

National Pollutant Discharge Elimination System (NPDES) Permit Program

F A C T S H E E T

Regarding an NPDES Permit To Discharge to Waters of the State of Ohio
for Port Clinton Wastewater Treatment Plant

Public Notice No.: 10-12-033
Public Notice Date: December 22, 2010
Comment Period Ends: January 22, 2011

OEPA Permit No.: 2PD00014*MD
Application No.: OH0052876

Name and Address of Applicant:

Mayor and Council
City of Port Clinton
1868 East Perry Street
Port Clinton, Ohio 43452

Name and Address of Facility Where
Discharge Occurs:

Port Clinton Wastewater Treatment Plant
100 North Jackson Street
Port Clinton, Ohio 43452

Receiving Water: Portage River

Subsequent
Stream Network: Lake Erie

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

Mercury limits have been recommended in the permit. Monthly average limit is based on mercury variance application and the daily maximum limit is based on WLA (Waste Load Allocation).

Limits for oil and grease and pH (based on water quality standards), total residual chlorine (based on wasteload allocation and plant design).

Per rule 3745-33-06 of the Ohio Administrative Code, any publicly owned treatment works (POTW) in the Lake Erie basin with a design flow of 1.0 million gallons per day or more, or designated as a major discharger by the director, must meet a total phosphorus discharge limit of 1.0 milligram per liter as a thirty-day average. Therefore, the existing 30-day average (1.0 mg/l) and weekly phosphorus limit (1.5 mg/l) remains unchanged in the permit

Limits for dissolved oxygen, CBOD₅, total suspended solids and ammonia-nitrogen based on existing permit and derived from antidegradation required treatment technology [OAC 3745-1-05(C)(2)], are continued.

By reasonable potential assessment existing copper limit has been removed and only monitoring is recommended.

Current monitoring requirements for flow, temperature, nitrate+nitrite-N, free cyanide, cadmium, total chromium, dissolved hexavalent chromium, lead, nickel and zinc are being continued to maintain a current data set for use in future evaluations.

Though no toxicity was evident in Ohio EPA's bioassay testing, 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 chronic toxicity testing with determination of acute end points will fulfill this requirement.

Effluent limits are being proposed for *Escherichia coli*. Water quality standards for *E. coli* became effective in March 2010. Since the facility does not anticipate problems meeting the proposed monthly and weekly geometric mean concentrations of 126 and 284 per 100 ml respectively, these limits have been recommended in the permit.

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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 by phone (614) 644-2027, and by e-mail raj.chakrabarti@epa.state.oh.us

Location of Discharge/Receiving Water Use Classification

The Port Clinton wastewater treatment plant discharges to the Portage River estuary, which flows into Lake Erie. The treatment plant was modeled as a direct discharge to Lake Erie, which is designated for the following uses under Ohio's Water Quality Standards (OAC 3745-1-31): Exceptional Warmwater Habitat, Superior High Quality Water, Agricultural Water Supply, Public Water Supply, Industrial Water Supply, and Bathing Waters. This section of Lake Erie is designated by Ohio EPA River Code 24-200 and by USEPA hydrologic unit code 04100010. The Portage River is designated for the following uses under Ohio's Water quality Standards (OAC 3745-23): Warmwater Habitat, Agricultural Water Supply, Industrial Water Supply, and Class A Primary Contact Recreation. Figure 1 shows the approximate location of this facility.

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 cannot meet the Clean Water Act 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) 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

Port Clinton WWTP was constructed in 1955 and upgraded to secondary treatment with phosphate removal in 1970. Major modifications in 2004 and 2006 completely changed the treatment process, which now consists of a pumping station, fine bar screen, grit removal, Actiflo Ballasted Flocculation, fine bubble aeration tanks, ferric chloride and polymer addition, secondary clarification, chlorination/ dechlorination and a sludge belt filter press with landfill disposal. The plant now has a design flow of 2.0 MGD and wet weather handling capacity of 24 MGD serving a population of 6,400.

Under the long-term control plan, the City completed treatment plant upgrades including installation of a 24 MGD Actiflo ballasted flocculation system comprised of two treatment trains. Under normal plant operations, one Actiflo unit is used for primary treatment while the other is maintained in a ready mode. When the plant is operating in storm mode, one or both of the Actiflo units may be used. One unit treats storm flows up to 5 - 6 million gallons. When storm flows exceed 6 - 8 million gallons, the second Actiflo unit is brought into storm mode. The final effluent is discharged to the Portage River.

The collection system is 52% combined sewers and 48% separate sewers. There is only one remaining combined sewer overflow at Adams Street (outfall 003).

