

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, 92<sup>nd</sup> Congress) as amended,

Permit No. MO-0122092

Owner: Schweissguth Brothers, Inc.  
Address: P.O. Box 7, Dutzow, MO 63342

Continuing Authority: Same as above  
Address: Same as above

Facility Name: Schweissguth Brothers WWTF  
Facility Address: 400 Highway TT, Dutzow, MO 63342

Legal Description: NW ¼, NW ¼, Sec. 36, T45N, R1W, Warren County  
UTM Coordinates: X=675737; Y=4276193

Receiving Stream: Lake Creek (U)  
First Classified Stream and ID: Charrette Creek (P) (01613)  
USGS Basin & Sub-watershed No.: Missouri River Mainstream-Hermann to St. Louis (10300200-140001)

is authorized to discharge from the facility described herein, in accordance with the effluent limitations and monitoring requirements as set forth herein:

**FACILITY DESCRIPTION**

Outfall #001 - Repair Shop – SIC # 7699  
Oil & water separator / aerated three-cell lagoon / sludge is retained in lagoon  
Design population equivalent is 5.  
Design flow is 600 gallons per day.  
Actual flow is 100 gallons per day.  
Design sludge production is 0.08 dry tons/year.

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 4, 2010  
Effective Date

  
Mark N. Templeton, Director, Department of Natural Resources

June 3, 2015  
Expiration Date

  
Mike Struckhoff, Director, St. Louis Regional Office

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS				PAGE NUMBER 2 of 8		
				PERMIT NUMBER MO-0122092		
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	MGD	*		*	once/month	24 hr. estimate
Biochemical Oxygen Demand <sub>5</sub>	mg/L		45	30	once/quarter <sup>***</sup>	grab
Total Suspended Solids	mg/L		45	30	once/quarter <sup>***</sup>	grab
pH – Units	SU	**		**	once/quarter <sup>***</sup>	grab
Ammonia as N					once/quarter <sup>***</sup>	grab
(May 1 – Oct 31)	mg/L	4.2		2.1		
(Nov 1 – April 30)	mg/L	7.7		3.9		
Temperature	°C	*		*	once/quarter <sup>***</sup>	grab
Oil & Grease	mg/L	15		10	once/quarter <sup>***</sup>	grab
Chloride plus Sulfates	µg/L	1000		1000	once/quarter <sup>***</sup>	grab
Aluminum, Total Recoverable	µg/L	750		374	once/quarter <sup>***</sup>	grab
Cadmium, Total Recoverable	µg/L	0.6		0.3	once/quarter <sup>***</sup>	grab
Copper, Total Recoverable	µg/L	19		9.5	once/quarter <sup>***</sup>	grab
Lead, Total Recoverable	µg/L	13.4		6.7	once/quarter <sup>***</sup>	grab
Zinc, Total Recoverable	µg/L	2.0		2.0	once/quarter <sup>***</sup>	grab
Phenols, Total Recoverable	µg/L	183		91	once/quarter <sup>***</sup>	grab
MONITORING REPORTS SHALL BE SUBMITTED <u>QUARTERLY</u> ; THE FIRST REPORT IS DUE <u>October 28, 2010</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 Conditions		biannual	grab	
MONITORING REPORTS SHALL BE SUBMITTED <u>BI-ANNUALLY</u> ; THE FIRST REPORT IS DUE <u>April 28, 2011</u> .						
<b>B. STANDARD CONDITIONS</b>						
IN ADDITION TO SPECIFIED CONDITIONS STATED HEREIN, THIS PERMIT IS SUBJECT TO THE ATTACHED <u>Parts I &amp; III</u> STANDARD CONDITIONS DATED <u>October 1, 1980 and August 15, 1994</u> , AND HEREBY INCORPORATED AS THOUGH FULLY SET FORTH HEREIN.						

MO 780-0010 (8/91)

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 6.0-9.0 pH units.
- \*\*\* Sample once per quarter during the months of February, May, August, and November.

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 area-wide wastewater treatment system within 90 days of notice of its availability.
4. Changes in Discharges of Toxic Substances

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

- (a) That any activity has occurred or will occur which would result in the discharge of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels:"
    - (1) One hundred micrograms per liter (100 µg/L);
    - (2) Two hundred micrograms per liter (200 µg/L) for acrolein and acrylonitrile; five hundred micrograms per liter (500 µg/L) for 2,5 dinitrophenol and for 2-methyl-4, 6-dinitrophenol; and one milligram per liter (1 mg/L) for antimony;
    - (3) Five (5) times the maximum concentration value reported for the pollutant in the permit application;
    - (4) The level established in Part A of the permit by the Director.
  - (b) That they have begun or expect to begin to use or manufacture as an intermediate or final product or byproduct any toxic pollutant, which was not reported in the permit application.
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. The permittee shall comply with any applicable requirements listed in 10 CSR 20-8 and 10 CSR 20-9. The monitoring frequencies contained in this permit shall not be construed by the permittee as a modification of the monitoring frequencies listed in 10 CSR 20-9. If a modification of the monitoring frequencies listed in 10 CSR 20-9 is needed, the permittee shall submit a written request to the department for review and, if deemed necessary, approval.
8. The permittee shall submit a report semi-annually in April and October with the Discharge and Monitoring reports which address measures taken to locate and eliminate sources of infiltration and inflow into the City's collection system.
9. Whole Effluent Toxicity (WET) tests shall be conducted as follows:

