

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 RSMo, hereinafter, the Law), and the Federal Water Pollution Control Act (Public Law 92-500, 92<sup>nd</sup> Congress) as amended,

Permit No.:	MO-0121312
Owner:	City of Union
Address:	500 East Locust Street, Union, MO 63084
Continuing Authority:	Same as above
Address:	Same as above
Facility Name:	Union East Sewage Treatment Plant
Facility Address:	1999 Denmark Road, Union, MO 63084
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.

February 1, 2021  
Effective Date

June 30, 2025  
Expiration Date

  
Edward B. Galbraith, Director, Division of Environmental Quality

  
Chris Wieberg, Director, Water Protection Program

**FACILITY DESCRIPTION (continued):**

**Outfall #001** – POTW

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

Influent lift station / mechanical screening / oxidation ditch / UV disinfection / aerobic digester /  
sludge is removed by contract hauler / sludge is land applied.

Design population equivalent is 8,000.

Design flow is 800,000 gallons per day.

Actual flow is 220,000 gallons per day.

Design sludge production is 33 dry tons/year.

Legal Description:	Sec. 31, T43N, R01E, Franklin County
UTM Coordinates:	X = 678950, Y = 4255813
Receiving Stream:	Tributary to Bourbeuse River (C)
First Classified Stream and ID:	100K Extent Remaining Streams (C) (3960)
USGS Basin & Sub-watershed No.:	(07140103-0405)

**Permitted Feature INF** – Influent Monitoring Location

OUTFALL #001	TABLE A-1. FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS					
The permittee is authorized to discharge from outfall number(s) as specified in the application for this permit. The final effluent limitations in <b>Table A-1</b> shall become effective on <b>February 1, 2021</b> and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:						
EFFLUENT PARAMETER(S)	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
Limit Set: M						
Flow	MGD	*		*	once/weekday***	24 hr. total
Biochemical Oxygen Demand <sub>5</sub>	mg/L	30		20	once/month	composite**
Total Suspended Solids	mg/L	30		20	once/month	composite**
<i>E. coli</i> (Note 1)	#/100mL		630	126	once/week	grab
Ammonia as N						
(January)		12.1		3.1		
(February)		10.1		2.7		
(March)		12.0		3.1		
(April)		12.1		2.7		
(May)		12.1		2.2		
(June)	mg/L	12.1		1.7	once/month	composite**
(July)		12.1		1.5		
(August)		10.1		1.3		
(September)		12.1		1.8		
(October)		12.1		2.5		
(November)		12.1		3.1		
(December)		12.1		3.1		
EFFLUENT PARAMETER(S)	UNITS	MINIMUM		MAXIMUM	MEASUREMENT FREQUENCY	SAMPLE TYPE
pH – Units****	SU	6.5		9.0	once/month	grab
EFFLUENT PARAMETER(S)			UNITS	MONTHLY AVERAGE MINIMUM	MEASUREMENT FREQUENCY	SAMPLE TYPE
Biochemical Oxygen Demand <sub>5</sub> – Percent Removal (Note 2)			%	85	once/month	calculated
Total Suspended Solids – Percent Removal (Note 2)			%	85	once/month	calculated
MONITORING REPORTS SHALL BE SUBMITTED <b>MONTHLY</b> ; THE FIRST REPORT IS DUE <b>MARCH 28, 2021</b> . THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.						

\* Monitoring requirement only.

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

\*\*\* Once each weekday means: Monday, Tuesday, Wednesday, Thursday, and Friday.

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

**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** – Calculate Percent Removal by using the following formula: [(Average Influent – Average Effluent) / Average Influent] x 100% = Percent Removal. Influent and effluent samples are to be taken during the same month. The Average Influent and Average Effluent values are to be calculated by adding the respective values together and dividing by the number of samples taken during the month.

OUTFALL #001	TABLE A-2. FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS					
	The permittee is authorized to discharge from outfall number(s) as specified in the application for this permit. The final effluent limitations in <b>Table A-2</b> shall become effective on <b>February 1, 2021</b> and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:					
EFFLUENT PARAMETER(S)	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
Oil & Grease	mg/L	15		10	once/quarter***	grab
Total Phosphorus	mg/L	*		*	once/quarter***	composite**
Total Kjeldahl Nitrogen	mg/L	*		*	once/quarter***	composite**
Nitrite + Nitrate	mg/L	*		*	once/quarter***	composite**
Copper, Total Recoverable	µg/L	33.2		16.2	once/quarter***	composite**
Zinc, Total Recoverable	µg/L	*		*	once/quarter***	composite**
Hardness, Total	mg/L	*		*	once/quarter***	composite**
MONITORING REPORTS SHALL BE SUBMITTED <b>QUARTERLY</b> ; THE FIRST REPORT IS DUE <b>APRIL 28, 2021</b> .						

\* Monitoring requirement only.

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

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

Quarterly Minimum Sampling Requirements			
Quarter	Months	Quarterly 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 28 <sup>th</sup>
Third	July, August, September	Sample at least once during any month of the quarter	October 28 <sup>th</sup>
Fourth	October, November, December	Sample at least once during any month of the quarter	January 28 <sup>th</sup>

OUTFALL #001	TABLE A-3. WHOLE EFFLUENT TOXICITY FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS					
	The permittee is authorized to discharge from outfall number(s) as specified in the application for this permit. The final effluent limitations in <b>Table A-3</b> shall become effective on <b>February 1, 2021</b> and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:					
EFFLUENT PARAMETER(S)	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
Limit Set: WA						
Acute Whole Effluent Toxicity (Note 3)	TU <sub>a</sub>	*			once/year	composite**
ACUTE WET TEST MONITORING REPORTS SHALL BE SUBMITTED <u>ANNUALLY</u> ; THE FIRST REPORT IS DUE JANUARY 28, 2022.						

\* Monitoring requirement only.

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

**Note 3** – The Acute WET test shall be conducted once per year during the permit cycle. See Special Condition #17 for additional requirements.

PERMITTED FEATURE <u>INF</u>	TABLE B-1. INFLUENT MONITORING REQUIREMENTS					
The monitoring requirements in <b>Table B-1</b> shall become effective on <u>February 1, 2021</u> and remain in effect until expiration of the permit. The influent wastewater shall be monitored by the permittee as specified below:						
PARAMETER(S)	UNITS	MONITORING REQUIREMENTS				
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
Limit Set: IM						
Biochemical Oxygen Demand <sub>5</sub> ( <b>Note 4</b> )	mg/L			*	once/month	composite**
Total Suspended Solids ( <b>Note 4</b> )	mg/L			*	once/month	composite**
MONITORING REPORTS SHALL BE SUBMITTED <u>MONTHLY</u> ; THE FIRST REPORT IS DUE <u>MARCH 28, 2021</u> .						
Limit Set: IQ						
Ammonia as N	mg/L	*		*	once/quarter***	composite**
Total Phosphorus	mg/L	*		*	once/quarter***	composite**
Total Kjeldahl Nitrogen	mg/L	*		*	once/quarter***	composite**
Nitrite + Nitrate	mg/L	*		*	once/quarter***	composite**
MONITORING REPORTS SHALL BE SUBMITTED <u>QUARTERLY</u> ; THE FIRST REPORT IS DUE <u>APRIL 28, 2021</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.

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

**Note 4** – Influent sampling for BOD<sub>5</sub> and TSS is not required when the facility does not discharge effluent during the reporting period. Samples are to be collected prior to any treatment process. Influent samples are to be collected as a 24-hour composite sample, composed of 48 aliquots (subsamples) collected at 30 minute intervals by an automatic sampling device.

### **C. 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 August 1, 2019, and hereby incorporated as though fully set forth herein.

### **D. SPECIAL CONDITIONS**

1. Electronic Discharge Monitoring Report (eDMR) Submission System. Per 40 CFR Part 127 National Pollutant Discharge Elimination System (NPDES) Electronic Reporting Rule, reporting of effluent monitoring data and any report required by the permit (unless specifically directed otherwise by the permit) shall be submitted by the permittee via an electronic system to ensure timely, complete, accurate, and nationally consistent set of data about the NPDES program.
  - (a) eDMR Registration Requirements. The permittee must register with the Department's eDMR system through the Missouri Gateway for Environmental Management (MoGEM) before the first report is due. Registration and other information regarding MoGEM can be found at <https://dnr.mo.gov/mogem>. Information about the eDMR system can be found at <https://dnr.mo.gov/env/wpp/edmr.htm>. The first user shall register as an Organization Official and the association to the facility must be approved by the Department. Regarding Standard Conditions Part I, Section B, #7, the eDMR system is currently the only Department approved reporting method for this permit unless a waiver is granted by the Department. See paragraph (c) below.
  - (b) Electronic Submissions. To access the eDMR system, use the following link in your web browser: <https://apps5.mo.gov/mogems/welcome.action>. If you experience difficulties with using the eDMR system you may contact [edmr@dnr.mo.gov](mailto:edmr@dnr.mo.gov) or call 855-789-3889 or 573-526-2082 for assistance.
  - (c) Waivers from Electronic Reporting. The permittee must electronically submit compliance monitoring data and reports unless a waiver is granted by the Department in compliance with 40 CFR Part 127. Only permittees with an approved waiver request may submit monitoring data and reports on paper to the Department for the period that the approved electronic reporting waiver is effective. The permittee may obtain an electronic reporting waiver by first submitting an eDMR Waiver Request Form: <http://dnr.mo.gov/forms/780-2692-f.pdf>. The Department will either approve or deny this electronic reporting waiver request within 120 calendar days.
2. The full implementation of this operating permit, which includes implementation of any applicable schedules of compliance, shall constitute compliance with all applicable federal and state statutes and regulations in accordance with §644.051.16, RSMo, and the Clean Water Act (CWA) section 402(k); however, this permit may be reopened and modified, or alternatively revoked and reissued:
  - (a) To 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 CWA, 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) To incorporate an approved pretreatment program or modification thereto pursuant to 40 CFR 403.8(c) or 40 CFR 403.18(e), respectively.
3. All outfalls must be clearly marked in the field.
4. Report as no-discharge when a discharge does not occur during the report period.
5. 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) Where the permit contains a Minimum Level (ML) and the permittee is granted authority in the permit to report zero in lieu of the < ML for a specified parameter (conventional, priority pollutants, metals, etc.), then zero (0) is to be reported for that parameter.
  - (e) See Standard Conditions Part I, Section A, #4 regarding proper detection limits used for sample analysis.
  - (f) When a parameter is not detected above ML, the permittee must report the data qualifier signifying less than ML for that parameter (e.g., < 50 µg/L, if the ML for the parameter is 50 µg/L). For reporting an average based on a mix of values detected and not detected, assign a value of "0" for all non-detects for that reporting period and report the average of all the results.

**D. SPECIAL CONDITIONS (continued)**

6. It is a violation of the Missouri Clean Water Law to fail to pay fees associated with this permit (644.055 RSMo).
7. 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. To request a modification of the operational control testing requirements listed in 10 CSR 20-9, the permittee shall submit a permit modification application and fee to the Department requesting a deviation from the operational control monitoring requirements. Upon approval of the request, the Department will modify the permit.
8. The permittee shall develop and implement a program for maintenance and repair of its collection system. The permittee may compare collection system performance results and other data with the benchmarks used in the Departments' Capacity, Management, Operation, And Maintenance (CMOM) Model located at <http://dnr.mo.gov/env/wpp/permits/docs/cmom-template.doc>. Additional information regarding the Departments' CMOM Model is available at <http://dnr.mo.gov/pubs/pub2574.htm>.

The permittee shall also submit a report via the Electronic Discharge Monitoring Report (eDMR) Submission System annually, by January 28<sup>th</sup>, for the previous calendar year. The report shall contain the following information:

- (a) A summary of the efforts to locate and eliminate specific sources of excessive infiltration and inflow into the collection system serving the facility for the previous year.
  - (b) A summary of the general maintenance and repairs to the collection system serving the facility for the previous year.
  - (c) 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.
9. 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), and with Standard Condition Part I, Section B, subsection 2. Bypasses are to be reported to the Saint Louis Regional Office during normal business hours or by using the online Sanitary Sewer Overflow/Facility Bypass Application located at: <https://dnr.mo.gov/mogem/> or the Environmental Emergency Response spill-line at 573-634-2436 outside of normal business hours. Once an electronic reporting system compliant with 40 CFR Part 127, the National Pollutant Discharge Elimination System (NPDES) Electronic Reporting Rule, is available all bypasses must be reported electronically via the new system. 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.
  10. The facility must be sufficiently secured to restrict entry by children, livestock and unauthorized persons as well as to protect the facility from vandalism.
  11. 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.
  12. An all-weather access road to the treatment facility shall be maintained.
  13. The outfall sewer shall be protected and maintained against the effects of floodwater, ice, or other hazards as to reasonably insure its structural stability, freedom from stoppage, and 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.
  14. **Expanded Effluent Testing**  
Permittee must sample and analyze for the pollutants listed in Form B2 – Application for Operating Permit for Facilities That Receive Primarily Domestic Waste And Have A Design Flow More Than 100,000 Gallons Per Day (MO-780-1805 dated 02-19), Part D – Expanded Effluent Testing Data, #18. The permittee shall provide this data with the permit renewal application. A minimum of three samples taken within four and one-half years prior to the date of the permit application must be provided. Samples must be representative of the seasonal variation in the discharge from each outfall. Approved and sufficiently sensitive testing methods listed in 40 CFR 136.3 must be utilized. 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 measured pollutant or pollutant parameter; or 2) the method minimum level is above the applicable water quality criterion, but the amount of the pollutant or pollutant parameter in a facility's discharge is high enough that the method detects and quantifies the level of the pollutant or pollutant parameter in the discharge; or 3) the method has the lowest minimum level of the analytical methods approved under 40 CFR part 136. These methods are also required for parameters listed as monitoring only, as the data collected may be used to determine if numeric limitations need to be established.

**D. SPECIAL CONDITIONS (continued)**

15. Stormwater Pollution Prevention Plan (SWPPP): Through implementation of the SWPPP, the permittee shall minimize the release of pollutants in stormwater from the facility to the waters of the state. The SWPPP shall be developed in consultation 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 June 2015.
- (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.
    - (1) 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.
    - (2) 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.
    - (3) The routine inspection reports must be kept onsite with the SWPPP and maintained for a period of five (5) years.
    - (4) 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, 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 with Special Condition D.15.
    - (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 control measures change.



**D. SPECIAL CONDITIONS (continued)**

16. 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):
    - (1) 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 warranted and practicable.
    - (2) 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.
    - (3) Implement a maintenance program to ensure that the structural control measures and industrial equipment is kept in good operating condition and to prevent or minimize leaks and other releases of pollutants.
    - (4) Prevent or minimize the spillage or leaks of fluids, oil, grease, fuel, etc. from equipment and vehicle maintenance, equipment and vehicle cleaning, or activities.
    - (5) 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.
    - (6) Provide stormwater runoff controls to divert, infiltrate, reuse, contain, or otherwise minimize pollutants in the stormwater discharge.
    - (7) Enclose or cover storage piles of salt or piles containing salt, used for deicing or other commercial or industrial purposes.
    - (8) 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.
    - (9) Eliminate and prevent unauthorized non-stormwater discharges at the facility.
    - (10) Minimize generation of dust and off-site tracking of raw, final, or waste materials by implementing appropriate control measures.
17. Acute Whole Effluent Toxicity (WET) tests shall be conducted as follows:
- (a) Freshwater Species and Test Methods: Species and short-term test methods for estimating the acute toxicity of NPDES effluents are found in the most recent edition of *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms* (EPA/821/R-02/012; Table IA, 40 CFR Part 136). The permittee shall concurrently conduct 48-hour, static, non-renewal toxicity tests with the following species:
    - i. The fathead minnow, *Pimephales promelas* (Acute Toxicity EPA Test Method 2000.0).
    - ii. The daphnid, *Ceriodaphnia dubia* (Acute Toxicity EPA Test Method 2002.0).
  - (b) Chemical and physical analysis of the 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 or known to be toxic, other approved control water may be used.
  - (c) Test conditions must meet all test acceptability criteria required by the EPA Method used in the analysis.
  - (d) The laboratory shall not chemically dechlorinate the sample.
  - (e) The Allowable Effluent Concentration (AEC) is 100%; the dilution series is: 6.25%, 12.5%, 25%, 50%, and 100%.
  - (f) All chemical and physical analysis of the effluent sample performed in conjunction with the WET test shall be performed at the 100% effluent concentration.
  - (g) The facility must submit a full laboratory report for all toxicity testing. 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 effluent concentration that would cause death in 50 percent of the test organisms at a specific time.

**D. SPECIAL CONDITIONS (continued)**

18. **Pretreatment:** 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.
- (a) The permittee shall submit to the Department via the Electronic Discharge Monitoring Report (eDMR) Submission System 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:
- (1) 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;
  - (2) A summary of the status of Industrial User compliance over the reporting period;
  - (3) A summary of compliance and enforcement activities (including inspections) conducted by the Permittee during the reporting period; and
  - (4) Any other relevant information requested by the Department.
- (b) 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) by **August 1, 2021**. Please contact the Department's pretreatment coordinator for further guidance. Should revision of local limits be deemed necessary, it is recommended that revisions follow the US Environmental Protection Agency's guidance document *Local Limits Development Guidance*. EPA833-R04-002A. July 2004.

**E. NOTICE OF RIGHT TO APPEAL**

If you were adversely affected by this decision, you may be entitled to pursue an appeal before the administrative hearing commission (AHC) pursuant to Sections 621.250 and 644.051.6 RSMo. To appeal, you must file a petition with the AHC within thirty days after the date this decision was mailed or the date it was delivered, whichever date was earlier. If any such petition is sent by registered mail or certified mail, it will be deemed filed on the date it is mailed; if it is sent by any method other than registered mail or certified mail, it will be deemed filed on the date it is received by the AHC. Any appeal should be directed to:

Administrative Hearing Commission  
U.S. Post Office Building, Third Floor  
131 West High Street, P.O. Box 1557  
Jefferson City, MO 65102-1557  
Phone: 573-751-2422  
Fax: 573-751-5018  
Website: <https://ahc.mo.gov>

**MISSOURI DEPARTMENT OF NATURAL RESOURCES  
FACT SHEET  
FOR THE PURPOSE OF RENEWAL  
OF  
MO-0121312  
UNION EAST SEWAGE TREATMENT PLANT**

The Federal Water Pollution Control Act ("Clean Water Act" Section 402 Public Law 92-500 as amended) established the National Pollutant 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)(A)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 Minor facility.

**Part I – Facility Information**

Facility Type: POTW

Facility Description: Influent lift station / mechanical screening / oxidation ditch / UV disinfection / aerobic digester / sludge is removed by contract hauler / sludge is land applied.

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

✓ No.

Application Date: 01/14/20

Expiration Date: 06/30/20

**OUTFALL(S) TABLE:**

OUTFALL	DESIGN FLOW (CFS)	TREATMENT LEVEL	EFFLUENT TYPE
#001	1.24	Secondary	Domestic

**Facility Performance History:**

The treatment facility has not been inspected recently, however, an inspection of the City of Union's Pretreatment Program was conducted on July 11, 2019, and an inspection of the treatment plant's collection system was conducted on September 24, 2019. The City was issued Letters of Warning for unsatisfactory features revealed by these inspections on September 9, 2019 and October 10, 2019, respectively. Satisfactory responses were received that addressed each of the Letters of Warning and the City was returned to compliance on May 29, 2020. A review of Discharge Monitoring Reports from the previous permit cycle revealed an exceedance of the Copper limit in the third quarter of 2019, the Ammonia limit in June of 2016, and exceedances of Zinc limits in the third quarter of 2015, fourth quarter of 2016, third and fourth quarters of 2017, and the third quarter of 2018.

Comments:

Changes in this permit for Outfall #001 include the following:

- reduced sampling frequency for BOD, TSS, and pH to once per month from twice per month
- recalculated Copper effluent limits
- the removal of limits for Lead and Zinc; monitoring is still required for Zinc
- the removal of monitoring requirements for Arsenic, Cadmium, Chromium (VI), Mercury, and Silver
- recalculated Ammonia effluent limits
- removal of instream monitoring for nutrients and hardness; total hardness should now be monitored at Outfall #001
- Total Nitrogen should now be reported as Speciated Total Nitrogen (Nitrate+Nitrite and Total Kjeldahl Nitrogen); and
- the addition of influent nutrient monitoring requirements

See Part VI of the Fact Sheet for further information regarding the addition, revision, and removal of effluent parameters. Special conditions were updated to include Expanded Effluent Testing requirements as required by the Form B2 renewal application.

## **Part II – Operator Certification Requirements**

✓ This facility is required to have a certified operator.

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 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

☐ - County

☐ - Public Sewer District

☐ - State agency

☐ - Public Water Supply Districts

☐ - Private Sewer Company regulated by the Public Service Commission

Each of the above entities are only applicable if they have a Population Equivalent greater than two hundred (200).

This facility currently requires a chief 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: Aguilar, David V.

Certification Number: 8886

Certification Level: WW-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 Control Testing Requirements**

Missouri Clean Water Commission regulation 10 CSR 20-9.010 requires certain publicly owned treatment works and privately owned facilities regulated by the Public Service Commission to conduct internal operational control monitoring to further ensure proper operation of the facility and to be a safeguard or early warning for potential plant upsets that could affect effluent quality. This requirement is only applicable if the publicly owned treatment works and privately owned facilities regulated by the Public Service Commission has a Population Equivalent greater than two hundred (200).

10 CSR 20-9.010(3) allows the Department to modify the monitoring frequency required in the rule based upon the Department's judgement of monitoring needs for process control at the specified facility.

✓ As per [10 CSR 20-9.010(4)], the facility is required to conduct operational monitoring. Operational monitoring reports are to be submitted to the Department along with the MSOP discharge monitoring reports.

- ✓ The facility is a mechanical plant and is required to conduct operational control monitoring as follows:

Operational Monitoring Parameter	Frequency
Precipitation	Daily (M-F)
Flow – Influent or Effluent	Daily (M-F)
pH – Influent	Daily (M-F)
Temperature (Aeration basin)	Daily (M-F)
TSS – Influent	Weekly
TSS – Mixed Liquor	Weekly
Settleability – Mixed Liquor	Daily (M-F)
Dissolved Oxygen – Mixed Liquor	Daily (M-F)
Temperature - Aerobic Digester	Daily (M-F)
Dissolved Oxygen – Aerobic Digester	Daily (M-F)

## **Part IV – Receiving Stream Information**

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

WATER-BODY NAME	CLASS	WBID	DESIGNATED USES*	12-DIGIT HUC	DISTANCE TO CLASSIFIED SEGMENT (MI)
Tributary to Bourbeuse River (100K Extent-Remaining Streams)	C	3960	AQL-WWH, HHP, IRR, LWW, SCR, WBC-B	0714103-0405	0.0
Bourbeuse River	P	2034	AQL-WWH, AQL-CLF, DWS, HHP, IRR, LWW, SCR, WBC-A		1.23

\*As per 10 CSR 20-7.031 Missouri Water Quality Standards, the Department defines the Clean Water Commission's water quality objectives in terms of "water uses to be maintained and the criteria to protect those uses." The receiving stream and 1<sup>st</sup> classified receiving stream's beneficial water uses to be maintained are in the receiving stream table in accordance with [10 CSR 20-7.031(1)(C)].

Uses found in the receiving streams table, above:

10 CSR 20-7.031(1)(C)1.:

**AQL** = Protection of aquatic life (Current narrative use(s) are defined to ensure the protection and propagation of fish shellfish and wildlife, which is further subcategorized as: **WWH** = Warm Water Habitat; **CDF** = Cold-water fishery (Current narrative use is cold-water habitat.); **CLF** = Cool-water fishery (Current narrative use is cool-water habitat); **EAH** = Ephemeral Aquatic Habitat; **MAH** = Modified Aquatic Habitat; **LAH** = Limited Aquatic Habitat. This permit uses AQL effluent limitations in 10 CSR 20-7.031 Table A for all habitat designations unless otherwise specified.)

10 CSR 20-7.031(1)(C)2.: Recreation in and on the water

**WBC** = Whole Body Contact recreation where the entire body is capable of being submerged;

**WBC-A** = Whole body contact recreation that supports swimming uses and has public access;

**WBC-B** = Whole body contact recreation that supports swimming;

**SCR** = Secondary Contact Recreation (like fishing, wading, and boating).

10 CSR 20-7.031(1)(C)3. to 7.:

**HHP** (formerly HHF) = Human Health Protection as it relates to the consumption of fish;

**IRR** = Irrigation for use on crops utilized for human or livestock consumption;

**LWW** = Livestock and wildlife watering (Current narrative use is defined as **LWP** = Livestock and Wildlife Protection);

**DWS** = Drinking Water Supply;

**IND** = Industrial water supply

10 CSR 20-7.031(1)(C)8-11.: Wetlands (10 CSR 20-7.031 Table A currently does not have corresponding habitat use criteria for these defined uses)

**WSA** = Storm- and flood-water storage and attenuation; **WHP** = Habitat for resident and migratory wildlife species;

**WRC** = Recreational, cultural, educational, scientific, and natural aesthetic values and uses; **WHC** = Hydrologic cycle maintenance.

10 CSR 20-7.031(6): **GRW** = Groundwater

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

RECEIVING STREAM	LOW-FLOW VALUES (CFS)		
	1Q10	7Q10	30Q10
Tributary to Bourbeuse River (C)	0.0	0.0	0.0

**MIXING CONSIDERATIONS**

Mixing Zone: Not Allowed [10 CSR 20-7.031(5)(A)4.B.(I)(a)].

Zone of Initial Dilution: Not Allowed [10 CSR 20-7.031(5)(A)4.B.(I)(b)].

**RECEIVING STREAM MONITORING REQUIREMENTS:**

No receiving water monitoring requirements recommended at this time.

Receiving Water Body's Water Quality

The Department conducted a stream survey on August 15<sup>th</sup>, 2012 at two locations near this facility: in Stream approximately 500 yards upstream of Outfall #001 and 50 yards below Outfall #001. It was determined the protection of aquatic life use designation was impaired at that time. The Union East treatment facility has been upgraded since this stream survey, and department staff have not reassessed the site since the plant upgrade.

**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(40)] & [10 CSR 20-7.031(1)(O)], 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.

- ✓ Limitations in this operating permit for the reissuance of this permit conform to the anti-backsliding provisions of Section 402(o) of the Clean Water Act, and 40 CFR Part 122.44.
- ✓ 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.
- **Ammonia as N.** Effluent limitations were re-calculated for Ammonia. The Department previously followed the 2007 Ammonia Guidance method for derivation of ammonia limits. However, the EPA's Technical Support Document for Water Quality-based Toxic Controls (TSD) establishes other alternatives to limit derivation. The Department has determined that the approach established in Section 5.4.2 of the TSD, which allows for direct application of both the acute and chronic wasteload allocations (WLA) as permit limits for toxic pollutants, is more appropriate limit derivation approach. Using this method for a discharge to a waterbody where mixing is not allowed, the criterion continuous concentration (CCC) and the criterion maximum concentration (CMC) will equal the chronic and acute WLA respectively. The WLAs are then applied as effluent limits, per Section 5.4.2 of the TSD, where the CMC is the Daily Maximum and the CCC is the Monthly Average. The direct application of both acute and chronic criteria as WLA is also applicable for facilities that discharge into receiving waterbodies with mixing considerations. The CCC and CMC will need to be calculated into WLA with mixing considerations using the mass-balance equation. The newly established limitations are still protective of water quality.
- **BOD and TSS Sampling Frequency.** The previous permit contained weekly sampling frequencies for these parameters. This permit contains monthly sampling frequencies due to the consistency of effluent data and compliance with effluent limits. The permit is still protective of water quality.
- **Instream Total Phosphorus and Total Nitrogen Monitoring.** The previous permit contained upstream instream monitoring requirements for Total Phosphorus and Total Nitrogen. The Department has made a determination that

monitoring of background nutrients is not needed. This permit is still protective of water quality and this determination will be reassessed at the time of renewal.

- **Total Recoverable Copper.** Effluent limitations were re-calculated for Copper using the past five years of monitoring data, including monitoring data for site-specific hardness, and using the current Missouri Water Quality Standards for Copper. The newly established limitations are still protective of water quality.
  - **Total Recoverable Zinc.** The previous permit contained final effluent limits. Monitoring only requirements have been included in this permit. An RPA was conducted based on the current WQS and using new site-specific hardness data that determined there is no reasonable potential to violate the water quality standards at this time, please see **Appendix – RPA Results**. Monitoring is being maintained to ensure a representative dataset is available to conduct a RPA at the next permit renewal as significant detectable levels of these parameters are present in the effluent as shown by DMRs and Expanded Effluent Tests (EETs).
  - **Total Recoverable Arsenic, Cadmium, Chromium (III), Lead, Mercury, and Silver.** A reasonable potential analysis was performed using the past five years of monitoring data from the facility, including monitoring data for site-specific hardness, and determined that there is no reasonable potential to cause an excursion of water quality standards, please see **Appendix – RPA Results**. At this time, detectable levels in the effluent do not pose a risk to violate water quality standards, additionally, these parameters are monitored in the Expanded Effluent Tests that the facility performs and submits to the Department as part of the Form B2 renewal application; therefore monitoring requirements have been removed from the permit. See Appendix – RPA Results.
- ✓ The Department determines that technical mistakes or mistaken interpretations of law were made in issuing the permit under section 402(a)(1)(b).
- **General Criteria.** The previous permit contained a special condition which described a specific set of prohibitions related to general criteria found in 10 CSR 20-7.031(4). In order to comply with 40 CFR 122.44(d)(1), the permit writer has conducted reasonable potential determinations for each general criterion and established numeric effluent limitations where reasonable potential exists. While the removal of the previous permit special condition creates the appearance of backsliding, since this permit establishes numeric limitations where reasonable potential to cause or contribute to an excursion of the general criteria exists the permit maintains sufficient effluent limitations and monitoring requirements in order to protect water quality, this permit is equally protective as compared to the previous permit. Therefore, given this new information, and the fact that the previous permit special condition was not consistent with 40 CFR 122.44(d)(1), an error occurred in the establishment of the general criteria as a special condition of the previous permit. Please see Part VI – Effluent Limits Determination for more information regarding the reasonable potential determinations for each general criterion related to this facility.

#### **ANTIDEGRADATION:**

In accordance with Missouri's Water Quality Standard [10 CSR 20-7.031(3)], for domestic wastewater discharge with new, altered, or expanding discharges, the Department is to document by means of Antidegradation Review that the use of a water body's available assimilative capacity is justified. In accordance with Missouri's water quality regulations for antidegradation [10 CSR 20-7.031(3)], degradation may be justified by documenting the socio-economic importance of a discharge after determining the necessity of the discharge. Facilities must submit the antidegradation review request to the Department prior to establishing, altering, or expanding discharges. See <http://dnr.mo.gov/env/wpp/permits/antideg-implementation.htm>

- ✓ 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.

For stormwater discharges, the stormwater BMP chosen for the facility, through the antidegradation analysis performed by the facility, must be implemented and maintained at the facility. Failure to implement and maintain the chosen BMP alternative is a permit violation; see SWPPP.

- ✓ The facility must review and maintain stormwater BMPs as appropriate.

#### **AREA-WIDE WASTE TREATMENT MANAGEMENT & CONTINUING AUTHORITY:**

As per [10 CSR 20-6.010(2)(C)], ...An applicant may utilize a lower preference continuing authority by submitting, as part of the application, when a higher level authority is available, must submit information to the Department for review and approval, provided it 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.

- ✓ Sludge/biosolids are removed by contract hauler, and/ or permittee is authorized to land apply biosolids in accordance with Standard Conditions III.

**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.

**ELECTRONIC DISCHARGE MONITORING REPORT (EDMR) SUBMISSION SYSTEM:**

The U.S. Environmental Protection Agency (EPA) promulgated a final rule on October 22, 2015, to modernize Clean Water Act reporting for municipalities, industries, and other facilities by converting to an electronic data reporting system. This final rule requires regulated entities and state and federal regulators to use information technology to electronically report data required by the National Pollutant Discharge Elimination System (NPDES) permit program instead of filing paper reports. To comply with the federal rule, the Department is requiring all permittees to begin submitting discharge monitoring data and reports online. In an effort to aid facilities in the reporting of applicable information electronically, the Department has created several new forms including operational control monitoring forms and an I&I location and reduction form. These forms are optional and found on the Department's website at the following locations:

Operational Monitoring Lagoon: <http://dnr.mo.gov/forms/780-2801-f.pdf>

Operational Monitoring Mechanical: <http://dnr.mo.gov/forms/780-2800-f.pdf>

I&I Report: <http://dnr.mo.gov/forms/780-2690-f.pdf>

Per 40 CFR 127.15 and 127.24, permitted facilities may request a temporary waiver for up to 5 years or a permanent waiver from electronic reporting from the Department. To obtain an electronic reporting waiver, a permittee must first submit an eDMR Waiver Request Form: <http://dnr.mo.gov/forms/780-2692-f.pdf>. Each facility must make a request. If a single entity owns or operates more than one facility, then the entity must submit a separate request for each facility based on its specific circumstances. An approved waiver is non-transferable.

The Department must review and notify the facility within 120 calendar days of receipt if the waiver request has been approved or rejected [40 CFR 124.27(a)]. During the Department review period as well as after a waiver is granted, the facility must continue submitting a hard-copy of any reports required by their permit. The Department will enter data submitted in hard-copy from those facilities allowed to do so and electronically submit the data to the EPA on behalf of the facility.

- ✓ The permittee/facility is currently using the eDMR data reporting system.

**NUMERIC LAKE NUTRIENT CRITERIA**

- ✓ This facility does not discharge into a lake watershed where numeric lake nutrient criteria are applicable. For more information, please see the Department's Nutrient Criteria Implementation Plan at: <https://dnr.mo.gov/env/wpp/rules/documents/nutrient-implementation-plan-final-072618.pdf>

**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.

- ✓ An 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(12)] 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 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) or the Departments' CMOM Model located at <http://dnr.mo.gov/env/wpp/permits/docs/cmom-template.doc>. For additional information regarding the Departments' CMOM Model, see the CMOM Plan Model Guidance document at <http://dnr.mo.gov/pubs/pub2574.htm>. The CMOM identifies some of the criteria used 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 may include 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), 10 CSR 20-7.031(11), and 10 CSR 20-7.015(9), 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 that may result in site-specific criteria or alternative effluent limits. 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 SOC's, and attain a greater level of consistency, on April 9, 2015 the Department issued an updated policy on development of SOC's. 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 for Compliance.

✓ This permit does not contain an SOC.

**SEWER EXTENSION AUTHORITY SUPERVISED PROGRAM:**

In accordance with [10 CSR 20-6.010(6)(A)], the Department may grant approval of a permittee's Sewer Extension Authority Supervised Program. These approved permittees regulate and approve construction of sanitary sewers and pump stations, which are tributary to this wastewater treatment facility. The permittee shall act as the continuing authority for the operation, maintenance, and modernization of the constructed collection system. See <http://dnr.mo.gov/env/wpp/permits/sewer-extension.htm>.

✓ The permittee does not have a Department approved Sewer Extension Authority Supervised Program.

**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 June 2015], 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. The purpose of a SWPPP is to comply with all applicable stormwater regulations by creating an adaptive management plan to control and mitigate stream pollution from stormwater runoff. Developing a SWPPP provides opportunities to employ appropriate BMPs to minimize the risk of pollutants being discharged during storm events. The following paragraph outlines the general steps the permittee should take to determine which BMPs will work to achieve the benchmark values or limits in the permit. This section is not intended to be all encompassing or restrict the use of any physical BMP or operational and maintenance procedure assisting in pollution control. Additional steps or revisions to the SWPPP may be required to meet the requirements of the permit.

Areas which should be included in the SWPPP are identified in 40 CFR 122.26(b)(14). Once the potential sources of stormwater pollution have been identified, a plan should be formulated to best control the amount of pollutant being released and discharged by each activity or source. This should include, but is not limited to, minimizing exposure to stormwater, good housekeeping measures, proper facility and equipment maintenance, spill prevention and response, vehicle traffic control, and proper materials handling. Once a plan has been developed the facility will employ the control measures determined to be adequate to achieve the benchmark values discussed above. The facility will conduct monitoring and inspections of the BMPs to ensure they are working properly and re-evaluate any BMP not achieving compliance with permitting requirements. For example, if sample results from an outfall show values of TSS above the benchmark value, the BMP being employed is deficient in controlling stormwater pollution. Corrective action should be taken to repair, improve, or replace the failing BMP. This internal evaluation is required at least once per month but should be continued more frequently if BMPs continue to fail. If failures do occur, continue this trial and error process until appropriate BMPs have been established.

For new, altered, or expanded stormwater discharges, the SWPPP shall identify reasonable and effective BMPs while accounting for environmental impacts of varying control methods. The antidegradation analysis must document why no discharge or no exposure options are not feasible. The selection and documentation of appropriate control measures shall serve as an alternative analysis of technology and fulfill the requirements of antidegradation [10 CSR 20-7.031(3)]. For further guidance, consult the antidegradation implementation procedure (<http://dnr.mo.gov/env/wpp/docs/AIP050212.pdf>).

Alternative Analysis (AA) evaluation of the BMPs is a structured evaluation of BMPs that are reasonable and cost effective. The AA evaluation should include practices that are designed to be: 1) non-degrading; 2) less degrading; or 3) degrading water quality. The glossary of AIP defines these three terms. The chosen BMP will be the most reasonable and effective management strategy while ensuring the highest statutory and regulatory requirements are achieved and the highest quality water attainable for the facility is discharged. The AA evaluation must demonstrate why “no discharge” or “no exposure” is not a feasible alternative at the facility. This structured analysis of BMPs serves as the antidegradation review, fulfilling the requirements of 10 CSR 20-7.031(3) Water Quality Standards and *Antidegradation Implementation Procedure* (AIP), Section II.B.

If parameter-specific numeric exceedances continue to occur and the permittee feels there are no practicable or cost-effective BMPs which will sufficiently reduce a pollutant concentration in the discharge to the benchmark values established in the permit, the permittee can submit a request to re-evaluate the benchmark values. This request needs to include 1) a detailed explanation of why the facility is unable to comply with the permit conditions and unable to establish BMPs to achieve the benchmark values; 2) financial data of the company and documentation of cost associated with BMPs for review and 3) the SWPPP, which should contain adequate documentation of BMPs employed, failed BMPs, corrective actions, and all other required information. This will allow the Department to conduct a cost analysis on control measures and actions taken by the facility to determine cost-effectiveness of BMPs. The request shall be submitted in the form of an operating permit modification; the application is found at: <http://dnr.mo.gov/forms/index.html>.

- ✓ 10 CSR 20-6.200 and 40 CFR 122.26(b)(14)(ix) 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 (SWPPP).

A facility can apply for conditional exclusion for “no exposure” of industrial activities and materials to stormwater by submitting a permit modification via Form B2 (<http://dnr.mo.gov/forms/780-1805-f.pdf>) appropriate application filing fees and a completed No Exposure Certification for Exclusion from NPDES Stormwater Permitting under Missouri Clean Water Law (<https://dnr.mo.gov/forms/780-2828-f.pdf>) to the Department’s Water Protection Program, Operating Permits Section. Upon approval of the No Exposure Certification, the permit will be modified and the Special Condition to develop and implement a SWPPP will be removed.

#### **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(86)], 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:

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

Where C = downstream concentration      C<sub>e</sub> = effluent concentration  
Cs = upstream concentration              Q<sub>e</sub> = effluent flow  
Q<sub>s</sub> = upstream 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 was either not submitted or determined not applicable by Department staff.

**WHOLE EFFLUENT TOXICITY (WET) TEST:**

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

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) and the Water Quality Standards 10 CSR 20-7.031(4)(D),(F),(G),(J)2.A & B are being met. Under [10 CSR 20-6.010(8)(B)], 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 that 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) that alters its production process throughout the year.
- ☐ Facility handles large quantities of toxic substances, or substances that are toxic in large amounts.
- ☒ Facility has Water Quality-based Effluent Limitations for toxic substances (other than NH<sub>3</sub>)
- ☒ Facility is a municipality with a Design Flow ≥ 22,500 gpd.
- ☐ Other – please justify.

✓ The permittee is required to conduct WET test for this facility.

**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 discharges to a tributary to Bourbeuse River that is classified as a 100K Extent-Remaining Stream (C) (3960). This tributary flows 1.2 miles to Bourbeuse River (P) (2034) which is listed on the 2020 Missouri 303(d) List for Mercury in fish issue.
  - It is unknown at this time if the facility is a source of the above listed pollutant(s) or considered to contribute to the impairment of Bourbeuse River (P) 2034. Once a TMDL is developed, the permit may be modified to include WLAs from the TMDL.

