

KPDES



**KENTUCKY POLLUTANT
DISCHARGE ELIMINATION
SYSTEM**

PERMIT

**AUTHORIZATION TO DISCHARGE UNDER THE
KENTUCKY POLLUTANT DISCHARGE ELIMINATION SYSTEM**

PERMIT NO.: KY0041971

AGENCY INTEREST NO.: 4054

Pursuant to Authority in KRS 224,

Louisville Gas & Electric Company
P.O. Box 32010
Louisville, Kentucky 40232

is authorized to discharge from a facility located at

Trimble County Generating Station
487 Corn Creek Road
Bedford, Trimble County, Kentucky

to receiving waters named

Ohio River, Corn Creek, UT to UT to Corn Creek, and UT to Barebone Creek

in accordance with effluent limitations, monitoring requirements and other conditions set forth in this permit.

This permit shall become effective on April 1, 2018

This permit modification shall become effective on December 1, 2021.

This permit and the authorization to discharge shall expire at midnight, March 31, 2023

Date Signed: October 8, 2021

**Carey M. Johnson, Director
Division of Water**

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SECTION 1

EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1.1. Compliance Monitoring Locations (Outfalls)

The following table lists the outfalls authorized by this permit, the location and description of each, and the DOW assigned KPDES outfall number:

TABLE 1.					
Outfall No.	Outfall Type	Latitude (N)	Longitude (W)	Receiving Water	Description of Outfall
001	External	38°34'49"	85°24'56"	Ohio River	Plant Fields – Roadways Stormwater Gas turbine evaporative cooler blowdown Gas turbine blade washings Gas turbine equipment floor drains Transformers stormwater drains
002	External	38°34'36"	85°24'54"	Ohio River Via a Multi-Port Diffuser	Tier 1: Unit 1 and 2 Cooling Tower Blowdown Internal Outfalls 003, 006, and 007
					Tier 2: Unit 1 and 2 Cooling Tower Blowdown Internal Outfalls 003, 006, 007, and 008 Dewatering of outfall 006 through outfall 002
					Tier 3: Unit 1 and 2 Cooling Tower Blowdown Internal Outfalls 003, 006, 007, and 008 Once dewatering of outfall 006 through outfall 002 is complete
002A	Internal	38°34'36"	85°24'54"	Outfall 002	Unit 1 Cooling Tower Blowdown
002B	Internal	38°34'36"	85°24'54"	Outfall 002	Unit 2 Cooling Tower Blowdown
003	Internal	38°35'11"	85°24'37"	BAP/Outfall 002	Domestic Sanitary Wastewater
004	Internal	38°35'10"	85°24'47"	BAP/Outfall 008	Boiler Chemical Cleaning Waste Water
005	External	38°35'16"	85°25'20"	Plant Intake from Ohio River	Raw Water Intake
006	Internal	38°35'11"	85°24'45"	Outfall 002	Unit 2 FGD-Gypsum Process Water, Coal-Limestone Piles Equipment Washdown, Water Treatment Building Sumps, Boiler Blowdown/Condensate Polishing/ Quench Wastewater, Coal-Limestone Piles Areas Precipitation Runoff, GSP Direct Precipitation, and CCRT-Handling Area CCR-Contact Precipitation Runoff.
007	Internal	38°35'11"	85°24'45"	Outfall 002	Treated FGD Wastewater

TABLE 1.

Outfall No.	Outfall Type	Latitude (N)	Longitude (W)	Receiving Water	Description of Outfall
008	Internal	38°34'57"	85°24'42"	Outfall 002	Coal-Limestone Piles Equipment Washdown, Water Treatment Building Sumps, Boiler Blowdown/Condensate Polishing/Quench Wastewaters, Coal-Limestone Piles Area Precipitation Runoff, CCRT-Handling Area CCR-Contact Precipitation Runoff, Unit 1 Plant Sumps (including unit 1 air heater washes, unit 1 bottom ash loading area drains-sumps, unit 1 boiler turbine building, aux boiler washdowns and floor drains), Unit 2 Plant Sumps (including unit 2 air heater washes, fly ash loading area washdown, unit 1 pyrites/MR sluice dewater pit drains, unit 2 bottom ash loading area drains-sumps, unit 2 boiler-turbine building washdowns and floor drains, and fly ash marketing silo washdown/precipitation runoff sumps), Internal Outfall 004, and landfill leachate.
009	External	38°35'60"	85°25'06"	UT to Corn Creek	Stormwater runoff from closed/capped BAP-bottom ash pond
010	External	38°36'07"	85°25'20"	Corn Creek	Stormwater runoff from closed/capped GSP-gypsum storage pond-northeast areas
011	External	38°36'02"	85°25'32"	Corn Creek	Stormwater runoff from closed/capped GSP-gypsum storage pond-northwest areas
012	External	38°36'03"	85°24'31"	UT to UT to Corn Creek	Landfill Stormwater Runoff
013	External	38°35'36"	85°24'36"	UT to Barebone Creek	Stormwater Runoff for Haul Road

1.2. Effluent Limitations and Monitoring Requirements

1.2.1 Outfall 001

Beginning on the effective date and lasting through the term of this permit, discharges from Outfall 001 shall comply with the following effluent limitations:

TABLE 2.

EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs./day)		Concentrations				Frequency	Sample Type
		Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Maximum		
Flow	MGD	Report	Report	N/A	N/A	N/A	N/A	1/Quarter	Instantaneous
Total Suspended Solids	mg/l	N/A	N/A	N/A	30	60	N/A	1/Quarter	Grab

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TABLE 2.

EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs./day)		Concentrations				Frequency	Sample Type
		Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Maximum		
Oil & Grease	mg/l	N/A	N/A	N/A	10	15	N/A	1/Quarter	Grab
pH	SU	N/A	N/A	6.0	N/A	N/A	9.0	1/Quarter	Grab

1.2.2 Outfall 002 Tier 1

Beginning on the effective date and lasting through the term of this permit or until the facility starts dewatering the gypsum storage pond (GSP) through internal outfall 006 to Outfall 002, discharges from Outfall 002 shall comply with the following effluent limitations:

TABLE 3.

EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs./day)		Concentrations				Frequency	Sample Type
		Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Maximum		
Flow	MGD	Report	Report	N/A	N/A	N/A	N/A	Continuous	Calculated
Temperature	°F	N/A	N/A	N/A	Report	100	N/A	Continuous	Recorder
pH	SU	N/A	N/A	6.0	N/A	N/A	9.0	1/Week	Grab
Chloride	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Hardness (as mg/l CaCO ₃)	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Cadmium	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Chromium	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Copper	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Selenium	mg/l	N/A	N/A	N/A	0.051	Report	N/A	1/Quarter	Grab
Total Recoverable Selenium (Fish Tissue)	mg/kg dry weight	N/A	N/A	N/A	N/A	N/A	8.6	(¹)	(¹)
Acute WET ²	TU _A	N/A	N/A	N/A	N/A	N/A	1.00	1/Quarter	(³)

¹Should the monthly average concentration of Total Recoverable Selenium exceed 0.051 mg/l, see permit Section 5.12 for additional requirements.

²WET – Whole Effluent Toxicity

³Two (2) discrete grab samples shall be collected 12 hours apart

1.2.3 Outfall 002 Tier 2

Beginning once facility starts dewatering the gypsum storage pond (GSP) through internal outfall 006 to Outfall 002 and lasting through the term of this permit or until the dewatering gypsum storage pond (GSP) is complete, discharges from Outfall 002 shall comply with the following effluent limitations. The permittee shall notify the Division of Water, Surface Water Permits Branch at least 30 days prior to commencement of the process/knockout pond discharging directly to outfall 002 requesting to switch to the Tier 2 limits.

TABLE 4.									
EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs./day)		Concentrations				Frequency	Sample Type
		Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Maximum		
Flow	MGD	Report	Report	N/A	N/A	N/A	N/A	Continuous	Calculated
Temperature	°F	N/A	N/A	N/A	Report	100	N/A	Continuous	Recorder
pH	SU	N/A	N/A	6.0	N/A	N/A	9.0	1/Week	Grab
Chloride	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Month	Grab
Total Recoverable Selenium	mg/l	N/A	N/A	N/A	0.051	Report	N/A	1/Month	Grab
Total Recoverable Selenium (Fish Tissue)	mg/kg dry weight	N/A	N/A	N/A	N/A	N/A	8.6	(²)	(²)
Hardness (as mg/l CaCO ₃)	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Month	Grab
Total Recoverable Antimony ¹	mg/l	N/A	N/A	N/A	1.93	Report	N/A	1/Month	Grab
Total Recoverable Arsenic ¹	mg/l	N/A	N/A	N/A	3.03	3.03	N/A	1/Month	Grab
Total Recoverable Beryllium ¹	mg/l	N/A	N/A	N/A	1.38	Report	N/A	1/Month	Grab
Total Recoverable Cadmium ¹	mg/l	N/A	N/A	N/A	0.04	0.04	N/A	1/Month	Grab
Total Recoverable Chromium ¹	mg/l	N/A	N/A	N/A	34.3	Report	N/A	1/Month	Grab
Total Recoverable Copper ¹	mg/l	N/A	N/A	N/A	0.25	0.25	N/A	1/Month	Grab
Total Recoverable Iron ¹	mg/l	N/A	N/A	N/A	35.1	35.1	N/A	1/Month	Grab
Total Recoverable Lead ¹	mg/l	N/A	N/A	N/A	0.84	1.88	N/A	1/Month	Grab
Total Recoverable Mercury ¹	mg/l	N/A	N/A	N/A	0.000046	0.0013	N/A	1/Month	Grab
Total Recoverable Nickel ¹	mg/l	N/A	N/A	N/A	7.87	7.87	N/A	1/Month	Grab
Total Recoverable Silver ¹	mg/l	N/A	N/A	N/A	Report	0.12	N/A	1/Month	Grab
Total Recoverable Thallium ¹	mg/l	N/A	N/A	N/A	0.083	Report	N/A	1/Month	Grab

TABLE 4.

EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs./day)		Concentrations				Frequency	Sample Type
		Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Maximum		
Total Recoverable Zinc ¹	mg/l	N/A	N/A	N/A	2.106	2.106	N/A	1/Month	Grab
Acute WET ³	TU _A	N/A	N/A	N/A	N/A	N/A	1.00	1/Month	(⁴)
¹ The Monthly Average and Daily Maximum concentrations for these pollutants are not effluent limitations, but water quality triggers that, if exceeded for two (2) consecutive months, require permittee action. See the Best Management Practices Plan Section - Additional BMP Conditions Subsection for additional requirements related to these triggers.									
² Should the monthly average concentration of Total Recoverable Selenium exceed 0.051 mg/l, see permit Section 5.12 or additional requirements.									
³ WET – Whole Effluent Toxicity									
⁴ Two (2) discrete grab samples shall be collected 12 hours apart									

1.2.4 Outfall 002 Tier 3

Beginning once the dewatering of gypsum storage pond (GSP) through internal Outfall 006 through Outfall 002 has stopped and lasting through the term of this permit, discharges from Outfall 002 shall comply with the following effluent limitations. The permittee shall notify the Division of Water, Surface Water Permits Branch at least 30 days prior to completion of outfall 006 dewatering requesting to switch to the Tier 3 limits.

TABLE 5.

EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs./day)		Concentrations				Frequency	Sample Type
		Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Maximum		
Flow	MGD	Report	Report	N/A	N/A	N/A	N/A	Continuous	Calculated
Temperature	°F	N/A	N/A	N/A	Report	100	N/A	Continuous	Recorder
pH	SU	N/A	N/A	6.0	N/A	N/A	9.0	1/Week	Grab
Chloride	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Hardness (as mg/l CaCO ₃)	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Cadmium	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Chromium	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Copper	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab

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TABLE 5.

EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs./day)		Concentrations				Frequency	Sample Type
		Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Maximum		
Total Recoverable Selenium	mg/l	N/A	N/A	N/A	0.051	Report	N/A	1/Quarter	Grab
Total Recoverable Selenium (Fish Tissue)	mg/kg dry weight	N/A	N/A	N/A	N/A	N/A	8.6	(¹)	(¹)
Acute WET ²	TU _A	N/A	N/A	N/A	N/A	N/A	1.00	1/Quarter	(³)

¹Should the monthly average concentration of Total Recoverable Selenium exceed 0.051 mg/l, see permit Section 5.12 for additional requirements.

²WET – Whole Effluent Toxicity

³Two (2) discrete grab samples shall be collected 12 hours apart

1.2.5 Outfall 002A and Outfall 002B

TABLE 6.

EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs./day)		Concentrations				Frequency	Sample Type
		Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Maximum		
Flow	MGD	Report	Report	N/A	N/A	N/A	N/A	Continuous	Calculated
Free Available Chlorine ¹	mg/l	N/A	N/A	N/A	0.2	0.5	N/A	1/Occurrence ²	Multiple Grab ³
Total Residual Oxidants ^{1,4}	mg/l	N/A	N/A	N/A	Report	0.2	N/A	1/Occurrence ²	Multiple Grab ³
Oxidant Discharge Time ¹	Min/unit/day	N/A	N/A	N/A	N/A	120	N/A	1/Occurrence ²	Log
Total Chromium ¹	mg/l	N/A	N/A	N/A	0.2	0.2	N/A	1/Year	Grab
Total Zinc ¹	mg/l	N/A	N/A	N/A	0.212	0.212	N/A	1/Year	Grab
Priority Pollutants ^{1,5}	No Detectable Amount						1/Year	Calculated ⁶	

¹Sampling of cooling tower blowdown must be taken at the nearest accessible point prior to discharge to or mixing with the receiving waters or wastestreams from other outfalls.

²The measurement frequency "Occurrence" means during periods of chlorination or oxidation addition to cooling water, but no more frequent than once per week.

³The sample type 'Multiple Grab' means grab samples collected at the approximate beginning of oxidant discharge and once every fifteen (15) minutes thereafter until the end of the oxidant discharge.

TABLE 6.

EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs./day)		Concentrations				Frequency	Sample Type
		Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Maximum		
<p>⁴The term Total Residual Oxidants (TRO) means the value obtained by using the amperometric titration or DPD methods for Total Residual Chlorine described in 40 CFR Part 136. In the event of addition of an oxidant other than Chlorine, the permittee shall receive prior approval from the DOW permitting staff before the initial use. TRO monitoring and limits only apply if the applicant chooses to utilize an oxidant other than Chlorine.</p> <p>⁵Priority Pollutants are those contained in chemicals added for cooling tower maintenance and shall be monitored annually by grab sample or by engineering calculations. The results of the analyses/engineering calculations shall be totaled and reported as a single concentration on the DMR. The laboratory bench sheets/engineering or electronic equivalent calculations showing the results for each pollutant shall be attached to the DMR. The term priority pollutants means the 126 priority pollutants listed in 40 CFR Part 423 Appendix A except total chromium and total zinc.</p> <p>⁶Compliance with the limitations, for the 126 priority pollutants, in paragraph (b)(10) of 40 CFR 423.15 may be determined by engineering calculations which demonstrate that the regulated pollutants are not detectable in the final discharge by the analytical methods in 40 CFR part 136.</p> <p>Neither free available chlorine nor total residual chlorine or oxidants may be discharged from any unit for more than two hours in any one day and not more than one unit in any plant may discharge free available chlorine or total residual chlorine or oxidants at any one time unless the utility can demonstrate to the DOW that the units in a particular location cannot operate at or below this level of chlorination or oxidant addition.</p>									

1.2.6 Outfall 003

Beginning on the effective date and lasting through the term of this permit, discharges from Outfall 003 shall comply with the following effluent limitations:

TABLE 7.

EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs./day)		Concentrations				Frequency	Sample Type
		Monthly Average	Daily Maximum	Minimum	Monthly Average	Maximum Weekly Average	Maximum		
Flow	MGD	Report	Report	N/A	N/A	N/A	N/A	1/Month	Instantaneous
BOD ₅ ¹	mg/l	N/A	N/A	N/A	30	45	N/A	1/Month	Composite ²
Total Suspended Solids	mg/l	N/A	N/A	N/A	30	45	N/A	1/Month	Composite ²
Total Residual Chlorine	mg/l	N/A	N/A	0.2	N/A	N/A	N/A	1/Month	Grab

¹BOD₅ –Biochemical Oxygen Demand, 5-day

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TABLE 7.

EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs./day)		Concentrations				Frequency	Sample Type
		Monthly Average	Daily Maximum	Minimum	Monthly Average	Maximum Weekly Average	Maximum		
² A sample composed of four or more equal or flow-proportional aliquots collected over a period of no less than eight and no more than twenty-four hours and aggregated so that the aggregate sample reflects the average water quality of the effluent during the compositing or sample period									
As long as the sewage treatment plant is discharged to the BAP that operates as no discharge system, NODI Code 9 "Conditional Monitoring-Not Required This Period" can be used for the monitoring requirements at this outfall.									

1.2.7 Outfall 004

Beginning on the effective date and lasting through the term of this permit, discharges from Outfall 004 shall comply with the following effluent limitations:

TABLE 8.

EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs./day)		Concentrations				Frequency	Sample Type
		Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Maximum		
Flow	MGD	Report	Report	N/A	N/A	N/A	N/A	1/Batch ¹	Calculated
Total Copper	mg/l	N/A	N/A	N/A	1.0	1.0	N/A	1/Batch ¹	Grab
Total Iron	mg/l	N/A	N/A	N/A	1.0	1.0	N/A	1/Batch ¹	Grab
¹ Monitoring shall be conducted once per metal cleaning operation.									
As long as the boiler chemical cleaning waste water is discharged to the BAP that operates as no discharge system, NODI Code 9 "Conditional Monitoring-Not Required This Period" can be used for the monitoring requirements at this outfall.									

1.2.8 Outfall 005

Beginning on the effective date and lasting through the term of this permit, discharges from Outfall 005 shall comply with the following effluent limitations:

TABLE 9.									
EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs./day)		Concentrations				Frequency	Sample Type
		Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Maximum		
Flow	MGD	Report	Report	N/A	N/A	N/A	N/A	1/Week	Instantaneous
Temperature	°F	N/A	N/A	N/A	Report	Report	N/A	1/Week	Grab
Hardness (as mg/l CaCO ₃)	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Metals ¹	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab

¹The term Total Recoverable Metals means those metals listed on Form C, Section V, Part C – Metals, Cyanide, and Phenols: Antimony, Arsenic, Beryllium, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Selenium, Silver, Thallium, and Zinc.

