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 **Wheeling Pittsburgh Steel - Steubenville South**

Public Notice No.:
Public Notice Date:
Comment Period Ends:

OEPA Permit No.: **0ID00034*FD**
Application No.: (OH #) **OH0011355**

Name and Address of Applicant:

**Wheeling Pittsburgh Steel Corporation**
**1134 Market Street**
**Wheeling, West Virginia 26003**

Name and Address of Facility Where Discharge Occurs:

**Wheeling-Pittsburgh Steel Corporation**
**Steubenville South Plant**
**McLister Avenue**
**Mingo Junction, Ohio 43938**
**Jefferson County**

Receiving Water: **Cross Creek**
**Jumbo Run**
**Ohio River**

Subsequent Stream Network: **Ohio River**
**Mississippi 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.

This permit renewal is proposed for a term of approximately **four years**, expiring on **January 31, 2008**. This schedule will allow the Wheeling Pittsburgh Steel - Steubenville South permit to be on a similar schedule with the other facilities within the same watershed basin.

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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**
**Lazarus Government Center**
**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**
**Water Resource Management Section**
**Lazarus Government Center**
**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.

The application, fact sheet, public notice, permit including effluent limitations, special conditions, comments received and other documents are available for inspection and may be copied at a cost of 25 cents per page at the Ohio Environmental Protection Agency at the address shown above any time between the hours of 8:00 a.m. and 5:00 p.m., Monday through Friday. Copies of the Public Notice are available at no charge at the same address.

## Location of Discharge/Receiving Water Use Classification

The Wheeling-Pittsburgh Steel (or WPS) Steubenville South Plant, which is also known as the Mingo Junction Plant, discharges to the Ohio River at the following River Miles:

910.73 (outfall 008)
910.70 (outfall 003)
910.55 (outfall 004)
910.45 (outfall 005)
910.06 (outfall 007)

The Steubenville South Plant also discharges to Cross Creek at River Mile 0.3 through outfall 011. Cross Creek enters the Ohio River at River Mile 909.80. In addition, stormwater outfalls discharge to the Ohio River (three outfalls), Cross Creek (two outfalls), and Jumbo Run (one outfall).

This segment of the Ohio River is described by Ohio EPA River Code: 25-650; USEPA River Reach #: 05030106-002; County: Jefferson; Ecoregion: Western Allegheny Plateau. The Ohio River is presently designated for the following uses: Warmwater Habitat (WWH), Agricultural Water Supply (AWS), Industrial Water Supply (IWS), Bathing Waters (BW). The approximate location of the WPS Steubenville South Plant is shown in Figure 1.

Figure 1. Approximate Location of WPS Steubenville South Plant

## Facility Description

The Wheeling-Pittsburgh Steel Corporation operates the Steubenville South Plant located in Mingo Junction. This facility uses coke and iron ore as raw materials, and manufactures iron, steel, steel slabs, and steel strip. The process operations at the Steubenville South Plant are categorized under the Standard Industrial Classification (SIC) code 3312: blast furnaces, steel works, and rolling mills. As a result, Title 40 of the Code of Federal Regulations (40 CFR), Part 420, which is titled "Iron and Steel Manufacturing Point Source Category", applies to the process wastewaters generated by this facility. (See Attachment A at the end of this document for further details on applicable federal regulations or guidelines.)

The plant can be divided into four primary manufacturing operations: 1) blast furnace, 2) basic oxygen furnace, 3) continuous caster, and 4) 80-inch hot strip mill. The Steubenville South Plant has two blast furnaces, one of which is currently in operation for the production of iron used in manufacturing steel. This furnace produces approximately 8,200,000 pounds (or 4,100 tons) of iron per day. The gases resulting from this process contain suspended solids, lead, zinc, cyanide, phenols, and ammonia. The gases are passed through a scrubber system which cools the gases and removes impurities with the resulting process water being sent to a treatment facility.

The basic oxygen furnaces (BOFs) produce approximately 18,000,000 pounds (or 9,000 tons) per day of primarily, low carbon steel. The Steubenville South Plant has two BOFs, but only one is operated at any given time. Process waste waters produced by the BOFs are generated through gas cooling and cleaning systems, and are sent to a facility wastewater treatment plant.

The continuous caster at the Steubenville South Plant is a two-strand caster. Average daily production for this system is 17,000,000 pounds (or 8,500 tons). Three water systems are used in this component of plant operation: a mold cooling water system, a machine water system, and a spray water system. Mold and machine waters are non-contact cooling waters, while the spray cooling waters are contact cooling waters.

The 80-inch hot strip mill (HSM) produces approximately 9,710 tons of hot rolled steel strip each day. The major components of the HSM include: three re-heat furnaces, five roughing rolling stands, six finishing rolling stands, a runout table, and two downcoilers. The re-heat furnaces heat steel slabs to 2,000 to 2,400 °F. The steel slabs are then delivered to the roughing rolling stands where the slabs are reduced to approximately one inch in thickness. The finishing rolling stands further reduce the thickness of the steel to the desired gauge before the steel is coiled.

Large amounts of process wastewater is generated during the operation of the hot strip mill, due to scale removal and cooling. Process wastewater is pumped to a treatment facility within the Steubenville South Plant.

Water is supplied for use throughout the South Plant from two sources. Potable water is supplied from the City of Mingo Junction municipal water system. There is also one active water intake structure on the Ohio River.

## Description of Existing Discharge

Table 1 shows the external discharges or outfalls, the types of plant operations contributing wastewater to each outfall, and the average amount discharged. All of the external outfalls discharge directly to the Ohio River with the exception of outfall 011, which discharges to a storm sewer in the Village of Mingo Junction which then discharges to Cross Creek. The average flow shown in Table 1 for each outfall is based upon the flows reported in the NPDES application and the monthly operating reports submitted by WPS Steubenville South to Ohio EPA. As shown in the table,

| process wastewaters from the... | ...are discharged from outfall... |
|---|---|
| blast furnace | 004 |
| basic oxygen furnace | 005 |
| 80-inch hot strip mill | 007 |
| continuous caster | 007 |

**Table 1. External Outfalls, Sources of Wastewater, and Average Discharge Flows***

| Outfall No. | Type of Plant Operation Contributing Wastewater | Receiving Waters | Average Flow (in MGD) |
|---|---|---|---|
| 001 | • Storm water runoff; roof and surface runoff | Ohio River | -- |
| 003 | • Blowing room non-contact cooling water, turbo cooling water, and surface runoff | Ohio River | 39 |
| 004 | • Blast furnace non-contact cooling water, surface water runoff, and floor drains<br>• Blast furnace scrubber process water (outfall 601)<br>• Boiler blowdown (outfall 607) | Ohio River | 23.5 |
| 005 | • Basic oxygen furnace (outfall 605)<br>• Lance cooling water<br>• 80-inch hot strip mill finishing cooling tower blowdown<br>• Surface water runoff | Ohio River | 1.4 |
| 007 | • 80-inch hot strip mill reheat furnace non-contact cooling water<br>• 80-inch hot strip mill (outfall 603)<br>• Continuous caster (outfall 606)<br>• Reheat furnace non-contact cooling water | Ohio River | 25.5 |
| 008 | • Cooling tower blowdown and reject from reverse osmosis system<br>• Non-contact cooling water and storm water runoff | Ohio River | 0.2 |

**Table 1. External Outfalls, Sources of Wastewater, and Average Discharge Flows***

| Outfall No. | Type of Plant Operation Contributing Wastewater | Receiving Waters | Average Flow (in MGD) |
|---|---|---|---|
| 009 | • Cooling tower blowdown, non-contact cooling water, floor drains, surface water runoff, air compressor condensate | Ohio River | 0.046 |
| 010 | • River water standpipe overflow | Ohio River | -- |
| 011 | • Non-contact cooling water from hot strip mill, surface water runoff, and floor drains | Cross Creek | 0.2 |
| 014 | • Condenser cooling water | Ohio River | 0.5 |
| 015, 016, 017 | • Storm water runoff from railyard | Ohio River | -- |
| 018 | • Plant surface runoff and post drains | Jumbo Run | -- |
| 019 | • Storm water runoff from employee parking lot | Cross Creek | -- |
| 020 | • Storm water runoff from Main Access Bridge | Cross Creek | -- |

* External outfalls discharge directly into a stream or other surface waters of the state.

Outfall 008 includes reject from a reverse osmosis treatment system which has been included in the plant operation with the addition of a cogeneration plant designed to process boiler blowdown and blast furnace gas condensate. Dechlorination treatment is also provided to wastewaters prior to discharge at outfall 008. Outfall 006 has been eliminated, and the flows that previously discharged through this outfall have been routed to the intake clarifiers for river water.

The types of plant operations contributing wastewater, treatment provided, and external outfalls associated with each internal outfall is included in Table 2.

**Table 2. Internal Outfalls, Sources of Wastewater and Treatment, and Discharge Points***

| Outfall No. | Type of Plant Operation Contributing Wastewater | Type of Treatment Provided | Discharge Point (External outfall) |
|---|---|---|---|
| 601 | • Blast furnace scrubber process water | Sedimentation<br>Evaporation<br>Neutralization<br>Flocculation<br>Rapid sand filtration<br>Vacuum filtration<br>Disinfection<br>Coagulation | Outfall 004 |

**Table 2. Internal Outfalls, Sources of Wastewater and Treatment, and Discharge Points***

| Outfall No. | Type of Plant Operation Contributing Wastewater | Type of Treatment Provided | Discharge Point (External outfall) |
|---|---|---|---|
| 603 | • 80-inch hot strip mill treatment system | Sedimentation<br>Evaporation<br>Rapid sand filtration<br>Belt filtration<br>Oil skimming | Outfall 007 |
| 605 | • Basic oxygen furnace scrubber treatment system | Flocculation<br>Sedimentation<br>Chemical Precipitation<br>Flocculation<br>Sedimentation<br>Rapid sand filtration<br>Neutralization<br>Belt filtration | Outfall 005 |
| 606 | • Continuous caster blowdown treatment system | Sedimentation<br>Evaporation<br>Sand filtration | Outfall 007 |
| 607 | • Boiler blowdown | Evaporation<br>Coagulation<br>Flocculation<br>Sedimentation<br>Vacuum filtration | Outfall 004 |

* All internal outfalls discharge to an external outfall.

Table 4, beginning on page 21, presents a summary of the chemicals detected and concentrations of those chemicals measured for outfalls 003, 004, 005, 007, 008, 009, and 011. The data reflects effluent samples compiled from the NPDES application. Table 5 shows effluent concentrations of chemicals for outfalls 004 and 007 resulting from bioassay tests performed by Ohio EPA.

Table 6 (pages 26 - 33) presents a summary of unaltered monthly operational report data for January 1998 through December 2002 for outfalls 003, 004, 005, 007, 008, 009, 011, 014, 601, 603, 605, 606, 607, 620, 630, 631, and 801. In addition to monthly operating report data, these tables show the current permit limits, and monthly average $PEQ_{avg}$ (Projected Effluent Quality) and daily maximum $PEQ_{max}$ values.

The Steubenville South Plant has reported several parameter concentrations which were violations of permit limits since 1999. The most violations have been reported for copper at outfall 009 with 21 exceedances of permit limits. The highest concentration reported at outfall 009 for copper was 152 micrograms per liter (ug/l) in February 2000. Ten violations of zinc concentration limits were reported for outfall 005, with three of these values being equal to greater than 1300 ug/l. Violations reported since 1999 are summarized as follows:

<u>Outfall</u> <u>Parameter</u> <u>Number of Violations</u>

| | | |
|---|---|---|
| 004 | Cyanide | 3 |
| | Zinc | 1 |
| 005 | Lead | 1 |
| | Zinc | 10 |
| 007 | Zinc | 1 |
| 009 | Copper | 21 |
| 620 | Cyanide | 2 |
| 630 | total suspended solids | 2 |

## Reported Spills at the Facility and Water Quality of Receiving Stream

Table 3 shows the reported spills at the Steubenville South facility. Although the type of pollutant could not be identified for many of these spills, the result was a visible sheen on the Ohio River. In addition, the cause of several spills was due to the use of a bypass to the treatment system. The Ohio River impact of these spills as well as authorized discharges from WPS cannot be determined at this time since a recent biological assessment of this segment of the Ohio River is not available.

**Table 3. Records of Pollution Spills With Suspected Origin from Wheeling Pittsburgh Steel: Steubenville South**

| DATE | Waterbody Affected | Suspected Pollutant | Cause | Amount Spilled |
|---|---|---|---|---|
| 01/12/1998 | Jumbo Run | [sheen] | unknown | unknown |
| 04/28/1998 | Ohio River | [sheen] | bypass | unknown |
| 06/16/1998 | not applicable | pickle liquor | cut or break | 100 gallons |
| 07/09/1998 | Ohio River | [sheen] | bypass | unknown |
| 03/10/1999 | not applicable | hydraulic oil | cut or break | 50 gallons |
| 05/03/1999 | Ohio River | wastewater | bypass | unknown |
| 05/11/1999 | Ohio River | wastewater | bypass | unknown |

**Table 3. Records of Pollution Spills With Suspected Origin from Wheeling Pittsburgh Steel: Steubenville South (continued)**

| DATE | Waterbody Affected | Suspected Pollutant | Cause | Amount Spilled |
|---|---|---|---|---|
| 06/07/1999 | Ohio River | wastewater | bypass | unknown |
| 06/14/1999 | Ohio River | [sheen] | unknown | unknown |

| | | | | |
|---|---|---|---|---|
| 06/24/1999 | Ohio River | [sheen] | bypass | unknown |
| 07/14/1999 | Ohio River | lube oil | cut or break | 10 gallons |
| 07/27/1999 | Ohio River | [sheen] | bypass | unknown |
| 08/07/2000 | Ohio River | oil | bypass | 5 gallons |
| 11/02/2000 | Ohio River | oil | bypass | unknown |
| 03/01/2002 | Ohio River | scrubber water | bypass | unknown |
| 07/03/2002 | Ohio River | cooling water | bypass | unknown |
| 07/09/2002 | Ohio River | hydraulic oil | cut or break | 2 pounds |
| 07/17/2002 | [air release] | benzene | cut or break | 44 pounds |
| 09/18/2002 | not applicable | ferrous chloride | equip. failure | 3000 gallons |
| 11/07/2002 | not applicable | hazardous waste | overflow | 10 gallons |
| 11/14/2002 | Ohio River | [sheen] | bypass | unknown |
| 03/07/2003 | Ohio River | scrubber water | bypass | unknown |
| 03/13/2003 | Ohio River | [sheen] | bypass | unknown |

Source: Ohio EPA, Division of Emergency Response and Remedial Action

## 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. In addition, whole effluent toxicity issues must be addressed. The study area is depicted in Figure 2.

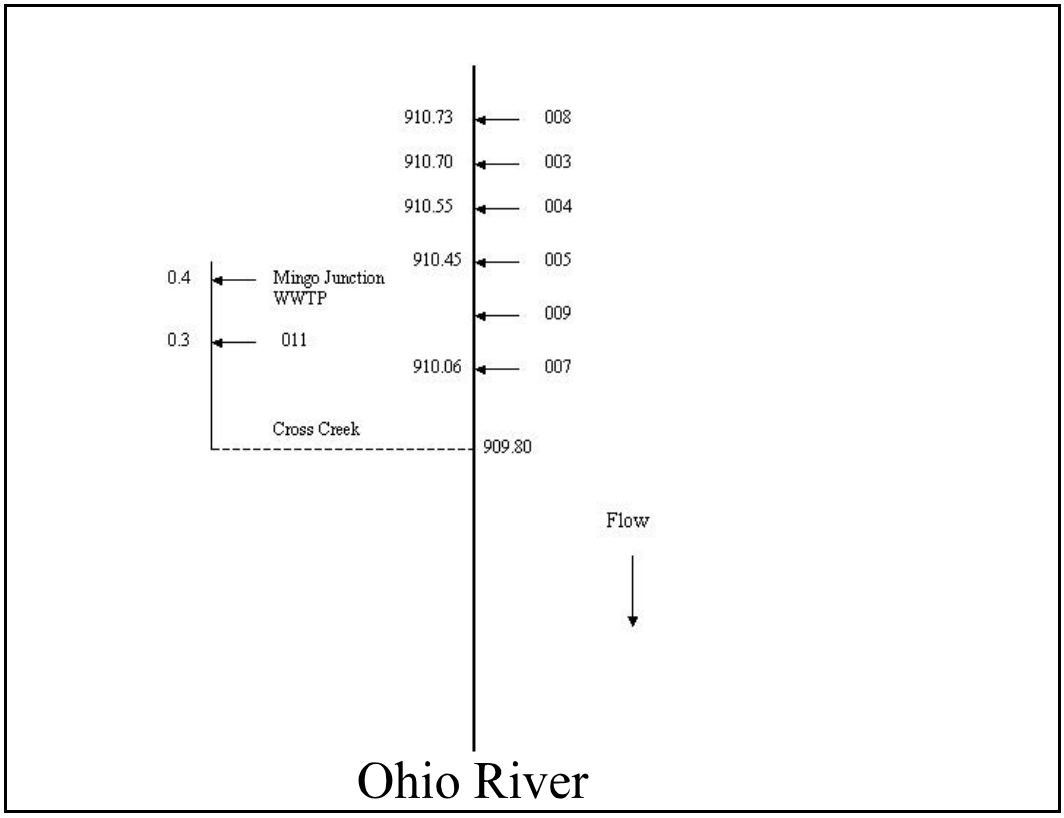

Figure 2. Ohio River Study Area

## Parameter Selection

Effluent data for Wheeling Pittsburgh Steel was used to determine what parameters should undergo wasteload allocation. The major sources of the effluent data are as follows;

| | |
|---|---|
| Self-monitoring data (LEAPS) | November 1998 - December 2002 |
| 2c data | 1998 |
| Ohio EPA data | May 1996 - October 2002 |

The average and maximum projected effluent quality (PEQ) values are presented in Table 7. For a summary of the screening results, refer to the parameter groupings in Tables 11-003 through 11-011.

