

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-0002356

Owner: Balchem Corporation
Address: 52 Sunrise Park Road, New Hampton, NY 10958

Continuing Authority: Same as above
Address: Same as above

Facility Name: BCP Ingredients, Inc.
Facility Address: 299 Extension Street, Verona, MO 65769

Legal Description: SE ¼, NW ¼, Sec. 17, T26N, R26W, Lawrence County
UTM Coordinates: See Page 2

Receiving Stream: See page 2
First Classified Stream and ID: Spring River (P) (03165)
USGS Basin & Sub-watershed No.: (11070207 – 010001)

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 Page 2

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.

June 17, 2011
Effective Date


Sara Parker Pauley, Director, Department of Natural Resources

June 16, 2016
Expiration Date


John Madras, Director, Water Protection Program

FACILITY DESCRIPTION (continued):

Outfall #001 – Collection Sump – SIC #2099 & 2048
Outfall removed from effluent limitations. See Outfall #004.

Outfall #002 -Industrial Process Wastewater- SIC # 2099 & 2048
Acid-base reactions/salt concentration, purification and drying/choline and ammonium salts produced/settling tanks/1,000,000 gallon lined lagoon/process wastewater hauled offsite for disposal /sludge hauled offsite for treatment or land applied.
Design flow is 15,000 gallons per day.
Actual flow is 9,000 gallons per day.
Sludge storage capacity is roughly equivalent to 20 years under normal production conditions.

UTM Coordinates: X = 428750, Y = 4091403
Receiving Stream: Spring River (P)

Outfall #003 - Industrial Storm water- SIC # 2099 & 2048
Storm water from surface runoff and the north containment dike.
Design flow is 35,000 gallons per day.
Actual flow is dependent upon rainfall.

UTM Coordinates: X = 428891, Y = 4091454
Receiving Stream: Unnamed Tributary to Spring River (U)

Outfall #004 - Non-Contact Cooling and Storm Water- SIC # 2099 & 2048
Non-contact cooling from Process Buildings/surface runoff and south containment dike/collection sump/retention basin
Design flow is 80,000 gallons per day.
Actual flow is 36,000 gallons per day.

UTM Coordinates: X = 428726, Y = 4091234
Receiving Stream: Spring River (P)

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS					PAGE NUMBER 3 of 12	
					PERMIT NUMBER MO-0002356	
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>Outfall #002</u> (Note 1)						
Hauled Waste Volume	Gallons	*		*	once/year	report
MONITORING REPORTS SHALL BE SUBMITTED <u>ANNUALLY</u> ; THE FIRST REPORT IS DUE <u>August 28, 2011</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						
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>Outfall #003</u>						
Flow	MGD	*		*	once/quarter	24 hr. estimate
pH – Units	SU	**		**	once/quarter	grab
Oil & Grease	mg/L	15		10	once/quarter	grab
MONITORING REPORTS SHALL BE SUBMITTED <u>QUARTERLY</u> ; THE FIRST REPORT IS DUE <u>October 28, 2011</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					PAGE NUMBER 4 of 12	
					PERMIT NUMBER MO-0002356	
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 for three (3) years. 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 #004</u>						
Flow (Effluent)	cfs	*		*	once/day	24 hr. total
Stream Flow (Note 2)	cfs	*			once/week	total
Temperature (Effluent)	°F	*			once/week	grab
pH – Units	SU	**		**	once/month	grab
Chemical Oxygen Demand	mg/L	90		60	once/month	***
Oil & Grease	mg/L	15		10	once/month	grab
Total Residual Chlorine (Note 6)	mg/L	0.03		0.02	once/month	grab
MONITORING REPORTS SHALL BE SUBMITTED <u>MONTHLY</u> ; THE FIRST REPORT IS DUE <u>August 1, 2011</u> . THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.						
Whole Effluent Toxicity (WET) test	% Survival	See Special Condition #11			once/year	24 hr. composite****
MONITORING REPORTS SHALL BE SUBMITTED <u>ANNUALLY</u> ; THE FIRST REPORT IS DUE <u>August 28, 2012</u> .						
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					PAGE NUMBER 5 of 12	
					PERMIT NUMBER MO-0002356	
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 three (3) years from the date of 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>Outfall #004</u>						
Flow (Effluent)	cfs	*		*	once/day	24 hr. total
Stream Flow (Note 2)	cfs	*			once/week	total
Temperature (Stream) (Note 3)	°F	*			once/week	grab
Temperature (Effluent)	°F	*			once/week	grab
ΔT (Note 4)	°F	*		*	once/week	calculated
T _{cap} (Note 5)	°F	*		*	once/week	calculated
pH – Units	SU	**		**	once/month	grab
Chemical Oxygen Demand	mg/L	90		60	once/month	***
Oil & Grease	mg/L	15		10	once/month	grab
Total Residual Chlorine (Note 6)	mg/L	0.03		0.02	once/month	grab
MONITORING REPORTS SHALL BE SUBMITTED <u>MONTHLY</u> ; THE FIRST REPORT IS DUE <u>August 1, 2014</u> . THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.						
Whole Effluent Toxicity (WET) test	% Survival	See Special Condition #11		once/year	24 hr. composite****	
MONITORING REPORTS SHALL BE SUBMITTED <u>ANNUALLY</u> ; THE FIRST REPORT IS DUE <u>August 28, 2015</u> .						
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 (continued)

- * Monitoring requirement only.
- ** pH is measured in pH units and is not to be averaged. The pH is limited to the range of 6.5-9.0 pH units.
- *** A composite sample composed of a minimum of 4 grab samples collected within a 24 hour period, with a minimum of 2 hours between each grab sample.
- **** A 24 hour composite samples is composed of 48 aliquots (subsamples) collected at 30 minute intervals by an automatic sampling device.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (continued)

Note 1 – There shall be no discharge to waters of the state from the lined lagoon. Process wastewater flows are to be hauled offsite to a permitted treatment facility. Any unauthorized discharge from the lagoon is considered to be a bypass and shall reported to the department as soon as possible but always within 24 hours. Sludge shall be removed as necessary and transported to an offsite treatment or disposal facility.

Note 2 - Stream flow. Stream flow is the flow of the receiving stream as determined from the nearest gauging station (USGS 07185700, Spring River at La Russell). Flow determination will be adjusted based on a 28 square mile drainage area at Verona (approximately 11% of the drainage area contributing to flow at La Russell). An alternative gauging station may be approved should the aforementioned station become unavailable or a new station comes online.

Note 3 - Temperature (Stream). The facility must use the receiving stream's ambient temperature at a point upstream of the discharge.

$$\text{Note 4} - \Delta T = [((Q_s/4)T_s + Q_e T_e) / ((Q_s/4) + Q_e)] - T_s$$

Where:

$Q_s/4$: is the receiving stream's mixing zone flow in cfs minus the Intake flow in cfs.

Q_e : is the effluent's flow in cfs.

T_s : is the stream's temperature (ambient temperature).

T_e : is the effluent's temperature.

ΔT : is the amount in T°F that the facility is causing the receiving stream's temperature to rise at the end of the regulatory mixing zone.

$$\text{Note 5} - T_{\text{cap}} = [((Q_s/4)T_s + Q_e T_e) / ((Q_s/4) + Q_e)]$$

Where:

$Q_s/4$: is the receiving stream's mixing zone flow in cfs minus the Intake flow in cfs.

Q_e : is the effluent's flow in cfs.

T_s : is the stream's temperature (ambient temperature).

T_e : is the effluent's temperature.

T_{cap} : is the temperature of the receiving stream at the end of the regulatory mixing zone.

Note 6 - This permit contains a Total Residual Chlorine (TRC) limit.

- (a) 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 130 µg/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 130 µg/L will be considered violations of the permit and values less than the minimum quantification level of 130 µg/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.
- (b) Do not chemically dechlorinate **if it is not needed to meet the limits in your permit.**
- (c) If no chlorine was used in a given sampling period, an actual analysis is not necessary. Simply report as “0 µg/L” TRC.

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 a facility with an area-wide management plan per 10 CSR 20-6.010(3)(B) within 90 days of notice of its availability. Domestic wastewater flows shall be discharged to the City of Verona wastewater treatment system.
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.
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.

C. SPECIAL CONDITIONS (continued)

7. Permittee shall submit an annual report to the Southwest Regional Office detailing the treatment location of effluent from Outfall #002, as well as the volume of effluent treated.
8. The permittee shall develop and implement a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP must be prepared within 60 days and implemented within 90 days of permit issuance. The SWPPP must be kept on-site and should not be sent to DNR unless specifically requested. The SWPPP must be reviewed and updated, if needed, every five (5) years or as site conditions change. The permittee shall select, install, use, operate, and maintain the Best Management Practices prescribed in the SWPPP in accordance with the concepts and methods described in the following document:

Developing Your Storm Water Pollution Prevention Plan, A Guide for Industrial Operators, (Document number EPA 833-B-09-002) published by the United States Environmental Protection Agency (USEPA) in February 2009.

