

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES
MISSOURI CLEAN WATER COMMISSION



MISSOURI STATE OPERATING PERMIT

In compliance with the Missouri Clean Water Law, (Chapter 644 R.S. Mo. as amended, hereinafter, the Law), and the Federal Water Pollution Control Act (Public Law 92-500, 92nd Congress) as amended,

Permit No. MO-0095575

Owner: Sikeston Board of Municipal Utilities
Address: P.O. Box 370, Sikeston, MO 63801

Continuing Authority: Same as above
Address: Same as above

Facility Name: Sikeston Power Station
Facility Address: 1551 West Wakefield, Sikeston, MO 63801

Legal Description: plant site: NE ¼, Sec. 26, T26N, R13E, Scott County

Latitude/Longitude: plant site: +365245/-08937113

Receiving Stream: Tributary to Richland Drain Ditch #4 (U)
First Classified Stream and ID: Ditch #4 (P)(03046)
USGS Basin & Sub-watershed No.: (08020204-020003)
is authorized to discharge from the facility described herein, in accordance with the effluent limitations and monitoring requirements as set forth herein:

FACILITY DESCRIPTION

See next page

This permit authorizes only wastewater discharges under the Missouri Clean Water Law and the National Pollutant Discharge Elimination System; it does not apply to other regulated areas. This permit may be appealed in accordance with Section 644.051.6 of the Law.

February 13, 2009
Effective Date



Joseph P. Bimbeutel, Acting Director, Department of Natural Resources

February 12, 2014
Expiration Date



Robert K. Morrison, P.E., Chief, Water Pollution Control Branch

Outfall #001 – Coal Fired Power Plant - SIC #4911

Non-contact cooling water/ cooling tower blowdown. After September 30, 2008, cooling tower blowdown will be routed to outfall #003.

Design flow is 1.3 MGD.

Actual flow is 0.5 MGD.

Legal description: SW ¼, SE ¼, Sec. 23, T26N, R13E, Scott County

Latitude/Longitude +3652333/-08937145

Receiving Stream: Tributary to Ditch 4 (U)

First Classified Stream and ID: Ditch 4 (P) (03046)

USGS Basin and Sub watershed No.: 08020204-000050

Outfall #002 Eliminated

Outfall #003 – Power Plant - SIC #4911

Stormwater runoff/cooling tower blowdown (after 9-30-2008)/fly ash basin/wet air equipment/bottom ash system.

Design flow is 1.0 MGD.

Actual flow is 0.5 MGD.

Legal description: NW ¼, SE ¼, Sec. 23, T26N, R13E, Scott County

Latitude/Longitude +3652582/-08937226

Receiving Stream: Tributary to Ditch 4 (U)

First Classified Stream and ID: Ditch 4 (P) (03046)

USGS Basin and Sub watershed No.: 08020204-020003

Upstream Monitoring Point S1

on Ditch 4, 200 feet upstream of confluence of outfall 003

Legal description: SW ¼, NE ¼, Sec. 23, T26N, R13E, Scott County

Latitude/Longitude +3653007/-08937262

Receiving Stream: Ditch 4 (U)

First Classified Stream and ID: Ditch 4 (P) (03046)

USGS Basin and Sub watershed No.: 08020204-020003

Downstream Compliance Point S2

on Ditch 4, 200 feet downstream of outfall 001 on Ditch 4.

Legal description: SW1/4 SE1/4, Sec. 23, T26N R13E

Latitude/Longitude +3652315/-08937256

Receiving Stream: Ditch 4 (U)

First Classified Stream and ID: Ditch 4 (P) (03046)

USGS Basin and Sub watershed No.: 08020204-020003

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

PERMIT NUMBER MO-0095575

The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The interim effluent limitations shall become effective upon issuance and remain in effect until September 30, 2009. Such discharges shall be controlled, limited and monitored by the permittee as specified below:

OUTFALL NUMBER AND EFFLUENT PARAMETER(S)	UNITS	INTERIM EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
<u>Outfall #001</u>						
Flow	MGD	*		*	daily when discharge occurs	24 hr. total
temperature	°F	*		*	daily when discharge occurs	grab
pH – Units	SU	***		***	daily when discharge occurs	grab
Zinc, Total Recoverable	ug/L	*		*	daily when discharge occurs	grab
Chromium III, Total Recoverable	ug/L	196		97	daily when discharge occurs	grab
Chromium VI, Total Recoverable	ug/L	15.4		7.7	daily when discharge occurs	grab
Chlorine, Free Available Note 1	mg/L	0.017		0.008	daily when discharge occurs	grab
<u>Outfall #003</u>						
Flow	MGD	*		*	once/day	24 hr. total
pH- Units	SU	***		***	once/month	grab
Total Suspended Solids	mg/L	100		30	once/month	grab
Oil & Grease	mg/L	20		15	once/month	grab
Iron, Total Recoverable	ug/L	1000		817	once/month	grab
Copper, Total Recoverable	ug/L	17.1		8.5	once/month	grab
Zinc, Total recoverable	ug/L	*		*	once/month	grab

MONITORING REPORTS SHALL BE SUBMITTED MONTHLY; THE FIRST REPORT IS DUE March 28, 2009.

Outfall #001 and #003

Acute Whole Effluent Toxicity test	% Survival	(See Special Condition 8)	Once/year Report in January	24 hr composite composite
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MONITORING REPORTS SHALL BE SUBMITTED ANNUALLY; THE FIRST REPORT IS DUE January 31, 2010. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

B. STANDARD CONDITIONS

IN ADDITION TO SPECIFIED CONDITIONS STATED HEREIN, THIS PERMIT IS SUBJECT TO THE ATTACHED Part I STANDARD CONDITIONS DATED October 1, 1980, AND HEREBY INCORPORATED AS THOUGH FULLY SET FORTH HEREIN.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

PERMIT NUMBER MO-0095575

The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The final effluent limitations shall become effective October 1, 2009 and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:

OUTFALL NUMBER AND EFFLUENT PARAMETER(S)	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
<u>Outfall #001</u>						
Flow	MGD	*		*	daily when discharge occurs	24 hr. total
Temperature	°F	*		*	daily when discharge occurs	grab
pH – Units	SU	***		***	daily when discharge occurs	grab
Zinc, Total Recoverable	ug/L	168.6		84	daily when discharge occurs	grab
Chromium III, Total Recoverable	ug/L	196		97	daily when discharge occurs	grab
Chromium VI, Total Recoverable	ug/L	15.4		7.7	daily when discharge occurs	grab
Chlorine, Free Available Note 1	mg/L	0.017		0.008	daily when discharge occurs	grab
<u>Outfall #003</u>						
Flow	MGD	*		*	once/day	24 hr. total
pH- Units	SU	***		***	once/month	grab
Total Suspended Solids	mg/L	100		30	once/month	grab
Oil & Grease	mg/L	20		15	once/month	grab
Iron, Total Recoverable	ug/L	1000		817	once/month	grab
Copper, Total Recoverable	ug/L	17.1		8.5	once/month	grab
Zinc, Total recoverable	ug/L	171.1		82.3	once/month	grab

MONITORING REPORTS SHALL BE SUBMITTED MONTHLY; THE FIRST REPORT IS DUE November 28, 2009.

