

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 the **North Olmsted Wastewater Treatment Plant**

Public Notice No.: 14-03-031  
Public Notice Date: March 18, 2014  
Comment Period Ends: April 18, 2014

OEPA Permit No.: **3PD00016\*MD**  
Application No.: **OH0026778**

Name and Address of Applicant:

**City of North Olmsted  
5200 Dover Center Road  
North Olmsted, Ohio 44070**

Name and Address of Facility Where  
Discharge Occurs:

**North Olmsted WWTP  
23775 Mastick Road  
North Olmsted Ohio 44070  
Cuyahoga County**

Receiving Water: **Rocky 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 (CFR), Section 124.8 and 124.56. This document fulfills the requirements established in those regulations by providing the information necessary to inform the public of actions proposed by the Ohio Environmental Protection Agency (Ohio EPA), as well as the methods by which the public can participate in the process of finalizing those actions.

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

Effluent limits based on available treatment technologies are required by Section 301(b) of the CWT. Many of these have already been established by the U.S. 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 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**

New effluent limitations are proposed for the following parameters based on the design criteria of the treatment plant improvements that are scheduled to become fully operational by May 2015: dissolved oxygen, 5-day carbonaceous biochemical oxygen demand (CBOD<sub>5</sub>), total suspended solids and ammonia-nitrogen; limits requirements for total phosphorus, oil and grease, and pH would remain the same as in the current permit.

A new ultraviolet disinfection system is expected to be operational during the 2014 disinfection season. Hence, monitoring and effluent limitations for total residual chlorine will not be necessary in the final limits. Effluent limits and related conditions are included in the interim conditions in the event that chlorine needs to be used.

Final effluent limitations are proposed for *Escherichia coli*. New WQS for *E. coli* became effective in March 2010. As a compliance schedule was included in the last permit for meeting these new final effluent limitations, a schedule has not been included in this draft permit.

The draft permit would also renew the current mercury variance for the plant. The current monthly average limitation of 2.6 nanograms per liter (ng/l) would be continued as an alternative to meeting the Lake Erie Basin water quality standard of 1.3 ng/l.

The draft permit includes annual chronic bioassay testing requirements to comply with the federal NPDES application rules for publicly-owned treatment works.

In Part II of the permit, special conditions are included that address SSO reporting; operator certification, minimum staffing and operator of record; whole effluent toxicity testing; outfall signage; and pretreatment program requirements.

Parts IV, V and VI of the permit contain controls and best management practices to minimize the discharge of pollutants in facility storm water. Recent Ohio EPA inspections have found materials exposed to storm water, and therefore the controls and best management practices are needed. Storm water from major public treatment works is considered industrial storm water under federal NPDES regulations.

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## **Procedures for Participation in the Formulation of Final Determinations**

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

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

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

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

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

**Ohio Environmental Protection Agency  
Attention: Division of Surface Water  
Permits and Compliance Section  
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.

For additional information about this fact sheet or the draft permit, contact Eric Nygaard at (614) 644-2024 ([eric.nygaard@epa.state.oh.us](mailto:eric.nygaard@epa.state.oh.us)) or Erm Gomes at (330) 963-1196 ([erm.gomes@epa.state.oh.us](mailto:erm.gomes@epa.state.oh.us)).

## **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.

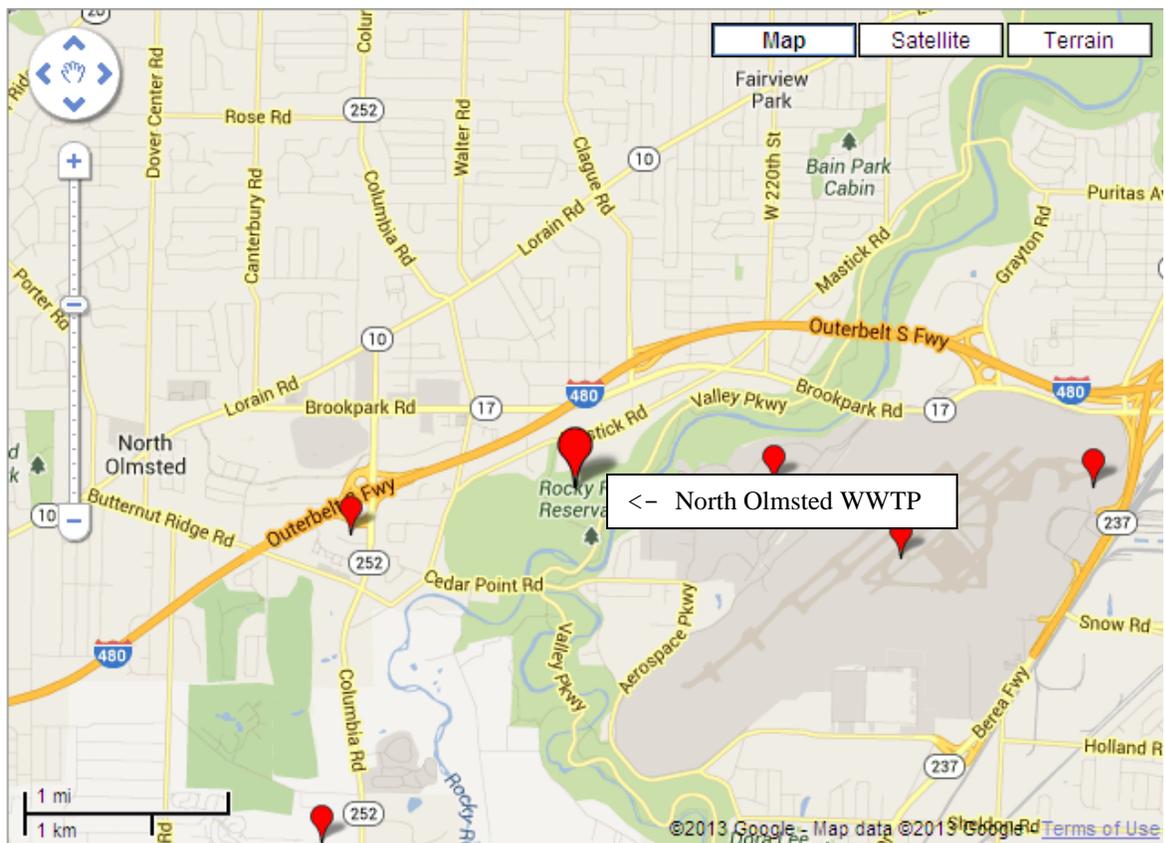
Alternately, the applicant may propose the development of site-specific water quality standard(s) pursuant to OAC Rule 3745-1-35. The permittee shall submit written notification regarding their intent to develop site specific water quality standards for parameters that are not priority pollutants to the above address no later than 30 days after the Public Notice Date.

## Location of Discharge/Receiving Water Use Classification

The North Olmsted WWTP discharges to the Rocky River at River Mile (RM) 11.38. Figure 1 shows the approximate location of the facility.

This segment of the Rocky River is described by Ohio EPA River Code: 13-001, U.S. EPA River Reach #: 04110001-070, County: Cuyahoga, Ecoregion: Erie-Ontario Lake Plain. The Rocky River is designated for the following uses under Ohio's WQS (OAC 3745-1-20): Warmwater Habitat (WWH), Agricultural Water Supply (AWS), Industrial Water Supply (IWS), and Class A Primary Contact Recreation (PCR).

