National Pollutant Discharge Elimination System (NPDES) Permit Program

FACT SHEET

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

Public Notice No.: 16-02-019
Public Notice Date: February 16, 2016
Comment Period Ends: March 17, 2016

Ohio EPA Permit No.: **0PE00000*RD**
Application No.: **OH0028240**

Name and Address of Applicant:
City of Zanesville
401 Market Street
Zanesville, OH 43701

Name and Address of Facility Where Discharge Occurs:
Zanesville WWTP
1730 Moxahala Avenue
Zanesville, OH 43701
Muskingum County

Receiving Water: **Muskingum River**

Subsequent Stream Network: **Ohio 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.

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 monitoring requirements proposed for the following parameters are the same as in the previous permit, although some monitoring frequencies have changed: water temperature, total precipitation, dissolved oxygen, total suspended solids, oil and grease, total nitrogen, ammonia, total kjeldahl nitrogen, nitrate + nitrite, phosphorus, nickel, zinc, cadmium, lead, chromium, copper, dissolved hexavalent chromium, *Escherichia Coli (E. Coli)*, flow rate, total residual chlorine, free cyanide, pH, total filterable residue, and 5-day carbonaceous biochemical oxygen demand ($CBOD_5$).

New monthly monitoring is proposed for dissolved orthophosphate (as P). This monitoring is required by Ohio Senate Bill 1, which was signed by the Governor on April 2, 2015. Monitoring for orthophosphate is proposed to further develop nutrient datasets for dissolved reactive phosphorus and to assist stream and watershed assessments and studies. Ohio EPA monitoring, as well as other in-stream monitoring, is taken via grab sample, orthophosphate is proposed to be collected by grab sample to maintain consistent data to support watershed and stream surveys. Monitoring will be done by grab sample, which must be filtered within 15 minutes of collection using a 0.45-micron filter. The filtered sample must be analyzed within 48 hours.

Limits are proposed to be removed for mercury because data supports that these parameters do not have the reasonable potential to contribute to WQS exceedances, and limits are not necessary to protect water quality. Monitoring is proposed to continue for mercury at the same frequency.

Annual acute toxicity monitoring is proposed for the life of the permit. This satisfies the minimum testing requirements of Ohio Administrative Code (OAC) 3754-33-07(B)(11) and will adequately characterize toxicity in the plant's effluent.

This permit no longer authorizes the use of method 4500 CN-I from Standard Methods for free cyanide testing. As soon as possible, the permittee must begin using either ASTM D7237-10 or OIA-1677-09 both of which are approved methods for free cyanide listed in 40 CFR 136.

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; storm water compliance; tracking of group 4 parameters; pretreatment program requirements; 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 Elizabeth Buening, (614) 644-2138, Elizabeth.buening@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: http://epa.ohio.gov/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 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 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 3745-1-35. 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

The Zanesville WWTP discharges to the Muskingum River at River Mile 74.1. Figure 1 shows the approximate location of the facility.

This segment of the Muskingum River is described by Ohio EPA River Code: 17-001, U.S. EPA River Reach Code: 05040004-119; County: Muskingum, Ecoregion: Western Allegheny Plateau. The Muskingum River is designated for the following uses under Ohio's WQS (OAC 3745-1-24): Warmwater Habitat, Agricultural Water Supply, Industrial Water Supply, Class A 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 coldwater fish and macroinvertebrates, warmwater aquatic life and waters with exceptional communities of warmwater organisms. These uses all meet the goals of the federal CWA. Ohio WQS also include aquatic life use designations for waterbodies which cannot meet the CWA goals because of human-caused conditions that cannot be remedied without causing fundamental changes to land use and widespread economic impact. The dredging and clearing of some small streams to support agricultural or urban drainage is the most common of these conditions. These streams are given Modified Warmwater or Limited Resource Water designations.

Recreation uses are defined by the depth of the waterbody and the potential for wading or swimming. Uses are defined for bathing waters, swimming/canoeing (Primary Contact 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

Zanesville WWTP was constructed in 1959 and last upgraded in 2009. The average design flow is 11 million gallons per day (MGD). Zanesville WWTP serves the City of Zanesville and Muskingum County for a total of 94,580 customers. Zanesville WWTP has the following treatment processes which are shown on Figure 2:

- Influent pumping
- Bar screen
- Grit removal
- Primary sedimentation
- Trickling filter
- Activated sludge-contact stabilization
- Secondary clarification
- Chlorination - gas
- Dechlorination – sodium bisulfite

Zanesville WWTP has two bypasses. The facility has the capability to bypass wastewater flow around the trickling filters (from the primary clarifiers to contact stabilization). The WWTP also includes a bypass from primary treatment directly to the chlorine contact tank. The City of Zanesville has 88 percent separated sewers

and 12 percent combined sewers in the collection system. The City of Zanesville does have an approved pretreatment program. The City of Zanesville has two categorical users that discharge 0.006 MGD of flow and 34 significant non-categorical users that discharge 0.492 MGD of flow.

Zanesville WWTP utilizes the following sewage sludge treatment processes:

- Anaerobic Digestion
- Belt Filter Press

Treated sludge is transferred to another NPDES permitted facility.

Description of Existing Discharge

During the past five years, Zanesville WWTP had one effluent violation for minimum pH on September 6, 2010 and two total residual chlorine violations on May 21, 2012 and June 25, 2012. These violations were not caused by a known process error or upset condition.

Zanesville WWTP estimates there is an infiltration/inflow (I/I) rate to the collection system of 1.0 MGD. The average annual effluent flow rate for Zanesville WWTP for the previous five years is presented on Table 1.

Zanesville WWTP reports SSOs at station 300. The number of SSOs and dates recorded is presented on Table 2. Zanesville WWTP reports bypasses at stations 602 and 603. The number of bypasses and dates reported is presented on Table 3.

Zanesville WWTP has 16 known combined sewer overflows (CSOs). The number of CSOs and dates reported is presented on Table 4.