SUMMARY OF WET TESTING FOR THIS PERMIT				
OUTFALL	A.E.C. %	FREQUENCY	SAMPLE TYPE	MONTH
001	100%	Bi-annual	Grab	July

(a) Test Schedule and Follow-Up Requirements

- (1) Perform a SINGLE-dilution test in the months and at the frequency specified above. For tests which are successfully passed, submit test results USING THE DEPARTMENT'S WET TEST REPORT FORM #MO-780-1899 along with complete copies of the test reports as received from the laboratory, including copies of chain-of-custody forms within 30 calendar days of availability to the WATER PROTECTION PROGRAM, P.O. Box 176, Jefferson City, MO 65102. If the effluent passes the test, do not repeat the test until the next test period.
  - (i) For discharges of stormwater, samples shall be collected within three hours from when discharge first occurs.
  - (ii) Samples submitted for analysis of stormwater discharges shall be collected as a grab.
  - (iii) For discharges of non-stormwater, samples shall be collected only when precipitation has not occurred for a period of forty-eight hours prior to sample collection. In no event shall sample collection occur simultaneously with the occurrence of precipitation excepting for stormwater samples.
  - (iv) A twenty-four hour composite sample shall be submitted for analysis of non-stormwater discharges.
  - (v) Upstream receiving water samples, where required, shall be collected upstream from any influence of the effluent where downstream flow is clearly evident.
  - (vi) 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.
  - (vii) 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.
  - (viii) 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.
  - (ix) 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.
  - (x) Where flow-weighted composite sample is required for analysis, the samples shall be composited at the laboratory where the test is to be performed.
  - (xi) 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.

C. SPECIAL CONDITIONS (continued)

- (xii) 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.
  - (xiii) All instream samples, including downstream samples, shall be tested for toxicity at the 100% concentration in addition to any other assigned AEC for in-stream samples.
  - (2) All failing test results along with complete copies of the test reports as received from the laboratory, INCLUDING THOSE TESTS CONDUCTED UNDER CONDITION (3) BELOW, shall be reported to the WATER PROTECTION PROGRAM, P.O. Box 176, Jefferson City, MO 65102 within 14 calendar days of the availability of the results.
  - (3) If the effluent fails the test, a multiple dilution test shall be performed within 30 calendar days and biweekly thereafter, until one of the following conditions are met:
    - (a) THREE CONSECUTIVE MULTIPLE-DILUTION TESTS PASS. No further tests need to be performed until next regularly scheduled test period.
    - (b) A TOTAL OF THREE MULTIPLE-DILUTION TESTS FAIL.
  - (4) Failure of at least two multiple-dilution tests during any period of accelerated monitoring violates the permit narrative requirement for aquatic life protection.
  - (5) The permittee shall submit a concise summary of all test results for the test series to the WATER PROTECTION PROGRAM, P.O. Box 176, Jefferson City, MO 65102 within 14 calendar days of the third failed test.
  - (6) Additionally, the following shall apply upon failure of the third MULTIPLE DILUTION test: A toxicity identification evaluation (TIE) or toxicity reduction evaluation (TRE) is automatically triggered. The permittee shall contact THE WATER PROTECTION PROGRAM within 14 calendar days from availability of the test results to ascertain as to whether a TIE or TRE is appropriate. The permittee shall submit a plan for conducting a TIE or TRE to the WATER PROTECTION PROGRAM within 60 calendar days of the date of DNR's direction to perform either a TIE or TRE. This plan must be approved by DNR before the TIE or TRE is begun. A schedule for completing the TIE or TRE shall be established in the plan approval.
  - (7) Upon DNR's approval, the TIE/TRE schedule may be modified if toxicity is intermittent during the TIE/TRE investigations. A revised WET test schedule may be established by DNR for this period.
  - (8) If a previously completed TIE has clearly identified the cause of toxicity, additional TIEs will not be required as long as effluent characteristics remain essentially unchanged and the permittee is proceeding according to a DNR approved schedule to complete a TRE and reduce toxicity. Regularly scheduled WET testing as required in the permit, without the follow-up requirements, will be required during this period.
  - (9) When WET test sampling is required to run over one DMR period, each DMR report shall contain a copy of the Department's WET test report form that was generated during the reporting period.
  - (10) Submit a concise summary in tabular format of all test results with the annual report.
- (b) PASS/FAIL procedure and effluent limitations:
- (1) To pass a single-dilution test, mortality observed in the AEC test concentration shall not be significantly different (at the 95% confidence level;  $p = 0.05$ ) than that observed in the upstream receiving-water control sample. Where upstream receiving water is not available mortality observed in the AEC test concentration shall not be significantly different (at the 95% confidence level;  $p = 0.05$ ) than that observed in the laboratory control. The appropriate statistical tests of significance shall be consistent with the most current edition of METHODS FOR MEASURING THE ACUTE TOXICITY OF EFFLUENTS AND RECEIVING WATERS TO FRESHWATER AND MARINE ORGANISMS or other Federal guidelines as appropriate or required.
  - (2) To pass a multiple-dilution test:
    - (a) For facilities with a computed percent effluent at the edge of the zone of initial dilution, Allowable Effluent Concentration (AEC), OF 30% OR LESS THE AEC must be less than three-tenths (0.3) of the  $LC_{50}$  concentration for the most sensitive of the test organisms; **OR**,
    - (b) For facilities with an AEC greater than 30% the  $LC_{50}$  concentration must be greater than 100%; **AND**,
    - (c) all effluent concentrations equal to or less than the AEC must be nontoxic. Mortality observed in all effluent concentrations equal to or less than the AEC shall not be significantly different (at the 95% confidence level;  $p = 0.05$ ) than that observed in the upstream receiving-water control sample. Where upstream receiving water is not available mortality observed in the AEC test concentration shall not be significantly different (at the 95% confidence level;  $p = 0.05$ ) than that observed in the laboratory control. The appropriate statistical tests of significance shall be consistent with the most current edition of METHODS FOR MEASURING THE ACUTE TOXICITY OF EFFLUENTS AND RECEIVING WATERS TO FRESHWATER AND MARINE ORGANISMS or other federal guidelines as appropriate or required. Failure of one multiple-dilution test may be considered an effluent limit violation.