Figure 1. Location of North Olmsted WWTP



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 CWT. Ohio WQS also include aquatic life use designations for

waterbodies which can not meet the CWT goals because of human-caused conditions that can not 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 / Facility Improvements**

The existing North Olmsted WWTP is an advanced treatment facility with an average design flow of 7.0 million gallons per day (MGD), a sustainable peak flow of 12.0 MGD, and a peak flow capacity of 30 MGD. The plant, built in 1959 with a major modification in 1994, serves North Olmsted as well as parts of Fairview Park and Olmsted Township. Current wet stream processes include the addition of sodium aluminate at the headworks, screening and grit removal, flow equalization, primary sedimentation, activated sludge, phosphorus removal, biological nitrification, secondary clarification, additional removal of suspended solids using microstrainers, and disinfection by chlorination/dechlorination. Sludge from the primary clarifiers is thickened and mixed with sludge from the secondary clarifiers and dewatered via a centrifuge. The sludge cake is hauled off-site for landfill disposal or transfer to another facility.

The City is under a compliance schedule (from the existing permit) to upgrade the peak capacity of the treatment plant and eliminate bypasses. The plant has bypassed 16 times between February 2011 and June 2013, in large part due to bottlenecks in the treatment plant flows. The compliance schedule requires the plant to have improvements that address these issues constructed by December 1, 2014.

North Olmsted WWTP is presently undergoing large scale modifications to the plant to meet these requirements and improve nutrient removal at the facility. The new wet stream processes as of December 2014 will include screening and grit removal, enlarged flow equalization, vertical loop reactor activated sludge biological treatment, secondary clarification, disk filtration and ultraviolet disinfection. This will not affect the average design flow of the plant, but will increase the peak flow capacity to 40 MGD. New Best Available Demonstrated Control Technology (BADCT) effluent limitations are proposed based on the design criteria of the treatment plant improvements that are scheduled to become fully operational by May 2015.

The North Olmsted sewerage system is 100 percent separate and implements an Ohio EPA approved industrial pretreatment program. There is one categorical industrial user and 221 non-categorical industrial users. The industrial users contribute approximately 0.05 MGD of flow, with the vast majority of this flow coming from non-categorical users.

### **Description of Existing Discharge**

Table 1 presents chemical specific data compiled from the data reported in annual pretreatment reports, and data collected by Ohio EPA.

Table 2 presents a summary of unaltered Discharge Monitoring Report (DMR) data for outfall 3PD00016001. Data are presented for the period January 2008 to September 2013, and current permit limits are provided for comparison.

Table 5 summarizes the chemical specific data for outfall 001 by presenting the average and maximum Projected Effluent Quality (PEQ) values.

Tables 3 and 4 summarize the results of acute and chronic whole effluent toxicity tests of the final effluent.

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

### **Assessment of Impact on Receiving Waters**

Rocky River is an impaired water, and listed on Ohio's 303(d) List. In October 2001, Ohio EPA completed a Total Maximum Daily Load (TMDL) report for the Rocky River Basin. A TMDL report is necessary when a waterbody is characterized as not meeting its goals or water quality use designation or characteristics. A TMDL report identifies the causes and sources of non-attainment and impacts, and recommends solutions. The TMDL for Rocky River did not include any recommendations or WLAs for the North Olmsted WWTP due to improving trends in the watershed. The entire TMDL is available at:

<http://epa.ohio.gov/dsw/tmdl/BlackRockyRivers.aspx>

High magnitude sources causing non-attainment of uses in the Rocky River are urban run-off, WWTP effluent discharges, channelization of the river, land development and stream bank destabilization. See the Attachment to this Fact Sheet for further information.

### **Development of Water-Quality-Based Effluent Limits**

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

*Parameter Selection* Effluent data for the North Olmsted WWTP were used to determine what parameters should undergo WLA. The parameters discharged are identified by the data available to Ohio EPA - Discharge Monitoring Report (DMR) data submitted by the permittee, compliance sampling data collected by Ohio EPA, and any other data submitted by the permittee, such as priority pollutant scans required by the NPDES application or by pretreatment, or other special conditions in the NPDES permit. The sources of effluent data used in this evaluation are as follows:

Self-monitoring data (DMR)	January 2008 through September 2013
Pretreatment data	2009-12
Ohio EPA compliance sampling data	2012

The data were examined, and the following values were removed from the evaluation to give a more reliable projection of effluent quality: chlorine – 0.068 mg/l; CBOD5 – 102 mg/l.

This data is evaluated statistically, and Projected Effluent Quality (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 wasteload allocation (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 9 for a summary of the screening results.

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

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

Aquatic life (WWH)		
Toxics (metals, organics, etc.)	Average	Annual 7Q10
	Maximum	Annual 1Q10
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 7, 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 (12 ng/l in the Ohio River basin; 1.3 ng/l in the Lake Erie basin).

The data used in the WLA are listed in Tables 6 and 7. The WLA results to maintain all applicable criteria are presented in Table 8. The current ammonia limits have been evaluated using the WLA procedures and are protective of WQS for ammonia toxicity.

*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 by NPDES permit rules [OAC Rule 3745-33-05(C)(2)]. 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.

For the Rocky River, there were 8 such paired samples available applicable to chromium and lead. To account for the limited quantity of data, the DMT for each of these metals was determined as the lower end of the 95 percent 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 are used in the WLA procedures.

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

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

The WLA calculations for WET are similar to those for aquatic life criteria - using the chronic toxicity unit ( $TU_c$ ) and 7Q10 flow for the average and the acute toxicity unit ( $TU_a$ ) and 1Q10 flow for the maximum. These values are the levels of effluent toxicity that should not cause instream toxicity during critical low-flow conditions. For the North Olmsted WWTP, the WLA values are 1.0  $TU_a$  and 1.6  $TU_c$ .

The chronic toxicity unit ( $TU_c$ ) is defined as 100 divided by the  $IC_{25}$ :

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

Where  $IC_{25}$  is the effluent concentration that causes a 25% decrease in organism growth or reproduction. 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 the No Observed Effects Concentration, and LOEC is the Lowest Observed Effects Concentration.

The acute toxicity unit (TU<sub>a</sub>) is defined as 100 divided by the LC<sub>50</sub> for the most sensitive test species:

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

Where LC50 is the effluent concentration causing 50% acute mortality to the test organisms. This equation applies outside the mixing zone for warmwater, modified warmwater, exceptional warmwater, coldwater, and seasonal salmonid use designations.

### **Reasonable Potential/ Effluent Limits/Hazard Management Decisions**

After appropriate effluent limits are calculated, the reasonable potential of the discharger to violate the WQS must be determined. Each parameter is examined and placed in a defined "group". Parameters that do not have a water quality standard 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 8. 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 9.

The final effluent limits are determined by evaluating the groupings in conjunction with other applicable rules and regulations. Table 10 presents the interim effluent limits and monitoring requirements proposed for North Olmsted WWTP outfall 3PD00016001 and the basis for their recommendation; Table 11 presents the final effluent limits and monitoring requirements.

The final limits proposed for dissolved oxygen, total suspended solids, ammonia-nitrogen and 5-day carbonaceous biochemical oxygen demand (CBOD<sub>5</sub>) are based on Best Available Demonstrated Control Technology (BADCT) levels for sanitary plant discharges [OAC 3745-1-05]. The new plant design was found to meet these standards in the Permit-to-Install approval. Ohio EPA may set discharge limits based on design levels in a PTI [OAC 3745-33-05(E)]. These limits become effective after a startup period for the new plant, i.e. May 1, 2015, and are protective of WQS.