Port Clinton does not implement an Ohio EPA approved industrial pretreatment program. Based on its NPDES renewal application, two significant non-categorical industries discharge to the treatment plant.

Description of Existing Discharge

Table 1 presents a summary of unaltered monthly operating report data for Port Clinton outfall 2PD00014001. Data are presented for the period March 2007 - September 2010, and current permit limits are provided for comparison. Table 2 presents additional chemical specific data collected by Ohio EPA. Table 3 summarizes the chemical specific data for outfall 001 and presents the average and maximum Projected Effluent Quality (PEQ) values. Table 4 summarizes the results of acute screening whole effluent toxicity tests of outfall 001 effluent conducted by Ohio EPA.

Assessment of Impact on receiving waters

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 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; 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 Water Quality Standards (WQS; Ohio Administrative Code 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 (IBI) and modified Index of Well-Being (MIwb), which indicate the response of the fish community, and the Invertebrate Community Index (ICI), 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 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.

Figure 2 presents the biological data that were collected between June-October 2008 at stations in the Portage River basin and select Lake Erie tributaries to assess aquatic life use attainment status. While the Port Clinton WWTP is located at 0.5 RM, the nearest sample collected was at RM 6.0. The attainment status is non-attainment due to nutrient/eutrophication siltation.

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 Port Clinton wastewater plant were used to determine what parameters should undergo wasteload allocation. The parameters discharged are identified by the data available to Ohio EPA - Monthly Operating Report (MOR) data submitted by the permittee, compliance sampling data collected by Ohio EPA, and any other data submitted by the permittee, such as priority pollutant scans required by the NPDES application or by pretreatment, or other special conditions in the NPDES permit. The sources of effluent data used in this evaluation are as follows:

Self-monitoring data (LEAPS)	March 2007 through September 2010
Ohio EPA compliance sampling data	2009

The data was reviewed for outliers, and none was deleted from the analysis.

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

The PEQ values are used according to Ohio rules to compare to applicable water quality standards (WQS) and allowable wasteload allocation (WLA) values for each pollutant evaluated. Initially, PEQ values are compared to the applicable average and maximum WQS. If both PEQ values are less than 25 percent of the applicable WQS, the pollutant does not have the reasonable potential to cause or contribute to exceedances of WQS, and no 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 8 for a summary of the screening results.

Wasteload Allocation For those parameters that require a WLA, the results are based on the uses assigned to the receiving waterbody in OAC 3745-1. Dischargers are allocated pollutant loadings/concentrations based on the Ohio Water Quality Standards (OAC 3745-1). Because of its proximity to Lake Erie, the Port Clinton plant is modeled as a direct discharge to the lake. The following dilution calculation is used for direct discharges to lakes:

$$WLA = 11 \times (\text{Water Quality Criteria}) - 10 \times (\text{Background Concentration})$$

The data used in the WLA are listed in Tables 5 and 6. The wasteload allocation results to maintain all applicable criteria are presented in Table 7.

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

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

The wasteload allocation calculations for WET were done using the same dilution calculation as above. These values are the levels of effluent toxicity that should not cause toxicity in the receiving water. For the Port Clinton wastewater plant, the wasteload allocation values are 1.0 TU_a and 11.0 TU_c .

Reasonable Potential/ Effluent Limits/Hazard Management Decisions

After appropriate effluent limits are calculated, the reasonable potential of the discharger to violate the water quality standards must be determined. Each parameter is examined and placed in a defined "group". Parameters that do not have a water quality standard or do not require a wasteload allocation based on the initial screening are assigned to either group 1 or 2. For the allocated parameters, the preliminary effluent limits (PEL) based on the most restrictive average and maximum wasteload allocations are selected from Table 7. The average PEL (PEL_{avg}) is compared to the average PEQ (PEQ_{avg}) from Table 3, and the PEL_{max} is compared to the PEQ_{max} . Based on the calculated percentage of the allocated value [$(PEQ_{avg} \div PEL_{avg}) \times 100$, or $(PEQ_{max} \div PEL_{max}) \times 100$], the parameters are assigned to group 3, 4, or 5. The groupings are listed in Table 8.

The final effluent limits are determined by evaluating the groupings in conjunction with other applicable rules and regulations. Table 9 presents the final effluent limits and monitoring requirements proposed for Port Clinton outfall 2PD00014001 and the basis for their recommendation.

The limits proposed for dissolved oxygen, COD_5 (5-day carbonaceous biochemical oxygen demand), total suspended solids and ammonia-nitrogen are based on the existing permit which were derived from treatment technology required under Ohio's antidegradation rule [OAC 3745-1-05(C)(2)].

