National Pollutant Discharge Elimination System (NPDES) Permit Program
FACT SHEET

Regarding an NPDES Permit to Discharge to Waters of the State of Ohio for Ohio Valley Electric Corporation, Kyger Creek Station WWTP

| | | | |
|---|---|---|---|
| Public Notice No.: | 08-10-051 | OEPA Permit No.: | 0IB00005*MD |
| Public Notice Date | October 29, 2008 | Application No.: | OH0005282 |
| Comment Period Ends: | November 29, 2008 | | |

| Name and Address of Applicant: | Name and Address of Facility Where Discharge Occurs: |
|---|---|
| Ohio Valley Electric Corporation<br>P.O. Box 468<br>Piketon, Oh 45661 | Ohio Valley Electric Corporation<br>Kyger Creek Station<br>5758 State Route 7 (P.O. Box 372)<br>Cheshire, Oh 45620 |

| Receiving Water: | Subsequent Stream Network: |
|---|---|
| Kyger Creek | Ohio River |
| Ohio River | Ohio River |
| Little Campaign Creek | Campaign Creek, Ohio River |
| Little Kyger Creek | Kyger Creek, Ohio River |

## Introduction

Development of a Fact Sheet for NPDES permits is mandated by Title 40 of the Code of Federal Regulations, Section 124.8 and 124.56. This document fulfills the requirements established in those regulations by providing the information necessary to inform the public of actions proposed by the Ohio Environmental Protection Agency, as well as the methods by which the public can participate in the process of finalizing those actions.

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

The draft permit contains effluent limits developed to comply with the requirements of Ohio Administrative Code (OAC) Section 3745-1-05. Any person who believes that these limits are eligible for revision in accordance with Section 3745-1-05(B) of the OAC may request the Director to consider such revision. Please contact the staff of the Division of Surface Water at (614) 644-2001 to obtain specific instructions and the forms necessary to make the request.

Procedures for Participation in the Formulation of Final Determinations

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

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

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

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

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

**Ohio Environmental Protection Agency**
**Attention: Division of Surface Water**
**Water Resource Management Section**
**P.O. Box 1049**
**Columbus, Ohio 43216-1049**

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

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

**Facility Description and Permit Renewal**

The Ohio Valley Electric Kyger Creek Station is a coal fired power plant with a total generating capacity of 1086 megawatts from five generating units. The facility is located at 5758 State Route 7, near Cheshire, in Addison Twp., Gallia County, Ohio. It has wastewater discharges authorized under NPDES permit 0IB00005*MD, with effective date January 1, 2008 and expiration date June 30, 2008. This short term permit was issued upon the expiration of 2002 NPDES permit in July 31, 2007. An application for renewal of the permit was submitted to Ohio EPA by OVEC on January 31, 2007. Why the short term permit was issued is explained below at the end.

The Ohio Valley Electric Corporation (OVEC) Kyger Creek Facility is currently undergoing the installation of a Flue Gas Desulfurization (FGD) system or "scrubber" system. A new wastewater stream or source referred to as the FGD chloride purge stream (CPS) will be created by operation of the FGD system. The chloride purge stream is a direct purge from the scrubber vessels.

This wastewater source will be treated in a new wastewater treatment plant prior to being discharged to the existing fly ash pond treatment system (existing NPDES outfall 0IB00005005). The new wastewater treatment plant will be known as the FGD CPS wastewater treatment plant. The treatment system will have mercury removal equipment. It is intended to minimize the incremental pollutant loading from the existing fly ash pond (Outfall 005 discharge to Kyger Creek).

An FGD sludge (also referred to as coal combustion product or "CCP") landfill of approximately 100 acres with both a liner system and leachate collection system will be constructed. Contact and non-contact runoff water in the FGD landfill area will be routed to a series of settling treatment ponds to be discharged to new NPDES outfalls.

A temporary FGD CCP storage pad will be constructed within the landfill and will be served by a temporary treatment pond (with a new NPDES outfall). In addition, there will be an FGD stackout pad located about halfway between the power plant and the FGD landfill, at the end of the proposed FGD belt line (conveyor). Runoff from this pad will be routed to a treatment pond with a new NPDES outfall.

OVEC began construction of these new wastewater treatment facilities associated with the scrubber installation. A Permit to Install was necessary prior to beginning of construction. Because of the Antidegradation Rule (OAC 3745-1-05), the Permit to Install (PTI No. 610866) had to be issued and at the same time these new discharges were authorized under this short term NPDES permit 0IB00005*MD.

Since the expired 2002 NPDES permit could not be modified to address new discharges, the permit was renewed as short term permit. Time constraints did not allow Ohio EPA to complete the requisite water quality modeling necessary to renew the permit for 5 years. Ohio EPA has now completed its' full evaluation of water quality issues related to OVEC's existing discharges (outfalls 001, 003 and 005) based on effluent data from 2002 thru 2006. For the new outfalls, no discharges have yet taken place because the constructions have not yet been completed.

The details of new NPDES permitted outfalls, their receiving streams are listed below:

New Discharges

| | |
|---|---|
| 0IB00005602 | FGD Chloride Purge Stream wastewater treatment facility; 0.386 MGD internal discharge to Fly Ash Pond which discharges through outfall 005 to Kyger Creek. |
| 0IB00005026 | Temporary Coal Combustion Products (CCP's) Storage contact treatment pond, 0.800 MGD discharge to Unnamed Tributary (UT) to Little Kyger Creek. |
| 0IB00005027 | Temporary CCP Noncontact (NC) treatment pond, 3.2 MGD discharge to UT to L. Kyger Creek |
| 0IB00005028 | Gypsum Stackout Pad contact storm runoff; 0.0 MGD discharge to UT to L. Kyger Creek |
| 0IB00005029 | Haul Road non-contact storm runoff, 1.0 MGD discharge to UT to L. Kyger Creek |
| 0IB00005030 | Interim Leachate (contact water) pond, 0.28 MGD discharge to UT to L. Kyger Creek |
| 0IB00005031 | Interim contact leachate pond, 0.19 MGD discharge to UT to L. Kyger Creek |
| 0IB00005032 | Noncontact storm runoff (East), 2.70 MGD discharge to UT to L. Kyger Creek. |
| 0IB00005033 | NC storm runoff (North), 2.40 MGD discharge to UT to L. Kyger Creek |
| 0IB00005034 | NC storm runoff (West), 3.20 MGD discharge to UT to L. Campaign Creek |
| 0IB00005035 | NC storm runoff (South), 4.50 MGD discharge to UT to L. Kyger Creek |

**Receiving Stream Location**

| | |
|---|---|
| Stream Location: | Ohio River, RM 723.<br>Kyger Creek<br>Little Kyger Creek |
| Major Basin: | Ohio River Basin |
| Ohio EPA River Code: | 25-350 |
| USEPA River Reach number: | 05030202-005 |
| Designated Stream Uses: | Ohio River; Warmwater Habitat<br>Agricultural Water Supply<br>Tribs; Limited Resource Water,<br>Agricultural Water Supply |

