

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-0058343

Owner: City of St. Charles  
Address: 200 North Second Street, St. Charles, MO 63301

Continuing Authority: Same as above  
Address: Same as above

Facility Name: St. Charles Mississippi River Wastewater Treatment Facility  
Facility Address: 4933 Dwyer Road, St. Charles, MO 63301

Legal Description: See Page 2  
UTM Coordinates: See Page 2

Receiving Stream: See Page 2  
First Classified Stream and ID: See Page 2  
USGS Basin & Sub-watershed No.: See Page 2

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 and stormwater 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 621.250 RSMo, Section 640.013 RSMo and Section 644.051.6 of the Law.

August 1, 2015  
Effective Date

Sara Parker Pauley, Director, Department of Natural Resources

June 30, 2020  
Expiration Date

John Madras, Director, Water Protection Program

**FACILITY DESCRIPTION (continued):**

Outfall #001 – POTW – SIC #4952

The use or operation of this facility shall be by or under the supervision of a Certified “B” Operator.

Influent pump station with flow meters / mechanical screen / grit removal system / pre-aerobic selectors / activated sludge / final clarification / UV disinfection / sludge thickening and dewatering / landfill of sludge

Design population equivalent is 96,300.

Design flow is 9.63 MGD.

Actual flow is 5.3 MGD.

Design sludge production is 3,900 dry tons/year.

Legal Description:	NE ¼, SW ¼, Sec. 36, T48N, R4E, St. Charles County
UTM Coordinates:	X= 715198, Y= 4305978
Receiving Stream:	Mississippi River – Dardenne Chute (P)
First Classified Stream and ID:	Mississippi River – Dardenne Chute (P) (3700)
USGS Basin & Sub-watershed No.:	(07110009-0107)

Outfall #002 – Stormwater – Eliminated

Discharges from this outfall are no longer authorized, and shall be subject to 40 CFR 122.41(m) and reported according to 40 CFR 122.41(m)(3)(i) & (ii).

Permitted Feature #SM1 – Instream Monitoring

Instream monitoring location – Upstream – See Special Condition #23

OUTFALL #001	TABLE A-1 FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS					
	EFFLUENT PARAMETER(S)	UNITS	FINAL EFFLUENT LIMITATIONS			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 on <b>Effective Date</b> and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:						
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
Flow	MGD	*		*	once/day	24 hr. total
Biochemical Oxygen Demand <sub>5</sub>	mg/L		45	30	five/week***	composite**
Total Suspended Solids	mg/L		45	30	five/week***	composite**
Ammonia as N	mg/L	*		*	five/week***	grab
<i>E. coli</i> (Note 1, Page 4)	#/100mL		630	126	once/week	grab
Oil & Grease	mg/L	15		10	once/month	grab
MONITORING REPORTS SHALL BE SUBMITTED <u>MONTHLY</u> ; THE FIRST REPORT IS DUE <u>SEPTEMBER 28, 2015</u> . THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.						
Cyanide, Amenable to Chlorination (Note 2, Page 4)	µg/L	*		*	once/quarter*****	grab
Arsenic, Total Recoverable	µg/L	*		*	once/quarter*****	grab
Chromium (III), Total Recoverable	µg/L	*		*	once/quarter*****	grab
Chromium (VI), Total Dissolved	µg/L	*		*	once/quarter*****	grab
Copper, Total Recoverable	µg/L	*		*	once/quarter*****	grab
Lead, Total Recoverable	µg/L	*		*	once/quarter*****	grab
Mercury, Total Recoverable	µg/L	*		*	once/quarter*****	grab
Nickel, Total Recoverable	µg/L	*		*	once/quarter*****	grab
Silver, Total Recoverable	µg/L	*		*	once/quarter*****	grab
Zinc, Total Recoverable	µg/L	*		*	once/quarter*****	grab
Total Phosphorus	mg/L	*		*	once/quarter*****	grab
Total Nitrogen	mg/L	*		*	once/quarter*****	grab
MONITORING REPORTS SHALL BE SUBMITTED <u>QUARTERLY</u> ; THE FIRST REPORT IS DUE <u>OCTOBER 28, 2015</u> .						
EFFLUENT PARAMETER(S)	UNITS	MINIMUM		MAXIMUM	MEASUREMENT FREQUENCY	SAMPLE TYPE
pH – Units *****	SU	6.5		9.0	five/week***	grab
MONITORING REPORTS SHALL BE SUBMITTED <u>MONTHLY</u> ; THE FIRST REPORT IS DUE <u>SEPTEMBER 28, 2015</u> .						

\* Monitoring requirement only.

\*\* A 24-hour composite sample is composed of 48 aliquots (subsamples) collected at 30 minute intervals by an automatic sampling device.

\*\*\* Five per week means that effluent samples shall be collected five days in any given calendar week with no more than two days in a row during that calendar week passing without effluent samples being taken.

\*\*\*\*\* pH is measured in pH units and is not to be averaged.

\*\*\*\*\* See table on Page 4 for quarterly sampling requirements.

Minimum Sampling Requirements			
Quarter	Months	Effluent Parameters	Report is Due
First	January, February, March	Sample at least once during any month of the quarter	April 28 <sup>th</sup>
Second	April, May, June	Sample at least once during any month of the quarter	July 28th
Third	July, August, September	Sample at least once during any month of the quarter	October 28th
Fourth	October, November, December	Sample at least once during any month of the quarter	January 28th

Note 1 - Effluent limitations and monitoring requirements for *E. coli* are applicable only during the recreational season from April 1 through October 31. The Monthly Average Limit for *E. coli* is expressed as a geometric mean. The Weekly Average for *E. coli* will be expressed as a geometric mean if more than one (1) sample is collected during a calendar week (Sunday through Saturday).

Note 2 – The Department has determined the current acceptable ML of Cyanide amenable to chlorination to be 20 µg/L when using Method #9102A from the U.S.EPA National Exposure Research Laboratory. This method is used to determine the concentration of inorganic cyanide that is present as either soluble salts or complexes in wastes or leachate. The permittee will conduct analyses in accordance with this method, or equivalent, and report actual analytical values.

OUTFALL #001	TABLE A-2 WHOLE EFFLUENT TOXICITY FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS						
	EFFLUENT PARAMETER(S)	UNITS	FINAL EFFLUENT LIMITATIONS			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 on <b>Effective Date</b> and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:							
			DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
Acute Whole Effluent Toxicity (Note 3)	TU <sub>a</sub>	*				once/year	composite**
MONITORING REPORTS SHALL BE SUBMITTED <u>ANNUALLY</u> ; THE FIRST REPORT IS DUE <u>October 28, 2015</u> .							
Chronic Whole Effluent Toxicity (Note 4)	TU <sub>c</sub>	*				once/permit cycle	composite**
<u>WET TEST</u> REPORTS SHALL BE SUBMITTED <u>ONCE PER PERMIT CYCLE</u> ; THE FIRST REPORT IS DUE <u>October 28, 2018</u> .							

\* Monitoring requirement only.

Note 3 – The Acute WET test shall be conducted once per year during the 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>, and 5<sup>th</sup> year of the permit cycle. See Special Condition #22 for additional requirements.

Note 4 –The Chronic WET test shall be conducted during the 4<sup>th</sup> year of the permit cycle. See Special Condition #22 for additional requirements.

**TABLE B  
INFLUENT MONITORING REQUIREMENTS**

The facility is required to meet a removal efficiency of 85% or more as a monthly average. The monitoring requirements shall become effective on **Effective Date** and remain in effect until expiration of the permit. To determine removal efficiencies, the influent wastewater shall be monitored by the permittee as specified below:

SAMPLING LOCATION AND PARAMETER(S)	UNITS	MONITORING REQUIREMENTS	
		MEASUREMENT FREQUENCY	SAMPLE TYPE
Biochemical Oxygen Demand <sub>5</sub>	mg/L	once/month	composite**
Total Suspended Solids	mg/L	once/month	composite**

MONITORING REPORTS SHALL BE SUBMITTED MONTHLY; THE FIRST REPORT IS DUE SEPTEMBER 28, 2015.

\*\* A 24-hour composite sample is composed of 48 aliquots (subsamples) collected at 30 minute intervals by an automatic sampling device.

**PERMITTED  
FEATURE #SM1**

**TABLE C  
INSTREAM MONITORING REQUIREMENTS**

The monitoring requirements shall become effective on **Effective Date** and remain in effect until expiration of the permit.

PARAMETER(S)	UNITS	MONITORING REQUIREMENTS				
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
Total Phosphorus	mg/L	*		*	once/quarter*****	grab
Total Nitrogen	mg/L	*		*	once/quarter*****	grab

MONITORING REPORTS SHALL BE SUBMITTED QUARTERLY; THE FIRST REPORT IS DUE OCTOBER 28, 2015.

\* Monitoring requirement only.

\*\*\*\*\* See table below for quarterly sampling

Minimum Sampling Requirements			
Quarter	Months	Total Nitrogen & Total Phosphorus	Report is Due
First	January, February, March	Sample at least once during any month of the quarter	April 28 <sup>th</sup>
Second	April, May, June	Sample at least once during any month of the quarter	July 28th
Third	July, August, September	Sample at least once during any month of the quarter	October 28th
Fourth	October, November, December	Sample at least once during any month of the quarter	January 28th

D. STANDARD CONDITIONS

In addition to specified conditions stated herein, this permit is subject to the attached Parts I, II, & III standard conditions dated August 1, 2014, May 1, 2013, and March 1, 2015, and hereby incorporated as though fully set forth herein.

## E. SPECIAL CONDITIONS

1. This permit establishes final ammonia limitations based on Missouri's current Water Quality Standard. On August 22, 2013, the U.S. Environmental Protection Agency (EPA) published a notice in the Federal Register announcing of the final national recommended ambient water quality criteria for protection of aquatic life from the effects of ammonia in freshwater. The EPA's guidance, Final Aquatic Life Ambient Water Quality Criteria for Ammonia – Fresh Water 2013, is not a rule, nor automatically part of a state's water quality standards. States must adopt new ammonia criteria consistent with EPA's published ammonia criteria into their water quality standards that protect the designated uses of the water bodies. The Department of Natural Resources has initiated stakeholder discussions on how to best incorporate these new criteria into the State's rules. A date for when this rule change will occur has not been determined. Also, refer to Section VI of this permit's factsheet for further information including estimated future effluent limits for this facility. It is recommended the permittee view the Department's 2013 EPA criteria Factsheet located at <http://dnr.mo.gov/pubs/pub2481.htm>.
2. 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.
  - (d) Incorporate the requirement to develop a pretreatment program pursuant to 40 CFR 403.8(a) when the Director of the Water Protection Program determines that a pretreatment program is necessary due to any new introduction of pollutants into the Publically Owned Treatment Works or any substantial change in the volume or character of pollutants being introduced. The permit as modified or reissued under this paragraph shall also contain any other requirements of the Clean Water Act then applicable.
3. All outfalls must be clearly marked in the field. This does not include instream monitoring locations.
4. 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.
5. Report as no-discharge when a discharge does not occur during the report period.
6. Water Quality Standards
  - (a) To the extent required by law, 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.

E. SPECIAL CONDITIONS (continued)

7. Changes in existing pollutants or the addition of new pollutants to the treatment facility

The permittee must provide adequate notice to the Director of the following:

- (a) Any new introduction of pollutants into the POTW from an indirect discharger which would be subject to section 301 or 306 of CWA if it were directly discharging those pollutants; and
- (b) Any substantial change in the volume or character of pollutants being introduced into that POTW by a source introducing pollutants into the POTW at the time of issuance of the permit.
- (c) For purposes of this paragraph, adequate notice shall include information on:
  - (1) the quality and quantity of effluent introduced into the POTW, and
  - (2) any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW.

8. Reporting of Non-Detects:

- (a) An analysis conducted by the permittee or their contracted laboratory shall be conducted in such a way that the precision and accuracy of the analyzed result can be enumerated.
- (b) The permittee shall not report a sample result as "Non-Detect" without also reporting the detection limit of the test. Reporting as "Non Detect" without also including the detection limit will be considered failure to report, which is a violation of this permit.
- (c) The permittee shall provide the "Non-Detect" sample result using the less than sign and the minimum detection limit (e.g. <10).
- (d) The permittee shall use one-half of the detection limit for the non-detect result when calculating monthly averages.
- (e) See Standard Conditions Part I, Section A, #4 regarding proper detection limits used for sample analysis.

9. It is a violation of the Missouri Clean Water Law to fail to pay fees associated with this permit (644.055 RSMo).

10. The permittee shall comply with any applicable requirements listed in 10 CSR 20-9, unless the facility has received written notification that the Department has approved a modification to the requirements. 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.

11. The permittee shall develop and implement a program for maintenance and repair of the collection system. The recommended guidance is the US EPA's Guide For Evaluating Capacity, Management, Operation, And Maintenance (CMOM) Programs At Sanitary Sewer Collection Systems (Document number EPA 305-B-05-002). The permittee shall submit a report to the St. Louis Regional Office annually, by January 28<sup>th</sup>, for the previous calendar year. The report shall contain the following information:

- (a) A list of all:
  - (1) Sanitary Sewer Overflows (SSO) that occurred for the previous year, including SSOs that do not reach waters of the state and;
  - (2) Building backups in which the backup is attributable to the public sewer system.
  - (3) This does not include SSOs that occur due to routine maintenance of sewer lines.
  - (4) This list shall also include the following information for each individual SSO:
    - i. The location of each SSO (GPS, 911 address, manhole number, etc.)
    - ii. What portion of the collection system did the SSO occur at (manhole, lamphole, sewer cleanout, etc.)
    - iii. The estimated volume (gallons) of each SSO.
    - iv. The estimated duration of each SSO.
    - v. If the SSO entered waters of the state, and include the name of receiving water. If the SSO entered a drainageway, use the first named stream that the drainageway enters (e.g. first named stream = Dry Creek; Report = Tributary to Dry Creek).
    - vi. Cause for the SSO.
    - vii. How each SSO was mitigated.
    - viii. What actions were taken to prevent a reoccurrence of each SSO.
- (b) A summary of the efforts to locate and eliminate sources of excessive infiltration and inflow into the collection system serving the facility for the previous year.
- (c) A summary of the general maintenance and repairs to the collection system serving the facility for the previous year.
- (d) A summary of any planned maintenance and repairs to the collection system serving the facility for the upcoming calendar year. This list shall include locations (GPS, 911 address, manhole number, etc.) and actions to be taken.

E. SPECIAL CONDITIONS (continued)

12. Bypasses are not authorized at this facility unless they meet the criteria in 40 CFR 122.41(m). If a bypass occurs, the permittee shall report in accordance to 40 CFR 122.41(m)(3)(i), and with Standard Condition Part I, Section B, subsection 2.b. Bypasses are to be reported to the St. Louis Regional Office during normal business hours or the Environmental Emergency Response hotline at 573-634-2436 outside of normal business hours. Blending, which is the practice of combining a partially-treated wastewater process stream with a fully-treated wastewater process stream prior to discharge, is not considered a form of bypass. If the permittee wishes to utilize blending, the permittee shall file an application to modify this permit to facilitate the inclusion of appropriate monitoring conditions.
13. The facility must be sufficiently secured to restrict entry by children, livestock and unauthorized persons as well as to protect the facility from vandalism.
14. At least one gate must be provided to access the wastewater treatment facility and provide for maintenance and mowing. The gate shall remain closed except when temporarily opened by; the permittee to access the facility, perform operational monitoring, sampling, maintenance, mowing, or for inspections by the Department. The gate shall be closed and locked when the facility is not staffed.
15. At least one (1) warning sign shall be placed on each side of the facility enclosure in such positions as to be clearly visible from all directions of approach. There shall also be one (1) sign placed for every five hundred feet (500') (150 m) of the perimeter fence. A sign shall also be placed on each gate. Minimum wording shall be SEWAGE TREATMENT FACILITY—KEEP OUT. Signs shall be made of durable materials with characters at least two inches (2") high and shall be securely fastened to the fence, equipment or other suitable locations.
16. An Operation and Maintenance (O & M) manual shall be maintained by the permittee and made available to the operator. The O & M manual shall include key operating procedures and a brief summary of the operation of the facility.
17. An all-weather access road shall be provided to the treatment facility.
18. The discharge from the wastewater treatment facility shall be conveyed to the receiving stream via a closed pipe or a paved or rip-rapped open channel. Sheet or meandering drainage is not acceptable. The outfall sewer shall be protected against the effects of floodwater, ice or other hazards as to reasonably insure its structural stability and freedom from stoppage. The outfall shall be maintained so that a sample of the effluent can be obtained at a point after the final treatment process and before the discharge mixes with the receiving waters.
19. The permittee shall implement and enforce its approved pretreatment program in accordance with the requirements of 10 CSR 20-6.100. The approved pretreatment program is hereby incorporated by reference.

The permittee shall submit to the Department on or before March 31<sup>st</sup> of each year a report briefly describing its pretreatment activities during the previous calendar year. At a minimum, the report shall include the following:

- (a) An updated list of the Permittee's Industrial Users, including their names and addresses, or a list of deletions and additions keyed to a previously submitted list. The Permittee shall provide a brief explanation of each deletion. This list shall identify which Industrial Users are subject to categorical pretreatment Standards and specify which Standards are applicable to each Industrial User. The list shall indicate which Industrial Users are subject to local standards that are more stringent than the categorical Pretreatment Standards. The Permittee shall also list the Industrial Users that are subject only to local Requirements;
- (b) A summary of the status of Industrial User compliance over the reporting period;
- (c) A summary of compliance and enforcement activities (including inspections) conducted by the Permittee during the reporting period; and
- (d) Any other relevant information requested by the Department.

Pursuant to 40 CFR 122.44(j)(2)(ii), the permittee shall submit to the Department a written technical evaluation of the need to revise local limits under 40 CFR 403.5(c)(1) along with the application for renewal of this permit.

E. SPECIAL CONDITIONS (continued)

20. Stormwater Pollution Prevention Plan (SWPPP): A SWPPP must be implemented upon permit issuance. Through implementation of the SWPPP, the permittee shall prevent or minimize the generation and the potential for the release of pollutants from the facility to the waters of the state through normal operations and ancillary activities. The SWPPP shall be developed in accordance with the concepts and methods described in the following document: Developing Your Stormwater 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.
- (a) The SWPPP must identify any stormwater outfall from the facility and Best Management Practices (BMPs) used to prevent or reduce the discharge of contaminants in stormwater. The stormwater outfalls shall either be marked in the field or clearly marked on a map and maintained with the SWPPP.
  - (b) The SWPPP must include a schedule and procedures for a once per month routine site inspection.
    - i. The monthly routine inspection shall be documented in a brief written report, which shall include:
      - i. The person(s) conducting the inspection.
      - ii. The inspection date and time.
      - iii. Weather information for the day of the inspection.
      - iv. Precipitation information for the entire period since the last inspection.
      - v. Description of the discharges observed, including visual quality of the discharges (sheen, turbid, etc.).
      - vi. Condition of BMPs
      - vii. If BMPs were replaced or repaired.
      - viii. Observations and evaluations of BMP effectiveness.
    - ii. Any deficiency observed during the routine inspection must be corrected within seven (7) days and the actions taken to correct the deficiencies shall be included with the written report.
    - iii. The routine inspection reports must be kept onsite with the SWPPP and maintained for a period of five (5) years.
    - iv. The routine inspection reports shall be made available to Department personnel upon request.
  - (c) The SWPPP must include a schedule and procedures for a once per year comprehensive site inspection.
    - (1) The annual comprehensive inspection shall be documented in a written report, which shall include:
      - i. The person(s) conducting the inspection.
      - ii. The inspection date and time.
      - iii. Findings from the areas of your facility that were examined;
      - iv. All observations relating to the implementation of your control measures including:
        1. Previously unidentified discharges from the site,
        2. Previously unidentified pollutants in existing discharges,
        3. Evidence of, or the potential for, pollutants entering the drainage system;
        4. Evidence of pollutants discharging to receiving waters at all facility outfall(s), and the condition of and around the outfall, including flow dissipation measures to prevent scouring, and
        5. Additional control measures needed to address any conditions requiring corrective action identified during the inspection.
      - v. Any required revisions to the SWPPP resulting from the inspection;
      - vi. Any incidence of noncompliance observed or a certification stating that the facility is in compliance.
    - (2) Any deficiency observed during the comprehensive inspection must be corrected within seven (7) days and the actions taken to correct the deficiencies shall be included with the written report.
    - (3) The comprehensive inspection reports must be kept onsite with the SWPPP and maintained for a period of five (5) years.
    - (4) The comprehensive inspection reports shall be made available to Department personnel upon request.
  - (d) The SWPPP must be kept on-site and should not be sent to the Department unless specifically requested.
  - (e) The SWPPP must be reviewed and updated at a minimum once per permit cycle, as site conditions, or as control measures change.

E. SPECIAL CONDITIONS (continued)

21. The permittee shall select, install, use, operate, and maintain the Best Management Practices prescribed in the SWPPP.

- (a) Permittee shall adhere to the following minimum Best Management Practices (BMPs):
  - i. Minimize the use of water contaminants in the industrial activities at the facility.
  - ii. Minimize the exposure of industrial material storage areas, loading and unloading areas, dumpsters and other disposal areas, maintenance activities, and fueling operations to rain, snow, snowmelt, and runoff, by locating industrial materials and activities inside or protecting them with storm resistant coverings, if possible.
  - iii. Provide good housekeeping practices on the site to prevent potential pollution sources from coming into contact with stormwater and provide collection facilities and arrange for proper disposal of waste products, including sludge.
  - iv. Implement a maintenance program to ensure that the structural control measures and industrial equipment if kept in good operating condition and to prevent or minimize leaks and other releases of pollutants.
  - v. Prevent the spillage or leaks of fluids, oil, grease, fuel, etc. from equipment and vehicle maintenance, equipment and vehicle cleaning, or activities and thereby prevent the contamination of stormwater from these substances.
  - vi. 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.
  - vii. Provide stormwater runoff controls to divert, infiltrate, reuse, contain, or otherwise reduce stormwater runoff, to minimize pollutants in the stormwater discharge.
  - viii. Enclose or cover storage piles of salt or piles containing salt, used for deicing or other commercial or industrial purposes.
  - ix. Provide training to all employees who; work in areas where industrial materials or activities are exposed to stormwater, are responsible for stormwater inspections, are members of the Pollution Prevention Team. Training must cover the specific control measures and monitoring, inspection, planning, reporting and documentation requirements of this permit. Training is recommended annually for any applicable staff and whenever a new employee is hired who meets the description above.
  - x. Eliminate and prevent unauthorized non-stormwater discharges at the facility.

Minimize generation of dust and off-site tracking of raw, final, or waste materials by implementing appropriate control measures.

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

a) For ACUTE TOXICITY: Freshwater Species and Test Methods

DILUTION SERIES							
AEC= 21%	100%	50%	21%	12.5%	6.25%	(Control) 100% upstream, if available	(Control) 100% Lab Water, also called synthetic water

- a. Species and short-term test methods for estimating the acute toxicity of NPDES effluents are found in the fifth edition of *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms* (EPA/821/R-02/012, 2002; Table IA, 40 CFR Part 136). The permittee shall concurrently conduct 48-hour static non-renewal toxicity tests with the following vertebrate species:
  - i. The fathead minnow, *Pimephales promelas* (Acute Toxicity Test Method 2000.0).  
And the following invertebrate species:
  - ii. The daphnid, *Ceriodaphnia dubia* (Acute Toxicity Test Method 2002.0).
- b. Chemical and physical analysis of an upstream control sample 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. Where upstream receiving water is not available, synthetic laboratory control water may be used.
- c. Test conditions must meet all test acceptability criteria required by the EPA Method used in the analysis.
- d. 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 analysis performed upon any other effluent concentration.

b) For CHRONIC TOXICITY: Freshwater Species and Test Methods

DILUTION SERIES							
AEC= 3.6%	100%	50%	25%	12.5%	3.6%	(Control) 100% upstream, if available	(Control) 100% Lab Water, also called synthetic water

E. SPECIAL CONDITIONS (continued)

- a. Species and short-term test methods for estimating the chronic toxicity of NPDES effluents are found in the fourth edition of Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms (EPA/821/R-02/013, 2002; Table IA, 40 CFR Part 136). The permittee shall concurrently conduct 7-day, static, renewal toxicity tests with the following vertebrate species:
    - i. The fathead minnow, *Pimephales promelas* (Survival and Growth Test Method 1000.0).  
And the following invertebrate species:
    - ii. The daphnid, *Ceriodaphnia dubia* (Survival and Reproduction Test Method 1002.0).
  - b. Chemical and physical analysis of an upstream control sample 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. Where upstream receiving water is not available, synthetic laboratory control water may be used.
  - c. Test conditions must meet all test acceptability criteria required by the EPA Method used in the analysis.
  - d. 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 analysis performed upon any other effluent concentration.
- c) All chemical analyses shall be performed and results shall be recorded in the appropriate field of the report form. The parameters for chemical analysis include, but are not limited to Temperature (°C), pH (SU), Conductivity (µMohs), Dissolved Oxygen (mg/L), Total Residual Chlorine (mg/L), Un-ionized Ammonia (mg/L), Total Alkalinity (mg/L), and Total Hardness (mg/L).
- d) Reporting of Toxicity Monitoring Results
- a. WET test results shall be submitted to the St. Louis Regional Office, or by eDMR, with the permittee's Discharge Monitoring Reports by October, 28, 2015. The submittal shall include:
  - b. A full laboratory report for all toxicity testing.
  - c. Copies of chain-of-custody forms.
  - d. The WET form provided by the Department upon permit issuance.
  - e. ACUTE: The report must include a quantification of acute toxic units ( $TU_a = 100/LC_{50}$ ) reported according to the test methods manual chapter on report preparation and test review. The Lethal Concentration, 50 Percent ( $LC_{50}$ ) is the toxic or effluent concentration that would cause death in 50 percent of the test organisms over a specified period of time.
  - f. CHRONIC: The report must include a quantification of chronic toxic units ( $TU_c = 100/IC25$ ) reported according to the Methods for Measuring the Chronic Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms chapter on report preparation and test review. The 25 percent Inhibition Effect
- e) Permit reopener. In accordance with 40 CFR Parts 122 and 124, this permit may be modified to include effluent limitations or permit conditions to address acute toxicity in the effluent or receiving waterbody, as a result of the discharge; or to implement new, revised, or newly interpreted water quality standards applicable to acute toxicity.
23. Receiving Water Monitoring Conditions
- (a) In-stream receiving water samples should be taken at the location(s) specified on Page 2 of this permit. In the event that a safe, accessible location is not present at the location(s) listed, a suitable location can be negotiated with the Department. Samples should be taken at least four feet from the bank or from the middle of the stream (whichever is less) and 6-inches below the surface. The upstream receiving water sample should be collected at a point upstream from any influence of the effluent, where the water is visibly flowing down stream.
  - (b) When conducting in-stream monitoring, the permittee shall record observations that include: the time of day, weather conditions, unusual stream/lake characteristics (e.g., septic conditions, algae growth, etc.), the stream segment (e.g., riffle, pool or run) from where the sample was collected. These observations shall be submitted with the sample results.
  - (c) Samples shall not be collected from areas with especially turbulent flow, still water or from the stream bank, unless these conditions are representative of the stream reach or no other areas are available for sample collection. Sampling should not be made when significant precipitation has occurred recently. The sampling event should be terminated and rescheduled if any of the following conditions occur:
    - If turbidity in the stream increases notably; or
    - If rainfall over the past two weeks exceeds 2.5 inches or exceeds 1 inch in the last 24 hours
  - (d) Always use the correct sampling technique and handling procedure specified for the parameter of interest. Please refer to the latest edition of Standard Methods for the Examination of Water and Wastewater for further discussion of proper sampling techniques. All analyses must be conducted in accordance with an approved EPA method. Meters shall be calibrated immediately (within 1 hour) prior to the sampling event.
  - (e) Please contact the Department if you need additional instructions or assistance.

**MISSOURI DEPARTMENT OF NATURAL RESOURCES**  
**FACT SHEET**  
**FOR THE PURPOSE OF RENEWAL**  
**OF**  
**MO-0058343**  
**ST. CHARLES MISSISSIPPI RIVER WASTEWATER TREATMENT FACILITY**

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 stormwater 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.

**Part I – Facility Information**

Facility Type: POTW - SIC #4952

**Facility Description:**

Influent pump station with flow meters / mechanical screen / grit removal system / pre-aerobic selectors / activated sludge / final clarification / UV disinfection / sludge thickening and dewatering / landfill of sludge

Application Date: 07/14/14

Expiration Date: 10/29/14

**OUTFALL(S) TABLE:**

OUTFALL	DESIGN FLOW (CFS)	TREATMENT LEVEL	EFFLUENT TYPE
#001	14.93	Secondary	Domestic
#002	<i>Stormwater – Eliminated</i>		

**Facility Performance History:**

This facility was last inspected on September 24, 2014. The conditions of the facility at the time of inspection were found to be satisfactory. A review of monitoring data submitted by the permittee indicates no effluent limit exceedances in the past five years.

**Comments:**

Outfall #001 discharges to the Mississippi River (Dardenne Chute). For the purposes of compliance monitoring, effluent samples are to be collected at the final effluent structure located inside the fenced area at the treatment plant. The final effluent structure is the last accessible location for collection of effluent samples and samples collected at this location are considered to be representative of the effluent quality at the discharge location due to the short distance from the Final Effluent Structure to the actual outfall location.

Outfall #002 has been removed from this permit as the stormwater flow is now returned to the headworks.

Temperature monitoring has been removed from this permit as there is no reasonable potential for it to exceed water quality standards. Special conditions were updated to include the addition of inflow and infiltration reporting requirements, reporting of Non-detects, bypass reporting requirements, and addition of instream monitoring requirements.

**Part II – Operator Certification Requirements**

As per [10 CSR 20-6.010(8) Terms and Conditions of a Permit], the permittee 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 20-9.020(2)(A)], requirements for operation by certified personnel shall apply to all wastewater treatment systems, if applicable, as listed below:

- Owned or operated by or for a
- Municipalities
  - Public Sewer District
  - County
  - Public Water Supply Districts
  - Private Sewer Company regulated by the Public Service Commission
  - State agency
  - Federal agency

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

This facility currently requires an operator with a B Certification Level. Please see **Appendix - Classification Worksheet**. Modifications made to the wastewater treatment facility may cause the classification to be modified.

Operator’s Name: Gary Miller  
 Certification Number: 754  
 Certification Level: A

The listing of the operator above only signifies that staff drafting this operating permit have reviewed appropriate Department records and determined that the name listed on the operating permit application has the correct and applicable Certification Level.

**Part III– Operational Monitoring**

- As per [10 CSR 20-9.010(4)], the facility is not required to conduct operational monitoring.
- As per [10 CSR 20-9.010(4)], the facility is required to conduct operational monitoring.

**Part IV – Receiving Stream Information**

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(4)].

**RECEIVING STREAM(S) TABLE: OUTFALL #001**

WATER-BODY NAME	CLASS	WBID	DESIGNATED USES*	12-DIGIT HUC	DISTANCE TO CLASSIFIED SEGMENT (MI)
Mississippi River – Dardenne Chute	P	3700	IRR, LWW, AQL, HHP, WBC-A, SCR, DWS, IND	(07110009-0107)	Direct Discharge

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

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

RECEIVING STREAM (C, E, P, P1)	LOW-FLOW VALUES (CFS)*		
	1Q10	7Q10	30Q10
Mississippi River – Dardenne Chute (P)	1,949	2,267	2,580

\* - Data was obtained from Water Quality and Antidegradation Review performed by DNR in 2009 (see Appendix).

**MIXING CONSIDERATIONS TABLE:**

MIXING ZONE (CFS) [10 CSR 20-7.031(5)(A)4.B.(II)(a)]			ZONE OF INITIAL DILUTION (CFS) [10 CSR 20-7.031(5)(A)4.B.(II)(b)]		
1Q10	7Q10	30Q10	1Q10	7Q10	30Q10
487.25	566.75	645.00	48.725	56.675	N/A

**RECEIVING STREAM MONITORING REQUIREMENTS:**

Facilities with a design flow greater than 100,000 gallons per day are required to sample their effluent quarterly for Total Phosphorus and Total Nitrogen per 10 CSR 20-7.015(9)(D)7. Upstream monitoring for these parameters is necessary to determine background concentrations in order to complete calculations that determine instream nutrient loading.

Permitted Feature SM1 – Upstream

**Part V – 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.

- 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(o); 40 CFR Part 122.44(l)] that requires a reissued permit to be as stringent as the previous permit with some exceptions. Information is available which was not available at the time of permit issuance (other than revised regulations, guidance, or test methods) and which would have justified the application of a less stringent effluent limitation at the time of permit issuance. Temperature monitoring has been removed from this permit as there is no reasonable potential for it to exceed water quality standards. This permit changes WET test requirements for the facility from a pass/fail requirement to monitoring only for toxic units. This change reflects modifications to Missouri’s Effluent Regulation found at 10 CSR 20-7.015. 40 CFR 122.44(d)(1)(ii) requires the Department to establish effluent limitations that control all parameters which have the reasonable potential to cause or contribute to an excursion above any state water quality standard, including state narrative criteria. The previous permit imposed a pass/fail limitation without collecting sufficient data to make a reasonable potential determination. Furthermore, the method of reporting associated with the pass/fail limitation prevented the Department from gathering the data necessary to make a finding of reasonable potential. Implementation of the toxic unit monitoring requirement will allow the Department to implement numeric acute criteria in accordance with water quality standards established under §303 of the CWA.

**ANTIDegradation:**

In accordance with Missouri’s Water Quality Standard [10 CSR 20-7.031(3)], 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.

- No degradation proposed and no further review necessary. Facility did not apply for authorization to increase pollutant loading or to add additional pollutants to their discharge.

**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 & SEWAGE SLUDGE:**

Biosolids are solid materials resulting from domestic wastewater treatment that meet federal and state criteria for beneficial uses (i.e. fertilizer). 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://extension.missouri.edu/main/DisplayCategory.aspx?C=74>, items WQ422 through WQ449.

- Permittee is not authorized to land apply biosolids. Sludge/biosolids are landfilled.

**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.

- The 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

- This permittee has an approved pretreatment program in accordance with the requirements of [40 CFR Part 403] and [10 CSR 20-6.100] and is expected to implement and enforce its approved 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)(1)(iii)] if the permit writer determines that any given 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.

- A RPA was conducted on appropriate parameters. Please see **APPENDIX – RPA RESULTS.**

**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.

- Secondary Treatment is 85% removal [40 CFR Part 133.102(a)(3) & (b)(3)].

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

Sanitary Sewer Overflows (SSOs) are defined as untreated sewage releases and are considered bypassing under state regulation [10 CSR 20-2.010(11)] and should not be confused with the federal definition of bypass. SSOs result from a variety of causes including blockages, line breaks, and sewer defects that can either allow wastewater to backup within the collection system during dry weather conditions or allow excess stormwater and groundwater to enter and overload the collection system during wet weather conditions. SSOs can also result from lapses in sewer system operation and maintenance, inadequate sewer design and construction, power failures, and vandalism. SSOs include overflows out of manholes, cleanouts, broken pipes, and other into waters of the state and onto city streets, sidewalks, and other terrestrial locations.

Inflow and Infiltration (I&I) is defined as unwanted intrusion of stormwater or groundwater into a collection system. This can occur from points of direct connection such as sump pumps, roof drain downspouts, foundation drains, and storm drain cross-connections or through cracks, holes, joint failures, faulty line connections, damaged manholes, and other openings in the collection system itself. I&I results from a variety of causes including line breaks, improperly sealed connections, cracks caused by soil erosion/settling, penetration of vegetative roots, and other sewer defects. In addition, excess stormwater and groundwater entering the collection system from line breaks and sewer defects have the potential to negatively impact the treatment facility.

Missouri RSMo §644.026.1.(13) mandates that the Department issue permits for discharges of water contaminants into the waters of this state, and also for the operation of sewer systems. Such permit conditions shall ensure compliance with all requirements as established by sections 644.006 to 644.141. Standard Conditions Part I, referenced in the permit, contains provisions requiring proper operation and maintenance of all facilities and systems of treatment and control. Missouri RSMo §644.026.1.(15) instructs the Department to require proper maintenance and operation of treatment facilities and sewer systems and proper disposal of residual waste from all such facilities. To ensure that public health and the environment are protected, any noncompliance which may endanger public health or the environment must be reported to the Department within 24 hours of the time the permittee becomes aware of the noncompliance. Standard Conditions Part I, referenced in the permit, contains the reporting requirements for the permittee when bypasses and upsets occur. The permit also contains requirements for permittees to develop and implement a program for maintenance and repair of the collection system. The permit requires that the permittee submit an annual report to the Department for the previous calendar year that contains a list of all SSOs and building backups (locations, features of collection system where the SSO/building backup occurred, volumes, durations, receiving stream, causes, mitigation efforts, and actions to prevent reoccurrences), a summary of efforts taken by the permittee to locate and eliminate sources of excess I & I, a summary of general maintenance and repairs to the collection system, and a summary of any planned maintenance and repairs to the collection system for the upcoming calendar year.

- At this time, the Department recommends the US EPA's Guide for Evaluating Capacity, Management, Operation and Maintenance (CMOM) Programs At Sanitary Sewer Collection Systems (Document # EPA 305-B-05-002). The CMOM identifies some of the criteria used by the EPA to evaluate a collection system's management, operation, and maintenance and was intended for use by the EPA, state, regulated community, and/or third party entities. The CMOM is applicable to small, medium, and large systems; both public and privately owned; and both regional and satellite collection systems. The CMOM does not substitute for the Clean Water Act, the Missouri Clean Water Law, and both federal and state regulations, as it is not a regulation.

**SCHEDULE OF COMPLIANCE (SOC):**

Per 644.051.4 RSMo, a permit may be issued with a Schedule of Compliance (SOC) to provide time for a facility to come into compliance with new state or federal effluent regulations, water quality standards, or other requirements. Such a schedule is not allowed if the facility is already in compliance with the new requirement, or if prohibited by other statute or regulation. A SOC includes 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. *See also* Section 502(17) of the Clean Water Act, and 40 CFR §122.2. For new effluent limitations, the permit includes interim monitoring for the specific parameter to demonstrate the facility is not already in compliance with the new requirement. Per 40 CFR § 122.47(a)(1) and 10 CSR 20-7.031(11), compliance must occur as soon as possible. If the permit provides a schedule for meeting new water quality based effluent limits, a SOC must include an enforceable, final effluent limitation in the permit even if the SOC extends beyond the life of the permit.

A SOC is not allowed:

- For effluent limitations based on technology-based standards established in accordance with federal requirements, if the deadline for compliance established in federal regulations has passed. 40 CFR § 125.3.
- For a newly constructed facility in most cases. Newly constructed facilities must meet applicable effluent limitations when discharge begins, because the facility has installed the appropriate control technology as specified in a permit or antidegradation review. A SOC is allowed for a new water quality based effluent limit that was not included in a previously public noticed permit or antidegradation review, which may occur if a regulation changes during construction.
- To develop a TMDL, UAA, or other study associated with development of a site specific criterion. A facility is not prohibited from conducting these activities, but a SOC may not be granted for conducting these activities.

In order to provide guidance to Permit Writers in developing SOCs, and attain a greater level of consistency, on October 25, 2012 the Department issued a policy on development of SOCs. This policy provides guidance to Permit Writers on the standard time frames for schedules for common activities, and guidance on factors that may modify the length of the schedule such as a cost analysis.

- This permit does not contain a SOC.

**STORMWATER 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 stormwater 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 Stormwater 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 Stormwater 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 stormwater discharges.

- 10 CSR 20-6.200 and 40 CFR 122.26 includes treatment works treating domestic sewage or any other sewage sludge or wastewater treatment device or system, used in the storage treatment, recycling, and reclamation of municipal or domestic sewage, including land dedicated to the disposal of sewage sludge that is located within the confines of the facility, with a design flow of 1.0 mgd or more, or are required to have an approved pretreatment program under 40 CFR part 403, as an industrial activity in which permit coverage is required.

In lieu of requiring sampling in the site-specific permit, the facility is required to develop and implement a Stormwater Pollution Prevention Plan. A facility can apply for conditional exclusion for "no exposure" of industrial activities and materials to stormwater by submitting to the Department a completed NPDES Form 3510-11 – No Exposure Certification for Exclusion from NPDES Stormwater Permitting. That document and additional information may be found at <http://water.epa.gov/polwaste/npdes/stormwater/Conditional-No-Exposure-Exclusion.cfm>. Upon approval on the "No Exposure", the permit can be modified to remove the SWPPP requirements. If the facility chooses to retain the conditional exclusion for "no exposure", the facility is required to renew the "No Exposure" exemption during the permit renewal period by submitting NPDES Form 3510-11 with Form B2.

**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.

- 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.

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

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

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.

- A WLA study including model was submitted to the Department by Environmental Management Corporation. This included a Streeter-Phelps dissolved oxygen analysis for the Dardenne Chute of the Mississippi River.

**WATER QUALITY STANDARDS:**

Per [10 CSR 20-7.031(4)], 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.

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(4)(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 facilities meeting the following criteria:

- Facility is a designated Major.
- Facility continuously or routinely exceeds its design flow.
- Facility exceeds its design population equivalent (PE) for BOD<sub>5</sub> whether or not its design flow is being exceeded.
- Facility (whether primarily domestic or industrial) 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 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 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 20-7.015(9)(G) states a bypass means the intentional diversion of waste streams from any portion of a treatment facility, except in the case of blending, 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 devices designed for peak wet weather flows.

