

National Pollutant Discharge Elimination System (NPDES) Permit Program

FACT SHEET

Regarding an NPDES Permit to Discharge to Waters of the State of Ohio
for Aqua Ohio Wastewater, Inc. Blacklick Estates Wastewater Treatment Plant (WWTP)

Public Notice No.: 206545
Public Notice Date: October 2, 2024
Comment Period Ends: November 1, 2024

Ohio EPA Permit No.: 4PU00002*MD
Application No.: OH0036021

Name and Address of Applicant:

Aqua Ohio Wastewater, Inc.
5481 Buenos Aires Boulevard
Westerville, OH 43081

Name and Address of Facility Where

Discharge Occurs:

Aqua Ohio Water Co. Inc. Blacklick WWTP
4010 Signal Drive
Columbus, OH 43232
Franklin County

Receiving Water: Blacklick Creek

Subsequent Stream Network: Big Walnut Creek, Scioto River

INTRODUCTION

Development of a Fact Sheet for NPDES permits is mandated by Title 40 of the Code of Federal Regulations (CFR), Section 124.8 and 124.56. This document fulfills the requirements established in those regulations by providing the information necessary to inform the public of actions proposed by the Ohio Environmental Protection Agency (Ohio EPA), as well as the methods by which the public can participate in the process of finalizing those actions.

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

Antidegradation provisions in Ohio Administrative Code (OAC) Chapter 3745-1 describe the conditions under which water quality may be lowered in surface waters. No antidegradation review was necessary.

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

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

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

SUMMARY OF PERMIT CONDITIONS

The effluent limits and/or monitoring requirements proposed for all parameters are the same as in the current permit, except those listed below.

Reduced monitoring is proposed for copper at outfall 001 as the data demonstrates there is currently no reasonable potential to exceed water quality standards.

Monitoring for total filterable residue is proposed to increase to once every two weeks to align with Ohio EPA monitoring frequency recommendations.

Monitoring for pH, dissolved oxygen, and water temperature is proposed to be removed at upstream monitoring station 801 because this data is not currently needed as part of the reasonable potential analysis.

New monitoring for total Kjeldahl nitrogen and nitrite + nitrate is proposed to be added to upstream monitoring station 801 and downstream monitoring station 901 to further categorize the nitrogen load within the watershed prior to and in addition to Blacklick Estates WWTP's discharge.

Monitoring for *E. coli* is proposed to change from monthly during summer months to once per two weeks from June through August at upstream monitoring station 801 and downstream monitoring station 901. The increased frequency over a shorter period will facilitate impairment assessment.

Monitoring for dissolved oxygen is proposed to be removed at the downstream monitoring station 901 because this data is not currently needed as part of the reasonable potential analysis.

In Part II of the permit, special conditions are included that address sanitary sewer overflow (SSO) reporting; operator certification, minimum staffing, and operator of record; whole effluent toxicity (WET) testing; limits below quantification; supplemental effluent data; 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 emailed to HClerk@epa.ohio.gov or mailed 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 by email to epa.dswcomments@epa.ohio.gov (preferred method) or delivered 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 Allison Gouge, 614-728-3856, allison.gouge@epa.ohio.gov.

INFORMATION REGARDING CERTAIN WATER QUALITY BASED EFFLUENT LIMITS

This draft permit may contain proposed water-quality-based effluent limits (WQBELs) for parameters that **are not** priority pollutants. (See the following link for a list of the priority pollutants: https://epa.ohio.gov/static/Portals/35/pretreatment/Pretreatment_Program_Priority_Pollutant_Detection_Limits.pdf.) In accordance with ORC 6111.03(J)(3), the Director established these WQBELs after considering, to the extent consistent with the Federal Water Pollution Control Act, evidence relating to the technical feasibility and economic reasonableness of removing the polluting properties from those wastes and to evidence relating to conditions calculated to result from that action and their relation to benefits to the people of the state and to

accomplishment of the purposes of this chapter. This determination was made based on data and information available at the time the permit was drafted, which included the contents of the timely submitted NPDES permit renewal application, along with any and all pertinent information available to the Director.

This public notice allows the permittee to provide to the Director for consideration during this public comment period additional site-specific pertinent and factual information with respect to the technical feasibility and economic reasonableness for achieving compliance with the proposed final effluent limitations for these parameters. The permittee shall email to epa.dswcomments@epa.ohio.gov (preferred method) or 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, a written request for any additional time shall be sent to the above address no later than 30 days after the Public Notice Date on Page 1.

Should the applicant determine that compliance with the proposed WQBELs for parameters other than the priority pollutants is technically and/or economically unattainable, the permittee may submit an application for a variance to the applicable WQS used to develop the proposed effluent limitation in accordance with the terms and conditions set forth in OAC 3745-33-07(D). The permittee shall submit this application to the above address no later than 30 days after the Public Notice Date.

Alternately, the applicant may propose the development of site-specific WQS pursuant to OAC 3745-1-39. The permittee shall submit written notification regarding their intent to develop site specific WQS for parameters that are not priority pollutants to the above address no later than 30 days after the Public Notice Date.

LOCATION OF DISCHARGE/RECEIVING WATER USE CLASSIFICATION

Blacklick Estates WWTP discharges to Blacklick Creek at River Mile 4.85. Figure 1 shows the approximate location of the facility.

This segment of Blacklick Creek is described by Ohio EPA River Code: 02-130, Hydrologic Unit Code: 05060001-15-04, County: Franklin, Ecoregion: Eastern Corn Belt Plains. Blacklick Creek is designated for the following uses under Ohio's WQS (OAC 3745-1-09): Warmwater Habitat, Agricultural Water Supply, Industrial Water Supply, and Primary Contact Recreation.

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 cold water fish and macroinvertebrates, warmwater aquatic life and waters with exceptional communities of warmwater organisms. These uses all meet the goals of the federal CWA. Ohio WQS also include aquatic life use designations for waterbodies which cannot meet the CWA goals because of human-caused conditions that cannot be remedied without causing fundamental changes to land use and widespread economic impact. The dredging and clearing of some small streams to support agricultural or urban drainage is the most common of these conditions. These streams are given Modified Warmwater or Limited Resource Water designations.

Recreation uses are defined by the depth of the waterbody and the potential for wading or swimming. Uses are defined for bathing waters, swimming/canoeing (Primary Contact Recreation) and wading only (Secondary Contact which are generally waters too shallow for swimming or canoeing).

Water supply uses are defined by the actual or potential use of the waterbody. Public Water Supply designations apply near existing water intakes so that waters are safe to drink with standard treatment. Most other waters are designated for agricultural water supply and industrial water supply.