Outfall #001 and #003

Acute Whole Effluent Toxicity test

% Survival

(See Special Condition 8)

Once/year

Report in January

24 hr composite

composite

MONITORING REPORTS SHALL BE SUBMITTED ANNUALLY; THE FIRST REPORT IS DUE January 31, 2010. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

B. STANDARD CONDITIONS

IN ADDITION TO SPECIFIED CONDITIONS STATED HEREIN, THIS PERMIT IS SUBJECT TO THE ATTACHED Part I STANDARD CONDITIONS DATED October 1, 1980, AND HEREBY INCORPORATED AS THOUGH FULLY SET FORTH HEREIN.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS					PAGE NUMBER 5 of 10	
					PERMIT NUMBER MO-0095575	
The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The final effluent limitations shall become effective upon issuance and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:						
OUTFALL NUMBER AND EFFLUENT PARAMETER(S)	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
<u>Upstream Monitoring Point S1</u>						
Temperature	°F	*		*	Once/month	grab
<u>Downstream Compliance Point S2</u>						
Temperature **	°F	90		90	Once/month	grab
Temperature increase between S1 and S2 ***	°F	5		5	Once/month	grab
MONITORING REPORTS SHALL BE SUBMITTED <u>MONTHLY</u> ; THE FIRST REPORT IS DUE <u>March 28, 2009</u> . THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.						
B. STANDARD CONDITIONS						
IN ADDITION TO SPECIFIED CONDITIONS STATED HEREIN, THIS PERMIT IS SUBJECT TO THE ATTACHED <u>Part I</u> STANDARD CONDITIONS DATED <u>October 1, 1980</u> , AND HEREBY INCORPORATED AS THOUGH FULLY SET FORTH HEREIN.						

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

* Monitoring requirement only.

** Beyond the mixing zone, this release shall not raise or lower the temperature of the receiving stream more than five degrees (5°F). In addition, this release shall not cause or contribute to stream temperature in excess of ninety degrees (90°F).

*** pH is measured in pH units and is not to be averaged. The pH is limited to the range of 6.0-9.0 pH units.

Note 1- This effluent limit is below the minimum quantification level (ML) of the most common and practical EPA approved CLTRC methods. The department has determined the current acceptable ML for total residual chlorine to be 0.13 mg/L when using the DPD Colorimetric Method #4500 – CL G. from Standard Methods for the Examination of Waters and Wastewater. The permittee will conduct analyses in accordance with this method, or equivalent, and report actual analytical values. Measured values greater than or equal to the minimum quantification level of 0.13 mg/L will be considered violations of the permit and values less than the minimum quantification level of 0.13 mg/L will be considered to be in compliance with the permit limitation. The minimum quantification level does not authorize the discharge of chlorine in excess of the effluent limits stated in the permit.

C. SPECIAL CONDITIONS

1. This permit may be reopened and modified, or alternatively revoked and reissued, to:
 - (a) Comply with any applicable effluent standard or limitation issued or approved under Sections 301(b)(2)(C) and (D), 304(b)(2), and 307(a) (2) of the Clean Water Act, 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.
 - (b) Incorporate new or modified effluent limitations or other conditions, if the result of a waste load allocation study, toxicity test or other information indicates changes are necessary to assure compliance with Missouri's Water Quality Standards.
 - (c) Incorporate new or modified effluent limitations or other conditions if, as the result of a watershed analysis, a Total Maximum Daily Load (TMDL) limitation is developed for the receiving waters which are currently included in Missouri's list of waters of the state not fully achieving the state's water quality standards, also called the 303(d) list. ***The permit as modified or reissued under this paragraph shall also contain any other requirements of the Clean Water Act then applicable.***
2. All outfalls must be clearly marked in the field.
3. Permittee will cease discharge by connection to areawide wastewater treatment system within 90 days of notice of its availability.
4. Changes in Discharges of Toxic Substances

The permittee shall notify the Director as soon as it knows or has reason to believe:

- (a) That any activity has occurred or will occur which would result in the discharge of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels:"
 - (1) One hundred micrograms per liter (100 µg/L);
 - (2) Two hundred micrograms per liter (200 µg/L) for acrolein and acrylonitrile; five hundred micrograms per liter (500 µg/L) for 2,5 dinitrophenol and for 2-methyl-4, 6-dinitrophenol; and one milligram per liter (1 mg/L) for antimony;
 - (3) Five (5) times the maximum concentration value reported for the pollutant in the permit application;
 - (4) The level established in Part A of the permit by the Director.
 - (b) That they have begun or expect to begin to use or manufacture as an intermediate or final product or byproduct any toxic pollutant, which was not reported in the permit application.
 - (c) That the effluent limit established in part A of the permit will be exceeded.
5. Report as no-discharge when a discharge does not occur during the report period.
 6. Water Quality Standards
 - (a) Discharges to waters of the state shall not cause a violation of water quality standards rule under 10 CSR 20-7.031, including both specific and general criteria.
 - (b) General Criteria. The following general water quality criteria shall be applicable to all waters of the state at all times including mixing zones. No water contaminant, by itself or in combination with other substances, shall prevent the waters of the state from meeting the following conditions:
 - (1) Waters shall be free from substances in sufficient amounts to cause the formation of putrescent, unsightly or harmful bottom deposits or prevent full maintenance of beneficial uses;
 - (2) Waters shall be free from oil, scum and floating debris in sufficient amounts to be unsightly or prevent full maintenance of beneficial uses;
 - (3) Waters shall be free from substances in sufficient amounts to cause unsightly color or turbidity, offensive odor or prevent full maintenance of beneficial uses;
 - (4) Waters shall be free from substances or conditions in sufficient amounts to result in toxicity to human, animal or aquatic life;
 - (5) There shall be no significant human health hazard from incidental contact with the water;
 - (6) There shall be no acute toxicity to livestock or wildlife watering;
 - (7) Waters shall be free from physical, chemical or hydrologic changes that would impair the natural biological community;

- (8) Waters shall be free from used tires, car bodies, appliances, demolition debris, used vehicles or equipment and solid waste as defined in Missouri's Solid Waste Law, section 260.200, RSMo, except as the use of such materials is specifically permitted pursuant to section 260.200-260.247.

7. Sludge and Biosolids Use For Domestic Wastewater Treatment Facilities

- (a) Permittee shall comply with the pollutant limitations, monitoring, reporting, and other requirements in accordance with the attached permit Standard Conditions.
- (b) If sludge is not removed by a contract hauler, permittee is authorized to land apply biosolids. Permit Standard Conditions, Part III shall apply to the land application of biosolids. Permittee shall notify the department at least 180 days prior to the planned removal of biosolids. The department may require submittal of a biosolids management plan for department review and approval as determined appropriate

8. Acute Whole Effluent Toxicity (AWET) tests shall be conducted as follows:

SUMMARY OF WET TESTING FOR THIS PERMIT

OUTFALL	A.E.C. %	FREQUENCY	SAMPLE TYPE	MONTH
001	100	Annual	Grab, to be taken when chlorine or biocides are used	Any, Report in January
003	100	Annual	Grab, to be taken when chlorine or biocides are used	Any, report in January

