National Pollutant Discharge Elimination System (NPDES) Permit Program

FACT SHEET

Regarding an NPDES Permit To Discharge to Waters of the State of Ohio
for **Taylor Creek WWTP**

Public Notice No.: 09-10-001
Public Notice Date: October 1, 2009
Comment Period Ends: November 1, 2009

OEPA Permit No.: **1PK00015*DD**
Application No.: **OH0040983**

Name and Address of Applicant:

Hamilton County Board of Commissioners
c/o MSD of Greater Cincinnati
1600 Gest Street
Cincinnati, Ohio 45204

Receiving Water: **Great Miami River**

Name and Address of Facility Where Discharge Occurs:

Taylor Creek Regional WWTP
6975 East Miami River Road
Cincinnati, Ohio 45002
Hamilton County

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

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

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

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

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

Summary of Permit Conditions

Outfall 1PK00015001 (Final Effluent to the Great Miami River):

The limits and monitoring proposed at this station are the same as in the current permit with the following exceptions:

- Annual biomonitoring of acute toxicity added. Though no toxicity was noticed in the effluent, annual biomonitoring for acute toxicity has been added to the permit. Federal NPDES rules per 40 CFR 122.21 require a permit holder to submit the results of four toxicity tests as part of its NPDES renewal application. The proposed monitoring will fulfill this requirement.

- Monitoring of total dissolved solids added. Though it is unlikely TDS would exceed the average water quality based limit based on one sample result, monthly monitoring will give a good database.

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Procedures for Participation in the Formulation of Final Determinations

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

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

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

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

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

Ohio Environmental Protection Agency
Attention: Division of Surface Water
Permits and Compliance Section
P.O. Box 1049
Columbus, Ohio 43216-1049

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

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

For additional information about this fact sheet or the draft permit, contact Raj Chakrabarti (614) 644-2027, raj.chakrabarti@epa.state.oh.us

Location of Discharge/Receiving Water Use Classification

The Taylor Creek Wastewater Treatment Plant discharges at approximately river mile (RM) 15.2 to the Great Miami River, which flows into the Ohio River. This segment of the Great Miami River is designated for the following uses under Ohio's Water Quality Standards (OAC 3745-1-21): Warmwater Habitat, Agricultural Water Supply, Industrial Water Supply, and Primary Contact Recreation. This section of the Great Miami River is designated by Ohio EPA River Code: 14-001 and by USEPA River Reach No.05080002-004. Figure 1 shows the approximate location of this facility. The Great Miami River Study Area is shown in Figure 2.

Use designations define the goals and expectations of a waterbody. These goals are set for aquatic life protection, recreation use and water supply use, and are defined in the Ohio WQS (OAC 3745-1-07). The use designations for individual waterbodies are listed in rules-08 through-32 of the Ohio WQS. Once the goals are set, numeric water quality standards are developed to protect these uses. Different uses have different water quality criteria.

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

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

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

Facility Description

The Taylor Creek plant is an advanced treatment facility with an average design flow of 5.5 million gallons per day (MGD). Construction of the treatment facility was completed in 1993, however the collection system was not in place until 1997. Fifteen public package plants and a number of private plants were tied into the collection system beginning in late winter and early spring, 1997.

Wet stream processes are screening, aerated grit removal, grease removal, activated sludge aeration (extended aeration), final clarification, disinfection using ultraviolet light, and cascade post aeration. Sludge generated at the plant is stored in aerated storage tanks. Sludge disposal is by hauling to another wastewater treatment plant for incineration. The Taylor Creek plant is served by a 100% separate sanitary sewer system and provides treatment for primary domestic wastewater.

The facility has brought on line a new influent pump station that they have been constructing for the past few years. It went on-line on 7/31/2009 and it enables flow from Miamitown (located across the Great Miami River from the plant) to have sewer service.

Description of Existing Discharge

Table A presents a summary of analytical results for outfall 001 effluent samples compiled from the bioassay tests done by Ohio EPA.

Table B presents a summary of unaltered monthly operation report data for the period January 2003 to August 2008 for the Taylor Creek WWTP as well as current permit limits, and monthly average PEQ_{avg} and daily maximum PEQ_{max} values.

Assessment of Impact on Receiving Waters

The most recent biological data is contained in the Technical Support Document (TSD) "Biological and Water Quality Study of the Middle and Lower Great Miami River and Selected Tributaries, 1995". This document can be obtained through the OEPA, Division of Surface Water website @
http://www.epa.state.oh.us/portals/35/documents/lmgmr95.pdf

An assessment of the impact of a permitted point source on the immediate receiving waters includes an evaluation of the available chemical/physical (water column, effluents, sediment, flows), biological (fish and macroinvertebrate assemblages), 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 Water Quality Standards and Ohio EPA guidance documents. Other information which may be evaluated includes, but is not limited to, NPDES permittee self-monitoring data and effluent and mixing zone bioassays conducted by Ohio EPA, the permittee, or U.S. EPA.

Ohio EPA relies on a tiered approach in attempting to link administrative activity indicators (*i.e.*, permitting, grants, enforcement) with true environmental indicators (*i.e.*, stressor, exposure, and response indicators). Stressor indicators generally include activities which have the potential to degrade the aquatic environment such as pollutant discharges (permitted and unpermitted), land use effects, and habitat modifications. Exposure indicators include whole effluent toxicity tests, tissue residues, and biomarkers, each of which provides evidence of biological exposure to stressor or bioaccumulative agents. Response indicators include the more direct measures of community and population response and are represented here by the biological indices which comprise Ohio EPA's biological criteria. The key is in using the different types of indicators within the roles which are the most appropriate for each. Describing the causes and sources associated with observed impairments relies on an interpretation of multiple lines of evidence including the water chemistry data, sediment data, habitat data, effluent data, biomonitoring results, land use data, and biological response signatures within the biological data itself. Thus the assignment of principal causes and sources of impairment represents the association of impairments (defined by response indicators) with stressor and exposure indicators.

Use attainment is a term which describes the degree to which environmental indicators are either above or below criteria specified by the Ohio Water Quality Standards (WQS; Ohio Administrative Code 3745-1). Assessing use attainment status for aquatic life uses involves a primary reliance on the Ohio EPA biological criteria (OAC 3745-1-07; Table 7-14). These are confined to ambient assessments and apply to rivers and streams outside of mixing zones. Numerical biological criteria are based on multimetric biological indices which include the Index of Biotic Integrity (IBI) and modified Index of Well-Being (MIwb), which indicate the response of the fish community, and the Invertebrate Community Index (IC), which indicates the response of the macroinvertebrate community. Numerical endpoints are stratified by ecoregion, use designation, and stream or river size. 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 meet the biocriteria or one of the organism groups reflects poor or very poor performance. An aquatic life use attainment table 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 (QHEI), and comments and observations for each sampling location.

Specific to the Taylor Creek WWTP

The Taylor Creek sewer project was initiated in the mid 1970s and was resurrected in the mid 1980s as a means for the Metropolitan Sewer District (MSD) to comply with a Consent Order for several small facilities in the upper region of the watershed. Detailed plans for the sewer were submitted by MSD and later challenged by the Ohio EPA resulting in a longstanding disagreement between agencies over the sewer alignment. Issues relating to the potential threat to the biological and physical integrity of the stream were raised by the Ohio EPA, much of the difficulty arising from concerns relating to the unique geology dominating much of Hamilton County. MSD elected to continue with the construction of the wastewater treatment facility despite the absence of a collection system or a permit to install (PTI) for the collection system. MSD eventually agreed to reevaluate the sewer alignment issue and movement within the project ensued. The treatment facility received wastewater from the package plants by February, 1997.