FACILITY DESCRIPTION

Blacklick Estates WWTP was constructed in 1962 and last upgraded in 2019. The average design flow is 1.2 million gallons per day (MGD). Blacklick Estates WWTP serves Blacklick Estates subdivision, and portions of Madison Township and Truro Township in Franklin County. Blacklick Estates WWTP has the following treatment processes (Figure 2):

- Influent Pump Station
- Fine Screens
- Grit Removal
- Aeration Tanks
- Activated Sludge
- Secondary Clarification
- Tertiary Disc Filter
- Chlorination
- Post-Aeration
- Dechlorination

Blacklick Estates has 100% separate sewers and 0% combined sewers in the collection system.

Blacklick Estates does not have an approved pretreatment program or any industrial users.

Blacklick Estates WWTP utilizes the following sewage sludge treatment processes:

- Aerobic digestion – air
- Mechanical dewatering – filter press

Table 1 shows the last five years of sludge removed from Blacklick Estates WWTP. Treated sludge is disposed of in a municipal landfill or is transferred to another NPDES permit holder.

DESCRIPTION OF EXISTING DISCHARGE

Table 2 presents the effluent violations for Blacklick Estates WWTP during the previous five years. These violations were not caused by a known process error or upset condition.

Table 3 presents the average annual effluent flow rate for Blacklick Estates WWTP for the previous five years. Blacklick Estates WWTP has an estimated infiltration/inflow (I/I) rate of 0.23 MGD. Blacklick Estates WWTP has done spot repairs and relined one 750-foot section of 8” pipe to help minimize I/I.

No SSOs were reported over the past five years.

Table 4 presents data characterizing the summer seasonal total phosphorus load from Blacklick Estates WWTP during the previous five years.

Table 5 presents chemical specific data compiled from supplemental effluent testing data submitted as part of the NPDES renewal application.

Table 6 presents a summary of unaltered Discharge Monitoring Report (DMR). Data are presented for the period April 2018 to March 2023, and current permit limits are provided for comparison.

Table 7 summarizes the chemical specific data for outfall 001 by presenting the average and maximum PEQ values.

Table 8 summarizes the results of acute and chronic Whole Effluent Toxicity (WET) tests of the final effluent, using the water flea (*Ceriodaphnia dubia*) and fathead minnow (*Pimephales promelas*) as test organisms.

ASSESSMENT OF IMPACT ON RECEIVING WATERS

Pursuant to Section 303(d) of the Clean Water Act, each state is required to develop and submit a list to US EPA of its impaired and threatened waters (e.g., stream/river segments, lakes). For each water on the list, the state identifies the pollutant(s) causing the impairment, when known. The Big Walnut Creek watershed assessment unit, which includes Blacklick Creek in the vicinity of Blacklick Estates WWTP, is listed as impaired for aquatic life and recreation uses on Ohio’s 303(d) list.

The Total Maximum Daily Load (TMDL) program focuses on identifying and restoring polluted rivers, streams, lakes, and other surface water bodies. A TMDL is a written, quantitative assessment of water quality problems in a water body and contributing sources of pollution. It specifies the amount a pollutant needs to be reduced to meet water quality standards (WQS), allocates pollutant load reductions, and provides the basis for taking actions needed to restore a water body. A Total Daily Maximum Load (TMDL) report was initially approved for the entire Big Walnut Creek Watershed in September 2005. A modification to the TMDL for a different part of the watershed away from Blacklick Estates WWTP was approved in July 2021.

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

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

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

Three attainment status results are possible at each sampling location - full, partial, or non-attainment. Full attainment means that all of the applicable indices meet the bio criteria. Partial attainment means that one or more of the applicable indices fails meet the bio criteria. Nonattainment means that either none of the applicable indices meet the bio criteria or one of the organism groups indicates poor or very poor performance. An aquatic life use attainment table (see Table 9) is constructed based on the sampling results and is arranged from upstream to downstream and includes the sampling locations indicated by river mile, the applicable biological indices, the use attainment status (i.e., full, partial, or non), the Qualitative Habitat Evaluation Index, and comments and observations for each sampling location.

The Big Walnut Creek Watershed is impaired for aquatic life and recreational uses due to ammonia, nutrients, and organic enrichment. The sources of impairment are home sewage treatment systems and point source discharges from wastewater treatment plants tributary to Blacklick Creek. Recreation use impairment was attributed to these same sources.

As a solution to the nutrient impairment, TMDL Tables 5.2.F and 7.1.A propose monthly phosphorus limits of 0.5 mg/L and 2.3 kg/day, and an annual phosphorus loading limit of 829 kg/year. The TMDL's proposed limits are based on Blacklick Estates' average design flow of 1.2 MGD. The median phosphorus concentration and loading for the past five years is provided in Table 4.

The biological and community sampling indicated a mild to moderate impact from Blacklick Estates WWTP. Sampling outside of the mixing zone and immediately downstream of the discharge showed a moderate impact to the macroinvertebrate community. The fish community did not exhibit a decline downstream of the discharge, so the attainment status was partial downstream of Blacklick Estates WWTP discharge. Blacklick Estates WWTP is likely contributing to the impairment, but habitat is also contributing with poor riparian, siltation and erosion. The draft permit proposed to continue the phosphorus limits based on the TMDL.

The TMDL is available through the Ohio EPA, Division of Surface Water website at: [BWC_FinalModification_July2021.pdf \(ohio.gov\)](#)

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

Self-monitoring data (DMR)
Priority Pollutant Scan

April 2018 through March 2023
February 2023

Statistical Outliers and Other Non-representative Data

The data were examined, and the following values were removed from the evaluation as non-representative data:

Nitrite plus Nitrate – 1.05 mg/L, 08/07/2020, non-representative data.

Total Filterable Residue – 40 mg/L, 02/02/2023 and 4170 mg/L, 9/12/2018, non-representative data

This data is evaluated statistically, and PEQ values are calculated for each pollutant. Average PEQ (PEQ_{avg}) values represent the 95th percentile of monthly average data, and maximum PEQ (PEQ_{max}) values represent the 95th percentile of all data points (see Table 7). See Modeling Guidance #1 for more information on PEQ calculations, available through the Ohio EPA, Division of Surface Water website at:

[DSW Guidance Documents | Ohio Environmental Protection Agency](#)

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

Wasteload Allocation

For those parameters that require a WLA, the results are based on the uses assigned to the receiving waterbody in OAC 3745-1. Dischargers are allocated pollutant loadings/concentrations based on the Ohio WQS (OAC 3745-1). Most pollutants are allocated by a mass-balance method because they do not break down in the receiving water. For free-flowing streams, WLAs using this method are calculated 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 following dischargers in the Blacklick Creek were considered interactive (see Figure 3. Blacklick Creek Study Area):

- Fairfield County Tussing Rd. WRC
- Aqua Ohio – Blacklick Estates WWTP

The Fairfield County Tussing Rd. WRC and the Aqua Ohio – Blacklick Estates WWTP were allocated together for most parameters due to the size of the plant discharges, the flows of the Blacklick Creek and the relatively close proximity of the two plants. The exception was the ammonia-N WLA which was done separately for each facility because ammonia-N is considered to be a non-conservative parameter.