(a) Test Schedule and Follow-Up Requirements

- (1) Perform a SINGLE-dilution test in the months and at the frequency specified above. For tests which are successfully passed, submit test results USING THE DEPARTMENT'S WET TEST REPORT FORM #MO-780-1899 along with complete copies of the test reports as received from the laboratory, including copies of chain-of-custody forms within 30 calendar days of availability to the WATER PROTECTION PROGRAM, P.O. Box 176, Jefferson City, MO 65102. If the effluent passes the test, do not repeat the test until the next test period.
- (a) For discharges of stormwater, samples shall be collected within three hours from when discharge first occurs.
- (b) Samples submitted for analysis of stormwater discharges shall be collected as a grab.
- (c) For discharges of non-stormwater, samples shall be collected only when precipitation has not occurred for a period of forty-eight hours prior to sample collection. In no event shall sample collection occur simultaneously with the occurrence of precipitation excepting for stormwater samples.
- (d) A twenty-four hour composite sample shall be submitted for analysis of non-stormwater discharges.
- (e) Upstream receiving water samples, where required, shall be collected upstream from any influence of the effluent where downstream flow is clearly evident.
- (f) Samples submitted for analysis of upstream receiving water may be collected as either a grab or twenty-four-hour composite as appropriate to the nature of the discharge.
- (g) Chemical and physical analysis of the upstream control and effluent sample shall occur immediately upon being received by the laboratory, prior to any manipulation of the effluent sample beyond preservation methods consistent with federal guidelines for WET testing that are required to stabilize the sample during shipping.
- (h) Any and all chemical or physical analysis of the effluent sample performed in conjunction with the WET test shall be performed at the 100% Effluent concentration in addition to analyses performed upon any other effluent concentration.
- (i) All chemical analyses included in the Missouri Department of Natural Resources WET test report form #MO-780-1899 shall be performed and results shall be recorded in the appropriate field of the report form.
- (j) Where flow-weighted composite sample is required for analysis, the samples shall be composited at the laboratory where the test is to be performed.

- (k) Where in stream testing is required downstream from the discharge, sample collection shall occur immediately below the established Zone of Initial Dilution in conjunction with or immediately following a release or discharge.
 - (l) Samples submitted for analysis of downstream receiving water may be collected as either a grab or twenty-four-hour composite as appropriate to the nature of the discharge.
 - (m) All instream samples, including downstream samples, shall be tested for toxicity at the 100% concentration in addition to any other assigned AEC for in-stream samples.
- (2) All failing test results along with complete copies of the test reports as received from the laboratory, INCLUDING THOSE TESTS CONDUCTED UNDER CONDITION (3) BELOW, shall be reported to the WATER PROTECTION PROGRAM, P.O. Box 176, Jefferson City, MO 65102 within 14 calendar days of the availability of the results.
 - (3) If the effluent fails the test, a multiple dilution test shall be performed within 30 calendar days and biweekly thereafter, until one of the following conditions are met:
 - (a) THREE CONSECUTIVE MULTIPLE-DILUTION TESTS PASS. No further tests need to be performed until next regularly scheduled test period.
 - (b) A TOTAL OF THREE MULTIPLE-DILUTION TESTS FAIL.
 - (4) Failure of at least two multiple-dilution tests during any period of accelerated monitoring violates the permit narrative requirement for aquatic life protection.
 - (5) The permittee shall submit a concise summary of all test results for the test series to the WATER PROTECTION PROGRAM, P.O. Box 176, Jefferson City, MO 65102 within 14 calendar days of the third failed test.
 - (6) Additionally, the following shall apply upon failure of the third MULTIPLE DILUTION test: A toxicity identification evaluation (TIE) or toxicity reduction evaluation (TRE) is automatically triggered. The permittee shall contact THE WATER PROTECTION PROGRAM within 14 calendar days from availability of the test results to ascertain as to whether a TIE or TRE is appropriate. The permittee shall submit a plan for conducting a TIE or TRE to the WATER PROTECTION PROGRAM within 60 calendar days of the date of DNR's direction to perform either a TIE or TRE. This plan must be approved by DNR before the TIE or TRE is begun. A schedule for completing the TIE or TRE shall be established in the plan approval.
 - (7) Upon DNR's approval, the TIE/TRE schedule may be modified if toxicity is intermittent during the TIE/TRE investigations. A revised WET test schedule may be established by DNR for this period.
 - (8) If a previously completed TIE has clearly identified the cause of toxicity, additional TIEs will not be required as long as effluent characteristics remain essentially unchanged and the permittee is proceeding according to a DNR approved schedule to complete a TRE and reduce toxicity. Regularly scheduled WET testing as required in the permit, without the follow-up requirements, will be required during this period.
 - (9) When WET test sampling is required to run over one DMR period, each DMR report shall contain a copy of the Department's WET test report form that was generated during the reporting period.
 - (10) Submit a concise summary in tabular format of all test results with the annual report.
- (b) PASS/FAIL procedure and effluent limitations:
 - (1) To pass a single-dilution test, mortality observed in the AEC test concentration shall not be significantly different
 - (2) (at the 95% confidence level; $p = 0.05$) than that observed in the upstream receiving-water control sample. Where upstream receiving water is not available mortality observed in the AEC test concentration shall not be significantly different (at the 95% confidence level; $p = 0.05$) than that observed in the laboratory control. The appropriate statistical tests of significance shall be consistent with the most current edition of METHODS FOR MEASURING THE ACUTE TOXICITY OF EFFLUENTS AND RECEIVING WATERS TO FRESHWATER AND MARINE ORGANISMS or other Federal guidelines as appropriate or required.

- (2) To pass a multiple-dilution test:
 - (a) For facilities with a computed percent effluent at the edge of the zone of initial dilution, Allowable Effluent Concentration (AEC), OF 30% OR LESS THE AEC must be less than three-tenths (0.3) of the LC₅₀ concentration for the most sensitive of the test organisms; **OR**,
 - (b) For facilities with an AEC greater than 30% the LC50 concentration must be greater than 100%; **AND**,
 - (c) all effluent concentrations equal to or less than the AEC must be nontoxic. Mortality observed in all effluent concentrations equal to or less than the AEC shall not be significantly different (at the 95% confidence level; $p = 0.05$) than that observed in the upstream receiving-water control sample. Where upstream receiving water is not available mortality observed in the AEC test concentration shall not be significantly different (at the 95% confidence level; $p = 0.05$) than that observed in the laboratory control. The appropriate statistical tests of significance shall be consistent with the most current edition of METHODS FOR MEASURING THE ACUTE TOXICITY OF EFFLUENTS AND RECEIVING WATERS TO FRESHWATER AND MARINE ORGANISMS or other federal guidelines as appropriate or required. Failure of one multiple-dilution test may be considered an effluent limit violation.

- (c) Test Conditions
 - (1) Test Type: Acute Static non-renewal.
 - (2) All tests, including repeat tests for previous failures, shall include both test species listed below.
 - (3) Test species: Ceriodaphnia dubia and Pimephales promelas (fathead minnow). Organisms used in WET testing shall come from cultures reared for the purpose of conducting toxicity tests and cultured in a manner consistent with the most current USEPA guidelines. All test animals shall be cultured as described in the most current edition of METHODS FOR MEASURING THE ACUTE TOXICITY OF EFFLUENTS AND RECEIVING WATERS TO FRESHWATER AND MARINE ORGANISMS.
 - (4) Test period: 48 hours at the "Acceptable Effluent Concentration" (AEC) specified above.
 - (5) When dilutions are required, upstream receiving stream water shall be used as dilution water. If upstream water is unavailable or if mortality in the upstream water exceeds 10%, "reconstituted" water will be used as dilution water. Procedures for generating reconstituted water will be supplied by the MDNR upon request.
 - (6) Single-dilution tests will be run with:
 - (a) Effluent at the AEC concentration;
 - (b) 100% receiving-stream water (if available), collected upstream of the outfall at a point beyond any influence of the effluent; and
 - (c) reconstituted water.
 - (7) Multiple-dilution tests will be run with:
 - (a) 100%, 50%, 25%, 12.5%, and 6.25% effluent, unless the AEC is less than 25% effluent, in which case dilutions will be 4 times the AEC, two times the AEC, AEC, 1/2 AEC and 1/4 AEC;
 - (b) 100% receiving-stream water (if available), collected upstream of the outfall at a point beyond any influence of the effluent; and
 - (c) reconstituted water.
 - (8) If reconstituted-water control mortality for a test species exceeds 10%, the entire test will be rerun.
 - (9) If upstream control mortality exceeds 10%, the entire test will be rerun using reconstituted water as the dilutant.

