

National Pollutant Discharge Elimination System (NPDES) Permit Program

FACT SHEET

Regarding an NPDES Permit To Discharge to Waters of the State of Ohio  
for Fairborn Water Reclamation Facility

Public Notice No.: 16-03-015  
Public Notice Date: March 16, 2016  
Comment Period Ends: April 16, 2016

Ohio EPA Permit No.: 1PD00002\*ND  
Application No.: OH0025062

Name and Address of Applicant:

**City of Fairborn  
44 West Hebble Street  
Fairborn, OH 45324**

Name and Address of Facility Where  
Discharge Occurs:

**Fairborn Water Reclamation Center  
6920 Upper Valley Road  
Huber Heights, OH 45424  
Montgomery County**

Receiving Water: Mad River

Subsequent Stream Network: Great Miami River and 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: flow, temperature, dissolved oxygen, CBOD5, total suspended solids, ammonia-nitrogen, E. coli, total phosphorus, nitrite+nitrate-nitrogen, total Kjeldahl nitrogen, oil and grease, pH, cadmium, total chromium, dissolved hexavalent chromium, lead, mercury, nickel, zinc, total filterable residue and whole effluent toxicity.

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.

Annual chronic toxicity monitoring with the determination of acute endpoints 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.

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; downstream public water supply notification; 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 Ned Sarle, (937) 285-6096 [ned.sarle@epa.ohio.gov](mailto:ned.sarle@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](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

Fairborn Water Reclamation Center discharges to the Mad River at River Mile 9.62. Figure 1 shows the approximate location of the facility.

This segment of the Mad River is described by Ohio EPA River Code: 14-100, U.S. EPA River Reach Code: 05080001-001, County: Montgomery, Ecoregion: Eastern Corn Belt Plains. The Mad River is designated for the following uses under Ohio's WQS (OAC 3745-1-21): Warmwater Habitat, Agricultural Water Supply, Industrial Water Supply and 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

Fairborn Water Reclamation Facility was constructed in 1959 and last upgraded in 2009. The average design flow is 6.0 million gallons per day (MGD) and the peak hydraulic capacity is 17.5 MGD. Fairborn Water Reclamation Facility serves the City of Fairborn and Wright Pat Air Force Base for a total of 32,770 customers. Fairborn Water Reclamation Facility has the following treatment processes which are shown on Figure 2:

- Influent pumping
- Screening and grit removal
- Activated sludge aeration using oxidation ditches
- Final clarification
- Ultraviolet disinfection

The City of Fairborn has 100% separated sewers. The City of Fairborn does not have an approved pretreatment program. The City of Fairborn does not have any industrial users.

The City of Fairborn's potable water comes from ground water.

Fairborn Water Reclamation Facility utilizes the following sewage sludge treatment processes:

- Aerobic digestion
- Belt filter press dewatering

Treated sludge is disposed of in a municipal landfill. Table 1 shows the last five years of sludge removed from Fairborn Water Reclamation Facility.

#### Description of Existing Discharge

Fairborn Water Reclamation Facility had no effluent violations for January 2010 through December 2014.

Fairborn Water Reclamation Facility has an estimated infiltration/inflow (I/I) rate of 0.5 MGD but performs the following activities to minimize I/I: dye testing, smoke testing, flow monitoring, video inspections, slip lining, manhole rehabilitation and point repair. The annual effluent flow rate for Fairborn Water Reclamation Facility for the previous five years is presented on Table 3.

Fairborn Water Reclamation Facility reports SSOs at station 300. The number of SSOs and dates recorded 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 from Ohio EPA effluent testing.

Table 5 presents chemical specific data compiled from data collected by Ohio EPA.

Table 6. Effluent Characterization Using Self-Monitoring Data presents a summary of unaltered Discharge Monitoring Report (DMR). Data are presented for the period January 2010 to December 2014, and current permit limits are provided for comparison.

Table 7 summarizes the chemical specific data for outfall 1PD00002001 by presenting the average and maximum PEQ values.

Table 8. Summary of Acute and Chronic Toxicity Results summarizes the results of acute and chronic 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 Huffman Dam-Mad River watershed assessment unit, number 05080001 19 03, which includes the Mad River in the vicinity of the Fairborn wastewater plant, is listed as impaired on Ohio's 303(d) list for:

Recreation, TMDL needed

A Total Daily Maximum Load (TMDL) report was approved for the Mad River Watershed in January 2010. The March 24, 2015, Supreme Court of Ohio decision *Fairfield Cty. Bd. of Commrs. v. Nally*, Slip Opinion No. 2015-Ohio-991 vacated all previously approved TMDLs. At the present time, this TMDL is considered a technical guidance document pending final TMDL approval.

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 7-15). 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 multimetric 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 biocriteria. Partial attainment means that one or more of the applicable indices fails meet the biocriteria. Nonattainment means that either none of the applicable indices meet the biocriteria or one of the organism groups indicates poor or very poor performance. An aquatic life use attainment table (see Table 10) 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 Mad River is in full attainment of its aquatic life use upstream and downstream of the Fairborn Water Reclamation Facility. The full TMDL report can be found at this website:  
[http://epa.ohio.gov/portals/35/tmdl/MadRiverTMDL\\_final\\_dec09.pdf](http://epa.ohio.gov/portals/35/tmdl/MadRiverTMDL_final_dec09.pdf)

### 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 Fairborn Water Reclamation Facility 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:

*Statistical Outliers and Other Non-representative Data*

The data were examined and no values were removed from the evaluation.

