

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, 92nd Congress) as amended,

Permit No. MO-0027111

Owner: City of Herculaneum
Address: #1 Parkwood Court, Herculaneum, MO 63048

Continuing Authority: Same as above
Address: Same as above

Facility Name: Herculaneum Wastewater Treatment Plant
Facility Address: 200 School Road, Herculaneum, MO 63048

Legal Description: Land Grant 3028, Jefferson County
UTM Coordinates: X = 729520, Y = 4237423

Receiving Stream: Tributary to Joachim Creek
First Classified Stream and ID: Joachim Creek (P) (1719)
USGS Basin & Sub-watershed No.: Cahokia-Joachim; (07140101-0804)

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

FACILITY DESCRIPTION

Outfall #001 – POTW

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

Influent lift station / grit removal / bar screen / dual oxidation ditches / dual clarifiers / UV disinfection / aerobic digester / sludge press / sludge drying bed / sludge is landfilled.

Design population equivalent is 9,450.

Design flow is 1.045 MGD.

Actual flow is 0.888 MGD.

Design sludge production is 180 dry tons/year.

Permitted Feature INF – Influent Monitoring Location

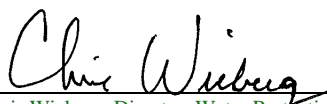
This permit authorizes only wastewater discharges under the Missouri Clean Water Law and the National Pollutant Discharge Elimination System; it does not apply to other regulated areas.

April 1, 2022

Effective Date

March 31, 2027

Expiration Date


Chris Wieberg, Director, Water Protection Program

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 Table A shall become effective on <u>April 1, 2022</u> . 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 ₅	mg/L		45	30	once/month	composite**
Total Suspended Solids	mg/L		45	30	once/month	composite**
<i>E. coli</i> (Note 1, Page 4)	#/100mL		630	126	once/week	grab
Total Phosphorus	mg/L	*		*	once/month	composite**
Total Kjeldahl Nitrogen	mg/L	*		*	once/month	composite**
Nitrite + Nitrate	mg/L	*		*	once/month	composite**
EFFLUENT PARAMETER(S)			UNITS	MONTHLY AVERAGE MINIMUM	MEASUREMENT FREQUENCY	SAMPLE TYPE
Biochemical Oxygen Demand ₅ – Percent Removal (Note 2, Page 4)			%	85	once/month	calculated
Total Suspended Solids – Percent Removal (Note 2, Page 4)			%	85	once/month	calculated
MONITORING REPORTS SHALL BE SUBMITTED MONTHLY ; THE FIRST REPORT IS DUE <u>MAY 28, 2022</u> . THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.						
Limit Set: Q						
Ammonia as N (January)	mg/L	12.1		3.1	once/month	composite**
Ammonia as N (February)	mg/L	12.1		3.1	once/month	composite**
Ammonia as N (March)	mg/L	10.1		2.7	once/month	composite**
Ammonia as N (April)	mg/L	8.4		2.1	once/month	composite**
Ammonia as N (May)	mg/L	12.1		2.1	once/month	composite**
Ammonia as N (June)	mg/L	10.1		1.3	once/month	composite**
Ammonia as N (July)	mg/L	8.4		0.9	once/month	composite**
Ammonia as N (August)	mg/L	8.4		0.9	once/month	composite**
Ammonia as N (September)	mg/L	8.4		1.2	once/month	composite**
Ammonia as N (October)	mg/L	8.4		1.8	once/month	composite**
Ammonia as N (November)	mg/L	8.4		2.4	once/month	composite**
Ammonia as N (December)	mg/L	10.1		2.7	once/month	composite**
Oil & Grease	mg/L	15		10	once/quarter*****	grab
Hardness	mg/L	*		*	once/quarter*****	grab
Cadmium, Total Recoverable	ug/L	2.46		0.80	once/quarter*****	composite**
Copper, Total Recoverable	ug/L	*		*	once/quarter*****	composite**
Lead, Total Recoverable	ug/L	11.0		7.3	once/quarter*****	composite**
Nickel, Total Recoverable	ug/L	*		*	once/quarter*****	composite**
Zinc, Total Recoverable	ug/L	223.3		111.7	once/quarter*****	composite**
EFFLUENT PARAMETER(S)	UNITS	MINIMUM		MAXIMUM	MEASUREMENT FREQUENCY	SAMPLE TYPE
pH – Units****	SU	6.5		9.0	once/quarter*****	grab
MONITORING REPORTS SHALL BE SUBMITTED QUARTERLY ; THE FIRST REPORT IS DUE <u>JULY 28, 2022</u> . THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.						

* Monitoring requirement only.

** A composite sample made up from a minimum of four grab samples collected within a 24 hour period with a minimum of two hours between each grab sample. The facility may also buy an automatic sampling device to collect a 24-hour composite sample and collect composite samples composed of 48 aliquots (subsamples) collected at 30 minute intervals.

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

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

***** See table on Page 3 for quarterly sampling.

Quarterly Minimum Sampling Requirements				
Quarter	Months	<i>E. coli</i>	All Other Parameters	Report is Due
First	January, February, March	Not required to sample.	Sample at least once during any month of the quarter	April 28 th
Second	April, May, June	Sample at least once during any month of the quarter	Sample at least once during any month of the quarter	July 28 th
Third	July, August, September	Sample at least once during any month of the quarter	Sample at least once during any month of the quarter	October 28 th
Fourth	October	Sample once during October	Sample at least once during any month of the quarter	January 28 th
	November & December	Not required to sample.		

OUTFALL #001	TABLE A-2. 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 Table A-2 shall become effective on <u>April 1, 2022</u> 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, Page 4)	TU _a	*			once/year	composite**
ACUTE WET TEST MONITORING REPORTS SHALL BE SUBMITTED <u>ANNUALLY</u> ; THE FIRST REPORT IS DUE <u>OCTOBER 28, 2022</u> .						
Limit Set: WC						
Chronic Whole Effluent Toxicity (Note 4, Page 4)	TU _c	*			once/permit cycle	composite**
CHRONIC WET TEST REPORTS SHALL BE SUBMITTED <u>ONCE PER PERMIT CYCLE</u> ; THE FIRST REPORT IS DUE <u>OCTOBER 28, 2026</u> .						

* Monitoring requirement only.

** A composite sample made up from a minimum of four grab samples collected within a 24 hour period with a minimum of two hours between each grab sample. The facility may also buy an automatic sampling device to collect a 24-hour composite sample and collect composite samples composed of 48 aliquots (subsamples) collected at 30 minute intervals.

PERMITTED FEATURE <u>INF</u>	TABLE B-1. INFLUENT MONITORING REQUIREMENTS					
The monitoring requirements in Table B-1 shall become effective on <u>April 1, 2022</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 ₅ (Note 2, Page 4)	mg/L			*	once/month	composite**
Total Suspended Solids (Note 2, Page 4)	mg/L			*	once/month	composite**
Ammonia as N	mg/L	*		*	once/month	composite**
Total Phosphorus	mg/L	*		*	once/month	composite**
Total Kjeldahl Nitrogen	mg/L	*		*	once/month	composite**
Nitrite + Nitrate	mg/L	*		*	once/month	composite**
MONITORING REPORTS SHALL BE SUBMITTED <u>MONTHLY</u> ; THE FIRST REPORT IS DUE <u>MAY 28, 2022</u> .						

* Monitoring requirement only.

** A composite sample made up from a minimum of four grab samples collected within a 24 hour period with a minimum of two hours between each grab sample. The facility may also buy an automatic sampling device to collect a 24-hour composite sample and collect composite samples composed of 48 aliquots (subsamples) collected at 30 minute intervals.

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 – Influent sampling for BOD₅ 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. Calculate Percent Removal by using the following formula: $[(\text{Average Influent} - \text{Average Effluent}) / \text{Average Influent}] \times 100\% = \text{Percent Removal}$. 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. 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 or composite sample made up from a minimum of four grab samples collected within a 24 hour period with a minimum of two hours between each grab sample.

Note 3 – The Acute WET test shall be conducted during the years 2022, 2023, 2024, and 2025. See Special Condition #15 for additional requirements.

Note 4 – The Chronic WET test shall be conducted once per permit cycle during the year 2026. An Acute WET test is not required during the year of the chronic test. See Special Condition #16 for additional requirements.

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/data-e-services/missouri-gateway-environmental-management-mogem>. Information about the eDMR system can be found at <https://dnr.mo.gov/water/business-industry-other-entities/reporting/electronic-discharge-monitoring-reporting-system-edmr>. 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 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. The permittee may obtain an electronic reporting waiver by first submitting an eDMR Waiver Request Form: <https://dnr.mo.gov/document-search/electronic-discharge-monitoring-report-waiver-request-form-mo-780-2692>. 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. Permittee will cease discharge by connection to a facility with an area-wide management plan per 10 CSR 20-6.010(2)(B) within the timeframe allotted by the continuing authority with its notice of its availability. The permittee shall obtain Department approval for closure according to section 10 CSR 20-6.010(12) or alternate use of these facilities.
5. Report as no-discharge when a discharge does not occur during the report period.
6. 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) See sufficiently sensitive test method requirements in Standard Conditions Part I, Section A, No. 4 regarding proper testing and method minimum levels used for sample analysis.
 - (c) The permittee shall not report a sample result as "Non-Detect" without also reporting the method minimum level of the test. Reporting as "Non Detect" without also including the method minimum level, will be considered failure to report, which is a violation of this permit.
 - (d) The permittee shall provide the "Non-Detect" sample result using the less than symbol and the method minimum level (e.g., <50 µg/L, if the method minimum level for the parameter is 50 µg/L).
 - (e) Where the permit contains a Department determined Minimum Quantification 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.
 - (f) For the daily maximum, the facility shall report the highest value. If the highest value was a non-detect, use the less than "<" symbol and the laboratory's highest method minimum level.
 - (g) For reporting an average based on all non-detected values, remove the "<" sign from the values, average the values, and then add the "<" symbol back to the resulting average.
 - (h) For reporting an average based on a mix of detected and non-detected values (not including *E. coli*), 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)

- (i) When *E. coli* is not detected above the method minimum level, the permittee must report the data qualifier signifying less than detection limit for that parameter (e.g., <1 #/100mL, if the method minimum level is 1 #/100mL). For reporting a geometric mean based on a mix of detected and non-detected values, use one-half of the detection limit (instead of zero) for non-detects when calculating geometric means.
 - (j) See the Fact Sheet Appendix - Non-Detect Example Calculations for further guidance.
7. It is a violation of the Missouri Clean Water Law to fail to pay fees associated with this permit (644.055 RSMo).
8. 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.
9. 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 <https://dnr.mo.gov/document-search/capacity-management-operations-maintenance-plan-editable-template>. Additional information regarding the Departments' CMOM Model is available at <https://dnr.mo.gov/print/document-search/pub2574>.
- The permittee shall also submit a report via the Electronic Discharge Monitoring Report (eDMR) Submission System annually, by January 28th, 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.
10. 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 St. Louis Regional Office during normal business hours or by using the online Sanitary Sewer Overflow/Facility Bypass Application located at: <https://dnr.mo.gov/data-e-services/missouri-gateway-environmental-management-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.
11. The facility must be sufficiently secured to restrict entry by children, livestock and unauthorized persons as well as to protect the facility from vandalism.
12. 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.
13. An all-weather access road to the treatment facility shall be maintained.
14. 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.
15. 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).