SUMMARY OF TEST METHODOLOGY FOR ACUTE WHOLE-EFFLUENT TOXICITY TESTS

Whole-effluent-toxicity test required in NPDES permits shall use the following test conditions when performing single or multiple dilution methods. Any future changes in methodology will be supplied to the permittee by the Missouri Department of Natural Resources (MDNR). Unless more stringent methods are specified by the DNR, the procedures shall be consistent with the most current edition of Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms,

Test conditions for Ceriodaphnia dubia:

Test duration:	48 h
Temperature:	25 ± 1°C Temperatures shall not deviate by more than 3°C during the test.
Light Quality:	Ambient laboratory illumination
Photoperiod:	16 h light, 8 h dark
Size of test vessel:	30 mL (minimum)
Volume of test solution:	15 mL (minimum)
Age of test organisms:	<24 h old
No. of animals/test vessel:	5
No. of replicates/concentration:	4
No. of organisms/concentration:	20 (minimum)
Feeding regime:	None (feed prior to test)
Aeration:	None
Dilution water:	Upstream receiving water; if no upstream flow, synthetic water modified to reflect effluent hardness.
Endpoint:	Pass/Fail (Statistically significant Mortality when compared to upstream receiving water control or synthetic control if upstream water was not available at $p \leq 0.05$)
Test acceptability criterion:	90% or greater survival in controls

Test conditions for Pimephales promelas:

Test duration:	48 h
Temperature:	25 ± 1°C Temperatures shall not deviate by more than 3°C during the test.
Light Quality:	Ambient laboratory illumination
Photoperiod:	16 h light/ 8 h dark
Size of test vessel:	250mL(minimum)
Volume of test solution:	200 mL (minimum)
Age of test organisms:	1-14 days (all same age)
No. of animals/test vessel:	10
No. of replicates/concentration:	4 (minimum) single dilution method 2 (minimum) multiple dilution method
No. of organisms/concentration:	40 (minimum) single dilution method 20 (minimum) multiple dilution method
Feeding regime:	None (feed prior to test)
Aeration:	None, unless DO concentration falls below 4.0 mg/L; rate should not exceed 100 bubbles/min.
Dilution water:	Upstream receiving water;if no upstream flow, synthetic water modified to reflect effluent hardness.
Endpoint:	Pass/Fail (Statistically significant Mortality when compared to upstream receiving water control or synthetic control if upstream water was not available at $p \leq 0.05$)
Test Acceptability criterion:	90% or greater survival in controls

Missouri Department of Natural Resources
Fact Sheet
Sikeston Power Station, Scott County
NPDES State Operating Permit #: MO-0095575

A Statement of Basis gives pertinent information regarding the applicable regulations and rationale for the development of the NPDES Missouri State Operating Permit (operating permit). This Statement includes Wasteload Allocations, Water Quality Based Effluent Limitations, and Reasonable Potential Analysis calculations as well as any other calculations that effect the effluent limitations of this operating permit. This Statement does not pertain to operating permits that include sewage sludge land application plans and variance procedures, and does not include the public comment process for this operating permit.

A Statement is not an enforceable part of an operating permit.

Facility Information

NPDES #: MO-0095575
 Facility Name: Sikeston Power Station
 Facility Address: 1551 W. Wakefield St., Sikeston, MO 63801
 Owner's Name: Sikeston Board of Municipal Utilities
 Owner's Address: Box 370, Sikeston, MO 63801

Facility Region: SE
 Facility County: Scott

Facility Type: 233 MW coal fired electric generation plant
 Facility SIC Code(s): 4911

Outfall #001
 Legal Description: SW SE Sec 23, T26N R13E
 Latitude/Longitude: 3652333 / -8937145
 Receiving Stream: Trib to Ditch 4 (U)
 First Classified Stream and ID: Ditch 4 (P) (03046)
 USGS Basin & Sub-watershed No.: 08020204-000050

Outfall #003
 Legal Description: NW SE Sec 23, T26N R13E
 Latitude/Longitude: 3652582 / -8937226
 Receiving Stream: Trib to Ditch 4 (U)
 First Classified Stream and ID: Ditch 4 (P)
 USGS Basin & Sub-watershed No.: 08020204-020003

Facility Description: 233 MW coal fired electric power plant

OUTFALL(S) TABLE:

OUTFALL	DESIGN FLOW (CFS)	TREATMENT LEVEL	EFFLUENT TYPE	DISTANCE TO CLASSIFIED SEGMENT (MI)
001	2.0	none	Cooling water	0
003	1.55	Settling pond	Stormwater/fly ash/bottom ash system	500 feet

Water Quality History: _____

Comments: _____

Receiving Stream Information

Please mark the correct designated waters of the state categories of the receiving stream.

Missouri or Mississippi River [10 CSR 20-7.015(2)]:	Yes <input type="checkbox"/> ; No <input type="checkbox"/>
Lake or Reservoir [10 CSR 20-7.015(3)]:	Yes <input type="checkbox"/> ; No <input type="checkbox"/>
Losing [10 CSR 20-7.015(4)]:	Yes <input type="checkbox"/> ; No <input type="checkbox"/>
Metropolitan No-Discharge [10 CSR 20-7.015(5)]:	Yes <input type="checkbox"/> ; No <input type="checkbox"/>
Special Stream [10 CSR 20-7.015(6)]:	Yes <input type="checkbox"/> ; No <input type="checkbox"/>
Subsurface Water [10 CSR 20-7.015(7)]:	Yes <input type="checkbox"/> ; No <input type="checkbox"/>
All Other Waters [10 CSR 20-7.015(8)]:	Yes <input checked="" type="checkbox"/> ; No <input type="checkbox"/>

10 CSR 20-7.031 Missouri Water Quality Standards, the department defines the Clean Water Commission water quality objectives in terms of "water uses to be maintained and the criteria to protect those uses." The receiving stream and/or 1st classified receiving stream's beneficial water uses to be maintained are located in the Receiving Stream Table located below in accordance with [10 CSR 20-7.031(3)].

RECEIVING STREAM(S) TABLE:

WATERBODY NAME	CLASS	WBID	DESIGNATED USES*	8-DIGIT HUC	EDU**
Tributary to Ditch 4	U			08020204	MS Alluvial Plain
Ditch 4	P	03046	LWW, AQL		

* - Irrigation (IRR), Livestock & Wildlife Watering (LWW), Protection of Warm Water Aquatic Life and Human Health-Fish Consumption (AQL), Cool Water Fishery (CLF), Cold Water Fishery (CDF), Whole Body Contact Recreation (WBC), Secondary Contact Recreation (SCR), Drinking Water Supply (DWS), Industrial (IND).