The interim limits proposed for total suspended solids, ammonia-nitrogen and CBOD<sub>5</sub> are all based on current permit requirements. Interim limits for dissolved oxygen, oil and grease, pH, and *Escherichia coli* are based on Water Quality Standards (OAC 3745-1-07). Class A PCR *E. coli* standards apply to the Rocky River.

The proposed interim limit for total residual chlorine is based on WLA as limited by IMZM. The IMZM is a value calculated to avoid rapidly lethal conditions in the effluent mixing zone. The effluent limit for chlorine at outfall 3PD00016001 is less than the quantification level of 0.050 mg/l. However, a pollutant minimization program (PMP) is not required because the dosing rate of dechlorination chemicals ensures that the water quality based effluent limit is being met. Additionally, the use of chlorine is expected to be eliminated prior to the 2014 recreational period, May – October.

Phosphorus is limited based on provisions of OAC 3745-33-06(C). This rule requires that treatment plants located in the Lake Erie watershed with design flows of at least 1.0 MGD must meet these treatment technology standards.

The TMDL Report for the Rocky River indicates that the mainstem of Rocky River shows the effects in nutrient enrichment in the biological communities. Nutrients and organic enrichment/dissolved oxygen are listed as “high magnitude” causes, and major municipal point sources are listed among the “high magnitude” sources. Considering this information and the fact that municipal wastewater treatment plants discharge a nutrient load to the river, the current limits for phosphorus, and monitoring for nitrate + nitrite and total Kjeldahl nitrogen is proposed based on best engineering judgment. Monitoring for phosphorus and nitrate + nitrite at the upstream and downstream stations is also proposed. The purpose of the monitoring is to maintain a nutrient data set for use in the future updates to the TMDL study.

*Mercury Reasonable Potential and Mercury Variance* The Ohio EPA risk assessment (Table 9) places mercury in group 5. This placement as well as the data in Tables 1, 2 and 4 indicate 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 Ohio Administrative Code. 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 nanograms per liter (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. Part II of the draft NPDES permit lists the provisions of the mercury variance, and includes the following requirements:

- A variance-based monthly average effluent limit of 2.6 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 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.

The Ohio EPA risk assessment (Table 9) also places free cyanide in group 5, which recommends limits to protect water quality. Using the discretion allowed the Director under OAC 3745-33-07(A)(5), we are proposing monitoring, rather than limits, for these pollutants. Free cyanide was detected once in 39 samples at a concentration near the quantification level of the test method; this makes the PEQ values questionably representative of the discharge. We propose continued monitoring to evaluate the frequency of occurrence and variability of this parameter in the plant’s effluent.

Ohio EPA risk assessment (Table 9) places hexavalent chromium in group 4. This placement as well as the data in Tables 1, 2 and 5 supports that this parameter does not have the reasonable potential to contribute to WQS exceedances, and limits are not necessary to protect water quality. Monitoring for Group 4 pollutants (where PEQ exceeds 50 percent of the WLA) is required by OAC Rule 3745-33-07(A)(2).

In addition, the free cyanide and hexavalent chromium effluent quality falls within 75 percent of the WLA. Under OAC 3745-33-07(A)(2), parameters in this range must have a tracking requirement in the permit that specifies reductions in pollutant concentrations if effluent concentrations exceed the WLA. The tracking/reduction requirements are included in Part II Item J. of the draft permit.

Ohio EPA risk assessment (Table 9) places arsenic, bromodichloromethane, bis(2-ethylhexyl)phthalate, cadmium, chlorodibromomethane, chloroform, chromium, copper, iron, lead, manganese, molybdenum, nickel, selenium, strontium, toluene, zinc and total dissolved solids in groups 2 and 3. This placement as well as the data in Tables 1, 2 and 5 supports that these parameters do not have the reasonable potential to contribute to WQS exceedances, and that limits are not necessary to protect water quality. Monitoring for cadmium, chromium, copper, lead, nickel, selenium, zinc and total dissolved solids at a continued low frequency is proposed to document that these pollutants continue to remain at low levels.

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

#### *Whole Effluent Toxicity Reasonable Potential*

The toxicity data in Tables 3 and 4 show no measurable toxicity in this effluent. As a result, PEQs for acute and chronic toxicity cannot be calculated for the North Olmsted WWTP effluent; because of this there is no reasonable potential for this discharge to contribute to exceedances of toxicity WQS using the provisions of 40 CFR Part 132, Appendix F, Procedure 6. 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.

#### **Other Requirements**

##### *Compliance Schedule*

A 6 month compliance schedule is proposed for the City to submit a technical justification for either revising its local industrial user limits or retaining its existing local limits. If revisions to local limits are required, the City/County must also submit a pretreatment program modification request.

##### *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 of the permit in accordance with rules adopted in December 2006. These rules presently require the North Olmsted WWTP to have a Class III wastewater treatment plant operator in charge of the treatment plant operations discharging through outfall 001. After completion of construction, the new treatment plant will be designated as a Class IV treatment works. Based on the May 1, 2015 compliance date, the North Olmsted WWTP will need to have a Class IV wastewater treatment plant operator in charge of the treatment plant operations by May 1, 2016.

#### *Operator of Record*

In December 2006, Ohio Administrative Code (OAC) rule revisions became effective that affect the requirements for certified operators for sewage collection systems and treatment works regulated under NPDES permits. Part II includes a requirement to implement rule 3745-7-02 of the OAC. It requires the permittee to designate one or more operator of record to oversee the technical operation of the treatment works.

#### *Storm Water Compliance*

In order to comply with industrial storm water regulations, the permittee submitted a form for "No Exposure Certification" which was signed on June 5, 2009. Since that time, inspections by NEDO staff have found materials exposed to storm water. The draft permit contains Parts IV, V and VI to ensure control of storm water at the site.

#### *Outfall Signage*

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

Table 1. Effluent Characterization Using Ohio EPA Data and Pretreatment Program Data

Summary of analytical results for the North Olmsted WWTP outfall 3PD00016001. All values are in ug/l unless otherwise indicated. PT = data from, pretreatment program reports; OEPA = data from analyses by Ohio EPA; ND = below detection (detection limit); NA = not analyzed. Decision Criteria: PEQ<sub>avg</sub> = monthly averages; PEQ<sub>max</sub> = daily maximum analytical results.