The 1995 biological sampling in the Great Miami River downstream from the Taylor Creek WWTP, before it began operation, indicated full attainment of the WWH criteria which is an improvement from previous years. The fish community was indicative of marginally good to exceptional quality (IBI=35, MIwb=10.0), and the macroinvertebrate community was indicative of very good quality (ICI=42). Future monitoring will be necessary to determine if the Taylor Creek WWTP has an impact on the aquatic community

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.

The assimilative capacity was divided among several facilities in order to account for possible interactivity of the discharges. The CONSWLA model was used to distribute the loads of those conservative parameters requiring allocation. The study area, showing relative positions of significant dischargers and tributaries, is depicted in Figure 2.

This data is evaluated statistically, and Projected Effluent Quality (PEQ) values are calculated for each pollutant. Average PEQ (PEQ_{avg}) values represent the 95^{th} percentile of monthly average data, and maximum PEQ (PEQ_{max}) values represent the 95^{th} percentile of all data points. The average and maximum PEQ values are presented in Table 1.

The PEQ values are used according to Ohio rules to compare to applicable water quality standards (WQS) and allowable wasteload allocation (WLA) values for each pollutant evaluated. Initially, PEQ values are compared to the applicable average and maximum WQS. If both PEQ values are less than 25 percent of the applicable WQS, the pollutant does not have the reasonable potential to cause or contribute to exceedances of WQS, and no wasteload allocation is done for that parameter. If either PEQ_{avg} or PEQ_{max} is greater than 25 percent of the applicable WQS, a wasteload allocation is conducted to determine whether the parameter exhibits reasonable potential and needs to have a limit or if monitoring is required. See Table 5 for a summary of the screening results.

<u>Parameter Selection</u>
Effluent data for the Franklin Area WWTP were used to determine what parameters should undergo wasteload allocation. The sources of effluent data are as follows:

Self-monitoring data (LEAPS)	January 2003 through August 2008
Ohio EPA data (compliance, survey)	2007

The effluent data were checked for outliers and no values were eliminated. The average and maximum projected effluent quality (PEQ) values are presented in Table 1. For a summary of the screening results, refer to the parameter groupings at the end of this section.

<u>Wasteload Allocation</u>
For those parameters that require a wasteload allocation (WLA), the results are based on the uses assigned to the receiving waterbody in OAC 3745-1. The applicable waterbody uses for this facility's discharge and the associated stream design flows are as follows:

Aquatic life (WWH)		
Toxics (metals, organics, etc.)	Average	Annual 7Q10
	Maximum	Annual 1Q10
Ammonia-N	Average	Summer/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 3), and allocations cannot exceed the Inside Mixing Zone Maximum criteria. Wasteload allocations using this method are done using the following general equation: Discharger WLA = (downstream flow x WQS) - (upstream flow x background concentration). Discharger WLAs are divided by the discharge flow so that the allocations are expressed as concentrations.

The data used in the WLA are listed in Tables 1 and 3. The wasteload allocation results to maintain all applicable criteria are presented in Table 4. The current permit limits for NH_3-N were evaluated and are adequate to maintain the WQS for NH_3-N. Therefore, NH_3-N will not be addressed further in this report.

The wasteload allocation calculations for WET are similar to those for aquatic life criteria - using the chronic toxicity unit (TU_c) and 10 percent of the 7Q10 flow for the average and the acute toxicity unit (TU_a) and 1 percent of the 7Q10 flow for the maximum. These values are the levels of effluent toxicity that should not cause instream toxicity during critical low-flow conditions.

For the Taylor Creek WWTP, the WET values are as follows;

Outfall 001 1.0 TU_a and 89.6 TU_c.

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

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

The acute toxicity unit (TU_a) is defined as 100 divided by the 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.

Figure 2. Great Miami River Study Area (not to scale).