The limits proposed for oil and grease and pH are based on Ohio water quality standards (OAC 3745-1-07).

Per rule 3745-33-06 of the Ohio Administrative Code, any publicly owned treatment works (POTW) in the Lake Erie basin with a design flow of 1.0 million gallons per day or more, or designated as a major discharger by the director, must meet a total phosphorus discharge limit of 1.0 milligram per liter as a thirty-day average. Therefore, the existing 30-day average (1.0 mg/l) and weekly phosphorus limit (1.5 mg/l) remains unchanged in the permit.

The limit proposed for total residual chlorine is based on wasteload allocation limited by application of the Inside Mixing Zone Maximum (IMZM). The IMZM is a value calculated to avoid rapidly lethal conditions in the effluent mixing zone. The effluent limit for chlorine at

outfall 2PD00014001 is less than the quantification level of 0.050 mg/l. However, a Pollutant Minimization Program is not required because the dosing rate of dechlorination chemicals ensures that the water quality based effluent limit is being met. Though reasonable potential assessment requires monitoring, the limit is continued based on the design criteria of the plant.

As allowed under paragraph (C)(1)(c) of Rule 3745-33-05, the loading limits proposed for CBOD₅, total suspended solids, ammonia-N, phosphorus and mercury are based on a flow value of 24 MGD. This flow value is based on plant design and is the peak hourly wet weather flow that the plant is capable of treating under wet weather conditions.

Based on reasonable potential for requiring monitoring in NPDES permits [OAC 3745-33-07(A)], monitoring is proposed for zinc. This pollutant is included in Group 4 under the risk assessment procedures (Table 8).

Ohio rules for implementing water quality standards [OAC 3745-2-08(L)] require that mixing zones for bioaccumulative chemicals of concern (BCCs) be phased out as of November 15, 2010. This means that dischargers will need to meet water quality standards at the discharge point for BCCs after that date. Mercury is considered a BCC.

The draft permit included a provision in Part II that required Port Clinton to evaluate its low level mercury data prior to submitting its next NPDES renewal application. The City had to determine if it would be able to meet a final mercury effluent limit of 1.3 ng/l, which is the wildlife criteria for mercury that applies in the Lake Erie basin. Based on its evaluation, the City submitted information stating that they will not be able to meet the 1.3 ng/l limit, and therefore they applied for a general mercury variance to the water quality standard.

Basis for approval of mercury variance

The City of Port Clinton has applied for coverage under the general mercury variance, Rule 3745-33-07(D)(10) of the Ohio Administrative Code. Based on the results of low-level mercury monitoring, the permittee has determined that its wastewater treatment plant cannot meet the 30-day average water quality based effluent limit (WQBEL) of 1.3 nanograms per liter (ng/l). However, the permittee believes that the plant will be able to achieve an annual average mercury effluent concentration of 12 ng/l. The variance application also demonstrated to the satisfaction of Ohio EPA that there is no readily apparent means of complying with the WQBEL without constructing prohibitively expensive end-of-pipe controls for mercury. Based on these factors, the permittee is eligible for coverage under the general mercury variance.

Ohio EPA has reviewed the mercury variance application and has determined that it meets the requirements of the Ohio Administrative Code. As a result, Ohio EPA is proposing an approval of mercury variance in the NPDES permit. Mercury variance provisions are being added as Items U and V in Part II of the NPDES permit. The following requirements have been included in the draft permit:

- A variance-based monthly average effluent limit of 5.8638 ng/l, which was developed from sampling data submitted by the permittee;
- A requirement that the permittee make reasonable progress to meet the water-quality-based effluent limit for mercury by implementing the plan of study, which has been developed as part of the Pollutant Minimization Program (PMP);
- Low-level mercury monitoring of the plant's influent and effluent;
- A requirement that the annual average mercury effluent concentration is less than or equal to 12 ng/l as specified in the plan of study;
- A summary of the elements of the plan of study;
- A requirement to submit an annual report on implementation of the PMP; and
- A requirement for submittal of a certification stating that all permit conditions related to implementing the plan of study and the PMP have been satisfied, but that compliance with the monthly average water quality based effluent limit for mercury has not been achieved.

The agency, after review of their application, approved the mercury variance and recommended monthly average limit of 5.8638 ng/l. The daily maximum limit of 3400 ng/l is based on the WLA.