** - Ecological Drainage Unit

*** - UAA conducted on DATE and approved on DATE or disapproved on DATE.

*** - UAA has not been conducted.

RECEIVING STREAM(S) LOW-FLOW VALUES TABLE:

RECEIVING STREAM (U, C, P)	LOW-FLOW VALUES (CFS)		
	1Q10	7Q10	30Q10
Tributary to Ditch 4		0.0	
Ditch 4		0.1	

MIXING CONSIDERATIONS TABLE: MIXING ZONE (CFS) [10 CSR 20-7.031(4)(A)4.B.(II)(a)]			ZONE OF INITIAL DILUTION (CFS) [10 CSR 20-7.031(4)(A)4.B.(II)(b)]		
1Q10	7Q10	30Q10	1Q10	7Q10	30Q10
	0.025			0.0025	

Rationale and Derivation of Effluent Limitations & Permit Conditions

ANTI-BACKSLIDING:

A provision in the Federal Regulations [CWA §303(d)(4); CWA §402(c); CFR §122.44(I)] that requires a reissued permit to be as stringent as the previous permit with some exceptions.

- All limits in this statement are at least as protective as those previously established; therefore, backsliding does not apply.

- Backsliding proposed in this statement for the reissuance of this permit conform to the anti-backsliding provisions of Section 402(o) of the Clean Water Act, and 40 § CFR 122.44.

ANTIDegradation:

Policies which ensure protection of water quality for a particular water body where the water quality exceeds levels necessary to protect fish and wildlife propagation and recreation on and in the water. This also includes special protection of waters designated as outstanding natural resource waters. Antidegradation plans are adopted by each State to minimize adverse effects on water.

Applicable ;

Please see **APPENDIX B – ANTIDegradation ANALYSIS.**

Not Applicable ;

As per [10 CSR 20-7.031(2)(D)], the three (3) levels of protection provided by the antidegradation policy in subsections (A), (B), and (C) of this section shall be implemented according to procedures developed by the department. *Missouri Antidegradation Rule and Implementation Procedure*, when approved, shall be applicable to new or upgraded/expanded facilities only.

APPLICABLE PERMIT PARAMETERS:

Effluent parameters for conventional, non-conventional, and toxic pollutants have been obtained from the previous NPDES operating permit for this facility, technology based effluent limits, water quality based effluent limits, and from appropriate sections of the renewal application.

COMPLIANCE AND ENFORCEMENT:

Action taken by the department to resolve violations of the Missouri Clean Water Law, its implementing regulations, and/or any terms and condition of an operating permit.

Applicable ;

The permittee/facility is currently under enforcement action

Not Applicable ;

The permittee/facility is not under enforcement action and is considered to be in compliance with the Missouri Clean Water Law, its implementing regulations, and/or any terms and condition of an operating permit.

PRETREATMENT PROGRAM:

The reduction of the amount of pollutants, the elimination of pollutants, or the alteration of the nature of pollutant properties in wastewater prior to or in lieu of discharging or otherwise introducing such pollutants into a Publicly Owned Treatment Works [40 CFR §403.3(q)].

Applicable ;

Permittee shall implement and enforce its approved pretreatment program in accordance with the requirements of 40 CFR Part 403. The approved pretreatment program is hereby incorporated by reference. Permittee shall submit to the department on or before March 31st of each year a report briefly describing its pretreatment activities during the previous calendar year.

Not Applicable ;

At this time, the permittee is not required to implement and enforce a Pretreatment Program.

REASONABLE POTENTIAL ANALYSIS (RPA):

Limitations must control all pollutants or pollutant parameters that are or may be discharged at a level which will cause, have reasonable potential to cause, or contribute to an excursion above the Missouri Water Quality Standards.

Applicable ;

Not Applicable ;

Analytes in this permit are mandated by categorical limits at 40 CFR 423.

SANITARY SEWER OVERFLOWS (SSOs), AND INFLOW & INFILTRATION (I&I):

Collection systems are a critical element in the successful performance of the wastewater treatment process. Under certain conditions, poorly designed, built, managed, operated, and/or maintained systems can pose risks to public health, the environment, or both. Causes of SSOs include, but are not limited to, the following: high levels of I&I during wet weather; blockages; structural, mechanical, or electrical failures; collapsed or broken sewer pipes; insufficient conveyance capacity; and vandalism. Effective and continuous management, operation, and maintenance, as well as ensuring adequate capacity and rehabilitation when necessary are critical to maintaining collection system capacity and performance while extending the life of the system.

Applicable ;

The permittee is required to develop or implement a program for maintenance and repair of the collection system and shall be required in this operating permit by either means of a Special Condition or Schedule of Compliance.

Not Applicable ;

This facility is not required to develop or implement a program for maintenance and repair of the collection system; however, it is a violation of Missouri State Environmental Laws and Regulations to allow untreated wastewater to discharge to waters of the state.

SCHEDULE OF COMPLIANCE (SOC):

A schedule of remedial measures included in a permit, including an enforceable sequence of interim requirements (actions, operations, or milestone events) leading to compliance with the Missouri Clean Water Law, its implementing regulations, and/or the terms and conditions of an operating permit.

Applicable ;

The time given for effluent limitations of this permit listed under Interim Effluent Limitation and Final Effluent Limitations where established in accordance with [10 CSR 20-7.031(10)].

Not Applicable ;

This permit does not contain a SOC.

STORM WATER POLLUTION PREVENTION PLAN (SWPPP):

A plan to schedule activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the state. The plan may include, but is not limited to, treatment requirements, operating procedures, and practices to control facility site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

Applicable ;

A SWPPP shall be developed and implemented for each site and shall incorporate required practices identified by the department with jurisdiction, incorporate erosion control practices specific to site conditions, and provide for maintenance and adherence to the plan.

Not Applicable ;

At this time, the permittee is not required to develop and implement a SWPPP.

WASTELOAD ALLOCATIONS (WLA) FOR LIMITS:

As per [10 CSR 20-2.010(78)], the amount of pollutant each discharger is allowed by the department to release into a given stream after the department has determined to total amount of pollutant that may be discharged into that stream without endangering its water quality.

Applicable ;

Wasteload allocations were calculated where applicable using water quality criteria or water quality model results and the dilution equation below:

$$C = \frac{(Cs \times Qs) + (Ce \times Qe)}{(Qe + Qs)} \quad (\text{EPA/505/2-90-001, Section 4.5.5})$$

- Where C = downstream concentration
- Cs = upstream concentration
- Qs = upstream flow
- Ce = effluent concentration
- Qe = effluent flow

Chronic wasteload allocations were determined using applicable chronic water quality criteria (CCC: criteria continuous concentration) and stream volume of flow at the edge of the mixing zone (MZ). Acute wasteload allocations were determined using applicable water quality criteria (CMC: criteria maximum concentration) and stream volume of flow at the edge of the zone of initial dilution (ZID).

Water quality based maximum daily and average monthly effluent limitations were calculated using methods and procedures outlined in USEPA's "Technical Support Document For Water Quality-based Toxics Control" (EPA/505/2-90-001).

Not Applicable ;

Wasteload allocations were not calculated.

WLA MODELING:

Applicable ;

Not Applicable ;

A WLA study was either not submitted or determined not applicable by department staff.

WHOLE EFFLUENT TOXICITY (WET) TEST:

As per [10 CSR 20-7.031(1)(CC)], a toxicity test conducted under specified laboratory conditions on specific indicator organism; and as per [40 CFR §122.2], the aggregate toxic effect of an effluent measured directly by a toxicity test.