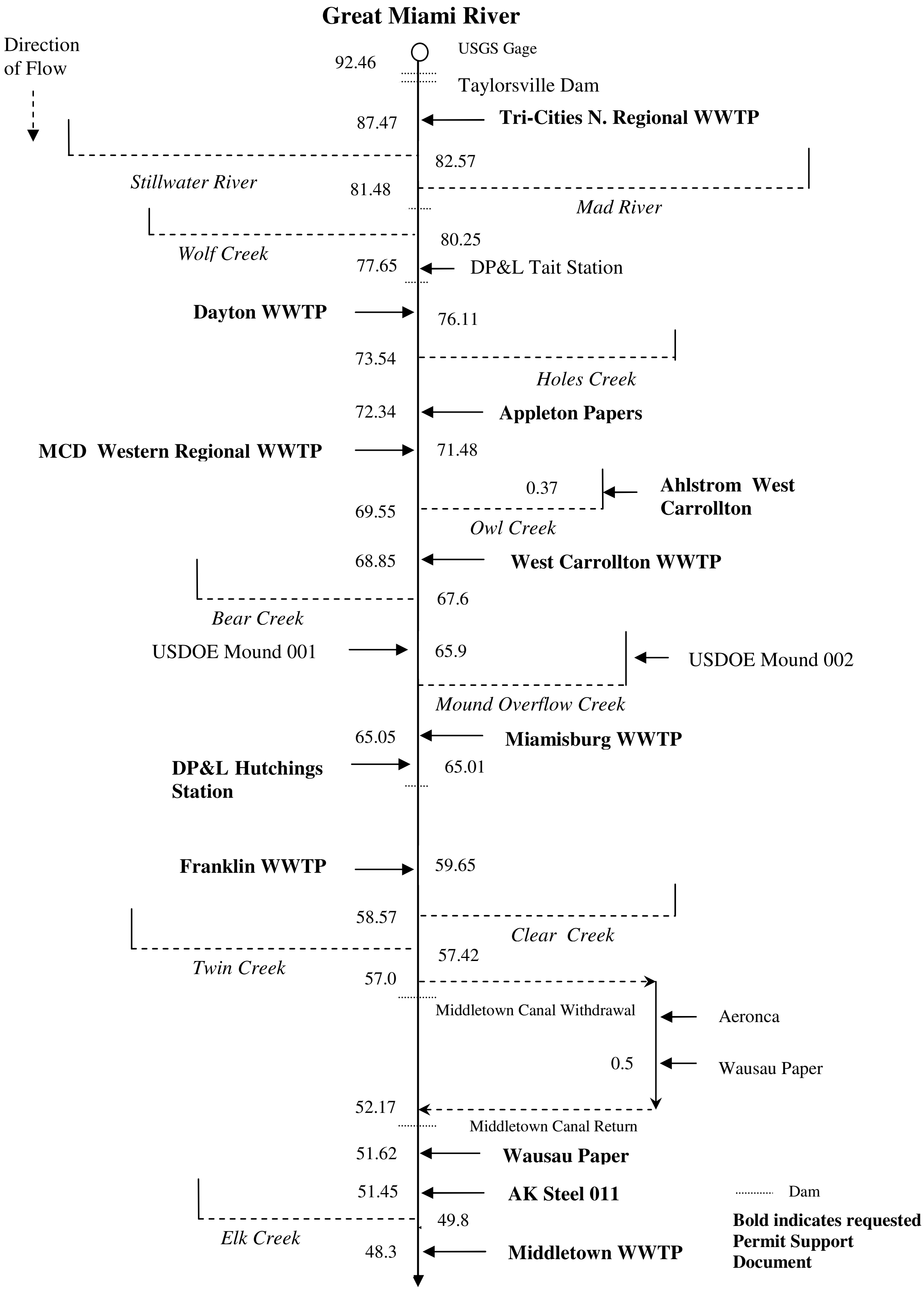

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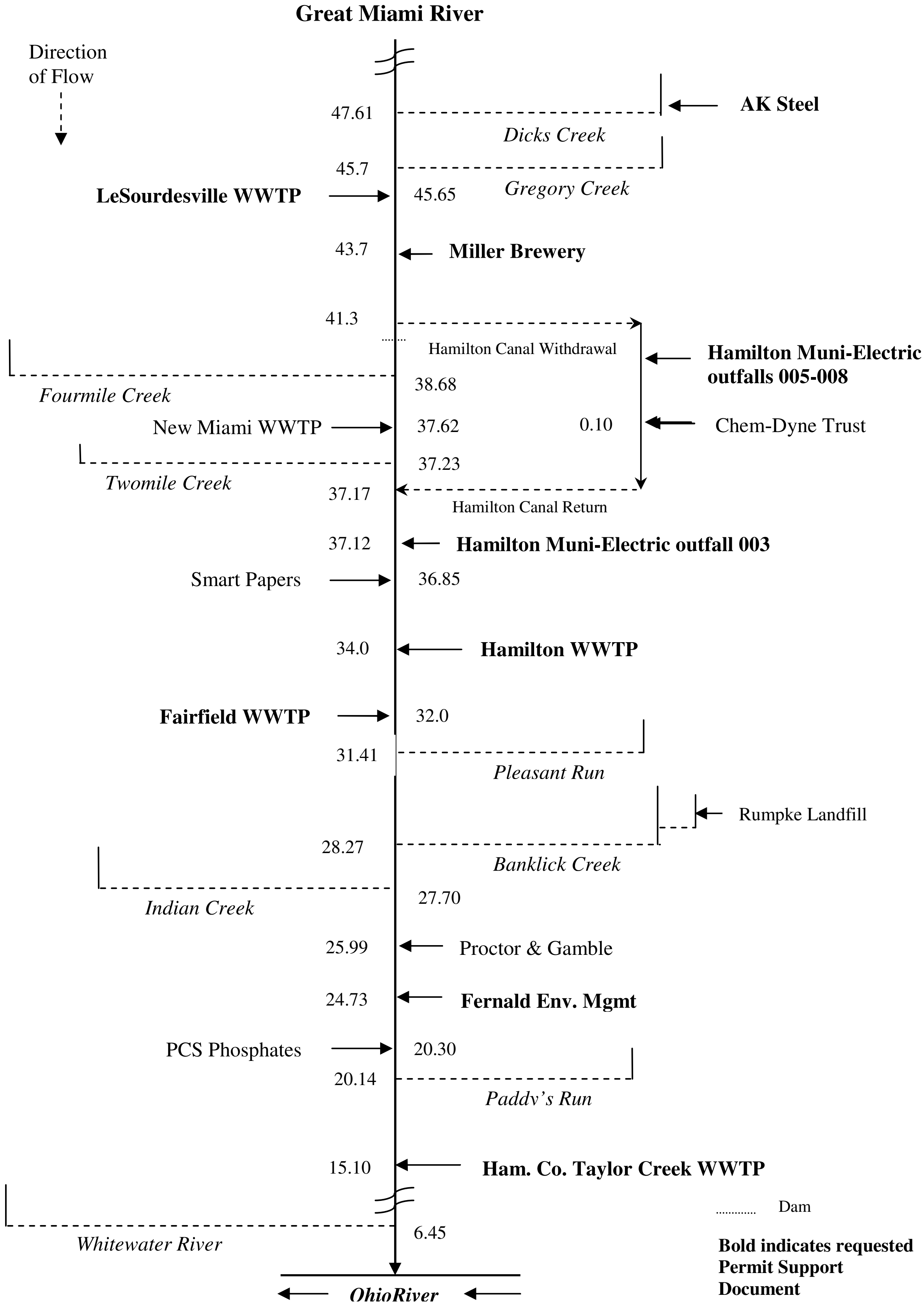
Figure 2. Great Miami River Study Area - Continued.