**Assessment of Impact on Receiving Waters**

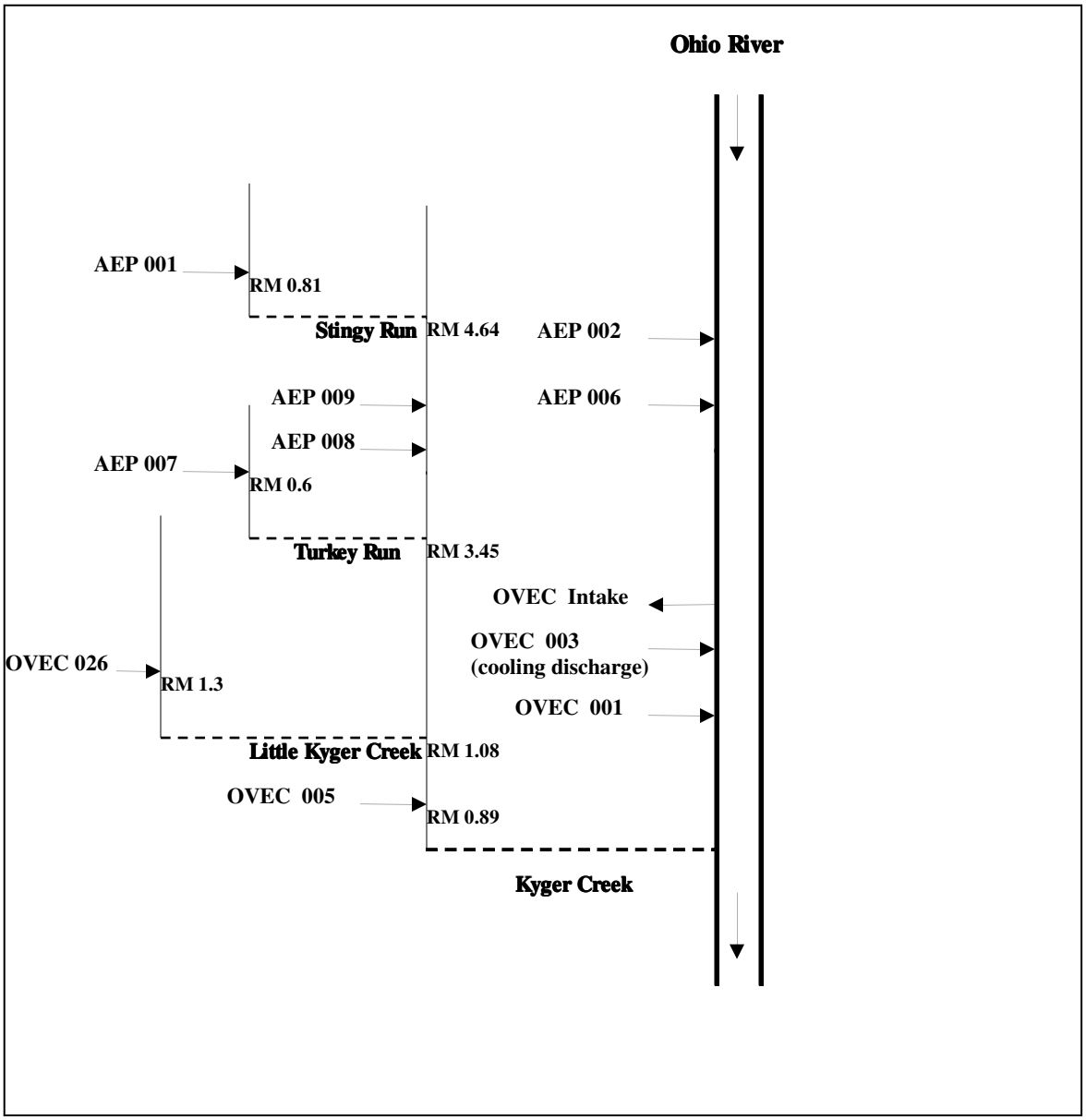
No recent information to assess this source is available.

**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.

This facility is considered to be interactive with the AEP Gavin Plant, which discharges to the Ohio River and Kyger Creek in the vicinity of the Ohio Valley Electric Corporation (OVEC) outfalls. The CONSWLA (conservative substance wasteload allocation) model was used to distribute effluent loadings between these two entities. A schematic of the study area is shown in Figure 1.

Figure 1. Ohio River Study Area



Parameter Selection

Effluent data for OVEC were used to determine what parameters should undergo wasteload allocation. The sources of effluent data are as follows:

| | |
|---|---|
| Self-monitoring data (LEAPS) | January 2002 through December 2006 |
| 2.c. Application data | 2007 |
| Ohio EPA data (compliance, survey) | 2006 |

The effluent data were checked for outliers and the following values were eliminated from the data sets: outfall 001; one value for copper of 19. ug/l, at outfall 003; one value for chlorine, tot. res. of 40. ug/l, and at outfall 005, two values for boron of 1.88 and 2.1 ug/l, and two values for strontium of 1.09 and 1.21 ug/l. The values removed for boron and strontium at outfall 005 were lower than the MDL and were likely reporting errors.

The average and maximum projected effluent quality (PEQ) values are presented in Table 1. For some of the parameters at outfall 005, the existing PEQ data was mass balanced with the estimated loadings from a proposed scrubber treatment system that will increase the effluent flow from 21.3 to 21.9 cfs.

For a summary of the screening results, refer to the parameter groupings at the end of this section.

Wasteload Allocation

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

| | | |
|---|---|---|
| Aquatic life (WWH) and (LRW) | | |
| Toxics (metals, organics, etc.) | Average | Annual 7Q10 |
| | Maximum | Annual 1Q10 |
| Ammonia-N | Average | Summer, winter 30Q10 |
| Agricultural Water Supply | | Harmonic mean flow |
| Human Health (nondrinking) | | Harmonic mean flow |

Allocations are developed using a percentage of stream design flow (as specified in Table 3), and allocations cannot exceed the Inside Mixing Zone Maximum criteria.

Due to the LRW use designation, Aquatic Life average criteria do not apply in Kyger Creek, Little Kyger Creek, Stingy Run and Turkey Run; however outfalls discharging to those tributaries still have to meet all applicable criteria in the Ohio River.

The data used in the WLA are listed in Tables 2 and 3. The wasteload allocation results to maintain all applicable criteria are presented in Table 4.

Reasonable Potential

The preliminary effluent limits are the lowest average WLA (average PEL) and the maximum WLA (maximum PEL). To determine the reasonable potential of the discharger to exceed the WLA for each parameter, the facility's effluent quality is compared to the preliminary effluent limits. The average PEQ value (Table 1) is compared to the average PEL, and the maximum PEQ value is compared to the maximum PEL. Based on the calculated percentage of the respective average and maximum comparisons, the parameters are assigned to "groups", as listed in Table 5.

Whole Effluent Toxicity

The allowable effluent toxicity (AET) is a factor considered in evaluating whole effluent toxicity. The AET calculations are similar to those for aquatic life criteria (using the chronic toxicity unit ($TU_c$) and 7Q10 for average and the acute toxicity unit ($TU_a$) and 1Q10 for maximum). For OVEC, the AET values are as follows; for outfall 001, 1.0 $TU_a$ and 147.7 $TU_c$ ; for outfall 005, 0.44 $TU_a$ and 33.1 $TU_c$ ; for outfall 026, 0.31 $TU_a$ and 584.4 $TU_c$. Note: for the OVEC outfalls discharging to the LRW tributaries (outfalls 005 and 026), $TU_c$ values are calculated to meet criteria in the Ohio River.

Table 1. Effluent Data for OVEC

| Parameter | Units | # of Samples | # > MDL | Average PEQ | Maximum PEQ |
|---|---|---|---|---|---|
| **Outfall 001** | | | | | |
| Self-Monitoring (MOR) Data | | | | | |
| Copper | ug/l | 13 | 10 | 3.403 | 6.064 |
| Cadmium | ug/l | 15 | 1 | 8.76 | 12. |
| 2. c. Application Data | | | | | |
| Ammonia | mg/l | 77 | -- | 0.394 | 0.54 |
| $NO_3$+$NO_2$ | mg/l | 8 | -- | 1.817 | 2.489 |
| Phosphorus | mg/l | 8 | -- | 1.248 | 1.71 |
| Fluoride | ug/l | 1 | 1 | 905. | 1240. |
| Sulfate | mg/l | 53 | -- | 225.4 | 308.8 |
| Aluminum | ug/l | 1 | 1 | 1593.2 | 2182.4 |
| Arsenic | ug/l | 10 | -- | 8.687 | 11.9 |
| Barium | ug/l | 9 | -- | 127.46 | 174.6 |
| Boron | ug/l | 1 | 1 | 905.2 | 1240. |
| Chromium, total | ug/l | 10 | -- | 11.17 | 15.3 |
| Iron | ug/l | 9 | -- | 2338.9 | 3204. |
| Lead | ug/l | 9 | -- | 3.942 | 5.4 |
| Manganese | ug/l | 9 | -- | 262.8 | 360. |
| Nickel | ug/l | 9 | -- | 14.45 | 19.8 |
| Selenium | ug/l | 9 | -- | 11.83 | 16.2 |
| Silver | ug/l | 9 | -- | 0.788 | 1.08 |
| Titanium | ug/l | 1 | 1 | 72.42 | 99.2 |
| Zinc | ug/l | 9 | -- | 17.08 | 23.4 |
| Di-n-butyl phthalate | ug/l | 1 | 1 | 14.48 | 19.84 |
| Bis (2-ethylhexyl) phthalate [C] | ug/l | 1 | 1 | 57.03 | 78.12 |
| **Outfall 003** | | | | | |
| Self-Monitoring (MOR) Data | | | | | |
| Chlorine, tot. res. | ug/l | 308 | 0 | -- | -- |

[C] Carcinogen

Table 1. Effluent Data for OVEC – Continued.