This data is evaluated statistically, and PEQ values are calculated for each pollutant. Average PEQ ( $PEQ_{avg}$ ) values represent the 95<sup>th</sup> percentile of monthly average data, and maximum PEQ ( $PEQ_{max}$ ) values represent the 95<sup>th</sup> 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 11).

*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. For free flowing streams, WLAs using this method are done using the following general equation: Discharger WLA = (downstream flow x WQS) - (upstream flow x background concentration). Discharger WLAs are divided by the discharge flow so that the allocations are expressed as concentrations. The following dischargers in the Mad River study area were considered interactive (see Figure 3):

- Southwest Regional Wastewater Treatment Plant

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 11 and Table 12. The WLA results to maintain all applicable criteria are presented in Table 13.

The existing permit limits for ammonia-nitrogen were evaluated and found to be adequate to maintain criteria in the Mad River.

#### *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 Fairborn Water Reclamation Facility, the WLA values are 1.0  $TU_a$  and 16.4  $TU_c$ .

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):

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

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 13. 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 [ $(PEQ_{avg} \div PEL_{avg}) \times 100$ , or  $(PEQ_{max} \div PEL_{max}) \times 100$ ], the parameters are assigned to group 3, 4, or 5. The groupings are listed in Table 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 Fairborn Water Reclamation Facility outfall 1PD00002001 and the basis for their recommendation. Unless otherwise indicated, the monitoring frequencies proposed in the permit are continued from the existing permit.

#### *Temperature and Flow*

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

#### *Dissolved Oxygen, Total Suspended Solids, Ammonia, and CBOD<sub>5</sub>*

The limits proposed for dissolved oxygen, total suspended solids, ammonia and 5-day carbonaceous biochemical oxygen demand are all based on plant design criteria. These limits are protective of WQS.

#### *Dissolved Orthophosphate, Total Phosphorus*

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.

This facility does not have a final effluent limit for total phosphorus but does have monitoring requirements. Monitoring of total phosphorus in their effluent as well as upstream and downstream of their discharges will continue. Facilities which do not have effluent limits for total phosphorus must develop a study that evaluates the technical and financial capability of their existing treatment facilities to reduce total phosphorus to 1 mg/l or lower. This study is required by Ohio Senate Bill 1, which was signed by the Governor on April 2, 2015. The study must be submitted to Ohio EPA by December 1, 2017. Ohio EPA is implementing this Ohio Senate Bill 1 requirement outside of NPDES permits. Instead, Ohio EPA will send a letter instructing all applicable facilities how to comply with the evaluation study required by Ohio Senate Bill 1.

#### *Oil and Grease, E. coli, pH*

Limits proposed for oil and grease, pH, and *Escherichia coli* are based on WQS (OAC 3745-1-07). Class A Primary Contact *E. coli* standards apply to the Mad River.

#### *Lead, Mercury, Chromium, Nickel, Zinc, Cadmium, Copper, Nitrate + Nitrite and Total Filterable Residue*

The Ohio EPA risk assessment (Table 14) places lead, mercury, chromium, nickel, zinc cadmium, copper, nitrate + nitrite and total filterable residue 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.

#### *Cyanide (free), Hexavalent Chromium, Heptachlor Epoxide, Strontium, Iron and Barium*

The Ohio EPA risk assessment (Table 14) places free cyanide, hexavalent chromium, heptachlor epoxide, strontium, iron and barium 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, and it is proposed that current monitoring for hexavalent chromium be deleted.

#### *Whole Effluent Toxicity Reasonable Potential*

Based on evaluating the WET data presented in Table 8. Summary of Acute and Chronic Toxicity Results

and Table 9 and other pertinent data under the provisions of OAC 3745-33-07(B), the Fairborn Water Reclamation Facility 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 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.

#### *Total Suspended Solids, Ammonia and Carbonaceous Biochemical Oxygen Demand (5 day) Loadings*

The existing permitted loads contained several minor errors. The permitted loads were recalculated using the permitted concentration limits, wastewater treatment plant design of 6.0 MGD and a conversion factor of 3.785.

#### *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: removal to sanitary landfill or hauled to another NPDES Permitted facility. The facility no longer land applies sludge as a Class A or Class B material. Monitoring and reporting requirements for station 581 and 584 have been removed in this permit renewal.

#### 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 adopted in December 2006 (OAC 3745-7-02). These rules require the Fairborn Water Reclamation Facility to have a Class III wastewater treatment plant operator in charge of the sewage treatment plant operations discharging through outfall 1PD00002001. These rules also require the permittee to designate one or more operator of record to oversee the technical operation of the treatment works.

In accordance with OAC 3745-7-04, the permittee has requested that Ohio EPA reduce the minimum staffing requirements from 40 hours to 15 hours. Ohio EPA has reviewed the request and determined that the reduced staffing plan should be granted. Any change in the criteria under which the reduced staffing plan was approved

(such as enforcement status, history of compliance, or provisions included in the plan) will require that the treatment works immediately return to the minimum staffing requirements included in OAC 3745-7-04(C)(1).

#### *Storm Water Compliance*

To comply with industrial storm water regulations, the permittee submitted a form for "No Exposure Certification" which was signed on March 16, 2015. Compliance with the industrial storm water regulations must be re-affirmed every five years. No later than March 15, 2020, 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 Mad River providing information about the discharge. Signage at outfalls is required pursuant to OAC 3745-33-08(A).

#### *Public Water Supply Notification*

An addition to OAC 3745-33-08 requires that permittees discharging wastewater within ten miles of a downstream PWS intake located on the same waterway, must develop spill (or bypass) notification procedures in conjunction with the downstream public water supply operator. Since the City of Dayton operates a public water supply intake less than ten miles downstream from the Fairborn Water Reclamation Facility, an item in Part II of the permit requires the development of notification procedures within six months after the effective date of the permit.