PARAMETER	Ohio EPA	Ohio EPA	PT	PT	PT	PT	<u>DECISION CRITERIA</u>	
	08/13/12	05/22/12	11/13/12	08/30/11	09/07/10	09/04/09	PEQ <sub>avg</sub>	PEQ <sub>max</sub>
CBOD5 mg/l	<2.0	2.9	NA	NA	NA	NA		
COD mg/l	36	26	NA	NA	NA	NA		
Ammonia-N mg/l	0.065	0.086	NA	NA	NA	NA	0.28	0.62
Nitrate/nitrite-N mg/l	8.89	10.9	NA	NA	NA	NA	10.57	14.48
Kjeldahl N mg/l	1.81	1.93	NA	NA	NA	NA	2.34	3.42
Phosphorus mg/l	1.03	0.868	NA	NA	NA	NA	0.9	1.43
Dissolved Solids mg/l	520	590	NA	NA	NA	NA	715	836
Chloride mg/l	125	138	NA	NA	NA	NA	383	524
Hardness mg/l	197	235	NA	NA	NA	NA		
Copper	<10	13	<20	<20	<20	<10	11.5	16.2
Iron	120	132	NA	NA	NA	NA	366	502
Lead	<2.0	<2.0	30.4	<10	<10	<10	8.0	11
Magnesium mg/l	14	17	NA	NA	NA	NA	47	65
Manganese	<10	23	NA	NA	NA	NA	63.8	87.4
Nickel	<40	4.5	<5	<5	<5	<5	6.2	8.5
Potassium mg/l	11	11	NA	NA	NA	NA		
Strontium	217	256	NA	NA	NA	NA	269	313
Zinc	31	28	23.3	20.6	88.5	21.4	38.6	52.5
Bromodichloromethane	NA	1.75	<5	5.8	<5*	<5	9.7	13.3
Chloroform	NA	2.94	<5	11	14*	9.6	23.5	32.2
Dibromochloromethane	NA	0.69	<5	<5	<5*	<5	3.1	4.3
Toluene	NA	0.51	<5	<5	<5*	<5	2.3	3.2

Table 2. Effluent Characterization Using Self-Monitoring Data

Summary of current permit limits and unaltered monthly operating report (MOR) data for North Olmsted WWTP outfall 3PD00016001. All values are based on annual records unless otherwise indicated. N = Number of Analyses. For pH, 5th percentile shown in place of 50th percentile; For dissolved oxygen, 5th percentile shown in place of 95th percentile; A = 7 day average. Decision Criteria: PEQ<sub>avg</sub> = monthly average; PEQ<sub>max</sub> = daily maximum analytical results.

Parameter	Season	Units	Current Permit Limits		# Obs.	Percentiles		Data Range	Decision Criteria		
			30 day	Daily		50 <sup>th</sup>	95 <sup>th</sup>		# Obs.	PEQ <sub>ave</sub>	PEQ <sub>max</sub>
Water Temperature	Annual	C	Monitor		1973	16.6	22	8-24.3			
Dissolved Oxygen	Summer	mg/l		5.0 min	744	7.1	8.4	5.3-9.4	508	7.166	8.0377
Dissolved Oxygen	Winter	mg/l		5.0 min	708	8	9.3	5.4-11.2	349	8.2925	9.7264
Residue, Total Dissolved	Annual	mg/l	Monitor		38	590	775	428-824	38	715.02	836.19
Residue, Total Dissolved	Annual	kg/day	--	--	38	9580	20400	32600			
Total Suspended Solids	Annual	mg/l	**	**	1160	5	22	0-121	1160	9.4279	19.946
Total Suspended Solids	Annual	kg/day	**	**	1160	70.2	856	0-5470			
Oil and Grease, Total	Annual	mg/l	--	--	242	0	0	0-5.48	242	2.8	3.836
Oil and Grease, Total	Annual	kg/day	--	--	242	0	0	0-120			
Oil and Grease, Hexane Extr Method	Annual	mg/l	--	10	76	0	0	0-0	76	--	--
Oil and Grease, Hexane Extr Method	Annual	kg/day	--	--	76	0	0	0-0			
Nitrogen, Ammonia (NH3)	Summer	mg/l	1.6	2.4 <sup>A</sup>	515	0.104	0.73	0-2.41	351	0.28171	0.6245
Nitrogen, Ammonia (NH3)	Winter	mg/l	7.0	10.5 <sup>A</sup>	534	0.0915	1.76	0-11.3	267	1.5988	1.8691
Nitrogen, Ammonia (NH3)	Summer	kg/day	42.4	63.6 <sup>A</sup>	515	1.24	20.3	0-156			
Nitrogen, Ammonia (NH3)	Winter	kg/day	185.5	278.2 <sup>A</sup>	534	1.49	61.6	0-300			
Nitrogen Kjeldahl, Total	Annual	mg/l	Monitor		40	1.2	3.87	0.66-4.64	40	2.3354	3.415
Nitrogen Kjeldahl, Total	Annual	kg/day	--	--	40	20.6	87.9	4.76-115			

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Nitrite Plus Nitrate, Total	Annual	mg/l	Monitor	162	9.43	12	1.66-18.1	162	10.57	14.48	
Nitrite Plus Nitrate, Total	Annual	kg/day	--	--	162	145	244	46.5-361			
Phosphorus, Total (P)	Annual	mg/l	1.0	1.5 <sup>A</sup>	615	0.6	1.4	0-3.5	615	0.90152	1.4279
Phosphorus, Total (P)	Annual	kg/day	26.5	39.7 <sup>A</sup>	615	10.1	28.5	0-84.6			
Cyanide, Free	Annual	mg/l	Monitor	41	0	0	0-0.024	39	0.01927	0.0264	
Cyanide, Free	Annual	kg/day	--	--	41	0	0	0-0.621			
Selenium, Total Recoverable	Annual	ug/l	Monitor	42	0	0	0-0	42	--	--	
Selenium, Total Recoverable	Annual	kg/day	--	--	42	0	0	0-0			
Nickel, Total Recoverable	Annual	ug/l	Monitor	22	0	0	0-0	10	6.2	8.5	
Nickel, Total Recoverable	Annual	kg/day	--	--	22	0	0	0-0			
Strontium, Total Recoverable	Annual	ug/l	--	--	30	228	271	149-281	30	268.68	313.47
Strontium, Total Recoverable	Annual	kg/day	--	--	30	3.6	7.8	1.83-8.69			
Zinc, Total Recoverable	Annual	ug/l	Monitor	22	25.7	45.3	15.5-47	22	38.571	52.466	
Zinc, Total Recoverable	Annual	kg/day	--	--	22	0.425	1.12	0.151-1.15			
Cadmium, Total Recoverable	Annual	ug/l	Monitor	50	0	0	0-0	50	--	--	
Cadmium, Total Recoverable	Annual	kg/day	--	--	50	0	0	0-0			
Lead, Total Recoverable	Annual	ug/l	Monitor	42	0	0	0-8.95	42	8.03	11	
Lead, Total Recoverable	Annual	kg/day	--	--	42	0	0	0-0.327			
Chromium, Total Recoverable	Annual	ug/l	Monitor	22	0	0	0-0	22	--	--	
Chromium, Total Recoverable	Annual	kg/day	--	--	22	0	0	0-0			
Copper, Total Recoverable	Annual	ug/l	Monitor	70	0	13.1	0-17	70	11.457	16.242	
Copper, Total Recoverable	Annual	kg/day	--	--	70	0	0.277	0-1.2			
Chromium, Dissolved Hexavalent	Annual	ug/l	Monitor	22	0	0	0-15	22	14.2	19.5	
Chromium, Dissolved Hexavalent	Annual	kg/day	--	--	22	0	0	0-0.000157			
Fecal Coliform	Annual	ml #/100	1000	2000 <sup>A</sup>	451	31	462	1-66000			
E. coli	Annual	ml	Monitor	123	89	2620	1-155000				
Bromomethane	Annual	ug/l	--	--	29	0	0	0-0	29	--	--
Bromomethane	Annual	kg/day	--	--	29	0	0	0-0			
Bis(2-ethylhexyl) Phthalate	Annual	ug/l	Monitor	67	0	0	0-3.3	34	4.38	6	
Bis(2-ethylhexyl) Phthalate	Annual	kg/day	--	--	67	0	0	0-0.0513			