| Parameter | Units | # of Samples | # > MDL | Average PEQ | Maximum PEQ |
|---|---|---|---|---|---|
| **Outfall 005** | | | | | |
| Self-Monitoring (MOR) Data | | | | | |
| Fluoride [A] | ug/l | 58 | 58 | 2027.7 | 2777.6 |
| Arsenic [A] | ug/l | 125 | 116 | 82.71 | 113.3 |
| Selenium [A] | ug/l | 14 | 13 | 34.2 | 46.86 |
| Boron [A] | ug/l | 57 | 57 | 8230.8 | 11275. |
| Strontium | ug/l | 56 | 56 | 1088.3 | 1333.9 |
| Copper | ug/l | 14 | 14 | 51.67 | 96.08 |
| 2. c. Application Data | | | | | |
| Ammonia | mg/l | 93 | -- | 1.183 | 1.62 |
| $NO_3$+$NO_2$ | mg/l | 10 | -- | 1.936 | 2.652 |
| Phosphorus | mg/l | 10 | -- | 0.186 | 0.255 |
| Chlorides [A] | mg/l | 1 | 1 | 196.63 | 269.36 |
| Sulfates [A] | mg/l | 53 | -- | 331.4 | 453.9 |
| Aluminum | ug/l | 2 | 2 | 3550.7 | 4864. |
| Antimony [A] | ug/l | 13 | -- | 8.021 | 10.99 |
| Barium [A] | ug/l | 14 | -- | 355.13 | 486.47 |
| Beryllium [A] | ug/l | 107 | -- | 0.653 | 0.894 |
| Cadmium [A] | ug/l | 108 | -- | 2.292 | 3.139 |
| Chromium, tot. [A] | ug/l | 104 | -- | 35.27 | 48.31 |
| Iron | ug/l | 14 | -- | 1007.4 | 1380. |
| Lead [A] | ug/l | 108 | -- | 3.862 | 5.29 |
| Manganese | ug/l | 12 | -- | 257. | 352. |
| Nickel [A] | ug/l | 107 | -- | 27.19 | 37.24 |
| Potassium | mg/l | 1 | 1 | 24.82 | 34. |
| Silver [A] | ug/l | 13 | -- | 3.52 | 4.821 |
| Titanium | ug/l | 1 | 1 | 298.7 | 409.2 |
| Zinc [A] | ug/l | 108 | -- | 74.76 | 102.41 |
| Di-n-butyl phthalate | ug/l | 2 | 1 | 14.03 | 19.22 |
| TDS [A] | mg/l | 1 | 1 | 2319.6 | 3177.5 |

[A] Average and Maximum PEQs calculated by mass balancing existing loads with estimated loads from the proposed air pollution control scrubber waste stream.

Table 1. Effluent Data OVEC – Continued.

| Parameter | Units | # of Samples | # > MDL | Average PEQ | Maximum PEQ |
|---|---|---|---|---|---|
| **Outfall 026** | | | | | |
| 2. d. Application Data [A] | | | | | |
| Fluoride | ug/l | -- | -- | 4500. | -- |
| Sulfate | mg/l | -- | -- | 1490. | -- |
| Barium | ug/l | -- | -- | 245. | -- |
| Boron | ug/l | -- | -- | 290. | -- |
| Lead | ug/l | -- | -- | 7.0 | -- |
| Silver | ug/l | -- | -- | 1.0 | -- |
| Zinc | ug/l | -- | -- | 46. | -- |
| Arsenic | ug/l | -- | -- | 7.0 | -- |
| Copper | ug/l | -- | -- | 2.0 | -- |
| Selenium | ug/l | -- | -- | 17. | -- |

[A] No actual effluent data is available for this outfall. Average PEQs are estimates derived from data collected at similar leachate outfalls at other facilities.

Table 2. Water Quality Criteria in the Study Area

| Parameter | Units | Outside Mixing Zone Criteria: Average: Human Health | Outside Mixing Zone Criteria: Average: Agri-culture | Outside Mixing Zone Criteria: Average: Aquatic Life | Outside Mixing Zone Criteria: Maximum Aquatic Life | Inside Mixing Zone max. |
|---|---|---|---|---|---|---|
| **Water Quality Criteria for the Ohio River** | | | | | | |
| Arsenic | ug/l | 50. | 100. | 150. | 340. | 680. |
| Barium | ug/l | -- | -- | 220. | 2000. | 4000. |
| Beryllium | ug/l | 16. | 100. | 15. | 130. | 250. |
| Bis (2-ethylhexyl) phthalate | ug/l | 18. | -- | 8.4 | 1100. | 2100. |
| Boron | ug/l | -- | -- | 950. | 8500. | 17000. |
| Cadmium | ug/l | -- | 50. | 2.8 | 5.5 | 11. |
| Chlorine, total res. | ug/l | -- | -- | 11. | 19. | 38. |
| Chromium , total | ug/l | -- | 100. | 100. | 2100. | 4200. |
| Cobalt | ug/l | -- | -- | 24. | 220. | 440. |
| Copper | ug/l | 1300. | 500. | 11. | 17. | 33. |
| Di-n-butyl phthalate | ug/l | 2700. | -- | -- | -- | -- |
| Fluoride | ug/l | 1000. | 2000. | -- | -- | -- |
| Iron | ug/l | -- | 5000. | -- | -- | -- |
| Lead | ug/l | -- | 100. | 8.1 | 150. | 310. |
| Mercury [B] | ug/l | 0.012 | 10. | 0.91 | 1.7 | 3.4 |
| Nickel | ug/l | 610. | 200. | 61. | 550. | 1100. |
| $NO_3$+$NO_2$ | mg/l | 10. | 100. | -- | -- | -- |
| Phenol | ug/l | 21000. | -- | 400. | 4700. | 9400. |
| Selenium | ug/l | 170. | 50. | 5. | -- | -- |
| Silver | ug/l | 50. | -- | 1.3 | 2.2 | 4.4 |
| Strontium | ug/l | -- | -- | 5300. | 48000. | 95000. |
| Sulfates | mg/l | 250. | -- | -- | -- | -- |
| Thallium | ug/l | 1.7 | -- | 17. | 79. | 160. |
| Total Dissolved Solids | mg/l | -- | -- | 1500. | -- | -- |
| Zinc | ug/l | 9100. | 25000. | 140. | 140. | 280. |

[B] Bioaccumulative Chemical of Concern

Table 2. Water Quality Criteria in the Study Area

| Parameter | Units | Outside Mixing Zone Criteria: Average: Human Health | Outside Mixing Zone Criteria: Average: Agri-culture | Outside Mixing Zone Criteria: Average: Aquatic Life | Outside Mixing Zone Criteria: Maximum Aquatic Life | Inside Mixing Zone Max. |
|---|---|---|---|---|---|---|
| **Water Quality Criteria for Kyger Creek and tribs.** | | | | | | |
| Ammonia - S | mg/l | -- | -- | -- | 13. | -- |
| Ammonia - W | mg/l | -- | -- | -- | 13. | -- |
| Arsenic | ug/l | -- | 100. | -- | 340. | 680. |
| Barium | ug/l | -- | -- | -- | 2000. | 4000. |
| Beryllium | ug/l | 280. | 100. | -- | 870. | 1700. |
| Boron | ug/l | -- | -- | -- | 8500. | 17000. |
| Cadmium | ug/l | -- | 50. | -- | 22. | 43. |
| Chromium , total | ug/l | -- | 100. | -- | 5600. | 11000. |
| Cobalt | ug/l | -- | -- | -- | 220. | 440. |
| Copper | ug/l | 1300. | 500. | -- | 52. | 100. |
| Di-n-butyl phthalate | ug/l | 12000. | -- | -- | -- | -- |
| Fluoride | ug/l | -- | 2000. | -- | -- | -- |
| Iron | ug/l | -- | 5000. | -- | -- | -- |
| Lead | ug/l | -- | 100. | -- | 710. | 1400. |
| Mercury [B] | ug/l | 0.012 | 10. | -- | 1.7 | 3.4 |
| Nickel | ug/l | 4600. | 200. | -- | 1500. | 3000. |
| $NO_3$+$NO_2$ | mg/l | -- | 100. | -- | -- | -- |
| Selenium | ug/l | 11000. | 50. | -- | -- | -- |
| Silver | ug/l | -- | -- | -- | 17. | 35. |
| Strontium | ug/l | -- | -- | -- | 48000. | 95000. |
| Thallium | ug/l | 6.3 | -- | -- | 79. | 160. |
| Zinc | ug/l | 69000. | 25000. | -- | 390. | 780. |