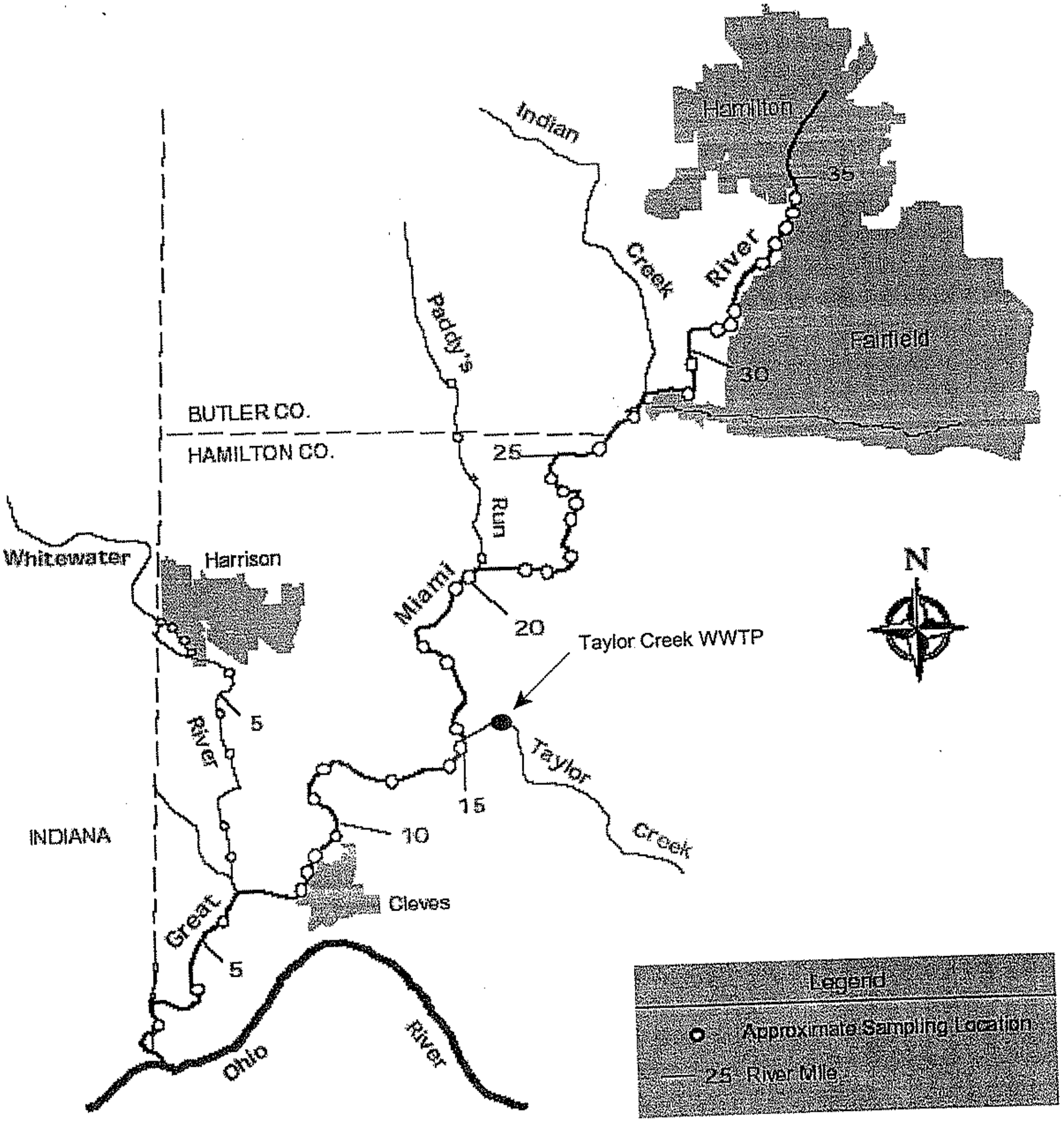


Figure 1. Approximate location of the Taylor Creek WWTP

Reasonable Potential/ Effluent Limits/Hazard Management Decisions

The listings in Tables 5 reflect the hazard assessment done according to WLA procedures. Tables 6 show the draft NPDES limits for the Taylor Creek WWTP.

After appropriate effluent limits are calculated, the reasonable potential of the discharger to violate the WLA (and 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 Limit (PEL) for the most restrictive average and maximum WLA were selected from Table 4. The PEL_{avg} was compared to the PEQ_{avg} value from Table 1, and the PEL_{max} was compared to the PEQ_{max} value. Based on the calculated percentage of the allocated value, the parameters are assigned to group 3, 4 or 5. The listing in Table 5 (Parameter Assessment Table) reflects the hazard assessment done according to WLA procedures. Table 6 (Final Effluent Limits Table) shows the draft NPDES limits for Taylor Creek WWTP.

Limits proposed for oil and grease, pH, dissolved oxygen (D.O.), and fecal coliform are based on Water Quality Standards (OAC 3745-1).

Proposed limits for ammonia-nitrogen (NH_3-N) are based on the existing permit.

The *Ohio 2002 Integrated Water Quality Monitoring and Assessment Report* (Ohio EPA) lists the Great Miami River mainstem downstream of Tawawa Creek as impaired for aquatic life. Nutrients and organic enrichment/dissolved oxygen are listed as "high magnitude" causes, and major municipal point sources are listed among the "high magnitude" sources. Considering this information and the fact that municipal wastewater treatment plants discharge a nutrient load to the river, monthly monitoring for phosphorus, nitrate + nitrite, and total Kjeldahl nitrogen is continued based on best engineering judgment (BEJ). Monitoring for phosphorus and nitrate + nitrite at the upstream and downstream stations also is proposed. The purpose of the monitoring is to maintain a nutrient data set for use in the future TMDL (total maximum daily load) study of the Great Miami River.

Limits proposed for total suspended solids (TSS) and carbonaceous biochemical oxygen demand ($CBOD_5$) are technology-based treatment standards included in 40 CFR Part 133, Secondary Treatment Regulation. Secondary treatment is defined by Best Practicable Waste Treatment Technology criteria, which are required of all publicly owned treatment works discharging to effluent limited stream segments (with respect to conventional pollutants).

Total Dissolved Solids (TDS) is placed under group 4. Though it is unlikely TDS would exceed the average water quality based limit based on one sample result, monthly monitoring will give a good database.

The mercury monitoring, per reasonable potential assessment, is recommended. BPO means Before Phase Out and APO means After Phase Out. Ohio's modeling rules [OAC 3745-2-05(A) (1) (d) (iv)] require that mixing zones for bioaccumulative chemicals of concern (BCCs) be phased out as of November 15, 2010. This rule applies statewide. The list of BCCs is in OAC 3745-1-02(B) (13). The list contains many old generation pesticides, PCBs, dioxins and mirex. However, the most commonly-detected pollutant on the list is mercury. The effluent data shows Taylor Creek will be able to meet the water quality based average limit of 12 ng/l. Low-level mercury monitoring (EPA Method 1631) per requirement of Group 3 must continue. Although the PEQ_{avg} data shows the facility will be able to meet mercury limits after the mercury phase out rule becomes effective on 11/1/2010, there have been detections like 10.3 ng/l and 8.45 ng/l in 2007 which are not very far off from the mercury limit of 12 ng/l. The facility should keep a watch on the source reduction of mercury in the influent.

Ohio EPA risk assessment (Table 5) places zinc, cadmium, copper and barium in group 3. This placement as well as the data in Tables 1 and 4 support that these parameters should not pose an environmental hazard and limits are not necessary to protect water quality. The monitoring data for barium give the justification that further monitoring at this time is not necessary. Monitoring remains for the rest parameters to document that these pollutants continue to remain at low levels.

Additional monitoring requirements proposed at the final effluent, influent, upstream/downstream and sludge 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.

Except the pollutants (phosphorus, nitrate+nitrite) that have been already addressed, Ohio EPA's risk assessment (Table 5) places the following pollutants hexavalent chromium, total chromium, free cyanide, iron, lead, nickel, phenol, strontium and toluene in Groups 1 and 2. Based on reasonable potential for requiring monitoring in NPDES permits [OAC 3745-33-07(A)], no effluent monitoring is proposed for toluene, hexavalent chromium, phenol, free cyanide and iron. Taylor Creek WWTP has no pretreatment program and treats primarily domestic wastewater with no significant industrial dischargers.

Whole Effluent Toxicity

The allowable effluent toxicity (AET) is a factor considered in evaluating whole effluent toxicity. The AET calculations are similar to those for aquatic life criteria (using the chronic toxicity unit (TU_c) and 7Q10 for average and the acute toxicity unit (TU_a) and 1Q10 for maximum). For the Taylor Creek WWTP, the AET values are 1.0 TU_a and 89.6 TU_c.

Screening toxicity testing by Ohio EPA for Ceriodaphnia dubia and fathead minnows in May 2008, showed no evidence of toxicity in the effluent. One fathead minnow died in the 6 May effluent grab. No other mortality or adverse effects were observed in the ambient waters and remaining effluents for either fathead minnow or *Ceriodaphnia dubia*. Survival in the laboratory controls was 95 percent or greater for both species.

Though no toxicity was noticed in the effluent, annual biomonitoring for acute toxicity has been added to the permit. Federal NPDES rules per 40 CFR 122.21 require a permit holder to submit the results of four toxicity tests as part of its NPDES renewal application. The proposed monitoring will fulfill this requirement.

Other Requirements

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, removal to sanitary landfill or transfer to another facility with an NPDES permit.

Operator Certification: Operator certification requirements have been included in Part II, Item A of the permit in accordance with rules adopted in December 2006. These rules require the Taylor Creek Regional Wastewater Treatment Works to have a Class III wastewater treatment plant operator in charge of the sewage treatment plant operations discharging through outfall 1PK00015001.

Stormwater Compliance: Since all stormwater at the plant is routed through the treatment plant, no Part IV, V and VI of the stormwater pollution prevention plan is included in the permit.