Figure 1. Location of (DISCHARGER)

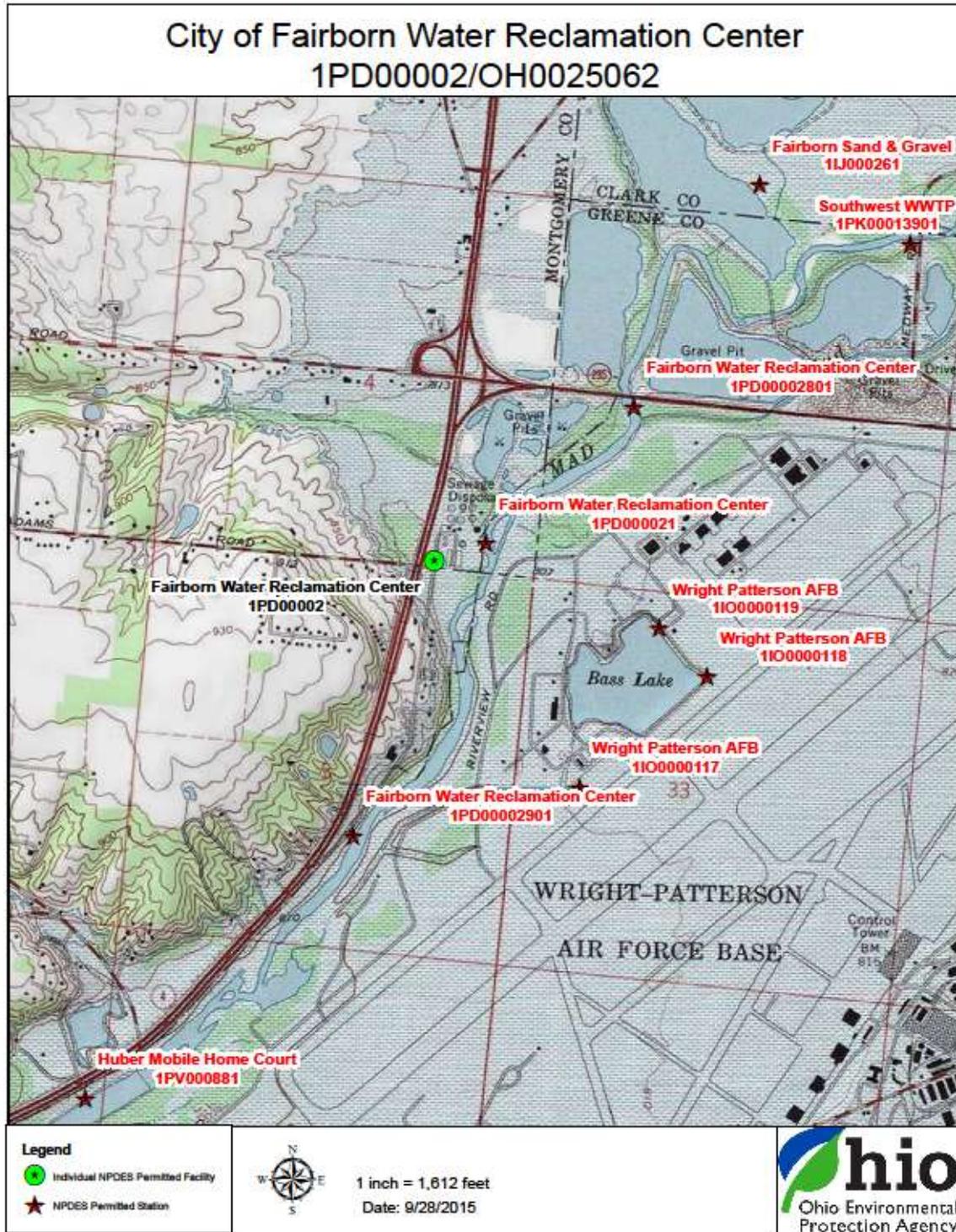