- This facility does not anticipate bypassing.

**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

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

**Part VI –2013 Water Quality Criteria for Ammonia**

Upcoming changes to the Water Quality Standard for ammonia may require significant upgrades to wastewater treatment facilities.

On August 22, 2013, the U.S. Environmental Protection Agency (EPA) finalized new water quality criteria for ammonia, based on toxicity studies of mussels and gill breathing snails. Missouri's current ammonia criteria are based on toxicity testing of several species, but did not include data from mussels or gill breathing snails. Missouri is home to 69 of North America's mussel species, which are spread across the state. According to the Missouri Department of Conservation nearly two-thirds of the mussel species in Missouri are considered to be "of conservation concern". Nine species are listed as federally endangered, with an additional species currently proposed as endangered and another species proposed as threatened.

The adult forms of mussels that are seen in rivers, lakes, and streams are sensitive to pollutants because they are sedentary filter feeders. They vacuum up many pollutants with the food they bring in and cannot escape to new habitats, so they can accumulate toxins in their bodies and die. But very young mussels, called glochidia, are exceptionally sensitive to ammonia in water. As a result of a citizen suit, the EPA was compelled to conduct toxicity testing and develop ammonia water quality criteria that would be protective if young mussels may be present in a waterbody. These new criteria will apply to any discharge with ammonia levels that may pose a reasonable potential to violate the standards. Nearly all discharging domestic wastewater treatment facilities (cities, subdivisions, mobile home parks, etc.), as well as certain industrial and stormwater dischargers with ammonia in their effluent, will be affected by this change in the regulations.

When new water quality criteria are established by the EPA, states must adopt them into their regulations in order to keep their authorization to issue permits under the National Pollutant Discharge Elimination System (NPDES). States are required to review their water quality standards every three years, and if new criteria have been developed they must be adopted. States may be more protective than the Federal requirements, but not less protective. Missouri does not have the resources to conduct the studies necessary for developing new water quality standards, and therefore our standards mirror those developed by the EPA; however, we will utilize any available flexibility based on actual species of mussels that are native to Missouri and their sensitivity to ammonia.

Many treatment facilities in Missouri are currently scheduled to be upgraded to comply with the current water quality standards. But these new ammonia standards may require a different treatment technology than the one being considered by the permittee. It is important that permittees discuss any new and upcoming requirements with their consulting engineers to ensure that their treatment systems are capable of complying with the new requirements. The Department encourages permittees to construct treatment technologies that can attain effluent quality that supports the EPA ammonia criteria.

Ammonia toxicity varies by temperature and by pH of the water. Assuming a stable pH value, but taking into account winter and summer temperatures, Missouri includes two seasons of ammonia effluent limitations. Effluent limits have not been established in this permit per the Water Quality and Antidegradation Review. Monitoring data will be assessed at renewal to determine reasonable potential.

Under the new EPA criteria, where mussels of the family Unionidae are present or expected to be present, the estimated effluent limitations for a facility that shows reasonable potential in a location such as this that discharges to a receiving stream with the mixing consideration listed in Part IV of the Fact Sheet will be:

Season	Temp (°C)	pH (SU)	Total Ammonia Nitrogen CCC (mg/L)	Total Ammonia Nitrogen CMC (mg/L)
Summer	26	7.8	0.7	3.4
Winter	6	7.8	2.3	8.1

Summer: April 1 – September 30

Chronic WLA:  $C_e = ((14.93 + 645)0.7 - (645 * 0.01)) / 14.93$   
 $C_e = 65.89 \text{ mg/L}$

Acute WLA:  $C_e = ((14.93 + 57)3.4 - (57 * 0.01)) / 14.93$   
 $C_e = 51.57 \text{ mg/L}$

$LTA_c = 65.89 \text{ mg/L} (0.780) = 51.41 \text{ mg/L}$

[CV = 0.6, 99<sup>th</sup> Percentile, 30 day avg.]

$LTA_a = 51.57 \text{ mg/L} (0.321) = 16.56 \text{ mg/L}$

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

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

$MDL = 16.56 \text{ mg/L} (3.11) = 14.5 \text{ mg/L}$

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

$AML = 16.56 \text{ mg/L} (1.19) = 5.5 \text{ mg/L}$

[CV = 0.6, 95<sup>th</sup> Percentile, n=30]

Winter: October 1 – March 31

Chronic WLA:  $C_e = ((14.93 + 645)2.3 - (645 * 0.01)) / 14.93$   
 $C_e = 136.62 \text{ mg/L}$

Acute WLA:  $C_e = ((14.93 + 57)8.1 - (57 * 0.01)) / 14.93$   
 $C_e = 51.57 \text{ mg/L}$

$LTA_c = 136.62 \text{ mg/L} (0.780) = 106.61 \text{ mg/L}$

[CV = 0.6, 99<sup>th</sup> Percentile, 30 day avg.]

$LTA_a = 51.57 \text{ mg/L} (0.321) = 16.56 \text{ mg/L}$

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

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

$MDL = 16.56 \text{ mg/L} (3.11) = 34.5 \text{ mg/L}$

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

$AML = 16.56 \text{ mg/L} (1.19) = 13.2 \text{ mg/L}$

[CV = 0.6, 95<sup>th</sup> Percentile, n=30]

Summer – 14.5 mg/L daily maximum, 5.5 mg/L monthly average.

Winter – 34.5 mg/L daily maximum, 13.2 mg/L monthly average.

These estimated limits above are based in part on the actual performance of the plant at the time of the drafting of this permit and should not be construed as future effluent limitations. Future effluent limits, based on the EPA's 2013 water quality criteria for ammonia, will depend in part on the actual performance of the facility at the time the permit is renewed.

Operating permits for facilities in Missouri must be written based on current statutes and regulations. Therefore permits will be written with the existing effluent limitations until the new standards are adopted. To aid permittees in decision making, an advisory will be added to permit Fact Sheets notifying permittees of the expected effluent limitations for ammonia. When setting schedules of compliance for ammonia effluent limitations, consideration will be given to facilities that have recently constructed upgraded facilities to meet the current ammonia limitations.

For more information on this topic feel free to contact the Missouri Department of Natural Resources, Water Protection Program, Water Pollution Control Branch, Operating Permits Section at (573) 751-1300.

**Part VII – Effluent Limits Determination**

**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)]

**OUTFALL #001 – MAIN FACILITY OUTFALL**

**EFFLUENT LIMITATIONS TABLE:**

PARAMETER	Unit	Basis for Limits	Daily Maximum	Weekly Average	Monthly Average	Modified	Previous Permit Limitations
Flow	MGD	1	*		*	No	*/*
BOD <sub>5</sub>	mg/L	1		45	30	No	40/25
TSS	mg/L	1		45	30	No	45/30
Ammonia as N	mg/L	4	*		*	No	*/*
Escherichia coli **	#/100mL	1, 3		630	126	No	630/126
Oil & Grease	mg/L	1, 3	15		10	No	15/10
Cyanide, Amenable to Chlorination	µg/L	2, 3	*		*	No	*/*
Arsenic, Total Recoverable	µg/L	2, 3	*		*	No	*/*
Chromium (III), Total Recoverable	µg/L	2, 3	*		*	No	*/*
Chromium (VI), Total Dissolved	µg/L	2, 3	*		*	No	*/*
Copper, Total Recoverable	µg/L	2, 3	*		*	No	*/*
Lead, Total Recoverable	µg/L	2, 3	*		*	No	*/*
Mercury, Total Recoverable	µg/L	2, 3	*		*	No	*/*
Nickel, Total Recoverable	µg/L	2, 3	*		*	No	*/*
Silver, Total Recoverable	µg/L	2, 3	*		*	No	*/*
Zinc, Total Recoverable	µg/L	2, 3	*		*	No	*/*
Total Nitrogen	mg/L	1	*		*	Yes	***
Total Phosphorus	mg/L	1	*		*	Yes	***
Acute Whole Effluent Toxicity	TUa	1, 9	*			Yes	Pass/Fail
Chronic Whole Effluent Toxicity	TUc	1, 9	*			Yes	***
PARAMETER	Unit	Basis for Limits	Minimum		Maximum	Modified	Previous Permit Limitations
pH	SU	1	6.5		9.0		6.5-9.0

\* - Monitoring requirement only.

\*\* - #/100mL; the Monthly Average for *E. coli* is a geometric mean.

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

**Basis for Limitations Codes:**

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

**OUTFALL #001 – 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 (BOD<sub>5</sub>).** Effluent limitations have been retained from previous state operating permit, please see the **APPLICABLE DESIGNATION OF WATERS OF THE STATE** sub-section of the **Effluent Limits Determination.**
- **Total Suspended Solids (TSS).** Effluent limitations have been retained from previous state operating permit, please see the **APPLICABLE DESIGNATION OF WATERS OF THE STATE** sub-section of the **Effluent Limits Determination.**
- **Total Ammonia Nitrogen.** Monitoring only included to determine if the facility has the reasonable potential to cause a violation of water quality standards in the receiving stream. See the Appendix – Water Quality and Antidegradation Review. A Reasonable Potential Analysis was not run for ammonia due to a lack of data since the facility was upgraded. Conclusions from the Water Quality and Antidegradation Review are continued for this permit cycle.
- **Escherichia coli (E. coli).** Monthly average of 126 per 100 mL as a geometric mean and Weekly Average of 630 per 100 mL as a geometric mean during the recreational season (April 1 – October 31), to protect Whole Body Contact Recreation (A) designated use of the receiving stream, as per 10 CSR 20-7.031(5)(C). An effluent limit for both monthly average and weekly average is required by 40 CFR 122.45(d). The Geometric Mean is calculated by multiplying all of the data points and then taking the nth root of this product, where n = # of samples collected. For example: Five E. coli samples were collected with results of 1, 4, 6, 10, and 5 (#/100mL). Geometric Mean = 5<sup>th</sup> root of (1)(4)(6)(10)(5) = 5<sup>th</sup> root of 1,200 = 4.1 #/100mL.
- **Oil & Grease.** Conventional pollutant, effluent limitation for protection of aquatic life; 10 mg/L monthly average, 15 mg/L daily maximum.
- **Total Phosphorus and Total Nitrogen.** Monitoring required for facilities greater than 100,000 gpd design flow per 10 CSR 20-7.015(9)(D)7. Total Nitrogen shall be determined by testing for Total Kjeldahl Nitrogen (TKN) and Nitrate + Nitrite and reporting the sum of the results (reported as N). Nitrate + Nitrite can be analyzed together or separately.
- **pH.** Effluent limits of 6.5-9.0 SU have been reassessed and determined protective of water quality; therefore, they have been retained from previous operating permit.
- **Cyanide, Amenable to Chlorination.** Monitoring only included to determine if the facility has the reasonable potential to cause a violation of water quality standards in the receiving stream. Statistical analysis was performed using the past five years of monitoring data from the facility and determined that there is no reasonable potential to cause an excursion of water quality standards. See Appendix – RPA Results.
- **Arsenic, Chromium (III), Copper, Lead, Mercury, Nickel, Silver, Zinc, Total Recoverable and Chromium (VI), Total Dissolved.** Monitoring only included to determine if the facility has the reasonable potential to cause a violation of water quality standards in the receiving stream. Statistical analysis was performed using the past five years of monitoring data from the facility and determined that there is no reasonable potential to cause an excursion of water quality standards. See Appendix – RPA Results.

**Whole Effluent Toxicity**

- **Acute Whole Effluent Toxicity.** Monitoring requirement only. Monitoring is required to determine if reasonable potential exists for this facility's discharge to exceed water quality standards.

$$\text{Acute AEC\%} = [((14.93 + 56.675) / 14.93)^{-1}] \times 100 = 21\%$$

- **Chronic Whole Effluent Toxicity.** Monitoring requirement only. Monitoring is required to determine if reasonable potential exists for this facility's discharge to exceed water quality standards.

$$\text{Chronic AEC\%} = [((14.93 + 566.75) / 14.93)^{-1}] \times 100 = 3.6\%$$

- **Parameters Removed.** Temperature monitoring has been removed from this permit as there is no reasonable potential for it to exceed water quality standards.

**Minimum Sampling and Reporting Frequency Requirements.**

PARAMETER	SAMPLING FREQUENCY	REPORTING FREQUENCY
Flow	once/day	once/month
BOD <sub>5</sub>	five/week	once/month
TSS	five/week	once/month
pH	five/week	once/month
Ammonia as N	five/week	once/month
<i>E. coli</i>	once/week	once/month
Oil & Grease	once/month	once/month
Cyanide, Amenable to Chlorination	once/quarter	once/quarter
Arsenic, Total Recoverable	once/quarter	once/quarter
Chromium (III), Total Recoverable	once/quarter	once/quarter
Chromium (VI), Total Recoverable	once/quarter	once/quarter
Copper, Total Recoverable	once/quarter	once/quarter
Lead, Total Recoverable	once/quarter	once/quarter
Mercury, Total Recoverable	once/quarter	once/quarter
Nickel, Total Recoverable	once/quarter	once/quarter
Silver, Total Recoverable	once/quarter	once/quarter
Zinc, Total Recoverable	once/quarter	once/quarter
Total Phosphorus	once/quarter	once/quarter
Total Nitrogen	once/quarter	once/quarter
Acute Whole Effluent Toxicity	once/year	once/year
Chronic Whole Effluent Toxicity	once/permit cycle	once/permit cycle

**Sampling Frequency Justification:**

Sampling and reporting frequency was deemed appropriate and retained from previous permit.

**WET Test Sampling Frequency Justification.** 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. Acute WET Tests shall be performed no less than once per year for facilities designated as a major and with water quality based effluent limits for toxic substances other than ammonia. Chronic WET Tests shall be performed no less than once per permit cycle for facilities with a design flow of greater than 1.0 million gallons per day, but less than 10 million gallons per day.

**Sampling Type Justification:**

As per 10 CSR 20-7.015, BOD<sub>5</sub>, TSS, and WET test samples collected for mechanical plants shall be a 24 hour composite sample. Grab samples, however, must be collected for pH, Ammonia as N, *E. coli*, Oil & Grease, Cyanide, metals, Total Nitrogen, and Total Phosphorus. This is due to the holding time restriction for *E. coli*, the volatility of Ammonia, and the fact that pH cannot be preserved and must be sampled in the field. As Ammonia, Oil & Grease, metals, Total Nitrogen, and Total Phosphorus samples must be immediately preserved, these samples are to be collected as a grab.

**PERMITTED FEATURE #SM1 – INSTREAM MONITORING (UPSTREAM)  
 MONITORING REQUIREMENTS TABLE:**

PARAMETER	Unit	Basis for Limits	Daily Maximum	Weekly Average	Monthly Average	Modified	Previous Permit Limitations
Total Nitrogen	mg/L	7	*		*	Yes	***
Total Phosphorus	mg/L	7	*		*	Yes	***

\* - Monitoring requirement only.  
 \*\*\* - Parameter was not previously established in previous state operating permit.

**Basis for Limitations Codes:**

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

**PERMITTED FEATURE #SM1 – DERIVATION AND DISCUSSION OF MONITORING REQUIREMENTS:**

- **Total Phosphorus and Total Nitrogen.** Facilities with a design flow greater than 100,000 gallons per day are required to sample their effluent quarterly for Total Phosphorus and Total Nitrogen per 10 CSR 20-7.015(9)(D)7. Upstream monitoring for these parameters is necessary to determine background stream concentrations in order to complete calculations that determine instream nutrient loading.

**Minimum Sampling and Reporting Frequency Requirements.**

PARAMETER	SAMPLING FREQUENCY	REPORTING FREQUENCY
Total Phosphorus	once/quarter	once/quarter
Total Nitrogen	once/quarter	once/quarter

**Sampling Frequency Justification:**

The sampling and reporting frequency for Total Phosphorus and Total Nitrogen has been established to match the required sampling frequency of these parameters in the effluent.

**Sampling Type Justification**

As Total Phosphorus and Total Nitrogen samples must be immediately preserved; these samples are to be collected as a grab.

**Part VIII – Cost Analysis for Compliance**

Pursuant to Section 644.145, RSMo, when issuing permits under this chapter that incorporate a new requirement for discharges from publicly owned combined or separate sanitary or storm sewer systems or publicly owned treatment works, or when enforcing provisions of this chapter or the Federal Water Pollution Control Act, 33 U.S.C. 1251 et seq., pertaining to any portion of a publicly owned combined or separate sanitary or storm sewer system or [publicly owned] treatment works, the Department of Natural Resources shall make a “finding of affordability” on the costs to be incurred and the impact of any rate changes on ratepayers upon which to base such permits and decisions, to the extent allowable under this chapter and the Federal Water Pollution Control Act. This process is completed through a cost analysis for compliance. Permits that do not include new requirements may be deemed affordable.

- The Department is required to determine “findings of affordability” because the permit applies to a combined or separate sanitary sewer system for a publically-owned treatment works.

**Cost Analysis for Compliance -** The Department has made a reasonable search for empirical data indicating the permit is affordable. The search consisted of a review of Department records that might contain economic data on the community, a review of information provided by the applicant as part of the application, and public comments received in response to public notices of this draft permit. If the empirical cost data was used by the permit writer, this data may consist of median household income, any other ongoing projects that the Department has knowledge, and other demographic financial information that the community provided as contemplated by Section 644. 145.3. See **Appendix – Cost Analysis for Compliance**

## **Part IX – 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.

### **PERMIT SYNCHRONIZATION:**

The Department of Natural Resources is currently undergoing a synchronization process for operating permits. Permits are normally issued on a five-year term, but to achieve synchronization many permits will need to be issued for less than the full five years allowed by regulation. The intent is that all permits within a watershed will move through the Watershed Based Management (WBM) cycle together will all expire in the same fiscal year. This will allow further streamlining by placing multiple permits within a smaller geographic area on public notice simultaneously, thereby reducing repeated administrative efforts. This will also allow the Department to explore a watershed based permitting effort at some point in the future. Renewal applications must continue to be submitted within 180 days of expiration, however, in instances where effluent data from the previous renewal is less than 4 years old, that data may be re-submitted to meet the requirements of the renewal application. If the permit provides a schedule of compliance for meeting new water quality based effluent limits beyond the expiration date of the permit, the time remaining in the schedule of compliance will be allotted in the renewed permit.

### **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 was from April 17, 2015 – May 18, 2015. No comments were received.

**DATE OF FACT SHEET:** MARCH 17, 2015

### **COMPLETED BY:**

**ANGELA FALLS, ENVIRONMENTAL SPECIALIST  
MISSOURI DEPARTMENT OF NATURAL RESOURCES  
WATER PROTECTION PROGRAM  
OPERATING PERMITS SECTION - DOMESTIC WASTEWATER UNIT  
(573) 751-1419  
[angela.falls@dnr.mo.gov](mailto:angela.falls@dnr.mo.gov)**

**Appendices**

**APPENDIX - CLASSIFICATION WORKSHEET:**

ITEM	POINTS POSSIBLE	POINTS ASSIGNED
Maximum Population Equivalent (P.E.) served (Max 10 pts.)	1 pt./10,000 PE or major fraction thereof.	10
Maximum: 10 pt Design Flow (avg. day) or peak month; use greater (Max 10 pts.)	1 pt. / MGD or major fraction thereof.	10
<b>EFFLUENT DISCHARGE RECEIVING WATER SENSITIVITY:</b>		
Missouri or Mississippi River	0	0
All other stream discharges except to losing streams and stream reaches supporting whole body contact	1	
Discharge to lake or reservoir outside of designated whole body contact recreational area	2	
Discharge to losing stream, or stream, lake or reservoir area supporting whole body contact recreation	3	
<b>PRELIMINARY TREATMENT - Headworks</b>		
Screening and/or comminution	3	3
Grit removal	3	3
Plant pumping of main flow (lift station at the headworks)	3	3
<b>PRIMARY TREATMENT</b>		
Primary clarifiers	5	
Combined sedimentation/digestion	5	
Chemical addition (except chlorine, enzymes)	4	
<b>REQUIRED LABORATORY CONTROL – performed by plant personnel (highest level only)</b>		
Push – button or visual methods for simple test such as pH, Settleable solids	3	
Additional procedures such as DO, COD, BOD, titrations, solids, volatile content	5	
More advanced determinations such as BOD seeding procedures, fecal coliform, nutrients, total oils, phenols, etc.	7	7
Highly sophisticated instrumentation, such as atomic absorption and gas chromatograph	10	
<b>ALTERNATIVE FATE OF EFFLUENT</b>		
Direct reuse or recycle of effluent	6	
Land Disposal – low rate	3	
High rate	5	
Overland flow	4	
<b>Total from page ONE (1)</b>	----	36

**APPENDIX - CLASSIFICATION WORKSHEET (CONTINUED):**

ITEM	POINTS POSSIBLE	POINTS ASSIGNED
<b>VARIATION IN RAW WASTE (highest level only) (DMR exceedances and Design Flow exceedances)</b>		
Variation do not exceed those normally or typically expected	0	0
Recurring deviations or excessive variations of 100 to 200 % in strength and/or flow	2	
Recurring deviations or excessive variations of more than 200 % in strength and/or flow	4	
Raw wastes subject to toxic waste discharge	6	
<b>SECONDARY TREATMENT</b>		
Trickling filter and other fixed film media with secondary clarifiers	10	
Activated sludge with secondary clarifiers (including extended aeration and oxidation ditches)	15	15
Stabilization ponds without aeration	5	
Aerated lagoon	8	
Advanced Waste Treatment Polishing Pond	2	
Chemical/physical – without secondary	15	
Chemical/physical – following secondary	10	
Biological or chemical/biological	12	
Carbon regeneration	4	
<b>DISINFECTION</b>		
Chlorination or comparable	5	
Dechlorination	2	
On-site generation of disinfectant (except UV light)	5	
UV light	4	4
<b>SOLIDS HANDLING - SLUDGE</b>		
Solids Handling Thickening	5	5
Anaerobic digestion	10	
Aerobic digestion	6	
Evaporative sludge drying	2	
Mechanical dewatering	8	8
Solids reduction (incineration, wet oxidation)	12	
Land application	6	
Total from page <b>TWO (2)</b>	----	32
Total from page <b>ONE (1)</b>	---	36
Grand Total	---	68

- A: 71 points and greater
- B: 51 points – 70 points
- C: 26 points – 50 points
- D: 0 points – 25 points

**APPENDIX – RPA RESULTS:**

Parameter	CMC*	RWC Acute*	CCC*	RWC Chronic*	n**	Range max/min	CV***	MF	RP Yes/No
Cyanide, Amenable to Chlorination	22.0	6.18	5.0	0.76	18.00	13/0.005	0.56	2.28	NO
Arsenic, Total Recoverable	NA	5.35	20.0	0.66	17.00	17/0.015	0.26	1.51	NO
Chromium (III), Total Recoverable	3181.1	1.53	152.1	0.19	18.00	5/0.005	0.25	1.47	NO
Chromium (VI), Total Recoverable	15.0	1.68	10.0	0.21	17.00	5/0.002	0.30	1.61	NO
Copper, Total Recoverable	26.9	9.10	16.9	1.12	50.00	22/0.0066	0.80	1.98	NO
Lead, Total Recoverable	197.2	3.07	7.7	0.38	18.00	10/0.01	0.25	1.47	NO
Mercury, Total Recoverable	2.8	2.28	0.5	0.28	18.00	2/0.0002	1.49	5.47	NO
Nickel, Total Recoverable	843.9	10.61	93.8	1.31	18.00	18/0.013	0.74	2.83	NO
Silver, Total Recoverable	12.5	0.63	NA	NA	18.00	2/0.002	0.27	1.52	NO
Zinc, Total Recoverable	215.6	29.83	215.6	3.67	18.00	70/0.06	0.48	2.04	NO

N/A – Not Applicable

\* - Units are (µg/L) unless otherwise noted.

\*\* - If the number of samples is 10 or greater, then the CV value must be used in the WQBEL for the applicable constituent. If the number of samples is < 10, then the default CV value must be used in the WQBEL for the applicable constituent.

\*\*\* - Coefficient of Variation (CV) is calculated by dividing the Standard Deviation of the sample set by the Mean of the same sample set.

RWC – Receiving Water Concentration. It is the concentration of a toxicant or the parameter toxicity in the receiving water after mixing (if applicable).

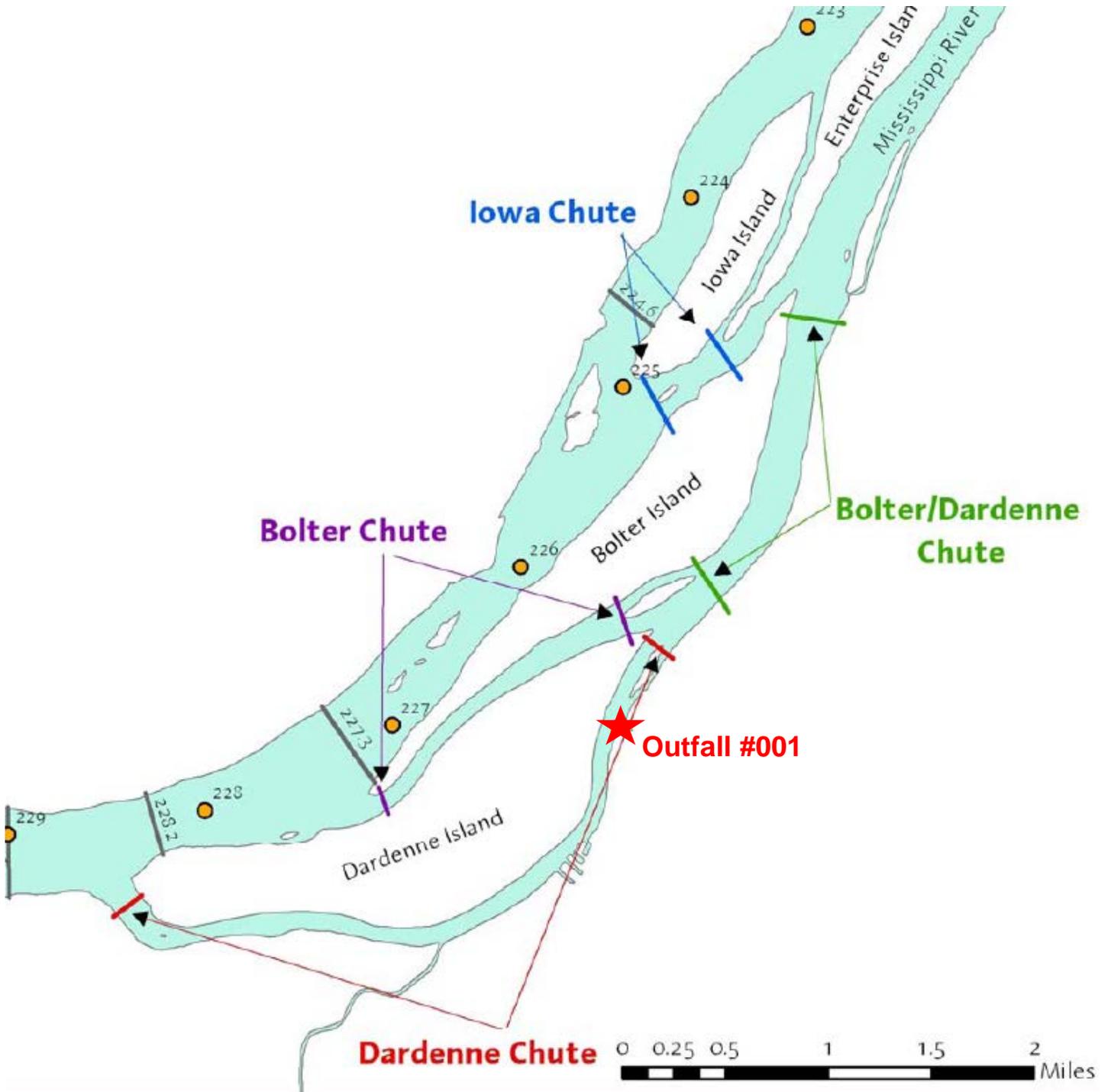
n – Is the number of samples.

MF – Multiplying Factor. 99% Confidence Level and 99% Probability Basis.

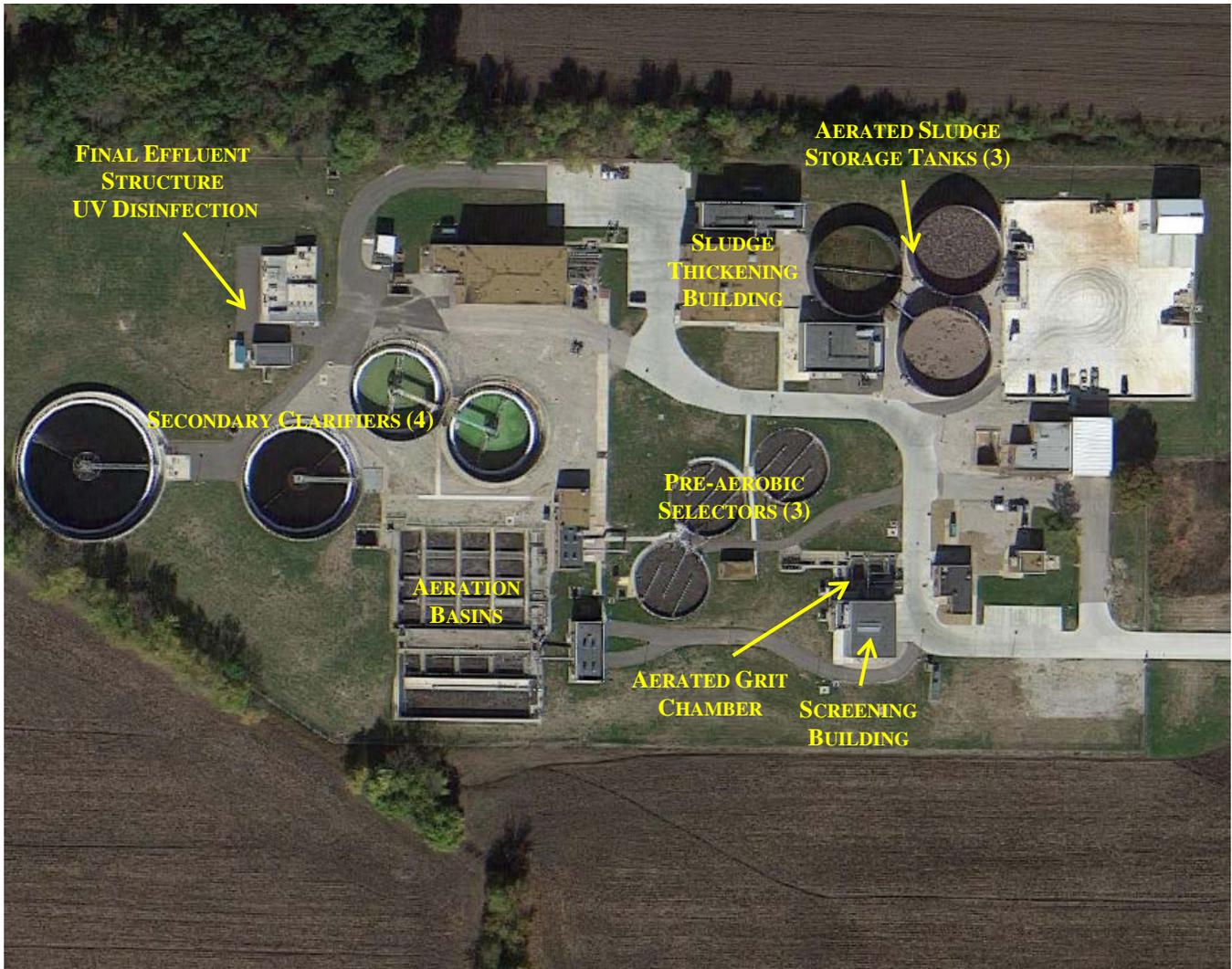
RP – Reasonable Potential. It is where an effluent is projected or calculated to cause an excursion above a water quality standard based on a number of factors including, as a minimum, the four factors listed in 40 CFR 122.44(d)(1)(ii).

Reasonable Potential Analysis is conducted as per (TSD, EPA/505/2-90-001, Section 3.3.2). A more detailed version including calculations of this RPA is available upon request.

APPENDIX – SECTION OF MISSISSIPPI RIVER:



**APPENDIX – FACILITY LAYOUT:**



**APPENDIX – COST ANALYSIS FOR COMPLIANCE:**

**Missouri Department of Natural Resources  
Water Protection Program  
Cost Analysis for Compliance  
(In accordance with RSMo 644.145)**

**St. Charles Mississippi River WWTF, Permit Renewal  
City of St. Charles  
Missouri State Operating Permit #MO-0058343**

Section 644.145 RSMo requires the Department of Natural Resources (DNR) to make a “finding of affordability” when “issuing permits under” or “enforcing provisions of” state or federal clean water laws “pertaining to any portion of a combined or separate sanitary sewer system for publicly-owned treatment works.”

The Department is required to issue a permit with final effluent limits in accordance with 644.051.1.(1) RSMo, 644.051.1.(2) RSMo, and the Clean Water Act. The practical result of many affordability findings will be to allow longer compliance schedules to mitigate adverse impact to distressed populations resulting from the costs of upgrading the wastewater treatment facility.

This cost analysis is based on data available to the Department as provided by the permittee and data obtained from readily available sources. For the most accurate analysis, it is essential that the permittee provides the Department with current information about the City’s financial and socioeconomic situation.

**Facility Description: Influent pump station with flow meters / mechanical screen / grit removal system / pre-aerobic selectors / activated sludge / final clarification / UV disinfection / sludge thickening and dewatering / landfill of sludge**

Total Connections for this facility: 26,715

**New Permit Requirements:**

The permit requires compliance with new sampling requirements for total nitrogen, total phosphorus, and WET testing.

**Anticipated Costs Associated with Complying with the New Requirements:**

The total cost estimated for new nutrient sampling requirements in-stream and of the effluent is \$800 annually. The cost for a chronic WET test is estimated to be \$1,550 or \$310 annually. This makes the total cost of nutrient sampling and WET testing \$1,110 annually. This cost, if financed through user fees, might cost each household an extra \$0.003<sup>1</sup> per month. A community sets their user rates based on several factors. The percentage of the current user rate that is available to cover new debt is unknown to the Department.

**(1) A community’s financial capability and ability to raise or secure necessary funding;**

Due to the minimal cost associated with these new permit requirements; the Department anticipates the City of St. Charles has the means to raise \$1,110 annually.

**(2) Affordability of pollution control options for the individuals or households at or below the median household income level of the community;**

The total cost estimated for the new sampling requirements is \$1,110 annually. This cost, if financed through user fees, might cost each household an extra \$0.003 per month. This would make the additional cost per household as a percent of median household income (MHI) 0.000%<sup>2</sup> based on the State’s MHI of \$47,333. Due to the minimal cost associated with this new requirement, the Department anticipates no rate increase will be necessary to impact individuals or households of the community.

**(3) An evaluation of the overall costs and environmental benefits of the control technologies;**

Nutrients are mineral compounds that are required for organisms to grow and thrive. Of the six (6) elemental macronutrients, Nitrogen and Phosphorus are generally not readily available and limit growth of organisms. If excess Nitrogen and Phosphorus are introduced into a waterbody, some species' populations will dramatically increase, while other populations will not be able to sustain life. This causes a shift in the ecosystem's food web. Competition and productivity are two factors in which nutrients can alter aquatic ecosystems and the designated uses of a waterbody. For example, designated uses, like drinking water source or recreational uses, become impaired when algal blooms take over a waterbody. These blooms can cause foul tastes and odors in the drinking water, and also cause unsightly appearance, and fish mortality in the waterbody. Some algae also produce toxins that may cause serious adverse health conditions such as liver damage, tumor promotion, paralysis, and kidney damage. Increased productivity of aquatic life may also clog treatment equipment, cause an increase in organic matter, bacteria, and fungi, and die-off and decomposition of algal blooms can reduce dissolved oxygen and suffocate fish and other aquatic life in the waterbody. The monitoring requirements for Nitrogen and Phosphorus have been added to the permit to provide data to the Department regarding the health of the receiving stream's aquatic life.

**(4) Inclusion of ongoing costs of operating and maintaining the existing wastewater collection and treatment system, including payments on outstanding debts for wastewater collection and treatment systems when calculating projected rates:**

The community did not provide the Department with information, nor could it be found through readily available data.

**(5) An inclusion of ways to reduce economic impacts on distressed populations in the community, including but not limited to low and fixed income populations. This requirement includes but is not limited to:**

- (a) Allowing adequate time in implementation schedules to mitigate potential adverse impacts on distressed populations resulting from the costs of the improvements and taking into consideration local community economic considerations.
- (b) Allowing for reasonable accommodations for regulated entities when inflexible standards and fines would impose a disproportionate financial hardship in light of the environmental benefits to be gained.

**Socioeconomic Data<sup>3-6:</sup>**

Potentially Distressed Populations – City of St. Charles	
Unemployment	4.5%
Adjusted Median Household Income (MHI)*	\$59,257
Percent Change in MHI (1990-2012)	+65.8%
Percent Population Growth/Decline (1990-2012)	+20.6%
Change in Median Age in Years (1990-2012)	+5.8
Percent of Households in Poverty	10.4%
Percent of Households Relying on Food Stamps	7.6%

\* The State's average MHI of \$47,333 is used in this analysis

**(6) An assessment of other community investments and operating costs relating to environmental improvements and public health protection;**

The community did not report any other investments relating to environmental improvements

**(7) An assessment of factors set forth in the United States Environmental Protection Agency's guidance, including but not limited to the "Combined Sewer Overflow Guidance for Financial Capability Assessment and Schedule Development" that may ease the cost burdens of implementing wet weather control plans, including but not limited to small system considerations, the attainability of water quality standards, and the development of wet weather standards;**

The new sampling requirements associated with this permit will not impose a financial burden on the community, nor will the new requirements require the City of St. Charles to seek funding from an outside source.

**(8) An assessment of any other relevant local community economic condition.**

The community did not report any other relevant local economic conditions.

### **Conclusion and Finding**

As a result of new regulations, the Department is proposing modifications to the current operating permit that may require the permittee to increase monitoring. The Department identified the actions for which cost analysis for compliance is required under Section 644.145 RSMo.

The Department estimates the cost for nutrient monitoring and chronic WET testing is \$1,110 per year. Should these additional costs be financed through user fees, it may require user fees 0.000% of the community's MHI.

The Department considered the eight (8) criteria presented in subsection 644.145.3 when evaluating the cost associated with the relevant actions. Taking into consideration these criteria, this analysis examined whether the above referenced permit modifications affects the ability of an individual customer or household to pay a utility bill without undue hardship or unreasonable sacrifice in the essential lifestyle or spending patterns of the individual or household. As a result of reviewing the above criteria, the Department hereby finds that the action described above may result in a low burden with regard to the community's overall financial capability and a low financial impact for most individual customers/households; therefore, the new permit requirements are affordable.

### **References:**

1.  $((\text{Estimated cost for sampling annually}/\text{Total connections})/12 \text{ months}) = \text{Cost per household per month}$
2.  $(\text{Cost per household per month}/(\text{MHI}/12)) * 100 = \text{Cost per household as a percent of MHI}$
3. Unemployment data was obtained from Missouri Department of Economic Development (July 2014) – <http://www.missourieconomy.org/pdfs/ure11407.pdf>
4. Median Household Income data from American Community Survey – Median income in the past 12 months – [http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?\\_afpt=table](http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?_afpt=table)
5. Population trend data was obtained from online at: 2012 Census Bureau Population Data - [http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?\\_afpt=table](http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?_afpt=table), 2000 Census Bureau Population Data - <http://www.census.gov/popest/data/cities/totals/2009/tables/SUB-EST2009-04-29.xls>, 1990 Census Bureau Population Data - <http://www.census.gov/prod/cen1990/cp1/cp-1-27.pdf>
6. Poverty data – American Community Survey- <http://factfinder2.census.gov/faces/nav/jsf/pages/searchresults.xhtml?refresh=t>

**APPENDIX – WATER QUALITY AND ANTIDegradation REVIEW:**

# **Water Quality and Antidegradation Review**

*For the Protection of Water Quality  
and Determination of Effluent Limits for Discharge to the Missouri River  
by*

*City of St. Charles*

*St. Charles Mississippi River Wastewater Treatment Plant*



July 16, 2009

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Appendix A: Map of Discharge Location..... **Error! Bookmark not defined.**

Appendix B: Current Facility Discharge Concentrations ( $\mu\text{g/L}$ ) from MDNR Database**Error! Bookmark not defined.**

Appendix C: Stream Low-Flow Determination excerpt from MEC Water Resources' April 28, 2009, memorandum to DNR on *St. Charles Mississippi River Wastewater Treatment Plant Expansion - Proposed Approach for Demonstrating Insignificance*, ..... **Error! Bookmark not defined.**

Appendix D: Streeter Phelps Model Results for the Proposed Design Flow**Error! Bookmark not defined.**

Appendix E: Antidegradation Review Summary Attachments ..... **Error! Bookmark not defined.**

Appendix F: MDC Natural Heritage Review ..... **Error! Bookmark not defined.**

Appendix G: Comparison of Mussel Toxicity Literature Values with Water Quality Criteria.**Error! Bookmark not defined.**

# 1. Facility Information

FACILITY NAME: St. Charles Mississippi Wastewater Treatment Plant NPDES #: MO-0058343

FACILITY TYPE/DESCRIPTION: The city is proposing to expand design flow. The existing facility will be upgraded and expanded by converting the existing primary clarifiers to aeration/anoxic basins, deepening the existing aeration basins, adding 1) a new influent bar screen, 2) aeration basin, 3) new aeration blowers, 4) a new final clarifier, and 5) ultra-violet (UV) system. New design flow will be 9.63 MGD. Current design flow is 7.5 MGD.