[B] Bioaccumulative Chemical of Concern

Table 3. Instream Conditions and Discharger Flow

| Parameter | Units | Season | Value | Basis |
|---|---|---|---|---|
| **Ohio River** | | | | |
| 7Q10 | cfs | annual | 6700. | ORSANCO |
| Harmonic Mean Flow | cfs | annual | 26000. | ORSANCO |
| Instream Hardness | mg/l | annual | 120. | STORET |
| Mixing Assumption | % | average | 10. | Stream-to-discharge ratio |
| | % | maximum | 1.0 | Stream-to-discharge ratio |

Background Water Quality for the Ohio River (ug/l)

| | | |
|---|---|---|
| Arsenic | 2. | STORET; 50 values, 44<MDL,1990-98 |
| Barium | 50. | STORET; 29 values, 7<MDL,1990-98 |
| Beryllium | 0. | No representative data available. |
| Bis (2-ethylhexyl) phthalate | 0. | No representative data available. |
| Boron | 0. | No representative data available. |
| Cadmium | 0.25 | STORET; 68 values, 64<MDL,1990-98 |
| Chlorine, tot. res. | 0. | No representative data available. |
| Chromium, total | 5. | STORET; 28 values, 23<MDL,1990-98 |
| Cobalt | 0. | No representative data available. |
| Copper | 2.5 | STORET; 67 values, 44<MDL,1990-98 |
| Fluoride | 0. | No representative data available. |
| Iron | 620. | STORET; 68 values, 1<MDL,1990-98 |
| Lead | 2.5 | STORET; 68 values, 48<MDL,1990-98 |
| Mercury | 0. | No representative data available. |
| Nickel | 0. | STORET; 29 values, 29<MDL,1990-98 |
| $NO_3$+$NO_2$ (mg/l) | 1.04 | STORET; 67 values, 1<MDL,1990-98 |
| Selenium | 0. | STORET; 29 values, 29<MDL,1990-98 |
| Silver | 0. | STORET; 29 values, 29<MDL,1990-98 |
| Strontium | 0. | No representative data available |
| Sulfate (mg/l) | 76. | STORET; 68 values, 0<MDL,1990-98 |
| Thallium | 0. | No representative data available. |
| Total Dissolved Solids (mg/l) | 382. | BWQR; 3755 values, 0 <MDL |
| Zinc | 20. | STORET; 68 values, 18<MDL,1990-98 |

BWQR – Background Water Quality Report

Table 3. Instream Conditions and Discharger Flow – Continued.

| Parameter | Units | Season | Value | Basis |
|---|---|---|---|---|
| **Kyger Creek Upst Stingy Run** | | | | |
| 7Q10 | cfs | annual | 0.14. | USGS gage #03202000, 1938-97 data |
| 1Q10 | cfs | annual | 0.11 | USGS gage #03202000, 1938-97 data |
| Harmonic Mean Flow | cfs | annual | 1.89 | USGS gage #03202000, 1938-97 data |
| **Stingy Run Upst AEP 001** | | | | |
| 7Q10 | cfs | annual | 0.02 | USGS gage #03202000, 1938-97 data |
| 1Q10 | cfs | annual | 0.01 | USGS gage #03202000, 1938-97 data |
| Harmonic Mean Flow | cfs | annual | 0.21 | USGS gage #03202000, 1938-97 data |
| **Turkey Run Upst AEP 007** | | | | |
| 7Q10 | cfs | annual | 0.01. | USGS gage #03202000, 1938-97 data |
| 1Q10 | cfs | annual | 0.01 | USGS gage #03202000, 1938-97 data |
| Harmonic Mean Flow | cfs | annual | 0.16 | USGS gage #03202000, 1938-97 data |
| **Little Kyger Creek Upst OVEC 026** | | | | |
| 7Q10 | cfs | annual | 0.04. | USGS gage #03202000, 1938-97 data |
| 1Q10 | cfs | annual | 0.03 | USGS gage #03202000, 1938-97 data |
| Harmonic Mean Flow | cfs | annual | 0.54 | USGS gage #03202000, 1938-97 data |
| **Kyger Creek and all tribs.** | | | | |
| Mixing Assumption | % | average | 100 | Stream-to-discharge ratio |
| | % | maximum | 100 | Stream-to-discharge ratio |
| Instream Hardness | mg/l | annual | 400. | STORET; 22 values, 1982-90 |

BWQR – Background Water Quality Report

Table 3. Instream Conditions and Discharger Flow – Continued.

| Parameter | Units | Season | Value | Basis |
|---|---|---|---|---|
| Background Water Quality for Kyger Creek and tribs. (ug/l) | | | | |
| Arsenic | | | 1.5 | STORET; 6 values, 5<MDL,1990 |
| Barium | | | 50. | STORET;29 values, 7<MDL,1990-98(Ohio R) |
| Beryllium | | | 0. | No representative data available. |
| Bis (2-ethylhexyl) phthalate | | | 0. | No representative data available. |
| Boron | | | 0. | No representative data available. |
| Cadmium | | | 0.32 | STORET; 6 values, 0<MDL,1990 |
| Chromium, total | | | 0. | STORET; 8 values, 8<MDL,1982-90 |
| Cobalt | | | 0. | No representative data available. |
| Copper | | | 10. | STORET; 7 values, 4<MDL,1982-90 |
| Fluoride | | | 0. | No representative data available. |
| Iron | | | 1049. | STORET; 8 values, 0<MDL,1982-90 |
| Lead | | | 8.2 | STORET; 6 values, 3<MDL,1990 |
| Mercury | | | 0. | No representative data available. |
| Nickel | | | 61. | STORET; 8 values, 2<MDL,1982-90 |
| $NO_3$+$NO_2$ (mg/l) | | | 0.2 | STORET; 8 values, 0<MDL,1982-90 |
| Selenium | | | 0. | No representative data available. |
| Silver | | | 0. | No representative data available. |
| Strontium | | | 0. | No representative data available. |
| Sulfate (mg/l) | | | 76. | STORET;68 values, 0<MDL,1990-98(Ohio R) |
| Thallium | | | 0. | No representative data available. |
| Total Dissolved Solids (mg/l) | | | 722.5 | STORET; 8 values, 0<MDL,1982-90 |
| Zinc | | | 137. | STORET; 8 values, 0<MDL,1982-90 |
| Discharge flows for AEP- Gavin and Ohio Valley Electric Corporation | | | | |
| AEP 001 | cfs | annual | 6.47 | DSW |
| AEP 002 | cfs | annual | 0.04 | DSW |
| AEP 006 | cfs | annual | 18.1 | DSW |
| AEP 007 | cfs | annual | 0.83 | DSW |
| AEP 008 | cfs | annual | 0.61 | DSW |
| AEP 009 | cfs | annual | 0.61 | DSW |
| OVEC 001 | cfs | annual | 4.69 | DSW |
| OVEC 003 | cfs | annual | 1823. | DSW |
| OVEC 005 | cfs | annual | 21.9 | DSW |
| OVEC 026 | cfs | annual | 1.24 | DSW |

BWQR – Background Water Quality Report

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

| Parameter | Units | Average Human Health | Average Agri Supply | Average Aquatic Life | Maximum Aquatic Life | Inside Mixing Zone Maximum |
|---|---|---|---|---|---|---|
| **Outfall 001** | | | | | | |
| Barium | ug/l | -- | -- | 2313. | 7736. [A] | 4000. |
| Bis (2-ethylhexyl) phthalate | ug/l | 10070.[A] | -- | 1241. | 21070. [A] | 2100. |
| Boron | ug/l | -- | -- | 12640. | 33450. [A] | 17000. |
| Cadmium | ug/l | -- | 27820. [A] | 70. [A] | 24. [A] | 11. |
| Copper | ug/l | 149100.[A] | 57160. [A] | 120. [A] | 36. [A] | 33. |
| Fluoride | ug/l | 48770. | 229800. | -- | -- | -- |
| Iron | ug/l | -- | 503800. | -- | -- | -- |
| Lead | ug/l | -- | 11220. [A] | 90. | 392. [A] | 310. |
| Selenium | ug/l | 9415. | 5754. | 76. | -- | -- |
| Silver | ug/l | 4774. [A] | -- | 34. [A] | 9.6 [A] | 4.4 |
| **Outfall 003** | | | | | | |
| Chlorine, tot. res. [B] | ug/l | -- | -- | 11. | 19. | 38. |

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

[B] Parameter would not require a WLA based on reasonable potential procedures, but allocation requested by permit writer.