C. SPECIAL CONDITIONS (continued)

- (xiv) 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.
  - (xv) All instream samples, including downstream samples, shall be tested for toxicity at the 100% concentration in addition to any other assigned AEC for in-stream samples.
  - (2) All failing test results along with complete copies of the test reports as received from the laboratory, INCLUDING THOSE TESTS CONDUCTED UNDER CONDITION (3) BELOW, shall be reported to the WATER PROTECTION PROGRAM, P.O. Box 176, Jefferson City, MO 65102 within 14 calendar days of the availability of the results.
  - (3) If the effluent fails the test, a multiple dilution test shall be performed within 30 calendar days and biweekly thereafter, until one of the following conditions are met:
    - (a) THREE CONSECUTIVE MULTIPLE-DILUTION TESTS PASS. No further tests need to be performed until next regularly scheduled test period.
    - (b) A TOTAL OF THREE MULTIPLE-DILUTION TESTS FAIL.
  - (11) Failure of at least two multiple-dilution tests during any period of accelerated monitoring violates the permit narrative requirement for aquatic life protection.
  - (12) The permittee shall submit a concise summary of all test results for the test series to the WATER PROTECTION PROGRAM, P.O. Box 176, Jefferson City, MO 65102 within 14 calendar days of the third failed test.
  - (13) 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.
  - (14) 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.
  - (15) 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.
  - (16) When WET test sampling is required to run over one DMR period, each DMR report shall contain a copy of the Department's WET test report form that was generated during the reporting period.
  - (17) Submit a concise summary in tabular format of all test results with the annual report.
- (b) PASS/FAIL procedure and effluent limitations:
- (1) To pass a single-dilution test, mortality observed in the AEC test concentration shall not be significantly different (at the 95% confidence level;  $p = 0.05$ ) than that observed in the upstream receiving-water control sample. Where upstream receiving water is not available mortality observed in the AEC test concentration shall not be significantly different (at the 95% confidence level;  $p = 0.05$ ) than that observed in the laboratory control. The appropriate statistical tests of significance shall be consistent with the most current edition of METHODS FOR MEASURING THE ACUTE TOXICITY OF EFFLUENTS AND RECEIVING WATERS TO FRESHWATER AND MARINE ORGANISMS or other Federal guidelines as appropriate or required.
  - (2) To pass a multiple-dilution test:
    - (a) For facilities with a computed percent effluent at the edge of the zone of initial dilution, Allowable Effluent Concentration (AEC), OF 30% OR LESS THE AEC must be less than three-tenths (0.3) of the  $LC_{50}$  concentration for the most sensitive of the test organisms; **OR**,
    - (b) For facilities with an AEC greater than 30% the  $LC_{50}$  concentration must be greater than 100%; **AND**,
    - (c) all effluent concentrations equal to or less than the AEC must be nontoxic. Mortality observed in all effluent concentrations equal to or less than the AEC shall not be significantly different (at the 95% confidence level;  $p = 0.05$ ) than that observed in the upstream receiving-water control sample. Where upstream receiving water is not available mortality observed in the AEC test concentration shall not be significantly different (at the 95% confidence level;  $p = 0.05$ ) than that observed in the laboratory control. The appropriate statistical tests of significance shall be consistent with the most current edition of METHODS FOR MEASURING THE ACUTE TOXICITY OF EFFLUENTS AND RECEIVING WATERS TO FRESHWATER AND MARINE ORGANISMS or other federal guidelines as appropriate or required. Failure of one multiple-dilution test may be considered an effluent limit violation.

C. SPECIAL CONDITIONS (continued)

(c) Test Conditions

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

C. SPECIAL CONDITIONS (continued)

**SUMMARY OF TEST METHODOLOGY FOR 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

**Missouri Department of Natural Resources**  
**Fact Sheet**  
**Schweissguth Brothers Wastewater Treatment Plant**  
**NPDES #: MO-0122092**  
**Warren County**

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. Permits in Missouri 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). NPDES operating permits are issued for a period of five (5) years unless otherwise specified.

