

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 Medina County Sewer District No. 300 Wastewater Treatment Works

Public Notice No.: 14-05-034
Public Notice Date: May 21, 2014
Comment Period Ends: June 22, 2014

Ohio EPA Permit No.: 3PK00003*JD
Application No.: OH0045748

Name and Address of Applicant:

Medina Co. Sanitary Engineer's Office
791 West Smith Road
Medina, OH 44256

Name and Address of Facility Where
Discharge Occurs:

Medina Co. Sewer District No. 300 WWTP
85 Ridge Rd.
Hinckley, OH 44233
Medina County

Receiving Water: East Branch Rocky River

Subsequent
Stream Network: Rocky River, 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, 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, Chapter 6111 of the Ohio Revised Code (ORC). Decisions to award variances to water quality standards (WQS) or promulgated effluent guidelines for economic or technological reasons will also be justified in the fact sheet where necessary.

Effluent limits based on available treatment technologies are required by Section 301(b) of the Clean Water Act. Many of these have already been established by 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

Fact Sheet for NPDES Permit Renewal, Medina County Sewer District #300 Hinckley WWTP, 2014

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

The majority of monitoring frequencies and limits are proposed to remain the same in the permit renewal, with the following changes.

Final effluent limits are proposed for *Escherichia coli*. New water quality standards for *E. coli* became effective in March 2010. A compliance schedule is proposed for meeting these new final effluent limits. Based on best engineering judgment, it is proposed that the plant comply with its current fecal coliform limits during the interim period.

Quarterly monitoring is proposed for chronic toxicity of *Ceriodaphnia dubia* for the first 27 months of the permit, and then semi-annually with limits for the remainder of the permit. Annual monitoring is proposed for *Pimephales promelas* for the duration of the permit.

Mercury limits have been removed based on the WLA.

In Part II of the permit, special conditions are included that address sanitary sewer overflow (SSO) reporting; operator certification, minimum staffing and operator of record; whole effluent toxicity testing; and outfall signage.

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Procedures for Participation in the Formulation of Final Determinations

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

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

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

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

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

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

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

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

For additional information about this fact sheet or the draft permit, contact Chuck Allen, (330) 963-1110, Charles.allen@epa.ohio.gov or Andy Bachman, (614) 644-3075, andrew.bachman@epa.ohio.gov.

Information Regarding Certain Water Quality Based Effluent Limits

This draft permit may contain proposed water quality based effluent limitations for parameters that **are not** priority pollutants. (See the following link for a list of the priority pollutants:

http://epa.ohio.gov/portals/35/pretreatment/Pretreatment_Program_Priority_Pollutant_Detection_Limits.pdf.)

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 (NDPES) 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 Medina County #300 WWTP discharges to the East Branch Rocky River at river mile 18.2. Figure 1 shows the approximate location of the facility.

This segment of the East Branch Rocky River is described by Ohio EPA River Code: 13-100, U.S. EPA River Reach #: 04110001070, County: Medina, Ecoregion: Erie/Ontario Lake Plain. The East Branch Rocky River is designated for the following uses under Ohio's water quality standards (OAC 3745-1-20): Warmwater Habitat (WWH), Agricultural Water Supply (AWS), and Primary Contact Recreation (PCR).

Use designations define the goals and expectations of a waterbody. These goals are set for aquatic life protection, recreation use and water supply use, and are defined in the Ohio WQS (OAC 3745-1-07). The use designations for individual waterbodies are listed in rules -08 through -32 of the Ohio WQS. Once the goals are set, numeric water quality standards 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 Clean Water Act. Ohio WQS also include aquatic life use designations for waterbodies which can not meet the Clean Water Act 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 agricultural and industrial water supply.