The SWPPP must include the following:

8. Developing Your Storm Water Pollution Prevention Plan (continued):
 - (a) A listing of specific Best Management Practices (BMPs) and a narrative explaining how BMPs will be implemented to control and minimize the amount of potential contaminants that may enter storm water. Minimum BMPs are listed in SPECIAL CONDITIONS #9 below.
 - (b) The SWPPP must include a schedule for twice per month site inspections and brief written reports. The inspections must include observation and evaluation of BMP effectiveness. Deficiencies must be corrected within seven (7) days and the actions taken to correct the deficiencies shall be included with the written report, including photographs. Any corrective measure that necessitates major construction may also need a construction permit. Inspection reports must be kept on site with the SWPPP and maintained for a period of five (5) years. These must be made available to DNR personnel upon request.
 - (c) A provision for designating an individual to be responsible for environmental matters.
 - (d) A provision for providing training to all personnel involved in material handling and storage, and housekeeping of maintenance and cleaning areas. Proof of training shall be submitted on request of DNR.
9. Permittee shall adhere to the following minimum Best Management Practices:
 - (a) Prevent the spillage or loss of fluids, oil, grease, fuel, etc. from vehicle maintenance, equipment cleaning, or warehouse activities and thereby prevent the contamination of storm water from these substances.
 - (b) Provide collection facilities and arrange for proper disposal of waste products including but not limited to petroleum waste products, and solvents.
 - (c) Store all paint, solvents, petroleum products and petroleum waste products (except fuels), and storage containers (such as drums, cans, or cartons) so that these materials are not exposed to storm water or provide other prescribed BMPs such as plastic lids and/or portable spill pans to prevent the commingling of storm water with container contents. Commingled water may not be discharged under this permit. Provide spill prevention control, and/or management sufficient to prevent any spills of these pollutants from entering waters of the state. Any containment system used to implement this requirement shall be constructed of materials compatible with the substances contained and shall also prevent the contamination of groundwater.
 - (d) Provide good housekeeping practices on the site to keep trash from entry into waters of the state.
 - (e) Provide sediment and erosion control sufficient to prevent or control sediment loss off of the property. This could include the use of straw bales, silt fences, or sediment basins, if needed, to comply with effluent limits.
10. The purpose of the SWPPP and the BMPs listed herein is the prevention of pollution of waters of the state. A deficiency of a BMP means it was not effective in preventing pollution [10 CSR 20-2.010(56)] of waters of the state, and corrective actions means the facility took steps to eliminate the deficiency.

C. SPECIAL CONDITIONS (continued)

11. Whole Effluent Toxicity (WET) Test shall be conducted as follows:

SUMMARY OF ACUTE WET TESTING FOR THIS PERMIT				
OUTFALL	AEC	FREQUENCY	SAMPLE TYPE	MONTH
004	63%	once/year	24 hr. composite****	Any, Report in August

Dilution Series						
100% effluent	50% effluent	25% effluent	12.5% effluent	6.25% effluent	(Control) 100% upstream, if available	(Control) 100% Lab Water, also called synthetic water

(a) Test Schedule and Follow-Up Requirements

- (1) Perform a MULTIPLE-dilution acute WET 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 storm water, samples shall be collected within three hours from when discharge first occurs.
 - (b) Samples submitted for analysis of storm water discharges shall be collected as a grab.
 - (c) For discharges of non-storm water, 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 storm water samples.
 - (d) A twenty-four hour composite sample shall be submitted for analysis of non-storm water 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 for BOTH test species within 30 calendar days and biweekly thereafter (for storm water, tests shall be performed on the next and subsequent storm water discharges as they occur, but not less than 7 days apart) 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.

C. SPECIAL CONDITIONS (continued)

11. Whole Effluent Toxicity (WET) Test (continued):

- (4) The permittee shall submit a summary of all test results for the test series along with complete copies of the test reports as received from the laboratory to the WATER PROTECTION PROGRAM, P.O. Box 176, Jefferson City, MO 65102 within 14 calendar days of the third failed test.
 - (5) 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.
 - (6) 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.
 - (7) 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.
- (b) PASS/FAIL procedure and effluent limitations:
- (1) 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.
- (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 "Allowable Effluent Concentration" (AEC) specified above.
 - (5) 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) Unless otherwise specified above, 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.
 - (7) If reconstituted-water control mortality for a test species exceeds 10%, the entire test will be rerun.
 - (8) 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:	250 mL (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

D. SCHEDULE OF COMPLIANCE - AT

1. The permittee must attain compliance with the final effluent limits as soon as possible, but no later than three years from the date of issuance of this permit.
2. Within one year of issuance of this permit, the permittee shall report progress made in attaining compliance with the final effluent limits.
3. Within two years of issuance of this permit, the permittee shall submit a report detailing progress made in attaining compliance with the final effluent limits.
4. If the permittee fails to meet any of the interim dates above, the permittee shall notify the Department in writing of the reason for non compliance no later than 14 days following each interim date.

Missouri Department of Natural Resources
FACT SHEET
FOR THE PURPOSE OF RENEWAL
OF
MO-0002356
BCP INGREDIENTS, INC.

The Federal Water Pollution Control Act ("Clean Water Act" Section 402 Public Law 92-500 as amended) established the National Pollution Discharge Elimination System (NPDES) permit program. This program regulates the discharge of pollutants from point sources into the waters of the United States, and the release of storm water from certain point sources. All such discharges are unlawful without a permit (Section 301 of the "Clean Water Act"). After a permit is obtained, a discharge not in compliance with all permit terms and conditions is unlawful. Missouri State Operating Permits (MSOPs) are issued by the Director of the Missouri Department of Natural Resources (Department) under an approved program, operating in accordance with federal and state laws (Federal "Clean Water Act" and "Missouri Clean Water Law" Section 644 as amended). MSOPs are issued for a period of five (5) years unless otherwise specified.

As per [40 CFR Part 124.8(a)] and [10 CSR 20-6.020(1)2.] a Factsheet shall be prepared to give pertinent information regarding the applicable regulations, rationale for the development of effluent limitations and conditions, and the public participation process for the Missouri State Operating Permit (operating permit) listed below.

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

This Factsheet is for a Major , Minor , Industrial Facility ; Variance ;
Master General Permit ; General Permit Covered Facility ; and/or permit with widespread public interest .

Part I – Facility Information

Facility Type: IND
Facility SIC Code(s): 2099 & 2048

Facility Description:

BCP Ingredients, Inc. is a manufacturer of feed and feed grade nutritional additives (choline chloride) located in Verona, Lawrence County, MO. Manufacturing processes involve acid-base reactions. All resulting salts are sold in liquid form or are concentrated, purified and dried. Choline and ammonium salts are also produced. All source water used for cooling and manufacturing processes is obtained from the Aurora municipal water supply.

The previous operating permit contained effluent limits for Outfall #001, a Collection Sump that discharges to Outfall #004. The renewed operating permit will contain effluent limits for outfall #004 only, as no new wastewater streams are added after the Collection Sump. Additionally, no process wastewater is discharged through this outfall, making effluent exempt from the provisions of 10 CSR 20-7.015(9)(B). See description for Outfall #004 below.

Outfall #002 is a 1,000,000 gallon aerated, lined lagoon. Outfall #002 collects process wastewater from the Production Process Buildings (V-3, V-8, V-9, V-13, V-16 and V-19), Quality Control Laboratory (V-12), Boilers and Maintenance Area (V-5) and the north and south containment dikes. Prior to entering the lined lagoon, process wastewater flows to one (1) of two (2) settling tanks. Wastewater from the lined lagoon is not discharged from Outfall #002. Process wastewater is transported offsite for disposal at the Springfield Wastewater Treatment Facility. Solids are stored in the lined lagoon and either land applied or sent offsite for treatment. In 2008, the permittee was granted permission for a one-time land application of sludge from the lagoon. The lagoon has a storage capacity roughly equal to 20 years of sludge production. The lagoon has a design capacity of at least 60 days of storage for wastewater streams plus the 1-in-10 year rain event and 25 year, 24 hour rainfall.

Outfall #003 discharges storm water from surface runoff on the north portion of the facility and the north containment dikes to a channel in the slough area. Storm water from the containment dikes is tested for pH and clarity before being discharged through Outfall #003. Any storm water not meeting pH and clarity standards is diverted to the settling tanks and disposed of as process wastewater.

Outfall #004 receives discharge from the Collection Sump, which includes storm water surface runoff from the south portion of the facility, non-contact cooling water from Buildings V-10 and V-11, and storm water from the containment dikes on the south portion of the facility. Storm water from the containment dikes is tested for pH and clarity before being sent to the Collection Sump. Water that

does not meet clarity and pH standards is sent to one (1) of two (2) settling tanks, eventually flowing to the lined lagoon (Outfall #002). The Collection Sump flows into a retention basin for settling. The retention basin discharges to Spring River via Outfall #004.

Domestic wastewater and boiler blowdown from the facility are transported via sanitary sewer to the Verona Wastewater Treatment Facility.

The facility proposed addition of a wastewater irrigation system, represented as Outfall #005, in the application for renewal. Wastewater from the concentration of solids from Outfall #002 would be subject to reverse osmosis and ultra filtration before entering a 50,000 gallon storage tank. Land application would occur on grass hay located on the facility property. The application for construction of wastewater irrigation is currently being reviewed by staff at the Southwest Regional Office. Should approval be received for this proposed discharge, the permittee may apply for an operating permit modification at the time construction is completed. At that time, effluent limitations would be included for proposed Outfall #005.

Have any changes occurred at this facility or in the receiving water body that effects effluent limit derivation?

- No.

Application Date: 12/09/10

Expiration Date: 05/11/11

Last Inspection: 08/17/10

In Compliance ; Non-Compliance ; The facility failed to follow Standard Methods for pH analysis and failed to obtain receiving facility signatures for hauled waste.