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Flow Rate	Annual	MGD	Monitor	2069	4.68	10.7	1.91-21.1				
Chlorine, Total Residual	Annual	mg/l	--	0.038	724	0	0	0-0.068	723	0.012222	0.020518
Chlorine, Total Residual	Annual	kg/day	--	--	724	0	0	0-1.81			
Mercury, Total (Low Level)	Annual	ng/l	2.6	1700	72	1.27	5.82	0-9.1	72	3.3798	5.2567
Mercury, Total (Low Level)	Annual	kg/day	0.000069	0.0451	72	0.000021	0.000147	0-0.00055			
Acute Toxicity, Ceriodaphnia dubia	Annual	TUa	Monitor		14	0	0.105	0-0.3			
Chronic Toxicity, Ceriodaphnia dubia	Annual	TUc	Monitor		8	0	0	0-0			
Acute Toxicity, Pimephales promelas	Annual	TUa	Monitor		13	0	0	0-0			
Chronic Toxicity, Pimephales promelas	Annual	TUc	Monitor		8	0	0	0-0			
pH, Maximum	Annual	S.U.	--	9.0	1435	7	7.5	6.5-8.66			
pH, Minimum	Annual	S.U.	--	6.5	1435	6.8	7.3	6-7.85			
CBOD 5 day	Summer	mg/l	15	23 <sup>A</sup>	439	0	6.02	0-25	297	11.24	15.4
CBOD 5 day	Winter	mg/l	25	40 <sup>A</sup>	437	2.4	9.66	0-102	214	4.3587	9.2371
CBOD 5 day	Summer	kg/day	397	609 <sup>A</sup>	439	0	191	0-1090			
CBOD 5 day	Winter	kg/day	662	1060 <sup>A</sup>	437	40.2	420	0-3000			

\*\* - TSS limits: Summer – 20 mg/l avg (530 kg/day), 30 mg/l maximum (795 kg/day); Winter – 30 mg/l avg (795 kd/day), 45 mg/l maximum (1192 kg/day)

Table 3. Summary of effluent acute toxicity test results.

Test Date(a)	<i>Ceriodaphnia dubia</i> 48 hours						<i>Fathead Minnows</i> 96 hour					
	UP <sup>b</sup>	C <sup>c</sup>	LC <sub>50</sub> <sup>d</sup>	%M <sup>e</sup>	TUa <sup>f</sup>	NF <sup>g</sup>	UP <sup>b</sup>	C <sup>c</sup>	LC <sub>50</sub> <sup>d</sup>	%M <sup>e</sup>	TUa <sup>f</sup>	NF <sup>g</sup>
02/10/08 (E)	0	NR	>100	0	<1.0	0	0	NR	>100	0	<1.0	2.5
05/19/08 (E)	0	NR	>100	15	<1.0	NT	20	NR	>100	0	<1.0	NT
05/30/08 (E)	0	NR	>100	0	<1.0	NT	0	NR	>100	0	<1.0	0
08/03/08 (E)	0	NR	>100	0	<1.0	0	0	NR	>100	0	<1.0	5
11/02/08 (E)	0	NR	>100	0	<1.0	0	0	NR	>100	0	<1.0	5
02/21/09 (E)	0	NR	>100	0	<1.0	0	5	NR	>100	0	<1.0	12
05/04/09 (E)	5	NR	>100	0	<1.0	5	2	NR	>100	0	<1.0	0
08/08/09 (E)	0	NR	>100	0	<1.0	0	15	NR	>100	0	<1.0	0
02/06/10 (E)	0	NR	>100	0	<1.0	0	10	NR	>100	0	<1.0	5
05/03/10 (E)	0	NR	>100	0	<1.0	0	0	NR	>100	0	<1.0	5

<sup>a</sup> O = EPA test; E = entity test

<sup>b</sup> UP = upstream control water

<sup>c</sup> C = laboratory water control

<sup>d</sup> LC<sub>50</sub> = median lethal concentration

<sup>e</sup> %M = percent mortality in 100% effluent

<sup>f</sup> TUa = acute toxicity units

<sup>g</sup> NF = near field sample in the Rocky River

NR = not reported in OEPA database

NT = not tested

Table 3. continued.

Test Date(a)	<i>Ceriodaphnia dubia</i> 48 hours						<i>Fathead Minnows</i> 96 hour					
	UP <sup>b</sup>	C <sup>c</sup>	LC <sub>50</sub> <sup>d</sup>	%M <sup>e</sup>	TUa <sup>f</sup>	NF <sup>g</sup>	UP <sup>b</sup>	C <sup>c</sup>	LC <sub>50</sub> <sup>d</sup>	%M <sup>e</sup>	TUa <sup>f</sup>	NF <sup>g</sup>
06/19/10 (E)	0	NR	>100	0	<1.0	NT	NR	NR	>100	0	<1.0	NT
05/22/12 (O)	0	0	>100	0	<1.0	0	0	0	>100	0	<1.0	0
06/03/12 (E)	0	NR	>100	0	<1.0	NT	2	NR	>100	0	<1.0	NT
06/09/13 (E)	0	NR	>100	0	<1.0	NT	28	NR	>100	0	<1.0	NT

<sup>a</sup> O = EPA test; E = entity test

<sup>b</sup> UP = upstream control water

<sup>c</sup> C = laboratory water control

<sup>d</sup> LC<sub>50</sub> = median lethal concentration

<sup>e</sup> %M = percent mortality in 100% effluent

<sup>f</sup> TUa = acute toxicity units

<sup>g</sup> NF = near field sample in the Rocky River

NR = not reported in OEPA database

NT = not tested

Table 4. Summary of effluent chronic toxicity test results.

Test Date (a)	<i>Ceriodaphnia dubia</i> 7-Day										<i>Fathead Minnows</i> 7-Day					
	UP <sup>b</sup>	C <sup>c</sup>	IC <sub>25</sub> <sup>d</sup>	TU <sub>c</sub> <sup>e</sup>	Survival			Reproduction			FF <sup>i</sup>	UP <sup>b</sup>	C <sup>c</sup>	IC <sub>25</sub> <sup>d</sup>	TU <sub>c</sub> <sup>e</sup>	FF <sup>i</sup>
					LOEC <sup>f</sup>	NOEC <sup>g</sup>	TU <sub>c</sub> <sup>h</sup>	LOEC <sup>f</sup>	NOEC <sup>g</sup>	TU <sub>c</sub> <sup>h</sup>						
02/08/08 (E)	0	NR	>100	<1.0	>100	100	<1.0	>100	100	<1.0	2.5	2.5	NR	>100	<1.0	10
08/03/08 (E)	0	NR	>100	<1.0	>100	100	<1.0	>100	100	<1.0	0	5	NR	>100	<1.0	18
02/21/09 (E)	0	NR	>100	<1.0	>100	100	<1.0	>100	100	<1.0	0	0	NR	>100	<1.0	10
08/08/09 (E)	0	NR	>100	<1.0	>100	100	<1.0	>100	100	<1.0	0	8	NR	>100	<1.0	8
02/06/10 (E)	0	NR	>100	<1.0	>100	100	<1.0	>100	100	<1.0	0	15	NR	>100	<1.0	20
06/19/10 (E)	NR	NR	>100	<1.0	>100	100	<1.0	>100	100	<1.0	NT	NR	NR	>100	<1.0	NT
06/03/12 (E)	0	NR	>100	<1.0	>100	100	<1.0	>100	100	<1.0	NT	2	NR	>100	<1.0	NT
06/09/13 (E)	10	NR	>100	<1.0	>100	100	<1.0	>100	100	<1.0	NT	42	NR	>100	<1.0	NT