D. SPECIAL CONDITIONS (continued)

- (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: 100%, 50%, 25%, 12.5%, and 6.25%.
 - (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.
16. Chronic 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 chronic toxicity of NPDES effluents are found in the most recent edition of *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms* (EPA/821/R-02/013; Table IA, 40 CFR Part 136). The permittee shall concurrently conduct 7-day, static renewal toxicity tests with the following species:
 - i. The fathead minnow, *Pimephales promelas* (Survival and Growth Test Method 1000.0).
 - ii. The daphnid, *Ceriodaphnia dubia* (Survival and Reproduction Test Method 1002.0).
 - (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: 100%, 50%, 25%, 12.5%, and 6.25%.
 - (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 chronic toxic units ($TU_c = 100/IC_{25}$) reported according to the *Methods for Measuring the Chronic Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms* chapter on report preparation and test review. The 25 percent Inhibition Effect Concentration (IC_{25}) is the toxic or effluent concentration that would cause 25 percent reduction in mean young per female or in growth for the test populations.
17. 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.
18. Stormwater Pollution Prevention Plan (SWPPP): A SWPPP must be implemented upon permit issuance. 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.

D. SPECIAL CONDITIONS (continued)

- (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.18.
 - (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.
19. 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.

D. SPECIAL CONDITIONS (continued)

- (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.

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-0027111
HERCULANEUM WWTP

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.

Part I – Facility Information

Application Date: 06/07/2021
Expiration Date: 02/28/2022

Facility Type and Description: POTW

Influent lift station / grit removal / bar screen / dual oxidation ditches / dual clarifiers / UV disinfection / aerobic digester / sludge press / sludge drying bed / sludge is landfilled.

OUTFALL(S) TABLE:

OUTFALL	DESIGN FLOW (CFS)	TREATMENT LEVEL	EFFLUENT TYPE
#001	1.62	Secondary	Domestic

Comments:

Changes in this permit for Outfall #001 include the reduction in sampling frequency from monthly to quarterly for effluent pH, a reduction in sampling frequency for BOD₅ and TSS from twice a month to once a month, and an increase in Total Phosphorus and Total Nitrogen (Total Kjeldahl Nitrogen and Nitrates + Nitrites) sampling frequency from once per quarter to monthly. In addition, this permit includes the removal of Total Recoverable Arsenic, Total Recoverable Chromium III, Total Recoverable Chromium VI, and Total Recoverable Mercury, as this facility has only had one instance of a detect for these parameters within the last 10 years, and there are no industries discharging to the POTW that utilize these pollutants. Total Recoverable Lead and Total Recoverable Zinc effluent limitations were revised according to the Reasonable Potential Analysis, and Total Recoverable Cadmium has switched from monitoring only to a limited parameter. Total Recoverable Copper has been changed to monitoring only, as there is no reasonable potential for this facility to exceed Water Quality Standards for this parameter. This permit includes the addition of monthly influent Ammonia as N, Total Kjeldahl Nitrogen, Nitrate + Nitrite, and Total Phosphorus monitoring. Lastly, instream monitoring requirements have been removed. See Part II of the Fact Sheet for further information regarding the addition, revision, and removal of effluent parameters. Special conditions were updated to include the addition of requirements to complete Part D of Form B2 180 days prior to this permit's expiration.

Part II – Effluent Limitations and Monitoring Requirements**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.

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

WATER-BODY NAME	CLASS	WBID	DESIGNATED USES*	12-DIGIT HUC	DISTANCE TO CLASSIFIED SEGMENT (MI)
Tributary to Joachim Creek	--	--	General Criteria	07140101-0804	0.09
Joachim Creek	P	1719	AQL, WBC-A, SCR, HHP, IRR, LWW, IND		

*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 1st 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 Joachim Creek	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 Water Body's Water Quality

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 stream with an EPA approved TMDL for PCBs and chlordane.
 - This facility is not considered to be a source of the above pollutants, as they were banned from production over 30 years ago, and domestic facilities were never sources.
- ✓ This facility discharges to a stream with an EPA approved TMDL for dissolved lead and zinc.
 - The source of these pollutants is the Doe Run Herculaneum Smelter, which is no longer permitted. As such, this facility is not a source of the above pollutants. However, effluent limitations have been introduced for Total Recoverable Zinc, as this facility has reasonable potential to cause an excursion of Water Quality Standards for this parameter.
- ✓ The Department has not conducted a stream survey for this waterbody. When a stream survey is conducted, more information may be available about the receiving stream.

CHANGES TO EFFLUENT LIMITATIONS TABLE:

PARAMETER	Unit	Basis for Limits	Daily Maximum	Weekly Average	Monthly Average	Previous Permit Limit	Sampling Frequency	Reporting Frequency	Sample Type ****
Ammonia as N (January) (February) (March) (April) (May) (June) (July) (August) (September) (October) (November) (December)	mg/L	2, 3	12.1 12.1 10.1 8.4 12.1 10.1 8.4 8.4 8.4 8.4 8.4 10.1		3.1 3.1 2.7 2.1 2.1 1.3 0.9 0.9 1.2 1.8 2.4 2.7	Apr – Sep: */* Oct - Mar: 12.1/2.3	1/month	monthly	C
(Jan 1 – Mar 31) (Apr 1 – Jun 30) (Jul 1 – Sep 30) (Oct 1 – Dec 31)	mg/L	2, 3	12.1 10.1 8.4 8.4		3.1 1.5 1.0 2.2	Apr – Sep: */* Oct - Mar: 12.1/2.3	1/quarter	quarterly	C
Total Recoverable Cadmium	µg/L	1, 3	2.46		0.8	*/*	1/quarter	quarterly	C
Total Recoverable Copper	µg/L	1, 3	*		*	24.4/14.2	1/quarter	quarterly	C
Total Recoverable Lead	µg/L	1,3	11		7.3	*/*	1/quarter	quarterly	C
Total Recoverable Zinc	µg/L	1,3	223.3		111.7	189.5/88.1	1/quarter	quarterly	C

* - 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 (BOD₅).** Operating permit retains 45 mg/L as a Weekly Average and 30 mg/L as a Monthly Average from the previous permit. Effluent limits were established in accordance with 10 CSR 20-7.015(8) for discharges to All Other Waters.
- **Total Suspended Solids (TSS).** Operating permit retains 45 mg/L as a Weekly Average and 30 mg/L as a Monthly Average from the previous permit. Effluent limits were established in accordance with 10 CSR 20-7.015(8) for discharges to All Other Waters.
- ***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 = 5th root of (1)(4)(6)(10)(5) = 5th 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_e = effluent concentration
Cs = upstream concentration Q_e = effluent flow
Q_s = 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	2.8	7.8	3.1	12.1
February	4.4	7.8	3.1	12.1
March	9.4	7.9	2.7	10.1
April	16.1	8.0	2.1	8.4
May	21.0	7.8	2.1	12.1
June	26.0	7.9	1.3	10.1
July	29.4	8.0	0.9	8.4
August	29.3	8.0	0.9	8.4
September	25.6	8.0	1.2	8.4
October	19.0	8.0	1.8	8.4
November	12.0	8.0	2.4	8.4
December	6.9	7.9	2.7	10.1

* Ecoregion Data (Interior River Valleys and Hills)

January

Chronic WLA:

$$C_e = ((1.62 + 0.0)3.1 - (0.0 * 0.01))/1.62 = 3.1 \text{ mg/L}$$

February

Chronic WLA:

$$C_e = ((1.62 + 0.0)3.1 - (0.0 * 0.01))/1.62 = 3.1 \text{ mg/L}$$

Acute WLA:

$$C_e = ((1.62 + 0.0)12.1 - (0.0 * 0.01))/1.62 = 12.1 \text{ mg/L}$$

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

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

March

Chronic WLA:

$$C_e = ((1.62 + 0.0)2.7 - (0.0 * 0.01))/1.62 = 2.7 \text{ mg/L}$$

Acute WLA:

$$C_e = ((1.62 + 0.0)10.1 - (0.0 * 0.01))/1.62 = 10.1 \text{ mg/L}$$

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

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

May

Chronic WLA:

$$C_e = ((1.62 + 0.0)2.1 - (0.0 * 0.01))/1.62 = 2.1 \text{ mg/L}$$

Acute WLA:

$$C_e = ((1.62 + 0.0)12.1 - (0.0 * 0.01))/1.62 = 12.1 \text{ mg/L}$$

Chronic WLA = AML = **2.1** mg/L

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

July

Chronic WLA:

$$C_e = ((1.62 + 0.0)0.9 - (0.0 * 0.01))/1.62 = 0.9 \text{ mg/L}$$

Acute WLA:

$$C_e = ((1.62 + 0.0)8.4 - (0.0 * 0.01))/1.62 = 8.4 \text{ mg/L}$$

Chronic WLA = AML = **0.9** mg/L

Acute WLA = MDL = **8.4** mg/L

September

Chronic WLA:

$$C_e = ((1.62 + 0.0)1.2 - (0.0 * 0.01))/1.62 = 1.2 \text{ mg/L}$$

Acute WLA:

$$C_e = ((1.62 + 0.0)8.4 - (0.0 * 0.01))/1.62 = 8.4 \text{ mg/L}$$

Chronic WLA = AML = **1.2** mg/L

Acute WLA = MDL = **8.4** mg/L

November

Chronic WLA:

$$C_e = ((1.62 + 0.0)2.4 - (0.0 * 0.01))/1.62 = 2.4 \text{ mg/L}$$

Acute WLA:

$$C_e = ((1.62 + 0.0)8.4 - (0.0 * 0.01))/1.62 = 8.4 \text{ mg/L}$$

Chronic WLA = AML = **2.4** mg/L

Acute WLA = MDL = **8.4** mg/L

Acute WLA:

$$C_e = ((1.62 + 0.0)12.1 - (0.0 * 0.01))/1.62 = 12.1 \text{ mg/L}$$

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

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

April

Chronic WLA:

$$C_e = ((1.62 + 0.0)2.1 - (0.0 * 0.01))/1.62 = 2.1 \text{ mg/L}$$

Acute WLA:

$$C_e = ((1.62 + 0.0)8.4 - (0.0 * 0.01))/1.62 = 8.4 \text{ mg/L}$$

Chronic WLA = AML = **2.1** mg/L

Acute WLA = MDL = **8.4** mg/L

June

Chronic WLA:

$$C_e = ((1.62 + 0.0)1.3 - (0.0 * 0.01))/1.62 = 1.3 \text{ mg/L}$$

Acute WLA:

$$C_e = ((1.62 + 0.0)10.1 - (0.0 * 0.01))/1.62 = 10.1 \text{ mg/L}$$

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

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

August

Chronic WLA:

$$C_e = ((1.62 + 0.0)0.9 - (0.0 * 0.01))/1.62 = 0.9 \text{ mg/L}$$

Acute WLA:

$$C_e = ((1.62 + 0.0)8.4 - (0.0 * 0.01))/1.62 = 8.4 \text{ mg/L}$$

Chronic WLA = AML = **0.9** mg/L

Acute WLA = MDL = **8.4** mg/L

October

Chronic WLA:

$$C_e = ((1.62 + 0.0)1.8 - (0.0 * 0.01))/1.62 = 1.8 \text{ mg/L}$$

Acute WLA:

$$C_e = ((1.62 + 0.0)8.4 - (0.0 * 0.01))/1.62 = 8.4 \text{ mg/L}$$

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

Acute WLA = MDL = **8.4** mg/L

December

Chronic WLA:

$$C_e = ((1.62 + 0.0)2.7 - (0.0 * 0.01))/1.62 = 2.7 \text{ mg/L}$$

Acute WLA:

$$C_e = ((1.62 + 0.0)10.1 - (0.0 * 0.01))/1.62 = 10.1 \text{ mg/L}$$

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

Acute WLA = MDL = **10.1** 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 (BOD₅) 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 BOD₅ and TSS for Publicly Owned Treatment Works (POTWs)/municipals. This facility is required to meet 85% removal efficiency for BOD₅.
- **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 BOD₅ and TSS for Publicly Owned Treatment Works (POTWs)/municipals. This facility is required to meet 85% removal efficiency for TSS.
- **Total Hardness.** As the receiving stream for this discharge is effluent dominated, the department has determined that effluent hardness values will be reflective of the conditions instream. 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. Effluent water hardness of 208 mg/L is used in the calculation below. This value represents the 50th 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
Cadmium	0.912	0.877
Lead	0.695	0.695
Zinc	0.986	0.986

Conversion factors for Cd, Pb, and Zn are hardness dependent. Values calculated using equation found in Section 1.3 of EPA 823-B-96-007.

- **Cadmium, Total Recoverable.** Protection of Aquatic Life Acute Criteria = 2.46 µg/L, Chronic Criteria = 0.80 µg/L. The hardness value of **208 mg/L** represents the 50th percentile (median) for Tributary to Joachim Creek.

Acute AQL: $e^{(1.0166 * \ln 208 - 3.062490)} * (1.136672 - \ln 208 * 0.041838) = 9.709 \text{ µg/L}$ [at hardness 208]
Chronic AQL: $e^{(0.7977 * \ln 208 - 3.909)} * (1.101672 - \ln 208 * 0.041938) = 1.245 \text{ µg/L}$ [at hardness 208]
TR Conversion: AQL/Translator = 9.709 / 0.913 = 10.63 [at hardness 208]
TR Conversion: AQL/Translator = 1.245 / 0.878 = 1.417 [at hardness 208]
Acute WLA: $C_e = ((1.625 \text{ cfsDF} + 0 \text{ cfsZID}) * 10.63 - (0 \text{ cfsZID} * 0 \text{ background})) / 1.625 \text{ cfsDF} = 10.63$
Chronic WLA: $C_e = ((1.625 \text{ cfsDF} + 0 \text{ cfsMZ}) * 1.417 - (0 \text{ cfsMZ} * 0 \text{ background})) / 1.625 \text{ cfsDF} = 1.417$
LTAA: $WLA_a * LTAA \text{ multiplier} = 10.63 * 0.115 = 1.223$ [CV: 2.05, 99th %ile]
LTAc: $WLA_c * LTAc \text{ multiplier} = 1.417 * 0.199 = 0.283$ [CV: 2.05, 99th %ile]
use most protective LTA: 0.283
Daily Maximum: MDL = LTA * MDL multiplier = 0.283 * 8.693 = 2.46 µg/L [CV: 2.05, 99th %ile]
Monthly Average: AML = LTA * AML multiplier = 0.283 * 2.815 = 0.8 µg/L [CV: 2.05, 95th %ile, n=4]
- **Lead, Total Recoverable.** Protection of Aquatic Life Acute Criteria = 11 µg/L, Chronic Criteria = 7.3 µg/L. The hardness value of **208 mg/L** represents the 50th percentile (median) for Tributary to Joachim Creek.

Acute AQL: $e^{(1.273 * \ln 208 - 1.460448)} * (1.46203 - \ln 208 * 0.145712) = 141.863 \text{ µg/L}$ [at hardness 208]
Chronic AQL: $e^{(1.273 * \ln 208 - 4.704797)} * (1.46203 - \ln 208 * 0.145712) = 5.532 \text{ µg/L}$ [at hardness 208]
TR Conversion: AQL/Translator = 141.863 / 0.684 = 207.315 [at hardness 208]

TR Conversion: $AQL/Translator = 5.532 / 0.684 = 8.084$ [at hardness 208]
 Acute WLA: $C_e = ((1.625 \text{ cfsDF} + 0 \text{ cfsZID}) * 207.315 - (0 \text{ cfsZID} * 0 \text{ background})) / 1.625 \text{ cfsDF} = 207.315$
 Chronic WLA: $C_e = ((1.625 \text{ cfsDF} + 0 \text{ cfsMZ}) * 8.084 - (0 \text{ cfsMZ} * 0 \text{ background})) / 1.625 \text{ cfsDF} = 8.084$
 LTAA: $WLAa * LTAA \text{ multiplier} = 207.315 * 0.519 = 107.563$ [CV: 0.309, 99th %ile]
 LTAc: $WLAc * LTAc \text{ multiplier} = 8.084 * 0.708 = 5.725$ [CV: 0.309, 99th %ile]
 use most protective LTA: 5.725
 Daily Maximum: $MDL = LTA * MDL \text{ multiplier} = 5.725 * 1.927 = 11 \mu\text{g/L}$ [CV: 0.309, 99th %ile]
 Monthly Average: $AML = LTA * AML \text{ multiplier} = 5.725 * 1.272 = 7.3 \mu\text{g/L}$ [CV: 0.309, 95th %ile, n=4]

- **Zinc, Total Recoverable.** Protection of Aquatic Life Acute Criteria = 223.3 $\mu\text{g/L}$, Chronic Criteria = 111.7 $\mu\text{g/L}$. The hardness value of **208 mg/L** represents the 50th percentile (median) for Tributary to Joachim Creek.

Acute AQL: $e^{(0.8473 * \ln 208 + 0.884)} * 0.98 = 218.392 \mu\text{g/L}$ [at hardness 208]
 Chronic AQL: $e^{(0.8473 * \ln 208 + 0.884)} * 0.98 = 218.392 \mu\text{g/L}$ [at hardness 208]
 TR Conversion: $AQL/Translator = 218.392 / 0.978 = 223.305$ [at hardness 208]
 TR Conversion: $AQL/Translator = 218.392 / 0.986 = 221.493$ [at hardness 208]
 Acute WLA: $C_e = ((1.625 \text{ cfsDF} + 0 \text{ cfsZID}) * 223.305 - (0 \text{ cfsZID} * 0 \text{ background})) / 1.625 \text{ cfsDF} = 223.305$
 Chronic WLA: $C_e = ((1.625 \text{ cfsDF} + 0 \text{ cfsMZ}) * 221.493 - (0 \text{ cfsMZ} * 0 \text{ background})) / 1.625 \text{ cfsDF} = 221.493$
 LTAA: $WLAa * LTAA \text{ multiplier} = 223.305 * 0.323 = 72.183$ [CV: 0.595, 99th %ile]
 LTAc: $WLAc * LTAc \text{ multiplier} = 221.493 * 0.53 = 117.354$ [CV: 0.595, 99th %ile]
 use most protective LTA: 72.183
 Daily Maximum: $MDL = LTA * MDL \text{ multiplier} = 72.183 * 3.094 = 223.3 \mu\text{g/L}$ [CV: 0.595, 99th %ile]
 Monthly Average: $AML = LTA * AML \text{ multiplier} = 72.183 * 1.548 = 111.7 \mu\text{g/L}$ [CV: 0.595, 95th %ile, n=4]

- **Copper and Nickel, 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 Copper and Nickel, 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 Waters of the State lacking designated uses are 100%, 50%, 25%, 12.5%, & 6.25%.
- **Chronic Whole Effluent Toxicity.** Monitoring requirement only. Monitoring is required to determine if reasonable potential exists for this facility's discharge to exceed water quality standards.
 - Chronic Allowable Effluent Concentrations (AECs) for facilities that discharge to Waters of the State lacking designated uses are 100%, 50%, 25%, 12.5%, & 6.25%.

Sampling Frequency Justification: The Department has determined that many previously established sampling and reporting frequency is sufficient to characterize the facility's effluent and be protective of water quality. However, there has been a reduction in sampling frequency for BOD₅ and TSS from twice a month to once a month to maintain the same monitoring frequency as influent parameters and an increase in Total Phosphorus and Total Nitrogen (Total Kjeldahl Nitrogen and Nitrates + Nitrites) sampling frequency from once per quarter to monthly per [10 CSR 20-7.015(9)(D)8.B., which states that these parameters must be sampled monthly for facilities with a design flow over 1.0 MGD. 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 is designated as a Major facility or has a design flow ≥ 1.0 MGD.