OUTFALL(S) TABLE:

OUTFALL	DESIGN FLOW (CFS)	TREATMENT LEVEL	EFFLUENT TYPE	DISTANCE TO CLASSIFIED SEGMENT (MI)
001	0.05	None	Non-Contact Cooling	0.17
002	0.02	Settling	Process Wastewater - No Discharge	0.06
003	0.05	None	Storm Water	0.43
004	0.12	Settling	Storm Water & Non-Contact Cooling	0.07

Outfall #001 – Collection Sump

Legal Description: SE ¼, NW ¼, Sec. 17, T26N, R26W, Lawrence County

UTM Coordinates: X = 428882, Y = 4091236

Receiving Stream: N/A

First Classified Stream and ID: Spring River (P) (03165)

USGS Basin & Sub-watershed No.: (11070207 – 010001)

Outfall #002 – Process Wastewater

Legal Description: same as above

UTM Coordinates: X = 428750, Y = 4091403

Receiving Stream: N/A

First Classified Stream and ID: Spring River (P) (03165)

USGS Basin & Sub-watershed No.: (11070207 – 010001)

Outfall #003 – Storm Water

Legal Description: same as above

UTM Coordinates: X = 428891, Y = 4091454

Receiving Stream: Unnamed Tributary to Spring River (U)

First Classified Stream and ID: Spring River (P) (03165)

USGS Basin & Sub-watershed No.: (11070207 – 010001)

Outfall #004 – Non-Contact Cooling Water and Storm Water

Legal Description: same as above

UTM Coordinates: X = 428726, Y = 4091234

Receiving Stream: Spring River (P)

First Classified Stream and ID: Spring River (P) (03165)

USGS Basin & Sub-watershed No.: (11070207 – 010001)

Receiving Water Body's Water Quality & Facility Performance History:

Spring River is a class P stream with designated uses of protection of aquatic life, livestock and wildlife watering, secondary contact recreation and swimming. This segment of Spring River is proposed for inclusion on the Missouri 2010 303(d) List of impaired waterways. The pollutant of concern is identified as bacteria from rural, non-point sources. Additionally, the segment of Spring River downstream of the facility is included on the 2008 and proposed for inclusion on the 2010 303(d) List for bacteria from rural non-point sources. TMDL development for the downstream segment of Spring River is scheduled for 2013. TMDL development has not yet been scheduled for the segment of Spring River receiving discharge from the facility. However, the facility is not expected to be identified as a major contributor to impairment, as the listing denotes non-point sources and the facility is unlikely to discharge high levels of bacteria to Spring River.

Isolated violations of Total Residual Chlorine effluent limits were incurred at Outfalls #003 and 004 during September and December 2008. At the time of last inspection the facility was found to be in non-compliance due to failure to follow appropriate Standard Methods for pH analysis and failure to obtain signatures from receiving facilities on Chain of Custody documents for hauled waste from Outfall #002.

Comments:

Outfall #001 will not have effluent limitations in the renewed operating permit, as this is a collection sump which accrues no additional waste streams before entering a retention basin and subsequently discharging to Spring River via Outfall #004. Effluent limitations for this wastewater will be represented at Outfall #004.

This facility was the subject of previous enforcement action when under the ownership of DuCoa, LP. Violations of effluent limits and pollution of waters of the state occurred from an onsite wastewater irrigation system and discharge of process wastewater from the lined lagoon to Spring River. A 1996 settlement agreement inactivated Outfall #002 and Outfalls #005-015. Subsequently, wastewater from Outfall #002 was diverted to a treatment facility and wastewater irrigation was discontinued at the site. The facility was returned to compliance in 1999.

The facility contains the East portion of the Syntex Facility Superfund Site. The site is also included on the Registry of Confirmed Abandoned or Uncontrolled Hazardous Waste Disposal Sites in Missouri. The site is listed as Class 3, indicating that it poses no significant threat to public health or the environment. High levels of dioxin were present due to manufacturing activities previously occurring at the site between 1965 and 1975, when the site was owned and operated by Northeastern Pharmaceutical and Chemical Company. The site was subsequently owned and operated by Syntex Agribusiness, Inc. and DuCoa, LP prior to being sold to BCP Ingredients. The east portion of the site was remediated between 1988 and 1990, including the burn area, irrigation area, lagoon area and slough area. Approximately 860 cubic yards of soil with dioxin levels above 20 ppb was removed from the site and incinerated. The contaminated soil was replaced with clean soil and "capped" with a layer of vegetative cover. All remaining soil with dioxin levels in excess of 1 ppb were either covered with a vegetated soil layer or capped with asphalt. EPA inspections indicate that dioxin at the site is not highly mobile and does not pose a threat to the health of humans or the environment. DNR indicates that while the site does not currently pose a threat to public health, there is still potential for groundwater contamination under certain conditions (i.e., the presence of oil or surfactants). EPA indicates that exposure pathways to groundwater are incomplete. Syntex Agribusinesses, Inc. maintains environmental responsibility for activities associated with this site, as well as maintaining ownership of the portion of the site West of Spring River. The Spring River has not been found to be contaminated and dioxin in fish tissue has decreased below health concern levels.

Part II – Operator Certification Requirements

As per [10 CSR 20-6.010(8) Terms and Conditions of a Permit], permittees shall operate and maintain facilities to comply with the Missouri Clean Water Law and applicable permit conditions and regulations. Operators or supervisors of operations at regulated wastewater treatment facilities shall be certified in accordance with [10 CSR 20-9.020(2)] and any other applicable state law or regulation. As per [10 CSR 20-9.010(2)(A)], requirements for operation by certified personnel shall apply to all wastewater treatment systems, if applicable, as listed below:

Not Applicable ; This facility is not required to have a certified operator.

Part III – Receiving Stream Information

APPLICABLE DESIGNATIONS OF WATERS OF THE STATE:

As per Missouri’s Effluent Regulations [10 CSR 20-7.015], the waters of the state are divided into the below listed seven (7) categories. Each category lists effluent limitations for specific parameters, which are presented in each outfall’s Effluent Limitation Table and further discussed in the Derivation & Discussion of Limits section.

- Missouri or Mississippi River [10 CSR 20-7.015(2)]:
- Lake or Reservoir [10 CSR 20-7.015(3)]:
- Losing [10 CSR 20-7.015(4)]:
- Metropolitan No-Discharge [10 CSR 20-7.015(5)]:
- Special Stream [10 CSR 20-7.015(6)]:
- Subsurface Water [10 CSR 20-7.015(7)]:
- All Other Waters [10 CSR 20-7.015(8)]:

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**
Spring River	P	3165	AQL, LWW, SCR, WBC(A)	11070207	Ozark/Neosho
Tributary to Spring River	U	--	General Criteria		

* - 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), Groundwater (GRW).

** - Ecological Drainage Unit

RECEIVING STREAM(S) LOW-FLOW VALUES TABLE:

RECEIVING STREAM (U, C, P)	LOW-FLOW VALUES (CFS)*		
	1Q10	7Q10	30Q10
Spring River (P)	2.82	2.86	3.48
Tributary to Spring River (U)	0.0	0.0	0.0

*Low flow values were proportionally determined using all available data from USGS 07185700, Spring River at LaRussell, MO and adjusting for contributing drainage area. The adjusted drainage area for the Spring River at the Verona is approximately 28 sq. miles, compared to 306 sq. miles at LaRussell. Therefore, the drainage area of Spring River at Verona is approximately 11% of the drainage area at La Russell.

MIXING CONSIDERATIONS TABLE (OUTFALL #004):

MIXING ZONE (CFS) [10 CSR 20-7.031(4)(A)4.B(III)(a)]		ZONE OF INITIAL DILUTION (CFS) [10 CSR 20-7.031(4)(A)4.B(III)(b)]	
7Q10	30Q10	1Q10	7Q10
0.72	0.87	0.07	0.07

MIXING CONSIDERATIONS FOR OUTFALL #003

Mixing Zone: Not Allowed [10 CSR 20-7.031(4)(A)4.B.(I)(a)].

Zone of Initial Dilution: Not Allowed [10 CSR 20-7.031(4)(A)4.B.(I)(b)].

RECEIVING STREAM MONITORING REQUIREMENTS:

No receiving water monitoring requirements recommended at this time.

Part IV – Rationale and Derivation of Effluent Limitations & Permit Conditions

ALTERNATIVE EVALUATIONS FOR NEW FACILITIES:

As per [10 CSR 20-7.015(4)(A)], discharges to losing streams shall be permitted only after other alternatives including land application, discharges to a gaining stream and connection to a regional wastewater treatment facility have been evaluated and determined to be unacceptable for environmental and/or economic reasons.

Not Applicable ;

The facility does not discharge to a Losing Stream as defined by [10 CSR 20-2.010(36)] & [10 CSR 20-7.031(1)(N)], or is an existing facility.

ANTI-BACKSLIDING:

A provision in the Federal Regulations [CWA §303(d)(4); CWA §402(c); 40 CFR Part 122.44(I)] that requires a reissued permit to be as stringent as the previous permit with some exceptions.

- Limitations in this operating permit for the reissuance of this permit conform to the anti-backsliding provisions of Section 402(o) of the Clean Water Act, and 40 CFR Part 122.44.

ANTIDegradation:

In accordance with Missouri's Water Quality Standard [10 CSR 20-7.031(2)], the Department is to document by means of Antidegradation Review that the use of a water body's available assimilative capacity is justified. Degradation is justified by documenting the socio-economic importance of a discharging activity after determining the necessity of the discharge.

- Renewal no degradation proposed and no further review necessary.

AREA-WIDE WASTE TREATMENT MANAGEMENT & CONTINUING AUTHORITY:

As per [10 CSR 20-6.010(3)(B)], ...An applicant may utilize a lower preference continuing authority by submitting, as part of the application, a statement waiving preferential status from each existing higher preference authority, providing the waiver does not conflict with any area-wide management plan approved under section 208 of the Federal Clean Water Act or any other regional sewage service and treatment plan approved for higher preference authority by the Department.

BIOSOLIDS, SLUDGE, & SEWAGE SLUDGE:

Bio-solids are solid materials resulting from wastewater treatment that meet federal and state criteria for beneficial uses (i.e. fertilizer). Sludge is any solid, semi-solid, or liquid waste generated from a municipal, commercial, or industrial wastewater treatment plant, water supply treatment plant, or air pollution control facility or any other such waste having similar characteristics and effect. Sewage sludge is solids, semi-solids, or liquid residue generated during the treatment of domestic sewage in a treatment works; including but not limited to, domestic septage; scum or solids removed in primary, secondary, or advanced wastewater treatment process; and a material derived from sewage sludge. Sewage sludge does not include ash generated during the firing of sewage sludge in a sewage sludge incinerator or grit and screening generated during preliminary treatment of domestic sewage in a treatment works. Additional information regarding biosolids and sludge is located at the following web address: <http://dnr.mo.gov/env/wpp/pub/index.html>, items WQ422 through WQ449.