The available assimilative capacity was distributed among them using the conservative substance wasteload allocation (CONSWLA) water quality model for conservative parameters. CONSWLA is the model Ohio EPA typically uses in multiple discharger situations. CONSWLA model inputs for flow are fixed at their critical low levels and inputs for effluent flow are fixed at their design or 50th percentile levels. Background concentrations are fixed at a representative value (generally a 50th percentile). A mass balancing method is then used to allocate effluent concentrations that maintain WQS under these conditions. This technique is appropriate when data bases are unavailable to generate statistical distributions for inputs and if the parameters modeled are conservative.

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

Aquatic life (Warmwater Habitat)		
Toxics (metals, organics, etc.)	Average	Annual 7Q10
	Maximum	Annual 1Q10
Ammonia-N	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 11, and allocations cannot exceed the Inside Mixing Zone Maximum (IMZM) criteria.

The data used in the WLA are listed in Table 10 and Table 11. The WLA results to maintain all applicable criteria are presented in Table 12.

Whole Effluent Toxicity Wasteload Allocation

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 (i.e. TUa and TUc) by the associated WQS Implementation Rule (OAC 3745-2-09). The translation results in a numeric value of 0.3 TUa and 1.0 TUc. WLAs can then be calculated using these values as if they were water quality criteria.

There are two separate reasonable potential procedures in Ohio - one for the Lake Erie watershed and one for the Ohio River watershed. Dischargers in the Ohio River watershed are assessed using OAC 3745-33-07(B). Dischargers in the Lake Erie watershed are assessed in accordance with the “Great Lakes Water Quality Initiative Implementation Procedures” contained in 40 CFR Part 132, Appendix F, Procedure 6.

The WLA calculations for WET are similar to those for aquatic life criteria - using the chronic toxicity unit (TUc) and 7Q10 flow for the average and the acute toxicity unit (TUa) and 1Q10 flow for the maximum. WET WLAs are based on meeting the values of 0.3 TUa and 1.0 TUc downstream of the discharge and include any available dilution. These values are the levels of effluent toxicity that should not cause instream toxicity during

critical low-flow conditions. WLAs for acute toxicity are capped at 1.0 TUa unless the discharger demonstrates that an Area-of-Initial-Mixing (AIM) exists under OAC 3745-1-06, or that one of the factors in OAC 3745-33-07(B)(5)-(9) allows a higher TUa limit to be granted. For the purposes of establishing WET limitations, the values of 1.0 TUa and 1.0 TUc are the most restrictive limitations that can be applied in NPDES permits [OAC 3745-33-07(B)(10)].

For Blacklick Estates WWTP, the WLA values for outfall 001 are 1.0 TUa and 3.98 TUc.

The chronic toxicity unit (TUc) is defined as 100 divided by the estimate of the effluent concentration which causes a 25% reduction in growth or reproduction of test organisms (IC25):

$$TUc = 100/IC25$$

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):

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

The acute toxicity unit (TUa) is defined as 100 divided by the concentration in water having 50% chance of causing death to aquatic life (LC50) for the most sensitive test species:

$$TUa = 100/LC50$$

This equation applies outside the mixing zone for all designated waters. Based on the above, a value of 1.0 TUa is the lowest value that can be calculated using the equation. TUa values between 0.2 and 1.0 are based on an interpolation of toxic effects where an LC50 cannot be identified.

REASONABLE POTENTIAL/EFFLUENT LIMITS/MANAGEMENT DECISIONS

After appropriate effluent limits are calculated, the reasonable potential of the discharger to violate the WQS must be determined. Each parameter is examined and placed in a defined "group". Parameters that do not have a WQS or do not require a WLA based on the initial screening are assigned to either group 1 or 2. For the allocated parameters, the preliminary effluent limits (PEL) based on the most restrictive average and maximum WLAs are selected from Table 12. The average PEL (PEL_{avg}) is compared to the average PEQ (PEQ_{avg}) from Table 7, 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 13.

The final effluent limits are determined by evaluating the groupings in conjunction with other applicable rules and regulations. Table 14 presents the final effluent limits and monitoring requirements proposed for Blacklick Estates WWTP outfall 001 and the basis for their recommendation. Unless otherwise indicated, the monitoring frequencies proposed in the permit are continued from the existing permit.

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

The limits proposed for 5-day carbonaceous biochemical oxygen demand (CBOD₅), ammonia, total suspended solids (TSS), and dissolved oxygen are all based on plant design criteria and are protective of WQS. The TSS and CBOD₅ limits are more stringent than the Secondary Treatment Standards in 40 CFR Part 133. The CBOD₅-day limit was initially included during the 2000 permit derivation to be protective of in-stream

dissolved concentrations. The current ammonia limits have been evaluated using the WLA procedures and are protective of WQS for ammonia toxicity. The current dissolved oxygen limit is protective of WQS.

Total Residual Chlorine

The existing daily effluent limit for total residual chlorine is proposed to continue as a plant design value which is based on protection of the inside mixing zone maximum (IMZM) and outside mixing zone maximum (OMZM) PELs. The most stringent daily maximum criterion is applied and is to be met anytime chlorine is being utilized for effluent disinfection. The limit has been evaluated using the WLA procedures and determined to be protective of WQS for chlorine toxicity.

The effluent limit for chlorine is less than the quantification level of 0.050 mg/L. Language has been included in Part II of the permit discussing the reporting of analytical results.

Total Phosphorus

The limit proposed for this parameter is based on the Big Walnut TMDL and is a continuation of the current permit limit.

Total Kjeldahl Nitrogen (TKN) and Nitrite plus Nitrate

Based on best technical judgment, monitoring is proposed to continue for these parameters. Nutrients and organic enrichment are listed as “high magnitude” causes for impairment in the Big Walnut Creek Watershed TMDL, and major municipal point sources are listed among the “high magnitude” sources. Considering this information and the fact that municipal WWTPs discharge a substantial nutrient load to the creek, there is reasonable potential for nutrients to adversely affect the receiving stream.

Oil and Grease, pH, and *Escherichia coli*

Limits proposed for oil and grease, pH, and *E. coli* are based on WQS (OAC 3745-1-35 and 37). Primary contact recreation *E. coli* standards apply to Blacklick Creek.