Facility Description

The Medina County #300 WWTP is an advanced treatment facility with an average design flow of 3.25 million gallons per day (MGD). The plant was built in 1976 with a major modification in 1996. Wet stream processes include screening, comminution, activated sludge aeration, addition of ferrous chloride, secondary clarification, nitrification using rotating biological contactors, additional clarification by rapid sand filtration, and disinfection by chlorination, and dechlorination. Solid stream processes include sludge treatment by aerobic digestion, polymer addition, dewatering using belt filter presses, and alkaline stabilization. The primary means of sludge disposal is recycling by land application at agronomic rates.

The collection system for the facility consists of 100 percent separate sanitary sewers. There are no industrial users.

Description of Existing Discharge

Table 1 presents a summary of unaltered discharge monitoring report (DMR) data for outfall 3PK00003001. Data are presented for the period March 2009 through February 2014, and current permit limits are provided for comparison.

Table 2 summarizes the chemical specific data for outfall 001 by presenting the average and maximum Projected Effluent Quality values.

Table 3 summarizes the results of acute and chronic whole effluent toxicity tests of the final effluent.

The facility did not report any sanitary sewer overflows for 2010 through 2013.

Assessment of Impact on Receiving Waters

A Total Maximum Daily Load (TMDL) study of the Rocky River Basin conducted by Ohio EPA (October 2001) did not include any recommendations for the Medina County #300 WWTP.

The draft 2014 *Ohio Integrated Water Quality Monitoring and Assessment Report* lists the East Branch Rocky River as impaired for human health and aquatic life. The report is available for viewing at <http://epa.ohio.gov/dsw/tmdl/OhioIntegratedReport.aspx>.

Intensive monitoring is scheduled to take place in 2014. The TMDL study report to address any impairment identified will be available in the future at <http://www.epa.state.oh.us/dsw/tmdl/BlackRockyRivers.aspx>.

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 Medina County #300 WWTP were used to determine what parameters should undergo wasteload allocation. The parameters discharged are identified by the data available to Ohio EPA - DMR data submitted by the permittee, compliance sampling data collected by Ohio EPA, and any other data submitted by the permittee, such as priority pollutant scans required by the NPDES application or by pretreatment, or other special conditions in the NPDES permit. The sources of effluent data used in this evaluation are as follows:

Self-monitoring data (DMR)

March 2009 through February 2014

This data is evaluated statistically, and Projected Effluent Quality (PEQ) values are calculated for each pollutant. Average PEQ (PEQ_{avg}) values represent the 95th percentile of monthly average data, and maximum PEQ (PEQ_{max}) values represent the 95th percentile of all data points. The average and maximum PEQ values are presented in Table 3.

The PEQ values are used according to Ohio rules to compare to applicable water quality standards (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_{avg} or PEQ_{max} is greater than 25 percent of the applicable WQS, a WLA is conducted to determine whether the parameter exhibits reasonable potential and needs to have a limit or if monitoring is required. See Table 7 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 water quality standards (OAC 3745-1). Most pollutants are allocated by a mass-balance method because they do not degrade in the receiving water. Wasteload allocations 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 5, and allocations cannot exceed the Inside Mixing Zone Maximum criteria.

Ohio’s water quality standard 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 water quality standards at the end-of-pipe, which are 12 ng/l (average) and 1700 ng/l (maximum) in the Ohio River basin, or 1.3 ng/l (average) and 1700 ng/l (maximum) in the Lake Erie basin.

The data used in the WLA are listed in Tables 3, 4, and 5. The wasteload allocation results to maintain all applicable criteria are presented in Table 6. The current ammonia limits have been evaluated using the wasteload allocation procedures and are protective of water quality standards 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 East Branch Rocky River, there were 3 such paired samples available applicable to copper, lead, and nickel. To account for the limited quantity of data, the DMT for each of these metals was determine 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 wasteload allocation 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.

Water quality standards 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 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 Medina County #300 WWTP, the wasteload allocation values are 0.3 TU_a and 1.0 TU_c.