Outfall Signage: Part II of the permit includes requirements for signs to be placed at each outfall to the Great Miami River, providing information about the discharge. Signage at outfalls is required pursuant to Ohio Administrative Code 3745-33-08(A).

Table A_. Effluent Characterization Using Ohio EPA Data

Summary of analytical results for Taylor Creek outfall 1PK00015001. ug/l unless otherwise noted; OEPA = data from analyses by Ohio EPA; NA = not analyzed; ND = not detected (detection limit).

PARAMETER	OEPA 05/06/08
TDS (mg/l)	498
Barium	17
Copper	5.6
Iron	63
Nickel	2.2
Strontium	286
Zinc	74
Phenol	2.9
Toluene	0.67

Table B. Factsheet Data for Taylor Creek WWTP

Parameter	Season	Units	Current Permit Limits		# Obs.	Percentiles		Data Range	Decision Criteria		
			30 day	Daily		50th	95th		# Obs.	PEQ_{ave}	PEQ_{max}
Outfall 001											
Water Temperature	Annual	C	-	-	1542	18	24	11-26			
Dissolved Oxygen	Summer	mg/l	-	5.0 min.	783	7.8	9.4	5-10.4	530	7.8564	9.488
Dissolved Oxygen	Winter	mg/l	-	5.0 min.	760	8.9	10	5.8-10.4	375	9.194	10.69
pH, Maximum	Annual	S.U.	-	9.0	1543	7	7.3	6.6-7.8			
pH, Minimum	Annual	S.U.	-	6.5	1543	6.9	7.2	6.5-7.5			
Total Suspended Solids	Annual	mg/l	20	30	810	2	6	1-14	810	3.0647	5.1936
Oil and Grease, Hexane Extr Method	Annual	mg/l	-	10	132	0	0	0-5.7	132	3.329	4.56
Oil and Grease, Freon Extr-Grav Meth	Annual	mg/l	-	-	8	0	0	0-0	8	--	--
Nitrogen, Ammonia (NH3)	Summer	mg/l	7.0	10.5	401	0	1.8	0-8.3	270	1.4449	1.8282
Nitrogen, Ammonia (NH3)	Winter	mg/l	7.0	10.5	403	0	2.87	0-13.1	202	6.694	9.17
Nitrogen Kjeldahl, Total	Annual	mg/l	-	-	562	0.7	3.59	0-13	562	1.8957	3.9357
Nitrite Plus Nitrate, Total	Annual	mg/l	-	-	810	12.2	19.1	0-29.3	810	16.031	27.448
Phosphorus, Total (P)	Annual	mg/l	-	-	810	3.2	4.7	0-7.9	810	3.8917	5.9504
Nickel, Total Recoverable	Annual	ug/l	-	-	67	0	0	0-0			
Strontium, Total (Sr)	Annual	ug/l	-	-	5	275	283	0-285			
Strontium, Total Recoverable	Annual	ug/l	-	-	60	278	331	0-370			
Zinc, Total Recoverable	Annual	ug/l	-	-	74	55.9	82.7	0-95	74	78.186	101.8
Cadmium, Total Recoverable	Annual	ug/l	-	-	67	0	2	0-6			
Lead, Total Recoverable	Annual	ug/l	-	-	67	0	0	0-0			
Chromium, Total Recoverable	Annual	ug/l	-	-	74	0	13.7	0-36	74	12.587	17.347
Copper, Total Recoverable	Annual	ug/l	-	-	67	7	15.3	0-19			
Chromium, Dissolved Hexavalent	Annual	ug/l	-	-	7	0	0	0-0	7	--	--
Fecal Coliform	Annual	#/100 ml	1000	2000	392	9	289	1-14000			
Flow Rate	Summer	MGD			1039	1.63	2.63	0.38-5.84			
Flow Rate	Winter	MGD	-	-	1023	1.98	3.54	0.14-13.8			
Flow Rate	Annual	MGD	-	-	2062	1.77	3.19	0.14-13.8			
Mercury, Total (Low Level)	Annual	ng/l	-	-	38	2.12	5.26	0-10.3	38	5.1807	8.3651
CBOD 5 day	Summer	mg/l	16	24	387	1	3	1-6	257	1.7865	2.7654

CBOD 5 day	Winter	mg/l	16	24	382	2	3.95	1-6	189	2.5921	3.7764
Nickel, Total Recoverable	Annual	ug/l	-	-	7	0	0	0-0			
Lead, Total Recoverable	Annual	ug/l	-	-	7	0	0	0-0			
Copper, Total Recoverable	Annual	ug/l	-	-	7	8	20.7	6-24			
Cadmium, Total Recoverable	Annual	ug/l	-	-	7	0	0	0-0			
Mercury, Total	Annual	ug/l	-	-	7	0	0.14	0-0.2	7	0.292	0.4
Cyanide, Free	Annual	mg/l	-	-	7	0	0	0-0	7	--	--

Table 1. Effluent Data for Taylor Creek WWTP

Parameter	Units	# of Samples	# > MDL	Average PEQ	Maximum PEQ
Self-Monitoring (MOR) Data					
Ammonia-S	mg/l	270	54	1.445	1.828
Ammonia-W	mg/l	202	70	6.694	9.17
NO_2+NO_3	mg/l	810	808	16.03	27.45
Phosphorus	mg/l	810	802	3.892	5.95
Nickel - TR	μg/l	74	0	--	--
Strontium	μg/l	65	56	307.6	338.7
Zinc - TR	μg/l	74	73	78.19	101.8
Cadmium – TR	μg/l	74	8	3.942	5.4
Lead - TR	μg/l	74	0	--	--
Chromium - TR	μg/l	74	15	12.59	17.35
Copper - TR	μg/l	74	62	15.71	24.23
$Chromium^{+6}$, diss.	μg/l	7	0	--	--
Mercury	μg/l	38	34	0.0052	0.0084
Cyanide - free	μg/l	7	0	--	--
Other Data [A]					
Dissolved Solids, tot.	mg/l	1	1	2254.	3088.
Barium	μg/l	1	1	76.94	105.4
Iron	μg/l	1	1	285.1	390.6
Phenol	μg/l	1	1	13.13	17.98
Toluene	μg/l	1	1	3.032	4.154

[A] Other data sources include pretreatment program reports and Ohio EPA data.