Total Filterable Residue

The Ohio EPA risk assessment (Table 13) places total filterable residue in group 4. This placement, as well as the data in Table 6 and Table 7, support that this parameter does not have the reasonable potential to contribute to WQS exceedances, and limits are not necessary to protect water quality. Monitoring for Group 4 pollutants (where PEQ exceeds 50 percent of the WLA) is required by OAC 3745-33-07(A)(2). Monitoring is proposed to increase to once every two weeks to align with Ohio EPA monitoring frequency recommendations.

Cadmium, Chromium, Nickel, Zinc, Copper, Lead and Mercury

The Ohio EPA risk assessment (Table 13) places these parameters in groups 2 and 3. This placement, as well as the data in Table 6 and Table 7, 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 to document that these pollutants continue to remain at low levels. Monitoring for copper is proposed to be reduced to once a quarter.

Flow Rate and Temperature

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

Dissolved Orthophosphate

Monitoring for dissolved orthophosphate (as P) is required by ORC 6111.03. This monitoring will further develop nutrient datasets that are used in stream and watershed assessments and studies. Because Ohio EPA monitoring, as well as other in-stream monitoring, for dissolved orthophosphate is taken by grab sample, grab

samples are proposed for orthophosphate to maintain consistent data. The grab samples must be filtered within 15 minutes of collection using a 0.45-micron filter. The filtered sample must be analyzed within 48 hours.

Whole Effluent Toxicity Reasonable Potential

Based on evaluating the WET data presented in Table 8, Attachment 1, and other pertinent data under the provisions of OAC 3745-33-07(B), the Blacklick Estates WWTP is placed in Category 4 with respect to WET. While this indicates that the plant's effluent does not currently pose a toxicity problem, to stay consistent with the minimum monitoring requirements at OAC 3754-33-07(B)(11) annual toxicity testing is proposed. Annual chronic toxicity monitoring with the determination of acute endpoints is proposed for the life of the permit. The proposed monitoring will adequately characterize toxicity in the plant's effluent.

Additional Monitoring Requirements

New monitoring for TKN and Nitrite plus Nitrate is being proposed at upstream and downstream monitoring stations 801 and 901 respectfully to further categorize the nitrogen load within the watershed prior to and in addition to Blacklick Estates WWTP's discharge.

Monitoring for pH, dissolved oxygen, and water temperature is proposed to be removed at upstream monitoring station 801 and dissolved oxygen is proposed to be removed at downstream monitoring station 901 because the data is not currently needed as part of the reasonable potential analysis.

Increased monitoring for *E. coli* is being proposed at upstream and downstream monitoring stations 801 and 901 respectfully to further categorize the bacteria load within the watershed prior to and in addition to Blacklick Estates WWTP's discharge. The increased frequency over a shorter duration will allow for direct assessment of the recreation standards.

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

Sludge

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

OTHER REQUIREMENTS

Sanitary Sewer Overflow Reporting

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

Operator Certification and Operator of Record

Operator certification requirements have been included in Part II of the permit in accordance with rules effective on August 15, 2018 (OAC 3745-7). These rules require the Blacklick Estates WWTP to have a Class III wastewater treatment plant operator in charge of the sewage treatment plant operations discharging through outfall 001. These rules also require the permittee to designate one or more operator of record to oversee the technical operation of the treatment works and sewerage system.

Method Detection Limit Reporting

When submitting monitoring results in eDMR, the permittee must report all detected concentration values above the method detection limit (MDL), even if that value is below the quantification level, as indicated in Permit Guidance 9: *Limits below Quantification*. A detection above the MDL indicates the presence of a pollutant with strong confidence, which must be considered in reasonable potential analyses. Per OAC 3745-33-07(C)(2)(c), for the purpose of assessing compliance, any value reported below the quantification level shall be considered in compliance with an effluent limit.

Outfall Signage

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

NPDES Renewal Application Supplemental Effluent Data

The permittee must submit supplemental effluent data as part of the next NPDES permit renewal application. A minimum of three samples must be tested for 101 parameters, each collected within four and one-half years of the application submission date. The complete list of parameters to be analyzed is contained in Table 2 of “Appendix J to Part 122 – NPDES Permit Testing Requirements for Publicly Owned Treatment Works (§122.21(j)).” Existing effluent data may be used, if available, in lieu of sampling performed solely for the purpose of the renewal application. See Part II of the permit for details.

Part III

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

Storm Water Compliance

Parts IV, V, and VI have been included with the draft permit to ensure that any storm water flows from the facility site are properly regulated and managed. As an alternative to complying with Parts IV, V, and VI, Blacklick Estates WWTP may seek permit coverage under the general permit for industrial storm water (permit # OHR000006) or submit a “No Exposure Certification.” Parts IV, V, and VI will be removed from the final permit if: 1) Blacklick Estates WWTP submits a Notice of Intent (NOI) for coverage under the general permit for industrial storm water or submits a No Exposure Certification, 2) Ohio EPA determines that the facility is eligible for coverage under the general permit or meets the requirements for a No Exposure Certification, and 3) the determination by Ohio EPA can be made prior to the issuance of the final permit.