1.2.9 Outfall 006

Beginning on the effective date and lasting through the term of this permit, discharges from Outfall 006 shall comply with the following effluent limitations:

TABLE 10.									
EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs./day)		Concentrations				Frequency	Sample Type
		Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Maximum		
Flow	MGD	Report	Report	N/A	N/A	N/A	N/A	2/Month	Instantaneous
Total Suspended Solids	mg/l	N/A	N/A	N/A	30.0	91.8	N/A	2/Month	Grab
Oil and Grease	mg/l	N/A	N/A	N/A	14.0	18.8	N/A	2/Month	Grab

1.2.10 Outfall 007

Beginning on the effective date and lasting through the term of this permit, discharges from Outfall 007 shall comply with the following effluent limitations:

TABLE 11.									
EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs./day)		Concentrations				Frequency	Sample Type
		Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Maximum		
Flow	MGD	Report	Report	N/A	N/A	N/A	N/A	2/Month	Instantaneous
Total Suspended Solids	mg/l	N/A	N/A	N/A	30.0	100.0	N/A	2/Month	Grab
Oil & Grease	mg/l	N/A	N/A	N/A	15.0	20.0	N/A	2/Month	Grab
Total Recoverable Arsenic ¹	µg/l	N/A	N/A	N/A	8	18	N/A	1/Month	Grab
Total Recoverable Mercury ¹	ng/l	N/A	N/A	N/A	34	103	N/A	1/Month	Grab
Total Recoverable Selenium ¹	µg/l	N/A	N/A	N/A	29	70	N/A	1/Month	Grab
Nitrate/nitrite as N ¹	mg/l	N/A	N/A	N/A	3	4	N/A	1/Month	Grab

¹These limits do not become effective till April 1st, 2024.

Until FGD treatment system is built and FGD starts discharging through this internal outfall NODI Code 9 "Conditional Monitoring-Not Required This Period" can be used for the monitoring requirements at this outfall.

1.2.11 Outfall 008

Beginning on the effective date and lasting through the term of this permit, discharges from Outfall 008 shall comply with the following effluent limitations:

TABLE 12.									
EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs./day)		Concentrations				Frequency	Sample Type
		Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Maximum		
Flow	MGD	Report	Report	N/A	N/A	N/A	N/A	2/Month	Instantaneous
Total Suspended Solids	mg/l	N/A	N/A	N/A	30.0	95.4	N/A	2/Month	Grab
Oil & Grease	mg/l	N/A	N/A	N/A	14.3	19.1	N/A	2/Month	Grab

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1.2.12 Outfall 009

Beginning on the effective date and lasting through the term of this permit, discharges from Outfall 009 shall comply with the following effluent limitations:

TABLE 13.

EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs./day)		Concentrations				Frequency	Sample Type
		Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Maximum		
Flow	MGD	Report	Report	N/A	N/A	N/A	N/A	1/Quarter	Instantaneous
Total Suspended Solids	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
pH	SU	N/A	N/A	Report	N/A	N/A	Report	1/Quarter	Grab
Hardness (as mg/l CaCO ₃)	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Arsenic	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Cadmium	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Chromium	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Copper	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Lead	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Mercury	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Nickel	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Silver	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Zinc	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab

Until this outfall is constructed and stormwater for the closed/capped portions of the BAP-bottom ash pond start discharging through this outfall NODI Code 9 "Conditional Monitoring-Not Required This Period" can be used for the monitoring requirements at this outfall.

1.2.13 Outfall 010

Beginning on the effective date and lasting through the term of this permit, discharges from Outfall 010 shall comply with the following effluent limitations:

TABLE 14.									
EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs./day)		Concentrations				Frequency	Sample Type
		Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Maximum		
Flow	MGD	Report	Report	N/A	N/A	N/A	N/A	1/Quarter	Instantaneous
Total Suspended Solids	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
pH	SU	N/A	N/A	Report	N/A	N/A	Report	1/Quarter	Grab
Hardness (as mg/l CaCO ₃)	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Arsenic	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Cadmium	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Chromium	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Copper	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Lead	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Mercury	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Nickel	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Silver	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Zinc	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab

Until this outfall is constructed and stormwater for the closed/capped portions of the GSP-gypsum storage pond start discharging through this outfall NODI Code 9 "Conditional Monitoring-Not Required This Period" can be used for the monitoring requirements at this outfall.

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1.2.14 Outfall 011

Beginning on the effective date and lasting through the term of this permit, discharges from Outfall 011 shall comply with the following effluent limitations:

TABLE 15.

EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs./day)		Concentrations				Frequency	Sample Type
		Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Maximum		
Flow	MGD	Report	Report	N/A	N/A	N/A	N/A	1/Quarter	Instantaneous
Total Suspended Solids	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
pH	SU	N/A	N/A	Report	N/A	N/A	Report	1/Quarter	Grab
Hardness (as mg/l CaCO ₃)	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Arsenic	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Cadmium	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Chromium	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Copper	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Lead	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Mercury	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Nickel	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Silver	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Zinc	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Until this outfall is constructed and stormwater for the closed/capped portions of the GSP-gypsum storage pond start discharging through this outfall NODI Code 9 "Conditional Monitoring-Not Required This Period" can be used for the monitoring requirements at this outfall.									

1.2.15 Outfall 012

Beginning on the effective date and lasting through the term of this permit, discharges from Outfall 012 shall comply with the following effluent limitations:

EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs./day)		Concentrations				Frequency	Sample Type
		Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Maximum		
Flow	MGD	Report	Report	N/A	N/A	N/A	N/A	1/Quarter	Instantaneous
Total Suspended Solids	mg/l	N/A	N/A	N/A	Report	100	N/A	1/Quarter	Grab
pH	SU	N/A	N/A	6.0	N/A	N/A	9.0	1/Quarter	Grab
Hardness (as mg/l CaCO ₃)	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Arsenic	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Cadmium	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Chromium	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Copper	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Iron	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Lead	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Mercury	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Nickel	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Silver	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Zinc	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab

Until this outfall is constructed and stormwater runoff from the landfill starts discharging through this outfall NODI Code 9 "Conditional Monitoring-Not Required This Period" can be used for the monitoring requirements for this outfall.

1.2.16 Outfall 013

Beginning on the effective date and lasting through the term of this permit, discharges from Outfall 013 shall comply with the following effluent limitations:

The stormwater runoff from the areas served by Outfall 013 shall be managed using appropriate Best Management Practices (BMPs) to prevent the discharge of pollutants from those areas.

1.3. Standard Effluent Requirements

The discharges to Waters of the Commonwealth shall not produce floating solids, visible foam or a visible sheen on the surface of the receiving waters.

SECTION 2

STANDARD CONDITIONS

2. STANDARD CONDITIONS

The following conditions apply to all KPDES permits.

2.1. Duty to Comply

The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of KRS Chapter 224 and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application. Any person who violates applicable statutes or who fails to perform any duty imposed, or who violates any determination, permit, administrative regulation, or order of the cabinet promulgated pursuant thereto shall be liable for a civil penalty as provided at KRS 224.99.010.

2.2. Duty to Reapply

If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for a new permit.

2.3. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

2.4. Duty to Mitigate

The permittee shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

2.5. Proper Operation and Maintenance

The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems which are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit.

2.6. Permit Actions

This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition.

2.7. Property Rights

This permit does not convey any property rights of any sort, or any exclusive privilege.

2.8. Duty to Provide Information

The permittee shall furnish to the Director, within a reasonable time, any information which the Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit or to determine compliance with this permit. The permittee shall also furnish to the Director upon request, copies of records required to be kept by this permit.

2.9. Inspection and Entry

The permittee shall allow the Director, or an authorized representative (including an authorized contractor acting as a representative of the Administrator), upon presentation of credentials and other documents as may be required by law, to:

- (1) Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;
- (2) Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
- (3) Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and
- (4) Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the Clean Water Act, any substances or parameters at any location.

2.10. Monitoring and Records

- (1) Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.
- (2) Except for records of monitoring information required by this permit related to the permittee's sewage sludge use and disposal activities, which shall be retained for a period of at least five (5) years (or longer as required by 401 KAR 5:065, Section 2(10) [40 CFR 503]), the permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least three (3) years from the date of the sample, measurement, report or application. This period may be extended by request of the Director at any time.
- (3) Records of monitoring information shall include:
 - a) The date, exact place, and time of sampling or measurements;
 - b) The individual(s) who performed the sampling or measurements;
 - c) The date(s) analyses were performed;
 - d) The individual(s) who performed the analyses;
 - e) The analytical techniques or methods used; and
 - f) The results of such analyses.
- (4) Monitoring must be conducted according to test procedures approved under 401 KAR 5:065, Section 2(8) [40 CFR 136] unless another method is required under 401 KAR 5:065, Section 2(9) or (10) [40 CFR subchapters N or O].
- (5) KRS 224.99-010 provides that any person who knowingly violates KRS 224.70-110 or other enumerated statutes, or who knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall be guilty of a Class D felony and, upon conviction, shall be punished by a fine of not more than \$25,000, or by imprisonment for not more than one (1) year, or both. Each day upon which a violation occurs shall constitute a separate violation.

2.11. Signatory Requirement

- (1) All applications, reports, or information submitted to the Director shall be signed and certified pursuant to 401 KAR 5:060, Section 4 [40 CFR 122.22].

(2) KRS 224.99-010 provides that any person who knowingly provides false information in any document filed or required to be maintained under KRS Chapter 224 shall be guilty of a Class D felony and upon conviction thereof, shall be punished by a fine not to exceed twenty-five thousand dollars (\$25,000), or by imprisonment, or by fine and imprisonment, for each separate violation. Each day upon which a violation occurs shall constitute a separate violation.

2.12. Reporting Requirements

2.12.1. Planned Changes

The permittee shall give notice to the Director as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required only when:

(1) The alteration or addition to a permitted facility may meet one (1) of the criteria for determining whether a facility is a new source in KRS 224.16-050 [40 CFR 122.29(b)]; or

(2) The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in the permit, nor to notification requirements under KRS 224.16-050 [40 CFR 122.42(a)(1)].

(3) The alteration or addition results in a significant change in the permittee's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan.

2.12.2. Anticipated Noncompliance

The permittee shall give advance notice to the Director of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

2.12.3. Transfers

This permit is not transferable to any person except after notice to the Director. The Director may require modification or revocation and reissuance of the permit to change the name of the permittee and incorporate such other requirements as may be necessary under KRS 224 [CWA; see 40 CFR 122.61; in some cases, modification or revocation and reissuance is mandatory].