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

| Parameter | Units | Average Human Health | Average Agri Supply | Average Aquatic Life | Maximum Aquatic Life | Inside Mixing Zone Maximum |
|---|---|---|---|---|---|---|
| **Outfall 005** | | | | | | |
| Arsenic | ug/l | 3096. [A] | 148. | 2603. [A] | 467. | 680. |
| Barium | ug/l | -- | -- | 2313. | 2012. | 4000. |
| Boron | ug/l | -- | -- | 12640. | 8551. | 17000. |
| Cadmium | ug/l | -- | 78. [A] | 70. [A] | 24. | 43. |
| Copper | ug/l | 1560.[A] | 599. [A] | 120. [A] | 36. | 100. |
| Chromium, tot. | ug/l | -- | 156. | 3132. | 8135. | 11000. |
| Fluoride | ug/l | 48770. | 2206. | -- | -- | -- |
| Lead | ug/l | -- | 145. | 90. | 392. | 1400. |
| Nickel | ug/l | 5819. [A] | 237. | 945. | 1433. | 3000. |
| Selenium | ug/l | 9415. | 69. | 76. | -- | -- |
| Silver | ug/l | 4774. [A] | -- | 34. [A] | 9.6 [A] | 4.4 |
| Sulfates | mg/l | 9361. | -- | -- | -- | -- |
| Total Dissolved Solids | mg/l | -- | -- | 17360. | -- | -- |
| Zinc | ug/l | 82810.[A] | 29990. [A] | 1838. [A] | 322. | 780. |

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

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

| Parameter | Units | Average Human Health | Average Agri Supply | Average Aquatic Life | Maximum Aquatic Life | Inside Mixing Zone Maximum |
|---|---|---|---|---|---|---|
| **Outfall 026** | | | | | | |
| Barium | ug/l | -- | -- | 2313. | 2012. | 4000. |
| Boron | ug/l | -- | -- | 12640. | 8551. | 17000. |
| Fluoride | ug/l | 48770. | 2206. | -- | -- | -- |
| Lead | ug/l | -- | 140. | 90. | 392. | 1400. |
| Selenium | ug/l | 9415. | 69. | 76. | -- | -- |
| Silver | ug/l | 4774.[A] | -- | 34.[A] | 9.6[A] | 4.4 |
| Sulfates | mg/l | 9361. | -- | -- | -- | -- |
| Zinc | ug/l | 82810.[A] | 29990.[A] | 1838.[A] | 322. | 780. |

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

Table 5. Parameter Assessment for **Outfall 001**

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

| | | |
|---|---|---|
| Aluminum | Manganese | Phosphorus |
| Sulfide | Titanium | |

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

| | | |
|---|---|---|
| Ammonia | Arsenic | Chromium, total |
| Di-n-butyl phthalate | Nickel | $NO_3$+$NO_2$ |
| Zinc | | |

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

| | | |
|---|---|---|
| Barium | Bis (2-ethylhexyl) phthalate | Boron |
| Copper | Fluoride | Iron |
| Lead | Selenium | Silver |

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 meet the criteria of this group.

Group 5: Maximum PEQ $\geq$ 100% of the maximum PEL or average PEQ $\geq$ 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. Limit recommended.

Limits to Protect Numeric Water Quality Criteria

| Parameter | Units | Applicable Period | Recommended Effluent Limits Average | Maximum |
|---|---|---|---|---|
| Cadmium | ug/l | annual | -- | 11. |

Table 5. Parameter Assessment for **Outfall 003**

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

No parameters meet the criteria of this group.

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

Chlorine, tot. res.

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

No parameters meet the criteria of this group.

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 meet the criteria of this group.

Group 5: Maximum PEQ $\geq$ 100% of the maximum PEL or average PEQ $\geq$ 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. Limit recommended.

No parameters meet the criteria of this group.

Table 5. Continued - Parameter Assessment for **Outfall 005**

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

| | | |
|---|---|---|
| Aluminum | Chloride | Manganese |
| Phosphorus | Potassium | Titanium |

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

| | | |
|---|---|---|
| Ammonia | Antimony | Beryllium |
| Di-n-butyl phthalate | Iron | $NO_3$+$NO_2$ |
| Strontium | | |

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

| | | |
|---|---|---|
| Barium | Cadmium | Chromium, tot. |
| Lead | Nickel | 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.

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

Group 5: Maximum PEQ $\geq$ 100% of the maximum PEL or average PEQ $\geq$ 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. Limit recommended.

Limits to Protect Numeric Water Quality Criteria

| Parameter | Units | Applicable Period | Recommended Effluent Limits Average | Maximum |
|---|---|---|---|---|
| Copper | ug/l | annual | -- | 36. |
| Fluoride | ug/l | annual | 2206. | -- |
| Silver | ug/l | annual | -- | 4.4 |

Table 5. Continued - Parameter Assessment for **Outfall 026**

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

No parameters meet the criteria of this group.

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

Arsenic
Copper

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

Barium
Boron
Lead
Selenium
Silver
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 meet the criteria of this group.

Group 5: Maximum PEQ $\geq$ 100% of the maximum PEL or average PEQ $\geq$ 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. Limit recommended.

Limits to Protect Numeric Water Quality Criteria

| Parameter | Units | Applicable Period | Recommended Effluent Limits Average | Maximum |
|---|---|---|---|---|
| Fluoride | ug/l | annual | 2206. | -- |

**Conclusions**

At outfall 026, no effluent data was available. Effluent concentrations from Table 1 for this outfall were estimated based on data from similar outfalls. In addition, existing effluent loads for some parameters at outfall 005 were mass balanced with estimated loads from a proposed new scrubber waste treatment system.

**Final Effluent Limits, Monitoring Requirements and their Justification For Outfalls**

The limits and monitoring requirements of existing discharges namely outfall 001, outfall 093, outfall 005 and internal outfall 601 are explained under tables 6, 7, 8 and 9 respectively.

For outfall 001, though WLA (Waste Load Allocation) recommended limit for cadmium, it has not been recommended for inclusion in the draft permit because the detected value was taken from an old database (April 2002) that precedes the permit issued in August 2002.

For outfall 005, the arsenic limit from the existing permit has been removed based on reasonable potential assessment. Monitoring only is required. The copper limit in the WLA was based on data prior to August 2002 permit and therefore should not be considered for reasonable potential assessment. Based on the effluent data, fluoride monitoring is appropriate.

For silver, the PEQs were calculated by mass balancing existing loads with estimated loads from the proposed air pollution control scrubber waste stream. However, looking at the maximum concentration value in the renewal application and taking into consideration the anticipated load for outfall 026, it does not appear there is potential for silver to exceed WQS. Therefore, only monitoring will be continued.

Ohio's modeling rule OAC 3745-2-05(A)(1)(d)(iv) require that mixing zones for bioaccumulative chemicals of concern (BCCs) be phased out as of November 15, 2010. This rule applies statewide. The most commonly detected pollutant in this list is mercury. The mixing zone phase out means all modeling and dilution assumptions cease on 11/15/2010 and al dischargers meet end of the pipe limit of 0.012 ug/l for mercury in the Ohio river basin. Therefore, the facility must meet 0.012 ug/l by 11/15/2010 or they would need to apply for general mercury variance.

What will be the discharge concentration of mercury from outfall 005 after the FGD and CPS systems go into effect, is not known at this time. Mercury sampling data from outfall 005 (as reported in the short term permit) shows detections at 3.9 ng/l and 2.5 ng/l. This small data base will not help in developing PEQ that can be used for reasonable potential assessment. Therefore, mercury monitoring has been recommended at this time.