## Wasteload Allocation

For those parameters that required a wasteload allocation (WLA), the results were based on the applicable Outside Mixing Zone criteria for Warmwater Habitat, the Human Health criteria (non-drinking water), and the Agricultural Water Supply criteria in the Ohio River mainstem. Due to the large instream dilutions in the Ohio river, the average aquatic life WLAs used 10% of the ${}_{7}Q_{10}$ as the stream

design flow, while the maximum aquatic life WLAs used 1% of the $_7Q_{10}$. The WLAs to maintain the WQS for human health and agricultural water supply were based on 10% of the harmonic mean flow. The data used in the WLA are listed in Tables 8 and 9. The wasteload allocation results to maintain all applicable criteria are presented in Table 10.

## Effluent Limits/Hazard Management Decisions

After appropriate effluent limits are calculated by wasteload allocation, the lowest most restrictive average and maximum values are selected from Table 10 and are referred to as Preliminary Effluent Limits ($PEL_{avg}$ and $PEL_{max}$ respectively). The reasonable potential of the discharger to exceed the wasteload allocation (PEL values) is determined by comparing the $PEQ_{avg}$ to the $PEL_{avg}$ and the $PEQ_{max}$ to the $PEL_{max}$ for each parameter. Based on this comparison, each parameter is 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. Parameters are assigned to group 3, 4, or 5 depending on how close the PEQ value is to the allocated value or PEL. The groupings listed in Tables 11-003 through 11-011 reflect the reasonable potential hazard assessment done according to WLA procedures for outfalls 003, 004, 005, 007, 008, 009, and 011.

The final effluent limits are determined by evaluating the groupings in Tables 11-003 through 11-011 in conjunction with other applicable rules and regulations. Tables 12-001 through 12-631 shows the proposed NPDES limits for the WPS Steubenville South Plant for the following outfalls: 001, 003, 004, 005, 007, 008, 009, 011, 014, 015, 016, 017, 018, 019, 020, 601, 603, 605, 606, 607, 610, 611, 620, 630, and 631.

Federal and State laws/regulation require that dischargers meet both treatment-technology-based limits and any more stringent standards needed to comply with state WQS. Permit limits are based on the more restrictive of the two. Treatment-technology-based limits for the iron and steel manufacturing industry, found in 40 CFR Part 420, are based on the kilograms of pollutant allowed to be discharged per 1000 kilograms of production. The plant production rates used are the maximum 30-day average rates for the past five years. Limits are calculated as follows: TSS limits (kg./day) = BPT (kg./kkg.) x production (kkg./day)

Detailed explanation of the recommended limits and/or monitoring requirements for each outfall are given below.

### *Outfall 001*

This outfall discharges wastewater from roof drains and surface runoff. Monitoring is proposed for precipitation, flow rate, as well as zinc to ensure that this metal does not cause water quality problems.

### *Outfall 003*

Ohio EPA's risk assessment (Table 11-003) places zinc in group 4. This placement as well as the data in Tables 6 and 7 support that this parameter should not pose an environmental hazard and limits are not necessary to protect water quality. Monitoring is proposed to document that this pollutant

continues to remain at low levels. Monitoring for temperature, oil & grease, and flow rate are proposed to continue in order to assist in the evaluation of effluent quality.

***Outfall 004***

Ohio EPA's risk assessment (Table 11-004) places free cyanide, lead, and zinc in group 3. This placement as well as the data in Tables 6 and 7 support that these parameters should not pose an environmental hazard and limits are not necessary to protect water quality. Monitoring is proposed to continue to document that these pollutants remain at relatively low levels. Monitoring for temperature, suspended solids, oil & grease, and flow rate are proposed to continue in order to assist in the evaluation of effluent quality, and treatment plant performance.

The minimum limit for pH of 6.0 standard units is based upon a study performed in 1994 showing that this limit at the end-of-pipe would be protective of the outside mixing zone criteria of 6.5 standards units. Toxicity monitoring has been removed from the permit based upon recent testing which showed no evidence of toxicity. (See the following section entitled, "Whole Effluent Toxicity.")

***Outfall 005***

Ohio EPA's risk assessment has placed zinc in Group 5 and has recommended limits to protect water quality. Since the daily maximum limit for zinc is more stringent than the existing limit, and 14 samples of effluent showed concentrations of zinc which would have been greater than the new limit, the draft permit includes a compliance schedule which provides three years to meet the more stringent limit.

Ohio EPA's risk assessment (Table 11-005) places lead in group 4. This placement as well as the data in Tables 6 and 7 support that this parameter should not pose an environmental hazard and limits are not necessary to protect water quality. Monitoring is proposed to document that this pollutant continues to remain at low levels. Monitoring for temperature, oil & grease, and flow rate are proposed to continue in order to assist in the evaluation of effluent quality. The minimum limit for pH of 6.0 standard units is based upon a study performed in 1994 showing that this limit at the end-of-pipe would be protective of the outside mixing zone criteria of 6.5 standards units.

***Outfall 007***

Ohio EPA's risk assessment (Table 11-007) places cadmium in group 4. This placement as well as the data in Tables 6 and 7 support that this parameter should not pose an environmental hazard and limits are not necessary to protect water quality. Monitoring is proposed to document that this pollutant continues to remain at low levels.

Ohio EPA's risk assessment (Table 11-007) places free cyanide, lead, and zinc in group 3. This placement as well as the data in Tables 6 and 7 support that these parameters should not pose an environmental hazard and limits are not necessary to protect water quality. Monitoring is proposed to continue to document that these pollutants remain at relatively low levels. Monitoring for other parameters placed into group 3 is not warranted based on concentration levels and the small likelihood of these pollutants being present at levels of concern at this outfall.

Monitoring for temperature, oil & grease, and flow rate are proposed to continue in order to assist in the evaluation of effluent quality. The minimum limit for pH of 6.0 standard units is based upon a study performed in 1994 showing that this limit at the end-of-pipe would be protective of the outside mixing zone criteria of 6.5 standards units.

***Outfall 008***

Ohio EPA's risk assessment has placed chlorine and copper in Group 5 and has recommended limits to protect water quality. Since several of the samples for chlorine would have exceeded the proposed daily maximum limit for this parameter, the draft permit includes a compliance schedule of three years which should provide adequate time for WPS to meet the new limit.

The placement of copper into Group 5 is based upon only one sample. In order to determine if this sample is representative of the effluent from outfall 008, the draft permit proposes monitoring only for copper in order to develop a more statistically reliable database for copper prior to re-assessing the need for limits during the subsequent permit renewal in 2008.

Ohio EPA's risk assessment (Table 11-008) places lead and zinc in Group 4, and free cyanide in Group 3. This placement as well as the data in Tables 6 and 7 support that these parameters should not pose an environmental hazard and limits are not necessary to protect water quality. Monitoring is proposed to document that these pollutants continue to remain at low levels.

Monitoring for temperature, suspended solids, oil & grease, and flow rate are proposed to continue in order to assist in the evaluation of effluent quality. The minimum limit for pH of 6.0 standard units is based upon a study performed in 1994 showing that this limit at the end-of-pipe would be protective of the outside mixing zone criteria of 6.5 standards units.

***Outfall 009***

Ohio EPA's risk assessment (Table 11-009) has placed copper and zinc in Group 5 and has recommended limits to protect water quality. The proposed daily maximum limits for both copper and zinc are more stringent than the existing permit limits. Since several of the samples for copper over the last five years would have exceeded the proposed daily maximum limit for this parameter, the draft permit includes a compliance schedule of three years which should provide adequate time for WPS to meet the new limit. A three-year compliance schedule is also provided for zinc.

Ohio EPA's risk assessment places lead in group 3. This placement as well as the data in Tables 6 and 7 support that this parameter should not pose an environmental hazard and limits are not necessary to protect water quality. Monitoring is proposed to continue to document that this pollutant remains at relatively low levels. Monitoring for other parameters placed into group 3 is not warranted based on concentration levels and the small likelihood of these pollutants being present at levels of concern at this outfall.

Monitoring for temperature, oil & grease, and flow rate are proposed to continue in order to assist in the evaluation of effluent quality. The minimum limit for pH of 6.0 standard units is based upon a study performed in 1994 showing that this limit at the end-of-pipe would be protective of the outside mixing zone criteria of 6.5 standards units.

***Outfall 011***

Ohio EPA's risk assessment (Table 11-011) places free cyanide, lead, and zinc in group 3. This placement as well as the data in Tables 6 and 7 support that these parameters should not pose an environmental hazard and limits are not necessary to protect water quality. Monitoring is proposed to continue to document that these pollutants remain at relatively low levels. Monitoring for other parameters placed into group 3 is not warranted based on concentration levels and the small likelihood of these pollutants being present at levels of concern at this outfall.

Monitoring for temperature, oil & grease, and flow rate is proposed to continue in order to assist in the evaluation of effluent quality. The minimum limit for pH of 6.0 standard units is based upon a study performed in 1994 showing that this limit at the end-of-pipe would be protective of the outside mixing zone criteria of 6.5 standards units.

***Outfall 014***

The discharge from this outfall is limited to steam condensate from steam driven water pumps at the plant's water works. Monitoring for water temperature and flow rate is proposed to continue in the draft permit.

***Outfalls 015, 016, and 017***

Monitoring of the stormwater discharges from areas contributing flow to these outfalls has shown concentrations of copper and zinc at levels of concern. As a result, the permit includes quarterly monitoring for precipitation, flow rate, copper, and zinc.

***Outfalls 018, 019, and 020***

Sampling of the discharges from areas contributing flow to these outfalls has shown concentrations of copper, lead, and zinc at levels of concern. As a result, the permit includes quarterly monitoring for precipitation, flow rate, copper, lead, and zinc. Chromium has also been detected at levels of concern for outfall 020 and has been included in the permit for this outfall.

***Outfall 601***

The monitoring requirements for this internal outfall are based upon the Federal Effluent Guidelines (FEG) for Iron and Steel Manufacturing Point Source Category found in 40 CFR Parts 420.32(a) and 420.33(a), and are shown in Table 12-601. The limits for this outfall are applied at calculated outfall 620. (See below.)

***Outfall 603***

Table 12-603 shows the limits and monitoring requirements for outfall 603. The limits for suspended solids and oil & grease are based upon the FEG for the hot forming subcategory found in 40 CFR Part 420.72(c)(1) and the estimated production from the hot strip mill of 19,420,000 pounds per day. Monitoring requirements for pH are also based upon the same FEG. Monitoring for zinc and and lead is based upon the existing permit requirements and due to continued detection of these pollutants at this outfall.

***Outfall 605***

The monitoring requirements for this internal outfall are based upon the FEG for the basic oxygen furnace found in 40 CFR Parts 420.42(c) and 420.43(c), and are shown in Table 12-605. The limits for this outfall are applied at calculated outfall 630. (See below.)

***Outfall 606***

Table 12-606 shows the limits and monitoring requirements for outfall 606. The limits for suspended solids, oil & grease, and pH are based upon the FEG for the continuous casting subcategory found in Part 420.62(c)(1) and the estimated production from the continuous caster of 17,000,000 pounds per day. Limits for lead and zinc are based upon best available technology economically achievable found in 40 CFR Part 420.63 of the FEG. Monitoring for flow is important to characterize the effluent quality.

***Outfall 607***

Table 12-607 shows the limits and monitoring requirements for outfall 607. The limits for suspended solids and oil & grease are based upon best professional judgement given the characteristics of the wastewater discharged. The pH limits are based upon Ohio water quality standards and best professional judgement. Lead and zinc have been included in the draft permit since these pollutants continue to be detected in the effluent at levels which warrant continued monitoring. Monitoring for flow is important to characterize the effluent quality.

***Outfall 610***

This outfall is an emergency overflow from the blast furnace recycle system. It is assumed that discharges from outfall 610 contain only process wastewaters. When a discharge occurs, the monitoring required, which is shown in Table 12-610, is identical to that specified for outfall 601, with the exception that outfall 610 is sampled only when an emergency overflow or bypass occurs. WPS has not reported a discharge from this outfall for at least the last five years.

***Outfall 611***

This outfall is an emergency overflow from the basic oxygen furnace treatment system emergency overflow. It is assumed that discharges from outfall 610 contain only process wastewaters. When a discharge occurs, the monitoring required, which is shown in Table 12-611, is identical to that specified for outfall 605, with the exception that outfall 611 is sampled only when an emergency overflow occurs. WPS has not reported a discharge from this outfall for at least the last five years.

***Outfall 620***

Outfall 620 is a calculated station used to report the summation of pollutants discharged from internal monitoring outfalls 601 and 610. The limits and monitoring requirements for outfall 620 are shown in Table 11-620, and are based upon the FEG, the Ironmaking Subcategory found in 40 CFR Parts 420.32(a) and 420.33(a). Loading limits for suspended solids, total cyanide, lead, phenolic 4AAP, and zinc have been re-calculated based upon the production estimate of 8,200,000 pounds per day, and are somewhat more stringent than the limits in the existing permit.

In the existing permit, the limits for ammonia and phenolics are based upon a variance approved in accordance with Section 301(g) of the Clean Water Act on March 11, 1987. Section 301(g) allows the U.S. EPA Administrator, with the concurrence of the State, to modify BAT (Best Available Technology Economically Achievable) limits found in the FEG for certain pollutants, provided that the discharge will meet BPT (Best Practicable Control Technology Available) limits and any applicable WQBELs. With this draft permit, Ohio EPA is proposing much lower limits for both ammonia and total phenolics based upon the data reported over the last five years. In order to calculate limits which are more appropriate for ammonia, Ohio EPA analyzed the data using techniques for determining projected effluent quality (PEQ). Each of these values was then increased by 20 percent to determine the proposed limit in order to allow for analytical and production variability. The table below shows that WPS should no difficulty complying with these limits, and that these limits are well below the BPT limits. In addition, the proposed limits are well below any WQBELs calculated for the 1987 variance, which estimated a daily maximum WQBEL limit of 1320 kilograms per day. Also, using STORET temperature and pH data from the Pike Island Lock downstream from WPS, and using 10 percent of the 7Q10 Ohio River flow, results in a very conservative 30-day average WQBEL of 2024 kilograms per day.

| | | | Proposed Limits (PEQ +20%) | | - - - -BPT Limits - - - - | | Maximum |
|---|---|---|---|---|---|---|---|
| Parameter | PEQ ave. | PEQ max. | 30-day ave. | daily max. | 30-day ave. | daily max. | Value |
| Ammonia (kg/day) | | | | | | | |
| Summer | 16.3 | 25.3 | 25.7 | 35.2 | 200 | 600 | 32.6 |
| Winter | 22.9 | 35.8 | 27.5 | 42.9 | 200 | 600 | 36.4 |

For phenolics, the draft permit proposes to incorporate the BAT limits from the Federal Effluent Guidelines. The data over the last five years shows that two values were higher than the proposed daily maximum loading limit of 0.22 kilograms per day; Ohio EPA determined that these two values were outliers since they were more than six times greater than next highest value. Ohio EPA believes that WPS should not have difficulty in complying with the BAT limits for phenolics.

***Outfall 630***

Outfall 630 is a calculated station used to report the summation of pollutants discharged from internal monitoring outfalls 605 and 611. The limits and monitoring requirements for outfall 630 are shown in Table 12-630, and are based upon the FEG for the basic oxygen furnace found in 40 CFR Parts 420.42(c) and 420.43(c). Loading limits for suspended solids, lead, and zinc have been continued fropm the existing permit even though the higher production estimates in the permit renewal

application result in slightly higher loading limits. The existing limits have been retained since WPS has not requested an increase in loadings through an anti-degradation review.

Effluent from the operation of the electric arc furnace will also discharge through outfall 605. However, the loading limits for outfall 630 have not been adjusted based upon the potential increase in pollutants from the operation of the electric arc furnace since doing so would effectively increase the permitted loadings at final outfall 005 for an increase in production which was not previously authorized.[1]

***Outfall 631***

This outfall is a calculated station which represents the total effluent load limitations for internal stations 603, 607, 620, and 630, and is a continuation of existing permit requirements.

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.

## Whole Effluent Toxicity

Whole effluent toxicity or "WET" is the total toxic effect of an effluent on aquatic life in the receiving stream 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. WET values are then compared to a calculated allowable effluent toxicity "AET" value. This comparison along with an assessment of the instream community are two ways in which whole effluent toxicity is evaluated.