Other parameters

Based on reasonable potential for requiring monitoring in NPDES permits [OAC 3745-33-07(A)], monitoring is proposed for free cyanide, copper, cadmium, dissolved hexavalent chromium, total chromium, lead and nickel. Because these pollutants were included in Groups 2 and 3 under the risk assessment procedures (Table 8), monitoring at a reduced frequency of once per quarter is proposed. The purpose of the monitoring is to maintain a current data base on the level of these pollutants in the plant effluent. This data will be used to assess reasonable potential at future permit renewals.

Additional monitoring requirements proposed for the final effluent, influent, upstream/downstream and sludge stations are based on best engineering judgment 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, for designing plant improvements, and conducting future stream studies.

Evaluating the acute toxicity results in Table 4 under the provisions of 40 CFR Part 132, Appendix F, Procedure 6, gives a PEQ value of 0 TU_a and an (estimated) chronic PEQ of 0 TU_c. Reasonable potential for toxicity is not demonstrated, since these values are less than the wasteload allocation values of 1.0 TU_a and 11.0 TU_c.

Though no acute toxicity was noticed in the effluent, annual biomonitoring for chronic toxicity with determination of acute end points 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

The facility is aware that the water quality standards for *E. coli* became effective in March 2010. They are prepared to convert from fecal coliform disinfection testing to *E. coli* testing. Since they do not anticipate problems meeting the proposed monthly and weekly geometric mean concentrations of 126 and 284 per 100 ml respectively, these limits have been recommended in the permit.

Provisions for reporting sanitary sewer overflows (SSOs) are continued. 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.

The implementation of Port Clinton's CSO long-term control plan is addressed under a federal consent decree (Civil Case 3:99CV7434 and 3:99CV7435; U.S. District Court of the Northern District of Ohio, Western Division; September 1999). Under its long-term control plan, the City completed treatment plant upgrades including installation of a 24 MGD Actiflo ballasted flocculation system comprised of two treatment trains.

The permit includes the following stations that are monitored to determine compliance with final effluent limits and to monitor plant operations under both dry and wet weather conditions:

- Station 001 is the final plant outfall. All flows from the plant under dry and wet weather conditions are discharged through this station. All flows discharged through this station are disinfected during the recreation season.
- Station 602 is an internal monitoring station for effluent from the final clarifiers when the plant is operating in storm mode.
- Station 603 is the discharge from the Actiflo units if they are used for tertiary treatment. This mode of operation has not ever been used.
- Station 604 is the discharge from the Actiflo units when they are operating in storm mode.

Under normal dry weather plant operations, one Actiflo unit is used for primary treatment while the other is maintained in a ready mode. When the plant is operating in storm mode, one or both of the Actiflo units may be used. One unit treats storm flows up to 5 - 6 million gallons. When storm flows exceed 6 - 8 million gallons, the second Actiflo unit is brought into storm mode. All flows discharge through final outfall 001 and are disinfected during the recreation season.

SEWAGE 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.

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.

Other Requirements

Operator Certification

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

Operator of Record

Fact Sheet for NPDES Permit Renewal, Port Clinton Wastewater Treatment Plant, 2010

In December 2006, Ohio Administrative Code rule revisions became effective which affect the requirements for certified operators for sewage collection systems and treatment works regulated under NPDES permits. Part II, Item A of this NPDES permit reflects implementation of rule 3745-7-02 of the Ohio Administrative Code (OAC). It requires the permittee to designate one or more operators of record to oversee the technical operation of the treatment works.

Storm Water Compliance

Parts IV, V, and VI have been included with the draft permit in order to ensure that any storm water flows from the facility site are properly regulated and managed. As an alternative to complying with Parts IV, V, and VI, the Port Clinton WWTP may seek permit coverage under the general permit for industrial storm water (permit # OHR000004) or submit a "No Exposure Certification." Parts IV, V, and VI will be removed from the final permit if: 1) the Port Clinton WWTP submits a Notice of Intent (NOI) for coverage under the general permit for industrial storm water or submits a No Exposure Certification, 2) Ohio EPA determines that the facility is eligible for coverage under the general permit or meets the requirements for a No Exposure Certification, and 3) the determination by Ohio EPA can be made prior to the issuance of the final permit.



Figure 1. Approximate location of Port Clinton wastewater treatment plant.