- Sludge/biosolids are removed by contract hauler or are stored in the lagoon. All process waste is stored in a lined lagoon. Process wastewater is sent to the Springfield Wastewater Treatment Plant for treatment. Sludge stored in the lagoon may be land applied. Sludge storage capacity is roughly equivalent to 20 years of normal facility operation. The permittee applied for, and was granted, a one time land application of sludge in 2008. No subsequent request for land application has been made at the time of drafting of this permit.

COMPLIANCE AND ENFORCEMENT:

Enforcement is the action taken by the Water Protection Program (WPP) to bring an entity into compliance with the Missouri Clean Water Law, its implementing regulations, and/or any terms and conditions of an operating permit. The primary purpose of the enforcement activity in the WPP is to resolve violations and return the entity to compliance.

Not Applicable ;

The permittee/facility is not currently under Water Protection Program enforcement action.

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 Part 403.3(q)].

Pretreatment programs are required at any POTW (or combination of POTW operated by the same authority) and/or municipality with a total design flow greater than 5.0 MGD and receiving industrial wastes that interfere with or pass through the treatment works or are otherwise subject to the pretreatment standards. Pretreatment programs can also be required at POTWs/municipals with a design flow less than 5.0 MGD if needed to prevent interference with operations or pass through.

Several special conditions pertaining to the permittee's pretreatment program may be included in the permit, and are as follows:

- Implementation and enforcement of the program,
- Annual pretreatment report submittal,
- Submittal of list of industrial users,
- Technical evaluation of need to establish local limitations, and
- Submittal of the results of the evaluation

Not Applicable ;

The permittee, at this time, is not required to have a Pretreatment Program or does not have an approved pretreatment program.

REASONABLE POTENTIAL ANALYSIS (RPA):

Federal regulation [40 CFR Part 122.44(d)(1)(i)] requires effluent limitations for all pollutants that are or may be discharged at a level that will cause or have the reasonable potential to cause or contribute to an in-stream excursion above narrative or numeric water quality standard.

In accordance with [40 CFR Part 122.44(d)(iii)] if the permit writer determines that any give pollutant has the reasonable potential to cause, or contribute to an in-stream excursion above the WQS, the permit must contain effluent limits for that pollutant.

Not Applicable ;

A RPA was not conducted for this facility.

REMOVAL EFFICIENCY:

Removal efficiency is a method by which the Federal Regulations define Secondary Treatment and Equivalent to Secondary Treatment, which applies to Biochemical Oxygen Demand 5-day (BOD₅) and Total Suspended Solids (TSS) for Publicly Owned Treatment Works (POTWs)/municipals. Please see the United States Environmental Protection Agency's (EPA) website for interpretation of percent removal requirements for National Pollutant Discharge Elimination System Permit Application Requirements for Publicly Owned Treatment Works and Other Treatment Works Treating Domestic Sewage @ www.epa.gov/fedrgstr/EPA-WATER/1999/August/Day-04/w18866.htm.

Not Applicable ;

Influent monitoring is not being required to determine percent removal.

SANITARY SEWER OVERFLOWS (SSO) AND INFLOW AND INFILTRATION (I&I):

Sanitary Sewer Overflows (SSOs) are defined as an untreated or partially treated sewage release are considered bypassing under state regulation [10 CSR 20-2.010(11)] and should not be confused with the federal definition of bypass. SSO's have a variety of causes including blockages, line breaks, and sewer defects that allow excess storm water and ground water to (1) enter and overload the collection system, and (2) overload the treatment facility. Additionally, SSO's can be also be caused by lapses in sewer system operation and maintenance, inadequate sewer design and construction, power failures, and vandalism. SSOs also include overflows out of manholes and onto city streets, sidewalks, and other terrestrial locations.

Additionally, Missouri RSMo §644.026.1 mandates that the Department require proper maintenance and operation of treatment facilities and sewer systems and proper disposal of residual waste from all such facilities.

- 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 permit contains a 3 year schedule for the facility to fully implement an instream temperature monitoring program. The time given for effluent limitations of this permit listed under Interim Effluent Limitation and Final Effluent Limitations were established in accordance with [10 CSR 20-7.031(10)].

STORM WATER POLLUTION PREVENTION PLAN (SWPPP):

In accordance with 40 CFR 122.44(k) *Best Management Practices (BMPs)* to control or abate the discharge of pollutants when: (1) Authorized under section 304(e) of the Clean Water Act (CWA) for the control of toxic pollutants and hazardous substances from ancillary industrial activities; (2) Authorized under section 402(p) of the CWA for the control of storm water discharges; (3) Numeric effluent limitations are infeasible; or (4) the practices are reasonably necessary to achieve effluent limitations and standards or to carry out the purposes and intent of the CWA.

In accordance with the EPA's *Developing Your Storm water Pollution Prevention Plan, A Guide for Industrial Operators*, (Document number EPA 833-B-09-002) [published by the United States Environmental Protection Agency (USEPA) in February 2009], BMPs are measures or practices used to reduce the amount of pollution entering (regarding this operating permit) waters of the state. BMPs may take the form of a process, activity, or physical structure.

Additionally in accordance with the Storm Water Management, a SWPPP is a series of steps and activities to (1) identify sources of pollution or contamination, and (2) select and carry out actions which prevent or control the pollution of storm water discharges.

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.

VARIANCE:

As per the Missouri Clean Water Law § 644.061.4, variances shall be granted for such period of time and under such terms and conditions as shall be specified by the commission in its order. The variance may be extended by affirmative action of the commission. In no event shall the variance be granted for a period of time greater than is reasonably necessary for complying with the Missouri Clean Water Law §§644.006 to 644.141 or any standard, rule or regulation promulgated pursuant to Missouri Clean Water Law §§644.006 to 644.141.

Not Applicable ;

This operating permit is not drafted under premises of a petition for variance.

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 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:

$$C = \frac{(C_s \times Q_s) + (C_e \times Q_e)}{(Q_e + Q_s)} \quad (\text{EPA/505/2-90-001, Section 4.5.5})$$

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).

Number of Samples "n":

Additionally, in accordance with the TSD for water quality-based permitting, effluent quality is determined by the underlying distribution of daily values, which is determined by the Long Term Average (LTA) associated with a particular Wasteload Allocation (WLA) and by the Coefficient of Variation (CV) of the effluent concentrations. Increasing or decreasing the monitoring frequency does not affect this underlying distribution or treatment performance, which should be, at a minimum, be targeted to comply with the values dictated by the WLA. Therefore, it is recommended that the actual planned frequency of monitoring normally be used to determine the value of "n" for calculating the AML. However, in situations where monitoring frequency is once per month or less, a higher value for "n" must be assumed for AML derivation purposes. Thus, the statistical procedure being employed using an assumed number of samples is "n = 4" at a minimum. For Total Ammonia as Nitrogen, "n = 30" is used.

WLA MODELING:

There are two general types of effluent limitations, technology-based effluent limits (TBELs) and water quality based effluent limits (WQBELs). If TBELs do not provide adequate protection for the receiving waters, then WQBEL must be used.

Not Applicable ;

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

WATER QUALITY STANDARDS:

Per [10 CSR 20-7.031(3)], General Criteria shall be applicable to all waters of the state at all times including mixing zones.

Additionally, [40 CFR 122.44(d)(1)] directs the Department to establish in each NPDES permit to include conditions to achieve water quality established under Section 303 of the Clean Water Act, including State narrative criteria for water quality.

WHOLE EFFLUENT TOXICITY (WET) TEST:

A WET test is a quantifiable method of determining if a discharge from a facility may be causing toxicity to aquatic life by itself, in combination with or through synergistic responses when mixed with receiving stream water.

Applicable ;

Under the federal Clean Water Act (CWA) §101(a)(3), requiring WET testing is reasonably appropriate for site-specific Missouri State Operating Permits for discharges to waters of the state issued under the National Pollutant Discharge Elimination System (NPDES). WET testing is also required by 40 CFR 122.44(d)(1). WET testing ensures that the provisions in the 10 CSR 20-6.010(8)(A)7. and the Water Quality Standards 10 CSR 20-7.031(3)(D),(F),(G),(I)2.A & B are being met. Under [10 CSR 20-6.010(8)(A)4], the Department may require other terms and conditions that it deems necessary to assure compliance with the Clean Water Act and related regulations of the Missouri Clean Water Commission. In addition the following MCWL apply: §§644.051.3 requires the Department to set permit conditions that comply with the MCWL and CWA; 644.051.4 specifically references toxicity as an item we must consider in writing permits (along with water quality-based effluent limits, pretreatment, etc.); and 644.051.5 is the basic authority to require testing conditions. WET test will be required by all facilities meeting the following criteria:

- Facility is a designated Major.
- Facility continuously or routinely exceeds its design flow.
- Facility (industrial) that alters its production process throughout the year.
- Facility handles large quantities of toxic substances, or substances that are toxic in large amounts.
- Facility has Water Quality-based Effluent Limitations for toxic substances (other than NH₃)
- Facility is a municipality or domestic discharger with a Design Flow ≥ 22,500 gpd.
- Other – please justify.

40 CFR 122.41(m) - BYPASSES:

The federal Clean Water Act (CWA), Section 402 prohibits wastewater dischargers from “bypassing” untreated or partially treated sewage (wastewater) beyond the headworks. A bypass, which includes blending, is defined as an intentional diversion of waste streams from any portion of a treatment facility, [40 CFR 122.41(m)(1)(i)]. Additionally, Missouri regulation 10 CSR 20-2.010(11) defines a bypass as the diversion of wastewater from any portion of wastewater treatment facility or sewer system to waters of the state. Only under exceptional and specified limitations do the federal regulations allow for a facility to bypass some or all of the flow from its treatment process. Bypasses are prohibited by the CWA unless a permittee can meet all of the criteria listed in 40 CFR 122.41(m)(4)(i)(A), (B), & (C). Any bypasses from this facility are subject to the reporting required in 40 CFR 122.41(l)(6) and per Missouri’s Standard Conditions I, Section B, part 2.b. Additionally, Anticipated Bypasses include bypasses from peak flow basins or similar.