Table 2. Water Quality Criteria in the Study Area

		Outside Mixing Zone Criteria				Inside
		Average			Maximum	Mixing
		Human	Agri-	Aquatic	Aquatic	Zone
Parameter	Units	Health	culture	Life	Life	Maximum
Aldrin	µg/l	0.0014	--	--	--	--
Antimony	µg/l	4300.	--	190.	900.	1800.
Arsenic	µg/l	--	100.	150.	340.	680.
Barium	µg/l	--	--	220.	2000.	4000.
Beryllium [A]	µg/l	280.	100.	67.	570.	1100.
Bis(2-ethylhexyl)phthalate	µg/l	59.	--	8.4	1100.	2100.
Boron	µg/l	--	--	950.	8500.	17000.
Bromodichloromethane	µg/l	460.	--	--	--	--
Bromoform	µg/l	3600.	--	230.	1100.	2200.
Bromomethane (Methyl Bromide)	µg/l	4000.	--	16.	38.	75.
Cadmium [A]	µg/l	--	50.	6.0	16.	32.
Chlorine, tot. res.	µg/l	--	--	11.	19.	38.
Chloroform	µg/l	4700.	--	140.	1300.	2600.
Chromium^{+6}, diss.	µg/l	--	--	11.	16.	31.
Chromium -TR[A]	µg/l	--	100.	220.	4500.	9100.
Cobalt	µg/l	--	--	24.	220.	440.
Copper [A]	µg/l	1300.	500.	24.	40.	81.
Cyanide, free	µg/l	220000.	--	12.	46.	92.
Dibromochloromethane	µg/l	340.	--	--	--	--
1,4-Dichlorobenzene	µg/l	2600.	--	9.4	57.	110.
Dichlorobromomethane	µg/l	460.	--	--	--	--
Dieldrin [B]	µg/l	0.0014	--	0.056	0.24	0.47
Endosulfan	µg/l	240.	--	--	--	--
Endrin Aldehyde	µg/l	0.81	--	--	--	--
Fluoride	µg/l	--	2000.	--	--	--
Heptachlor Epoxide	µg/l	0.0011	--	--	--	--
beta-BHC [B]	µg/l	0.46	--	--	--	--
gamma-BHC (Lindane) [B]	µg/l	0.63	--	0.057	0.95	1.9
Iron	µg/l	--	5000.	--	--	--
Lead [A]	µg/l	--	100.	27.	510.	1000.
Mercury [B]	µg/l	0.012	10.	0.91	1.7	3.4
Methylene Chloride	µg/l	16000.	--	1900.	11000.	22000.
Methyl Ethyl Ketone	µg/l	--	--	22000.	200000.	400000.
Molybdenum	µg/l	--	--	20000.	190000.	370000.
Nickel [A]	µg/l	4600.	200.	140.	1200.	2400.
Nitrate+Nitrite	mg/l	--	100.	--	--	--
Pentachlorophenol [C]	µg/l	82.	--	25.	32.	64.

Table 2. Water Quality Criteria in the Study Area -continued.

		Outside Mixing Zone Criteria				Inside Mixing Zone Maximum
		Average			Maximum	
Parameter	Units	Human Health	Agri-culture	Aquatic Life	Aquatic Life	
Phenol	µg/l	4600000.	--	400.	4700.	9400.
SAS-310	µg/l	--	--	0.61	5.0	10.
Selenium	µg/l	11000.	50.	5.0	--	--
Silver [A]	µg/l	--	--	1.3	11.	22.
Strontium	µg/l	--	--	21000.	40000.	81000.
Tetrachloroethylene	µg/l	89.	--	53.	430.	850.
1,1,2,2-Tetrachloroethane	µg/l	110.	--	260.	910.	1800.
Thallium	µg/l	6.3	--	17.	79.	160.
Tin	µg/l	--	--	180.	1600.	3200.
Toluene	µg/l	200000.	--	62.	560.	1100.
Total Dissolved Solids (TDS)	mg/l	--	--	1500.	--	--
1,1,1-Trichloroethane	µg/l	--	--	76.	690.	1400.
1,1,2-Trichloroethane	µg/l	420.	--	740.	3300.	6600.
2,4,6-Trichlorophenol	µg/l	65.	--	4.9	39.	79.
Zinc [A]	µg/l	69000.	25000.	310.	310.	620.

[A] Aquatic Life Criteria is hardness-based.
[B] Bioaccumulative Chemical of Concern (BCC)
[C] Aquatic Life Criteria is pH based.

Table 3. Instream Conditions and Discharger Flow

Parameter	Units		Value	Basis
Upstream Flow				
GMR at Taylorsville				
7Q10	cfs	summer	52.	USGS gage #03263000, 1921-97 data
		winter	83.	USGS gage #03263000, 1921-97 data
		annual	50.	USGS gage #03263000, 1921-97 data
1Q10	cfs	annual	43.	USGS gage #03263000, 1921-97 data
30Q10	cfs	summer	60.	USGS gage #03263000, 1921-97 data
		winter	116.	USGS gage #03263000, 1921-97 data
Harmonic Mean Flow	cfs	annual	241.	USGS gage #03263000, 1921-97 data
Mixing Assumption	%	average	100	Stream-to-discharge ratio
(GMR & Tribs.)	%	maximum	100	Stream-to-discharge ratio
Stillwater River at Mouth				
7Q10	cfs	summer	16.6	USGS gage #03266000, 1925-97 data
		winter	41.6	USGS gage #03266000, 1925-97 data
		annual	16.6	USGS gage #03266000, 1925-97 data
1Q10	cfs	annual	11.4	USGS gage #03266000, 1925-97 data
30Q10	cfs	summer	22.9	USGS gage #03266000, 1925-97 data
		winter	57.2	USGS gage #03266000, 1925-97 data
Harmonic Mean Flow	cfs	annual	111.3	USGS gage #03266000, 1925-97 data
Mad River at Mouth				
7Q10	cfs	summer	143.8	USGS gage #03270000, 1914-21, 24-97
		winter	182.1	USGS gage #03270000, 1914-21, 24-97
		annual	141.8	USGS gage #03270000, 1914-21, 24-97
1Q10	cfs	annual	134.5	USGS gage #03270000, 1914-21, 24-97
30Q10	cfs	summer	158.3	USGS gage #03270000, 1914-21, 24-97
		winter	212.1	USGS gage #03270000, 1914-21, 24-97
Harmonic Mean Flow	cfs	annual	391.1	USGS gage #03270000, 1914-21, 24-97
Wolf Creek at Mouth				
7Q10	cfs	summer	1.74	USGS gage #03271000, 1938-50, 86-97
		winter	3.38	USGS gage #03271000, 1938-50, 86-97
		annual	1.64	USGS gage #03271000, 1938-50, 86-97
1Q10	cfs	annual	1.33	USGS gage #03271000, 1938-50, 86-97
30Q10	cfs	summer	2.46	USGS gage #03271000, 1938-50, 86-97
		winter	6.35	USGS gage #03271000, 1938-50, 86-97
Harmonic Mean Flow	cfs	annual	12.4	USGS gage #03271000, 1938-50, 86-97

Table 3. Instream Conditions and Discharger Flow - continued.