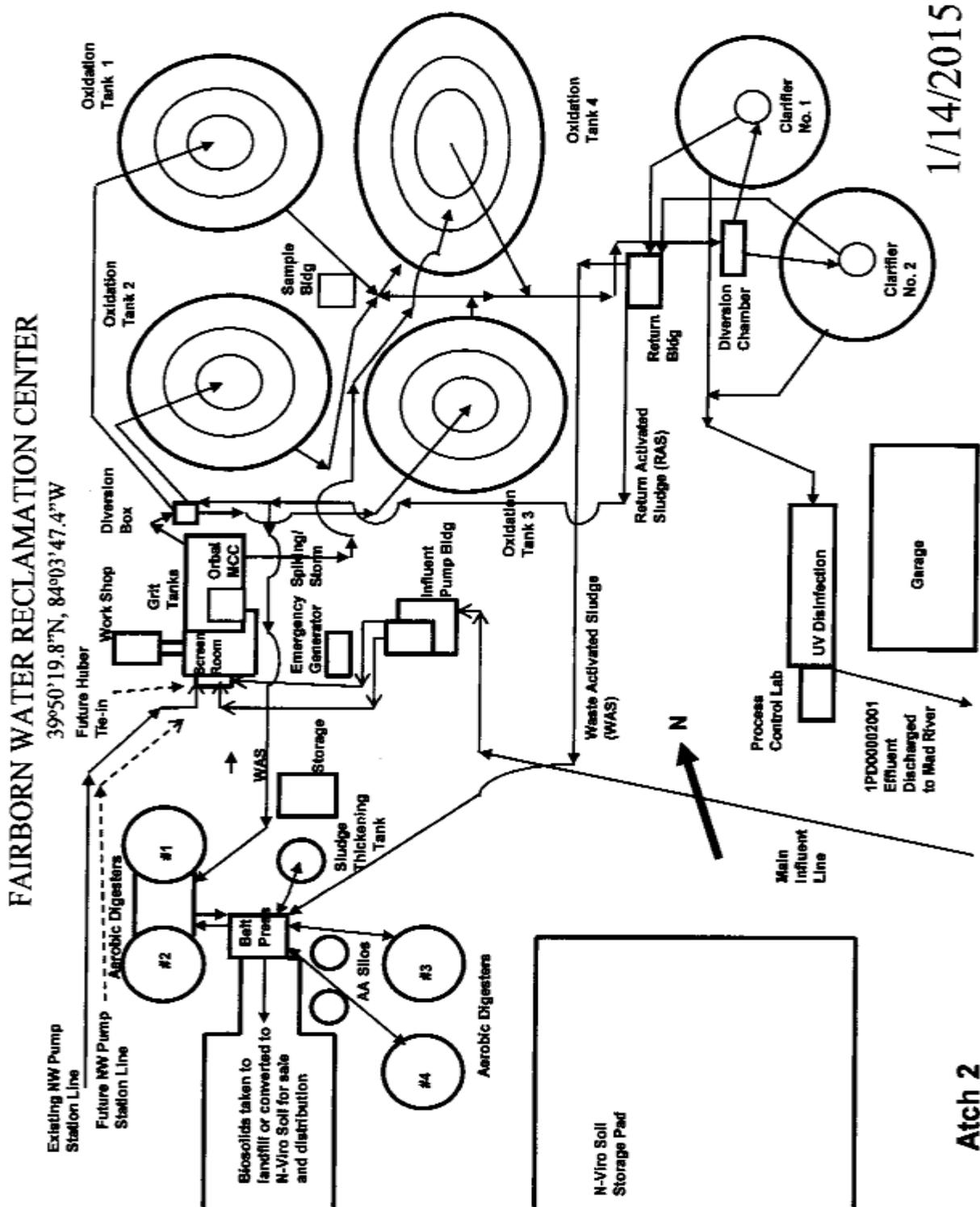
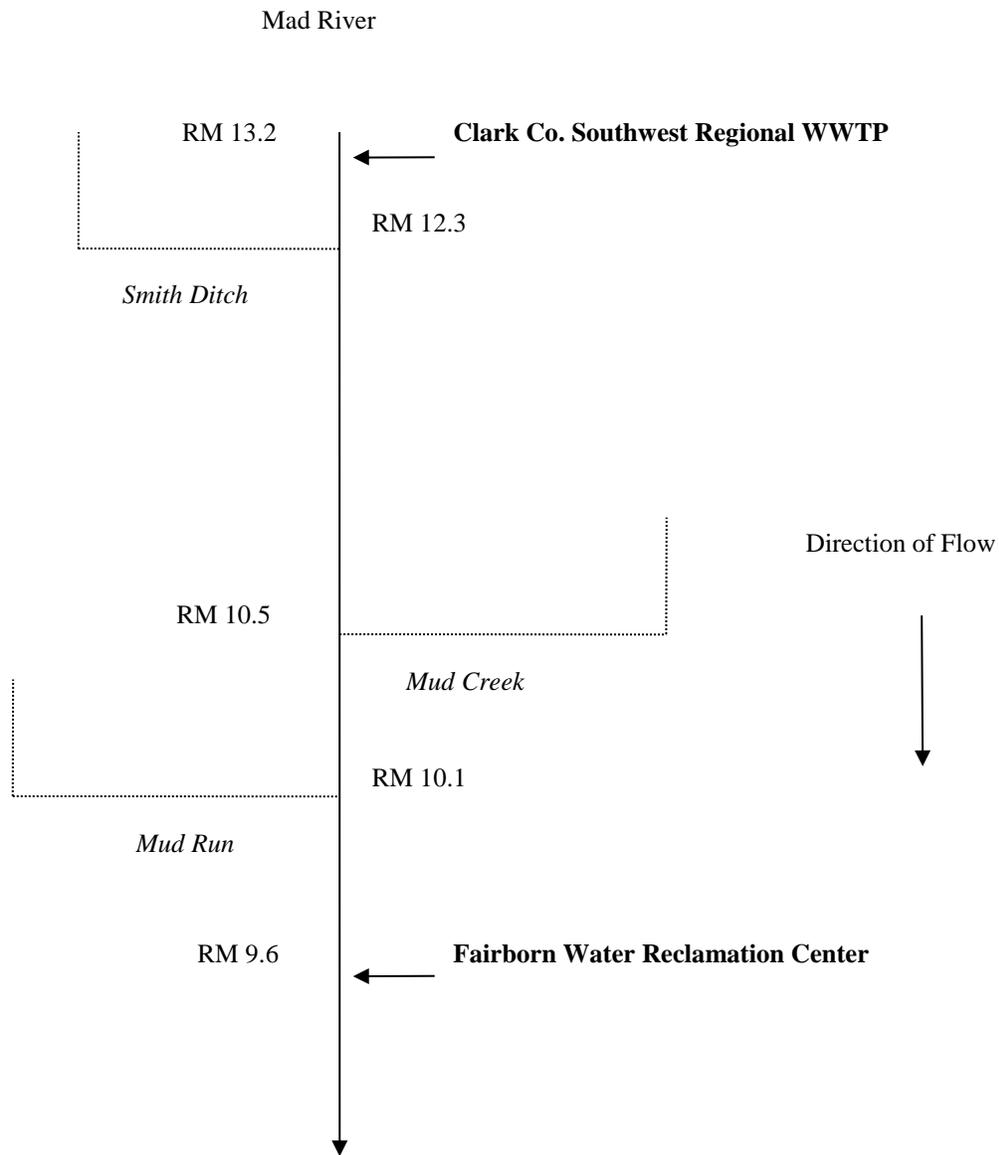