Applicable ;

Effective July 15, 2005, upon revision, renewal, modification, or issuance, all Missouri State Operating Permits under the NPDES will incorporate use of the following guidelines for determining the applicability and requirements for WET testing. WET testing requirements are established by the WET Test Policy, 120 § 308 of the Federal Water Pollution Control Act, and 40 CFR § 136.

Please check WET tests applicability for this facility:

- All major discharge facilities ;
- Facilities that are exceeding or routinely exceed their design flow ;
- Most municipals, domestic sewage dischargers ;
- Industrial dischargers or other dischargers that may alter their production processes throughout the year ;
- Facilities that may handle large quantities of toxic substances, or substances that are toxic in large amounts ; and
- Facilities that have been granted seasonal relief of numeric limitations .

Not Applicable ;

At this time, the permittee is not required to conduct WET test for this facility.

303(d) LIST & TOTAL MAXIMUM DAILY LOAD (TMDL):

Section 303(d) of the federal Clean Water Act requires that each state identify waters that are not meeting water quality standards and for which adequate water pollution controls have not been required. Water quality standards protect such beneficial uses of water as whole body contact (such as swimming), maintaining fish and other aquatic life, and providing drinking water for people, livestock and wildlife. The 303(d) list helps state and federal agencies keep track of waters that are impaired but not addressed by normal water pollution control programs.

A TMDL is a calculation of the maximum amount of a given pollutant that a body of water can absorb before its water quality is affected. If a water body is determined to be impaired as listed on the 303(d) list, then a watershed management plan will be developed that shall include the TMDL calculation

Applicable ;

(Receiving water body's name) or (1st classified water body's name) is listed on the (YEAR) Missouri 303(d) List for (pollutant).

– This facility is not considered to be a source of the above listed pollutant(s) or considered to contributed to the impairment of (stream name).

– This facility is considered to be a source of or has the potential to contribute to the above listed pollutant(s).

Not Applicable ;

This facility does not discharge to a 303(d) listed stream.

Outfall #001 – Main Facility Outfall

EFFLUENT LIMITATIONS TABLE:

PARAMETER	UNIT	BASIS FOR LIMITS	DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MODIFIED	PREVIOUS PERMIT LIMITATIONS
FLOW	MGD	1	*		*	NO	S
pH (S.U.)	SU	1	6 – 9		6 – 9	NO	S
TEMPERATURE (°F)	°F	8	*		*	YES	5 F
CHLORINE, TOTAL RESIDUAL (MG/L)	MG/L	1/2	0.017		0.008	YES	0.5/0.2
CHROMIUM III, TOTAL RECOVERABLE	µg/L	2/3	196		97	YES **	0.2/0.2
CHROMIUM VI, TOTAL RECOVERABLE	µg/L	2/3	15.4		7.7	YES **	0.2/0.2
ZINC, TOTAL RECOVERABLE	µg/L	2/3	168.6		84.0	YES	1.0/1.0 ****
WHOLE EFFLUENT TOXICITY (WET) TEST	Please see WET Test in the Derivation and Discussion Section below.						
MONITORING FREQUENCY	Please see Minimum Sampling and Reporting Frequency Requirements in the Derivation and Discussion Section below.						

*** - Monitoring requirement only**

** Chromium III and Chromium VI have been calculated separately, old permit stated just Chromium, not III or VI

*** reserved

**** . Has monitoring only as interim limit.

N/A – Not applicable

S – Same as previous operating permit

Basis for Limitations Codes:

1. State or Federal Regulation/Law
2. Water Quality Standard (includes RPA)
3. Water Quality Based Effluent Limits
4. Lagoon Policy
5. Ammonia Policy
6. Antidegradation Policy
7. Water Quality Model
8. Best Professional Judgement
9. TMDL or Permit in lieu of TMDL
10. WET test Policy

OUTFALL #001 – DERIVATION AND DISCUSSION OF LIMITS:

- **pH.** Effluent limitation has been retained from previous state operating permit, [10 CSR 20-7.015(8)(B)2.]. Or they have been changed with correct regulation citation.
- **Temperature.** Limited due to heat discharge to Mississippi River
- **Total Residual Chlorine (TRC).** Warm-water Protection of Aquatic Life CCC = 10 g/L, CMC = 19 g/L [10 CSR 20-7.031, Table A]. Background TRC = 0.0 g/L.

Chronic WLA: $C_e = 10 \left((0.025 + 2.0) - (0.0 * 0.0) \right) / 2.0$
 $C_e = 10 \text{ g/L}$

Acute WLA: $C_e = 19 \left((0.0025 + 2.0) - (0.0 * 0.0) \right) / 2.0$
 $C_e = 19 \text{ g/L}$

$LTA_c = 10 \text{ g/L} (0.527) = 5.3 \text{ g/L}$ [CV = 0.6, 99th Percentile]
 $LTA_a = 19 \text{ g/L} (0.321) = 6.1 \text{ g/L}$ [CV = 0.6, 99th Percentile]

$MDL = 5.3 \text{ g/L} (3.11) = 16.5 \text{ g/L}$ [CV = 0.6, 99th Percentile]
 $AML = 5.3 \text{ g/L} (1.55) = 8.2 \text{ g/L}$ [CV = 0.6, 95th Percentile, n = 4]

Total Residual Chlorine effluent limits of 0.017 mg/L daily maximum, 0.008 mg/L monthly average are recommended if chlorine is used as a disinfectant. Standard compliance language for TRC, including the minimum level (ML), should be included in the permit.

- **Oil & Grease.** Conventional pollutant, effluent limitation for protection of aquatic life; 10 mg/L monthly average, 15 mg/L daily maximum.
- **Metals**
Effluent limitations for total recoverable metals were developed using methods and procedures outlined in EPA/505/2-90-001 and “The Metals Translator: Guidance For Calculating A Total Recoverable Permit Limit From A Dissolved Criterion” (EPA 823-B-96-007). General warm-water fishery criteria apply and water hardness = 162 mg/L.

Due to the absence of contemporaneous effluent and instream data for total recoverable metals, dissolved metals, hardness, and total suspended solids with which to calculate metals translators, partitioning between the dissolved and absorbed phases was assumed to be minimal (Section 5.7.3, EPA/505/2-90-001). Freshwater criteria conversion factors for dissolved metals were used as the metals translator as recommended in guidance (Section 1.3, 1.5.3, and Table 1, EPA 823-B-96-007). If concurrent site-specific data for total recoverable metals, dissolved metals, hardness, and total suspended solids are provided to the department, partitioning evaluations may be considered and site-specific translators developed.

METAL	CONVERSION FACTORS	
	ACUTE	CHRONIC
Chromium III	0.316	0.860
Chromium VI	0.982	0.962
Zinc	0.978	0.986

Values calculated using equation found in Section 1.3 of EPA 823-B-96-007 and hardness = 162 mg/L.