Parameter	Units		Value	Basis
Twin Creek at Mouth				
7Q10	cfs	summer	5.4	USGS gage #03272000, 1914-23, 27-97
		winter	16.1	USGS gage #03272000, 1914-23, 27-97
		annual	5.4	USGS gage #03272000, 1914-23, 27-97
1Q10	cfs	annual	4.71	USGS gage #03272000, 1914-23, 27-97
30Q10	cfs	summer	7.24	USGS gage #03272000, 1914-23, 27-97
		winter	24.1	USGS gage #03272000, 1914-23, 27-97
Harmonic Mean Flow	cfs	annual	40.5	USGS gage #03272000, 1914-23, 27-97
Four Mile Creek at Mouth				
7Q10	cfs	summer	6.84	USGS gage #03272700, 1970-97 data
		winter	15.5	USGS gage #03272700, 1970-97 data
		annual	6.84	USGS gage #03272700, 1970-97 data
1Q10	cfs	annual	5.92	USGS gage #03272700, 1970-97 data
30Q10	cfs	summer	9.58	USGS gage #03272700, 1970-97 data
		winter	31.9	USGS gage #03272700, 1970-97 data
Harmonic Mean Flow	cfs	annual	50.7	USGS gage #03272700, 1970-97 data
Holes Creek at Mouth				
7Q10	cfs	summer	1.11	USGS gage #03271300, 1959-72 data
		winter	2.55	USGS gage #03271300, 1959-72 data
		annual	1.11	USGS gage #03271300, 1959-72 data
1Q10	cfs	annual	1.11	USGS gage #03271300, 1959-72 data
30Q10	cfs	summer	1.43	USGS gage #03271300, 1959-72 data
		winter	3.5	USGS gage #03271300, 1959-72 data
Harmonic Mean Flow	cfs	annual	8.31	USGS gage #03272000, 1914-23, 27-97
Indian Creek at Mouth				
7Q10	cfs	summer	0.2	USGS gage #03274200, 1961-69 data
		winter	0.5	USGS gage #03274200, 1961-69 data
		annual	0.2	USGS gage #03274200, 1961-69 data
1Q10	cfs	annual	0.2	USGS gage #03274200, 1961-69 data
30Q10	cfs	summer	0.3	USGS gage #03274200, 1961-69 data
		winter	0.8	USGS gage #03274200, 1961-69 data
Harmonic Mean Flow	cfs	annual	1.17	USGS gage #03272800, 1960-72 data
Clear Creek at Mouth				
7Q10	cfs	summer	0.4	USGS gage #03271700, 1959-69 data
		winter	1.5	USGS gage #03271700, 1959-69 data
		annual	0.4	USGS gage #03271700, 1959-69 data
1Q10	cfs	annual	0.4	USGS gage #03271700, 1959-69 data
30Q10	cfs	summer	0.6	USGS gage #03271700, 1959-69 data
		winter	2.5	USGS gage #03271700, 1959-69 data
Harmonic Mean Flow	cfs	annual	3.0	USGS gage #03272000, 1914-23, 27-97

Table 3. Instream Conditions and Discharger Flow - continued.

Parameter	Units		Value	Basis
Elk Creek at Mouth				
7Q10	cfs	summer	0.4	USGS gage #03272200, 1960-67 data
		winter	1.3	USGS gage #03272200, 1960-67 data
		annual	0.4	USGS gage #03272200, 1960-67 data
1Q10	cfs	annual	0.4	USGS gage #03272200, 1960-67 data
30Q10	cfs	summer	0.6	USGS gage #03272200, 1960-67 data
		winter	2.1	USGS gage #03272200, 1960-67 data
Harmonic Mean Flow	cfs	annual	3.0	USGS gage #03272000, 1914-23, 27-97
Bear Creek at Mouth				
7Q10	cfs	summer	2.21	USGS gage #03272000, 1914-23, 27-97
		winter	4.02	USGS gage #03272000, 1914-23, 27-97
		annual	2.21	USGS gage #03272000, 1914-23, 27-97
1Q10	cfs	annual	2.1	USGS gage #03272000, 1914-23, 27-97
30Q10	cfs	summer	2.52	USGS gage #03272000, 1914-23, 27-97
		winter	5.38	USGS gage #03272000, 1914-23, 27-97
Harmonic Mean Flow	cfs	annual	8.14	USGS gage #03272000, 1914-23, 27-97
Gregory Creek at Mouth				
7Q10	cfs	summer	0.26	USGS gage #03272200, 1960-67 data
		winter	0.84	USGS gage #03272200, 1960-67 data
		annual	0.26	USGS gage #03272200, 1960-67 data
1Q10	cfs	annual	0.26	USGS gage #03272200, 1960-67 data
30Q10	cfs	summer	0.39	USGS gage #03272200, 1960-67 data
		winter	1.35	USGS gage #03272200, 1960-67 data
Harmonic Mean Flow	cfs	annual	1.93	USGS gage #03272000, 1914-23, 27-97
Pleasant Run at Mouth				
7Q10	cfs	summer	0.04	USGS gage #03274200, 1961-69 data
		winter	0.10	USGS gage #03274200, 1961-69 data
		annual	0.04	USGS gage #03274200, 1961-69 data
1Q10	cfs	annual	0.04	USGS gage #03274200, 1961-69 data
30Q10	cfs	summer	0.06	USGS gage #03274200, 1961-69 data
		winter	0.16	USGS gage #03274200, 1961-69 data
Harmonic Mean Flow	cfs	annual	0.23	USGS gage #03272800, 1960-72 data
Banklick Creek at Mouth				
7Q10	cfs	summer	0.01	USGS gage #03274200, 1961-69 data
		winter	0.03	USGS gage #03274200, 1961-69 data
		annual	0.01	USGS gage #03274200, 1961-69 data
1Q10	cfs	annual	0.01	USGS gage #03274200, 1961-69 data
30Q10	cfs	summer	0.02	USGS gage #03274200, 1961-69 data
		winter	0.05	USGS gage #03274200, 1961-69 data
Harmonic Mean Flow	cfs	annual	0.07	USGS gage #03272800, 1960-72 data

Table 3. Instream Conditions and Discharger Flow - continued.

Parameter	Units		Value	Basis
Twomile Creek at Mouth				
7Q10	cfs	summer	0.02	USGS gage #03274200, 1961-69 data
		winter	0.04	USGS gage #03274200, 1961-69 data
		annual	0.02	USGS gage #03274200, 1961-69 data
1Q10	cfs	annual	0.02	USGS gage #03274200, 1961-69 data
30Q10	cfs	summer	0.02	USGS gage #03274200, 1961-69 data
		winter	0.06	USGS gage #03274200, 1961-69 data
Harmonic Mean Flow	cfs	annual	0.10	USGS gage #03272800, 1960-72 data
Paddy's Run at Mouth				
7Q10	cfs	summer	0.03	USGS gage #03274200, 1961-69 data
		winter	0.08	USGS gage #03274200, 1961-69 data
		annual	0.03	USGS gage #03274200, 1961-69 data
1Q10	cfs	annual	0.03	USGS gage #03274200, 1961-69 data
30Q10	cfs	summer	0.05	USGS gage #03274200, 1961-69 data
		winter	0.13	USGS gage #03274200, 1961-69 data
Harmonic Mean Flow	cfs	annual	0.19	USGS gage #03272800, 1960-72 data
Instream Hardness	mg/l	annual	308.	STORET/LEAPS; 822 values,2000-2008

Table 3. Instream Conditions and Discharger Flow - continued.