<sup>a</sup>O = EPA test; E = entity test

<sup>b</sup>UP = upstream control water

<sup>c</sup>C = laboratory water control

<sup>d</sup>IC<sub>25</sub> = inhibition concentration twenty-five

<sup>e</sup>TU<sub>c</sub> = chronic toxicity units based on IC<sub>25</sub>

<sup>f</sup>LOEC = lowest observed effects concentration

<sup>g</sup>NOEC = no observed effects concentration

<sup>h</sup>TU<sub>c</sub> = chronic toxicity units based on LOEC and NOEC

<sup>i</sup>FF = far-field effect

<sup>j</sup>STU<sub>c</sub> = TU<sub>c</sub> based on LOEC and NOEC for survival

<sup>k</sup>GTU<sub>c</sub> = TU<sub>c</sub> based on LOEC and NOEC for growth

BD = below detection

NT = not tested

**Table 5.****Effluent Data for the North Olmsted WWTP**

<b>Parameter</b>	<b>Units</b>	<b>Number of Samples</b>	<b>Number &gt; MDL</b>	<b>PEQ Average</b>	<b>PEQ Maximum</b>
Ammonia-Summer	mg/l	351	233	0.28	0.62
Ammonia-Winter	mg/l	267	151	1.6	1.87
Arsenic - TR	ug/l	6	0	--	--
Bis(2-ethylhexyl)phthalate	ug/l	34	1	4.38	6
Bromodichloromethane	ug/l	5	2	9.7382	13.34
Cadmium - TR	ug/l	50	0	--	--
Chlorides	mg/l	2	2	382.812	524.4
Chlorine - TRes	mg/l	723	22	0.012	0.021
Chlorodibromomethane	ug/l	1	1	3.12294	4.278
Chloroform (Trichloromethane)	ug/l	5	4	23.506	32.2
Chromium - TR	ug/l	22	0	--	--
Chromium VI - Diss	ug/l	22	1	14.235	19.5
Copper - TR	ug/l	70	31	11.5	16.2
Cyanide - free	mg/l	39	1	0.019272	0.0264
Dissolved solids	mg/l	38	38	715	836
Iron - TR	ug/l	2	2	366.168	501.6
Lead - TR	ug/l	42	2	8.03	11
Magnesium	mg/l	2	2	47.158	64.6
Manganese - TR	ug/l	2	1	63.802	87.4
Mercury - TR (BCC)	ng/l	72	65	3.4	5.3
Molybdenum	ug/l	0	0	--	--
Nickel - TR	ug/l	10	1	6.2	8.5
Nitrate-N + Nitrite-N	mg/l	162	162	10.5704	14.48
Phosphorus	mg/l	615	612	0.9	1.43
Selenium - TR	ug/l	42	0	--	--
Strontium	ug/l	30	30	269	313
TKN	mg/l	40	40	2.34	3.42
Toluene	ug/l	1	1	2.30826	3.162
Zinc - TR	ug/l	22	22	38.6	52.5

**Table 6.**

**Water Quality Criteria in the Study Area**

Parameter	Units	Outside Mixing Zone Criteria				Maximum Aquatic Life	Inside Mixing Zone Maximum
		Average					
		Wildlife	Human Health	Agri-culture	Aquatic Life		
Ammonia-Summer	mg/l	--	--	--	1.6	--	--
Ammonia-Winter	mg/l	--	--	--	3.7	--	--
Arsenic - TR	ug/l	--	580	100	150	340	680
Bis(2-ethylhexyl)phthalate	ug/l	--	32c	--	8.4	1100	2100
Bromodichloromethane	ug/l	--	180c	--	340	3100	6200
Cadmium - TR	ug/l	--	730	50	4.6	11	22
Chlorides	mg/l	--	--	--	--	--	--
Chlorine - TRes	mg/l	--	--	--	0.011	0.019	0.038
Chlorodibromomethane	ug/l	--	150	--	320	2900	5800
Chloroform (Trichloromethane)	ug/l	--	1700c	--	140	1300	2600
Chromium - TR	ug/l	--	14000	100	210	1700	3300
Chromium VI - Diss	ug/l	--	14000	--	11	16	31
Copper - TR	ug/l	--	64000	500	18	29	59
Cyanide - free	mg/l	--	48	--	0.0052	0.022	0.044
Dissolved solids	mg/l	--	--	--	1500	--	--
Iron - TR	ug/l	--	--	5000	--	--	--
Lead - TR	ug/l	--	--	100	20	380	760
Magnesium	mg/l	--	--	--	--	--	--
Manganese - TR	ug/l	--	61000	--	--	--	--
Mercury - TR (BCC)	ng/l	1.3	3.1	10000	910	1700	3400
Molybdenum	ug/l	--	10000	--	20000	190000	370000
Nickel - TR	ug/l	--	43000	200	100	910	1800
Nitrate-N + Nitrite-N	mg/l	--	--	100	--	--	--
Phosphorus	mg/l	--	--	--	--	--	--
Selenium - TR	ug/l	--	3100	50	5	--	--
Strontium	ug/l	--	1400000	--	21000	40000	81000
TKN	mg/l	--	--	--	--	--	--
Toluene	ug/l	--	51000	--	62	560	1100
Zinc - TR	ug/l	--	35000	25000	230	230	470

**Table 7.**

**Instream Conditions and Discharger Flow**

<u>Parameter</u>	<u>Units</u>	<u>Season</u>	<u>Value</u>	<u>Basis</u>
<i>Stream Flows</i>				
1Q10	cfs	annual	24.65	USGS 04201500 + Ust POTWs
7Q10	cfs	annual	25.25	USGS 04201500 + Ust POTWs
		summer	0	
		winter	0	
30Q10	cfs	summer	26.65	USGS 04201500 + Ust POTWs
		winter	52.4	USGS 04201500 + Ust POTWs
90Q10	cfs	annual	29.85	
Harmonic Mean	cfs	annual	45.85	USGS 04201500 + Ust POTWs
Mixing Assumption	%	average	25	
	%	maximum	100	
<i>Hardness</i>	mg/l	annual	220	N Olmsted 901 median
<i>pH</i>	S.U.	summer	7.85	N. Olmsted 901 75th %ile
		winter	7.95	N. Olmsted 901 75th %ile
<i>Temperature</i>	C	summer	21.425	N. Olmsted 901 75th %ile
		winter	7.25	N. Olmsted 901 75th %ile
<i>North Olmsted WWTP flow</i>	cfs	annual	10.83	Plant design flow