AET calculations are similar to aquatic life criteria wasteload allocation calculations. The $Q_{7,10}$ and chronic toxicity unit ($Tu_c$) are used to calculated the average allowable AET and the $Q_{1,10}$ and acute toxicity unit ($Tu_a$ ) are used to calculate the maximum allowable AET. Based upon the effluent flow rate and the flow of the Ohio River, the maximum allowable toxicity values calculated for each outfall at WPS Steubenville South (003 through 011) are as follows (on next page):

[1] In order to include the potential pollutant loadings from the operation of the electric arc furnace in the determination of limits for outfall 630, WPS would need to request an increase in permitted loadings, which would result in an anti-degradation review. WPS has not requested an increase in permitted loadings.

| Outfall # | Chronic Toxicity ($TU_c$) | Acute Toxicity ($TU_a$) |
|---|---|---|
| 003 | 10.6 | 0.41 |
| 004 | 18.6 | 0.41 |
| 005 | 313. | 1.0 |
| 007 | 18.2 | 0.41 |
| 008 | 1872. | 1.0 |
| 009 | 9703. | 1.0 |
| 011 | 2319. | 1.0 |

The chronic toxicity unit ($TU_c$) is defined as 100 divided by the $IC_{25}$:

$$Tu_c = \frac{100}{IC_{25}}$$

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):

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

The acute toxicity unit ($TU_a$) is defined as 100 divided by the LC50 for the most sensitive test species:

$$Tu_a = \frac{100}{LC50}$$

This equation applies outside the mixing zone for warmwater, modified warmwater, exceptional warmwater, coldwater, and seasonal salmonid use designations. When the calculated AET is less than 1.0 $TU_a$, Allowable Effluent Toxicity is defined as:

| Dilution Ratio (downstream flow to discharger flow) | Allowable Effluent Toxicity (percent effects in 100% effluent) |
|---|---|
| up to 2 to 1 | 30 |
| greater than 2 to 1 but less than 2.7 to 1 | 40 |
| 2.7 to 1 to 3.3 to 1 | 50 |

Ohio EPA conducted toxicity testing at outfalls 004 and 007 in December 2000 and again in October 2002. These tests revealed no evidence of toxicity in the effluent. In addition, testing performed by WPS from 1993 through 1998 for outfalls 003, 004, 005, 007, and 008 showed no evidence of toxicity. Based upon these results, biomonitoring has not been included in the draft permit.

## Table 4. Chemical Data From NPDES Permit Application

| | 1998 Permit Application Renewal Form 2C | | | | |
|---|---|---|---|---|---|
| | Effluent | | | Intake | |
| Parameter | No. of Samples | Average | Maximum | No. of Samples | Average |
| ***Outfall 003*** | | | | | |
| Aluminum (ug/l) | 1 | | 280. | 1 | 440. |
| Ammonia (mg/l) | 1 | | 0.35 | 53 | <1.08 |
| Barium (ug/l) | 1 | | 34. | 1 | 37. |
| Biochemical Oxygen Demand (mg/l) | 1 | | 1.1 | 1 | <1.0 |
| Boron (ug/l) | 1 | | 30. | 1 | 33. |
| Chemical Oxygen Demand (mg/l) | 1 | | <10.0 | 1 | <10.0 |
| Fecal Coliform (no./100 ml) | 1 | | 240 | 1 | 240 |
| Fluoride (mg/l) | 1 | | 0.11 | 1 | 0.12 |
| Iron (ug/l) | 1 | | 600. | 1 | 990. |
| Magnesium (mg/l) | 1 | | 6.7 | 1 | 7.0 |
| Manganese (ug/l) | 1 | | 160. | 1 | 190. |
| Nitrate-Nitrite as N (mg/l) | 1 | | 0.8 | 1 | 0.88 |
| Nitrogen, Total Organic as N (mg/l) | 1 | | <1.0 | 1 | 1.0 |
| Oil and Grease (mg/l) | 13 | | 3 | 53 | <1.62 |
| Phosphorus (mg/l) | 1 | | 0.069 | 1 | 0.066 |
| Sulfate (mg/l) | 1 | | 73.0 | 1 | 71.0 |
| Surfactants (mg/l) | 1 | | 0.026 | 1 | 0.046 |
| Tin (ug/l) | 1 | | <10. | 1 | 34. |
| Total Organic Carbon (mg/l) | 1 | | 1.6 | 1 | 1.6 |
| Total Suspended Solids (mg/l) | 1 | | 10.0 | 54 | <29.23 |
| Zinc (ug/l) | 1 | | 19. | 54 | <33. |
| ***Outfall 004*** | | | | | |
| Aluminum (ug/l) | 1 | | 490. | 1 | 440. |
| Ammonia (mg/l) | 56 | 0.35 | 1.40 | 53 | <1.08 |
| Barium (ug/l) | 1 | | 40. | 1 | 37. |
| Biochemical Oxygen Demand (mg/l) | 1 | | 2.6 | 1 | <1.0 |
| Boron (ug/l) | 1 | | 56. | 1 | 33. |
| Chromium (ug/l) | 1 | | 42. | 1 | <10. |
| Cyanide (mg/l) | 1 | | <0.0050 | 54 | <0.005 |
| Fecal Coliform (No./100ml) | 1 | | 480 | 1 | 240 |
| Fluoride (mg/l) | 1 | | 0.23 | 1 | 0.12 |
| Iron (ug/l) | 1 | | 1000. | 1 | 990. |
| Lead (ug/l) | 55 | 3.5 | 10. | 54 | <2.6 |
| Magnesium (mg/l) | 1 | | 7.6 | 1 | 7.0 |
| Manganese (ug/l) | 1 | | 190. | 1 | 190. |
| Nitrate-Nitrite as N (mg/l) | 1 | | 0.63 | 1 | 0.88 |
| Nitrogen, Total Organic (mg/l) | 1 | | <1.0 | 1 | 1.0 |
| Oil and Grease (mg/l) | 56 | <1.0 | 14.0 | 53 | <1.62 |
| Phosphorus (mg/l) | 1 | | 0.059 | 1 | 0.066 |
| Sulfate (mg/l) | 1 | | 42.0 | 1 | 71.0 |
| Surfactants (mg/l) | 1 | | 0.037 | 1 | 0.046 |
| Total Organic Carbon (mg/l) | 1 | | 3.5 | 1 | 1.6 |
| Total Suspended Solids (mg/l) | 56 | 35.66 | 503 | 54 | <29.23 |
| Zinc (ug/l) | 55 | 53. | 140. | 54 | <33. |

## Table 4. Chemical Data From NPDES Permit Application (continued)

| | 1998 Permit Application Renewal Form 2C | | | | |
|---|---|---|---|---|---|
| | ----------Effluent---------- | | | ----------Intake---------- | |
| **Parameter** | **No. of Samples** | **Average** | **Maximum** | **No. of Samples** | **Average** |
| ***Outfall 005*** | | | | | |
| Aluminum (ug/l) | 1 | | 270. | 1 | 440. |
| Ammonia (mg/l) | 1 | | 0.16 | 53 | <1.08 |
| Barium (ug/l) | 1 | | <10. | 1 | 37. |
| Biochemical Oxygen Demand (mg/l) | 1 | | 1.4 | 1 | <1.0 |
| Boron (ug/l) | 1 | | 130. | 1 | 33. |
| Cyanide (mg/l) | 1 | | <0.0050 | 54 | <0.005 |
| Fecal Coliform (No./100ml) | 1 | | 20 | 1 | 240 |
| Fluoride (mg/l) | 1 | | 3.4 | 1 | 0.12 |
| Iron (ug/l) | 1 | | 230. | 1 | 990. |
| Lead (ug/l) | 54 | 41. | 420. | 54 | <2.6 |
| Magnesium (mg/l) | 1 | | 1.3 | 1 | 7.0 |
| Manganese (ug/l) | 1 | | <10. | 1 | 190. |
| Nitrate-Nitrite as N (mg/l) | 1 | | 1.7 | 1 | 0.88 |
| Nitrogen, Total Organic (mg/l) | 1 | | 1.3 | 1 | 1.0 |
| Oil and Grease (mg/l) | 54 | 1.7 | 14.0 | 53 | <1.62 |
| Phosphorus (mg/l) | 1 | | 0.030 | 1 | 0.066 |
| Sulfate (mg/l) | 1 | | 130.0 | 1 | 71.0 |
| Surfactants (mg/l) | 1 | | <0.025 | 1 | 0.046 |
| Tin (ug/l) | 1 | | <180. | 1 | 34. |
| Total Organic Carbon (mg/l) | 1 | | 2.5 | 1 | 1.6 |
| Zinc (ug/l) | 54 | 177. | 1600. | 54 | <32.9 |
| ***Outfall 007*** | | | | | |
| Aluminum (ug/l) | 1 | | 220. | 1 | 440. |
| Ammonia (mg/l) | 1 | | 0.11 | 54 | <1.08 |
| Barium (ug/l) | 1 | | 31. | 1 | 37. |
| Biochemical Oxygen Demand (mg/l) | 1 | | 1.6 | 1 | <1.0 |
| Boron (ug/l) | 1 | | 42. | 1 | 33. |
| Chemical Oxygen Demand (mg/l) | 1 | | 16 | 1 | <10 |
| Chromium (ug/l) | 1 | | 42. | 1 | <10. |
| Fecal Coliform (No./100ml) | 1 | | 50 | 1 | 240 |
| Fluoride (mg/l) | 1 | | 0.86 | 1 | 0.12 |
| Iron (ug/l) | 1 | | 550. | 1 | 990. |
| Lead (ug/l) | 54 | 3. | <18. | 54 | <2.6 |
| Magnesium (mg/l) | 1 | | 6.8 | 1 | 7.0 |
| Manganese (ug/l) | 1 | | 110. | 1 | 190. |
| Nitrate-Nitrite as N (mg/l) | 1 | | 0.72 | 1 | 0.88 |
| Nitrogen, Total Organic (mg/l) | 1 | | 1.0 | 1 | 1.0 |
| Oil and Grease (mg/l) | 54 | 2.5 | 40.0 | 54 | <1.62 |
| Phosphorus (mg/l) | 1 | | 0.68 | 1 | 0.066 |
| Sulfate (mg/l) | 1 | | 74.0 | 1 | 71.0 |
| Surfactants (mg/l) | 1 | | 0.029 | 1 | 0.046 |
| Tin (ug/l) | 1 | | <10. | 1 | 34. |
| Total Organic Carbon (mg/l) | 1 | | 3 | 1 | 1.6 |
| Total Suspended Solids (mg/l) | 1 | | 2.8 | 54 | <29.23 |
| Zinc (ug/l) | 55 | 45. | 770. | 54 | <33. |

**Table 4. Chemical Data From NPDES Permit Application (continued)**

| | 1998 Permit Application Renewal Form 2C | | | | |
|---|---|---|---|---|---|
| | Effluent | | | Intake | |
| Parameter | No. of Samples | Average | Maximum | No. of Samples | Average |
| ***Outfall 008*** | | | | | |
| Aluminum (ug/l) | 1 | | 380. | 1 | 440. |
| Ammonia (mg/l) | 1 | | 0.15 | 53 | <1.08 |
| Barium (ug/l) | 1 | | 34. | 1 | 37. |
| Biochemical Oxygen Demand (mg/l) | 1 | | 1.0 | 1 | <1.0 |
| Boron (ug/l) | 1 | | 83. | 1 | 33. |
| Copper (ug/l) | 1 | | 15. | 54 | 13. |
| Fecal Coliform (No./100ml) | 1 | | 2100 | 1 | 240 |
| Fluoride (mg/l) | 1 | | 0.31 | 1 | 0.12 |
| Iron (ug/l) | 1 | | 770. | 1 | 990. |
| Lead (ug/l) | 1 | | 9.3 | 54 | <2.6 |
| Magnesium (mg/l) | 1 | | 6.5 | 1 | 7.0 |
| Manganese (ug/l) | 1 | | 150. | 1 | 190. |
| Nitrate-Nitrite as N (mg/l) | 1 | | 0.69 | 1 | 0.88 |
| Nitrogen, Total Organic (mg/l) | 1 | | <1.0 | 1 | 1.0 |
| Oil and Grease (mg/l) | 54 | 2.40 | 17.0 | 53 | <1.62 |
| Phosphorus (mg/l) | 1 | | 0.14 | 1 | 0.066 |
| Sulfate (mg/l) | 1 | | 80.0 | 1 | 71.0 |
| Surfactants (mg/l) | 1 | | <0.025 | 1 | 0.046 |
| Tin (ug/l) | 1 | | <10. | 1 | 34. |
| Total Organic Carbon (mg/l) | 1 | | 1.8 | 1 | 1.6 |
| Total Suspended Solids (mg/l) | 27 | 26.6 | 115 | 54 | <29.23 |
| Zinc (ug/l) | 1 | | 24. | 54 | <33. |
| ***Outfall 009*** | | | | | |
| Aluminum (ug/l) | 1 | | 170. | 1 | 440. |
| Barium (ug/l) | 1 | | 25. | 1 | 37. |
| Biochemical Oxygen Demand (mg/l) | 1 | | 16.5 | 1 | <1.0 |
| Boron (ug/l) | 1 | | 82. | 1 | 33. |
| Copper (ug/l) | 26 | 29. | 290. | 54 | <13. |
| Fecal Coliform (No./100ml) | 1 | | <10 | 1 | 240 |
| Fluoride (mg/l) | 1 | | 1.0 | 1 | 0.12 |
| Iron (ug/l) | 1 | | 620. | 1 | 990. |
| Lead (ug/l) | 1 | | 5. | 54 | <2.6 |
| Magnesium (mg/l) | 1 | | 2.9 | 1 | 7.0 |
| Manganese (ug/l) | 1 | | 70. | 1 | 190. |
| Nitrate-Nitrite as N (mg/l) | 1 | | 0.2 | 1 | 0.88 |
| Nitrogen, Total Organic (mg/l) | 1 | | <1.0 | 1 | 1.0 |
| Oil and Grease (mg/l) | 26 | 2.4 | 29.0 | 53 | <1.62 |
| Phosphorus (mg/l) | 1 | | 0.50 | 1 | 0.066 |
| Sulfate (mg/l) | 1 | | 112.3 | 1 | 71.0 |
| Surfactants (mg/l) | 1 | | <0.025 | 1 | 0.046 |
| Tin (ug/l) | 1 | | <10. | 1 | 34. |
| Total Suspended Solids (mg/l) | 1 | | 2.6 | 54 | <29.23 |
| Zinc (ug/l) | 26 | 62. | 740. | 54 | <33. |

**Table 4. Chemical Data From NPDES Permit Application (continued)**

| | 1998 Permit Application Renewal Form 2C | | | | |
|---|---|---|---|---|---|
| | ----------Effluent---------- | | | ----------Intake---------- | |
| **Parameter** | **No. of Samples** | **Average** | **Maximum** | **No. of Samples** | **Average** |
| ***Outfall 011*** | | | | | |
| Aluminum (ug/l) | 1 | | 120. | 1 | 440. |
| Ammonia (mg/l) | 1 | | 0.10 | 53 | <1.08 |
| Barium (ug/l) | 1 | | 37. | 1 | 37. |
| Bis (2-ethylhexyl) Phthalate (ug/l) | 1 | | 50. | 1 | <10. |
| Boron (ug/l) | 1 | | 190. | 1 | 33. |
| Chromium (ug/l) | 1 | | 42. | 1 | <10. |
| Cyanide (mg/l) | 1 | | 0.010 | 54 | <0.005 |
| Fecal Coliform (No./100ml) | 1 | | 40 | 1 | 240 |
| Fluoride (mg/l) | 1 | | 0.44 | 1 | 0.12 |
| Iron (ug/l) | 1 | | 160. | 1 | 990. |
| Lead (ug/l) | 55 | 3.5 | 10. | 54 | <2.6 |
| Magnesium (mg/l) | 1 | | 11.0 | 1 | 7.0 |
| Manganese (ug/l) | 1 | | 330. | 1 | 190. |
| Nitrate-Nitrite as N (mg/l) | 1 | | 1.1 | 1 | 0.88 |
| Nitrogen, Total Organic (mg/l) | 1 | | 1.0 | 1 | 1.0 |
| Oil and Grease (mg/l) | 13 | 2.80 | 12.0 | 53 | <1.62 |
| Phosphorus (mg/l) | 1 | | 0.045 | 1 | 0.066 |
| Sulfate (mg/l) | 1 | | 140.0 | 1 | 71.0 |
| Surfactants (mg/l) | 1 | | <0.025 | 1 | 0.046 |
| Tin (ug/l) | 1 | | <10. | 1 | 34. |
| Total Organic Carbon (mg/l) | 1 | | 2.9 | 1 | 1.6 |
| Total Suspended Solids (mg/l) | 1 | | 1.6 | 54 | <29.23 |
| Zinc (ug/l) | 1 | | 14. | 54 | <33. |

**Table 5. Chemical Data from Ohio EPA Bioassays**

| Parameter | ---------- Ohio EPA Bioassay Dates---------- 05/06/1996 | 12/11/2000 | 10/22/2002 |
|---|---|---|---|
| ***Outfall 004*** | | | |
| Ammonia (mg/l) | 0.15 | 0.409 | 0.099 |
| Biochemical Oxygen Demand (mg/l) | | 2.2 | < 2. |
| Calcium (mg/l) | 26. | 31. | 46. |
| Chemical Oxygen Demand (mg/l) | | 11. | < 10. |
| Chromium (ug/l) | < 30. | < 30. | < 30. |
| Barium (ug/l) | | 42. | 49. |
| Chloride (mg/l) | | 36. | 48.1 |
| Hardness (mg/l) | 94. | 110. | 168. |
| Iron (ug/l) | | 387. | 182. |
| Lead (ug/l) | 7. | < 2. | < 2. |
| Magnesium (mg/l) | 7. | 8. | 13. |
| Manganese (ug/l) | | 81. | 63. |
| Nitrate-Nitrite as N (mg/l) | | 0.9 | 1.62 |
| Phosphorus (mg/l) | | 0.11 | 0.706 |
| Potassium (mg/l) | | 3. | 4. |
| Sodium (mg/l) | | 21. | 45. |
| Strontium (ug/l) | | 152. | 330. |
| Total Dissolved Solids (mg/l) | | 210. | 322. |
| Total Kjeldahl Nitrogen (mg/l) | | 0.62 | 0.28 |
| Total Suspended Solids (mg/l) | | 5. | < 5. |
| Zinc (ug/l) | 63. | 15. | 14. |
| ***Outfall 007*** | | | |
| Aluminum (ug/l) | | 358. | < 200. |
| Ammonia (mg/l) | | 0.142 | 0.067 |
| Arsenic (ug/l) | | < 2. | 4. |
| Barium (ug/l) | | 44. | 52. |
| Cadmium (ug/l) | | < 0.2 | 1.64 |
| Calcium (mg/l) | | 30. | 45. |
| Chemical Oxygen Demand (mg/l) | | 17. | 12. |
| Chloride (mg/l) | | | 41.8 |
| Hardness (mg/l) | | 104. | 162. |
| Iron (ug/l) | | 829. | 140. |
| Lead (mg/l) | | < 2. | 18.4 |
| Magnesium (mg/l) | | 7. | 12. |
| Manganese (ug/l) | | 166. | 67. |
| Nitrate-Nitrite as N (mg/l) | | 0.925 | 1.31 |
| Phosphorus (mg/l) | | 0.07 | < 0.05 |
| Potassium (mg/l) | | 2. | 3. |
| Selenium (ug/l) | | < 2. | 7.3 |
| Sodium (mg/l) | | 20. | 45. |
| Strontium (ug/l) | | 148. | 322. |
| Total Dissolved Solids (mg/l) | | | 306. |
| Total Kjeldahl Nitrogen (mg/l) | | 0.35 | 0.33 |
| Zinc (ug/l) | | 25. | < 10. |