Table 602. Final effluent limits and monitoring requirements for Ohio Valley Electric Corporation's Kyger Creek Station outfall OIB00005602 and their justification.

| | | Effluent Limits | | | | |
|---|---|---|---|---|---|---|
| | | Concentration | | Loading (kg/day)[a] | | |
| Parameter | Units | 30 Day Average | Daily Maximum | 30 Day Average | Daily Maximum | Basis[b] |
| Residue, Total filterable | mg/l | -- | -- | -- | -- | BPJ |
| Suspended Solids | mg/l | - - | - - | -- | -- | NSPS |
| Water Temperature | oC | -- | -- | -- | -- | BPJ |
| Specific Conductance | UMHO | -- | -- | -- | -- | BPJ |
| Alkalinity | mg/l | -- | -- | -- | -- | BPJ |
| Sulfite | mg/l | -- | -- | -- | -- | BPJ |
| Calcium, T | mg/l | -- | -- | -- | -- | BPJ |
| Magnesium, T | mg/l | -- | -- | -- | -- | BPJ |
| Sodium, T | mg/l | -- | -- | -- | -- | BPJ |
| Chloride, T | mg/l | -- | -- | -- | -- | BPJ |
| Sulfate | mg/l | -- | -- | -- | -- | BPJ |
| Arsenic, TR | ug/l | -- | -- | -- | -- | BPJ |
| Iron, TR | ug/l | -- | -- | -- | -- | BPJ |
| Selenium, TR | ug/l | -- | -- | -- | -- | BPJ |
| Barium, TR | ug/l | -- | -- | -- | -- | BPJ |
| Manganese, T | ug/l | -- | -- | -- | -- | BPJ |
| Zinc, TR | ug/l | -- | -- | -- | -- | BPJ |
| Chromium, TR | ug/l | -- | -- | -- | -- | BPJ |
| Flow Rate | MGD | -- | -- | -- | -- | BPJ |
| Lead, TR | ug/l | -- | -- | -- | -- | BPJ |
| Copper, TR | ug/l | -- | -- | -- | -- | BPJ |
| Cadmium, TR | ug/l | -- | -- | -- | -- | BPJ |
| Mercury, T(ll) | ng/l | -- | -- | -- | -- | BPJ |
| pH | S.U. | - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - | | | | BPJ |
| Oil & Grease | mg/l | - - | - - | - - | - - | NSPS |
| Nitrogen, Ammonia | mg/l | – | – | – | – | BPJ |
| Fluoride, T | mg/l | - - | - - | - - | - - | BPJ |
| Berryllium, TR | ug/l | - - | - - | - - | - - | BPJ |
| Boron, T | mg/l | - - | - - | - - | - - | BPJ |
| Molybdenum | ug/l | - - | - - | - - | - - | BPJ |
| Nickel, TR | ug/l | - - | - - | - - | - - | BPJ |
| Silver, TR | ug/l | - - | - - | - - | - - | BPJ |
| Strontium, TR | ug/l | - - | - - | - - | - - | BPJ |
| Antimony, T | ug/l | - - | - - | - - | - - | BPJ |
| Vanadium, T | ug/l | - - | - - | - - | - - | BPJ |

[a] Effluent loadings based on average design discharge flow of 0.386 MGD.

[b] Definitions: NSPS = New Source Performance Standard ( 40 CFR Part 423.15); WQS = Ohio Water Quality Standards (OAC 3745-1-07); M = Monitoring; BPJ = Best Professional Judgment; (II) = Low -level Mercury Testing Method

[c] Monitoring, including flow and indicator parameters will assist in the evaluation of effluent quality and potential receiving stream impacts.

Table 026. Final effluent limits and monitoring requirements for Ohio Valley Electric Corporation's Kyger Creek Station outfall OIB00005026 and their justification.

| | | Effluent Limits | | | | |
|---|---|---|---|---|---|---|
| | | Concentration | | Loading (kg/day)[a] | | |
| Parameter | Units | 30 Day Average | Daily Maximum | 30 Day Average | Daily Maximum | Basis[b] |
| Residue, Total filterable | mg/l | -- | -- | -- | -- | BPJ |
| Suspended Solids | mg/l | 30 | 100 | -- | -- | NSPS |
| Water Temperature | oC | -- | -- | -- | -- | BPJ |
| Specific Conductance | UMHO | -- | -- | -- | -- | BPJ |
| Alkalinity | mg/l | -- | -- | -- | -- | BPJ |
| Sulfite | mg/l | -- | -- | -- | -- | BPJ |
| Calcium, T | mg/l | -- | -- | -- | -- | BPJ |
| Magnesium, T | mg/l | -- | -- | -- | -- | BPJ |
| Sodium, T | mg/l | -- | -- | -- | -- | BPJ |
| Chloride, T | mg/l | -- | -- | -- | -- | BPJ |
| Sulfate | mg/l | -- | -- | -- | -- | BPJ |
| Arsenic, TR | ug/l | -- | -- | -- | -- | BPJ |
| Iron, TR | ug/l | -- | -- | -- | -- | BPJ |
| Selenium, TR | ug/l | -- | -- | -- | -- | BPJ |
| Barium, TR | ug/l | -- | -- | -- | -- | BPJ |
| Manganese, T | ug/l | -- | -- | -- | -- | BPJ |
| Zinc, TR | ug/l | -- | -- | -- | -- | BPJ |
| Chromium, TR | ug/l | -- | -- | -- | -- | BPJ |
| Flow Rate | MGD | -- | -- | -- | -- | BPJ |
| Lead, TR | ug/l | -- | -- | -- | -- | BPJ |
| Copper, TR | ug/l | -- | -- | -- | -- | BPJ |
| Cadmium, TR | ug/l | -- | -- | -- | -- | BPJ |
| Mercury, T(ll) | ng/l | -- | -- | -- | -- | BPJ |
| pH | S.U. | - - - - - - 6.5 to 9.0 - - - - - - - - - - - - - | | | | WQS |
| Oil & Grease | mg/l | 15 | 20 | - - | - - | NSPS |
| Fluoride, T | mg/l | - - | - - | - - | - - | BPJ |
| Boron, T | mg/l | - - | - - | - - | - - | BPJ |

[a] Effluent loadings based on average design discharge flow of 0.800 MGD.

[b] Definitions: NSPS = New Source Performance Standard ( 40 CFR Part 423.15); WQS = Ohio Water Quality Standards (OAC 3745-1-07); M = Monitoring; BPJ = Best Professional Judgment; (II) = Low -level Mercury Testing Method

[c] Monitoring, including flow and indicator parameters will assist in the evaluation of effluent quality and potential receiving stream impacts.

Table 028. Final effluent limits and monitoring requirements for Ohio Valley Electric Corporation's Kyger Creek Station outfall OIB00005028 and their justification.

| | | Effluent Limits | | | | |
|---|---|---|---|---|---|---|
| | | Concentration | | Loading (kg/day)[a] | | |
| | | 30 Day | Daily | 30 Day | Daily | |
| Parameter | Units | Average | Maximum | Average | Maximum | Basis[b] |
| Parameter | Units | Average | Maximum | Average | Maximum | Basis[b] |
| Residue, Total filterable | mg/l | -- | -- | -- | -- | BPJ |
| Suspended Solids | mg/l | 30 | 100 | -- | -- | NSPS |
| Water Temperature | oC | -- | -- | -- | -- | BPJ |
| Specific Conductance | UMHO | -- | -- | -- | -- | BPJ |
| Alkalinity | mg/l | -- | -- | -- | -- | BPJ |
| Sulfite | mg/l | -- | -- | -- | -- | BPJ |
| Calcium, T | mg/l | -- | -- | -- | -- | BPJ |
| Magnesium, T | mg/l | -- | -- | -- | -- | BPJ |
| Sodium, T | mg/l | -- | -- | -- | -- | BPJ |
| Chloride, T | mg/l | -- | -- | -- | -- | BPJ |
| Sulfate | mg/l | -- | -- | -- | -- | BPJ |
| Arsenic, TR | ug/l | -- | -- | -- | -- | BPJ |
| Iron, TR | ug/l | -- | -- | -- | -- | BPJ |
| Selenium, TR | ug/l | -- | -- | -- | -- | BPJ |
| Barium, TR | ug/l | -- | -- | -- | -- | BPJ |
| Manganese, T | ug/l | -- | -- | -- | -- | BPJ |
| Zinc, TR | ug/l | -- | -- | -- | -- | BPJ |
| Chromium, TR | ug/l | -- | -- | -- | -- | BPJ |
| Flow Rate | MGD | -- | -- | -- | -- | BPJ |
| Lead, TR | ug/l | -- | -- | -- | -- | BPJ |
| Copper, TR | ug/l | -- | -- | -- | -- | BPJ |
| Cadmium, TR | ug/l | -- | -- | -- | -- | BPJ |
| Mercury, T(ll) | ng/l | -- | -- | -- | -- | BPJ |
| pH | S.U. | - - - - - - 6.5 to 9.0 - - - - - - - - - - - - - | | | | WQS |
| Oil & Grease | mg/l | 15 | 20 | - - | - - | NSPS |
| Fluoride, T | mg/l | - - | - - | - - | - - | BPJ |
| Boron, T | mg/l | - - | - - | - - | - - | BPJ |

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

[b] Definitions: NSPS = New Source Performance Standard ( 40 CFR Part 423.15); WQS = Ohio Water Quality Standards (OAC 3745-1-07); M = Monitoring; BPJ = Best Professional Judgment; (II) = Low -level Mercury Testing Method

[c] Monitoring, including flow and indicator parameters will assist in the evaluation of effluent quality and potential receiving stream impacts.