- Not Applicable, this facility does not bypass.

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

Not Applicable ;

This facility does not discharge to a 303(d) listed stream. The reach of Spring River located downstream of the facility is included on the 2008 303(d) List due to high bacteria levels. However, the facility is not considered to be a source of bacteria in the watershed.

Part V – Effluent Limits Determination

Outfall #002 – Lined Lagoon

Effluent limitations derived and established in the below Effluent Limitations Table are based on current operations of the facility. Future permit action due to facility modification may contain new operating permit terms and conditions that supersede the terms and conditions, including effluent limitations, of this operating permit.

EFFLUENT LIMITATIONS TABLE:

PARAMETER	UNIT	BASIS FOR LIMITS	DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MODIFIED	PREVIOUS PERMIT LIMITATIONS
HAULED WASTE	GALLONS	9	*		*	NO	
MONITORING FREQUENCY	Please see Minimum Sampling and Reporting Frequency Requirements in the Derivation and Discussion Section below.						

* - Monitoring requirement only.

Basis for Limitations Codes:

- | | |
|--|------------------------------------|
| 1. State or Federal Regulation/Law | 7. Antidegradation Policy |
| 2. Water Quality Standard (includes RPA) | 8. Water Quality Model |
| 3. Water Quality Based Effluent Limits | 9. Best Professional Judgment |
| 4. Lagoon Policy | 10. TMDL or Permit in lieu of TMDL |
| 5. Ammonia Policy | 11. WET Test Policy |
| 6. Dissolved Oxygen Policy | 12. Antidegradation Review |

OUTFALL #002 – DERIVATION AND DISCUSSION OF LIMITS:

- **Hauled Waste**. The permittee shall maintain a detailed record of the volume of waste in gallons that is hauled from the lined lagoon, as well as the location the waste is hauled to for treatment. An annual report shall be submitted to the Department including this information. There shall be no discharge to waters of the state from the lagoon. Discharge from the lined lagoon shall be considered a bypass and must be reported to the Department as such.
- **Minimum Sampling and Reporting Frequency Requirements**. Sampling and reporting frequency requirements have been retained from previous state operating permit.

Outfall #003 – Storm Water Outfall

Effluent limitations derived and established in the below Effluent Limitations Table are based on current operations of the facility. Future permit action due to facility modification may contain new operating permit terms and conditions that supersede the terms and conditions, including effluent limitations, of this operating permit.

EFFLUENT LIMITATIONS TABLE:

PARAMETER	UNIT	BASIS FOR LIMITS	DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MODIFIED	PREVIOUS PERMIT LIMITATIONS
FLOW	GPD	1	*		*	NO	
pH	SU	1	6.5-9.0		6.5-9.0	YES	6.0-9.0
OIL & GREASE	MG/L	1	15		10	NO	
MONITORING FREQUENCY	Please see Minimum Sampling and Reporting Frequency Requirements in the Derivation and Discussion Section below.						

* - Monitoring requirement only.

** - Parameter not previously established in previous state operating permit.

Basis for Limitations Codes:

- | | |
|--|------------------------------------|
| 1. State or Federal Regulation/Law | 7. Antidegradation Policy |
| 2. Water Quality Standard (includes RPA) | 8. Water Quality Model |
| 3. Water Quality Based Effluent Limits | 9. Best Professional Judgment |
| 4. Lagoon Policy | 10. TMDL or Permit in lieu of TMDL |
| 5. Ammonia Policy | 11. WET Test Policy |
| 6. Dissolved Oxygen Policy | 12. Antidegradation Review |

OUTFALL #003 – DERIVATION AND DISCUSSION OF LIMITS:

- **Flow.** In accordance with [40 CFR Part 122.44(i)(1)(ii)] the volume of effluent discharged from each outfall is needed to assure compliance with permitted effluent limitations. If the permittee is unable to obtain effluent flow, then it is the responsibility of the permittee to inform the Department, which may require the submittal of an operating permit modification.
- **Biochemical Oxygen Demand (BOD₅).** Effluent limitations for BOD will not be included in this operating permit. DMR data indicate consistently low concentrations of BOD from this outfall, with a maximum value of 12 mg/L and a mean value of 2 mg/L. This data indicates that facility performance far exceeds standard effluent limitations for storm water discharges. The permittee will, however, be required to implement a SWPPP as part of this operating permit. Should monitoring data for future operating permit renewals indicate changes in performance with regard to BOD, effluent limitations may be reinstated at that time.
- **Total Suspended Solids (TSS).** Effluent limitations for TSS will not be included in this operating permit. DMR data indicate consistently low concentrations of TSS from this outfall, with a maximum value of 11 mg/L and a mean value of 3.6 mg/L. This data indicates that facility performance far exceeds standard effluent limitations for storm water discharges. The permittee will, however, be required to implement a SWPPP as part of this operating permit. Should monitoring data for future operating permit renewals indicate changes in performance with regard to TSS, effluent limitations may be reinstated at that time.
- **pH.** pH shall be maintained within the range from 6.5 to 9.0 Standard Units (SU) as per 10 CSR 20-7.031(4)(E). DMR data indicate that the facility is capable of meeting the more stringent limits upon issuance.
- **Oil & Grease.** Conventional pollutant, effluent limitation for protection of aquatic life; 10 mg/L monthly average, 15 mg/L daily maximum. Effluent limitations from the previous operating permit have been retained.
- **Chemical Oxygen Demand (COD).** Effluent limitations for COD will not be included in this operating permit. DMR data indicate consistently low COD values from this outfall, with a maximum value of 24.4 mg/L and a mean value of 6.1 mg/L. This data indicates that facility performance far exceeds standard effluent limitations for storm water discharges. The permittee will, however, be required to implement a SWPPP as part of this operating permit. Should monitoring data for future operating permit renewals indicate changes in performance with regard to COD, effluent limitations may be reinstated at that time.
- **Minimum Sampling and Reporting Frequency Requirements.** Sampling and reporting frequency requirements have been retained from previous state operating permit.

Outfall #004 – Non-Contact Cooling Water and Storm Water

Effluent limitations derived and established in the below Effluent Limitations Table are based on current operations of the facility. Future permit action due to facility modification may contain new operating permit terms and conditions that supersede the terms and conditions, including effluent limitations, of this operating permit.

EFFLUENT LIMITATIONS TABLE:

PARAMETER	UNIT	BASIS FOR LIMITS	DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MODIFIED	PREVIOUS PERMIT LIMITATIONS
EFFLUENT FLOW	CFS	1	*		*	NO	
STREAM FLOW	CFS	2,3	*			YES	**
TEMPERATURE (EFFLUENT)	°F	3,9	*			YES	°C
TEMPERATURE (STREAM)	°F	2,3	*			YES	**
ΔT	°F	2,3	*		*	YES	**
T _{CAP}	°F	2,3	*		*	YES	**
PH	SU	1	6.5-9.0		6.5-9.0	YES	6.0-9.0
COD	MG/L	2,3, 9	90		60	YES	*/**
CHLORINE, TOTAL RESIDUAL	MG/L	2,3	0.03		0.02	YES	0.022/0.011
OIL & GREASE (MG/L)	MG/L	1	15		10	NO	
WHOLE EFFLUENT TOXICITY (WET) TEST	% Survival	11	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.

** - Parameter not previously established in previous state operating permit.

Basis for Limitations Codes:

- | | |
|--|------------------------------------|
| 1. State or Federal Regulation/Law | 7. Antidegradation Policy |
| 2. Water Quality Standard (includes RPA) | 8. Water Quality Model |
| 3. Water Quality Based Effluent Limits | 9. Best Professional Judgment |
| 4. Lagoon Policy | 10. TMDL or Permit in lieu of TMDL |
| 5. Ammonia Policy | 11. WET Test Policy |
| 6. Dissolved Oxygen Policy | 12. Antidegradation Review |

OUTFALL #004 – DERIVATION AND DISCUSSION OF LIMITS:

- **Effluent Flow.** In accordance with [40 CFR Part 122.44(i)(1)(ii)] the volume of effluent discharged from each outfall is needed to assure compliance with permitted effluent limitations. If the permittee is unable to obtain effluent flow, then it is the responsibility of the permittee to inform the Department, which may require the submittal of an operating permit modification.
- **Stream Flow.** Weekly monitoring only requirement in cfs. The Department will only use gauging station data as a viable source of stream flow. Meaning that flows (design or actual) from other point sources will not be considered (i.e., added to the flow determination). Since the nearest gauging station is approximately 20 miles downstream of the facility discharge (USGS 07185700, Spring River at La Russell), the permittee may use this data but must estimate the flow at the point of discharge using the appropriate drainage area and then subtract their daily discharge from the receiving stream flow. The drainage area of Spring River at Verona is approximately 11% of the total drainage area contributing to Spring River flow at La Russell. See the Receiving Stream Information section of this fact sheet for more information.
- **Temperature (Effluent).** Weekly monitoring only requirement in °F of the discharge. When applicable, this measurement should be made after mixing of storm water and non-contact cooling water in the retention basin, as this action occurs prior to discharge into Spring River. Temperature of the combined effluent flows is most representative of the temperature of effluent entering Spring River.

- **Temperature (Stream).** Weekly monitoring only requirement in °F. This data will be used to ensure compliance with temperature change limits. Intake temperature can not be used for this measure, as source water is obtained from the Aurora Municipal water supply. Therefore, ambient stream temperature must be obtained from a point upstream of the facility discharge to Spring River. The previous operating permit did not require instream monitoring for temperature compliance. Therefore, a period of three (3) years will be provided for the facility to implement instream and temperature compliance monitoring.
- **Delta Temperature (ΔT).** A monitoring only requirement will be established in the permit to characterize the impact of facility discharge on receiving stream temperature. In accordance with [10 CSR 20-7.031(4)(D)1], this facility shall not cause the temperature of the receiving stream to change by +/- 5°F at the end of the regulatory mixing zone. Upon next renewal, this data will be used to determine if the facility discharge has reasonable potential to cause excursions of Water Quality Standards in Spring River. The previous operating permit did not require the facility to obtain ambient stream temperature. Therefore, the permit will contain a schedule of compliance to allow time to implement instream temperature monitoring. The facility may seek a Water Quality Variance from this criteria. However, this must be approved by EPA. ΔT is calculated as follows:

$$\Delta T = [((Q_s/4)T_s + Q_e T_e) / ((Q_s/4) + Q_e)] - T_s$$

Where,

$Q_s/4$ = is the receiving stream flow in cfs divided by 4 in accordance with [10 CSR 20-7.031(4)(D)6.], 25% of the flow.