**Table 6.** **Effluent Characterization and Decision Criteria**

Summary of analytical results for Outfalls 003, 004, 005, 007, 008, 009, 011, 014, 601, 603, 605, 606, 607, 620, 630, 631, and 801. All values are in µg/l unless otherwise indicated. ND = below detection (detection limit); NA = not analyzed. Decision Criteria: $PEQ_{avg}$ = monthly averages; $PEQ_{max}$ = daily max. analytical results.

| PARAMETER | SEASON | UNITS | CURRENT PERMIT 30 DAY | CURRENT PERMIT DAILY | PERIOD = JAN98 THRU DEC02 N | 50 PCTL | 95 PCTL | RANGE | DECISION CRITERIA N | $PEQ_{avg}$ | $PEQ_{max}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***Outfall 003*** | | | | | | | | | | | |
| CONDUIT FLOW | ANNUAL | MGD | -- | -- | 62 | 40 | 40 | 40-40 | | | |
| | MAY-OCT | MGD | | | 30 | 40 | 40 | 40-40 | | | |
| | NOV-APR | MGD | | | 32 | 40 | 40 | 40-40 | | | |
| OIL GRSE TOT | ANNUAL | MG/L | -- | -- | 62 | 0 | 4 | 0-6 | | | |
| | | KG/DAY | -- | -- | 62 | 0 | 605.6 | 0-908.4 | | | |
| WATER TEMP. | ANNUAL | DEG C | -- | -- | 62 | 18 | 32 | 3-58 | | | |
| ***Outfall 004*** | | | | | | | | | | | |
| AMMONIA NH3-N | MAY-OCT | MG/L | | | 134 | 0 | 0.32 | 0-0.53 | | | |
| | | KG/DAY | | | 134 | 0 | 29.069 | 0-41.325 | | | |
| | NOV-APR | MG/L | | | 132 | 0 | 0.37 | 0-0.91 | | | |
| | | KG/DAY | | | 132 | 0 | 38.0203 | 0-84.633 | | | |
| CONDUIT FLOW | ANNUAL | MGD | -- | -- | 1789 | 22.215 | 36.6 | 0.118-52.8 | | | |
| | MAY-OCT | MGD | | | 920 | 21 | 36.6 | 0.118-47.7 | | | |
| | NOV-APR | MGD | | | 869 | 23.28 | 36.5 | 10.64-52.8 | | | |
| CYANIDE FREE | ANNUAL | MG/L | -- | 0.037 | 266 | 0 | 0.006 | 0-0.16 | 264 | 3.9 | 5.8 |
| | | KG/DAY | -- | 7.81 | 266 | 0 | 0.3785 | 0-14.11 | | | |
| LEAD TOT REC | ANNUAL | UG/L | -- | 230 | 265 | 2 | 9 | 0-23 | 265 | 8.14 | 11.71 |
| | | KG/DAY | -- | -- | 265 | 0.10333 | 0.86979 | 0-2.5602 | | | |
| OIL GRSE TOT | ANNUAL | MG/L | -- | -- | 266 | 0 | 4 | 0-21 | | | |
| | | KG/DAY | -- | -- | 266 | 0 | 488.26 | 0-2408.4 | | | |
| PH | ANNUAL | S.U. | 6.0 <= pH =< 9.0 | | 266 | 6.8* | 7.9 | 6.1-8.7 | | | |
| RESIDUE TOT NFLT | ANNUAL | MG/L | -- | -- | 266 | 8 | 65 | 0-184 | | | |
| | | KG/DAY | -- | -- | 266 | 681.3 | 6404.2 | 0-23092 | | | |
| WATER TEMP. | ANNUAL | DEG C | -- | -- | 265 | 19 | 31 | 1-36 | | | |
| ZINC TOT REC | ANNUAL | UG/L | -- | 290 | 265 | 18 | 81 | 0-150 | 265 | 55.37 | 82.9 |
| | | KG/DAY | -- | -- | 265 | 1.47161 | 8.7229 | 0-12.461 | | | |

**Table 6. Effluent Characterization and Decision Criteria (continued)**

| PARAMETER | SEASON | UNITS | CURRENT PERMIT 30 DAY | CURRENT PERMIT DAILY | PERIOD = JAN98 THRU DEC02 N | 50 PCTL | 95 PCTL | RANGE | DECISION CRITERIA N | $PEQ_{ave}$ | $PEQ_{max}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***Outfall 005*** | | | | | | | | | | | |
| CONDUIT FLOW | ANNUAL | MGD | -- | -- | 1096 | 1.5 | 1.783 | 0.2-2.407 | | | |
| | MAY-OCT | MGD | | | 604 | 1.465 | 1.717 | 0.2-2.3 | | | |
| | NOV-APR | MGD | | | 492 | 1.557 | 1.811 | 0.2-2.407 | | | |
| LEAD TOT REC | ANNUAL | UG/L | -- | 230 | 260 | 4 | 52 | 0-1000 | 259 | 39.58 | 50.34 |
| | | KG/DAY | -- | -- | 260 | 0.02271 | 0.25916 | 0-5.6775 | | | |
| OIL GRSE TOT | ANNUAL | MG/L | -- | -- | 260 | 0 | 5 | 0-9 | | | |
| | | KG/DAY | -- | -- | 260 | 0 | 24.602 | 0-51.097 | | | |
| PH | ANNUAL | S.U. | 6.0 <= pH =< 9.0 | | 260 | 6.8* | 7.8 | 6.5-8.6 | | | |
| WATER TEMP. | ANNUAL | DEG C | -- | -- | 260 | 26 | 36 | 8-39 | | | |
| ZINC TOT REC | ANNUAL | UG/L | -- | -- | 260 | 41 | 300 | 0-1500 | 260 | 187.15 | 276.36 |
| | | KG/DAY | -- | 290 | 260 | 0.23274 | 1.68054 | 0-7.9485 | | | |
| ***Outfall 007*** | | | | | | | | | | | |
| CONDUIT FLOW | ANNUAL | MGD | -- | -- | 262 | 26 | 30 | 18-31.4 | | | |
| | MAY-OCT | MGD | | | 139 | 26 | 29.5 | 18-30.6 | | | |
| | NOV-APR | MGD | | | 123 | 26 | 30.2 | 18-31.4 | | | |
| CYANIDE FREE | ANNUAL | MG/L | -- | -- | 256 | 0 | 0 | 0-0.012 | 256 | 3.5 | 5.3 |
| | | KG/DAY | -- | -- | 256 | 0 | 0 | 0-1.1914 | 257 | 7.07 | 9.94 |
| LEAD TOT REC | ANNUAL | UG/L | -- | 230 | 257 | 1 | 8 | 0-60 | | | |
| | | KG/DAY | -- | -- | 257 | 0.09462 | 0.757 | 0-6.1544 | | | |
| OIL GRSE TOT | ANNUAL | MG/L | -- | -- | 265 | 0 | 6 | 0-24 | | | |
| | | KG/DAY | -- | -- | 265 | 0 | 619.98 | 0-2407.3 | | | |
| PAHS | ANNUAL | UG/L | -- | -- | 23 | 0 | 0 | 0-0 | 23 | -- | -- |
| PH | ANNUAL | S.U. | 6.0 <= pH =< 9.0 | | 75 | 6.8* | 7.8 | 6.6-8.4 | | | |
| WATER TEMP. | ANNUAL | DEG C | -- | -- | 256 | 20 | 33 | 2-36 | | | |
| ZINC TOT REC | ANNUAL | UG/L | -- | 290 | 257 | 14 | 64 | 0-530 | 256 | 46.62 | 69.77 |
| | | KG/DAY | -- | -- | 257 | 1.37774 | 6.5178 | 0-50.151 | | | |

**Table 6. Effluent Characterization and Decision Criteria (continued)**

| PARAMETER | SEASON | UNITS | CURRENT PERMIT 30 DAY | CURRENT PERMIT DAILY | ---PERIOD = JAN98 THRU DEC02--- N | 50 PCTL | 95 PCTL | RANGE | DECISION CRITERIA N | $PEQ_{ave}$ | $PEQ_{max}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***Outfall 008*** | | | | | | | | | | | |
| BENZENE | ANNUAL | UG/L | | | 9 | 0 | 11 | 0-11 | 9 | 14.45 | 19.8 |
| | | KG/DAY | | | 9 | 0 | 0.00121 | 0-0.0012 | | | |
| CHLORINE TOT RESD | ANNUAL | MG/L | | | 140 | 0.01 | 0.1 | 0-0.68 | 140 | 159. | 177.5 |
| | | KG/DAY | | | 140 | 0.00053 | 0.07267 | 0-0.6177 | | | |
| CONDUIT FLOW | ANNUAL | MGD | -- | -- | 274 | 0.24 | 0.24 | 0.014-0.24 | | | |
| | MAY-OCT | MGD | | | 138 | 0.24 | 0.24 | 0.014-0.24 | | | |
| | NOV-APR | MGD | | | 136 | 0.24 | 0.24 | 0.014-0.24 | | | |
| CYANIDE FREE | ANNUAL | MG/L | -- | -- | 248 | 0 | 0.006 | 0-0.013 | 248 | 5.0 | 7.4 |
| | | KG/DAY | -- | -- | 248 | 0 | 0.00545 | 0-0.0091 | | | |
| ETHYLBENZENE | ANNUAL | UG/L | | | 9 | 0 | 0 | 0-0 | 9 | -- | -- |
| OIL GRSE TOT | ANNUAL | MG/L | -- | -- | 159 | 0 | 330 | 0-15000 | | | |
| | | KG/DAY | -- | -- | 159 | 0 | 254.35 | 0-13626 | | | |
| PAHS | ANNUAL | UG/L | | | 2 | 0 | 0 | 0-0 | 2 | -- | -- |
| PH | ANNUAL | S.U. | 6.0 <= pH =< 9.0 | | 74 | 6.8* | 7.8 | 6.4-8.6 | | | |
| RESIDUE TOT NFLT | ANNUAL | MG/L | -- | -- | 168 | 6 | 118 | 0-1600 | | | |
| | | KG/DAY | -- | -- | 168 | 3.6336 | 99.016 | 0-1453.4 | | | |
| WATER TEMP. | ANNUAL | DEG C | -- | -- | 142 | 19 | 28 | 4-40 | | | |
| TOLUENE | ANNUAL | UG/L | | | 9 | 0 | 0 | 0-0 | 9 | -- | -- |
| XYLENE TOT | ANNUAL | UG/L | | | 9 | 0 | 0 | 0-0 | 9 | -- | -- |
| ***Outfall 009*** | | | | | | | | | | | |
| CONDUIT FLOW | ANNUAL | MGD | -- | -- | 129 | 0.087 | 0.087 | 0.002-0.09 | | | |
| | MAY-OCT | MGD | | | 66 | 0.002 | 0.087 | 0.002-0.09 | | | |
| | NOV-APR | MGD | | | 63 | 0.087 | 0.087 | 0.002-0.087 | | | |
| COPPER TOT REC | ANNUAL | UG/L | -- | 45 | 129 | 13 | 205 | 0-1059 | 128 | 258.39 | 304.78 |
| | | KG/DAY | -- | 0.0085 | 129 | 0.00016 | 0.06751 | 0-0.3487 | | | |
| OIL GRSE TOT | ANNUAL | MG/L | -- | -- | 129 | 0 | 6 | 0-210 | | | |
| | | KG/DAY | -- | -- | 129 | 0 | 1.9758 | 0-7.9031 | | | |
| PH | ANNUAL | S.U. | 6.0 <= pH =< 9.0 | | 68 | 6.8* | 8.6 | 6.8-9 | | | |
| WATER TEMP. | ANNUAL | DEG C | -- | -- | 127 | 28 | 49 | 7-52 | | | |
| ZINC TOT REC | ANNUAL | UG/L | -- | 290 | 129 | 42 | 155 | 0-434 | 129 | 123.67 | 203.1 |
| | | KG/DAY | -- | 0.055 | 129 | 0.00182 | 0.04709 | 0-0.1429 | | | |

**Table 6. Effluent Characterization and Decision Criteria (continued)**

| PARAMETER | SEASON | UNITS | CURRENT PERMIT 30 DAY | CURRENT PERMIT DAILY | ---PERIOD = JAN98 THRU DEC02--- N | 50 PCTL | 95 PCTL | RANGE | DECISION CRITERIA N | $PEQ_{ave}$ | $PEQ_{max}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***Outfall 011*** | | | | | | | | | | | |
| CONDUIT FLOW | ANNUAL | MGD | -- | -- | 127 | 0.22 | 0.22 | 0.124-0.27 | | | |
| | MAY-OCT | MGD | | | 65 | 0.22 | 0.24 | 0.22-0.27 | | | |
| | NOV-APR | MGD | | | 62 | 0.22 | 0.22 | 0.124-0.22 | | | |
| CYANIDE FREE | ANNUAL | MG/L | -- | -- | 127 | 0 | 0.006 | 0-0.017 | 127 | 6.1 | 8.5 |
| | | KG/DAY | -- | -- | 127 | 0 | 0.005 | 0-0.0142 | | | |
| OIL GRSE TOT | ANNUAL | MG/L | -- | -- | 65 | 0 | 17 | 0-350000 | | | |
| | | KG/DAY | -- | -- | 65 | 0 | 15.443 | 0-291445 | | | |
| PH | ANNUAL | S.U. | 6.0 <= pH =< 9.0 | | 64 | 6.8* | 9 | 6.7-9.2 | | | |
| ***Outfall 014*** | | | | | | | | | | | |
| CONDUIT FLOW | ANNUAL | MGD | -- | -- | 61 | 0.5 | 0.5 | 0.14-0.5 | | | |
| | MAY-OCT | MGD | | | 29 | 0.5 | 0.5 | 0.5-0.5 | | | |
| | NOV-APR | MGD | | | 32 | 0.5 | 0.5 | 0.14-0.5 | | | |
| WATER TEMP. | ANNUAL | DEG C | -- | -- | 61 | 21 | 32 | 10-36 | | | |
| ***Outfall 601*** | | | | | | | | | | | |
| AMMONIA NH3-N | MAY-OCT | MG/L | -- | -- | 125 | 0.3 | 20 | 0-31 | | | |
| | | KG/DAY | -- | -- | 125 | 0.29523 | 22.316 | 0-32.619 | | | |
| | NOV-APR | MG/L | -- | -- | 130 | 6.6 | 25 | 0-37 | | | |
| | | KG/DAY | -- | -- | 130 | 6.4292 | 24.1483 | 0-36.412 | | | |
| CONDUIT FLOW | ANNUAL | MGD | -- | -- | 1781 | 0.273 | 0.38 | 0.001-0.628 | | | |
| | MAY-OCT | MGD | | | 881 | 0.273 | 0.378 | 0.001-0.58 | | | |
| | NOV-APR | MGD | | | 900 | 0.274 | 0.38 | 0.0227-0.628 | | | |
| CYANIDE TOT | ANNUAL | MG/L | -- | -- | 255 | 0 | 0.12 | 0-37 | | | |
| | | KG/DAY | -- | -- | 255 | 0 | 0.12173 | 0-28.709 | | | |
| LEAD PB,TOT | ANNUAL | UG/L | -- | -- | 255 | 0 | 12 | 0-44 | | | |
| | | KG/DAY | -- | -- | 255 | 0 | 0.01027 | 0-0.065 | | | |
| PH | ANNUAL | S.U. | -- | -- | 256 | 8.2* | 9.8 | 6.5-11 | | | |
| PHENOLIC 4AAP TOT | ANNUAL | UG/L | -- | -- | 255 | 3 | 24 | 0-1700 | | | |
| | | KG/DAY | -- | -- | 255 | 0.00307 | 0.02353 | 0-1.6215 | | | |