Figure 1. Location of Blacklick Estates



Figure 2. Diagram of Wastewater Treatment System

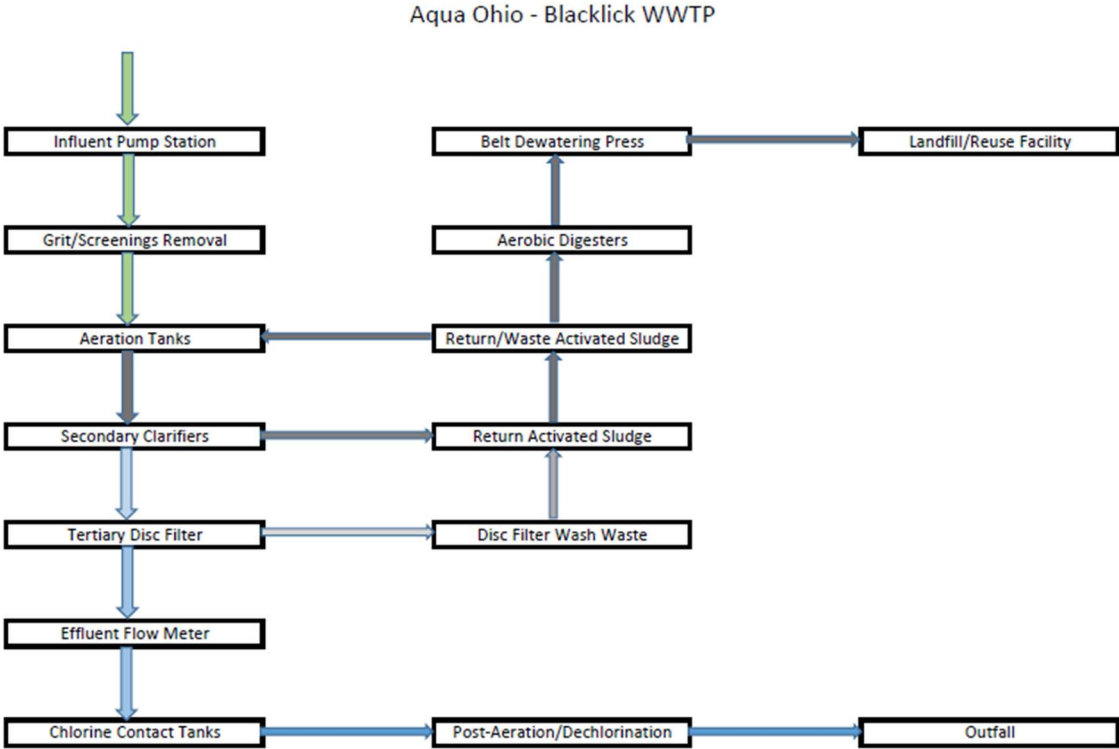


Figure 3. Blacklick Creek Study Area

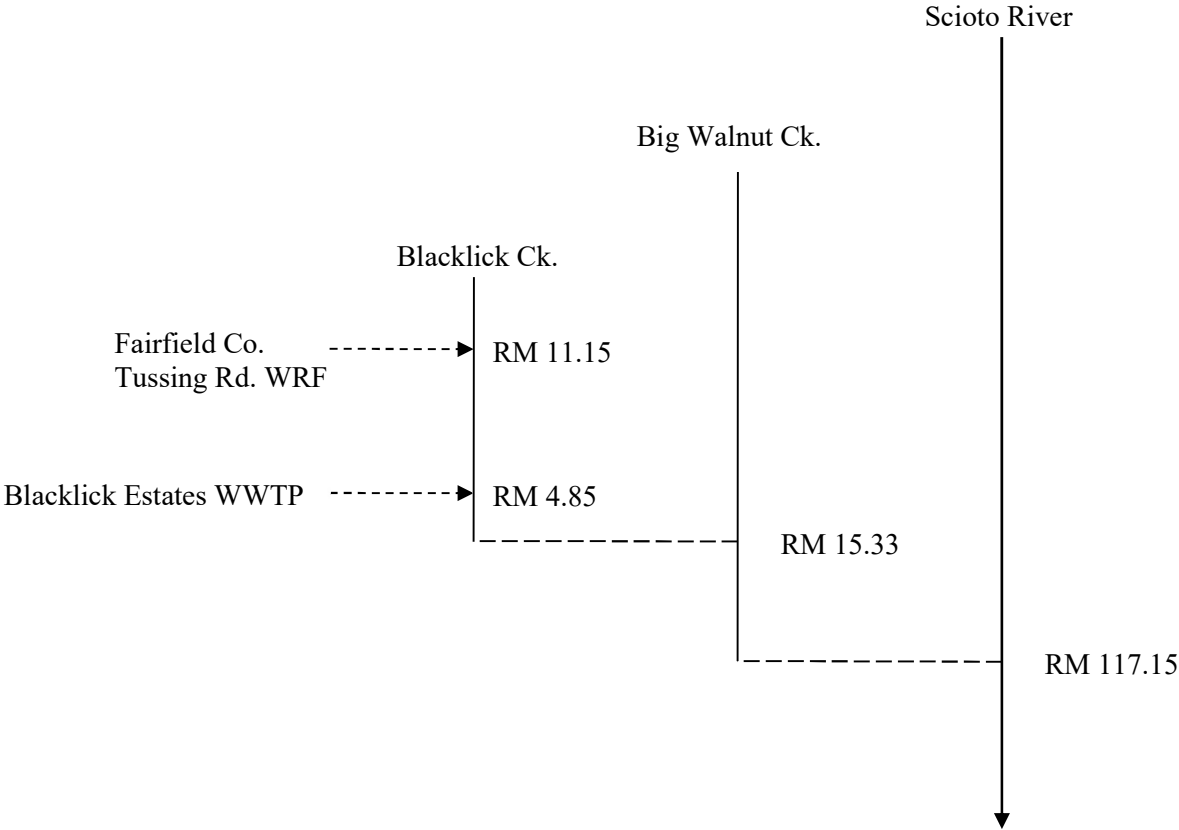


Table 1. Sewage Sludge Removal

Year	Dry Tons Removed
2018	66.03
2019	139.99
2020	49.07
2021	130.90
2022	92.07

Table 2. Effluent Violations for Outfall 001

Parameter	2018 ^a	2019	2020	2021	2022	2023 ^b	Total
CBOD ₅	1	0	0	0	0	0	1
<i>E. coli</i>	2	0	1	0	0	0	3
Total Suspended Solids	0	0	0	0	7	0	7
Total	3	0	1	0	7	0	11

^a = data set begins on 4/1/18

^b = data set ends on 3/31/23

Table 3. Average Annual Effluent Flow Rates

Year	Annual Flow (MGD)		
	50 th Percentile	95 th Percentile	Maximum
2018 ^a	0.93	1.82	3.13
2019	0.88	2.03	4.10
2020	0.83	2.09	5.52
2021	0.88	1.41	2.86
2022	0.90	2.24	5.28
2023 ^b	0.89	1.58	2.09

^a = data set begins on 4/1/18

^b = data set ends on 3/31/23

MGD = million gallons per day.

Table 4. Calculated Seasonal Total Phosphorus Loadings

Year	n	Median Phosphorus (mg/L)	Median Flow (MGD)	Median Loading (kg/day)
2018 ^a	24	0.24	0.87	0.78
2019	24	0.20	0.74	0.60
2020	25	0.28	0.71	0.82
2021	24	0.32	0.83	1.02
2022 ^b	23	0.30	0.81	1.01

Data is for May-Oct.

^a = data set begins on 4/1/18

^b = data set ends on 3/31/23

MGD = million gallons per day

n = number of samples

Table 5. Effluent Characterization Using Priority Pollutant Scan Data

Parameter	Units	2/6/2023	2/7/2023	2/8/2023
Antimony	µg/L	AA (3)	AA (3)	AA (3)
Arsenic	µg/L	AA (3)	AA (3)	AA (3)
Beryllium	µg/L	AA (5)	AA (5)	AA (5)
Cadmium	µg/L	AA (0.5)	AA (0.5)	AA (0.5)
Chromium	µg/L	AA (10)	AA (10)	AA (10)
Copper	µg/L	AA (10)	AA (10)	AA (10)
Lead	µg/L	4	4.4	4.4
Mercury	ng/L	AA (0.200)	AA (0.200)	AA (0.200)
Nickel	µg/L	AA (10)	AA (10)	AA (10)
Selenium	µg/L	AA (5)	AA (5)	AA (5)
Silver	µg/L	AA (1.0)	AA (1.0)	AA (1.0)
Thallium	µg/L	AA (1.0)	AA (1.0)	AA (1.0)
Zinc	µg/L	20	51	14