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

Table 5 presents chemical specific data compiled from data reported in annual pretreatment reports and collected by Ohio EPA.

Table 6 presents a summary of unaltered Discharge Monitoring Report (DMR). Data are presented for the period September 2010 through August 2015, 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 WET tests of the final effluent.

Table 9 summarizes the screening results of Ohio EPA bioassay sampling of the final effluent.

Assessment of Impact on Receiving Waters

The Muskingum watershed assessment unit, which includes the Muskingum River and its' tributaries in the vicinity of Zanesville WWTP, is listed as impaired on Ohio's 303(d) list due to tributaries.

The most recent data available for the Muskingum River watershed is from 2006. The mainstem of the Muskingum River is in full attainment of the aquatic life WWH designation, both upstream and downstream of the City of Zanesville. A Total Daily Maximum Load (TMDL) study is scheduled for 2018. The full 2014 Integrated Report can be found at this website:
http://epa.ohio.gov/dsw/tmdl/OhioIntegratedReport.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 Zanesville 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)	September 2010 through August 2015
Pretreatment data	2011 through 2014
Ohio EPA compliance sampling data	2013

Statistical Outliers and Other Non-representative Data
The effluent data were checked for outliers and the following values were removed: two values for cadmium of 22.9 µg/L (August 2, 2013) and 42.8 µg/L (December 3, 2013), one value for lead of 79 µg/L (November 20, 2013), and one value for total residual chlorine of 1196 µg/L (June 25, 2012).

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).

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 14).

Wasteload Allocation
For those parameters that require a WLA, the results are based on the uses assigned to the receiving waterbody in OAC 3745-1. Dischargers are allocated pollutant loadings/concentrations based on the Ohio WQS (OAC 3745-1). Most pollutants are allocated by a mass-balance method because they do not degrade in the receiving water. The following dischargers in the Muskingum River were considered interactive (see Figure 3):

- Zanesville WWTP
- AK Steel Zanesville

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	Average	Summer 30Q10
		Winter 30Q10
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 12, and allocations cannot exceed the Inside Mixing Zone Maximum (IMZM) criteria.

Ohio's WQS implementation rules [OAC 3745-2-05(A)(2)(d)(iv)] required a phase out of mixing zones for bioaccumulative chemicals of concern (BCCs) as of November 15, 2010. This rule applied statewide. Mercury is a BCC. The mixing zone phase-out means that as of November 15, 2010 all dischargers requiring mercury limits in their NPDES permit must meet WQS at the end-of-pipe, which for mercury are 12 ng/L (average) and 1700 ng/L (maximum) in the Ohio River basin.

The data used in the WLA are listed in Table 6 and Table 7. The WLA results to maintain all applicable criteria are presented in Table 13.

Whole Effluent Toxicity WLA

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

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

The WLA calculations for WET are similar to those for aquatic life criteria - using the chronic toxicity unit (TU_c) and 7Q10 flow for the average and the acute toxicity unit (TU_a) and 1Q10 flow for the maximum. These values are the levels of effluent toxicity that should not cause instream toxicity during critical low-flow conditions. For Zanesville WWTP, the WLA values are 1.0 TU_a and 37.4 TU_c.

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

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

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

TU_c = 100/geometric mean of No Observed Effect Concentration and Lowest Observed Effect Concentration

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

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

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

Reasonable Potential/ Effluent Limits/Hazard Management Decisions

After appropriate effluent limits are calculated, the reasonable potential of the discharger to violate the WQS must be determined. Each parameter is examined and placed in a defined "group". Parameters that do not have a WQS or do not require a WLA based on the initial screening are assigned to either group 1 or 2. For the allocated parameters, the preliminary effluent limits (PEL) based on the most restrictive average and maximum WLAs are selected from Table 11. The average PEL (PEL_{avg}) is compared to the average PEQ (PEQ_{avg}) from Table 13, and the PEL_{max} is compared to the PEQ_{max}. Based on the calculated percentage of the allocated value [($PEQ_{avg} \div PEL_{avg}$) X 100, or ($PEQ_{max} \div PEL_{max}$) X 100)], the parameters are assigned to group 3, 4, or 5. The groupings are listed in Table 14.

The final effluent limits are determined by evaluating the groupings in conjunction with other applicable rules and regulations. Table 15 presents the final effluent limits and monitoring requirements proposed for Zanesville 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.

Water Temperature, Dissolved Oxygen, Total Precipitation, and Flow Rate
Monitoring for these parameters is proposed to continue in order to evaluate the performance of the treatment plant.

Ammonia, Total Suspended Solids and $CBOD_5$
The limits proposed for these parameters are all based on plant design criteria. These limits are protective of WQS.

Oil and Grease, pH, and E. Coli
Limits proposed for oil and grease, pH, and E. coli are based on WQS (OAC 3745-1-07). Class A PCR E. coli standards apply to the Muskingum River.

Total Residual Chlorine
Although the current WLA as limited by the IMZM (Inside Mixing Zone Maximum) would allow slightly higher limits for total residual chlorine, anti-backsliding provisions in the OAC prevent the imposition of less stringent limits than those in the existing permit unless specific conditions have been satisfied. In the case of the Zanesville WWTP, none of those conditions have been satisfied, so the existing limits are proposed to continue. The anti-backsliding provisions of OAC 3745-33-05(F) require that an anti-degradation review must be completed before an existing permit limit can be made less stringent. The rule requires other conditions to be satisfied as well. The effluent limit for chlorine at outfall 001 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.

Mercury, Copper, and Dissolved Hexavalent Chromium
The Ohio EPA risk assessment (Table 14) places mercury, copper, and dissolved hexavalent chromium in group 4. This placement, as well as the data in Tables 6 and 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 for Group 4 pollutants (where PEQ exceeds 50 percent of the WLA) is required by OAC 3745-33-07(A)(2). Limits for mercury are proposed to be removed but monitoring will continue at the same frequency.