2.12.4. Monitoring Reports

Monitoring results shall be reported at the intervals specified elsewhere in this permit.

(1) Monitoring results must be reported on a Discharge Monitoring Report (DMR) or forms provided or specified by the Director for reporting results of monitoring of sludge use or disposal practices.

(2) If the permittee monitors any pollutant more frequently than required by the permit using test procedures approved under 401 KAR 5:065, Section 2(8) [40 CFR 136], or another method required for an industry-specific waste stream under 401 KAR 5:065, Section 2(9) or (10) [40 CFR subchapters N or O], the results of such monitoring shall be included in the calculation and reporting of the data submitted in the DMR or sludge reporting form specified by the Director.

(3) Calculations for all limitations which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified by the Director in the permit.

2.12.5. Compliance Schedules

Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than fourteen (14) days following each schedule date.

2.12.6. Twenty-four-Hour Reporting

(1) The permittee shall report any noncompliance which may endanger health or the environment. Any information shall be provided orally within twenty-four (24) hours from the time the permittee becomes aware of the circumstances. A written submission shall also be provided within 5 days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

(2) The following shall be included as information which must be reported within twenty-four (24) hours under this paragraph.

- a) Any unanticipated bypass which exceeds any effluent limitation in the permit. (See §122.41(g))
- b) Any upset which exceeds any effluent limitation in the permit.
- c) Violation of a maximum daily discharge limitation for any of the pollutants listed by the Director in the permit to be reported within twenty-four (24) hours.

(3) The Director may waive the written report on a case-by-case basis under 40 CFR 122.41 (l), if the oral report has been received within twenty-four (24) hours.

2.12.7. Other Noncompliance

The permittee shall report all instances of noncompliance not reported under Sections 2.12.1, 2.12.4, 2.12.5 and 2.12.6, at the time monitoring reports are submitted. The reports shall contain the information listed in Section 2.12.6.

2.12.8. Other Information

Where the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Director, it shall promptly submit such facts or information.

2.13. Bypass

2.13.1. Definitions

(1) Bypass means the intentional diversion of waste streams from any portion of a treatment facility.

(2) Severe property damage means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

2.13.2. Bypass Not Exceeding Limitations

The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of Section 2.13.3 and 2.13.4.

2.13.3. Notice

(1) Anticipated bypass. If the permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least ten (10) days before the date of the bypass.

(2) Unanticipated bypass. The permittee shall submit notice of an unanticipated bypass as required in Section 2.12.6.

2.13.4. Prohibition of Bypass

(1) Bypass is prohibited, and the Director may take enforcement action against a permittee for bypass, unless:

- a) Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;
- b) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and
- c) The permittee submitted notices as required under Section 2.13.3.

(2) The Director may approve an anticipated bypass, after considering its adverse effects, if the Director determines that it will meet the three (3) conditions listed above in Section 2.13.4

2.14. Upset

2.14.1. Definition

Upset means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

2.14.2. Effect of an Upset

An upset constitutes an affirmative defense to an action brought for noncompliance with such technology-based permit effluent limitations if the requirements of Section 2.14.3 are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.

2.14.3. Conditions Necessary for a Demonstration of Upset

A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:

- (1) An upset occurred and that the permittee can identify the cause(s) of the upset;
- (2) The permitted facility was at the time being properly operated; and
- (3) The permittee submitted notice of the upset as required in Section 2.12.6; and
- (4) The permittee complied with any remedial measures required under Section 2.4.

2.14.4. Burden of Proof

In any enforcement proceeding the permittee seeking to establish the occurrence of an upset has the burden of proof.

SECTION 3

BEST MANAGEMENT PRACTICES PLAN (BMPP) REQUIREMENTS

3. BEST MANAGEMENT PRACTICES PLAN (BMPP) REQUIREMENTS

The permittee shall develop and implement a Best Management Practices Plan (BMPP) consistent with 401 KAR 5:065, Section 2(4).

3.1. Applicability

These conditions apply to all permittees who use, manufacture, store, handle, or discharge any pollutant listed as: (1) toxic under Section 307(a)(1) of the Clean Water Act; (2) oil, as defined in Section 311(a)(1) of the Act; (3) any pollutant listed as hazardous under Section 311 of the Act; or (4) is defined as a pollutant pursuant to KRS 224.1-010(35) and who have operations which could result in (1) the release of a hazardous substance, pollutant, or contaminant, or (2) an environmental emergency, as defined in KRS 224.1-400, as amended, or any regulation promulgated pursuant thereto (hereinafter, the "BMP pollutants"). These operations include, but are not limited to, material storage areas; plant site runoff; in-plant transfer, process and material handling areas; loading and unloading operations, and sludge and waste disposal areas.

3.2. Plan

The permittee shall develop and implement a BMPP consistent with 401 KAR 5:065, Section 2(4) pursuant to KRS 224.70-110, which prevents or minimizes the potential for the release of "BMP pollutants" from ancillary activities through site runoff; spillage or leaks, sludge or waste disposal; or drainage from raw material storage.

3.3. Implementation

The permittee shall implement the BMPP upon the commencement of regulated activity. Modifications to the plan as a result of ineffectiveness or plan changes to the facility shall be implemented as soon as possible.

3.4. General Requirements

The BMPP shall:

- (1) Be documented in narrative form, and shall include any necessary plot plans, drawings, or maps.
- (2) Establish specific objectives for the control of toxic and hazardous pollutants.
 - a. Each facility component or system shall be examined for its potential for causing a release of "BMP pollutants" due to equipment failure, improper operation, natural phenomena such as rain or snowfall, etc.
 - b. Where experience indicates a reasonable potential for equipment failure (e.g., a tank overflow or leakage), natural condition (e.g., precipitation), or other circumstances which could result in a release of "BMP pollutants", the plan should include a prediction of the direction, rate of flow, and total quantity of the pollutants which could be released from the facility as result of each condition or circumstance.
- (3) Establish specific BMPs to meet the objectives identified under paragraph b of this section, addressing each component or system capable of causing a release of "BMP pollutants".
- (4) Include any special conditions established in part b of this section.
- (5) Be reviewed by engineering staff and the site manager.

3.5. Specific Requirements

The plan shall be consistent with the general guidance contained in the publication entitled "NPDES Best Management Practices Guidance Document", and shall include the following baseline BMPs as a minimum:

- (1) BMP Committee
- (2) Reporting of BMP Incidents
- (3) Risk Identification and Assessment
- (4) Employee Training
- (5) Inspections and Records
- (6) Preventive Maintenance
- (7) Good Housekeeping
- (8) Materials Compatibility
- (9) Security
- (10) Materials Inventory

3.6. SPCC Plans

The BMP plan may reflect requirements for Spill Prevention Control and Countermeasure (SPCC) plans under Section 311 of the Act and 40 CFR Part 151, and may incorporate any part of such plans into the BMP plan by reference.

3.7. Hazardous Waste Management

The permittee shall assure the proper management of solids and hazardous waste in accordance with the regulations promulgated under the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act of 1978 (RCRA) (40 U.S.C. 6901 et seq.) Management practices required under RCRA regulations shall be referenced in the BMP plan.

3.8. Documentation

The permittee shall maintain a copy of the BMPP at the facility and shall make the plan available upon request to EEC personnel.

3.9. BMP Plan Modification

The permittee shall modify the BMPP whenever there is a change in the facility or change in the operation of the facility that materially increases the potential for the release of "BMP pollutants".

3.10. Modification for Ineffectiveness

The BMPs and the BMPP shall be reviewed and appropriate modifications implemented to utilize other practicable measures if any of the following events occur:

- (1) As a result of either a fixed or episodic event-driven evaluation, the permittee determines the selected BMPs are not achieving the established performance benchmarks;
- (2) As a result of a notice of deficiency from an evaluation or inspection by Cabinet personnel; or
- (3) A release to the environment/beyond secondary containment of any petroleum-based product, toxic or hazardous substance.

3.11. Periodically Discharged Wastewater Not Specifically Covered By Effluent Conditions

The permittee shall include in this BMP plan procedures and controls necessary for the handling of periodically discharged wastewaters such as intake screen backwash, meter calibration, fire protection, hydrostatic testing water, water associated with demolition projects, etc.

3.12. Additional BMP Conditions during Dewatering

3.12.1. BMP Evaluation Triggers

Water Quality Trigger: The monthly average and daily maximum discharge concentrations for the listed metals in table 4 are triggers that once exceeded for two (2) consecutive months requires the permittee to initiate an evaluation of the currently employed BMP's related to dewatering.

WET Trigger: The permittee shall review the BMPs currently employed, related to dewatering, when the findings of a Toxicity Reduction Evaluation (TRE) indicates that one or more of the pollutants monitored was the toxicant.

3.12.2. Evaluation of BMPs

The permittee shall notify DOW within five (5) days that a BMP evaluation trigger has occurred and within forty five (45) days shall complete a BMP evaluation.

At a minimum, the findings of this evaluation shall include:

- 1) A list of known, practicable control measures;
- 2) The order of implementing identified control measures;
- 3) Monitoring plans and schedules to support evaluating the effectiveness of each control measure;
- 4) A description of decision-making criteria and timelines for evaluating whether a particular measure has been effective and whether additional or different measures are required;
- 5) Identification of a process for revising the BMP Plan (BMPP) should data obtained from monitoring the effectiveness of particular control measures warrant such revisions; and
- 6) Any proposed changes to the BMPP shall be implemented within 90 days of the finalization of evaluation.

SECTION 4

WHOLE EFFLUENT TOXICITY (WET) TESTING REQUIREMENTS

4. WHOLE EFFLUENT TOXICITY (WET) TESTING REQUIREMENTS

The permittee shall initiate, within thirty (30) days of the effective date of this permit, or continue the series of tests described below to evaluate wastewater toxicity of the discharge from Outfall 002.