Figure 2. Diagram of Wastewater Treatment System



**Figure 3. Mad River Study Area**



**Table 1. Sewage Sludge Removal**

Year	Dry Tons Removed
2010	665.21
2011	667.37
2012	650.51
2013	638.32
2014	534.95

**Table 2. Effluent Violations for Outfall 001**

Parameter	2010	2011	2012	2013	2014
<i>Total</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>

**Table 3. Average Annual Effluent Flow Rates**

Year	Annual Flow in MGD		
	50th Percentile	95th Percentile	Maximum
2010	4.12	5.45	8.21
2011	4.62	9.18	12.5
2012	3.77	5.53	10.1
2013	3.95	5.70	9.70
2014	4.09	6.30	12.3

MGD = million gallons per day

**Table 4. Sanitary Sewer Overflows Discharges**

<b>Year</b>	<b>Number</b>
2010	8
2011	14
2012	3
2013	11
2014	4

**Table 5. Effluent Characterization Using Ohio EPA data**

PARAMETER	Dates		Unit of Measure
	12/02/2013	4/28/2014	
Aluminum	AA (200)	AA (200)	ug/l
Ammonia	2.59	0.683	mg/l
Arsenic	AA (2.0)	AA (2.0)	ug/l
Barium	112	111	ug/l
Cadmium	AA (0.2)	1.1	ug/l
Calcium	84	84.8	mg/l
Carbonaceous Biochemical Oxygen Demand (5 day)	2.7	3.3	mg/l
Chloride	194	191	mg/l
Chromium	AA (2.0)	2.0	ug/l
Copper	5.3	5.3	ug/l
Cyanide, Total	AA (5.0)	AA (5.0)	ug/l
Iron	51	84	ug/l
Lead	AA (2.0)	AA (2.0)	ug/l
Magnesium	31	30.5	mg/l
Manganese	14	15	ug/l
Nickel	2.2	4.5	ug/l
Nitrate+Nitrite	10.9	9.04	mg/l
Oil & Grease	AA (2.0)	AA (2.0)	mg/l
Phosphorus	0.595	1.73	mg/l
Selenium	AA (2.0)	AA (2.0)	ug/l
Strontium	586	469	ug/l
Total Filterable Residue (Dissolved Solids)	724	702	mg/l
Total Kjeldahl Nitrogen	2.46	1.96	mg/l
Total Suspended Solids	AA (5.0)	AA (5.0)	mg/l
Zinc	38	32	ug/l

AA = not-detected (analytical method detection limit)

NA = not applicable

**Table 6. Effluent Characterization Using Self-Monitoring Data**

Parameter	Season	Units	Current Permit Limits		# Obs.	Percentiles		Data Range
			30 day	Daily		50 <sup>th</sup>	95 <sup>th</sup>	
Water Temperature	Annual	C	Monitor		1803	16.5	22.5	9.23-23.6
Dissolved Oxygen	Summer	mg/l	5.0 (min.)		910	6.1	7.07	5.2-8.4
Dissolved Oxygen	Winter	mg/l	5.0 (min.)		893	6.95	8.17	5.26-8.87
Total Suspended Solids	Annual	mg/l	#	#	696	4.25	8.03	0-18
Oil and Grease	Annual	mg/l	10 (max.)		61	0	0	0-7.7
Nitrogen, Ammonia (NH3)	Summer	mg/l	9.1	13.7	353	0.14	1.15	0-2.51
Nitrogen, Ammonia (NH3)	Winter	mg/l	16.5	23.8	342	0.08	1.28	0-3.78
Total Nitrogen Kjeldahl	Annual	mg/l	Monitor		21	1.61	4.04	0-4.93
Nitrite Plus Nitrate, Total	Annual	mg/l	Monitor		232	8.8	12.8	1.34-15
Phosphorus, Total (P)	Annual	mg/l	Monitor		271	1.19	2.14	0.05-4.34
Cyanide, Free	Annual	mg/l	Monitor		4	0	0	0-0
Nickel, Total Recoverable	Annual	ug/l	Monitor		20	0	0	0-0
Zinc, Total Recoverable	Annual	ug/l	Monitor		20	36	41.6	21-42
Cadmium, Total Recoverable	Annual	ug/l	Monitor		20	0	0	0-0
Lead, Total Recoverable	Annual	ug/l	Monitor		20	0	0	0-0
Chromium, Total Recoverable	Annual	ug/l	Monitor		20	0	0	0-0
Copper, Total Recoverable	Annual	ug/l	Monitor		20	8	12	0-12
Chromium, Dissolved Hexavalent	Annual	ug/l	Monitor		20	0	0	0-0
E. coli	Annual	#/100 ml	126	284	280	8	33	1-300
Heptachlor Epoxide	Annual	ug/l	Monitor		4	0	0	0-0
Flow Rate	Annual	MGD	Monitor		1826	4.09	6.75	3.04-12.5
Mercury, Total (Low Level)	Annual	ng/l	Monitor		20	0.915	1.51	0-1.91
pH, Maximum	Annual	S.U.	9.0 (max.)		1801	7.74	7.9	7.37-8.18
pH, Minimum	Annual	S.U.	6.5 (min.)		1801	7.55	7.72	7.18-7.85
Residue, Total Filterable	Annual	mg/l	Monitor		16	753	905	629-910
CBOD 5 day	Summer	mg/l	13.7	21	353	2.5	4.64	0-12.4
CBOD 5 day	Winter	mg/l	20	30.2	339	3.7	6.6	0-13

All values are based on annual records unless otherwise indicated. \* = For minimum pH, 5th percentile shown in place of 50th percentile; \*\* = For dissolved oxygen, 5th percentile shown in place of 95th percentile; a = weekly average.”