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

Free Cyanide, Cadmium, Total Filterable Residue, Zinc, Lead, Chromium, and Nickel
The Ohio EPA risk assessment (Table 14) places these parameters in groups 2 and 3. This placement, as well as the data in Tables 6 and 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 reduced frequency is proposed to document that these pollutants continue to remain at low levels. Limits for ammonia are proposed to be removed but will keep the same monitoring frequency.

Arsenic, Selenium, Molybdenum, Silver, Iron, Nickel, Strontium, and Barium
The Ohio EPA risk assessment (Table 14) places these parameters in groups 2 and 3. This placement, as well as the data in Tables 6 and 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. No new monitoring is proposed.

Phosphorus, Total Nitrogen, Nitrate + Nitrite, and Total Kjeldahl Nitrogen
Continued monitoring is also proposed for total nitrogen, total Kjeldahl nitrogen, nitrate+nitrite, and phosphorus to provide information on the discharge of nutrients and provide supplemental data for the ongoing evaluation of Muskingum River water quality nutrient loading in the Ohio River basin.

Dissolved Orthophosphate
New monthly monitoring is proposed for dissolved orthophosphate (as P). This monitoring is required by Ohio Senate Bill 1, which was signed by the Governor on April 2, 2015. Monitoring for orthophosphate is proposed to further develop nutrient datasets for dissolved reactive phosphorus and to assist stream and watershed assessments and studies. Ohio EPA monitoring, as well as other in-stream monitoring, is taken via grab sample, orthophosphate is proposed to be collected by grab sample to maintain consistent data to support watershed and stream surveys. Monitoring will be done by grab sample, which must be filtered within 15 minutes of collection using a 0.45-micron filter. The filtered sample must be analyzed within 48 hours.

Whole Effluent Toxicity Reasonable Potential
Based on evaluating the WET data presented in Table 8 and Table 9 and other pertinent data under the provisions of OAC 3745-33-07(B), the Zanesville 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, annual toxicity testing is proposed consistent with the minimum monitoring requirements at OAC 3754-33-07(B)(11). Annual acute toxicity monitoring is proposed for the life of the permit. The proposed monitoring will adequately characterize toxicity in the plant's effluent.

Additional Monitoring Requirements
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: land application.

Other Requirements

Compliance Schedule
CSO LTCP - A compliance schedule is proposed to continue for Zanesville to meet complete sewer separation of the LTCP. Details are in Part I.C of the permit.

Nine Minimum Controls
The Zanesville WWTP shall be operated and maintained so that the total loading of pollutants discharged during wet weather is minimized. To accomplish this, the City of Zanesville shall utilize the following technologies under the nine minimum control language in Part II of the permit.

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 adopted in December 2006 (OAC 3745-7-02). These rules require the Zanesville WWTP to have a Class IV 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".

Percent Removal Rate
Based on past five years of data for Total Suspended Solids and $CBOD_5$ the City of Zanesville meets the criteria for 85 percent removal (See Part III, Item 1 in the permit).

Low-Level Free Cyanide Testing
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.

Storm Water Compliance
To comply with industrial storm water regulations, the permittee submitted a form for "No Exposure Certification" which was signed on April 7, 2011. The certification number is 0GRN00208*DG. Compliance with the industrial storm water regulations must be re-affirmed every five years. No later than April 7, 2016, the permittee must submit a new form for "No Exposure Certification" or make other provisions to comply with the industrial storm water regulations.