Portage River – Downstream State Route 19	S02P06 (12.55)	516.0 ^B	32	9.0	26	38.5	NON	Nutrient/Eutrophication Siltation PCBs in sediment	Upstream sources, Brush Wellman
Portage River – Downstream Oak Harbor WWTP	S02S14 (11.10)	518.0 ^B	36	9.5	20	32.5	NON	Nutrient/Eutrophication Siltation PCBs in sediment	Upstream sources, Brush Wellman

Location	STORET (RM) ^a	Drain. (mi ²)	IBI	MIwb ^b	ICI ^c	QHEI	Status ^d	Causes	Sources
Portage River – Upstream Little Portage River	S99Q01 (6.00)	540.0 ^B	22	6.9	18	26.0	NON	Nutrient/Eutrophication Siltation	Upstream sources

Figure 2. Watershed Assessment Unit Summary That Includes Lower Portage River

Table 1. Unaltered Monthly Operating Report Data/Effluent Characterization Using Self-Monitoring Data

Parameter	Season	Units	Current Permit Limits		# Obs.	Percentiles		Data Range
			30 day	Daily		50 th	95 th	
Outfall 001								
Water Temperature	Annual	C	-	-	1341	16	24	2-28
Dissolved Oxygen	Summer	mg/l	-	5.2 Min	736	7.8	9.3	5.7-10.8
Dissolved Oxygen	Winter	mg/l	-	5.2 Min	605	9.7	11.9	6.2-13.3
Total Suspended Solids	Annual	mg/l	25.5	38.2 ^d	593	9	39	1-128
Oil and Grease, Hexane Extr Method	Annual	mg/l	-	10 Max	44	0	0	0-0
Nitrogen, Ammonia (NH3)	Summer	mg/l	11.5	17.2 ^d	315	0.63	5.66	0-11.6
Nitrogen, Ammonia (NH3)	Winter	mg/l	12	18 ^d	260	1.44	6.06	0-14.1
Nitrite Plus Nitrate, Total	Annual	mg/l	-	-	44	8.23	20.1	0.96-27.1
Phosphorus, Total (P)	Annual	mg/l	1.0	1.5 ^d	572	0.31	0.884	0.02-3
Cyanide, Free	Annual	mg/l	-	-	15	0	0	0-0
Nickel, Total Recoverable	Annual	ug/l	-	-	15	0	0	0-0
Zinc, Total Recoverable	Annual	ug/l	-	-	15	45	223	22-306
Cadmium, Total Recoverable	Annual	ug/l	-	-	15	0	0	0-0
Lead, Total Recoverable	Annual	ug/l	-	-	15	0	9.4	0-15
Chromium, Total Recoverable	Annual	ug/l	-	-	15	0	0	0-0
Copper, Total Recoverable	Annual	ug/l	-	38	46	6	15.8	0-20
Chromium, Dissolved Hexavalent	Annual	ug/l	-	-	15	0	0	0-0
Fecal Coliform	Annual	#/100 ml	1000	2000 ^d	316	1	105	1-14200
Flow Rate	Summer	MGD	-	-	736	1.35	3.5	0.659-14.4
Flow Rate	Winter	MGD	-	-	605	1.63	6.86	0.598-17.1
Flow Rate	Annual	MGD	-	-	1341	1.41	5.21	0.598-17.1
Chlorine, Total Residual	Annual	mg/l	-	0.038	736	0.01	0.02	0-0.04
Mercury, Total (Low Level)	Annual	ng/l	-	-	15	2.78	5.68	0.99-7
pH, Maximum	Annual	S.U.	-	9.0	1341	7.1	7.5	6.6-7.9
pH, Minimum	Annual	S.U.	-	6.5	1341	7	7.3	6.5-7.7
CBOD 5 day	Summer	mg/l	21.2	33.8 ^d	309	19.5	46.2	0-76.3
CBOD 5 day	Winter	mg/l	21.2	33.8 ^d	260	6.05	19.6	1.4-30.5

d = weekly

Table 2. Effluent Characterization

Summary of analytical results for City of Port Clinton outfall 2PD00014001. Units ug/l unless otherwise noted; OEPA = data from analyses by Ohio EPA; ND = not detected (detection limit).

PARAMETER	OEPA 09/14/09	OEPA 10/19/09
Dissolved solids, total (mg/l)	578	598
Copper	5.0 (2)	3.2
Nickel	2.8 (2)	4.7
Barium	<15(15)	15
Iron	386	180
Strontium	1230	1410
Zinc	18	22
Chloride (mg/l)	88.7	91.7
Nitrate+Nitrite (mg/l)	19.4	11.9
Phosphorus (mg/l)	0.881	0.194
TKN (mg/l)	1.70	1.13
Bromodichloromethane	23.9	16.0
Bromomethane	0.64	ND(0.5)
Bromoform	0.64	ND(0.5)
Chloroform	31.2	19.9
Dibromochloromethane	10.5	5.28