4.1. Sampling Requirements

Tests shall be conducted on each of two grab samples collected over the period of discharge, (i.e., discrete sample #1 taken at commencement of discharge, sample #2 taken approximately 12 hours later, sooner if discharge is expected to cease). The elapsed time between the collection of each grab sample and the initiation of each test shall not exceed 36 hours.

4.2. Test Requirements

The Acute WET test requirements consists of two 48-hour static non-renewal toxicity tests with water flea (Ceriodaphnia dubia, Daphnia magna, or Daphnia pulex) and two 48-hour static non-renewal toxicity tests with fathead minnow (Pimephales promelas) performed on discrete grab samples of 100% effluent (1.00 TU_A) at the frequency specified. Testing of each sample shall begin within 36 hours of the collection of that sample.

4.3. Serial Dilutions

Effluent concentrations for the tests must include the percent effluent required by the permit and at least four additional effluent concentrations.

For a required percent effluent of 100%, test concentrations shall be 20%, 40%, 60%, 80% and 100%.

For a required percent effluent less than 100% but greater than or equal to 75%, the test concentrations shall include the required percent effluent, two (2) concentrations below that are based on a 0.5 dilution factor, and two (2) concentrations above: one (1) at mid-point between 100% and the required percent effluent, and one (1) at 100% effluent.

For a required percent effluent less than 75%, test concentrations shall include the required percent effluent, two (2) concentrations below on a 0.5 dilution factor, and two (2) concentrations above the required percent effluent based on a 0.5 dilution factor, if possible; otherwise, one (1) at mid-point between 100% and the required percent effluent, and one (1) at 100% effluent.

Selection of different effluent concentrations must be approved by DOW prior to testing. Controls shall be conducted concurrently with effluent testing using synthetic water.

4.4. Controls

Control tests shall be conducted concurrent with effluent testing using synthetic water. The analysis will be deemed reasonable and good only if the minimum control requirements are met.

Any test that does not meet the control acceptability criteria shall be repeated as soon as practicable within the monitoring period.

Within 30 days prior to initiating an effluent toxicity test, a reference toxicant test must be completed for the method used; alternatively, the reference toxicant test may be run concurrent with the effluent toxicity test.

Control survival is 90% or greater in test organisms held in synthetic water.

4.5. Test Methods

All test organisms, procedures, and quality assurance criteria used shall be in accordance with Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, EPA-

821-R-02-012 (5th edition), the most recently published edition of this publication, or as approved in advance by DOW.

4.6. Reduction to Single Species Testing

After at least six (6) consecutive passing toxicity tests using both, the water flea and the fathead minnow, a request for testing with only the most sensitive species may be submitted to DOW. Upon approval, the most sensitive species may be considered as representative and all subsequent compliance tests may be conducted using only that species unless directed at any time by DOW to change or revert to both.

4.7. Reduction in Monitoring Frequency

The permittee may request a reduction in the frequency of WET testing upon demonstration that no test failures, incomplete tests, or invalid tests occurred during the following specified timeframes:

- (1) Existing facilities: four (4) consecutive quarters;
- (2) New or expanded facilities: eight (8) consecutive quarters.

New and expanded facilities are defined in the above Requirements Effective Dates Section of this permit. In the event of the failure of an annual test or non-submission by January 28th of the year following the completion of the test, the permittee will again be subject to quarterly WET testing.

4.8. Reporting Requirements

Results of all toxicity tests conducted with any species shall be reported according to the most recent format provided by DOW (See the Section for Submission of DMRs of this permit). Notification of failed test shall be made to DOW within five days of test completion. Test reports shall be submitted to DOW within thirty (30) days of completion. A control chart including the most recent reference toxicant test endpoints for the effluent test method (minimum of 5, up to 20 if available) shall be part of the report.

4.9. Test Results

If noncompliance occurs in an initial test, the permittee shall repeat the test using new samples. Results of this second round of testing will be used to evaluate the persistence of the toxic event and the possible need for a Toxicity Reduction Evaluation (TRE).

Noncompliance is demonstrated if the LC₅₀ is less than 100 % effluent. If noncompliance occurs in an initial test, the permittee shall repeat the test using new grab samples collected approximately twelve (12) hours apart. Sampling must be initiated within ten (10) days of completing the failed test. The second round of testing shall include both species unless approved for only the most sensitive species by DOW.

4.10. Accelerated Testing

If the second round of testing also demonstrates noncompliance, the permittee will be required to perform accelerated testing as specified in the following paragraphs.

Complete four (4) additional rounds of testing to evaluate the frequency and degree of toxicity within sixty (60) days of completing the second failed round of testing. Results of the initial and second rounds of testing specified above plus the four (4) additional rounds of testing will be used in deciding if a TRE shall be required.

If results from any two (2) of six (6) rounds of testing show a significant noncompliance with the Toxicity limit, i.e., ≥ 1.2 times the TU, or results from any four of the six tests show toxicity as defined above, a TRE will be required.

The permittee shall provide written notification to DOW within five (5) days of completing the accelerated testing, stating that: (1) toxicity persisted and that a TRE will be initiated; or (2) that toxicity did not persist and normal testing will resume.

Should toxicity prove not to be persistent during the accelerated testing period, but reoccur within twelve (12) months of the initial failure at a level ≥ 1.2 times the TU, then a TRE shall be required.

4.11. WET TRE

Having determined that a TRE is required, the permittee shall initiate and/or continue at least monthly testing with both species until such time as a specific TRE plan is approved by DOW. A TRE plan shall be developed by the permittee and submitted to DOW within thirty (30) days of determining a TRE is required. The plan shall be developed in accordance with the most recent Environmental Protection Agency (EPA) and DOW guidance. Questions regarding this process may be submitted to DOW.

The TRE plan shall include Toxic Identification Evaluation (TIE) procedures, treatability studies, and evaluations of: chemical usage including changes in types, handling and suppliers; operational and process procedures; housekeeping and maintenance activities; and raw materials. The TRE plan will establish an implementation schedule to begin immediately upon approval by DOW, to have duration of at least six (6) months, and not to exceed twenty-four (24) months. The implementation schedule shall include quarterly progress reports being submitted to DOW, due the last day of the month following each calendar quarter.

Upon completion of the TRE, the permittee shall submit a final report detailing the findings of the TRE and actions taken or to be taken to prevent the reoccurrence of toxicity. This final report shall include: the toxicant(s), if any are identified; treatment options; operational changes; and the proposed resolutions including an implementation schedule not to exceed one-hundred-eighty (180) days.

Should the permittee determine the toxicant(s) and/or a workable treatment prior to the planned conclusion of the TRE, the permittee will notify DOW within five (5) days of making that determination and take appropriate actions to implement the solution within one-hundred-eighty (180) days of that notification.

SECTION 5

OTHER CONDITIONS

5. OTHER CONDITIONS

5.1. Schedule of Compliance

The permittee shall attain compliance with all requirements of this permit on the effective date of this permit unless otherwise stated.

5.2. Other Permits

This permit has been issued under the provisions of KRS Chapter 224 and regulations promulgated pursuant thereto. Issuance of this permit does not relieve the permittee from the responsibility of obtaining any other permits or licenses required by this Cabinet and other state, federal, and local agencies.

5.3. Continuation of Expiring Permit

This permit shall be continued in effect and enforceable after the expiration date of the permit provided the permittee submits a timely and complete application in accordance with 401 KAR 5:060, Section 2(4).

5.4. Antidegradation

For those discharges subject to the provisions of 401 KAR 10:030 Section, 1(3)(b)5, the permittee shall install, operate, and maintain wastewater treatment facilities consistent with those identified in the SDAA submitted with the KPDES permit application.

5.5. Reopener Clause

This permit shall be modified, or alternatively revoked and reissued, to comply with any applicable effluent standard or limitation issued or approved in accordance with 401 KAR 5:050 through 5:080, if the effluent standard or limitation so issued or approved:

- (1) Contains different conditions or is otherwise more stringent than any effluent limitation in the permit; or
- (2) Controls any pollutant not limited in the permit.

The permit as modified or reissued under this paragraph shall also contain any other requirements of KRS Chapter 224 when applicable.

5.6. Cooling Water Additives, FIFRA, and Mollusk Control

The discharge of any product registered under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) in cooling water which ultimately may be released to the waters of the Commonwealth is prohibited, except Herbicides, unless specifically identified and authorized by the KPDES permit. In the event the permittee needs to use a biocide or chemical not previously reported for mollusk control or other purpose, the permittee shall submit sufficient information, a minimum of thirty (30) days prior to the commencement of use of said biocides or chemicals to the Division of Water for review and establishment of appropriate control parameters.

5.7. Certified Operators

The wastewater treatment plant shall be under the primary responsibility of Class I Wastewater Treatment Plant Certified Operator or higher.

5.8. Outfall Signage

Ohio River

The permittee shall comply with the permanent marker requirements of ORSANCO's Pollution Control Standards.

Other Waterbodies

The KPDES permit establishes monitoring points, effluent limitations, and other conditions to address discharges from the permitted facility. In an effort to better document and clarify these locations the permittee should place and maintain a permanent marker at each of the monitoring locations.

5.9. 316(b) Cooling Water Intake Structure

The permittee shall use this permitting cycle to gather the application materials required within 40 CFR 122.21(r) necessary to establish impingement mortality and entrainment BTA requirements as applicable under 40 CFR 125.94(c) and (d). This information shall be included with the next KPDES permit renewal application for this facility, unless an alternate schedule for the submission of the information required is granted.