## Part VI – Effluent Limits Determination

### OUTFALL #001 – MAIN FACILITY OUTFALL

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

#### EFFLUENT LIMITATIONS TABLE:

PARAMETER	Unit	Basis for Limits	Daily Maximum	Weekly Average	Monthly Average	Previous Permit Limit	Sampling Frequency	Reporting Frequency	Sample Type ****
Flow	MGD	1	*		*	*/*	1/weekday	monthly	T
BOD <sub>5</sub>	mg/L	1, 5	30		20	30/20	1/month	monthly	C
TSS	mg/L	1, 5	30		20	30/20	1/month	monthly	C
<i>Escherichia coli</i> **	#/100mL	1, 3		630	126	630/126	1/week	monthly	G
Ammonia as N (January) (February) (March) (April) (May) (June) (July) (August) (September) (October) (November) (December)	mg/L	2, 3	12.1 10.1 12.0 12.1 12.1 12.1 12.1 10.1 12.1 12.1 12.1 12.1	3.1 2.7 3.1 2.7 2.2 1.7 1.5 1.3 1.8 2.5 3.1 3.1		Apr – Sep: 5.4/1.3  Oct - Mar: 12.1/2.5	1/month	monthly	C
Oil & Grease	mg/L	1, 3	15		10	15/10	1/quarter	quarterly	G
Total Phosphorus	mg/L	1	*		*	***	1/quarter	quarterly	C
Total Kjeldahl Nitrogen	mg/L	1	*		*	***	1/quarter	quarterly	C
Nitrite + Nitrate	mg/L	1	*		*	***	1/quarter	quarterly	C
Copper, Total Recoverable	µg/L	2,3	33.2		16.2	12.5/6.2	1/quarter	quarterly	C
Zinc, Total Recoverable	µg/L	2, 7	*		*	120/60	1/quarter	quarterly	C
Total Hardness	mg/L	7	*		*	*/*	1/quarter	quarterly	C
Acute Whole Effluent Toxicity	TUa	1, 9	*			*	1/year	annually	C
PARAMETER	Unit	Basis for Limits	Minimum		Maximum	Previous Permit Limit	Sampling Frequency	Reporting Frequency	Sample Type
pH	SU	1	6.5		9.0		1/month	monthly	G
PARAMETER	Unit	Basis for Limits	Daily Minimum		Monthly Avg. Min	Previous Permit Limit	Sampling Frequency	Reporting Frequency	Sample Type
BOD <sub>5</sub> Percent Removal	%	1			85	85	1/month	monthly	M
TSS Percent Removal	%	1			85	85	1/month	monthly	M

\* - Monitoring requirement only.

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

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

\*\*\*\* - C = 24-hour composite

G = Grab

T = 24-hr. total

E = 24-hr. estimate

M = Measured/calculated

#### Basis for Limitations Codes:

- |  |                                   |   |
|--|-----------------------------------|---|
| 1. State or Federal Regulation/Law       | 5. Antidegradation Policy         | 9. WET Test Policy                        |
| 2. Water Quality Standard (includes RPA) | 6. Water Quality Model            | 10. Multiple Discharger Variance          |
| 3. Water Quality Based Effluent Limits   | 7. Best Professional Judgment     | 11. Nutrient Criteria Implementation Plan |
| 4. Antidegradation Review                | 8. TMDL or Permit in lieu of TMDL |   |

**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>)**. Operating permit retains 30 mg/L as a Daily Maximum and 20 mg/L as a Monthly Average. Please see the attached Antidegradation Review Sheet.
- **Total Suspended Solids (TSS)**. Operating permit retains 30 mg/L as a Weekly Average and 20 mg/L as a Monthly Average. Please see the attached Antidegradation Review Sheet.
- **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), for discharges within two miles upstream of segments or lakes with Whole Body Contact Recreation (A) designated use of the receiving stream, as per 10 CSR 20-7.015(9)(B). 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.
- **Total Ammonia Nitrogen**. Early Life Stages Present Total Ammonia Nitrogen criteria apply [10 CSR 20-7.031(5)(B)7.C. & Table B3]. Background total ammonia nitrogen = 0.01 mg/L. No mixing considerations allowed; therefore, WLA = appropriate criterion.

The Department previously followed the 2007 Ammonia Guidance method for derivation of ammonia limits. However, the EPA's Technical Support Document for Water Quality-based Toxic Controls (TSD) establishes other alternatives to limit derivation. The Department has determined that the approach established in Section 5.4.2 of the TSD, which allows for direct application of both the acute and chronic wasteload allocations (WLA) as permit limits for toxic pollutants, is more appropriate limit derivation approach. Using this method for a discharge to a waterbody where mixing is not allowed, the criterion continuous concentration (CCC) and the criterion maximum concentration (CMC) will equal the chronic and acute WLA respectively. The WLAs are then applied as effluent limits, per Section 5.4.2 of the TSD, where the CMC is the Daily Maximum and the CCC is the Monthly Average. The direct application of both acute and chronic criteria as WLA is also applicable for facilities that discharge into receiving waterbodies with mixing considerations. The CCC and CMC will need to be calculated into WLA with mixing considerations using the mass-balance equation:

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

Where C = downstream concentration      C<sub>e</sub> = effluent concentration  
Cs = upstream concentration              Q<sub>e</sub> = effluent flow  
Q<sub>s</sub> = upstream flow

In the event that mixing considerations derive an AML less stringent than the MDL, the AML and MDL will be equal and based on the MDL.

Month	Temp (°C)*	pH (SU)*	Total Ammonia Nitrogen CCC (mg/L)	Total Ammonia Nitrogen CMC (mg/L)
January	8.1	7.8	3.1	12.1
February	9.3	7.9	2.7	10.1
March	13.0	7.8	3.1	12.0
April	16.7	7.8	2.7	12.1
May	20.0	7.8	2.2	12.1
June	24.0	7.8	1.7	12.1
July	26.6	7.8	1.5	12.1
August	26.5	7.9	1.3	10.1
September	23.5	7.8	1.8	12.1
October	18.0	7.8	2.5	12.1
November	14.0	7.8	3.1	12.1
December	10.0	7.8	3.1	12.1

\* Ecoregion data (Ozark Highlands)

### January

Chronic WLA:

$$C_e = ((1.24 + 0.0)3.1 - (0.0 * 0.01))/1.24 = 3.1 \text{ mg/L}$$

Acute WLA:

$$C_e = ((1.24 + 0.0)12.1 - (0.0 * 0.01))/1.24 = 12.1 \text{ mg/L}$$

Chronic WLA = AML = **3.1** mg/L

Acute WLA = MDL = **12.1** mg/L

### March

Chronic WLA:

$$C_e = ((1.24 + 0.0)3.1 - (0.0 * 0.01))/1.24 = 3.1 \text{ mg/L}$$

Acute WLA:

$$C_e = ((1.24 + 0.0)12.0 - (0.0 * 0.01))/1.24 = 12.0 \text{ mg/L}$$

Chronic WLA = AML = **3.1** mg/L

Acute WLA = MDL = **12.0** mg/L

### May

Chronic WLA:

$$C_e = ((1.24 + 0.0)2.2 - (0.0 * 0.01))/1.24 = 2.2 \text{ mg/L}$$

Acute WLA:

$$C_e = ((1.24 + 0.0)12.1 - (0.0 * 0.01))/1.24 = 12.1 \text{ mg/L}$$

Chronic WLA = AML = **2.2** mg/L

Acute WLA = MDL = **12.1** mg/L

### July

Chronic WLA:

$$C_e = ((1.24 + 0.0)1.5 - (0.0 * 0.01))/1.24 = 1.5 \text{ mg/L}$$

Acute WLA:

$$C_e = ((1.24 + 0.0)12.1 - (0.0 * 0.01))/1.24 = 12.1 \text{ mg/L}$$

Chronic WLA = AML = **1.5** mg/L

Acute WLA = MDL = **12.1** mg/L

### September

Chronic WLA:

$$C_e = ((1.24 + 0.0)1.8 - (0.0 * 0.01))/1.24 = 1.8 \text{ mg/L}$$

Acute WLA:

$$C_e = ((1.24 + 0.0)12.1 - (0.0 * 0.01))/1.24 = 12.1 \text{ mg/L}$$

Chronic WLA = AML = **1.8** mg/L

Acute WLA = MDL = **12.1** mg/L

### November

Chronic WLA:

$$C_e = ((1.24 + 0.0)3.1 - (0.0 * 0.01))/1.24 = 3.1 \text{ mg/L}$$

Acute WLA:

$$C_e = ((1.24 + 0.0)12.1 - (0.0 * 0.01))/1.24 = 12.1 \text{ mg/L}$$

Chronic WLA = AML = **3.1** mg/L

Acute WLA = MDL = **12.1** mg/L

### February

Chronic WLA:

$$C_e = ((1.24 + 0.0)2.7 - (0.0 * 0.01))/1.24 = 3.1 \text{ mg/L}$$

Acute WLA:

$$C_e = ((1.24 + 0.0)10.1 - (0.0 * 0.01))/1.24 = 12.1 \text{ mg/L}$$

Chronic WLA = AML = **2.7** mg/L

Acute WLA = MDL = **10.1** mg/L

### April

Chronic WLA:

$$C_e = ((1.24 + 0.0)2.7 - (0.0 * 0.01))/1.24 = 2.7 \text{ mg/L}$$

Acute WLA:

$$C_e = ((1.24 + 0.0)12.1 - (0.0 * 0.01))/1.24 = 12.1 \text{ mg/L}$$

Chronic WLA = AML = **2.7** mg/L

Acute WLA = MDL = **12.1** mg/L

### June

Chronic WLA:

$$C_e = ((1.24 + 0.0)1.7 - (0.0 * 0.01))/1.24 = 1.7 \text{ mg/L}$$

Acute WLA:

$$C_e = ((1.24 + 0.0)12.1 - (0.0 * 0.01))/1.24 = 12.1 \text{ mg/L}$$

Chronic WLA = AML = **1.7** mg/L

Acute WLA = MDL = **12.1** mg/L

### August

Chronic WLA:

$$C_e = ((1.24 + 0.0)1.3 - (0.0 * 0.01))/1.24 = 1.3 \text{ mg/L}$$

Acute WLA:

$$C_e = ((1.24 + 0.0)10.1 - (0.0 * 0.01))/1.24 = 10.1 \text{ mg/L}$$

Chronic WLA = AML = **1.3** mg/L

Acute WLA = MDL = **10.1** mg/L

### October

Chronic WLA:

$$C_e = ((1.24 + 0.0)2.5 - (0.0 * 0.01))/1.24 = 2.5 \text{ mg/L}$$

Acute WLA:

$$C_e = ((1.24 + 0.0)12.1 - (0.0 * 0.01))/1.24 = 12.1 \text{ mg/L}$$

Chronic WLA = AML = **2.5** mg/L

Acute WLA = MDL = **12.1** mg/L

### December

Chronic WLA:

$$C_e = ((1.24 + 0.0)3.1 - (0.0 * 0.01))/1.24 = 3.1 \text{ mg/L}$$

Acute WLA:

$$C_e = ((1.24 + 0.0)12.1 - (0.0 * 0.01))/1.24 = 12.1 \text{ mg/L}$$

Chronic WLA = AML = **3.1** mg/L

Acute WLA = MDL = **12.1** mg/L



- **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 (Speciated).** Effluent monitoring for Total Phosphorus, Total Kjeldahl Nitrogen, and Nitrite + Nitrate are required per 10 CSR 20-7.015(9)(D)8.
- **pH.** 6.5-9.0 SU. pH limitations of 6.0-9.0 SU [10 CSR 20-7.015] are not protective of the in-stream Water Quality Standard, which states that water contaminants shall not cause pH to be outside the range of 6.5-9.0 SU.
- **Biochemical Oxygen Demand (BOD<sub>5</sub>) Percent Removal.** In accordance with 40 CFR Part 133, removal efficiency is a method by which the Federal Regulations define Secondary Treatment and Equivalent to Secondary Treatment, which applies to BOD<sub>5</sub> and TSS for Publicly Owned Treatment Works (POTWs)/municipals. This facility is required to meet 85% removal efficiency for BOD<sub>5</sub>.
- **Total Suspended Solids (TSS) Percent Removal.** In accordance with 40 CFR Part 133, removal efficiency is a method by which the Federal Regulations define Secondary Treatment and Equivalent to Secondary Treatment, which applies to BOD<sub>5</sub> and TSS for Publicly Owned Treatment Works (POTWs)/municipals. This facility is required to meet 85% removal efficiency for TSS.
- **Total Hardness.** Monitoring only requirement as the metals parameters contained in the permit are hardness based. This data will be used in the next permit renewal.

### **Metals**

Effluent limitations for total recoverable metals were developed using methods and procedures outlined in the “Technical Support Document for Water Quality-based Toxic Controls” (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. Downstream water hardness of 250 mg/L is used in the calculation below. This value represents the 50<sup>th</sup> percentile (median) for all sample data submitted to the Department by the facility in compliance with the In-stream monitoring requirements of the operating permit.

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

METAL	CONVERSION FACTORS	
	ACUTE	CHRONIC
Copper	0.960	0.960

Conversion factors for Cu are hardness dependent. Values calculated using equation found in Section 1.3 of EPA 823-B-96-007 and hardness = 250 mg/L.

- **Copper, Total Recoverable.** Protection of Aquatic Life Acute Criteria = 31.8 µg/L, Chronic Criteria = 19.6 µg/L. The hardness value of **250 mg/L** represents the 50<sup>th</sup> percentile (median) for Tributary to Bourbeuse River (C)

Acute AQL WQS:	$e^{(0.9422 * \ln 250 - 1.700300)} * (0.960) = 31.86$	[at Hardness 250]
Chronic AQL WQS:	$e^{(0.8545 * \ln 250 - 1.702)} * (0.960) = 19.60$	[at Hardness 250]
Acute WQS:	$31.86 \div 0.960 = 33.2 \text{ µg/L}$	[Total Recoverable Conversion]
Chronic WQS:	$19.60 \div 0.960 = 20.4 \text{ µg/L}$	[Total Recoverable Conversion]
LTA <sub>a</sub> :	$33.2 (0.311) = 10.3 \text{ µg/L}$	[CV = 0.624, 99 <sup>th</sup> Percentile]
LTA <sub>c</sub> :	$20.4 (0.516) = 10.5 \text{ µg/L}$	[CV = 0.624, 99 <sup>th</sup> Percentile]

Use most protective number of LTA<sub>a</sub> or LTA<sub>c</sub>.

MDL:	$10.3 (3.219) = 33.2 \text{ µg/L}$	[CV = 0.624, 99 <sup>th</sup> Percentile]
AML:	$10.3 (1.576) = 16.2 \text{ µg/L}$	[CV = 0.624, 95 <sup>th</sup> Percentile, n = 4]

- **Zinc, Total Recoverable.** Monitoring only requirements have been included in this permit. An RPA was conducted based on the current WQS and determined that there is no reasonable potential to violate the water quality standard for Zinc, please see **Appendix – RPA Results.** This determination will be reassessed at the time of renewal.

#### **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. Where no mixing is allowed, the acute criterion must be met at the end of the pipe. However, when using an LC50 as the test endpoint, the acute toxicity test has an upper sensitivity level of 100% effluent, or 1.0 TUa. If less than 50% of the test organisms die at 100% effluent, the true LC50 value for the effluent cannot be measured, effectively acting as a detection limit. Therefore, when the allowable effluent concentration is 100% a limit of 1.0 TUa will apply. If more than 50% of the organisms survive at 100% effluent, the permittee should report TUa <1.
- ✓ Acute Allowable Effluent Concentrations (AECs) for facilities that discharge to Class C streams are 100%, 50%, 25%, 12.5%, & 6.25%.

#### **Parameters Removed.**

- **Total Recoverable Arsenic, Cadmium, Chromium (IV), Lead, Mercury, and Silver.** A reasonable potential analysis was performed using the past five years of monitoring data from the facility, including monitoring data for site-specific hardness, and determined that there is no reasonable potential to cause an excursion of water quality standards. At this time, detectable levels in the effluent do not pose a risk to violate water quality standards, additionally, these parameters are monitored in the Expanded Effluent Tests that the facility performs and submits to the Department as part of the Form B2 renewal application; therefore monitoring requirements have been removed from the permit. See Appendix – RPA Results.

**Sampling Frequency Justification:** The sampling frequency for BOD, TSS, and pH has been reduced to monthly from twice per month due to the consistency of the effluent quality and compliance with permit limits. The Department has determined that previously established sampling and reporting frequency for all other parameters is sufficient to characterize the facility's effluent and be protective of water quality. Weekly sampling is required for *E. coli*, per 10 CSR 20-7.015(9)(D)7.A.

**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 Whole Effluent Toxicity**

- ✓ **No less than ONCE/YEAR:**
- Facility incorporates a pretreatment program.
  - Facility has Water Quality-based effluent limitations for toxic substances (other than NH<sub>3</sub>).

**Sampling Type Justification:** As per 10 CSR 20-7.015, samples collected for mechanical plants shall be a 24 hour modified composite sample. Grab samples, however, must be collected for pH, *E. coli*, and Oil & Grease in accordance with recommended analytical methods. For further information on sampling and testing methods please review 10 CSR 20-7.015(9)(D) 2.

### **PERMITTED FEATURE INF – INFLUENT MONITORING**

The monitoring requirements established in the below Monitoring Requirements Table are based on current operations of the facility. Future permit action due to facility modification may contain new operating permit terms and conditions that supersede the terms and conditions, including the monitoring requirements listed in this table.

### **INFLUENT MONITORING TABLE:**

PARAMETER	Unit	Basis for Limits	Daily Maximum	Weekly Average	Monthly Average	Previous Permit Limit	Sampling Frequency	Reporting Frequency	Sample Type ***
BOD <sub>5</sub>	mg/L	1			*	**	1/month	monthly	C
TSS	mg/L	1			*	**	1/month	monthly	C
Ammonia as N	mg/L	1	*		*	**	1/quarter	quarterly	C
Total Phosphorus	mg/L	1	*		*	**	1/quarter	quarterly	C
Total Kjeldahl Nitrogen	mg/L	1	*		*	**	1/quarter	quarterly	C
Nitrite + Nitrate	mg/L	1	*		*	**	1/quarter	quarterly	C

\* - Monitoring requirement only.

\*\*\* - C = Composite

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

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

- |  |                                   |   |
|--|-----------------------------------|---|
| 1. State or Federal Regulation/Law       | 5. Antidegradation Policy         | 9. WET Test Policy                        |
| 2. Water Quality Standard (includes RPA) | 6. Water Quality Model            | 10. Multiple Discharger Variance          |
| 3. Water Quality Based Effluent Limits   | 7. Best Professional Judgment     | 11. Nutrient Criteria Implementation Plan |
| 4. Antidegradation Review                | 8. TMDL or Permit in lieu of TMDL |   |

### **Influent Parameters**

- **Biochemical Oxygen Demand (BOD<sub>5</sub>) and Total Suspended Solids (TSS)**. An influent sample is required to determine the removal efficiency. In accordance with 40 CFR Part 133, removal efficiency is a method by which the Federal Regulations define Secondary Treatment and Equivalent to Secondary Treatment, which applies to BOD<sub>5</sub> and TSS for Publicly Owned Treatment Works (POTWs)/municipals.
- **Total Phosphorus, Total Kjeldahl Nitrogen, Nitrite + Nitrate, and Ammonia**. Influent monitoring for Total Phosphorus, Total Kjeldahl Nitrogen, Nitrite + Nitrate, and Ammonia required per 10 CSR 20-7.015(9)(D)8.

**Sampling Frequency Justification:** The sampling and reporting frequencies for Total Phosphorus and Total Kjeldahl Nitrogen, Nitrite + Nitrate, and Ammonia parameters were established to match the required sampling frequency of these parameters in the effluent, per [10 CSR 20-7.015(9)(D)8.]. The sampling and reporting frequencies for influent BOD<sub>5</sub> and TSS have been established to match the required sampling frequency of these parameters in the effluent.

**Sampling Type Justification:** Sample types for influent parameters were established to match the required sampling type of these parameters in the effluent. Samples should be analyzed as soon as possible after collection and/or properly preserved according to method requirements.

**OUTFALL #001 – GENERAL CRITERIA CONSIDERATIONS:**

In accordance with 40 CFR 122.44(d)(1), effluent limitations shall be placed into the permit for those pollutants which have been determined to cause, have the reasonable potential to cause, or contribute to an excursion above any State water quality standard, including State narrative criteria for water quality. The rule further states that pollutants which have been determined to cause, have the reasonable potential to cause, or contribute to an excursion above a narrative criterion within an applicable State water quality standard, the permit shall contain a numeric effluent limitation to protect that narrative criterion. In order to comply with this regulation, the permit writer will complete reasonable potential determinations on whether the discharge will violate any of the general criteria listed in 10 CSR 20-7.031(4). These specific requirements are listed below followed by derivation and discussion (the lettering matches that of the rule itself, under 10 CSR 20-7.031(4)). It should also be noted that Section 644.076.1, RSMo as well as Section D – Administrative Requirements of Standard Conditions Part I of this permit states that it shall be unlawful for any person to cause or permit any discharge of water contaminants from any water contaminant or point source located in Missouri that is 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.

- (A) 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. The discharge from this facility is made up of treated domestic wastewater. No evidence of an excursion of this criterion has been observed by the Department in the past and the facility has not disclosed any other information related to the characteristics of the discharge on their permit application which has the potential to cause or contribute to an excursion of this narrative criterion. Additionally, this facility utilizes secondary treatment technology and is currently in compliance with effluent limitations that are more stringent than the secondary treatment technology based effluent limits established in 40 CFR 133 and there has been no indication to the Department that the stream has had issues maintaining beneficial uses as a result of this discharge. Based on the information reviewed during the drafting of this permit, these final effluent limitations appear to have protected against the excursion of this criterion in the past. Therefore, the discharge does not have the reasonable potential to cause or contribute to an excursion of this criterion.
- (B) Waters shall be free from oil, scum and floating debris in sufficient amounts to be unsightly or prevent full maintenance of beneficial uses. Please see (A) above as justification is the same.
- (C) Waters shall be free from substances in sufficient amounts to cause unsightly color or turbidity, offensive odor or prevent full maintenance of beneficial uses. Please see (A) above as justification is the same.
- (D) Waters shall be free from substances or conditions in sufficient amounts to result in toxicity to human, animal or aquatic life. This permit contains final effluent limitations which are protective of both acute and chronic toxicity for various pollutants that are either expected to be discharged by domestic wastewater facilities or that were disclosed by this facility on the application for permit coverage. Based on the information reviewed during the drafting of this permit, it has been determined if the facility meets final effluent limitations established in this permit, there is no reasonable potential for the discharge to cause an excursion of this criterion.
- (E) Waters shall provide for the attainment and maintenance of water quality standards downstream including waters of another state. Please see (D) above as justification is the same.
- (F) There shall be no significant human health hazard from incidental contact with the water. Please see (D) above as justification is the same.
- (G) There shall be no acute toxicity to livestock or wildlife watering. Please see (D) above as justification is the same.
- (H) Waters shall be free from physical, chemical or hydrologic changes that would impair the natural biological community. Please see (A) above as justification is the same.
- (I) 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. The discharge from this facility is made up of treated domestic wastewater. No evidence of an excursion of this criterion has been observed by the Department in the past and the facility has not disclosed any other information related to the characteristics of the discharge on their permit application which has the potential to cause or contribute to an excursion of this narrative criterion. Additionally, any solid wastes received or produced at this facility are wholly contained in appropriate storage facilities, are not discharged, and are disposed of offsite. This discharge is subject to Standard Conditions Part III, which contains requirements for the management and disposal of sludge to prevent its discharge. Therefore, this discharge does not have reasonable potential to cause or contribute to an excursion of this criterion.

## **Part VII – 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 not required to complete a cost analysis for compliance because the facility is not a combined or separate sanitary sewer system for a publicly-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.

The following table summarizes the results of the cost analysis. See **Appendix – Cost Analysis for Compliance** for detailed information.

**Summary Table. Cost Analysis for Compliance Summary for the City of Union**

New Permit Requirements			
Influent monitoring of Ammonia, Total Kjeldahl Nitrogen, Nitrate + Nitrite, Total Phosphorus			
Estimated Annual Cost	Annual Median Household Income (MHI)	Estimated Monthly User Rate	User Rate as a Percent of MHI
\$468	\$51,719	\$14.43	0.001%

## **Part VIII – 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.

### **WATER QUALITY STANDARD REVISION:**

In accordance with section 644.058, RSMo, the Department is required to utilize an evaluation of the environmental and economic impacts of modifications to water quality standards of twenty-five percent or more when making individual site-specific permit decisions.

- ✓ This operating permit does not contain requirements for a water quality standard that has changed twenty-five percent or more since the previous operating permit.

### **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 and 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 December 4, 2020 to January 4, 2021. No responses received.

**DATE OF FACT SHEET:** AUGUST 31, 2020

### **COMPLETED BY:**

**SAM BUCKLER, ENVIRONMENTAL PROGRAM ANALYST**  
**MISSOURI DEPARTMENT OF NATURAL RESOURCES**  
**WATER PROTECTION PROGRAM**  
**OPERATING PERMITS SECTION - DOMESTIC WASTEWATER UNIT**  
**(573) 526-0827**  
**sam.buckler@dnr.mo.gov**

## Appendices

### APPENDIX - CLASSIFICATION WORKSHEET:

Item	Points Possible	Points Assigned
Maximum Population Equivalent (P.E.) served , peak day	1 pt./10,000 PE or major fraction thereof. (Max 10 pts.)	1
Design Flow (avg. day) or peak month's flow (avg. day) whichever is larger	1 pt. / MGD or major fraction thereof. (Max 10 pts.)	1
Effluent Discharge		
Missouri or Mississippi River	0	
All other stream discharges except to losing streams and stream reaches supporting whole body contact recreation	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	3
Direct reuse or recycle of effluent	6	
Land Application/Irrigation		
Drip Irrigation	3	
Land application/irrigation	5	
Overland flow	4	
Variation in Raw Wastes (highest level only)		
Variations do not exceed those normally or typically expected	0	
Reoccurring deviations or excessive variations of 100 to 200 percent in strength and/or flow	2	
Reoccurring deviations or excessive variations of more than 200 percent in strength and/or flow	4	
Department-approved pretreatment program	6	6
Preliminary Treatment		
STEP systems (operated by the permittee)	3	
Screening and/or comminution	3	3
Grit removal	3	
Plant pumping of main flow	3	
Flow equalization	5	
Primary Treatment		
Primary clarifiers	5	
Chemical addition (except chlorine, enzymes)	4	
Secondary Treatment		
Trickling filter and other fixed film media with or without secondary clarifiers	10	
Activated sludge (including aeration, oxidation ditches, sequencing batch reactors, membrane bioreactors, and contact stabilization)	15	15
Stabilization ponds without aeration	5	
Aerated lagoon	8	
Advanced Lagoon Treatment – Aerobic cells, anaerobic cells, covers, or fixed film	10	
Biological, physical, or chemical	12	
Carbon regeneration	4	
Total from page <b>ONE (1)</b>	----	29

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

ITEM	POINTS POSSIBLE	POINTS ASSIGNED
<b>Solids Handling</b>		
Sludge Holding	5	
Anaerobic digestion	10	
Aerobic digestion	6	6
Evaporative sludge drying	2	
Mechanical dewatering	8	
Solids reduction (incineration, wet oxidation)	12	
Land application	6	6
<b>Disinfection</b>		
Chlorination or comparable	5	
On-site generation of disinfectant (except UV light)	5	
Dechlorination	2	
UV light	4	4
<b>Required Laboratory Control Performed by Plant Personnel (highest level only)</b>		
Lab work done outside the plant	0	
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>Total from page TWO (2)</b>	----	23
<b>Total from page ONE (1)</b>	---	29
<b>Grand Total</b>	---	52

- ☐ - 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
Ammonia as N – January (mg/L)	12.1	9.68	1.6	9.68	28.00	3.91/0.01	0.79	2.48	YES
Ammonia as N – February (mg/L)	12.1	20.52	3.1	20.52	29.00	7.12/0.4	0.99	2.88	YES
Arsenic, Total Recoverable (µg/L)	340	1.69	150	1.689	22	1.0	0.375	1.69	NO
Cadmium, Total Recoverable (µg/L)	12.82	1.53	1.64	1.53	20	1.0	1.164	1.53	NO
Chromium VI, Total Dissolved (µg/L)	16	1.42	11	9.96	21	7.0	0.305	1.42	NO
Copper, Total Recoverable (µg/L)	33.18	27.19	20.41	27.19	22	12.0	0.624	2.27	YES
Lead, Total Recoverable (µg/L)	262.01	1.35	10.22	1.35	22	1.0	0.27	1.35	NO
Mercury, Total Recoverable (µg/L)	1.65	0.22	0.8	0.22	20	0.22	0.022	1.02	NO
Silver, Total Recoverable (µg/L)	18.33	7.28	n/a	7.28	21	5.0	1.188	1.456	NO
Zinc, Total Recoverable (µg/L)	260.96	207.51	258.85	207.51	23	110	0.472	1.886	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.

# Water Quality and Antidegradation Review

*For the Protection of Water Quality  
and Determination of Effluent Limits for Discharge  
to the Unnamed Tributary to the Bourbeuse River*



October 2009

**Union East Sewage Treatment Plant**  
1999 Denmark Road  
Union, MO 63084

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## 1. FACILITY INFORMATION

FACILITY NAME: Union East STP NPDES #: MO-0121312

### FACILITY TYPE/DESCRIPTION:

Proposed facility expansion to 0.8 MGD with the addition of a 500,000 gpd Schreiber Plant. Facility states that all increase in loading will be domestic wastewater as the industrial park is tributary to the Union West WWTP. Note that the facility is proposing to convert from chlorination to UV disinfection. The facility discharges into an unnamed tributary to the Bourbeuse River (Location – See Appendix A). Current design flow is 0.3 MGD from the existing oxidation ditch, which is proposed to remain in service.

EDU\*: Ozark/Meramec 8-DIGIT HUC: 07140103 COUNTY: Franklin

\* - Ecological Drainage Unit

LEGAL DESCRIPTION: SE1/4, NE1/4 Section 31, T43N, R1E LATITUDE/LONGITUDE: 38.25576 / - 90.56592

## 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, exceedences were as follows: 1) Total Residual Chlorine – August, September, and October 2008, and April and May 2009; 2) Ammonia – August, September, and October 2008; 3) Oil and Grease – May 2006, and October 2007.

## 3. OUTFALL CHARACTERISTICS

OUTFALL	DESIGN FLOW (CFS)	TREATMENT LEVEL	RECEIVING WATERBODY	DISTANCE TO CLASSIFIED SEGMENT (MI)
001	1.24	Secondary	Unnamed trib to Bourbeuse River	1.7

## 4. RECEIVING WATERBODY INFORMATION

WATERBODY NAME	CLASS	WBID	LOW-FLOW VALUES (CFS)			DESIGNATED USES**
			1Q10	7Q10	30Q10	
Unnamed tributary to the Bourbeuse River	U	-	0.0	0.0	0.0	General Criteria
Bourbeuse River	P	2034	13	15	30	IRR, LWW, AQL, CLF, WBC(A), SCR, DWS

\*\* 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: Unnamed tributary to the Bourbeuse River

Upper end segment\* UTM or Lat/Long coordinates: 38.25576/ - 90.56592 (Outfall)

Lower end segment\* UTM or Lat/Long coordinates: 38.26401/ - 90.55572 (Confluence with Bourbeuse River)

RECEIVING WATER BODY SEGMENT #2: Bourbeuse River

Upper end segment\* UTM or Lat/Long coordinates: 38.26401/ - 90.55572 (End of Segment #1)

Lower end segment\* UTM or Lat/Long coordinates: 38.26444/ - 90.55178 (Confluence with Birch Creek)

\*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.

## 5. GENERAL COMMENTS

Cochran Engineering prepared, on behalf of the City of Union, the *Antidegradation Analysis for the Union East Sewage Treatment Plant* (Appendix A: Map) dated June 16, 2009. The Geohydrological Evaluation states that the receiving waterbody is gaining. A Tier Analysis was submitted by the applicant (Appendix B). Dissolved oxygen modeling analysis (QUAL2K) was submitted for review and the department's Water Quality Monitoring and Assessment Section reviewed the model and revised the proposed effluent concentration for BOD.

Information found in the submitted report and in the summary forms provided by the applicant in Appendix B was used to develop this review document. The facility is tributary to the Bourbeuse River (about 1.7 miles downstream) and the Meramec River (about 9.8 miles downstream). The Bourbeuse River is on the 2008 305(b) List for Mercury and the Meramec River is on the 2008 305(b) List for Mercury and the EPA 2006 303(d) List for Mercury. This discharge will not contribute to these impairments. A Missouri Department of Conservation Natural Heritage Review was obtained by the applicant; and notes a Level 2 response. Applicant should verify that no aquatic species of concern will be impacted by the discharge.

## 6. ANTIDEGRADATION REVIEW INFORMATION

The following is a review of the *Antidegradation Analysis for the Union East Sewage Treatment Plant* dated June 16, 2009.

### 6.1. 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). Additionally, Table 2 shows the existing water quality and water quality standard for several pollutants of concern. 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
BOD <sub>5</sub> /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		Not determined	Permit limits apply only
Cadmium, Total and Dissolved	2	Minimal	
Copper, Total and Dissolved	2	Minimal	
Lead, Total and Dissolved	2	Minimal	
Silver, Total and Dissolved	2	Minimal	
Zinc, Total and Dissolved	2	Minimal	
Bacteria (E. Coli & Fecal Coliform)	2	Minimal	

Tier determination not possible: \* No in-stream standards for these parameters. \*\* Standards for these parameters are ranges

The pre-treatment test parameters chemical oxygen demand (COD), total phosphorus, and total nitrogen were not added to the above list. No criteria exist for these parameters. Hardness was not added because it is only used to adjust criteria for metals.

The following Antidegradation Review Summary attachments in Appendix B 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

## 6.2. EXISTING WATER QUALITY

Water quality data was obtained for the Bourbeuse River from the USGS water quality sampling station 07016400 - Bourbeuse River above Union, Mo (Years 2000-2009). All metals are total recoverable except for Chromium VI.

### 6.3. ASSIMILATIVE CAPACITY CALCULATIONS

Depending on the POC, calculated assimilative capacities were much less than 10%. *Missouri's Antidegradation Rule and Implementation Procedure* considers the use of less than 10% of the facility's available assimilative capacity as insignificant degradation. 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 Union East STP amounts to the sum total of the degradation. The expansion of the Union East STP will reduce or maintain the concentration of each POC in the unclassified tributary to the Bourbeuse River. These water quality based effluent limits are shown to also be minimally degrading as each POC uses less than 10% of the facility's available assimilative capacity.

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

		$FAC = C_c * (Q_s + Q_{d2}) - C_s (Q_s + Q_{d1}) * CF$	
Outfall #001	P streams only	Cd1 = current effluent concentration	CF= correction factor-see below*
Classified	Permit Number	Cc= downstream concentration, the Water Quality Standard (WQS)	FACratio = facility assimilative capacity ratio
Facility Name	MO-0121312	Qs = Stream 7Q10 flow (ft <sup>3</sup> /s)	
Stream name	Bourbeuse River	Qd1 = Current effluent design flow (ft <sup>3</sup> /s)	All metals are total recoverable, except Chromium VI.
	Qs 1Q10 =	Qd2 = Proposed effluent design flow (ft <sup>3</sup> /s)	
	Qd1= 0.47	30 Cs = combined stream concentrations (see Footnote 1 below)	
	Qs - 30Q10 =	15 Cd2 = proposed effluent concentration	
	Qd2= 1.2	Qs 7Q10 =	

**Footnote 1:** Receiving stream concentration was obtained from USGS water quality sampling station - Bourbeuse River above Union (2000-2009).

Cs represents a combination of existing water quality data (upstream monitoring data and the current permitted discharge levels).

EWQ from the USGS WQ sampling station was unfiltered or total recoverable. No data for Chromium VI.

\*Conversion factor to change FAC to pound per day were as follows: ug/L units -- 0.0054; mg/L units -- 5.4.

**WQ Criteria:**

Aquatic life chronic and acute standards were converted to total recoverable.

Hardness of 100 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 2000-09 USGS Water Quality Station above Union, Mo.

#### 6.4. 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.

## 7. 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.

## 8. MIXING CONSIDERATIONS

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

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

## 9. 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: 100% METHOD: MULTIPLE

TABLE 3. EFFLUENT LIMITS

PARAMETER	UNITS	DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	BASIS FOR LIMIT (NOTE 2)	MONITORING FREQUENCY
FLOW	MGD	*		*	FSR	ONCE/DAY
BOD <sub>5</sub> ***	MG/L	30		20	WQBEL	TWICE/MONTH
TSS ***	MG/L	30		20	WQBEL	TWICE/MONTH
PH	SU	6.0 - 9.0		6.0 - 9.0	FSR	TWICE/MONTH
AMMONIA AS N (MAY 1 – OCT 31)	MG/L	3.4		1.4	WQBEL	TWICE/MONTH
AMMONIA AS N (NOV 1 – APR 30)	MG/L	4.4		2.2	FSR	TWICE/MONTH
OIL AND GREASE (MG/L)	MG/L	15		10	FSR	TWICE/MONTH
ESCHERICHIA COLIFORM (E. COLI)	Please see the E. coli discussion in the Derivation & Discussion of Limits section of this WQAR below.					
FECAL COLI FORM (NOTE 1)		1000		400	FSR	TWICE/MONTH
CADMIUM, TOTAL RECOVERABLE	µG/L	0.4		0.2	WQBEL	ONCE/MONTH
COPPER, TOTAL RECOVERABLE	µG/L	12.5		6.2	WQBEL	ONCE/MONTH
LEAD, TOTAL RECOVERABLE	µG/L	5.3		2.6	WQBEL	ONCE/MONTH
SILVER, TOTAL RECOVERABLE	µG/L	3.8		1.9	WQBEL	ONCE/MONTH
ZINC, TOTAL RECOVERABLE	µG/L	120		60	WQBEL	ONCE/MONTH
ARSENIC, TOTAL RECOVERABLE	µG/L	*		*	MDEL	ONCE/QUARTER
CHROMIUM VI, TOTAL DISSOLVED	µG/L	*		*	MDEL	ONCE/QUARTER
MERCURY, TOTAL RECOVERABLE	µG/L	*		*	MDEL	ONCE/QUARTER
HARDNESS	MG/L	*		*	N/A	ONCE/QUARTER

\* - Monitoring requirements only.

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

NOTE 1 – COLONIES/100 ML

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.

## 10. RECEIVING WATER MONITORING REQUIREMENTS

No receiving water monitoring requirements recommended at this time.

## 11. 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:

Expanding Facility:

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

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 have been based on the authority included in Section III. Permit Consideration of the AIP.

#### 11.1. 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.
- **Biochemical Oxygen Demand (BOD<sub>5</sub>).** BOD<sub>5</sub> limits of 30 mg/L monthly average, 45 mg/L weekly average [10 CSR 20-7.015(8)(B)1]. The Department's Water Quality Monitoring and Assessment Section determined through their modeling that BOD<sub>5</sub> limits of 30 mg/L as a daily maximum was less than significant degradation. The Maximum Daily Limitation (MDL) = 1.5 x Average Monthly Limit. Therefore, the Average Monthly Limit will be 20 mg/L for insignificant degradation. The proposed effluent concentration will result in an improvement throughout the unclassified tributary to the Bourbeuse River and the Bourbeuse River segment evaluated.

**Therefore, MDNR staff concludes that the above-mentioned effluent limits of 20 mg/L for the average monthly limit and 30 mg/L for the maximum daily limit are protective of beneficial uses and existing water quality and will result in insignificant degradation. The proposed effluent concentration will result in improved dissolved oxygen concentration throughout the unclassified tributary and the Bourbeuse River segment.**

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

- **Total Suspended Solids (TSS).** Technology based limits of 20 mg/L for the average monthly limit and 30 mg/L for the maximum daily limit. According to EPA, because TSS and BOD are closely correlated, we apply the same limits for TSS as BOD. Influent monitoring may be required for this facility in its Missouri State Operating Permit. 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 (6.0 – 9.0) standard units [10 CSR 20-7.015 (8)(B)2.].
- **Total Ammonia Nitrogen.** Early Life Stages Present Total Ammonia Nitrogen criteria apply [10 CSR 20-7.031(4)(B)7.C. & Table B3]. Table 2 shows the calculations that the proposed effluent limitations for ammonia are minimally degrading as approximately two percent of the facility assimilative capacity is used.

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.