AA = not-detected (analytical method detection limit)

Table 6. Effluent Characterization Using Self-Monitoring Data

Parameter	Season	Units	Current Permit Limits		# Obs.	Percentiles		Data Range
			30 day	Daily		50 th	95 th	
Outfall 001								
Water Temperature	Annual	°C	-- Monitor --		1791	17	21	11-26.2
Dissolved Oxygen	Winter	mg/L	5.0 ^m		595	8.2	7.37**	5.5-12.7
Dissolved Oxygen	Summer	mg/L	7.0 ^m		638	8	7.50**	7.1-10
Total Suspended Solids	Annual	mg/L	20	30 ^w	708	3.4	13	0-96
		kg/day	90.8	136.2 ^w	708	11.5	63.3	0-388
Oil and Grease	Annual	mg/L	10.0 ^M		119	<0.9	<0.9	0-5.9
Nitrogen, Ammonia	Summer	mg/L	1.5	2.3 ^w	361	0.07	1.18	0-8.47
		kg/day	6.8	10.4 ^w	361	0.198	4.49	0-23.1
Nitrogen, Ammonia	Fall/Spring	mg/L	4.75	7.13 ^w	168	0.08	1.36	0-2.79
		kg/day	21.6	32.4 ^w	168	0.247	7.04	0-27.6
Nitrogen, Ammonia	Winter – Short	mg/L	8.0	12.0 ^w	181	0.08	2.25	0-4.72
		kg/day	36.3	54.5 ^w	181	0.291	10.4	0-34.5
Total Kjeldahl Nitrogen	Annual	mg/L	-- Monitor --		59	<0.20	3.85	0-14.5
Nitrate + Nitrite	Annual	mg/L	-- Monitor --		59	10.2	16.1	0-23.5
Total Phosphorus	Annual	mg/L	0.50	--	242	0.25	0.469	0.06-1.42
		kg/day	2.3	--	242	0.854	2	0.168-6.13
Orthophosphate, Dissolved	Annual	mg/L	-- Monitor --		59	0.100	0.26	0-0.59
Nickel	Annual	µg/L	-- Monitor --		19	<10	3	0-3
Zinc	Annual	µg/L	-- Monitor --		19	17	32.8	0-40
Cadmium	Annual	µg/L	-- Monitor --		19	0	0	<0.4
Lead	Annual	µg/L	-- Monitor --		19	<3	10	0-14
Chromium	Annual	µg/L	-- Monitor --		19	0	0	<1
Copper	Annual	µg/L	-- Monitor --		59	<1	7.5	0-17
<i>E. coli</i>	Annual	#/100 ml	161	362 ^w	359	23.1	281	0-2760
Flow Rate	Annual	MGD	-- Monitor --		1795	0.89	1.82	0.42-5.52
Chlorine, Total Residual	Annual	mg/L	0.021 ^M		638	0.02	0.02	0-0.03
Mercury, Total (Low Level)	Annual	mg/L	-- Monitor --		18	1.48	4.44	0-10.9
Acute Toxicity, <i>Ceriodaphnia dubia</i>	Annual	TU _a	-- Monitor --		5	0	0	<0.2
Acute Toxicity, <i>Pimephales promelas</i>	Annual	TU _a	-- Monitor --		5	0	0	<0.2
Chronic Toxicity, <i>Ceriodaphnia dubia</i>	Annual	TU _c	-- Monitor --		5	<1	2.24	0-2.8

Table 6. Effluent Characterization Using Self-Monitoring Data

Parameter	Season	Units	Current Permit Limits		# Obs.	Percentiles		Data Range
			30 day	Daily		50 th	95 th	
Chronic Toxicity, <i>Pimephales promelas</i>	Annual	TU _c	- - Monitor - -		5	0	0	<1
pH, Maximum	Annual	S.U.	9.0 ^M		1233	7.8	8.1	6.8-8.8
pH, Minimum	Annual	S.U.	6.0 ^m		1233	7.8	7.2*	6.7-8.2
Total Filterable Residue	Annual	mg/L	- - Monitor - -		59	724	1620	40-4170
Carbonaceous Biochemical Oxygen Demand (5 day)	Summer	mg/L	10.0	15.0 ^w	358	5	9	0-38
		kg/day	45.4	68.1 ^w	358	14.7	36.7	0-135
Carbonaceous Biochemical Oxygen Demand (5 day)	Winter	mg/L	25	40 ^w	343	3	8.54	0-28
		kg/day	113.5	181.6 ^w	343	11.4	42.4	0-279

* = For minimum pH, 5th percentile shown in place of 95th percentile.

** = For dissolved oxygen, 5th percentile shown in place of 95th percentile.

^m = Minimum limit

^M = Maximum limit

^w = Weekly average

Table 7. Projected Effluent Quality for Outfall 001

Parameter	Units	Number of Samples	Number > MDL	PEQ Average	PEQ Maximum
Ammonia (summer)	mg/L	240	125	1.507	1.636
Ammonia (winter)	mg/L	181	101	1.892	2.568
Cadmium	µg/L	20	0	--	--
Chlorine , total residual	mg/L	638	637	0.013	0.018
Chromium	µg/L	20	0	--	--
Copper	µg/L	60	8	12.41	17
Lead	µg/L	21	6	13.29	18.2
Mercury – (BCC)	ng/L	19	18	4.311	7.476
Nickel	µg/L	12	2	3.504	4.8
Nitrate-N + Nitrite-N	mg/L	59	58	13.96	17.97
Total Filterable Residue	mg/L	58	58	952	1167
Zinc	µg/L	23	20	36.84	56.61

PEQ = Projected Effluent Quality

DMR = Discharge Monitoring Report

MDL = analytical laboratory Method Detection Limit

BCC = Bioaccumulative Chemical of Concern

* Per OAC 3745-2-04€(3), ammonia PEQ is based on data collected during the following months:

Summer – June through September

Winter – December through February

Table 8. Summary of Acute and Chronic Toxicity Results

Date	<i>Ceriodaphnia Dubia</i>		<i>Pimephales promelas</i>	
	TU _a	TU _c	TU _a	TU _c
8/17/2018	AA (0.2)	AA (1.0)	AA (0.2)	AA (1.0)
8/12/2019	AA (0.2)	AA (1.0)	AA (0.2)	AA (1.0)
8/13/2020	AA (0.2)	2.8	AA (0.2)	AA (1.0)
8/9/2021	AA (0.2)	AA (1.0)	AA (0.2)	AA (1.0)
8/15/2022	AA (0.2)	AA (1.0)	AA (0.2)	AA (1.0)