5.10. Polychlorinated Biphenyls

Pursuant to the requirements of 40 CFR Part 423.12(b) (2), there shall be no discharge, from any point source, of Polychlorinated Biphenyl compounds such as those commonly used in transformer fluids. The permittee shall implement this requirement as a specific section of the BMP plan developed for this section.

5.11. Selective Catalytic Reduction Devices or Systems (SCRs) and Selective Non-Catalytic Reduction Devices or Systems (SNCR)

In response to Clean Air Act amendments and recent EPA rules, the installation of these devices for NO_x reduction may become necessary. Associated with the installation and operation of these units, an “ammonia slip” may occur resulting in the discharge of ammonia to the ash pond. The impact of such an occurrence on the performance of the ash pond and any eventual impact on the environment is not known. Therefore, should it become necessary to install these devices, the permittee shall develop and implement an Ammonia Monitoring Plan. The plan shall be submitted to the DOW within ninety (90) days of the determination that these devices will be installed, and shall include at a minimum influent and effluent monitoring of each unit on a monthly bases with submission of the data as a quarterly report. If such a plan already exists, then the plan should be appropriately modified during each installation of additional SCR or SNCR devices or systems.

5.12. Additional Requirements for Total Recoverable Selenium

The monthly average discharge concentration for total recoverable selenium of 0.051 mg/l is a trigger that once exceeded, requires the permittee to collect and analyze fish tissue for selenium residue.

5.12.1. Tissue Collection and Analysis

The following requirements apply:

- (1) Collection and analysis shall be performed within the calendar month following the calendar month the 0.051 mg/l monthly average trigger was exceeded;
- (2) Fish tissue collection and analysis shall be performed in accordance with the DOW protocols specified in “Methods for the Collection of Selenium Residue in Fish Tissue Used to Determine KPDES Permit Compliance” (See Section 7);
- (3) Results of the analysis shall be reported as Total Recoverable Selenium (Fish Tissue) on the Discharge Monitoring Report (DMR) for the month during which the analysis were performed.

5.12.2. Results of Analysis

The results of the fish tissue shall be interpreted as follows:

- (1) less than or equal to 8.6 mg/Kg dry weight selenium residue there is no permit violation;

- (2) greater than 8.6 mg/Kg dry weight selenium residue there is a permit violation; and
- (3) unable to obtain fish tissue, the 0.051 mg/l trigger becomes the effluent limitation and there is a permit violation

5.13. ORSANCO's Mercury Variance

The permittee requested a variance from ORSANCO's mercury standard of 0.000012 mg/l for effluent from this site which discharges to the Ohio River. Mercury is a pollutant believed to be present in FGD wastewaters. The permittee is installing a new treatment system for FGD wastewaters in order to achieve compliance with new federal effluent limitation guidelines. The treatment system utilizes new treatments never before used by the power industry. Effluent from Outfall 002 will be partially comprised of treated FGD wastewaters, and DOW believes the effluent will be able to meet Kentucky's water quality criteria for mercury once the new treatment system is operational. The permittee is doubtful the effluent will consistently meet ORSANCO's mercury standard. Given these circumstances, the DOW granted the variance ORSANCO's mercury standard and will apply Kentucky's water quality criteria for mercury for discharges to the Ohio River.

5.14. Unpermitted Combustion Residual Leachate

Pursuant to 40 CFR 423.11(r), the term combustion residual leachate ("leachate") means "leachate from landfills or surface impoundments containing combustion residuals. Leachate is composed of liquid, including any suspended or dissolved constituents in the liquid, that has percolated through waste or other materials emplaced in a landfill, or that passes through the surface impoundment's containment structure (e.g., bottom, dikes, berms). Combustion residual leachate includes seepage and/or leakage from a combustion residual landfill or impoundment unit. Combustion residual leachate includes wastewater from landfills and surface impoundments located on non-adjointing property when under the operational control of the permitted facility."

This permit authorizes the discharge of leachate from outfall 008. For newly discovered leachate seeps from a CCR surface impoundment or a CCR landfill, as defined at 40 CFR 257.53, to the surface that discharge or have a potential to discharge to a water of the commonwealth other than through outfall 008, the permittee shall develop and implement a plan to address such surface seeps. The plan shall be included as part of the on-site BMP Plan and shall address, at a minimum, (1) scheduled inspections for identifying surface leachate seeps, (2) maintenance of CCR landfills and/or impoundments to minimize the potential for surface leachate seeps, and (3) corrective measures that will be implemented upon the discovery of a surface leachate seep that is not being controlled by a permitted outfall authorized for discharge of leachate. The permittee shall notify the DOW Surface Water Permits Branch and the appropriate DOW Field Office of planned corrective measures for any identified surface seeps of leachate as soon as feasible after discovery of such a leachate seep, but no later than ten (10) days after the discovery. Such corrective measures may include: (1) plans to reduce or eliminate the leachate seep to the surface; (2) actions to route the surface leachate seep (via a conveyance designed to contain the flow or eliminate the possibility of infiltration) to an outfall permitted to discharge leachate; and (3) combinations of actions to eliminate or, if elimination is not feasible, reduce and control a surface leachate seep and ensure any discharge to a receiving stream is authorized by the permit. Please note that this does not exempt the permittee from 24-hour reporting Section 2.12 of the permit.

SECTION 6

MONITORING AND REPORTING REQUIREMENTS

6. MONITORING AND REPORTING REQUIREMENTS

6.1. KPDES Outfalls

Discharge samples and measurements shall be collected at the compliance point for each KPDES Outfall identified in this permit. Each sample shall be representative of the volume and nature of the monitored discharge.

6.2. Sufficiently Sensitive Analytical Methods

Analytical methods utilized to demonstrate compliance with the effluent limitations established in this permit shall be sufficiently sensitive to detect pollutant levels at or below the required effluent limit, i.e. the Method Minimum Level shall be at or below the effluent limit. In the instance where an EPA-approved method does not exist that has a Method Minimum Level at or below the established effluent limitation, the permittee shall:

- (1) Use the method specified in the permit; or
- (2) The EPA-approved method with an ML that is nearest to the established effluent limit.

It is the responsibility of the permittee to demonstrate compliance with permit parameter limitations by utilization of sufficiently sensitive analytical methods.

6.3. Certified Laboratory Requirements

All laboratory analyses and tests required to demonstrate compliance with the conditions of this permit shall be performed by EEC certified general wastewater laboratories.

6.4. Submission of DMRs

The completed DMR for each monitoring period must be entered into the DOW approved electronic system no later than midnight on the 28th day of the month following the monitoring period for which monitoring results were obtained.

For more information regarding electronic submittal of DMRs, please visit the Division's website at: <http://water.ky.gov/permitting/Pages/netDMRInformation.aspx> or contact the DMR Coordinator at (502) 564-3410.

SECTION 7

APPENDIX A

7. Appendix A

Methods for the Collection of Selenium Residue in Fish Tissue Used to Determine KPDES Permit Compliance

Commonwealth of Kentucky
Energy and Environment Cabinet
Department for Environmental Protection
Division of Water

7.1. Procedures

7.1.1. Scope and Applicability

This manual has been developed by the Kentucky Division of Water (KDOW) as guidance for the uniform collection of selenium residue in fish tissue for the purposes of compliance with KPDES permits. The methods set forth herein are required for all activities related to the collection of fish for the determination of selenium residue in fish tissue. Data submitted to KDOW for review will undergo QA/QC review and those data identified as not following the methods set forth in this document will be flagged and shall not be used for purposes of determining compliance with the KPDES permit.

The sources for the collection methods in this Standard Operating Procedure (SOP) document are based on the historical methods used by the Division of Water (KDOW 2008).

7.1.2. Definitions

CFR – Code of Federal Regulations

COC – Chain-of-Custody

DNR – Department for Natural Resources

DW – Dry Weight

EPA – U.S. Environmental Protection Agency

Headwater or Headwater Stream – Stream that is less than 6 square miles in catchment area.

KDFWR – Kentucky Department of Fish & Wildlife Resources

KDOW – Kentucky Division of Water

KPDES – Kentucky Pollutant Discharge Elimination System

QA – Quality Assurance

QC – Quality Control

Sample Reach – the specific length of the stream where fish survey collections are made; it includes the entire width of the stream within that stream length.

SOP – Standard Operating Procedure

WQB – Water Quality Branch

Wadeable or Wadeable Stream – Stream that is equal to or greater than 6 square miles in catchment area.

7.1.3. Personnel Qualifications / Responsibilities

Individuals conducting fish tissue collections shall possess a valid KDFWR Scientific Wildlife Collecting Permit, if applicable. Field personnel conducting fish tissue collections must also have basic knowledge of aquatic organisms and their habitats, stream geomorphology and stream physical processes. Most importantly, field personnel must be able to properly identify the target species.

7.1.4. Recommended Equipment and Supplies

- Backpack Electrofishing Unit (including Probe, Ring and Rat Tail)
- Backpack Electrofishing Unit Battery
- Dip Nets (at least 3)
- Seine (Wadeable Streams)
- 5 Gallon Bucket
- Measuring Board (in mm)
- Sterile Whirl-pack Bags
- Gallon of De-ionized Water
- Waders and Boots
- First Aid Kit
- Polarized Sunglasses
- Waterproof Pen
- Permanent Marker
- Powderless Latex or Nitrile Gloves
- Chain-of-Custody Documents
- Cooler
- Ice

7.1.5. Methods

7.1.5.1. Purpose

In order to protect the aquatic life use from the bioaccumulative effects of selenium, KDOW has promulgated a chronic selenium water quality standard based on whole-body fish tissue DW concentration. Information obtained from the fish tissue survey will be used to determine compliance with the KPDES permit. The collection of fish tissue is required when the average effluent selenium concentration discharged from a permitted outfall exceeds 0.051 mg/l (KDOW 2013). Results of selenium residue in fish tissue samples will be used to determine compliance with the KPDES permit.