#### Summer

$$C_e = (((Q_e + Q_s) * C) - (Q_s * C_s)) / Q_e$$

Chronic WLA:  $C_e = 1.5 \text{ mg/L}$

Acute WLA:  $C_e = 12.1 \text{ mg/L}$

$LTA_c = 1.5 \text{ mg/L (0.780)} = \mathbf{1.2 \text{ mg/L}}$

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

$LTA_a = 12.1 \text{ mg/L (0.321)} = 3.88 \text{ mg/L}$

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

$MDL = 1.2 \text{ mg/L (3.11)} = 3.7 \text{ mg/L}$

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

$AML = 1.2 \text{ mg/L (1.19)} = 1.4 \text{ mg/L}$

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

#### Winter

Chronic WLA:  $C_e = 3.1 \text{ mg/L}$

Acute WLA:  $C_e = 12.1 \text{ mg/L}$

$LTA_c = 3.1 \text{ mg/L (0.780)} = \mathbf{2.4 \text{ mg/L}}$

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

$LTA_a = 12.1 \text{ mg/L (0.321)} = 3.9 \text{ mg/L}$

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

$MDL = 2.4 \text{ mg/L (3.11)} = 7.5 \text{ mg/L}$

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

$AML = 2.4 \text{ mg/L (1.19)} = 2.9 \text{ mg/L}$

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

Existing permit has winter ammonia effluent limitations of 2.2 mg/L for monthly average and 4.4 mg/L for daily maximum and a summer maximum daily limits of 3.4 mg/L. To avoid any backsliding issues, these concentrations will be maintained for this expansion.

Season	Maximum Daily Limit (mg/l)	Average Monthly Limit (mg/l)
Summer	3.4	1.4
Winter	4.4	2.2

- **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.*
- **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(8)(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.*
- **Total Residual Chlorine.** Monitoring requirements removed as facility proposed converting to ultraviolet disinfection.

- **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.
- **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.

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 = 100 mg/L.

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

Metal	Conversion Factors	
	Acute	Chronic
Cadmium	0.944	0.909
Copper	0.960	0.960
Lead	0.791	0.791
Silver	0.850	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 = 100 mg/L.

- **Cadmium, Total Recoverable.** Protection of Aquatic Life – Acute Criteria = 5.1 µg/L, Chronic Criteria = 0.2 µg/L.

$$\text{Chronic} = 0.2/0.944 = 0.22 \text{ } \mu\text{g/L}$$

$$\text{Acute} = 4.8/0.909 = 5.08 \text{ } \mu\text{g/L}$$

$$\text{LTA}_c = 0.22(0.527) = \mathbf{0.12 \text{ } \mu\text{g/L}}$$

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

$$\text{LTA}_a = 5.08(0.321) = 1.63 \text{ } \mu\text{g/L}$$

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

$$\text{MDL} = 0.12(3.11) = 0.4 \text{ } \mu\text{g/L}$$

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

$$\text{AML} = 0.12(1.55) = 0.2 \text{ } \mu\text{g/L}$$

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

- **Copper, Total Recoverable.** Protection of Aquatic Life – Acute Criteria = 13.4 µg/L, Chronic Criteria = 7.3 µg/L.

$$\text{Chronic} = 7.3/0.960 = 7.6 \text{ } \mu\text{g/L}$$

$$\text{Acute} = 13.4/0.960 = 14.0 \text{ } \mu\text{g/L}$$

$$\text{LTA}_c = 7.6(0.527) = \mathbf{4.0 \text{ } \mu\text{g/L}}$$

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

$$\text{LTA}_a = 14.0(0.321) = 8.0 \text{ } \mu\text{g/L}$$

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

$$\text{MDL} = 4.0(3.11) = 12.5 \text{ } \mu\text{g/L}$$

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

$$\text{AML} = 4.0(1.55) = 6.2 \text{ } \mu\text{g/L}$$

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

- **Lead, Total Recoverable.** Protection of Aquatic Life – Acute Criteria = 65 µg/L, Chronic Criteria = 2.5 µg/L.

$$\text{Chronic} = 2.5/0.791 = 3.2 \text{ µg/L}$$

$$\text{Acute} = 65/0.791 = 82.2 \text{ µg/L}$$

$$\text{LTA}_c = 3.2(0.527) = \mathbf{1.7 \text{ µg/L}}$$

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

$$\text{LTA}_a = 82.2(0.321) = 26.4 \text{ µg/L}$$

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

$$\text{MDL} = 1.7(3.11) = 5.3 \text{ µg/L}$$

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

$$\text{AML} = 1.7(1.55) = 2.6 \text{ µg/L}$$

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

- **Silver, Total Recoverable.** Protection of Aquatic Life – Acute Criteria = 3.2 µg/L, Drinking Water Standard - Chronic Criteria = 50 µg/L.

$$\text{Chronic} = 50 \text{ µg/L}$$

$$\text{Acute} = 3.2/0.85 = 3.8 \text{ µg/L}$$

$$\text{LTA}_c = 50(0.527) = 26.4 \text{ µg/L}$$

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

$$\text{LTA}_a = 3.8(0.321) = \mathbf{1.22 \text{ µg/L}}$$

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

$$\text{MDL} = 1.22(3.11) = 3.8 \text{ µg/L}$$

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

$$\text{AML} = 1.22(1.55) = 1.9 \text{ µg/L}$$

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

- **Zinc, Total Recoverable.** Protection of Aquatic Life – Acute Criteria = 117 µg/L, Chronic Criteria = 107 µg/L.

$$\text{Chronic} = 107/0.986 = 109 \text{ µg/L}$$

$$\text{Acute} = 117/0.978 = 120 \text{ µg/L}$$

$$\text{LTA}_c = 109(0.527) = 57.5 \text{ µg/L}$$

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

$$\text{LTA}_a = 120(0.321) = \mathbf{38.5 \text{ µg/L}}$$

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

$$\text{MDL} = 38.5(3.11) = 120 \text{ µg/L}$$

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

$$\text{AML} = 38.5(1.55) = 60 \text{ µg/L}$$

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

**Arsenic, Chromium VI, and Mercury.** Monitoring only. Reasonable Potential Analysis should be conducted at renewal of the operating permit. A previous Reasonable Potential Analysis conducted by Jacobs was included in the Antidegradation Report indicated no reasonable potential exists. Monitoring shall verify these results.

## 12. ANTIDEGRADATION REVIEW PRELIMINARY DETERMINATION

The proposed expansion of the Union East STP to 0.8 MGD will maintain or reduce the concentration of all POCs in the identified segment of the unnamed tributary of the Bourbeuse River and result in minimal degradation of the identified segment of the Bourbeuse River. The water quality based effluent limits for the pollutants of concern being discharge to the unclassified stream are shown to be using less than 10 percent of the assimilative capacity of the Bourbeuse River segment. 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: Keith Forck

Date: 10/28/09

Unit Chief: John Rustige

Section Chief: Refaat Mefrakis

Monitoring and effluent limits contained within this document have been developed in accordance with EPA guidelines using the best available data and are believed to be consistent with Missouri's Water Quality Standards and Effluent Regulations. If additional water quality data or anecdotal information are available that may affect the recommended monitoring and effluent limits, please forward these data and information to the author.

**APPENDIX – ALTERNATIVE:**



**APPENDIX – COST ANALYSIS FOR COMPLIANCE:**

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

**Union East Sewage Treatment Plant, Permit Renewal  
City of Union  
Missouri State Operating Permit #MO-0025283**

Section 644.145 RSMo requires the Department of Natural Resources (Department) 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.” This cost analysis does not dictate how the permittee will comply with new permit requirements.

**New Permit Requirements**

The permit requires compliance with new influent monitoring requirements for Ammonia, Total Kjeldahl Nitrogen, Nitrate + Nitrite, and Total Phosphorus.

**Connections**

The number of connections was reported by the permittee on the permit renewal application.

Connection Type	Number
Residential	1,347
Commercial	82
Industrial	18
<b>Total</b>	<b>1,447</b>

**Data Collection for this Analysis**

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. The financial questionnaire available to permittees on the Department’s website (<http://dnr.mo.gov/forms/780-2511-f.pdf>) is a required attachment to the permit renewal application. If the financial questionnaire is not submitted with the renewal application, the Department sends a request to complete the form with the welcome correspondence. If certain data was not provided by the permittee to the Department and the data is not obtainable through readily available sources, this analysis will state that the information is “unknown”.

**Eight Criteria of 644.145 RSMo**

The Department must consider the eight (8) criteria presented in subsection 644.145 RSMo to evaluate the cost associated with new permit requirements.

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

Criterion 1 Table. Current Financial Information for the City of Union	
Current Monthly User Rates per 5,000 gallons*	\$14.40
Median Household Income (MHI) <sup>1</sup>	\$51,719
Current Annual Operating Costs (excludes depreciation)	Unknown

\*User Rates were reported by the permittee on the Financial Questionnaire.

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

The following tables outline the estimated costs of the new permit requirements:

<b>Criterion 2A Table. Estimated Cost Breakdown of New Permit Requirements</b>			
New Requirement	Frequency	Estimated Cost	Estimated Annual Cost
Total Phosphorus – Influent	Quarterly	\$24	\$96
Total Kjeldahl Nitrogen - Influent	Quarterly	\$33	\$132
Nitrate + Nitrite - Influent	Quarterly	\$40	\$160
Ammonia - Influent	Quarterly	\$20	\$80
Total Estimated Annual Cost of New Permit Requirements			\$468

<b>Criterion 2B Table. Estimated Costs for New Permit Requirements</b>		
(1)	Estimated Annual Cost	\$468
(2)	Estimated Monthly User Cost for New Requirements <sup>2</sup>	\$0.03
	Estimated Monthly User Cost for New Requirements as a Percent of MHI <sup>3</sup>	0.001%
(3)	Total Monthly User Cost*	\$14.43
	Total Monthly User Cost as a Percent of MHI <sup>4</sup>	0.335%

\* Current User Rate + Estimated Monthly Costs of New Sampling Requirements

Due to the minimal cost associated with new permit requirements, the Department anticipates an extremely low to no rate increase will be necessary, which could impact individuals or households of this community.

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

This analysis is being conducted based on new requirements in the permit, which will not require the addition of new control technologies at the facility. However, the new sampling requirements are being established in order to provide data regarding the health of the receiving stream's aquatic life and to ensure that the existing permit limits are providing adequate protection of aquatic life. Improved wastewater provides benefits such as avoided health costs due to water-related illness, enhanced environmental ecosystem quality, and improved natural resources. The preservation of natural resources has been proven to increase the economic value and sustainability of the surrounding communities. Maintaining Missouri's water quality standards fulfills the goal of restoring and maintaining the chemical, physical, and biological integrity of the receiving stream; and, where attainable, it achieves a level of water quality that provides for the protection and propagation of fish, shellfish, wildlife, and recreation in and on the water.

**(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 this 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:**

- 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.
- 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.

The following table characterizes the current overall socioeconomic condition of the community as compared to the overall socioeconomic condition of Missouri. The following information was compiled using the latest U.S. Census data.

**Criterion 5 Table. Socioeconomic Data <sup>1, 5-9</sup> for the City of Union**

No.	Administrative Unit	Union City	Missouri State	United States
1	Population (2018)	11,274	6,090,062	322,903,030
2	Percent Change in Population (2000-2018)	45.3%	8.8%	14.7%
3	2018 Median Household Income (in 2019 Dollars)	\$51,719	\$54,530	\$61,385
4	Percent Change in Median Household Income (2000-2018)	-14.9%	-6.3%	-4.7%
5	Median Age (2018)	34.0	38.5	37.9
6	Change in Median Age in Years (2000-2018)	0.4	2.4	2.6
7	Unemployment Rate (2018)	2.8%	5.1%	5.9%
8	Percent of Population Below Poverty Level (2018)	11.1%	14.2%	14.1%
9	Percent of Household Received Food Stamps (2018)	15.7%	11.6%	12.2%
10	(Primary) County Where the Community Is Located	Franklin County		

**(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 requirements associated with this permit will not impose a financial burden on the community, nor will they require the City of Union to seek funding from an outside source.

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

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 has considered the eight (8) criteria presented in subsection 644.145 RSMo to evaluate the cost associated with the new permit requirements.

This analysis examined whether the new sampling requirements affect 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. After reviewing the above criteria, the Department finds that the new sampling requirements 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. (A) 2018 MHI in 2018 Dollar: United States Census Bureau. 2014-2018 American Community Survey 5-Year Estimates, Table B19013: Median Household Income in the Past 12 Months (in 2018 Inflation-Adjusted Dollars). <https://data.census.gov/cedsci/table?q=B19013&tid=ACSDT5Y2018.B19013&vintage=2018>.  
(B) 2000 MHI in 1999 Dollar: (1) For United States, United States Census Bureau (2003) 2000 Census of Population and Housing, Summary Social, Economic, and Housing Characteristics, PHC-2-1 Part 1. United States Summary, Table 5. Work Status and Income in 1999: 2000, Washington, DC. <https://www.census.gov/prod/cen2000/phc-2-1-pt1.pdf>. (2) For Missouri State, United States Census Bureau (2003) 2000 Census of Population and Housing, Summary Social, Economic, and Housing Characteristics, PHC-2-27, Missouri, Table 10. Work Status and Income in 1999: 2000, Washington, DC. <https://www.census.gov/prod/cen2000/phc-2-27-pt1.pdf>.  
(C) 2019 CPI, 2018 CPI and 1999 CPI: U.S. Department of Labor Bureau of Labor Statistics (2019) Consumer Price Index - All Urban Consumers, U.S. City Average. All Items. 1982-84=100. [http://data.bls.gov/timeseries/CUUR0000SA0?data\\_tool=Xgtable](http://data.bls.gov/timeseries/CUUR0000SA0?data_tool=Xgtable).  
(D) 2018 MHI in 2019 Dollar = 2018 MHI in 2018 Dollar x 2019 CPI / 2018 CPI; 2000 MHI in 2019 Dollar = 2000 MHI in 1999 Dollar x 2019 CPI / 1999 CPI.  
(E) Percent Change in Median Household Income (2000-2018) = (2018 MHI in 2019 Dollar - 2000 MHI in 2019 Dollar) / (2000 MHI in 2019 Dollar).
2.  $(\$468/1,447)/12 = \$0.03$  (Estimated Monthly User Cost for New Requirements)
3.  $(\$0.03/(\$51,719/12))100\% = 0.001\%$  (New Sampling Only)
4.  $(\$14.43/(\$51,719/12))100\% = 0.335\%$  (Total User Cost)
5. (A) Total Population in 2018: United States Census Bureau. 2014-2018 American Community Survey 5-Year Estimates, Table B01003: Total Population - Universe: Total Population. <https://data.census.gov/cedsci/table?q=B01003%20population&tid=ACSDT5Y2018.B01003&vintage=2018>.  
(B) Total Population in 2000: (1) For United States, United States Census Bureau (2002) 2000 Census of Population and Housing, Summary Social, Economic, and Housing Characteristics, PHC-1-1 Part 1. United States Summary, Table 1. Age and Sex: 2000, Washington, DC. <https://www.census.gov/prod/cen2000/phc-1-1-pt1.pdf>.  
(2) For Missouri State, United States Census Bureau (2002) 2000 Census of Population and Housing, Summary Population and Housing Characteristics, PHC-1-27, Missouri, Table 2. Place of Birth, Residence in 1995, and Language: 2000, Washington, DC. <http://www.census.gov/prod/cen2000/phc-2-27-pt1.pdf>.  
(C) Percent Change in Population (2000-2018) = (Total Population in 2018 - Total Population in 2000) / (Total Population in 2000).
6. (A) Median Age in 2018: United States Census Bureau. 2014-2018 American Community Survey 5-Year Estimates, Table B01002: Median Age by Sex - Universe: Total population. <https://data.census.gov/cedsci/table?q=B01002&tid=ACSDT5Y2018.B01002&vintage=2018>.  
(B) Median Age in 2000: (1) For United States, United States Census Bureau (2002) 2000 Census of Population and Housing, Summary Social, Economic, and Housing Characteristics, PHC-1-1 Part 1. United States Summary, Table 1. Age and Sex: 2000, Washington, DC., Page 2. <https://www.census.gov/prod/cen2000/phc-1-1-pt1.pdf>.  
(2) For Missouri State, United States Census Bureau (2002) 2000 Census of Population and Housing, Summary Population and Housing Characteristics, PHC-1-27, Missouri, Table 2. Place of Birth, Residence in 1995, and Language: 2000, Washington, DC. <http://www.census.gov/prod/cen2000/phc-2-27-pt1.pdf>.  
(C) Change in Median Age in Years (2000-2018) = (Median Age in 2018 - Median Age in 2000).
7. United States Census Bureau. 2014-2018 American Community Survey 5-Year Estimates, B23025: Employment Status for the Population 16 Years and Over - Universe: Population 16 years and Over. <https://data.census.gov/cedsci/table?q=B23025&tid=ACSDT5Y2018.B23025>.
8. United States Census Bureau. 2014-2018 American Community Survey 5-Year Estimates, Table S1701: Poverty Status in the Past 12 Months. <https://data.census.gov/cedsci/table?q=S1701&tid=ACSST5Y2018.S1701>.
9. United States Census Bureau. 2014-2018 American Community Survey 5-Year Estimates, Table B22003: Receipt of Food Stamps/SNAP in the Past 12 Months by Poverty Status in the Past 12 Months for Households - Universe: Households. <https://data.census.gov/cedsci/table?q=B22003&tid=ACSDT5Y2018.B22003>.



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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;
    - 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, except in the case of blending.
  - 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.



STANDARD CONDITIONS FOR NPDES PERMITS  
ISSUED BY  
THE MISSOURI DEPARTMENT OF NATURAL RESOURCES  
MISSOURI CLEAN WATER COMMISSION  
REVISED  
MAY 1, 2013

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

**STANDARD CONDITIONS FOR NPDES PERMITS**  
**ISSUED BY**  
**THE MISSOURI DEPARTMENT OF NATURAL RESOURCES**  
**MISSOURI CLEAN WATER COMMISSION**  
**August 1, 2019**

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

**SECTION A – GENERAL REQUIREMENTS**

1. PART III Standard Conditions pertain to biosolids and sludge requirements under the Missouri Clean Water Law and regulations for domestic and municipal wastewater and also incorporates federal sludge disposal requirements under 40 CFR Part 503 for domestic wastewater. The Environmental Protection Agency (EPA) has principal authority for permitting and enforcement of the federal sludge regulations under 40 CFR Part 503 for domestic biosolids and sludge.
2. PART III Standard Conditions apply only to biosolids and sludge generated at domestic wastewater treatment facilities, including public owned treatment works (POTW) and privately owned facilities.
3. Biosolids and Sludge Use and Disposal Practices:
  - a. The permittee is authorized to operate the biosolids and sludge generating, treatment, storage, use, and disposal facilities listed in the facility description of this permit.
  - b. The permittee shall not exceed the design sludge/biosolids volume listed in the facility description and shall not use biosolids or sludge disposal methods that are not listed in the facility description, without prior approval of the permitting authority.
  - c. For facilities operating under general operating permits that incorporate Standard Conditions PART III, the facility is authorized to operate the biosolids and sludge generating, treatment, storage, use and disposal facilities identified in the original operating permit application, subsequent renewal applications or subsequent written approval by the department.
4. Biosolids or Sludge Received from other Facilities:
  - a. Permittees may accept domestic wastewater biosolids or sludge from other facilities as long as the permittee's design sludge capacity is not exceeded and the treatment facility performance is not impaired.
  - b. The permittee shall obtain a signed statement from the biosolids or sludge generator or hauler that certifies the type and source of the sludge
5. Nothing in this permit precludes the initiation of legal action under local laws, except to the extent local laws are preempted by state law.
6. This permit does not preclude the enforcement of other applicable 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 biosolids or sludge disposal standard or limitation issued or approved under Section 405(d) of the Clean Water Act or under Chapter 644 RSMo.
8. In addition to Standard Conditions PART III, the Department may include biosolids and sludge limitations in the special conditions portion or other sections of a site specific permit.
9. Exceptions to Standard Conditions PART III may be authorized on a case-by-case basis by the Department, as follows:
  - a. The Department may modify a site-specific permit following permit notice provisions as applicable under 10 CSR 20-6.020, 40 CFR § 124.10, and 40 CFR § 501.15(a)(2)(ix)(E).
  - b. Exceptions cannot be granted where prohibited by the federal sludge regulations under 40 CFR Part 503.

## **SECTION B – DEFINITIONS**

1. Best Management Practices are practices to prevent or reduce the pollution of waters of the state and include agronomic loading rates (nitrogen based), soil conservation practices, spill prevention and maintenance procedures 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, feed 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 Part 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 (PSRP) in accordance with 40 CFR Part 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. Feed crops are crops produced primarily for consumption by animals.
8. Fiber crops are crops such as flax and cotton.
9. Food crops are crops consumed by humans which include, but is not limited to, fruits, vegetables and tobacco.
10. Industrial wastewater means any wastewater, also known as process wastewater, not defined as domestic wastewater. Per 40 CFR Part 122.2, process wastewater 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. Land application of industrial wastewater, residuals or sludge is not authorized by Standard Conditions PART III.
11. Mechanical treatment plants are wastewater treatment facilities that use mechanical devices to treat wastewater, including, sand filters, extended aeration, activated sludge, contact stabilization, trickling filters, rotating biological contact systems, and other similar facilities. It does not include wastewater treatment lagoons or constructed wetlands for wastewater treatment.
12. Plant Available Nitrogen (PAN) is nitrogen that will be available to plants during the growing seasons after biosolids application.
13. 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.
14. 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), sewage sludge incinerator ash, or grit/screenings generated during preliminary treatment of domestic sewage.
15. Sludge lagoon is part of a mechanical wastewater treatment facility. A sludge lagoon is an earthen or concrete lined 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.
16. Septage is the sludge pumped from residential septic tanks, cesspools, portable toilets, Type III marine sanitation devices, or similar treatment works such as sludge holding structures from residential wastewater treatment facilities with design populations of less than 150 people. Septage does not include grease removed from grease traps at a restaurant or material removed from septic tanks and other similar treatment works that have received industrial wastewater. The standard for biosolids from septage is different from other sludges. See Section H for more information.

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

1. Biosolids or sludge shall be routinely removed from wastewater treatment facilities and handled according to the permit facility description and the requirements of Standard Conditions PART III or in accordance with Section A.3.c., above.
2. The permittee shall operate storage and treatment facilities, as defined by Section 644.016(23), RSMo, so that there is no biosolids or sludge discharged to waters of the state. Agricultural storm water discharges are exempt under the provisions of Section 644.059, RSMo.
3. Mechanical treatment plants shall have separate biosolids or sludge storage compartments in accordance with 10 CSR 20, Chapter 8. Failure to remove biosolids or sludge from these storage compartments on the required design schedule is a violation of this permit.

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

1. Permittees that use contract haulers, under the authority of their operating permit, to dispose of biosolids or sludge, are responsible for compliance with all the terms of this permit. Contract haulers that assume the responsibility of the final disposal of biosolids or sludge, including biosolids land application, must obtain a Missouri State Operating Permit unless the hauler transports the biosolids or sludge to another permitted treatment facility.
2. Testing of biosolids or sludge, other than total solids content, is not required if biosolids or sludge are hauled to a permitted wastewater treatment facility, unless it is required by the accepting facility.



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

1. Please be aware that sludge incineration facilities may be subject to the requirements of 40 CFR Part 503 Subpart E, Missouri Air Conservation Commission regulations under 10 CSR 10, and solid waste management regulations under 10 CSR 80, as applicable.
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, mass of sludge incinerated and mass of ash generated. Permittee shall also provide the name of the ash disposal facility and permit number if applicable.

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

1. Please be aware that surface disposal sites of biosolids or sludge from wastewater treatment facilities may be subject to other laws including the requirements in 40 CFR Part 503 Subpart C, Missouri Air Conservation Commission regulations under 10 CSR 10, and solid waste management regulations under 10 CSR 80, as applicable.
2. Biosolids or 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 biosolids or sludge storage lagoons as storage facilities, accumulated biosolids or 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 biosolids or sludge removed will be dependent on biosolids or sludge generation and accumulation in the facility. Enough biosolids or 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 biosolids or sludge on the bottom of the lagoon, upon prior approval of the Department; or
  - b. Permittee shall close the lagoon in accordance with Section I.

## **SECTION G – LAND APPLICATION OF BIOSOLIDS**

1. The permittee shall not land apply biosolids unless land application is authorized in the facility description, the special conditions of the issued NPDES permit, or in accordance with Section A.3.c., above.
2. This permit only authorizes “Class A” or “Class B” biosolids derived from domestic wastewater 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.
3. Class A Biosolids Requirements: Biosolids shall meet Class A requirements for application to public contact sites, residential lawns, home gardens or sold and/or given away in a bag or other container.
4. Class B biosolids that are land applied to agricultural and public contact sites shall comply with the following restrictions:
  - a. Food crops that touch the biosolids/soil mixture and are totally above the land surface shall not be harvested for 14 months after application of biosolids.
  - b. Food crops below the surface of the land shall not be harvested for 20 months after application of biosolids when the biosolids remain on the land surface for four months or longer prior to incorporation into the soil.
  - c. Food crops below the surface of the land shall not be harvested for 38 months after application of biosolids when the biosolids remain on the land surface for less than four months prior to incorporation into the soil.
  - d. Animal grazing shall not be allowed for 30 days after application of biosolids.
  - e. Food crops, feed crops, and fiber crops shall not be harvested for 30 days after application of biosolids.
  - f. Turf shall not be harvested for one year after application of biosolids if used for lawns or high public contact sites in close proximity to populated areas such as city parks or golf courses.
  - g. After Class B biosolids have been land applied to public contact sites with high potential for public exposure, as defined in 40 CFR § 503.31, such as city parks or golf courses, access must be restricted for 12 months.
  - h. After Class B biosolids have been land applied public contact sites with low potential for public exposure as defined in 40 CFR § 503.31, such as a rural land application or reclamation sites, access must be restricted for 30 days.
5. Pollutant limits
  - a. Biosolids shall be monitored to determine the quality for regulated pollutants listed in Table 1, below. Limits for any pollutants not listed below may be established in the permit.
  - b. The number of samples taken is directly related to the amount of biosolids or sludge produced by the facility (See Section J, below). 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 achieve pollutant concentration below those identified in Table 1, below.
  - c. Table 1 gives the ceiling concentration for biosolids. Biosolids which exceed the concentrations in Table 1 may not be land applied.

**TABLE 1**

Biosolids ceiling concentration	
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

- d. Table 2 below gives the low metal concentration for biosolids. Because of its higher quality, biosolids with pollutant concentrations below those listed in Table 2 can safely be applied to agricultural land, forest, public contact sites, lawns, home gardens or be given away without further analysis. Biosolids containing metals in concentrations above the low metals concentrations but below the ceiling concentration limits may be land applied but shall not exceed the annual loading rates in Table 3 and the cumulative loading rates in Table 4. The permittee is required to track pollutant loading onto application sites for parameters that have exceeded the low metal concentration limits.

**TABLE 2**

Biosolids Low Metal Concentration	
Pollutant	Milligrams per kilogram dry weight
Arsenic	41
Cadmium	39
Copper	1,500
Lead	300
Mercury	17
Nickel	420
Selenium	100
Zinc	2,800

- e. Annual pollutant loading rate.

**Table 3**

Biosolids Annual Loading Rate	
Pollutant	Kg/ha (lbs./ac) per year
Arsenic	2.0 (1.79)
Cadmium	1.9 (1.70)
Copper	75 (66.94)
Lead	15 (13.39)
Mercury	0.85 (0.76)
Nickel	21 (18.74)
Selenium	5.0 (4.46)
Zinc	140 (124.96)

- f. Cumulative pollutant loading rates.

**Table 4**

Biosolids Cumulative Pollutant Loading Rate	
Pollutant	Kg/ha (lbs./ac)
Arsenic	41 (37)
Cadmium	39 (35)
Copper	1500 (1339)
Lead	300 (268)
Mercury	17 (15)
Nickel	420 (375)
Selenium	100 (89)
Zinc	2800 (2499)

6. Best Management Practices. The permittee shall use the following best management practices during land application activities to prevent the discharge of biosolids to waters of the state.
- Biosolids shall not be applied to the land if it is likely to adversely affect a threatened or endangered species listed under § 4 of the Endangered Species Act or its designated critical habitat.
  - Apply biosolids only at the agronomic rate of nitrogen needed (see 5.c. of this section).
  - The applicator must document the Plant Available Nitrogen (PAN) loadings, available nitrogen in the soil, and crop

nitrogen removal when either of the following occurs: 1) When biosolids are greater than 50,000 mg/kgTN; 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:  
(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. Alternative volatilization factors and mineralization rates can be utilized on a case-by-case basis.
- ii. Crop nutrient production/removal to be based on crop specific nitrogen needs and realistic yield goals. **NOTE:** There are a number of reference documents on the Missouri Department of Natural Resources website that are informative to implement best management practices in the proper management of biosolids, including crop specific nitrogen needs, realistic yields on a county by county basis and other supporting references.
- iii. Biosolids that are applied at agronomic rates shall not cause the annual pollutant loading rates identified in Table 3 to be exceeded.
- d. Buffer zones are as follows:
  - i. 300 feet of a water supply well, sinkhole, 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 of dwellings or public use areas;
  - iv. 100 feet (35 feet if biosolids application is down-gradient or the buffer zone is entirely vegetated) of lake, pond, wetlands or gaining streams (perennial or intermittent);
  - v. 50 feet of a property line. Buffer distances from property lines may be waived with written permission from neighboring property owner.
  - vi. For the application of dry, cake or liquid biosolids that are subsurface injected, buffer zones identified in 5.d.i. through 5.d.iii above, may be reduced to 100 feet. The buffer zone may be reduced to 35 feet if the buffer zone is permanently vegetated. Subsurface injection does not include methods or technology reflective of combination surface/shallow soil incorporation.
- e. Slope limitation for application sites are as follows:
  - i. For slopes less than or equal to 6 percent, 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.
  - iv. Dry, cake or liquid biosolids that are subsurface injected, may be applied on slopes not to exceed 20 percent. Subsurface injection does not include the use of methods or technology reflective of combination surface/shallow soil incorporation.
- f. No biosolids may be land applied in an area that it is reasonably certain that pollutants will be transported into waters of the state.
- g. Biosolids may be land applied to sites with soil that are snow covered, frozen, or saturated with liquid when site restrictions or other controls are provided to prevent pollutants from being discharged to waters of the state during snowmelt or stormwater runoff. During inclement weather or unfavorable soil conditions use the following management practices:
  - i. A maximum field slope of 6% and a minimum 300 feet grass buffer between the application site and waters of the state. A 35 feet grass buffer may be utilized for the application of dry, cake or liquid biosolids that are subsurface injected. Subsurface injection does not include the use of methods or technology reflective of combination surface/shallow soil incorporation;
  - ii. A maximum field slope of 2% and 100 feet grass buffer between the application site and waters of the state. A 35 feet grass buffer may be used for the application of dry, cake or liquid biosolids that are subsurface injected. Subsurface injection does not include the use of methods or technology reflective of combination surface/shallow soil incorporation;
  - iii. Other best management practices approved by the Department.

## SECTION H – SEPTAGE

1. Haulers that land apply septage must obtain a state permit. An operating permit is not required for septage haulers who transport septage to another permitted treatment facility for disposal.
2. Do not apply more than 30,000 gallons of septage per acre per year or the volume otherwise stipulated in the operating permit.
3. Septic 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 mechanical treatment facilities.
4. Septage must comply with Class B biosolids regarding pathogen and vector attraction reduction requirements before it may be applied to crops, pastures or timberland. To meet required pathogen and vector reduction requirements, mix 50 pounds of hydrated lime for every 1,000 gallons of septage and maintain a septage pH of at least 12 pH standard units for 30 minutes or more prior to application.
5. 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.
6. As residential septage contains relatively low levels of metals, the testing of metals in septage is not required.

## SECTION I– CLOSURE REQUIREMENTS

1. This section applies to all wastewater facilities (mechanical and lagoons) and sludge or biosolids storage and treatment facilities. 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 sludges and/or biosolids. 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. Biosolids or sludge 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. Biosolids and sludge shall meet the monitoring and land application limits for agricultural rates as referenced in Section G, above.
  - 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. Alternative, site-specific application rates may be included in the closure plan for department consideration.
    - 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. Alternative volatilization factors and mineralization rates can be utilized on a case-by-case basis.
4. Domestic wastewater treatment lagoons with a design treatment capacity less than or equal to 150 persons, are “similar treatment works” under the definition of septage. Therefore the sludge within the lagoons may be treated as septage during closure activities. See Section B, above. 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. Biosolids or sludge left within the domestic lagoon shall be mixed with soil on at least a 1 to 1 ratio, and unless otherwise approved, 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. Alternative biosolids or sludge and soil mixing ratios may be included in the closure plan for department consideration.
6. Lagoon and earthen structure 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 plant, all biosolids or 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. Hazardous Waste shall not be land applied or disposed during mechanical plant closures unless in accordance with Missouri Hazardous Waste Management Law and Regulations pursuant to 10 CSR 25.
  - c. After demolition of the mechanical plant, the site must only contain clean fill defined in Section 260.200.1(6) RSMo 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, reclamation, or other beneficial use. Other solid wastes must be removed.
8. If biosolids or sludge from the domestic lagoon or mechanical treatment plant exceeds agricultural rates under Section G and/or I, 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 Part 503, Subpart C.

## SECTION J – MONITORING FREQUENCY

1. At a minimum, biosolids or sludge 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**

Biosolids or Sludge produced and disposed (Dry Tons per Year)	Monitoring Frequency (See Notes 1, and 2)		
	Metals, Pathogens and Vectors, Total Phosphorus, Total Potassium	Nitrogen TKN, Nitrogen PAN <sup>1</sup>	Priority Pollutants <sup>2</sup>
319 or less	1/year	1 per month	1/year
320 to 1650	4/year	1 per month	1/year
1651 to 16,500	6/year	1 per month	1/year
16,501+	12/year	1 per month	1/year

<sup>1</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>2</sup> Priority pollutants (40 CFR 122.21, Appendix D, Tables II and III) are required only for permit holders that must have a pre-treatment program. Monitoring requirements may be modified and incorporated into the operating permit by the Department on a case-by-case basis.

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

2. Permittees that operate wastewater treatment lagoons, peak flow equalization basins, combined sewer overflow basins or biosolids or sludge lagoons that are cleaned out once a year or less, may choose to sample only when the biosolids or sludge is removed or the lagoon is closed. Test one composite sample for each 319 dry tons of biosolids or sludge removed from the lagoon during the reporting year or during lagoon closure. Composite sample must represent various areas at one-foot depth.
3. Additional testing may be required in the special conditions or other sections of the permit.
4. Biosolids and sludge monitoring shall be conducted in accordance with federal regulation 40 CFR § 503.8, Sampling and analysis.

## SECTION K – RECORD KEEPING AND REPORTING REQUIREMENTS

1. The permittee shall maintain records on file at the facility for at least five years for the items listed in Standard Conditions PART III and any additional items in the Special Conditions section of this permit. This shall include dates when the biosolids or sludge facility is checked for proper operation, records of maintenance and repairs and other relevant information.
2. Reporting period
  - a. By February 19<sup>th</sup> of each year, applicable facilities shall submit an annual report for the previous calendar year period for all mechanical wastewater treatment facilities, sludge lagoons, and biosolids or sludge disposal facilities.
  - b. Permittees with wastewater treatment lagoons shall submit the above annual report only when biosolids or sludge are removed from the lagoon during the report period or when the lagoon is closed.
3. Report Form. The annual report shall be prepared on report forms provided by the Department or equivalent forms approved by the Department.
4. Reports shall be submitted as follows:  
Major facilities, which are those serving 10,000 persons or more or with a design flow equal to or greater than 1 million gallons per day or that are required to have an approved pretreatment program, shall report to both the Department and EPA if the facility land applied, disposed of biosolids by surface disposal, or operated a sewage sludge incinerator. All other facilities shall maintain their biosolids or sludge records and keep them available to Department personnel upon request. State reports shall be submitted to the address listed as follows:

DNR regional or other applicable office listed in the  
permit (see cover letter of permit)  
ATTN: Sludge Coordinator

Reports to EPA must be electronically submitted online via the Central Data Exchange at: <https://cdx.epa.gov/> Additional information is available at: <https://www.epa.gov/biosolids/compliance-and-annual-reporting-guidance-about-clean-water-act-laws>

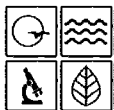
5. Annual report contents. The annual report shall include the following:
  - a. Biosolids and sludge testing performed. If testing was conducted at a greater frequency than what is required by the permit, all test results must be included in the report.
  - b. Biosolids or sludge quantity shall be reported as dry tons for the quantity produced and/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 and 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 using a 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 biosolids or sludge 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 ¼, ¼, 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 and phosphorus. If no soil was tested during the year, report the last date when tested and the results.

RECEIVED

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MISSOURI DEPARTMENT OF NATURAL RESOURCES  
WATER PROTECTION PROGRAM

Water Protection Program

**FORM B2 – APPLICATION FOR AN OPERATING PERMIT FOR  
FACILITIES THAT RECEIVE PRIMARILY DOMESTIC WASTE AND  
HAVE A DESIGN FLOW MORE THAN 100,000 GALLONS PER DAY**

FOR AGENCY USE ONLY	
CHECK NUMBER	
DATE RECEIVED 1-14-20	FEE SUBMITTED 0
JET PAY CONFIRMATION NUMBER	

**PART A – BASIC APPLICATION INFORMATION**

**1. THIS APPLICATION IS FOR:**

- ☐ An operating permit for a new or unpermitted facility. Construction Permit # \_\_\_\_\_  
(Include completed Antidegradation Review or request to conduct an Antidegradation Review, see instructions)
- ☒ An operating permit renewal: Permit #MO- 0121312 Expiration Date June 30, 2020
- ☐ An operating permit modification: Permit #MO- \_\_\_\_\_ Reason: \_\_\_\_\_

1.1 Is the appropriate fee included with the application (see instructions for appropriate fee)? ☐ YES ☐ NO

**2. FACILITY**

NAME <u>Union East Sewage Treatment Plant</u>		TELEPHONE NUMBER WITH AREA CODE <u>636-583-3600</u>	
ADDRESS (PHYSICAL) <u>1999 Denmark Road</u>	CITY <u>Union</u>	STATE <u>MO</u>	ZIP CODE <u>63084</u>
2.1 LEGAL DESCRIPTION (Facility Site): Sec. <u>31</u> , T <u>43</u> , R <u>1e</u>		COUNTY <u>Franklin</u>	

2.2 UTM Coordinates Easting (X): +3825576 Northing (Y): -07056592  
For Universal Transverse Mercator (UTM), Zone 15 North referenced to North American Datum 1983 (NAD83)

2.3 Name of receiving stream: Tributary to Bourbeuse River (C) (3960)

2.4 Number of Outfalls: 1 wastewater outfalls: 1 stormwater outfalls: \_\_\_\_\_ instream monitoring sites: \_\_\_\_\_

3. **OWNER: The owner of the regulated activity/discharge being applied for and is not necessarily the owner of the real property on which the activity or discharge is occurring.**

NAME <u>City of Union</u>	EMAIL ADDRESS <u>engdept@unionmissouri.org</u>	TELEPHONE NUMBER WITH AREA CODE <u>636-583-1805</u>	
ADDRESS <u>500 East Locust Street</u>	CITY <u>Union</u>	STATE <u>MO</u>	ZIP CODE <u>63084</u>

3.1 Request review of draft permit prior to Public Notice? ☒ YES ☐ NO

3.2 Are you a Publically Owned Treatment Works (POTW)? ☒ YES ☐ NO  
If yes, is the Financial Questionnaire attached? ☒ YES ☐ NO See: <https://dnr.mo.gov/forms/780-2511-f.pdf>

3.3 Are you a Privately Owned Treatment Facility? ☐ YES ☒ NO

3.4 Are you a Privately Owned Treatment Facility regulated by the Public Service Commission (PSC)? ☐ YES ☒ NO

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

NAME <u>City of Union</u>	EMAIL ADDRESS <u>engdept@unionmissouri.org</u>	TELEPHONE NUMBER WITH AREA CODE <u>636-583-3600</u>	
ADDRESS <u>500 East Locust Street</u>	CITY <u>Union</u>	STATE <u>MO</u>	ZIP CODE <u>63084</u>

If the Continuing Authority is different than the Owner, include a copy of the contract agreement between the two parties and a description of the responsibilities of both parties within the agreement.