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

TU_a = acute toxicity unit

TU_c = chronic toxicity unit

Table 9: Use Attainment Table

Location	RM	Use	IBI	MIwb	ICI	QHEI	Status	Cause	Source
Blacklick Ck. Ust. of Tussing Rd. WWTP	11.25	WWH	39 ^{ns}	8.0 ^{ns}	48	76.5	Full		
Blacklick Ck. Dst. of Tussing Rd. WWTP	11.00	WWH	44	8.6	38	70	Full		
Blacklick Ck. At Clubhouse Lane	10.20	WWH	NA	NA	NA	NA	Full		
Blacklick Ck. At Refugee Rd.	8.80	WWH	46	9.4	40	70.5	Full		
Blacklick Ck. Dst. of Blacklick Estates WWTP	4.80	WWH	NA	NA	NA	NA	Full		
Blacklick Ck. At Winchester Pike	4.35	WWH	46	8.9	26*	69	Partial	Bacteria, other flow regime alterations, impairment unknown, alteration in stream-side or littoral vegetative covers	Upstream source, post- development erosion and sedimentation, loss of riparian habitat
Blacklick Ck. Behind Ohio EPA Building	2.40	WWH	43	8.4	42	78	Full		

Data gathered from [Total Maximum Daily Loads for the Big Walnut Creek Watershed, 2021]

* = Significant departure from ecoregion bio criterion

ns = nonsignificant departure from bio criterion

IBI = Index of Biotic Integrity bio criterion

MIwb = Modified Index of Well-being criteria

ICI = Invertebrate Community Index criteria

WWH = warmwater habitat

Ck. = Creek

Ust. = upstream

Dst. = downstream

RM = River mile

WWTP = Wastewater Treatment Plant

Table 10. Water Quality Criteria in the Study Area

Parameter	Units	Outside Mixing Zone Criteria				Inside Mixing Zone Maximum
		Average			Maximum Aquatic Life	
		Human Health	Agriculture	Aquatic Life		
Ammonia (summer)	mg/L	--	--	0.8	--	--
Ammonia (winter)	mg/L	--	--	1.9	--	--
Cadmium	µg/L	--	50	5.9	16	32
Chlorine , total residual	mg/L	--	--	0.011	0.019	0.038
Chromium	µg/L	--	100	210	4500	8900
Copper	µg/L	--	500	24	40	80
Lead	µg/L	--	100	26	500	1000
Mercury ^A	ng/L	12	10000	910	1700	--
Nickel	µg/L	4600	200	130	1200	2400
Nitrate-N + Nitrite-N	mg/L	--	100	--	--	--
Total Filterable Residue	mg/L	--	--	1500	--	--
Zinc	µg/L	26000	25000	310	310	610

^A Bioaccumulative Chemical of Concern (BCC)

^C carcinogen

Table 11. Instream Conditions and Discharger Flow

Parameter	Units	Season	Value	Basis
Stream Flows				
1Q10	cfs	annual	0.80	USGS gage 03228700, 1950 - 1972
7Q10	cfs	annual	0.89	USGS gage 03228700, 1950 - 1972
30Q10	cfs	summer	1.13	USGS gage 03228700, 1950 - 1972
		winter	3.54	USGS gage 03228700, 1950 - 1972
Harmonic Mean	cfs	annual	3.46	USGS gage 03228700, 1950 - 1972
Mixing Assumption	%	average	100	Stream-to-discharge ratio
		maximum	100	Stream-to-discharge ratio
Instream Hardness				
<i>Instream Hardness</i>	mg/L	annual	303	Blacklick 901, 2018-2023, n= 20 median
	mg/L	annual	252	Fairfield Co. 901, 2018-2023, n= 59, median
Fairfield County Tussing Road WWTP flow				
<i>Fairfield County Tussing Road WWTP flow</i>	cfs	design	4.64	NPDES application Form 2A
	MGD		3.0	
Aqua Ohio – Blacklick Estates WWTP flow				
<i>Aqua Ohio – Blacklick Estates WWTP flow</i>	cfs	design	1.86	NPDES application Form 2A
	MGD		1.2	
Background Water Quality				
Ammonia	mg/L	summer	0	DMR 801; 32 values, 31<MDL, 2018-2023
Ammonia	mg/L	winter	0	DMR 801; 15 values, 11<MDL, 2018-2023
Barium	µg/L	annual	88.5	STORET; 26 values, 0<MDL, 2000-2010
Butyl benzyl phthalate	µg/L	annual	0	STORET; 26 values, 26<MDL, 2000-2010
Cadmium	mg/L	annual	0	STORET; 26 values, 26<MDL, 2000-2010
Chlorine	mg/L	annual	0	No representative data available.
Chromium	µg/L	annual	0	STORET; 26 values, 26<MDL, 2000-2010
Dissolved Hexavalent Chromium	µg/L	annual	0	No representative data available.
Copper	µg/L	annual	5	STORET; 26 values, 23<MDL, 2000-2010
Cyanide	µg/L	annual	0	No representative data available.
Lead	µg/L	annual	0	STORET; 26 values, 26<MDL, 2000-2010
Nickel	µg/L	annual	20	STORET; 26 values, 24<MDL, 2000-2010
Nitrate-N + Nitrite-N	mg/L	annual	0.36	STORET; 13 values, 10<MDL, 2000-2013
Selenium	µg/L	annual	0	STORET; 12 values, 12<MDL, 2000-2010
Total Filterable Residue	mg/L	annual	516	STORET; 25 values, 0<MDL, 2000-2013
Zinc	µg/L	annual	5	STORET; 26 values, 18<MDL, 2000-2010

MDL = method detection limit

NPDES = National Pollutant Discharge Elimination System

STORET = United States Environmental Protection Agency Storage and Retrieval Data Warehouse – stations V05S30, V05W34, V05W18, V05G92, V05G53 and V05G91

USGS = United States Geological Survey

Table 12. Summary of Effluent Limits to Maintain Applicable Water Quality Criteria

Parameter	Units	Outside Mixing Zone Criteria				Inside Mixing Zone Maximum
		Average			Maximum Aquatic Life	
		Human Health	Agri-culture	Aquatic Life		
Ammonia (summer)	mg/L	--	--	3.29	--	--
Ammonia (winter)	mg/L	--	--	10.27	--	--
Cadmium ^B	µg/L	--	77 ^A	8.3	25	32
Chlorine , total residual	mg/L	--	--	0.044	0.075 ^A	0.038
Chromium ^B	µg/L	--	153	299	6547	8900
Copper	µg/L	--	763 ^A	33	60	80
Lead	µg/L	--	153	41	792	1000
Mercury ^C	ng/L	12	10000 ^A	910	1700	--
Nickel ^B	µg/L	7038 ^A	296	189	1785	2400
Nitrate-N + Nitrite-N ^B	mg/L	--	153	--	--	--
Total Filterable Residue	mg/L	--	--	1635	--	--
Zinc ^B	µg/L	39837 ^A	38305 ^A	459	456	610

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

^B Parameter would not require a WLA based on reasonable potential procedures, but allocation requested by permit staff.