EDU\*: Central Plains/Cuivre/Salt 8-DIGIT HUC: 07110009 COUNTY: St. Charles

\* - Ecological Drainage Unit

LEGAL DESCRIPTION: NE1/4 SW1/4 Section 36, T48N, R4E LATITUDE/LONGITUDE: 38.87625 / -90.51464

# 2. Water Quality Information

In accordance with Missouri's Water Quality Standard [10 CSR 20-7.031(2)] and federal antidegradation policy at Title 40 Code of Federal Regulation (CFR) Section 131.12 (a), the Missouri Department of Natural Resources (MDNR) developed a statewide antidegradation policy and corresponding procedures to implement the policy. A proposed discharge to a water body will be required to undergo a level of Antidegradation Review which documents that the use of a water body's available assimilative capacity is justified. Effective August 30, 2008, a facility is required to use *Missouri's Antidegradation Rule and Implementation Procedure (AIP)* for new and expanded wastewater discharges.

## 2.1. Water Quality History:

During the last permit cycle (2004 to 2009), the facility failed to report on numerous occasions of the required sampling for Outfall #002 – Stormwater runoff. For Outfall #001, exceedence was for only TSS--once in 2006.

OUTFALL	DESIGN FLOW (CFS)	TREATMENT LEVEL	RECEIVING WATERBODY	DISTANCE TO CLASSIFIED SEGMENT (MI)
001	14.9	Secondary	Mississippi River	0.0
002	Variable	Stormwater	Unnamed Trib to Mississippi R.	0.0

# 3. Receiving Waterbody Information

WATERBODY NAME	CLASS	WBID	LOW-FLOW VALUES (CFS)			DESIGNATED USES**
			1Q10	7Q10	30Q10	
Mississippi River ( <b>Dardenne Chute-see Appendix C</b> )	P	00001	1,949	2,267	2,580	IRR, LWW, AQL, WBC(A), SCR, DWS, IND General Criteria
Unnamed Trib to Mississippi	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)

RECEIVING WATER BODY SEGMENT #1: Mississippi River (Dardenne Chute)

Upper end segment\* UTM or Lat/Long coordinates: 38.87628 / - 90.51972 (St. Charles Outfall)

Lower end segment\* UTM or Lat/Long coordinates: 38.96857 / - 90.46485 (Mississippi River confluence with Illinois R)

\*Segment is the portion of the stream where discharge occurs. Segment is used to track changes in assimilative capacity and is bound at a minimum by existing sources and confluences with other significant water bodies.

## 4. General Comments

MEC Water Resources prepared on behalf of the City of St. Charles, Missouri and Environmental Management Corporation the *St. Charles Mississippi River Wastewater Treatment Plant Antidegradation Report* dated June 2009. No Geohydrological Evaluation was submitted with the request; however, the receiving waterbody is gaining (Appendix A: Map). The Missouri Department of Natural Resources (MDNR) conducted a tier analysis for the Mississippi River. We determined that all POCs were Tier 2 for those POCs that have water quality standards. Dissolved oxygen modeling analysis was submitted for review (See Appendix B). Applicant requested a preliminary review of the stream flow for the Dardenne Chute and of the antidegradation review approach. Portions of the MEC's stream flow determination for Dardenne Chute of the Mississippi River are provided in Appendix C. After our preliminary review and comments, the Department agreed with the described datasets, model assumptions, and approach for demonstrating insignificance. Information found in the submitted report and in the summary forms provided by the applicant in Appendix E was used to develop this review document. A Missouri Department of Conservation Natural Heritage Review was obtained by the applicant; and endangered species were found in the vicinity of the discharge (Appendix F). Ammonia, copper, and chlorides are pollutants that can be toxic to mussels. Chlorides will not be a concern in this discharge as disinfection will be via ultraviolet light. In Appendix F, we compare the water quality standards to available research studies on mussel species' chronic and acute toxicity to copper and ammonia. In the Section 10 Deviation and Discussion of Limits below, we provide explanation for protection of the mussels from ammonia and copper as pollutants.

## 5. Antidegradation Review Information

The following is a review of the *St. Charles Mississippi River Wastewater Treatment Plant Antidegradation Report* dated June 2009.

### 5.1. TIER DETERMINATION

Below is a list of pollutants of concern reasonably expected to be in the discharge (see Appendix B: Tier Determination and Effluent Limit Summary). Pollutants of concern are defined as those pollutants "proposed for discharge that affects beneficial use(s) in waters of the state. POCs include pollutants that create conditions unfavorable to beneficial uses in the water body receiving the discharge or proposed to receive the discharge." (AIP, Page 7).

Table 1. Pollutants of Concern and Tier Determination

POLLUTANTS OF CONCERN	TIER	DEGRADATION	COMMENT
CBOD5/DO	2	Minimal (modeled)	
Total Suspended Solids (TSS)	*	Not determined	No criteria
Ammonia	2	Minimal	
pH	**	Not determined	Permit limits apply only
Oil and Grease	2	Not determined	Permit limits apply only
Bacteria--Escherichia coli (E. coli)	2	Not determined	In future limits will apply.
Bacteria--Fecal coliform	2	Not determined	Permit limits apply only.
Cyanide	2	Minimal	
Arsenic	2	Minimal	
Cadmium	2	Minimal	
Chromium III	2	Minimal	
Chromium VI	2	Minimal	
Copper	2	Minimal	
Lead	2	Minimal	
Mercury	2	Minimal	
Silver	2	Minimal	
Nickel	2	Minimal	
Zinc	2	Minimal	

Tier determination not possible: \* No in-stream standards for these parameters. \*\* Standards for these parameters are ranges  
 Hardness was not added because it is only used to adjust criteria for metals.

The following Antidegradation Review Summary attachments in Appendix E were used by the applicant:

Tier Determination and Effluent Summary

For pollutants of concern, the attachments are:

Attachment A, Tier 2 with significant degradation.

Attachment B, Tier 2 with minimal degradation.

Attachment D, Tier 1 Review. Additionally, a Tier 2 review must be conducted for each pollutant of concern on the appropriate water body segment

### ***5.2. EXISTING WATER QUALITY***

An upstream USGS Water Quality sampling station (#05587455) at Grafton, Illinois was used by the applicant. Where data was not available from the USGS Grafton station, MEC used the MDNR data collected between the Des Moines and Illinois River. Only USGS Grafton station data collected since 2002 (last 7 years) were used. Total cyanide was used from the MDNR data because the USGS data was insufficient. The use of total cyanide is conservative because cyanide, amendable to chlorination (as described in the water quality standards), is a fraction of total cyanide.

MDNR will use total recoverable for metal POCs because permit limits must be total recoverable for metals.

### ***5.3. ASSIMILATIVE CAPACITY CALCULATIONS***

Depending on the POC, calculated assimilative capacities were between 3.2% and 0.01% (Table 2). MEC preformed a separate analysis of ultimate BOD that resulted in 9% consumption of the assimilative capacity. *Missouri's Antidegradation Rule and Implementation Procedure* considers the use of less than 10% of the facility's available assimilative capacity as insignificant degradation. Therefore, the discharge will result in insignificant degradation for all POCs. The procedures indicate that cumulative degradation is measured from the time existing water quality is first determined. Because this antidegradation review serves to establish the existing water quality, the proposed expansion of the St. Charles Mississippi WWTF amounts to the sum total of the degradation. We believe that there is no need to determine cumulative degradation for this review.

Table 2. Assimilative Capacity Calculations for the Mississippi River Segment.

$$FAC = C_c * (Q_s + Q_{d2}) - C_s (Q_s + Q_{d1}) * CF$$

Outfall #001  
 Classified P streams only  
 Facility Name St. Charles, Ms River WWTF  
 Permit Number MO-00058343  
 Stream name Mississippi River 1Q10 = 1949  
 Qd1= 11.6 Qs 30Q10 = 2580  
 Qd2= 14.9 Qs 7Q10 = 2267

Cd1 = current effluent concentration  
 Cc= downstream concentration, the Water Quality Standard (WQS)  
 Qs = Stream 7Q10 flow (ft<sup>3</sup>/s)  
 Qd1 = Current effluent design flow (ft<sup>3</sup>/s)  
 Qd2 = Proposed effluent design flow (ft<sup>3</sup>/s)  
 Cs = combined stream concentrations (see Footnote 1 below)  
 Cd2 = proposed effluent concentration  
 CF= correction factor-see below\*  
 FACratio = facility assimilative capacity ratio

**All metals are total recoverable, except Cs for:  
 Chromium VI**

Units: Metals =ug/L; Ammonia, O&G = mg/L	Aquatic Life Acute (Cc)	Aquatic Life Chronic (Cc)	Chronic Drinking Water Standard or WBC	Current Effluent Concentration (Cd1)	Proposed Effluent Concentration (Cd2)	Upstream Water Quality <sup>1</sup>	Receiving Stream Concentration (Cs)	FAC (Chronic)	FAC (Acute)	FAC (lbs/day)*	Net Increase (lbs/day)	FACratio or provided ratio
Ammonia (May-Oct)	12.1	1.5		3.79	3.79	0.02	0.04	3796.79	0.00	20502.6	67.5	0.0033
Ammonia (Nov-Apr)	12.1	3.1		5.1	5.1	0.08	0.10	7778.63	0.00	42004.6	90.9	0.0022
Arsenic		20.00	50	20.20	20.20	1.50	1.60	42003.18	0.00	226.8	0.4	0.0016
Cadmium	10.20	0.50	5	4.70	4.70	0.03	0.06	1009.15	0.00	5.4	0.1	0.0154
Chromium III	3180.00	212.00	100	5.00	5.00	0.30	0.33	227446.63	0.00	1228.2	0.1	0.0001
Chromium VI	15.30	10.40		4.81	4.81	0.27	0.29	23063.26	0.00	124.5	0.1	0.0007
Copper	26.90	14.10	1300	60.00	60.00	2.10	2.40	26708.64	0.00	144.2	1.1	0.0074
Cyanide	22.00	5.00		5.00	5.00	4.78	4.78	515.24	0.00	2.8	0.1	0.0320
Lead	197.10	7.70	15	10.00	10.00	0.10	0.15	17224.65	0.00	93.0	0.2	0.0019
Nickel	844.00	93.80	100	25.00	25.00	2.36	2.47	208408.74	0.00	1125.4	0.4	0.0004
Silver	12.5	0.00	50	2.50	2.50	0.09	0.11	0.00	28523.75	154.0	0.0	0.0003
Zinc	216.00	196.00	5000	127.40	127.40	3.70	4.33	437382.52	0.00	2361.9	2.3	0.0010
Mercury	2.4	0.5	2	0.30	0.30	0.01	0.01	1114.80	0.00	6.0	0.0	0.0009
Oil and Grease		10		15.00	15.00	0.10	0.18	22418.30	0.00	121058.8	267.3	0.0022

Footnote1: Up stream water quality was obtained from the USGS water quality sampling station - Mississippi River at Grafton, IL Years (2002-2009).  
 Cs represents a combination of existing water quality data (upstream monitoring data and St. Charles Ms River WWTP concentrations) and the current permitted discharge levels or the 99th percentile of the discharge monitoring data.  
 EWQ from the USGS WQ sampling station was dissolved converted to total recoverable .  
 \*Conversion factor to change FAC to pound per day were as follows: ug/L units -- 0.0054; mg/L units -- 5.4; cfu/sec units -- 283.

**WQ Criteria:**

Aquatic life chronic and acute standards were converted to total recoverable.  
 Hardness of 200 mg/L was used to calculate criteria for metals that are hardness dependent. Represents the 25th percentile of hardness data.  
 Hardness data was obtained from 2002-09 USGS Water Quality Station at Grafton, IL.

**Stream Flow and Mixing Zone Determination (does not apply for Minimally Degradation):**

Stream flow value was obtained from the May 2009 Antidegradation Review submittal from MEC Water Resources.

**Oil and Grease discharge is assumed at MDL.**

5.4. DEMONSTRATION OF NECESSITY AND SOCIAL AND ECONOMIC IMPORTANCE

Missouri’s antidegradation implementation procedures specify that if the proposed activity does not result in significant degradation then a demonstration of necessity (i.e., alternatives analysis) and a determination of social and economic importance are not required.

**6. General Assumptions of the Water Quality and Antidegradation Review**

1. A Water Quality and Antidegradation Review (WQAR) assumes that [10 CSR 20-6.010(3), Continuing Authorities and 10 CSR 20-6.010(4) (D), consideration for no discharge] has been or will be addressed in a Missouri State Operating Permit or Construction Permit Application.
2. A WQAR does not indicate approval or disapproval of alternative analysis as per [10 CSR 20-7.015(4) Losing Streams], and/or any section of the effluent regulations.
3. Changes to Federal and State Regulations made after the drafting of this WQAR may alter Water Quality Based Effluent Limits (WQBEL).
4. Effluent limitations derived from Federal or Missouri State Regulations (FSR) may be WQBEL or Effluent Limit Guidelines (ELG).
5. WQBEL supercede ELG only when they are more stringent. Mass limits derived from technology based limits are still appropriate.
6. A WQAR does not allow discharges to waters of the state, and shall not be construed as a National Pollution Discharge Elimination System or Missouri State Operating Permit to discharge or a permit to construct, modify, or upgrade.
7. Limitations and other requirements in a WQAR may change as Water Quality Standards, Methodology, and Implementation procedures change.
8. Nothing in this WQAR removes any obligations to comply with county or other local ordinances or restrictions.

## 7. Mixing Considerations

**Mixing Zone (MZ):** One-quarter (1/4) of the stream volume of flow; length one-quarter (1/4) mile.  
[10 CSR 20-7.031(4)(A)4.B.(III)(a)].

**Zone of Initial Dilution (ZID):** One-tenth (0.1) of the mixing zone volume of flow, not to exceed 10 times the effluent design flow. [10 CSR 20-7.031(4)(A)4.B.(III)(b)].

The following are mixing consideration flows for Dardenne Chute (see explanation below):

	Flow (cfs)**	MZ (cfs)	ZID (cfs)
<b>7Q10</b>	2,267	566.8	56.7
<b>1Q10</b>	1,949	487.3	48.7
<b>30Q10</b>	2,580	645	64.5

$$AEC\% = \left( \frac{100}{DilutionRatio + 1} \right)$$

Mixing considerations were only used for water quality-based effluent limit; otherwise, total flow of the Dardenne Chute (Mississippi River) was assumed for facility assimilative capacity and minimal-degradation limit determination.

\*\*MEC Water Resources' assertion is that the percentage flow does not change with increasing flow. Regardless of flow conditions, MEC calculated the Dardenne chute flow as 12% of the total flow in the Mississippi River. An analysis of the USACE data showed no clear correlation between total flow and percentage flow through the Dardenne Chute (see Appendix C for more information).

## 8. Permit Limits and Information

WASTELOAD ALLOCATION  
STUDY CONDUCTED (Y OR N):  N

USE ATTAINABILITY  
ANALYSIS CONDUCTED (Y OR N):  N

WHOLE BODY CONTACT  
USE RETAINED (Y OR N):  Y

### OUTFALL #001

WET TEST (Y OR N):  Y FREQUENCY: ONCE/YEAR AEC: 21% METHOD: MULTIPLE

TABLE 3. EFFLUENT LIMITS—OUTFALL #001

PARAMETER	DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	WQBEL (NOTE 2)	MONITORING FREQUENCY
FLOW	*		*	FSR	once/day
CBOD <sub>5</sub> (MG/L)***		40	25	FSR	Once/weekday
TSS (MG/L)		45	30	FSR	Once/weekday
pH (S.U.)	6.0-9.0		6.0-9.0	FSR	Thrice/week
AMMONIA AS N (MG/L) (MAY 1 – OCT 31)	*		*	MDEL	Thrice/week
AMMONIA AS N (MG/L) (NOV 1 – APR 30)	*		*	MDEL	Thrice/week
ESCHERICHIA COLIFORM (E. COLI) (NOTE 1)			126**	FSR	Thrice/week
FECAL COLI FORM (NOTE 1)	1000**		400**	FSR	Thrice/week
OIL & GREASE (MG/L)	15		10	FSR	Once/quarter
CYANIDE, TOTAL (µG/L)	*		*	MDEL	Once/quarter
ARSENIC, TOTAL RECOVERABLE (µG/L)	*		*	MDEL	Once/quarter
CADMIUM, TOTAL RECOVERABLE (µG/L)	*		*	MDEL	Once/quarter
CHROMIUM III, TOTAL RECOVERABLE (µG/L)	*		*	MDEL	Once/quarter
CHROMIUM VI, DISSOLVED (µG/L)	*		*	MDEL	Once/quarter
COPPER, TOTAL RECOVERABLE (µG/L)	*		*	MDEL	Once/quarter
LEAD, TOTAL RECOVERABLE (µG/L)	*		*	MDEL	Once/quarter
NICKEL, TOTAL RECOVERABLE (µG/L)	*		*	MDEL	Once/quarter
ZINC, TOTAL RECOVERABLE (µG/L)	*		*	MDEL	Once/quarter
SILVER, TOTAL RECOVERABLE (µG/L)	*		*	MDEL	Once/quarter
ZINC, TOTAL RECOVERABLE (µG/L)	*		*	MDEL	Once/quarter
MERCURY, TOTAL DISSOLVED (µG/L)	*		*	MDEL	Once/quarter
HARDNESS (MG/L)	*		*	N/A	Once/quarter

- - Monitoring requirements only.

#### **For future reasonable potential analysis, refer to Table 6 of this WQAR.**

\*\* - The Monthly Average for Fecal Coliform and E. Coli shall be reported as a Geometric Mean.

NOTE 1 – COLONIES/100 ML; DURING RECREATION SEASON FROM APRIL 1 TO OCTOBER 31ST

NOTE 2 – WATER QUALITY-BASED EFFLUENT LIMITATION --WQBEL; OR MINIMALLY DEGRADING EFFLUENT LIMIT--MDEL; OR TECHNOLOGY-BASED EFFLUENT LIMIT-TBEL; OR NO DEGRADATION LIMIT--NDL; OR FSR --FEDERAL/STATE REGULATION; OR N/A--NOT APPLICABLE. ALSO, PLEASE SEE THE **GENERAL ASSUMPTIONS OF THE WQAR #4 & #5.**

\*\*\*This facility is required to meet a removal efficiency of 85% or more for BOD<sub>5</sub> and TSS. Influent BOD<sub>5</sub> and TSS data should be reported to ensure removal efficiency requirements are met.

**OUTFALL #002- Stormwater**

WET TEST (Y OR N):  N FREQUENCY: NA AEC: NA METHOD: NA

TABLE 4. EFFLUENT LIMITS—OUTFALL #002

PARAMETER	DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MONITORING FREQUENCY
FLOW	*		*	once/quarter
BOD <sub>5</sub> (MG/L)	*		*	once/quarter
RAINFALL (INCHES)	*		*	once/quarter
PH (S.U.)	6.5-9.0		6.5-9.0	once/quarter
OIL & GREASE (MG/L)	15.0		10.0	once/quarter
SETTLABLE SOLIDS (ML/L/HR)	1.5		1.0	once/quarter

\* - Monitoring requirements only.

ALSO, PLEASE SEE THE **GENERAL ASSUMPTIONS OF THE WQAR #4 & #5.**

**9. Receiving Water Monitoring Requirements**

No receiving water monitoring requirements recommended at this time.

**10. Derivation and Discussion of Limits**

Wasteload allocations and limits were calculated using two methods:

1) Water quality based – Using water quality criteria or water quality model results and the dilution equation below:

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

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

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

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

2) Assimilative capacity based – Using existing water quality (EWQ), water quality criteria, and the facility assimilative capacity ratio within the following equation:

$$Cd2 = ([Cc \times (Qs + Qd2) + Cs \times (Qs + Qd1)] FACratio + Qd1 \times Cd1) / Qd2$$

Where: Cc = downstream concentration, the Water Quality Standard (WQS)  
 Qs = Stream 7Q10 flow (ft<sup>3</sup>/s)  
 Qd1 = Current effluent **design** flow (ft<sup>3</sup>/s)  
 Qd2 = Proposed effluent design flow (ft<sup>3</sup>/s)

Cs = combined stream concentrations (calculated using EWQ, permitted discharges)  
 Cd1 = effluent concentration of the current facility  
 Cd2 = effluent concentration of the proposed facility  
 FACratio = facility assimilative capacity ratio (calculated or assumed)

Chronic wasteload allocations (WLA<sub>c</sub>) were determined using applicable chronic water quality criteria (CCC: criteria continuous concentration) and upstream stream flow without mixing considerations. Acute wasteload allocations are only determined in the absence of applicable chronic criteria.

The minimally-degrading effluent average monthly and daily maximum limits are determined by applying the WLA<sub>c</sub> as the daily maximum (MDL) and dividing the MDL by 1.5 to derive the average monthly limit. This is an accepted procedure that is defined in USEPA’s “Technical Support Document For Water Quality-based Toxics Control” (EPA/505/2-90-001).

Note: Minimally-degrading effluent limits (MDEL) have been based on the authority included in Section III. Permit Consideration of the AIP.

**10.1. OUTFALL #001 – MAIN FACILITY OUTFALL**

- **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.
- **Carbonaceous Biochemical Oxygen Demand (CBOD<sub>5</sub>).** BOD<sub>5</sub> limits of 30 mg/L monthly average, 45 mg/L weekly average [10 CSR 20-7.015(2)(B)1]. However, per 10 CSR 20-7.015(2)(B)6, the permittee requests 25 mg/L monthly average, 40 mg/L weekly average. No demonstration that nitrification is occurring was provided; however, St. Charles MS River WWTP treatment type may have sufficient nitrification to merit CBOD<sub>5</sub> limits.

The *St. Charles MS River WWTP Antidegradation Report* determined using ultimate BOD (BOD<sub>u</sub>) that the net increase in ultimate BOD divided by the available assimilative capacity of the Mississippi River was 9% and thus less than the required threshold of 10% for insignificant degradation. In addition, Streeter Phelps modeling simulated using the current design and the proposed design flow indicated a 1.67 and 1.84 mg/L deficit (see Appendix D for proposed design flow modeling). This modeled difference in deficit and critical dissolved oxygen (DO) is insignificant. The modeled lowest DO or critical DO sag concentration was 6.3 and 6.2 mg/L, respectively. The DO sag may take place approximately 48.7 miles downstream of the discharge that is ultimately in the main stem Mississippi River. The model was not able to account for the high flows of the main stem Mississippi River or the contribution of other channels as the Dardenne Chute flows to the main stem Mississippi River; however, including their contributions would likely increase the DO sag concentrations.

**As a result of this analysis, MDNR staff concludes that the above mentioned effluent limits are protective of beneficial uses and existing water quality.**

Influent monitoring may be required for this facility in its Missouri State Operating Permit.

- **Total Suspended Solids (TSS).** 30 mg/L monthly average, 45 mg/L weekly average. [10 CSR 20-7.015(2)(B)1]. Influent monitoring may be required for this facility in its Missouri State Operating Permit.
- **pH.** pH shall be maintained in the range from six to nine (6 – 9) standard units [10 CSR 20-7.015 (2)(B)2].
- **Total Ammonia Nitrogen.** Monitoring requirement only. Monitoring for ammonia are included to determine whether “reasonable potential” to exceed water quality standards exists after the discharge begins.

Season	Temp (°C)	pH (SU)	Total Ammonia Nitrogen CCC (mg N/L)	Total Ammonia Nitrogen CMC (mg N/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.

See Table 5 and 7 for limit determination. The facility performance is somewhat certain with the new expansion. However, given the applicants use of the same discharge data for the assimilative capacity calculations, a reasonable potential analysis (RPA) was conducted to see if exceedence of water quality standards (Table 6) or the maximum daily limit of the MDEL (Table 5) would occur with the expanded design flow. Ammonia limits will not apply. Upon renewal, a RPA will be conducted to determine the need for the ammonia limits. The RPA should be conducted such that the maximum daily limit on Table 5 or the water quality standards will not be exceeded. If exceedence occurs then the maximum daily limit of the MDEL should be applied because it is lower than the water quality-based effluent limit.

See Appendix G for protection of state-listed endangered mussels species listed in Appendix F. Natural Heritage Review. Based on the RPA in Table 6, acute (ZID) or chronic (MZ), ammonia discharge concentrations will not exceed the toxicity thresholds shown in Appendix G. The chronic total ammonia nitrogen toxicity threshold is 0.37 mg/L for mussels compared to the receiving stream concentration for summer and winter MZ of 0.4 and 0.33 mg/L, respectively, on Table 6. Toxicity of ammonia is lowered with lower pH and temperature. Thus, this analysis assumes that the summer pH and temperature after mixing are at or below the pH and temperature value for the chronic toxicity threshold presented in Appendix G. The toxicity threshold values are provided as benchmarks for which to show that the discharge should not impact the endangered mussels. The toxicity values in Appendix G are not water quality criteria.

- **E. coli**. This facility may be required to have E. coli effluent limitations when Missouri adopts the implementation of the E. coli effluent regulations. Also, please see **GENERAL ASSUMPTIONS OF THE WQAR #7**. *The addition of these limits will depend on new E. coli rule and finalizing the operating permit. St. Charles Ms River proposed limits of 126 cfu/100ml.*
- **Fecal Coliform**. Discharge shall not contain more than a monthly geometric mean of 400 colonies/100 mL and a daily maximum of 1000 colonies/100 mL during the recreational season (April 1 – October 31) [10 CSR 20-7.015(2)(B)4.A.]. Future renewals of the facility operating permit will contain effluent limitations for E. coli that will replace fecal coliform as the applicable bacteria criteria in Missouri's water quality standards when Missouri adopts the implementation of the E. coli standards. Also, please see **GENERAL ASSUMPTIONS OF THE WQAR #7**. *Removal of these limits will depend on new E. coli rule and finalizing the operating permit.*
- **Oil & Grease**. Conventional pollutant, [10 CSR 20-7.031, Table A]. Effluent limitation for protection of aquatic life; 10 mg/L monthly average, 15 mg/L daily maximum.
- **Cyanide, Total**. Nonconventional pollutant, [10 CSR 20-7.031, Table A]. Protection of Aquatic Life Chronic and Acute Criteria ( g/L) are listed in Table 2.

### **Metals**

#### **Non-hardness Dependent Metals:**

Note: Minimally-degrading effluent limits were determined for these metals. Limits were determined using the method described in the beginning of the Derivation and Discussion of Limits section and below Table 5 of this section. These limits and water quality standards were compared to the reasonable potential concentration in Table 6 to determine the need for limits or monitoring only. Upon renewal, these limits and water quality standards will be compared to the calculated receiving water concentration (from current discharge monitoring data) and applied if exceedences occur.

- **Arsenic, Total Recoverable**. Monitoring only. Protection of Aquatic Life Chronic and Acute Criteria ( g/L) are listed in Table 2.
- **Mercury, Total Recoverable**. Monitoring only. Protection of Aquatic Life Chronic and Acute Criteria ( g/L) are listed in Table 2.

#### **Hardness Dependent 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 = 200 mg/L. Hardness was determined from data submitted with the *St. Charles MS River WWTP Antidegradation Report*. Data originated from the USGS Water Quality Monitoring Station at Grafton, Illinois.

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 adsorbed 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
Cadmium	0.915	0.88
Chromium III	0.316	0.860
Chromium VI	0.982	0.962
Copper	0.960	0.960
Lead	0.690	0.690
Nickel	0.998	0.997
Silver	0.85	N.A.
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 = 200 mg/L.

- **Cadmium, Total Recoverable.** Monitoring only. Protection of Aquatic Life Chronic and Acute Criteria ( g/L) are listed in Table 2.
- **Chromium III, Dissolved.** Monitoring only. Protection of Aquatic Life Chronic and Acute Criteria ( g/L) are listed in Table 2.
- **Chromium VI, Total Recoverable.** Monitoring only. Protection of Aquatic Life Chronic and Acute Criteria ( g/L) are listed in Table 2.
- **Copper, Total Recoverable.** Monitoring only. Protection of Aquatic Life Chronic and Acute Criteria ( g/L) are listed in Table 2. See Appendix G for protection of state-listed endangered mussels species listed in Appendix F. Based on the RPA in Table 6, acute (ZID) or chronic (MZ) discharge concentrations will not exceed the toxicity thresholds shown in Appendix G. The toxicity threshold values are provided as benchmarks for which to show that the discharge should not impact the endangered mussels. The toxicity values in Appendix G are not water quality criteria.
- **Lead, Total Recoverable.** Monitoring only. Protection of Aquatic Life Chronic and Acute Criteria ( g/L) are listed in Table 2.
- **Silver, Total Recoverable.** Monitoring only. Protection of Aquatic Life Chronic and Acute Criteria ( g/L) are listed in Table 2.
- **Zinc, Total Recoverable.** Monitoring only. Protection of Aquatic Life Chronic and Acute Criteria ( g/L) are listed in Table 2.

**10.2. LIMIT DERIVATION**

The process for limit derivation for POCs that are minimally degrading is as follows:

- 1) Determine using method #2 outlined above for all applicable POCs the minimally degrading wasteload allocation and effluent limits (MDEL) that retains the remaining assimilative capacity and does not exceed 10% of the FAC.
- 2) Determine the need for permit limits of various POCs using reasonable potential analysis. While this process is applied to all applicable POCs, this process is particularly important for POCs having monitoring only requirements for an existing discharge. No POC will exceed the maximum daily limit (MDL) of the MDEL or water quality standards. Limits that exceed the MDL of the MDEL may have MDEL applied. Some POCs may have the limit applied under certain circumstances.
- 3) To determine if any of the above proposed limits are protective of water quality standards, the final step is to develop water quality-based effluent limits. The more stringent of the MDEL and QBEL will be applied.

The Table 5 below contains the minimally-degrading effluent average monthly and maximum daily limits for most of the pollutants of concern. Using MDNR Water Quality Information Systems data, we completed MDELs with a different set of discharge monitoring data than provided in the Antidegradation Report (See Appendix B). The 99<sup>th</sup> percentile for some POCs was different than those provided by MEC due to a longer monitoring period. Discussion of the assumptions and basis for the limits can be found below the table. The area in yellow in the table is a confirmation that the maximum daily limit (MDL) is less than 10 % degradation.

Table 5. Calculations of the Minimally-Degrading Effluent Limits

Outfall #001  
Classified P streams only  
Facility Name St. Charles, Ms River WWTF  
Permit Number MO-00058343  
Stream name Mississippi R.

Qd1= 11.6  
Qd2= 14.9

Qs 1Q10 = 1949  
Qs 30Q10 = 2580  
Qs 7Q10 = 2267

Allowance discharge is equal to  $Cd2 = \frac{((Cc * (Qs + Qd2) + Cs * (Qs + Qd1)) * FACratio + Qd1 * Cd1) * Qd2}{Qd2}$   
Cd1 = current effluent concentration  
Cc = downstream concentration, the Water Quality Standard (WQS)  
Qs = Stream flow (ft<sup>3</sup>/s)  
Qd1 = Current effluent design flow (ft<sup>3</sup>/s)  
Qd2 = Proposed effluent design flow (ft<sup>3</sup>/s)  
Cs = combined stream concentrations (see Footnote 1 below)  
Cd2 = effluent concentration  
FACratio = facility assimilative capacity ratio

WLAa = Cd2 using the acute WQS  
WLAc = Cd2 using the chronic WQS  
MDL ug/L = WLAa,c  
AML ug/L = WLAc,a / 1.5

**All values are total recoverable, except Cs for: Chromium VI**

UNITS: Metals=ug/L; Ammonia, O&G = mg/L	Aquatic Life Acute (Cc)	Aquatic Life Chronic (Cc)	Chronic Drinking Water Standard or WBC	Effluent Concentration (Cd1)	Upstream Water Quality <sup>1</sup>	Receiving Stream Concentration (Cs)	FAC (Chronic)	FAC (Acute)	Net Increase (lbs/day)	FACratio or <10%	WLAc	WLAa	MDL	AML	Net Increase (lbs/day)	Check of % FAC (MDL)
Ammonia (May-Oct)	12.1	1.5		3.79	0.02	0.04	3796.79	0.00	67.5	9.9%	28.18	0.00	28.2	18.8	2029.8	9.9%
Ammonia (Nov-Apr)	12.1	3.1		5.1	0.08	0.10	7778.63	0.00	90.9	9.9%	55.65	0.00	55.7	37.1	4158.5	9.9%
Arsenic		20.00	50	20.20	1.50	1.60	42003.18	0.00	18864.8	9.9%	294.81	0.00	294.8	196.5	1176803.1	9.9%
Cadmium	10.20	0.50	5	4.70	0.03	0.06	1009.15	0.00	0.1	9.9%	10.36	0.00	10.4	6.9	0.5	9.9%
Chromium III	3180.00	212.00	100	5.00	0.30	0.33	227446.63	0.00	0.1	9.9%	1515.12	0.00	1515.1	1010.1	121.6	9.9%
Chromium VI	15.30	10.40		4.81	0.27	0.29	23063.26	0.00	0.1	9.9%	156.98	0.00	157.0	104.7	12.3	9.9%
Copper	26.90	14.10	1300	60.00	2.10	2.40	26708.64	0.00	1.1	9.9%	224.17	0.00	224.2	149.4	14.3	9.9%
Cyanide	22.00	5.00		5.00	4.78	4.78	515.24	0.00	0.1	9.9%	7.32	0.00	7.3	4.9	0.3	9.9%
Lead	197.10	7.70	15	10.00	0.10	0.15	17224.65	0.00	0.2	9.9%	122.23	0.00	122.2	81.5	9.2	9.9%
Nickel	844.00	93.80	100	25.00	2.36	2.47	208408.74	0.00	0.4	9.9%	1404.19	0.00	1404.2	936.1	111.4	9.9%
Silver	12.5	0.00	50	2.50	0.09	0.11	0.00	28523.75	0.0	9.9%	0.00	191.47	191.5	127.6	15.2	9.9%
Zinc	216.00	196.00	5000	127.40	3.70	4.33	437382.52	0.00	2.3	9.9%	3005.28	0.00	3005.3	2003.5	233.8	9.9%
Mercury	2.4	0.5	2	0.30	0.01	0.01	1114.80	0.00	0.0	9.9%	7.64	0.00	7.6	5.1	0.6	9.9%
Oil and Grease		10		15.00	0.10	0.18	22418.30	0.00	0.3	9.9%	160.63	0.00	160.6	107.1	12.0	9.9%

**Footnote1:** Up stream water quality was obtained from the USGS water quality sampling station - Mississippi River at Grafton, IL Years (2002-2009).  
Cs represents a combination of existing water quality data (upstream monitoring data and St. Charles Ms River WWTP concentrations) and the current permitted discharge levels or the 99th percentile of the discharge monitoring data.  
EWQ from the USGS WQ sampling station was dissolved converted to total recoverable.

**WQ Criteria:**  
Aquatic life chronic and acute standards were converted to total recoverable.  
Hardness of 200 mg/L was used to calculate criteria for metals that are hardness dependent.  
Hardness data was obtained from 2002-09 USGS Water Quality Station at Grafton, IL.  
Silver has no chronic water quality criteria.

**Assumptions and Basis:**  
MDL = WLA  
AML = WLA / 1.5  
FACratio is a value that cannot be exceeded to retain minimal degradation.  
Conversion factors for assimilative capacity calculations are: 0.0054 for ug/L, 5.4 for mg/L.  
Net increase = (MDL \* proposed design flow) - (Cd1 \* current design flow)

**Stream Flow and Mixing Zone Determination (does not apply for Minimally Degrading):**  
Stream flow value was obtained from the May 2009 Antidegradation Review submittal from MEC Water Resources.  
Mixing Zone (MZ): One-quarter (1/4) of the stream volume of flow; length one-quarter (1/4) mile. [10 CSR 20-7.031(4)(A)4.B.(III)(a)].  
Zone of Initial Dilution (ZID): One-tenth (0.1) of the mixing zone volume of flow, not to exceed 10 times the effluent design flow. [10 CSR 20-7.031(4)(A)4.B.(III)(b)].

**Explanation of Limits:**  
Because the Mississippi River has drinking water designated uses, the lesser of the chronic drinking water or aquatic life criteria may be used to determine WLAc.  
The use of the LTAA or LTAc to determine MDL and AML may create a percent of FAC greater than 10%, therefore the above assumption were used.  
The presence of zeros in the WLA columns indicates that no water quality criteria are available.

To determine the need for permit limits of the various pollutants of concern, a reasonable potential analysis was conducted. MEC Water Resources also completed the statistical analysis of the raw discharge monitoring data. Using MDNR Water Quality Information Systems data, we completed a RPA with the same outcome as MEC's RPA yet with a different set of discharge monitoring data (See Appendix B). The reasonable potential to exceed (RPTE calculation column) value in Table 6 below was determined by following the procedure outline in the EPA/505/2-90-001. No POC exceeded the water quality criteria, which is lower than the maximum daily limit of the MDELs.

Table 6. Reasonable Potential Analysis to Exceed Water Quality Standards.

Outfall #001  
 Classified P streams only  
 Facility Name St. Charles, Ms River WWTF  
 Permit Number MO-00058343  
 Stream name Mississippi R. Qs 1Q10 = 1949  
 Qs 30Q10 = 2580  
 Qd2= 14.9 Qs 7Q10 = 2267

All values are total recoverable, except Cs for:

Chromium VI  
 Qs = Stream 7Q10 flow (ft<sup>3</sup>/s), or 1Q10, or 30Q10  
 Qe = Effluent design flow (ft<sup>3</sup>/s)  
 Cs = combined stream concentrations (see Footnote 1 below)  
 Ce = maximum effluent concentration  
 NA = not applicable

$$C = \frac{(C_s * Q_s) + (C_e * Q_e)}{(Q_e + Q_s)}$$

Metals=ug/L; Ammonia, O&G = mg/L	Aquatic Life Acute (Cc)	Aquatic Life Chronic (Cc)	Chronic Drinking Water Standard	Maximum Concentration (Ce)	Upstream WQ (Cs)	RPTE Calculation	Receiving Stream Concentration (C)-MZ	Receiving Stream Concentration (C)-ZID	RPTE (Y/N)
Ammonia (May-Oct)	12.1	1.5		3.8	0.04	16.06	0.40	3.79	N
Ammonia (Nov-Apr)	12.1	3.1		5.2	0.10	10.37	0.33	2.51	N
Arsenic		20.0	50	0.021	1.60	33.30	2.41	8.20	N
Cadmium	10.2	0.5	5	0.005	0.06	7.12	0.24	1.53	N
Chromium III	3180.0	212.0	100	0.005	0.33	6.85	0.49	1.68	N
Chromium VI	10.2	0.5		4.40	0.29	6.03	0.44	1.49	N
Copper	3180.0	212.0	1300	0.06	2.40	128.38	5.63	28.63	N
Cyanide	22.0	5.0		0.005	4.78	7.76	4.86	5.40	N
Lead	197.1	7.7	15	0.01	0.15	14.48	0.52	3.14	N
Nickel	844.0	93.8	100	0.025	2.47	45.43	3.57	11.41	N
Silver	12.5	0.0	50	0.0025	0.11	3.25	0.19	0.76	N
Zinc	216.0	196.0	5000	0.13	4.33	219.29	9.84	49.08	N
Mercury	2.4	0.5	2	0.0003	0.01	0.41	0.02	0.09	N

**Footnote1:** Up stream water quality was obtained from the USGS water quality sampling station - Mississippi River at Grafton, IL Years (2002-2009). Cs represents a combination of existing water quality data (upstream monitoring data and St. Charles Ms River WWTP concentrations) and the current permitted discharge levels or the 99th percentile of the discharge monitoring data. EWQ from the USGS WQ sampling station was dissolved converted to total recoverable.

**Assumptions and Basis:**

Qd2= the proposed discharge.  
 The concentrations in the proposed were assumed to be the same as the current give the proposed concentrations used in the FAC calculations.

**WQ Criteria:**

Aquatic life chronic and acute standards were converted to total recoverable.  
 Hardness of 200 mg/L was used to calculate criteria for metals that are hardness dependent.  
 Hardness data was obtained from 2002-09 USGS Water Quality Station at Grafton, IL.

**Stream Flow and Mixing Zone Determination:**

Stream flow value was obtained from the May 2009 Antidegradation Review submittal from MEC Water Resources.

Limits will be applied to oil and grease. Upon renewal, a RPA will be conducted to determine the need for the ammonia limits. The RPA should be conducted such that the maximum daily limit of the MDEL or the water quality standards will not be exceeded.

The final step in the limit determination process is the comparison of the water quality-based effluent limit (WQBEL) and the minimally degrading effluent limit. Table 7 shows the WQBEL for the POCs. By comparison, all but Silver's minimally degrading effluent limits in Table 5 are less than the WQBEL, therefore the most stringent minimally degrading effluent limits may apply. The WQBEL for silver was more stringent than the MDEL.

Table 7. Water Quality-based Effluent Limits for POCs.