The chronic toxicity unit (TU_c) is defined as 100 divided by the IC₂₅:

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

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

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

The acute toxicity unit (TU_a) is defined as 100 divided by the LC₅₀ for the most sensitive test species:

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

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

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

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

The acute wasteload allocation for Medina County #300 WWTP 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 6. 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} ÷ PEL_{avg}) X 100, or (PEQ_{max} ÷ PEL_{max}) X 100], the parameters are assigned to group 3, 4, or 5. The groupings are listed in Table 7.

The final effluent limits are determined by evaluating the groupings in conjunction with other applicable rules and regulations. Table 8 presents the final effluent limits and monitoring requirements proposed for Medina County #300 WWTP outfall 3PK00003001 and the basis for their recommendation.

It is proposed that the existing limits for dissolved oxygen, total suspended solids, and 5-day carbonaceous biochemical oxygen demand (CBOD₅) be continued. These limits are design criteria and are protective of water quality standards. The existing ammonia-N limits were evaluated as part of the wasteload allocation and are adequate to maintain water quality standards; therefore, it is proposed that they be continued.

The limit proposed for total residual chlorine is a plant design criterion and a continuation of the existing permit. The effluent limit for chlorine at outfall 3PK00003001 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.

Limits proposed for oil and grease, pH, and *Escherichia coli* are based on water quality standards (OAC 3745-1-07). The proposed *E. coli* limits are protective of the Class A Primary Contact Recreation designation that begins 5.5 miles downstream of the Medina County #300 WWTP.

Water quality standards for *E. coli* became effective in March 2010, and a compliance schedule is proposed for meeting these new final effluent limits no later than 27 months after the effective date of the permit. The schedule provides time during the summer disinfection season for the plant to evaluate the ability of its existing disinfection system to achieve the new limits and to make operational changes or equipment upgrades if necessary. It is proposed that the plant comply with its current fecal coliform limits during the interim period.

Phosphorus is limited based on provisions of OAC 3745-33-06(C).

The draft 2014 *Ohio Integrated Water Quality Monitoring and Assessment Report* lists the East Branch Rocky River as impaired for human health and aquatic life. Considering this information and the fact that municipal wastewater treatment plants discharge a nutrient load to the river, monthly monitoring for nitrate + nitrite is proposed to continue.

The Ohio EPA risk assessment (Table 7) 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. The PEQ values calculated for Medina County #300 WWTP (Table 3) may not be representative of its actual levels in the plant effluent they were based on two data points. The purpose of the proposed monitoring is to collect additional data on the frequency of occurrence and variability of these pollutants in the plant's effluent.

Currently there are two approved methods for free cyanide listed in 40 CFR 136.3 that have quantification levels lower than any water quality-based effluent limits:

- ASTM D7237-10 and OIA-1677-09 - Flow injection followed by gas diffusion amperometry

These methods will allow Ohio EPA make more reliable water quality-related decisions regarding free cyanide. Because the quantification levels are lower than any water quality-based effluent limits, it will also be possible to directly evaluate compliance with free cyanide limits.

New NPDES permits no longer authorize the use of method 4500 CN-I from Standard Methods for free cyanide testing. The new permits require permittees to begin using one of these approved methods as soon as possible. If a permittee must use method 4500 CN-I during the transition to an approved method, they are instructed to report the results on their DMR and enter "Method 4500 CN-I" in the remarks section.

Ohio EPA risk assessment (Table 7) places Copper and Mercury in group 4. This placement as well as the data in Tables 1 and 3 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).

Ohio EPA risk assessment (Table 7) places Cadmium, Chromium, Dissolved Hexavalent Chromium, Lead, Nickel, and Zinc in groups 2 and 3. This placement as well as the data in Tables 1 and 3 support that these parameters do not have the reasonable potential to contribute to WQS exceedances, and limits are not necessary

to protect water quality. Monitoring at a low frequency is proposed to continue in order to document that these pollutants continue to remain at low levels.

Based on best engineering judgment, monitoring is proposed for total dissolved solids (total filterable residue). No effluent data is available for this parameter, which is an emerging water quality issue for municipal wastewater treatment plants. The purpose of the monitoring is to obtain data on the level and variability of total dissolved solids in the Medina County #300 WWTP effluent.