A Factsheet gives pertinent information regarding the applicable regulations, rational for the development of the NPDES Missouri State Operating Permit (operating permit), and the public participation process for 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**

NPDES #: MO-0122092  
 Facility Name: Schweissguth Brothers WWTF  
 Facility Address: 400 Hwy TT, Dutzow, MO 63342  
 Owner's Name: Schweissguth Brothers, Inc.  
 Owner's Address: P.O. Box 7, Dutzow, MO 63342

Facility Region: St. Louis  
 Facility County: Warren

Facility Type: Repair Shop  
 Facility SIC Code(s): 7699

Facility Description: Oil & water separator / aerated three-cell lagoon / sludge is retained in lagoon

**OUTFALL(S) TABLE:**

OUTFALL	DESIGN FLOW (CFS)	TREATMENT LEVEL	EFFLUENT TYPE	DISTANCE TO CLASSIFIED SEGMENT (MI)
001	0.0009	Secondary	Domestic/industrial	2.2 miles

**Outfall #001**

Legal Description: NW ¼, NW ¼, Sec. 36, T45N, R1W, Warren County  
 Latitude/Longitude: +38° 37' 00.7"/-090° 58' 53.2"  
 Receiving Stream: Lake Creek (U)  
 First Classified Stream and ID: Charette Creek (P) (01613)  
 USGS Basin & Sub-watershed No.: (10300200-140001)

Water Quality History: No discharge was reported during past two years.

Comments: The facility is to be upgraded to meet secondary treatment limits.

**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:

Check boxes below that are applicable to the facility;

- Owned or operated by or for:
  - Municipalities
  - Public Sewer District:
  - County
  - Public Water Supply Districts:
  - Private sewer company regulated by the Public Service Commission:
  - State or Federal agencies:

Each of the above entities are only applicable if they have a Population Equivalent greater than two hundred (200) and/or fifty (50) or more service connections.

Currently this facility doesn't require a certified operator. Modifications made to the wastewater treatment facility may cause the classification to be modified.

**Part III – Receiving Stream Information**

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

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

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 1<sup>st</sup> 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**
Lake Creek	U	---	General Criteria	10300200	Ozark/Moreau/ Loutre
Charrette Creek	P	1613	LWW, AQL, WBC***		

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

\*\* - Ecological Drainage Unit

\*\*\* - UAA conducted on DATE and approved on DATE or disapproved on DATE. UAA has not been conducted for the facility yet.

**RECEIVING STREAM(S) LOW-FLOW VALUES TABLE:**

RECEIVING STREAM (U, C, P)	LOW-FLOW VALUES (CFS)		
	1Q10	7Q10	30Q10
Lake Creek (U)	0.0	0.0	0.0
Charrette Creek (P)	0.1	0.1	1.0

**MIXING ZONE:** Not allowed, discharge to unclassified stream [10 CSR 20-7.031(4)(A)4.B.(I)(a)]. Acute criteria apply per 10 CSR 20-7.031(3)(I)1. and chronic criteria apply at the classified Charette Creek.

**ZONE OF INITIAL DILUTION:** Not allowed due to unclassified receiving stream. Acute criteria must be met end-of-pipe. [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); CFR §122.44(I)] that requires a reissued permit to be as stringent as the previous permit with some exceptions. (Staff may also add or remove any language needed)

- 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 (l) (2) (i) (B)

**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.

**APPLICABLE PERMIT PARAMETERS:**

Effluent parameters contained in Factsheets and Missouri State Operating Permits are obtained from Technology Based Effluent Limit (TBEL), Missouri's Effluent Regulations [10 CSR 20-7.015], Missouri's Water Quality Standards [10 CSR 20-7.031], previous Missouri State Operating Permits, and from Operating Permit Applications.

**BIO-SOLIDS, 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.

- This condition is not applicable to the permittee for this specific facility.

**COMPLIANCE AND ENFORCEMENT:**

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

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.

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 (BOD<sub>5</sub>) 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](http://www.epa.gov/fedrgstr/EPA-WATER/1999/August/Day-04/w18866.htm)

Not Applicable ; the facility is not POTW.

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

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

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.

Not Applicable ; This permit does not contain a SOC.

**STORM WATER POLLUTION PREVENTION PLAN (SWPPP):**

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

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

**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 to total amount of pollutant that may be discharged into that stream without endangering its water quality.

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) for Charette Creek which was assumed to have a 7Q10 of 0.1 cfs. Acute wasteload allocations were determined for Lake creek using applicable water quality criteria (CMC: criteria maximum concentration) and a 7Q10 of 0.0 cfs.

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).

**WLA MODELING:**

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

**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 ; In accordance with the 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. Furthermore, WET testing is a means by which the department determines that [10 CSR 20-7.031(3)(D, F, & G)] are being met by the permitted facility. In addition to justification for the WET testing, WET tests are required under [10 CSR 20-6.010(8)(A)4] to be performed by specialist who are properly trained in conducting the test according to the methods prescribed by the Federal Government as referenced in [40 CFR Part 136]. 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 NH<sub>3</sub>)
- Facility is a municipality or domestic discharger with a Design Flow ≥ 22,500 gpd.
- Other – please justify.