Table 3.**Effluent Data for the Port Clinton WWTP**

Parameter	Units	Number of Samples	Number > MDL	PEQ Average	PEQ Maximum
Arsenic - TR	ug/l	3	0	--	--
Bromodichloromethane	ug/l	2	2	66.3	90.82
Bromoform (Tribromomethane)	ug/l	2	1	1.77536	2.432
Bromomethane	ug/l	2	1	1.77536	2.432
Cadmium - TR	ug/l	15	0	--	--
Chlorine (wwh,ewh, mwh,cwh) - TRes	mg/l	705	462	0.012524	0.022315
Chloroform (Trichloromethane)	ug/l	2	2	86.5488	118.56
Chromium - TR	ug/l	21	0	--	--
Chromium VI - Diss	ug/l	15	0	--	--
Copper - TR	ug/l	47	38	12.104	18.332
Cyanide - free	mg/l	15	0	--	--
Dibromochloromethane	ug/l	2	2	29.127	39.9
Lead - TR	ug/l	15	2	16.425	22.5
Mercury - TR (BPO)	ng/l	15	15	5.8638	9.6665
Mercury - TR (APO)	ng/l	15	15	5.8638	9.6665
Nickel - TR	ug/l	17	2	4.8034	6.58
Oil & grease	mg/l	53	0	--	--
Phenol (wwh,ewh,mwh)	ug/l			--	--
Phosphorus	mg/l	561	561	0.54825	1.0531
Selenium - TR	ug/l	3	0	--	--
Zinc - TR	ug/l	17	17	149.63	264.93
Ammonia-S	mg/l	210	185	4.0846	7.6998
Ammonia-W	mg/l	116	115	3.9331	9.1023
Nitrate-N + Nitrite-N	mg/l	45	45	25.725	41.688
Chlorides	mg/l	1	1	401.4562	549.94
Iron - TR	ug/l	2	2	1070.764	1466.8
Strontium	ug/l	2	2	3911.34	5358
TKN	mg/l	1	1	5.11438	7.006
Dissolved solids (ave)	mg/l	2	2	1658.852	2272.4
Dissolved solids (max)	mg/l	2	2	1658.852	2272.4
Barium	ug/l	2	1	41.61	57
Manganese - TR	ug/l	2	1	33.288	45.6

Table 4. Summary of acute toxicity test results on the Port Clinton wastewater treatment plant effluent.

Test Date(a)	<i>Ceriodaphnia dubia</i> 48 hour								<i>Fathead Minnows</i> 48 hour							
	UP ^b	C ^c	LC ₅₀ ^d	EC ₅₀ ^e	%A ^f	%M ^g	TUa ^h	NF ⁱ	UP ^b	C ^c	LC ₅₀ ^d	EC ₅₀ ^e	%A ^f	%M ^g	TUa ^h	NF ⁱ
5/11/04(O)*	0	0	>100	>100	0	0	BD	0	0	0	>100	>100	0	0	BD	0
5/12/04(O)*	NT	0	>100	>100	0	0	BD	NT	NT	10	>100	>100	15	15	BD	NT
6/15/04(O)*	0	0	>100	>100	0	0	BD	0	0	0	>100	>100	5	5	BD	0
6/16/04(O)*	NT	0	>100	>100	0	0	BD	NT	NT	0	>100	>100	0	0	BD	NT
9/15/09 (O) *	0	0	>100	>100	0	0	BD	0	0	0	>100	>100	0	0	BD	5
9/16/09 (O) *	NT	5	>100	>100	0	0	BD	NT	NT	0	>100	>100	0	0	BD	NT
10/20/09 (O) *	0	5	>100	>100	0	0	BD	0	0	0	>100	>100	0	0	BD	0
10/21/09 (O) *	NT	0	>100	>100	0	0	BD	NT	NT	0	>100	>100	0	0	BD	NT

^a O = EPA test; E = entity test

^b UP = upstream control water

^c C = laboratory water control

^d LC₅₀ = median lethal concentration

^e EC₅₀ = median effects concentration

NT = not tested

* = 48 hour scening test

^f %A = percent adversely affected in 100% effluent

^g %M = percent mortality in 100% effluent

^h TUa = acute toxicity units

ⁱ NF = 1:1 manual mixing zone sample

ND = not determined

BD = below detection

Table 5.