Q_e = Effluent Flow.

T_s = Receiving stream's ambient temperature.

T_e = Temperature of the Effluent.

If the ΔT is greater than 5 °F, then the facility is in non-compliance. For additional description, please see **Appendix A – Temperature Limits Derivation.**

- **Temperature Cap (T_{cap}).** A monitoring only requirement will be established in the permit to characterize the impact of facility discharge on receiving stream temperature. In accordance with 10 CSR 20-7.031(4)(D)1., this facility shall not cause stream temperatures in excess of 90°F at the end of the regulatory mixing zone. At the time of next renewal, this data will be used to determine if the facility discharge has reasonable potential to cause excursions of Water Quality Standards. The previous operating permit did not require the facility to obtain ambient stream temperature. Therefore, the permit will contain a schedule of compliance to allow time to implement instream temperature monitoring. The facility may seek a Water Quality Variance from this criterion. However, such a variance must be approved by EPA. T_{cap} is calculated as follows:

$$T_{cap} = [((Q_s/4)T_s + Q_e T_e) / ((Q_s/4) + Q_e)]$$

Where,

$Q_s/4$ = is the receiving stream flow in cfs divided by 4 in accordance with [10 CSR 20-7.031(4)(D)6.], 25% of the flow.

Q_e = Effluent Flow.

T_s = Receiving stream's ambient temperature.

T_e = Temperature of the Effluent.

For additional description, please see **Appendix A – Temperature Limits Derivation.**

- **Biochemical Oxygen Demand (BOD₅).** Effluent limitations for BOD will not be included in this operating permit. DMR data indicate consistently low concentrations of BOD from this outfall, with a maximum value of 24 mg/L and a mean value of 3.6 mg/L. This data indicates that facility performance far exceeds standard effluent limitations for storm water discharges. The permittee will, however, be required to implement a SWPPP as part of this operating permit. Should monitoring data for future operating permit renewals indicate changes in performance with regard to BOD, effluent limitations may be reinstated at that time.
- **Total Suspended Solids (TSS).** Effluent limitations for TSS will not be included in this operating permit. DMR data indicate consistently low concentrations of TSS from this outfall, with a maximum value of 20 mg/L and a mean value of 3.6 mg/L. This data indicates that facility performance far exceeds standard effluent limitations for storm water discharges. The permittee will, however, be required to implement a SWPPP as part of this operating permit. Should monitoring data for future operating permit renewals indicate changes in performance with regard to TSS, effluent limitations may be reinstated at that time.
- **pH.** pH shall be maintained within the range from 6.5 to 9.0 Standard Units (SU) as per 10 CSR 20-7.031(4)(E). DMR data indicate that the facility is capable of meeting the more stringent limits upon issuance.

- **Chemical Oxygen Demand (COD).** Effluent limitations of 90 mg/L as a Daily Maximum and 60 mg/L as a Monthly Average. The previous operating permit listed a monitoring only requirement for Outfalls #001 and 004. However, COD concentrations at Outfall #001 are highly variable. Additionally, these effluent limits have been demonstrated to be achievable with SWPPPs and existing technology, and are consistent with other operating permits with storm water runoff. DMR data indicate that the facility is capable of meeting these limits upon issuance.
- **Total Residual Chlorine (TRC).** A Reasonable Potential Analysis was not conducted for this parameter, as only two data points were available from the previous permit cycle. However, a single monitoring point of 340 µg/L was reported during this time. Therefore, TRC effluent limitations were recalculated using updated flow data. Note that monitoring for TRC will only be required when chlorine is used during a given sampling period. Warm-water Protection of Aquatic Life CCC = 10 µg/L, CMC = 19 µg/L [10 CSR 20-7.031, Table A]. Background TRC = 0.0 µg/L.

Chronic WLA: $C_e = ((0.12 + 0.72)10 - (0.72 * 0.0))/0.12$
 $C_e = 70 \mu\text{g/L}$

Acute WLA: $C_e = ((0.12 + 0.07)19 - (0.07 * 0.0))/0.12$
 $C_e = 30.1 \mu\text{g/L}$

$LTA_c = 70 (0.527) = 36.9 \mu\text{g/L}$ [CV = 0.6, 99th Percentile]
 $LTA_a = 30.1 (0.321) = 9.7 \mu\text{g/L}$ [CV = 0.6, 99th Percentile]

Use most protective number of LTA_c or LTA_a .

MDL = 9.7 (3.11) = 30.2 µg/L [CV = 0.6, 99th Percentile]
 AML = 9.7 (1.55) = 15 µg/L [CV = 0.6, 95th Percentile, n = 4]

DMR data indicate the facility is currently capable of meeting these limits upon issuance. One measurement in excess of these limitations was reported during the previous permit cycle, but the overall trend is of compliance.

- **Oil & Grease.** Conventional pollutant, effluent limitation for protection of aquatic life; 10 mg/L monthly average, 15 mg/L daily maximum. Effluent limitations have been retained from the previous operating permit.
- **WET Test.** WET Testing schedules and intervals are established in accordance with the Department's Permit Manual; Section 5.2 *Effluent Limits / WET Testing for Compliance Bio-monitoring*. It is recommended that WET testing be conducted during the period of lowest stream flow.

- Chronic
- Acute

No less than ONCE/YEAR:

- Facility is designated as a Major facility or has a design flow ≥ 1.0 MGD.
- Facility continuously or routinely exceeds their design flow.
- Facility exceeds its design population equivalent (PE) for BOD₅ whether or not its design flow is being exceeded.
- Facility has Water Quality-based effluent limitations for toxic substances (other than NH₃).

Acute AEC% = $((\text{design flow}_{\text{cfs}} + \text{ZID}_{7Q10}) / \text{design flow}_{\text{cfs}})^{-1}] \times 100 = \#\#\%$
 Acute AEC% = $((0.12 + 0.07) / 0.12)^{-1}] \times 100 = 63.3\%$ rounded to 63%

- **Minimum Sampling and Reporting Frequency Requirements.** Sampling and reporting frequency requirements for Outfall #001 have been retained from previous state operating permit. Sampling frequency for temperature parameters shall be weekly.

Part VI – 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 and within the operating permit. The proposed determinations are tentative pending public comment.

PUBLIC NOTICE:

The Department shall give public notice that a draft permit has been prepared and its issuance is pending. Additionally, public notice will be issued if a public hearing is to be held because of a significant degree of interest in and water quality concerns related to a draft permit. No public notice is required when a request for a permit modification or termination is denied; however, the requester and permittee must be notified of the denial in writing.

The Department must issue public notice of a pending operating permit or of a new or reissued statewide general permit. The public comment period is the length of time not less than 30 days following the date of the public notice which interested persons may submit written comments about the proposed permit.

For persons wanting to submit comments regarding this proposed operating permit, then please refer to the Public Notice page located at the front of this draft operating permit. The Public Notice page gives direction on how and where to submit appropriate comments.

- The Public Notice period for this operating permit is tentatively schedule to begin on April 15, 2011.

DATE OF FACT SHEET: (03/14/2011); REVISED 05/10/2011

COMPLETED BY:

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APPENDIX A– TEMPERATURE LIMITS GUIDANCE:

Temperature Limits Derivation: **General & Limited Warm-Water Fisheries** **Stream Method**

Introduction

Missouri's Water Quality Standards (WQS) establish Temperature Criteria that provide several forms of protection from the impacts of heat energy on receiving water bodies. The purpose of this derivation document is to provide a simplistic approach to help both permit writers and the public understand the Missouri WQS's Temperature Criteria and how they are applied in Missouri State Operating Permits.

Missouri's WQS Temperature Criteria [10 CSR 20-7.031(4)(D)] establish two (2) main areas of compliance for general and limited warm-water fisheries. The first compliance requirement deals with the rise of temperature in a receiving water body (stream), and the second compliance requirement deals with the overall stream's temperature not to exceed. Both compliance requirements are to be established at the end of the regulatory mixing zone (if applicable – depending on stream classification). These two (2) compliance requirements are located in Missouri WQS [10 CSR 20-7.031(4)(D)1. & 5.].

Missouri WQS Temperature Criteria [10 CSR 20-7.031(4)(D)1.] contains both compliance requirements for all streams. However, the overall stream's temperature not to exceed in this specific regulation does not cover the Mississippi River. Missouri WQS Temperature Criteria for the Mississippi River is established in [10 CSR 20-7.031(4)(D)5.], which also establishes a Percent Deviation Allowance to the Mississippi River and a maximum temperature not to exceed.

In addition to establishing temperature limits in an operating permit, Missouri's WQS Temperature Criteria also establish Mixing Zone regulations contain in [10 CSR 20-7.031(4)(D)6.]. In comparison to Missouri's WQS Toxic Mixing Considerations that use low-flow considerations (i.e, 1Q10, 7Q10, & 30Q10), the Missouri WQS Temperature regulations require the Missouri Department of Natural Resources (Department) to establish a Thermal Mixing Zone limited to either 25% of the cross-sectional area or 25% volume of a river.

This approach assumes that the receiving water consumes 100% of the heat energy being discharged.