Chronic Whole Effluent Toxicity

✓ No less than **ONCE/PERMIT CYCLE**:

- POTW facilities with a design flow of greater than 1.0 million gallons per day, but less than 10 million gallons per day, shall conduct and submit to the Department a chronic WET test no less than once per five years. These minimum testing frequencies may be increased based on toxic parameters present in a facility's in the effluent, demonstrated toxicity in previous WET tests, or based on impacts to the receiving stream

Sampling Type Justification: As per 10 CSR 20-7.015, samples collected for mechanical plants shall be a 24 hour composite sample. Grab samples, however, must be collected for pH, *E. coli*, TRC, Oil & Grease, Dissolved Oxygen, Cyanide, and Chromium, VI 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.

CHANGES TO INFLUENT MONITORING:

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

* - Monitoring requirement only.

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

**** - C = Composite

G = Grab

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 (BOD₅) 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 BOD₅ 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 BOD₅ 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. Based upon review of the Report of Compliance Inspection for the inspection conducted on March 23, 2021, 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 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 III – 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.
- **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.
- **Metals.** A Reasonable Potential Analysis was conducted and it was determined that there is no reasonable potential to cause an excursion of water quality standards for Total Recoverable Copper in the receiving stream. As a result, monitoring requirements have been removed. This determination will be reassessed at renewal. Please see **Appendix – RPA Results** for more information.
- **Sampling and Reporting Frequency.** Sampling and reporting frequencies were reduced from monthly to quarterly for pH. Sampling and reporting frequencies were reduced from twice monthly to once monthly for TSS and BOD₅. Discharge monitoring data submitted by the permittee shows that operations at the facility have been consistent and have low variability. Therefore, the Department has found the permittee eligible for reduced monitoring frequencies. The permit is still protective of water quality.
- **Total Recoverable Arsenic, Chromium III, Chromium VI, and Mercury.** The permit writer conducted a Reasonable Potential Analysis on all parameters and determined the facility had no reasonable potential to cause or contribute to an excursion of the standard, as there are no discharging industries that contribute to this pollutant in the facility's waste stream, and the facility has not reported a detection of these values in the last 8 years. As a result, final effluent limits have been removed. Please see **APPENDIX – RPA RESULTS**. The permit is still protective of water quality and this determination will be reassessed at the time of renewal.
- 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 II – Effluent Limitations and Monitoring Requirements 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 <https://dnr.mo.gov/document-search/antidegradation-implementation-procedure>.

- ✓ 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 when a higher level authority is available by submitting information as part of the application 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.

- ✓ Permittee is not authorized to land apply biosolids. Sludge/biosolids are dried, then landfilled.

COMPLIANCE AND ENFORCEMENT:

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

Facility Performance History:

- ✓ The facility is not currently under Water Protection Program enforcement action. This facility was last inspected on March 23, 2021. The inspection showed the following unsatisfactory features, all stemming from unsatisfactorily conducted sewer rehabilitation work: operational and maintenance problems, failure to comply with permit conditions, and failure to adequately submit DMRs.

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 can be provided upon request to the Department.

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: <https://dnr.mo.gov/document-search/electronic-discharge-monitoring-report-waiver-request-form-mo-780-2692>. 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.

OPERATOR CERTIFICATION REQUIREMENTS:

As per [10 CSR 20-6.010(8) Terms and Conditions of a Permit], the permittee shall operate and maintain facilities to comply with the Missouri Clean Water Law and applicable permit conditions and regulations. Operators 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 with population equivalents greater than 200 and are owned or operated by or for municipalities, public sewer districts, counties, public water supply districts, private sewer companies regulated by the Public Service Commission and state or federal agencies.

- ✓ This facility is required to have a certified operator as it has a population equivalent greater than 200 and is owned or operated by or for a municipality, public sewer district, county, public water supply district, private sewer company regulated by the PSC, state or federal agency.

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: Leonard A. Kohler
Certification Number: 9939
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.

OPERATIONAL CONTROL TESTING:

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 calculated 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. These 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)
Dissolved Oxygen – Aerobic Digester	Daily (M-F)
UV disinfection	Daily (M-F)

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.

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

REASONABLE POTENTIAL ANALYSIS (RPA):

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

In accordance with [40 CFR Part 122.44(d)(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 (BOD₅) 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 <https://dnr.mo.gov/document-search/capacity-management-operations-maintenance-plan-editable-template>. For additional information regarding the Departments' CMOM Model, see the CMOM Plan Model Guidance document at <https://dnr.mo.gov/print/document-search/pub2574>. 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 <https://dnr.mo.gov/water/business-industry-other-entities/permits-certification-engineering-fees/wastewater/construction-engineering>.

✓ 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 (<https://dnr.mo.gov/document-search/antidegradation-implementation-procedure>).

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: <https://dnr.mo.gov/forms-applications>.

- ✓ 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 (<https://dnr.mo.gov/document-search/form-b2-application-operating-permit-facilities-receive-primarily-domestic-waste-have-design-flow-more-100000-gallons-day-mo-780-1805>) 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/document-search/no-exposure-certification-exclusion-npdes-stormwater-permitting-under-missouri-clean-water-law-mo-780-2828>) to the Department’s Water Protection Program, Operating Permits Section. Upon receipt 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_e = effluent concentration
Cs = upstream concentration Q_e = effluent flow
Q_s = 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 BOD₅ 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 NH₃)
- ☒ 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.

Part IV – Cost Analysis for Compliance

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

✓ The Department is required to determine “findings of affordability” because the permit applies to a combined or separate sanitary sewer system for a 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 Herculaneum

New Permit Requirements			
Increased monthly effluent monitoring (from quarterly) for Total Kjeldahl Nitrogen, Nitrate + Nitrite, Total Phosphorus and new monthly influent monitoring for Total Kjeldahl Nitrogen, Nitrate + Nitrite, Total Phosphorus and Total Ammonia.			
Estimated Annual Cost	Annual Median Household Income (MHI)	Estimated Monthly User Rate	User Rate as a Percent of MHI
\$2,180	\$66,256	\$38.50	0.70%

Part V – 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 contains a permit requirement for Total Recoverable Arsenic, Total Recoverable Chromium III, and Total Recoverable Chromium VI, which water quality criteria has been modified by twenty-five percent or more since the issuance of the previous permit. The approval of these changes by the EPA is environmentally necessary to ensure the criteria are reflective of the most current science available while protecting the water quality standards of the receiving stream without placing needless and overly burdensome requirements on regulated entities. The “Evaluation of Environmental and Economic Impacts of Revised Water Quality Standards and Criteria on a Subbasin Basis” report is available upon request to the Department.

PERMIT SYNCHRONIZATION:

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

PUBLIC NOTICE:

The Department shall give public notice that a draft permit has been prepared and its issuance is pending. Additionally, public notice will be issued if a public hearing is to be held because of a significant degree of interest in and water quality concerns related to a draft permit. No public notice is required when a request for a permit modification or termination is denied; however, the requester and permittee must be notified of the denial in writing. The Department must issue public notice of a pending operating permit or of a new or reissued statewide general permit. The public comment period is the length of time not less than 30 days following the date of the public notice which interested persons may submit written comments about the proposed permit. For persons wanting to submit comments regarding this proposed operating permit, then please refer to the Public Notice page located at the front of this draft operating permit. The Public Notice page gives direction on how and where to submit appropriate comments.

- ✓ The Public Notice period for this operating permit started October 29, 2021 and ended November 29, 2021. No comments were received, however the influent monitoring point was added to the permitted features list.

DATE OF FACT SHEET: SEPTEMBER 13, 2021

COMPLETED BY:

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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, 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	2
Reoccurring deviations or excessive variations of more than 200 percent in strength and/or flow	4	
Department-approved pretreatment program	6	
Preliminary Treatment		
STEP systems (operated by the permittee)	3	
Screening and/or comminution	3	3
Grit removal	3	3
Plant pumping of main flow	3	
Flow equalization	5	3
Primary Treatment		
Primary clarifiers	5	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 ONE (1)	----	33

APPENDIX - CLASSIFICATION WORKSHEET (CONTINUED):

ITEM	POINTS POSSIBLE	POINTS ASSIGNED
Solids Handling		
Sludge Holding	5	
Anaerobic digestion	10	
Aerobic digestion	6	6
Evaporative sludge drying	2	2
Mechanical dewatering	8	
Solids reduction (incineration, wet oxidation)	12	
Land application	6	
Disinfection		
Chlorination or comparable	5	
On-site generation of disinfectant (except UV light)	5	
Dechlorination	2	
UV light	4	4
Required Laboratory Control Performed by Plant Personnel (highest level only)		
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	5
More advanced determinations, such as BOD seeding procedures, fecal coliform, nutrients, total oils, phenols, etc.	7	
Highly sophisticated instrumentation, such as atomic absorption and gas chromatograph	10	
Total from page TWO (2)	----	17
Total from page ONE (1)	---	33
Grand Total	---	53

- ☐ - 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 – Summer (mg/L)	8.4	2.72	1.0	2.72	32.00	1.13/0	0.82	2.40	YES
Ammonia as N – Winter (mg/L)	8.4	15.48	2.2	15.48	32.00	4/0.11	1.56	3.87	YES
Arsenic, Total Recoverable (µg/L)	340.00	5.00	150.00	5.00	21	5/5	0.00	1.00	No
Cadmium, Total Recoverable (µg/L)	10.63	596.96	1.42	596.96	21	90/5	2.05	6.63	Yes
Chromium III, Total Recoverable (µg/L)	3284.96	10.04	157.02	10.04	21	7/0.01	0.25	1.43	No
Chromium VI, Dissolved (µg/L)	16.00	0.03	11.00	0.03	16	0.02/0.005	0.28	1.57	No
Copper, Total Recoverable (µg/L)	27.90	16.86	17.44	16.86	20	11/5	0.29	1.53	No
Lead, Total Recoverable (µg/L)	207.31	19.08	8.08	19.08	19	12/5	0.31	1.59	Yes
Mercury, Total Recoverable (µg/L)	1.65	1.44	0.77	1.44	20	1.3/1	0.07	1.10	Yes; however, all values other than one (1.3, which was a typo according to the facility) are non- detects, so there is no RP
Nickel, Total Recoverable (µg/L)	872.36	22.08	96.93	22.08	20	13/1	0.36	1.70	No
Zinc, Total Recoverable (µg/L)	223.31	467.16	221.49	467.16	20	204/14	0.60	2.29	223.31

N/A – Not Applicable

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

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

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

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

n – Is the number of samples.