Outfall #001  
 Classified P streams only  
 Facility Name St. Charles, Ms River WWTF  
 Permit Number MO-00058343  
 Stream name Mississippi River

Allowable discharge is equal to  $Ce = ((Qe + Qs) / Cc) * (Qs / Cs) / Q$   
 Cwq = downstream concentration, the Water Quality Standard  
 Qs = Stream 7Q10 flow (ft<sup>3</sup>/s), or 1Q10, or 30Q10  
 Qe = proposed effluent design flow (ft<sup>3</sup>/s)  
 Cs = combined stream concentrations (see Footnote 1)  
 Ce = effluent concentration

WLAa = Ce using the chronic WQS  
 WLAc = Ce using the acute WQS  
 LTAA = WLA acute \* LTAA multiplier  
 LTAc = WLA chronic \* LTAc multiplier  
 MDL ug/L = the more protective LTA (LTAA or LTAc) \* AML multiplier  
 AML ug/L = the more protective LTA (LTAA or LTAc) \* MDL multiplier

Qd2 = 14.9  
 Qs 1Q10 = 1949  
 Qs 30Q10 = 2580  
 Qs 7Q10 = 2267  
 Qs decreased by 0.25 for mixing zone and 0.025 for zone of initial dilution considerations

UNITS: Metals=ug/L; Ammonia, O&G = mg/L	Aquatic Life Acute (Cc)	Aquatic Life Chronic (Cc)	Chronic Drinking Water Standard or WBC	Receiving Stream Concentration (Cs) <sup>1</sup>	WLAa	WLAc	LTAA	LTAc	MDL	AML
Ammonia (May-Oct)	12.1	1.5		0.04	406.58	63.71	130.5	49.7	<b>154.6</b>	<b>59.1</b>
Ammonia (Nov-Apr)	12.1	3.1		0.10	404.44	130.53	129.8	101.8	<b>316.6</b>	<b>121.2</b>
Arsenic		20.00	50	1.60	0.00	720.06	0.0	561.6	<b>1746.7</b>	<b>668.4</b>
Cadmium	10.20	0.50	5	0.06	48.78	17.32	15.7	9.1	<b>28.4</b>	<b>14.2</b>
Chromium III	3180.00	212.00	100	0.33	15274.50	3891.28	4904.4	2052.4	<b>6392.1</b>	<b>3186.2</b>
Chromium VI	15.30	10.40		0.29	72.38	394.82	23.2	208.2	<b>72.4</b>	<b>36.1</b>
Copper	26.90	14.10	1300	2.40	120.09	459.17	38.6	242.2	<b>120.1</b>	<b>59.9</b>
Cyanide	22.00	5.00		4.78	87.50	13.33	28.1	7.0	<b>21.9</b>	<b>10.9</b>
Lead	197.10	7.70	15	0.15	946.23	294.81	303.8	155.5	<b>484.3</b>	<b>241.4</b>
Nickel	844.00	93.80	100	2.47	4044.91	3567.62	1298.8	1881.7	<b>4044.9</b>	<b>2016.2</b>
Silver	12.5	0.00	50	0.11	59.64	0.00	19.1	0.0	<b>59.6</b>	<b>29.7</b>
Zinc	216.00	196.00	5000	4.33	1021.12	7486.48	327.9	3948.6	<b>1021.1</b>	<b>509.0</b>
Mercury	2.4	0.5	2	0.01	11.49	19.08	3.7	10.1	<b>11.5</b>	<b>5.7</b>

**Footnote 1:** Up stream water quality was obtained from the USGS water quality sampling station - Mississippi River at Grafton, IL Years (2002-2009).  
 Cs represents a combination of existing water quality data (upstream monitoring data and St. Charles Ms River WWTP concentrations) and the current permitted discharge levels or the 99th percentile of the discharge monitoring data. EWQ from the USGS WQ sampling station was dissolved converted to total recoverable.

**Assumptions and Basis:**  
 CV = 0.6  
 For LTA, MDL the 99th Percentile was used.  
 For AML, the 95th Percentile was used.

**WQ Criteria:**  
 Aquatic life chronic and acute standards were converted to total recoverable.  
 Hardness of 200 mg/L was used to calculate criteria for metals that are hardness dependent.  
 Hardness data was obtained from 2002-09 USGS Water Quality Station at Grafton, IL.

Metals Multiplier: LTAA = 0.321  
 LTAc = 0.527  
 MDL = 3.11  
 AML = 1.55 n=4

Ammonia Multipliers: MDL = 3.11  
 AML = 1.19  
 LTAA = 0.321  
 LTAc = 0.780

N=30  
 30 day average

**Oil and Grease Cs is assumed.**

**Mixing Zone Determination:**  
 Mixing Zone (MZ): One-quarter (1/4) of the stream volume of flow; length one-quarter (1/4) mile. [10 CSR 20-7.031(4)(A)4.B.(III)(a)].  
 Zone of Initial Dilution (ZID): One-tenth (0.1) of the mixing zone volume of flow, not to exceed 10 times the effluent design flow. [10 CSR 20-7.031(4)(A)4.B.(III)(b)].

**Explanation of Limits:**  
 Because the Mississippi River has drinking water designated uses, the lesser of the chronic drinking water or aquatic life criteria may be used to determine WLAc. The lesser of the LTAA or LTAc was used to determine MDL and AML (shown in bold letters above on table).  
 The presence of zeros in the WLA and LTA columns indicates that no water quality criteria available.

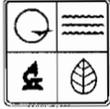
10.3. **OUTFALL #002 – STORM WATER RUN-OFF OUTFALL**

- **Biochemical Oxygen Demand (BOD<sub>5</sub>).** Monitoring requirement only, requirement retained from previous state operating permit.
- **pH.** A pH range was established in the previous operating permit; however, staff have determined that the pH must be maintained in the range of 6.5 to 9.0, as per [10 CSR 20-7.031(4)(E)].
- **Settleable Solids.** Effluent limitations from the previous state operating permit have been retained.
- **Oil & Grease.** Conventional pollutant, effluent limitation for protection of aquatic life; 10 mg/L monthly average, 15 mg/L daily maximum.

11. **ANTIDEGRADATION REVIEW PRELIMINARY DETERMINATION**

The proposed expansion of the St. Charles Mississippi River WWTP to 9.6 MGD will result in minimal degradation of the segment identified in the Mississippi River. Per the requirements of the AIP, the effluent limits in this review were developed to be protective of beneficial uses and to retain the remaining assimilative capacity. MDNR has determined that the submitted review is sufficient and meets the requirements of the AIP. No further analysis is needed for this discharge.

Reviewer: Todd J. Blanc  
 Date: July 16, 2009  
 Unit Chief: John Rustige, PE



MISSOURI DEPARTMENT OF NATURAL RESOURCES  
 WATER PROTECTION PROGRAM, WATER POLLUTION CONTROL BRANCH  
**FORM B2 – APPLICATION FOR CONSTRUCTION OR OPERATING  
 PERMIT FOR FACILITIES WHICH RECEIVE PRIMARILY DOMESTIC  
 WASTE AND HAVE A DESIGN FLOW MORE THAN 100,000 GALLONS  
 PER DAY**

**FOR AGENCY USE ONLY**

CHECK NUMBER	
DATE RECEIVED 7-14-14	FEE SUBMITTED -0-

**PART A – BASIC APPLICATION INFORMATION**

1. This application is for:

An operating permit and antidegradation review public notice.

A construction permit following an appropriate operating permit and antidegradation review public notice.

A construction permit, a concurrent operating permit and antidegradation review public notice.

A construction permit (submitted before Aug. 30, 2008 or antidegradation review is not required).

An operating permit for a new or unpermitted facility. Construction Permit # \_\_\_\_\_

An operating permit renewal: Permit #MO- 0058343 Expiration Date 10/29/14

An operating permit modification: Permit #MO- \_\_\_\_\_ Reason: \_\_\_\_\_

1.1 Is this a Federal/State Funded Project?  Yes  No Funding Agency/Project #: \_\_\_\_\_

1.2 Is the appropriate fee included with the application (See instructions for appropriate fee)?  Yes  No (Renewal)

**2. FACILITY**

NAME St Charles Mississippi River WWTF		TELEPHONE NUMBER WITH AREA CODE 636-250-4600	
ADDRESS (PHYSICAL) 4933 Dwyer Road	CITY St. Charles	STATE MO	ZIP 63301
2.1 LEGAL DESCRIPTION (Plant Site): NE 1/4, SW 1/4, 1/4, Sec. 36, T 48N, R 4E		County St Charles	
2.2 UTM Coordinates Easting (X): <u>715195</u> Northing (Y): <u>4305984</u> For Universal Transverse Mercator (UTM), Zone 15 North referenced to North American Datum 1983 (NAD83)			

**3. OWNER** City of St. Charles

NAME City of St. Charles		TITLE N/A		TELEPHONE NUMBER WITH AREA CODE 636.949.3237	
ADDRESS 200 North Second Street	CITY St. Charles	STATE MO	ZIP 63301		

3.1 Request review of draft permit prior to Public Notice?  Yes  No

**4. CONTINUING AUTHORITY:** Permanent organization which will serve as the continuing authority for the operation, maintenance and modernization of the facility.

NAME City of St. Charles		CITY St. Charles	
ADDRESS 200 North Second Street	CERTIFICATE NUMBER (IF APPLICABLE) N/A	STATE MO	ZIP 63301

**5. OPERATOR**

NAME Woodard & Curran		TITLE Contract Operator		TELEPHONE NUMBER WITH AREA CODE 636.250.4600	
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**6. FACILITY CONTACT**

NAME Gary Miller, MO WW-A 754		TITLE Project Manager	
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MO 780-1805 (09-08)



MISSOURI DEPARTMENT OF NATURAL RESOURCES  
WATER PROTECTION PROGRAM, WATER POLLUTION CONTROL BRANCH  
**FORM B2 – APPLICATION FOR CONSTRUCTION OR OPERATING PERMIT FOR FACILITIES  
WHICH RECEIVE PRIMARILY DOMESTIC WASTE AND HAVE A DESIGN FLOW MORE THAN  
100,000 GALLONS PER DAY**

FACILITY NAME St. Charles Mississippi River WWTF	
PERMIT NO. MO0058343	COUNTY St. Charles

**APPLICATION OVERVIEW**

Form B2 has been developed in a modular format and consists of Parts A, B and C and a Supplemental Application Information (Parts D, E, F and G) packet. All applicants must complete Parts A, B and C. Some applicants must also complete parts of the Supplemental Application Information packet. The following items explain which parts of Form B2 you must complete. Submittal of an incomplete application may result in the application being returned.

**BASIC APPLICATION INFORMATION**

- A. Basic Application Information for all Applicants. All applicants must complete Part A.
- B. Additional Application Information for all Applicants. All applicants must complete Part B.
- C. Certification. All applicants must complete Part C.

**SUPPLEMENTAL APPLICATION INFORMATION**

- D. Expanded Effluent Testing Data. A treatment works that discharges effluent to surface water of the United States and meets one or more of the following criteria must complete *Part D - Expanded Effluent Testing Data*:
  - 1. Has a design flow rate greater than or equal to 1 million gallons per day.
  - 2. Is required to have or currently has a pretreatment program.
  - 3. Is otherwise required by the permitting authority to provide the information.
- E. Toxicity Testing Data. A treatment works that meets one or more of the following criteria must complete *Part E - Toxicity Testing Data*:
  - 1. Has a design flow rate greater than or equal to 1 million gallons per day.
  - 2. Is required to have or currently has a pretreatment program.
  - 3. Is otherwise required by the permitting authority to provide the information.
- F. Industrial User Discharges and Resource Conservation and Recovery Act / Comprehensive Environmental Response, Compensation and Liability Act Wastes. A treatment works that accepts process wastewater from any significant industrial users, also known as SIUs, or receives a Resource Conservation and Recovery Act or CERCLA wastes must complete *Part F - Industrial User Discharges and Resource Conservation and Recovery Act /CERCLA Wastes*.  
SIUs are defined as:
  - 1. All Categorical Industrial Users, or CIUs, subject to Categorical Pretreatment Standards under 40 Code of Federal Regulations 403.6 and 40 Code of Federal Regulations 403.6 and 40 CFR Chapter 1, Subchapter N.
  - 2. Any other industrial user that meets one or more of the following:
    - i. Discharges an average of 25,000 gallons per day or more of process wastewater to the treatment works (with certain exclusions).
    - ii. Contributes a process waste stream that makes up five percent or more of the average dry weather hydraulic or organic capacity of the treatment plant.
    - iii. Is designated as an SIU by the control authority.
- G. Combined Sewer Systems. A treatment works that has a combined sewer system must complete *Part G - Combined Sewer Systems*.

**ALL APPLICANTS MUST COMPLETE PARTS A, B and C**

FACILITY NAME St. Charles Mississippi River WWTF	PERMIT NO. MO- 0058343	OUTFALL NO. #001
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**PART A – BASIC APPLICATION INFORMATION**

**7. ADDITIONAL FACILITY INFORMATION**

7.1 BRIEF DESCRIPTION OF FACILITIES

Influent flow meters/ mechanical screen/ grit removal system/ pre-aerobic selectors/ activated sludge/ final clarification/ ultraviolet (UV) disinfection/ sludge thickening and dewatering/ landfill of sludge.

7.2 TOPOGRAPHIC MAP. ATTACH TO THIS APPLICATION A TOPOGRAPHIC MAP OF THE AREA EXTENDING AT LEAST ONE MILE BEYOND FACILITY PROPERTY BOUNDARIES. THIS MAP MUST SHOW THE OUTLINE OF THE FACILITY AND THE FOLLOWING INFORMATION. (YOU MAY SUBMIT MORE THAN ONE MAP IF ONE MAP DOES NOT SHOW THE ENTIRE AREA.)

- a. The area surrounding the treatment plant, including all unit processes.
- b. The location of the downstream landowner(s). (See Item 10.)
- c. The major pipes or other structures through which wastewater enters the treatment works and the pipes or other structures through which treated wastewater is discharged from the treatment plant. Include outfalls from bypass piping, if applicable.
- d. The actual point of discharge.
- e. Wells, springs, other surface water bodies and drinking water wells that are: 1) within ¼ mile of the property boundaries of the treatment works, and 2) listed in public record or otherwise known to the applicant.
- f. Any areas where the sewage sludge produced by the treatment works is stored, treated or disposed.
- g. If the treatment works receives waste that is classified as hazardous under the Resource Conservation and Recovery Act, or RCRA, by truck, rail or special pipe, show on the map where that hazardous waste enters the treatment works and where it is treated, stored or disposed.

7.3 PROCESS FLOW DIAGRAM OR SCHEMATIC. PROVIDE A DIAGRAM SHOWING THE PROCESSES OF THE TREATMENT PLANT. ALSO, PROVIDE A WATER BALANCE SHOWING ALL TREATMENT UNITS, INCLUDING DISINFECTION (E.G. CHLORINATION AND DECHLORINATION). THE WATER BALANCE MUST SHOW DAILY AVERAGE FLOW RATES AT INFLUENT AND DISCHARGE POINTS AND APPROXIMATE DAILY FLOW RATES BETWEEN TREATMENT UNITS. INCLUDE A BRIEF NARRATIVE DESCRIPTION OF THE DIAGRAM.

7.4 FACILITY SIC CODE 4952	DISCHARGE SIC CODE: 4952	FACILITY NAICS CODE: 221320	DISCHARGE NAICS CODE: 221320
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7.5 NUMBER OF SEPARATE DISCHARGE POINTS  
1

7.6 NUMBER OF PEOPLE PRESENTLY CONNECTED OR POPULATION EQUIVALENT 65,794 (2010 Census, both WWTF)	DESIGN POPULATION EQUIVALENT 96,300 PE
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NUMBER OF UNITS PRESENTLY CONNECTED  
 HOMES \_\_\_\_\_ APARTMENTS \_\_\_\_\_ TRAILERS \_\_\_\_\_ OTHER 26,715 Households

TOTAL DESIGN FLOW (ALL OUTFALLS) 9.63 MGD	ACTUAL FLOW 5.364 MGD
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7.7 DOES ANY BYPASSING OCCUR ANYWHERE IN THE COLLECTION SYSTEM OR AT THE TREATMENT FACILITY?  
 Yes  No  (If Yes, attach an explanation.)

7.8 LENGTH OF THE SANITARY SEWER COLLECTION SYSTEM IN MILES  
 303 Miles for both Mississippi and Missouri WWTF watersheds

7.9 IS INDUSTRIAL WASTE DISCHARGED TO THE FACILITY IDENTIFIED IN ITEM 2? Yes  No

7.10 WILL THE DISCHARGE BE CONTINUOUS THROUGH THE YEAR? Yes  No

A. DISCHARGE WILL OCCUR DURING THE FOLLOWING MONTHS January - December	B. HOW MANY DAYS OF THE WEEK WILL THE DISCHARGE OCCUR? Seven
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7.11 IS WASTEWATER LAND APPLIED? (If Yes, Attach Form I) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	7.12 DOES THIS FACILITY DISCHARGE TO A LOSING STREAM OR SINKHOLE? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
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7.13 HAS A WASTE LOAD ALLOCATION STUDY BEEN COMPLETED FOR THIS FACILITY?  
 Yes  No

7.14 LIST ALL PERMIT VIOLATIONS, INCLUDING EFFLUENT LIMIT EXCEEDANCES IN THE LAST FIVE YEARS. ATTACH A SEPARATE SHEET IF NECESSARY. IF NONE, WRITE NONE. None

**8. LABORATORY CONTROL INFORMATION**

8.1 LABORATORY WORK CONDUCTED BY PLANT PERSONNEL

Lab work conducted outside of plant.	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Push-button or visual methods for simple test such as pH, settleable solids.	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Additional procedures such as Dissolved Oxygen, Chemical Oxygen Demand, Biological Oxygen Demand, titrations, solids, volatile content.	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
More advanced determinations such as BOD seeding procedures, fecal coliform, nutrients, total oils, phenols, etc.	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Highly sophisticated instrumentation, such as atomic absorption and gas chromatograph.	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>

FACILITY NAME St. Charles Mississippi River WWTF	PERMIT NO. MO- 0058343	OUTFALL NO. #001
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**PART A – BASIC APPLICATION INFORMATION**

**9. SLUDGE HANDLING, USE AND DISPOSAL**

9.1 IS THE SLUDGE A HAZARDOUS WASTE AS DEFINED BY 10 CSR 25?  
Yes  No

9.2 SLUDGE PRODUCTION, INCLUDING SLUDGE RECEIVED FROM OTHERS  
Design Dry Tons/Year 3,909 Actual Dry Tons/Year 1,066

9.3 CAPACITY OF SLUDGE HOLDING STRUCTURES

9.4 SLUDGE STORAGE PROVIDED  
Cubic Feet 250,000 Days of Storage 4 Average Percent Solids of Sludge 14  No Sludge Storage is Provided

9.5 TYPE OF STORAGE  
 Holding Tank  Basin  Building  Concrete Pad  Other (Describe) Concrete pad, temporary storage

9.6 SLUDGE TREATMENT  
 Anaerobic Digester  Storage Tank  Lime Stabilization  Lagoon  
 Aerobic Digester  Air or Heat Drying  Composting  Other (Attach Description)

9.7 SLUDGE USE OR DISPOSAL  
 Land Application  Contract Hauler  Hauled to Another Treatment Facility  Solid Waste Landfill  
 Surface Disposal (Sludge Disposal Lagoon, Sludge Held For More Than Two Years)  Incineration  
 Other (Attach Explanation Sheet) \_\_\_\_\_

9.8 PERSON RESPONSIBLE FOR HAULING SLUDGE TO DISPOSAL FACILITY

NAME  
City of St. Charles, MO

ADDRESS 200 North Second Street	CITY St. Charles	STATE MO	ZIP 63301
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CONTACT PERSON John C. Zimmerman, PE, Asst. DPW	TELEPHONE NUMBER WITH AREA CODE 636.949.3237	PERMIT NO. MO- 0058343
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9.9 SLUDGE USE OR DISPOSAL FACILITY  
 By Applicant  By Others (Complete Below)

NAME

ADDRESS CITY STATE ZIP

CONTACT PERSON TELEPHONE NUMBER WITH AREA CODE PERMIT NO.  
MO-

9.10 DO THE SLUDGE OR BIOSOLIDS DISPOSAL COMPLY WITH FEDERAL SLUDGE REGULATIONS UNDER 40 CFR 503?  
 Yes  No (Attach Explanation)

**10. DOWNSTREAM LANDOWNER(S). (ATTACH ADDITIONAL SHEETS AS NECESSARY.)**

NAME  
Alexander-Richardson Investments INC dba Yacht Club of St. Louis

ADDRESS 105 Lake Village Drive	CITY St. Charles	STATE MO	ZIP 63301
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**11. DRINKING WATER SUPPLY INFORMATION**

**11.1 SOURCE OF YOUR DRINKING WATER SUPPLY**

A. PUBLIC SUPPLY (MUNICIPAL OR WATER DISTRICT WATER) (IF PUBLIC, PLEASE GIVE NAME OF PUBLIC SUPPLY)  
City of St. Charles, MO

B. PRIVATE WELL  
n/a

C. SURFACE WATER (LAKE, POND OR STREAM)  
n/a

11.2 DOES YOUR DRINKING WATER SOURCE SERVE AT LEAST 25 PEOPLE AT LEAST 60 DAYS PER YEAR (NOT NECESSARILY CONSECUTIVE DAYS)?  
Yes  No

11.3 DOES YOUR SUPPLY SERVE HOUSING THAT IS OCCUPIED YEAR ROUND BY THE SAME PEOPLE? THIS DOES NOT INCLUDE HOUSING THAT IS OCCUPIED SEASONALLY?  
Yes  No

**END OF PART A**

MO 780-1805 (09-08)

**MAKE ADDITIONAL COPIES OF THIS FORM FOR EACH OUTFALL**

FACILITY NAME Mississippi River WWTF	PERMIT NO. MO- 0058343	OUTFALL NO. #001
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**PART B – ADDITIONAL APPLICATION INFORMATION****20. INFLOW AND INFILTRATION**

ESTIMATE THE AVERAGE NUMBER OF GALLONS PER DAY THAT FLOW INTO THE TREATMENT WORKS FROM INFLOW AND INFILTRATION.

Gallons Per Day Estimate 500,000 gpd with heavy rain > 1"

BRIEFLY EXPLAIN ANY STEPS UNDERWAY OR PLANNED TO MINIMIZE INFLOW AND INFILTRATION.

Plan submitted to SLRO MoDNR annually on or before December 31st deadline as per permit

**20.1 OPERATION AND MAINTENANCE PERFORMED BY CONTRACTOR(S)**

ARE ANY OPERATIONAL OR MAINTENANCE ASPECTS (RELATED TO WASTEWATER TREATMENT AND EFFLUENT QUALITY) OF THE TREATMENT WORKS THE RESPONSIBILITY OF A CONTRACTOR?

Yes  No  If Yes, list the name, address, telephone number and status of each contractor and describe the contractor's responsibilities. (Attach additional pages if necessary.)

NAME  
Woodard & Curran

MAILING ADDRESS  
4933 Dwyer Road

TELEPHONE NUMBER WITH AREA CODE  
636.450.4600

RESPONSIBILITIES OF CONTRACTOR  
Operation and Maintenance

20.2 SCHEDULED IMPROVEMENTS AND SCHEDULES OF IMPLEMENTATION. PROVIDE INFORMATION ABOUT ANY UNCOMPLETED IMPLEMENTATION SCHEDULE OR UNCOMPLETED PLANS FOR IMPROVEMENTS THAT WILL AFFECT THE WASTEWATER TREATMENT, EFFLUENT QUALITY OR DESIGN CAPACITY OF THE TREATMENT WORKS. IF THE TREATMENT WORKS HAS SEVERAL DIFFERENT IMPLEMENTATION SCHEDULES OR IS PLANNING SEVERAL IMPROVEMENTS, SUBMIT SEPARATE RESPONSES FOR EACH. (IF NONE, GO TO QUESTION B-20.3.)

A. List the outfall number that is covered by this implementation schedule Outfall No.	B. Indicate whether the planned improvements or implementation schedule are required by local, state or federal agencies. Yes <input type="checkbox"/> No <input type="checkbox"/>
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20.3 WASTEWATER DISCHARGES:  
COMPLETE QUESTIONS 20.4 THROUGH 20.7 ONCE FOR EACH OUTFALL (INCLUDING BYPASS POINTS) THROUGH WHICH EFFLUENT IS DISCHARGED. DO NOT INCLUDE INFORMATION ON COMBINED SEWER OVERFLOWS IN THIS SECTION.

**20.4 DESCRIPTION OF OUTFALL**

OUTFALL NUMBER **001**

A. LOCATION  
 ¼ SW ¼ SE ¼ NE Section 36 Township 48N Range 4  E  W  
 UTM Coordinates Easting (X): 715195 Northing (Y): 4305984  
 For Universal Transverse Mercator (UTM), Zone 15 North referenced to North American Datum 1983 (NAD83)

B. Distance from Shore (If Applicable) 200 ft.	C. Depth Below Surface (If Applicable) 8-10 ft.	D. Average Daily Flow Rate 5.364 mgd
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E. Does this outfall have either an intermittent or periodic discharge?  
 Yes  No If Yes, Provide the following information:

Number of Days Per Year Discharge Occurs:	Average Duration of Each Discharge:	Average Flow Per Discharge: mgd	Months in Which Discharge Occurs:
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Is Outfall Equipped with a Diffuser?  Yes  No

**20.5 DESCRIPTION OF RECEIVING WATER**

B. Name of Receiving Water  
Mississippi River

B. Name of Watershed (If Known)  
Mississippi River (P) (00001) U.S. Soil Conservation Service 14-Digit Watershed Code (If Known)  
0711009-030004

B. Name of State Management/River Basin (If Known) U.S. Geological Survey 8-Digit Hydrologic Cataloging Unit Code (If Known)

B. Critical Flow of Receiving Stream (If Applicable)  
Acute \_\_\_\_ cfs Chronic \_\_\_\_ cfs B. Total Hardness of Receiving Stream at Critical Low Flow (If Applicable)  
mg/L of CaCO<sub>3</sub>

FACILITY NAME St. Charles Mississippi River WWTF	PERMIT NO. MO- 0058343	OUTFALL NO. #001
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**PART B – ADDITIONAL APPLICATION INFORMATION (CONTINUED)**

20.6 DESCRIPTION OF TREATMENT

A. WHAT LEVELS OF TREATMENT ARE PROVIDED? Check All That Apply

Primary       Secondary       Advanced       Other (Describe) Disinfection Seasonal

B. INDICATE THE FOLLOWING REMOVAL RATES (AS APPLICABLE)

Design BOD<sub>5</sub> Removal Or Design CBOD<sub>5</sub> Removal      85 %      Design SS Removal      85 %

Design P Removal      %      Design N Removal      %      Other      %

C. What type of disinfection is used for the effluent from this outfall? If disinfection varies by season, please describe:

UV Disinfection

If disinfection is by chlorination, is dechlorination used for this outfall?       Yes       No

Does the treatment plant have post aeration?       Yes       No

20.7 EFFLUENT TESTING DATA. ALL APPLICANTS THAT DISCHARGE TO WATERS OF THE U.S. MUST PROVIDE EFFLUENT TESTING DATA FOR THE FOLLOWING PARAMETERS. PROVIDE THE INDICATED EFFLUENT DATA FOR EACH OUTFALL THROUGH WHICH EFFLUENT IS DISCHARGED. DO NOT INCLUDE INFORMATION OF COMBINED SEWER OVERFLOWS IN THIS SECTION. ALL INFORMATION REPORTED MUST BE BASED ON DATA COLLECTED THROUGH ANALYSIS CONDUCTED USING 40 CFR PART 136 METHODS. IN ADDITION, THIS DATA MUST COMPLY WITH QA/QC REQUIREMENTS OF 40 CFR PART 136 AND OTHER APPROPRIATE QA/QC REQUIREMENTS FOR STANDARD METHODS FOR ANALYTES NOT ADDRESSED BY 40 CFR PART 136.

OUTFALL NUMBER

PARAMETER	MAXIMUM DAILY VALUE		AVERAGE DAILY VALUE		
	VALUE	UNITS	VALUE	UNITS	NO. OF SAMPLES
pH (Minimum)	6.6	S.U.	7.1	S.U.	265
pH (Maximum)	7.9	S.U.	7.1	S.U.	265
FLOW RATE	14.880	MGD	5.2733	MGD	365
TEMPERATURE (Winter)	21	°C	15	°C	133
TEMPERATURE (Summer)	24	°C	20	°C	202

\*For pH report a minimum and a maximum daily value.

POLLUTANT	MAXIMUM DAILY DISCHARGE		AVERAGE DAILY DISCHARGE			ANALYTICAL METHOD	ML/MDL
	CONC.	UNITS	CONC.	UNITS	NO. OF SAMPLES		

Conventional and Nonconventional Compounds

BIOCHEMICAL OXYGEN DEMAND (Report One)	BOD <sub>5</sub>		mg/L		mg/L			
	CBOD <sub>5</sub>	40	mg/L	6.7	mg/L	258	SM 18 5210 B	
FECAL COLIFORM	131.4	#/100 mL	13.7	#/100 mL	22	SM 9223 B	*E. coli	
TOTAL SUSPENDED SOLIDS (TSS)	41	mg/L	10.5	mg/L	258	SM 22 2540 D		
AMMONIA (AS N)	16.9	mg/L	2.54	mg/L	214	SM18 NH3 F		
CHLORINE (TOTAL RESIDUAL, TRC)	<0.04	mg/L	<0.04	mg/L	3	SM18 4500CI G		
DISSOLVED OXYGEN	9.7	mg/L	4.5	mg/L	361	SM19 4500-O		
TOTAL KJELDAHL NITROGEN (TKN)	2.3	mg/L	2.3	mg/L	1	SM4500-N B		
NITRATE PLUS NITRITE NITROGEN	15	mg/L	15	mg/L	1	EPA 300.0R2.1		
OIL AND GREASE	<6.1	mg/L	<5.1	mg/L	36	EPA 1664A		
PHOSPHORUS (TOTAL)	2.4	mg/L	2.4	mg/L	1	SM4500B E		
TOTAL DISSOLVE SOLIDS (TDS)	620	mg/L	620	mg/L	1	SM2540C		
OTHER		mg/L		mg/L				

**END OF PART B**

**PART C - CERTIFICATION**

**30. CERTIFICATION**

All applicants must complete the Certification Section. This certification must be signed by an officer of the company or city official. All applicants must complete all applicable sections as explained in the Application Overview. By signing this certification statement, applicants confirm that they have reviewed the entire form and have completed all sections that apply to the facility for which this application is submitted.

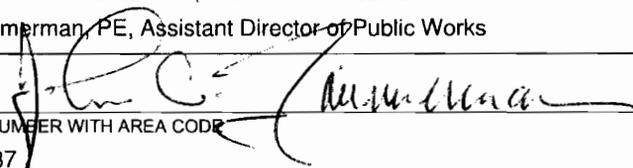
ALL APPLICANTS MUST COMPLETE THE FOLLOWING CERTIFICATION.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

PRINTED NAME AND OFFICIAL TITLE (MUST BE AN OFFICER OF THE COMPANY OR CITY OFFICIAL)

John C. Zimmerman, PE, Assistant Director of Public Works

SIGNATURE



TELEPHONE NUMBER WITH AREA CODE

636.949.3237

DATE SIGNED

7/3/14

Upon request of the permitting authority, you must submit any other information necessary to assess wastewater treatment practices at the treatment works or identify appropriate permitting requirements.

For Design Flows Less than 1 Million Gallons Per Day,  
Send Completed Form to:

**Appropriate Regional Office**

Map of regional offices with addresses and phone numbers is available on the Web at [www.dnr.mo.gov/regions/ro-map.pdf](http://www.dnr.mo.gov/regions/ro-map.pdf).

For Design Flows of 1 Million Gallons Per Day or Greater,  
Send Completed Form to:

Department of Natural Resources  
Water Protection Program  
ATTN: NPDES Permits and Engineering Section  
P.O. Box 176  
Jefferson City, MO 65102

**END OF PART C.**

**REFER TO THE APPLICATION OVERVIEW TO DETERMINE WHICH OTHER PARTS OF FORM B2 YOU MUST COMPLETE.**

Do not complete the remainder of this application, unless:

1. Your facility design flow is equal to or greater than 1,000,000 gallons per day.
2. Your facility is a pretreatment treatment works.
3. Your facility is a combined sewer system.

Submittal of an incomplete application may result in the application being returned. Permit fees for returned applications shall be forfeited. Permit fees for applications being processed by the department that are withdrawn by the applicant shall be forfeited.

**MAKE ADDITIONAL COPIES OF THIS FORM FOR EACH OUTFALL.**

FACILITY NAME St. Charles Mississippi River WWTF	PERMIT NO. MO- 0058343	OUTFALL NO. #001
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**PART D – EXPANDED EFFLUENT TESTING DATA**

**40. EXPANDED EFFLUENT TESTING DATA**

Refer to the supplemental application information to determine whether Part D applies to the treatment works.

40.1 EFFLUENT TESTING: IF THE TREATMENT WORKS HAS A DESIGN FLOW GREATER THAN OR EQUAL TO 1 MILLION GALLONS PER DAY OR IT HAS (OR IS REQUIRED TO HAVE) A PRETREATMENT PROGRAM, OR IS OTHERWISE REQUIRED BY THE PERMITTING AUTHORITY TO PROVIDE THE DATA, THEN PROVIDE EFFLUENT TESTING DATA FOR THE FOLLOWING POLLUTANTS. PROVIDE THE INDICATED EFFLUENT TESTING INFORMATION **FOR EACH OUTFALL THROUGH WHICH EFFLUENT IS DISCHARGED**. DO NOT INCLUDE INFORMATION ON COMBINED SEWER OVERFLOWS IN THIS SECTION. ALL INFORMATION REPORTED MUST BE BASED ON DATA COLLECTED THROUGH ANALYSIS CONDUCTED USING 40 CFR PART 136 METHODS. IN ADDITION, THIS DATA MUST COMPLY WITH QA/QC REQUIREMENTS OF 40 CFR PART 136 AND OTHER APPROPRIATE QA/QC REQUIREMENTS FOR STANDARD METHODS FOR ANALYTES NOT ADDRESSED BY 40 CFR PART 136. INDICATE IN THE BLANK ROWS PROVIDED BELOW ANY DATA YOU MAY HAVE ON POLLUTANTS NOT SPECIFICALLY LISTED IN THIS FORM. EFFLUENT TESTING MUST NOT BE MORE THAN FOUR AND ONE-HALF YEARS OLD.

OUTFALL NUMBER (Complete Once for Each Outfall Discharging Effluent to Waters of the State.)

POLLUTANT	MAXIMUM DAILY DISCHARGE			AVERAGE DAILY DISCHARGE					ANALYTICAL METHOD	ML/MDL
	CONC	UNITS	MASS	UNITS	CONC	UNITS	MASS	UNITS		

METALS (TOTAL RECOVERABLE), CYANIDE, PHENOLS AND HARDNESS

ANTIMONY	< 10	ug/L							1	EPA 200.7	
ARSENIC	< 15	ug/L			<15	ug/L			12	EPA 200.7	
BERYLLIUM	< 1.0	ug/L							1	EPA 200.7	
CADMIUM	< 2.0	ug/L			< 2.0	ug/L			12	EPA 200.7	
CHROMIUM	< 2.0	ug/L			< 2.0	ug/L			12	EPA 200.7	
COPPER	11	ug/L			6	ug/L			34	EPA 200.7	
LEAD	< 10	ug/L			< 10	ug/L			12	EPA 200.7	
MERCURY	< 0.2	ug/L			< 0.2	ug/L			12	EPA 245.1	
NICKEL	18	ug/L			6.9	ug/L			12	EPA 200.7	
SELENIUM	< 10	ug/L							1	EPA 200.7	
SILVER	< 2.0	ug/L			< 2.0	ug/L			12	EPA 200.7	
THALLIUM	< 20	ug/L							1	EPA 200.7	
ZINC	60	ug/L			38	ug/L			12	EPA 200.7	
CYANIDE	12	ug/L			< 5.0	ug/L			12	SM4500CN	
TOTAL PHENOLIC COMPOUNDS	< 10.0	ug/L							1	EPA 625	
HARDNESS (as CaCO <sub>3</sub> )	330	mg/L							1	SM 2340 B	

USE THIS SPACE (OR A SEPARATE SHEET) TO PROVIDE INFORMATION ON OTHER METALS REQUESTED BY THE PERMIT WRITER.


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**PART D – EXPANDED EFFLUENT TESTING DATA (CONTINUED)**

**40.1 EXPANDED EFFLUENT TESTING DATA (CONTINUED)**

Complete Once for Each Outfall Discharging Effluent to Waters of the State.

POLLUTANT	MAXIMUM DAILY DISCHARGE				AVERAGE DAILY DISCHARGE					ANALYTICAL METHOD	ML/MDL	
	CONC	UNITS	MASS	UNITS	CONC	UNITS	MASS	UNITS	NO. OF SAMPLES			
VOLATILE ORGANIC COMPOUNDS												
ACROLEIN	< 50	ug/L								1	EPA 624	
ACRYLONITRILE	< 10	ug/L								1	EPA 624	
BENZENE	< 5.0	ug/L								1	EPA 624	
BROMOFORM	< 5.0	ug/L								1	EPA 624	
CARBON TETRACHLORIDE	< 5.0	ug/L								1	EPA 624	
CHLOROBENZENE	< 5.0	ug/L								1	EPA 624	
CHLORODIBROMO-METHANE	< 5.0	ug/L								1	EPA 624	
CHLOROETHANE	< 10	ug/L								1	EPA 624	
2-CHLORO-ETHYLVINYL ETHER	< 5.0	ug/L								1	EPA 624	
CHLOROFORM	< 5.0	ug/L								1	EPA 624	
DICHLOROBROMO-METHANE	< 5.0	ug/L								1	EPA 624	
1,1-DICHLORO-ETHANE	< 5.0	ug/L								1	EPA 624	
1,2-DICHLORO-ETHANE	< 5.0	ug/L								1	EPA 624	
TRANS-1,2-DICHLOROETHYLENE	< 5.0	ug/L								1	EPA 624	
1,1-DICHLORO-ETHYLENE	< 5.0	ug/L								1	EPA 624	
1,2-DICHLORO-PROPANE	< 5.0	ug/L								1	EPA 624	
1,3-DICHLORO-PROPYLENE	< 5.0	ug/L								1	EPA 624	
ETHYLBENZENE	< 5.0	ug/L								1	EPA 624	
METHYL BROMIDE	< 10	ug/L								1	EPA 624	
METHYL CHLORIDE	< 10	ug/L								1	EPA 624	
METHYLENE CHLORIDE	< 5.0	ug/L								1	EPA 624	
1,1,2,2-TETRACHLOROETHANE	< 5.0	ug/L								1	EPA 624	
TETRACHLORO-ETHANE	< 5.0	ug/L								1	EPA 624	
TOLUENE	< 5.0	ug/L								1	EPA 624	
3,4-BENZO-FLUORANTHENE	< 10.0	ug/L								1	EPA 625	
BENZO(GH) PHERYLENE	< 10.0	ug/L								1	EPA 625	
BENZO(K) FLUORANTHENE	< 10.0	ug/L								1	EPA 625	

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**PART D – EXPANDED EFFLUENT TESTING DATA (CONTINUED)**

**40.1 EXPANDED EFFLUENT TESTING DATA (CONTINUED)**

Complete Once for Each Outfall Discharging Effluent to Waters of the State.

POLLUTANT	MAXIMUM DAILY DISCHARGE				AVERAGE DAILY DISCHARGE					ANALYTICAL METHOD	ML/MDL
	CONC	UNITS	MASS	UNITS	CONC	UNITS	MASS	UNITS	NO. OF SAMPLES		
BIS (2-CHLOROTHOXY) METHANE	< 10.0	ug/L							1	EPA 625	
BIS (2-CHLOROETHYL) – ETHER	< 10.0	ug/L							1	EPA 625	
BIS (2-ETHYLHEXYL) PHTHALATE	< 10.0	ug/L							1	EPA 625	
4-BROMOPHENYL PHENYL ETHER	< 10.0	ug/L							1	EPA 625	
BUTYL BENZYL PHTHALATE	< 10.0	ug/L							1	EPA 625	
2-CHLORONAPH-THALENE	< 10.0	ug/L							1	EPA 625	
4-CHLORPHENYL PHENYL ETHER	< 10.0	ug/L							1	EPA 625	
CHRYSENE	< 10.0	ug/L							1	EPA 625	
DI-N-BUTYL PHTHALATE	< 10.0	ug/L							1	EPA 625	
DEBENZO (A,H) ANTHRACENE	<10.0	ug/L							1	EPA 625	
1,2-DICHLORO-BENZENE	< 5.0	ug/L							1	EPA 625	
1,3-DICHLORO-BENZENE	< 5.0	ug/L							1	EPA 625	
1,4-DICHLORO-BENZENE	< 5.0	ug/L							1	EPA 625	
3,3-DICHLORO-BENZIDINE	< 10.0	ug/L							1	EPA 625	
DIETHYL PHTHALATE	< 10.0	ug/L							1	EPA 625	
DIMETHYL PHTHALATE	< 10.0	ug/L							1	EPA 625	
2,4-DINITRO-TOLUENE	< 10.0	ug/L							1	EPA 625	
2,6-DINITRO-TOLUENE	< 10.0	ug/L							1	EPA 625	
1,2-DIPHENYL-HYDRAZINE	< 10.0	ug/L							1	EPA 625	
1,1,1-TRICHLORO-ETHANE	< 5.0	ug/L							1	EPA 624	
1,1,2-TRICHLORO-ETHANE	< 5.0	ug/L							1	EPA 624	
TRICHLORETHYLENE	< 5.0	ug/L							1	EPA 624	
VINYL CHLORIDE	< 5.0	ug/L							1	EPA 624	

USE THIS SPACE (OR A SEPARATE SHEET) TO PROVIDE INFORMATION ON OTHER VOLATILE ORGANIC COMPOUNDS REQUESTED BY THE PERMIT WRITER




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**PART D – EXPANDED EFFLUENT TESTING DATA (CONTINUED)**

**40.1 EXPANDED EFFLUENT TESTING DATA (CONTINUED)**

POLLUTANT	MAXIMUM DAILY DISCHARGE				AVERAGE DAILY DISCHARGE					ANALYTICAL METHOD	ML/MDL
	CONC	UNITS	MASS	UNITS	CONC	UNITS	MASS	UNITS	NO. OF SAMPLES		

**BASE-NEUTRAL COMPOUNDS**

ACENAPHTHENE	< 10.0	ug/L							1	EPA 625	
ACENAPHTHYLENE	< 10.0	ug/L							1	EPA 625	
ANTHRACENE	< 10.0	ug/L							1	EPA 625	
BENZIDINE	< 10.0	ug/L							1	EPA 625	
BENZO(A)ANTHRACENE	< 10.0	ug/L							1	EPA 625	
BENZO(A)PYRENE	< 10.0	ug/L							1	EPA 625	
FLUORANTHENE	< 10.0	ug/L							1	EPA 625	
FLUORENE	< 10.0	ug/L							1	EPA 625	
HEXACHLOROBENZENE	< 10.0	ug/L							1	EPA 625	
HEXACHLOROCYCLO-PENTADIENE	< 10.0	ug/L							1	EPA 625	
HEXACHLOROETHANE	< 10.0	ug/L							1	EPA 625	
INDENO (1,2,3-CD) PYRENE	< 10.0	ug/L							1	EPA 625	
ISOPHORONE	< 10.0	ug/L							1	EPA 625	
NAPHTHALENE	< 10.0	ug/L							1	EPA 625	
NITROBENZENE	< 10.0	ug/L							1	EPA 625	
N-NITROSODI-PROPYLAMINE	< 10.0	ug/L							1	EPA 625	
N-NITROSODI-METHYLAMINE	< 10.0	ug/L							1	EPA 625	
N-NITROSODI-PHENYLAMINE	< 10.0	ug/L							1	EPA 625	
PHENANTHRENE	< 10.0	ug/L							1	EPA 625	
PYRENE	< 10.0	ug/L							1	EPA 625	
1,2,4-TRICHLOROBENZENE	< 10.0	ug/L							1	EPA 625	

USE THIS SPACE (OR SEPARATE SHEET) TO PROVIDE INFORMATION ON OTHER BASE-NEUTRAL COMPOUNDS REQUESTED BY THE PERMIT WRITER.