**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.

## **Part V – Effluent Limits Determination**

### ***Outfall #001 – Main Facility Outfall***

#### **EFFLUENT LIMITATIONS TABLE:**

PARAMETER	UNIT	BASIS FOR LIMITS	DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MODIFIED	PREVIOUS PERMIT LIMITATIONS
FLOW	GPD	1	*		*	NO	S
BOD <sub>5</sub> **	MG/L	1		45	30	YES	S
TSS **	MG/L	1		45	30	YES	S
pH	SU	1	6 – 9		6 – 9	NO	S
AMMONIA AS N (MAY 1 – OCTOBER 31)	MG/L	2/3/5	4.2		2.1	YES	S
AMMONIA AS N (NOVEMBER 1 – APRIL 30)	MG/L	2/3/5	7.7		3.9	YES	S
TEMPERATURE (°C)	°C	1/8	*		*	NO	S
OIL & GREASE (MG/L)	MG/L	1	15		10	NO	S
CHLORIDES PLUS SULFATES	Mg/L	2/3	1000		1000	NO	S
ALUMINUM, TOTAL RECOVERABLE	µg/L	2/3	750		374	YES	S
CADMIUM, TOTAL RECOVERABLE	µg/L	2/3	0.6		0.3	YES	S
COPPER, TOTAL RECOVERABLE	µg/L	2/3	19.0		9.5	YES	S
LEAD, TOTAL RECOVERABLE	µg/L	2/3	13.4		6.7	YES	S
ZINC, TOTAL RECOVERABLE	µg/L	2/3	2.0		2.0	NO	S
PHENOLS, TOTAL RECOVERABLE	µg/L	2/3	183		91	YES	S
MONITORING FREQUENCY	Please see Minimum Sampling and Reporting Frequency Requirements in the Derivation and Discussion Section below.						

\* Monitoring requirement only

N/A Not applicable

S Same as previous operating permit

#### **Basis for Limitations Codes:**

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

#### **OUTFALL #001 – DERIVATION AND DISCUSSION OF LIMITS:**

- **Biochemical Oxygen Demand (BOD<sub>5</sub>):** Effluent limitations have been retained from previous state operating permit, [10 CSR 20-7.015(8)(B)1.].
- **Total Suspended Solids (TSS):** Effluent limitations have been retained from previous state operating permit, [10 CSR 20-7.015(8)(B)1.].
- **pH:** Effluent limitation has been retained from previous state operating permit, [10 CSR 20-7.015(8)(B)2.].

- **Total Ammonia Nitrogen.** Early Life Stages Present Total Ammonia Nitrogen criteria apply [10 CSR 20-7.031(4)(B)7.C. & Table B3]. Background total ammonia nitrogen = 0.01 mg/L

Season	Temp (°C)	pH (SU)	Total Ammonia Nitrogen CCC (mg/L)	Total Ammonia Nitrogen CMC (mg/L)
Summer	26	7.8	1.5	12.1
Winter	6	7.8	3.1	12.1

Summer: May 1 – October 31, Winter: November 1 – April 30

Staff used a modified Feed Forward Reaction decay formula to allow degradation for ammonia prior to reaching the first classified water body:

$$[\text{NH}_3\text{N}]_t = [\text{NH}_3\text{N}]_{t=0} * e^{-kt} \text{ therefore } [\text{NH}_3\text{N}]_t / [\text{NH}_3\text{N}]_{t=0} = \text{remaining concentration} = e^{-kt}$$

Where:

$[\text{NH}_3\text{N}]_t$  = ammonia concentration at confluence with classified segment

$[\text{NH}_3\text{N}]_{t=0}$  = ammonia concentration at pipe =  $C_c$

$k$  =  $\text{NH}_3$  oxidation per day =  $(k_{1,20}) \Theta_1^{(\text{Temp}-20)}$

$$k_{1,20} = 0.3(\text{day}^{-1})$$

$$\Theta_1 = \text{temperature correction factor} = 1.083$$

$t$  = estimated time for effluent to travel to first classified segment (in days) = 0.3

Travel time was calculated using based on generic equation from publication “*Reaeration and Velocity Prediction for Small Streams*” by Edward G. Foree, in the October, 1976, ASCE Journal of Environmental Engineering. Equation is given as:

$$V = 0.40 + 4.1 q S^{0.5} \text{ where } V \text{ is the velocity in ft./sec., } q \text{ is the stream flow in cfs, and } S \text{ is the slope.}$$

And  $q = 0.09$  cfs,  $S$  assumed to be zero.  $V$  is calculated to be 0.4 ft./sec.

The total distance to the classified stream is approximately 11,600 ft.

Summer Temp. = 26°C.

$$\text{Given } k = (0.3)(1.083)^{(26-20)} = 0.4841 \text{ and } t = 0.3 \text{ days; } e^{-kt} = e^{-(0.4841)(0.3)} = e^{-0.1452} = 0.8650$$

Which means 86.5% of the ammonia concentration still remains after leaving the facility and reaching the first classified stream segment.