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

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

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

APPENDIX – Non-Detect Example Calculations:

Example: Permittee has four samples for Pollutant X which has a method minimum level of 5 mg/L and is to report a Daily Maximum and Monthly Average.

Week 1 = 11.4 mg/L

Week 2 = Non-Detect or <5.0 mg/L

Week 3 = 7.1 mg/L

Week 4 = Non-Detect or <5.0 mg/L

For this example, use subpart (h) - For reporting an average based on a mix of detected and non-detected values (not including *E. coli*), assign a value of “0” for all non-detects for that reporting period and report the average of all the results.

$$11.4 + 0 + 7.1 + 0 = 18.5 \div 4 \text{ (number of samples)} = 4.63 \text{ mg/L.}$$

The Permittee reports a Monthly Average of 4.63 mg/L and a Daily maximum of 11.4 mg/L (Note the < symbol was dropped in the answers).

Example: Permittee has five samples for Pollutant Y that has a method minimum level of 9 µg/L and is to report a Daily Maximum and Monthly Average.

Day 1 = Non-Detect or <9.0 µg/L

Day 2 = Non-Detect or <9.0 µg/L

Day 3 = Non-Detect or <9.0 µg/L

Day 4 = Non-Detect or <9.0 µg/L

Day 5 = Non-Detect or <9.0 µg/L

For this example, use subpart (g) - For reporting an average based on all non-detected values, remove the “<” sign from the values, average the values, and then add the “<” symbol back to the resulting average.

$$(9 + 9 + 9 + 9 + 9) \div 5 \text{ (number of samples)} = <9 \text{ µg/L.}$$

The Permittee reports a Monthly Average of <9.0 µg/L (retain the ‘less than’ symbol) and a Daily Maximum of <9.0 µg/L.

Example: Permittee has four samples for Pollutant Z where the first two tests were conducted using a method with a method minimum level of 4 µg/L and the remaining two tests were conducted using a different method that has a method minimum level of <6 µg/L and is to report a Monthly Average and a Weekly Average.

Week 1 = Non-Detect or <4.0 µg/L

Week 2 = Non-Detect or <4.0 µg/L

Week 3 = Non-Detect or <6.0 µg/L

Week 4 = Non-Detect or <6.0 µg/L

For this example, use subpart (g) - For reporting an average based on all non-detected values, remove the “<” sign from the values, average the values, and then add the “<” symbol back to the resulting average.

$$(4 + 4 + 6 + 6) \div 4 \text{ (number of samples)} = <5 \text{ µg/L. (Monthly)}$$

The facility reports a Monthly Average of <5.0 µg/L and a Weekly Average of <6.0 µg/L.

APPENDIX – Non-Detect Example Calculations (Continued):

Example: Permittee has five samples for Pollutant Z where the first two tests were conducted using a method with a method minimum level of 4 µg/L and the remaining three tests were conducted using a different method that has a method minimum level of <6 µg/L and is to report a Monthly Average and a Weekly Average.

Week 1 = Non-Detect or <4.0 µg/L

Week 2 = Non-Detect or <4.0 µg/L

Week 2 = Non-Detect or <6.0 µg/L

Week 3 = Non-Detect or <6.0 µg/L

Week 4 = Non-Detect or <6.0 µg/L

For this example, use subpart (g) - For reporting an average based on all non-detected values, remove the “<” sign from the values, average the values, and then add the “<” symbol back to the resulting average.

$(4 + 4 + 6 + 6 + 6) \div 5$ (number of samples) = <5.2 µg/L. (Monthly)

$(4 + 6) \div 2$ (number of samples) = <5 µg/L. (Week 2)

The facility reports a Monthly Average of <5.2 µg/L and a Weekly Average of <6.0 µg/L (report highest Weekly Average value)

Example: Permittee has four samples for Pollutant Z where the tests were conducted using a method with a method minimum level of 10 µg/L and is to report a Monthly Average and Daily Maximum. The permit lists that Pollutant Z has a Department determined Minimum Quantification Level (ML) of 130 µg/L.

Week 1 = 12 µg/L

Week 2 = 52 µg/L

Week 3 = Non-Detect or <10 µg/L

Week 4 = 133 µg/L

For this example, use subpart (h) - For reporting an average based on a mix of detected and non-detected values (not including *E. coli*), assign a value of “0” for all non-detects for that reporting period and report the average of all the results.

For this example, $(12 + 52 + 0 + 133) \div 4$ (number of samples) = $197 \div 4 = 49.3$ µg/L.

The facility reports a Monthly Average of 49.3 µg/L and a Daily Maximum of 133 µg/L.

Example: Permittee has five samples for *E. coli* which has a method minimum level of 1 #/100mL and is to report a Weekly Average (seven (7) day geometric mean) and a Monthly Average (thirty (30) day geometric mean).

Week 1 = 102 #/100mL

Week 2 (Monday) = 400 #/100mL

Week 2 (Friday) = Non-Detect or <1 #/100mL

Week 3 = 15 #/100mL

Week 4 = Non-Detect or <1 #/100mL

For this example, use subpart (i) - When *E. coli* is not detected above the method minimum level, the permittee must report the data qualifier signifying less than detection limit for that parameter (e.g., <1 #/100mL, if the method minimum level is 1 #/100mL). For reporting a geometric mean based on a mix of detected and non-detected values, use one-half of the detection limit (instead of zero) for non-detects when calculating geometric means. 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.

The Monthly Average (30 day Geometric Mean) = 5th root of $(102)(400)(0.5)(15)(0.5) = 5\text{th root of } 153,000 = 10.9$ #/100mL.

The 7 day Geometric Mean = 2nd root of $(400)(0.5) = 2\text{nd root of } 200 = 14.1$ #/100mL. (Week 2)

The Permittee reports a Monthly Average (30 day Geometric Mean) of 10.9 #/100mL and a Weekly Average (7 day geometric mean) of 102 #/100mL (report highest Weekly Average value)

APPENDIX – COST ANALYSIS FOR COMPLIANCE:

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

Herculaneum WWTP, Permit Renewal City of Herculaneum Missouri State Operating Permit #MO-0027111

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 monitoring requirements for Total Kjeldahl Nitrogen, Nitrate + Nitrite, Total Phosphorus and Total Ammonia.

Connections

The number of connections was reported by the permittee on the Financial Questionnaire.

Connection Type	Number
Residential	1,642
Commercial	98
Industrial	5
Total	1,745

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 of Herculaneum’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 Herculaneum	
Current Monthly User Rates per 5,000 gallons*	\$38.40
Median Household Income (MHI) ¹	\$66,256
Current Annual Operating Costs (excludes depreciation)	\$1,239,612

*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:

Criterion 2A Table. Estimated Cost Breakdown of New Permit Requirements			
New Requirement	Frequency	Estimated Cost	Estimated Annual Cost
Total Phosphorus – Effluent	Monthly, from Quarterly	\$24	\$192
Total Kjeldahl Nitrogen - Effluent	Monthly, from Quarterly	\$33	\$264
Nitrate + Nitrite - Effluent	Monthly, from Quarterly	\$40	\$480
Ammonia - Influent	Monthly	\$20	\$240
Total Phosphorus – Influent	Monthly	\$24	\$288
Total Kjeldahl Nitrogen - Influent	Monthly	\$33	\$396
Nitrate + Nitrite - Influent	Monthly	\$40	\$320
Total Estimated Annual Cost of New Permit Requirements			\$2,180

Criterion 2B Table. Estimated Costs for New Permit Requirements		
(1)	Estimated Annual Cost	\$2,180
(2)	Estimated Monthly User Cost for New Requirements ²	\$0.10
	Estimated Monthly User Cost for New Requirements as a Percent of MHI ³	0.002%
(3)	Total Monthly User Cost*	\$38.50
	Total Monthly User Cost as a Percent of MHI ⁴	0.70%

* 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 reported that their outstanding debt for their current wastewater collection and treatment systems is \$2,239,000. The community reported that each user pays \$38.40 monthly, of which, \$13.79 is used toward payments on the current outstanding debt.

The community has reported that they have no outstanding debt for the current wastewater collection and treatment systems.

(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 ^{1, 5-9} for the City of Herculaneum

No.	Administrative Unit	Herculaneum City	Missouri State	United States
1	Population (2019)	4,025	6,104,910	324,697,795
2	Percent Change in Population (2000-2019)	43.5%	9.1%	15.4%
3	2019 Median Household Income (in 2020 Dollars)	\$66,256	\$56,145	\$63,618
4	Percent Change in Median Household Income (2000-2019)	5.7%	-4.7%	-2.5%
5	Median Age (2019)	37.5	38.6	38.1
6	Change in Median Age in Years (2000-2019)	-3.0	2.5	2.8
7	Unemployment Rate (2019)	8.3%	4.6%	5.3%
8	Percent of Population Below Poverty Level (2019)	9.3%	13.7%	13.4%
9	Percent of Household Received Food Stamps (2019)	7.7%	11.1%	11.7%
10	(Primary) County Where the Community Is Located	Jefferson 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 Herculaneum 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.

The Department contracted with Wichita State University to complete an assessment tool that would allow for predictions on rural Missouri community populations and future sustainability. The purpose of the study is to use a statistical modeling analysis in order to determine factors associated with each rural Missouri community that would predict the future population changes that could occur in each community. A stepwise regression model was applied to 19 factors which were determined as predictors of rural population change in Missouri. The model established a hierarchy of the predicting factors which allowed the model to place a weighted value on each of the factors. A total of 745 rural towns and villages in Missouri received a weighted value for each of the predicting factors. The weighted values for each town / village were then added together to determine an overall decision score. The overall decision scores were then divided into five categories and each town was assigned to a different categorical group based on the overall decision score. The categorical groups were developed from the range of overall scores across all rural towns and villages within Missouri.

Based on the assessment tool, the City of Herculaneum has been determined to be a category 5 community. This means that the City of Herculaneum is predicted to be stable over time.