**Table 6. Effluent Characterization and Decision Criteria (continued)**

| PARAMETER | SEASON | UNITS | CURRENT PERMIT 30 DAY | CURRENT PERMIT DAILY | ---PERIOD = JAN98 THRU DEC02--- N | 50 PCTL | 95 PCTL | RANGE | DECISION CRITERIA N | $PEQ_{ave}$ | $PEQ_{max}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***Outfall 601*** *(continued)* | | | | | | | | | | | |
| RESIDUE TOT NFLT | ANNUAL | MG/L | -- | -- | 254 | 4 | 17 | 0-88 | | | |
| | | KG/DAY | -- | -- | 254 | 4.031 | 19.239 | 0-119.24 | | | |
| ZINC ZN,TOT | ANNUAL | UG/L | -- | -- | 255 | 11 | 100 | 0-290 | | | |
| | | KG/DAY | -- | -- | 255 | 0.01078 | 0.10192 | 0-0.2975 | | | |
| ***Outfall 603*** | | | | | | | | | | | |
| CONDUIT FLOW | ANNUAL | MGD | -- | -- | 1796 | 8.309 | 12.265 | 0.247-15.085 | | | |
| | MAY-OCT | MGD | | | 890 | 8.078 | 12.095 | 0.247-12.908 | | | |
| | NOV-APR | MGD | | | 906 | 8.731 | 12.372 | 0.47-15.085 | | | |
| LEAD PB,TOT | ANNUAL | UG/L | -- | -- | 256 | 0 | 6 | 0-22 | | | |
| | | KG/DAY | -- | -- | 256 | 0 | 0.19758 | 0-0.7025 | | | |
| OIL GRSE TOT | ANNUAL | MG/L | -- | -- | 296 | 0 | 11 | 0-55 | | | |
| | | KG/DAY | 950.9 | 1054.6 | 296 | 0 | 412.19 | 0-2102.6 | | | |
| PH | ANNUAL | S.U. | -- | -- | 256 | 6.9* | 7.8 | 6.4-9.5 | | | |
| RESIDUE TOT NFLT | ANNUAL | MG/L | -- | -- | 281 | 0 | 11 | 0-58 | | | |
| | | KG/DAY | 1517.3 | 4106.2 | 281 | 0 | 382.28 | 0-2085.5 | | | |
| ZINC ZN,TOT | ANNUAL | UG/L | -- | -- | 256 | 10 | 57 | 0-310 | | | |
| | | KG/DAY | -- | -- | 256 | 0.22165 | 2.1143 | 0-13.846 | | | |
| ***Outfall 605*** | | | | | | | | | | | |
| CONDUIT FLOW | ANNUAL | MGD | -- | -- | 1783 | 1.279 | 1.557 | 0.155-2.516 | | | |
| | MAY-OCT | MGD | | | 878 | 1.27 | 1.492 | 0.155-2.1 | | | |
| | NOV-APR | MGD | | | 905 | 1.293 | 1.597 | 0.496-2.516 | | | |
| LEAD PB,TOT | ANNUAL | UG/L | -- | -- | 254 | 5 | 33 | 0-210 | | | |
| | | KG/DAY | -- | -- | 254 | 0.02176 | 0.15685 | 0-0.8664 | | | |
| PH | ANNUAL | S.U. | -- | -- | 253 | 6.9* | 7.9 | 6.4-9.8 | | | |
| RESIDUE TOT NFLT | ANNUAL | MG/L | -- | -- | 255 | 4 | 23 | 0-136 | | | |
| | | KG/DAY | -- | -- | 255 | 20.59 | 112.3 | 0-684.63 | | | |
| ZINC ZN,TOT | ANNUAL | UG/L | -- | -- | 254 | 40 | 180 | 0-480 | | | |
| | | KG/DAY | -- | -- | 254 | 0.19531 | 0.86525 | 0-2.6162 | | | |

**Table 6. Effluent Characterization and Decision Criteria (continued)**

| PARAMETER | SEASON | UNITS | CURRENT PERMIT 30 DAY | CURRENT PERMIT DAILY | ---PERIOD = JAN98 THRU DEC02--- N | 50 PCTL | 95 PCTL | RANGE | DECISION CRITERIA N | $PEQ_{ave}$ | $PEQ_{max}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***Outfall 606*** | | | | | | | | | | | |
| CONDUIT FLOW | ANNUAL | MGD | -- | -- | 1756 | 0.314 | 0.527 | 0.008-1.566 | | | |
| | MAY-OCT | MGD | | | 883 | 0.301 | 0.474 | 0.008-1.185 | | | |
| | NOV-APR | MGD | | | 873 | 0.325 | 0.554 | 0.01-1.566 | | | |
| LEAD PB,TOT | ANNUAL | UG/L | -- | -- | 251 | 2 | 8 | 0-85 | | | |
| | | KG/DAY | -- | -- | 251 | 0.00138 | 0.00842 | 0-0.1062 | | | |
| PH | ANNUAL | S.U. | -- | -- | 247 | 6.9* | 7.8 | 6.5-8.4 | | | |
| ZINC ZN,TOT | ANNUAL | UG/L | -- | -- | 249 | 26 | 95 | 0-300 | | | |
| | | KG/DAY | -- | -- | 249 | 0.02748 | 0.12426 | 0-0.4996 | | | |
| ***Outfall 607*** | (PERIOD = JAN98 THRU JUN99) | | | | | | | | | | |
| CONDUIT FLOW | ANNUAL | MGD | -- | -- | 504 | 0.08 | 0.125 | 0.001-0.216 | | | |
| | MAY-OCT | MGD | | | 213 | 0.09 | 0.125 | 0.014-0.136 | | | |
| | NOV-APR | MGD | | | 291 | 0.068 | 0.134 | 0.001-0.216 | | | |
| LEAD PB,TOT | ANNUAL | UG/L | -- | -- | 72 | 2 | 11 | 0-76 | | | |
| | | KG/DAY | -- | -- | 72 | 0.00045 | 0.00345 | 0-0.0118 | | | |
| OIL GRSE TOT | ANNUAL | MG/L | 15 | 20 | 72 | 2 | 6 | 0-15 | | | |
| | | KG/DAY | -- | -- | 72 | 0.4542 | 2.3316 | 0-6.0181 | | | |
| PH | ANNUAL | S.U. | -- | -- | 72 | 7.5* | 10.5 | 7-12.2 | | | |
| RESIDUE TOT NFLT | ANNUAL | MG/L | 30 | 100 | 72 | 5 | 14 | 0-43 | | | |
| | | KG/DAY | -- | -- | 72 | 1.4194 | 5.4958 | 0-13.49 | | | |
| WATER TEMP. | ANNUAL | DEG C | -- | -- | 72 | 32 | 32 | 17-33 | | | |
| ZINC ZN,TOT | ANNUAL | UG/L | -- | -- | 72 | 26 | 160 | 0-3100 | | | |
| | | KG/DAY | -- | -- | 72 | 0.00763 | 0.04951 | 0-1.2513 | | | |
| ***Outfall 620*** | | | | | | | | | | | |
| AMMONIA NH3-N | MAY-OCT | MG/L | -- | -- | 120 | 0 | 20 | 0-31 | | | |
| | | KG/DAY | 113.4 | 226.8 | 120 | 0 | 22.316 | 0-32.619 | | | |
| | NOV-APR | MG/L | -- | -- | 130 | 7 | 25 | 0-37 | | | |
| | | KG/DAY | 113.4 | 226.8 | 130 | 6.69945 | 23.528 | 0-36.412 | | | |

**Table 6. Effluent Characterization and Decision Criteria (continued)**

| PARAMETER | SEASON | UNITS | CURRENT PERMIT 30 DAY | CURRENT PERMIT DAILY | ---PERIOD = JAN98 THRU DEC02--- N | 50 PCTL | 95 PCTL | RANGE | DECISION CRITERIA N | $PEQ_{ave}$ | $PEQ_{max}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***Outfall 620 (continued)*** | | | | | | | | | | | |
| CONDUIT FLOW | ANNUAL | MGD | -- | -- | 1746 | 0.274 | 0.38 | 0.033-0.628 | | | |
| | MAY-OCT | MGD | | | 846 | 0.274 | 0.379 | 0.033-0.58 | | | |
| | NOV-APR | MGD | | | 900 | 0.274 | 0.38 | 0.07-0.628 | | | |
| CYANIDE TOT | ANNUAL | MG/L | -- | -- | 250 | 0 | 0.15 | 0-37 | | | |
| | | KG/DAY | 3.82 | 7.63 | 250 | 0 | 0.13134 | 0-28.709 | | | |
| LEAD PB,TOT | ANNUAL | UG/L | -- | -- | 250 | 0 | 12 | 0-44 | | | |
| | | KG/DAY | 0.38 | 1.15 | 250 | 0 | 0.01027 | 0-0.065 | | | |
| PHENOLIC 4AAP TOT | ANNUAL | UG/L | -- | -- | 250 | 3 | 24 | 0-1700 | | | |
| | | KG/DAY | 0.45 | 0.90 | 250 | 0.00271 | 0.02353 | 0-1.6215 | | | |
| RESIDUE TOT NFLT | ANNUAL | MG/L | -- | -- | 249 | 4 | 17 | 0-88 | | | |
| | | KG/DAY | 113.3 | 340.9 | 249 | 4.031 | 19.239 | 0-119.24 | | | |
| ZINC ZN,TOT | ANNUAL | UG/L | -- | -- | 250 | 11 | 110 | 0-290 | | | |
| | | KG/DAY | 0.57 | 1.72 | 250 | 0.01064 | 0.10192 | 0-0.2975 | | | |
| ***Outfall 630*** | | | | | | | | | | | |
| CONDUIT FLOW | ANNUAL | MGD | -- | -- | 1752 | 1.278 | 1.559 | 0.155-2.515 | | | |
| | MAY-OCT | MGD | | | 847 | 1.268 | 1.5 | 0.155-2.1 | | | |
| | NOV-APR | MGD | | | 905 | 1.291 | 1.597 | 0.496-2.515 | | | |
| LEAD PB,TOT | ANNUAL | UG/L | -- | -- | 250 | 5 | 34 | 0-210 | | | |
| | | KG/DAY | 0.98 | 2.93 | 250 | 0.0212 | 0.16896 | 0-0.8664 | | | |
| RESIDUE TOT NFLT | ANNUAL | MG/L | -- | -- | 250 | 4 | 23 | 0-136 | | | |
| | | KG/DAY | 162.4 | 487.1 | 250 | 20.59 | 112.3 | 0-684.63 | | | |
| ZINC ZN,TOT | ANNUAL | UG/L | -- | -- | 250 | 41 | 180 | 0-480 | | | |
| | | KG/DAY | 1.47 | 4.40 | 250 | 0.19531 | 0.88115 | 0-2.6162 | | | |

**Table 6. Effluent Characterization and Decision Criteria (continued)**

| PARAMETER | SEASON | UNITS | CURRENT PERMIT 30 DAY | CURRENT PERMIT DAILY | ---PERIOD = JAN98 THRU DEC02--- N | 50 PCTL | 95 PCTL | RANGE | DECISION CRITERIA N | $PEQ_{ave}$ | $PEQ_{max}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***Outfall 631*** | | | | | | | | | | | |
| CONDUIT FLOW | ANNUAL | MGD | -- | -- | 1735 | 9.811 | 13.719 | 1.11-16.279 | | | |
| | MAY-OCT | MGD | | | 859 | 9.538 | 13.247 | 1.11-14.581 | | | |
| | NOV-APR | MGD | | | 876 | 10.244 | 13.948 | 2.247-16.279 | | | |
| LEAD PB,TOT | ANNUAL | UG/L | -- | -- | 250 | 1 | 7 | 0-21 | | | |
| | | KG/DAY | 2.90 | -- | 250 | 0.0419 | 0.29605 | 0-0.8602 | | | |
| ***Outfall 801*** | | | | | | | | | | | |
| AMMONIA NH3-N | MAY-OCT | MG/L | | | 125 | 0 | 0.28 | 0-0.41 | | | |
| | NOV-APR | MG/L | | | 128 | 0 | 0.25 | 0-0.39 | | | |
| COPPER TOT REC | ANNUAL | UG/L | | | 253 | 0 | 30 | 0-140 | | | |
| CYANIDE FREE | ANNUAL | MG/L | | | 253 | 0 | 0 | 0-0.007 | | | |
| CYANIDE TOT | ANNUAL | MG/L | | | 253 | 0 | 0 | 0-0.17 | | | |
| LEAD PB,TOT | ANNUAL | UG/L | | | 255 | 1 | 10 | 0-54 | | | |
| LEAD TOT REC | ANNUAL | UG/L | | | 253 | 2 | 10 | 0-52 | | | |
| OIL GRSE TOT | ANNUAL | MG/L | | | 255 | 0 | 5 | 0-13 | | | |
| PH | ANNUAL | S.U. | | | 254 | 6.9* | 7.8 | 6.2-8.7 | | | |
| PHENOLIC 4AAP TOT | ANNUAL | UG/L | | | 253 | 0 | 2 | 0-26 | | | |
| RESIDUE TOT NFLT | ANNUAL | MG/L | | | 254 | 10 | 122 | 0-650 | | | |
| WATER TEMP. | ANNUAL | DEG C | | | 254 | 17 | 28 | 1-31 | | | |
| ZINC TOT REC | ANNUAL | UG/L | | | 254 | 27 | 400 | 0-1700 | | | |
| ZINC ZN,TOT | ANNUAL | UG/L | | | 255 | 28 | 380 | 0-1500 | | | |

**Table 7. Effluent Data for WPS Steubenville South**

| Parameter | Units | # of Samples | # > MDL | $PEQ_{avg}$ | $PEQ_{max}$ |
|---|---|---|---|---|---|
| ***Outfall 003*** | | | | | |
| **2-C Data** | | | | | |
| Aluminum | µg/l | 1 | 1 | 1267.28 | 1736.00 |
| Iron | µg/l | 1 | 1 | 2715.60 | 3720.00 |
| Magnesium | mg/l | 1 | 1 | 30.32 | 41.54 |
| Manganese | µg/l | 1 | 1 | 724.16 | 992.00 |
| Phosphorus | mg/l | 1 | 1 | 0.31 | 0.43 |
| Sulfate | mg/l | 1 | 1 | 330.40 | 452.60 |
| Surfactants | mg/l | 1 | 1 | 0.12 | 0.16 |
| Zinc | µg/l | 1 | 1 | 85.99 | 117.80 |
| ***Outfall 004*** | | | | | |
| **Self-Monitoring (LEAPS) Data:** | | | | | |
| Cyanide, free | µg/l | 264 | 14 | 3.9 | 5.8 |
| Lead | µg/l | 265 | 154 | 8.14 | 11.71 |
| Zinc | µg/l | 265 | 198 | 55.37 | 82.90 |
| **2-C and OEPA Data:** | | | | | |
| Aluminum | µg/l | 1 | 1 | 2217.74 | 3038.00 |
| Barium | µg/l | 3 | 3 | 107.31 | 147.00 |
| Boron | µg/l | 1 | 1 | 253.46 | 347.20 |
| Calcium | mg/l | 3 | 3 | 100.74 | 138.00 |
| Chloride | mg/l | 2 | 2 | 133.43 | 182.78 |
| Chromium | µg/l | 4 | 1 | 79.72 | 109.20 |
| Fluoride | µg/l | 1 | 1 | 1040.98 | 1426.00 |
| Iron | µg/l | 3 | 3 | 2190.00 | 3000.00 |
| Magnesium | mg/l | 4 | 4 | 24.67 | 33.80 |
| Manganese | µg/l | 3 | 3 | 416.10 | 570.00 |
| NO2+NO3 | mg/l | 3 | 3 | 3.55 | 4.86 |
| Phosphorus | mg/l | 3 | 3 | 1.55 | 2.12 |
| Potassium | mg/l | 2 | 2 | 11.10 | 15.20 |
| Sodium | mg/l | 2 | 2 | 124.83 | 171.00 |
| Strontium | µg/l | 2 | 2 | 915.42 | 1254.00 |
| Sulfate | mg/l | 1 | 1 | 190.09 | 260.40 |
| Surfactants | mg/l | 1 | 1 | 0.17 | 0.23 |
| TDS | mg/l | 2 | 2 | 893.23 | 1223.60 |

**Table 7. Effluent Data for WPS Steubenville South (continued)**

| Parameter | Units | # of Samples | # > MDL | $PEQ_{avg}$ | $PEQ_{max}$ |
|---|---|---|---|---|---|
| ***Outfall 005*** | | | | | |
| **Self-Monitoring (LEAPS) Data:** | | | | | |
| Lead | µg/l | 259 | 208 | 39.58 | 50.34 |
| Zinc | µg/l | 260 | 251 | 187.15 | 276.36 |
| **2-C Data:** | | | | | |
| Aluminum | µg/l | 1 | 1 | 1222.02 | 1674.00 |
| Boron | µg/l | 1 | 1 | 588.38 | 806.00 |
| Fluoride | µg/l | 1 | 1 | 15388.40 | 21080.00 |
| Iron | µg/l | 1 | 1 | 1040.98 | 1426.00 |
| Magnesium | mg/l | 1 | 1 | 5.88 | 8.06 |
| NO2+NO3 | mg/l | 1 | 1 | 7.69 | 10.54 |
| Phosphorus | mg/l | 1 | 1 | 0.14 | 0.19 |
| Sulfate | mg/l | 1 | 1 | 588.38 | 806.00 |
| ***Outfall 007*** | | | | | |
| **Self-Monitoring (LEAPS) Data:** | | | | | |
| Cyanide, free | µg/l | 256 | 6 | 3.5 | 5.3 |
| Lead | µg/l | 257 | 133 | 7.07 | 9.94 |
| PAHs | µg/l | 23 | 0 | -- | -- |
| Zinc | µg/l | 256 | 174 | 46.62 | 69.77 |
| **2-C Data and OEPA Data:** | | | | | |
| Aluminum | µg/l | 3 | 2 | 784.02 | 1074.00 |
| Arsenic | µg/l | 2 | 1 | 11.10 | 15.20 |
| Boron | µg/l | 1 | 1 | 190.09 | 260.40 |
| Cadmium | µg/l | 2 | 1 | 4.55 | 6.23 |
| Calcium | mg/l | 2 | 2 | 124.83 | 171.00 |
| Chloride | mg/l | 1 | 1 | 189.19 | 259.16 |
| Chromium | µg/l | 1 | 1 | 190.09 | 260.40 |
| Fluoride | µg/l | 1 | 1 | 3892.36 | 5332.00 |
| Iron | µg/l | 3 | 3 | 1815.51 | 2487.00 |
| Magnesium | mg/l | 3 | 3 | 26.28 | 36.00 |
| Manganese | µg/l | 3 | 3 | 363.54 | 498.00 |
| Phosphorus | mg/l | 3 | 2 | 1.49 | 2.04 |
| Potassium | mg/l | 2 | 2 | 8.32 | 11.40 |
| Selenium | µg/l | 2 | 1 | 20.25 | 27.74 |
| Sodium | mg/l | 2 | 2 | 124.83 | 171.00 |
| Strontium | µg/l | 2 | 2 | 893.23 | 1223.60 |
| Sulfate | mg/l | 1 | 1 | 334.92 | 458.80 |
| Surfactants | mg/l | 1 | 1 | 0.13 | 0.18 |
| TDS | mg/l | 1 | 1 | 1384.96 | 1897.20 |