Water Quality Criteria in the Study Area

Parameter	Units	Outside Mixing Zone Criteria					Maximum Aquatic Life	Inside Mixing Zone Maximum
		Wildlife	Average					
			Human Health	Agri-culture	Aquatic Life			
Arsenic - TR	ug/l	--	580	100	150	340	680	
Bromodichloromethane	ug/l	--	180c	--	340	3100	6200	
Bromoform (Tribromomethane)	ug/l	--	890c	--	230	1100	2200	
Bromomethane	ug/l	--	2600	--	16	38	75	
Cadmium - TR	ug/l	--	730	50	3.2	6.6	13	
Chlorine (wwh,ewh, mwh,cwh) - TRes	mg/l	--	--	--	0.011	0.019	0.038	
Chloroform (Trichloromethane)	ug/l	--	1700c	--	140	1300	2600	
Chromium - TR	ug/l	--	14000	100	110	2400	4800	
Chromium VI - Diss	ug/l	--	14000	--	11	16	31	
Copper - TR	ug/l	--	64000	500	12	19	38	
Cyanide - free	mg/l	--	48	--	0.0052	0.022	0.044	
Dibromochloromethane	ug/l	--	150c	--	320	2900	5800	
Lead - TR	ug/l	--	--	100	9.9	190	380	
Mercury - TR (BPO)	ng/l	1.3	3.1	10000	910	1700	3400	
Mercury - TR (APO)	ng/l	1.3	3.1	10000	910	1700	3400	
Nickel - TR	ug/l	--	43000	200	69	620	1200	
Oil & grease	mg/l	--	--	--	--	10	--	
Phenol (wwh,ewh,mwh)	ug/l	--	2400	--	400	4700	9400	
Phosphorus	mg/l	--	--	--	--	--	--	
Selenium - TR	ug/l	--	3100	50	5	--	--	
Zinc - TR	ug/l	--	35000	25000	160	160	320	
Ammonia-S	mg/l	--	--	--	--	--	--	
Ammonia-W	mg/l	--	--	--	--	--	--	
Nitrate-N + Nitrite-N	mg/l	--	--	100	--	--	--	
Chlorides	mg/l	--	--	--	--	--	--	
Iron - TR	ug/l	--	--	5000	--	--	--	
Strontium	ug/l	--	1400000	--	21000	40000	81000	
TKN	mg/l	--	--	--	--	--	--	
Dissolved solids (ave)	mg/l	--	--	--	1500	--	--	
Dissolved solids (max)	mg/l	--	--	--	1500	--	--	
Barium	ug/l	--	160000	--	220	2000	4000	
Manganese - TR	ug/l	--	61000	--	--	--	--	

Table 6.

Instream Conditions and Discharger Flow

<u>Parameter</u>	<u>Units</u>	<u>Season</u>	<u>Value</u>	<u>Basis</u>
<i>Stream Flows</i>				
1Q10	cfs	annual	0	
7Q10	cfs	annual	0	
		summer	0	
		winter	0	
30Q10	cfs	summer	0	
		winter	0	
Harmonic Mean	cfs	annual	0	
Mixing Assumption	%	average	--	
	%	maximum	--	
<i>Hardness</i>	mg/l	annual	140	
<i>pH</i>	S.U.	summer	0	
		winter	0	
<i>Temperature</i>	C	summer	0	
		winter	0	
<i>Port Clinton WWTP flow</i>	cfs	annual	3.09	

Table 6.

Instream Conditions and Discharger Flow

Parameters	Unit	Value	Basis

Table 7.