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

Figure 1. Location of Zanesville WWTP

Figure 2. Diagram of Wastewater Treatment System

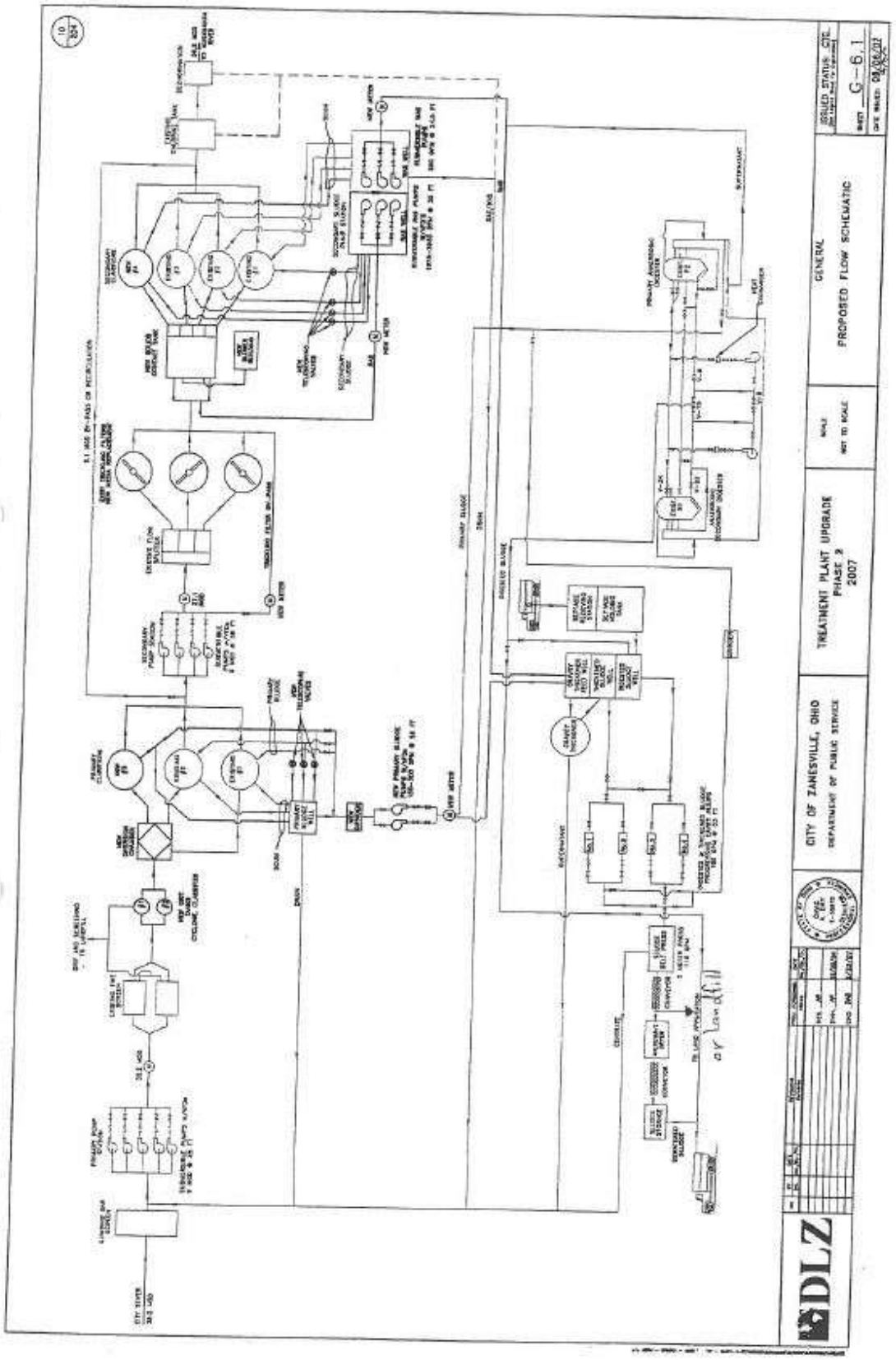

Figure 3. Muskingum River Study Area

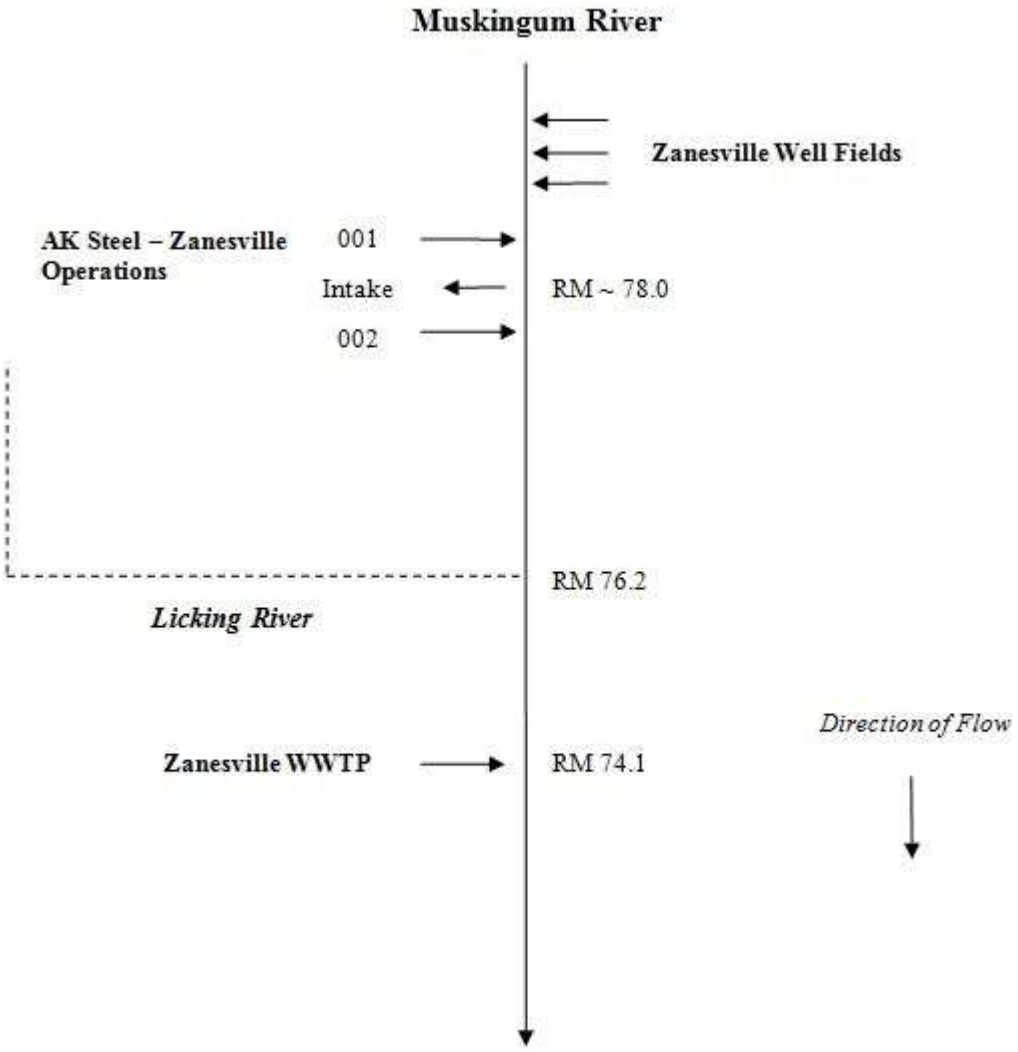

Table 1. Average Annual Effluent Flow Rates

Year	Annual Flow in Million Gallons per Day		
	50th Percentile	95th Percentile	Maximum
2011	6.78	14.972	19.577
2012	5.816	10.06	18.438
2013	6.074	11.365	19.096
2014	6.125	11.208	19.76
2015	6.647	14.185	20.365