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. 2019 MHI in 2019 Dollar: United States Census Bureau. 2015-2019 American Community Survey 5-Year Estimates, Table B19013: Median Household Income in the Past 12 Months (in 2019 Inflation-Adjusted Dollars).
<https://data.census.gov/cedsci/table?q=B19013&g=0400000US29.160000&tid=ACSDT5Y2019.B19013&hidePreview=false>.
(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) 2020 CPI, 2019 CPI and 1999 CPI: U.S. Department of Labor Bureau of Labor Statistics (2020) Consumer Price Index - All Urban Consumers, U.S. City Average. All Items. 1982-84=100. <https://data.bls.gov/pdq/SurveyOutputServlet>.
(D) 2019 MHI in 2020 Dollar = 2019 MHI in 2019 Dollar x 2020 CPI / 2019 CPI; 2000 MHI in 2020 Dollar = 2000 MHI in 1999 Dollar x 2020 CPI / 1999 CPI.
(E) Percent Change in Median Household Income (2000-2019) = (2019 MHI in 2020 Dollar - 2000 MHI in 2020 Dollar) / (2000 MHI in 2020 Dollar).
2. $(\$2,180/1,745)/12 = \0.10 (Estimated Monthly User Cost for New Requirements)
3. $(\$0.10/(\$66,256/12))100\% = 0.002\%$ (New Sampling Only)
4. $(\$38.50/(\$66,256/12))100\% = 0.70\%$ (Total User Cost)
5. Total Population in 2019: United States Census Bureau. 2015-2019 American Community Survey 5-Year Estimates, Table B01003: Total Population - Universe: Total Population.
<https://data.census.gov/cedsci/table?q=B01003&g=0400000US29.160000&tid=ACSDT5Y2019.B01003&hidePreview=false>.
(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 (2000-2019) = (Total Population in 2019 - Total Population in 2000) / (Total Population in 2000).
6. Median Age in 2019: United States Census Bureau. 2015-2019 American Community Survey 5-Year Estimates, Table B01002: Median Age by Sex - Universe: Total population.
<https://data.census.gov/cedsci/table?q=B01002&g=0400000US29.160000&tid=ACSDT5Y2019.B01002&hidePreview=false>.
(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 (2000-2019) = (Median Age in 2019 - Median Age in 2000).
7. United States Census Bureau. 2015-2019 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&g=0400000US29.160000&tid=ACSDT5Y2019.B23025&hidePreview=false>.
8. United States Census Bureau. 2015-2019 American Community Survey 5-Year Estimates, Table S1701: Poverty Status in the Past 12 Months.
<https://data.census.gov/cedsci/table?q=S1701&g=0400000US29.160000&tid=ACSST5Y2019.S1701&hidePreview=false>.
9. United States Census Bureau. 2015-2019 American Community Survey 5-Year Estimates, Table B2201: Food Stamps/Supplemental Nutrition Assistance Program (SNAP) - Universe: Households.
<https://data.census.gov/cedsci/table?q=Receipt%20of%20Food%20Stamps&g=0400000US29.050000,29.160000&tid=ACSST5Y2019.S2201&hidePreview=true>



STANDARD CONDITIONS FOR NPDES PERMITS
ISSUED BY
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MISSOURI CLEAN WATER COMMISSION
REVISED
AUGUST 1, 2014

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

Part I – General Conditions

Section A – Sampling, Monitoring, and Recording

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

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

Section B – Reporting Requirements

1. **Planned Changes.**
 - a. The permittee shall give notice to the Department as soon as possible of any planned physical alterations or additions to the permitted facility when:
 - i. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in 40 CFR 122.29(b); or
 - ii. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in the permit, nor to notification requirements under 40 CFR 122.42;
 - 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 28th 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.



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

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
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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
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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 factor¹).
¹ 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:
$$(\text{Nitrate} + \text{nitrite nitrogen}) + (\text{organic nitrogen} \times 0.2) + (\text{ammonia nitrogen} \times \text{volatilization factor}^1).$$
¹ 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 ¹	Priority Pollutants ²
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

¹ 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.

² 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 19th 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.

THIS LETTER IS WRITTEN AS AN ATTACHMENT REGARDING E-COLI SAMPLES TAKEN FOR MO-0027111
PERMIT RENEWAL..

3 SAMPLES WERE TAKEN AS REQUIRED WHICH STARTED AT THE TIME OUR U.V. DISENFECTION LIGHTS WERE TURNED ON AT BEGINNING OF APRIL. THE LIGHTS HAVE BEEN REPLACED AS SCHEDULED FOR THIS SEASON. SAMPLES 1 AND 2 HAD ELEVATED LEVELS EXCEDING THE LIMITS AS IS HILIGHTED ON REPORTS. THE 3RD SAMPLE CAME BACK AS NORMAL READING ,BUT THE GEOMETRIC MEANS AVERAGE WAS NOT IN COMPLIANCE WITH OUR PERMIT. SINCE THEN I HAVE TAKEN 2 OTHER SAMPLES. THE RESULTS ARE VERY MUCH WITHIN THE LIMITS OF OUR PERMIT AS CAN BE SEEN ON THE REPORTS THAT HAVE BEEN SENT. I HAVE ALSO SENT THE 3 ORIGINAL LAB REPORTS PLUS W.E.T. TEST RESULTS. THIS SHOULD COMPLETE THE APPLICATION AS REQUIRED .

IF THERE IS ANY OTHER INFORMATION OR TESTING NEEDED FOR THE E-COLI ISSUE PLEASE LET ME KNOW. 314-583-1357 lkohler@cityofherculaneum.gov

Thank you

Leonard Kohler

Supervisor Herculanum WWTP

RECEIVED

JUN 07 2021

Water Protection Program



2810 Clark Avenue • St. Louis, MO 63103-2574 • (314) 531-8080 • FAX (314) 531-8085
Chemical, Metallurgical, Mechanical, Nondestructive, Environmental Testing, Analyses and Field Service.

CITY OF HERCULANEUM
#1 Parkwood Court
Herculaneum, MO 63048

Attention: Leonard Kohler

May 27, 2021
Lab No. 21E-0802
Invoice No. INSTL8176
Page 1 of 1

REPORT OF ANALYSIS

SAMPLE ID: Wastewater Sample, Collected 05/25/2021, 08:15

RESULTS:

ANALYTE	RESULTS	MQL	METHOD NUMBER	DATE OF ANALYSIS
E. coli, col/100 mL	15	1	EPA 1603	05/26/2021

MQL: Minimum Quantitative Limit

Start Time of Incubation: 05/25/2021, 13:30

KSK/vk

Kimberly Kostelac, Manager
Environmental Testing





2810 Clark Avenue • St. Louis, MO 63103-2574 • (314) 531-8080 • FAX (314) 531-8085

Chemical, Metallurgical, Mechanical, Nondestructive, Environmental Testing, Analyses and Field Service.

CITY OF HERCULANEUM

#1 Parkwood Court
Herculaneum, MO 63048

May 14, 2021 36

Lab No. 21E-0716

Invoice No. INSTL7632

Page 1 of 1

Attention: Leonard Kohler

REPORT OF ANALYSIS

SAMPLE ID: Wastewater Sample, Collected 05/13/2021, 08:05

RESULTS:

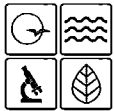
ANALYTE	RESULTS	ML	METHOD NUMBER	DATE OF ANALYSIS
E. coli, col/100 mL	113	1	EPA 1603	05/14/2021

ML: Minimum Quantitative Limit

Start Time of Incubation: 05/13/2021, 10:45

KSK/vk

Kimberly Kostelac, Manager
Environmental Testing



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 HERCULANEUM WWTP	
PERMIT NO. MO-0027111	COUNTY JEFFERSON
APPLICATION OVERVIEW	
Form B2 has been developed in a modular format and consists of Parts A, B and C and a Supplemental Application Information (Parts D, E, F and G) packet. All applicants must complete Parts A, B and C. Some applicants must also complete parts of the Supplemental Application Information packet. The following items explain which parts of Form B2 you must complete. Submittal of an incomplete application may result in the application being returned.	
BASIC APPLICATION INFORMATION	
A. Basic application information for all applicants. All applicants must complete Part A. B. Additional application information for all applicants. All applicants must complete Part B. C. Certification. All applicants must complete Part C.	
SUPPLEMENTAL APPLICATION INFORMATION	
D. Expanded Effluent Testing Data. A treatment works that discharges effluent to surface water of the United States and meets one or more of the following criteria must complete <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 5% 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> .	
ALL APPLICANTS MUST COMPLETE PARTS A, B and C	

RECEIVED

JUN 07 2021



MISSOURI DEPARTMENT OF NATURAL RESOURCES
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**

37032

FOR AGENCY USE ONLY

CHECK NUMBER

DATE RECEIVED

FEE SUBMITTED

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- 0027111 Expiration Date 02/08/2022
- ☐ 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 HERCULANEUM WWTP		TELEPHONE NUMBER WITH AREA CODE 636-479-9580	
ADDRESS (PHYSICAL) 200 SCHOOL ST.	CITY HERCULANEUM	STATE MO	ZIP CODE 63048
2.1 LEGAL DESCRIPTION (Facility Site): Sec. 29 , T 41N, R 6E		COUNTY JEFFERSON	

2.2 UTM Coordinates Easting (X): 729520 Northing (Y): 4237423
For Universal Transverse Mercator (UTM), Zone 15 North referenced to North American Datum 1983 (NAD83)

2.3 Name of receiving stream: JOACHIM CREEK

2.4 Number of Outfalls: 1 wastewater outfalls: 1 stormwater outfalls: 0 instream monitoring sites: 2

3. OWNER

NAME CITY OF HERCULANEUM		EMAIL ADDRESS INFO@CITYOFHERCULANEUM.GOV	TELEPHONE NUMBER WITH AREA CODE 636-475-4447
ADDRESS #1 PARKWOOD COURT	CITY HERCULANEUM	STATE MO	ZIP CODE 63048

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? 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

NAME CITY OF HERCULANEUM		EMAIL ADDRESS info@cityofherculaneum.gov	TELEPHONE NUMBER WITH AREA CODE 636-475-4447
ADDRESS #1 PARKWOOD COURT	CITY HERCULANEUM	STATE MO	ZIP CODE 63048