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A. COMPLIANCE DETERMINATION WITH $\Delta T^{\circ}F$

Missouri WQS Temperature Criteria [10 CSR 20-7.031(4)(D)1.] establishes that point sources discharging to streams in Missouri shall not raise or lower the temperature of the receiving stream by 5°F. Because this is a WQS, this criteria can be applied at the end of the regulatory Mixing Zone. In the determination of compliance with the temperature criteria of ΔT , several factors/conditions need to be obtained (i.e., intake temperature, stream flow, effluent flow, & effluent temperature). Without placing requirements in an operating permit for these additional parameters, the Department would not be able to determine if compliance with ΔT is being met.

The following calculation determines compliance with the +/- 5°F.

$$\Delta T = [((Q_s/4)T_s + Q_e T_e) / ((Q_s/4) + Q_e)] - T_s$$

Where:

$Q_s/4$: is the daily receiving stream's mixing zone flow in cfs minus the Intake flow in cfs.

Q_e : is the effluent's flow in cfs.

T_s : is the stream's temperature (ambient/intake temperature).

T_e : is the effluent's temperature.

ΔT : is the amount in T°F that the facility is causing the receiving stream's temperature to rise at the end of the regulatory mixing zone.

If the ΔT is greater than 5°F, then the facility is in non-compliance.

The term Q_s will be established in operating permits as Ambient Stream Flow in the unit of cfs. It is the Department's expectation that the permittee will obtain the Q_s data from appropriate and applicable the nearest upstream USGS or Corp. or Engineers (or both) Gauging Stations.

If there is a significant distance from the facility to the nearest upstream gauging station, it may be in the best interest of the permittee to fund a new gauging station; however, it is not required. Additionally, the Department will only use gauging station data as a viable source of receiving stream flow. Meaning that flows (design or actual) from other point sources may not be considered (i.e., added) to the flow determination.

If there is a near-by gauging station downstream of the facility, then the permittee can use this data but must subtract their daily effluent discharge from the receiving stream flow.

The term Q_e will be established in the operating permit as Flow and reported in the unit cfs. It is recommended that effluent flow be used; however, Intake flow can be used for this determination.

The term T_s will be established in the operating permit as Temperature (Stream) and reported in the unit °F. For most facilities, the intake temperature can be used to determine T_s . However, in some cases, ambient stream temperature can be used. The permittee only need inform the department that they may or may not use ambient stream temperature. Remember, that we are discussing compliance with the receiving stream's temperature and not their intake structure's water temperature.

The term T_e will be established in the operating permit as Temperature (Effluent) and reported in the unit °F. This is not a measurement of the change in temperature from the intake to the effluent, but as it sounds – the temperature of the effluent.

B. COMPLIANCE DETERMINATION WITH 90°F (TEMPERATURE CAP):

Missouri WQS Temperature Criteria [10 CSR 20-7.031(4)(D)1.] also establishes that point sources discharging to streams (other than the Mississippi River) shall not cause or contribute to the receiving stream in excess of 90°F. In order to determine compliance with the T_{cap} , the same equation used for ΔT compliance, with some modification, is used.

The following equation determines compliance with Temperature Cap Criteria of 90°F.

$$T_{cap} = \left[\frac{((Q_s/4)T_s + Q_e T_e)}{((Q_s/4) + Q_e)} \right]$$

Where:

$Q_s/4$: is the daily receiving stream's mixing zone flow in cfs minus the Intake flow in cfs.

Q_e : is the effluent's flow in cfs.

T_s : is the stream's temperature (ambient/intake temperature).

T_e : is the effluent's temperature.

T_{cap} : is the temperature of the receiving stream at the end of the regulatory mixing zone.

If the T_{cap} is greater than 90°F, then the facility is in non-compliance.

The term Q_s will be established in operating permits as Ambient Stream Flow in the unit of cfs. It is the expectation of the Department that the permittee will obtain the Q_s data from appropriate and applicable the nearest upstream USGS or Corp. or Engineers (or both) Gauging Stations.

If there is a significant distance from the facility to the nearest upstream gauging station, it may be in the best interest of the permittee to fund a new gauging station; however, it is not required. Additionally, the Department will only use gauging station data as a viable source of receiving stream flow. Meaning that flows (design or actual) from other point sources may not be considered (i.e., added) to the flow determination.

If there is a near-by gauging station downstream of the facility, then the permittee can use this data but must subtract their daily effluent discharge from the receiving stream flow.

The term Q_e will be established in the operating permit as Flow and reported in the unit cfs. It is recommended that effluent flow be used; however, Intake flow can be used for this determination.

The term T_s will be established in the operating permit as Temperature (Stream) and reported in the unit °F. For most facilities, the intake temperature can be used to determine T_s . However, in some cases, ambient stream temperature can be used. The permittee only need inform the department that they may or may not use ambient stream temperature. Remember, that we are discussing compliance with the receiving stream's temperature and not their intake structure.

The term T_e will be established in the operating permit as Temperature (Effluent) and reported in the unit °F. This is not a measurement of the change in temperature from the intake to the effluent, but as it is – the temperature of the effluent.

C. COMPLIANCE DETERMINATION WITH MISSISSIPPI RIVER TEMPERATURE CAP CRITERIA:

Missouri WQS Temperature Criteria [10 CSR 20-7.031(4)(D)5.] establishes that point sources discharging to the Mississippi River shall not cause or contribute to the receiving stream in excess of a Monthly Temperature Criteria. The methodology for the determination of compliance is similar to the T_{cap} for 90°F established above. However, the fundamental difference is the Monthly Temperature not to be exceeded. Thus, the criteria is established per calendar month and per Mississippi River Zone, as follows:

Month	A & B		C	
	°F	°C	°F	°C
January	45	7 2/9	50	10
February	45	7 2/9	50	10
March	57	13 8/9	60	15 5/9
April	68	20	70	21 1/9
May	78	25 5/9	80	26 6/9
June	86	30	87	30 5/9
July	88	31 1/9	89	31 6/9
August	88	31 1/9	89	31 6/9
September	86	30	87	30 5/9
October	75	23 8/9	78	25 5/9
November	65	18 3/9	70	21 1/9
December	52	11 1/9	57	13 8/9

Zone A = Zone 1A: Des Moines River to Lock and Dam No. 25.
Zone B = Zone 1B: Lock and Dam No. 25 to Lock and Dam No. 26.
Zone C = Zone 2: Lock and Dam No. 26 to the Missouri-Arkansas state line.

In addition to the Monthly T_{cap} , [10 CSR 20-7.031(4)(D)5.] establishes a Percent Deviation Allowance. The Percent Deviation Allowance provides a specific amount of time (in hours) that a facility can be out-of-compliance with their Monthly T_{cap} . Finally, [10 CSR 20-7.031(4)(D)5.] establishes a Maximum T_{cap} (T_{max}) that is never to be exceeded. The $T_{max} = T_{cap} + 3°F$. Meaning that if a facility located in Zone C is discharging their cooling water during the month of January, their T_{cap} would be 50°F and their T_{max} would be 53°F as long as they had time available for deviation from their T_{cap} .

The following equation determines compliance with Monthly T_{cap} .

$$T_{cap} = [((Q_s/4)T_s + Q_e T_e)] / ((Q_s/4) + Q_e]$$

Where:

$Q_s/4$: is the daily receiving stream's mixing zone flow in cfs minus the Intake flow in cfs.

Q_e : is the effluent's flow in cfs.

T_s : is the stream's temperature (ambient/intake temperature).

T_e : is the effluent's temperature.

T_{max} : is the temperature of the receiving stream at the end of the regulatory mixing zone.

If the T_{cap} is greater than the Monthly Temperature Criteria, then the facility may or may not be in non-compliance with Missouri's Water Quality Standards, Temperature Criteria due to Percent Deviation Allowance. Please see below:

If the T_{cap} is greater than the monthly limit but is below the T_{max} ; and there is time available in their applicable Percent Deviation Allowance, then the permittee is in compliance.

If the T_{cap} is greater than the monthly limit but is below the T_{max} ; but there is NO time available in their applicable Percent Deviation Allowance, then the permittee is in non-compliance.

C. COMPLIANCE DETERMINATION WITH MISSISSIPPI RIVER TEMPERATURE CAP CRITERIA (CONTINUED):

If the T_{cap} is greater than the monthly limit and above the T_{max} ; then the facility is in non-compliance.

The following equation determines compliance with Monthly T_{max} .

$$T_{max} = [((Q_s/4)T_s + Q_e T_e) / ((Q_s/4) + Q_e)]$$

Where:

$Q_s/4$: is the daily receiving stream's mixing zone flow in cfs minus the Intake flow in cfs.

Q_e : is the effluent's flow in cfs.

T_s : is the stream's temperature (ambient/intake temperature).

T_e : is the effluent's temperature.

T_{max} : is the temperature of the receiving stream at the end of the regulatory mixing zone.

If the T_{max} is greater than the Monthly Temperature Criteria, then the facility is in non-compliance and the "clock is ticking" with regards to Percent Deviation Allowance time.

The term Q_s will be established in operating permits as Ambient Stream Flow in the unit of cfs. It is the expectation of the Department that the permittee will obtain the Q_s data from appropriate and applicable the nearest upstream USGS or Corp. or Engineers (or both) Gauging Stations.

If there is a significant distance from the facility to the nearest upstream gauging station, it may be in the best interest of the permittee to fund a new gauging station; however, it is not required. Additionally, the Department will only use gauging station data as a viable source of receiving stream flow. Meaning that assumptions (e.g., other point sources) will not be considered as an added flow determination.

If there is a near-by gauging station downstream of the facility, then the permittee can use this data but must subtract their daily effluent discharge from the receiving stream flow.

The term Q_e will be established in the operating permit as Flow and reported in the unit cfs. It is recommended that effluent flow be used; however, Intake flow can be used for this determination.

The term T_s will be established in the operating permit as Temperature (Stream) and reported in the unit °F. For most facilities, the intake temperature can be used to determine T_s . However, in some cases, ambient stream temperature can be used. The permittee only need inform the department that they may or may not use ambient stream temperature. Remember, that we are discussing compliance with the receiving stream's temperature and not their intake structure.