Table 2. Sanitary Sewer Overflows Discharges

Year	Number
2011	0
2012	1
2013	2
2014	11
2015	1

Table 3. Bypass Discharges

	Bypass Table 602			Bypass Table 603				
	Observations	Bypass Total Hours	Bypass Volume (MGAL)	Observations	Bypass Total Hours		Bypass Volume (MGAL)	
Year	Number	Mean/Maximum	Mean/Maximum	Number	Mean	Maximum	Mean	Maximum
2011	1	4	2.013	63	5.9254	22.8	0.5773	3.78
2012	1	0	0	25	3.106	12.6	0.2644	1.74
2013	1	0.583	0.0097	31	4.529	17.25	0.31742	1.32
2014	1	3	0.8	22	6.5886	23.5	0.62	3.45
2015	1	0.1	0	23	7.7565	24	0.85435	3.61

Table 4. Combined Sewer Overflow Discharges

Station	Number of Occurrences	Maximum Volume (Million Gallons)	Average Volume (Million Gallons)
005	7	ND	ND
006	127	1.171	0.10618
007	1	ND	ND
008	16	ND	ND
009	156	2.67949	0.22701
010	3	ND	ND
011	0	ND	ND
012	3	ND	ND
013	21	ND	ND
014	3	ND	ND
015	32	ND	ND
016	18	ND	ND
017	171	6.364	0.14454
021	5	ND	ND
024	198	3.0002	0.28931
052	6	ND	ND

ND = not determined

Table 5. Effluent Characterization Using Ohio EPA and Pretreatment Data

	PT	PT	PT	PT	OEPA
Parameter (µg/L)	**8/2/2011**	**8/23/2012**	**11/20/2013**	**9/26/2014**	**10/7/2013**
Antimony	AA (2.0)	AA (1.0)	AA (10)	AA (5.0)	NA
Arsenic	1.3	AA (1.0)	AA (10)	AA (5.0)	AA (2.0)
Barium	NA	NA	NA	NA	35
Cadmium	AA (0.5)	AA (1.0)	AA (10)	AA (3.0)	AA (0.2)
Chromium	AA (2.0)	AA (1.0)	AA (10)	AA (7.0)	AA (2.0)
Copper	8.0	AA (1.0)	AA (10)	9.0	9.8
Cyanide, Free	NA	NA	NA	NA	AA (5.0)
Iron	NA	NA	NA	NA	210
Lead	AA (2.0)	AA (1.0)	79	AA (10)	AA (2.0)
Molybdenum	NA	NA	NA	NA	NA
Nickel	AA (0.2)	AA (1.0)	AA (10)	AA (8.0)	3.1
Nitrate+Nitrite	NA	NA	NA	NA	15.2
Selenium	AA (1.0)	AA (1.0)	AA (10)	AA (4.0)	AA (2.0)
Silver	AA (0.2)	AA (1.0)	AA (10)	AA (5.0)	NA
Strontium	NA	NA	NA	NA	215
Total Filterable Residue	NA	NA	NA	NA	538
Zinc	31	AA (1.0)	21	27	24

AA = not-detected (analytical method detection limit)

OEPA = data from analyses by Ohio EPA

PT = data from pretreatment program annual reports

NA = not analyzed

Table 6. Effluent Characterization Using Self-Monitoring Data

Summary of current permit limits and unaltered discharge monitoring report for Zanesville outfall 0PE00000001 (September 2010 - August 2015). All values are based on annual records unless otherwise indicated.

Parameter	Season	Units	Current Permit Limits		# Obs.	Percentiles		Data Range
			30 day	Daily		50th	95th	
Water Temperature	Annual	°C	Monitor		1826	16	22.3	7.7-24
Total Precipitation	Annual	Inches	Monitor		822	0.1	0.879	0-2.01
Dissolved Oxygen	Summer	mg/L	Monitor		920	7	8.1	4-9.3
	Winter	mg/L	Monitor		906	7.1	8.5	1.8-78
Total Suspended Solids	Annual	mg/L	30	45[a]	778	7	20	0-104
		kg/day	2050	3070[a]	778	167	558	0-5160
Oil and Grease	Annual	mg/L	--	10	127	0	3.37	0-6.5
Total Nitrogen	Annual	mg/L	Monitor		60	20	37.7	0-1200
Ammonia	Summer	mg/L	--	8.85	389	0.308	1.67	0.058-4.62
		kg/day	--	603	389	0.632	4.3	0.069-11.5
	Winter	mg/L	--	12.7	381	6.94	47.7	1.36-213
		kg/day	--	866	381	17.6	156	1.69-668
Total Kjeldahl Nitrogen	Annual	mg/L	Monitor		60	1.11	10	0-14.3
Nitrate+Nitrite	Annual	mg/L	Monitor		60	17.6	31.2	0-36.7
Phosphorus	Annual	mg/L	Monitor		60	3.22	5.1	0.66-11.4
Cyanide, Free	Annual	mg/L	Monitor		20	0.0045	0.009	0-0.009
Nickel	Annual	µg/L	Monitor		20	2.27	7.2	0-12.4
Zinc	Annual	µg/L	Monitor		20	27.8	50.6	14.3-95.1
Cadmium	Annual	µg/L	Monitor		20	0.104	23.9	0-42.8
Lead	Annual	µg/L	Monitor		20	1.43	2.94	0-3.42

Table 6. (Continued)

Parameter	Season	Units	Current Permit Limits		# Obs.	Percentiles		Data Range
			30 day	Daily		50th	95th	
Chromium	Annual	µg/L	Monitor		20	2.98	10.3	0-11.3
Copper	Annual	µg/L	Monitor		60	10.1	27.8	0-82
Dissolved Hexavalent Chromium	Annual	µg/L	Monitor		60	10	10	10-20
E. coli	Annual	#/100 mL	126	284[a]	361	14	173	1-1370
Flow Rate	Summer	MGD	Monitor		920	5.7	10.2	2.15-18.4
	Winter	MGD	Monitor		906	6.73	14	2.34-20.4
	Annual	MGD	Monitor		1826	6.17	12.6	2.15-20.4
Chlorine, Total Residual	Summer	mg/L	--	0.038	920	0.001	0.0291	0.001-1.2
Mercury	Annual	ng/L	12	1700	52	3.9	8.22	0-10.2
		kg/day	0.00082	0.12	52	0.0000904	0.000227	0-0.000357
pH, Maximum	Annual	S.U.	--	9.0	1826	7.3	7.5	6.6-8.4
pH, Minimum	Annual	S.U.	--	6.5	1826	7.1	7.3	6.4-7.5
Total Filterable Residue	Annual	mg/L	Monitor		48	699	928	5.9-973
$CBOD_5$	Annual	mg/L	25	40.0[a]	765	0	10	0-57
		kg/day	1710	2730[a]	765	0	353	0-2310