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

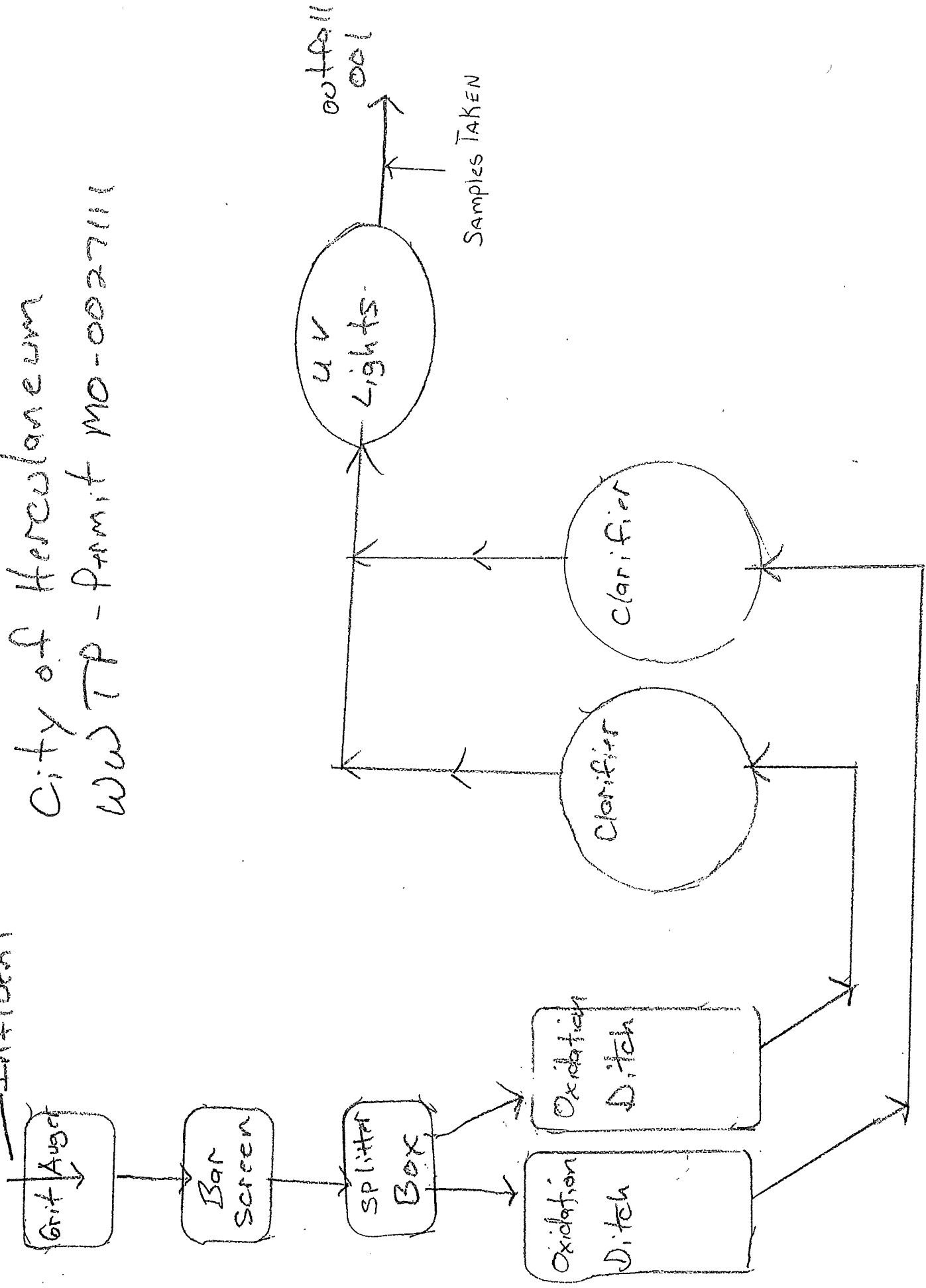
NAME LEONARD KOHLER		TITLE CHIEF OPERATOR	CERTIFICATE NUMBER (IF APPLICABLE) 9939
EMAIL ADDRESS lkohler@cityofherculaneum.org		TELEPHONE NUMBER WITH AREA CODE 314-583-1357	

6. FACILITY CONTACT

NAME LEONARD KOHLER		TITLE CHIEF OPERATOR	
EMAIL ADDRESS lkohler@cityofherculaneum.org		TELEPHONE NUMBER WITH AREA CODE 314-583-1357	
ADDRESS 1138 SCENIC DR.	CITY HERCULANEUM	STATE MO	ZIP CODE 63048

Influent































City of Herculaneum
WWT - Permit MO-002711



FACILITY NAME HERCULANEUM WWTP	PERMIT NO. MO- 0027111	OUTFALL NO. 001
PART A – BASIC APPLICATION INFORMATION		
7. FACILITY INFORMATION		
<p>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.</p> <p>SEE ATTACHED</p>		

MO 0027111



- | Standardized Curriculum | |
|---------------------------------------------------------------------------------------|-------------------|
|  | Academic |
|  | Interdisciplinary |
|  | Academics |
|  | Not Integrated |
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|  | Interdisciplinary |
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February 2021

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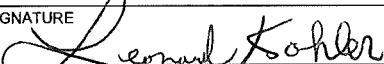
1097991

FACILITY NAME HERCULANEUM WWTP	PERMIT NO. MO- 0027111	OUTFALL NO. 001
PART A – BASIC APPLICATION INFORMATION		
7. FACILITY INFORMATION (continued)		
<p>7.2 Map. 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: https://modnr.maps.arcgis.com/apps/webappviewer/index.html?id=1d81212e0854478ca0dae87c33c8c5ce</p> <ul style="list-style-type: none"> a. The area surrounding the treatment plant, including all unit processes. b. 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. c. The actual point of discharge. d. 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. e. Any areas where the sewage sludge produced by the treatment works is stored, treated, or disposed. f. 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. 		
<p>7.3 Number of people presently connected or population equivalent (P.E.): <u>4138</u> Design P.E. <u>9450</u></p>		
<p>7.4 Connections to the facility:</p> <p>Number of units presently connected:</p> <p>Residential: <u>1614</u> Commercial: <u>96</u> Industrial <u>5</u></p>		
<p>7.5 Design Flow <u>1.045 MGD</u></p>		<p>Actual Flow <u>.855 MGD</u></p>
<p>7.6 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: <u>JAN-DEC</u></p> <p>How many days of the week will discharge occur? <u>365</u></p>		
<p>7.7 Is industrial wastewater discharged to the facility? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p> <p>If yes, describe the number and types of industries that discharge to your facility. Attach sheets as necessary</p> <p style="text-align: center;">Refer to the APPLICATION OVERVIEW to determine whether additional information is needed for Part F.</p>		
7.8 Does the facility accept or process leachate from landfills?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/> <small>See next page</small>
7.9 Is wastewater land applied? If yes, please attach Form I See: https://dnr.mo.gov/forms/780-1686-f.pdf	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/> <small>See next page</small>
7.10 Does the facility discharge to a losing stream or sinkhole?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
7.11 Has a wasteload allocation study been completed for this facility?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
8. LABORATORY CONTROL INFORMATION		
LABORATORY WORK CONDUCTED BY PLANT PERSONNEL		
Lab work conducted outside of plant.	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Push-button or visual methods for simple test such as pH, settleable solids.	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Additional procedures such as Dissolved Oxygen, Chemical Oxygen Demand, Biological Oxygen Demand, titrations, solids, volatile content.	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
More advanced determinations such as BOD seeding procedures, fecal coliform, nutrients, total oils, phenols, etc.	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Highly sophisticated instrumentation, such as atomic absorption and gas chromatograph.	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>

FACILITY NAME HERCULANEUM WWTP	PERMIT NO. MO- 0027111	OUTFALL NO. 001
PART A – BASIC APPLICATION INFORMATION		
9. SLUDGE HANDLING, USE AND DISPOSAL		
9.1 Is the sludge a hazardous waste as defined by 10 CSR 25? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
9.2 Sludge production (Including sludge received from others): Design Dry Tons/Year 180 Actual Dry Tons/Year APP 90		
9.3 Sludge storage provided: _____ Cubic feet; _____ Days of storage; _____ Average percent solids of sludge; <input checked="" 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 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) <small>OXIDATION DITCH</small>		
9.6 Sludge use or disposal: <input type="checkbox"/> Land Application <input type="checkbox"/> Contract Hauler <input type="checkbox"/> Hauled to Another Treatment Facility <input checked="" 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 checked="" type="checkbox"/> By Applicant <input type="checkbox"/> By Others (complete below)		
NAME MIKE WELCH		EMAIL ADDRESS
ADDRESS #1 PARKWOOD COURT	CITY HERCULANEUM	STATE ZIP CODE MO 63048
CONTACT PERSON MARK JOHNSON	TELEPHONE NUMBER WITH AREA CODE 636-475-4447	PERMIT NO. MO- 0027111
9.8 Sludge use or disposal facility: <input type="checkbox"/> By Applicant <input checked="" type="checkbox"/> By Others (Complete below)		
NAME TIMBER RIDGE LANDFILL		EMAIL ADDRESS
ADDRESS 12581 STATE HWY H	CITY RICHWOODS	STATE ZIP CODE MO 63071
CONTACT PERSON KEVIN GENTRY	TELEPHONE NUMBER WITH AREA CODE 573-678-2183	PERMIT NO. MO- 0122103
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 HERCULANEUM WWTP	PERMIT NO. MO- 0027111	OUTFALL NO. 001
PART B – ADDITIONAL APPLICATION INFORMATION		
10. COLLECTION SYSTEM		
10.1 Are there any municipal satellite collection systems connected to this facility? ____ Yes <u>NO</u> 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>7.2</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: SMOKE TESTING. TELEVISION. SEALING MANHOLE LIDS WHERE NEEDED. SEALING OR REPAIR OF MANHOLES. REPLACE ANY OUT DATED MAINLINES WHERE POSSIBLE I & I IS OCCURING.		
11. BYPASSING		
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:		
12. OPERATION AND MAINTENANCE PERFORMED BY CONTRACTOR(S)		
Are any operational or maintenance aspects (related to wastewater treatment and effluent quality) of the treatment works the responsibility of the contractor? Yes <input type="checkbox"/> No <input checked="" 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		
MAILING ADDRESS		
TELEPHONE NUMBER WITH AREA CODE	EMAIL ADDRESS	
RESPONSIBILITIES OF CONTRACTOR		
13. SCHEDULED IMPROVEMENTS AND SCHEDULES OF IMPLEMENTATION		
Provide information about any uncompleted implementation schedule or uncompleted plans for improvements that will affect the wastewater treatment, effluent quality, or design capacity of the treatment works. If the treatment works has several different implementation schedules or is planning several improvements, submit separate responses for each. A plan is in place to replace UV lights and do maintenance on UV disinfection. Upgrade the bar screen headworks also make any improvements as needed.		