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

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

Whole Effluent Toxicity Reasonable Potential

Evaluating the acute and chronic toxicity results in Table 2 under the provisions of 40 CFR Part 132, Appendix F, Procedure 6, shows reasonable potential for exceeding the wasteload allocation values of 0.3 TU_a and 1.0 TU_c for *Ceriodaphnia dubia*. Consistent with Procedure 6 and OAC 3745-33-07(B)(10), a monthly average limit of 1.0 TU_c and a daily maximum limit of 1.0 TU_a are proposed. It is proposed that the final effluent limits for toxicity become effective 51 months from the effective date of the permit. Quarterly monitoring for the first 27 months of the permit with a trigger to conduct a toxicity reduction evaluation (TRE), and semi-annual monitoring thereafter are proposed.

A compliance schedule is provided for submitting the initial TRE work plan that will outline actions of a TRE if triggered.

Other Requirements

Operator Certification

Operator certification requirements have been included in Part II, Item A of the permit in accordance with rules adopted in December 2006. These rules require the Medina County #300 WWTP to have a Class III wastewater treatment plant operator in charge of the sewage treatment plant operations discharging through outfall 001.

Operator of Record

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

Storm Water Compliance

Medina County #300 WWTP currently has granted coverage under the Industrial storm water general permit, number 3GR00935*EG, granted to the permittee on 2/17/2012.