a = weekly average

$CBOD_5$ = 5-day carbonaceous biochemical oxygen demand

MGD = Million gallons per day

Table 7. Projected Effluent Quality

Parameter	Units	Number of Samples	Number > MDL	PEQ Average	PEQ Maximum
Ammonia (Summer)	mg/L	389	389	0.688	1.426
Ammonia (Winter)	mg/L	381	381	2.141	4.784
Arsenic	µg/L	5	1	3.606	4.94
Barium	µg/L	1	1	158.4	217
Cadmium	µg/L	23	10	2.716	3.01
Chlorine, Total Residual	µg/L	920	920	15.77	21.60
Chromium	µg/L	25	14	8.86	15.09
Dissolved Hexavalent Chromium	µg/L	61	60	14.60	20.00
Copper	µg/L	65	45	30.24	47.81
Cyanide, Free	mg/L	20	18	9.198	12.60
Total Filterable Residue	mg/L	47	47	843.3	1015
Iron	µg/L	1	1	950.5	1302
Lead	µg/L	17	13	3.495	4.788
Mercury	ng/L	52	49	7.446	10.20
Molybdenum	mg/L	--	--	--	--
Nickel	µg/L	25	15	11.79	16.15
Nitrate+Nitrite	mg/L	61	55	26.79	36.7
Selenium	µg/L	5	0	--	--
Strontium	µg/L	1	1	973.1	1333
Zinc	µg/L	25	24	47.11	68.64

PEQ = Projected Effluent Quality

Table 8. Summary of Acute Toxicity Results

	Ceriodaphnia Dubia	*Pimephales promelas*
Date	**Acute Toxicity (TU_a)**	**Acute Toxicity (TU_a)**
12/21/2010	NT	AA
3/15/2011	NT	AA
6/2/2011	NT	AA
8/24/2011	NT	AA
12/13/2011	NT	AA
3/7/2012	NT	AA
6/7/2012	NT	AA
8/23/2012	AA	AA
12/19/2012	NT	AA
3/19/2013	NT	AA
6/18/2013	NT	AA
8/12/2013	AA	AA
12/4/2013	NT	AA
3/5/2014	NT	AA
6/4/2014	NT	AA
8/11/2014	AA	NT
8/27/2014	NT	AA
12/4/2014	NT	AA
3/11/2015	NT	AA
6/10/2015	NT	AA
8/12/2015	AA	AA

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

NT = not tested

Table 9. Ohio EPA Toxicity Screening Results for Outfall 001

	Ceriodaphnia dubia								*Pimephales promelas*							
	24 Hours				48 Hours				24 Hours				48 Hours			
Collection Date	**UP**	**C**	**%M**	**TU_a**	**UP**	**C**	**%M**	**TU_a**	**UP**	**C**	**%M**	**TU_a**	**UP**	**C**	**%M**	**TU_a**
10/7/2013	0	0	0	ND	0	0	0	ND	0	0	0	ND	0	0	0	ND
10/8/2013	0	0	0	ND	0	0	0	ND	0	0	0	ND	0	0	0	ND
10/7/13-10/8/13[a]	0	0	0	ND	0	0	0	ND	0	0	0	ND	0	0	0	ND

TU_c = chronic toxicity units

AA = below detection limit (0.2 TU_a, 1.0 TU_c)

a = 24-hour composite sample

C = laboratory control water

%M = percent mortality in 100% effluent

ND = not determined

TU_a = acute toxicity units

UP = percent mortality in upstream control water

Table 10. Use Attainment Table

A Summary of the Muskingum River Use Designation Status, and Causes/Sources of Impairment, 2006 & 2009 Surveys.

Location	Year	River Mile	Attainment Status	Causes	Sources
Muskingum River (17-001) - WWH existing					
Ellis Dam Pool	2006	87.0	FULL		
Ellis Dam Tailwaters	2006	84.6	FULL		
Zanesville Dam Pool	2006	80.2	FULL		
Downstream of AK Steel discharges	2006	77.6	FULL		
Zanesville Dam Tailwaters	2006	75.8	FULL		
Upstream of Gould National Battery property	2009	74.7	FULL		
Adjacent to Gould National Battery property	2009	74.2	PARTIAL	Direct Habitat Alterations	Impoundment
Downstream of Gould National Battery property	2009	73.5	PARTIAL	Direct Habitat Alterations	Impoundment
Downstream of Zanesville WWTP	2006	72.4	FULL		
Philo Dam Tailwaters	2006	67.3	FULL		

WWH = Warmwater Habitat

WWTP = Wastewater Treatment Plant

Table 11. Water Quality Criteria in the Study Area

Parameter	Units					Inside Mixing Zone Maximum
		Human Health	Agri-culture	Aquatic Life	Maximum Aquatic Life	
Ammonia (Summer)	mg/L	--	--	--	--	43
Ammonia (Winter)	mg/L	--	--	--	--	50
Arsenic	µg/L	--	100	150	340	680
Barium	µg/L	--	--	220	2000	4000
Cadmium	µg/L	--	50	4.5	11	22
Chlorine, Total Residual	µg/L	--	--	11	19	38
Chromium	µg/L	--	100	160	3400	6800
Dissolved Hexavalent Chromium	µg/L	--	--	11	16	31
Copper	µg/L	1300	500	18	29	58
Cyanide, Free	mg/L	220	--	0.012	0.046	0.092
Total Filterable Residue	mg/L	--	--	1500	--	--
Lead	µg/L	--	100	17	330	660
Mercury	ng/L	12	10000	910	1700	3400
Molybdenum	µg/L	--	--	20000	190000	370000
Nickel	µg/L	4600	200	100	910	1800
Nitrate+Nitrite	mg/L	--	100	--	--	--
Selenium	µg/L	11000	50	5	--	--
Silver	µg/L	--	--	1.3	6.1	12
Zinc	µg/L	69000	25000	230	230	460