7.1.5.2. Precautions Before Sampling

While following the sampling methods outlined herein, it is important to keep the sampling reach intact and undisturbed. Field personnel shall not walk through the reach until sampling has occurred. If the sampling reach has been disturbed by other activities, sufficient time shall be allowed for the water to clear and fish to settle back into normal habitats. Electrofishing in turbid water can result in less effective sampling results. Polarized sunglasses are recommended when electrofishing, since they will cut down on the glare of the water. Optimal sampling conditions, such as high water clarity, normal ambient flow conditions and high ambient sunlight conditions, will enhance sampling efficiency. If sampling conditions are not adequate or practical, the survey should be postponed until conducive sampling conditions exist.

Electrofishing unit settings shall be set based on the conductivity of the water. To minimize stress and mortality, it is important to use the minimum amount of electrical energy needed to stun fish. Select initial voltage setting at 150-400 V for high conductivity conditions (>300 $\mu\text{S}/\text{cm}$), 500-800 V for medium conductivity (100 to 300 $\mu\text{S}/\text{cm}$), and 900-1100 V for low conductivity (<100 $\mu\text{S}/\text{cm}$). Set the pulse width between 2-6 ms and pulse frequency between 40-60 Hz. Adjust the voltage, pulse width and pulse frequency to efficiently capture fish without inducing excessive stress and mortality.

7.1.5.3. Headwater Streams

To determine selenium residue in fish tissue, a target species composite sample and one duplicate/replicate sample are required at each station. Two to five individuals of the target species shall be used to establish an individual whole-body composite or duplicate/replicate sample.

7.1.5.3.1. Target Species Composite Sample

A composite, whole-body sample shall consist of two to five (2-5) individuals selected from the taxa listed in Table 17. The composite sample may be of any taxa listed, but a composite sample shall consist of individuals of the same taxon. The individuals of a composite sample shall be, at a minimum, the size listed in Table 17 and shall be within 75% of the length of the longest individual. These fish lengths represent reproductive maturity for each of these target species. A duplicate/replicate sample shall be collected at each sampling station following the same guidelines as stated for the composite sample of the target species.

Fish Taxa	Minimum Length at Reproductive Maturity
<i>Camptostoma spp.</i> (Stonerollers)	80 mm
<i>Catostomus commersonii</i> (White Sucker)	150 mm
<i>Chrosomus erythrogaster</i> (Southern Redbelly Dace)	50 mm
<i>Hypentelium nigricans</i> (Northern Hogsucker)	125 mm
<i>Rhinichthys atratulus</i> (Blacknose Dace)	60 mm
<i>Semotilus atromaculatus</i> (Creek Chub)	100 mm

7.1.5.3.2. Sample Reach

The first sample reach shall begin 5 meters below the outfall that exceeded the monthly average effluent selenium concentration of 0.051 mg/l and extend 100 meters downstream from that point in the receiving stream. Where the effluent receiving stream is a drainage ditch and not part of the upper-most channel-defined reaches (i.e., ephemeral or intermittent channels) of a watershed, the sample collection effort will commence in the uppermost receiving stream at the discharge point of the effluent ditch.

Field personnel shall measure out this sample reach before conducting the survey. Sampling shall begin at the downstream end of the reach and continue upstream until the most upstream end of the reach has been sampled. Every effort shall be made to obtain the composite and duplicate/replicate samples of the target species within the first sample reach. If a composite sample and the duplicate/replicate sample of the target species cannot be obtained within the first sample reach, field personnel shall proceed to sample the next downstream 100 meter reach. Every effort shall be made to obtain the composite sample and the duplicate/replicate sample of the target species within the second sample reach.

Field personnel shall continue downstream using successive 100-meter reaches until adequate target species composite and duplicate/replicate samples are obtained or the stream receiving the effluent empties into its receiving stream. In the event the effluent receiving stream is less than 100 meters in length every effort shall be made to collect fish from the available habitat of that stream, but when fish are not present in such streams the collection effort is extended into the next receiving stream. That collection effort will continue at the point the stream empties into its receiving stream with sampling conducted in successive downstream 100-meter reaches.

However, no more than a total of four 100-meter reaches shall be sampled; this is inclusive of all sampled reaches. Should the stream receiving the effluent discharge empty into its receiving stream less than four successive 100-meter reaches from the point of effluent discharge, then sampling shall continue in the receiving stream from that confluence until one has sampled linear reaches totaling no more than four successive (inclusive of all reaches sampled) 100-meter reaches.

Once two composite samples have been collected sampling may cease. If adequate composite and duplicate/replicate samples of the target species cannot be obtained then the 0.051 mg/l water column limit shall apply.

7.1.5.4. Target Species Composite Sample Collection

All members of the fish tissue collection crew shall don powderless latex or nitrile gloves. The sampling crew shall consist of a minimum of two members. Dip nets, seine and backpack electrofishing units are all instruments used in the collection of fish; the hydrological and physical characteristics of the stream to be sampled will determine what equipment is appropriate. If a backpack electrofishing unit is utilized, one individual operates the backpack electrofishing unit while the other(s) work the seine (if used) and dip nets, and carry the bucket used to transport captured fish. The backpack electrofishing unit operator shall also carry a dip net (Barbour et al. 1999) if using one probe and rat tail configuration. Backpack electrofishing sampling consists of working in an upstream direction in a side-to-side/bank-to-bank sweeping technique. Crew members with dip nets walk alongside and behind the electrofishing unit operator to collect stunned fish. If necessary, a seine can be used to sample deep pool habitat more efficiently after electrofishing. The seine can also be used to block off the width of stream while the electrofishing unit operator shocks fish downstream into the seine. This technique is especially useful when the water is slightly turbid. In shallow headwater streams, use of seine or dip nets may be the appropriate equipment utilized in procurement of fishes.

Collected fish shall be frequently transferred from dip nets to a bucket of water to lessen stress and mortality. In addition, water in the bucket shall be changed periodically (warmer water temperatures require more frequent water changes) to reduced stress and mortality of fish.

7.1.5.5. Target Species Composite Sample Processing

Once adequate composite and duplicate/replicate samples of the target species are collected, the processing procedure can begin. A sterile Whirl-pack bag shall be used to contain the samples. On the outside of the bags, the collectors shall write the following information with a permanent marker: station #, permit #, stream name, location, latitude and longitude (resolve to seconds or to five decimal places), county, date, time, species collected, number of individuals collected, the parameter or analyte to be tested and whether it is the composite sample or the duplicate/replicate sample of the target species. The longest individual in the bucket shall be measured in millimeters and placed in a sterile Whirl-pack bag. The length of the first individual shall be recorded on the COC sheet and the 75th percentile of that individual's length shall be calculated. Two to four other individuals within the 75th percentile shall be measured and placed in the Whirl-pack bag with the longest individual. These lengths are recorded on the COC sheet along with the first. The duplicate/replicate sample shall be processed in the same manner as the first sample. All other fish that are being held in the bucket can be released once the duplicate/replicate sample has been processed. The bucket and measuring board shall be triple rinsed with de-ionized water after processing the samples.

The samples shall be kept on ice in a cooler until transported to a freezer for long-term storage. Maximum holding time on ice in a cooler is 12 hours. Samples shall be processed and analyzed in the lab within 30 days of collection.

7.1.5.6. Wadeable Streams

To determine selenium residue in fish tissue, a composite sample and one duplicate/replicate sample of the target species are required at each station. Two to five individuals of the target species shall be used to establish an individual whole-body composite or duplicate/replicate sample.

7.1.5.6.1. Target Species Composite Sample

A composite, whole-body sample shall consist of two to five (2-5) individuals from the taxa listed in Table 18. The composite sample may be of any taxa listed, but a composite sample shall consist of individuals of the same taxon. The individuals of a composite sample shall be, at a minimum, the size listed in Table 18 and within 75% of the length of the longest individual of that species. These fish lengths represent reproductive maturity for each of these target species. A duplicate/replicate sample shall be collected at each sampling station following the same guidelines as stated for the target species composite sample.

Fish Taxa	Minimum Length at Reproductive Maturity
<i>Campostoma</i> sp. (Stonerollers)	80 mm
<i>Catostomus commersonii</i> (White Sucker)	150 mm
<i>Chrosomus erythrogaster</i> (Southern Redbelly Dace)	50 mm
<i>Hypentelium nigricans</i> (Northern Hogsucker)	125 mm
<i>Rhinichthys atratulus</i> (Blacknose Dace)	60 mm
<i>Semotilus atromaculatus</i> (Creek Chub)	100 mm
<i>Ambloplites rupestris</i> (Rock Bass)	100 mm
<i>Cyprinella</i> spp. (Shiners)	75 mm
<i>Etheostoma caeruleum</i> (Rainbow Darter)	45 mm
<i>Etheostoma flabellare</i> (Fantail Darter)	45 mm
<i>Lepomis</i> spp. (Sunfish)	70 mm
<i>Luxilus chrysocephalus</i> (Striped Shiner)	80 mm
<i>Lythrurus</i> spp. (Finescale Shiners)	45 mm
<i>Pimephales notatus</i> (Bluntnose Minnow)	60 mm

7.1.5.6.2. Sample Reach

The first sample reach shall begin 5 meters below the outfall(s) that exceeded the monthly average effluent selenium concentration of 0.051 mg/l and extend 100 meters downstream from that point. If the discharge is into a drainage ditch, sampling should begin at the point the ditch discharges into the wadeable stream.