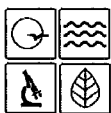
**5. OPERATOR**

NAME <u>David Aguilar</u>	TITLE <u>WWTP Operator</u>	CERTIFICATE NUMBER (IF APPLICABLE) <u>8886</u>
EMAIL ADDRESS <u>wwtpwest@yhti.net</u>	TELEPHONE NUMBER WITH AREA CODE <u>636-583-3522</u>	

**6. FACILITY CONTACT**

NAME <u>Jeff Voss</u>	TITLE <u>Water/Wastewater Foreman</u>		
EMAIL ADDRESS <u>jvoss@unionmissouri.org</u>	TELEPHONE NUMBER WITH AREA CODE <u>636-583-3522</u>		
ADDRESS <u>500 East Locust</u>	CITY <u>Union</u>	STATE <u>MO</u>	ZIP CODE <u>63084</u>

East



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

FACILITY NAME <i>Union East Sewage Treatment Plant</i>	
PERMIT NO. <i>MO-0121312</i>	COUNTY <i>Franklin</i>
<b>APPLICATION OVERVIEW</b>	
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.	
<b>BASIC APPLICATION INFORMATION</b>	
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.	
<b>SUPPLEMENTAL APPLICATION INFORMATION</b>	
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 <i>Part D - Expanded Effluent Testing Data</i> : 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 <i>Part E - Toxicity Testing Data</i> : 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 <i>Part F - Industrial User Discharges and Resource Conservation and Recovery Act / CERCLA Wastes</i> . 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. iv. Is otherwise required by the permitting authority to provide the information.	
G. Combined Sewer Systems. A treatment works that has a combined sewer system must complete <i>Part G - Combined Sewer Systems</i> .	
<b>ALL APPLICANTS MUST COMPLETE PARTS A, B and C</b>	



FACILITY NAME <i>Union East STP</i>	PERMIT NO. <i>MO- 0121312</i>	OUTFALL NO. <i>001</i>
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**PART A – BASIC APPLICATION INFORMATION**

**7. FACILITY INFORMATION**

- 7.1 Process Flow Diagram or Schematic.** Provide a diagram showing the processes of the treatment plant. Show all of the treatment units, including disinfection (e.g. – Chlorination and Dechlorination), influents, and outfalls. Specify where samples are taken. Indicate any treatment process changes in the routing of wastewater during dry weather and peak wet weather. Include a brief narrative description of the diagram.  
Attach sheets as necessary.

*See Attached Site Plans*

FACILITY NAME <i>Union East STP</i>	PERMIT NO. <i>MO- 0121312</i>	OUTFALL NO. <i>001</i>
<b>PART A – BASIC APPLICATION INFORMATION</b>		
<b>7. FACILITY INFORMATION (continued)</b>		
<p><b>7.2 Map.</b> Attach to this application an aerial or 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. A map can be obtained by visiting the following website: <a href="https://modnr.maps.arcgis.com/apps/webappviewer/index.html?id=1d81212e0854478ca0dae87c33c8c5ce">https://modnr.maps.arcgis.com/apps/webappviewer/index.html?id=1d81212e0854478ca0dae87c33c8c5ce</a></p> <ol style="list-style-type: none"> <li>The area surrounding the treatment plant, including all unit processes.</li> <li>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.</li> <li>The actual point of discharge.</li> <li>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.</li> <li>Any areas where the sewage sludge produced by the treatment works is stored, treated, or disposed.</li> <li>If the treatment works receives waste that is classified as hazardous under the Resource Conservation and Recovery Act (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.</li> </ol>		
7.3 Facility SIC Code: <i>4952</i>	Discharge SIC Code: <i>4952</i>	
7.4 Number of people presently connected or population equivalent (P.E.): _____		Design P.E. <i>8000</i>
<p>7.5 Connections to the facility:</p> <p>Number of units presently connected:</p> <p>Residential: <i>1347</i> Commercial: <i>82</i> Industrial <i>18</i></p>		
7.6 Design Flow <i>0.8 mgd</i>	Actual Flow <i>0.208 mgd</i>	
<p>7.7 Will discharge be continuous through the year? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>Discharge will occur during the following months: _____</p> <p>How many days of the week will discharge occur? _____</p>		
<p>7.8 Is industrial wastewater discharged to the facility? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>If yes, describe the number and types of industries that discharge to your facility. Attach sheets as necessary</p> <p><i>Select Powdercoating - Powdercoat Paint Operation</i></p> <p><i>Volpi Foods - salt and Aging of hams, Production of Prosciutto</i></p> <p>Refer to the APPLICATION OVERVIEW to determine whether additional information is needed for Part F.</p>		
7.9 Does the facility accept or process leachate from landfills?:	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
7.10 Is wastewater land applied? If yes, please attach Form I See: <a href="https://dnr.mo.gov/forms/780-1686-f.pdf">https://dnr.mo.gov/forms/780-1686-f.pdf</a>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
7.11 Does the facility discharge to a losing stream or sinkhole?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
7.12 Has a wasteload allocation study been completed for this facility?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
<b>8. LABORATORY CONTROL INFORMATION</b>		
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 <u>Dissolved Oxygen</u> , <u>Chemical Oxygen Demand</u> , <u>Biological Oxygen Demand</u> , <u>titrations</u> , <u>solids</u> , <u>volatile content</u> .	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
More advanced determinations such as <u>BOD seeding procedures</u> , <u>fecal coliform</u> , <u>nutrients</u> , <u>total oils</u> , <u>phenols</u> , 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 <i>Union East STP</i>	PERMIT NO. MO- <i>0121312</i>	OUTFALL NO. <i>001</i>
<b>PART A – BASIC APPLICATION INFORMATION</b>		
<b>9. SLUDGE HANDLING, USE AND DISPOSAL</b>		
9.1 Is the sludge a hazardous waste as defined by 10 CSR 25?      Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
9.2 Sludge production (Including sludge received from others): Design Dry Tons/Year <i>54</i> Actual Dry Tons/Year <i>39.59 dt</i>		
9.3 Sludge storage provided: <i>4010</i> Cubic feet; _____ Days of storage; <i>2.45</i> Average percent solids of sludge; <input type="checkbox"/> No sludge storage is provided. <input type="checkbox"/> Sludge is stored in lagoon.		
9.4 Type of storage: <input type="checkbox"/> Holding Tank <input type="checkbox"/> Building <input checked="" type="checkbox"/> Basin <input type="checkbox"/> Lagoon <input type="checkbox"/> Concrete Pad <input type="checkbox"/> Other (Describe) _____		
9.5 Sludge Treatment: <input type="checkbox"/> Anaerobic Digester <input type="checkbox"/> Storage Tank <input type="checkbox"/> Lime Stabilization <input type="checkbox"/> Lagoon <input checked="" type="checkbox"/> Aerobic Digester <input type="checkbox"/> Air or Heat Drying <input type="checkbox"/> Composting <input type="checkbox"/> Other (Attach Description)		
9.6 Sludge use or disposal: <input type="checkbox"/> Land Application <input checked="" type="checkbox"/> Contract Hauler <input type="checkbox"/> Hauled to Another Treatment Facility <input type="checkbox"/> Solid Waste Landfill <input type="checkbox"/> Surface Disposal (Sludge Disposal Lagoon, Sludge Held For More Than Two Years) <input type="checkbox"/> Incineration <input type="checkbox"/> Other (Attach Explanation Sheet) _____		
9.7 Person responsible for hauling sludge to disposal facility: <input type="checkbox"/> By Applicant <input checked="" type="checkbox"/> By Others (complete below)		
NAME <i>Oros and Busch Application Tech.</i>		EMAIL ADDRESS <i>billmjr@orosandbusch.com</i>
ADDRESS <i>14933 Moore Cemetery Rd</i>	CITY <i>Carlinville</i>	STATE <i>Ill.</i> ZIP CODE <i>62626</i>
CONTACT PERSON <i>Bill Miller Director of Operations</i>	TELEPHONE NUMBER WITH AREA CODE <i>636-359-1575</i>	PERMIT NO. MO- <i>0121312</i>
9.8 Sludge use or disposal facility: <input type="checkbox"/> By Applicant <input checked="" type="checkbox"/> By Others (Complete below) <i>Same as Above</i>		
NAME		EMAIL ADDRESS
ADDRESS	CITY	STATE      ZIP CODE
CONTACT PERSON	TELEPHONE NUMBER WITH AREA CODE	PERMIT NO. MO-
9.9 Does the sludge or biosolids disposal comply with Federal Sludge Regulation 40 CFR 503? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No    (Explain)		

**END OF PART A**

FACILITY NAME <i>Union East STP</i>	PERMIT NO. MO- 0121312	OUTFALL NO. <i>001</i>
<b>PART B – ADDITIONAL APPLICATION INFORMATION</b>		
<b>10. COLLECTION SYSTEM</b>		
10.1 Are there any municipal satellite collection systems connected to this facility? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, please list all connected to this facility, contact phone number and length of each collection system		
FACILITY	CONTACT PHONE NUMBER	LENGTH OF SYSTEM (FEET OR MILES)
10.2 Length of sanitary sewer collection system in miles (If available, include totals from satellite collection systems) <u>24</u> miles		
10.3 Does significant infiltration occur in the collection system? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If yes, briefly explain any steps underway or planned to minimize inflow and infiltration: <i>Video Inspections / Pipe Replacement / Smoke testing of System</i>		
<b>11. BYPASSING</b>		
Does any bypassing occur anywhere in the collection system or at the treatment facility? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> If yes, explain:		
<b>12. OPERATION AND MAINTENANCE PERFORMED BY CONTRACTOR(S)</b>		
Are any operational or maintenance aspects (related to wastewater treatment and effluent quality) of the treatment works the responsibility of the contractor? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> 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 <i>Oros and Busch Application Tech.</i>		
MAILING ADDRESS <i>14933 Moore Cemetery Rd, Carlinville Ill. 62626</i>		
TELEPHONE NUMBER WITH AREA CODE <i>636-359-1575</i>	EMAIL ADDRESS <i>billmjr@orosandbusch.com</i>	
RESPONSIBILITIES OF CONTRACTOR <i>Sludge Hauling and Disposal</i>		
<b>13. SCHEDULED IMPROVEMENTS AND SCHEDULES OF IMPLEMENTATION</b>		
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. <div style="text-align: right; margin-top: 20px;"><i>None</i></div>		

FACILITY NAME <b>Union East STP</b>	PERMIT NO. <b>MO- 0121312</b>	OUTFALL NO. <b>001</b>					
<b>PART B – ADDITIONAL APPLICATION INFORMATION</b>							
<b>14. EFFLUENT TESTING DATA</b>							
<p>Applicants must provide effluent testing data for the following parameters. Provide the indicated effluent data <b>for each outfall through which effluent is discharged</b>. 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. At a minimum, effluent testing data must be based on at least <b>three samples</b> and must be no more than four and one-half years apart. See 40 CFR 136.3 for sufficiently sensitive methods: <a href="https://www.ecfr.gov/cgi-bin/text-id.x?SID=2d29852e2dcd91badc043bd5fc3d4df&amp;mc=true&amp;node=se40.25.136.13&amp;rgn=div8">https://www.ecfr.gov/cgi-bin/text-id.x?SID=2d29852e2dcd91badc043bd5fc3d4df&amp;mc=true&amp;node=se40.25.136.13&amp;rgn=div8</a></p>							
Outfall Number							
PARAMETER	MAXIMUM DAILY VALUE		AVERAGE DAILY VALUE				
	Value	Units	Value	Units	Number of Samples		
pH (Minimum)	<b>7.1</b>	S.U.	<b>7.1</b>	S.U.	<b>Daily 9 months</b>		
pH (Maximum)	<b>7.5</b>	S.U.	<b>7.5</b>	S.U.	<b>Daily 9 months</b>		
Flow Rate	<b>0.406</b>	MGD	<b>0.2109</b>	MGD	<b>33 months</b>		
*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	Number of Samples		
Conventional and Nonconventional Compounds							
BIOCHEMICAL OXYGEN DEMAND (Report One)	BOD <sub>5</sub>	<b>16.8</b>	mg/L	<b>6.2</b>	mg/L	<b>18</b>	<b>EPA</b>
	CBOD <sub>5</sub>		mg/L		mg/L		
E. COLI		<b>361</b>	#/100 mL	<b>55.7</b>	#/100 mL	<b>26</b>	<b>EPA</b>
TOTAL SUSPENDED SOLIDS (TSS)		<b>12.0</b>	mg/L	<b>5.4</b>	mg/L	<b>18</b>	<b>EPA</b>
TOTAL PHOSPHORUS		<b>6.5</b>	mg/L	<b>2.81</b>	mg/L	<b>9</b>	<b>EPA</b>
TOTAL KJELDAHL NITROGEN		<b>11</b>	mg/L	<b>2.68</b>	mg/L	<b>9</b>	<b>EPA</b>
NITRITES + NITRATES		<b>28</b>	mg/L	<b>9.7</b>	mg/L	<b>5</b>	<b>EPA</b>
AMMONIA AS N		<b>0.82</b>	mg/L	<b>0.459</b>	mg/L	<b>9</b>	<b>EPA</b>
CHLORINE* (TOTAL RESIDUAL, TRC)		<b>NA</b>	mg/L		mg/L		
DISSOLVED OXYGEN		<b>6.2</b>	mg/L	<b>4.16</b>	mg/L	<b>39</b>	<b>EPA</b>
OIL and GREASE		<b>&lt; 5</b>	mg/L	<b>&lt; 5</b>	mg/L	<b>9</b>	<b>EPA</b>
OTHER: _____			mg/L		mg/L		
*Report only if facility chlorinates							
<b>END OF PART B</b>							

FACILITY NAME <i>Union East STP</i>	PERMIT NO. MO- <i>0121312</i>	OUTFALL NO. <i>001</i>
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### PART C – CERTIFICATION

#### 15. ELECTRONIC DISCHARGE MONITORING REPORT (eDMR) SUBMISSION SYSTEM

Per 40 CFR Part 127 National Pollutant Discharge Elimination System (NPDES) Electronic Reporting Rule, reporting of effluent limits and monitoring shall be submitted by the permittee via an electronic system to ensure timely, complete, accurate, and nationally-consistent set of data. **One of the following must be checked in order for this application to be considered complete.** Please visit <https://dnr.mo.gov/forms/780-2204-f.pdf> to access the eDMR application.

- ☐ - You have completed and submitted with this permit application the required documentation to participate in the eDMR system.
- ☒ - You have previously submitted the required documentation to participate in the eDMR system and/or you are currently using the eDMR system.
- ☐ - You have submitted a written request for a waiver from electronic reporting. See instructions for further information regarding waivers.

#### 16. JETPAY

Permit fees may be paid online by credit card or eCheck through a system called JetPay. Use the URL provided to access JetPay and make an online payment.

New Site Specific Permit: <https://magic.collectorsolutions.com/magic-ui/payments/mo-natural-resources/591/>  
 Construction Permits: <https://magic.collectorsolutions.com/magic-ui/payments/mo-natural-resources/592/>  
 Modification Fee: <https://magic.collectorsolutions.com/magic-ui/payments/mo-natural-resources/596/>

#### 17. 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 submitted 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 <i>Russell L. Rost</i>	OFFICIAL TITLE (MUST BE AN OFFICER OF THE COMPANY OR CITY OFFICIAL) <i>City Administrator</i>
SIGNATURE <i>Russell L. Rost</i>	
TELEPHONE NUMBER WITH AREA CODE <i>636-583-3600</i>	
DATE SIGNED <i>01/09/2020</i>	

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.

Send Completed Form to:

Department of Natural Resources  
 Water Protection Program  
 ATTN: NPDES Permits and Engineering Section  
 P.O. Box 176  
 Jefferson City, MO 65102-0176

#### END OF PART C

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

Do not complete the remainder of this application, unless at least one of the following statements applies to your facility:

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

Union East STP

PERMIT NO.

MO- 0121312

OUTFALL NO.

001

**PART D – EXPANDED EFFLUENT TESTING DATA**
**18. EXPANDED EFFLUENT TESTING DATA**

Refer to the APPLICATION OVERVIEW to determine whether Part D applies to the treatment works.

If the treatment works has a design flow greater than or equal to 1 MGD 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 of combined sewer overflows in this section. All information reported must be based on data collected and analyzed using sufficiently sensitive methods found in 40 CFR Part 136. See 40 CFR 136.3 for sufficiently sensitive methods: <https://www.ecfr.gov/cgi-bin/text-id?SID=2d29852e2dcd91badc043bd5fc3d4df&mc=true&node=se40.25.136.13&rgn=div8>. In addition, all 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. At a minimum, effluent testing data must be based on at least **three pollutant scans** and must be no more than four and one-half years prior to the date of the permit application submittal. In the blank rows provided at the end of this list, include any additional data for pollutants not specifically listed in this form. Information may be written in the blanks below or provided as attached documents containing the laboratory test results.

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	No. of Samples		
<b>METALS (TOTAL RECOVERABLE), CYANIDE, PHENOLS AND HARDNESS</b> <i>See Attached Analytical Results</i>											
ALUMINUM	<0.1	mg/l			0.025	mg/l			12	EPA	
ANTIMONY	<0.02	mg/l			0.007	mg/l			3	EPA	
ARSENIC	<0.02	mg/l			0.002	mg/l			12	EPA	
BERYLLIUM	<0.005	mg/l			<0.002	mg/l			3	EPA	
CADMIUM	<0.005	mg/l			<0.00057	mg/l			12	EPA	
CHROMIUM III	<0.005	mg/l			<0.0057	mg/l			11	EPA	
CHROMIUM VI	0.007	mg/l			0.0055	mg/l			12	EPA	
COPPER	<0.03	mg/l			0.0098	mg/l			12	EPA	
IRON	0.1	mg/l			0.046	mg/l			11	EPA	
LEAD	<0.01	mg/l			0.0015	mg/l			12	EPA	
MERCURY	<0.0002	mg/l			<0.00019	mg/l			12	EPA	
NICKEL	<0.01	mg/l			0.0029	mg/l			12	EPA	
SELENIUM	<0.03	mg/l			0.003	mg/l			12	EPA	
SILVER	<0.01	mg/l			<0.0016	mg/l			12	EPA	
THALLIUM	<0.03	mg/l			<0.01	mg/l			3	EPA	
ZINC	0.12	mg/l			0.0797	mg/l			12	EPA	
CYANIDE	<0.005	mg/l			<0.0045	mg/l			4	EPA	
TOTAL PHENOLIC COMPOUNDS	<0.005	mg/l			0.0048	mg/l			3	EPA	
HARDNESS (as CaCO <sub>3</sub> )	230	mg/l			170	mg/l			3	EPA	
<b>VOLATILE ORGANIC COMPOUNDS</b> <i>Expanded Sampling - See attached Analytical Results</i>											
ACROLEIN											
ACRYLONITRILE											
BENZENE											
BROMOFORM											
CARBON TETRACHLORIDE											

FACILITY NAME <i>Union East STP</i>				PERMIT NO. <i>MO- 0121312</i>				OUTFALL NO. <i>001</i>			
<b>PART D – EXPANDED EFFLUENT TESTING DATA</b>											
<b>18. EXPANDED EFFLUENT TESTING DATA</b>											
Complete Once for Each Outfall Discharging Effluent to Waters of the State <i>See attached Analytical Results</i>											
POLLUTANT	MAXIMUM DAILY DISCHARGE				AVERAGE DAILY DISCHARGE					ANALYTICAL METHOD	ML/MDL
	Conc.	Units	Mass	Units	Conc.	Units	Mass	Units	No. of Samples		
CHLOROBENZENE											
CHLORODIBROMO-METHANE											
CHLOROETHANE											
2-CHLORO-ETHYL VINYL ETHER											
CHLOROFORM											
DICHLOROBROMO-METHANE											
1,1-DICHLORO-ETHANE											
1,2-DICHLORO-ETHANE											
TRANS-1,2-DICHLOROETHYLENE											
1,1-DICHLORO-ETHYLENE											
1,2-DICHLORO-PROPANE											
1,3-DICHLORO-PROPYLENE											
ETHYLBENZENE											
METHYL BROMIDE											
METHYL CHLORIDE											
METHYLENE CHLORIDE											
1,1,2,2-TETRA-CHLOROETHANE											
TETRACHLORO-ETHANE											
TOLUENE											
1,1,1-TRICHLORO-ETHANE											
1,1,2-TRICHLORO-ETHANE											
TRICHLOROETHYLENE											
VINYL CHLORIDE											
<b>ACID-EXTRACTABLE COMPOUNDS</b>											
P-CHLORO-M-CRESOL											
2-CHLOROPHENOL											
2,4-DICHLOROPHENOL											
2,4-DIMETHYLPHENOL											
4,6-DINITRO-O-CRESOL											
2,4-DINITROPHENOL											
2-NITROPHENOL											
4-NITROPHENOL											



FACILITY NAME <i>Union East STP</i>	PERMIT NO. <i>MO- 0121312</i>	OUTFALL NO. <i>001</i>
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**PART D – EXPANDED EFFLUENT TESTING DATA**

**18. EXPANDED EFFLUENT TESTING DATA**

Complete Once for Each Outfall Discharging Effluent to Waters of the State. *See Attached Analytical Results*

POLLUTANT	MAXIMUM DAILY DISCHARGE				AVERAGE DAILY DISCHARGE					ANALYTICAL METHOD	ML/MDL
	Conc.	Units	Mass	Units	Conc.	Units	Mass	Units	No. of Samples		
PENTACHLOROPHENOL											
PHENOL											
2,4,6-TRICHLOROPHENOL											

**BASE-NEUTRAL COMPOUNDS**

ACENAPHTHENE											
ACENAPHTHYLENE											
ANTHRACENE											
BENZIDINE											
BENZO(A)ANTHRACENE											
BENZO(A)PYRENE											
3,4-BENZO-FLUORANTHENE											
BENZO(GH) PHERYLENE											
BENZO(K) FLUORANTHENE											
BIS (2-CHLOROTHOXY) METHANE											
BIS (2-CHLOROETHYL) – ETHER											
BIS (2-CHLOROISO-PROPYL) ETHER											
BIS (2-ETHYLHEXYL) PHTHALATE											
4-BROMOPHENYL PHENYL ETHER											
BUTYL BENZYL PHTHALATE											
2-CHLORONAPH-THALENE											
4-CHLORPHENYL PHENYL ETHER											
CHRYSENE											
DI-N-BUTYL PHTHALATE											
DI-N-OCTYL PHTHALATE											
DIBENZO (A,H) ANTHRACENE											
1,2-DICHLORO-BENZENE											
1,3-DICHLORO-BENZENE											
1,4-DICHLORO-BENZENE											
3,3-DICHLORO-BENZIDINE											
DIETHYL PHTHALATE											
DIMETHYL PHTHALATE											

FACILITY NAME <i>Union East STP</i>	PERMIT NO. <i>MO- 0121312</i>	OUTFALL NO. <i>001</i>
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## PART D – EXPANDED EFFLUENT TESTING DATA

## 18. EXPANDED EFFLUENT TESTING DATA

Complete Once for Each Outfall Discharging Effluent to Waters of the State. *See Attached Analytical Results*

[illegible]

Use this space (or a separate sheet) to provide information on other pollutants not specifically listed in this form.

[illegible]

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 <i>Union East STP</i>	PERMIT NO. <i>MO- 0121312</i>	OUTFALL NO. <i>001</i>	
<b>PART E – TOXICITY TESTING DATA</b>			
<b>19. TOXICITY TESTING DATA</b> <i>See W.E.T. test results</i>			
Refer to the APPLICATION OVERVIEW 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>			
Indicate the number of whole effluent toxicity tests conducted in the past four and one-half years: <u>0</u> chronic <u>4</u> acute			
Complete the following chart for the last three whole effluent toxicity tests. Allow one column per 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 Method Number	<i>USEPA 2002 and 2000</i>		<i>EPA 821/R-02/012</i>
Final Report Number		<i>60277609</i>	<i>60255802</i>
Outfall Number	<i>001</i>	<i>001</i>	<i>001</i>
Dates Sample Collected	<i>09-16-19 to 09-17-19</i>	<i>08-13-18 to 08-14-18</i>	<i>10-16-17 to 10-17-17</i>
Date Test Started	<i>09-18-19</i>	<i>08-15-18</i>	<i>10-18-17</i>
Duration	<i>24 hrs and 48 hrs.</i>	<i>24 hrs and 48 hrs</i>	<i>24 hrs and 48 hrs</i>
<b>B. Toxicity Test Methods Followed</b>			
Manual Title	<i>USEPA</i>	<i>USEPA</i>	<i>USEPA</i>
Edition Number and Year of Publication	<i>2002 / 2000</i>	<i>2002 / 2000</i>	<i>2002 / 2000</i>
Page Number(s)			
<b>C. Sample collection method(s) used. For multiple grab samples, indicate the number of grab samples used</b>			
24-Hour Composite	<i>yes</i>	<i>yes</i>	<i>yes</i>
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:	<i>End of Process 001</i>	<i>End of Process 001</i>	<i>End of Process 001</i>
<b>F. Indicate 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 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-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	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Receiving Water	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

FACILITY NAME <i>Union East STP</i>	PERMIT NO. <i>MO- 0121312</i>	OUTFALL NO. <i>001</i>	
<b>PART E – TOXICITY TESTING DATA</b>			
<b>19. TOXICITY TESTING DATA (continued)</b>			
	Most Recent	Second Most Recent	Third Most Recent
I. Type of dilution water. If salt water, specify "natural" or type of artificial sea salts or brine used.			
Fresh Water	<i>✓</i>	<i>✓</i>	<i>✓</i>
Salt Water			
J. Percentage of effluent used for all concentrations in the test series			
	<i>100 %</i>	<i>100 %</i>	<i>100 %</i>
K. Parameters measured during the test (State whether parameter meets test method specifications)			
pH	<i>✓</i>	<i>✓</i>	<i>✓</i>
Salinity			
Temperature	<i>✓</i>	<i>✓</i>	<i>✓</i>
Ammonia	<i>✓</i>	<i>✓</i>	<i>✓</i>
Dissolved Oxygen	<i>✓</i>	<i>✓</i>	<i>✓</i>
L. Test Results			
Acute:			
Percent Survival in 100% Effluent		<i>&gt;100% Both Organisms</i>	<i>&gt;100% Both Organisms</i>
LC <sub>50</sub>			
95% C.I.			
Control Percent Survival		<i>&gt;100 %</i>	<i>&gt;100 %</i>
Other (Describe)			
Chronic:			
NOEC			
IC <sub>25</sub>			
Control Percent Survival			
Other (Describe)			
M. Quality Control/ Quality Assurance			
Is reference toxicant data available?		<i>Yes - Pace Analytical</i>	<i>Yes - Pace Analytical</i>
Was reference toxicant test within acceptable bounds?		<i>YES</i>	<i>YES</i>
What date was reference toxicant test run (MM/DD/YYYY)?		<i>08-02-18</i>	<i>10-17-17</i>
Other (Describe)			
Is the treatment works involved in a toxicity reduction evaluation? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
If yes, describe:			
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 <i>Union East STP</i>	PERMIT NO. MO- <i>0121312</i>	OUTFALL NO. <i>001</i>	
<b>PART F – INDUSTRIAL USER DISCHARGES AND RCRA/CERCLA WASTES</b>			
Refer to the APPLICATION OVERVIEW to determine whether Part F applies to the treatment works.			
<b>20. GENERAL INFORMATION</b>			
20.1 Does the treatment works have, or is it subject to, an approved pretreatment program? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			
20.2 Number of Significant Industrial Users (SIUs) and Categorical Industrial Users (CIUs). Provide the number of each of the following types of industrial users that discharge to the treatment works: Number of non-categorical SIUs <u>1</u> Number of CIUs <u>1</u>			
<b>21. INDUSTRIES CONTRIBUTING MORE THAN 5 PERCENT OF THE ACTUAL FLOW TO THE FACILITY OR OTHER SIGNIFICANT INDUSTRIAL USERS 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. <i>Only one SIU</i>			
NAME <i>VOLPI Foods, Inc</i>			
MAILING ADDRESS <i>5263 Northrup Ave</i>		CITY <i>St. Louis</i>	STATE <i>MO</i>
		ZIP CODE <i>63110</i>	
21.1 Describe all of the industrial processes that affect or contribute to the SIU's discharge <i>Preparation and Aging of Hams to produce Prosciutto</i>			
21.2 Describe all of the principle processes and raw materials that affect or contribute to the SIU's discharge. Principal Product(s): <i>prosciutto</i>  Raw Material(s): <i>Ham and Salt</i>			
21.3 Flow Rate 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. gpd <input checked="" type="checkbox"/> Continuous <input type="checkbox"/> Intermittent			
21.4 Pretreatment Standards. Indicate whether the SIU is subject to the following: a. Local Limits <input type="checkbox"/> Yes <input checked="" 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?			
21.5 Problems at the treatment works attributed to waste discharged by the SIU. 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			

<b>MAKE ADDITIONAL COPIES OF THIS FORM FOR EACH OUTFALL</b>		
FACILITY NAME <i>Union East STP</i>	PERMIT NO. MO- <i>0121312</i>	OUTFALL NO. <i>001</i>
<b>PART F – INDUSTRIAL USER DISCHARGES AND RCRA/CERCLA WASTES</b>		
<b>22. RCRA HAZARDOUS WASTE RECEIVED BY TRUCK, RAIL, OR DEDICATED PIPELINE</b>		
22.1 Does the treatment works receive or has it in the past three years received RCRA hazardous waste by truck, rail or dedicated pipe? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
22.2 Method by which RCRA waste is received. (Check all that apply) <input type="checkbox"/> Truck <input type="checkbox"/> Rail <input type="checkbox"/> Dedicated Pipe		
22.3 Waste Description		
EPA Hazardous Waste Number	Amount (volume or mass)	Units
<b>23. CERCLA (SUPERFUND) WASTEWATER, RCRA REMEDIATION/CORRECTIVE ACTION WASTEWATER, AND OTHER REMEDIAL ACTIVITY WASTEWATER</b>		
23.1 Does the treatment works currently (or has it been notified that it will) receive waste from remedial activities? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Provide a list of sites and the requested information for each current and future site.		
23.2 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). <div style="text-align: center;"><i>NA</i></div>		
23.3 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) <div style="text-align: center;"><i>NA</i></div>		
23.4 Waste Treatment <i>NA</i>		
a. Is this waste treated (or will it be treated) prior to entering the treatment works? <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, describe the treatment (provide information about the removal efficiency):  		
b. Is the discharge (or will the discharge be) continuous or intermittent? <input type="checkbox"/> Continuous <input type="checkbox"/> Intermittent If intermittent, describe the discharge schedule:  		
<b>END OF PART F</b>		
<b>REFER TO THE APPLICATION OVERVIEW TO DETERMINE WHICH OTHER PARTS OF FORM B2 YOU MUST COMPLETE.</b>		

<b>MAKE ADDITIONAL COPIES OF THIS FORM FOR EACH OUTFALL</b>		
FACILITY NAME <b>Union East STP</b>	PERMIT NO. MO- <b>0121312</b>	OUTFALL NO. <b>001</b>
<b>PART G – COMBINED SEWER SYSTEMS</b>		
Refer to the APPLICATION OVERVIEW to determine whether Part G applies to the treatment works.		
<b>24. GENERAL INFORMATION</b>		
<b>24.1 System Map.</b> Provide a map indicating the following: (May be included with basic application information.) <i>See Attached</i> A. <input checked="" type="checkbox"/> 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.		
<b>24.2 System Diagram.</b> 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: <i>See Attached</i> 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.		
24.3 Percent of collection system that is combined sewer <b>NA</b>		
24.4 Population served by combined sewer collection system <b>NA</b>		
24.5 Name of any satellite community with combined sewer collection system <b>NA</b>		
<b>25. CSO OUTFALLS. COMPLETE THE FOLLOWING ONCE FOR EACH CSO DISCHARGE POINT</b>		
<b>25.1 Description of Outfall</b> <b>NA</b> a. Outfall Number b. Location  c. Distance from Shore (if applicable) _____ ft d. Depth Below Surface (if applicable) _____ ft e. Which of the following were monitored during the last year for this CSO? <input type="checkbox"/> Rainfall <input type="checkbox"/> CSO Pollutant Concentrations <input type="checkbox"/> CSO <input type="checkbox"/> CSO Flow Volume <input type="checkbox"/> Receiving Water Quality f. How many storm events were monitored last year?		
<b>25.2 CSO Events</b> a. Give the Number of CSO Events in the Last Year                      Events <input type="checkbox"/> Actual <input type="checkbox"/> Approximate b. Give the Average Duration Per CSO Event                      Hours <input type="checkbox"/> Actual <input type="checkbox"/> Approximate c. Give the Average Volume Per CSO Event                      Million Gallons <input type="checkbox"/> Actual <input type="checkbox"/> Approximate d. Give the minimum rainfall that caused a CSO event in the last year                      _____ inches of rainfall		
<b>25.3 Description of Receiving Waters</b> a. Name of Receiving Water b. Name of Watershed/River/Stream System c. U.S. Soil Conservation Service 14-Digit Watershed Code (If Known) d. Name of State Management/River Basin e. U.S. Geological Survey 8- Digit Hydrologic Cataloging Unit Code (If Known)		
<b>25.4 CSO Operations</b> 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.)		
<b>END OF PART G</b>		
<b>REFER TO THE APPLICATION OVERVIEW TO DETERMINE WHICH OTHER PARTS OF FORM B2 YOU MUST COMPLETE.</b>		



Permit Renewal  
2019 East Plant  
Extended Sampling Report  
Expanded Sampling Reports

RECEIVED  
JAN 14 2020  
Water Protection Program



December 18, 2019

David Aguilar  
Union WWTP  
500 E Locust St  
Union, MO 63084

RE: MO-0121312

Dear David Aguilar:

Please find enclosed the analytical results for the 2 sample(s) the laboratory received on 12/4/19 9:40 am and logged in under work order 9120730. All testing is performed according to our current TNI accreditations unless otherwise noted. This report cannot be reproduced, except in full, without the written permission of PDC Laboratories, Inc.

If you have any questions regarding your report, please contact your project manager. Quality and timely data is of the utmost importance to us.

PDC Laboratories, Inc. appreciates the opportunity to provide you with analytical expertise. We are always trying to improve our customer service and we welcome you to contact the Director of Client Services, Lisa Grant, with any feedback you have about your experience with our laboratory at 309-683-1764 or lgrant@pdclab.com.

Sincerely,

Amy Holmes  
Project Manager  
(314) 595-7336  
aholmes@pdclab.com





## ANALYTICAL RESULTS

Sample: 9120730-01  
Name: Expanded Effluent Grab  
Alias: EAST PLANT

Sampled: 12/03/19 14:00  
Received: 12/04/19 09:40  
Matrix: Waste Water - Grab

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
<b>General Chemistry - PIA</b>									
Cyanide	< 0.0050	mg/L		12/09/19 08:26	1	0.0050	12/10/19 11:52	PMN	EPA 335.4
Hexavalent chromium	< 0.0050	mg/L		12/04/19 12:47	1	0.0050	12/04/19 12:47	CRD	SM 3500-Cr B
Phenolics	< 0.0050	mg/L		12/11/19 07:55	1	0.0050	12/12/19 09:41	PMN	EPA 420.4
Trivalent Chromium	< 0.0050	mg/L		12/05/19 09:20	1	0.0050	12/09/19 13:31	CRD	calculation
<b>Total Metals - PIA</b>									
Chromium	< 0.0050	mg/L		12/05/19 09:20	1	0.0050	12/09/19 13:31	ZSA	EPA 200.7
<b>Volatile Organics - PIA</b>									
1,1,1-Trichloroethane	< 5.0	ug/L		12/05/19 13:09	1	5.0	12/06/19 00:58	JJI	EPA 624
1,1,2,2-Tetrachloroethane	< 5.0	ug/L		12/05/19 13:09	1	5.0	12/06/19 00:58	JJI	EPA 624
1,1,2-Trichloroethane	< 5.0	ug/L		12/05/19 13:09	1	5.0	12/06/19 00:58	JJI	EPA 624
1,1-Dichloroethane	< 5.0	ug/L		12/05/19 13:09	1	5.0	12/06/19 00:58	JJI	EPA 624
1,1-Dichloroethene	< 5.0	ug/L		12/05/19 13:09	1	5.0	12/06/19 00:58	JJI	EPA 624
1,2-Dichlorobenzene	< 5.0	ug/L		12/05/19 13:09	1	5.0	12/06/19 00:58	JJI	EPA 624
1,2-Dichloroethane	< 5.0	ug/L		12/05/19 13:09	1	5.0	12/06/19 00:58	JJI	EPA 624
1,3-Dichloropropene - Total	< 15	ug/L		12/05/19 13:09	1	15	12/06/19 00:58	JJI	EPA 624*
1,2-Dichloropropane	< 5.0	ug/L		12/05/19 13:09	1	5.0	12/06/19 00:58	JJI	EPA 624
1,3-Dichlorobenzene	< 5.0	ug/L		12/05/19 13:09	1	5.0	12/06/19 00:58	JJI	EPA 624
1,4-Dichlorobenzene	< 5.0	ug/L		12/05/19 13:09	1	5.0	12/06/19 00:58	JJI	EPA 624
2-Chloroethylvinyl ether	< 5.0	ug/L		12/06/19 12:53	1	5.0	12/06/19 17:24	JJI	EPA 624
Acrolein	< 50	ug/L		12/05/19 13:09	1	50	12/06/19 00:58	JJI	EPA 624
Acrylonitrile	< 50	ug/L		12/05/19 13:09	1	50	12/06/19 00:58	JJI	EPA 624
Benzene	< 5.0	ug/L		12/05/19 13:09	1	5.0	12/06/19 00:58	JJI	EPA 624
Bromodichloromethane	< 5.0	ug/L		12/05/19 13:09	1	5.0	12/06/19 00:58	JJI	EPA 624
Bromoform	< 5.0	ug/L		12/05/19 13:09	1	5.0	12/06/19 00:58	JJI	EPA 624
Bromomethane	< 10	ug/L		12/05/19 13:09	1	10	12/06/19 00:58	JJI	EPA 624
Carbon tetrachloride	< 5.0	ug/L		12/05/19 13:09	1	5.0	12/06/19 00:58	JJI	EPA 624
Chlorobenzene	< 5.0	ug/L		12/05/19 13:09	1	5.0	12/06/19 00:58	JJI	EPA 624
Chloroethane	< 10	ug/L		12/05/19 13:09	1	10	12/06/19 00:58	JJI	EPA 624
Chloroform	< 5.0	ug/L		12/05/19 13:09	1	5.0	12/06/19 00:58	JJI	EPA 624
Chloromethane	< 10	ug/L		12/05/19 13:09	1	10	12/06/19 00:58	JJI	EPA 624
Dibromochloromethane	< 5.0	ug/L		12/05/19 13:09	1	5.0	12/06/19 00:58	JJI	EPA 624

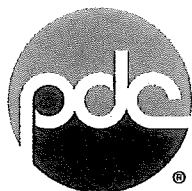


## ANALYTICAL RESULTS

Sample: 9120730-01  
Name: Expanded Effluent Grab  
Alias: EAST PLANT

Sampled: 12/03/19 14:00  
Received: 12/04/19 09:40  
Matrix: Waste Water - Grab

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
trans-1,2-Dichloroethene	< 20	ug/L		12/05/19 13:09	1	20	12/06/19 00:58	JJI	EPA 624
Ethylbenzene	< 5.0	ug/L		12/05/19 13:09	1	5.0	12/06/19 00:58	JJI	EPA 624
Methylene chloride	< 5.0	ug/L		12/05/19 13:09	1	5.0	12/06/19 00:58	JJI	EPA 624
Tetrachloroethene	< 5.0	ug/L		12/05/19 13:09	1	5.0	12/06/19 00:58	JJI	EPA 624
Toluene	< 5.0	ug/L		12/05/19 13:09	1	5.0	12/06/19 00:58	JJI	EPA 624
Trichloroethene	< 5.0	ug/L		12/05/19 13:09	1	5.0	12/06/19 00:58	JJI	EPA 624
Vinyl chloride	< 5.0	ug/L		12/05/19 13:09	1	5.0	12/06/19 00:58	JJI	EPA 624



## ANALYTICAL RESULTS

Sample: 9120730-02  
Name: Expanded Effluent Composite  
Alias: EAST PLANT

Sampled: 12/03/19 14:00  
Received: 12/04/19 09:40  
Matrix: Waste Water - Composite