# TSS Limits Summer 18 / 27.5 (monthly / weekly)  
 Winter 25.6 / 33.5

**Table 7. Projected Effluent Quality**

Parameter	Units	# of Samples	# > MDL	Average PEQ	Maximum PEQ
<u>Self-Monitoring (DMR) Data</u>					
Ammonia	mg/l	237	237	0.530	1.144
Ammonia	mg/l	170	167	0.511	1.093
Nitrate + Nitrite	mg/l	232	232	7.665	10.5
Phosphorus	mg/l	271	271	1.935	2.891
Cyanide, free	µg/l	4	0	--	--
Nickel	µg/l	22	2	7.592	10.4
Zinc	µg/l	22	22	42.48	52.43
Cadmium	µg/l	22	1	1.847	2.53
Lead	µg/l	20	0	--	--
Chromium, total	µg/l	22	1	3.796	5.2
Copper	µg/l	22	17	11.41	15.86
Chromium <sup>+6</sup> , diss.	µg/l	20	0	--	--
Heptachlor Epoxide	µg/l	4	0	--	--
Mercury	ng/l	20	19	1.408	2.005
Total Filterable Residue	mg/l	18	18	834.3	926.1
<u>Ohio EPA Data</u>					
Barium	µg/l	2	2	310.7	425.6
Iron	µg/l	2	2	233.0	319.2
Strontium	µg/l	2	2	1626.	2227.
Chloride	mg/l	2	2	538.2	737.2

MDL = analytical method detection limit

PEQ = projected effluent quality

**Table 8. Summary of Acute and Chronic Toxicity Results**

Date	<i>Ceriodaphnia dubia</i>		<i>Pimephales promelas</i>	
	TU <sub>a</sub>	TU <sub>c</sub>	TU <sub>a</sub>	TU <sub>c</sub>
9/30/2011	AA	AA	AA	AA
8/5/2012	AA	AA	AA	AA
8/6/2013	AA	AA	AA	AA
8/11/2014	AA	1.2	AA	AA

AA = non-detection; analytical method detection limit of 0.2 TU<sub>a</sub>, 1.0 TU<sub>c</sub>

TU<sub>a</sub> = acute toxicity unit

TU<sub>c</sub> = chronic toxicity unit

**Table 9. Ohio EPA Toxicity Screening Results for Outfall 001**

Date	<i>Pimephales promelas</i>		<i>Ceriodaphnia dubia</i>	
	%M		%M	
	24 hours	48 hours	24 hours	48 hours
12/2/2013	0	0	0	0
12/3/2013	0	0	0	0
12/2-3/20/13 <sup>a</sup>	0	0	0	0
4/28/2014	0	0	0	0
4/29/2014	0	0	0	0
4/28-29/2014 <sup>a</sup>	0	0	0	0

<sup>a</sup> = 24-hour composite sample

%M = percent mortality in 100% effluent

**Table 10. Use Attainment Table**

<b>Location</b>	<b>RM</b>	<b>AL Use Desig.</b>	<b>Attain. Status</b>	<b>Causes of Impairment</b>	<b>Sources of Impairment</b>
Mad R. @ Snider Rd.	17.5	WWH	PARTIAL	Not reported	
Mad R. @ I-70; Dst Clark Co SW Reg.	13.1	WWH	FULL		
Mad R. @ Osborne-Medway Rd.	11.5	WWH	FULL		
Mad R. Dst. Fairborn WWTP	8.6	WWH	FULL		
Mad R. Dst. Hebble Ck.	6.0	WWH	FULL		
Mad R. Dst. Harshman Rd.	4.0	WWH	FULL		
Mad R. @ Findlay St. Dayton	1.6	WWH	FULL		
Mad R. @ Webster St. Dayton	0.3	WWH	FULL		

WWH = warmwater habitat

**Table 11. Water Quality Criteria in the Study Area**

Parameter	Units	Outside Mixing Zone Criteria				Inside Mixing Zone Maximum
		Human Health	Average		Maximum Aquatic Life	
			Agri- culture	Aquatic Life		
Arsenic	µg/l	--	100.	150.	340.	680.
Barium	µg/l	--	--	220.	2000.	4000.
Cadmium	µg/l	--	50.	6.5	18.	37.
Chlorine, tot. res.	µg/l	--	--	11.	19.	38.
Chromium <sup>+6</sup> , diss.	µg/l	--	--	11.	16.	31.
Chromium, tot.	µg/l	--	100.	240.	5000.	10000.
Copper	µg/l	1300.	500.	27.	45.	90.
Iron	µg/l	--	5000.	--	--	--
Lead	µg/l	--	100.	31.	590.	1200.
Mercury <sup>A</sup>	ng/l	12.	10000.	910.	1700.	3400.
Nickel	µg/l	4600.	200.	150.	1300.	2700.
Strontium	µg/l	--	--	21000.	40000.	81000.
Total Filterable Residue	mg/l	--	--	1500.	--	--
Zinc	µg/l	69000.	25000.	340.	340.	690.