Field personnel shall measure out this sample reach before conducting the survey. Sampling shall begin at the downstream end of the reach and continue upstream until the most upstream end of the reach has been sampled. Every effort shall be made to obtain the composite and duplicate/replicate samples of the target species within the first sample reach. If a composite sample and the duplicate/replicate sample of the target species cannot be obtained within the first sample reach, field personnel shall proceed to sample the next downstream 100-meter reach.

Every effort shall be made to obtain the composite sample and the duplicate/replicate sample of the target species within the second sample reach.

Field personnel shall continue downstream using successive 100-meter reaches until adequate target species composite and duplicate/replicate samples are obtained or the stream receiving the effluent empties into its receiving stream. In the event the effluent receiving stream is less than 100 meters in length every effort shall be made to collect fish from the available habitat of that stream, but when fish are not present in such streams the collection effort is extended into the next receiving stream. That collection effort will continue at the point the stream empties into its receiving stream with sampling conducted in successive downstream 100-meter reaches.

However, no more than a total of four 100-meter reaches shall be sampled; this is inclusive of all sampled reaches. Should the stream receiving the effluent discharge empty into its receiving stream less than four successive 100-meter reaches from the point of effluent discharge, then sampling shall continue in the receiving stream from that confluence until one has sampled linear reaches totaling no more than four successive (inclusive of all reaches sampled) 100-meter reaches.

Once two composite samples have been collected sampling may cease. If adequate composite and duplicate/replicate samples of the target species cannot be obtained then the 0.051 mg/l Target Species Composite Sample Collection

All members of the fish-tissue collection crew shall don powderless latex or nitrile gloves. The sampling crew shall consist of a minimum of two members. One individual operates the backpack electrofishing unit while the other(s) work the seine (if used) and dip nets, and carry the bucket used to transport captured fish. The backpack electrofishing unit operator shall also carry a dip net (Barbour et al. 1999) if using one probe and rat tail configuration. Sampling consists of using a backpack electrofishing unit working in an upstream direction in a side-to-side/bank-to-bank sweeping technique. Crew members with dip nets walk alongside and behind the electrofishing unit operator to collect stunned fish. If necessary, a seine can be used to sample deep pool habitat more efficiently after electrofishing. The seine can also be used to block off the width of stream while the electrofishing unit operator shocks fish downstream into the seine. This technique is especially useful when the water is slightly turbid.

Collected fish shall be frequently transferred from dip nets to a bucket of water to lessen stress and mortality. In addition, water in the bucket shall be changed periodically (warmer water temperatures require more frequent water changes) to reduce stress and mortality of fish.

7.1.5.6.3. Target Species Composite Sample Processing

Once adequate composite and duplicate/replicate samples of the target species are collected, the processing procedure can begin. A sterile Whirl-pack bag shall be used to contain the samples. On the outside of the bags, the collectors shall write the following information with a permanent marker: station #, permit #, stream name, location, latitude and longitude (resolve to seconds or to five decimal places), county, date, time, species collected, number of individuals collected, the parameter or analyte to be tested and whether it is the composite sample or the duplicate/replicate sample of the target species. The longest individual in the bucket shall be measured in millimeters and placed in a sterile Whirl-pack bag. The length of the first individual shall be recorded on the COC sheet and the 75th percentile of that individual's length shall be calculated. Two to four other individuals within the 75th percentile shall be measured and placed in the Whirl-pack bag with the longest individual. These lengths are recorded on the COC sheet along with the first. The duplicate/replicate sample shall be processed in the same manner as the

first sample. All other fish that are being held in the bucket can be released once the duplicate/replicate sample has been processed. The bucket and measuring board shall be triple rinsed with de-ionized water after processing the samples.

The samples shall be kept on ice in a cooler until transported to a freezer for long-term storage. The maximum holding time on ice in a cooler is 12 hours. Samples shall be processed and analyzed in the lab within 30 days of collection.

7.2. Quality Assurance/Quality Control

A field crew will consist of at least one person who is knowledgeable of the identification and nomenclature of Kentucky fishes. All members of the sampling crew will don powderless latex or nitrile gloves during collection and processing of the sample. After any sampling has been completed, all sampling gear will be thoroughly cleaned to remove all fish so that no fish are carried to the next site. The equipment shall be examined prior to sampling at the next site to ensure that no fish are present.

Field data must be complete and legible and entered on COC sheets and on the Whirl-pack bag. While in the field, the field team should possess sufficient copies of COC sheets for all anticipated sampling sites, as well as copies of all applicable SOPs. The following information shall be written on the COC sheet: station #, permit #, stream name, location, latitude and longitude (resolve to seconds or to five decimal places), county, date, time, species collected, number of individuals collected, collectors, parameter to be tested and whether it is the target species composite sample or the duplicate/replicate sample. Each collector will also sign and date the Whirl-pack bag as well as the COC sheets.

When delivering a target species composite sample to the laboratory for processing, the proper COC sheet that corresponds with the sample must be delivered to the laboratory at the same time. When the collector relinquishes the sample to the sample lab custodian, the collector will sign and date the COC in the "Relinquished By" space and the lab sample custodian will sign and date the COC in the "Received By" space. All lab data submitted to KDOW for selenium compliance must be accompanied with corresponding COC sheets.

7.2.1. Procedures for the Preparation of Fish Tissue and Methods for the Determination of Selenium in Fish Tissue

For fish tissue preparation for the determination of total selenium, the following procedures shall be used by the laboratory.

7.2.1.1. Fish Tissue Processing SOP (Conducted by a Certified Wastewater Laboratory)

(KDOW 2008)

Processing will be conducted in a certified "clean laboratory environment" with pre-cleaned stainless steel countertops and pre-cleaned stainless steel equipment:

1. Place composite samples in freezer when delivered from the field and allow to freeze.
2. Weigh composite sample to determine amount of dry ice to use during homogenization.
3. Remove frozen sample from freezer.
4. Remove frozen individual fish from plastic freezer bag using nitrile gloves.
5. Place each individual fish from one composite into a stainless steel industrial blender.

6. Place the equivalent amount of dry ice in the blender that was determined prior to freezing for the composite sample (Ex. If the composite sample weighed 110 grams, then you would add 110 grams of dry ice to the blender for homogenization).
7. Homogenize sample in blender.
8. Remove homogenized sample with stainless steel utensil and place in pre-cleaned glass jar with Teflon-lined lid.
9. Label jar with all of the composite sample information from the sample bag.
10. Place jar with homogenized sample into freezer until ready for analysis.
11. Clean all equipment and countertops between composite samples with the following cleaning process:
 - a. Wash with mild detergent
 - b. Rinse with hot tap water
 - c. Rinse with distilled water
 - d. Rinse with 10% nitric acid
 - e. Rinse with acetone
 - f. Allow to air dry

Analytical test methods and procedures shall be according to test procedures approved under 401 KAR 5:065, Section 2(8) unless another method is required under 401 KAR 5:065, Section 2(9) or (10).

7.3. References

Barbour, M.T., J. Gerritsen, B.D. Snyder, and J. B. Stribling. 1999. Rapid Bioassessment protocols for use in streams and wadeable rivers: periphyton, benthic macroinvertebrates, and fish, second edition. EPA 841-B-99-002. U.S. Environmental Protection Agency; Office of Water, Washington, D.C.

Kentucky Division of Water (KDOW). 2013. 401 KAR 10:031. Kentucky Department for Environmental Protection. Division of Water. Frankfort, Kentucky.

Kentucky Division of Water (KDOW). 2008. Standard Methods for Assessing Biological Integrity of Surface Waters in Kentucky. Kentucky Department for Environmental Protection, Division of Water, Frankfort, Kentucky.

7.4. Appendix A1

Selenium Fish Tissue Chain-of-Custody Sheet

SELENIUM FISH TISSUE

CHAIN-OF-CUSTODY

Station #: _____ Date: _____

Stream / Location: _____ Time: _____

KPDES Permit#: _____

County: _____ Lat/Long Upstream Reach: _____

Lat/Long Downstream Reach: _____

Outfall #: _____ Duplicate/Replicate (circle one): yes no

Flow status (circle one): runoff event high flow low flow normal other

Fish #	Genus	Species	Length (mm)	Comments
001				
002				
003				
004				
005				
006				
007				

Length (mm) of 75%tile of Longest Fish: _____

Total # Fish Collected in Sample: _____

Collected by: _____	Date: _____	Time: _____
Relinquished by: _____	Date: _____	Time: _____
Received by: _____	Date: _____	Time: _____

7.5. Appendix A2

Example of a Filled Out Chain-of-Custody Sheet

SELENIUM FISH TISSUE

CHAIN-OF-CUSTODY

Station #: UTHF-001-Dup

Date: 5/23/13

Stream / Location: UT Horse Fork – Downstream Outfall

Time: 1234 CST

DNR Permit#: 745-2525

KPDES Permit#: KY0100000

County: Hancock

Lat/Long Upstream Reach: 37.770/-86.803

Lat/Long Downstream Reach: 37.771/-86.803

Outfall #: 003

Duplicate/Replicate (circle one): yes no

Flow status (circle one): runoff event high flow low flow normal other

Fish #	Genus	Species	Length (mm)	Comments
001	Semotilus	atromaculatus	120 mm	
002	Semotilus	atromaculatus	112 mm	
003	Semotilus	atromaculaus	104 mm	
004	Semotilus	atromaculatus	123 mm	Longest
005	Semotilus	atromaculatus	98 mm	
006				
007				

Length (mm) 75%tile of Longest Fish: 92 mm

Total # Fish Collected in Sample: 5

Collected by: John Johnson ABC Consulting	Date: 5/23/13	Time: 1234 CST
Relinquished by: John Johnson ABC Consulting	Date: 5/23/13	Time: 1536 CST
Received by: William Williamson DEF Laboratory	Date: 5/23/13	Time: 1536 CST