The term T_e will be established in the operating permit as Temperature (Effluent) and reported in the unit °F. This is not a measurement of the change in temperature from the intake to the effluent, but as it is – the temperature of the effluent.

Percent Deviation Allowance

The site-specific criteria for the Mississippi River allows the permittee to exceed their applicable criteria either 1% of the year for Zone 1A and 2; and 5% of the year for Zone 1B. It has been determined that this percent exceedances allowance should be tracked in hours for a calendar year.

Zone 1A and 2 = 1% = $[(365)(24)(0.01)] = 87.6 \text{ hours} = 88 \text{ hours}$

Zone 2A = 5% = $[(365)(24)(0.05)] = 438 \text{ hours}$.

Tracking of time used for Percent Deviation Allowance, can be captured and tracked via a permit Special Condition or actual effluent limit (if available in MoCWIS). If the permittee's T_{cap} exceeds the Monthly Temperature Criteria but is below the T_{max} and there is available time in the Percent Deviation Allowance, then the facility is in compliance. However, if the facility exceeds their T_{cap} and does not have any time remaining on their Percent Deviation Allowance, then the facility is in non-compliance. Finally, if a facility exceeds T_{cap} & T_{max} , they are in non-compliance and the Percent Deviation Allowance "clock" is running during the time of the excursion.

For every episode that the permittee uses their available time, the operating permit shall require that the permittee submit the time with their DMR that they exceeded their T_{cap} . This is very important to put this into the permit because it has implications for tracking and data entry in MoCWIS.

The below is an example of Percent Deviation in an Operating Permit. This does not indicate that this is the only language to use, but the language should be very near and try to capture the same.

D. ESTABLISHING IN AN OPERATING PERMIT FOR A 90°F FACILITY:

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS					PAGE NUMBER 2 of 8	
					PERMIT NUMBER MO-xxxxxxx	
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>Outfall #001</u>						
Flow (Effluent)	cfs	*			once/day	grab
Stream Flow (Note 1)	cfs	*			once/day	grab
Temperature (Stream) (Note 2)	°F	*			once/day	grab
Temperature (Effluent)	°F	*			once/day	grab
ΔT (Note 3)	°F	5°F		5°F	once/day	grab
T _{cap} (Note 4)	°F	90°F		90°F	once/day	grab

A. Effluent Limitations and Monitoring Requirements (continued)

* - Monitoring requirement only.

Note 1: Stream flow. Stream flow is the daily flow of the receiving stream – intake flow.

Note 2: Temperature (Intake). It is recommended that if the Intake structure does not adequately provide a temperature of the receiving stream, then the facility should use the receiving stream’s ambient temperature.

Note 3: $\Delta T = [((Q_s/4)T_s + Q_e T_e) / ((Q_s/4) + Q_e)] - T_s$

Where:

Q_s/4: is the daily receiving stream’s mixing zone flow in cfs minus the Intake flow in cfs.

Q_e: is the effluent’s flow in cfs.

T_s: is the stream’s temperature (ambient/intake temperature).

T_e: is the effluent’s temperature.

ΔT: is the amount in T°F that the facility is causing the receiving stream’s temperature to rise at the end of the regulatory mixing zone.

Note 4: $T_{cap} = [((Q_s/4)T_s + Q_e T_e) / ((Q_s/4) + Q_e)]$

Where:

Q_s/4: is the daily receiving stream’s mixing zone flow in cfs minus the Intake flow in cfs.

Q_e: is the effluent’s flow in cfs.

T_s: is the stream’s temperature (ambient/intake temperature).

T_e: is the effluent’s temperature.

T_{cap}: is the temperature of the receiving stream at the end of the regulatory mixing zone.

E. ESTABLISHING IN AN OPERATING PERMIT FOR A MISSISSIPPI RIVER FACILITY:

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS					PAGE NUMBER 2 of 8	
					PERMIT NUMBER MO-xxxxxxx	
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>Outfall #001</u>						
Flow (Effluent)	cfs	*			once/day	grab
Flow (Stream) (Note 1)	cfs	*			once/day	grab
Temperature (Stream) (Note 2)	°F	*			once/day	grab
Temperature (Effluent)	°F	*			once/day	grab
ΔT (Note 3)	°F	5°F		5°F	once/day	grab
T _{cap} (Note 4) (<i>assumes zone c</i>)	°F				once/day	grab
January		50		50		
February		50		50		
March		60		60		
April		70		70		
May		80		80		
June		87		87		
July		89		89		
August		89		89		
September		87		87		
October		78		78		
November		70		70		
December		57		57		
T _{max} (Note 4) (<i>assumes zone c</i>)	°F				once/day	grab
January		53		53		
February		53		53		
March		63		63		
April		73		73		
May		83		83		
June		90		90		
July		92		92		
August		92		92		
September		90		90		
October		81		81		
November		73		73		
December		60		60		

A. Effluent Limitations and Monitoring Requirements (continued)

* - Monitoring requirement only.

Note 1: Stream flow. Stream flow is the daily flow of the receiving stream – intake flow.

Note 2: Temperature (Stream). It is recommended that if the Intake structure does not adequately provide a temperature of the receiving stream, then the facility should use the receiving stream's ambient temperature.

Note 3: $\Delta T = [((Q_s/4)T_s + Q_e T_e) / ((Q_s/4) + Q_e)] - T_s$

Where:

$Q_s/4$: is the daily receiving stream's mixing zone flow in cfs minus the Intake flow in cfs.

Q_e : is the effluent's flow in cfs.

T_s : is the stream's temperature (ambient/intake temperature).

T_e : is the effluent's temperature.

ΔT : is the amount in T°F that the facility is causing the receiving stream's temperature to rise at the end of the regulatory mixing zone.

Note 4: Temperature Cap is the temperature of the receiving stream at the end of the regulatory mixing zone (if applicable). It is designated with $[T_{cap}]$ in the equation below.

$$T_{cap} = [((Q_s/4)T_s + Q_e T_e) / ((Q_s/4) + Q_e)]$$

Where:

$Q_s/4$ = Daily receiving stream's flow divided by 4 (Mixing Consideration) in cfs minus the Intake flow in cfs.

T_s = Daily receiving stream's temperature. This can be the actual ambient temperature of the receiving stream or the intake water temperature (both in °F).

Q_e = Daily effluent flow or intake flow.

T_e = Daily effluent temperature in °F.

- (a) If the T_{cap} calculated temperature value is less than the specific month's Daily Maximum or Monthly Average T_{cap} , the permittee is to report the calculated temperature value as T_{cap} and report a "No Discharge" for T_{max} .
- (b) If the T_{cap} calculated result is greater than the specific month's Daily Maximum and/or Monthly Average T_{cap} limit, but is below the T_{max} and there is time available in Percent Deviation Allowance (see Note 6); then the permittee is to report in accordance with Note 5 below.
- (c) If the T_{cap} calculated result is greater than the specific month's Daily Maximum and/or Monthly Average T_{cap} limit but is below the T_{max} , but there is no time available in Percent Deviation Allowance (see Note 6); then the permittee is to report the calculated temperature value as T_{cap} and report a "No Discharge" for T_{max} .
- (d) If the T_{cap} calculated result is greater than the specific month's Daily Maximum and/or Monthly Average T_{cap} and T_{max} ; then the permittee is to report in accordance with Note 5.
- (a)

Note 5: Temperature Maximum is the maximum that a facility can increase the temperature of the receiving stream by at the end of the regulatory mixing zone (if applicable). It is designated with the $[T_{max}]$ in the equation below and is the T_{cap} monthly limit plus three (+3°F).

$$T_{max} = [((Q_s/4)T_s + Q_e T_e) / ((Q_s/4) + Q_e)]$$

Where:

$Q_s/4$ = Daily receiving stream's flow divided by 4 (Mixing Consideration) in cfs minus the Intake flow in cfs.

T_s = Daily receiving stream's temperature. This can be the actual ambient temperature of the receiving stream or the intake water temperature (both in °F).

Q_e = Daily effluent flow or intake flow.

T_e = Daily effluent temperature in °F.

- (a) If the T_{cap} calculated result is greater than the specific month's Daily Maximum and/or Monthly Average T_{cap} limit, but is below the T_{max} and there is time available in Percent Deviation Allowance (see Note 6); then the permittee is to report the calculated temperature value as T_{max} and report a "No Discharge" for T_{cap} .
- (b) If the T_{cap} calculated result is greater than the specific month's Daily Maximum and/or Monthly Average T_{cap} and T_{max} ; then the permittee is to report the calculated temperature value as T_{max} and report a "No Discharge" for T_{cap} .

Note 6 – Missouri’s Water Quality Standards allows permittees to exceed their applicable criteria for 1% of the year in Zone 2A (or C) in the Mississippi River. Percent Deviation Allowance shall be tracked in hours per year (please see **Special Condition 7 – Percent Deviation Allowance**).

7. Percent Deviation Allowance

Site-specific temperature criteria for the thermal discharges to the Mississippi River allow the permittee to exceed their applicable temperature criteria for 1% of the year for Zone 1A and 2. This facility discharges to Zone 2 of the Mississippi River. Therefore, the permittee is authorized to exceed their Temperature Cap effluent limitation for 88 hours in one (1) calendar year. However, the permittee is not authorized to exceed their Temperature Max limitation at any time.

- (a) The permittee shall document the time in hours to the nearest minute that their calculated temperature values exceeded a specific month’s Daily Maximum T_{cap} effluent limit. This time is to be subtracted from 88 hours to the nearest minute.
- (b) The permittee shall submit an annual report on January 28th of each year that includes the number of hours that the facility exceeded their Temperature Cap effluent limits for each month during the previous calendar year.
- (c) If the permittee exceeds their maximum allowed Percent Deviation Allowance of 88 hours prior to the end of the calendar year, then the permittee shall submit a Maximum Percent Deviation Exceeded Report to the Southeast Regional Office within 15 days of notice.
- (d) Percent Deviation Allowance is not applicable to the permit parameter of Temperature Maximum.