Summary of Effluent Limits to Maintain Applicable WQ Criteria

Parameter	Units	Outside Mixing Zone Criteria					Maximum Aquatic Life	Inside Mixing Zone Maximum
		Wildlife	Average					
			Human Health	Agri-culture	Aquatic Life			
Arsenic - TR	ug/l	--	6380	1100	1650	--	680	
Bromodichloromethane	ug/l	--	1980	--	3740	--	6200	
Bromoform (Tribromomethane)	ug/l	--	9790	--	2530	--	2200	
Bromomethane	ug/l	--	28600	--	176	--	75	
Cadmium - TR	ug/l	--	8028	548	33	--	13	
Chlorine (wwh,ewh, mwh,cwh) - TRes	mg/l	--	--	--	0.12	--	0.038	
Chloroform (Trichloromethane)	ug/l	--	18700	--	1540	--	2600	
Chromium - TR	ug/l	--	153850	950	1060	--	4800	
Chromium VI - Diss	ug/l	--	154000	--	121	--	31	
Copper - TR	ug/l	--	703950	5450	82	--	38	
Cyanide - free	mg/l	--	528	--	0.057	--	0.044	
Dibromochloromethane	ug/l	--	1650	--	3520	--	5800	
Lead - TR	ug/l	--	--	1080	89	--	380	
Mercury - TR (BPO)	ng/l	14	34	110000	10010	--	3400	
Mercury - TR (APO)	ng/l	1.3	3.1	10000	910	--	3400	
Nickel - TR	ug/l	--	472800	2000	559	--	1200	
Oil & grease	mg/l	--	--	--	--	--	--	
Phenol (wwh,ewh,mwh)	ug/l	--	26400	--	4400	--	9400	
Phosphorus	mg/l	--	--	--	--	--	--	
Selenium - TR	ug/l	--	34100	550	55	--	--	
Zinc - TR	ug/l	--	384850	274850	1610	--	320	
Ammonia-S	mg/l	--	--	--	--	--	--	
Ammonia-W	mg/l	--	--	--	--	--	--	
Nitrate-N + Nitrite-N	mg/l	--	--	1093	--	--	--	
Chlorides	mg/l	--	--	--	--	--	--	
Iron - TR	ug/l	--	--	55000	--	--	--	
Strontium	ug/l	--	15400000	--	231000	--	81000	
TKN	mg/l	--	--	--	--	--	--	
Dissolved solids (ave)	mg/l	--	--	--	12680	--	--	
Dissolved solids (max)	mg/l	--	--	--	12680	--	--	
Barium	ug/l	--	1760000	--	2420	--	4000	
Manganese - TR	ug/l	--	671000	--	--	--	--	

Table 8 Parameter Assessment

Parameter	Units	Effluent Limits				Basis ^b
		Concentration Loading (kg/day) ^a				
		Monthly Average	Daily Maximum	Monthly Average	Daily Maximum	
Flow	MGD	----- Monitor -----				M
Temperature	°C	----- Monitor -----				M
Dissolved Oxygen	mg/l	5.2 minimum		–	–	EP
BOD ₅	mg/l	21.2	33.8 ^c	1929	3075 ^c	EP
Suspended Solids	mg/l	25.5	38.2 ^c	2320	3475 ^c	EP
Ammonia-N						
Summer	mg/l	11.5	17.2 ^c	1046	1565 ^c	EP
Winter	mg/l	12.0	18.0 ^c	1092	1637 ^c	EP
Oil and Grease	mg/l	Not to exceed 10 at any time			WQS	
pH	S.U.	----- 6.5 to 9.0 -----				WQS
E.coli						
Summer Only	#/100ml	126	284 ^c	--	--	WQS
Chlorine Residual						
Summer Only	mg/l	Not to exceed 0.038 at any time				WLA/IMZM, EP
Phosphorus	mg/l	1.0	1.5 ^c	91	136 ^c	IJC, EP
Nitrate(N) + Nitrite(N)	mg/l	----- Monitor -----				M
Cyanide, Free	mg/l	----- Monitor -----				M
Cadmium, T. R.	µg/l	----- Monitor -----				M
Chromium, T. R.	µg/l	----- Monitor -----				M
Hex. Chromium (Dissolved)	µg/l	----- Monitor -----				M
Copper, T. R.	µg/l	----- Monitor -----				M
Lead, T. R.	µg/l	----- Monitor -----				M
Mercury, T.	ng/l	5.8638	3400	0.000052	0.308	Variance/WLA
Nickel, T. R.	µg/l	----- Monitor -----				M
Zinc, T. R.	µg/l	----- Monitor -----				RP, M
Chronic Toxicity, <i>C.dubia</i>	TUc	----- Monitor -----				FAR
Chronic Toxicity, <i>P.promelas</i>	TUc	----- Monitor -----				FAR
Acute Toxicity, <i>C.dubia</i>	TUa	----- Monitor -----				FAR
Acute Toxicity, <i>P.promelas</i>	TUa	----- Monitor -----				FAR

^a Effluent loadings based on a wet weather discharge flow of 24 MGD based on plant design. The average design flow of the plant is 2.0 MGD. Any increase in the average design flow is subject to the provisions of the antidegradation rule (OAC 3745-1-05).

^b Definitions: 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; IJC = 1988 revision of the 1972 Great Lakes Water Quality Agreement of the International Joint Commission; M = BEJ of Permit Guidance 1: Monitoring Frequency Requirements for Sanitary Discharges; RP = Reasonable Potential for requiring water quality-based effluent limits and monitoring requirements in NPDES permits [OAC 3745-33-07(A)]; 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); FAR= Federal Application Requirement; Variance = Mercury Variance Application [3743-33-07](D)(10) of the Ohio Administrative Code.

^c Weekly average limit.