*Background Water Quality*

Ammonia-Summer	mg/l	0.216	801 station; 2008-13; n=23; 3<MDL; median value
Ammonia-Winter	mg/l	0.053	801 station; 2008-13; n=4; 0<MDL; mean value
Arsenic - TR	ug/l	1.6	T01W19; 2001; n=2; 1<MDL; mean value
Bis(2-ethylhexyl)phthalate	ug/l	0	No representative data available.
Bromodichloromethane	ug/l	0	No representative data available.
Cadmium - TR	ug/l	0	T01W19; 2001; n=2; 2<MDL; All values <MDL
Chlorides	mg/l	141	T01W19; 2001; n=2; 0<MDL; mean value
Chlorine - TRes	mg/l	0	No representative data available.
Chlorodibromomethane	ug/l	0	No representative data available.
Chloroform (Trichloromethane)	ug/l	0	No representative data available.
Chromium - TR	ug/l	0	T01W19; 2001; n=2; 2<MDL; All values <MDL
Chromium VI - Diss	ug/l	0	No representative data available.
Copper - TR	ug/l	0	T01W19; 2001; n=2; 2<MDL; All values <MDL
Cyanide - free	mg/l	0	No representative data available.
Dissolved solids	mg/l	568	T01W19; 2001; n=2; 0<MDL; mean value
Iron - TR	ug/l	474	T01W19; 2001; n=2; 0<MDL; mean value
Lead - TR	ug/l	0	T01W19; 2001; n=2; 2<MDL; All values <MDL
Magnesium	mg/l	16.5	T01W19; 2001; n=2; 0<MDL; mean value
Manganese - TR	ug/l	36	T01W19; 2001; n=2; 0<MDL; mean value
Mercury - TR (BCC)	ng/l	0	No representative data available.
Molybdenum	ug/l	0	No representative data available.
Nickel - TR	ug/l	0	T01W19; 2001; n=2; 2<MDL; All values <MDL
Nitrate-N + Nitrite-N	mg/l	1.8	801 station; 2008-13; n=40; 0<MDL; median value
Phosphorus	mg/l	0.061	801 station; 2008-13; n=40; 6<MDL; median value
Selenium - TR	ug/l	0	T01W19; 2001; n=2; 2<MDL; All values <MDL
Strontium	ug/l	370	T01W19; 2001; n=2; 0<MDL; mean value
TKN	mg/l	1.25	T01W19; 2001; n=2; 0<MDL; mean value
Toluene	ug/l	0	No representative data available.
Zinc - TR	ug/l	0	T01W19; 2001; n=2; 2<MDL; All values <MDL

**Table 8.**

**Summary of Effluent Limits to Maintain Applicable WQ Criteria**

Parameter	Units	Outside Mixing Zone Criteria					Inside Mixing Zone Maximum
		Wildlife	Average			Maximum Aquatic Life	
			Human Health	Agri-culture	Aquatic Life		
Ammonia-Summer	mg/l	--	--	--	5.0	--	--
Ammonia-Winter	mg/l	--	--	--	Sec.	--	--
Arsenic - TR	ug/l	--	1192	204	236	1110	680
Bis(2-ethylhexyl)phthalate	ug/l	--	66	--	13	3604	2100
Bromodichloromethane	ug/l	--	371	--	538	10156	6200
Cadmium - TR	ug/l	--	1503	103	7.3	36	22
Chlorides	mg/l	--	--	--	--	--	--
Chlorine - TRes	mg/l	--	--	--	0.017	0.062	0.038
Chlorodibromomethane	ug/l	--	309	--	507	9501	5800
Chloroform (Trichloromethane)	ug/l	--	3499	--	222	4259	2600
Chromium - TR	ug/l	--	28818	206	332	5569	3300
Chromium VI - Diss	ug/l	--	28818	--	17	52	31
Copper - TR	ug/l	--	131738	1029	28	95	59
Cyanide - free	mg/l	--	99	--	0.0082	0.072	0.044
Dissolved solids	mg/l	--	--	--	2043	--	--
Iron - TR	ug/l	--	--	9790	--	--	--
Lead - TR	ug/l	--	--	206	32	1245	760
Magnesium	mg/l	--	--	--	--	--	--
Manganese - TR	ug/l	--	125524	--	--	--	--
Mercury - TR (BCC)	ng/l	1.3	3.1	10000	910	1700	3400
Molybdenum	ug/l	--	20584	--	31657	622456	370000
Nickel - TR	ug/l	--	88511	412	158	2981	1800
Nitrate-N + Nitrite-N	mg/l	--	--	204	--	--	--
Phosphorus	mg/l	--	--	--	--	--	--
Selenium - TR	ug/l	--	6381	103	7.9	--	--
Strontium	ug/l	--	2881372	--	33025	130201	81000
TKN	mg/l	--	--	--	--	--	--
Toluene	ug/l	--	104979	--	98	1835	1100
Zinc - TR	ug/l	--	72044	51460	364	753	470

Sec – secondary treatment levels are adequate to maintain WQS.



Table 10. Interim effluent limits and monitoring requirements for North Olmsted WWTP outfall 3PD00016001 and the basis for their recommendation.

Parameter	Units	<u>Effluent Limits</u>				Basis <sup>b</sup>
		Concentration		Loading (kg/day) <sup>a</sup>		
		30 Day Average	Daily Maximum	30 Day Average	Daily Maximum	
Flow	MGD	----- Monitor -----				M <sup>c</sup>
Temperature	°C	----- Monitor -----				M <sup>c</sup>
Dissolved Oxygen	mg/l	--	5.0 (min.)	--	--	WQS
CBOD <sub>5</sub>	mg/l					
Summer		15	23 <sup>d</sup>	397	609 <sup>d</sup>	EP/PD
Winter		25	40 <sup>d</sup>	662	1060 <sup>d</sup>	BPT
Dissolved Solids	mg/l	----- Monitor -----				M <sup>c</sup>
Suspended Solids	mg/l					
Summer		20	30 <sup>d</sup>	530	795 <sup>d</sup>	EP/PD
Winter		30	45 <sup>d</sup>	795	1192 <sup>d</sup>	BPT
Ammonia-N	mg/l					
Summer		1.6	2.4 <sup>d</sup>	42.4	63.6 <sup>d</sup>	ABS/EP
Winter		7.0	10.5 <sup>d</sup>	185	278 <sup>d</sup>	ABS/EP
Kjeldahl N	mg/l	----- Monitor -----				M <sup>c</sup>
Nitrate/nitrite-N	mg/l	----- Monitor -----				M <sup>c</sup>
Phosphorus	mg/l	1.0	1.5 <sup>d</sup>	26.5	39.7 <sup>d</sup>	PTS
Oil and Grease	mg/l	--	10	--	--	WQS
pH	S.U.	----- 6.5 to 9.0 -----				WQS
E. coli	#/100ml					
Summer		126	284 <sup>d</sup>	--	--	WQS
Chlorine Residual	mg/l	--	0.038	--	--	WLA/IMZM
Cyanide, Free	mg/l	----- Monitor -----				M/RP <sup>c</sup>
Cadmium, T. R.	µg/l	----- Monitor -----				M <sup>c</sup>
Chromium, T. R.	µg/l	----- Monitor -----				M <sup>c</sup>
Hex. Chromium (Dissolved)	µg/l	----- Monitor -----				M/RP <sup>c</sup>
Copper, T. R.	µg/l	----- Monitor -----				M <sup>c</sup>
Lead, T. R.	µg/l	----- Monitor -----				M <sup>c</sup>
Mercury, T.	ng/l	2.6	1700	0.000069	0.045	VAR,WLA
Nickel, T. R.	µg/l	----- Monitor -----				M <sup>c</sup>
Selenium, T. R.	µg/l	----- Monitor -----				M <sup>c</sup>
Zinc, T. R.	µg/l	----- Monitor -----				M <sup>c</sup>
Whole Effluent Toxicity						
Acute	TUa	----- Monitor (w/o trigger) -----				MTR
Chronic	TUc	----- Monitor (w/o trigger) -----				MTR

Table 10. Con't.