$$\begin{aligned} \text{Chronic WLA: } C_c &= (0.0009 + 0.0)1.5 - (0.0 * 0.01)0.0009 \\ C_c &= (1.5 \text{ mg/L}) / 0.865 = 1.73 \text{ mg/L} \end{aligned}$$

$$\begin{aligned} \text{Acute WLA: } C_c &= (0.0009 + 0.0)12.1 - (0.0 * 0.01)0.0009 \\ C_c &= 12.1 \text{ mg/L} \end{aligned}$$

$$\begin{aligned} \text{LTA}_c &= 1.73 \text{ mg/L } (0.780) = 1.35 \text{ mg/L} & [\text{CV} = 0.6, 99^{\text{th}} \text{ Percentile, } n = 30] \\ \text{LTA}_a &= 12.1 \text{ mg/L } (0.321) = 3.9 \text{ mg/L} & [\text{CV} = 0.6, 99^{\text{th}} \text{ Percentile}] \end{aligned}$$

Use most protective number of  $\text{LTA}_c$  and  $\text{LTA}_a$  ( $\text{LTA}_{\text{MIN}}$ )

$$\begin{aligned} \text{MDL} &= 1.35 \text{ mg/L } (3.11) = \mathbf{4.2 \text{ mg/L}} & [\text{CV} = 0.6, 99^{\text{th}} \text{ Percentile}] \\ \text{AML} &= 1.35 \text{ mg/L } (1.55) = \mathbf{2.1 \text{ mg/L}} & [\text{CV} = 0.6, 95^{\text{th}} \text{ Percentile, } n = 4] \end{aligned}$$

Winter, Temp. = 6°C

$$\text{Given } k = (0.3)(1.083)^{(6-20)} = 0.0982 \text{ and } t = 0.5 \text{ days; } e^{-kt} = e^{-(0.0982)(0.5)} = e^{-0.0491} = 0.971$$

Which means 97.1% of the ammonia concentration still remains after leaving the facility and reaching the first classified stream segment.

Chronic WLA:  $C_c = (0.0009 + 0.0)3.1 - (0.0 * 0.01)/0.0009$   
 $C_c = (3.1 \text{ mg/L}) / 0.971 = 3.19 \text{ mg/L}$

Acute WLA:  $C_c = (0.0009 + 0.0)12.1 - (0.0 * 0.01)/0.0009$   
 $C_c = 12.1 \text{ mg/L}$

$LTA_c = 3.19 \text{ mg/L} (0.780) = 2.49 \text{ mg/L}$  [CV = 0.6, 99<sup>th</sup> Percentile, n = 30]  
 $LTA_a = 12.1 \text{ mg/L} (0.321) = 3.9 \text{ mg/L}$  [CV = 0.6, 99<sup>th</sup> Percentile]

Use most protective number of  $LTA_c$  and  $LTA_a$  ( $LTA_{MIN}$ )

$MDL = 2.49 \text{ mg/L} (3.11) = 7.7 \text{ mg/L}$  [CV = 0.6, 99<sup>th</sup> Percentile]  
 $AML = 2.49 \text{ mg/L} (1.55) = 3.9 \text{ mg/L}$  [CV = 0.6, 95<sup>th</sup> Percentile, n = 4]

- **Oil & Grease:** Conventional pollutant, effluent limitation for protection of aquatic life; 10 mg/L monthly average, 15 mg/L daily maximum.
- **Chlorides plus Sulfates:** Refer to 10 CSR 20-7.031(4)(L). Applies to discharges to unclassified streams.
- **Metals:** Effluent limitations for total recoverable metals were developed using methods and procedures outlined in EPA/505/2-90-001 and “The Metals Translator: Guidance For Calculating A Total Recoverable Permit Limit From A Dissolved Criterion” (EPA 823-B-96-007). General warm-water fishery criteria apply and water hardness = 162 mg/L.

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

METAL	CONVERSION FACTORS	
	ACUTE	CHRONIC
Aluminum	NA	NA
Cadmium	0.924	0.889
Copper	0.960	0.960
Lead	0.720	0.720
Zinc	0.978	0.986

Conversion factors for Cd and Pb are hardness dependent. Values calculated using equation found in Section 1.3 of EPA 823-B-96-007 and hardness = 162 mg/L.

- **Aluminum, total recoverable** - Protection of Aquatic Life Acute Criteria = 750.0 µg/L, Chronic Criteria - NA.

Acute:

$C_c = ((0.0009 + 0.0)750 - (0.0 * 0.0))/0.0009$   
 $C_c = 750 \text{ µg/L}$   
 $WLA_a = 750 \text{ µg/L}$

$LTA_c = 750.0 (0.321) = 241 \text{ µg/L}$  [CV = 0.6, 99<sup>th</sup> Percentile]

$MDL = 241.0 (3.11) = 750 \text{ µg/L}$  [CV = 0.6, 99<sup>th</sup> Percentile]  
 $AML = 241.0 (1.55) = 374 \text{ µg/L}$  [CV = 0.6, 95<sup>th</sup> Percentile, n = 4]

Since the previously issued permit had a monthly average limit of 750 µg/L, the limit is reduced in this permit to 374 µg/L.

- **Cadmium, total recoverable** - Protection of Aquatic Life Chronic Criteria = 0.3 µg/L, Acute Criteria = 7.6 µg/L.