**END OF PART D**

**REFER TO THE APPLICATION OVERVIEW TO DETERMINE WHICH OTHER PARTS OF FORM B2 YOU MUST COMPLETE.**

<b>MAKE ADDITIONAL COPIES OF THIS FORM FOR EACH OUTFALL.</b>			
FACILITY NAME St. Charles Mississippi River WWTF		PERMIT NO. MO- 0058343	OUTFALL NO. #001
<b>PART E – TOXICITY TESTING DATA</b>			
<b>50. TOXICITY TESTING DATA</b>			
Refer to the Supplemental Application Information to determine whether Part E applies to the treatment works.			
Publicly owned treatment works, or POTWS, meeting one or more of the following criteria must provide the results of whole effluent toxicity tests for acute or chronic toxicity for each of the facility's discharge points.			
<ul style="list-style-type: none"> <li>A. POTWS with a design flow rate greater than or equal to 1 million gallons per day.</li> <li>B. POTWS with a pretreatment program (or those that are required to have one under 40 CFR Part 403).</li> <li>C. POTWS required by the permitting authority to submit data for these parameters <ul style="list-style-type: none"> <li>◆ At a minimum, these results must include quarterly testing for a 12-month period within the past one year using multiple species (minimum of two species), or the results from four tests performed at least annually in the four and one-half years prior to the application, provided the results show no appreciable toxicity, and testing for acute or chronic toxicity, depending on the range of receiving water dilution. Do not include information about combined sewer overflows in this section. All information reported must be based on data collected through analysis conducted using 40 CFR Part 136 methods. In addition, this data must comply with QA/QC requirements of 40 CFR Part 136 and other appropriate QA/QC requirements for standard methods for analytes not addressed by 40 CFR Part 136.</li> <li>◆ If EPA methods were not used, report the reason for using alternative methods. If test summaries are available that contain all of the information requested below, they may be submitted in place of Part E. If no biomonitoring data is required, do not complete Part E. Refer to the application overview for directions on which other sections of the form to complete.</li> </ul> </li> </ul>			
50.1 REQUIRED TESTS. INDICATE THE NUMBER OF WHOLE EFFLUENT TOXICITY TESTS CONDUCTED IN THE PAST FOUR AND ONE-HALF YEARS.			
CHRONIC		ACUTE 4	
INDIVIDUAL TEST DATA. Complete the following chart for the last three whole effluent toxicity tests. Allow one column per test (where each species constitutes a test). Copy this page if more than three tests are being reported.			
	MOST RECENT	2 <sup>ND</sup> MOST RECENT	3 <sup>RD</sup> MOST RECENT
<b>A. TEST INFORMATION</b>			
TEST NUMBER	See Attached	See Attached	See Attached
TEST SPECIES AND TEST METHOD NUMBER			
AGE AT INITIATION OF TEST			
OUTFALL NUMBER			
DATES SAMPLE COLLECTED			
DATE TEST STARTED			
DURATION			
<b>B. GIVE TOXICITY TEST METHODS FOLLOWED</b>			
MANUAL TITLE	See Attached	See Attached	See Attached
EDITION NUMBER AND YEAR OF PUBLICATION			
PAGE NUMBER(S)			
<b>C. GIVE THE SAMPLE COLLECTION METHOD(S) USED. FOR MULTIPLE GRAB SAMPLES, INDICATE THE NUMBER OF GRAB SAMPLES USED.</b>			
24-HOUR COMPOSITE	See Attached	See Attached	See Attached
GRAB			
<b>D. INDICATE WHERE THE SAMPLE WAS TAKEN IN RELATION TO DISINFECTION. (CHECK ALL THAT APPLY FOR EACH)</b>			
BEFORE DISINFECTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
AFTER DISINFECTION	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
AFTER DECHLORINATION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>E. DESCRIBE THE POINT IN THE TREATMENT PROCESS AT WHICH THE SAMPLE WAS COLLECTED</b>			
SAMPLE WAS COLLECTED			
<b>F. FOR EACH TEST, INCLUDE WHETHER THE TEST WAS INTENDED TO ASSESS CHRONIC TOXICITY, ACUTE TOXICITY OR BOTH.</b>			
CHRONIC TOXICITY	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ACUTE TOXICITY	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b>G. PROVIDE THE TYPE OF TEST PERFORMED</b>			
STATIC	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
STATIC STATIC-RENEWAL	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
FLOW-THROUGH	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>H. SOURCE OF DILUTION WATER. IF LABORATORY WATER, SPECIFY TYPE; IF RECEIVING WATER, SPECIFY SOURCE</b>			
LABORATORY WATER	See Attached	See Attached	See Attached
RECEIVING WATER			

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**PART E – TOXICITY TESTING DATA (CONTINUED)**

**50.1 WHOLE EFFLUENT TOXICITY TESTS DATA (CONTINUED)**

	MOST RECENT	2 <sup>ND</sup> MOST RECENT	3 <sup>RD</sup> MOST RECENT
<b>I. TYPE OF DILUTION WATER, IF SALT WATER, SPECIFY "NATURAL" OR TYPE OF ARTIFICIAL SEA SALTS OR BRINE USED.</b>			
FRESH WATER	See Attached	See Attached	See Attached
SALT WATER			
<b>J. GIVE THE PERCENTAGE EFFLUENT USED FOR ALL CONCENTRATIONS IN THE TEST SERIES.</b>			
	See Attached	See Attached	See Attached
<b>K. PARAMETERS MEASURED DURING THE TEST. (STATE WHETHER PARAMETER MEETS TEST METHOD SPECIFICATIONS)</b>			
pH	See Attached	See Attached	See Attached
SALINITY			
TEMPERATURE			
AMMONIA			
DISSOLVED OXYGEN			
<b>L. TEST RESULTS</b>			
<b>ACUTE:</b>			
PERCENT IN SURVIVAL IN 100% EFFLUENT	See Attached	See Attached	See Attached
LC <sub>50</sub>			
95% C.I.			
CONTROL PERCENT SURVIVAL			
OTHER (DESCRIBE)			
<b>CHRONIC:</b>			
NOEC			
IC <sub>25</sub>			
CONTROL PERCENT SURVIVAL			
OTHER (DESCRIBE)			
<b>M. QUALITY CONTROL ASSURANCE</b>			
IS REFERENCE TOXICANT DATA AVAILABLE?	See Attached	See Attached	See Attached
WAS REFERENCE TOXICANT TEST WITHIN ACCEPTABLE BOUNDS?			
WHAT DATE WAS REFERENCED TOXICANT TEST RUN (MM/DD/YYYY)?			
OTHER (DESCRIBE)			

**50.2 TOXICITY REDUCTION EVALUATION**

Is the treatment works involved in a toxicity reduction evaluation?     Yes             No  
 If yes, describe:

**50.3 SUMMARY OF SUBMITTED BIOMONITORING TEST INFORMATION**

If you have submitted biomonitoring test information, or information regarding the cause of toxicity, within the past four and one-half years, provide the dates the information was submitted to the permitting authority and a summary of the results.

Date Submitted (MM/DD/YYYY)

Summary of Results (See Instructions)

**END OF PART E**

**REFER TO THE APPLICATION OVERVIEW TO DETERMINE WHICH OTHER PARTS OF FORM B2 YOU MUST COMPLETE.**

<b>MAKE ADDITIONAL COPIES OF THIS FORM FOR EACH OUTFALL.</b>			
FACILITY NAME St. Charles Mississippi River WWTF		PERMIT NO. MO- 0058343	OUTFALL NO. #001
<b>PART F – INDUSTRIAL USER DISCHARGES AND RCRA/CERCLA WASTES</b>			
<b>60. INDUSTRIAL USER DISCHARGES AND RCRA/CERCLA WASTES</b>			
Refer to the Supplemental Application Information to determine whether Part F applies to the treatment works.			
All treatment works receiving discharges from significant industrial users or which receive RCRA, CERCLA, or other remedial wastes must complete this form.			
<b>GENERAL INFORMATION</b>			
<b>60.1 PRETREATMENT PROGRAM</b>			
Does the treatment works have, or is it subject to, an approved pretreatment program?			
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			
<b>60.2 NUMBER OF NON-CATEGORICAL SIGNIFICANT INDUSTRIAL USERS, or SIUs AND CATEGORICAL INDUSTRIAL USERS, or CIUs. PROVIDE THE NUMBER OF EACH OF THE FOLLOWING TYPES OF INDUSTRIAL USERS THAT DISCHARGE TO THE TREATMENT WORKS.</b>			
A.	Number of Non-Categorical SIUs 3	B.	Number of CIUs 0
<b>60.3 SIGNIFICANT INDUSTRIAL USER INFORMATION</b>			
Supply the following information for each SIU. If more than one SIU discharges to the treatment works, provide the information requested for each. Submit additional pages as necessary.			
NAME See Attached			
MAILING ADDRESS		CITY	STATE      ZIP
<b>60.4 INDUSTRIAL PROCESSES</b>			
DESCRIBE ALL OF THE INDUSTRIAL PROCESSES THAT AFFECT OR CONTRIBUTE TO THE SIU's DISCHARGE. See Attached			
<b>60.5 PRINCIPAL PRODUCT(S) AND RAW MATERIAL (S)</b>			
Describe all of the principle processes and raw materials that affect or contribute to the SIU's discharge.			
PRINCIPAL PRODUCT(S) See Attached			
RAW MATERIAL(S)			
<b>60.6 FLOW RATE</b>			
A.	PROCESS WASTEWATER FLOW RATE. Indicate the average daily volume of process wastewater discharged into the collection system in gallons per day, or gpd, and whether the discharge is continuous or intermittent. gpd <input checked="" type="checkbox"/> Continuous <input type="checkbox"/> Intermittent		
B.	NON-PROCESS WASTEWATER FLOW RATE. Indicate the average daily volume of non-process wastewater discharged into the collection system in gallons per day, or gpd, and whether the discharge is continuous or intermittent.		
C.	gpd <input checked="" type="checkbox"/> Continuous <input type="checkbox"/> Intermittent		
<b>60.7 PRETREATMENT STANDARDS</b>			
Indicate whether the SIU is subject to the following			
A.	Local Limits	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
B.	Categorical Pretreatment Standards	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
If subject to categorical pretreatment standards, which category and subcategory?			
<b>60.8 PROBLEMS AT THE TREATMENT WORKS ATTRIBUTED TO WASTE DISCHARGED BY THE SIU</b>			
Has the SIU caused or contributed to any problems (e.g., upsets, interference) at the treatment works in the past three years? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No      If Yes, describe each episode			

**MAKE ADDITIONAL COPIES OF THIS FORM FOR EACH OUTFALL.**

FACILITY NAME St. Charles Mississippi River WWTF	PERMIT NO. MO- 0058343	OUTFALL NO. #001
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**PART F – INDUSTRIAL USER DISCHARGES AND RCRA/CERCLA WASTES (CONTINUED)**

**60.9 RCRA HAZARDOUS WASTE RECEIVED BY TRUCK, RAIL, OR DEDICATED PIPELINE**

RCRA WASTE. Does the treatment works receive or has it in the past three years received RCRA hazardous waste by truck, rail or dedicated pipe?  
 Yes  No

WASTE TRANSPORT. Method by which RCRA waste is received. (Check all that apply)

Truck  Rail  Dedicated Pipe

WASTE DESCRIPTION. Give EPA hazardous waste number and amount (volume or mass, specify units).

EPA HAZARDOUS WASTE NUMBER	AMOUNT	UNITS

**60.10 CERCLA, OR SUPERFUND, WASTEWATER, RCRA REMEDIATION/CORRECTIVE ACTION WASTEWATER AND OTHER REMEDIAL ACTIVITY WASTEWATER**

REMEDIAL WASTE. Does the treatment works currently (or has it been notified that it will) receive waste from remedial activities?

Yes  No Provide a list of sites and the requested information for each current and future site.

**60.11 WASTE ORIGIN**

Describe the site and type of facility at which the CERCLA/RCRA/ or other remedial waste originates (or is expected to originate in the next five years).

See Attached

**60.12 POLLUTANTS**

List the hazardous constituents that are received (or are expected to be received). Included data on volume and concentration, if known. (Attach additional sheets if necessary)

See Attached

**60.13 WASTE TREATMENT**

A. Is this waste treated (or will it be treated) prior to entering the treatment works?

Yes  No

If Yes, describe the treatment (provide information about the removal efficiency):

See Attached

B. Is the discharge (or will the discharge be) continuous or intermittent?

Continuous  Intermittent

If intermittent, describe the discharge schedule:

**END OF PART F**

**REFER TO THE APPLICATION OVERVIEW TO DETERMINE WHICH OTHER PARTS OF FORM B2 YOU MUST COMPLETE.**

**MAKE ADDITIONAL COPIES OF THIS FORM FOR EACH OUTFALL.**

FACILITY NAME

St. Charles Mississippi River WWTF

PERMIT NO.

MO- 0058343

OUTFALL NO.

#001

**PART G – COMBINED SEWER SYSTEMS****70. COMBINED SEWER SYSTEMS (COMPLETE THIS PART IF THE TREATMENT WORKS HAS A COMBINED SEWER SYSTEM.)**

Refer to the Supplemental Application Information to determine whether Part G applies to the treatment works.

**70.1 SYSTEM MAP**

Provide a map indicating the following: (May be included with basic application information.)

- A. All CSO Discharges.
- B. Sensitive Use Areas Potentially Affected by CSOs. (e.g., beaches, drinking water supplies, shellfish beds, sensitive aquatic ecosystems and Outstanding Natural Resource Waters.)
- C. Waters that Support Threatened and Endangered Species Potentially Affected by CSOs.

**70.2 SYSTEM DIAGRAM**

Provide a diagram, either in the map provided above or on a separate drawing, of the Combined Sewer Collection System that includes the following information:

- A. Locations of Major Sewer Trunk Lines, Both Combined and Separate Sanitary.
- B. Locations of Points where Separate Sanitary Sewers Feed into the Combined Sewer System.
- C. Locations of In-Line or Off-Line Storage Structures.
- D. Locations of Flow-Regulating Devices.
- E. Locations of Pump Stations.

**70.3 PERCENT OF COLLECTION SYSTEM THAT IS COMBINED SEWER****70.4 POPULATION SERVED BY COMBINED SEWER COLLECTION SYSTEM****70.5 NAME OF ANY SATELLITE COMMUNITY WITH COMBINED SEWER COLLECTION SYSTEM****70.6 CSO OUTFALLS. COMPLETE THE FOLLOWING ONCE FOR EACH CSO DISCHARGE POINT****70.7 DESCRIPTION OF OUTFALL**

A. Outfall Number

B. Location

C. Distance from Shore (if applicable)  
\_\_\_\_\_ ftD. Depth Below Surface (if applicable)  
\_\_\_\_\_ ft

E. Which of the following were monitored during the last year for this CSO?

 Rainfall       CSO Pollutant Concentrations       CSO       CSO Flow Volume       Receiving Water Quality

F. How many storm events were monitored last year?

**70.8 CSO EVENTS**A. Give the Number of CSO Events in the Last Year  
\_\_\_\_\_ Events       Actual       ApproximateB. Give the Average Duration Per CSO Event  
\_\_\_\_\_ Hours       Actual       ApproximateC. Give the Average Volume Per CSO Event  
\_\_\_\_\_ Million Gallons       Actual       Approximate

D. GIVE THE MINIMUM RAINFALL THAT CAUSED A CSO EVENT IN THE LAST YEAR \_\_\_\_\_ INCHES OF RAINFALL

**70.9 DESCRIPTION OF RECEIVING WATERS**

A. Name of Receiving Water

B. Name of Watershed/River/Stream System

U.S. Soil Conservation Service 14-Digit Watershed Code (If Known)

Name of State Management/River Basin

U.S. Geological Survey 8- Digit Hydrologic Cataloging Unit Code (If Known)

**70.10 CSO OPERATIONS**

Describe any known water quality impacts on the receiving water caused by this CSO (e.g., permanent or intermittent beach closings, permanent or intermittent shellfish bed closings, fish kills, fish advisories, other recreational loss, or violation of any applicable state water quality standard.)

**END OF PART G.****REFER TO THE APPLICATION OVERVIEW TO DETERMINE WHICH OTHER PARTS OF FORM B2 YOU MUST COMPLETE.**



**Downstream Landowner:  
Yacht Club of St. Louis**

**Mississippi River WWTF**

**Outfall #001**

**Outfall pipe extends underground &  
discharges upward into the Dardenne Slough  
of the Mississippi River**

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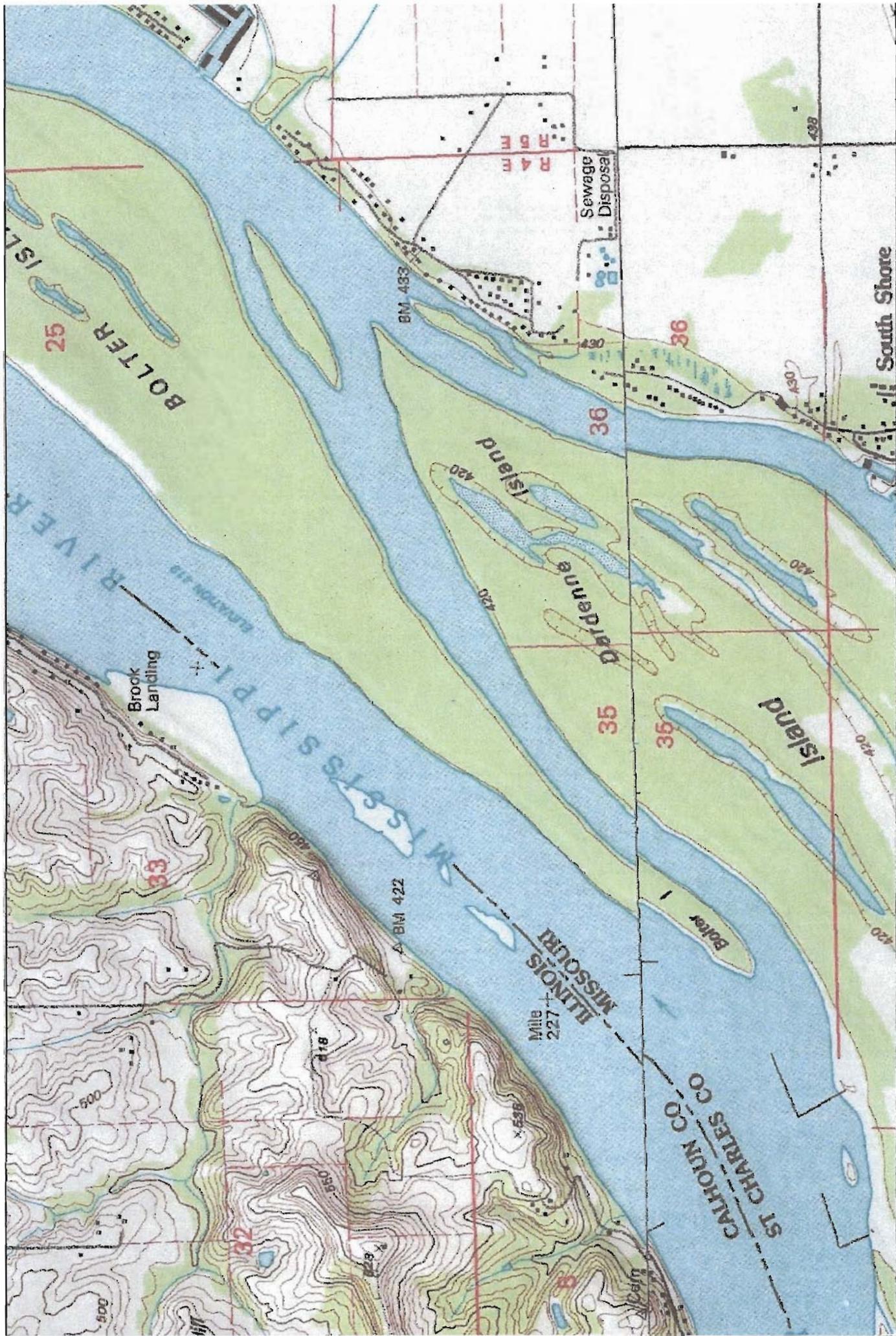
Google

1996

Imagery Date: 11/12/2013

38°52'42.37" N 90°30'47.42" W elev 439 ft eye alt





0 0.5 Mi  
0 2000 Ft

Map provided by MyTopo.com



PA Laboratory Inc.  
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Woodard & Curran- Mississippi Plant  
 4933 Dwyer Road  
 St Charles, MO 63301  
 Attn: Todd VanVoorhis

Date Received: 05/07/14 16:09  
 Report Date: 06/19/14  
 Customer #: 277651

**\*Revised Laboratory Results\***

Sample No: **4051057-01**  
 Sample Description: **Mississippi River WWTF Effluent**

Collect Date: **05/07/14 08:05**  
 Matrix: **Waste Water Grab**

Parameters	Result	Qual	Analysis Date	Analyst	Method
<b><u>Anions - STL</u></b>					
Nitrate-N	15 mg/L		05/08/14 15:35	DWM	EPA 300.0 R2.1 04KS
Nitrite-N	< 0.50 mg/L		05/08/14 14:24	DWM	EPA 300.0 R2.1 04KS
<b><u>General Chemistry - STL</u></b>					
Nitrite / Nitrate	15 mg/L		05/08/14 15:35	DWM	
Cyanide	< 0.0050 mg/L		05/13/14 13:00	DWM	SM 4500-CN C E 18Ed*
Phenol	< 0.050 mg/L		05/13/14 10:00	DWM	EPA 420.1 04KS
Solids - total dissolved solids (TDS)	620 mg/L		05/12/14 16:15	DAW	SM 2540C 18Ed*
<b><u>Nutrients - PIA</u></b>					
Total Kjeldahl Nitrogen (TKN)	2.3 mg/L		05/14/14 13:59	Igbrs	SM 4500-N B & NH3-H 18Ed MOD IL,IA,WI,AR
<b><u>Nutrients - STL</u></b>					
Phosphorus - total as P	2.4 mg/L		05/13/14 16:00	ACV	SM 4500P B E 18ed 04KS
<b><u>Semivolatile Organics - STL</u></b>					
1,2,4-Trichlorobenzene	< 10.0 ug/L		05/20/14 08:55	BP	EPA 625 04KS
1,2-Dichlorobenzene	< 10.0 ug/L		05/20/14 08:55	BP	EPA 625*
1,3-Dichlorobenzene	< 10.0 ug/L		05/20/14 08:55	BP	EPA 625*
1,4-Dichlorobenzene	< 10.0 ug/L		05/20/14 08:55	BP	EPA 625*
2,4,5-Trichlorophenol	< 10.0 ug/L		05/20/14 08:55	BP	EPA 625*
2,4,6-Trichlorophenol	< 10.0 ug/L		05/20/14 08:55	BP	EPA 625 04KS
2,4-Dichlorophenol	< 10.0 ug/L		05/20/14 08:55	BP	EPA 625 04KS
2,4-Dimethylphenol	< 10.0 ug/L		05/20/14 08:55	BP	EPA 625 04KS
2,4-Dinitrophenol	< 10.0 ug/L		05/20/14 08:55	BP	EPA 625 04KS
2,4-Dinitrotoluene	< 10.0 ug/L		05/20/14 08:55	BP	EPA 625 04KS
2,6-Dimethylaniline	< 5.00 ug/L		05/20/14 08:55	BP	EPA 625*
2,6-Dinitrotoluene	< 10.0 ug/L		05/20/14 08:55	BP	EPA 625 04KS
2-Chloronaphthalene	< 10.0 ug/L		05/20/14 08:55	BP	EPA 625 04KS
2-Chlorophenol	< 10.0 ug/L		05/20/14 08:55	BP	EPA 625 04KS
2-Nitrophenol	< 10.0 ug/L		05/20/14 08:55	BP	EPA 625 04KS
3,3'-Dichlorobenzidine	< 10.0 ug/L		05/20/14 08:55	BP	EPA 625 04KS
4,6-Dinitro-2-methylphenol	< 10.0 ug/L		05/20/14 08:55	BP	EPA 625*
4-Bromophenyl phenyl ether	< 10.0 ug/L		05/20/14 08:55	BP	EPA 625 04KS

4051057



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Woodard & Curran- Mississippi Plant  
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 St Charles, MO 63301  
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Date Received: 05/07/14 16:09  
 Report Date: 06/19/14  
 Customer #: 277651

\*Revised Laboratory Results\*

Sample No: **4051057-01**  
 Sample Description: **Mississippi River WWTF Effluent**

Collect Date: **05/07/14 08:05**  
 Matrix: **Waste Water Grab**

Parameters	Result	Qual	Analysis Date	Analyst	Method	
<b>Semivolatile Organics - STL</b>						
4-Chloro-3-methylphenol	< 10.0 ug/L		05/20/14 08:55	BP	EPA 625	04KS
4-Chlorophenylphenyl ether	< 10.0 ug/L		05/20/14 08:55	BP	EPA 625	04KS
4-Nitrophenol	< 10.0 ug/L		05/20/14 08:55	BP	EPA 625	04KS
Acenaphthene	< 10.0 ug/L		05/20/14 08:55	BP	EPA 625	04KS
Acenaphthylene	< 10.0 ug/L		05/20/14 08:55	BP	EPA 625	04KS
Anthracene	< 10.0 ug/L		05/20/14 08:55	BP	EPA 625	04KS
Azobenzene	< 10.0 ug/L		05/20/14 08:55	BP	EPA 625*	
Benzidine	< 10.0 ug/L		05/20/14 08:55	BP	EPA 625*	
Benzo(a)anthracene	< 10.0 ug/L		05/20/14 08:55	BP	EPA 625	04KS
Benzo(a)pyrene	< 10.0 ug/L		05/20/14 08:55	BP	EPA 625	04KS
Benzo(b&k)fluoranthene	< 10.0 ug/L		05/20/14 08:55	BP	EPA 625	04KS
Benzo(b)fluoranthene	< 10.0 ug/L		05/20/14 08:55	BP	EPA 625	04KS
Benzo(g,h,i)perylene	< 10.0 ug/L		05/20/14 08:55	BP	EPA 625	04KS
Benzo(k)fluoranthene	< 10.0 ug/L		05/20/14 08:55	BP	EPA 625	04KS
Bis(2-chloroethoxy) methane	< 10.0 ug/L		05/20/14 08:55	BP	EPA 625	04KS
Bis(2-chloroethyl) ether	< 10.0 ug/L		05/20/14 08:55	BP	EPA 625	04KS
Bis(2-chloroisopropyl) ether	< 10.0 ug/L		05/20/14 08:55	BP	EPA 625	04KS
Bis(2-ethylhexyl) phthalate	< 10.0 ug/L		05/20/14 08:55	BP	EPA 625	04KS
Butyl benzyl phthalate	< 10.0 ug/L		05/20/14 08:55	BP	EPA 625	04KS
Chrysene	< 10.0 ug/L		05/20/14 08:55	BP	EPA 625	04KS
Dibenzo(a,h)anthracene	< 10.0 ug/L		05/20/14 08:55	BP	EPA 625	04KS
Diethyl phthalate	< 10.0 ug/L		05/20/14 08:55	BP	EPA 625	04KS
Dimethyl phthalate	< 10.0 ug/L		05/20/14 08:55	BP	EPA 625	04KS
Di-n-butyl phthalate	< 10.0 ug/L		05/20/14 08:55	BP	EPA 625	04KS
Di-n-octyl phthalate	< 10.0 ug/L		05/20/14 08:55	BP	EPA 625	04KS
Diphenylamine	< 10.0 ug/L		05/20/14 08:55	BP	EPA 625	04KS
Fluoranthene	< 10.0 ug/L		05/20/14 08:55	BP	EPA 625	04KS
Fluorene	< 10.0 ug/L		05/20/14 08:55	BP	EPA 625	04KS
Hexachlorobenzene	< 10.0 ug/L		05/20/14 08:55	BP	EPA 625	04KS
Hexachlorobutadiene	< 10.0 ug/L		05/20/14 08:55	BP	EPA 625	04KS
Hexachlorocyclopentadiene	< 10.0 ug/L		05/20/14 08:55	BP	EPA 625	04KS
Hexachloroethane	< 10.0 ug/L		05/20/14 08:55	BP	EPA 625	04KS
Indeno(1,2,3-cd)pyrene	< 10.0 ug/L		05/20/14 08:55	BP	EPA 625	04KS

4051057



WWT Laboratory Inc.

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(314) 432-0550 • (800) 333-FAST • FAX (314) 432-4977



Woodard & Curran- Mississippi Plant  
4933 Dwyer Road  
St Charles, MO 63301  
Attn: Todd VanVoorhis

Date Received: 05/07/14 16:09  
Report Date: 06/19/14  
Customer #: 277651

**\*Revised Laboratory Results\***

Sample No: **4051057-01**  
Sample Description: **Mississippi River WWTF Effluent**

Collect Date: **05/07/14 08:05**  
Matrix: **Waste Water Grab**

Parameters	Result	Qual	Analysis Date	Analyst	Method
<b>Semivolatile Organics - STL</b>					
Isophorone	< 10.0 ug/L		05/20/14 08:55	BP	EPA 625 04KS
Naphthalene	< 10.0 ug/L		05/20/14 08:55	BP	EPA 625 04KS
Nitrobenzene	< 10.0 ug/L		05/20/14 08:55	BP	EPA 625 04KS
N-Nitrosodimethylamine	< 10.0 ug/L		05/20/14 08:55	BP	EPA 625 04KS
N-Nitrosodi-n-propylamine	< 10.0 ug/L		05/20/14 08:55	BP	EPA 625 04KS
Pentachlorophenol	< 10.0 ug/L		05/20/14 08:55	BP	EPA 625 04KS
Phenanthrene	< 10.0 ug/L		05/20/14 08:55	BP	EPA 625 04KS
Phenol	< 10.0 ug/L		05/20/14 08:55	BP	EPA 625 04KS
Pyrene	< 10.0 ug/L		05/20/14 08:55	BP	EPA 625 04KS
Surrogate: 2-Fluorophenol	15 % 10-121		05/20/14 08:55	BP	EPA 625
Surrogate: Phenol- d5	11 % 10-157		05/20/14 08:55	BP	EPA 625
Surrogate: Nitrobenzene-d5	37 % 10-109		05/20/14 08:55	BP	EPA 625
Surrogate: 2-Fluorobiphenyl	32 % 10-107		05/20/14 08:55	BP	EPA 625
Surrogate: 2,4,6-Tribromophenol	31 % 10-74		05/20/14 08:55	BP	EPA 625
Surrogate: p-Terphenyl-d14	35 % 10-133		05/20/14 08:55	BP	EPA 625
<b>Total Metals - STL</b>					
Mercury	< 0.0002 mg/L		05/13/14 11:47	WPS	EPA 245.1 R3.0 / SW 7470A 04KS
Antimony	< 0.010 mg/L		06/10/14 12:46	WPS	EPA 200.7 R4.4 04KS
Arsenic	< 0.015 mg/L		05/12/14 14:21	WPS	EPA 200.7 R4.4 04KS
Beryllium	< 0.0010 mg/L		06/10/14 12:46	WPS	EPA 200.7 R4.4 04KS
Hardness	330 mg/L		05/12/14 14:17	WPS	SM 2340B
Cadmium	< 0.0020 mg/L		05/12/14 14:21	WPS	EPA 200.7 R4.4 04KS
Calcium	75 mg/L		05/12/14 14:17	WPS	EPA 200.7 R4.4 04KS
Chromium	< 0.0020 mg/L		05/12/14 14:21	WPS	EPA 200.7 R4.4 04KS
Copper	0.0046 mg/L		05/12/14 14:21	WPS	EPA 200.7 R4.4 04KS
Lead	< 0.010 mg/L		05/12/14 14:21	WPS	EPA 200.7 R4.4 04KS
Magnesium	35 mg/L		05/12/14 14:17	WPS	EPA 200.7 R4.4 04KS
Nickel	0.0053 mg/L		05/12/14 14:21	WPS	EPA 200.7 R4.4 04KS
Selenium	< 0.010 mg/L		06/10/14 12:46	WPS	EPA 200.7 R4.4 04KS
Silver	< 0.0020 mg/L		05/12/14 14:21	WPS	EPA 200.7 R4.4 04KS
Thallium	< 0.020 mg/L		06/10/14 12:46	WPS	EPA 200.7 R4.4 04KS
Zinc	0.059 mg/L		05/12/14 14:21	WPS	EPA 200.7 R4.4 04KS



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 St Charles, MO 63301  
 Attn: Todd VanVoorhis

Date Received: 05/07/14 16:09  
 Report Date: 06/19/14  
 Customer #: 277651

**\*Revised Laboratory Results\***

Sample No: **4051057-01**  
 Sample Description: **Mississippi River WWTF Effluent**

Collect Date: **05/07/14 08:05**  
 Matrix: **Waste Water Grab**

Parameters	Result	Qual	Analysis Date	Analyst	Method
<b><u>Volatilic Organics - STL</u></b>					
1,1,1-Trichloroethane	< 5.0 ug/L		05/15/14 07:09	BP	EPA 624 04KS
1,1,2,2-Tetrachloroethane	< 5.0 ug/L		05/15/14 07:09	BP	EPA 624 04KS
1,1,2-Trichloroethane	< 5.0 ug/L		05/15/14 07:09	BP	EPA 624 04KS
1,1-Dichloroethane	< 5.0 ug/L		05/15/14 07:09	BP	EPA 624 04KS
1,1-Dichloroethene	< 5.0 ug/L		05/15/14 07:09	BP	EPA 624 04KS
1,2-Dichlorobenzene	< 5.0 ug/L		05/15/14 07:09	BP	EPA 624 04KS
1,2-Dichloroethane	< 5.0 ug/L		05/15/14 07:09	BP	EPA 624 04KS
1,2-Dichloropropane	< 5.0 ug/L		05/15/14 07:09	BP	EPA 624 04KS
1,3-Dichlorobenzene	< 5.0 ug/L		05/15/14 07:09	BP	EPA 624 04KS
1,4-Dichlorobenzene	< 5.0 ug/L		05/15/14 07:09	BP	EPA 624 04KS
2-Chloroethylvinyl ether	< 5.0 ug/L		05/15/14 07:09	BP	EPA 624 04KS
Acrolein	< 50 ug/L		05/15/14 07:09	BP	EPA 624 04KS
Acrylonitrile	< 10 ug/L		05/15/14 07:09	BP	EPA 624 04KS
Benzene	< 5.0 ug/L		05/15/14 07:09	BP	EPA 624 04KS
Bromodichloromethane	< 5.0 ug/L		05/15/14 07:09	BP	EPA 624 04KS
Bromoform	< 5.0 ug/L		05/15/14 07:09	BP	EPA 624 04KS
Bromomethane	< 10 ug/L		05/15/14 07:09	BP	EPA 624 04KS
Carbon tetrachloride	< 5.0 ug/L		05/15/14 07:09	BP	EPA 624 04KS
Chlorobenzene	< 5.0 ug/L		05/15/14 07:09	BP	EPA 624 04KS
Chloroethane	< 10 ug/L		05/15/14 07:09	BP	EPA 624 04KS
Chloroform	< 5.0 ug/L		05/15/14 07:09	BP	EPA 624 04KS
Chloromethane	< 10 ug/L		05/15/14 07:09	BP	EPA 624 04KS
cis-1,3-Dichloropropene	< 5.0 ug/L		05/15/14 07:09	BP	EPA 624 04KS
Dibromochloromethane	< 5.0 ug/L		05/15/14 07:09	BP	EPA 624 04KS
Ethylbenzene	< 5.0 ug/L		05/15/14 07:09	BP	EPA 624 04KS
m,p-Xylene	< 10 ug/L		05/15/14 07:09	BP	EPA 624*
Methylene chloride	< 5.0 ug/L		05/15/14 07:09	BP	EPA 624 04KS
o-Xylene	< 5.0 ug/L		05/15/14 07:09	BP	EPA 624*
Tetrachloroethene	< 5.0 ug/L		05/15/14 07:09	BP	EPA 624 04KS
Toluene	< 5.0 ug/L		05/15/14 07:09	BP	EPA 624 04KS
trans-1,2-Dichloroethene	< 5.0 ug/L		05/15/14 07:09	BP	EPA 624 04KS
trans-1,3-Dichloropropene	< 5.0 ug/L		05/15/14 07:09	BP	EPA 624 04KS
Trichloroethene	< 5.0 ug/L		05/15/14 07:09	BP	EPA 624 04KS

4051057



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Woodard & Curran- Mississippi Plant  
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St Charles, MO 63301  
Attn: Todd VanVoorhis

Date Received: 05/07/14 16:09  
Report Date: 06/19/14  
Customer #: 277651

**\*Revised Laboratory Results\***

Sample No: **4051057-01**

Collect Date: **05/07/14 08:05**

Sample Description: **Mississippi River WWTF Effluent**

Matrix: **Waste Water Grab**

Parameters	Result	Qual	Analysis Date	Analyst	Method	
<b><u>Volatile Organics - STL</u></b>						
Trichlorofluoromethane	< 5.0 ug/L		05/15/14 07:09	BP	EPA 624	04KS
Vinyl chloride	< 5.0 ug/L		05/15/14 07:09	BP	EPA 624	04KS
Surrogate: 1,2-Dichloroethane-d4	99 % 60.7-121		05/15/14 07:09	BP	EPA 624	
Surrogate: Toluene-d8	92 % 60.6-116		05/15/14 07:09	BP	EPA 624	
Surrogate: Bromofluorobenzene	98 % 69.7-113		05/15/14 07:09	BP	EPA 624	



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 Attn: Todd VanVoorhis

Date Received: 05/07/14 16:09  
 Report Date: 06/19/14  
 Customer #: 277651

**\*Revised Laboratory Results\***

**Notes**

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PDC Laboratories participates in the following accreditation/certification and proficiency programs at the following locations. Endorsement by Federal or State Governments or their agencies is not implied.