- <sup>a</sup> Effluent loadings based on average design discharge flow of 7.0 MGD.
- <sup>b</sup> Definitions: ABS = Antibacksliding Rule (OAC 3745-33-05(E) and 40 CFR Part 122.44(l)); BPT = Best Practicable Waste Treatment Technology, 40 CFR Part 133, Secondary Treatment Regulation; EP = Existing Permit; M = Monitoring; MTR = Minimum toxicity test requirement under OAC 3745-33-07(B)(11); PTS = Phosphorus Treatment Standards under OAC 3745-33-06; PD = Plant Design Criteria; RP = Reasonable Potential for requiring water quality-based effluent limits and monitoring requirements in NPDES permits (3745-33-07(A)); WLA = Wasteload Allocation procedures (OAC 3745-2); WLA/IMZM = Wasteload Allocation limited by Inside Mixing Zone Maximum; WQS = Ohio WQS (OAC 3745-1).
- <sup>c</sup> Monitoring of flow and other indicator parameters is specified to assist in the evaluation of effluent quality and treatment plant performance.
- <sup>d</sup> 7 day average limit.

Table 11. Final effluent limits and monitoring requirements for North Olmsted WWTP outfall 3PD00016001 and the basis for their recommendation.

Parameter	Units	<u>Effluent Limits</u>				Basis <sup>b</sup>
		Concentration		Loading (kg/day) <sup>a</sup>		
		30 Day Average	Daily Maximum	30 Day Average	Daily Maximum	
Flow	MGD	----- Monitor -----				M <sup>c</sup>
Temperature	°C	----- Monitor -----				M <sup>c</sup>
Dissolved Oxygen	mg/l	--	6.0 (min.)	--	--	BADCT
CBOD <sub>5</sub>	mg/l	10	15 <sup>d</sup>	265	397 <sup>d</sup>	BADCT
Dissolved Solids	mg/l	----- Monitor -----				M <sup>c</sup>
Suspended Solids	mg/l	12	18 <sup>d</sup>	318	477 <sup>d</sup>	BADCT
Ammonia-N	mg/l					
Summer		1.0	1.5 <sup>d</sup>	26.5	39.7 <sup>d</sup>	BADCT
Winter		3.0	4.5 <sup>d</sup>	79.5	119.2 <sup>d</sup>	BADCT
Kjeldahl N	mg/l	----- Monitor -----				M <sup>c</sup>
Nitrate/nitrite-N	mg/l	----- Monitor -----				M <sup>c</sup>
Phosphorus	mg/l	1.0	1.5 <sup>d</sup>	26.5	39.7 <sup>d</sup>	PTS
Oil and Grease	mg/l	--	10	--	--	WQS
pH	S.U.	----- 6.5 to 9.0 -----				WQS
E. coli	#/100ml					
Summer		126	284 <sup>d</sup>	--	--	WQS
Cyanide, Free	mg/l	----- Monitor -----				M/RP <sup>c</sup>
Cadmium, T. R.	µg/l	----- Monitor -----				M <sup>c</sup>
Chromium, T. R.	µg/l	----- Monitor -----				M <sup>c</sup>
Hex. Chromium (Dissolved)	µg/l	----- Monitor -----				M/RP <sup>c</sup>
Copper, T. R.	µg/l	----- Monitor -----				M <sup>c</sup>
Lead, T. R.	µg/l	----- Monitor -----				M <sup>c</sup>
Mercury, T.	ng/l	2.6	1700	0.000069	0.045	VAR,WLA
Nickel, T. R.	µg/l	----- Monitor -----				M <sup>c</sup>
Selenium, T. R.	µg/l	----- Monitor -----				M <sup>c</sup>
Zinc, T. R.	µg/l	----- Monitor -----				M <sup>c</sup>
Whole Effluent Toxicity						
Acute	TUa	----- Monitor (w/o trigger) -----				MTR
Chronic	TUc	----- Monitor (w/o trigger) -----				MTR

Table 10. Con't.

- <sup>a</sup> Effluent loadings based on average design discharge flow of 7.0 MGD.
- <sup>b</sup> Definitions: ABS = Antibacksliding Rule (OAC 3745-33-05(E) and 40 CFR Part 122.44(l)); BPT = Best Practicable Waste Treatment Technology, 40 CFR Part 133, Secondary Treatment Regulation; EP = Existing Permit; M = Monitoring; MTR = Minimum toxicity test requirement under OAC 3745-33-07(B)(11); PTS = Phosphorus Treatment Standards under OAC 3745-33-06; PD = Plant Design Criteria; RP = Reasonable Potential for requiring water quality-based effluent limits and monitoring requirements in NPDES permits (3745-33-07(A)); WLA = Wasteload Allocation procedures (OAC 3745-2); WLA/IMZM = Wasteload Allocation limited by Inside Mixing Zone Maximum; WQS = Ohio WQS (OAC 3745-1).
- <sup>c</sup> Monitoring of flow and other indicator parameters is specified to assist in the evaluation of effluent quality and treatment plant performance.
- <sup>d</sup> 7 day average limit.

## Attachment – Watershed Assessment Unit Summary for Rocky River

Assessment Unit Name: Rocky River  
Hydrologic Unit Code: 04110001 02 03  
Assessment Unit Size: 25.3 square miles  
Priority Points: 11  
Monitoring Scheduled: 2014  
TMDL Scheduled: 2017

### Land Use Statistics:

<b>Developed</b>	<b>Forest</b>	<b>Grass/Pasture</b>	<b>Row Crops</b>	<b>Other</b>
83.6%	13.2%	0.7%	0%	2.6%

## Aquatic Life Use Assessment

Reporting Category: 5hx  
Aquatic Life Uses: WWH  
Sampling Years: 1997, 2001  
Watershed Score: 48

### Assessment Details:

<b>Headwater Sites</b> <20 sq. mi.	<b>Wading Sites</b> >20 & <50 sq. mi.	<b>Principal Sites</b> >50 & <500 sq. mi.
Sites Assessed: 0	Sites Assessed: 0	Sites Assessed: 0
Sites Attaining: 0	Sites Attaining: 0	Sites Attaining: 0

### Causes of Impairment:

- chlorine
- direct habitat alterations
- flow alteration
- nutrients
- organic enrichment/DO
- siltation
- unionized ammonia

## Sources of Impairment:

- channelization - development
- flow regulation/modification - development
- highway/road/bridge/sewer line
- land development/suburbanization
- marinas
- municipal point source
- streambank modification/destabilization - dev
- urban runoff/storm sewers (NPS)

Comments: Available assessment data exceed 10 years in age; assessment unit will remain Category 5 until TMDLs are developed for all pollutants impairing all beneficial uses.

## Recreation Use Assessment

Reporting Category: 5

Assessment Unit Score: 70

### Assessment Details:

Geometric Mean of *E. Coli* Samples  
(colony forming units/100ml)

Station ID	Station Name	Rec. Use Class	2006	2007	2008	2009	2010
501790	ROCKY R @ PARK BLVD AT LAKEWOOD	Primary A	335	74	207	184	431

## Public Drinking Water Supply Assessment

Reporting Category: No active intakes

Cause of Impairment: None

Nitrate Watch List: No

Pesticide Watch List: No

## Fish Tissue Assessment

Reporting Category: 5h

Causes of Impairment: None