Outfall Signage

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

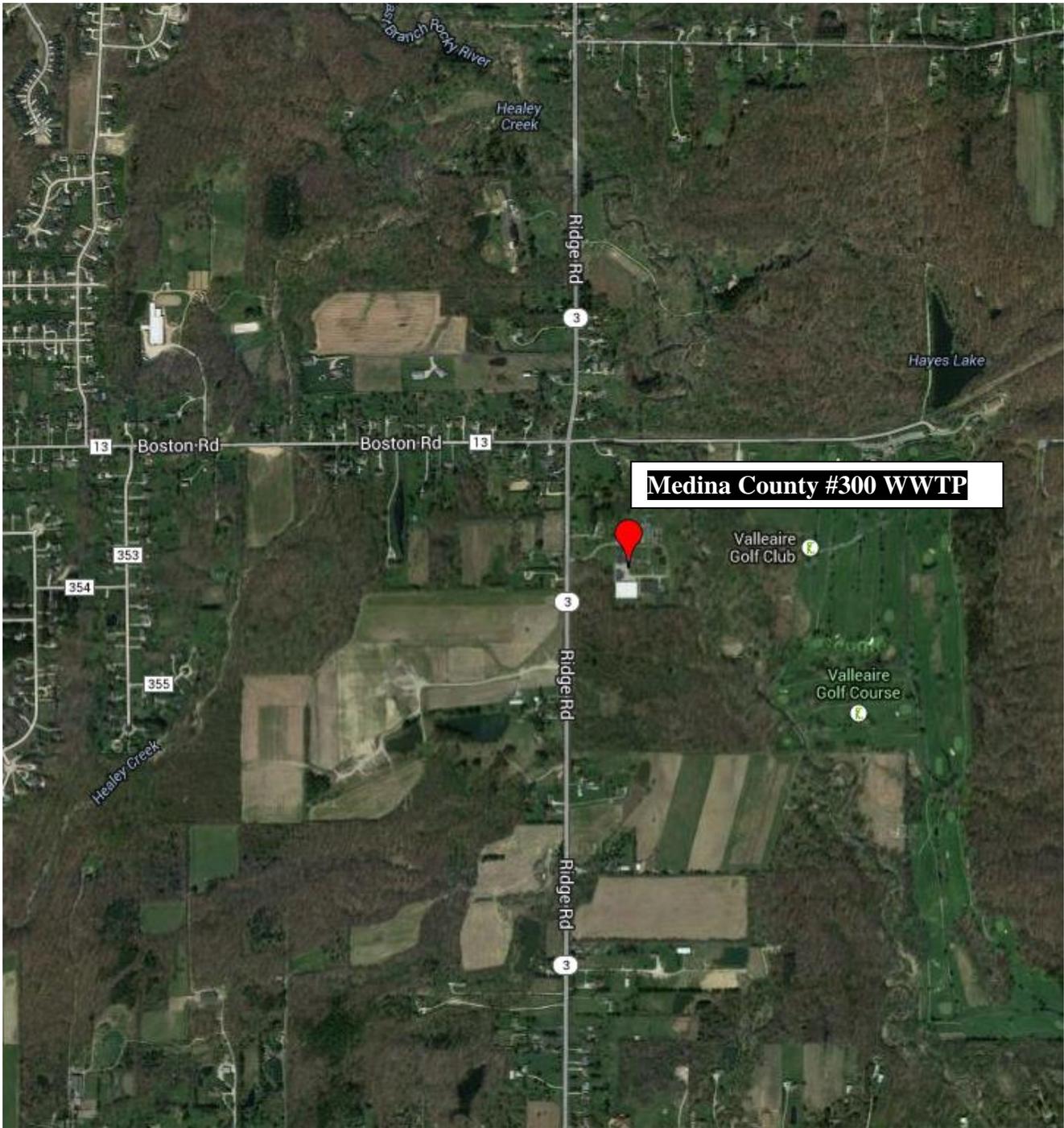


Figure 1. Location of Medina County Sewer District #300 Hinckley wastewater treatment plant.

Table 1. Effluent Characterization Using Self-Monitoring Data

Summary of current permit limits and unaltered discharge monitoring report data for Medina County Sewer District #300 Hinckley outfall 3PK00003001 (March 2009 – February 2014). All values are based on annual records unless otherwise indicated. * = For minimum pH, 5th percentile shown in place of 50th percentile; ** = For dissolved oxygen, 5th percentile shown in place of 95th percentile; a = weekly average.

Parameter	Season	Units	Current Permit Limits		# Obs.	Percentiles		Data Range	Decision Criteria		
			30 Day	Daily		50 th	95 th		# Obs.	PEQ _{avg}	PEQ _{max}
Water Temperature	Annual	C			1797	16	20	9-23			
Dissolved Oxygen	Summer	mg/L		7.0a	610	8.4	7.6	7-9.5	610	8.5218	9.1876
Dissolved Oxygen	Winter	mg/L		7.0a	423	9.2	8	7.1-10.4	423	9.2483	10.064
Total Suspended Solids	Annual	mg/L	12	18	771	1.7	3.1	0-30.8	752	2.2153	3.3416
Oil and Grease	Annual	mg/L		10	58	1.2	5.43	0-6.1	31	3.8586	6.1096
Nitrogen, Ammonia	Summer	mg/L	1.0	1.5	262	0.14	0.36	0-1.74			
Nitrogen, Ammonia	Winter	mg/L	3.3	5.0	181	0.18	0.83	0-2.11	166	0.36307	0.74955
Nitrite Plus Nitrate	Annual	mg/L			767	16.8	23.4	0.12-27.6	767	12.09	16.56
Phosphorus	Annual	mg/L	1.0	1.5	770	0.81	1.02	0.29-1.49	770	0.87993	1.1166
Cyanide, Free	Annual	mg/L			20	0	0.0003	0-0.006	1	0.01664	0.0228
Nickel	Annual	µg/L			20	1.415	2.6755	0.47-4.11	20	2.8319	4.3849
Zinc	Annual	µg/L			20	26	40.656	15.44-44	20	35.596	45.855
Cadmium	Annual	µg/L			20	0.025	0.277	0-1.74	10	0.94792	1.3133
Lead	Annual	µg/L			20	0.095	0.8035	0-1.06	10	0.80261	1.414
Chromium	Annual	µg/L			20	0.67	1.698	0-4.32	19	1.9852	3.4369
Copper	Annual	µg/L			20	4.245	8.9715	0-11.47	19	8.7055	13.392
Chromium, Dissolved Hexavalent	Annual	µg/L			20	0	0	0-0	0	0	0
Fecal Coliform	Summer	#/100mL	1000	2000	394	66	200	1-1700			
Flow Rate	Summer	MGD			610	1.305	2.5364	0.974-6.929			
Flow Rate	Winter	MGD			451	1.643	3.547	1.068-6.853			
Flow Rate	Annual	MGD			1798	1.469	3.3245	0.668-9.337			
Chlorine, Total Residual	Summer	mg/L		0.019	920	0	0	0-0	0	0	0
Mercury, Total (Low Level)	Annual	ng/L	3.5	1200	443	0.54	1.07	0.1-7	426	0.77338	1.883