Chronic =  $0.3/0.889 = 0.4 \text{ µg/L}$   
Acute =  $7.6/0.924 = 8.2 \text{ µg/L}$

Chronic

$$C_c = ((0.0009 + 0.0)0.4 - (0.0 * 0.0))/0.0009$$

$$C_c = 0.4 \mu\text{g/L}$$

$$\text{WLA}_c = 0.4 \mu\text{g/L}$$

Acute

$$C_c = ((0.0009 + 0.0)8.2 - (0.0 * 0.0))/0.0009$$

$$C_c = 8.2 \mu\text{g/L}$$

$$\text{WLA}_a = 8.2 \mu\text{g/L}$$

$$\text{LTA}_c = 0.4 (0.527) = 0.2 \mu\text{g/L}$$

[CV = 0.6, 99<sup>th</sup> Percentile]

$$\text{LTA}_a = 8.2 (0.321) = 2.6 \mu\text{g/L}$$

[CV = 0.6, 99<sup>th</sup> Percentile]

Use most protective number of  $\text{LTA}_c$  or  $\text{LTA}_a$ .

$$\text{MDL} = 0.2 (3.11) = 0.6 \mu\text{g/L}$$

[CV = 0.6, 99<sup>th</sup> Percentile]

$$\text{AML} = 0.2 (1.55) = 0.3 \mu\text{g/L}$$

[CV = 0.6, 95<sup>th</sup> Percentile, n = 4]

Since the previously issued permit had a maximum daily limit of 5  $\mu\text{g/L}$ , the above calculated limits (which are more protective) will be used.

- **Copper, total recoverable** - Protection of Aquatic Life Chronic Criteria = 11  $\mu\text{g/L}$ , Acute Criteria = 21  $\mu\text{g/L}$ .

$$\text{Chronic} = 11.0/0.960 = 11.5 \mu\text{g/L}$$

$$\text{Acute} = 21.0/0.960 = 21.9 \mu\text{g/L}$$

Chronic

$$C_c = ((0.0009 + 0.0)11.5 - (0.0 * 0.0))/0.0009$$

$$C_c = 11.5 \mu\text{g/L}$$

$$\text{WLA}_c = 11.5 \mu\text{g/L}$$

Acute

$$C_c = ((0.0009 + 0.0)21.9 - (0.0 * 0.0))/0.0009$$

$$C_c = 21.9 \mu\text{g/L}$$

$$\text{WLA}_a = 21.9 \mu\text{g/L}$$

$$\text{LTA}_c = 11.5 (0.527) = 6.1 \mu\text{g/L}$$

[CV = 0.6, 99<sup>th</sup> Percentile]

$$\text{LTA}_a = 21.9 (0.321) = 7.0 \mu\text{g/L}$$

[CV = 0.6, 99<sup>th</sup> Percentile]

Use most protective number of  $\text{LTA}_c$  or  $\text{LTA}_a$ .

$$\text{MDL} = 6.1 (3.11) = 19.0 \mu\text{g/L}$$

[CV = 0.6, 99<sup>th</sup> Percentile]

$$\text{AML} = 6.1 (1.55) = 9.5 \mu\text{g/L}$$

[CV = 0.6, 95<sup>th</sup> Percentile, n = 4]

- **Lead, total recoverable** - Protection of Aquatic Life Chronic Criteria = 5.9  $\mu\text{g/L}$ , Acute Criteria = 151  $\mu\text{g/L}$ .

$$\text{Chronic} = 5.9/0.720 = 8.2 \mu\text{g/L}$$

$$\text{Acute} = 151.0/0.720 = 210 \mu\text{g/L}$$

Chronic

$$C_c = ((0.0009 + 0.0)8.2 - (0.0 * 0.0))/0.0009$$

$$C_c = 8.2 \mu\text{g/L}$$

$$\text{WLA}_c = 8.2 \mu\text{g/L}$$

Acute

$$C_c = ((0.0009 + 0.0)210 - (0.0 * 0.0))/0.0009$$

$$C_c = 210 \mu\text{g/L}$$

$$\text{WLA}_a = 210 \mu\text{g/L}$$

$$LTA_c = 8.2 (0.527) = 4.3 \mu\text{g/L}$$

$$LTA_a = 210 (0.321) = 67.4 \mu\text{g/L}$$

$$[\text{CV} = 0.6, 99^{\text{th}} \text{ Percentile}]$$

$$[\text{CV} = 0.6, 99^{\text{th}} \text{ Percentile}]$$

Use most protective number of  $LTA_c$  or  $LTA_a$ .

$$\text{MDL} = 4.3 (3.11) = 13.4 \mu\text{g/L}$$

$$\text{AML} = 4.3 (1.55) = 6.7 \mu\text{g/L}$$

$$[\text{CV} = 0.6, 99^{\text{th}} \text{ Percentile}]$$

$$[\text{CV} = 0.6, 95^{\text{th}} \text{ Percentile, } n = 4]$$

The previously issued permit had a limit of 15  $\mu\text{g/L}$  based on the Drinking Water Supply criterion. As the above calculated limits are more protective, they will be used.