**Table 7. Effluent Data for WPS Steubenville South (continued)**

| Parameter | Units | # of Samples | # > MDL | $PEQ_{avg}$ | $PEQ_{max}$ |
|---|---|---|---|---|---|
| ***Outfall 008*** | | | | | |
| **Self-Monitoring (LEAPS) Data:** | | | | | |
| Benzene | µg/l | 9 | 1 | 14.45 | 19.8 |
| Chlorine | µg/l | 140 | 72 | 159. | 177.5 |
| Cyanide, free | µg/l | 248 | 26 | 5.0 | 7.4 |
| Ethylbenzene | µg/l | 9 | 0 | -- | -- |
| PAHs | µg/l | 2 | 0 | -- | -- |
| Toluene | µg/l | 9 | 0 | -- | -- |
| Xylene | µg/l | 9 | 0 | -- | -- |
| **2-C Data:** | | | | | |
| Aluminum | µg/l | 1 | 1 | 1719.88 | 2356.00 |
| Boron | µg/l | 1 | 1 | 375.66 | 514.60 |
| Copper | µg/l | 1 | 1 | 67.89 | 93.00 |
| Fluoride | µg/l | 1 | 1 | 1403.06 | 1922.00 |
| Iron | µg/l | 1 | 1 | 3485.02 | 4774.00 |
| Lead | µg/l | 1 | 1 | 42.09 | 57.66 |
| Magnesium | mg/l | 1 | 1 | 29.42 | 40.30 |
| Manganese | µg/l | 1 | 1 | 678.90 | 930.00 |
| Phosphorus | mg/l | 1 | 1 | 0.63 | 0.87 |
| Sulfate | mg/l | 1 | 1 | 362.08 | 496.00 |
| Zinc | µg/l | 1 | 1 | 108.62 | 148.80 |
| ***Outfall 009*** | | | | | |
| **Self-Monitoring (LEAPS) Data:** | | | | | |
| Copper | µg/l | 128 | 94 | 258.39 | 304.78 |
| Zinc | µg/l | 129 | 122 | 132.67 | 203.1 |
| **2-C Data:** | | | | | |
| Aluminum | µg/l | 1 | 1 | 769.42 | 1054.00 |
| Boron | µg/l | 1 | 1 | 371.13 | 508.40 |
| Fluoride | µg/l | 1 | 1 | 4526.00 | 6200.00 |
| Iron | µg/l | 1 | 1 | 2806.12 | 3844.00 |
| Lead | µg/l | 1 | 1 | 22.63 | 31.00 |
| Magnesium | mg/l | 1 | 1 | 13.13 | 17.98 |
| Manganese | µg/l | 1 | 1 | 316.82 | 434.00 |
| Phosphorus | mg/l | 1 | 1 | 2.26 | 3.10 |
| Sulfate | mg/l | 1 | 1 | 508.27 | 696.26 |

**Table 7. Effluent Data for WPS Steubenville South (continued)**

| Parameter | Units | # of Samples | # > MDL | $PEQ_{avg}$ | $PEQ_{max}$ |
|---|---|---|---|---|---|
| ***Outfall 011*** | | | | | |
| **Self-Monitoring (LEAPS) Data:** | | | | | |
| Cyanide, free | µg/l | 127 | 11 | 6.1 | 8.5 |
| **2-C Data:** | | | | | |
| Aluminum | µg/l | 1 | 1 | 543.12 | 744.00 |
| Bis (2-EHP) | µg/l | 1 | 1 | 226.30 | 310.00 |
| Boron | µg/l | 1 | 1 | 859.94 | 1178.00 |
| Chromium | µg/l | 1 | 1 | 190.09 | 260.40 |
| Fluoride | µg/l | 1 | 1 | 1991.44 | 2728.00 |
| Iron | µg/l | 1 | 1 | 724.16 | 992.00 |
| Lead | µg/l | 55 | ? | 7.30 | 10.00 |
| Magnesium | mg/l | 1 | 1 | 49.79 | 68.20 |
| Manganese | µg/l | 1 | 1 | 1493.58 | 2046.00 |
| NO2+NO3 | mg/l | 1 | 1 | 4.98 | 6.82 |
| Phosphorus | mg/l | 1 | 1 | 0.20 | 0.28 |
| Sulfate | mg/l | 1 | 1 | 633.64 | 868.00 |
| Zinc | µg/l | 1 | 1 | 63.36 | 86.80 |

**Table 8. Water Quality Criteria for Ohio River**

| Parameter (µg/l) | Outside Mixing Zone Criteria: Average: Human Health | Average: Agri-culture | Average: Aquatic Life | Maximum Aquatic Life | Inside Mixing Zone Maximum |
|---|---|---|---|---|---|
| Arsenic | 50. | 100. | 150. | 340. | 680. |
| Barium | -- | -- | 220. | 2000. | 4000. |
| Benzene | 12. | -- | 160. | 700. | 1400. |
| Bis (2-EHP) | 18. | -- | 8.4 | 1100. | 2100. |
| Boron | -- | -- | 950. | 8500. | 17000. |
| Cadmium | -- | 50. | 3.0 | 6.1 | 12. |
| Chlorine | -- | -- | 11. | 19. | 38. |
| Chromium | -- | 100. | 110. | 2200. | 4500. |
| Chromium +6 | -- | -- | 11. | 16. | 31. |
| Copper | 1300. | 500. | 12. | 18. | 36. |
| Cyanide, free | 700. | -- | 5.2 | 22. | 44. |
| Ethylbenzene | 3100. | -- | 61. | 550. | 1100. |
| Fluoride | 1000. | 2000. | -- | -- | -- |
| Iron | -- | 5000. | -- | -- | -- |
| Lead | -- | 100. | 9.0 | 170. | 340. |
| Mercury | 0.012 | 10. | 0.91 | 1.7 | 3.4 |
| Nickel | 610. | 200. | 65. | 590. | 1200. |
| NO2+NO3 (mg/l) | 10. | 100. | -- | -- | -- |
| Selenium | 170. | 50. | 5.0 | -- | -- |
| Strontium | -- | -- | 770. | 6900. | 14000. |
| Sulfate (mg/l) | 250. | -- | -- | -- | -- |
| Toluene | 6800. | -- | 62. | 560. | 1100. |
| TDS (mg/l) | -- | -- | 1500. | -- | -- |
| Xylene | -- | -- | 27. | 240. | 480. |
| Zinc | 9100. | 25000. | 150. | 150. | 300. |

**Table 9. Instream Conditions and Discharger Flow**

| Parameter | Value | Source |
|---|---|---|
| *Annual* $_7Q_{10}$ (cfs) | 5800. | ORSANCO |
| *Harmonic Mean Flow* (cfs) | 23000. | ORSANCO |
| *Instream hardness* (mg/l) | 130. | ORSANCO |
| *Background Water Quality* (µg/l) | | |
| Barium | 40. | STORET; 1992-98, n=19, 0<MDL |
| Benzene | 0. | No representative data available |
| Bis (2-EHP) | 0. | No representative data available |
| Boron | 0. | No representative data available |
| Cadmium | 0. | STORET; 1992-98, n=39, 39<MDL |
| Chlorine | 0. | No representative data available |
| Chromium | 0. | STORET; 1992-98, n=19, 19<MDL |
| Chromium +6 | 0. | No representative data available |
| Copper | 2.5 | STORET; 1992-98, n=39, 31<MDL |
| Cyanide, free | 0. | No representative data available |
| Fluoride | 0. | No representative data available |
| Iron | 690. | STORET; 1992-98, n=39, 0<MDL |
| Lead | 1. | STORET; 1992-98, n=39, 30<MDL |
| Mercury | 0. | No representative data available |
| Nickel | 0. | STORET; 1992-98, n=19, 19<MDL |
| NO2+NO3 (mg/l) | 0.95 | STORET; 1992-98, n=39, 0<MDL |
| Selenium | 0. | STORET; 1992-98, n=19, 19<MDL |
| Strontium | 0. | No representative data available |
| Sulfate (mg/l) | 63. | STORET; 1992-98, n=39, 0<MDL |
| TDS (mg/l) | 382. | BWQR |
| Zinc | 22. | STORET; 1992-98, n=39, 12<MDL |
| WP Steubenville South flows (cfs) | | |
| Outfall 003 | 60.33 | DSW |
| Outfall 004 | 36.35 | DSW |
| Outfall 005 | 2.17 | DSW |
| Outfall 007 | 39.45 | DSW |
| Outfall 008 | 0.31 | DSW |
| Outfall 009 | 0.07 | DSW |
| Outfall 011 | 0.31 | DSW |
| Mingo Junction WWTP flow (cfs) | 0.93 | DSW |

**Table 10. Summary of Effluent Limits to Maintain Applicable Water Quality Criteria**

| Parameter (µg/l) | Average Human Health | Average Agri Supply | Average Aquatic Life | Maximum Aquatic Life | Inside Mix. Zone Maximum |
|---|---|---|---|---|---|
| ***Outfall 003*** | | | | | |
| Iron | -- | 77680. | -- | -- | -- |
| Sulfate (mg/l) | 3344. | -- | -- | -- | -- |
| Zinc | 158300.[A] | 435588.[A] | 681.[A] | 203. | 300. |
| ***Outfall 004*** | | | | | |
| Barium -- | -- | 3392. | 8397.[A] | 4000. | |
| Boron | -- | -- | 16588. | 34356.[A] | 17000. |
| Chromium | -- | 3167. | 1028. | 5652.[A] | 4500. |
| Cyanide, free | 22340.[A] | -- | 49.[A] | 57.[A] | 44. |
| Fluoride | 31010. | 62013. | -- | -- | -- |
| Iron | -- | 77680. | -- | -- | -- |
| Lead | -- | 3036.[A] | 73. | 421.[A] | 340. |
| NO2+NO3 (mg/l) | 565. | 6170. | -- | -- | -- |
| Strontium | -- | -- | 7301. | 17904.[A] | 14000. |
| Sulfate (mg/l) | 3344. | -- | -- | -- | -- |
| TDS (mg/l) | -- | -- | 10982. | -- | -- |
| Zinc | 158300.[A] | 435588.[A] | 681.[A] | 203. | 300. |
| ***Outfall 005*** | | | | | |
| Boron | -- | -- | 16588. | 34356.[A] | 17000. |
| Fluoride | 31010. | 62013. | -- | -- | -- |
| Lead | -- | 3036.[A] | 73. | 421.[A] | 340. |
| NO2+NO3 (mg/l) | 565. | 6170. | -- | -- | -- |
| Sulfate (mg/l) | 3344. | -- | -- | -- | -- |
| Zinc | 158300.[A] | 435588.[A] | 681.[A] | 203. | 300. |

[A] Allocation must not exceed the Inside Mixing Zone Maximum.

**Table 10. Summary of Effluent Limits to Maintain Applicable Water Quality Criteria (contin.)**

| Parameter (µg/l) | Average Human Health | Average Agri Supply | Average Aquatic Life | Maximum Aquatic Life | Inside Mix. Zone Maximum |
|---|---|---|---|---|---|
| ***Outfall 007*** | | | | | |
| Cadmium | -- | 3021.[A] | 53.[A] | 30.[A] | 12. |
| Chromium | -- | 3167. | 1028. | 5652.[A] | 4500. |
| Cyanide, free | 22340.[A] | -- | 49.[A] | 57.[A] | 44. |
| Fluoride | 31010. | 62013. | -- | -- | -- |
| Iron | -- | 77680. | -- | -- | -- |
| Lead | -- | 3036.[A] | 73. | 421.[A] | 340. |
| Selenium | 10510. | 3091. | 91. | -- | -- |
| Strontium | -- | -- | 7301. | 17904.[A] | 14000. |
| Sulfate (mg/l) | 3344. | -- | -- | -- | -- |
| TDS (mg/l) | -- | -- | 10982. | -- | -- |
| Zinc | 158300.[A] | 435588.[A] | 681.[A] | 203. | 300. |
| ***Outfall 008*** | | | | | |
| Benzene | 89040.[A] | -- | 299515.[A] | 131668.[A] | 1400. |
| Boron | -- | -- | 16588. | 34256.[A] | 17000. |
| Chlorine | -- | -- | 6386.[A] | 3033.[A] | 38. |
| Copper | 2.42E6 [A] | 926600.[A] | 5223.[A] | 2344.[A] | 36. |
| Cyanide, free | 22340.[A] | -- | 49.[A] | 57.[A] | 44. |
| Fluoride | 31010. | 62013. | -- | -- | -- |
| Iron | -- | 77680. | -- | -- | -- |
| Lead | -- | 3036.[A] | 73. | 421.[A] | 340. |
| Sulfate (mg/l) | 3344. | -- | -- | -- | -- |
| Zinc | 158300.[A] | 435588.[A] | 681.[A] | 203. | 300. |
| ***Outfall 009*** | | | | | |
| Boron | -- | -- | 16588. | 34357.[A] | 17000. |
| Copper 2.42E6 [A] | 926600.[A] | 5223.[A] | 2344.[A] | 36. | |
| Fluoride | 31010. | 62013. | -- | -- | -- |
| Iron | -- | 77680. | -- | -- | -- |
| Lead | -- | 3036.[A] | 73. | 421.[A] | 340. |
| Sulfate (mg/l) | 3344. | -- | -- | -- | -- |
| Zinc | 158300.[A] | 435588.[A] | 681.[A] | 203. | 300. |

[A] Allocation must not exceed the Inside Mixing Zone Maximum.

**Table 10. Summary of Effluent Limits to Maintain Applicable Water Quality Criteria (contin.)**

| Parameter (µg/l) | Average Human Health | Average Agri Supply | Average Aquatic Life | Maximum Aquatic Life | Inside Mix. Zone Maximum |
|---|---|---|---|---|---|
| ***Outfall 011*** | | | | | |
| Bis (2-EHP) | 141600.[A] | -- | 19482.[A] | 698997.[A] | 2100. |
| Boron | -- | -- | 97666.[A] | 1.06E6 [A] | 17000. |
| Chromium | -- | 3167. | 1028. | 5652.[A] | 4500. |
| Cyanide, free | 22340.[A] | -- | 49.[A] | 57.[A] | 44. |
| Fluoride | 31010. | 62015. | -- | -- | -- |
| Lead | -- | 3036.[A] | 73. | 421.[A] | 340. |
| NO2+NO3 (mg/l) | 1164. | 12727. | -- | -- | -- |
| Sulfate (mg/l) | 3345. | -- | -- | -- | -- |
| Zinc | 158300.[A] | 435588.[A] | 681.[A] | 203. | 300. |

[A] Allocation must not exceed the Inside Mixing Zone Maximum.

**Table 11-003. Parameter Assessment - Outfall 003**

---

*Group 1 -* Parameter has no applicable WQS. No limit recommended. Monitoring optional.

| | | |
|---|---|---|
| Aluminum | Magnesium | Manganese |
| Phosphorus | Surfactants | |

*Group 2 -* Existing effluent less than 25% of WQS or all data below minimum detection limit. WLA not required. No limit recommended. Monitoring optional.

No parameters fit the criteria of this group

*Group 3 -* $PEQ_{max}$ < 50% of the maximum PEL and $PEQ_{avg}$ < 50% of the average PEL. No limit recommended. Monitoring optional.

Iron Sulfate

*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.

Zinc

*Group 5 -* $PEQ_{max}$ $\geq$ 100% of the Maximum PEL or $PEQ_{avg}$ $\geq$ 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.

No parameters fit the criteria of this group

**Table 11-004. Parameter Assessment - Outfall 004**

*Group 1 -* Parameter has no applicable WQS. No limit recommended. Monitoring optional.

| | | |
|---|---|---|
| Aluminum | Calcium | Chloride |
| Magnesium | Manganese | Phosphorus |
| Potassium | Sodium | Surfactants |

*Group 2 -* Existing effluent less than 25% of WQS or all data below minimum detection limit. WLA not required. No limit recommended. Monitoring optional.

No parameters fit the criteria of this group

*Group 3 -* $PEQ_{max}$ < 50% of the maximum PEL and $PEQ_{avg}$ < 50% of the average PEL. No limit recommended. Monitoring optional.

| | | |
|---|---|---|
| Barium | Boron | Chromium |
| Cyanide, free | Fluoride | Iron |
| Lead | NO2+NO3 | Strontium |
| Sulfate | TDS | 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.