Acute Toxicity, C. dubia	Annual	TUa		5			0-0				
Chronic Toxicity, C. dubia	Annual	TUc		5			0-5.65				
Acute Toxicity, P. promelas	Annual	TUa		5			0-0.2				
Chronic Toxicity, P. promelas	Annual	TUc		5			0-1.03				
pH, Maximum	Annual	S.U.	9.0	1798	7.04	7.54	6.83-7.83				
pH, Minimum	Annual	S.U.	6.5	1798	6.83	7.33	6.6-7.79				
CBOD 5 day	Summer	mg/L	8	12	262	0	4.585	0-7.2	123	3.0946	4.8614
CBOD 5 day	Winter	mg/L	8	12	179	0	4.2	0-8.2	64	2.8854	4.7544

Table 2. Summary of Toxicity Test Results

AA=Not detected; TUa=acute toxicity units; TUc=chronic toxicity units

Test Date	Pimephales promelas		Ceriodaphnia dubia	
	TUa	TUc	TUa	TUc
9/12/2009	0.2	AA	AA	AA
9/24/2010	AA	AA	AA	5.65
9/13/2011	AA	AA	AA	AA
9/21/2012	AA	AA	AA	AA
9/13/2013	AA	AA	AA	AA

* The results used for chronic toxicity of Pimephales promelas on 9/24/2010 were AA despite the laboratory reporting 1.03. The data was analyzed this way because the IC25 was 100% for this test. As chronic toxicity is defined as 100/IC25, the results are consistent with the other tests at 1.0, or “AA.”

Table 3. Effluent Data for the Medina County #300 WWTP

MDL = Method Detection Limit; PEQ = Projected Effluent Quality

Parameter	Units	Number of Samples	Number > MDL	PEQ Average	PEQ Maximum
Ammonia-Summer	mg/l	262	231	0.20775	0.34774
Ammonia-Winter	mg/l	181	166	0.36307	0.74955
Cadmium	ug/l	20	10	0.94792	1.3133
Chlorine	mg/l	920	0	--	--
Chromium	ug/l	20	19	1.9852	3.4369
Cyanide - free	mg/l	2	1	0.016644	0.0228
Lead	ug/l	20	10	0.80261	1.414
Mercury	ng/l	443	426	0.77338	1.1883
Nickel	ug/l	20	20	2.8319	4.3849
Nitrate + Nitrite	mg/l	767	767	12.0888	16.56
Oil & grease	mg/l	58	31	3.8586	6.1096
Phosphorus	mg/l	770	770	0.87993	1.1166
Zinc	ug/l	20	20	35.596	45.855
Chromium, Dissolved Hexavalent	ug/l	20	0	--	--
Copper	ug/l	20	19	8.7055	13.392