<sup>A</sup> Bioaccumulative Chemical of Concern (BCC)

**Table 12. Instream Conditions and Discharger Flow**

Parameter	Units		Value	Basis
<u>Mad River Flows</u>				
7Q10	cfs	annual	134.	USGS gages #03269500 & #03270000 <sup>A</sup>
1Q10	cfs	annual	126.	USGS gages #03269500 & #03270000 <sup>A</sup>
30Q10	cfs	summer	149.	USGS gages #03269500 & #03270000 <sup>A</sup>
		winter	191.	USGS gages #03269500 & #03270000 <sup>A</sup>
Harmonic Mean Flow	cfs	annual	351.	USGS gages #03269500 & #03270000 <sup>A</sup>
<u>Mud Run Flows</u>				
7Q10	cfs	annual	2.46	USGS gages #03269500 & #03270000 <sup>A</sup>
1Q10	cfs	annual	2.83	USGS gages #03269500 & #03270000 <sup>A</sup>
30Q10	cfs	summer	3.02	USGS gages #03269500 & #03270000 <sup>A</sup>
		winter	7.18	USGS gages #03269500 & #03270000 <sup>A</sup>
Harmonic Mean Flow	cfs	annual	13.8	USGS gages #03269500 & #03270000 <sup>A</sup>
<u>Mud Creek Flows</u>				
7Q10	cfs	annual	2.05	USGS gages #03269500 & #03270000 <sup>A</sup>
1Q10	cfs	annual	2.37	USGS gages #03269500 & #03270000 <sup>A</sup>
30Q10	cfs	summer	2.53	USGS gages #03269500 & #03270000 <sup>A</sup>
		winter	6.0	USGS gages #03269500 & #03270000 <sup>A</sup>
Harmonic Mean Flow	cfs	annual	11.5	USGS gages #03269500 & #03270000 <sup>A</sup>
<u>Smith Ditch Flows</u>				
7Q10	cfs	annual	0.41	USGS gages #03269500 & #03270000 <sup>A</sup>
1Q10	cfs	annual	0.47	USGS gages #03269500 & #03270000 <sup>A</sup>
30Q10	cfs	summer	0.50	USGS gages #03269500 & #03270000 <sup>A</sup>
		winter	1.18	USGS gages #03269500 & #03270000 <sup>A</sup>
Harmonic Mean Flow	cfs	annual	2.28	USGS gages #03269500 & #03270000 <sup>A</sup>
Mixing Assumption	%	average	100	Stream-to-discharge ratio
	%	maximum	100	Stream-to-discharge ratio
Instream Hardness	mg/l	annual	346.	STORET; 17 values, 2003 data

<sup>A</sup> To determine the low-flow value, a ratio was developed between these two gages. Periods of record for the two gages are: gage #03269500; 1914-2014, and gage #03270000; 1915-2013.

**Table 12. Instream Conditions and Discharger Flow (continued).**

Parameter	Units		Value	Basis
<b>Background Water Quality</b>				
Arsenic	µg/l	annual	1.0	STORET; 11 values, 1 <MDL, 2003
Barium	µg/l	annual	109.	STORET; 11 values, 0 <MDL, 2003
Cadmium	µg/l	annual	0.	STORET; 11 values, 11 <MDL, 2003
Chlorine, tot. res.	µg/l	summer	0.	No representative data available.
Chromium <sup>+6</sup> , diss.	µg/l	annual	0.	No representative data available.
Chromium, total	µg/l	annual	0.	STORET; 11 values, 11 <MDL, 2003
Copper	µg/l	annual	0.	STORET; 11 values, 11 <MDL, 2003
Iron	µg/l	annual	365.	STORET; 11 values, 0 <MDL, 2003
Lead	µg/l	annual	0.	STORET; 11 values, 11 <MDL, 2003
Mercury	ng/l	annual	0.	No representative data available.
Nickel	µg/l	annual	0.	STORET; 11 values, 11 <MDL, 2003
Strontium	µg/l	annual	598.	STORET; 11 values, 0 <MDL, 2003
Total Filterable Residue	mg/l	annual	425.	STORET; 12 values, 0 <MDL, 2003
Zinc	µg/l	annual	5.0	STORET; 11 values, 2 <MDL, 2003
Fairborn WWTP flow	cfs (mgd)		9.28 (6.0)	Design
Clark County Southwest Regional WWTP flow	cfs (mgd)		6.19 (4.0)	Design

MDL = analytical method detection limit

Ohio EPA = Ohio Environmental Protection Agency

USGS = United States Geological Survey

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

Parameter	Units	Average			Maximum Aquatic Life	Inside Mixing Zone Maximum
		Human Health	Agri Supply	Aquatic Life		
Barium	µg/l	--	--	1217.	18100. <sup>A</sup>	4000.
Cadmium	µg/l	--	1274. <sup>A</sup>	65. <sup>A</sup>	171. <sup>A</sup>	37.
Chromium <sup>+6</sup> , diss. <sup>B</sup>	µg/l	--	--	110. <sup>A</sup>	152. <sup>A</sup>	31.
Chromium, tot. <sup>B</sup>	µg/l	--	2547.	2395.	47560. <sup>A</sup>	10000.
Copper	µg/l	33110. <sup>A</sup>	12740. <sup>A</sup>	269. <sup>A</sup>	428. <sup>A</sup>	90.
Iron <sup>B</sup>	µg/l	--	118400.	--	--	--
Lead <sup>B</sup>	µg/l	--	2547. <sup>A</sup>	309.	5612. <sup>A</sup>	1200.
Mercury <sup>B,C</sup>	ng/l	12.	10000. <sup>A</sup>	910.	1700.	3400.
Nickel <sup>B</sup>	µg/l	117200. <sup>A</sup>	5094. <sup>A</sup>	1497.	12370. <sup>A</sup>	2700.
Strontium <sup>B</sup>	µg/l	--	--	204200. <sup>A</sup>	373500. <sup>A</sup>	81000.
Total Filterable Residue	mg/l	--	--	11150.	--	--
Zinc <sup>B</sup>	µg/l	1757000. <sup>A</sup>	636700. <sup>A</sup>	3348. <sup>A</sup>	3191. <sup>A</sup>	690.