Table 030. Final effluent limits and monitoring requirements for Ohio Valley Electric Corporation's Kyger Creek Station outfall OIB00005030 and their justification.

| | | Effluent Limits | | | | |
|---|---|---|---|---|---|---|
| | | Concentration | | Loading (kg/day)[a] | | |
| Parameter | Units | 30 Day Average | Daily Maximum | 30 Day Average | Daily Maximum | Basis[b] |
| Parameter | Units | Average | Maximum | Average | Maximum | Basis[b] |
| Residue, Total filterable | mg/l | -- | -- | -- | -- | BPJ |
| Suspended Solids | mg/l | 30 | 100 | -- | -- | NSPS |
| Water Temperature | oC | -- | -- | -- | -- | BPJ |
| Specific Conductance | UMHO | -- | -- | -- | -- | BPJ |
| Alkalinity | mg/l | -- | -- | -- | -- | BPJ |
| Sulfite | mg/l | -- | -- | -- | -- | BPJ |
| Calcium, T | mg/l | -- | -- | -- | -- | BPJ |
| Magnesium, T | mg/l | -- | -- | -- | -- | BPJ |
| Sodium, T | mg/l | -- | -- | -- | -- | BPJ |
| Chloride, T | mg/l | -- | -- | -- | -- | BPJ |
| Sulfate | mg/l | -- | -- | -- | -- | BPJ |
| Arsenic, TR | ug/l | -- | -- | -- | -- | BPJ |
| Iron, TR | ug/l | -- | -- | -- | -- | BPJ |
| Selenium, TR | ug/l | -- | -- | -- | -- | BPJ |
| Barium, TR | ug/l | -- | -- | -- | -- | BPJ |
| Manganese, T | ug/l | -- | -- | -- | -- | BPJ |
| Zinc, TR | ug/l | -- | -- | -- | -- | BPJ |
| Chromium, TR | ug/l | -- | -- | -- | -- | BPJ |
| Flow Rate | MGD | -- | -- | -- | -- | BPJ |
| Lead, TR | ug/l | -- | -- | -- | -- | BPJ |
| Copper, TR | ug/l | -- | -- | -- | -- | BPJ |
| Cadmium, TR | ug/l | -- | -- | -- | -- | BPJ |
| Mercury, T(ll) | ng/l | -- | -- | -- | -- | BPJ |
| pH | S.U. | - - - - - - 6.5 to 9.0 - - - - - - - - - - - - - | | | | WQS |
| Oil & Grease | mg/l | 15 | 20 | - - | - - | NSPS |
| Fluoride, T | mg/l | - - | - - | - - | - - | BPJ |
| Boron, T | mg/l | - - | - - | - - | - - | BPJ |

[a] Effluent loadings based on average design discharge flow of 0.2800 MGD.

[b] Definitions: NSPS = New Source Performance Standard ( 40 CFR Part 423.15); WQS = Ohio Water Quality Standards (OAC 3745-1-07); M = Monitoring; BPJ = Best Professional Judgment; (II) = Low -level Mercury Testing Method

[c] Monitoring, including flow and indicator parameters will assist in the evaluation of effluent quality and potential receiving stream impacts.

Table 031. Final effluent limits and monitoring requirements for Ohio Valley Electric Corporation's Kyger Creek Station outfall OIB00005031 and their justification.

| | | Effluent Limits | | | | |
|---|---|---|---|---|---|---|
| | | Concentration | | Loading (kg/day)[a] | | |
| Parameter | Units | 30 Day Average | Daily Maximum | 30 Day Average | Daily Maximum | Basis[b] |
| Parameter | Units | Average | Maximum | Average | Maximum | Basis[b] |
| Residue, Total filterable | mg/l | -- | -- | -- | -- | BPJ |
| Suspended Solids | mg/l | 30 | 100 | -- | -- | NSPS |
| Water Temperature | oC | -- | -- | -- | -- | BPJ |
| Specific Conductance | UMHO | -- | -- | -- | -- | BPJ |
| Alkalinity | mg/l | -- | -- | -- | -- | BPJ |
| Sulfite | mg/l | -- | -- | -- | -- | BPJ |
| Calcium, T | mg/l | -- | -- | -- | -- | BPJ |
| Magnesium, T | mg/l | -- | -- | -- | -- | BPJ |
| Sodium, T | mg/l | -- | -- | -- | -- | BPJ |
| Chloride, T | mg/l | -- | -- | -- | -- | BPJ |
| Sulfate | mg/l | -- | -- | -- | -- | BPJ |
| Arsenic, TR | ug/l | -- | -- | -- | -- | BPJ |
| Iron, TR | ug/l | -- | -- | -- | -- | BPJ |
| Selenium, TR | ug/l | -- | -- | -- | -- | BPJ |
| Barium, TR | ug/l | -- | -- | -- | -- | BPJ |
| Manganese, T | ug/l | -- | -- | -- | -- | BPJ |
| Zinc, TR | ug/l | -- | -- | -- | -- | BPJ |
| Chromium, TR | ug/l | -- | -- | -- | -- | BPJ |
| Flow Rate | MGD | -- | -- | -- | -- | BPJ |
| Lead, TR | ug/l | -- | -- | -- | -- | BPJ |
| Copper, TR | ug/l | -- | -- | -- | -- | BPJ |
| Cadmium, TR | ug/l | -- | -- | -- | -- | BPJ |
| Mercury, T(ll) | ng/l | -- | -- | -- | -- | BPJ |
| pH | S.U. | - - - - - - 6.5 to 9.0 - - - - - - - - - - - - - | | | | WQS |
| Oil & Grease | mg/l | 15 | 20 | - - | - - | NSPS |
| Fluoride, T | mg/l | - - | - - | - - | - - | BPJ |
| Boron, T | mg/l | - - | - - | - - | - - | BPJ |

[a] Effluent loadings based on average design discharge flow of 0.19 MGD.

[b] Definitions: NSPS = New Source Performance Standard ( 40 CFR Part 423.15); WQS = Ohio Water Quality Standards (OAC 3745-1-07); M = Monitoring; BPJ = Best Professional Judgment; (II) = Low -level Mercury Testing Method

[c] Monitoring, including flow and indicator parameters will assist in the evaluation of effluent quality and potential receiving stream impacts.

Existing Discharges

| | |
|---|---|
| Outfall 001 | South Bottom Ash Pond Discharges |
| Outfall 003 | Condenser cooling water discharge |
| Outfall 093 | Condenser cooling water discharge (during continuous chlorination/bromination). |
| Outfall 005 | Fly Ash Pond Discharge |
| Outfall 008 | Storm runoff from south switch yard |
| Outfall 010 | Storm runoff from concrete unloading ramp |
| Outfall 011 | Storm runoff from south yard area |
| Outfall 800 | Intake from Ohio River |
| Outfall 588 | Sample from the sewage treatment plant sludge removed for off-site disposal |
| Outfall 023 | Storm runoff from screen house roof and nearby paved area |
| Outfall 601 | Sewage Treatment Plant Discharge |

The effluent limitations, monitoring requirements for the existing outfalls as detailed below are copied from the existing permit. The reasonable potential assessment for the parameters will be evaluated prior to expiration of this short term permit and re-issuance.

The stormwater requirements associated with industrial activity for stormwater outfalls 008, 010, 011 and 023 have been included in the draft permit.

Table 6. Final effluent limits and monitoring requirements for Ohio Valley Electric Corporation's Kyger Creek Station outfall OIB00005001and their justification.

| | | Effluent Limits | | | | |
|---|---|---|---|---|---|---|
| | | Concentration | | Loading (kg/day)a | | |
| Parameter | Units | 30 Day Average | Daily Maximum | 30 Day Average | Daily Maximum | Basisb |
| Residue, Total Nonfilterable | mg/l | 30 | 100 | 284 | 946 | BPT |
| Oil & Grease, Total | mg/l | 15 | 20 | 142 | 189 | BPT |
| Flow Rate | MGD | -- | -- -- | | -- | Mc |
| pH | S.U. | - - - - - - 6.5 to 9.0 - - - - - - - - - - - - - | | | | WQS |

a Effluent loadings based on average design discharge flow of 2.5 MGD.

b Definitions: BPT = Best Practicable Waste Treatment Technology, 40 CFR Part 423.12 WQS = Ohio Water Quality Standards (OAC 3745-1-07); M = Monitoring

c Monitoring, including flow and indicator parameters will assist in the evaluation of effluent quality and potential receiving stream impacts.