No parameters fit the criteria of this group

*Group 5 -* $PEQ_{max} \geq 100\%$ of the Maximum PEL or $PEQ_{avg} \geq 100\%$ 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.

No parameters fit the criteria of this group

**Table 11-005. Parameter Assessment - Outfall 005**

*Group 1 -* Parameter has no applicable WQS. No limit recommended. Monitoring optional.

Aluminum Magnesium Phosphorus

*Group 2 -* Existing effluent less than 25% of WQS or all data below minimum detection limit. WLA not required. No limit recommended. Monitoring optional.

Iron

*Group 3 -* $PEQ_{max}$ < 50% of the maximum PEL and $PEQ_{avg}$ < 50% of the average PEL. No limit recommended. Monitoring optional.

Boron Fluoride NO2+NO3
Sulfate

*Group 4 -* $PEQ_{max}$ ≥ 50% but < 100% of the maximum PEL or $PEQ_{avg}$ ≥ 50% but < 100% of the average PEL. Monitoring is appropriate.

Lead

*Group 5 -* $PEQ_{max}$ ≥ 100% of the Maximum PEL or $PEQ_{avg}$ ≥ 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.

Limits to Protect Numeric Water Quality Criteria

| | Annual Effluent Limits | |
|---|---|---|
| Parameter (µg/l) | Ave. | Max. |
| Zinc | -- | 203. |

**Table 11-007. Parameter Assessment - Outfall 007**

*Group 1 -* Parameter has no applicable WQS. No limit recommended. Monitoring optional.

| | | |
|---|---|---|
| Aluminum | Calcium | Chloride |
| Magnesium | Manganese | PAHs |
| Phosphorus | Potassium | Sodium |
| Surfactants | | |

*Group 2 -* Existing effluent less than 25% of WQS or all data below minimum detection limit. WLA not required. No limit recommended. Monitoring optional.

| | |
|---|---|
| Arsenic | Boron |

*Group 3 -* $PEQ_{max}$ < 50% of the maximum PEL and $PEQ_{avg}$ < 50% of the average PEL. No limit recommended. Monitoring optional.

| | | |
|---|---|---|
| Chromium | Cyanide, free | Fluoride |
| Iron | Lead | Selenium |
| Strontium | Sulfate | TDS |
| 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.

Cadmium

*Group 5 -* $PEQ_{max} \geq 100\%$ of the Maximum PEL or $PEQ_{avg} \geq 100\%$ 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.

No parameters fit the criteria of this group

**Table 11-008. Parameter Assessment - Outfall 008**

*Group 1 -* Parameter has no applicable WQS. No limit recommended. Monitoring optional.

| | | |
|---|---|---|
| Aluminum | Magnesium | Manganese |
| PAHs | Phosphorus | |

*Group 2 -* Existing effluent less than 25% of WQS or all data below minimum detection limit. WLA not required. No limit recommended. Monitoring optional.

| | | |
|---|---|---|
| Ethylbenzene | Toluene | Xylene |

*Group 3 -* $PEQ_{max}$ < 50% of the maximum PEL and $PEQ_{avg}$ < 50% of the average PEL. No limit recommended. Monitoring optional.

| | | |
|---|---|---|
| Benzene | Boron | Cyanide, free |
| Fluoride | Iron | Sulfate |

*Group 4 -* $PEQ_{max}$ ≥ 50% but < 100% of the maximum PEL or $PEQ_{avg}$ ≥ 50% but < 100% of the average PEL. Monitoring is appropriate.

| | |
|---|---|
| Lead | Zinc |

*Group 5 -* $PEQ_{max}$ ≥ 100% of the Maximum PEL or $PEQ_{avg}$ ≥ 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.

Limits to Protect Numeric Water Quality Criteria

| | Annual Effluent Limits | |
|---|---|---|
| Parameter (µg/l) | Ave. | Max. |
| Chlorine | -- | 38. |
| Copper | -- | 36. |

**Table 11-009. Parameter Assessment - Outfall 009**

*Group 1 -* Parameter has no applicable WQS. No limit recommended. Monitoring optional.

| | | |
|---|---|---|
| Aluminum | Magnesium | Manganese |
| Phosphorus | | |

*Group 2 -* Existing effluent less than 25% of WQS or all data below minimum detection limit. WLA not required. No limit recommended. Monitoring optional.

No parameters fit the criteria of this group

*Group 3 -* $PEQ_{max}$ < 50% of the maximum PEL and $PEQ_{avg}$ < 50% of the average PEL. No limit recommended. Monitoring optional.

| | | |
|---|---|---|
| Boron | Fluoride | Iron |
| Lead | Sulfate | |

*Group 4 -* $PEQ_{max}$ ≥ 50% but < 100% of the maximum PEL or $PEQ_{avg}$ ≥ 50% but < 100% of the average PEL. Monitoring is appropriate.

No parameters fit the criteria of this group

*Group 5 -* $PEQ_{max}$ ≥ 100% of the Maximum PEL or $PEQ_{avg}$ ≥ 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.

Limits to Protect Numeric Water Quality Criteria

| | Annual Effluent Limits | |
|---|---|---|
| Parameter (µg/l) | Ave. | Max. |
| Copper | -- | 36. |
| Zinc | -- | 203. |

**Table 11-011. Parameter Assessment - Outfall 011**

---

*Group 1 -* Parameter has no applicable WQS. No limit recommended. Monitoring optional.

| | | |
|---|---|---|
| Aluminum | Magnesium | Manganese |
| Phosphorus | | |

*Group 2 -* Existing effluent less than 25% of WQS or all data below minimum detection limit. WLA not required. No limit recommended. Monitoring optional.

Iron

*Group 3 -* $PEQ_{max}$ < 50% of the maximum PEL and $PEQ_{avg}$ < 50% of the average PEL. No limit recommended. Monitoring optional.

| | | |
|---|---|---|
| Bis (2-EHP) | Boron | Chromium |
| Cyanide, free | Fluoride | Lead |
| NO2+NO3 | Sulfate | 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.

No parameters fit the criteria of this group

*Group 5 -* $PEQ_{max} \geq 100\%$ of the Maximum PEL or $PEQ_{avg} \geq 100\%$ 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.

No parameters fit the criteria of this group

**Table 12-001. Final Effluent Limits and Monitoring Requirements for Outfall 001**

| | | Effluent Limits | | | | |
|---|---|---|---|---|---|---|
| | | ----------Concentration---------- | | --Loading (kg/day)[a]-- | | |
| Parameter | Units | 30 Day Average | Daily Maximum | 30 Day Average | Daily Maximum | Basis[b] |
| Flow | MGD | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - | | M[c] |
| Total Precipitation | Inches | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - | | BPJ |
| Zinc | µg/l | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - | | BPJ |

[b,c] See page 59 for definitions of acronyms and abbreviations (footnote "b"), and an explanation of footnote "c".

**Table 12-003. Final Effluent Limits and Monitoring Requirements for Outfall 003**

| | | Effluent Limits | | | | |
|---|---|---|---|---|---|---|
| | | ----------Concentration---------- | | --Loading (kg/day)[a]-- | | |
| Parameter | Units | 30 Day Average | Daily Maximum | 30 Day Average | Daily Maximum | Basis[b] |
| Flow | MGD | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - | | M[c] |
| Temperature | °C | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - | | M[c] |
| Oil and Grease | mg/l | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - | | EP[c] |
| Zinc | µg/l | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - | | WLA |

[b,c] See page 59 for definitions of acronyms and abbreviations (footnote "b"), and an explanation of footnote "c".

**Table 12-004. Final Effluent Limits and Monitoring Requirements for Outfall 004**

| | | Effluent Limits | | | | |
|---|---|---|---|---|---|---|
| | | ----------Concentration---------- | | --Loading (kg/day)[a]-- | | |
| Parameter | Units | 30 Day Average | Daily Maximum | 30 Day Average | Daily Maximum | Basis[b] |
| Flow | MGD | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - | | M[c] |
| Temperature | °C | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - | | M[c] |
| Suspended Solids | mg/l | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - | | EP[c] |
| Oil and Grease | mg/l | | | | | |
| pH | S.U. | - - - - - - - - - - - - - | 6.0 to 9.0 | - - - - - - - - - - - - - | | WQS/Study |
| Cyanide, Free | mg/l | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - | | WLA |
| Lead, T. R. | µg/l | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - | | WLA |
| Zinc, T. R. | µg/l | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - | | WLA |

[b,c] See page 59 for definitions of acronyms and abbreviations (footnote "b"), and an explanation of footnote "c".

**Table 12-005. Final Effluent Limits and Monitoring Requirements for Outfall 005**

| | | Effluent Limits | | | | |
|---|---|---|---|---|---|---|
| | | ----------Concentration---------- | | --Loading (kg/day)[a]-- | | |
| **Parameter** | **Units** | **30 Day Average** | **Daily Maximum** | **30 Day Average** | **Daily Maximum** | **Basis[b]** |
| Flow | MGD | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - | | M[c] |
| Temperature | °C | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - | | M[c] |
| Oil and Grease | mg/l | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - | | EP[c] |
| pH | S.U. | - - - - - - - - - - - - - | 6.0 to 9.0 | - - - - - - - - - - - - - | | WQS/Study |
| Lead, T. R. | µg/l | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - | | WLA |
| Zinc, T. R. | µg/l | -- | 203 | -- | 1.08 | WLA |

[a] Effluent loadings based on average design discharge flow of 1.4 MGD.

[b,c] See page 59 for definitions of acronyms and abbreviations (footnote "b"), and an explanation of footnote "c".

**Table 12-007. Final Effluent Limits and Monitoring Requirements for Outfall 007**

| | | Effluent Limits | | | | |
|---|---|---|---|---|---|---|
| | | ----------Concentration---------- | | --Loading (kg/day)[a]-- | | |
| **Parameter** | **Units** | **30 Day Average** | **Daily Maximum** | **30 Day Average** | **Daily Maximum** | **Basis[b]** |
| Flow | MGD | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - | | M[c] |
| Temperature | °C | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - | | M[c] |
| Oil and Grease | mg/l | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - | | EP[c] |
| pH | S.U. | - - - - - - - - - - - - - | 6.0 to 9.0 | - - - - - - - - - - - - - | | WQS/Study |
| Cadmium | µg/l | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - | | WLA |
| Cyanide, Free | mg/l | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - | | WLA |
| Lead, T. R. | µg/l | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - | | WLA |
| Zinc, T. R. | µg/l | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - | | WLA |

[b,c] See page 59 for definitions of acronyms and abbreviations (footnote "b"), and an explanation of footnote "c".

**Table 12-008. Final Effluent Limits and Monitoring Requirements for Outfall 008**

| | | Effluent Limits | | | | |
|---|---|---|---|---|---|---|
| | | ----------Concentration---------- | | --Loading (kg/day)[a]-- | | |
| **Parameter** | **Units** | **30 Day Average** | **Daily Maximum** | **30 Day Average** | **Daily Maximum** | **Basis[b]** |
| Flow | MGD | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - | | M[c] |
| Temperature | °C | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - | | M[c] |
| Suspended Solids | mg/l | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - | | EP[c] |
| Oil and Grease | mg/l | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - | | EP[c] |
| pH | S.U. | - - - - - - - - - - - - - | 6.0 to 9.0 | - - - - - - - - - - - - - | | WQS/Study |
| Chlorine | mg/l | -- | 0.038 | -- | -- | WLA |
| Cyanide, Free | mg/l | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - | | WLA |
| Copper, T. R. | µg/l | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - | | WLA |
| Lead, T. R. | µg/l | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - | | WLA |
| Zinc, T. R. | µg/l | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - | | WLA |

[b,c] See page 59 for definitions of acronyms and abbreviations (footnote "b"), and an explanation of footnote "c".

**Table 12-009. Final Effluent Limits and Monitoring Requirements for Outfall 009**

| | | Effluent Limits | | | | |
|---|---|---|---|---|---|---|
| | | ----------Concentration---------- | | --Loading (kg/day)[a]-- | | |
| **Parameter** | **Units** | **30 Day Average** | **Daily Maximum** | **30 Day Average** | **Daily Maximum** | **Basis[b]** |
| Flow | MGD | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - | | M[c] |
| Temperature | °C | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - | | M[c] |
| Oil and Grease | mg/l | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - | | EP[c] |
| pH | S.U. | - - - - - - - - - - - - - | 6.0 to 9.0 | - - - - - - - - - - - - - | | WQS/Study |
| Copper, T. R. | µg/l | -- | 36 | -- | 0.0063 | WLA |
| Lead, T. R. | µg/l | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - | | WLA |
| Zinc, T. R. | µg/l | -- | 203 | -- | 0.035 | WLA |

[a] Effluent loadings based on average design discharge flow of 0.046 MGD.

[b,c] See page 59 for definitions of acronyms and abbreviations (footnote "b"), and an explanation of footnote "c".

**Table 12-011. Final Effluent Limits and Monitoring Requirements for Outfall 011**

| | | Effluent Limits | | | | |
|---|---|---|---|---|---|---|
| | | ----------Concentration---------- | | --Loading (kg/day)[a]-- | | |
| Parameter | Units | 30 Day Average | Daily Maximum | 30 Day Average | Daily Maximum | Basis[b] |
| Flow | MGD | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - | | M[c] |
| Temperature | °C | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - | | M[c] |
| Oil and Grease | mg/l | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - | | EP[c] |
| pH | S.U. | - - - - - - - - - - - - - | 6.0 to 9.0 | - - - - - - - - - - - - - | | WQS/Study |
| Cyanide, Free | mg/l | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - | | WLA |
| Lead | µg/l | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - | | WLA |
| Zinc, T. R. | µg/l | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - | | WLA |

[b,c] See page 59 for definitions of acronyms and abbreviations (footnote "b"), and an explanation of footnote "c".

**Table 12-014. Final Effluent Limits and Monitoring Requirements for Outfall 014**

| | | Effluent Limits | | | | |
|---|---|---|---|---|---|---|
| | | ----------Concentration---------- | | --Loading (kg/day)[a]-- | | |
| Parameter | Units | 30 Day Average | Daily Maximum | 30 Day Average | Daily Maximum | Basis[b] |
| Flow | MGD | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - | | M[c] |
| Temperature | °C | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - | | M[c] |

[b,c] See page 59 for definitions of acronyms and abbreviations (footnote "b"), and an explanation of footnote "c".

**Table 12-015. Final Effluent Limits and Monitoring Requirements for Outfalls 015, 016, and 017**

| | | Effluent Limits | | | | |
|---|---|---|---|---|---|---|
| | | ----------Concentration---------- | | --Loading (kg/day)[a]-- | | |
| Parameter | Units | 30 Day Average | Daily Maximum | 30 Day Average | Daily Maximum | Basis[b] |
| Flow Rate | MGD | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - | | M[c] |
| Total Precipitation | Inches | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - | | BPJ |
| Zinc | µg/l | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - | | BPJ |
| Copper | µg/l | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - | | BPJ |

[b,c] See page 59 for definitions of acronyms and abbreviations (footnote "b"), and an explanation of footnote "c".

**Table 12-018. Final Effluent Limits and Monitoring Requirements for Outfalls 018 and 019**

| | | Effluent Limits | | | | |
|---|---|---|---|---|---|---|
| | | ----------Concentration---------- | | --Loading (kg/day)[a]-- | | |
| **Parameter** | **Units** | **30 Day Average** | **Daily Maximum** | **30 Day Average** | **Daily Maximum** | **Basis[b]** |
| Flow Rate | MGD | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - | | M[c] |
| Total Precipitation | Inches | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - | | BPJ |
| Zinc | µg/l | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - | | BPJ |
| Copper | µg/l | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - | | BPJ |
| Lead | µg/l | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - | | BPJ |

[b,c] See page 59 for definitions of acronyms and abbreviations (footnote "b"), and an explanation of footnote "c".

**Table 12-020. Final Effluent Limits and Monitoring Requirements for Outfalls 020**

| | | Effluent Limits | | | | |
|---|---|---|---|---|---|---|
| | | ----------Concentration---------- | | --Loading (kg/day)[a]-- | | |
| **Parameter** | **Units** | **30 Day Average** | **Daily Maximum** | **30 Day Average** | **Daily Maximum** | **Basis[b]** |
| Flow Rate | MGD | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - | | M[c] |
| Total Precipitation | Inches | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - | | BPJ |
| Zinc | µg/l | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - | | BPJ |
| Copper | µg/l | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - | | BPJ |
| Lead | µg/l | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - | | BPJ |
| Chromium | µg/l | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - | | BPJ |

[b,c] See page 59 for definitions of acronyms and abbreviations (footnote "b"), and an explanation of footnote "c".

**Table 12-601. Final Effluent Limits and Monitoring Requirements for Outfall 601**

| | | Effluent Limits | | | | |
|---|---|---|---|---|---|---|
| | | ----------Concentration---------- | | --Loading (kg/day)[a]-- | | |
| Parameter | Units | 30 Day Average | Daily Maximum | 30 Day Average | Daily Maximum | Basis[b] |
| Flow | MGD | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - | | M[c] |
| Suspended Solids | mg/l | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - | | BPT |
| pH | S.U. | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - | | BPT/BPJ |
| Ammonia-Nitrogen | mg/l | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - | | BAT |
| Cyanide, Total | mg/l | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - | | BAT |
| Lead, T. R. | µg/l | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - | | BAT |
| Phenolic 4AAP | µg/l | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - | | BAT |
| Zinc, T. R. | µg/l | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - | | BAT |

[b,c,d] See page 59 for definitions of acronyms and abbreviations (footnote "b"), and explanations of footnotes "c" and "d".