Table 12. Instream Conditions and Discharger Flow

Parameter	Units	Season	Value	Basis
Muskingum River Flows				
1Q10	cfs	annual	532	USGS gage number 03144500; 1921-1984 data
7Q10	cfs	annual	557	USGS gage number 03144500; 1921-1984 data
30Q10	cfs	summer	614	USGS gage number 03144500; 1921-1984 data
		winter	1112	USGS gage number 03144500; 1921-1984 data
Harmonic Mean	cfs	annual	2418	USGS gage number 03144500; 1921-1984 data
Mixing Assumption	%	average	95	Stream-to-discharge ratio
		maximum	95	Stream-to-discharge ratio
Licking River Flows				
1Q10	cfs	annual	54.3	USGS gage number 03147500; 1939-1991 data
7Q10	cfs	annual	64.8	USGS gage number 03147500; 1939-1991 data
30Q10	cfs	summer	73.1	USGS gage number 03147500; 1939-1991 data
		winter	157	USGS gage number 03147500; 1939-1991 data
Harmonic Mean	cfs	annual	252	USGS gage number 03147500; 1939-1991 data
Mixing Assumption	%	average	85	Stream-to-discharge ratio
		maximum	85	Stream-to-discharge ratio
Zanesville WWTP flow	cfs	annual	17.0	Average Design Flow
Ak Steel - Zanesville 001 flow	cfs	annual	2.97	DMR; 2010-2015; 95th Percentile Monthly Average
Ak Steel - Zanesville 002 flow	cfs	annual	0.85	DMR; 2010-2015; 95th Percentile Monthly Average
Hardness	mg/L	annual	218	STORET; 2006; n=5; Station R16S34 Average
Background Water Quality for the Muskingum River				
Arsenic	µg/L	annual	3.1	STORET; 2006; n=6; 0<MDL
Barium	µg/L	annual	64.8	STORET; 2006; n=6; 0<MDL
Cadmium	µg/L	annual	0	STORET; 2006; n=6; 6<MDL
Chlorine, Total Residual	µg/L	annual	--	No representative data available.
Chromium	µg/L	annual	0	STORET; 2006; n=6; 6<MDL
Dissolved Hexavalent Chromium	µg/L	annual	--	No representative data available.
Copper	µg/L	annual	0	STORET; 2006; n=6; 6<MDL
Cyanide, Free	mg/L	annual	--	No representative data available.

Table 12. (Continued)

Parameter	Units	Season	Value	Basis
Total Filterable Residue	mg/L	annual	362	STORET; 2006; n=6; 0<MDL
Lead	µg/L	annual	3.1	STORET; 2006; n=6; 3<MDL
Mercury	ng/L	annual	--	No representative data available.
Molybdenum	mg/L	annual	--	No representative data available.
Nickel	µg/L	annual	0	STORET; 2006; n=6; 6<MDL
Nitrate+Nitrite	mg/L	annual	1.71	STORET; 2006; n=6; 0<MDL
Selenium	µg/L	annual	0	STORET; 2006; n=6; 6<MDL
Silver	µg/L	annual	--	No representative data available.
Zinc	µg/L	annual	14.3	STORET; 2006; n=6; 3<MDL
Background Water Quality for the Licking River				
Arsenic	µg/L	annual	4.5	STORET; 2008; n=5; 0<MDL
Barium	µg/L	annual	66.6	STORET; 2008; n=5; 0<MDL
Cadmium	µg/L	annual	0	STORET; 2008; n=5; 5<MDL
Chlorine, Total Residual	µg/L	annual	--	No representative data available.
Chromium	µg/L	annual	0	STORET; 2008; n=5; 5<MDL
Dissolved Hexavalent Chromium	µg/L	annual	--	No representative data available.
Copper	µg/L	annual	1.9	STORET; 2008; n=5; 1<MDL
Cyanide, Free	mg/L	annual	--	No representative data available.
Total Filterable Residue	mg/L	annual	328	STORET; 2008; n=5; 0<MDL
Lead	µg/L	annual	0	STORET; 2008; n=5; 5<MDL
Mercury	ng/L	annual	--	No representative data available.
Molybdenum	mg/L	annual	--	No representative data available.
Nickel	µg/L	annual	2.8	STORET; 2008; n=5; 0<MDL
Nitrate+Nitrite	mg/L	annual	0.64	STORET; 2008; n=5; 0<MDL
Selenium	µg/L	annual	0	STORET; 2008; n=5; 5<MDL
Silver	µg/L	annual	--	No representative data available.
Zinc	µg/L	annual	7.4	STORET; 2008; n=5; 4<MDL

WWTP = Wastewater Treatment Plant

DMR = Discharge Monitoring Report

USGS = United States Geological Survey

MDL = Method Detection Limit

STORET = United States Environmental Protection Agency STOrage and RETrieval Data Warehouse

Table 13. Summary of Effluent Limits to Maintain Applicable Water Quality Criteria