Table 7. Final effluent limits and monitoring requirements for the Ohio Valley Electric Corporation's Kyger Creek Station outfall OIB00005003 and their justification.

| | | Effluent Limits | | | | |
|---|---|---|---|---|---|---|
| | | Concentration | | Loading (kg/day) | | |
| | | 30 Day | Daily | 30 Day | Daily | |
| Parameter | Units | Average | Maximum | Average | Maximum | Basisa |
| Temperature | ℃ | -- | -- | -- | -- | Mb |
| Thermal Discharge | BTU x 106/hr | -- | 5990 | -- | -- | (316a) |
| Oxidants, Total Res. | mg/l | -- | 0.05 | -- | -- | OEPA's BPJ |
| Chlorine, Total res. | mg/l | -- | 0.2 | – | -- | BAT/OEPA's BPJ |
| pH | S.U. | -- - - - - 6.5 to 9.0 - - - - - - | | | | WQS |
| Flow | MGD | -- | -- | -- | -- | Mb |
| Chlorination/ bromination | MINS | -- | 120 | -- | -- | BAT/OEPA's BPJ |

a Definitions: 316(a) = 316(a) Thermal Water Quality Variance; WQS = Water Quality Standards (OAC 3745-1);

BAT = Best Available Technology Economically Achievable as set forth in 40 CFR 423.13; Steam Electric Power

Generating Point Source Category; OEPA'S BPJ = Ohio EPA's Best Professional Judgment;

b Monitoring, including flow and indicator parameters, will assist in the evaluation of effluent quality and potential receiving stream impacts.

Table 8. Final effluent limits and monitoring requirements for the Ohio Valley Electric Corporation's Kyger Creek Station outfall OIB00005093 and their justification.

| | | Effluent Limits | | | | |
|---|---|---|---|---|---|---|
| | | Concentration | | Loading (kg/day) | | |
| | | 30 Day | Daily | 30 Day | Daily | |
| Parameter | Units | Average | Maximum | Average | Maximum | Basisa |
| Temperature | ℃ | -- | -- | -- | -- | Mb |
| Thermal Discharge | BTU x 106/hr | -- | 5990 | -- | -- | (316a) |
| Oxidants, Total Res. | mg/l | -- | 0.010 | -- | -- | OEPA's BPJ |
| Chlorine, Total res. | mg/l | 0.015 | 0.02 | -- | -- | EP |
| pH | S.U. | - - - - - - 6.5 to 9.0 - - - - - - | | | | WQS |
| Flow | MGD | -- | -- | -- | -- | Mb |

a Definitions: 316(a) = 316(a) Thermal Water Quality Variance; WQS = Water Quality Standards (OAC 3745-1);

OEPA's BPJ = Ohio EPA's Best Professional Judgment; EP = Existing Permit; M = Monitoring

b Monitoring, including flow and indicator parameters, will assist in the evaluation of effluent quality and potential

receiving stream impacts.

C Monitoring of these parameters will assist in the evaluation of effluent quality and potential receiving stream impacts.

Table 9. Final effluent limits and monitoring requirements for the Ohio Valley Electric Corporation's Kyger Creek Station outfall OIB00005005 and their justification.

| | | Effluent Limits | | | | |
|---|---|---|---|---|---|---|
| | | Concentration | | Loading (kg/day)a | | |
| | | 30 Day | Daily | 30 Day | Daily | |
| Parameter | Units | Average | Maximum | Average | Maximum | Basisb |
| Residue, Total Nonfilterable | mg/l | 30 | 100 | 1713 | 5710 | BPT |
| Oil & Grease, Total | mg/l | 15 | 20 | 857 | 1142 | BPT |
| Arsenic, Total Rec. | ug/l | 125 | 404 | 6.95 | 22.48 | WLA |
| Strontium, Total Rec. | ug/l | – | -- | -- | -- | WLA/BPJ |
| Boron | ug/l | – | – | – | – | WLA/BPJ |
| Fluoride | ug/l | – | – | – | – | WLA/BPJ |
| Flow | MGD | -- | -- | -- | -- | Mc |
| pH | S.U. | - - - - - - 6.5 to 9.0 - - - - - - - - - - - - - - | | | | WQS |
| Water Temperature | oC | -- | -- | -- | -- | BPJ |
| Specific Conductance | UMHO | -- | -- | -- | -- | BPJ |
| Alkalinity | mg/l | -- | -- | -- | -- | BPJ |
| Sulfite | mg/l | -- | -- | -- | -- | BPJ |
| Calcium, T | mg/l | -- | -- | -- | -- | BPJ |
| Magnesium, T | mg/l | -- | -- | -- | -- | BPJ |
| Sodium, T | mg/l | -- | -- | -- | -- | BPJ |
| Chloride, T | mg/l | -- | -- | -- | -- | BPJ |
| Sulfate | mg/l | -- | -- | -- | -- | BPJ |
| Iron, TR | ug/l | -- | -- | -- | -- | BPJ |
| Selenium, TR | ug/l | -- | -- | -- | -- | BPJ |
| Barium, TR | ug/l | -- | -- | -- | -- | BPJ |
| Manganese, T | ug/l | -- | -- | -- | -- | BPJ |
| Zinc, TR | ug/l | -- | -- | -- | -- | BPJ |
| Chromium, TR | ug/l | -- | -- | -- | -- | BPJ |
| Lead, TR | ug/l | -- | -- | -- | -- | BPJ |
| Copper, TR | ug/l | -- | -- | -- | -- | BPJ |
| Cadmium, TR | ug/l | -- | -- | -- | -- | BPJ |
| Mercury, T(ll) | ng/l | -- | -- | -- | -- | BPJ |
| Fluoride, T | mg/l | - - | - - | - - | - - | BPJ |
| Berryllium, TR | ug/l | - - | - - | - - | - - | BPJ |
| Boron, T | mg/l | - - | - - | - - | - - | BPJ |
| Molybdenum | ug/l | - - | - - | - - | - - | BPJ |
| Nickel, TR | ug/l | - - | - - | - - | - - | BPJ |
| Silver, TR | ug/l | - - | - - | - - | - - | BPJ |
| Strontium, TR | ug/l | - - | - - | - - | - - | BPJ |
| Antimony, T | ug/l | - - | - - | - - | - - | BPJ |
| Vanadium, T | ug/l | - - | - - | - - | - - | BPJ |

a Effluent loadings based on 15.086 MGD except for arsenic which is based on 14.7 MGD.

b Definitions: BPT = Best Practicable Control Technology currently available as set forth in 40 CFR Part 423.12; steam electric power generating permit source category; WLA = Waste load Allocation; WQS = Ohio Water Quality Standards (OAC 3745-1); BPJ = Best Professional Judgment; M = Monitoring

Table 10. Final effluent limits and monitoring requirements for the Ohio Valley Electric Corporation's Kyger Creek Station outfall OIB00005601 and their justification.

| | | Effluent Limits | | | | |
|---|---|---|---|---|---|---|
| | | Concentration | | Loading (kg/day)a | | |
| Parameter | Units | 30 Day Average | Daily Maximum | 30 Day Average | Daily Maximum | Basisb |
| Color Severity | Units | Monitor | Monitor | -- | -- | Mc |
| CBOD5 | mg/l | 25 | 40 | -- | -- | EP |
| Suspended Solids | mg/l | 30 | 45 | -- | -- | EP |
| Odor. Severity | ug/l | --- Monitor --- | --- Monitor --- | | | Mc |
| Turbidity Severity | ug/l | --- Monitor --- | --- Monitor --- | | | Mc |
| Fecal Coli form | #/100ml | 1000 | 2000 | -- | -- | WQS |
| Flow | GPD | -- | -- | -- | -- | Mc |

a Effluent loadings based on average design discharge flow of 12,000 GPD.

b Definitions: WQS = Ohio Water Quality Standards (OAC 3745-1);
EP = Existing Permit; M = Monitoring