**Table 12-603. Final Effluent Limits and Monitoring Requirements for Outfall 603**

| | | Effluent Limits | | | | |
|---|---|---|---|---|---|---|
| | | ----------Concentration---------- | | --Loading (kg/day)[a]-- | | |
| Parameter | Units | 30 Day Average | Daily Maximum | 30 Day Average | Daily Maximum | Basis[b] |
| Flow | MGD | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - | | M[c] |
| Suspended Solids | mg/l | -- | -- | 1412 | 3769 | BPT |
| Oil and Grease | mg/l | -- | -- | -- | 944 | BPT |
| pH | S.U. | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - | | BPT/BPJ |
| Lead, T. R. | µg/l | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - | | EP/BPJ |
| Zinc, T. R. | µg/l | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - | | EP/BPJ |

[a] Effluent loadings based on average daily production of 19,420,000 pounds/day, or 8,827,273 kilograms/day.

[b,c,d] See page 59 for definitions of acronyms and abbreviations (footnote "b"), and explanations of footnotes "c" and "d".

**Table 12-605. Final Effluent Limits and Monitoring Requirements for Outfall 605**

| | | Effluent Limits | | | | |
|---|---|---|---|---|---|---|
| | | ----------Concentration---------- | | --Loading (kg/day)[a]-- | | |
| Parameter | Units | 30 Day Average | Daily Maximum | 30 Day Average | Daily Maximum | Basis[b] |
| Flow | MGD | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - - | | M[c] |
| Suspended Solids | mg/l | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - - | | BPT |
| pH | S.U. | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - - | | BPT/BPJ |
| Lead | µg/l | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - - | | BAT |
| Zinc | µg/l | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - - | | BAT |

[b,c,d] See page 59 for definitions of acronyms and abbreviations (footnote "b"), and explanations of footnotes "c" and "d".

**Table 12-606. Final Effluent Limits and Monitoring Requirements for Outfall 606**

| | | Effluent Limits | | | | |
|---|---|---|---|---|---|---|
| | | ----------Concentration---------- | | --Loading (kg/day)[a]-- | | |
| Parameter | Units | 30 Day Average | Daily Maximum | 30 Day Average | Daily Maximum | Basis[b] |
| Flow | MGD | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - - | | M[c] |
| Suspended Solids | mg/l | -- | -- | 201 | 603 | BPT |
| Oil and Grease | mg/l | -- | -- | 60.3 | 181 | BPT |
| pH | S.U. | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - - | | BPT/BPJ |
| Lead | µg/l | -- | -- | 0.24 | 0.73 | BAT |
| Zinc | µg/l | -- | -- | 0.36 | 1.09 | BAT |

[a] Effluent loadings based on average daily production of 17,000,000 pounds/day, or 7,727,273 kilograms/day.

[b,c,d] See page 59 for definitions of acronyms and abbreviations (footnote "b"), and explanations of footnotes "c" and "d".

**Table 12-607. Final Effluent Limits and Monitoring Requirements for Outfall 607**

| | | Effluent Limits | | | | |
|---|---|---|---|---|---|---|
| | | ----------Concentration---------- | | --Loading (kg/day)[a]-- | | |
| Parameter | Units | 30 Day Average | Daily Maximum | 30 Day Average | Daily Maximum | Basis[b] |
| Flow | MGD | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - | | M[c] |
| Temperature | °C | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - | | M[c] |
| Suspended Solids | mg/l | 30 | 100 | -- | -- | BPJ |
| Oil and Grease | mg/l | 15 | 20 | -- | -- | BPJ |
| pH | S.U. | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - | | BPT/BPJ |
| Lead | µg/l | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - | | BPJ |
| Zinc | µg/l | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - | | BPJ |

[b,c,d] See page 59 for definitions of acronyms and abbreviations (footnote "b"), and explanations of footnotes "c" and "d".

**Table 12-610. Final Effluent Limits and Monitoring Requirements for Outfall 610**

| | | Effluent Limits | | | | |
|---|---|---|---|---|---|---|
| | | ----------Concentration---------- | | --Loading (kg/day)[a]-- | | |
| Parameter | Units | 30 Day Average | Daily Maximum | 30 Day Average | Daily Maximum | Basis[b] |
| Flow | MGD | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - | | M[c] |
| Suspended Solids | mg/l | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - | | BPT |
| pH | S.U. | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - | | BPT |
| Ammonia-Nitrogen | mg/l | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - | | BAT |
| Cyanide, Total | mg/l | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - | | BAT |
| Lead | µg/l | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - | | BAT |
| Phenolic 4AAP | µg/l | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - | | BAT |
| Zinc | µg/l | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - | | BAT |

**Table 12-611. Final Effluent Limits and Monitoring Requirements for Outfall 611**

| | | Effluent Limits | | | | |
|---|---|---|---|---|---|---|
| | | ----------Concentration---------- | | --Loading (kg/day)[a]-- | | |
| Parameter | Units | 30 Day Average | Daily Maximum | 30 Day Average | Daily Maximum | Basis[b] |
| Flow | MGD | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - - | | M[c] |
| Suspended Solids | mg/l | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - - | | BPT |
| pH | S.U. | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - - | | BPT/BPJ |
| Lead | µg/l | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - - | | BAT |
| Zinc | µg/l | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - - | | BAT |

**Table 12-620. Final Effluent Limits and Monitoring Requirements for Outfall 620**

| | | Effluent Limits | | | | |
|---|---|---|---|---|---|---|
| | | ----------Concentration---------- | | --Loading (kg/day)[a]-- | | |
| Parameter | Units | 30 Day Average | Daily Maximum | 30 Day Average | Daily Maximum | Basis[b] |
| Flow | MGD | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - - | | M[c] |
| Suspended Solids | mg/l | -- | -- | 96.9 | 291.5 | BPT |
| Ammonia-Nitrogen | mg/l | | | | | |
| Summer | | -- | -- | 25.7 | 35.3 | 301(g) |
| Winter | | -- | -- | 27.5 | 42.9 | 301(g) |
| Cyanide, Total | mg/l | -- | -- | 3.26 | 6.52 | BAT |
| Lead | µg/l | -- | -- | 0.33 | 0.98 | BAT |
| Phenolic 4AAP | µg/l | -- | -- | 0.11 | 0.22 | BAT |
| Zinc | µg/l | -- | -- | 0.49 | 1.47 | BAT |

[a] Effluent loadings based on average daily production of 8,200,000 pounds/day, or 3,727,273 kilograms/day.

[b,c,d] See page 59 for definitions of acronyms and abbreviations (footnote "b"), and explanations of footnotes "c" and "d".

**Table 12-630. Final Effluent Limits and Monitoring Requirements for Outfall 630**

| | | Effluent Limits | | | | |
|---|---|---|---|---|---|---|
| | | ----------Concentration---------- | | --Loading (kg/day)[a]-- | | |
| **Parameter** | **Units** | **30 Day Average** | **Daily Maximum** | **30 Day Average** | **Daily Maximum** | **Basis[b]** |
| Flow | MGD | - - - - - - - - - - - - Monitor - - - - - - - - - - - - - - - - | | | | M[c] |
| Suspended Solids | mg/l | -- | -- | 162.4 | 487.1 | BPT/AD |
| Lead | µg/l | -- | -- | 0.98 | 2.93 | BAT/AD |
| Zinc | µg/l | -- | -- | 1.47 | 4.40 | BAT/AD |

[a] Effluent loadings based on existing permit loadings.

[b,c,d] See page 56 for definitions of acronyms and abbreviations (footnote "b"), and explanations of footnotes "c" and "d".

**Table 12-631. Final Effluent Limits and Monitoring Requirements for Outfall 631**

| | | Effluent Limits | | | | |
|---|---|---|---|---|---|---|
| | | ----------Concentration---------- | | --Loading (kg/day)[a]-- | | |
| **Parameter** | **Units** | **30 Day Average** | **Daily Maximum** | **30 Day Average** | **Daily Maximum** | **Basis[b]** |
| Flow | MGD | - - - - - - - - - - - - Monitor - - - - - - - - - - - - - - - - | | | | M[c] |
| Lead | µg/l | -- | -- | 2.90 | -- | BAT |

[b,c,d] See below for definitions of acronyms and abbreviations (footnote "b"), and explanations of footnotes "c" and "d".

[b] Definitions:

**ABS** = Antibacksliding Rule (OAC 3745-33-05(E) and 40 CFR Part 122.44(l));
**AD** = Antidegradation (OAC 3745-1-05);
**BAT** = Best Available Technology economically achievable, Federal Effluent Guidelines, 40 CFR Part ____;
**BPJ** = Best Professional Judgment;
**BPT** = Best Practicable control Technology currently available, Federal Effluent Guidelines, 40 CFR, Part ____;
**EP** = Existing Permit;
**M** = Division of Surface Water Guidance #2, "National Pollutant Discharge Elimination System: Determination of Sampling Frequency Formula for Industrial Waste Discharges" recommends monitoring for this parameter;
**PD** = Plant Design Criteria;

**RP** = Reasonable Potential for exceeding water quality standards, and requiring water quality-based effluent limits and monitoring requirements in NPDES permits (3745-33-07(A));
**Study** = 1994 study showing that a limit of 6.0 S.U. at end-of-pipe is protective of WQS;
**301(g)** = Variance issued in accordance with Section 301(g) of the Clean Water Act;
**WET** = Whole Effluent Toxicity (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).

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

[d] 7 day average limit.

**Table 13. Summary of Acute Toxicity Test Results for Plant Effluent: Outfalls 004 and 007**

| TEST DATE(a) | | *Ceriodaphnia dubia 48 hour* | | | | | | | *Fathead Minnows 96 hour* | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | UP[b] | C[c] | $LC_{50}$[d] | %A[e] | %M[f] | TUa[g] | NF[h] | UP[b] | C[c] | $LC_{50}$[d] | %A[e] | %M[f] | TUa[g] | NF[h] |
| ***Outfall 004*** | | | | | | | | | | | | | | | |
| O | 12/11/00 | 0 | 0 | > 100 | -- | 5 | < 1.0 | 0 | 0 | 0 | > 100 | -- | 0 | < 1.0 | 0 |
| O | 10/22/02 | 0 | 0 | > 100 | -- | 0 | < 1.0 | 0 | 5 | 0 | > 100 | -- | 0 | < 1.0 | 5 |
| ***Outfall 007*** | | | | | | | | | | | | | | | |
| O | 12/11/00 | 0 | 0 | > 100 | -- | 5 | < 1.0 | 0 | 0 | 0 | > 100 | -- | 0 | < 1.0 | 0 |
| O | 10/22/02 | 0 | 0 | > 100 | -- | 0 | < 1.0 | 0 | 0 | 10 | > 100 | -- | 0 | < 1.0 | 0 |

[a] O = EPA test; E = entity test
E-G = entity test, grab sample
E-C = entity test, composite sample
[b] UP = upstream control water hours
[c] C = laboratory water control
[d] $LC_{50}$ = Median Lethal Concentration
[e] %A = Percent Adversely Affected in 100% effluent
[f] %M = Percent Mortality in 100% effluent
[g] TUa = Acute Toxicity Units
[h] NF = Near Field Sample
NT = not tested
* = testing for Fathead minnow conducted for 48 hours

## Attachment A. Federal Effluent Guidelines Applicable to WPS Steubenville South Plant

***Used to Calculate Limits for Outfall 601:***

Quantity of product manufactured/day = 8,200,000 pounds = 3,727,273 kilograms

**40 CFR 420.32(a)** **Iron and Steel Manufacturing Point Source Category**
Subpart C - Ironmaking Subcategory
(a) Iron Blast Furnace
Best Practicable Control Technology Available (BPT)

| | ----------Kg/1000 Kg of Product---------- | | ----------Loading Limits---------- | |
|---|---|---|---|---|
| Parameter | Daily Maximum | 30-Day Average | Daily Maximum | 30-Day Average |
| Total Suspended Solids | 0.0782 | 0.0260 | 291.5 | 96.9 |

**40 CFR 420.33(a)** **Iron and Steel Manufacturing Point Source Category**
Subpart C - Ironmaking Subcategory
(a) Iron Blast Furnace
Best Available Technology Economically Achievable (BAT)

| | ----------Kg/1000 Kg of Product---------- | | ----------Loading Limits---------- | |
|---|---|---|---|---|
| Parameter | Daily Maximum | 30-Day Average | Daily Maximum | 30-Day Average |
| Ammonia-N | 0.00876 | 0.00292 | 32.6 | 10.9 |
| Cyanide | 0.00175 | 0.000876 | 6.52 | 3.26 |
| Phenols (4AAP) | 0.0000584 | 0.0000292 | 0.22 | 0.11 |
| Total Residual Chlorine | 0.000146 | ---------- 0.54 | ----- | |
| Lead | 0.000263 | 0.0000876 | 0.98 | 0.33 |
| Zinc | 0.000394 | 0.000131 | 1.47 | 0.49 |

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***Used to Calculate Limits for Outfall 603:***

Quantity of product manufactured/day = 19,420,000 pounds = 8,827,273 kilograms

**40 CFR 420.72(c)(1)** **Iron and Steel Manufacturing Point Source Category**
Subpart G - Hot Forming Subcategory
(c)(1) Hot Strip and Sheet Mills, Carbon and Specialty
Best Practicable Control Technology Currently Available (BPT)

| | ----------Kg/1000 Kg of Product---------- | | ----------Loading Limits---------- | |
|---|---|---|---|---|
| Parameter | Daily Maximum | 30-Day Average | Daily Maximum | 30-Day Average |
| Total Suspended Solids | 0.427 | 0.160 | 3769 | 1412 |
| Oil and Grease | 0.107 | ------- | 944 | ----- |

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***Used to Calculate Limits for Outfall 605:***

**Basic Oxygen Furnace**

Quantity of product manufactured/day = 18,000,000 pounds = 8,181,818 kilograms

**40 CFR 420.42(c) Iron and Steel Manufacturing Point Source Category**
Subpart D - Steelmaking Subcategory
(c) Basic Oxygen Furnace Steelmaking
Best Practicable Control Technology Currently Available (BPT)

| | ----------Kg/1000 Kg of Product---------- | | ----------Loading Limits---------- | |
|---|---|---|---|---|
| Parameter | Daily Maximum | 30-Day Average | Daily Maximum | 30-Day Average |
| Total Suspended Solids | 0.0687 | 0.0229 | 562 | 187 |

**40 CFR 420.43(c) Iron and Steel Manufacturing Point Source Category**
Subpart D - Steelmaking Subcategory
(c) Basic Oxygen Furnace Steelmaking
Best Available Technology Economically Achievable (BAT)

| | ----------Kg/1000 Kg of Product---------- | | ----------Loading Limits---------- | |
|---|---|---|---|---|
| Parameter | Daily Maximum | 30-Day Average | Daily Maximum | 30-Day Average |
| Lead | 0.000413 | 0.000138 | 3.38 | 1.13 |
| Zinc | 0.000620 | 0.000207 | 5.07 | 1.69 |

**Electric Arc Furnace**

Quantity of product manufactured/day = 16,800,000 pounds = 7,636,364 kilograms

**40 CFR 420.42(c) Iron and Steel Manufacturing Point Source Category**
Subpart D - Steelmaking Subcategory
(c) Basic Oxygen Furnace Steelmaking
Best Practicable Control Technology Currently Available (BPT)

| | ----------Kg/1000 Kg of Product---------- | | ----------Loading Limits---------- | |
|---|---|---|---|---|
| Parameter | Daily Maximum | 30-Day Average | Daily Maximum | 30-Day Average |
| Total Suspended Solids | 0.0687 | 0.0229 | 525 | 175 |

**40 CFR 420.43(c) Iron and Steel Manufacturing Point Source Category**
Subpart D - Steelmaking Subcategory
(c) Basic Oxygen Furnace Steelmaking
Best Available Technology Economically Achievable (BAT)

| | ----------Kg/1000 Kg of Product---------- | | ----------Loading Limits---------- | |
|---|---|---|---|---|
| Parameter | Daily Maximum | 30-Day Average | Daily Maximum | 30-Day Average |
| Lead | 0.000413 | 0.000138 | 3.15 | 1.05 |
| Zinc | 0.000620 | 0.000207 | 4.73 | 1.58 |

***Used to Calculate Limits for Outfall 606:***

Quantity of product manufactured/day = 17,000,000 pounds = 7,727,273 kilograms

**40 CFR 420.62** **Iron and Steel Manufacturing Point Source Category**
Subpart F - Continuous Casting Subcategory
Best Practicable Control Technology Currently Available (BPT)

| | ----------Kg/1000 Kg of Product---------- | | ----------Loading Limits---------- | |
|---|---|---|---|---|
| Parameter | Daily Maximum | 30-Day Average | Daily Maximum | 30-Day Average |
| Total Suspended Solids | 0.0780 | 0.0260 | 603 | 201 |
| Oil & Grease | 0.0234 | 0.0078 | 181 | 60.3 |

**40 CFR 420.63** **Iron and Steel Manufacturing Point Source Category**
Subpart F - Continuous Casting Subcategory
Best Available Technology Economically Achievable (BAT)

| | ----------Kg/1000 Kg of Product---------- | | ----------Loading Limits---------- | |
|---|---|---|---|---|
| Parameter | Daily Maximum | 30-Day Average | Daily Maximum | 30-Day Average |
| Lead | 0.0000939 | 0.0000313 | 0.73 | 0.24 |
| Zinc | 0.000141 | 0.0000469 | 1.09 | 0.36 |