Table 4. Water Quality Criteria in the Study Area

Parameter	Units	Outside Mixing Zone Criteria					Maximum Aquatic Life	Inside Mixing Zone Maximum
		Wildlife	Average					
			Human Health	Agri-culture	Aquatic Life			
Ammonia-Summer	mg/l	--	--	--	1.4	--	--	
Ammonia-Winter	mg/l	--	--	--	3.9	--	--	
Cadmium	ug/l	--	730	50	4.4	10	21	
Chlorine	mg/l	--	--	--	0.011	0.019	0.038	
Chromium	ug/l	--	14000	100	160	3300	6600	
Cyanide - free	mg/l	--	48	--	0.0052	0.022	0.044	
Lead	ug/l	--	--	100	41	780	1600	
Mercury	ng/l	1.3	3.1	10000	910	1700	3400	
Nickel	ug/l	--	43000	200	98	880	1800	
Nitrate + Nitrite	mg/l	--	--	100	--	--	--	
Oil & grease	mg/l	--	--	--	--	10	--	
Phosphorus	mg/l	--	--	--	--	--	--	
Zinc	ug/l	--	35000	25000	230	230	450	
Chromium, Dissolved Hexavalent	ug/l	--	14000	--	11	16	31	
Copper	ug/l	--	64000	500	17	27	55	

Table 5. Instream Conditions and Discharger Flow

cfs = cubic feet per second; MDL = method detection limit; n = number of observations

<u>Parameter</u>	<u>Units</u>	<u>Season</u>	<u>Value</u>	<u>Basis</u>
<i>Stream Flows</i>				
1Q10	cfs	annual	0.26	USGS gage 04201498
7Q10	cfs	annual	0.35	USGS gage 04201498
3Q10	cfs	summer	0.66	USGS gage 04201498
		winter	5.71	USGS gage 04201498
90Q10	cfs	annual	1.27	
Harmonic Mean	cfs	annual	4.36	USGS gage 04201498
Mixing Assumption	%	average	25	
		maximum	100	
<i>Hardness</i>	mg/l	annual	211	STORET Station 501720
<i>pH</i>	S.U.	summer	7.93	901 Station
		winter	7.92	901 Station
<i>Temperature</i>	C	summer	21.35	901 Station
		winter	3.31	901 Station
<i>Medina Co. #300 flow</i>	cfs	annual	5.02775	NPDES App Form 2A
<i>Background Water Quality</i>				
Ammonia-Summer	mg/l		0.055	801; 2009-2013; n=20; 4<MDL; 50th percentile
Ammonia-Winter	mg/l		0.065	801; 2009-2013; n=12; 0<MDL; 50th percentile
Cadmium	ug/l		0	STORET; 2001; n=4; 4<MDL; T01S07
Chlorine	mg/l		0	No representative data available.
Chromium	ug/l		0	STORET; 2001; n=4; 4<MDL; T01S07
Cyanide - free	mg/l		0	No representative data available.
Lead	ug/l		0	STORET; 2001; n=4; 4<MDL; T01S07
Mercury	ng/l		0	No representative data available.
Nickel	ug/l		0	STORET; 2001; n=4; 4<MDL; T01S07
Nitrate + Nitrite	mg/l		0.365	STORET; 2001; n=4; 0<MDL; T01S07
Oil & grease	mg/l		0	No representative data available.
Phosphorus	mg/l		0.039	STORET; 2001; n=4; 2<MDL; T01S07
Zinc	ug/l		6.5	STORET; 2001; n=4; 3<MDL; T01S07
Chromium, Dissolved Hexavalent	ug/l		0	No representative data available.
Copper	ug/l		0	STORET; 2001; n=4; 4<MDL; T01S07

Table 6. Summary of Effluent Limits to Maintain Applicable Water Quality Criteria