<sup>A</sup> Allocation must not exceed the Inside Mixing Zone Maximum.

<sup>B</sup> Parameter would not require a WLA based on reasonable potential procedures; allocation requested by permits group.

<sup>C</sup> Bioaccumulative Chemical of Concern (BCC); no mixing zone allowed, WQS must be met at end-of-pipe unless the requirements for an exclusion are met as listed in 3745-2-08 (L).

**Table 14. Parameter Assessment**

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

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

Ammonia-W	Chromium <sup>+6</sup> , diss.	Chromium, tot.
Cyanide,free	Heptachlor Epoxide	Iron
Lead	Mercury	Nickel
Nitrate+Nitrite	Strontium	Zinc

Group 3: PEQ<sub>max</sub> < 50% of maximum PEL and PEQ<sub>avg</sub> < 50% of average PEL. No limit recommended, monitoring optional.

Ammonia-S	Barium	Cadmium
Copper	Total Filterable Residue	

Group 4: PEQ<sub>max</sub> ≥ 50% but <100% of the maximum PEL or PEQ<sub>avg</sub> ≥ 50% but < 100% of the average PEL. Monitoring is appropriate.

No parameters meet the criteria of this group.

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

No parameters meet the criteria of this group.

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

**Table 15. Final Effluent Limits for Outfall 001**

Parameter	Units	Concentration		Loading (kg/day) <sup>a</sup>		Basis <sup>b</sup>
		30 Day Average	Daily Maximum	30 Day Average	Daily Maximum	
Water Temperature	°C	----- Monitor -----				M <sup>c</sup>
Flow Rate	MGD	----- Monitor -----				M <sup>c</sup>
pH	SU	6.5 - 9.0				WQS
Dissolved Oxygen	mg/l	5.0 Minimum				PD/EP
Total Suspended Solids						
Summer	mg/l	18	27.5 <sup>d</sup>	409	625 <sup>d</sup>	PD/EP
Winter	mg/l	25.6	33.5 <sup>d</sup>	581	761 <sup>d</sup>	PD/EP
Oil & Grease	mg/l	--	10	--	--	WQS/EP
Ammonia						
Summer	mg/l	9.1	13.7 <sup>d</sup>	207	311 <sup>d</sup>	PD/EP
Winter	mg/l	16.5	23.8 <sup>d</sup>	375	540 <sup>d</sup>	PD/EP
Total Kjeldahl Nitrogen	mg/l	----- Monitor -----				BTJ/EP
Nitrate+Nitrite	mg/l	----- Monitor -----				M <sup>c</sup> /EP
Orthophosphate, Dissolved (as P)	mg/L	----- Monitor -----				SB1
Phosphorus	mg/l	----- Monitor -----				BTJ/EP
Total Filterable Residue	mg/l	----- Monitor -----				M <sup>c</sup> /EP
Nickel	µg/l	----- Monitor -----				M <sup>c</sup> /EP
Zinc	µg/l	----- Monitor -----				M <sup>c</sup> /EP
Cadmium	µg/l	----- Monitor -----				M <sup>c</sup> /EP
Lead	µg/l	----- Monitor -----				M <sup>c</sup> /EP
Chromium	µg/l	----- Monitor -----				M <sup>c</sup> /EP
Copper	µg/l	----- Monitor -----				M <sup>c</sup> /EP
Mercury	ng/l	----- Monitor -----				M <sup>c</sup> /EP
<i>E. coli</i> (Summer Only)	#/100 mL	126	284 <sup>d</sup>	--	--	WQS/EP
Carbonaceous Biochemical Oxygen Demand (5 day)						
Summer	mg/l	13.7	21 <sup>d</sup>	311	477 <sup>d</sup>	PD/EP
Winter	mg/l	20	30.2 <sup>d</sup>	454	686 <sup>d</sup>	PD/EP
Acute Toxicity						
<i>Ceriodaphnia dubia</i>	TU <sub>a</sub>	----- Monitor -----				WET
<i>Pimephales promelas</i>	TU <sub>a</sub>	----- Monitor -----				WET

- <sup>a</sup> Effluent loadings based on average design discharge flow of 6.0 MGD.
- <sup>b</sup> Definitions:
  - BTJ = Best Technical Judgment
  - EP = Existing Permit
  - M = Division of Surface Water NPDES Permit Guidance 1: Monitoring frequency requirements for Sanitary Discharges
  - PD = Plant Design, OAC 3745-33-05(E)
  - SB1 = Implementation of Senate Bill 1 (ORC 6111.03)
  - WET = Whole Effluent Toxicity (OAC 3745-33-07(B))
  - WQS = Ohio Water Quality Standards (OAC 3745-1)
- <sup>c</sup> Monitoring of flow and other indicator parameters is specified to assist in the evaluation of effluent quality and treatment plant performance.
- <sup>d</sup> 7 day average limit