Parameter	Units	Human Health	Agri-culture	Aquatic Life	Maximum Aquatic Life	Inside Mixing Zone Maximum
Ammonia (Summer)	mg/L	--	--	--	--	43
Ammonia (Winter)	mg/L	--	--	--	--	50
Arsenic	µg/L	--	12349	4481	9730	680
Barium	µg/L	--	--	5603	65267	4000
Cadmium	µg/L	--	6378	137	318	22
Chlorine, Total Residual	µg/L	--	--	411	672	38
Chromium	µg/L	--	12756	4881	98190	6800
Dissolved Hexavalent Chromium	µg/L	--	--	336	462	31
Copper	µg/L	165825	63779	544	837	58
Cyanide, Free	mg/L	28060	--	0.366	1.328	0.092
Total Filterable Residue	mg/L	--	--	35222	--	--
Lead	µg/L	--	12396	436	9451	660
Mercury	ng/L	12	10000	910	1700	3400
Molybdenum	µg/L	--	--	747252	6720000	370000
Nickel	µg/L	586735	25482	3043	26274	1800
Nitrate+Nitrite	mg/L	--	15371	--	--	--
Selenium	µg/L	1403000	6378	153	--	--
Silver	µg/L	--	--	40	176	12
Zinc	µg/L	8800000	3187000	6651	6261	460

Table 14. Parameter Assessment

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

No parameters meet these criteria

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

Selenium	Chromium	Iron
Molybdenum	Arsenic	Silver
Lead	Strontium	Nickel

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

Total Filterable Residue	Barium	Zinc	Cadmium
Nitrate+Nitrite	Cyanide, Free	Ammonia	

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.

Mercury	Chlorine, Total Residual
Copper (>75 percent)	Dissolved Hexavalent Chromium

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.

No parameters meet these criteria

PEQ = Projected Effluent Quality
PEL = Projected Effluent Limit
WLA = wasteload allocation
WQS = water quality standard

Table 15. Final Effluent Limits for Outfall 001

Parameter	Units	Concentration		Loading (kg/day)[a]		Basis[b]
		30 Day Average	Daily Maximum	30 Day Average	Daily Maximum	
Water Temperature	℃	- - - - - - - - - - - Monitor - - - - - - - - - - - -				EP, M
Total Precipitation	Inches	- - - - - - - - - - - Monitor - - - - - - - - - - - -				EP, M
Dissolved Oxygen	mg/L	- - - - - - - - - - - Monitor - - - - - - - - - - - -				EP, PD
Total Suspended Solids	mg/L	30	45[c]	2050	3070[c]	EP, PD
Oil & Grease	mg/L	--	10	--	--	WQS, EP
Nitrogen, Total	mg/L	- - - - - - - - - - - Monitor - - - - - - - - - - - -				EP, BTJ
Ammonia						
Summer	mg/L	--	8.85	--	603	EP, PD
Winter	mg/L	--	12.7	--	866	EP, PD
Kjeldahl Nitrogen, Total	mg/L	- - - - - - - - - - - Monitor - - - - - - - - - - - -				EP, BTJ
Nitrate+Nitrite	mg/L	- - - - - - - - - - - Monitor - - - - - - - - - - - -				EP, BTJ
Phosphorus	mg/L	- - - - - - - - - - - Monitor - - - - - - - - - - - -				EP, BTJ
Orthophosphate, Dissolved (as P)	mg/L	- - - - - - - - - - - Monitor - - - - - - - - - - - -				SB1
Nickel	µg/L	- - - - - - - - - - - Monitor - - - - - - - - - - - -				EP, M
Zinc	µg/L	- - - - - - - - - - - Monitor - - - - - - - - - - - -				EP, M
Cadmium	µg/L	- - - - - - - - - - - Monitor - - - - - - - - - - - -				EP, M
Lead	µg/L	- - - - - - - - - - - Monitor - - - - - - - - - - - -				EP, M
Chromium	µg/L	- - - - - - - - - - - Monitor - - - - - - - - - - - -				EP, M
Copper	µg/L	- - - - - - - - - - - Monitor - - - - - - - - - - - -				EP, RP
Dissolved Hexavalent Chromium	µg/L	- - - - - - - - - - - Monitor - - - - - - - - - - - -				EP, RP
E. coli (Summer Only)	#/100 mL	126	284[c]	--	--	EP, WQS
Flow Rate	MGD	- - - - - - - - - - - Monitor - - - - - - - - - - - -				EP, M
Chlorine, Total Residual	mg/L	--	0.038	--	--	EP, M
Mercury	ng/L	- - - - - - - - - - - Monitor - - - - - - - - - - - -				RP
Cyanide, Free	mg/L	- - - - - - - - - - - Monitor - - - - - - - - - - - -				EP, M

Table 15. (Continued)

Parameter	Units	Concentration		Loading (kg/day)[a]		Basis[b]
		30 Day Average	Daily Maximum	30 Day Average	Daily Maximum	
Acute Toxicity						
Ceriodaphnia dubia	TU_a	- - - - - - - - - - Monitor - - - - - - - - - - -				WET
Pimephales promelas	TU_a	- - - - - - - - - - Monitor - - - - - - - - - - -				WET
pH	SU	6.5 - 9.0		--	--	WQS, EP
Total Filterable Residue	mg/L	- - - - - - - - - - Monitor - - - - - - - - - - -				EP, M
$CBOD_5$	mg/L	25	40[c]	1710	2730[c]	EP, PD

a = Effluent loadings based on wet weather flow of 18 MGD (OAC 3745-33-05(C)(c))

b = Definitions

BTJ = Best Technical Judgment

EP = Existing Permit

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

RP = Reasonable Potential for requiring water quality-based effluent limits and monitoring requirements in NPDES permits (3745-33-07(A))

WET = Whole Effluent Toxicity (CFR 40 part 132, Great Lakes Initiative procedure 6 and OAC 3745-33-07(B))

WLA = Wasteload Allocation procedures (OAC 3745-2)

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

SB1 = Implementation of Senate Bill 1 (ORC 6111.03)

PD = Plant Design

c = Weekly average limit

MGD = Million gallons per day

S.U. = Standard Units

TU_a = acute toxicity units

$CBOD_5$ = 5-day carbonaceous biochemical oxygen demand

P = Phosphorus