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
<b>Semivolatile Organics - PIA</b>									
N-Nitrosodimethylamine	< 10	ug/L	R	12/05/19 08:35	1	10	12/10/19 03:57	CRS	EPA 625
Phenol	< 10	ug/L		12/05/19 08:35	1	10	12/10/19 03:57	CRS	EPA 625
Bis(2-chloroethyl) ether	< 10	ug/L		12/05/19 08:35	1	10	12/10/19 03:57	CRS	EPA 625
2-Chlorophenol	< 10	ug/L		12/05/19 08:35	1	10	12/10/19 03:57	CRS	EPA 625
Bis(2-chloroisopropyl) ether	< 10	ug/L		12/05/19 08:35	1	10	12/10/19 03:57	CRS	EPA 625
N-Nitrosodi-n-propylamine	< 10	ug/L		12/05/19 08:35	1	10	12/10/19 03:57	CRS	EPA 625
Hexachloroethane	< 10	ug/L		12/05/19 08:35	1	10	12/10/19 03:57	CRS	EPA 625
Nitrobenzene	< 10	ug/L		12/05/19 08:35	1	10	12/10/19 03:57	CRS	EPA 625
Isophorone	< 10	ug/L		12/05/19 08:35	1	10	12/10/19 03:57	CRS	EPA 625
2-Nitrophenol	< 10	ug/L		12/05/19 08:35	1	10	12/10/19 03:57	CRS	EPA 625
2,4-Dimethylphenol	< 10	ug/L		12/05/19 08:35	1	10	12/10/19 03:57	CRS	EPA 625
Bis(2-chloroethoxy) methane	< 10	ug/L		12/05/19 08:35	1	10	12/10/19 03:57	CRS	EPA 625
2,4-Dichlorophenol	< 10	ug/L		12/05/19 08:35	1	10	12/10/19 03:57	CRS	EPA 625
1,2,4-Trichlorobenzene	< 10	ug/L		12/05/19 08:35	1	10	12/10/19 03:57	CRS	EPA 625
Naphthalene	< 10	ug/L		12/05/19 08:35	1	10	12/10/19 03:57	CRS	EPA 625
Hexachlorobutadiene	< 10	ug/L		12/05/19 08:35	1	10	12/10/19 03:57	CRS	EPA 625
4-Chloro-3-methylphenol	< 10	ug/L		12/05/19 08:35	1	10	12/10/19 03:57	CRS	EPA 625
Hexachlorocyclopentadiene	< 20	ug/L		12/05/19 08:35	1	20	12/10/19 03:57	CRS	EPA 625
2,4,6-Trichlorophenol	< 20	ug/L		12/05/19 08:35	1	20	12/10/19 03:57	CRS	EPA 625
2-Chloronaphthalene	< 10	ug/L		12/05/19 08:35	1	10	12/10/19 03:57	CRS	EPA 625
Dimethyl phthalate	< 10	ug/L		12/05/19 08:35	1	10	12/10/19 03:57	CRS	EPA 625
2,6-Dinitrotoluene	< 10	ug/L		12/05/19 08:35	1	10	12/10/19 03:57	CRS	EPA 625
Acenaphthylene	< 10	ug/L		12/05/19 08:35	1	10	12/10/19 03:57	CRS	EPA 625
Acenaphthene	< 10	ug/L		12/05/19 08:35	1	10	12/10/19 03:57	CRS	EPA 625
2,4-Dinitrophenol	< 20	ug/L		12/05/19 08:35	1	20	12/10/19 03:57	CRS	EPA 625
4-Nitrophenol	< 20	ug/L		12/05/19 08:35	1	20	12/10/19 03:57	CRS	EPA 625
2,4-Dinitrotoluene	< 10	ug/L		12/05/19 08:35	1	10	12/10/19 03:57	CRS	EPA 625
Diethyl phthalate	< 10	ug/L		12/05/19 08:35	1	10	12/10/19 03:57	CRS	EPA 625
Fluorene	< 10	ug/L		12/05/19 08:35	1	10	12/10/19 03:57	CRS	EPA 625
4-Chlorophenylphenyl ether	< 10	ug/L		12/05/19 08:35	1	10	12/10/19 03:57	CRS	EPA 625
4,6-Dinitro-2-methylphenol	< 50	ug/L		12/05/19 08:35	1	50	12/10/19 03:57	CRS	EPA 625
N-Nitrosodiphenylamine	< 10	ug/L		12/05/19 08:35	1	10	12/10/19 03:57	CRS	EPA 625
1,2-Diphenylhydrazine	< 10	ug/L		12/05/19 08:35	1	10	12/10/19 03:57	CRS	EPA 625*
4-Bromophenyl phenyl ether	< 10	ug/L		12/05/19 08:35	1	10	12/10/19 03:57	CRS	EPA 625



## ANALYTICAL RESULTS

Sample: 9120730-02

Name: Expanded Effluent Composite

Alias: EAST PLANT

Sampled: 12/03/19 14:00

Received: 12/04/19 09:40

Matrix: Waste Water - Composite

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Hexachlorobenzene	< 10	ug/L		12/05/19 08:35	1	10	12/10/19 03:57	CRS	EPA 625
Pentachlorophenol	< 50	ug/L		12/05/19 08:35	1	50	12/10/19 03:57	CRS	EPA 625
Phenanthrene	< 10	ug/L		12/05/19 08:35	1	10	12/10/19 03:57	CRS	EPA 625
Anthracene	< 10	ug/L		12/05/19 08:35	1	10	12/10/19 03:57	CRS	EPA 625
Di-n-butyl phthalate	< 10	ug/L		12/05/19 08:35	1	10	12/10/19 03:57	CRS	EPA 625
Fluoranthene	< 10	ug/L		12/05/19 08:35	1	10	12/10/19 03:57	CRS	EPA 625
Benzidine	< 80	ug/L		12/05/19 08:35	1	80	12/10/19 15:21	CRS	EPA 625
Pyrene	< 10	ug/L		12/05/19 08:35	1	10	12/10/19 15:21	CRS	EPA 625
Butyl benzyl phthalate	< 10	ug/L		12/05/19 08:35	1	10	12/10/19 15:21	CRS	EPA 625
Benzo(a)anthracene	< 10	ug/L		12/05/19 08:35	1	10	12/10/19 15:21	CRS	EPA 625
3,3'-Dichlorobenzidine	< 20	ug/L		12/05/19 08:35	1	20	12/10/19 15:21	CRS	EPA 625*
Chrysene	< 10	ug/L		12/05/19 08:35	1	10	12/10/19 15:21	CRS	EPA 625
Bis(2-ethylhexyl) phthalate	< 10	ug/L		12/05/19 08:35	1	10	12/10/19 15:21	CRS	EPA 625
Di-n-octyl phthalate	< 10	ug/L		12/05/19 08:35	1	10	12/10/19 15:21	CRS	EPA 625
Benzo(b)fluoranthene	< 10	ug/L		12/05/19 08:35	1	10	12/10/19 03:57	CRS	EPA 625
2,3,7,8-TCDD Screen	< 50	ug/L		12/05/19 08:35	1	50	12/10/19 15:21	CRS	EPA 625*
Benzo(k)fluoranthene	< 10	ug/L		12/05/19 08:35	1	10	12/10/19 03:57	CRS	EPA 625
Benzo(a)pyrene	< 10	ug/L		12/05/19 08:35	1	10	12/10/19 03:57	CRS	EPA 625
Indeno(1,2,3-cd)pyrene	< 10	ug/L		12/05/19 08:35	1	10	12/10/19 15:21	CRS	EPA 625
Dibenzo(a,h)anthracene	< 10	ug/L		12/05/19 08:35	1	10	12/10/19 03:57	CRS	EPA 625
Benzo(g,h,i)perylene	< 10	ug/L		12/05/19 08:35	1	10	12/10/19 03:57	CRS	EPA 625
<b>Total Metals - PIA</b>									
Aluminum	< 0.10	mg/L		12/05/19 09:20	1	0.10	12/05/19 16:57	ZSA	EPA 200.7
Mercury	< 0.00020	mg/L		12/10/19 08:06	1	0.00020	12/10/19 12:33	TAT	EPA 245.1
Antimony	< 0.020	mg/L		12/05/19 09:20	1	0.020	12/05/19 16:57	ZSA	EPA 200.7
Arsenic	< 0.020	mg/L		12/05/19 09:20	1	0.020	12/05/19 16:57	ZSA	EPA 200.7
Beryllium	< 0.0050	mg/L		12/05/19 09:20	1	0.0050	12/05/19 16:57	ZSA	EPA 200.7
Calcium Hardness as CaCO <sub>3</sub>	130	mg/L		12/05/19 09:20	1	0.25	12/09/19 13:33	ZSA	SM 2340B
Cadmium	< 0.0050	mg/L		12/05/19 09:20	1	0.0050	12/05/19 16:57	ZSA	EPA 200.7
Calcium	51	mg/L		12/05/19 09:20	1	0.10	12/09/19 13:33	ZSA	EPA 200.7
Copper	< 0.030	mg/L		12/05/19 09:20	1	0.030	12/05/19 16:57	ZSA	EPA 200.7
Iron	0.037	mg/L		12/05/19 09:20	1	0.010	12/09/19 13:33	ZSA	EPA 200.7
Lead	< 0.010	mg/L		12/05/19 09:20	1	0.010	12/05/19 16:57	ZSA	EPA 200.7
Nickel	< 0.010	mg/L		12/05/19 09:20	1	0.010	12/05/19 16:57	ZSA	EPA 200.7
Selenium	< 0.030	mg/L		12/05/19 09:20	1	0.030	12/05/19 16:57	ZSA	EPA 200.7



## ANALYTICAL RESULTS

Sample: 9120730-02

Name: Expanded Effluent Composite

Alias: EAST PLANT

Sampled: 12/03/19 14:00

Received: 12/04/19 09:40

Matrix: Waste Water - Composite

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Silver	< 0.010	mg/L		12/05/19 09:20	1	0.010	12/05/19 16:57	ZSA	EPA 200.7
Thallium	< 0.030	mg/L		12/05/19 09:20	1	0.030	12/05/19 16:57	ZSA	EPA 200.7
Zinc	0.11	mg/L		12/05/19 09:20	1	0.010	12/09/19 13:33	ZSA	EPA 200.7



## NOTES

Specifications regarding method revisions and method modifications used for analysis are available upon request. Please contact your project manager.

\* Not a TNI accredited analyte

### Certifications

CHI - McHenry, IL - 4314 W Crystal Lake Road A, McHenry, IL 60050

TNI Accreditation for Drinking Water, Wastewater, Fields of Testing through IL EPA Lab No. 100279

Illinois Department of Public Health Bacteriological Analysis in Drinking Water Approved Laboratory Registry No. 17556

PIA - Peoria, IL - 2231 W Altorfer Drive, Peoria, IL 61615

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: Iowa (240); Kansas (E-10338); Missouri (870)

Wastewater Certifications: Arkansas (88-0677); Iowa (240); Kansas (E-10338)

Hazardous/Solid Waste Certifications: Arkansas (88-0677); Iowa (240); Kansas (E-10338)

SPIL - Springfield, IL - 1210 Capitol Airport Drive, Springfield, IL 62707

TNI Accreditation through IL EPA Lab No. 100323

SPMO - Springfield, MO - 1805 W Sunset Street, Springfield, MO 65807

USEPA DMR-QA Program

STL - St. Louis, MO - 3278 N Highway 67, Florissant, MO 63033

TNI Accreditation for Wastewater, Hazardous and Solid Wastes Fields of Testing through KS Lab No. E-10389

TNI Accreditation for Wastewater, Hazardous, and Solid Waste Analysis through IL EPA No. 200080

Illinois Department of Public Health Bacteriological Analysis in Drinking Water Approved Laboratory Registry No. 171050

Missouri Department of Natural Resources

Microbiological Laboratory Service for Drinking Water

### Qualifiers

R Matrix Spike/Matrix Spike Duplicate Failed %Relative Percent Difference criterion.

Certified by: Amy Holmes, Project Manager





REGULATORY PROGRAM (Check one): NPDES ☐ RCRA ☐  
 MORBCA ☐ TACO: RES OR IND/COMM ☐  
 CCDD ☐

CHAIN OF CUSTODY RECORD  
 STATE WHERE SAMPLE COLLECTED \_\_\_\_\_

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

<b>CLIENT</b> 1 Union WWTP ADDRESS 500 EAST LOCUST STREET CITY Union, MO STATE 63084 ZIP CONTACT PERSON John Zimmermann and Dave Aguilar		<b>PROJECT LOCATION</b> Project Number Expanded Part D MO-0121312 PHONE NUMBER (636) 583-0820 E-MAIL pretreatment@unionmissouri.org		<b>PURCHASE ORDER #</b> DATE SHIPPED MATRIX TYPES: WW-WASTEWATER CW-CLEAN WATER GW-GRIND WATER WWSL-SLUDGE SAS-NON AQUEOUS SOLID SLS-SOLID SLS-SOLID	
<b>SAMPLER</b> (PLEASE PRINT) John Zimmermann and Dave Aguilar <b>SAMPLER'S SIGNATURE</b>		<b>DATE COLLECTED</b> 12-03-19 12-03-19 12-03-19		<b>TIME COLLECTED</b> 1400 1400 1400	
<b>SAMPLE DESCRIPTION</b> (UNIQUE DESCRIPTION AS IT WILL APPEAR ON THE ANALYTICAL REPORT) Effluent Grab (East Plant) Effluent Composite (East Plant)		<b>SAMPLE TYPE</b> COMP WW WW		<b>BOTTLE COUNT</b> 9 4	
<b>PREPARED BY</b> PREPARED BY PREPARED BY		<b>DATE</b> DATE DATE		<b>TIME</b> TIME TIME	
<b>ANALYSIS REQUESTED</b> (See Attached List) Cr+3 Calc (Cr, Cr6, Cr3) CN, Phenols Pb, Sb, Se, Ti, Zn M625 M624, 2-Cleve		<b>DATE</b> DATE DATE		<b>TIME</b> TIME TIME	
<b>REMARKS</b> REMARKS REMARKS		<b>DATE</b> DATE DATE		<b>TIME</b> TIME TIME	

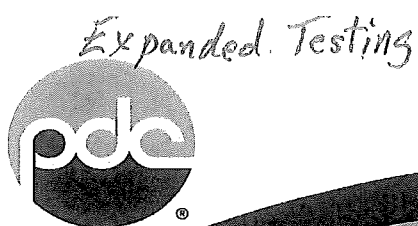
5 I understand that by initialing this box I give the lab permission to proceed with analysis; even though it may not meet all sample performance requirements as defined in the receiving facility's Sample Acceptance Policy and the data will be qualified. Qualified data may NOT be acceptable to report to all regulatory authorities.

6 PROCEED WITH ANALYSIS AND QUALIFY RESULTS: (INITIALS)

7 RECEIVED BY: (SIGNATURE)  
 DATE 12-03-19  
 TIME 1500  
 RECEIVED BY: (SIGNATURE)  
 DATE  
 TIME  
 RECEIVED BY: (SIGNATURE)  
 DATE  
 TIME  
 RECEIVED BY: (SIGNATURE)  
 DATE  
 TIME

8 COMMENTS: (FOR LAB USE ONLY)  
 SAMPLE TEMPERATURE UPON RECEIPT  
 CHILL PROCESS STARTED PRIOR TO RECEIPT  
 SAMPLE(S) RECEIVED ON ICE  
 SAMPLE ACCEPTANCE NONCONFORMANT  
 REPORT IS NEEDED  
 DATE AND TIME TAKEN FROM SAMPLE BOTTLE

9 DATE  
 TIME  
 DATE  
 TIME  
 DATE  
 TIME  
 DATE  
 TIME



Union East 11-19-19

# PDC Laboratories, Inc.

PROFESSIONAL • DEPENDABLE • COMMITTED

December 02, 2019

David Aguilar  
Union WWTP  
500 E Locust St  
Union, MO 63084

RE: Part D Expanded Effluent Testing

Dear David Aguilar:

Please find enclosed the analytical results for the 2 sample(s) the laboratory received on 11/19/19 3:20 pm and logged in under work order 9113111. All testing is performed according to our current TNI accreditations unless otherwise noted. This report cannot be reproduced, except in full, without the written permission of PDC Laboratories, Inc.

If you have any questions regarding your report, please contact your project manager. Quality and timely data is of the utmost importance to us.

PDC Laboratories, Inc. appreciates the opportunity to provide you with analytical expertise. We are always trying to improve our customer service and we welcome you to contact the Director of Client Services, Lisa Grant, with any feedback you have about your experience with our laboratory at 309-683-1764 or lgrant@pdclab.com.

Sincerely,

Amy Holmes  
Project Manager  
(314) 595-7336  
aholmes@pdclab.com





## ANALYTICAL RESULTS

Sample: 9113111-01  
Name: Expanded Eff East Comp  
Matrix: Waste Water - Composite

Sampled: 11/19/19 10:30  
Received: 11/19/19 15:20

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
<b>Semivolatile Organics - PIA</b>									
N-Nitrosodimethylamine	< 11	ug/L		11/21/19 08:10	1	11	11/21/19 21:39	CRS	EPA 625
Phenol	< 11	ug/L		11/21/19 08:10	1	11	11/21/19 21:39	CRS	EPA 625
Bis(2-chloroethyl) ether	< 11	ug/L		11/21/19 08:10	1	11	11/21/19 21:39	CRS	EPA 625
2-Chlorophenol	< 11	ug/L		11/21/19 08:10	1	11	11/21/19 21:39	CRS	EPA 625
Bis(2-chloroisopropyl) ether	< 11	ug/L		11/21/19 08:10	1	11	11/21/19 21:39	CRS	EPA 625
N-Nitrosodi-n-propylamine	< 11	ug/L		11/21/19 08:10	1	11	11/21/19 21:39	CRS	EPA 625
Hexachloroethane	< 11	ug/L		11/21/19 08:10	1	11	11/21/19 21:39	CRS	EPA 625
Nitrobenzene	< 11	ug/L		11/21/19 08:10	1	11	11/21/19 21:39	CRS	EPA 625
Isophorone	< 11	ug/L		11/21/19 08:10	1	11	11/21/19 21:39	CRS	EPA 625
2-Nitrophenol	< 11	ug/L		11/21/19 08:10	1	11	11/21/19 21:39	CRS	EPA 625
2,4-Dimethylphenol	< 11	ug/L		11/21/19 08:10	1	11	11/21/19 21:39	CRS	EPA 625
Bis(2-chloroethoxy) methane	< 11	ug/L		11/21/19 08:10	1	11	11/21/19 21:39	CRS	EPA 625
2,4-Dichlorophenol	< 11	ug/L		11/21/19 08:10	1	11	11/21/19 21:39	CRS	EPA 625
1,2,4-Trichlorobenzene	< 11	ug/L		11/21/19 08:10	1	11	11/21/19 21:39	CRS	EPA 625
Naphthalene	< 11	ug/L		11/21/19 08:10	1	11	11/21/19 21:39	CRS	EPA 625
Hexachlorobutadiene	< 11	ug/L		11/21/19 08:10	1	11	11/21/19 21:39	CRS	EPA 625
4-Chloro-3-methylphenol	< 11	ug/L		11/21/19 08:10	1	11	11/21/19 21:39	CRS	EPA 625
Hexachlorocyclopentadiene	< 21	ug/L		11/21/19 08:10	1	21	11/21/19 21:39	CRS	EPA 625
2,4,6-Trichlorophenol	< 21	ug/L		11/21/19 08:10	1	21	11/21/19 21:39	CRS	EPA 625
2-Chloronaphthalene	< 11	ug/L		11/21/19 08:10	1	11	11/21/19 21:39	CRS	EPA 625
Dimethyl phthalate	< 11	ug/L		11/21/19 08:10	1	11	11/21/19 21:39	CRS	EPA 625
2,6-Dinitrotoluene	< 11	ug/L		11/21/19 08:10	1	11	11/21/19 21:39	CRS	EPA 625
Acenaphthylene	< 11	ug/L		11/21/19 08:10	1	11	11/21/19 21:39	CRS	EPA 625
Acenaphthene	< 11	ug/L		11/21/19 08:10	1	11	11/21/19 21:39	CRS	EPA 625
2,4-Dinitrophenol	< 21	ug/L		11/21/19 08:10	1	21	11/21/19 21:39	CRS	EPA 625
4-Nitrophenol	< 21	ug/L		11/21/19 08:10	1	21	11/21/19 21:39	CRS	EPA 625
2,4-Dinitrotoluene	< 11	ug/L		11/21/19 08:10	1	11	11/21/19 21:39	CRS	EPA 625
Diethyl phthalate	< 11	ug/L		11/21/19 08:10	1	11	11/21/19 21:39	CRS	EPA 625
Fluorene	< 11	ug/L		11/21/19 08:10	1	11	11/21/19 21:39	CRS	EPA 625
4-Chlorophenylphenyl ether	< 11	ug/L		11/21/19 08:10	1	11	11/21/19 21:39	CRS	EPA 625
4,6-Dinitro-2-methylphenol	< 53	ug/L		11/21/19 08:10	1	53	11/21/19 21:39	CRS	EPA 625
N-Nitrosodiphenylamine	< 11	ug/L		11/21/19 08:10	1	11	11/21/19 21:39	CRS	EPA 625



## ANALYTICAL RESULTS

Sample: 9113111-01  
 Name: Expanded Eff East Comp  
 Matrix: Waste Water - Composite

Sampled: 11/19/19 10:30  
 Received: 11/19/19 15:20

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
1,2-Diphenylhydrazine	< 11	ug/L		11/21/19 08:10	1	11	11/21/19 21:39	CRS	EPA 625*
4-Bromophenyl phenyl ether	< 11	ug/L		11/21/19 08:10	1	11	11/21/19 21:39	CRS	EPA 625
Hexachlorobenzene	< 11	ug/L		11/21/19 08:10	1	11	11/21/19 21:39	CRS	EPA 625
Pentachlorophenol	< 53	ug/L		11/21/19 08:10	1	53	11/21/19 21:39	CRS	EPA 625
Phenanthrene	< 11	ug/L		11/21/19 08:10	1	11	11/21/19 21:39	CRS	EPA 625
Anthracene	< 11	ug/L		11/21/19 08:10	1	11	11/21/19 21:39	CRS	EPA 625
Di-n-butyl phthalate	< 11	ug/L		11/21/19 08:10	1	11	11/21/19 21:39	CRS	EPA 625
Fluoranthene	< 11	ug/L		11/21/19 08:10	1	11	11/21/19 21:39	CRS	EPA 625
Benzidine	< 84	ug/L		11/21/19 08:10	1	84	11/21/19 21:39	CRS	EPA 625
Pyrene	< 11	ug/L		11/21/19 08:10	1	11	11/21/19 21:39	CRS	EPA 625
Butyl benzyl phthalate	< 11	ug/L		11/21/19 08:10	1	11	11/21/19 21:39	CRS	EPA 625
Benzo(a)anthracene	< 11	ug/L		11/21/19 08:10	1	11	11/21/19 21:39	CRS	EPA 625
3,3'-Dichlorobenzidine	< 21	ug/L		11/21/19 08:10	1	21	11/21/19 21:39	CRS	EPA 625*
Chrysene	< 11	ug/L		11/21/19 08:10	1	11	11/21/19 21:39	CRS	EPA 625
Bis(2-ethylhexyl) phthalate	< 11	ug/L		11/21/19 08:10	1	11	11/21/19 21:39	CRS	EPA 625
Di-n-octyl phthalate	< 11	ug/L		11/21/19 08:10	1	11	11/21/19 21:39	CRS	EPA 625
Benzo(b)fluoranthene	< 11	ug/L		11/21/19 08:10	1	11	11/21/19 21:39	CRS	EPA 625
2,3,7,8-TCDD Screen	< 53	ug/L		11/21/19 08:10	1	53	11/21/19 21:39	CRS	EPA 625*
Benzo(k)fluoranthene	< 11	ug/L		11/21/19 08:10	1	11	11/21/19 21:39	CRS	EPA 625
Benzo(a)pyrene	< 11	ug/L		11/21/19 08:10	1	11	11/21/19 21:39	CRS	EPA 625
Indeno(1,2,3-cd)pyrene	< 11	ug/L		11/21/19 08:10	1	11	11/21/19 21:39	CRS	EPA 625
Dibenzo(a,h)anthracene	< 11	ug/L		11/21/19 08:10	1	11	11/21/19 21:39	CRS	EPA 625
Benzo(g,h,i)perylene	< 11	ug/L		11/21/19 08:10	1	11	11/21/19 21:39	CRS	EPA 625

**Total Metals - PIA**

Aluminum	0.013	mg/L		11/21/19 11:43	1	0.0020	11/21/19 16:26	JMW	EPA 200.8
Mercury	< 0.00020	mg/L		11/27/19 07:13	1	0.00020	11/27/19 10:22	TAT	EPA 245.1
Antimony	0.00085	mg/L		11/21/19 11:43	1	0.00060	11/21/19 16:26	JMW	EPA 200.8
Arsenic	0.00066	mg/L		11/21/19 11:43	1	0.00020	11/21/19 16:26	JMW	EPA 200.8
Beryllium	< 0.00020	mg/L		11/21/19 11:43	1	0.00020	11/21/19 16:26	JMW	EPA 200.8
Calcium Hardness as CaCO3	230	mg/L		11/21/19 11:43	10	2.5	11/25/19 14:19	ZSA	SM 2340B
Cadmium	< 0.00020	mg/L		11/21/19 11:43	1	0.00020	11/21/19 16:26	JMW	EPA 200.8
Calcium	91	mg/L		11/21/19 11:43	10	1.0	11/25/19 14:19	ZSA	EPA 200.7
Copper	0.0050	mg/L		11/21/19 11:43	1	0.00060	11/21/19 16:26	JMW	EPA 200.8
Iron	27	ug/L		11/21/19 11:43	1	2.0	11/21/19 16:26	JMW	EPA 200.8*
Lead	0.00039	mg/L		11/21/19 11:43	1	0.00020	11/21/19 16:26	JMW	EPA 200.8



## ANALYTICAL RESULTS

Sample: 9113111-01  
Name: Expanded Eff East Comp  
Matrix: Waste Water - Composite

Sampled: 11/19/19 10:30  
Received: 11/19/19 15:20

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Nickel	0.0017	mg/L		11/21/19 11:43	1	0.0010	11/21/19 16:26	JMW	EPA 200.8
Selenium	0.00048	mg/L		11/21/19 11:43	1	0.00020	11/21/19 16:26	JMW	EPA 200.8
Silver	< 0.0010	mg/L		11/21/19 11:43	1	0.0010	11/21/19 16:26	JMW	EPA 200.8
Thallium	< 0.00020	mg/L		11/21/19 11:43	1	0.00020	11/21/19 16:26	JMW	EPA 200.8
Zinc	0.083	mg/L		11/21/19 11:43	1	0.0012	11/21/19 16:26	JMW	EPA 200.8



## ANALYTICAL RESULTS

Sample: 9113111-02  
Name: Expanded Effluent Grab  
Matrix: Waste Water - Grab

Sampled: 11/19/19 10:30  
Received: 11/19/19 15:20

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
<b>General Chemistry - PIA</b>									
Cyanide	< 0.0050	mg/L		11/25/19 07:14	1	0.0050	11/26/19 11:10	PMN	EPA 335.4
Phenolics	< 0.0050	mg/L		11/21/19 07:15	1	0.0050	11/21/19 13:34	PMN	EPA 420.4
<b>General Chemistry - SPI</b>									
Hexavalent Chromium	< 0.0100	mg/L	X	11/20/19 09:40	1	0.0100	11/20/19 09:58	CLH	SM 3500-Cr B
<b>Total Metals - PIA</b>									
Chromium	< 0.0050	mg/L		11/21/19 11:36	1	0.0050	11/26/19 09:44	ZSA	EPA 200.7
<b>Volatile Organics - PIA</b>									
1,1,1-Trichloroethane	< 5.0	ug/L		11/22/19 11:13	1	5.0	11/22/19 22:03	JJI	EPA 624
1,1,2,2-Tetrachloroethane	< 5.0	ug/L		11/22/19 11:13	1	5.0	11/22/19 22:03	JJI	EPA 624
1,1,2-Trichloroethane	< 5.0	ug/L		11/22/19 11:13	1	5.0	11/22/19 22:03	JJI	EPA 624
1,1-Dichloroethane	< 5.0	ug/L		11/22/19 11:13	1	5.0	11/22/19 22:03	JJI	EPA 624
1,1-Dichloroethene	< 5.0	ug/L		11/22/19 11:13	1	5.0	11/22/19 22:03	JJI	EPA 624
1,2-Dichlorobenzene	< 5.0	ug/L		11/22/19 11:13	1	5.0	11/22/19 22:03	JJI	EPA 624
1,2-Dichloroethane	< 5.0	ug/L		11/22/19 11:13	1	5.0	11/22/19 22:03	JJI	EPA 624
1,3-Dichloropropene - Total	< 15	ug/L		11/22/19 11:13	1	15	11/22/19 22:03	JJI	EPA 624*
1,2-Dichloropropane	< 5.0	ug/L		11/22/19 11:13	1	5.0	11/22/19 22:03	JJI	EPA 624
1,3-Dichlorobenzene	< 5.0	ug/L		11/22/19 11:13	1	5.0	11/22/19 22:03	JJI	EPA 624
1,4-Dichlorobenzene	< 5.0	ug/L		11/22/19 11:13	1	5.0	11/22/19 22:03	JJI	EPA 624
2-Chloroethylvinyl ether	< 5.0	ug/L		11/22/19 11:49	1	5.0	11/22/19 18:30	JJI/AEIH	EPA 624
Acrolein	< 50	ug/L		11/22/19 11:13	1	50	11/22/19 22:03	JJI	EPA 624
Acrylonitrile	< 50	ug/L		11/22/19 11:13	1	50	11/22/19 22:03	JJI	EPA 624
Benzene	< 5.0	ug/L		11/22/19 11:13	1	5.0	11/22/19 22:03	JJI	EPA 624
Bromodichloromethane	< 5.0	ug/L		11/22/19 11:13	1	5.0	11/22/19 22:03	JJI	EPA 624
Bromoform	< 5.0	ug/L		11/22/19 11:13	1	5.0	11/22/19 22:03	JJI	EPA 624
Bromomethane	< 10	ug/L		11/22/19 11:13	1	10	11/22/19 22:03	JJI	EPA 624
Carbon tetrachloride	< 5.0	ug/L		11/22/19 11:13	1	5.0	11/22/19 22:03	JJI	EPA 624
Chlorobenzene	< 5.0	ug/L		11/22/19 11:13	1	5.0	11/22/19 22:03	JJI	EPA 624
Chloroethane	< 10	ug/L		11/22/19 11:13	1	10	11/22/19 22:03	JJI	EPA 624
Chloroform	< 5.0	ug/L		11/22/19 11:13	1	5.0	11/22/19 22:03	JJI	EPA 624
Chloromethane	< 10	ug/L		11/22/19 11:13	1	10	11/22/19 22:03	JJI	EPA 624
Dibromochloromethane	< 5.0	ug/L		11/22/19 11:13	1	5.0	11/22/19 22:03	JJI	EPA 624
trans-1,2-Dichloroethene	< 20	ug/L		11/22/19 11:13	1	20	11/22/19 22:03	JJI	EPA 624
Ethylbenzene	< 5.0	ug/L		11/22/19 11:13	1	5.0	11/22/19 22:03	JJI	EPA 624



## ANALYTICAL RESULTS

Sample: 9113111-02  
Name: Expanded Effluent Grab  
Matrix: Waste Water - Grab

Sampled: 11/19/19 10:30  
Received: 11/19/19 15:20

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Methylene chloride	< 5.0	ug/L		11/22/19 11:13	1	5.0	11/22/19 22:03	JJI	EPA 624
Tetrachloroethene	< 5.0	ug/L		11/22/19 11:13	1	5.0	11/22/19 22:03	JJI	EPA 624
Toluene	< 5.0	ug/L		11/22/19 11:13	1	5.0	11/22/19 22:03	JJI	EPA 624
Trichloroethene	< 5.0	ug/L		11/22/19 11:13	1	5.0	11/22/19 22:03	JJI	EPA 624
Vinyl chloride	< 5.0	ug/L		11/22/19 11:13	1	5.0	11/22/19 22:03	JJI	EPA 624



## NOTES

Specifications regarding method revisions and method modifications used for analysis are available upon request. Please contact your project manager.

\* Not a TNI accredited analyte

### Certifications

CHI - McHenry, IL - 4314 W Crystal Lake Road A, McHenry, IL 60050

TNI Accreditation for Drinking Water, Wastewater, Fields of Testing through IL EPA Lab No. 100279

Illinois Department of Public Health Bacteriological Analysis in Drinking Water Approved Laboratory Registry No. 17556

PIA - Peoria, IL - 2231 W Altorfer Drive, Peoria, IL 61615

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: Iowa (240); Kansas (E-10338); Missouri (870)

Wastewater Certifications: Arkansas (88-0677); Iowa (240); Kansas (E-10338)

Hazardous/Solid Waste Certifications: Arkansas (88-0677); Iowa (240); Kansas (E-10338)

SPIL - Springfield, IL - 1210 Capitol Airport Drive, Springfield, IL 62707

TNI Accreditation through IL EPA Lab No. 100323

SPMO - Springfield, MO - 1805 W Sunset Street, Springfield, MO 65807

USEPA DMR-QA Program

STL - St. Louis, MO - 3278 N Highway 67, Florissant, MO 63033

TNI Accreditation for Wastewater, Hazardous and Solid Wastes Fields of Testing through KS Lab No. E-10389

TNI Accreditation for Wastewater, Hazardous, and Solid Waste Analysis through IL EPA No. 200080

Illinois Department of Public Health Bacteriological Analysis in Drinking Water Approved Laboratory Registry No. 171050

Missouri Department of Natural Resources

Microbiological Laboratory Service for Drinking Water

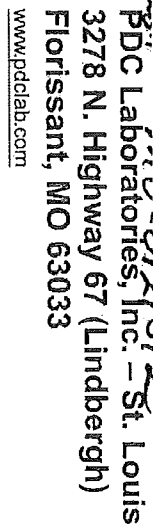
### Qualifiers

X Matrix correction used to account for turbidity.

Certified by: Amy Holmes, Project Manager







**CHAIN OF CUSTODY RECORD**  
 Phone (314) 432-0550 or (314) 921-4488  
 Fax (314) 432-4977

State where samples collected \_\_\_\_\_

(Instructions/Sample Acceptance Policy on Reverse)

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

[illegible]

SUBCONTRACT ORDER  
Transfer Chain of Custody

PDC Laboratories, Inc.

9113111

SENDING LABORATORY

PDC Laboratories, Inc.  
3278 N Highway 67  
Florissant, MO 63033  
(800) 333-3278

RECEIVING LABORATORY

PDC Laboratories, Inc. - Springfield, IL  
1210 Capital Airport Drive  
Springfield, IL 62707  
(217) 753-1148

Sample: 9113111-02  
Name: Expanded Effluent Grab

Sampled: 11/18/19 00:00  
Matrix: Waste Water  
Preservative: Cool <6

5009

Analysis	Due	Expires	Comments
06-Cr+6 SM3500-B	11/27/19 16:00	11/19/19 00:00	

Please email results to Amy Holmes at aholmes@pdclab.com

Date Shipped: 11/20/19 Total # of Containers: 1 Sample Origin (State): PO #:

Turn-Around Time Requested ☒ NORMAL ☐ RUSH Date Results Needed:

Relinquished By	Date/Time	Received By	Date/Time	Sample Temperature Upon Receipt	2.2 °C
J. Clark	11/20/19	M. Moore	11/20/19 6:50	Sample(s) Received on Ice	Y or N
				Proper Bottles Received in Good Condition	Y or N
				Bottles Filled with Adequate Volume	Y or N
				Samples Received Within Hold Time	Y or N
				Date/Time Taken From Sample Bottle	Y or N
S. Moore	11/20/19 9:24	S. Moore	11/20/19 10:24		

**SUBCONTRACT ORDER**  
**Transfer Chain of Custody**

PDC Laboratories, Inc.

9113111

*BUW*

**SENDING LABORATORY**

PDC Laboratories, Inc.  
3278 N Highway 67  
Florissant, MO 63033  
(800) 333-3278

**RECEIVING LABORATORY**

PDC Laboratories, Inc.  
2231 W Altorfer Dr  
Peoria, IL 61615  
(309) 692-9688

**Sample:** 9113111-01  
**Name:** Expanded Eff East Comp

**Sampled:** 11/19/19 10:30  
**Matrix:** Waste Water  
**Preservative:** HNO<sub>3</sub>, pH <2

Analysis	Due	Expires	Comments
Ag 200.8 WW Tot	11/27/19 16:00	05/17/20 10:30	<i>250p HNO<sub>3</sub></i> <i>3x Lg</i> <i>500p</i>
Al 200.8 WW Tot	11/27/19 16:00	05/17/20 10:30	
As 200.8 WW Tot	11/27/19 16:00	05/17/20 10:30	
Be 200.8 WW Tot	11/27/19 16:00	05/17/20 10:30	
Ca 200.7 WWTot	11/27/19 16:00	05/17/20 10:30	
Cd 200.8 WW Tot	11/27/19 16:00	05/17/20 10:30	
Cu 200.8 WWTot	11/27/19 16:00	05/17/20 10:30	
EPA 200.8	11/27/19 16:00	12/17/19 10:30	
Fe 200.8 WWTot	11/27/19 16:00	05/17/20 10:30	
Hg 245.1	11/27/19 16:00	12/17/19 10:30	
M625	11/27/19 16:00	11/26/19 10:30	
Ni 200.8 WWTot	11/27/19 16:00	05/17/20 10:30	
Pb 200.8 WWTot	11/27/19 16:00	05/17/20 10:30	
Sb 200.8 WWTot	11/27/19 16:00	05/17/20 10:30	
Se 200.8 WWTot	11/27/19 16:00	05/17/20 10:30	
Tl 200.8 WWTot	11/27/19 16:00	05/17/20 10:30	
Zn 200.8 WWTot	11/27/19 16:00	05/17/20 10:30	

SUBCONTRACT ORDER  
Transfer Chain of Custody

PDC Laboratories, Inc.

9113111

SENDING LABORATORY

PDC Laboratories, Inc.  
3278 N Highway 67  
Florissant, MO 63033  
(800) 333-3278

RECEIVING LABORATORY

PDC Laboratories, Inc.  
2231 W Altorfer Dr  
Peoria, IL 61615  
(309) 692-9688

Sample: 9113111-02  
Name: Expanded Effluent Grab

Sampled: 11/18/19 00:00  
Matrix: Waste Water  
Preservative: NaOH, cool <6

Analysis	Due	Expires	Comments
CN-T	11/27/19 16:00	12/02/19 00:00	500p - NaOH 250p HNO3 Levial 250ag H2SO4
Cr 200.7 WWTot	11/27/19 16:00	05/16/20 00:00	
M624	11/27/19 16:00	12/02/19 00:00	
M624 2-Chloroethylvinyl ether	11/27/19 16:00	11/25/19 00:00	
Phenol	11/27/19 16:00	12/16/19 00:00	

Please email results to Amy Holmes at [aholmes@pdclab.com](mailto:aholmes@pdclab.com)

Date Shipped: 11/20/19 Total # of Containers: 15 Sample Origin (State): \_\_\_\_\_ PO #: \_\_\_\_\_

Turn-Around Time Requested ☒ NORMAL ☐ RUSH Date Results Needed: \_\_\_\_\_

Relinquished By AJ Clark Date/Time 11/20/19 11:00 AM Received By M Moore Date/Time 11/20/19 6:50

Relinquished By M Moore Date/Time 11/20/19 11:13 Received By [Signature] Date/Time 11/20/19 11:13

Sample Temperature Upon Receipt 4.4°C  
Sample(s) Received on Ice Y or N  
Proper Bottles Received in Good Condition Y or N  
Bottles Filled with Adequate Volume Y or N  
Samples Received Within Hold Time Y or N  
Date/Time Taken From Sample Bottle Y or N

Expanded Testing

Union East

11-05-19



PDC Laboratories, Inc.

PROFESSIONAL • DEPENDABLE • COMMITTED

November 15, 2019

Jonathon Zimmerman  
Union WWTP  
500 EAST LOCUST STREET  
UNION, MO 63084

RE: Expanded effluent testing MO\_0025283  
*0121312*  
*Union East*

Dear Jonathon Zimmerman:

Please find enclosed the analytical results for the 2 sample(s) the laboratory received on 11/5/19 1:50 pm and logged in under work order 9110611. All testing is performed according to our current TNI accreditations unless otherwise noted. This report cannot be reproduced, except in full, without the written permission of PDC Laboratories, Inc.

If you have any questions regarding your report, please contact your project manager. Quality and timely data is of the utmost importance to us.

PDC Laboratories, Inc. appreciates the opportunity to provide you with analytical expertise. We are always trying to improve our customer service and we welcome you to contact the Director of Client Services, Lisa Grant, with any feedback you have about your experience with our laboratory at 309-683-1764 or lgrant@pdclab.com.