- **Chromium III, Total Recoverable** Protection of Aquatic Life Chronic Criteria = 103 µg/L, Acute Criteria = 794 µg/L.

$$\text{Chronic} = 103.0 / 0.860 = 119.8 \mu\text{g/L}$$

$$\text{Acute} = 794.0 / 0.316 = 2512.7 \mu\text{g/L}$$

Chronic

$$C_e = ((2.0 + 0.025)119.8 - (0.0 * 0.0)) / 2.0$$

$$C_e = 119.8 \mu\text{g/L}$$

$$\text{WLA}_c = 119.8 \mu\text{g/L}$$

Acute

$$C_e = ((2.0 + 0.0025)2512.7 - (0.0 * 0.0)) / 2.0$$

$$C_e = 2512.7 \mu\text{g/L}$$

$$\text{WLA}_a = 2512.7 \mu\text{g/L}$$

$$\text{LTA}_c = 119.8(0.527) = \mathbf{63.1} \mu\text{g/L}$$

[CV = 0.6, 99th Percentile]

$$\text{LTA}_a = 2512.7(0.321) = 806.6 \mu\text{g/L}$$

[CV = 0.6, 99th Percentile]

Use most protective number of LTA_c or LTA_a.

$$\text{MDL} = 63.1(3.11) = 196.2 \mu\text{g/L}$$

[CV = 0.6, 99th Percentile]

$$\text{AML} = 63.1(1.55) = 97.8 \mu\text{g/L}$$

[CV = 0.6, 95th Percentile, n = 4]

Chromium VI, Total Recoverable Protection of Aquatic Life Chronic Criteria = 10 µg/L, Acute Criteria = 15 µg/L.

Chronic = $10.0/0.962 = 10.4 \mu\text{g/L}$
 Acute = $15.0/0.982 = 15.3 \mu\text{g/L}$

Chronic

$$C_e = ((2.0 + 0.025)10.4 - (0.0 * 0.0))/2.0$$

$$C_e = 10.66 \mu\text{g/L}$$

$$WLA_c = 10.66 \mu\text{g/L}$$

Acute

$$C_e = ((2.0 + 0.00025)15.3 - (0.0 * 0.0))/2.0$$

$$C_e = 15.45 \mu\text{g/L}$$

$$WLA_a = 15.45 \mu\text{g/L}$$

$$LTA_c = 10.66(0.527) = 5.6 \mu\text{g/L}$$

$$LTA_a = 15.45(0.321) = 4.95 \mu\text{g/L}$$

[CV = 0.6, 99th Percentile]
 [CV = 0.6, 99th Percentile]

Use most protective number of LTA_c or LTA_a.

$$MDL = 4.95(3.11) = 15.39 \mu\text{g/L}$$

$$AML = 4.95(1.55) = 7.67 \mu\text{g/L}$$

[CV = 0.6, 99th Percentile]
 [CV = 0.6, 95th Percentile, n = 4]

• **Zinc, Total Recoverable** Protection of Aquatic Life Chronic Criteria = 151 µg/L, Acute Criteria = 165 µg/L.

Chronic = $151.0/0.986 = 153.1 \mu\text{g/L}$
 Acute = $165.0/0.978 = 168.7 \mu\text{g/L}$

Chronic

$$C_e = ((2.0 + 0.025)153.1 - (0.0 * 0.0))/2.0$$

$$C_e = 153.1 \mu\text{g/L}$$

$$WLA_c = 153.1 \mu\text{g/L}$$

Acute

$$C_e = ((2.0 + 0.025)168.7 - (0.0 * 0.0))/2.0$$

$$C_e = 168.7 \mu\text{g/L}$$

$$WLA_a = 168.7 \mu\text{g/L}$$

$$LTA_c = 153.1(0.527) = 80.7 \mu\text{g/L}$$

$$LTA_a = 168.7(0.321) = 54.2 \mu\text{g/L}$$

[CV = 0.6, 99th Percentile]
 [CV = 0.6, 99th Percentile]

Use most protective number of LTA_c or LTA_a.

$$MDL = 54.2(3.11) = 168.6 \mu\text{g/L}$$

$$AML = 54.2(1.55) = 84.0 \mu\text{g/L}$$

[CV = 0.6, 99th Percentile]
 [CV = 0.6, 95th Percentile, n = 4]

Outfall #003 – ash system

EFFLUENT LIMITATIONS TABLE:

PARAMETER	UNIT	BASIS FOR LIMITS	DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MODIFIED	PREVIOUS PERMIT LIMITATIONS
FLOW	GPD	1	*		*	NO	S
TSS	MG/L	1	100		30	NO	S
pH (S.U.)	SU	1	6 – 9		6 – 9	NO	S
OIL & GREASE (MG/L)	MG/L	1	15		10	NO	S
IRON, TOTAL RECOVERABLE	µg/L	3	1639		817	YES	1.0/1.0 MG/L
ZINC, TOTAL RECOVERABLE	µg/L	3	171.1		82.3	YES	****
COPPER, TOTAL RECOVERABLE	µg/L	3	17.1		8.5	YES	1.0/1.0 MG/L
MONITORING FREQUENCY	Please see Minimum Sampling and Reporting Frequency Requirements in the Derivation and Discussion Section below.						

*** - Monitoring requirement only**

** - reserved

*** - reserved

**** - Parameter not previously established in previous state operating permit. Has monitoring only as interim limit.

N/A – Not applicable

S – Same as previous operating permit

Basis for Limitations Codes:

- | | |
|--|-----------------------------------|
| 1. State or Federal Regulation/Law | 6. Antidegradation Policy |
| 2. Water Quality Standard (includes RPA) | 7. Water Quality Model |
| 3. Water Quality Based Effluent Limits | 8. Best Professional Judgement |
| 4. Lagoon Policy | 9. TMDL or Permit in lieu of TMDL |
| 5. Ammonia Policy | 10. WET test Policy |

OUTFALL #003 – DERIVATION AND DISCUSSION OF LIMITS:

- **Total Suspended Solids (TSS).** Effluent limitations have been retained from previous state operating permit, [10 CSR 20-7.015(8)(B)1.]. Or they have been changed with correct regulation citation.
- **pH.** Effluent limitation has been retained from previous state operating permit, [10 CSR 20-7.015(8)(B)2.]. Or they have been changed with correct regulation citation.
- **Oil & Grease.** Conventional pollutant, effluent limitation for protection of aquatic life; 10 mg/L monthly average, 15 mg/L daily maximum.
- **Metals**
Effluent limitations for total recoverable metals were developed using methods and procedures outlined in EPA/505/2-90-001 and “The Metals Translator: Guidance For Calculating A Total Recoverable Permit Limit From A Dissolved Criterion” (EPA 823-B-96-007). General warm-water fishery criteria apply and water hardness = 162 mg/L.

Due to the absence of contemporaneous effluent and instream data for total recoverable metals, dissolved metals, hardness, and total suspended solids with which to calculate metals translators, partitioning between the dissolved and absorbed phases was assumed to be minimal (Section 5.7.3, EPA/505/2-90-001). Freshwater criteria conversion factors for dissolved metals were used as the metals translator as recommended in guidance (Section 1.3, 1.5.3, and Table 1, EPA 823-B-96-007). If concurrent site-specific data for total recoverable metals, dissolved metals, hardness, and total suspended solids are provided to the department, partitioning evaluations may be considered and site-specific translators developed.

METAL	CONVERSION FACTORS	
	ACUTE	CHRONIC
Copper	0.960	0.960
Zinc	0.978	0.986
Iron	NA	NA.

Values calculated using equation found in Section 1.3 of EPA 823-B-96-007 and hardness = 162 mg/L.

- **Copper, Total Recoverable** Protection of Aquatic Life Chronic Criteria = 10 µg/L, Acute Criteria = 20 µg/L.