^C Bioaccumulative Chemical of concern (BCC).

Table 13. Parameter Assessment

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

No parameters meet the criteria of this group.

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

Cadmium - TR	Chromium - TR	Nickel - TR
Nitrate-N + Nitrite-N	Zinc - TR	

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

Ammonia (summer)	Ammonia (winter)	Total Residual Chlorine
Copper - TR	Lead - TR	Mercury (Low Level)

Group 4: PEQ_{max} ≥ 50 percent, but < 100 percent of the maximum PEL or PEQ_{avg} ≥ 50 percent, but < 100 percent of the average PEL. Monitoring is appropriate.

Total Filterable Residue

Group 5: Maximum PEQ ≥ 100 percent of the maximum PEL or average PEQ ≥ 100 percent of the average PEL, or either the average or maximum PEQ is between 75 and 100 percent of the PEL and certain conditions that increase the risk to the environment are present. Limit recommended.

Limits to Protect Numeric Water Quality Criteria

Parameter	Units	Period	Recommended Effluent Limits	
			Average	Maximum
No parameters meet the criteria of this group.				

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

Table 14. Final Effluent Limits for Outfall 001

Parameter	Units	Concentration		Loading (kg/day) ^a		Basis ^b
		Daily Maximum	30 Day Average	Daily Maximum	30 Day Average	
Water Temperature	°C	-----Monitor-----				M ^c
Dissolved Oxygen (winter)	mg/L	7.0 ^m	--	--	--	WQS
Dissolved Oxygen (summer)	mg/L	5.0 ^m	--	--	--	WQS
Total Suspended Solids	mg/L	30.0 ^d	20.0	136.2 ^d	90.8	PD
Oil & Grease	mg/L	10.0	--	--	--	WQS
Ammonia (summer)	mg/L	2.3 ^d	1.5	10.4 ^d	6.8	WQS/PD
Ammonia (fall/spring)	mg/L	7.13 ^d	4.75	32.4 ^d	21.6	WQS/PD
Ammonia (winter)	mg/L	12.0 ^d	8.0	54.5 ^d	36.3	WQS/PD
Total Kjeldahl Nitrogen	mg/L	-----Monitor-----				BTJ
Nitrate plus Nitrite	mg/L	-----Monitor-----				BTJ
Phosphorus, Total	mg/L	--	0.50	--	2.3	TMDL
Orthophosphate, Dissolved	mg/L	-----Monitor-----				PMR
Nickel, TR	µg/L	-----Monitor-----				M
Zinc, TR	µg/L	-----Monitor-----				M
Cadmium, TR	µg/L	-----Monitor-----				M
Lead, TR	µg/L	-----Monitor-----				M
Chromium, TR	µg/L	-----Monitor-----				M
Copper, TR	µg/L	-----Monitor-----				M
<i>E. coli</i>	#/100 mL	284 ^d	126	--	--	WQS
Flow Rate	MGD	-----Monitor-----				M ^c
Chlorine, Total Residual	mg/L	0.021	--	--	--	PD/WLA
Mercury, Total (Low Level)	ng/L	-----Monitor-----				M
Acute Toxicity, <i>Ceriodaphnia dubia</i>	TU _a	-----Monitor-----				WET
Chronic Toxicity, <i>Ceriodaphnia dubia</i>	TU _c	-----Monitor-----				WET
Acute Toxicity, <i>Pimephales promelas</i>	TU _a	-----Monitor-----				WET
Chronic Toxicity, <i>Pimephales promelas</i>	TU _c	-----Monitor-----				WET
Total Filterable Residue	mg/L	-----Monitor-----				M
pH, maximum	SU	9.0	--	--	--	WQS
pH, minimum	S.U.	6.5 ^m	--	--	--	WQS
CBOD ₅ (summer)	mg/L	15.0 ^d	10.0	68.1 ^d	45.4	WQS
CBOD ₅ (winter)	mg/L	40.0 ^d	25.0	181.6 ^d	113.5	BPT/PD

^a Effluent loadings based on average design discharge flow of 1.2 MGD.

^b Definitions:

BTJ = Best Technical Judgment

M = Division of Surface Water NPDES Permit Guidance 1: Monitoring frequency requirements for Sanitary Discharges

PD = Plant Design (OAC 3745-33-05(E))

PMR = Phosphorus monitoring requirements (ORC 6111.03)

TMDL = Total Maximum Daily Load

WET = Whole Effluent Toxicity (OAC 3745-33-07(B))

WQS = Ohio Water Quality Standards (OAC 3745-1)

WLA = Wasteload Allocation procedures (OAC 3745-2)

- ^c Monitoring of flow and other indicator parameters is specified to assist in the evaluation of effluent quality and treatment plant performance.
- ^d 7 day average limit.
- ^m minimum limit

Attachment 1. Whole Effluent Toxicity Reasonable Potential Analysis

Hazard Category Summary

	<i>Ceriodaphnia dubia</i>		<i>Pimephales promelas</i>	
	Acute	Chronic	Acute	Chronic
Effluent Toxicity (Table A)	4	4	4	4
	4		4	

Hazard Categories: 1: Toxicity adequately documented 3: Toxicity possible.
2: Toxicity strongly suspected 4: No toxicity

Table A. Effluent Toxicity

	<i>Ceriodaphnia dubia</i>		<i>Pimephales promelas</i>	
	Acute	Chronic	Acute	Chronic
WLA	1.0	3.98	1.0	3.98
# of tests	5	5	5	5
Maximum value	AA	2.8	AA	AA
Percent of tests >WLA	0%	0%	0%	0%
Geometric mean	<15	1.0	<15	1.0
Average Exceedance (Geomean * Percent of tests >WLA)	0	0	0	0
Average Exceedance / WLA	0%	0%	0%	0%

Ceriodaphnia dubia, chronic

Attribute Evaluated	Hazard Category 1	Hazard Category 2	Hazard Category 3	Hazard Category 4
Degree of Toxicity	Adequately Documented	Strongly Suspected	Possible	None
(1) Minimum number of tests	3	1	0 or 1	0 or 1
(2) Percent of tests >WLA	>30	20 to 30	10 to 20	< 10
(3) Average Exceedance/WLA ¹				
(a) Chronic	> 0.3	≥ 0.3	≥ 0.2	< 0.2
(4) Maximum TU value	≥(3xWLA)	≥WLA	≥WLA	<WLA

¹ Compare (per cent exceedances x geometric mean TU) to table factor.

² Use 0.3 x WLA for situations where AIM exists.

Addendum 1. Acronyms

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