Sincerely,

*Amy Holmes*

Amy Holmes  
Project Manager  
(314) 595-7336  
aholmes@pdclab.com





## ANALYTICAL RESULTS

Sample: 9110611-01  
Name: Expanded Eff East Comp  
Matrix: Waste Water - Composite

Sampled: 11/05/19 11:30  
Received: 11/05/19 13:30  
PO #: 247

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
<b>General Chemistry - PIA</b>									
Trivalent Chromium	< 5.8	ug/L		11/11/19 11:42	1	5.8	11/12/19 15:51	SCI	CALCULATION
<b>General Chemistry - STL</b>									
Hexavalent chromium	0.004	mg/L	J	11/05/19 18:04	1	0.005	11/05/19 18:10	SCI	SM 3500-Cr B
<b>Total Metals - PIA</b>									
Aluminum	12	ug/L		11/11/19 11:42	1	2.0	11/12/19 15:51	JMW	EPA 200.8
Mercury	< 0.060	ug/L		11/11/19 11:57	1	0.20	11/11/19 14:08	TAT	EPA 245.1
Antimony	0.88	ug/L		11/11/19 11:42	1	0.60	11/12/19 15:51	JMW	EPA 200.8
Arsenic	0.47	ug/L		11/11/19 11:42	1	0.20	11/13/19 11:38	JMW	EPA 200.8
Beryllium	< 0.080	ug/L		11/11/19 11:42	1	0.20	11/12/19 15:51	JMW	EPA 200.8
Calcium Hardness as CaCO3	150	mg/L		11/11/19 11:42	1	0.25	11/11/19 14:25	ZSA	SM 2340B
Cadmium	< 0.039	ug/L		11/11/19 11:42	1	0.20	11/12/19 15:51	JMW	EPA 200.8
Calcium	60	mg/L		11/11/19 11:42	1	0.10	11/11/19 14:25	ZSA	EPA 200.7
Chromium	< 0.80	ug/L		11/11/19 11:42	1	0.80	11/12/19 15:51	JMW	EPA 200.8
Copper	9.2	ug/L		11/11/19 11:42	1	0.60	11/12/19 15:51	JMW	EPA 200.8
Iron	21	ug/L		11/11/19 11:42	1	10	11/11/19 14:25	ZSA	EPA 200.7
Lead	0.12	ug/L	J	11/11/19 11:42	1	0.20	11/12/19 15:51	JMW	EPA 200.8
Nickel	1.7	ug/L		11/11/19 11:42	1	1.0	11/12/19 15:51	JMW	EPA 200.8
Selenium	0.16	ug/L	J	11/11/19 11:42	1	0.20	11/12/19 15:51	JMW	EPA 200.8
Silver	< 0.30	ug/L		11/11/19 11:42	1	1.0	11/13/19 11:38	JMW	EPA 200.8
Thallium	< 0.038	ug/L		11/11/19 11:42	1	0.20	11/13/19 11:38	JMW	EPA 200.8
Zinc	90	ug/L		11/11/19 11:42	1	1.2	11/13/19 11:38	JMW	EPA 200.8



## ANALYTICAL RESULTS

Sample: 9110611-01RE1  
Name: Expanded Eff East Comp  
Matrix: Waste Water - Composite

Sampled: 11/05/19 11:30  
Received: 11/05/19 13:30  
PO #: 247

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
<b>Semivolatile Organics - PIA</b>									
N-Nitrosodimethylamine	< 0.14	ug/L		11/12/19 13:04	1	10	11/13/19 14:01	CRS	EPA 625
Phenol	< 0.11	ug/L		11/12/19 13:04	1	10	11/13/19 14:01	CRS	EPA 625
Bis(2-chloroethyl) ether	< 0.26	ug/L		11/12/19 13:04	1	10	11/13/19 14:01	CRS	EPA 625
2-Chlorophenol	< 0.20	ug/L		11/12/19 13:04	1	10	11/13/19 14:01	CRS	EPA 625
Bis(2-chloroisopropyl) ether	< 0.27	ug/L		11/12/19 13:04	1	10	11/13/19 14:01	CRS	EPA 625
N-Nitrosodi-n-propylamine	< 0.31	ug/L		11/12/19 13:04	1	10	11/13/19 14:01	CRS	EPA 625
Hexachloroethane	< 0.34	ug/L		11/12/19 13:04	1	10	11/13/19 14:01	CRS	EPA 625
Nitrobenzene	< 0.21	ug/L		11/12/19 13:04	1	10	11/13/19 14:01	CRS	EPA 625
Isophorone	< 0.31	ug/L		11/12/19 13:04	1	10	11/13/19 14:01	CRS	EPA 625
2-Nitrophenol	< 0.47	ug/L		11/12/19 13:04	1	10	11/13/19 14:01	CRS	EPA 625
2,4-Dimethylphenol	< 0.48	ug/L		11/12/19 13:04	1	10	11/13/19 14:01	CRS	EPA 625
Bis(2-chloroethoxy) methane	< 0.28	ug/L		11/12/19 13:04	1	10	11/13/19 14:01	CRS	EPA 625
2,4-Dichlorophenol	< 0.32	ug/L		11/12/19 13:04	1	10	11/13/19 14:01	CRS	EPA 625
1,2,4-Trichlorobenzene	< 0.29	ug/L		11/12/19 13:04	1	10	11/13/19 14:01	CRS	EPA 625
Naphthalene	< 0.27	ug/L		11/12/19 13:04	1	10	11/13/19 14:01	CRS	EPA 625
Hexachlorobutadiene	< 0.33	ug/L		11/12/19 13:04	1	10	11/13/19 14:01	CRS	EPA 625
4-Chloro-3-methylphenol	< 0.26	ug/L		11/12/19 13:04	1	10	11/13/19 14:01	CRS	EPA 625
Hexachlorocyclopentadiene	< 1.0	ug/L		11/12/19 13:04	1	20	11/13/19 14:01	CRS	EPA 625
2,4,6-Trichlorophenol	< 1.0	ug/L		11/12/19 13:04	1	20	11/13/19 14:01	CRS	EPA 625
2-Chloronaphthalene	< 0.23	ug/L		11/12/19 13:04	1	10	11/13/19 14:01	CRS	EPA 625
Dimethyl phthalate	< 0.23	ug/L		11/12/19 13:04	1	10	11/13/19 14:01	CRS	EPA 625
2,6-Dinitrotoluene	< 0.85	ug/L		11/12/19 13:04	1	10	11/13/19 14:01	CRS	EPA 625
Acenaphthylene	< 0.21	ug/L		11/12/19 13:04	1	10	11/13/19 14:01	CRS	EPA 625
Acenaphthene	< 0.25	ug/L		11/12/19 13:04	1	10	11/13/19 14:01	CRS	EPA 625
2,4-Dinitrophenol	< 3.6	ug/L		11/12/19 13:04	1	20	11/13/19 14:01	CRS	EPA 625
4-Nitrophenol	< 2.9	ug/L		11/12/19 13:04	1	20	11/13/19 14:01	CRS	EPA 625
2,4-Dinitrotoluene	< 0.31	ug/L		11/12/19 13:04	1	10	11/13/19 14:01	CRS	EPA 625
Diethyl phthalate	< 0.26	ug/L		11/12/19 13:04	1	10	11/13/19 14:01	CRS	EPA 625
Fluorene	< 0.19	ug/L		11/12/19 13:04	1	10	11/13/19 14:01	CRS	EPA 625
4-Chlorophenylphenyl ether	< 0.24	ug/L		11/12/19 13:04	1	10	11/13/19 14:01	CRS	EPA 625
4,6-Dinitro-2-methylphenol	< 0.94	ug/L		11/12/19 13:04	1	50	11/13/19 14:01	CRS	EPA 625
N-Nitrosodiphenylamine	< 0.55	ug/L		11/12/19 13:04	1	10	11/13/19 14:01	CRS	EPA 625
1,2-Diphenylhydrazine	< 0.24	ug/L		11/12/19 13:04	1	10	11/13/19 14:01	CRS	EPA 625*
4-Bromophenyl phenyl ether	< 0.21	ug/L		11/12/19 13:04	1	10	11/13/19 14:01	CRS	EPA 625



## ANALYTICAL RESULTS

Sample: 9110611-01RE1  
Name: Expanded Eff East Comp  
Matrix: Waste Water - Composite

Sampled: 11/05/19 11:30  
Received: 11/05/19 13:30  
PO #: 247

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Hexachlorobenzene	< 0.20	ug/L		11/12/19 13:04	1	10	11/13/19 14:01	CRS	EPA 625
Pentachlorophenol	< 3.4	ug/L		11/12/19 13:04	1	50	11/13/19 14:01	CRS	EPA 625
Phenanthrene	< 0.24	ug/L		11/12/19 13:04	1	10	11/13/19 14:01	CRS	EPA 625
Anthracene	< 0.19	ug/L		11/12/19 13:04	1	10	11/13/19 14:01	CRS	EPA 625
Di-n-butyl phthalate	< 0.34	ug/L		11/12/19 13:04	1	10	11/13/19 14:01	CRS	EPA 625
Fluoranthene	< 0.36	ug/L		11/12/19 13:04	1	10	11/13/19 14:01	CRS	EPA 625
Benzidine	< 63	ug/L		11/12/19 13:04	1	80	11/13/19 14:01	CRS	EPA 625
Pyrene	< 0.34	ug/L		11/12/19 13:04	1	10	11/13/19 14:01	CRS	EPA 625
Butyl benzyl phthalate	< 0.40	ug/L		11/12/19 13:04	1	10	11/13/19 14:01	CRS	EPA 625
Benzo(a)anthracene	< 0.23	ug/L		11/12/19 13:04	1	10	11/13/19 14:01	CRS	EPA 625
3,3'-Dichlorobenzidine	< 0.66	ug/L		11/12/19 13:04	1	20	11/13/19 14:01	CRS	EPA 625*
Chrysene	< 0.18	ug/L		11/12/19 13:04	1	10	11/13/19 14:01	CRS	EPA 625
Bis(2-ethylhexyl) phthalate	< 0.40	ug/L		11/12/19 13:04	1	10	11/13/19 14:01	CRS	EPA 625
Di-n-octyl phthalate	< 0.39	ug/L		11/12/19 13:04	1	10	11/13/19 14:01	CRS	EPA 625
Benzo(b)fluoranthene	< 0.31	ug/L		11/12/19 13:04	1	10	11/13/19 14:01	CRS	EPA 625
2,3,7,8-TCDD Screen	< 50	ug/L		11/12/19 13:04	1	50	11/13/19 14:01	CRS	EPA 625*
Benzo(k)fluoranthene	< 0.33	ug/L		11/12/19 13:04	1	10	11/13/19 14:01	CRS	EPA 625
Benzo(a)pyrene	< 0.18	ug/L		11/12/19 13:04	1	10	11/13/19 14:01	CRS	EPA 625
Indeno(1,2,3-cd)pyrene	< 0.26	ug/L		11/12/19 13:04	1	10	11/13/19 14:01	CRS	EPA 625
Dibenzo(a,h)anthracene	< 0.46	ug/L		11/12/19 13:04	1	10	11/13/19 14:01	CRS	EPA 625
Benzo(g,h,i)perylene	< 0.29	ug/L		11/12/19 13:04	1	10	11/13/19 14:01	CRS	EPA 625





## ANALYTICAL RESULTS

Sample: 9110611-02  
Name: Expanded Eff list-Annual East  
Matrix: Waste Water - Grab

Sampled: 11/05/19 11:30  
Received: 11/05/19 13:30  
PO #: 247

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
<b>General Chemistry - PIA</b>									
Phenolics	0.0040	mg/L	J	11/12/19 15:22	1	0.0050	11/14/19 14:28	PMN	EPA 420.4
<b>General Chemistry - STL</b>									
Cyanide	< 0.0030	mg/L		11/11/19 10:37	1	0.0050	11/11/19 10:37	SCI	SM 4500-CN C E
Hexavalent chromium	0.005	mg/L		11/05/19 18:04	1	0.005	11/05/19 18:10	SCI	SM 3500-Cr B
<b>Volatile Organics - PIA</b>									
1,1,1-Trichloroethane	< 0.6	ug/L		11/11/19 08:52	1	5.0	11/11/19 17:50	JJI	EPA 624
1,1,2,2-Tetrachloroethane	< 1.1	ug/L		11/11/19 08:52	1	5.0	11/11/19 17:50	JJI	EPA 624
1,1,2-Trichloroethane	< 0.9	ug/L		11/11/19 08:52	1	5.0	11/11/19 17:50	JJI	EPA 624
1,1-Dichloroethane	< 0.6	ug/L		11/11/19 08:52	1	5.0	11/11/19 17:50	JJI	EPA 624
1,1-Dichloroethene	< 0.7	ug/L		11/11/19 08:52	1	5.0	11/11/19 17:50	JJI	EPA 624
1,2-Dichlorobenzene	< 0.7	ug/L		11/11/19 08:52	1	5.0	11/11/19 17:50	JJI	EPA 624
1,2-Dichloroethane	< 0.6	ug/L		11/11/19 08:52	1	5.0	11/11/19 17:50	JJI	EPA 624
1,2-Dichloropropane	< 0.4	ug/L		11/11/19 08:52	1	5.0	11/11/19 17:50	JJI	EPA 624
1,3-Dichlorobenzene	< 1.7	ug/L		11/11/19 08:52	1	5.0	11/11/19 17:50	JJI	EPA 624
1,4-Dichlorobenzene	< 0.5	ug/L		11/11/19 08:52	1	5.0	11/11/19 17:50	JJI	EPA 624
2-Chloroethylvinyl ether	< 0.3	ug/L		11/12/19 12:18	1	5.0	11/12/19 15:51	JJI	EPA 624
Acrolein	< 4.1	ug/L		11/11/19 08:52	1	50	11/11/19 17:50	JJI	EPA 624
Acrylonitrile	< 2.8	ug/L		11/11/19 08:52	1	50	11/11/19 17:50	JJI	EPA 624
Benzene	< 1.1	ug/L		11/11/19 08:52	1	5.0	11/11/19 17:50	JJI	EPA 624
Bromodichloromethane	< 1.0	ug/L		11/11/19 08:52	1	5.0	11/11/19 17:50	JJI	EPA 624
Bromoform	< 1.9	ug/L		11/11/19 08:52	1	5.0	11/11/19 17:50	JJI	EPA 624
Bromomethane	< 1.1	ug/L		11/11/19 08:52	1	10	11/11/19 17:50	JJI	EPA 624
Carbon tetrachloride	< 1.8	ug/L		11/11/19 08:52	1	5.0	11/11/19 17:50	JJI	EPA 624
cis-1,3-Dichloropropene	< 0.4	ug/L		11/11/19 08:52	1	5.0	11/11/19 17:50	JJI	EPA 624
Chlorobenzene	< 0.7	ug/L		11/11/19 08:52	1	5.0	11/11/19 17:50	JJI	EPA 624
Chloroethane	< 0.8	ug/L		11/11/19 08:52	1	10	11/11/19 17:50	JJI	EPA 624
Chloroform	< 0.8	ug/L		11/11/19 08:52	1	5.0	11/11/19 17:50	JJI	EPA 624
Chloromethane	< 0.6	ug/L		11/11/19 08:52	1	10	11/11/19 17:50	JJI	EPA 624
Dibromochloromethane	< 2.2	ug/L		11/11/19 08:52	1	5.0	11/11/19 17:50	JJI	EPA 624
trans-1,2-Dichloroethene	< 0.5	ug/L		11/11/19 08:52	1	20	11/11/19 17:50	JJI	EPA 624
trans-1,3-Dichloropropene	< 1.7	ug/L		11/11/19 08:52	1	5.0	11/11/19 17:50	JJI	EPA 624
Ethylbenzene	< 1.2	ug/L		11/11/19 08:52	1	5.0	11/11/19 17:50	JJI	EPA 624
Methylene chloride	< 0.8	ug/L		11/11/19 08:52	1	5.0	11/11/19 17:50	JJI	EPA 624
Tetrachloroethene	< 1.6	ug/L		11/11/19 08:52	1	5.0	11/11/19 17:50	JJI	EPA 624



## ANALYTICAL RESULTS

Sample: 9110611-02  
Name: Expanded Eff list-Annual East  
Matrix: Waste Water - Grab

Sampled: 11/05/19 11:30  
Received: 11/05/19 13:30  
PO #: 247

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Toluene	0.9	ug/L	J	11/11/19 08:52	1	5.0	11/11/19 17:50	JJI	EPA 624
Trichloroethene	< 1.2	ug/L		11/11/19 08:52	1	5.0	11/11/19 17:50	JJI	EPA 624
Vinyl chloride	< 0.5	ug/L		11/11/19 08:52	1	5.0	11/11/19 17:50	JJI	EPA 624



## NOTES

Specifications regarding method revisions and method modifications used for analysis are available upon request. Please contact your project manager.

\* Not a TNI accredited analyte

### Certifications

CHI - McHenry, IL - 4314 W Crystal Lake Road A, McHenry, IL 60050

TNI Accreditation for Drinking Water, Wastewater, Fields of Testing through IL EPA Lab No. 100279

Illinois Department of Public Health Bacteriological Analysis in Drinking Water Approved Laboratory Registry No. 17556

PIA - Peoria, IL - 2231 W Altorfer Drive, Peoria, IL 61615

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: Iowa (240); Kansas (E-10338); Missouri (870)

Wastewater Certifications: Arkansas (88-0677); Iowa (240); Kansas (E-10338)

Hazardous/Solid Waste Certifications: Arkansas (88-0677); Iowa (240); Kansas (E-10338)

SPIL - Springfield, IL - 1210 Capitol Airport Drive, Springfield, IL 62707

TNI Accreditation through IL EPA Lab No. 100323

SPMO - Springfield, MO - 1805 W Sunset Street, Springfield, MO 65807

USEPA DMR-QA Program

STL - St. Louis, MO - 3278 N Highway 67, Florissant, MO 63033

TNI Accreditation for Wastewater, Hazardous and Solid Wastes Fields of Testing through KS Lab No. E-10389

TNI Accreditation for Wastewater, Hazardous, and Solid Waste Analysis through IL EPA No. 200080

Illinois Department of Public Health Bacteriological Analysis in Drinking Water Approved Laboratory Registry No. 171050

Missouri Department of Natural Resources

Microbiological Laboratory Service for Drinking Water

### Qualifiers

J Estimated value; value between the Method Detection Limit and Method Reporting Limit.

Certified by: Amy Holmes, Project Manager



**PDC Laboratories, Inc. — St. Louis**  
**3278 N. Highway 67 (Lindbergh)**  
**Florissant, MO 63033**  
[www.pdcclab.com](http://www.pdcclab.com)

**CHAIN OF CUSTODY RECORD**  
 Phone (314) 432-0550 or (314) 921-4488  
 Fax (314) 432-4977

State where samples collected \_\_\_\_\_

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

<b>1 CLIENT</b> City of Union ADDRESS: 500 E. Locust Str CITY: Union, MO 63084 ZIP: 63084 CONTACT PERSON: John Zimmermann		<b>PROJECT NUMBER</b> MO-0121312 <b>PHONE NUMBER</b> 636-583-1865 <b>FAX NUMBER</b>  <b>EMAIL ADDRESS</b>  <b>MEANS SHIPPED</b>  		<b>3 ANALYSIS REQUESTED</b>  	
<b>2 SAMPLE DESCRIPTION</b> AS YOU WANT ON REPORT Expanded Effluent Testing camp STP Grab		<b>DATE</b> COLLECTED 11-04-19 11:30 COLLECTED 11-05-19 11:30 COLLECTED 11-05-19 11:30		<b>TIME</b> SAMPLE TYPE MATRIX Bottle Count GRAB COMP TYPE WW 1046 WW 1046 WW 1046	
<b>7 RELINQUISHED BY: (SIGNATURE)</b> [Signature] <b>RELINQUISHED BY: (SIGNATURE)</b> [Signature] <b>RELINQUISHED BY: (SIGNATURE)</b> [Signature]		<b>DATE</b> 11-05-19 11-05-19 11-05-19		<b>TIME</b> 11:30 11:30 11:30	
<b>5 TURNAROUND TIME</b> (RUSH TAT IS SUBJECT TO PDC LABS APPROVAL AND SURCHARGE) NORMAL (8-10 Bus. Days) RUSH (5 Bus. Days) Fasttrak <sub>SM</sub> (3 Bus. Days) 1-2 Bus. Days Same Day DATE DUE _____		<b>6</b> The sample temperature will be measured upon receipt at the lab. By initiating this area, you request that the lab notify you, before proceeding with analysis, if the sample temperature is outside of the range of 0.1-6.0°C. By not initiating this area, you allow the lab to proceed with analytical testing regardless of the sample temperature.		<b>4 (FOR LAB USE ONLY)</b> LOGIN # [Signature] LAB PROL # _____ TEMPLATE: _____ PROJ. MGR.: _____	
<b>RESULTS BY:</b> E-MAIL FAX PHONE CALL PHONE/FAX# IF DIFFERENT FROM ABOVE		<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 TIMES (EXCLUDES TYPICAL FIELD PARAMETERS) DATE AND TIME TAKEN FROM SAMPLE BOTTLE		<b>REMARKS</b> See Attached Expanded Effluent Testing list courier fee	

*East Plant 2017, 2018 and 2019*  
Wet Tests Summaries/Reports

RECEIVED  
JAN 14 2020  
Water Protection Program



East Plant 2019 W.E.T.

Pace Analytical Services, LLC  
9608 Loiret Blvd.  
Lenexa, KS 66219  
(913)599-5665

September 30, 2019

Mr. David Aguilar  
City of Union  
500 East Locust  
Union, MO 63084

RE: Project: EAST PLANT  
Pace Project No.: 60315193

Dear Mr. Aguilar:

Enclosed are the analytical results for sample(s) received by the laboratory on September 18, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Nolie Wood  
nolie.wood@pacelabs.com  
1(913)563-1401  
Project Manager

Enclosures



#### REPORT OF LABORATORY ANALYSIS

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## CERTIFICATIONS

Project: EAST PLANT  
Pace Project No.: 60315193

---

### Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219  
Missouri Inorganic Drinking Water Certification #: 10090  
Arkansas Drinking Water  
Arkansas Certification #: 19-016-0  
Arkansas Drinking Water  
Illinois Certification #: 004455  
Iowa Certification #: 118  
Kansas/NELAP Certification #: E-10116  
Louisiana Certification #: 03055

Nevada Certification #: KS000212018-1  
Oklahoma Certification #: 9205/9935  
Florida: Cert E871149 SEKS WET  
Texas Certification #: T104704407-18-11  
Utah Certification #: KS000212018-8  
Illinois Certification #: 004592  
Kansas Field Laboratory Accreditation: # E-92587  
Missouri SEKS Micro Certification: 10070

### Southeast Kansas Certification IDs

808 West McKay, Frontenac, KS 66763  
Arkansas Certification #: 18-016-0  
Iowa Certification #: 118  
Kansas/NELAP Certification #: E-10426

Louisiana Certification #: 03055  
Oklahoma Certification #: 9935  
Texas Certification #: T104704407  
Utah Certification #: KS00021

## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: EAST PLANT  
Pace Project No.: 60315193

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60315193001	EAST PLANT	Water	09/17/19 11:20	09/18/19 08:00
60315193002	COU DEN WER 2019	Water	09/17/19 11:20	09/18/19 18:20

## REPORT OF LABORATORY ANALYSIS

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## SAMPLE ANALYTE COUNT

Project: EAST PLANT  
Pace Project No.: 60315193

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60315193001	EAST PLANT	EPA 821/R-02/012	MEB	1	PASI-SE
60315193002	COU DEN WER 2019	EPA 350.1	JWR	1	PASI-K

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: EAST PLANT

Pace Project No.: 60315193

Sample: EAST PLANT		Lab ID: 60315193001	Collected: 09/17/19 11:20	Received: 09/18/19 08:00	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
Acute Toxicity		Analytical Method: EPA 821/R-02/012						
Toxicity, Acute	Complete		1.0	1		09/18/19 13:00		

Sample: COU DEN WER 2019		Lab ID: 60315193002		Collected: 09/17/19 11:20		Received: 09/18/19 18:20		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
350.1 Ammonia		Analytical Method: EPA 350.1							
Nitrogen, Ammonia	0.90	mg/L	0.10	1		09/27/19 13:31	7664-41-7		

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## QUALITY CONTROL DATA

Project: EAST PLANT  
Pace Project No.: 60315193

QC Batch: 612102 Analysis Method: EPA 350.1  
QC Batch Method: EPA 350.1 Analysis Description: 350.1 Ammonia  
Associated Lab Samples: 60315193002

METHOD BLANK: 2500243  
Associated Lab Samples: 60315193002

Matrix: Water

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, Ammonia	mg/L	ND	0.10	09/27/19 12:53	

LABORATORY CONTROL SAMPLE: 2500244

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, Ammonia	mg/L	5	4.9	97	90-110	

MATRIX SPIKE SAMPLE: 2500245

Parameter	Units	60314225009 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Nitrogen, Ammonia	mg/L	ND	10	9.8	98	90-110	

MATRIX SPIKE SAMPLE: 2500247

Parameter	Units	60315132006 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Nitrogen, Ammonia	mg/L	ND	10	9.6	96	90-110	

SAMPLE DUPLICATE: 2500246

Parameter	Units	60314225011 Result	Dup Result	RPD	Max RPD	Qualifiers
Nitrogen, Ammonia	mg/L	ND	ND		18	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

## REPORT OF LABORATORY ANALYSIS

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## QUALIFIERS

Project: EAST PLANT

Pace Project No.: 60315193

---

### DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

### LABORATORIES

PASI-K Pace Analytical Services - Kansas City

PASI-SE Pace Analytical Services - SE Kansas

## REPORT OF LABORATORY ANALYSIS

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## QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: EAST PLANT  
Pace Project No.: 60315193

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60315193001	EAST PLANT	EPA 821/R-02/012	612285		
60315193002	COU DEN WER 2019	EPA 350.1	612102		

## REPORT OF LABORATORY ANALYSIS

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# Sample Condition Upon Receipt

WO#: 60315193



Client Name: Union

Courier: FedEx ☐ UPS ☐ VIA ☒ Clay ☐ PEX ☐ ECI ☐ Pace ☐ Xroads ☐ Client ☐ Other ☐

Tracking #: \_\_\_\_\_ Pace Shipping Label Used? Yes ☐ No ☒

Custody Seal on Cooler/Box Present: Yes ☒ No ☐ Seals intact: Yes ☒ No ☐

Packing Material: Bubble Wrap ☐ Bubble Bags ☐ Foam ☐ None ☒ Other ☐

Thermometer Used: T-300 Type of Ice: Wet Blue ☐ None ☐

Cooler Temperature (°C): As-read 1.9 Corr. Factor 0.0 Corrected 1.9

Date and initials of person  
examining contents:

12/9/18/19

Temperature should be above freezing to 6°C

Chain of Custody present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Chain of Custody relinquished	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Samples arrived within holding time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Short Hold Time analyses (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Rush Turn Around Time requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Sufficient volume	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Correct containers used	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Pace containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Filtered volume received for dissolved tests?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Sample labels match COC: Date / time / ID / analyses	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Samples contain multiple phases? Matrix: <u>WT</u>	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Containers requiring pH preservation in compliance? (HNO <sub>3</sub> , H <sub>2</sub> SO <sub>4</sub> , HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	List sample IDs, volumes, lot #'s of preservative and the date/time added.
Cyanide water sample checks:		
Lead acetate strip turns dark? (Record only)	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Potassium iodide test strip turns blue/purple? (Preserve)	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Trip Blank present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Headspace in VOA vials (>6mm).	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Samples from USDA Regulated Area: State:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	

Client Notification/ Resolution:

Copy COC to Client? Y / N

Field Data Required? Y / N

Person Contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Comments/ Resolution: \_\_\_\_\_

Project Manager Review: \_\_\_\_\_

Date: \_\_\_\_\_



Pace Analytical  
www.pacelabs.com

# CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: of

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	City of Union	Report To:	David Aguilar	Attention:	Jeff Voss
Address:	500 East Locust Union, MO 63084	Copy To:		Company Name:	
Email To:		Purchase Order No		Address:	
Phone:		Project Name:	West Plant	Pace Order Reference:	
Requested Due Date/TAT:		Project Number:		Pace Project Manager:	Richard Mannz
				Pace Profile #:	165 Line 1

Section D Required Client Information		Valid Matrix Codes		COLLECTED		SAMPLE TYPE (G=GRAB C=COMP)		MATRIX CODE (see valid codes to len)		SAMPLE TEMP AT COLLECTION		# OF CONTAINERS		Preservatives		Requested Analysis Filtered (Y/N)		Residual Chlorine (Y/N)		Pace Project No./ Lab I.D.	
ITEM #	Sample ID (A-Z, 0-9 / .)	DRINKING WATER	WASTE WATER	PRODUCT	SOIL/SOLID	COMPOSITE START	COMPOSITE END/GRAB	DATE	TIME	DATE	TIME	DATE	TIME	DATE	TIME	DATE	TIME	DATE	TIME	DATE	TIME
1	West Plant					9/16/19	9/17/19	9/17/19	11:20												
2	Union West Plant																				
3																					
4																					
5																					
6																					
7																					
8																					
9																					
10																					
11																					
12																					
SAMPLE ID (A-Z, 0-9 / .)																					
Sample IDs MUST BE UNIQUE																					
Valid Matrix Codes																					
DRINKING WATER																					
WASTE WATER																					
PRODUCT																					
SOIL/SOLID																					
OIL																					
WIPE																					
AIR																					
OTHER																					
ISSUE																					
TS																					
MATRIX CODE																					
SAMPLE TYPE (G=GRAB C=COMP)																					
COLLECTED																					
COMPOSITE START																					
COMPOSITE END/GRAB																					
DATE																					
TIME																					
SAMPLE TEMP AT COLLECTION																					
# OF CONTAINERS																					
Preservatives																					
Unpreserved																					
H2SO4																					
HNO3																					
HCl																					
NaOH																					
Na2S2O3																					
Methanol																					
Other																					
Analysis Test																					
ACUTE WET																					
AMMONIA																					
Requested Analysis Filtered (Y/N)																					
Residual Chlorine (Y/N)																					
Pace Project No./ Lab I.D.																					
60315193																					
(C20120)																					
B035																					
002																					
Temp in °C																					
Received on																					
Ice (Y/N)																					
Custody Sealed																					
Cooler (Y/N)																					
Samples Intact																					
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Samples Intact																					
Temp in °C																					
Received on																					
Ice (Y/N)																					

**Sample Condition Upon Receipt**

60315193

Client Name: Union

Courier: FedEx ☐ UPS ☐ VIA ☒ Clay ☐ PEX ☐ ECI ☐ Pace ☐ Xroads ☐ Client ☐ Other ☐

Tracking #: \_\_\_\_\_ Pace Shipping Label Used? Yes ☐ No ☐

Custody Seal on Cooler/Box Present: Yes ☒ No ☐ Seals intact: Yes ☒ No ☐

Packing Material: Bubble Wrap ☐ Bubble Bags ☐ Foam ☐ None ☒ Other ☐

Thermometer Used: T-193 Type of Ice: Wet Blue None

Cooler Temperature (°C): As-read 4.8 Corr. Factor -1.1 Corrected 3.7

Date and initials of person  
examining contents: TH  
9/18/19 8:00

Temperature should be above freezing to 6°C

Chain of Custody present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Chain of Custody relinquished:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Samples arrived within holding time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Short Hold Time analyses (<72hr):	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Rush Turn Around Time requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Sufficient volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Correct containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Pace containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Filtered volume received for dissolved tests?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Sample labels match COC: Date / time / ID / analyses	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Samples contain multiple phases? Matrix:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Containers requiring pH preservation in compliance? (HNO <sub>3</sub> , H <sub>2</sub> SO <sub>4</sub> , HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions VOA, Micro, O&G, KS TPH, OK-DRO)	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	List sample IDs, volumes, lot #'s of preservative and the date/time added.
Cyanide water sample checks:		
Lead acetate strip turns dark? (Record only)	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Potassium iodide test strip turns blue/purple? (Preserve)	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Trip Blank present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Headspace in VOA vials (>6mm)	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Samples from USDA Regulated Area: State:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	

Client Notification/ Resolution: \_\_\_\_\_ Copy COC to Client? Y / N \_\_\_\_\_ Field Data Required? Y / N \_\_\_\_\_

Person Contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Comments/ Resolution: \_\_\_\_\_

Project Manager Review: \_\_\_\_\_ Date: \_\_\_\_\_



September 20, 2019

Dave Aguilar  
City of Union  
500 E. Locust  
Union, MO 63084

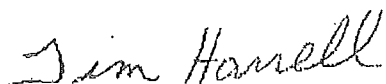
Re: Lab Project Number: 60315193  
Client Project ID: Wet Test

Dear:

Enclosed are the analytical results for sample(s) received by the laboratory. The results relate only to the samples included in this report. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

If you have any question concerning this report, please feel free to contact me.

Sincerely,



Tim Harrell  
[Tim.Harrell@pacelabs.com](mailto:Tim.Harrell@pacelabs.com)  
Technical Director

**Pace Analytical Services, Inc.**  
**808 West McKay, Frontenac, KS 66763**

**LABORATORY REPORT:**

<b>CLIENT:</b> Dave Aguilar City of Union 500 E Locust Union, MO 63084 1-636-583-8522	<b>Date Reported:</b> 9-20-19 <b>Date Initiated:</b> 9-18-19 <b>Time Set:</b> 13:00 <b>Date Terminated:</b> 9-20-19
---	--

**BIOMONITORING STUDY**

**ACUTE TOXICITY**

**Permit # MO-0121312**

**FINDING AND CONCLUSIONS:**

Acute toxicity testing was performed on duplicate samples of effluent collected from the City of Union (East) effluent discharge. **Acute toxicity**, as defined by significant mortality for at least one of two aquatic test species during a 48 hour period of exposure, was not detected in Ceriodaphnia exposed to the 100% effluent, and was not detected in fathead minnows exposed to the 100% effluent. The LC50 for the Ceriodaphnia was >100% and >100% for the Pimephales. The test species utilized in this test were the water flea, Ceriodaphnia dubia and the fathead minnow, Pimephales promelas. Detailed results of the toxicity testing are provided in the Acute Toxicity Reports. In addition to the acute toxicity testing, water temperature, pH, dissolved oxygen, total hardness, total alkalinity, conductivity, and chlorine determinations were performed on the effluent and control samples.

**SAMPLING PROCEDURES:**

City of Union (East) personnel collected a sample at the City of Union (East) effluent discharge. The sample was preserved with ice and transported to Pace Analytical by commercial carrier.

## INTRODUCTION:

The purpose of this test was to determine the acute toxicity of the City of Union (East) effluent on the freshwater invertebrate, Ceriodaphnia dubia and the fathead minnow, Pimephales promelas. These tests were conducted at Pace Analytical Services, Inc., Frontenac, KS.

## TEST ORGANISMS:

Ceriodaphnia dubia - The genetic stock of Ceriodaphnia dubia used in this acute toxicity Test were originally obtained from a private breeder. Ceriodaphnia are cultured in house at Pace Analytical Services, Inc. Culture methods of Ceriodaphnia were obtained from EPA821-C-02-006 November 2002.

Pimephales promelas - The fathead minnows used in this acute toxicity test were cultured in-house at Pace Analytical Services, Inc.; Frontenac, KS and/or were obtained from a private breeder. Fathead minnows are maintained at Pace Analytical Services until use for acute toxicity between the ages of 1 and 14 days. Information for culturing fathead minnows was taken from EPA821-C-02-006 November 2002.

## MATERIALS AND METHODS:

Procedures used in the acute toxicity tests are described in Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms (USEPA, 2002).

City of Union (East) personnel collected the effluent tested from the City of Union (East) discharge. Testing was performed using a 100% effluent, a series of dilutions, and a synthetic control. **The toxicity test was initiated within 36 hours of sample collection.**

Effluent and synthetic control test solutions were not aerated during the testing period.

## Ceriodaphnia ACUTE METHODS:

This static test was ran using 40 ml glass vials containing 25 ml of test solution. Food was administered before the test. Five Ceriodaphnia neonates (<24 hr old) were randomly selected and placed in each of 4 replicates of test solution. A total of 20 organisms per concentration were tested. Observations of mortality were made at 24 and 48 hours of exposure.

**Pimephales ACUTE METHODS:**

This static toxicity test was conducted using 500 ml polypropylene container as test chambers containing 250 ml of test solution. Food was administered prior to test initiation, but not during the testing period. Ten Pimephales, 1 – 14 days old, from a single spawn, were randomly selected and placed in each of 4 test chambers. A total of 40 organisms were exposed to each test concentration. Observations of mortality were made at 24 and 48 hours of exposure.

**WATER QUALITY METHODS:**

Prior to test initiation, temperature, dissolved oxygen, pH, total alkalinity, total hardness, and total residual chlorine were measured in the effluent and in the controls. At 24 and 48 hours of exposure, temperature, dissolved oxygen, pH, and conductance were measured in the effluent sample and the controls.

**DATA ANALYSIS:**

Statistically significant ( $p < 0.05$ ) mortality is determined by Dunnet's procedure using average percent survival of each test concentration versus the average survival of the controls. If significant mortality occurs, median lethal concentrations (LC50) are calculated using effluent concentrations and their corresponding percent mortality data. The LC50's and the 95% confidence intervals are calculated where appropriate by the Spearman-Kärber method. Statistical analysis is accomplished by following steps in EPA/600/4-90/027F, August 1993 and by use of Toxstat version 3.4.

**RESULTS:**

THE Ceriodaphnia MORTALITY RESULTS - There was no significant mortality observed of the freshwater invertebrate, Ceriodaphnia dubia, during the 48 hour exposure period to the 100% effluent concentrations. There was no significant mortality in the synthetic control. The LC50 value of the sample to Ceriodaphnia is approximately >100% the TUa <1.

**Ceriodaphnia MORTALITY DATA****# ALIVE**

CONC.	REP #	0 HOURS	24 HOURS	48 HOURS	% MORT.
SYNTHETIC	1	5	5	5	0
"	2	5	5	5	0
"	3	5	5	5	0
"	4	5	5	5	0
6.25%	1	5	5	5	0
"	2	5	5	5	0
"	3	5	5	5	0
"	4	5	5	5	0
12.5%	1	5	5	5	0
"	2	5	5	5	0
"	3	5	5	5	0
"	4	5	5	5	0
25%	1	5	5	5	0
"	2	5	5	5	0
"	3	5	5	5	0
"	4	5	5	5	0
50%	1	5	5	5	0
"	2	5	5	5	0
"	3	5	5	5	0
"	4	5	5	5	0
100%	1	5	5	5	0
"	2	5	5	5	0
"	3	5	5	5	0
"	4	5	5	5	0

**AVG. MORTALITY @ (100% EFFLUENT) =0.0%**

**THE Pimephales RESULTS** - Minnows exposed to effluent collected at the City of Union (East) effluent discharge exhibited no significant mortality in the 100% effluent concentration during the 48 hr exposure period. The synthetic control showed no significant mortality during the testing period. The LC50 value of the effluent to fathead minnows is estimated to be >100% the TUa <1.

CONC.	REP #	0 HOURS	24 HOURS	48 HOURS	% MORTALITY
SYNTHETIC	1	10	10	10	0
"	2	10	10	10	0
"	3	10	10	10	0
"	4	10	10	10	0
6.25%	1	10	10	10	0
"	2	10	10	10	0
"	3	10	10	10	0
"	4	10	10	10	0
12.5%	1	10	10	10	0
"	2	10	10	10	0
"	3	10	10	10	0
"	4	10	10	10	0
25%	1	10	10	10	0
"	2	10	10	10	0
"	3	10	10	10	0
"	4	10	10	10	0
50%	1	10	10	10	0
"	2	10	10	10	0
"	3	10	10	10	0
"	4	10	10	10	0
100%	1	10	10	10	0
"	2	10	10	10	0
"	3	10	10	10	0
"	4	10	10	10	0

*AVG. MORTALITY @ (100% EFFLUENT) =0.0%*

**WATER CHEMISTRY RESULTS:**

Total residual chlorine (Cl<sub>2</sub>) - The effluent sample from the City of Union (East) discharge had <0.1 mg/l detectable level of total residual chlorine upon receipt in the laboratory.

Dissolved Oxygen (D.O.) - Dissolved oxygen reading of the 100% effluent sample was 7.80 mg/l after being raised to the test temperature of 25° C. At termination D.O. was 7.40 mg/l in the 100% effluent, which falls into acceptable limits. Aeration was not required in this test.

pH - The pH of the 100% effluent was 8.13 upon receipt in the laboratory and the synthetic control had a 7.58. At termination the pH measurement in the 100% effluent sample was 8.72.

Conductance - The conductance of the effluent sample was 1370 umhos and the synthetic control was 321 umhos.

PACE # 60315193

INITIAL WATER QUALITY:

Initial Measurements Synthetic Water

pH	D.O. (mg/l)	Cond. (umhos)	Cl2 (mg/l)	Temp (C)	Hard (mg/l)	Alk (mg/l)
7.58	8.30	321	<0.1	25.0	96	58

Initial Measurements of 100% Effluent

PH	D.O. (mg/l)	Cond. (umhos)	Cl2 (mg/l)	Temp (C)	Hard (mg/l)	Alk (mg/l)
8.13	7.80	1370	<0.1	25.0	306	318

TEST WATER QUALITY:

24-hour Water Quality Measurements

EFFLUENT CONC (%)	PH	D.O. (mg/l)	TEMP (C)	COND. (umhos)
Synthetic	7.64	8.00	25.1	331
6.25%	8.01	8.00	25.1	438
12.5%	8.12	7.90	25.1	511
25%	8.24	7.80	25.1	720
50%	8.33	7.70	25.1	916
100%	8.65	7.60	25.1	1394

48-hour Water Quality Measurements

EFFLUENT CONC (%)	PH	D.O. (mg/l)	TEMP (C)	COND. (umhos)
Synthetic	7.71	7.80	25.0	346
6.25%	8.10	7.70	24.9	481
12.5%	8.17	7.60	24.9	530
25%	8.29	7.60	24.9	746
50%	8.37	7.50	24.9	982
100%	8.72	7.40	24.9	1422



QUALITY ASSURANCE:

The absence of control mortality during this test indicated the health of the organisms and indicated that any significant mortality in the test concentrations is not due to contaminants or variations in test conditions. Reference toxicity tests are routinely performed by staff members of our Toxicology Department.