- **Zinc, total recoverable** - Protection of Aquatic Life Chronic Criteria = 163  $\mu\text{g/L}$ , Acute Criteria = 180  $\mu\text{g/L}$ .

$$\text{Chronic} = 163.0/0.986 = 165 \mu\text{g/L}$$

$$\text{Acute} = 180.0/0.978 = 184 \mu\text{g/L}$$

Chronic

$$C_c = ((0.0009 + 0.0)165 - (0.0 * 0.0))/0.0009$$

$$C_c = 165.0 \text{ mg/L}$$

$$\text{WLA}_c = 165.0 \text{ mg/L}$$

Acute

$$C_c = ((0.0009 + 0.0)184.0 - (0.0 * 0.0))/0.0009$$

$$C_c = 184.0 \mu\text{g/L}$$

$$\text{WLA}_a = 184.0 \mu\text{g/L}$$

$$LTA_c = 165.0 (0.527) = 87.0 \text{ mg/L}$$

$$LTA_a = 184.0 (0.321) = 59.1 \mu\text{g/L}$$

$$[\text{CV} = 0.6, 99^{\text{th}} \text{ Percentile}]$$

$$[\text{CV} = 0.6, 99^{\text{th}} \text{ Percentile}]$$

Use most protective number of  $LTA_c$  or  $LTA_a$ .

$$\text{MDL} = 59.1 (3.11) = 183.8 \mu\text{g/L}$$

$$\text{AML} = 59.1 (1.55) = 91.6 \mu\text{g/L}$$

$$[\text{CV} = 0.6, 99^{\text{th}} \text{ Percentile}]$$

$$[\text{CV} = 0.6, 95^{\text{th}} \text{ Percentile, } n = 4]$$

The previously issued permit had a limit of 2  $\mu\text{g/L}$ . This limit will be kept in order to avoid backsliding.

- **Phenols** - Protection of Aquatic Life Chronic Criteria = 100  $\mu\text{g/L}$ , Acute Criteria – N/A.

$$\text{Chronic} = 100.0/0.889 = 112.5 \mu\text{g/L}$$

$$C_c = ((0.0009 + 0.0)112.5 - (0.0 * 0.0))/0.0009$$

$$C_c = 112.5 \mu\text{g/L}$$

$$\text{WLA}_c = 112.5 \mu\text{g/L}$$

$$LTA_c = 112.5 (0.527) = 59 \mu\text{g/L}$$

$$[\text{CV} = 0.6, 99^{\text{th}} \text{ Percentile}]$$

$$\text{MDL} = 59 (3.11) = 183 \mu\text{g/L}$$

$$\text{AML} = 59 (1.55) = 91 \mu\text{g/L}$$

$$[\text{CV} = 0.6, 99^{\text{th}} \text{ Percentile}]$$

$$[\text{CV} = 0.6, 95^{\text{th}} \text{ Percentile, } n = 4]$$

- **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/PERMIT CYCLE:**

- Municipality or domestic facility with a design flow  $\geq 22,500$  gpd, but less than 1.0 MGD.
- Other, please justify.

- No less than ONCE/YEAR:**
- Facility is designated as a Major facility or has a design flow  $\geq 1.0$  MGD.
  - Facility continuously or routinely exceeds their design flow.
  - Facility exceeds its design population equivalent (PE) for BOD<sub>5</sub> whether or not its design flow is being exceeded.
  - Facility has Water Quality-based effluent limitations for toxic substances (other than NH<sub>3</sub>).
- No less than TWICE/YEAR:**
- Facility is subject to production processes alterations throughout the year.
  - Facility handles large quantities of toxic substances, or substances that are toxic in large amounts.
  - Facility has been granted seasonal relief of numeric limitations.

Allowable Effluent Concentration (AEC) calculations determine if the facility is to conduct single dilution or multiple dilution WET testing. Facilities that discharge to unclassified or Class C receiving streams, the AEC% is 100%. Facilities with less than 100% for an AEC% will have multiple dilution WET testing. Facilities that discharge to Lakes and have Acute WET testing, the AEC% is 100% due to [10 CSR 20-7.031(4)(A)4.B.(IV)(b)] ZID not allowed for Lakes.

• **Minimum Sampling and Reporting Frequency Requirements.**

PARAMETER	SAMPLING FREQUENCY	REPORTING FREQUENCY
FLOW	ONCE/MONTH	ONCE/QUARTER
BOD <sub>5</sub>	ONCE/QUARTER	ONCE/QUARTER
TSS	ONCE/QUARTER	ONCE/QUARTER
pH (S.U.)	ONCE/QUARTER	ONCE/QUARTER
TEMPERATURE (°C)	ONCE/QUARTER	ONCE/QUARTER
AMMONIA AS N	ONCE/QUARTER	ONCE/QUARTER
OIL & GREASE (MG/L)	ONCE/QUARTER	ONCE/QUARTER
CHLORIDES PLUS SULFATES	ONCE/QUARTER	ONCE/QUARTER
CADMIUM, TOTAL RECOVERABLE	ONCE/QUARTER	ONCE/QUARTER
COPPER, TOTAL RECOVERABLE	ONCE/QUARTER	ONCE/QUARTER
LEAD, TOTAL RECOVERABLE	ONCE/QUARTER	ONCE/QUARTER
ZINC, TOTAL RECOVERABLE	ONCE/QUARTER	ONCE/QUARTER
PHENOLS, TOTAL RECOVERABLE	ONCE/QUARTER	ONCE/QUARTER

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

Once per quarter is the minimum sampling frequency requirement for all other parameters. If samples are collected on a more frequent basis, then the average of the samples may be submitted. Quarterly samples are to be reported in the months of month, month, month, and month; and are to be reported by the 28<sup>th</sup> day of the following month of the applicable quarterly required month.

**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.

**March 10, 2010**

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