- PIA PDC Laboratories - Peoria, IL
  - TNI Accreditation for Drinking Water, Wastewater, Hazardous and Solid Wastes Fields of Testing through IL EPA Lab No. 100230
  - Illinois Department of Public Health Bacteriological Analysis in Drinking Water Approved Laboratory Registry No. 17553
  - Drinking Water Certifications: Kansas (E-10338); Missouri (870); Wisconsin (998284430); Iowa (240)
  - Wastewater Certifications: Arkansas (88-0677); Wisconsin (998284430); Iowa (240); Kansas (E-10335)
  - Hazardous/Solid Waste Certifications; Arkansas (88-0677); Wisconsin (998284430); Iowa (240); Kansas (E-10335)
  - UST Certification; Iowa (240)
- SPM PDC Laboratories - Springfield, MO
  - EPA DMR-QA Program
- STL PDC Laboratories - St. Louis, MO
  - TNI Accreditation for Wastewater, Hazardous and Solid Wastes Fields of Testing through KS Lab No. E-10389

\* Not a TNI accredited analyte

Certified by: Barb Pandolfo, Project Manager

PDC Laboratories, Inc.  
 3278 N. Highway 67  
 Florissant, MO 63033

**CHAIN OF CUSTODY RECORD**  
 State where samples were collected MO

Phone: (800) 333-3278  
 Fax: (314) 432-4977  
 www.pdcclab.com

ALL HIGHLIGHTED AREAS MUST BE COMPLETED BY CLIENT (PLEASE PRINT)

<b>1 CLIENT</b> <b>Woodard &amp; Curran</b> ADDRESS: 4933 Dwyer Rd CITY: St. Charles MO 63301 CONTACT PERSON: Wendy Dalton		PROJECT NUMBER PHONE NUMBER: (636) 250-4603 FAX NUMBER	P.O. NUMBER DATE SHIPPED	MEANS SHIPPED MATRIX TYPES: WW - WASTE WATER DW - DRINKING WATER GW - GROUND WATER WWSL - SLUDGE MAS - SOLID LCHL - LEACHATE OTHER:	<b>3 ANALYSIS REQUESTED</b> <input checked="" type="checkbox"/> Total Recoverable Metals <input type="checkbox"/> Cyanide <input type="checkbox"/> Phenols <input checked="" type="checkbox"/> Hardness <input type="checkbox"/> Volatile Organic Compounds <input type="checkbox"/> Acid/Base Extractable	<b>4 WORK ORDER</b> (FOR LAB USE ONLY) LOGIN #: 4051057 LOGGED BY: HLC PROJECT: PROJ MGR:
<b>2 SAMPLES OF</b> MISSISSIPPI RIVER WWTF EXPANDED EFFLUENT DATE COLLECTED: 5/7/14 TIME COLLECTED: 8:05am SAMPLER (PLEASE PRINT): MATT LAUGEMAN SAMPLER'S SIGNATURE: <i>[Signature]</i>		DATE RESULTS NEEDED:		WASTE BOTTLE TYPE: WW COUNT: 1		REMARKS: Pres w/ Nitric Pres w/ NaOH Pres w/ Sulfuric Pres w/ HCl none
TURNAROUND TIME REQUESTED (RUSH TAT IS SUBJECT TO APPROVAL AND SURCHARGE) <input type="checkbox"/> NORMAL <input type="checkbox"/> RUSH		DATE RESULTS NEEDED:		WASTE BOTTLE TYPE: WW COUNT: 1		
RECEIVED BY (SIGNATURE): <i>[Signature]</i> DATE: 5-7-14 TIME: 8:15am		RECEIVED BY (SIGNATURE): <i>[Signature]</i> DATE: 5-7-14 TIME: 8:15am		WASTE BOTTLE TYPE: WW COUNT: 1		
RECEIVED BY (SIGNATURE): <i>[Signature]</i> DATE: 5-7-14 TIME: 8:15am		RECEIVED BY (SIGNATURE): <i>[Signature]</i> DATE: 5-7-14 TIME: 8:15am		WASTE BOTTLE TYPE: WW COUNT: 1		
RECEIVED BY (SIGNATURE): <i>[Signature]</i> DATE: 5-7-14 TIME: 8:15am		RECEIVED BY (SIGNATURE): <i>[Signature]</i> DATE: 5-7-14 TIME: 8:15am		WASTE BOTTLE TYPE: WW COUNT: 1		COMMENTS (FOR LAB USE ONLY) SAMPLE TEMPERATURE UPON RECEIPT: 3.8c CHILL PROCESS STARTED PRIOR TO RECEIPT SAMPLE(S) RECEIVED ON ICE PROPER BOTTLES RECEIVED IN GOOD CONDITION BOTTLES FILLED WITH ADEQUATE VOLUME SAMPLES RECEIVED WITHIN HOLD TIMES! (EXCLUDES TYPICAL FIELD PARAMETERS) DATE AND TIME TAKEN FROM SAMPLE BOTTLE
RECEIVED BY (SIGNATURE): <i>[Signature]</i> DATE: 5-7-14 TIME: 8:15am		RECEIVED BY (SIGNATURE): <i>[Signature]</i> DATE: 5-7-14 TIME: 8:15am		WASTE BOTTLE TYPE: WW COUNT: 1		

PDC Laboratories, Inc.  
 3278 N. Highway 67  
 Florissant, MO 63033

**CHAIN OF CUSTODY RECORD**  
 State where samples were collected MO

Phone: (800) 333-3278  
 Fax: (314) 432-4977  
 www.pdcclab.com

ALL HIGHLIGHTED AREAS MUST BE COMPLETED BY CLIENT (PLEASE PRINT)

<b>1</b> CLIENT <b>Woodard &amp; Curran</b> ADDRESS: <b>4933 Dwyer Rd</b> CITY: <b>St. Charles</b> STATE: <b>MO</b> ZIP: <b>63301</b> CONTACT PERSON: <b>Wendy Dalton</b>		PROJECT NUMBER <b>(636) 250-4603</b> PHONE NUMBER <b>(636) 250-4603</b> FAX NUMBER		P. O. NUMBER  MEANS SHIPPED  DATE SHIPPED  MATRIX TYPES: WW - WASTE WATER DW - DRINKING WATER GW - GROUND WATER WWML - SLUDGE MAS - SOLID LCHT - LEACHATE OTHER:		<b>3</b> ANALYSIS REQUESTED TKN Nitrate plus Nitrite Nitrogen Phosphorus Total Total Dissolved Solids		<b>4</b> WORK ORDER (FOR LAB USE ONLY) LOGIN #: LOGGED BY: PROJECT: PROJ MGR.:	
<b>2</b> SAMPLE DESCRIPTION SAMPLE TYPE: <b>Expanded Effluent, Continued</b> SAMPLE TIME: <b>5/7/14 8:05 AM</b> DATE COLLECTED: <b>5/7/14</b> TIME COLLECTED: <b>8:05 AM</b> MATR. TYPE: <b>WW</b>		DATE RESULTS NEEDED  <b>6</b> The sample temperature will be measured upon receipt at the lab. By initiating this area, you request that we notify you before proceeding with analysis if the sample temperature is outside of the range of 0° - 6°C. By not initiating this area, you allow the lab to proceed with analytical testing regardless of the sample temperature.		COMMENTS (FOR LAB USE ONLY)  <b>8</b> SAMPLE TEMPERATURE UPON RECEIPT CHILL PROCESS STARTED PRIOR TO RECEIPT SAMPLE(S) RECEIVED ON ICE PROPER BOTTLES RECEIVED IN GOOD CONDITION BOTTLES FILLED WITH ADEQUATE VOLUME SAMPLES RECEIVED WITHIN HOLD TIME(S) (EXCLUDES TYPICAL FIELD PARAMETERS) DATE AND TIME TAKEN FROM SAMPLE BOTTLE		REMARKS Pres w/ Sulfuric none Pres w/ Sulfuric none			
<b>5</b> TURNAROUND TIME REQUESTED (RUSH FEE IS SUBJECT TO APPROVAL AND SURCHARGE) <input type="checkbox"/> NORMAL <input type="checkbox"/> RUSH		RECEIVED BY (SIGNATURE) <b>Wendy Dalton</b> DATE: <b>5-7-14</b> TIME: <b>8:15 AM</b>		RECEIVED BY (SIGNATURE) <b>Richard Feng</b> DATE: <b>5-7-14</b> TIME: <b>10:15</b>		RECEIVED BY (SIGNATURE) <b>Heather Caldwell</b> DATE: <b>5-7-14</b> TIME: <b>16:09</b>		DATE AND TIME TAKEN FROM SAMPLE BOTTLE	
<b>7</b> RELINQUISHED BY (SIGNATURE) <b>Wendy Dalton</b> DATE: <b>5-7-14</b> TIME: <b>8:15 AM</b>		RELINQUISHED BY (SIGNATURE)  DATE: <b>5-7-14</b> TIME: <b>10:15</b>		RELINQUISHED BY (SIGNATURE)  DATE: <b>5-7-14</b> TIME: <b>16:09</b>		DATE AND TIME TAKEN FROM SAMPLE BOTTLE		COMMENTS (FOR LAB USE ONLY)	

**SUBCONTRACT ORDER**

**PDC Laboratories, Inc.**

**4051057**

**SENDING LABORATORY:**  PDC Laboratories, Inc, 2231 W Altorfer Peoria, IL 61615  
 PDC Laboratories, Inc, 1805 W Sunset, Springfield, MO 65807  
 PDC Laboratories, Inc, 3278 N Highway 67, Florissant, MO 63033

Project Manager: Barb Pandolfo      bpandolfo@pdclab.com      Phone: 314-595-7336

**RECEIVING LABORATORY:**

PDC Laboratories, Inc.  
PO Box 9071  
Peoria, IL 61612  
Phone :(309) 692-9688

Date Shipped 5/8/14  
Sample Origin (State) MO  
PO# \_\_\_\_\_  
Total # of Containers 1

Analysis	Due	Expires	Comments
Sample ID: 4051057-01	Water	Sampled:05/07/14 08:05	
TKN	05/19/14 16:00	06/04/14 08:05	

Turn-Around Time Requested (circle one): NORMAL RUSH      Date Results Needed: \_\_\_\_\_

Relinquished By	Date/Time	Received By	Date/Time	Sample Temperature Upon Receipt	<u>13</u> C
<u>Heather Lambert</u>	<u>5/8/14</u>	<u>[Signature]</u>	<u>5/9/14 945</u>	Sample(s) Received on Ice	<u>Y</u> or N
				Proper Bottles Received in Good Condition	<u>Y</u> or N
				Bottles Filled with Adequate Volume	<u>Y</u> or N
				Samples Received Within Hold Time	<u>Y</u> or N
				Date/Time Taken From Sample Bottle	<u>Y</u> or N

# Environmental Analysis South, Inc.

4000 East Jackson Blvd. • Jackson, MO 63755 • 573-204-8817 • Fax 573-204-8818



**REPORT OF ACUTE TOXICITY TESTING**  
**St. Charles Mississippi River Wastewater Treatment Facility**  
**OUTFALL 001 (24 hr composite) AEC = 21%**  
**MO-0058343**  
**EAS LOG# 1708603**  
**June 4, 2014 through June 6, 2014**

**Tests performed by:**

John P. Clippard / Chemical Analyst at Environmental Analysis South (EAS)  
Kelly J. Ray / Biologist at Environmental Analysis South (EAS)  
Sara C. Shields / Lab Supervisor - Chemist at Environmental Analysis South (EAS)  
David F. Warren / Lab Director - Chemist at Environmental Analysis South (EAS)

1. Report Summation
  - 1.1. Data Summation
  - 1.2. Conclusion
2. Method Summation
  - 2.1. Test Conditions and Methods
  - 2.2. Potassium chloride Reference Salt Test
    - 2.2.1. *Pimephales promelas* data
    - 2.2.2. *Ceriodaphnia dubia* data
  - 2.3. Literature Cited
3. Raw Data Bench Sheets
  - 3.1. Initial observations (page 1)
  - 3.2. Zero hour Observations (page 1)
  - 3.3. Twenty-four (24) hour Observations (page 1)
  - 3.4. Forty-eight (48) hour Observations (page 1)
  - 3.5. Survival Data Table (page 2)
  - 3.6. Test Comments (page 3)
4. Chain of Custody
5. MO DNR "Whole Effluent Toxicity (WET) Test Report (Form 780-1899)

# Environmental Analysis South, Inc.

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**REPORT OF ACUTE TOXICITY TESTING**  
**St. Charles Mississippi River Wastewater Treatment Facility**  
**OUTFALL 001 (24 hr composite) AEC = 21%**  
**MO-0058343**  
**EAS LOG# 1708603**  
**June 4, 2014 through June 6, 2014**

**1 REPORT SUMMATION:**

**1.1. Multiple Dilution Data Summation**

Test Solution	<i>Pimephales promelas</i> Acute Toxicity Test 48 Hour Survival	<i>Ceriodaphnia dubia</i> Acute Toxicity Test 48 Hour Survival
Reconstituted Control (RC)	100%	100%
Upstream Control (UC)	100%	100%
5.25% Effluent	100%	100%
10.5% Effluent	100%	100%
21% Effluent	100%	100%
42% Effluent	100%	100%
84% Effluent	95%	100%
Estimated 48 Hour LC <sub>50</sub> Value	>84% Effluent	>84% Effluent
To Pass: 1. Effluent - LC50 must be >AEC/0.3 and 2. All concentrations = or < AEC must not have significant difference to control in survival.	1. Yes 2. Yes	1. Yes 2. Yes
Result of Toxicity Test	PASS	PASS

\* Indicates a significant difference at alpha = 0.5 between effluent and control survival data.

**Conclusion:**

*Pimephales promelas* 48 hour WET results: LC 50 > 84% using Trimmed Spearman-Kärber

NOAEC = 84% by Steel's Many-One Rank Test

*Ceriodaphnia dubia* 48 hour WET results: LC 50 > 84% using the Graphical Method

NOAEC = 84% using Steel's Many-One Rank Test

Based on these results the outfall passed the whole effluent toxicity test with both species.

Approved by \_\_\_\_\_

  
 Sara C. Shields, Chemist

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**REPORT OF ACUTE TOXICITY TESTING**  
**St. Charles Mississippi River Wastewater Treatment Facility**  
**OUTFALL 001 (24 hr composite) AEC = 21%**  
**MO-0058343**  
**EAS LOG# 1708603**  
**June 4, 2014 through June 6, 2014**

## 2. TEST METHOD SUMMARY

### 2.1 TEST CONDITIONS AND METHODS:

	<i>Ceriodaphnia dubia:</i>	<i>Pimephales promelas:</i>
Test duration:	48 hours	48 hours
Temperature:	24 - 26 degree Celsius	24 - 26 degree Celsius
Light quality:	Ambient laboratory illumination	Ambient laboratory illumination
Photoperiod:	16 hour light, 8 hours dark	16 hour light, 8 hours dark
Control Water:	Moderately Hard Reconstituted Water	Moderately Hard Reconstituted Water
Dilution Water:	Upstream Water - If unavailable or toxic, then control water will be used.	Upstream Water - If unavailable or toxic, then control water will be used.
Size of test vessel:	30 milliliters	250 milliliters
Volume of test solution:	15 milliliters	200 milliliters
Age of test organisms:	<24 hours	1 - 14 days (all same age)
Number of organisms/test vessel:	5	10
Number of replicates/concentration:	4	2
Number of organisms/concentration:	20	40 for a single dilution test and 20 for a multiple dilution test
Feeding regime:	None (fed prior to test)	None (fed prior to test)
Aeration:	None	None
Test acceptability criterion:	90% or greater survival in controls	90% or greater survival in controls

The methodology used for the chemistry data was taken from the *Standard Methods for the Examination of Water and Wastewater*, 18<sup>th</sup> edition (1992). The exception was hardness, which was determined using a Hach EDTA titration test kit. The toxicity tests follow guidelines laid out in the permittee's NPDES permit and were conducted according to EPA approved methods (USEPA 2002).

All test organisms were cultured according to EPA approved methods (USEPA 2002). The *Ceriodaphnia dubia* and the *Pimephales promelas* were obtained from C-K Associates Inc. located in Baton Rouge, Louisiana and shipped overnight for use in the whole effluent toxicity test.

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**REPORT OF ACUTE TOXICITY TESTING**  
**St. Charles Mississippi River Wastewater Treatment Facility**  
**OUTFALL 001 (24 hr composite) AEC = 21%**  
**MO-0058343**  
**EAS LOG# 1708603**  
**June 4, 2014 through June 6, 2014**

## 2.2. REFERENCE TOXICITY TEST:

Environmental Analysis South performs monthly reference toxicity tests. The most recent reference test was initiated on June 4, 2014 using KCL Lot #41713. Following are the results:

2.2.1. *P. promelas* - 48 hr. Acute Test – LC<sub>50</sub> = 0.920 g/l 95%CI (0.669 g/l - 1 170 g/l)

EAS %CV = 13.6%

National Warning Limits (75<sup>th</sup> percentile) = 19%CV

National Control Limits (90<sup>th</sup> percentile) = 33%CV

2.2.2. *C. dubia* - 48 hr. Acute Test – LC<sub>50</sub> = 0.459 g/l 95%CI (0.336 g/l - 0.581g/l)

EAS %CV = 13.4%

National Warning Limits (75<sup>th</sup> percentile) = 29%CV

National Control Limits (90<sup>th</sup> percentile) = 34%CV

## 2.3. LITERATURE CITED:

1. APHA. 1992. *Standard methods for the examination of water and wastewater*, 18th Ed. American Public Health Association, Washington, D.C
2. USEPA. 2002. *Methods for measuring the acute toxicity of effluents and receiving waters to freshwater and marine organisms*, 5th Ed. EPA-821-R-02-012
3. USEPA 2000. *Understanding and Accounting for Method Variability in Whole Effluent Toxicity Applications under the National Pollutant Discharge Elimination System*, (Table B-2). June 2000. EPA 833-R-00-003.

CLIENT NAME: St. Charles Mississippi River Wastewater Treatment Facility, Outfall 001, 24 hr composite  
 NPDES NUMBER: MO-0056343

TYPE OF METHOD: multiple dilution, 48 hrs PP & CD, AEC=21%  
 DATE & TIME OF COLLECTION: 06/02/14 1000 hrs by Lawrence Oliver (PDC)  
 DATE & TIME OF SUBMISSION: 06/03/14 1515 hrs by Lawrence Oliver (PDC)  
 Upstream: Mississippi River  
 Collected: 06/03/14 1030 hrs by Lawrence Oliver (PDC)

INITIAL OBSERVATIONS	DATE	TIME	ANALYST	QC LOT	QC EXP VALUE	INT EFFL	INT UC	INT RC	10.5%	21%	42%	84%	10.5%	5.25%	X %AEC
LOG NUMBER / ID NUMBER						1708603	1708603A	RC4103							
PH - SU	06/03/14	1530 hrs	SCS	SB114 (8.8-9.2)	8.83	7.59	7.64	7.77							
TEMPERATURE °C RECEIVED	06/03/14	1530 hrs	SCS	EAS 106		13	16	22							
SPECIFIC CONDUCTANCE umhos	06/03/14	1530 hrs	SCS	ERA P218-506(286-330)	309	877	362	259							
HARDNESS - ppm	06/03/14	1530 hrs	SCS	ERA P170-507(107-134)	120	280	180	80							
CHLORINE - ppm	06/03/14	1530 hrs	SCS	tap water	+	<0.04	<0.04	<0.04							
DISSOLVED OXYGEN - ppm	06/03/14	1530 hrs	SCS	cal@840		8.4	8.4	8.4							
TOTAL ALKALINITY - ppm	06/04/14	1245 hrs	SCS	ERA P218-506(60.2-60.7)	58.9	165	125	68.0							
INITIAL AMMONIA - ppm	06/09/14	1515 hrs	JPC	DMRQA33 (10.0-16.8)	16.4	<0.05	<0.05	<0.05							
TOTAL DISSOLVED SOLIDS - ppm															
0 HOUR OBSERVATIONS															
PH - SU	06/04/14	1100 hrs	SCS	SB114 (8.8-9.2)	8.84	7.96	7.91	7.52	7.63	7.59	7.52	7.52	7.67	7.77	
TEMPERATURE °C	06/04/14	1100 hrs	SCS	EAS 106		23.6	24.0	24.2	24.5	24.2	24.2	24.2	24.0	24.2	
SPECIFIC CONDUCTANCE umhos	06/04/14	1100 hrs	SCS	ERA P218-506(286-330)	317	258	372	827	477	592	827	412	412	386	
DISSOLVED OXYGEN - ppm	06/04/14	1100 hrs	SCS	cal@840		8.5	7.9	8.6	8.3	8.3	8.6	8.2	8.2	8.2	

24 HOUR OBSERVATIONS - PP	DATE	TIME	ANALYST	QC LOT	QC EXP VALUE	RC	UC	RC	21%	42%	84%	10.5%	5.25%	X %AEC
PH - SU	06/05/14	1100 hrs	SCS	SB114 (8.8-9.2)	8.83	7.83	8.27	8.06	8.09	8.07	8.06	8.10	8.15	
TEMPERATURE °C	06/05/14	1100 hrs	SCS	EAS 106		25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	
SPECIFIC CONDUCTANCE umhos	06/05/14	1100 hrs	SCS	ERA P218-506(286-330)	319	270	398	895	478	627	895	413	391	
DISSOLVED OXYGEN - ppm	06/05/14	1100 hrs	SCS	cal@840		8.1	7.8	7.9	7.7	7.8	7.9	7.7	7.6	
48 HOUR OBSERVATIONS - PP														
PH - SU	06/05/14	1100 hrs	SCS	SB114 (8.8-9.2)	8.83	7.50	7.90	8.00	7.84	7.92	8.00	7.83	7.78	
TEMPERATURE °C	06/05/14	1100 hrs	SCS	EAS 106		25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	
SPECIFIC CONDUCTANCE umhos	06/05/14	1100 hrs	SCS	ERA P218-506(286-330)	307	280	413	954	483	671	954	430	397	
DISSOLVED OXYGEN - ppm	06/05/14	1100 hrs	SCS	cal@840		8.0	7.7	7.8	7.6	7.7	7.8	7.7	7.5	
FINAL AMMONIA - ppm														

24 HOUR OBSERVATIONS - CD	DATE	TIME	ANALYST	QC LOT	QC EXP VALUE	RC	UC	RC	21%	42%	84%	10.5%	5.25%	X %AEC
PH - SU	06/05/14	1100 hrs	SCS	SB114 (8.8-9.2)	8.83	7.84	8.20	8.01	8.07	8.04	8.01	8.10	8.14	
TEMPERATURE °C	06/05/14	1100 hrs	SCS	EAS 106		25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	
SPECIFIC CONDUCTANCE umhos	06/05/14	1100 hrs	SCS	ERA P218-506(286-330)	319	291	387	834	485	599	834	427	404	
DISSOLVED OXYGEN - ppm	06/05/14	1100 hrs	SCS	cal@840		8.1	8.8	9.3	9.0	9.2	9.3	9.2	9.1	
48 HOUR OBSERVATIONS - CD														
PH - SU	06/06/14	1100 hrs	SCS	SB114 (8.8-9.2)	8.83	8.28	8.36	8.18	8.17	8.19	8.18	8.18	8.16	
TEMPERATURE °C	06/06/14	1100 hrs	SCS	EAS 106		25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	
SPECIFIC CONDUCTANCE umhos	06/06/14	1100 hrs	SCS	ERA P218-506(286-330)	307	278	383	807	474	589	807	415	391	
DISSOLVED OXYGEN - ppm	06/06/14	1100 hrs	SCS	cal@840		8.2	8.5	8.5	8.4	8.4	8.5	8.5	8.5	
FINAL AMMONIA - ppm														

Approved by: *[Signature]* Date: 6/10/14

WHOLE EFFLUENT TEST conducted in accordance with US EPA 600/4-90/027  
Fifth Edition October 2002

St. Charles Mississippi River Wastewater Treatment Facility, Outfall 001, 24 hr composite EAS LOG# 1708603

Date Test Began: June 4, 2014 Time Test Began: 1100 hrs Analyst 1: DFW  
 Date Test Finished: June 6, 2014 Time Test Finished: 1100 hrs Analyst 2: KJR  
 Analyst 3: SCS

**P. promelas (PP)** AGE: 9 days HATCH NUMBER: 9102 c-k

PERIOD	RC	UC	84%	42%	21%	10.5%	5.25%	X% AEC
0 HR-PP	ALIVE							
24 HR-PP	10,10	10,10	10,10	10,10	10,10	10,10	10,10	
48 HR-PP	10,10	10,10	10,9	10,10	10,10	10,10	10,10	

**Ceriodaphnia dubia (CD)** AGE: <24 hours HATCH NUMBER: 2870 c-k

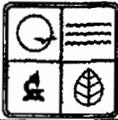
PERIOD	RC	UC	84%	42%	21%	10.5%	5.25%	X% AEC
0 HR-CD	ALIVE	ALIVE						
24 HR-CD	5,5,5,5	5,5,5,5	5,5,5,5	5,5,5,5	5,5,5,5	5,5,5,5	5,5,5,5	
48 HR-CD	5,5,5,5	5,5,5,5	5,5,5,5	5,5,5,5	5,5,5,5	5,5,5,5	5,5,5,5	

Approved by: *[Signature]*

Date: 6/10/14







MISSOURI DEPARTMENT OF NATURAL RESOURCES  
 WATER PROTECTION PROGRAM - P.O. BOX 176, JEFFERSON CITY MO, 65102  
**WHOLE EFFLUENT TOXICITY (WET) TEST REPORT**  
 (TO BE ATTACHED TO WET TESTS FOR SUBMISSION TO THE REGULATORY AUTHORITY)

**PART A - TO BE COMPLETED IN FULL BY PERMITTEE**

FACILITY NAME St. Charles Mississippi River Wastewater Treatment Facility		DATE & TIME COLLECTED EFFLUENT 06/02/14 1000-06/03/14 1000 UPSTREAM 06/03/14 1030	
PERMIT NUMBER MO-0058343		PERMIT OUTFALL NUMBER Outfall # 001	
COLLECTOR'S NAME Lawrence Oliver (PDC)			
RECEIVING STREAM COLLECTION SITE AND DESCRIPTION Mississippi River			
PERMIT ALLOWABLE EFFLUENT CONCENTRATION (AEC) 21%		EFFLUENT SAMPLE TYPE (CHECK ONE) <input checked="" type="checkbox"/> 24HR COMPOSITE <input type="checkbox"/> GRAB <input type="checkbox"/> OTHER	
SAMPLE NUMBER EFFLUENT 1708603 UPSTREAM 1708603A		UPSTREAM SAMPLE TYPE (CHECK ONE) <input type="checkbox"/> 24HR COMPOSITE <input checked="" type="checkbox"/> GRAB <input type="checkbox"/> OTHER	
PERMITTED EFFLUENT DAILY MAXIMUM LIMITATION FOR CHLORINE _____ mg/L		PERMITTED EFFLUENT DAILY MAXIMUM LIMITATION FOR AMMONIA _____ mg/L	

**PART B - TO BE COMPLETED IN FULL BY PERFORMING LABORATORY**

PERFORMING LABORATORY Environmental Analysis South, Inc.		TEST TYPE Acute Static Non renewal Test Multiple Dilution	
FINAL REPORT NUMBER MO_1708603		TEST DURATION 48 hour	
DATE OF LAST REFERENCE TOXICANT TESTING June 4, 2014		TEST METHOD Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms	
DATE AND TIME SAMPLES RECEIVED AT LABORATORY 06/03/14 1515 hrs by Lawrence Oliver (PDC)		TEST START DATE AND TIME 06/04/14 1100 hrs	TEST END DATE AND TIME 06/06/14 1100 hrs
SAMPLE DECHLORINATED PRIOR TO ANALYSIS? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO EFFLUENT _____ UPSTREAM _____		TEST ORGANISM #1 AND AGE Pimephales promelas 9 days	TEST ORGANISM #2 AND AGE Ceriodaphnia dubia < 24 hours
SAMPLE FILTERED <sup>1</sup> PRIOR TO ANALYSIS? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO EFFLUENT _____ UPSTREAM _____		90% OR GREATER SURVIVAL IN SYNTHETIC CONTROL? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	DILUTION WATER USED TO ACHIEVE AEC Upstream 1708603A
FILTER MESH SIEVE SIZE <sup>2</sup> None		EFFLUENT ORGANISM #1 % MORTALITY AT AEC LC50>84% Effluent	EFFLUENT ORGANISM #2 % MORTALITY AT AEC LC50>84% Effluent
SAMPLE AERATED DURING TESTING? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		UPSTREAM ORGANISM #1 % MORTALITY 0%	UPSTREAM ORGANISM #2 % MORTALITY 0%
pH ADJUSTED? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO EFFLUENT _____ UPSTREAM _____		TEST RESULT AT AEC FOR ORGANISM #1 <input checked="" type="checkbox"/> PASS <input type="checkbox"/> FAIL	TEST RESULT AT AEC FOR ORGANISM #2 <input checked="" type="checkbox"/> PASS <input type="checkbox"/> FAIL

**MINIMUM REQUIRED ANALYTICAL RESULTS FOR THE 100% EFFLUENT SAMPLE**

PARAMETER	RESULT	METHOD	WHEN ANALYZED
Temperature °C	13	SM18 2550B stored at 4 degree C until test setup	06/03/14 1530 hrs
pH Standard Units	7.59	SM18 4500-H B	06/03/14 1530 hrs
Conductance µMols	877	SM18 2510B	06/03/14 1530 hrs
Dissolved Oxygen mg/L	8.4	03/12/14 0945 hrs SM18 4500-O G	06/03/14 1530 hrs
Total Residual Chlorine mg/L	<0.04	SM18 4500-CI G	06/03/14 1530 hrs
Unionized Ammonia mg/L	<0.05x0.02<0.010	SM18 4500-NH3 F @ 25 degree C	06/09/14 1515 hrs
*Total Alkalinity mg/L	165	SM18 2320B	06/04/14 1245 hrs
*Total Hardness mg/L	280	SM18 2340 C	06/03/14 1530 hrs

\*Recommended by USEPA guidance, not a required analysis.

<sup>1</sup> Samples shall only be filtered if indigenous organisms are present that may be confused with, or attack, the test organisms.  
<sup>2</sup> Filters shall have a sieve size of 60 microns or greater.

# WHOLE EFFLUENT TOXICITY (WET) TEST REPORT

(TO BE ATTACHED TO WET TESTS FOR SUBMISSION TO THE REGULATORY AUTHORITY)

MINIMUM REQUIRED ANALYTICAL RESULTS FOR THE 100% UPSTREAM SAMPLE			
PARAMETER	RESULT	METHOD	WHEN ANALYZED
Temperature °C	16	SM18 2550B stored at 4 degree C until test setup	06/03/14 1530 hrs
pH Standard Units	7.64	SM18 4500-H B	06/03/14 1530 hrs
Conductance µMohs	362	SM18 2510B	06/03/14 1530 hrs
Dissolved Oxygen mg/L	8.4	SM18 4500-O G	06/03/14 1530 hrs
Total Residual Chlorine mg/L	<0.04	SM18 4500-Cl G	06/03/14 1530 hrs
Unionized Ammonia mg/L	<0.05x0.02<0.010	SM18 4500-NH3 F @ 25 degree C	06/09/14 1515 hrs
*Total Alkalinity mg/L	125	SM18 2320B	06/04/14 1245 hrs
*Total Hardness mg/L	180	SM18 2340 C	06/03/14 1530 hrs

\*Recommended by USEPA guidance, not a required analysis.

PRELIMINARY TEST ACCEPTABILITY MATRIX (FOR USE BY PERMITTEE IN DETERMINING TEST VALIDITY)
<b>PERMIT ALLOWABLE EFFLUENT CONCENTRATION (AEC):</b> As indicated on permit. Test is invalid otherwise.
<b>EFFLUENT SAMPLE TYPE:</b> As indicated on permit. Test is invalid otherwise.
<b>TEST TYPE:</b> Acute Static Non-Renewal Test or other as indicated on permit. Test is invalid otherwise.
<b>TEST DURATION:</b> Forty-eight (48) hours or as indicated on permit. Test is invalid otherwise.
<b>TEST ORGANISMS:</b> As indicated on permit. Test is invalid otherwise.
<b>DILUTION WATER USED TO ACHIEVE AEC:</b> Upstream receiving water required if available.
<b>TEST METHOD:</b> The only acceptable method is the <i>most current edition</i> of <u>Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms</u> , or other as specifically assigned by EPA for determining NPDES compliance. Test is invalid otherwise.
<b>TEST START DATE &amp; TIME:</b> Unless otherwise specified in writing by EPA, if >36 hours lapse between collection and initiation, test is invalid.
<b>FILTER MESH SIEVE SIZE:</b> Unless otherwise specified in writing by EPA, if sieve size is smaller than 60 microns, test is invalid.
<b>90% OR GREATER SURVIVAL IN LABORATORY CONTROL(S) (Y/N):</b> If NO, test is invalid.

PARAMETER	RESULT	NOTES	WHEN ANALYZED
Temperature °C	0 - 6	Unless received by the laboratory on the same day as collected, values outside this range invalidate the test.	Upon receipt

<sup>3</sup> Where no upstream control is available, enter results from laboratory or synthetic control.

# Environmental Analysis South, Inc.

4000 East Jackson Blvd. • Jackson, MO 63755 • 573-204-8817 • Fax 573-204-8818



**REPORT OF ACUTE TOXICITY TESTING**  
**St. Charles Mississippi River Wastewater Treatment Facility**  
**OUTFALL 001 (24 hr composite) AEC = 17.0%**  
**MO-0058343**  
**EAS LOG# 1603531**  
**June 5, 2013 through June 7, 2013**

**Tests performed by:**

John P. Clippard / Chemical Analyst at Environmental Analysis South (EAS)  
Kelly J. Ray / Biologist at Environmental Analysis South (EAS)  
Sara C. Shields / Lab Supervisor - Chemist at Environmental Analysis South (EAS)  
David F. Warren / Lab Director - Chemist at Environmental Analysis South (EAS)

1. **Report Summation**
  - 1.1 **Data Summation**
  - 1.2 **Conclusion**
2. **Method Summation**
  - 2.1. **Test Conditions and Methods**
  - 2.2. **Potassium chloride Reference Salt Test**
    - 2.2.1. *Pimephales promelas* data
    - 2.2.2. *Ceriodaphnia dubia* data
  - 2.3. **Literature Cited**
3. **Raw Data Bench Sheets**
  - 3.1. **Initial observations (page 1)**
  - 3.2. **Zero hour Observations (page 1)**
  - 3.3. **Twenty-four (24) hour Observations (page 1)**
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  - 3.5. **Survival Data Table (page 2)**
  - 3.6. **Test Comments (page 3)**
4. **Chain of Custody**
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**REPORT OF ACUTE TOXICITY TESTING**  
**St. Charles Mississippi River Wastewater Treatment Facility**  
**OUTFALL 001 (24 hr composite) AEC = 17.0%**  
**MO-0058343**  
**EAS LOG# 1603531**  
**June 5, 2013 through June 7, 2013**

**1. REPORT SUMMATION:**

**1.1. Multiple Dilution Data Summation**

Test Solution	<i>Pimephales promelas</i> Acute Toxicity Test 48 Hour Survival	<i>Ceriodaphnia dubia</i> Acute Toxicity Test 48 Hour Survival
Reconstituted Control (RC)	100%	100%
Upstream Control (UC)	100%	100%
4.25% Effluent	100%	100%
8.50% Effluent	100%	100%
17.0% Effluent	100%	100%
34.0% Effluent	100%	100%
68.0% Effluent	60%*	100%
Estimated 48 Hour LC <sub>50</sub> Value	>68.0% Effluent	>68.0% Effluent
To Pass: 1. Effluent - LC50 must be >AEC/0.3 and 2. All concentrations = or < AEC must not have significant difference to control in survival.	1. Yes 2. Yes	1. Yes 2. Yes
Result of Toxicity Test	PASS	PASS

\* Indicates a significant difference at alpha = 0.5 between effluent and control survival data.

**Conclusion:**

*Pimephales promelas* 48 hour WET results: LC 50 >68.0% using Trimmed Spearman-Kärber  
 NOAEC = 34.0% by Steel's Many-One Rank Test  
*Ceriodaphnia dubia* 48 hour WET results: LC 50 >68.0% using the Graphical Method  
 NOAEC = 68.0 % using Steel's Many-One Rank Test  
 Based on these results the outfall passed the whole effluent toxicity test with both species.

Approved by \_\_\_\_\_

Sara C. Shields, Chemist

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**June 5, 2013 through June 7, 2013**

## 2. TEST METHOD SUMMARY

### 2.1. TEST CONDITIONS AND METHODS:

	<i>Ceriodaphnia dubia</i> :	<i>Pimephales promelas</i> :
Test duration:	48 hours	48 hours
Temperature:	24 - 26 degree Celsius	24 - 26 degree Celsius
Light quality:	Ambient laboratory illumination	Ambient laboratory illumination
Photoperiod:	16 hour light, 8 hours dark	16 hour light, 8 hours dark
Control Water:	Moderately Hard Reconstituted Water	Moderately Hard Reconstituted Water
Dilution Water:	Upstream Water - If unavailable or toxic, then control water will be used.	Upstream Water - If unavailable or toxic, then control water will be used.
Size of test vessel:	30 milliliters	250 milliliters
Volume of test solution:	15 milliliters	200 milliliters
Age of test organisms:	<24 hours	1 -14 days (all same age)
Number of organisms/test vessel:	5	10
Number of replicates/concentration:	4	2
Number of organisms/concentration:	20	40 for a single dilution test and 20 for a multiple dilution test
Feeding regime:	None (fed prior to test)	None (fed prior to test)
Aeration:	None	None
Test acceptability criterion:	90% or greater survival in controls	90% or greater survival in controls

The methodology used for the chemistry data was taken from the *Standard Methods for the Examination of Water and Wastewater*, 18<sup>th</sup> edition (1992). The exception was hardness, which was determined using a Hach EDTA titration test kit. The toxicity tests follow guidelines laid out in the permittee's NPDES permit and were conducted according to EPA approved methods (USEPA 2002).

All test organisms were cultured according to EPA approved methods (USEPA 2002). The *Ceriodaphnia dubia* and the *Pimephales promelas* were obtained from C-K Associates Inc. located in Baton Rouge, Louisiana and shipped overnight for use in the whole effluent toxicity test.

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**MO-0058343**  
**EAS LOG# 1603531**  
**June 5, 2013 through June 7, 2013**

## 2.2. REFERENCE TOXICITY TEST:

Environmental Analysis South performs monthly reference toxicity tests. The most recent reference test was initiated on June 5, 2013 using KCL Lot #41713. Following are the results:

2.2.1 *P. promelas* - 48 hr. Acute Test – LC<sub>50</sub> = 0.892 g/l 95%CI (0.682-1.102 g/l)

EAS %CV = 11.8%

National Warning Limits (75<sup>th</sup> percentile) = 19%CV

National Control Limits (90<sup>th</sup> percentile) = 33%CV

2.2.2 *C. dubia* - 48 hr. Acute Test – LC<sub>50</sub> = 0.516 g/l 95%CI (0.414-0.618g/l)

EAS %CV = 9.9%

National Warning Limits (75<sup>th</sup> percentile) = 29%CV

National Control Limits (90<sup>th</sup> percentile) = 34%CV

## 2.3. LITERATURE CITED:

1. APHA. 1992. *Standard methods for the examination of water and wastewater*, 18th Ed. American Public Health Association, Washington, D.C
2. USEPA. 2002. *Methods for measuring the acute toxicity of effluents and receiving waters to freshwater and marine organisms*, 5th Ed. EPA-821-R-02-012
3. USEPA 2000. Understanding and Accounting for Method Variability in Whole Effluent Toxicity Applications under the National Pollutant Discharge Elimination System. (Table B-2). June 2000. EPA 833-R-00-003.