REFERENCE TOXICANT (NaCl)

Ceriodaphnia

# OF LIVE ORGANISMS

CONC OF TOXICANT	TEST INITIATION	24 HOUR EXPOSURE	48 HOUR EXPOSURE
3.0 g/l	20	2	0
2.5 g/l	20	15	7
2.0 g/l	20	19	18
1.5 g/l	20	20	20
1.0 g/l	20	20	20

LC50 = 2.36 g/l NaCl

REFERENCE TOXICANT (NaCl)

Pimephales

# OF LIVE ORGANISMS

CONC OF TOXICANT	TEST INITIATION	24 HOUR EXPOSURE	48 HOUR EXPOSURE
10.0 g/l	40	6	0
8.0 g/l	40	40	27
6.0 g/l	40	39	37
4.0 g/l	40	39	39
2.0 g/l	40	40	40

LC50 = 8.36g/l NaCl

Submitted By:

*Tim Harrell*

Timothy Harrell  
Technical Director



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# CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: \_\_\_\_\_ of \_\_\_\_\_

Page 21 of 21

Section A Required Client Information:				Section B Required Project Information:				Section C Invoice Information:				REGULATORY AGENCY			
Company: City of Union				Report To: David Aguilar				Reference: Jeff Voss				NPDES <input type="checkbox"/> GROUND WATER <input type="checkbox"/> DRINKING WATER <input type="checkbox"/>			
Address: 500 East Locust				Copy To:				Address:				UST <input type="checkbox"/> RCRA <input type="checkbox"/>			
Union, MO 63084				Purchase Order No:				Pace Quote:				Site Location: MO			
Mail To:				Project Name: West Plant				Pace Project Manager:				STATE: MO			
Phone:				Project Number:				Pace Profile #: 165 Line 1 -							
Requested Due Date/TAT:												Requested Analysis Filtered (Y/N)			
<b>Section D Valid Matrix Codes</b>				<b>Valid Matrix Codes</b>				<b>Valid Matrix Codes</b>				<b>Valid Matrix Codes</b>			
Required Client Information				Required Client Information				Required Client Information				Required Client Information			
Matrix Code				Matrix Code				Matrix Code				Matrix Code			
Sample ID (A-Z, 0-9 / -)				Sample ID (A-Z, 0-9 / -)				Sample ID (A-Z, 0-9 / -)				Sample ID (A-Z, 0-9 / -)			
Sample IDs MUST BE UNIQUE				Sample IDs MUST BE UNIQUE				Sample IDs MUST BE UNIQUE				Sample IDs MUST BE UNIQUE			
ITEM #				ITEM #				ITEM #				ITEM #			
1				1				1				1			
2				2				2				2			
3				3				3				3			
4				4				4				4			
5				5				5				5			
6				6				6				6			
7				7				7				7			
8				8				8				8			
9				9				9				9			
10				10				10				10			
11				11				11				11			
12				12				12				12			
ADDITIONAL COMMENTS				ADDITIONAL COMMENTS				ADDITIONAL COMMENTS				ADDITIONAL COMMENTS			
REMOVED BY / AFFILIATION				REMOVED BY / AFFILIATION				REMOVED BY / AFFILIATION				REMOVED BY / AFFILIATION			
DATE				DATE				DATE				DATE			
TIME				TIME				TIME				TIME			
ACCEPTED BY / AFFILIATION				ACCEPTED BY / AFFILIATION				ACCEPTED BY / AFFILIATION				ACCEPTED BY / AFFILIATION			
DATE				DATE				DATE				DATE			
TIME				TIME				TIME				TIME			
SAMPLER NAME AND SIGNATURE				SAMPLER NAME AND SIGNATURE				SAMPLER NAME AND SIGNATURE				SAMPLER NAME AND SIGNATURE			
PRINT Name of SAMPLER:				PRINT Name of SAMPLER:				PRINT Name of SAMPLER:				PRINT Name of SAMPLER:			
SIGNATURE of SAMPLER:				SIGNATURE of SAMPLER:				SIGNATURE of SAMPLER:				SIGNATURE of SAMPLER:			
DATE Signed (MM/DD/YYYY):				DATE Signed (MM/DD/YYYY):				DATE Signed (MM/DD/YYYY):				DATE Signed (MM/DD/YYYY):			
9-17-19				9-17-19				9-17-19				9-17-19			
Temp in °C				Temp in °C				Temp in °C				Temp in °C			
Received on Ice (Y/N)				Received on Ice (Y/N)				Received on Ice (Y/N)				Received on Ice (Y/N)			
Custody Sealed Cooler (Y/N)				Custody Sealed Cooler (Y/N)				Custody Sealed Cooler (Y/N)				Custody Sealed Cooler (Y/N)			
Samples Intact (Y/N)				Samples Intact (Y/N)				Samples Intact (Y/N)				Samples Intact (Y/N)			



East Plant 2018 W.E.T.

Pace Analytical Services, LLC  
9608 Loiret Blvd.  
Lenexa, KS 66219  
(913)599-5665

August 28, 2018

Mr. David Aguilar  
City of Union  
500 East Locust  
Union, MO 63084

RE: Project: DEN WET 2018  
Pace Project No.: 60277609

Dear Mr. Aguilar:

Enclosed are the analytical results for sample(s) received by the laboratory on August 15, 2018. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Richard Mannz  
richard.mannz@pacelabs.com  
(913)599-5665  
PM Lab Management

Enclosures



## REPORT OF LABORATORY ANALYSIS

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## CERTIFICATIONS

Project: DEN WET 2018  
Pace Project No.: 60277609

---

### Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219  
Missouri Certification Number: 10090  
WY STR Certification #: 2456.01  
Arkansas Certification #: 17-016-0  
Illinois Certification #: 200030  
Iowa Certification #: 118  
Kansas/NELAP Certification #: E-10116  
Louisiana Certification #: 03055

Nevada Certification #: KS000212018-1  
Oklahoma Certification #: 9205/9935  
Texas Certification #: T104704407  
Utah Certification #: KS00021  
Kansas Field Laboratory Accreditation: # E-92587  
Missouri Certification: 10070  
Missouri Certification Number: 10090

### Southeast Kansas Certification IDs

808 West McKay, Frontenac, KS 66763  
Arkansas Certification #: 17-016-0  
Iowa Certification #: 118  
Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055  
Oklahoma Certification #: 9935  
Texas Certification #: T104704407  
Utah Certification #: KS00021

## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: DEN WET 2018

Pace Project No.: 60277609

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60277609001	EFFLUENT	Water	08/14/18 08:30	08/15/18 10:00
60277609002	EFFLUENT	Water	08/14/18 08:30	08/15/18 18:50

## REPORT OF LABORATORY ANALYSIS

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## SAMPLE ANALYTE COUNT

Project: DEN WET 2018  
Pace Project No.: 60277609

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60277609001	EFFLUENT	EPA 821/R-02/012	MEB	1	PASI-SE
60277609002	EFFLUENT	EPA 350.1	BLA	1	PASI-K

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: DEN WET 2018  
Pace Project No.: 60277609

Sample: EFFLUENT		Lab ID: 60277609001		Collected: 08/14/18 08:30		Received: 08/15/18 10:00		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	

### Acute Toxicity

Analytical Method: EPA 821/R-02/012

Toxicity, Acute

**Complete**

1.0 1

08/15/18 11:00

Sample: EFFLUENT		Lab ID: 60277609002	Collected: 08/14/18 08:30	Received: 08/15/18 18:50	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual

### 350.1 Ammonia

Analytical Method: EPA 350.1

Nitrogen, Ammonia

**0.51**

mg/L

0.10 1

08/27/18 14:53 7664-41-7

## REPORT OF LABORATORY ANALYSIS

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## QUALITY CONTROL DATA

Project: DEN WET 2018  
Pace Project No.: 60277609

QC Batch:	541320	Analysis Method:	EPA 350.1
QC Batch Method:	EPA 350.1	Analysis Description:	350.1 Ammonia
Associated Lab Samples:	60277609002		

METHOD BLANK: 2218249  
Associated Lab Samples: 60277609002

Matrix: Water

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, Ammonia	mg/L	ND	0.10	08/27/18 14:17	

LABORATORY CONTROL SAMPLE: 2218250

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, Ammonia	mg/L	5	5.1	102	90-110	

MATRIX SPIKE SAMPLE: 2218251

Parameter	Units	60277482004 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Nitrogen, Ammonia	mg/L	372	100	480	109	90-110	

MATRIX SPIKE SAMPLE: 2218253

Parameter	Units	60277567001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Nitrogen, Ammonia	mg/L	0.38	2	2.4	102	90-110	

SAMPLE DUPLICATE: 2218252

Parameter	Units	60277506003 Result	Dup Result	RPD	Max RPD	Qualifiers
Nitrogen, Ammonia	mg/L	ND	ND		18	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

## REPORT OF LABORATORY ANALYSIS

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## QUALIFIERS

Project: DEN WET 2018  
Pace Project No.: 60277609

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### DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.  
ND - Not Detected at or above adjusted reporting limit.  
TNTC - Too Numerous To Count  
J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.  
MDL - Adjusted Method Detection Limit.  
PQL - Practical Quantitation Limit.  
RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.  
S - Surrogate  
1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.  
Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.  
LCS(D) - Laboratory Control Sample (Duplicate)  
MS(D) - Matrix Spike (Duplicate)  
DUP - Sample Duplicate  
RPD - Relative Percent Difference  
NC - Not Calculable.  
SG - Silica Gel - Clean-Up  
U - Indicates the compound was analyzed for, but not detected.  
N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.  
Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.  
TNI - The NELAC Institute.

### LABORATORIES

PASI-K Pace Analytical Services - Kansas City  
PASI-SE Pace Analytical Services - SE Kansas

## REPORT OF LABORATORY ANALYSIS

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## QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: DEN WET 2018  
Pace Project No.: 60277609

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60277609001	EFFLUENT	EPA 821/R-02/012	540336		
60277609002	EFFLUENT	EPA 350.1	541320		

## REPORT OF LABORATORY ANALYSIS

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# Sample Condition Upon Receipt

WO# : 60277609



60277609

Client Name: Union

Courier: FedEx ☐ UPS ☐ VIA ☒ Clay ☐ PEX ☐ ECI ☐ Pace ☐ Xroads ☐ Client ☐ Other ☐

Tracking #: \_\_\_\_\_ Pace Shipping Label Used? Yes ☐ No ☒

Custody Seal on Cooler/Box Present: Yes ☒ No ☐ Seals intact: Yes ☒ No ☐

Packing Material: Bubble Wrap ☐ Bubble Bags ☐ Foam ☐ None ☒ Other ☐

Thermometer Used: T-298 Type of Ice: Wet Blue ☐ None ☐

Cooler Temperature (°C): As-read 0.9 Corr. Factor +1.1 Corrected 2.0

Date and initials of person examining contents:

8/15/18

Temperature should be above freezing to 6°C

Chain of Custody present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Chain of Custody relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Samples arrived within holding time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Short Hold Time analyses (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Rush Turn Around Time requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Sufficient volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Correct containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Pace containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Filtered volume received for dissolved tests?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Sample labels match COC: Date / time / ID / analyses	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Samples contain multiple phases? Matrix: <u>WT</u>	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Containers requiring pH preservation in compliance? (HNO <sub>3</sub> , H <sub>2</sub> SO <sub>4</sub> , HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRG)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	List sample IDs, volumes, lot #'s of preservative and the date/time added.
Cyanide water sample checks:		
Lead acetate strip turns dark? (Record only)	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Potassium iodide test strip turns blue/purple? (Preserve)	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Trip Blank present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Headspace in VOA vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Samples from USDA Regulated Area: State:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	

Client Notification/ Resolution: \_\_\_\_\_ Copy COC to Client? Y / N \_\_\_\_\_ Field Data Required? Y / N \_\_\_\_\_

Person Contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Comments/ Resolution: \_\_\_\_\_

Project Manager Review:

Digitally signed  
by: Richard

Date: \_\_\_\_\_

Richard  
Mannz  
DN: CN = Richard  
Mannz C = US O  
= Pace Analytical  
OU = Client  
Services  
Date: 2018.08.16  
10:28:23 -05'00'

The Chain-of-Custody is a FGCAL DOCUMENT. All relevant fields must be completed accurately.

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Page 10 of 23

*[Signature]*



# Sample Condition Upon Receipt

60277609

Client Name:

Union

Courier: FedEx ☐ UPS ☒ VIA ☐ Clay ☐ PEX ☐ ECI ☐ Pace ☐ Xroads ☐ Client ☐ Other ☐

Tracking #:

Pace Shipping Label Used? Yes ☐ No ☒

Custody Seal on Cooler/Box Present: Yes ☒ No ☐ Seals intact: Yes ☒ No ☐

Packing Material: Bubble Wrap ☐ Bubble Bags ☐ Foam ☐ None ☒ Other ☐

Thermometer Used: T-111 Type of Ice: Wet ☒ Blue ☐ None ☐

Cooler Temperature (°C): As-read 3.4 Corr. Factor -1.3 Corrected 2.1

Date and initials of person examining contents:

8/15/18  
EC 1000

Temperature should be above freezing to 6°C

Chain of Custody present: ☒ Yes ☐ No ☐ N/A

Chain of Custody relinquished: ☒ Yes ☐ No ☐ N/A

Samples arrived within holding time: ☒ Yes ☐ No ☐ N/A

Short Hold Time analyses (<72hr): ☒ Yes ☐ No ☐ N/A

Rush Turn Around Time requested: ☐ Yes ☒ No ☐ N/A

Sufficient volume: ☒ Yes ☐ No ☐ N/A

Correct containers used: ☒ Yes ☐ No ☐ N/A

Pace containers used: ☒ Yes ☐ No ☐ N/A

Containers intact: ☒ Yes ☐ No ☐ N/A

Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs? ☐ Yes ☐ No ☒ N/A

Filtered volume received for dissolved tests? ☐ Yes ☐ No ☒ N/A

Sample labels match COC: Date / time / ID / analyses ☒ Yes ☐ No ☐ N/A

Samples contain multiple phases? Matrix: ☐ Yes ☒ No ☐ N/A

Containers requiring pH preservation in compliance? ☐ Yes ☐ No ☒ N/A

HNO<sub>3</sub>, H<sub>2</sub>SO<sub>4</sub>, HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide)

Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)

Cyanide water sample checks:

Lead acetate strip turns dark? (Record only) ☐ Yes ☐ No

Potassium iodide test strip turns blue/purple? (Preserve) ☐ Yes ☐ No

Strip Blank present: ☐ Yes ☐ No ☒ N/A

Leadspace in VOA vials (>6mm): ☐ Yes ☐ No ☒ N/A

Samples from USDA Regulated Area: State: ☐ Yes ☐ No ☒ N/A

Additional labels attached to 5035A / TX1005 vials in the field? ☐ Yes ☐ No ☒ N/A

Client Notification/ Resolution: Copy COC to Client? Y / N Field Data Required? Y / N

Person Contacted: Date/Time:

Comments/ Resolution:

Project Manager Review:

Date:



PACE # 60277609

*Pace Analytical Services, Inc.*  
9608 Loiret Blvd.  
Lenexa, KS 66219  
Phone: 913.599.5665  
Fax: 913.599.1759

August 17, 2018

Dave Aguilar  
City of Union  
500 E. Locust  
Union, MO 63084

Re: Lab Project Number: 60277609  
Client Project ID: Wet Test

Dear:

Enclosed are the analytical results for sample(s) received by the laboratory. The results relate only to the samples included in this report. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

If you have any question concerning this report, please feel free to contact me.

Sincerely,

Tim Harrell  
[Tim.Harrell@pacelabs.com](mailto:Tim.Harrell@pacelabs.com)  
Technical Director

## REPORT OF LABORATORY ANALYSIS

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PACE # 60277609

Pace Analytical Services, Inc.  
9608 Lolret Blvd.  
Lenexa, KS 66219  
Phone: 913.599.5665  
Fax: 913.599.1759

**Pace Analytical Services, Inc.**  
**808 West McKay, Frontenac, KS 66763**

**LABORATORY REPORT:**

<b>CLIENT:</b> Dave Aguilar City of Union 500 E Locust Union, MO 63084 1-636-583-8522	<b>Date Reported:</b> 08-17-18 <b>Date Initiated:</b> 08-15-18 <b>Time Set:</b> 11:00 <b>Date Terminated:</b> 08-17-18
---	---

**BIOMONITORING STUDY**

**ACUTE TOXICITY**

**Permit # MO-0121312**

**FINDING AND CONCLUSIONS:**

Acute toxicity testing was performed on duplicate samples of effluent collected from the City of Union (East) effluent discharge. Acute toxicity, as defined by significant mortality for at least one of two aquatic test species during a 48 hour period of exposure, was not detected in Ceriodaphnia exposed to the 100% effluent, and was not detected in fathead minnows exposed to the 100% effluent. The LC50 for the Ceriodaphnia was >100% and >100% for the Pimephales. The test species utilized in this test were the water flea, Ceriodaphnia dubia and the fathead minnow, Pimephales promelas. Detailed results of the toxicity testing are provided in the Acute Toxicity Reports. In addition to the acute toxicity testing, water temperature, pH, dissolved oxygen, total hardness, total alkalinity, conductivity, and chlorine determinations were performed on the effluent and control samples.

**SAMPLING PROCEDURES:**

City of Union (East) personnel collected a sample at City of Union (East) effluent discharge. The sample was preserved with ice and transported to Pace Analytical by commercial carrier.

**REPORT OF LABORATORY ANALYSIS**

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## INTRODUCTION:

The purpose of this test was to determine the acute toxicity of City of Union (East) effluent on the freshwater invertebrate, Ceriodaphnia dubia and the fathead minnow, Pimephales promelas. These tests were conducted at Pace Analytical Services, Inc., Frontenac, KS.

## TEST ORGANISMS:

Ceriodaphnia dubia - The genetic stock of Ceriodaphnia dubia used in this acute toxicity Test were originally obtained from a private breeder. Ceriodaphnia are cultured in house at Pace Analytical Services, Inc. Culture methods of Ceriodaphnia were obtained from EPA821-C-02-006 November 2002.

Pimephales promelas - The fathead minnows used in this acute toxicity test were cultured in-house at Pace Analytical Services, Inc., Frontenac, KS and/or were obtained from a private breeder. Fathead minnows are maintained at Pace Analytical Services until use for acute toxicity between the ages of 1 and 14 days. Information for culturing fathead minnows was taken from EPA821-C-02-006 November 2002.

## MATERIALS AND METHODS:

Procedures used in the acute toxicity tests are described in Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms (USEPA, 2002).

City of Union (East) personnel collected the effluent tested from City of Union (East) discharge. Testing was performed using a 100% effluent, a series of dilutions, and a synthetic control. **The toxicity test was initiated within 36 hours of sample collection.**

Effluent and synthetic control test solutions were not aerated during the testing period.

## Ceriodaphnia ACUTE METHODS:

This static test was ran using 40 ml glass vials containing 25 ml of test solution. Food was administered before the test. Five Ceriodaphnia neonates (<24 hr old) were randomly selected and placed in each of 4 replicates of test solution. A total of 20 organisms per concentration were tested. Observations of mortality were made at 24 and 48 hours of exposure.

## REPORT OF LABORATORY ANALYSIS

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**Pimephales ACUTE METHODS:**

This static toxicity test was conducted using 500 ml polypropylene container as test chambers containing 250 ml of test solution. Food was administered prior to test initiation, but not during the testing period. Ten Pimephales, 1 – 14 days old, from a single spawn, were randomly selected and placed in each of 4 test chambers. A total of 40 organisms were exposed to each test concentration. Observations of mortality were made at 24 and 48 hours of exposure.

**WATER QUALITY METHODS:**

Prior to test initiation, temperature, dissolved oxygen, pH, total alkalinity, total hardness, and total residual chlorine were measured in the effluent and in the controls. At 24 and 48 hours of exposure, temperature, dissolved oxygen, pH, and conductance were measured in the effluent sample and the controls.

**DATA ANALYSIS:**

Statistically significant ( $p < 0.05$ ) mortality is determined by Dunnet's procedure using average percent survival of each test concentration versus the average survival of the controls. If significant mortality occurs, median lethal concentrations (LC50) are calculated using effluent concentrations and their corresponding percent mortality data. The LC50's and the 95% confidence intervals are calculated where appropriate by the Spearman-Kärber method. TUa calculated by  $TUa = 100/LC50$ . Statistical analysis is accomplished by following steps in EPA/600/4-90/027F, August 1993 and by use of Toxstat version 3.4.

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## RESULTS:

THE Ceriodaphnia MORTALITY RESULTS - There was no significant mortality observed of the freshwater invertebrate, Ceriodaphnia dubia, during the 48 hour exposure period to the 100% effluent concentrations. There was no significant mortality in the synthetic control. The LC50 value of the sample to Ceriodaphnia is approximately >100% the TUa <1.

### Ceriodaphnia MORTALITY DATA

#### # ALIVE

CONC.	REP #	0 HOURS	24 HOURS	48 HOURS	% MORT.
SYNTHETIC	1	5	5	5	0
"	2	5	5	5	0
"	3	5	5	5	0
"	4	5	5	5	0
6.25%	1	5	5	5	0
"	2	5	5	5	0
"	3	5	5	5	0
"	4	5	5	5	0
12.5%	1	5	5	5	0
"	2	5	5	5	0
"	3	5	5	5	0
"	4	5	5	5	0
25%	1	5	5	5	0
"	2	5	5	5	0
"	3	5	5	5	0
"	4	5	5	5	0
50%	1	5	5	5	0
"	2	5	5	5	0
"	3	5	5	5	0
"	4	5	5	5	0
100%	1	5	5	5	0
"	2	5	5	5	0
"	3	5	5	5	0
"	4	5	5	5	0

**AVG. MORTALITY @ (100% EFFLUENT) =0.0%**

## REPORT OF LABORATORY ANALYSIS

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**THE Pimephales RESULTS** - Minnows exposed to effluent collected at City of Union (East) effluent discharge exhibited no significant mortality in the 100% effluent concentration during the 48 hr exposure period. The synthetic control showed no significant mortality during the testing period. The LC50 value of the effluent to fathead minnows is estimated to be >100% the TUa <1.

CONC.	REP #	0 HOURS	24 HOURS	48 HOURS	% MORTALITY
SYNTHETIC	1	10	10	10	0
"	2	10	10	10	0
"	3	10	10	10	0
"	4	10	10	10	0
6.25%	1	10	10	10	0
"	2	10	10	10	0
"	3	10	10	10	0
"	4	10	10	10	0
12.5%	1	10	10	10	0
"	2	10	10	10	0
"	3	10	10	10	0
"	4	10	10	10	0
25%	1	10	10	10	0
"	2	10	10	10	0
"	3	10	10	10	0
"	4	10	10	10	0
50%	1	10	10	10	0
"	2	10	10	10	0
"	3	10	10	10	0
"	4	10	10	10	0
100%	1	10	10	10	0
"	2	10	10	10	0
"	3	10	10	10	0
"	4	10	10	10	0

**AVG. MORTALITY @ (100% EFFLUENT) = 0.0%**

## REPORT OF LABORATORY ANALYSIS

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PACE # 60277609

*Pace Analytical Services, Inc.*  
9608 Loiret Blvd.  
Lenexa, KS 66219  
Phone: 913.599.5665  
Fax: 913.599.1759

#### **WATER CHEMISTRY RESULTS:**

Total residual chlorine (Cl<sub>2</sub>) - The effluent sample from City of Union (East) discharge had <0.1 mg/l detectable level of total residual chlorine upon receipt in the laboratory.

Dissolved Oxygen (D.O.) - Dissolved oxygen reading of the 100% effluent sample was 8.30 mg/l after being raised to the test temperature of 25° C. At termination D.O. was 8.00 mg/l in the 100% effluent, which falls into acceptable limits. Aeration was not required in this test.

pH - The pH of the 100% effluent was 7.88 upon receipt in the laboratory and the synthetic control had a 7.54. At termination the pH measurement in the 100% effluent sample was 8.59.

Conductance - The conductance of the effluent sample was 1318 umhos and the synthetic control was 338 umhos.

#### **REPORT OF LABORATORY ANALYSIS**

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**INITIAL WATER QUALITY:**

Initial Measurements Synthetic Water

pH	D.O. (mg/l)	Cond. (umhos)	Cl2 (mg/l)	Temp (C)	Hard (mg/l)	Alk (mg/l)
7.54	8.10	338	<0.1	25.0	90	64

Initial Measurements of 100% Effluent

PH	D.O. (mg/l)	Cond. (umhos)	Cl2 (mg/l)	Temp (C)	Hard (mg/l)	Alk (mg/l)
7.88	8.30	1318	<0.1	25.0	314	540

**TEST WATER QUALITY:**

24-hour Water Quality Measurements

EFFLUENT CONC (%)	PH	D.O. (mg/l)	TEMP (C)	COND. (umhos)
Synthetic	7.61	7.70	25.1	348
6.25%	7.89	7.80	25.1	619
12.5%	7.96	7.90	25.1	726
25%	8.17	8.00	25.1	1011
50%	8.31	8.10	25.1	1496
100%	8.51	8.20	25.1	1612

48-hour Water Quality Measurements

EFFLUENT CONC (%)	PH	D.O. (mg/l)	TEMP (C)	COND. (umhos)
Synthetic	7.69	7.40	25.0	352
6.25%	7.94	7.50	25.0	647
12.5%	8.00	7.60	25.0	800
25%	8.20	7.70	25.0	1090
50%	8.42	7.90	25.0	1514
100%	8.59	8.00	25.0	1692

**REPORT OF LABORATORY ANALYSIS**

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**QUALITY ASSURANCE:**

The absence of control mortality during this test indicated the health of the organisms and indicated that any significant mortality in the test concentrations is not due to contaminants or variations in test conditions. Reference toxicity tests are routinely performed by staff members of our Toxicology Department.

**REFERENCE TOXICANT (NaCl)**

**Ceriodaphnia**

**# OF LIVE ORGANISMS**

CONC OF TOXICANT	TEST INITIATION	24 HOUR EXPOSURE	48 HOUR EXPOSURE
3.0 g/l	20	3	0
2.5 g/l	20	15	8
2.0 g/l	20	20	20
1.5 g/l	20	20	20
1.0 g/l	20	20	20

LC50 = 2.33 g/l NaCl

**REFERENCE TOXICANT (NaCl)**

**Pimephales**

**# OF LIVE ORGANISMS**

CONC OF TOXICANT	TEST INITIATION	24 HOUR EXPOSURE	48 HOUR EXPOSURE
10.0 g/l	40	7	0
8.0 g/l	40	36	23
6.0 g/l	40	39	37
4.0 g/l	40	40	40
2.0 g/l	40	40	40

LC50 = 8.32g/l NaCl

Submitted By:

*Tim Harrell*

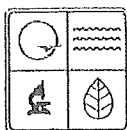
**Timothy Harrell**  
**Technical Director**

**REPORT OF LABORATORY ANALYSIS**

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The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

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## MISSOURI DEPARTMENT OF NATURAL RESOURCES

## WATER PROTECTION PROGRAM

**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	DATE AND TIME COLLECTED EFFLUENT _____ UPSTREAM _____
PERMIT NUMBER	PERMIT OUTFALL NUMBER
COLLECTOR'S NAME	
RECEIVING STREAM COLLECTION SITE AND DESCRIPTION	
PERMIT ALLOWABLE EFFLUENT CONCENTRATION (AEC)	EFFLUENT SAMPLE TYPE (CHECK ONE) <input type="checkbox"/> 24 HR COMPOSITE <input type="checkbox"/> GRAB <input type="checkbox"/> OTHER _____
SAMPLE NUMBER EFFLUENT _____ UPSTREAM _____	UPSTREAM SAMPLE TYPE (CHECK ONE) <input type="checkbox"/> 24 HR COMPOSITE <input 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 PACE ANALYTICAL SERVICES	TEST TYPE ACUTE	
FINAL REPORT NUMBER 60277609	TEST DURATION 48 HOURS	
DATE OF LAST REFERENCE TOXICANT TESTING 8/2/18	TEST METHOD EPA 2002 AND 2000	
DATE AND TIME SAMPLES RECEIVED AT LABORATORY 8/15/18 10:00	TEST START DATE AND TIME 8/15/18 11:00	TEST END DATE AND TIME 8/17/18 11:20
SAMPLE DECHLORINATED PRIOR TO ANALYSIS? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO EFFLUENT _____ UPSTREAM _____	TEST ORGANISM #1 AND AGE DUBIA <24 HOURS	TEST ORGANISM #2 AND AGE FATHEAD 9 DAYS
SAMPLE FILTERED <sup>1</sup> PRIOR TO ANALYSIS? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO EFFLUENT _____ UPSTREAM _____	90 PERCENT OR GREATER SURVIVAL IN SYNTHETIC CONTROL? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	DILUTION WATER USED TO ACHIEVE AEC
FILTER MESH SIEVE SIZE 2	EFFLUENT ORGANISM #1 PERCENT MORTALITY AT AEC 0	EFFLUENT ORGANISM #2 PERCENT MORTALITY AT AEC 0
SAMPLE AERATED DURING TESTING? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	UPSTREAM ORGANISM #1 PERCENT MORTALITY 0	UPSTREAM ORGANISM #2 PERCENT 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

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

PARAMETER	RESULT	METHOD	WHEN ANALYZED
Temperature °C	25.0	SM 2550B	8/15/18
pH Standard Units	7.88	SM 4500-H+ B	8/15/18
Conductance µMh	540	EPA 120.1	8/15/18
Dissolved Oxygen mg/L	8.30	SM 4500-O G	8/15/18
Total Residual Chlorine mg/L	<.1	SM 4500-CL G	8/15/18
Unionized Ammonia mg/L			
* Total Alkalinity mg/L	314	SM 2320 B	8/15/18
* Total Hardness mg/L	540	SM2340 C	8/15/18

\* Recommended by EPA 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 (Continued)**  
 (TO BE ATTACHED TO WET TESTS FOR SUBMISSION TO THE REGULATORY AUTHORITY)

**MINIMUM REQUIRED ANALYTICAL RESULTS FOR THE 100 PERCENT UPSTREAM SAMPLE<sup>3</sup>**

PARAMETER	RESULT	METHOD	WHEN ANALYZED
Temperature °C	25.0	SM 2550B	8/15/18
pH Standard Units	7.54	SM 4500-H+ B	8/15/18
Conductance µMhos	338	EPA 120.1	8/15/18
Dissolved Oxygen mg/L	8.10	SM 4500-O G	8/15/18
Total Residual Chlorine mg/L	<.1	SM 4500-CL G	8/15/18
Unionized Ammonia mg/L			
* Total Alkalinity mg/L	64	SM 2320 B	8/15/18
* Total Hardness mg/L	90	SM2340 C	8/15/18

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

**PRELIMINARY TEST ACCEPTABILITY MATRIX (FOR USE BY PERMITTEE IN DETERMINING TEST VALIDITY)**  
**MINIMUM REQUIRED ANALYTICAL RESULTS FOR THE 100 PERCENT UPSTREAM SAMPLE<sup>3</sup>**

**PERMIT ALLOWABLE EFFLUENT CONCENTRATION, or 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 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 National Pollutant Discharge Elimination System, or NPDES, compliance. Test is invalid otherwise.

**TEST START DATE AND 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 PERCENT 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>3</sup> Where no upstream control is available, enter results from laboratory or synthetic control.



2017 W.E.T. East Plant

Pace Analytical Services, LLC  
9608 Loiret Blvd.  
Lenexa, KS 66219  
(913)599-5665

October 31, 2017

Mr. David Aguilar  
City of Union  
500 East Locust  
Union, MO 63084

RE: Project: EAST PLANT  
Pace Project No.: 60255802

Dear Mr. Aguilar:

Enclosed are the analytical results for sample(s) received by the laboratory on October 18, 2017. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Richard Mannz  
richard.mannz@pacelabs.com  
(913)599-5665  
PM Lab Management

Enclosures



## REPORT OF LABORATORY ANALYSIS

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## CERTIFICATIONS

Project: EAST PLANT  
Pace Project No.: 60255802

---

### Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219  
WY STR Certification #: 2456.01  
Arkansas Certification #: 17-016-0  
Illinois Certification #: 200030  
Iowa Certification #: 118  
Kansas/NELAP Certification #: E-10116  
Louisiana Certification #: 03055

Nevada Certification #: KS000212018-1  
Oklahoma Certification #: 9205/9935  
Texas Certification #: T104704407  
Utah Certification #: KS00021  
Kansas Field Laboratory Accreditation: # E-92587  
Missouri Certification: 10070

### Southeast Kansas Certification IDs

808 West McKay, Frontenac, KS 66763  
Arkansas Certification #: 17-016-0  
Iowa Certification #: 118  
Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055  
Oklahoma Certification #: 9935  
Texas Certification #: T104704407  
Utah Certification #: KS00021

## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: EAST PLANT

Pace Project No.: 60255802

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60255802001	MO-0121312 EFF	Water	10/17/17 12:45	10/18/17 09:40
60255802002	MO-0121312 EFF	Water	10/17/17 12:45	10/18/17 19:04

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## SAMPLE ANALYTE COUNT

Project: EAST PLANT  
Pace Project No.: 60255802

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60255802001	MO-0121312 EFF	EPA 821/R-02/012	MEB	1	PASI-SE
60255802002	MO-0121312 EFF	EPA 350.1	CRS	1	PASI-K

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## ANALYTICAL RESULTS

Project: EAST PLANT

Pace Project No.: 60255802

<b>Sample: MO-0121312 EFF</b>		<b>Lab ID: 60255802001</b>	Collected: 10/17/17 12:45		Received: 10/18/17 09:40		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>Acute Toxicity</b>		Analytical Method: EPA 821/R-02/012						
Toxicity, Acute	<b>Complete</b>		1.0	1		10/18/17 11:00		

<b>Sample: MO-0121312 EFF</b>		<b>Lab ID: 60255802002</b>	Collected: 10/17/17 12:45		Received: 10/18/17 19:04		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>350.1 Ammonia</b>		Analytical Method: EPA 350.1						
Nitrogen, Ammonia	<b>0.29</b>	mg/L	0.10	1		10/25/17 13:03	7664-41-7	

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## QUALITY CONTROL DATA

Project: EAST PLANT  
Pace Project No.: 60255802

QC Batch: 500103 Analysis Method: EPA 350.1  
QC Batch Method: EPA 350.1 Analysis Description: 350.1 Ammonia  
Associated Lab Samples: 60255802002

METHOD BLANK: 2046777  
Associated Lab Samples: 60255802002

Matrix: Water

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, Ammonia	mg/L	ND	0.10	10/25/17 12:34	

LABORATORY CONTROL SAMPLE: 2046778

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, Ammonia	mg/L	5	4.8	96	90-110	

MATRIX SPIKE SAMPLE: 2046779

Parameter	Units	60255737004 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Nitrogen, Ammonia	mg/L	304	100	393	89	90-110	M1

MATRIX SPIKE SAMPLE: 2046781

Parameter	Units	60255795002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Nitrogen, Ammonia	mg/L	ND	2	1.9	97	90-110	

SAMPLE DUPLICATE: 2046780

Parameter	Units	60255723006 Result	Dup Result	RPD	Max RPD	Qualifiers
Nitrogen, Ammonia	mg/L	ND	ND		18	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

## REPORT OF LABORATORY ANALYSIS

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## QUALIFIERS

Project: EAST PLANT  
Pace Project No.: 60255802

---

### DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.  
ND - Not Detected at or above adjusted reporting limit.  
TNTC - Too Numerous To Count  
J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.  
MDL - Adjusted Method Detection Limit.  
PQL - Practical Quantitation Limit.  
RL - Reporting Limit.  
S - Surrogate  
1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.  
Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.  
LCS(D) - Laboratory Control Sample (Duplicate)  
MS(D) - Matrix Spike (Duplicate)  
DUP - Sample Duplicate  
RPD - Relative Percent Difference  
NC - Not Calculable.  
SG - Silica Gel - Clean-Up  
U - Indicates the compound was analyzed for, but not detected.  
N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.  
Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.  
TNI - The NELAC Institute.

### LABORATORIES

PASI-K Pace Analytical Services - Kansas City  
PASI-SE Pace Analytical Services - SE Kansas

### ANALYTE QUALIFIERS

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

## REPORT OF LABORATORY ANALYSIS

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## QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: EAST PLANT  
Pace Project No.: 60255802

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60255802001	MO-0121312 EFF	EPA 821/R-02/012	500471		
60255802002	MO-0121312 EFF	EPA 350.1	500103		

## REPORT OF LABORATORY ANALYSIS

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# Sample Condition Upon Receipt

WO#: 60255802



60255802

Client Name: Union

Courier: FedEx ☐ UPS ☐ VIA ☒ Clay ☐ PEX ☐ ECI ☐ Pace ☐ Xroads ☐ Client ☐ Other ☐

Tracking #: \_\_\_\_\_ Pace Shipping Label Used? Yes ☐ No ☒

Custody Seal on Cooler/Box Present: Yes ☒ No ☐ Seals intact: Yes ☒ No ☐

Packing Material: Bubble Wrap ☐ Bubble Bags ☐ Foam ☐ None ☒ Other ☐

Thermometer Used: T-266 / T-239 Type of Ice: Wet Blue ☐ None ☐

Cooler Temperature (°C): As-read 1.1 Corr. Factor CF 0.0 CF +0.3 Corrected 1.1

Date and initials of person  
examining contents:

Temperature should be above freezing to 6°C

Chain of Custody present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Chain of Custody relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Samples arrived within holding time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Short Hold Time analyses (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A
Rush Turn Around Time requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A
Sufficient volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Correct containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Pace containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Containers intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A
Filtered volume received for dissolved tests?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A
Sample labels match COC: Date / time / ID / analyses	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Samples contain multiple phases? Matrix: <u>WT</u>	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A
Containers requiring pH preservation in compliance? (HNO <sub>3</sub> , H <sub>2</sub> SO <sub>4</sub> , HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Cyanide water sample checks: <u>N/A</u>	
Lead acetate strip turns dark? (Record only)	<input type="checkbox"/> Yes <input type="checkbox"/> No
Potassium iodide test strip turns blue/purple? (Preserve)	<input type="checkbox"/> Yes <input type="checkbox"/> No
Trip Blank present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Headspace in VOA vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Samples from USDA Regulated Area: State:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Additional labels attached to 5035A / TX1005 vials in the field?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A

Client Notification/ Resolution: Copy COC to Client? Y / N Field Data Required? Y / N

Person Contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Comments/ Resolution: \_\_\_\_\_

Project Manager Review: \_\_\_\_\_

Digitally signed  
by: Richard

Date: \_\_\_\_\_

Richard  
Mannz  
DN: CN =  
Richard Mannz C  
= US, O = Pace  
Analytical OU =  
Client Services  
Date: 2017.10.19  
16:52:11 -05'00'



# Sample Condition Upon Receipt

00255 802

Client Name:

Union

Courier: FedEx ☐ UPS ☒ VIA ☐ Clay ☐ PEX ☐ ECI ☐ Pace ☐ Xroads ☐ Client ☐ Other ☐

Tracking #: \_\_\_\_\_ Pace Shipping Label Used? Yes ☐ No ☐

Custody Seal on Cooler/Box Present: Yes ☒ No ☐ Seals intact: Yes ☒ No ☐

Packing Material: Bubble Wrap ☐ Bubble Bags ☐ Foam ☐ None ☒ Other ☐

Thermometer Used: T-111 Type of Ice: Wet Blue None

Cooler Temperature (°C): As-read 2.8 Corr. Factor 1.5 Corrected 1.3

Date and initials of person examining contents:

Temperature should be above freezing to 6°C

Chain of Custody present: ☒ Yes ☐ No ☐ N/A

Chain of Custody relinquished: ☒ Yes ☐ No ☐ N/A

Samples arrived within holding time: ☒ Yes ☐ No ☐ N/A

Short Hold Time analyses (<72hr): ☒ Yes ☐ No ☐ N/A

Rush Turn Around Time requested: ☐ Yes ☒ No ☐ N/A

Sufficient volume: ☒ Yes ☐ No ☐ N/A

Correct containers used: ☒ Yes ☐ No ☐ N/A

Pace containers used: ☒ Yes ☐ No ☐ N/A

Containers intact: ☒ Yes ☐ No ☐ N/A

Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs? ☐ Yes ☐ No ☒ N/A

Filtered volume received for dissolved tests? ☐ Yes ☐ No ☒ N/A

Sample labels match COC: Date / time / ID / analyses ☒ Yes ☐ No ☐ N/A

Samples contain multiple phases? Matrix: ☐ Yes ☒ No ☐ N/A

Containers requiring pH preservation in compliance? ☐ Yes ☐ No ☒ N/A

(HNO<sub>3</sub>, H<sub>2</sub>SO<sub>4</sub>, HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide)

(Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)

Cyanide water sample checks:

Lead acetate strip turns dark? (Record only) ☐ Yes ☐ No

Potassium iodide test strip turns blue/purple? (Preserve) ☐ Yes ☐ No

Trip Blank present: ☐ Yes ☐ No ☒ N/A

Headspace in VOA vials (>6mm): ☐ Yes ☐ No ☒ N/A

Samples from USDA Regulated Area: State: ☐ Yes ☐ No ☒ N/A

Additional labels attached to 5035A / TX1005 vials in the field? ☐ Yes ☐ No ☒ N/A

Client Notification/ Resolution:

Copy COC to Client? Y / N

Field Data Required? Y / N

Person Contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Comments/ Resolution: \_\_\_\_\_

Project Manager Review: \_\_\_\_\_

Date: \_\_\_\_\_

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

www.dnshistory.com

Page 11 of 23

2. The amount of the advance payment shall be credited to the account of the contractor within 30 days of the date of receipt of the advance payment. The contractor shall be liable for any interest charges of 15% per month for any advance payment not paid within 30 days of the date of receipt of the advance payment.