Chronic = $10.0/0.960 = 10.4 \mu\text{g/L}$

Acute = $20.0/0.960 = 20.8 \mu\text{g/L}$

Chronic

$$C_e = ((1.55 + 0.0)10.4 - (0.0 * 0.0))/1.55$$

$$C_e = 10.4 \mu\text{g/L}$$

$$WLA_c = 10.4 \mu\text{g/L}$$

Acute

$$C_e = ((10.4 + 0.0)20.8 - (0.0 * 0.0))/1.55$$

$$C_e = 20.8 \mu\text{g/L}$$

$$WLA_a = 20.8 \mu\text{g/L}$$

$$LTA_c = 10.4(0.527) = 5.5 \mu\text{g/L}$$

$$LTA_a = 20.8(0.321) = 6.7 \mu\text{g/L}$$

[CV = 0.6, 99th Percentile]

[CV = 0.6, 99th Percentile]

Use most protective number of LTA_c or LTA_a.

MDL = 5.5(3.11) = 17.1 µg/L
 AML = 5.5(1.55) = 8.5 µg/L

[CV = 0.6, 99th Percentile]
 [CV = 0.6, 95th Percentile, n = 4]

- **Iron, Total Recoverable** Protection of Aquatic Life Chronic Criteria = 1000 µg/L, Acute Criteria = none.

Chronic

$C_e = ((1.55 + 0.0)1000 - (0.0 * 0.0))/1.55$
 $C_e = 1000 \mu\text{g/L}$
 $WLA_c = 1000 \mu\text{g/L}$

LTA_c = 1000(0.527) = **527** µg/L [CV = 0.6, 99th Percentile]

MDL = 527(3.11) = 1639 µg/L [CV = 0.6, 99th Percentile]
 Since 1639 is higher than the Effluent Limit Guideline daily limit at 40 CFR 423.12, the 1000 µg/L ELG daily limit will be used.

AML = 527(1.55) = 817 µg/L [CV = 0.6, 95th Percentile, n = 4]

- **Zinc, Total Recoverable** Protection of Aquatic Life Chronic Criteria = 151 µg/L, Acute Criteria = 165 µg/L.

Chronic = 151.0/0.986 = 153.1 µg/L
 Acute = 165.0/0.978 = 168.7 µg/L

Chronic

$C_e = ((1.55 + 0.025)153.1 - (0.0 * 0.0))/1.55$
 $C_e = 155.6 \mu\text{g/L}$
 $WLA_c = 155.6 \mu\text{g/L}$

Acute

$C_e = ((1.55 + 0.025)168.7 - (0.0 * 0.0))/1.55$
 $C_e = 171.4 \mu\text{g/L}$
 $WLA_a = 171.4 \mu\text{g/L}$

LTA_c = 155.6(0.527) = 82.0 µg/L [CV = 0.6, 99th Percentile]
 LTA_a = 171.4(0.321) = 55.0 µg/L [CV = 0.6, 99th Percentile]

Use most protective number of LTA_c or LTA_a.

MDL = 55.0(3.11) = 171.05 µg/L [CV = 0.6, 99th Percentile]
 AML = 55.0(1.55) = 85.25 µg/L [CV = 0.6, 95th Percentile, n = 4]

- **Outfall #001 Minimum Sampling and Reporting Frequency Requirements.**

PARAMETER	SAMPLING FREQUENCY	REPORTING FREQUENCY
FLOW	ONCE/DAY	ONCE/MONTH
PH (S.U.)	ONCE/DAY	ONCE/MONTH
TEMPERATURE (°F)	ONCE/DAY	ONCE/MONTH
CHLORINE, TOTAL RESIDUAL (MG/L)	ONCE/DAY	ONCE/MONTH
OIL & GREASE (MG/L)	ONCE/DAY	ONCE/MONTH
CHROMIUM (III), TOTAL RECOVERABLE	ONCE/DAY	ONCE/MONTH
CHROMIUM (VI), TOTAL RECOVERABLE	ONCE/DAY	ONCE/MONTH
ZINC, TOTAL RECOVERABLE	ONCE/QUARTER	ONCE/MONTH

- Outfall #003 Minimum Sampling and Reporting Frequency Requirements.**

PARAMETER	SAMPLING FREQUENCY	REPORTING FREQUENCY
FLOW	ONCE/DAY	ONCE/MONTH
TSS	ONCE/MONTH	ONCE/MONTH
PH (S.U.)	ONCE/MONTH	ONCE/MONTH
OIL & GREASE (MG/L)	ONCE/MONTH	ONCE/MONTH
COPPER, TOTAL RECOVERABLE	ONCE/MONTH	ONCE/MONTH
IRON, TOTAL RECOVERABLE	ONCE/MONTH	ONCE/MONTH
ZINC, TOTAL RECOVERABLE	ONCE/ MONTH	ONCE/ MONTH

Once per day is the minimum sampling frequency requirement; however, the samples may be averaged for the minimum reporting frequency requirement.

Once per month is the minimum sampling requirement. Samples may be obtained on a more frequent basis, but the average of the samples must be reported as required in the reporting frequency column. Discharge Monitoring Reports (DMRs) are to be submitted to the department by the 28th day of the following month.

Once per quarter is the minimum sampling frequency requirement. If samples are collected on a more frequent basis, then the average of the samples may be submitted. Quarterly samples are to be reported in the months of month, month, month, and month; and are to be reported by the 28th day of the following month of the applicable quarterly required month (needs more)

- WET Test.** An Acute Whole Effluent Toxicity test shall be conducted as follows:

Summary of Wet Testing for This Permit				
Outfall	A.E.C. %	Frequency	Sample Type	Month
001	100	Annual	Grab	Any, report in
003	100	Annual	Grab	January

AEC for 001= 2.0cfs / (0.0025cfs+2.0cfs)= 100%

AEC for 002= 1.0cfs / (0.0025cfs+1.0cfs)= 100%

RECEIVING STREAM MONITORING REQUIREMENTS:

Site S1 (Upstream)

PARAMETER(S)	SAMPLING FREQUENCY	SAMPLE TYPE	LOCATION
Temperature (F)	Once/day	grab	200 feet upstream of outfall 003

Site S2 (Downstream)

PARAMETER(S)	SAMPLING FREQUENCY	SAMPLE TYPE	LOCATION
Temperature (F)	Once/day	grab	200 feet downstream of confluence of Ditch 4 and outfall 001 tributary

Administrative Requirements

On the basis of preliminary staff review and the application of applicable standards and regulations, the Department, as administrative agent for the Missouri Clean Water Commission, proposes to issue a permit(s) subject to certain effluent limitations, schedules, and special conditions contained herein or within the operating permit. The proposed determinations are tentative pending public comment.

GENERAL ASSUMPTIONS OF THE STATEMENT:

1. A Statement assumes that [10 CSR 20-6.010(3) Continuing Authorities] has been or will be addressed in a Missouri State Operating Permit or Construction Permit Application.
2. A Statement does not indicate approval or disapproval of alternative analysis as per [10 CSR 20-7.015(4) Losing Streams], and/or any section of the effluent regulations.
3. Changes to Federal and State Regulations made subsequent to the drafting of this Statement may alter effluent limitations and or permit conditions.
4. Water Quality Based Effluent Limitations supercede Effluent Guidelines Limits only when they are more stringent. Mass limits derived from technology based limits are still appropriate.
5. A Statement does not allow discharges to waters of the state, and shall not be construed as a National Pollution Discharge Elimination System or Missouri State Operating Permit to discharge or a permit to construct, modify, or upgrade.
6. Limitations and other requirements in a Statement may change as Water Quality Standards, Methodology, and Implementation procedures change.

Date of Factsheet: 8-30-2007

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