Parameter	Units	Outside Mixing Zone Criteria					Inside Mixing Zone Maximum
		Wildlife	Average			Maximum	
			Human Health	Agri-culture	Aquatic Life	Aquatic Life	
Ammonia-Summer	mg/l	--	--	--	--	--	--
Ammonia-Winter	mg/l	--	--	--	--	--	--
Cadmium	ug/l	--	888	61	4.5	11	21
Chlorine	mg/l	--	--	--	0.011	0.02	0.038
Chromium	ug/l	--	17035	122	163	3471	6600
Cyanide - free	mg/l	--	58	--	0.0053	0.023	0.044
Lead	ug/l	--	--	122	42	820	1600
Mercury	ng/l	1.3	3.1	10000	910	1700	3400
Nickel	ug/l	--	52322	243	100	926	1800
Nitrate + Nitrite	mg/l	--	--	122	--	--	--
Oil & grease	mg/l	--	--	--	--	11	--
Phosphorus	mg/l	--	--	--	--	--	--
Zinc	ug/l	--	42586	30419	234	242	450
Chromium, Dissolved Hexavalent	ug/l	--	17035	--	11	17	31
Copper	ug/l	--	77875	608	17	28	55

Table 8. Final Effluent Limits and Monitoring Requirements

Parameter	Units	Effluent Limitations				Basis ^b
		Concentration		Loading (kg/day) ^a		
		Monthly Average	Daily Maximum	Monthly Average	Daily Maximum	
Temperature	°C	----- Monitor -----				M
Dissolved Oxygen	mg/l	--	7.0 min	--	--	PD, EP
Suspended Solids	mg/l	12	18 ^c	148	221 ^c	PD, EP
Oil and Grease	mg/l	--	10	--	--	PD, EP
Ammonia-N	mg/l					
Summer		1.0	1.5 ^c	12	18 ^c	PD, EP
Winter		3.3	5.0 ^c	41	62 ^c	PD, EP
Nitrite + Nitrate	mg/l	----- Monitor -----				M
Phosphorus, Total	mg/l	1.0	1.5 ^c	12	18 ^c	PT, EP
Cyanide, Free	mg/l	----- Monitor -----				M
Nickel	µg/l	----- Monitor -----				M
Zinc	µg/l	----- Monitor -----				M
Cadmium	µg/l	----- Monitor -----				M
Lead	µg/l	----- Monitor -----				M
Chromium	µg/l	----- Monitor -----				M
Copper, T. R.	µg/l	----- Monitor -----				M
Hex. Chromium (Diss.)	µg/l	----- Monitor -----				M
Fecal Coliform						
Summer Only (Interim)	#/100ml	1000	2000 ^c	--	--	EP
<i>E. coli</i>						
Summer Only (Final)	#/100ml	126	284 ^c	--	--	WQS
Flow	MGD	----- Monitor -----				M
Chlorine (Summer)	mg/l	--	0.019	--	--	EP
Mercury, T.	ng/l	----- Monitor -----				M
Whole Effluent Toxicity – <i>Ceriodaphnia dubia</i>						
(Interim)						
Acute	TUa	----- Monitor -----				WET
Chronic	TUc	----- Monitor -----				WET
(Final)						
Acute	TUa	--	1.0	--	--	GLI, RP
Chronic	TUc	1.0	--	--	--	GLI, RP
Whole Effluent Toxicity – <i>Pimephales promelas</i>						
Acute	TUa	----- Monitor -----				WET
Chronic	TUc	----- Monitor -----				WET
pH	S.U.	----- 6.5 to 9.0 -----				WQS, EP
Total filterable residue	mg/l	----- Monitor -----				BEJ
CBOD ₅	mg/l	8.0	12 ^c	98	148 ^c	PD, EP

^a Effluent loadings based on average design discharge flow of 3.25 MGD.

^b **Definitions:** ABS = Antibracksliding Rule [OAC 3745-33-05(E) and 40 CFR Part 122.44(1)]; BEJ = Best Engineering Judgment; EP = Existing Permit; M = BEJ of Permit Guidance 1: Monitoring Frequency Requirements for Sanitary Discharges; PD = Plant Design Criteria; PT = Phosphorus treatment required under OAC 3745-33-06(C); RP = Reasonable Potential for requiring water quality-based effluent limits and monitoring requirements in NPDES permits [OAC 3745-33-07(A)]; WET = Reasonable potential for requiring water quality-based effluent limits and monitoring requirements for whole effluent toxicity in NPDES permits [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.