PACE # 60255802

*Pace Analytical Services, Inc.*  
9608 Loiret Blvd.  
Lenexa, KS 66219  
Phone: 913.599.5665  
Fax: 913.599.1759

October 23, 2017

Dave Aguilar  
City of Union  
500 E. Locust  
Union, MO 63084

Re: Lab Project Number: 60255802  
Client Project ID: Wet Test

Dear:

Enclosed are the analytical results for sample(s) received by the laboratory. The results relate only to the samples included in this report. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

If you have any question concerning this report, please feel free to contact me.

Sincerely,

Tim Harrell  
[Tim.Harrell@pacelabs.com](mailto:Tim.Harrell@pacelabs.com)  
Technical Director

## REPORT OF LABORATORY ANALYSIS

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PACE # 60255802

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**Pace Analytical Services, Inc.**  
**808 West McKay, Frontenac, KS 66763**

**LABORATORY REPORT:**

<b>CLIENT:</b> Dave Aguilar City of Union 500 E Locust Union, MO 63084 1-636-583-8522	<b>Date Reported:</b> 10-23-17 <b>Date Initiated:</b> 10-18-17 <b>Time Set:</b> 11:00 <b>Date Terminated:</b> 10-20-17
---	---

**BIOMONITORING STUDY**

**ACUTE TOXICITY**

**Permit # MO-0121312**

**FINDING AND CONCLUSIONS:**

Acute toxicity testing was performed on duplicate samples of effluent collected from the City of Union (East) effluent discharge. Acute toxicity, as defined by significant mortality for at least one of two aquatic test species during a 48 hour period of exposure, was not detected in Ceriodaphnia exposed to the 100% effluent, and was not detected in fathead minnows exposed to the 100% effluent. The LC50 for the Ceriodaphnia was >100% and >100% for the Pimephales. The test species utilized in this test were the water flea, Ceriodaphnia dubia and the fathead minnow, Pimephales promelas. Detailed results of the toxicity testing are provided in the Acute Toxicity Reports. In addition to the acute toxicity testing, water temperature, pH, dissolved oxygen, total hardness, total alkalinity, conductivity, and chlorine determinations were performed on the effluent and control samples.

**SAMPLING PROCEDURES:**

City of Union (East) personnel collected a sample at City of Union (East) effluent discharge. The sample was preserved with ice and transported to Pace Analytical by commercial carrier.

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## INTRODUCTION:

The purpose of this test was to determine the acute toxicity of City of Union (East) effluent on the freshwater invertebrate, Ceriodaphnia dubia and the fathead minnow, Pimephales promelas. These tests were conducted at Pace Analytical Services, Inc., Frontenac, KS.

## TEST ORGANISMS:

Ceriodaphnia dubia - The genetic stock of Ceriodaphnia dubia used in this acute toxicity Test were originally obtained from a private breeder. Ceriodaphnia are cultured in house at Pace Analytical Services, Inc. Culture methods of Ceriodaphnia were obtained from EPA821-C-02-006 November 2002.

Pimephales promelas - The fathead minnows used in this acute toxicity test were cultured in-house at Pace Analytical Services, Inc., Frontenac, KS and/or were obtained from a private breeder. Fathead minnows are maintained at Pace Analytical Services until use for acute toxicity between the ages of 1 and 14 days. Information for culturing fathead minnows was taken from EPA821-C-02-006 November 2002.

## MATERIALS AND METHODS:

Procedures used in the acute toxicity tests are described in Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms (USEPA, 2002).

City of Union (East) personnel collected the effluent tested from City of Union (East) discharge. Testing was performed using a 100% effluent, a series of dilutions, and a synthetic control. The toxicity test was initiated within 36 hours of sample collection.

Effluent and synthetic control test solutions were not aerated during the testing period.

## Ceriodaphnia ACUTE METHODS:

This static test was ran using 40 ml glass vials containing 25 ml of test solution. Food was administered before the test. Five Ceriodaphnia neonates (<24 hr old) were randomly selected and placed in each of 4 replicates of test solution. A total of 20 organisms per concentration were tested. Observations of mortality were made at 24 and 48 hours of exposure.

## REPORT OF LABORATORY ANALYSIS

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**Pimephales ACUTE METHODS:**

This static toxicity test was conducted using 500 ml polypropylene container as test chambers containing 250 ml of test solution. Food was administered prior to test initiation, but not during the testing period. Ten Pimephales, 1 – 14 days old, from a single spawn, were randomly selected and placed in each of 4 test chambers. A total of 40 organisms were exposed to each test concentration. Observations of mortality were made at 24 and 48 hours of exposure.

**WATER QUALITY METHODS:**

Prior to test initiation, temperature, dissolved oxygen, pH, total alkalinity, total hardness, and total residual chlorine were measured in the effluent and in the controls. At 24 and 48 hours of exposure, temperature, dissolved oxygen, pH, and conductance were measured in the effluent sample and the controls.

**DATA ANALYSIS:**

Statistically significant ( $p < 0.05$ ) mortality is determined by Dunnet's procedure using average percent survival of each test concentration versus the average survival of the controls. If significant mortality occurs, median lethal concentrations (LC50) are calculated using effluent concentrations and their corresponding percent mortality data. The LC50's and the 95% confidence intervals are calculated where appropriate by the Spearman-Kärber method. TUa calculated by  $TUa = 100/LC50$ . Statistical analysis is accomplished by following steps in EPA/600/4-90/027F, August 1993 and by use of Toxstat version 3.4.

**REPORT OF LABORATORY ANALYSIS**

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## RESULTS:

THE Ceriodaphnia MORTALITY RESULTS - There was no significant mortality observed of the freshwater invertebrate, Ceriodaphnia dubia, during the 48 hour exposure period to the 100% effluent concentrations. There was no significant mortality in the synthetic control. The LC50 value of the sample to Ceriodaphnia is approximately >100% the TUa <1.

### Ceriodaphnia MORTALITY DATA

#### # ALIVE

CONC.	REP #	0 HOURS	24 HOURS	48 HOURS	% MORT.
SYNTHETIC	1	5	5	5	0
"	2	5	5	5	0
"	3	5	5	5	0
"	4	5	5	5	0
6.25%	1	5	5	5	0
"	2	5	5	5	0
"	3	5	5	5	0
"	4	5	5	5	0
12.5%	1	5	5	5	0
"	2	5	5	5	0
"	3	5	5	5	0
"	4	5	5	5	0
25%	1	5	5	5	0
"	2	5	5	5	0
"	3	5	5	5	0
"	4	5	5	5	0
50%	1	5	5	5	0
"	2	5	5	5	0
"	3	5	5	5	0
"	4	5	5	5	0
100%	1	5	5	5	0
"	2	5	5	5	0
"	3	5	5	5	0
"	4	5	5	5	0

**AVG. MORTALITY @ (100% EFFLUENT) =0.0%**

## REPORT OF LABORATORY ANALYSIS

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**THE Pimephales RESULTS** - Minnows exposed to effluent collected at City of Union (East) effluent discharge exhibited no significant mortality in the 100% effluent concentration during the 48 hr exposure period. The synthetic control showed no significant mortality during the testing period. The LC50 value of the effluent to fathead minnows is estimated to be >100% the TUa <1.

CONC.	REP #	0 HOURS	24 HOURS	48 HOURS	% MORTALITY
SYNTHETIC	1	10	10	10	0
"	2	10	10	10	0
"	3	10	10	10	0
"	4	10	10	10	0
6.25%	1	10	10	10	0
"	2	10	10	10	0
"	3	10	10	10	0
"	4	10	10	10	0
12.5%	1	10	10	10	0
"	2	10	10	10	0
"	3	10	10	10	0
"	4	10	10	10	0
25%	1	10	10	10	0
"	2	10	10	10	0
"	3	10	10	10	0
"	4	10	10	10	0
50%	1	10	10	10	0
"	2	10	10	10	0
"	3	10	10	10	0
"	4	10	10	10	0
100%	1	10	10	10	0
"	2	10	10	10	0
"	3	10	10	10	0
"	4	10	10	10	0

**AVG. MORTALITY @ (100% EFFLUENT) = 0.0%**

## REPORT OF LABORATORY ANALYSIS

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PACE # 60255802

**Pace Analytical Services, Inc.**  
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Phone: 913.599.5665  
Fax: 913.599.1759

#### WATER CHEMISTRY RESULTS:

Total residual chlorine (Cl<sub>2</sub>) - The effluent sample from City of Union (East) discharge had <0.1 mg/l detectable level of total residual chlorine upon receipt in the laboratory.

Dissolved Oxygen (D.O.) - Dissolved oxygen reading of the 100% effluent sample was 7.40 mg/l after being raised to the test temperature of 25° C. At termination D.O. was 6.70 mg/l in the 100% effluent, which falls into acceptable limits. Aeration was not required in this test.

pH - The pH of the 100% effluent was 7.48 upon receipt in the laboratory and the synthetic control had a 7.56. At termination the pH measurement in the 100% effluent sample was 8.49.

Conductance - The conductance of the effluent sample was 1465 umhos and the synthetic control was 318 umhos.

#### REPORT OF LABORATORY ANALYSIS

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**INITIAL WATER QUALITY:**

Initial Measurements Synthetic Water

pH	D.O. (mg/l)	Cond. (umhos)	Cl2 (mg/l)	Temp (C)	Hard (mg/l)	Alk (mg/l)
7.56	8.00	318	<0.1	25.0	88	62

Initial Measurements of 100% Effluent

PH	D.O. (mg/l)	Cond. (umhos)	Cl2 (mg/l)	Temp (C)	Hard (mg/l)	Alk (mg/l)
7.48	7.40	1465	<0.1	25.0	310	304

**TEST WATER QUALITY:**

24-hour Water Quality Measurements

EFFLUENT CONC (%)	PH	D.O. (mg/l)	TEMP (C)	COND. (umhos)
Synthetic	7.64	7.20	25.1	330
6.25%	7.78	7.20	25.1	397
12.5%	7.91	7.20	25.1	662
25%	8.10	7.10	25.1	815
50%	8.20	7.00	25.1	1006
100%	8.41	7.00	25.1	1512

48-hour Water Quality Measurements

EFFLUENT CONC (%)	PH	D.O. (mg/l)	TEMP (C)	COND. (umhos)
Synthetic	7.72	7.00	25.2	342
6.25%	7.89	7.00	25.2	426
12.5%	7.98	7.00	25.2	690
25%	8.17	6.90	25.2	854
50%	8.28	6.80	25.2	1051
100%	8.49	6.70	25.2	1584

**REPORT OF LABORATORY ANALYSIS**

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### QUALITY ASSURANCE:

The absence of control mortality during this test indicated the health of the organisms and indicated that any significant mortality in the test concentrations is not due to contaminants or variations in test conditions. Reference toxicity tests are routinely performed by staff members of our Toxicology Department.

### REFERENCE TOXICANT (NaCl)

#### Ceriodaphnia

#### # OF LIVE ORGANISMS

CONC OF TOXICANT	TEST INITIATION	24 HOUR EXPOSURE	48 HOUR EXPOSURE
3.0 g/l	20	4	0
2.5 g/l	20	16	6
2.0 g/l	20	20	18
1.5 g/l	20	20	20
1.0 g/l	20	20	20

LC50 = 2.33 g/l NaCl

### REFERENCE TOXICANT (NaCl)

#### Pimephales

#### # OF LIVE ORGANISMS

CONC OF TOXICANT	TEST INITIATION	24 HOUR EXPOSURE	48 HOUR EXPOSURE
10.0 g/l	40	8	0
8.0 g/l	40	36	27
6.0 g/l	40	39	37
4.0 g/l	40	40	40
2.0 g/l	40	40	40

LC50 = 8.36g/l NaCl

Submitted By:

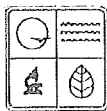
*Tim Harrell*

**Timothy Harrell**  
**Technical Director**

## REPORT OF LABORATORY ANALYSIS

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MISSOURI DEPARTMENT OF NATURAL RESOURCES  
WATER PROTECTION PROGRAM  
**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	DATE AND TIME COLLECTED EFFLUENT _____ UPSTREAM _____
PERMIT NUMBER	PERMIT OUTFALL NUMBER
COLLECTOR'S NAME	
RECEIVING STREAM COLLECTION SITE AND DESCRIPTION	
PERMIT ALLOWABLE EFFLUENT CONCENTRATION (AEC)	EFFLUENT SAMPLE TYPE (CHECK ONE) <input type="checkbox"/> 24 HR COMPOSITE <input type="checkbox"/> GRAB <input type="checkbox"/> OTHER _____
SAMPLE NUMBER EFFLUENT _____ UPSTREAM _____	UPSTREAM SAMPLE TYPE (CHECK ONE) <input type="checkbox"/> 24 HR COMPOSITE <input 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 PACE ANALYTICAL SERVICES	TEST TYPE ACUTE	
FINAL REPORT NUMBER 60255802	TEST DURATION 48 HOURS	
DATE OF LAST REFERENCE TOXICANT TESTING 10/17/17	TEST METHOD EPA 2002 AND 2000	
DATE AND TIME SAMPLES RECEIVED AT LABORATORY 10/18/17 9:40	TEST START DATE AND TIME 10/18/17 11:00	TEST END DATE AND TIME 10/20/17 10:45
SAMPLE DECHLORINATED PRIOR TO ANALYSIS? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO EFFLUENT _____ UPSTREAM _____	TEST ORGANISM #1 AND AGE DUBIA <24 HOURS	TEST ORGANISM #2 AND AGE FATHEAD 8 DAYS
SAMPLE FILTERED <sup>1</sup> PRIOR TO ANALYSIS? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO EFFLUENT _____ UPSTREAM _____	90 PERCENT OR GREATER SURVIVAL IN SYNTHETIC CONTROL? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	DILUTION WATER USED TO ACHIEVE AEC
FILTER MESH SIEVE SIZE 2	EFFLUENT ORGANISM #1 PERCENT MORTALITY AT AEC 0	EFFLUENT ORGANISM #2 PERCENT MORTALITY AT AEC 0
SAMPLE AERATED DURING TESTING? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	UPSTREAM ORGANISM #1 PERCENT MORTALITY 0	UPSTREAM ORGANISM #2 PERCENT 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

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

PARAMETER	RESULT	METHOD	WHEN ANALYZED
Temperature °C	25.0	SM 2550B	10/18/17
pH Standard Units	7.48	7.95SM 4500-H+ B	10/18/17
Conductance µMols	1465	EPA 120.1	10/18/17
Dissolved Oxygen mg/L	7.40	SM 4500-O G	10/18/17
Total Residual Chlorine mg/L	<.1	SM 4500-CL G	10/18/17
Unionized Ammonia mg/L			
* Total Alkalinity mg/L	304	SM 2320 B	10/18/17
* Total Hardness mg/L	310	SM2340 C	10/18/17

\* Recommended by EPA 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 (Continued)**  
(TO BE ATTACHED TO WET TESTS FOR SUBMISSION TO THE REGULATORY AUTHORITY)

**MINIMUM REQUIRED ANALYTICAL RESULTS FOR THE 100 PERCENT UPSTREAM SAMPLE<sup>3</sup>**

PARAMETER	RESULT	METHOD	WHEN ANALYZED
Temperature °C	25.0	SM 2550B	10/18/17
pH Standard Units	8.00	SM 4500-H+ B	10/18/17
Conductance µMhds	318	EPA 120.1	10/18/17
Dissolved Oxygen mg/L	8.00	SM 4500-O G	10/18/17
Total Residual Chlorine mg/L	<.1	SM 4500-CL G	10/18/17
Unionized Ammonia mg/L			
* Total Alkalinity mg/L	62	SM 2320 B	10/18/17
* Total Hardness mg/L	88	SM2340 C	10/18/17
* Recommended by EPA guidance, not a required analysis.			

**PRELIMINARY TEST ACCEPTABILITY MATRIX (FOR USE BY PERMITTEE IN DETERMINING TEST VALIDITY)**  
**MINIMUM REQUIRED ANALYTICAL RESULTS FOR THE 100 PERCENT UPSTREAM SAMPLE<sup>3</sup>**

**PERMIT ALLOWABLE EFFLUENT CONCENTRATION, or 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 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 National Pollutant Discharge Elimination System, or NPDES, compliance. Test is invalid otherwise.

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

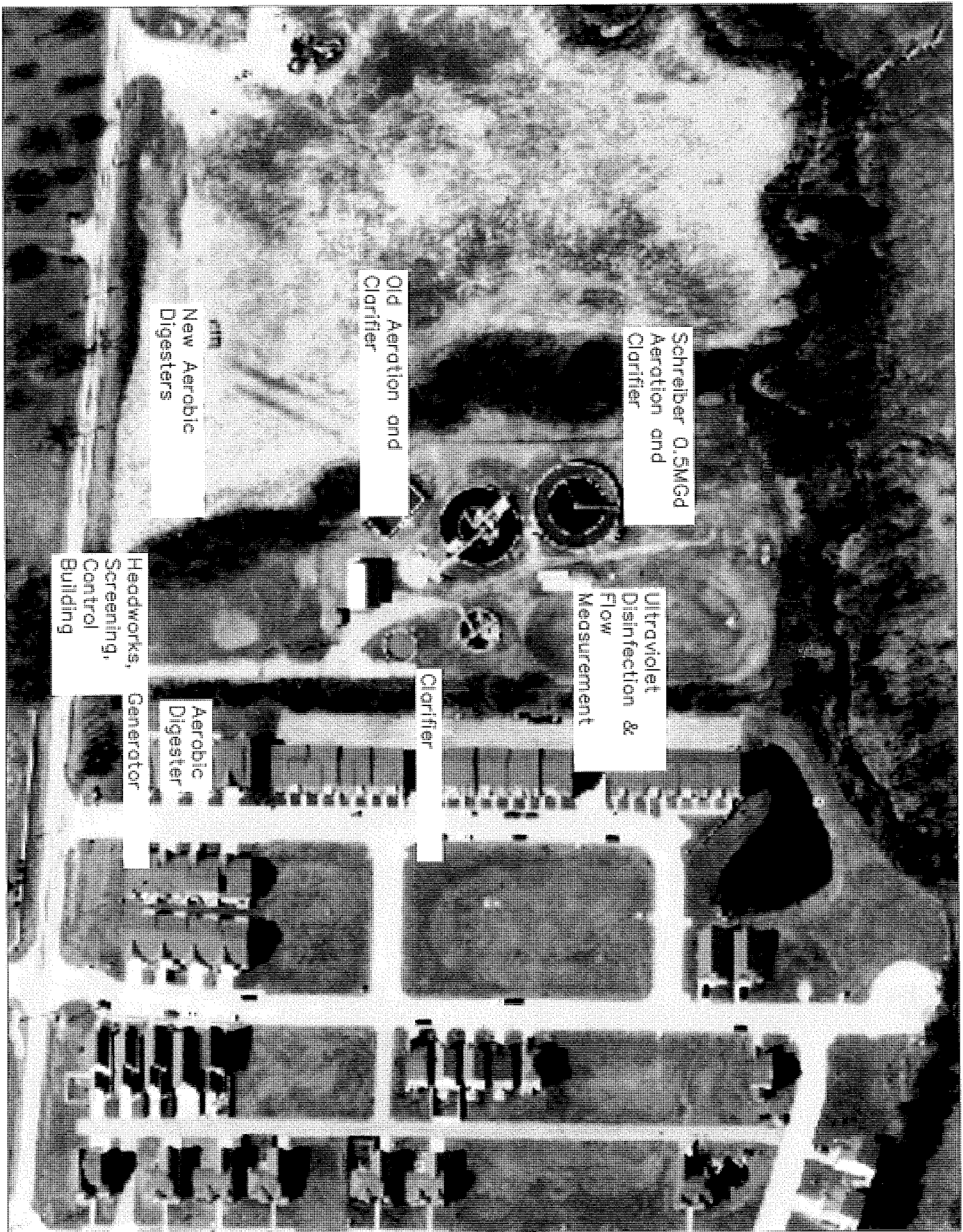
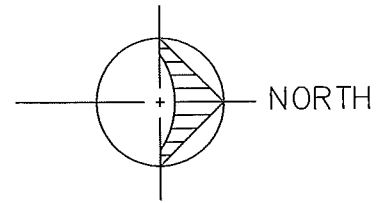
**FILTER MESH SIEVE SIZE:** Unless otherwise specified in writing by EPA, if sieve size is smaller than 60 microns, test is invalid.

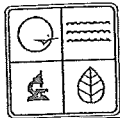
**90 PERCENT OR GREATER SURVIVAL IN LABORATORY CONTROL(S) (Y/N):** If no, test is invalid.

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







MISSOURI DEPARTMENT OF NATURAL RESOURCES  
WATER PROTECTION PROGRAM  
**FORM S - SECTION 1. DOMESTIC SLUDGE REPORTING**

3-11-19  
RECEIVED  
JAN 14 2020  
Water Protection Program

**GENERAL INFORMATION**

REPORTING PERIOD: (YEAR)

2018

FACILITY NAME

UNION EAST SEWAGE TREATMENT PLANT

CITY NAME

CITY OF UNION

PERMIT NUMBER

MO-0121312

COUNTY NAME

FRANKLIN

**INSTRUCTIONS: See attached instruction sheet for directions.**

1. Sludge Production, including sludge received from others:

ACTUAL DRY TONS/YEAR

39.59

ACTUAL POPULATION EQUIVALENT

3,704

2. Sludge Treatment

☐ Anaerobic Digester

☒ Aerobic Digester

☐ Composting

☐ Storage Tank

☐ Air or Heat Drying

☐ Lime Stabilization

☐ Other, Describe: \_\_\_\_\_

3. Sludge Use or Disposal: Complete the rest of this form only for the sections applicable to your method of sludge and biosolids use or disposal.

X All Permittees

Complete Section 1

☐ Land Application (LA)

Complete Sections 2 and 3

☒ Contract Hauler (CH) >150 PE

Complete Sections 2 and 4

☐ Contract Hauler (CH) <150 PE

Complete Section 4

☐ Hauled to another Treatment Facility (HT)

Complete Section 4

☐ Solid Waste Landfill (LF)

Complete Section 4

☐ Sludge Disposal Lagoon (SD)

Complete Section 5

☐ Incineration (IN)

Complete Section 6

☐ Sludge Hauled to Incinerator (IO)

Complete Section 6

4. Certification: I certify under penalty of law that the information contained in this report and attachments are true and correct. This determination has been made under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information used to determine these requirements have been met. I am aware that there are significant penalties for false certification, including the possibility of fine and imprisonment.

NAME (PRINT OR TYPE)

DAVID V. ROYAL

OFFICIAL TITLE

WASTEWATER OPERATOR

SIGNATURE

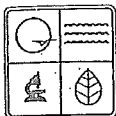
*David V. Royal*

DATE

1-18-19

TELEPHONE NUMBER WITH AREA CODE

636-583-0820



MISSOURI DEPARTMENT OF NATURAL RESOURCES  
WATER PROTECTION PROGRAM, WATER POLLUTION BRANCH  
**FORM S - SECTION 2 - LABORATORY RESULTS - FORM SA**

COPIY  
7-11-19

**SLUDGE MONITORING RESULTS FOR METALS, NUTRIENTS, PATHOGENS AND VETORS**

PERMIT NO:

MO - 0121312

REPORT PERIOD: (CALENDAR YEAR)

2018

FACILITY NAME

UNION EAST SEWAGE TREATMENT PLANT

Use this form to report sludge monitoring required under Standard Conditions for NPDES Permits, Part III, dated Aug. 15, 1994. For a copy, contact the department at (573) 751-6825.

If the facility has a design population equivalent (P.E.) of 150 or less, treat the sludge generated as septage and consequently, no testing is required. See WQ 422 guide, *Land Application of Septage*, for further guidance.

Report all results on **dry weight** basis.

Attach copies of all laboratory results for the items below.

**A. MINIMUM MONITORING LIST FOR ALL PERMITTEES**

PARAMETER	UNITS	AVERAGE	MINIMUM	MAXIMUM	NUMBER OF SAMPLES
TOTAL SOLIDS	%	2.45	2.2	2.8	4
TOTAL ARSENIC	mg/kg	< 41.5	< 25	< 63	4
TOTAL CADMIUM	mg/kg	< 5.55	< 3.3	< 8.4	4
TOTAL CHROMIUM	mg/kg	91.75	45	170	4
TOTAL COPPER	mg/kg	437.5	220	540	4
TOTAL LEAD	mg/kg	31	23	< 42	4
TOTAL MERCURY	mg/kg	1.76	< 0.82	4.2	4
TOTAL MOLYBDENUM	mg/kg	< 33.25	< 20	< 51	4
TOTAL NICKEL	mg/kg	83.5	37	190	4
TOTAL SELENIUM	mg/kg	< 27.75	< 17	< 42	4
TOTAL ZINC	mg/kg	992.5	570	1200	4

**B. ADDITIONAL MONITORING FOR LAND APPLICATION**

PARAMETER	UNITS	AVERAGE	MINIMUM	MAXIMUM	NUMBER OF SAMPLES
TOTAL KJELDAHL NITROGEN	mg/kg	56,250	30K	72K	4
TOTAL PHOSPHORUS AS P	mg/kg	36K	17K	81K	4
TOTAL POTASSIUM AS K	mg/kg	4,725	3500	6300	4

If more than two dry tons of sludge per acre/year is applied complete the following:

ORGANIC NITROGEN AS N	mg/kg	53K	25K	63K	4
AMMONIA NITROGEN AS N	mg/kg	5,575	3600	8700	4
NITRATE NITROGEN AS N	mg/kg	185.25	21	370	4

**C. POLLUTANT LIMITS**

POLLUTANT	AVERAGE SAMPLE CONCENTRATION mg/kg DRY WEIGHT	LOW METAL CONCENTRATION mg/kg DRY WEIGHT	CEILING CONCENTRATION mg/kg DRY WEIGHT
ARSENIC	< 41.5	41	75
CADMIUM	< 5.55	39	85
CHROMIUM	91.75	1,200	3,000
COPPER	437.5	1,500	4,300
LEAD	31	300	840
MERCURY	1.76	17	57
MOLYBDENUM	< 33.25	18	75
NICKEL	83.5	420	420
SELENIUM	< 27.75	36	100
ZINC	992.5	2,800	7,500

**D. PATHOGENS**

Pathogen testing is required for all sludges to show operational compliance, including sludges treated by a PSRP approved method.

The geometric mean of the density of fecal coliform is less than 2,000,000 Most Probable Number (MPN) or Colony Forming Units (CFU) per gram of total solids (dry weight basis) for each group of seven samples:

☒ Yes    ☐ No

Sampling frequency 1/QT

Geometric mean per gram of total solids for each group of seven samples was:

MPN/CFU 990,000

SAMPLE DATE 4/24/2018

MPN/CFU

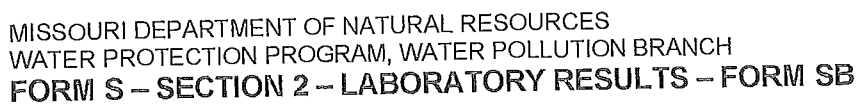
SAMPLE DATE

MPN/CFU

SAMPLE DATE

**E. VECTOR REDUCTION PROCESSES**

- ☐ 38 percent volatile solids reduction (attach calculations).  
☐ SOUR test, mg O/hr/g (attach graph and calculations).  
☐ Other. Attach explanation.



## PERMIT NO:

REPORT PERIOD: (CALENDAR YEAR)

MO -

FACILITY NAME

Report all results on **dry weight** basis.

## F. PRIORITY POLLUTANTS

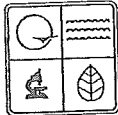
Report only those pollutants that were above detection limits. Do not repeat pollutants listed in section 2A. Attach additional sheets as needed.

[illegible]

**G. OTHER SPECIAL MONITORING REQUIRED BY PERMIT**

Report results of any additional testing required under the Special Conditions section of your permit.

[illegible]

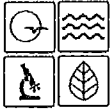


MISSOURI DEPARTMENT OF NATURAL RESOURCES  
WATER PROTECTION PROGRAM, WATER POLLUTION BRANCH  
**FORM S - SECTION 4. SLUDGE HAULING**

3-11-19

PERMIT NO.: <u>MO-0121312</u>		REPORTING PERIOD: CALENDAR YEAR <u>2018</u>
FACILITY NAME <u>UNION EAST SEWAGE TREATMENT PLANT</u>		
<p>Complete this section if the sludge generator or contract hauler transports sludge to another wastewater treatment facility or sludge disposal facility. Applicable sludge requirements are listed under Part III Standard Conditions.</p> <p>Show the applicable NPDES permit number (MO-) under 4.14 and 4.24. If disposal is at a landfill, surface disposal facility, or sludge disposal lagoon, the solid waste disposal permit number (SW) must also be given.</p> <p>If the facility has a design population equivalent (P.E.) of 150 or less, treat the sludge generated as septage and consequently, no testing is required. See WQ 422 guide, <i>Land Application of Septage</i>, for further guidance.</p>		
<b>4.10 Person Responsible for Hauling Sludge to Disposal Facility</b>		
4.11 HAULER NAME <u>OKOS &amp; BUSCH</u>		
4.12 CONTACT PERSON <u>BILL MUEER</u>		
4.13 CONTACT ADDRESS <u>149.33 MOORE COMETARY RD</u> <u>BARUNVILLE IL 62626</u>		
4.14 PHONE <u>636-359-1575</u>	PERMIT NO: <u>MO- 0121312</u>	SW
<b>4.20 Person Responsible for Final Sludge Disposal</b>		
4.21 FACILITY NAME		
4.22 CONTACT PERSON		
4.23 CONTACT ADDRESS		
4.24 PHONE	PERMIT NO: <u>MO-</u>	SW
4.25 SLUDGE DISPOSAL METHOD		
4.26 LEGAL <u>    </u> $\frac{1}{4}$ , <u>    </u> $\frac{1}{4}$ , SEC <u>    </u> , T <u>    </u> , R <u>    </u> , COUNTY <u>    </u>		

<b>4.30 Sludge Removal from Treatment Facility</b>											
<b>4.31 CAPACITY OF SLUDGE HOLDING STRUCTURES</b>									<b>DAYS OF STORAGE</b>		
Sludge storage provided: <u>100K</u> gallons.									30		
AVERAGE PERCENT SOLIDS OF SLUDGE <div style="text-align: center;">2.45</div>											
<input checked="" type="checkbox"/> No sludge storage is provided											
<b>4.32 Sludge hauled for disposal during the report period.</b>											
DRY TONS <div style="text-align: center;">39.59</div>				CUBIC FEET				GALLONS			
<b>4.33 Number of dry tons or gallons hauled each month from the wastewater treatment facility.</b>											
JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.
-	30,976	111,523	6196	80,577	37,206	31,041	-	-	-	42,000	48,000
If sludge hauled was more than the sludge holding capacity, attach explanation.											
<b>4.40 Sludge Monitoring (Per Subsection J of Part III Standard Conditions)</b>											
<input type="checkbox"/> 4.41 If the receiving facility is permitted facility, then it is responsible for testing and submitting section 2.											
<input type="checkbox"/> 4.42 If the receiving facility is not a permitted facility, then the generator is responsible for testing and completing section 2.											
<b>4.50 Sludge Disposal Requirements</b>											
<b>4.51</b> If the disposal facility listed under 4.20 does not have a sludge disposal permit, the wastewater treatment facility or sludge generator shall submit detailed information on sludge disposal: <div style="margin-left: 20px;"> <input type="checkbox"/> Attach completed Section 3 of Form S, if sludge is land applied.  <input type="checkbox"/> Attach sheets providing the information listed under section K of Part III Special Conditions, if sludge is not land applied.         </div>											
<b>4.52</b> Are alternate limits or exceptions listed in the Special Conditions section of the wastewater treatment facility permit or sludge generator permit? <div style="margin-left: 20px;"> <input type="checkbox"/> YES      <input type="checkbox"/> NO      If yes, attach explanation sheet.         </div>											



MISSOURI DEPARTMENT OF NATURAL RESOURCES  
WATER PROTECTION PROGRAM  
FINANCIAL QUESTIONNAIRE



NOTE ► FINANCIAL INFORMATION THAT IS NOT PROVIDED THROUGH THIS FORM WILL BE OBTAINED BY THE DEPARTMENT FROM READILY AVAILABLE SOURCES.

1. GENERAL INFORMATION

FACILITY NAME <i>Union East Sewage Treatment Plant</i>	PERMIT NUMBER #MO- 0121312
CITY <i>Union</i>	COUNTY <i>Franklin</i>

2. GENERAL FINANCIAL INFORMATION (ALL FACILITIES)

2.1 Number of connections to the facility: Residential <u>1347</u> Commercial <u>82</u> Industrial <u>18</u>	
2.2 Current sewer user rate (Based on a 5,000 gallon per month usage): <i>See attached</i> ✓	
2.3 Current annual operating costs for the facility (excludes depreciation):	\$897,852.00
2.4 Bond rating (if applicable):	AA-
2.5 Bonding capacity:	?
2.6 Current outstanding debt relating to wastewater collection and treatment:	\$4,618,600.00
2.7 Amount within the current user rate used toward payments on outstanding debt related to the current wastewater infrastructure:	\$514,494 Debt payments
2.8 Attach any relevant financial statements. ✓ <i>(See attached) - Financial Report</i>	

3. FINANCIAL INFORMATION REQUIRED FROM MUNICIPALITIES

3.1 Municipality's Full Market Property Value:	\$15,034,590.27
3.2 Municipality's Overall Net Debt:	\$4,618,600.00
3.3 Municipality's Property Tax Revenues (levied) [A]:	\$1,337,827.00
3.4 Municipality's Property Tax Revenues (collected) [B]:	\$1,367,748.00
3.5 Municipality's Property Tax Collection Rate ([B]/[A]):	102.2 %

4. FINANCIAL INFORMATION REQUIRED FROM SEWER DISTRICTS

4.1 Total connections to the sewer district: Residential _____ Commercial _____ Industrial _____	
4.2 When facilities require upgrades, how are the costs divided? Will the homes connected to the upgraded facility bear the costs? Will the costs be divided across the sewer district?	

5. ADDITIONAL CONSIDERATIONS (ALL FACILITIES)

5.1 Provide a list of major infrastructure or other investments in environmental projects. Include project timing and costs and indicate any possible overlap or complications (attach sheets as necessary):	
5.2 Provide a list of any other relevant local community economic conditions that may impact the ability to afford new permit requirements (attach sheets as necessary):	<i>MAINTENANCE PROJECTS ARE BUDGETED YEARLY. LARGE CAPITAL PROJECTS MUST BE BUDGETED OVER A 3 TO 5 YEAR TIMEFRAME</i>



# Union East STP

## 6. CERTIFICATION

FINANCIAL CONTACT

Heather Keith

OFFICIAL TITLE

Financial Officer

EMAIL ADDRESS

hkeith@unionmissouri.org

TELEPHONE NUMBER WITH AREA CODE

636-583-3600 Ext 1111

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 submitted 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.

OWNER OR AUTHORIZED REPRESENTATIVE

Russell L. Rost

OFFICIAL TITLE

City Administrator

SIGNATURE

*Russell L. Rost*

DATE SIGNED

1/10/2020

### INSTRUCTIONS FOR COMPLETING THE FINANCIAL QUESTIONNAIRE

The Financial Questionnaire is to be completed by municipalities, sewer districts, and water supply districts when filing for renewal of their Missouri State Operating Permit. The Financial Questionnaire is to be submitted as an attachment to **FORM B: APPLICATION FOR OPERATING PERMIT FOR FACILITIES THAT RECEIVE PRIMARILY DOMESTIC WASTE AND HAVE A DESIGN FLOW LESS THAN OR EQUAL TO 100,000 GALLONS PER DAY** and **FORM B2: APPLICATION FOR OPERATING PERMIT FOR FACILITIES THAT RECEIVE PRIMARILY DOMESTIC WASTE AND HAVE A DESIGN FLOW MORE THAN 100,000 GALLONS PER DAY**.

1. GENERAL INFORMATION – Provide the name by which the facility is locally known, the Missouri State Operating Permit number, and the city and county where the facility is located.
2. GENERAL FINANCIAL INFORMATION (ALL FACILITIES) – Municipalities, sewer districts, and water supply districts are to complete.
  - 2.1 Self-explanatory.
  - 2.2 Provide the rate that a household would be charged for sewer service if they use 5,000 gallons per month.
  - 2.3 Provide the cost to operate and maintain the wastewater facility annually.
  - 2.4 Bond ratings can be found here: <https://emma.msrb.org/IssuerHomePage/HomepagesForC6?cusip6=795169>.
  - 2.5 General obligation bond capacity allowed by constitution: Cities = up to 20% of taxable tangible property; Sewer districts = up to 5% of taxable tangible property.
  - 2.6 Provide the amount of debt owed on wastewater collection and treatment. Debt information is typically available from your community's annual financial statements
  - 2.7 Provide the amount of a user's monthly sewer bill that is used toward debt owed on wastewater collection and treatment. This may be a percentage or dollar amount.
  - 2.8 Self-explanatory.
3. FINANCIAL INFORMATION REQUIRED FROM MUNICIPALITIES – Municipalities are to complete.
  - 3.1 Full Market Property Value is typically available through your community or state assessor's office.
  - 3.2 Debt information is typically available from your community's annual financial statements.
  - 3.3 Property tax revenues are typically available from your community's annual financial statements. Property tax rates for Missouri communities can be found in the annual auditor's report: <https://app.auditor.mo.gov/AuditReports/AudRpt2.aspx?id=31>.
  - 3.4 Property Taxes Levied = (Real Property Assessed Value) \* (Property Tax Rate). This information is typically available through your community or state assessor's office and your community's annual financial statements. Property tax rates for Missouri communities can be found in the annual auditor's report: <https://app.auditor.mo.gov/AuditReports/AudRpt2.aspx?id=31>.
  - 3.5 Property tax collection rate = (Property Tax Revenues) ÷ (Property Taxes Levied).
4. FINANCIAL INFORMATION REQUIRED FROM SEWER DISTRICTS – Sewer Districts and Water Supply Districts are to complete.
  - 4.1-4.2 Self-explanatory.
5. ADDITIONAL CONSIDERATIONS (ALL FACILITIES) – Municipalities, sewer districts, and water supply districts are to complete.
  - 5.1-5.2 Self-explanatory.
6. CERTIFICATION – Provide the name and contact information for the individual who can respond to financial information requests for your community. This form must be signed by your community's "owner" or "authorized representative". The owner for a municipality is either the principal executive officer or ranking elected official.

If there are any questions concerning this form or your Missouri State Operating Permit, contact the Department of Natural Resources, Water Protection Program, Operating Permits Section at 800-361-4827 or 573-751-6825.

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**WATER/SEWER BILLING RATES**

**Water Rates:**    \$ 6.70 Minimum (0-2,000 gals.)  
                         \$ 3.05 per 1,000 gal. (2,001-35,000 gals.)  
                         \$ 2.95 per 1,000 gal. (35,001 + gals.)

**Sewer Rates:**    \$ 2.65 Minimum (Water metered users)  
                         \$ 2.35 per 1,000 gal. Metered water usage  
                         \$19.10 per month flat rate per unit for sewer only users.

**Out-of-Town**  
**Rates (Water):**    \$10.50 Minimum (0-1,000 gals.)  
                         \$ 4.15 per 1,000 gal. (1,001-25,000)  
                         \$ 3.32 per 1,000 gal. (25,001 gal. +)

**Primacy Fees:**    Varies depending on meter size. Billed monthly for state  
                         mandated annual reporting. \*Pass through fee.

**Security Deposit:** \$100.00 required for rental property only. Deposit is  
                         non-interest bearing. Refundable upon payment of final  
                         bill.

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