CLIENT NAME: St. Charles Mississippi River Wastewater Treatment Facility, Outfall 001, 24 hr composite

NPDES NUMBER: MO-0058343

TYPE OF METHOD: multiple dilution, 48 hrs PP & CD, AEC=17%

DATE & TIME OF COLLECTION: 05/03/13 1000 hrs - 06/04/13 1000 hrs by Lawrence Oliver (PDC)

DATE & TIME OF SUBMISSION: 06/04/13 1320 hrs by Lawrence Oliver (PDC)

Upstream: Mississippi River  
 Collected: 06/04/13 1015 hrs by L.O. (PDC)

LOG NUMBER / ID NUMBER	DATE	TIME	ANALYST	QC LOT	QC EXP VALUE	INT EFFL	INT UC	INT RC	34%	17%	8.5%	4.25%	X %AEC
1603531	06/04/13	1330 hrs	SCS	SB114 (8.8-9.2)	8.91	6.60	6.58	7.30	68%	6.94	6.98	7.00	
TEMPERATURE °C RECEIVED	06/04/13	1330 hrs	SCS	EAS 106		13	17	21					
SPECIFIC CONDUCTANCE umhos	06/04/13	1330 hrs	SCS	ERA208-506 (465-519)	509	1054	325	278					
HARDNESS - ppm	06/04/13	1330 hrs	SCS	ERA P170-507(107-134)	120	400	200	80					
CHLORINE - ppm	06/04/13	1330 hrs	SCS	tap water	+	<0.04	<0.04	<0.04					
DISSOLVED OXYGEN - ppm	06/04/13	1330 hrs	SCS	cal@840		6.97	7.81	9.03					
TOTAL ALKALINITY - ppm	06/05/13	1330 hrs	SCS	ERA P213-506(29.2-35.4)	31.5	297	122	58.3					
INITIAL AMMONIA - ppm	06/10/13	1130 hrs	JPC	EAS #2641 (8-12)	10.8	13.1	<0.05	<0.05					
TOTAL DISSOLVED SOLIDS - ppm													
0 HOUR OBSERVATIONS													
PH - SU	06/05/13	1100 hrs	SCS	SB114 (8.8-9.2)	8.91	7.46	7.06	6.95	6.94	6.95	6.98	7.00	
TEMPERATURE °C	06/05/13	1100 hrs	SCS	EAS 106		22.1	22.4	22.4	22.1	22.0	22.3	22.6	
SPECIFIC CONDUCTANCE umhos	06/05/13	1100 hrs	SCS	ERA208-506 (465-519)	509	253	304	832	574	439	367	337	
DISSOLVED OXYGEN - ppm	06/05/13	1100 hrs	SCS	cal@840		8.7	7.5	8.7	8.1	8.1	7.9	7.6	

24 HOUR OBSERVATIONS - PP	DATE	TIME	ANALYST	QC LOT	QC EXP VALUE	RC	UC	68%	34%	17%	8.5%	4.25%	X %AEC
PH - SU	06/06/13	1100 hrs	SCS	SB114 (8.8-9.2)	9.05	7.09	7.00	7.20	7.22	7.19	7.11	7.04	
TEMPERATURE °C	06/06/13	1100 hrs	SCS	EAS 106		25.0	25.0	25.0	25.0	25.0	25.0	25.0	
SPECIFIC CONDUCTANCE umhos	06/06/13	1100 hrs	SCS	ERA208-506 (465-519)	503	289	325	820	578	453	381	352	
DISSOLVED OXYGEN - ppm	06/06/13	1100 hrs	SCS	cal@840		8.12	8.12	7.76	7.78	7.81	7.87	7.85	
48 HOUR OBSERVATIONS - PP													
PH SU	06/07/13	1100 hrs	SCS	SB114 (8.8-9.2)	9.11	7.61	7.77	7.84	7.84	7.78	7.79	7.79	
TEMPERATURE °C	06/07/13	1100 hrs	SCS	EAS 106		24.5	24.5	24.5	24.5	24.5	24.5	24.5	
SPECIFIC CONDUCTANCE umhos	06/07/13	1100 hrs	SCS	ERA208-506 (465-519)	504	343	340	823	589	461	386	356	
DISSOLVED OXYGEN - ppm	06/07/13	1100 hrs	SCS	cal@840		7.5	7.6	7.9	8.0	7.9	7.9	7.9	
FINAL AMMONIA - ppm													

24 HOUR OBSERVATIONS - CD	DATE	TIME	ANALYST	QC LOT	QC EXP VALUE	RC	UC	68%	34%	17%	8.5%	4.25%	X %AEC
PH - SU	06/06/13	1100 hrs	SCS	SB114 (8.8-9.2)	9.05	7.58	7.36	7.45	7.37	7.37	7.33	7.36	
TEMPERATURE °C	06/06/13	1100 hrs	SCS	EAS 106		25.0	25.0	25.0	25.0	25.0	25.0	25.0	
SPECIFIC CONDUCTANCE umhos	06/06/13	1100 hrs	SCS	ERA208-506 (465-519)	503	820	321	817	575	444	378	351	
DISSOLVED OXYGEN - ppm	06/06/13	1100 hrs	SCS	cal@840		8.3	9.0	9.0	8.9	8.9	9.3	9.4	
48 HOUR OBSERVATIONS - CD													
PH - SU	06/07/13	1100 hrs	SCS	SB114 (8.8-9.2)	9.11	7.97	7.68	7.60	7.59	7.66	7.71	7.69	
TEMPERATURE °C	06/07/13	1100 hrs	SCS	EAS 106		24.5	24.5	24.5	24.5	24.9	24.9	24.9	
SPECIFIC CONDUCTANCE umhos	06/07/13	1100 hrs	SCS	ERA208-506 (465-519)	504	273	324	821	583	459	382	350	
DISSOLVED OXYGEN - ppm	06/07/13	1100 hrs	SCS	cal@840		8.5	8.6	8.7	8.7	8.8	8.8	8.9	
FINAL AMMONIA - ppm													

Approved by: *[Signature]* Date: 06/11/2013

WHOLE EFFLUENT TEST conducted in accordance with US EPA 600/4-90/027  
Fifth Edition October 2002

St. Charles Mississippi River Wastewater Treatment Facility, Outfall 001, 24 hr composite EAS LOG# 1603531

Analyst 1: DFW  
Analyst 2: KJR  
Analyst 3: SCS

Date Test Began: June 5, 2013 Time Test Began: 1100 hrs

Date Test Finished: June 7, 2013 Time Test Finished: 1100 hrs

P. promelas (PP) AGE: 8 days HATCH NUMBER: 8740 c-k

PERIOD	RC	UC	68%	34%	17%	8.5%	4.25%	X% AEC
0 HR-PP	ALIVE							
24 HR-PP	10,10	10,10	10,10	10,10	10,10	10,10	10,10	
48 HR-PP	10,10	10,10	10,8	10,10	10,10	10,10	10,10	
			5,7	10,10	10,10	10,10	10,10	

Ceriodaphnia dubia (CD) AGE: <24 hours HATCH NUMBER: 2592 c-k

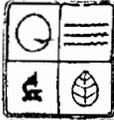
PERIOD	RC	UC	68%	34%	17%	8.5%	4.25%	X% AEC
0 HR-CD	ALIVE	ALIVE						
24 HR-CD	5,5,5,5	5,5,5,5	5,5,5,5	5,5,5,5	5,5,5,5	5,5,5,5	5,5,5,5	
48 HR-CD	5,5,5,5	5,5,5,5	5,5,5,5	5,5,5,5	5,5,5,5	5,5,5,5	5,5,5,5	
			5,5,5,5	5,5,5,5	5,5,5,5	5,5,5,5	5,5,5,5	

Approved by: *[Signature]*

Date: 06/11/2013







MISSOURI DEPARTMENT OF NATURAL RESOURCES  
 WATER PROTECTION PROGRAM - P.O. BOX 176, JEFFERSON CITY MO, 65102  
**WHOLE EFFLUENT TOXICITY (WET) TEST REPORT**  
 (TO BE ATTACHED TO WET TESTS FOR SUBMISSION TO THE REGULATORY AUTHORITY)

**PART A - TO BE COMPLETED IN FULL BY PERMITTEE**

FACILITY NAME St. Charles Mississippi River Wastewater Treatment Facility		DATE & TIME COLLECTED EFFLUENT 06/03/13 1000-06/04/13 1000 UPSTREAM 06/04/13 1015	
PERMIT NUMBER MO-0058343		PERMIT OUTFALL NUMBER Outfall # 001	
COLLECTOR'S NAME Lawrence Oliver (PDC)			
RECEIVING STREAM COLLECTION SITE AND DESCRIPTION Mississippi River			
PERMIT ALLOWABLE EFFLUENT CONCENTRATION (AEC) 17%		EFFLUENT SAMPLE TYPE (CHECK ONE) <input checked="" type="checkbox"/> 24HR COMPOSITE <input type="checkbox"/> GRAB <input type="checkbox"/> OTHER	
SAMPLE NUMBER EFFLUENT 1603531 UPSTREAM 1603531A		UPSTREAM SAMPLE TYPE (CHECK ONE) <input type="checkbox"/> 24HR COMPOSITE <input checked="" type="checkbox"/> GRAB <input type="checkbox"/> OTHER	
PERMITTED EFFLUENT DAILY MAXIMUM LIMITATION FOR CHLORINE _____ mg/L		PERMITTED EFFLUENT DAILY MAXIMUM LIMITATION FOR AMMONIA _____ mg/L	

**PART B - TO BE COMPLETED IN FULL BY PERFORMING LABORATORY**

PERFORMING LABORATORY Environmental Analysis South, Inc.		TEST TYPE Acute Static Non renewal Test Multiple Dilution	
FINAL REPORT NUMBER MO_1603531		TEST DURATION 48 hour	
DATE OF LAST REFERENCE TOXICANT TESTING June 5, 2013		TEST METHOD Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms	
DATE AND TIME SAMPLES RECEIVED AT LABORATORY 06/04/13 1320 hrs by Lawrence Oliver (PDC)		TEST START DATE AND TIME 06/05/13 1100 hrs	TEST END DATE AND TIME 06/07/13 1100 hrs
SAMPLE DECHLORINATED PRIOR TO ANALYSIS? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO EFFLUENT _____ UPSTREAM _____		TEST ORGANISM #1 AND AGE Pimephales promelas 8 days	TEST ORGANISM #2 AND AGE Ceriodaphnia dubia < 24 hours
SAMPLE FILTERED <sup>1</sup> PRIOR TO ANALYSIS? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO EFFLUENT _____ UPSTREAM _____		90% OR GREATER SURVIVAL IN SYNTHETIC CONTROL? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	DILUTION WATER USED TO ACHIEVE AEC upstream 1603531A
FILTER MESH SIEVE SIZE <sup>2</sup> None		EFFLUENT ORGANISM #1 % MORTALITY AT AEC LC50>68% Effluent	EFFLUENT ORGANISM #2 % MORTALITY AT AEC LC50>68% Effluent
SAMPLE AERATED DURING TESTING? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		UPSTREAM ORGANISM #1 % MORTALITY 0%	UPSTREAM ORGANISM #2 % MORTALITY 0%
pH ADJUSTED? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO EFFLUENT _____ UPSTREAM _____		TEST RESULT AT AEC FOR ORGANISM #1 <input checked="" type="checkbox"/> PASS <input type="checkbox"/> FAIL	TEST RESULT AT AEC FOR ORGANISM #2 <input checked="" type="checkbox"/> PASS <input type="checkbox"/> FAIL

**MINIMUM REQUIRED ANALYTICAL RESULTS FOR THE 100% EFFLUENT SAMPLE**

PARAMETER	RESULT	METHOD	WHEN ANALYZED
Temperature °C	17	SM18 2550B stored at 4 degree C until test setup	06/04/13 1330 hrs
pH Standard Units	6.58	SM18 4500-H B	06/04/13 1330 hrs
Conductance µMols	325	SM18 2510B	06/04/13 1330 hrs
Dissolved Oxygen mg/L	7.81	SM18 4500-O G	06/04/13 1330 hrs
Total Residual Chlorine mg/L	<0.04	SM18 4500-Cl G	06/04/13 1330 hrs
Unionized Ammonia mg/L	13.1x0.002=0.030	SM18 4500-NH3 F @ 25 degree C	06/10/13 1130 hrs
*Total Alkalinity mg/L	297	SM18 2320B	06/05/13 1330 hrs
*Total Hardness mg/L	400	SM18 2340 C	06/04/13 1330 hrs

\*Recommended by USEPA guidance, not a required analysis.

<sup>1</sup> Samples shall only be filtered if indigenous organisms are present that may be confused with, or attack, the test organisms.

<sup>2</sup> Filters shall have a sieve size of 60 microns or greater.

# WHOLE EFFLUENT TOXICITY (WET) TEST REPORT

(TO BE ATTACHED TO WET TESTS FOR SUBMISSION TO THE REGULATORY AUTHORITY)

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Conductance µMols	325	SM18 2510B	06/04/13 1330 hrs
Dissolved Oxygen mg/L	7.81	SM18 4500-O G	06/04/13 1330 hrs
Total Residual Chlorine mg/L	<0.04	SM18 4500-Cl G	06/04/13 1330 hrs
Unionized Ammonia mg/L	<0.05x0.002<0.01	SM18 4500-NH3 F @ 25 degree C	06/10/13 1130 hrs
*Total Alkalinity mg/L	122	SM18 2320B	06/05/13 1330 hrs
*Total Hardness mg/L	200	SM18 2340 C	06/04/13 1330 hrs

\*Recommended by USEPA guidance, not a required analysis.

PRELIMINARY TEST ACCEPTABILITY MATRIX (FOR USE BY PERMIT TEE IN DETERMINING TEST VALIDITY)
<b>PERMIT ALLOWABLE EFFLUENT CONCENTRATION (AEC):</b> As indicated on permit. Test is invalid otherwise.
<b>EFFLUENT SAMPLE TYPE:</b> As indicated on permit. Test is invalid otherwise.
<b>TEST TYPE:</b> Acute Static Non-Renewal Test or other as indicated on permit. Test is invalid otherwise.
<b>TEST DURATION:</b> Forty-eight (48) hours or as indicated on permit. Test is invalid otherwise.
<b>TEST ORGANISMS:</b> As indicated on permit. Test is invalid otherwise.
<b>DILUTION WATER USED TO ACHIEVE AEC:</b> Upstream receiving water required if available.
<b>TEST METHOD:</b> The only acceptable method is the <i>most current edition</i> of <u>Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms</u> , or other as specifically assigned by EPA for determining NPDES compliance. Test is invalid otherwise.
<b>TEST START DATE &amp; TIME:</b> Unless otherwise specified in writing by EPA, if >36 hours lapse between collection and initiation, test is invalid.
<b>FILTER MESH SIEVE SIZE:</b> Unless otherwise specified in writing by EPA, if sieve size is smaller than 60 microns, test is invalid.
<b>90% OR GREATER SURVIVAL IN LABORATORY CONTROL(S) (Y/N):</b> If NO, test is invalid.

PARAMETER	RESULT	NOTES	WHEN ANALYZED
Temperature °C	0 6	Unless received by the laboratory on the same day as collected, values outside this range invalidate the test.	Upon receipt

<sup>1</sup> Where no upstream control is available, enter results from laboratory or synthetic control.

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**OUTFALL 001 (24 hr composite) AEC = 17.0%**  
**MO-0058343**  
**EAS LOG# 1415322**  
**June 6, 2012 through June 8, 2012**

**Tests performed by:**

John P. Clippard / Chemical Analyst at Environmental Analysis South (EAS)  
Kelly J. Ray / Biologist at Environmental Analysis South (EAS)  
Sara C. Shields / Lab Supervisor - Chemist at Environmental Analysis South (EAS)  
David F. Warren / Lab Director - Chemist at Environmental Analysis South (EAS)

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# Environmental Analysis South, Inc.

4000 East Jackson Blvd. • Jackson, MO 63755 • 573-204-8817 • Fax 573-204-8818



**REPORT OF ACUTE TOXICITY TESTING**  
**St. Charles Mississippi River Wastewater Treatment Facility**  
**OUTFALL 001 (24 hr composite) AEC = 17.0%**  
**MO-0058343**  
**EAS LOG# 1415322**  
**June 6, 2012 through June 8, 2012**

**1. REPORT SUMMATION:**

**1.1. Multiple Dilution Data Summation**

Test Solution	<i>Pimephales promelas</i> Acute Toxicity Test 48 Hour Survival	<i>Ceriodaphnia dubia</i> Acute Toxicity Test 48 Hour Survival
Reconstituted Control (RC)	100%	95%
Reconstituted Control + Sodium Thiosulfate (RCT)	100%	95%
Upstream Control (UC)	100%	100%
4.25% Effluent	100%	100%
8.50% Effluent	100%	95%
17.0% Effluent	100%	100%
34.0% Effluent	100%	100%
68.0% Effluent	100%	95%
<b>Estimated 48 Hour LC<sub>50</sub> Value</b>	>68.0% Effluent	>68.0% Effluent
<b>To Pass:</b> 1. Effluent - LC50 must be >AEC/0.3 and 2. All concentrations = or < AEC must not have significant difference to control in survival.	1. Yes 2. Yes	1. Yes 2. Yes
<b>Result of Toxicity Test</b>	PASS	PASS

\* Indicates a significant difference at alpha = 0.5 between effluent and control survival data.

**Conclusion:**

*Pimephales promelas* 48 hour WET results: LC 50 >68.0% using the Graphical Method  
 NOAEC = 68.0% by Steel's Many-One Rank Test  
*Ceriodaphnia dubia* 48 hour WET results: LC 50 >68.0% using Trimmed Spearman-Kärber  
 NOAEC = 68.0 % using Steel's Many-One Rank Test

Based on these results the outfall passed the whole effluent toxicity test with both species.

Approved by \_\_\_\_\_

Sara C. Shields, Chemist

# Environmental Analysis South, Inc.

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**REPORT OF ACUTE TOXICITY TESTING**  
**St. Charles Mississippi River Wastewater Treatment Facility**  
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**June 6, 2012 through June 8, 2012**

## 2. TEST METHOD SUMMARY

### 2.1. TEST CONDITIONS AND METHODS:

	<i>Ceriodaphnia dubia:</i>	<i>Pimephales promelas:</i>
Test duration:	48 hours	48 hours
Temperature:	24 - 26 degree Celsius	24 - 26 degree Celsius
Light quality:	Ambient laboratory illumination	Ambient laboratory illumination
Photoperiod:	16 hour light, 8 hours dark	16 hour light, 8 hours dark
Control Water:	Moderately Hard Reconstituted Water	Moderately Hard Reconstituted Water
Dilution Water:	Upstream Water - If unavailable or toxic, then control water will be used.	Upstream Water - If unavailable or toxic, then control water will be used.
Size of test vessel:	30 milliliters	250 milliliters
Volume of test solution:	15 milliliters	200 milliliters
Age of test organisms:	<24 hours	1 -14 days (all same age)
Number of organisms/test vessel:	5	10
Number of replicates/concentration:	4	2
Number of organisms/concentration:	20	40 for a single dilution test and 20 for a multiple dilution test
Feeding regime:	None (fed prior to test)	None (fed prior to test)
Aeration:	None	None
Test acceptability criterion:	90% or greater survival in controls	90% or greater survival in controls

The methodology used for the chemistry data was taken from the *Standard Methods for the Examination of Water and Wastewater*, 18<sup>th</sup> edition (1992). The exception was hardness, which was determined using a Hach EDTA titration test kit. The toxicity tests follow guidelines laid out in the permittee's NPDES permit and were conducted according to EPA approved methods (USEPA 2002).

All test organisms were cultured according to EPA approved methods (USEPA 2002). The *Ceriodaphnia dubia* and the *Pimephales promelas* were obtained from C-K Associates Inc. located in Baton Rouge, Louisiana and shipped overnight for use in the whole effluent toxicity test.

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**EAS LOG# 1415322**  
**June 6, 2012 through June 8, 2012**

## 2.2. REFERENCE TOXICITY TEST:

Environmental Analysis South performs monthly reference toxicity tests. The most recent reference test was initiated on June 6, 2012 using KCL Lot #41713. Following are the results:

2.2.1 *P. promelas* - 48 hr. Acute Test – LC<sub>50</sub> = 0.919 g/l 95%CI (0.724-1.113 g/l)  
EAS %CV = 10.6%

National Warning Limits (75<sup>th</sup> percentile) = 19%CV

National Control Limits (90<sup>th</sup> percentile) = 33%CV

2.2.2 *C. dubia* - 48 hr. Acute Test – LC<sub>50</sub> = 0.486 g/l 95%CI (0.350-0.622g/l)  
EAS %CV = 14.0%

National Warning Limits (75<sup>th</sup> percentile) = 29%CV

National Control Limits (90<sup>th</sup> percentile) = 34%CV

## 2.3. LITERATURE CITED:

1. APHA. 1992. *Standard methods for the examination of water and wastewater*, 18th Ed. American Public Health Association, Washington, D.C
2. USEPA. 2002. *Methods for measuring the acute toxicity of effluents and receiving waters to freshwater and marine organisms*, 5th Ed. EPA-821-R-02-012
3. USEPA 2000. Understanding and Accounting for Method Variability in Whole Effluent Toxicity Applications under the National Pollutant Discharge Elimination System, (Table B-2). June 2000. EPA 833-R-00-003.

CLIENT NAME: St. Charles Mississippi River Wastewater Treatment Facility, Cutoff 001, 24 hr composite

NPDES NUMBER: MO-0058943  
 TYPE OF METHOD: multiple dilution, 48 hrs PP & CD, AEC=17%  
 DATE & TIME OF COLLECTION: 06/04/12 1040 hrs - 06/05/12 1010 hrs by Lawrence Oliver (PDC)  
 DATE & TIME OF SUBMISSION: 06/05/12 1404 hrs by Lawrence Oliver (PDC)

Upstream: Mississippi River  
 Collected: 06/05/12 1020 hrs by Lawrence Oliver (PDC)

INITIAL OBSERVATIONS	DATE	TIME	ANALYST	QC LOT	QC EXP VALUE	INT EFFL	INT UC	INT RC
LOG NUMBER / ID NUMBER						1415322	1415322A	RC4039
pH - SU	06/05/12	1415 hrs	JPC	SB114 (8.8-9.2)	9.03	7.97	8.04	8.12
TEMPERATURE °C RECEIVED	06/05/12	1415 hrs	JPC	EAS 106		12	15	24
SPECIFIC CONDUCTANCE umhos	06/05/12	1415 hrs	JPC	ERA506-0814(452-505)	500	748	419	257
HARDNESS - ppm	06/05/12	1415 hrs	JPC	ERA P170-507(107-134)	120	360	200	80
CHLORINE - ppm	06/05/12	1415 hrs	JPC	tap water	+	<0.04	<0.04	<0.04
DISSOLVED OXYGEN - ppm	06/05/12	1415 hrs	JPC	cal@840		8.56	7.88	8.64
TOTAL ALKALINITY - ppm	06/06/12	1500 hrs	SCS	ERAP203-506(106-124)	124.0	222	178	69.1
INITIAL AMMONIA - ppm	06/11/12	1530 hrs	JPC	EAS #2446 (8-12)	9.93	<0.05	<0.05	<0.05
TOTAL DISSOLVED SOLIDS - ppm								
0 HOUR OBSERVATIONS								
pH - SU	06/06/12	1100 hrs	SCS	SB114 (8.8-9.2)	9	7.75	7.51	7.61
TEMPERATURE °C	06/06/12	1100 hrs	SCS	EAS 106		23.6	24.3	24.7
SPECIFIC CONDUCTANCE umhos	06/06/12	1100 hrs	SCS	ERA506-0814(452-505)	488	251	416	648
DISSOLVED OXYGEN - ppm	06/06/12	1100 hrs	SCS	cal@840		8.7	8.9	8.8
24 HOUR OBSERVATIONS - PP								
pH - SU	06/07/12	1100 hrs	SCS	SB114 (8.8-9.2)	9.07	7.62	7.95	8.05
TEMPERATURE °C	06/07/12	1100 hrs	SCS	EAS 106		25.1	25.1	25.1
SPECIFIC CONDUCTANCE umhos	06/07/12	1100 hrs	SCS	ERA506-0814(452-505)	481	271	423	653
DISSOLVED OXYGEN - ppm	06/07/12	1100 hrs	SCS	cal@840		7.7	7.9	7.7
48 HOUR OBSERVATIONS - PP								
pH - SU	06/08/12	1100 hrs	SCS	SB114 (8.8-9.2)	9.17	8.08	8.44	8.29
TEMPERATURE °C	06/08/12	1100 hrs	SCS	EAS 106		25.1	25.1	25.1
SPECIFIC CONDUCTANCE umhos	06/08/12	1100 hrs	SCS	ERA506-0814(452-505)	493	273	424	670
DISSOLVED OXYGEN - ppm	06/08/12	1100 hrs	SCS	cal@840		7.6	7.7	7.5
FINAL AMMONIA - ppm				EAS #2375 (8-12)				
24 HOUR OBSERVATIONS - CD								
pH - SU	06/07/12	1100 hrs	SCS	SB114 (8.8-9.2)	9.07	8.52	8.28	8.28
TEMPERATURE °C	06/07/12	1100 hrs	SCS	EAS 106		25.1	25.1	25.1
SPECIFIC CONDUCTANCE umhos	06/07/12	1100 hrs	SCS	ERA506-0814(452-505)	481	259	418	635
DISSOLVED OXYGEN - ppm	06/07/12	1100 hrs	SCS	cal@840		8.9	8.4	8.5
48 HOUR OBSERVATIONS - CD								
pH - SU	06/08/12	1100 hrs	SCS	SB114 (8.8-9.2)	9.17	8.56	8.48	8.37
TEMPERATURE °C	06/08/12	1100 hrs	SCS	EAS 106		25.1	25.1	25.1
SPECIFIC CONDUCTANCE umhos	06/08/12	1100 hrs	SCS	ERA506-0814(452-505)	493	265	439	633
DISSOLVED OXYGEN - ppm	06/08/12	1100 hrs	SCS	cal@840		8.3	8.1	8.3
FINAL AMMONIA - ppm				EAS #2375 (8-12)				

Page 2 of 23

Approved by: *[Signature]*

Date: 06/12/2012

WHOLE EFFLUENT TEST conducted in accordance with US EPA 600/4-90/027  
Fifth Edition October 2002

St. Charles Mississippi River Wastewater Treatment Facility, Outfall 001, 24 hr composite EAS LOG# 1415332

Date Test Began: June 6, 2012 Time Test Began: 1100 hrs Analyst 1: DFW  
 Date Test Finished: June 8, 2012 Time Test Finished: 1100 hrs Analyst 2: KJR  
 Analyst 3: SCS

*P. promelas* (PP) AGE: 7 days HATCH NUMBER: 8387 c-k

PERIOD	RC	UC	68.0%	34.0%	17.0%	8.50%	4.25%	X% AEC
0 HR-PP	ALIVE							
	10,10	10,10	10,10	10,10	10,10	10,10	10,10	
24 HR-PP	10,10	10,10	10,10	10,10	10,10	10,10	10,10	
48 HR-PP	10,10	10,10	10,10	10,10	10,10	10,10	10,10	

*Ceriodaphnia dubia* (CD) AGE: <24 hours HATCH NUMBER: 2504 c-k

PERIOD	RC	UC	68.0%	34.0%	17.0%	8.50%	4.25%	X% AEC
0 HR-CD	ALIVE	ALIVE						
	5,5,5	5,5,5	5,5,5	5,5,5	5,5,5	5,5,5	5,5,5	
24 HR-CD	5,5,5	5,5,4,5	5,5,5,5	5,5,5,5	5,5,5,5	4,5,5,5	5,5,5,5	
48 HR-CD	4,5,5,5	5,5,4,5	5,5,5,5	5,5,5,5	5,5,5,5	4,5,5,5	5,5,5,5	

Approved by: *[Signature]*

Date: 06/12/2012







MISSOURI DEPARTMENT OF NATURAL RESOURCES  
 WATER PROTECTION PROGRAM - P.O. BOX 176, JEFFERSON CITY MO, 65102  
**WHOLE EFFLUENT TOXICITY (WET) TEST REPORT**  
 (TO BE ATTACHED TO WET TESTS FOR SUBMISSION TO THE REGULATORY AUTHORITY)

**PART A - TO BE COMPLETED IN FULL BY PERMITTEE**

FACILITY NAME St. Charles Mississippi River Wastewater Treatment Facility		DATE & TIME COLLECTED EFFLUENT 06/04/12 1040-06/05/12 1010 UPSTREAM 08/05/12 1020	
PERMIT NUMBER MO-0058343		PERMIT OUTFALL NUMBER Outfall # 001	
COLLECTOR'S NAME Lawrence Oliver (PDC)			
RECEIVING STREAM COLLECTION SITE AND DESCRIPTION Mississippi River			
PERMIT ALLOWABLE EFFLUENT CONCENTRATION (AEC) 17.0%		EFFLUENT SAMPLE TYPE (CHECK ONE) <input checked="" type="checkbox"/> 24HR COMPOSITE <input type="checkbox"/> GRAB <input type="checkbox"/> OTHER	
SAMPLE NUMBER EFFLUENT 1415322 UPSTREAM 1415322A		UPSTREAM SAMPLE TYPE (CHECK ONE) <input type="checkbox"/> 24HR COMPOSITE <input checked="" type="checkbox"/> GRAB <input type="checkbox"/> OTHER	
PERMITTED EFFLUENT DAILY MAXIMUM LIMITATION FOR CHLORINE mg/L		PERMITTED EFFLUENT DAILY MAXIMUM LIMITATION FOR AMMONIA mg/L	

**PART B - TO BE COMPLETED IN FULL BY PERFORMING LABORATORY**

PERFORMING LABORATORY Environmental Analysis South, Inc.		TEST TYPE Acute Static Non renewal Test Multiple Dilution	
FINAL REPORT NUMBER MO_1415322		TEST DURATION 48 hour	
DATE OF LAST REFERENCE TOXICANT TESTING June 6, 2012		TEST METHOD Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms	
DATE AND TIME SAMPLES RECEIVED AT LABORATORY 06/05/12 1404 hrs by Lawrence Oliver (PDC)		TEST START DATE AND TIME 06/06/12 1100 hrs	TEST END DATE AND TIME 06/08/12 1100 hrs
SAMPLE DECHLORINATED PRIOR TO ANALYSIS? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO EFFLUENT UPSTREAM		TEST ORGANISM #1 AND AGE Pimephales promelas 7 days	TEST ORGANISM #2 AND AGE Ceriodaphnia dubia < 24 hours
SAMPLE FILTERED <sup>1</sup> PRIOR TO ANALYSIS? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO EFFLUENT UPSTREAM		90% OR GREATER SURVIVAL IN SYNTHETIC CONTROL? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	DILUTION WATER USED TO ACHIEVE AEC upstream 1415322A
FILTER MESH SIEVE SIZE <sup>2</sup> None		EFFLUENT ORGANISM #1 % MORTALITY AT AEC LC50>68.0% Effluent	EFFLUENT ORGANISM #2 % MORTALITY AT AEC LC50>68.0% Effluent
SAMPLE AERATED DURING TESTING? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		UPSTREAM ORGANISM #1 % MORTALITY 0%	UPSTREAM ORGANISM #2 % MORTALITY 5%
pH ADJUSTED? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO EFFLUENT UPSTREAM		TEST RESULT AT AEC FOR ORGANISM #1 <input checked="" type="checkbox"/> PASS <input type="checkbox"/> FAIL	TEST RESULT AT AEC FOR ORGANISM #2 <input checked="" type="checkbox"/> PASS <input type="checkbox"/> FAIL

**MINIMUM REQUIRED ANALYTICAL RESULTS FOR THE 100% EFFLUENT SAMPLE**

PARAMETER	RESULT	METHOD	WHEN ANALYZED
Temperature °C	12	SM18 2550B stored at 4 degree C until test setup	06/05/12 1415 hrs
pH Standard Units	7.97	SM18 4500-H B	06/05/12 1415 hrs
Conductance µMohs	748	SM18 2510B	06/05/12 1415 hrs
Dissolved Oxygen mg/L	8.56	SM18 4500-O G	06/05/12 1415 hrs
Total Residual Chlorine mg/L	<0.04	SM18 4500-Cl G	06/05/12 1415 hrs
Unionized Ammonia mg/L	<0.05x0.05<0.010	SM18 4500-NH3 F @ 25 degree C	06/11/12 1530 hrs
*Total Alkalinity mg/L	222	SM18 2320B	06/06/12 1500 hrs
*Total Hardness mg/L	748	SM18 2340 C	06/05/12 1415 hrs

\*Recommended by USEPA guidance, not a required analysis.

<sup>1</sup> Samples shall only be filtered if indigenous organisms are present that may be confused with, or attack, the test organisms.  
<sup>2</sup> Filters shall have a sieve size of 60 microns or greater.

**WHOLE EFFLUENT TOXICITY (WET) TEST REPORT**  
 (TO BE ATTACHED TO WET TESTS FOR SUBMISSION TO THE REGULATORY AUTHORITY)

MINIMUM REQUIRED ANALYTICAL RESULTS FOR THE 100% UPSTREAM SAMPLE			
PARAMETER	RESULT	METHOD	WHEN ANALYZED
Temperature °C	15	SM18 2550B stored at 4 degree C until test setup	06/05/12 1415 hrs
pH Standard Units	8.04	SM18 4500-H B	06/05/12 1415 hrs
Conductance µMohs	419	SM18 2510B	06/05/12 1415 hrs
Dissolved Oxygen mg/L	7.88	SM18 4500-O G	06/05/12 1415 hrs
Total Residual Chlorine mg/L	<0.04	SM18 4500-Cl G	06/05/12 1415 hrs
Unionized Ammonia mg/L	<0.05x0.05<0.010	SM18 4500-NH3 F @ 25 degree C	06/11/12 1530 hrs
*Total Alkalinity mg/L	178	SM18 2320B	06/06/12 1500 hrs
*Total Hardness mg/L	200	SM18 2340 C	06/05/12 1415 hrs

\*Recommended by USEPA guidance, not a required analysis.

**PRELIMINARY TEST ACCEPTABILITY MATRIX (FOR USE BY PERMITTEE IN DETERMINING TEST VALIDITY)**

**PERMIT ALLOWABLE EFFLUENT CONCENTRATION (AEC):** As indicated on permit. Test is invalid otherwise.

**EFFLUENT SAMPLE TYPE:** As indicated on permit. Test is invalid otherwise.

**TEST TYPE:** Acute Static Non-Renewal Test or other as indicated on permit. Test is invalid otherwise.

**TEST DURATION:** Forty-eight (48) hours or as indicated on permit. Test is invalid otherwise.

**TEST ORGANISMS:** As indicated on permit. Test is invalid otherwise.

**DILUTION WATER USED TO ACHIEVE AEC:** Upstream receiving water required if available.

**TEST METHOD:** The only acceptable method is the *most current edition* of Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, or other as specifically assigned by EPA for determining NPDES compliance. Test is invalid otherwise.

**TEST START DATE & TIME:** Unless otherwise specified in writing by EPA, if >36 hours lapse between collection and initiation, test is invalid.

**FILTER MESH SIEVE SIZE:** Unless otherwise specified in writing by EPA, if sieve size is smaller than 60 microns, test is invalid.

**90% OR GREATER SURVIVAL IN LABORATORY CONTROL(S) (Y/N):** If NO, test is invalid.

PARAMETER	RESULT	NOTES	WHEN ANALYZED
Temperature °C	0 - 6	Unless received by the laboratory on the same day as collected, values outside this range invalidate the test.	Upon receipt

<sup>2</sup> Where no upstream control is available, enter results from laboratory or synthetic control.

**COMMITMENT & INTEGRITY  
DRIVE RESULTS**

St. Charles Mississippi River WWTF T 636.250.4609  
4933 Dwyer Road F 636.250.4607  
St. Charles, MO 63301  
woodardcurran.com



July 10, 2014

Missouri Department of Natural Resources  
Water Pollution Control Branch  
Lacey Hirschvogel  
Post Office Box 176  
Jefferson City, MO 65102-0176

Re: NPDES Permit #MO-0085343, St. Charles Mississippi River WWTF Permit Renewal

Dear Ms. Hirschvogel,

Please find enclosed the NPDES Permit #MO-0085343 Renewal Application form B2 for the City of St. Charles Mississippi River Wastewater Treatment Facility and the following supporting documentation:

- Attachments for Part A
  - Aerial Map of WWTF, Outfall, and Downstream Landowner
  - Process Flow Diagram
  - Topographical Map
- Attachments for Part D, Expanded Effluent Testing Data
- Attachments for Part E, Toxicity Testing Data
- Attachments for Part F, Significant Industrial Users

Should you have any questions regarding this application, please do not hesitate to contact me by phone or email.

Respectfully submitted,

**Wendy Dalton**

Woodard & Curran  
Environmental Compliance Specialist  
[wdalton@woodardcurran.com](mailto:wdalton@woodardcurran.com)

**Part F – Industrial User Discharges (1 of 3)**

60.3 Significant Industrial User Information

Name: **Cintas Corporation**

Address: 3750 Mueller Road  
St. Charles, MO 63301

- 60.4 Industrial Processes: Industrial Laundry  
60.5 Principle Products: Industrial Laundry  
Raw Materials: N/A  
60.6 Flow Rate  
A. Process Water: 91,000 gpd; continuous  
B. Non-Process Water: 3,000 gpd; continuous  
60.7 Pretreatment Standards  
A. Local Limits YES  
B. Categorical NO  
60.8 Problems at Treatment Works Attributed to SIU NO  
60.9 RCRA Hazardous Waste NO  
60.10 CERCLA/RCRA Remediation NO  
60.11 – 60.13 N/A

**Part F – Industrial User Discharges (2 of 3)**

60.3 Significant Industrial User Information

Name: **mom365**

Address: 3613 Mueller Road  
St. Charles, MO 63301

- 60.4 Industrial Processes: Photographic Processes  
60.5 Principle Products: Photographic processing and packaging, silver reclamation  
Raw Materials: N/A  
60.6 Flow Rate  
A,B. Process/Non-Process Water: 16,000 gpd; continuous  
60.7 Pretreatment Standards  
A. Local Limits YES  
B. Categorical NO  
60.8 Problems at Treatment Works Attributed to SIU NO  
60.9 RCRA Hazardous Waste NO  
60.10 CERCLA/RCRA Remediation NO  
60.11 – 60.13 N/A

**Part F – Industrial User Discharges (3 of 3)**

60.3 Significant Industrial User Information

Name: **SantoLubes LLC**

Address: 8 Governor Drive  
St. Charles, MO 63301

- 60.4 Industrial Processes: Groundwater Remediation  
60.5 Principle Products: Air stripping of groundwater  
Raw Materials: N/A  
60.6 Flow Rate  
A. Process Water: 14,000 gpd; continuous  
B. Non-Process Water: minimal  
60.7 Pretreatment Standards  
A. Local Limits YES  
B. Categorical NO  
60.8 Problems at Treatment Works Attributed to SIU NO  
60.9 RCRA Hazardous Waste NO  
60.10 CERCLA/RCRA Remediation YES  
60.11 Waste Origin Superfund, Groundwater Remediation Site  
60.12 Pollutants Various VOC's  
60.13 Waste Treatment  
A. YES. Air Stripping Tower  
B. Continuous



STANDARD CONDITIONS FOR NPDES PERMITS  
ISSUED BY  
THE MISSOURI DEPARTMENT OF NATURAL RESOURCES  
MISSOURI CLEAN WATER COMMISSION  
REVISED  
AUGUST 1, 2014

These Standard Conditions incorporate permit conditions as required by 40 CFR 122.41 or other applicable state statutes or regulations. These minimum conditions apply unless superseded by requirements specified in the permit.

## Part I – General Conditions

### Section A – Sampling, Monitoring, and Recording

1. **Sampling Requirements.**
  - a. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.
  - b. All samples shall be taken at the outfall(s) or Missouri Department of Natural Resources (Department) approved sampling location(s), and unless specified, before the effluent joins or is diluted by any other body of water or substance.
2. **Monitoring Requirements.**
  - a. Records of monitoring information shall include:
    - i. The date, exact place, and time of sampling or measurements;
    - ii. The individual(s) who performed the sampling or measurements;
    - iii. The date(s) analyses were performed;
    - iv. The individual(s) who performed the analyses;
    - v. The analytical techniques or methods used; and
    - vi. The results of such analyses.
  - b. If the permittee monitors any pollutant more frequently than required by the permit at the location specified in the permit using test procedures approved under 40 CFR Part 136, or another method required for an industry-specific waste stream under 40 CFR subchapters N or O, the results of such monitoring shall be included in the calculation and reported to the Department with the discharge monitoring report data (DMR) submitted to the Department pursuant to Section B, paragraph 7.
3. **Sample and Monitoring Calculations.** Calculations for all sample and monitoring results which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified in the permit.
4. **Test Procedures.** The analytical and sampling methods used shall conform to the reference methods listed in 10 CSR 20-7.015 unless alternates are approved by the Department. The facility shall use sufficiently sensitive analytical methods for detecting, identifying, and measuring the concentrations of pollutants. The facility shall ensure that the selected methods are able to quantify the presence of pollutants in a given discharge at concentrations that are low enough to determine compliance with Water Quality Standards in 10 CSR 20-7.031 or effluent limitations unless provisions in the permit allow for other alternatives. A method is “sufficiently sensitive” when; 1) the method minimum level is at or below the level of the applicable water quality criterion for the pollutant or, 2) the method minimum level is above the applicable water quality criterion, but the amount of pollutant in a facility’s discharge is high enough that the method detects and quantifies the level of pollutant in the discharge, or 3) the method has the lowest minimum level of the analytical methods approved under 10 CSR 20-7.015. These methods are also required for parameters that are listed as monitoring only, as the data collected may be used to determine if limitations need to be established. A permittee is responsible for working with their contractors to ensure that the analysis performed is sufficiently sensitive.
5. **Record Retention.** Except for records of monitoring information required by the permit related to the permittee’s sewage sludge use and disposal activities, which shall be retained for a period of at least five (5) years (or longer as required by 40 CFR part 503), the permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by the permit, and records of all data used to complete the application for the permit, for a period of at least three (3) years from the date of the sample, measurement, report or application. This period may be extended by request of the Department at any time.

6. **Illegal Activities.**
  - a. The Federal Clean Water Act provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under the permit shall, upon conviction, be punished by a fine of not more than \$10,000, or by imprisonment for not more than two (2) years, or both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment is a fine of not more than \$20,000 per day of violation, or by imprisonment of not more than four (4) years, or both.
  - b. The Missouri Clean Water Law provides that any person or who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained pursuant to sections 644.006 to 644.141 shall, upon conviction, be punished by a fine of not more than \$10,000, or by imprisonment for not more than six (6) months, or by both. Second and successive convictions for violation under this paragraph by any person shall be punished by a fine of not more than \$50,000 per day of violation, or by imprisonment for not more than two (2) years, or both.

### Section B – Reporting Requirements

1. **Planned Changes.**
  - a. The permittee shall give notice to the Department as soon as possible of any planned physical alterations or additions to the permitted facility when:
    - i. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in 40 CFR 122.29(b); or
    - ii. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in the permit, nor to notification requirements under 40 CFR 122.42(a)(1);
    - iii. The alteration or addition results in a significant change in the permittee’s sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan;
    - iv. Any facility expansions, production increases, or process modifications which will result in a new or substantially different discharge or sludge characteristics must be reported to the Department 60 days before the facility or process modification begins. Notification may be accomplished by application for a new permit. If the discharge does not violate effluent limitations specified in the permit, the facility is to submit a notice to the Department of the changed discharge at least 30 days before such changes. The Department may require a construction permit and/or permit modification as a result of the proposed changes at the facility.
2. **Non-compliance Reporting.**
  - a. The permittee shall report any noncompliance which may endanger health or the environment. Relevant information shall be provided orally or via the current electronic method approved by the Department, within 24 hours from the time the permittee becomes aware of the circumstances, and shall be reported to the appropriate Regional Office during normal business hours or the Environmental Emergency Response hotline at 573-634-2436 outside of normal business hours. A written submission shall also be provided within five (5) business days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.