Parameter	Units		Value	Basis
Background Water Quality for the Great Miami River				
Aldrin	µg/l	annual	0.	No representative data available.
Antimony	µg/l	annual	0.	No representative data available.
Arsenic	µg/l	annual	1.9	STORET; 8 values,4<MDL, 1990-95
Barium	µg/l	annual	0.	No representative data available.
Bis (2-ethylhexyl) phthalate	µg/l	annual	0.	No representative data available.
Boron	µg/l	annual	0.	No representative data available.
Cadmium	µg/l	annual	0.1	STORET; 22 values,19<MDL, 1989-95
Chlorine, total res	µg/l	annual	0.	No representative data available.
Chloroform	µg/l	annual	0.	No representative data available.
$Chromium^{+6}$, diss	µg/l	annual	0.	No representative data available.
Chromium, total	µg/l	annual	0.	STORET; 17 values,17<MDL, 1989-94
Copper	µg/l	annual	5.	STORET; 22 values,20<MDL, 1989-95
Cyanide, free	µg/l	annual	0.	No representative data available.
Dieldrin	µg/l	annual	0.	No representative data available.
Fluoride	µg/l	annual	0.	No representative data available.
gamma-BHC	µg/l	annual	0.	No representative data available.
Heptachlor epoxide	µg/l	annual	0.	No representative data available.
Iron	µg/l	annual	1375.	STORET; 12 values,0<MDL, 1989-94
Lead	µg/l	annual	1.	STORET; 22 values,16<MDL, 1989-95
Mercury	µg/l	annual	0.	No representative data available.
Molybdenum	µg/l	annual	0.	No representative data available.
Nickel	µg/l	annual	0.	STORET; 22 values,22<MDL, 1989-95
Nitrate+Nitrite	mg/l	annual	2.91	STORET; 34 values,0<MDL, 1989-95
Pentachlorophenol	µg/l	annual	0.	No representative data available.
SAS-310	µg/l	annual	0.	No representative data available.
Selenium	µg/l	annual	1.25	STORET; 8 values,7<MDL, 1990-95
Silver	µg/l	annual	0.	No representative data available.
Strontium	µg/l	annual	0.	No representative data available.
TDS	mg/l	annual	408.	STORET; 11 values,0<MDL, 1990-95
Thallium	µg/l	annual	0.	No representative data available.
2,4,6-Trichlorophenol	µg/l	annual	0.	No representative data available.
Zinc	µg/l	annual	10.	STORET; 22 values,10<MDL, 1989-95
Taylor Creek WWTP flow	cfs (mgd)	design	8.51 (5.5)	DSW

Table 4. Summary of Effluent Limits to Maintain Applicable Water Quality Criteria

Parameter	Units	Average Human Health	Average Agri Supply	Average Aquatic Life	Maximum Aquatic Life	Inside Mixing Zone Maximum
Barium	µg/l	--	--	706.	6526. [A]	4000.
Cadmium	µg/l	--	256.[A]	25.	69. [A]	32.
Copper	µg/l	3875.[A]	1486.[A]	58.	96. [A]	81.
Mercury [B]	µg/l	.052	44.[A]	3.1	5.7 [A]	3.4
TDS	mg/l	--	--	4258.	--	--
Zinc	µg/l	328300.[A]	118900.[A]	1267. [A]	1224. [A]	620.

[A] Allocation must not exceed the Inside Mixing Zone Maximum.
[B] Bioaccumulative Chemical of Concern (BCC); no mixing zone allowed after 11/15/2010, WQS must be met at end-of-pipe, unless the requirements for an exclusion are met as listed in 3745-2-08 (L).

Table 5. Parameter Assessment

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

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

$Chromium^{+6,}$ diss.	Chromium-TR	Cyanide, free
Iron	Lead	Nickel
Nitrate+Nitrite	Phenol	Strontium
Toluene		

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

Barium	Cadmium	Copper
Mercury (<11/15/2010)	Mercury (>11/15/2010)	Zinc

Group 4: $PEQ_{max} \geq 50\%$ but <100% of the maximum PEL or $PEQ_{avg} \geq 50\%$ but < 100% of the average PEL. Monitoring is appropriate.
TDS

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.

Table 6. Final effluent limits and monitoring requirements for Taylor Creek WWTP outfall 1PK00015001 and the basis for their recommendation.

		Effluent Limits				
		Concentration		Loading (kg/day)[a]		
Parameter	Units	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum	Basis[b]
Flow	MGD	- - - - - - - - - - - - - Monitor - - - - - - - - - - - - -				M[c]
Temperature	^{o}C	- - - - - - - - - - - - - Monitor - - - - - - - - - - - - -				M[c]
Dissolved Oxygen	mg/l	- - - - - - - - - - - 5.0 minimum - - - - - - - - - - - - -				PD
$CBOD_5$	mg/l	16	24[d]	333	500[d]	PD
Suspended Solids	mg/l	20	30[d]	416	625[d]	PD
Ammonia-N	mg/l	7	10.5[d]	146	219[d]	BEJ
Total Kjeldahl-N	mg/l	- - - - - - - - - - - - - Monitor - - - - - - - - - - -				BEJ
Oil and Grease	mg/l	Not to exceed 10 at any time				WQS
pH	S.U.	- - - - - - - - - - - 6.5 to 9.0 - - - - - - - - - - -				WQS
Fecal Coliform Summer Only	#/100ml	1000	2000[d]	--	--	WQS
TDS	mg/l	- - - - - - - - - - - - - Monitor - - - - - - - - - - - - -				BEJ
Phosphorus	mg/l	- - - - - - - - - - - - - Monitor - - - - - - - - - - - - -				BEJ
Nitrate(N) + Nitrite(N)	mg/l	- - - - - - - - - - - - - Monitor - - - - - - - - - - - - -				BEJ
Cadmium, T. R.	µg/l	- - - - - - - - - - - - - Monitor - - - - - - - - - - - - -				M[c]
Chromium, T. R.	µg/l	- - - - - - - - - - - - - Monitor - - - - - - - - - - - - -				M[c]
Copper, T. R.	µg/l	- - - - - - - - - - - - - Monitor - - - - - - - - - - - - -				M[c]
Lead, T. R.	µg/l	- - - - - - - - - - - - - Monitor - - - - - - - - - - - - -				M[c]
Mercury, T.	ng/l	- - - - - - - - - - - - - Monitor - - - - - - - - - - - - -				M[c]
Nickel, T. R.	µg/l	- - - - - - - - - - - - - Monitor - - - - - - - - - - - - -				M[c]
Zinc, T. R.	µg/l	- - - - - - - - - - - - - Monitor - - - - - - - - - - - - -				M[c]
Strontium	µg/l	- - - - - - - - - - - - - Monitor - - - - - - - - - - - - -				M[c]
Acute Toxicity	TUa	- - - - - - - - - - - - - Monitor - - - - - - - - - - - - -				BEJ

[a] Effluent loadings based on average design discharge flow of 5.5 MGD.

[b] Definitions: ABS = Antibacksliding Rule [OAC 3745-33-05(E) and 40 CFR Part 122.44(l)]; AD = Antidegradation (OAC 3745-1-05); AD/BADCT = Antidegradation required treatment technology [OAC 3745-1-05(C)(2)] - weighted average of existing flows at existing limits and new flows at BADCT (Table 5-1 of Antidegradation Rule); BEJ = Best Engineering Judgment; BPT = Best Practicable Waste Treatment Technology, 40 CFR Part 133, Secondary Treatment Regulation; EP = Existing Permit; M = BEJ of Permit Guidance 1: Monitoring Frequency Requirements for Sanitary Discharges; PD = Plant Design Criteria; RP = Reasonable Potential for requiring water quality-based effluent limits and monitoring requirements in NPDES permits [OAC 3745-33-07(A)]; WET = reasonable potential for requiring water quality-based effluent limits and monitoring requirements for whole effluent toxicity in NPDES permits [OAC 3745-33-07(B)]; WLA = Wasteload Allocation procedures (OAC 3745-2); WLA/IMZM = Wasteload Allocation limited by Inside Mixing Zone Maximum; WQS = Ohio Water Quality Standards (OAC 3745-1-07).

[c] Monitoring of flow and other indicator parameters is specified to assist in the evaluation of effluent quality and treatment plant performance.

[d] Weekly average limit.