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- b. The following shall be included as information which must be reported within 24 hours under this paragraph.
    - i. Any unanticipated bypass which exceeds any effluent limitation in the permit.
    - ii. Any upset which exceeds any effluent limitation in the permit.
    - iii. Violation of a maximum daily discharge limitation for any of the pollutants listed by the Department in the permit required to be reported within 24 hours.
  - c. The Department may waive the written report on a case-by-case basis for reports under paragraph 2. b. of this section if the oral report has been received within 24 hours.
3. **Anticipated Noncompliance.** The permittee shall give advance notice to the Department of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements. The notice shall be submitted to the Department 60 days prior to such changes or activity.
  4. **Compliance Schedules.** Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of the permit shall be submitted no later than 14 days following each schedule date. The report shall provide an explanation for the instance of noncompliance and a proposed schedule or anticipated date, for achieving compliance with the compliance schedule requirement.
  5. **Other Noncompliance.** The permittee shall report all instances of noncompliance not reported under paragraphs 2, 3, and 6 of this section, at the time monitoring reports are submitted. The reports shall contain the information listed in paragraph 2. a. of this section.
  6. **Other Information.** Where the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Department, it shall promptly submit such facts or information.
  7. **Discharge Monitoring Reports.**
    - a. Monitoring results shall be reported at the intervals specified in the permit.
    - b. Monitoring results must be reported to the Department via the current method approved by the Department, unless the permittee has been granted a waiver from using the method. If the permittee has been granted a waiver, the permittee must use forms provided by the Department.
    - c. Monitoring results shall be reported to the Department no later than the 28<sup>th</sup> day of the month following the end of the reporting period.
- b. Notice.
    - i. Anticipated bypass. If the permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least 10 days before the date of the bypass.
    - ii. Unanticipated bypass. The permittee shall submit notice of an unanticipated bypass as required in Section B – Reporting Requirements, paragraph 5 (24-hour notice).
  - c. Prohibition of bypass.
    - i. Bypass is prohibited, and the Department may take enforcement action against a permittee for bypass, unless:
      1. Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;
      2. There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and
      3. The permittee submitted notices as required under paragraph 2. b. of this section.
    - ii. The Department may approve an anticipated bypass, after considering its adverse effects, if the Department determines that it will meet the three (3) conditions listed above in paragraph 2. c. i. of this section.
3. **Upset Requirements.**
    - a. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of paragraph 3. b. of this section are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.
    - b. Conditions necessary for a demonstration of upset. A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:
      - i. An upset occurred and that the permittee can identify the cause(s) of the upset;
      - ii. The permitted facility was at the time being properly operated; and
      - iii. The permittee submitted notice of the upset as required in Section B – Reporting Requirements, paragraph 2. b. ii. (24-hour notice).
      - iv. The permittee complied with any remedial measures required under Section D – Administrative Requirements, paragraph 4.
    - c. Burden of proof. In any enforcement proceeding, the permittee seeking to establish the occurrence of an upset has the burden of proof.

## Section C – Bypass/Upset Requirements

1. **Definitions.**
  - a. *Bypass*: the intentional diversion of waste streams from any portion of a treatment facility.
  - b. *Severe Property Damage*: substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.
  - c. *Upset*: an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.
2. **Bypass Requirements.**
  - a. Bypass not exceeding limitations. The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of paragraphs 2. b. and 2. c. of this section.

## Section D – Administrative Requirements

1. **Duty to Comply.** The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Missouri Clean Water Law and Federal Clean Water Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application.
  - a. The permittee shall comply with effluent standards or prohibitions established under section 307(a) of the Federal Clean Water Act for toxic pollutants and with standards for sewage sludge use or disposal established under section 405(d) of the CWA within the time provided in the regulations that establish these standards or prohibitions or standards for sewage sludge use or disposal, even if the permit has not yet been modified to incorporate the requirement.
  - b. The Federal Clean Water Act provides that any person who violates section 301, 302, 306, 307, 308, 318 or 405 of the Act, or any permit condition or limitation implementing any such sections in a permit issued under section 402, or any requirement imposed in a pretreatment program approved under sections 402(a)(3) or 402(b)(8) of the Act, is subject to a civil penalty not to exceed \$25,000 per day for each violation. The Federal Clean Water Act provides that any person who negligently violates sections 301, 302, 306, 307, 308, 318, or 405 of the Act, or any condition or limitation implementing any of such sections in a permit issued under section 402 of the Act, or any requirement



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- imposed in a pretreatment program approved under section 402(a)(3) or 402(b)(8) of the Act, is subject to criminal penalties of \$2,500 to \$25,000 per day of violation, or imprisonment of not more than one (1) year, or both. In the case of a second or subsequent conviction for a negligent violation, a person shall be subject to criminal penalties of not more than \$50,000 per day of violation, or by imprisonment of not more than two (2) years, or both. Any person who knowingly violates such sections, or such conditions or limitations is subject to criminal penalties of \$5,000 to \$50,000 per day of violation, or imprisonment for not more than three (3) years, or both. In the case of a second or subsequent conviction for a knowing violation, a person shall be subject to criminal penalties of not more than \$100,000 per day of violation, or imprisonment of not more than six (6) years, or both. Any person who knowingly violates section 301, 302, 303, 306, 307, 308, 318 or 405 of the Act, or any permit condition or limitation implementing any of such sections in a permit issued under section 402 of the Act, and who knows at that time that he thereby places another person in imminent danger of death or serious bodily injury, shall, upon conviction, be subject to a fine of not more than \$250,000 or imprisonment of not more than 15 years, or both. In the case of a second or subsequent conviction for a knowing endangerment violation, a person shall be subject to a fine of not more than \$500,000 or by imprisonment of not more than 30 years, or both. An organization, as defined in section 309(c)(3)(B)(iii) of the CWA, shall, upon conviction of violating the imminent danger provision, be subject to a fine of not more than \$1,000,000 and can be fined up to \$2,000,000 for second or subsequent convictions.
- c. Any person may be assessed an administrative penalty by the EPA Director for violating section 301, 302, 306, 307, 308, 318 or 405 of this Act, or any permit condition or limitation implementing any of such sections in a permit issued under section 402 of this Act. Administrative penalties for Class I violations are not to exceed \$10,000 per violation, with the maximum amount of any Class I penalty assessed not to exceed \$25,000. Penalties for Class II violations are not to exceed \$10,000 per day for each day during which the violation continues, with the maximum amount of any Class II penalty not to exceed \$125,000.
- d. It is unlawful for any person to cause or permit any discharge of water contaminants from any water contaminant or point source located in Missouri in violation of sections 644.006 to 644.141 of the Missouri Clean Water Law, or any standard, rule or regulation promulgated by the commission. In the event the commission or the director determines that any provision of sections 644.006 to 644.141 of the Missouri Clean Water Law or standard, rules, limitations or regulations promulgated pursuant thereto, or permits issued by, or any final abatement order, other order, or determination made by the commission or the director, or any filing requirement pursuant to sections 644.006 to 644.141 of the Missouri Clean Water Law or any other provision which this state is required to enforce pursuant to any federal water pollution control act, is being, was, or is in imminent danger of being violated, the commission or director may cause to have instituted a civil action in any court of competent jurisdiction for the injunctive relief to prevent any such violation or further violation or for the assessment of a penalty not to exceed \$10,000 per day for each day, or part thereof, the violation occurred and continues to occur, or both, as the court deems proper. Any person who willfully or negligently commits any violation in this paragraph shall, upon conviction, be punished by a fine of not less than \$2,500 nor more than \$25,000 per day of violation, or by imprisonment for not more than one year, or both. Second and successive convictions for violation of the same provision of this paragraph by any person shall be punished by a fine of not more than \$50,000 per day of violation, or by imprisonment for not more than two (2) years, or both.
2. **Duty to Reapply.**
- a. If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and obtain a new permit.
- b. A permittee with a currently effective site-specific permit shall submit an application for renewal at least 180 days before the expiration date of the existing permit, unless permission for a later date has been granted by the Department. (The Department shall not grant permission for applications to be submitted later than the expiration date of the existing permit.)
- c. A permittee with currently effective general permit shall submit an application for renewal at least 30 days before the existing permit expires, unless the permittee has been notified by the Department that an earlier application must be made. The Department may grant permission for a later submission date. (The Department shall not grant permission for applications to be submitted later than the expiration date of the existing permit.)
3. **Need to Halt or Reduce Activity Not a Defense.** It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.
4. **Duty to Mitigate.** The permittee shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.
5. **Proper Operation and Maintenance.** The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems which are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit.
6. **Permit Actions.**
- a. Subject to compliance with statutory requirements of the Law and Regulations and applicable Court Order, this permit may be modified, suspended, or revoked in whole or in part during its term for cause including, but not limited to, the following:
- i. Violations of any terms or conditions of this permit or the law;
- ii. Having obtained this permit by misrepresentation or failure to disclose fully any relevant facts;
- iii. A change in any circumstances or conditions that requires either a temporary or permanent reduction or elimination of the authorized discharge; or
- iv. Any reason set forth in the Law or Regulations.
- b. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition.
7. **Permit Transfer.**
- a. Subject to 10 CSR 20-6.010, an operating permit may be transferred upon submission to the Department of an application to transfer signed by the existing owner and the new owner, unless prohibited by the terms of the permit. Until such time the permit is officially transferred, the original permittee remains responsible for complying with the terms and conditions of the existing permit.
- b. The Department may require modification or revocation and reissuance of the permit to change the name of the permittee and incorporate such other requirements as may be necessary under the Missouri Clean Water Law or the Federal Clean Water Act.
- c. The Department, within 30 days of receipt of the application, shall notify the new permittee of its intent to revoke or reissue or transfer the permit.
8. **Toxic Pollutants.** The permittee shall comply with effluent standards or prohibitions established under section 307(a) of the Federal Clean Water Act for toxic pollutants and with standards for sewage sludge use or disposal established under section 405(d) of the Federal Clean Water Act within the time provided in the regulations that establish these standards or prohibitions or standards for sewage sludge use or disposal, even if the permit has not yet been modified to incorporate the requirement.
9. **Property Rights.** This permit does not convey any property rights of any sort, or any exclusive privilege.



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10. **Duty to Provide Information.** The permittee shall furnish to the Department, within a reasonable time, any information which the Department may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit or to determine compliance with this permit. The permittee shall also furnish to the Department upon request, copies of records required to be kept by this permit.
11. **Inspection and Entry.** The permittee shall allow the Department, or an authorized representative (including an authorized contractor acting as a representative of the Department), upon presentation of credentials and other documents as may be required by law, to:
  - a. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of the permit;
  - b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
  - c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and
  - d. Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the Federal Clean Water Act or Missouri Clean Water Law, any substances or parameters at any location.
12. **Closure of Treatment Facilities.**
  - a. Persons who cease operation or plan to cease operation of waste, wastewater, and sludge handling and treatment facilities shall close the facilities in accordance with a closure plan approved by the Department.
  - b. Operating Permits under 10 CSR 20-6.010 or under 10 CSR 20-6.015 are required until all waste, wastewater, and sludges have been disposed of in accordance with the closure plan approved by the Department and any disturbed areas have been properly stabilized. Disturbed areas will be considered stabilized when perennial vegetation, pavement, or structures using permanent materials cover all areas that have been disturbed. Vegetative cover, if used, shall be at least 70% plant density over 100% of the disturbed area.
13. **Signatory Requirement.**
  - a. All permit applications, reports required by the permit, or information requested by the Department shall be signed and certified. (See 40 CFR 122.22 and 10 CSR 20-6.010)
  - b. The Federal Clean Water Act provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or non-compliance shall, upon conviction, be punished by a fine of not more than \$10,000 per violation, or by imprisonment for not more than six (6) months per violation, or by both.
  - c. The Missouri Clean Water Law provides that any person who knowingly makes any false statement, representation or certification in any application, record, report, plan, or other document filed or required to be maintained pursuant to sections 644.006 to 644.141 shall, upon conviction, be punished by a fine of not more than ten thousand dollars, or by imprisonment for not more than six months, or by both.
14. **Severability.** The provisions of the permit are severable, and if any provision of the permit, or the application of any provision of the permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of the permit, shall not be affected thereby.



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PART II - SPECIAL CONDITIONS – PUBLICLY OWNED  
TREATMENT WORKS  
SECTION A – INDUSTRIAL USERS

**1. Definitions**

Definitions as set forth in the Missouri Clean Water Laws and approved by the Missouri Clean Water Commission shall apply to terms used herein.

Significant Industrial User (SIU). Except as provided in the *General Pretreatment Regulation* 10 CSR 20-6.100, the term Significant Industrial User means:

1. All Industrial Users subject to Categorical Pretreatment Standards; and
2. Any other Industrial User that: discharges an average of 25,000 gallons per day or more of process wastewater to the Publicly-Owned Treatment Works (POTW) (excluding sanitary, noncontact cooling and boiler blowdown wastewater); contributes a process wastestream which makes up 5 percent or more of the average dry weather hydraulic or organic capacity of the POTW treatment plant; or is designated as such by the Control Authority on the basis that the Industrial User has a reasonable potential for adversely affecting the POTW's or for violating any Pretreatment Standard or requirement.

Clean Water Act (CWA) is the the federal Clean Water Act of 1972, 33 U.S.C. § 1251 et seq. (2002).

**2. Identification of Industrial Discharges**

Pursuant to 40 CFR 122.44(j)(1), all POTWs shall identify, in terms of character and volume of pollutants, any Significant Industrial Users discharging to the POTW subject to Pretreatment Standards under section 307(b) of the CWA and 40 CFR 403.

**3. Application Information**

Applications for renewal or modification of this permit must contain the information about industrial discharges to the POTW pursuant to 40 CFR 122.21(j)(6)

**4. Notice to the Department**

Pursuant to 40 CFR 122.42(b), all POTWs must provide adequate notice of the following:

1. Any new introduction of pollutants into the POTW from an indirect discharger which would be subject to section 301 or 306 of CWA if it were directly discharging these pollutants; and
2. Any substantial change into the volume or character of pollutants being introduced into that POTW by a source introducing pollutants into the POTW at the time of issuance of the permit.
3. For purposes of this paragraph, adequate notice shall include information on:
  - i. the quality and quantity of effluent introduced into the POTW, and
  - ii. any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW.

For POTWs without an approved pretreatment program, the notice of industrial discharges which was not included in the permit application shall be made as soon as practicable. For POTWs with an approved pretreatment program, notice is to be included in the annual pretreatment report required in the special conditions of this permit. Notice may be sent to:

Missouri Department of Natural Resources  
Water Protection Program  
Attn: Pretreatment Coordinator  
P.O. Box 176  
Jefferson City, MO 65102

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**PART III – SLUDGE AND BIOSOLIDS FROM DOMESTIC AND INDUSTRIAL WASTEWATER  
TREATMENT FACILITIES**

**SECTION A – GENERAL REQUIREMENTS**

1. This permit pertains to sludge requirements under the Missouri Clean Water Law and regulation for domestic wastewater and industrial process wastewater. This permit also incorporates applicable federal sludge disposal requirements under 40 CFR 503 for domestic wastewater. The Environmental Protection Agency (EPA) has principal authority for permitting and enforcement of the federal sludge regulations under 40 CFR 503 for domestic wastewater. EPA has reviewed and accepted these standard sludge conditions. EPA may choose to issue a separate sludge addendum to this permit or a separate federal sludge permit at their discretion to further address the federal requirements.
2. These PART III Standard Conditions apply only to sludge and biosolids generated at domestic wastewater treatment facilities, including public owned treatment works (POTW), privately owned facilities and sludge or biosolids generated at industrial facilities.
3. Sludge and Biosolids Use and Disposal Practices:
  - a. The permittee is authorized to operate the sludge and biosolids treatment, storage, use, and disposal facilities listed in the facility description of this permit.
  - b. The permittee shall not exceed the design sludge volume listed in the facility description and shall not use sludge disposal methods that are not listed in the facility description, without prior approval of the permitting authority.
  - c. The permittee is authorized to operate the storage, treatment or generating sites listed in the Facility Description section of this permit.
4. Sludge Received from other Facilities:
  - a. Permittees may accept domestic wastewater sludge from other facilities including septic tank pumpings from residential sources as long as the design sludge volume is not exceeded and the treatment facility performance is not impaired.
  - b. The permittee shall obtain a signed statement from the sludge generator or hauler that certifies the type and source of the sludge
5. These permit requirements do not supersede nor remove liability for compliance with county and other local ordinances.
6. These permit requirements do not supersede nor remove liability for compliance with other environmental regulations such as odor emissions under the Missouri Air Pollution Control Law and regulations.
7. This permit may (after due process) be modified, or alternatively revoked and reissued, to comply with any applicable sludge disposal standard or limitation issued or approved under Section 405(d) of the Clean Water Act under Chapter 644 RSMo.
8. In addition to STANDARD CONDITIONS, the Department may include sludge limitations in the special conditions portion or other sections of a site specific permit.
9. Alternate Limits in the Site Specific Permit.

Where deemed appropriate, the Department may require an individual site specific permit in order to authorize alternate limitations:

  - a. A site specific permit must be obtained for each operating location, including application sites.
  - b. To request a site specific permit, an individual permit application, permit fee, and supporting documents shall be submitted for each operating location. This shall include a detailed sludge/biosolids management plan or engineering report.
10. Exceptions to these Standard Conditions may be authorized on a case-by-case basis by the Department, as follows:
  - a. The Department will prepare a permit modification and follow permit notice provisions as applicable under 10 CSR 20-6.020, 40 CFR 124.10, and 40 CFR 501.15(a)(2)(ix)(E). This includes notification of the owner of the property located adjacent to each land application site, where appropriate.
  - b. Exceptions cannot be granted where prohibited by the federal sludge regulations under 40 CFR 503.

## **SECTION B – DEFINITIONS**

1. Best Management Practices include agronomic loading rates, soil conservation practices and other site restrictions.
2. Biosolids means organic fertilizer or soil amendment produced by the treatment of domestic wastewater sludge.
3. Biosolids land application facility is a facility where biosolids are spread onto the land at agronomic rates for production of food or fiber. The facility includes any structures necessary to store the biosolids until soil, weather, and crop conditions are favorable for land application.
4. Class A biosolids means a material that has met the Class A pathogen reduction requirements or equivalent treatment by a Process to Further Reduce Pathogens (PFRP) in accordance with 40 CFR 503.
5. Class B biosolids means a material that has met the Class B pathogen reduction requirements or equivalent treatment by a Process to Significantly Reduce Pathogens (PFRP) in accordance with 40 CFR 503.
6. Domestic wastewater means wastewater originating from the sanitary conveniences of residences, commercial buildings, factories and institutions; or co-mingled sanitary and industrial wastewater processed by a (POTW) or a privately owned facility.
7. Industrial wastewater means any wastewater, also known as process water, not defined as domestic wastewater. Per 40 CFR Part 122, process water means any water which, during manufacturing or processing, comes into direct contact with or results from the production or use of any raw material, intermediate product, finished product, byproduct, or waste product.
8. Mechanical treatment plants are wastewater treatment facilities that use mechanical devices to treat wastewater, including septic tanks, sand filters, extended aeration, activated sludge, contact stabilization, trickling filters, rotating biological discs, and other similar facilities. It does not include wastewater treatment lagoons and constructed wetlands for wastewater treatment.
9. Operating location as defined in 10 CSR 20-2.010 is all contiguous lands owned, operated or controlled by one (1) person or by two (2) or more persons jointly or as tenants in common.
10. Plant Available Nitrogen (PAN) is the nitrogen that will be available to plants during the growing seasons after biosolids application.
11. Public contact site is land with a high potential for contact by the public. This includes, but is not limited to, public parks, ball fields, cemeteries, plant nurseries, turf farms, and golf courses.
12. Sludge is the solid, semisolid, or liquid residue removed during the treatment of wastewater. Sludge includes septage removed from septic tanks or equivalent facilities. Sludge does not include carbon coal byproducts (CCBs)
13. Sludge lagoon is part of a mechanical wastewater treatment facility. A sludge lagoon is an earthen basin that receives sludge that has been removed from a wastewater treatment facility. It does not include a wastewater treatment lagoon or sludge treatment units that are not a part of a mechanical wastewater treatment facility.
14. Septage is the material pumped from residential septic tanks and similar treatment works (with a design population of less than 150 people). The standard for biosolids from septage is different from other sludges.

## **SECTION C – MECHANICAL WASTEWATER TREATMENT FACILITIES**

1. Sludge shall be routinely removed from wastewater treatment facilities and handled according to the permit facility description and sludge conditions of this permit.
2. The permittee shall operate the facility so that there is no sludge discharged to waters of the state.
3. Mechanical treatment plants shall have separate sludge storage compartments in accordance with 10 CSR 20, Chapter 8. Failure to remove sludge from these storage compartments on the required design schedule is a violation of this permit.

## **SECTION D – SLUDGE DISPOSED AT OTHER TREATMENT FACILITY OR CONTRACT HAULER**

1. This section applies to permittees that haul sludge to another treatment facility for disposal or use contract haulers to remove and dispose of sludge.
2. Permittees that use contract haulers are responsible for compliance with all the terms of this permit including final disposal, unless the hauler has a separate permit for sludge or biosolids disposal issued by the Department; or the hauler transports the sludge to another permitted treatment facility.
3. Haulers who land apply septage must obtain a state permit.
4. Testing of sludge, other than total solids content, is not required if sludge is hauled to a municipal wastewater treatment facility or other permitted wastewater treatment facility, unless it is required by the accepting facility.

## **SECTION E – INCINERATION OF SLUDGE**

1. Sludge incineration facilities shall comply with the requirements of 40 CFR 503 Subpart E; air pollution control regulations under 10 CSR 10; and solid waste management regulations under 10 CSR 80.
2. Permittee may be authorized under the facility description of this permit to store incineration ash in lagoons or ash ponds. This permit does not authorize the disposal of incineration ash. Incineration ash shall be disposed in accordance with 10 CSR 80; or if the ash is determined to be hazardous with 10 CSR 25.
3. In addition to normal sludge monitoring, incineration facilities shall report the following as part of the annual report, quantity of sludge incinerated, quantity of ash generated, quantity of ash stored, and ash used or disposal method, quantity, and location. Permittee shall also provide the name of the disposal facility and the applicable permit number.

## **SECTION F – SURFACE DISPOSAL SITES AND SLUDGE LAGOONS**

1. Surface disposal sites of domestic facilities shall comply with the requirements in 40 CFR 503 Subpart C; air pollution control regulations under 10 CSR 10; and solid waste management regulations under 10 CSR 80.
2. Sludge storage lagoons are temporary facilities and are not required to obtain a permit as a solid waste management facility under 10 CSR 80. In order to maintain sludge storage lagoons as storage facilities, accumulated sludge must be removed routinely, but not less than once every two years unless an alternate schedule is approved in the permit. The amount of sludge removed will be dependent on sludge generation and accumulation in the facility. Enough sludge must be removed to maintain adequate storage capacity in the facility.
  - a. In order to avoid damage to the lagoon seal during cleaning, the permittee may leave a layer of sludge on the bottom of the lagoon, upon prior approval of the Department; or
  - b. Permittee shall close the lagoon in accordance with Section H.

## **SECTION G – LAND APPLICATION**

1. The permittee shall not land apply sludge or biosolids unless land application is authorized in the facility description or the special conditions of the issued NPDES permit.
2. Land application sites within a 20 miles radius of the wastewater treatment facility are authorized under this permit when biosolids are applied for beneficial use in accordance with these standard conditions unless otherwise specified in a site specific permit. If the permittee's land application site is greater than a 20 mile radius of the wastewater treatment facility, approval must be granted from the Department.
3. Land application shall not adversely affect a threatened or endangered species or its designated critical habitat.
4. Biosolids shall not be applied unless authorized in this permit or exempted under 10 CSR 20, Chapter 6.
  - a. This permit does not authorize the land application of domestic sludge except for when sludge meets the definition of biosolids.
  - b. This permit authorizes "Class A or B" biosolids derived from domestic wastewater and/or process water sludge to be land applied onto grass land, crop land, timber or other similar agricultural or silviculture lands at rates suitable for beneficial use as organic fertilizer and soil conditioner.
5. Public Contact Sites:

Permittees who wish to apply Class A biosolids to public contact sites must obtain approval from the Department after two years of proper operation with acceptable testing documentation that shows the biosolids meet Class A criteria. A shorter length of testing will be allowed with prior approval from the Department. Authorization for land applications must be provided in the special conditions section of this permit or in a separate site specific permit.

  - a. After Class B biosolids have been land applied, public access must be restricted for 12 months.
  - b. Class B biosolids are only land applied to root crops, home gardens or vegetable crops whose edible parts will not be for human consumption.
6. Agricultural and Silvicultural Sites:

Septage – Based on Water Quality guide 422 (WQ422) published by the University of Missouri

  - a. Haulers that land apply septage must obtain a state permit
  - b. Do not apply more than 30,000 gallons of septage per acre per year.
  - c. Septage tanks are designed to retain sludge for one to three years which will allow for a larger reduction in pathogens and vectors, as compared to other mechanical type treatment facilities.
  - d. To meet Class B sludge requirements, maintain septage at 12 pH for at least thirty (30) minutes before land application. 50 pounds of hydrated lime shall be added to each 1,000 gallons of septage in order to meet pathogen and vector stabilization for septage biosolids applied to crops, pastures or timberland.
  - e. Lime is to be added to the pump truck and not directly to the septic tanks, as lime would harm the beneficial bacteria of the septic tank.

Biosolids - Based on Water Quality guide 423, 424, and 425 (WQ423, WQ424, WQ425) published by the University of Missouri;

- a. Biosolids shall be monitored to determine the quality for regulated pollutants
- b. The number of samples taken is directly related to the amount of sludge produced by the facility (See Section I of these Standard Conditions). Report as dry weight unless otherwise specified in the site specific permit. Samples should be taken only during land application periods. When necessary, it is permissible to mix biosolids with lower concentrations of biosolids as well as other suitable Department approved material to reach the maximum concentration of pollutants allowed.
- c. Table 1 gives the maximum concentration allowable to protect water quality standards

**TABLE 1**

Biosolids ceiling concentration <sup>1</sup>	
Pollutant	Milligrams per kilogram dry weight
Arsenic	75
Cadmium	85
Copper	4,300
Lead	840
Mercury	57
Molybdenum	75
Nickel	420
Selenium	100
Zinc	7,500

<sup>1</sup> Land application is not allowed if the sludge concentration exceeds the maximum limits for any of these pollutants

- d. The low metal concentration biosolids has reduced requirements because of its higher quality and can safely be applied for 100 years or longer at typical agronomic loading rates. (See Table 2)

**TABLE 2**

Biosolids Low Metal Concentration <sup>1</sup>	
Pollutant	Milligrams per kilogram dry weight
Arsenic	41
Cadmium	39
Copper	1,500
Lead	300
Mercury	17
Nickel	420
Selenium	36
Zinc	2,800

<sup>1</sup> You may apply low metal biosolids without tracking cumulative metal limits, provided the cumulative application of biosolids does not exceed 500 dry tons per acre.

- e. Each pollutant in Table 3 has an annual and a total cumulative loading limit, based on the allowable pounds per acre for various soil categories.

**TABLE 3**

Pollutant	CEC 15+		CEC 5 to 15		CEC 0 to 5	
	Annual	Total <sup>1</sup>	Annual	Total <sup>1</sup>	Annual	Total <sup>1</sup>
Arsenic	1.8	36.0	1.8	36.0	1.8	36.0
Cadmium	1.7	35.0	0.9	9.0	0.4	4.5
Copper	66.0	1,335.0	25.0	250.0	12.0	125.0
Lead	13.0	267.0	13.0	267.0	13.0	133.0
Mercury	0.7	15.0	0.7	15.0	0.7	15.0
Nickel	19.0	347.0	19.0	250.0	12.0	125.0
Selenium	4.5	89.0	4.5	44.0	1.6	16.0
Zinc	124.0	2,492.0	50.0	500.0	25.0	250.0

<sup>1</sup> Total cumulative loading limits for soils with equal or greater than 6.0 pH (salt based test) or 6.5 pH (water based test)

**TABLE 4** - Guidelines for land application of other trace substances <sup>1</sup>

Cumulative Loading	
Pollutant	Pounds per acre
Aluminum	4,000 <sup>2</sup>
Beryllium	100
Cobalt	50
Fluoride	800
Manganese	500
Silver	200
Tin	1,000
Dioxin	(10 ppt in soil) <sup>3</sup>
Other	<sup>4</sup>

<sup>1</sup> Design of land treatment systems for Industrial Waste, 1979. Michael Ray Overcash, North Carolina State University and Land Treatment of Municipal Wastewater, EPA 1981.)

<sup>2</sup> This applies for a soil with a pH between 6.0 and 7.0 (salt based test) or a pH between 6.5 to 7.5 (water based test). Case-by-case review is required for higher pH soils.

<sup>3</sup> Total Dioxin Toxicity Equivalents (TEQ) in soils, based on a risk assessment under 40 CFR 744, May 1998.

<sup>4</sup> Case by case review. Concentrations in sludge should not exceed the 95<sup>th</sup> percentile of the National Sewage Sludge Survey, EPA, January 2009.

Best Management Practices – Based on Water Quality guide 426 (WQ426) published by the University of Missouri

- a. Use best management practices when applying biosolids.
- b. Biosolids cannot discharge from the land application site
- c. Biosolid application is subject to the Missouri Department of Agriculture State Milk Board concerning grazing restrictions of lactating dairy cattle.
- d. Biosolid application must be in accordance with section 4 of the Endangered Species Act.
- e. Do not apply more than the agronomic rate of nitrogen needed.
- f. The applicator must document the Plant Available Nitrogen (PAN) loadings, available nitrogen in the soil, and crop removal when either of the following occurs: 1) When biosolids are greater than 50,000 mg/kg TN; or 2) When biosolids are land applied at an application rate greater than two dry tons per acre per year.
  - i. PAN can be determined as follows and is in accordance with WQ426  
(Nitrate + nitrite nitrogen) + (organic nitrogen x 0.2) + (ammonia nitrogen x volatilization factor<sup>1</sup>).  
<sup>1</sup>Volatilization factor is 0.7 for surface application and 1 for subsurface application.
- g. Buffer zones are as follows:
  - i. 300 feet of a water supply well, sinkhole, lake, pond, water supply reservoir or water supply intake in a stream;
  - ii. 300 feet of a losing stream, no discharge stream, stream stretches designated for whole body contact recreation, wild and scenic rivers, Ozark National Scenic Riverways or outstanding state resource waters as listed in the Water Quality Standards, 10 CSR 20-7.031;
  - iii. 150 feet if dwellings;
  - iv. 100 feet of wetlands or permanent flowing streams;
  - v. 50 feet of a property line or other waters of the state, including intermittent flowing streams.
- h. Slope limitation for application sites are as follows;
  - i. A slope 0 to 6 percent has no rate limitation
  - ii. Applied to a slope 7 to 12 percent, the applicator may apply biosolids when soil conservation practices are used to meet the minimum erosion levels
  - iii. Slopes > 12 percent, apply biosolids only when grass is vegetated and maintained with at least 80 percent ground cover at a rate of two dry tons per acre per year or less.
- i. No biosolids may be land applied in an area that it is reasonably certain that pollutants will be transported into waters of the state.
- j. Do not apply biosolids to sites with soil that is snow covered, frozen or saturated with liquid without prior approval by the Department.
- k. Biosolids / sludge applicators must keep detailed records up to five years.

## SECTION H – CLOSURE REQUIREMENTS

1. This section applies to all wastewater facilities (mechanical, industrial, and lagoons) and sludge or biosolids storage and treatment facilities and incineration ash ponds. It does not apply to land application sites.
2. Permittees of a domestic wastewater facility who plan to cease operation must obtain Department approval of a closure plan which addresses proper removal and disposal of all residues, including sludge, biosolids. Mechanical plants, sludge lagoons, ash ponds and other storage structures must obtain approval of a closure plan from the Department. Permittee must maintain this permit until the facility is closed in accordance with the approved closure plan per 10 CSR 20 – 6. 010 and 10 CSR 20 – 6.015.
3. Residuals that are left in place during closure of a lagoon or earthen structure or ash pond shall not exceed the agricultural loading rates as follows:
  - a. Residuals shall meet the monitoring and land application limits for agricultural rates as referenced in Section H of these standard conditions.
  - b. If a wastewater treatment lagoon has been in operation for 15 years or more without sludge removal, the sludge in the lagoon qualifies as a Class B biosolids with respect to pathogens due to anaerobic digestion, and testing for fecal coliform is not required. For other lagoons, testing for fecal coliform is required to show compliance with Class B biosolids limitations. In order to reach Class B biosolids requirements, fecal coliform must be less than 2,000,000 colony forming units or 2,000,000 most probable number. All fecal samples must be presented as geometric mean per gram.
  - c. The allowable nitrogen loading that may be left in the lagoon shall be based on the plant available nitrogen (PAN) loading. For a grass cover crop, the allowable PAN is 300 pounds/acre.
    - i. PAN can be determined as follows:  
$$(\text{Nitrate} + \text{nitrite nitrogen}) + (\text{organic nitrogen} \times 0.2) + (\text{ammonia nitrogen} \times \text{volatilization factor}^1).$$

<sup>1</sup> Volatilization factor is 0.7 for surface application and 1 for subsurface application.
4. When closing a domestic wastewater treatment lagoon with a design treatment capacity equal or less than 150 persons, the residuals are considered “septage” under the similar treatment works definition. See Section B of these standard conditions. Under the septage category, residuals may be left in place as follows:
  - a. Testing for metals or fecal coliform is not required
  - b. If the wastewater treatment lagoon has been in use for less than 15 years, mix lime with the sludge at a rate of 50 pounds of hydrated lime per 1000 gallons (134 cubic feet) of sludge.
  - c. The amount of sludge that may be left in the lagoon shall be based on the plant available nitrogen (PAN) loading. 100 dry tons/acre of sludge may be left in the basin without testing for nitrogen. If 100 dry tons/acre or more will be left in the lagoon, test for nitrogen and determine the PAN using the calculation above. Allowable PAN loading is 300 pounds/acre.
5. Residuals left within the domestic lagoon shall be mixed with soil on at least a 1 to 1 ratio, the lagoon berm shall be demolished, and the site shall be graded and contain  $\geq 70\%$  vegetative density over 100% of the site so as to avoid ponding of storm water and provide adequate surface water drainage without creating erosion.
6. Lagoons and/or earthen structure and/or ash pond closure activities shall obtain a storm water permit for land disturbance activities that equal or exceed one acre in accordance with 10 CSR 20-6.200
7. When closing a mechanical wastewater and/or industrial process wastewater plant; all sludge must be cleaned out and disposed of in accordance with the Department approved closure plan before the permit for the facility can be terminated.
  - a. Land must be stabilized which includes any grading, alternate use or fate upon approval by the Department, remediation, or other work that exposes sediment to stormwater per 10 CSR 20-6.200. The site shall be graded and contain  $\geq 70\%$  vegetative density over 100% of the site, so as to avoid ponding of storm water and provide adequate surface water drainage without creating erosion.
  - b. Per 10 CSR 20-6.015(4)(B)6, Hazardous Waste shall not be land applied or disposed during industrial and mechanical plant closures unless in accordance with Missouri Hazardous Waste Management Law and Regulations under 10 CSR 25.
  - c. After demolition of the mechanical plant / industrial plant, the site must only contain clean fill defined in RSMo 260.200 (5) as uncontaminated soil, rock, sand, gravel, concrete, asphaltic concrete, cinderblocks, brick, minimal amounts of wood and metal, and inert solids as approved by rule or policy of the Department for fill or other beneficial use. Other solid wastes must be removed.
8. If sludge from the domestic lagoon or mechanical treatment plant exceeds agricultural rates under Section G and/or H, a landfill permit or solid waste disposal permit must be obtained if the permittee chooses to seek authorization for on-site sludge disposal under the Missouri Solid Waste Management Law and regulations per 10 CSR 80, and the permittee must comply with the surface disposal requirements under 40 CFR 503, Subpart C.

## SECTION I – MONITORING FREQUENCY

- At a minimum, sludge or biosolids shall be tested for volume and percent total solids on a frequency that will accurately represent sludge quantities produced and disposed. Please see the table below.

**TABLE 5**

Design Sludge Production (dry tons per year)	Monitoring Frequency (See Notes 1, 2, and 3)			
	Metals, Pathogens and Vectors	Nitrogen TKN <sup>1</sup>	Nitrogen PAN <sup>2</sup>	Priority Pollutants and TCLP <sup>3</sup>
0 to 100	1 per year	1 per year	1 per month	1 per year
101 to 200	biannual	biannual	1 per month	1 per year
201 to 1,000	quarterly	quarterly	1 per month	1 per year
1,001 to 10,000	1 per month	1 per month	1 per week	-- <sup>4</sup>
10,001 +	1 per week	1 per week	1 per day	-- <sup>4</sup>

<sup>1</sup> Test total Kjeldahl nitrogen, if biosolids application is 2 dry tons per acre per year or less.

<sup>2</sup> Calculate plant available nitrogen (PAN) when either of the following occurs: 1) when biosolids are greater than 50,000 mg/kg TN; or 2) when biosolids are land applied at an application rate greater than two dry tons per acre per year.

<sup>3</sup> Priority pollutants (40 CFR 122.21, Appendix D, Tables II and III) and toxicity characteristic leaching procedure (40 CFR 261.24) is required only for permit holders that must have a pre-treatment program.

<sup>4</sup> One sample for each 1,000 dry tons of sludge.

Note 1: Total solids: A grab sample of sludge shall be tested one per day during land application periods for percent total solids.

This data shall be used to calculate the dry tons of sludge applied per acre.

Note 2: Total Phosphorus: Total phosphorus and total potassium shall be tested at the same monitoring frequency as metals.

Note 3: Table 5 is not applicable for incineration and permit holders that landfill their sludge.

- If you own a wastewater treatment lagoon or sludge lagoon that is cleaned out once a year or less, you may choose to sample only when the sludge is removed or the lagoon is closed. Test one composite sample for each 100 dry tons of sludge or biosolids removed from the lagoon during the year within the lagoon at closing. Composite sample must represent various areas at one-foot depth.
- Additional testing may be required in the special conditions or other sections of the permit. Permittees receiving industrial wastewater may be required to conduct additional testing upon request from the Department.
- At this time, the Department recommends monitoring requirements shall be performed in accordance with, "POTW Sludge Sampling and Analysis Guidance Document," United States Environmental Protection Agency, August 1989, and the subsequent revisions.

## SECTION J – RECORD KEEPING AND REPORTING REQUIREMENTS

- The permittee shall maintain records on file at the facility for at least five years for the items listed in these standard conditions and any additional items in the Special Conditions section of this permit. This shall include dates when the sludge facility is checked for proper operation, records of maintenance and repairs and other relevant information.
- Reporting period
  - By January 28<sup>th</sup> of each year, an annual report shall be submitted for the previous calendar year period for all mechanical wastewater treatment facilities, sludge lagoons, and sludge or biosolids disposal facilities.
  - Permittees with wastewater treatment lagoons shall submit the above annual report only when sludge or biosolids are removed from the lagoon during the report period or when the lagoon is closed.
- Report Forms. The annual report shall be submitted on report forms provided by the Department or equivalent forms approved by the Department.
- Reports shall be submitted as follows:

Major facilities (those serving 10,000 persons or 1 million gallons per day) shall report to both the Department and EPA. Other facilities need to report only to the Department. Reports shall be submitted to the addresses listed as follows:

DNR regional office listed in your permit  
(see cover letter of permit)  
ATTN: Sludge Coordinator

EPA Region VII  
Water Compliance Branch (WACM)  
Sludge Coordinator  
11201 Renner Blvd.  
Lenexa, KS 66219

5. Annual report contents. The annual report shall include the following:
- a. Sludge and biosolids testing performed. Include a copy or summary of all test results, even if not required by the permit.
  - b. Sludge or biosolids quantity shall be reported as dry tons for quantity generated by the wastewater treatment facility, the quantity stored on site at the end of the year, and the quantity used or disposed.
  - c. Gallons and % solids data used to calculate the dry ton amounts.
  - d. Description of any unusual operating conditions.
  - e. Final disposal method, dates, and location, and person responsible for hauling and disposal.
    - i. This must include the name, address for the hauler and sludge facility. If hauled to a municipal wastewater treatment facility, sanitary landfill, or other approved treatment facility, give the name of that facility.
    - ii. Include a description of the type of hauling equipment used and the capacity in tons, gallons, or cubic feet.
  - f. Contract Hauler Activities:

If contract hauler, provide a copy of a signed contract from the contractor. Permittee shall require the contractor to supply information required under this permit for which the contractor is responsible. The permittee shall submit a signed statement from the contractor that he has complied with the standards contained in this permit, unless the contract hauler has a separate sludge or biosolids use permit.
  - g. Land Application Sites:
    - i. Report the location of each application site, the annual and cumulative dry tons/acre for each site, and the landowners name and address. The location for each spreading site shall be given as a legal description for nearest  $\frac{1}{4}$ ,  $\frac{1}{4}$ , Section, Township, Range, and county, or UTM coordinates. The facility shall report PAN when either of the following occurs: 1) When biosolids are greater than 50,000 mg/kg TN; or 2) when biosolids are land applied at an application rate greater than two dry tons per acre per year.
    - ii. If the "Low Metals" criteria are exceeded, report the annual and cumulative pollutant loading rates in pounds per acre for each applicable pollutant, and report the percent of cumulative pollutant loading which has been reached at each site.
    - iii. Report the method used for compliance with pathogen and vector attraction requirements.
    - iv. Report soil test results for pH, CEC, and phosphorus. If none was tested during the year, report the last date when tested and results.