FACILITY NAME HERCULANEUM WWTP		PERMIT NO. MO- 0027111		OUTFALL NO. 001				
PART B – ADDITIONAL APPLICATION INFORMATION								
14. EFFLUENT TESTING DATA								
Applicants must provide effluent testing data for the following parameters. Provide the indicated effluent data for each outfall through which effluent is discharged . Do not include information of combined sewer overflows in this section. All information reported must be based on data collected through analysis conducted using 40 CFR Part 136 methods. In addition, this data must comply with QA/QC requirements of 40 CFR Part 136 and other appropriate QA/QC requirements for standard methods for analytes not addressed by 40 CFR Part 136. At a minimum, effluent testing data must be based on at least three samples and must be no more than four and one-half years apart. See 40 CFR 136.3 for sufficiently sensitive methods: https://www.ecfr.gov/cgi-bin/text-idx?SID=2d29852e2dcd91badc043bd5fc3d4df&mc=true&node=se40.25.136_13&rgn=div8								
Outfall Number 001								
PARAMETER	MAXIMUM DAILY VALUE		AVERAGE DAILY VALUE					
	Value	Units	Value	Units	Number of Samples			
pH (Minimum)	6.96	S.U.	7.22	S.U.	3			
pH (Maximum)	7.52	S.U.	7.22	S.U.	3			
Flow Rate	.855	MGD	.855	MGD				
*For pH report a minimum and a maximum daily value								
POLLUTANT	MAXIMUM DAILY DISCHARGE		AVERAGE DAILY DISCHARGE			ANALYTICAL METHOD	ML/MDL RL	
	Conc.	Units	Conc.	Units	Number of Samples			
Conventional and Nonconventional Compounds								
BIOCHEMICAL OXYGEN DEMAND (Report One)	BOD ₅	<10	mg/L	<10	mg/L	3	5210B	10
	CBOD ₅		mg/L		mg/L			
E. COLI	2940	#/100 mL	297	#/100 mL	3	9222D	20/9/7	
TOTAL SUSPENDED SOLIDS (TSS)	15	mg/L	5	mg/L	3	2540D	5	
TOTAL PHOSPHORUS	2.78	mg/L	1.25	mg/L	3	200.7	5	
TOTAL KJELDAHL NITROGEN	3.7	mg/L	2.53	mg/L	3	4500-norg B	0.2	
NITRITES + NITRATES	28.6	mg/L	20.13	mg/L	3	300.0	0.1	
AMMONIA AS N	3.5	mg/L	2.3	mg/L	3	4500-NH3 B,C	0.2	
CHLORINE* (TOTAL RESIDUAL, TRC)	0.02	mg/L	0.02	mg/L	3	HACH 8167	0.02	
DISSOLVED OXYGEN	9.79	mg/L	9.08	mg/L	3	DO PROBE	-----	
OIL and GREASE	<5	mg/L	< 5	mg/L	3	1664	5	
OTHER: _____		mg/L		mg/L				
*Report only if facility chlorinates								
END OF PART B								

FACILITY NAME HERCULANEUM WWTP	PERMIT NO. MO- 0027111	OUTFALL NO. 001
PART C – CERTIFICATION		
15. ELECTRONIC DISCHARGE MONITORING REPORT (eDMR) SUBMISSION SYSTEM		
<p>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 a timely, complete, accurate, and nationally-consistent set of data. One of the following options must be checked in order for this application to be considered complete. Visit https://dnr.mo.gov/env/wpp/edmr.htm to for information on the department's eDMR system and how to register.</p> <p> <input type="checkbox"/> I will register an account online to participate in the department's eDMR system through the Missouri Gateway for Environmental Management (MoGEM) before any reporting is due, in compliance with the Electronic Reporting Rule. <input checked="" type="checkbox"/> I have already registered an account online to participate in the department's eDMR system through MoGEM. <input type="checkbox"/> I have submitted a written request for a waiver from electronic reporting. See instructions for further information regarding waivers. <input type="checkbox"/> The permit I am applying for does not require the submission of discharge monitoring reports. </p>		
16. JETPAY		
<p>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.</p> <p> 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/ </p>		
17. CERTIFICATION		
<p>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.</p>		
ALL APPLICANTS MUST COMPLETE THE FOLLOWING CERTIFICATION.		
<p>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.</p>		
PRINTED NAME	OFFICIAL TITLE (MUST BE AN OFFICER OF THE COMPANY OR CITY OFFICIAL)	
LEONARD KOHLER	CHIEF OPERATOR	
SIGNATURE 		
TELEPHONE NUMBER WITH AREA CODE		
314-583-1357		
DATE SIGNED		
MAY 20,2021		
<p>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.</p>		
<p>Send Completed Form to: cleanwaterpermits@dnr.mo.gov</p> <p style="text-align: center;">OR</p> <p style="text-align: center;"> Department of Natural Resources Water Protection Program ATTN: NPDES Permits and Engineering Section P.O. Box 176 Jefferson City, MO 65102-0176 </p>		
END OF PART C		
REFER TO THE APPLICATION OVERVIEW TO DETERMINE WHICH PARTS OF FORM B2 YOU MUST COMPLETE.		
<p>Do not complete the remainder of this application, unless at least one of the following statements applies to your facility:</p> <ol style="list-style-type: none"> 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. 		
<p>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.</p>		

MAKE ADDITIONAL COPIES OF THIS FORM FOR EACH OUTFALL											
FACILITY NAME HERCULANEUM WWTP				PERMIT NO. MO- 0027111				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.											
<p>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-idx?SID=2d29852e2dcdf91badc043bd5fc3d4df&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.</p>											
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 RL
	Conc.	Units	Mass	Units	Conc.	Units	Mass	Units	No. of Samples		
METALS (TOTAL RECOVERABLE), CYANIDE, PHENOLS AND HARDNESS											
ALUMINUM	< 10	MGL	.00	LBS	<0.03	MGL	.00	LBS	3	200.7/200.8icpaes	0.10
ANTIMONY	<0.02	MGL	.00	LBS	<0.015	MGL	.00	LBS	3	"	0.015
ARSENIC	0.46	MGL	3.28	LBS	0.18	MGL	1.28	LBS	3	"	0.02
BERYLLIUM	<0.02	MGL	.00	LBS	<0.015	MGL	.00	LBS	3	"	0.015
CADMIUM	<0.02	MGL	.00	LBS	<0.015	MGL	.00	LBS	3	"	0.015
CHROMIUM III	<0.015	MGL	.00	LBS	<0.01	MGL	.00	LBS	3	"	0.01
CHROMIUM VI	<0.015	MGL	.00	LBS	<0.01	MGL	.00	LBS	3	"	0.01
COPPER	<0.05	MGL	.00	LBS	<0.05	MGL	.00	LBS	3	"	0.05
IRON	0.16	MGL	1.14	LBS	0.05	MGL	0.36	LBS	3	"	0.05
LEAD	0.32	MGL	2.28	LBS	0.11	MGL	0.78	LBS	3	"	0.015
MERCURY	<0.002	MGL	.00	LBS	<0.003	MGL	.00	LBS	3	"	0.03
NICKEL	<0.02	MGL	.00	LBS	<0.02	MGL	.00	LBS	3	"	0.02
SELENIUM	<0.02	MGL	.00	LBS	<0.015	MGL	.00	LBS	3	"	0.015
SILVER	<0.02	MGL	.00	LBS	<0.025	MGL	.00	LBS	3	"	0.035
THALLIUM	<0.02	MGL	.00	LBS	<0.015	MGL	.00	LBS	3	"	0.005
ZINC	0.091	MGL	.65	LBS	0.030	MGL	0.21	LBS	3	"	0.05
CYANIDE	0.0082	MGL	0.058	LBS	0.0027	MGL	0.0019	LBS	3	335.4	.005/.0050
TOTAL PHENOLIC COMPOUNDS	ND	MGL	ND	LBS	ND	MGL	ND	LBS	3	600/625-1 MOD	1.0
HARDNESS (as CaCO ₃)	251	MGL	1789.8	LBS	234.3	MGL	1670.7	LBS	3	2540B/2007	1.0
VOLATILE ORGANIC COMPOUNDS											
ACROLEIN	ND	MGL	ND	LBS	ND	MGL	ND	LBS	3	600/624-1 MOD	0.050
ACRYLONITRILE	ND	MGL	ND	LBS	ND	MGL	ND	LBS	3	"	0.010
BENZENE	ND	MGL	ND	LBS	ND	MGL	ND	LBS	3	"	0.005
BROMOFORM	ND	MGL	ND	LBS	ND	MGL	ND	LBS	3	"	0.005
CARBON TETRACHLORIDE	ND	MGL	ND	LBS	ND	MGL	ND	LB	3	"	0.005

FACILITY NAME HERCULANEUM WWTP				PERMIT NO. MO- 0027111				OUTFALL NO. 001			
PART D – EXPANDED EFFLUENT TESTING DATA											
18. EXPANDED EFFLUENT TESTING DATA											
Complete Once for Each Outfall Discharging Effluent to Waters of the State											
POLLUTANT	MAXIMUM DAILY DISCHARGE				AVERAGE DAILY DISCHARGE					ANALYTICAL METHOD	ML/MDL RL
	Conc.	Units	Mass	Units	Conc.	Units	Mass	Units	No. of Samples		
CHLOROBENZENE	ND	MGL	ND	LBS	ND	MGL	ND	LBS	3	600/624-1 MOD	0.005
CHLORODIBROMO-METHANE	ND	MGL	ND	LBS	ND	MGL	ND	LBS	3	600/624-1 MOD	0.005
CHLOROETHANE	ND	MGL	ND	LBS	ND	MGL	ND	LBS	3	600/624-1 MOD	0.005
2-CHLORO-ETHYLVINYL ETHER	ND	MGL	ND	LBS	ND	MGL	ND	LBS	3	600/624-1 MOD	0.005
CHLOROFORM	ND	MGL	ND	LBS	ND	MGL	ND	LBS	3	600/624-1 MOD	0.005
DICHLOROBROMO-METHANE	ND	MGL	ND	LBS	ND	MGL	ND	LBS	3	600/624-1 MOD	0.005
1,1-DICHLORO-ETHANE	ND	MGL	ND	LBS	ND	MGL	ND	LBS	3	600/624-1 MOD	0.005
1,2-DICHLORO-ETHANE	ND	MGL	ND	LBS	ND	MGL	ND	LBS	3	600/624-1 MOD	0.005
TRANS-1,2-DICHLOROETHYLENE	ND	MGL	ND	LBS	ND	MGL	ND	LBS	3	600/624-1 MOD	0.010
1,1-DICHLORO-ETHYLENE	ND	MGL	ND	LBS	ND	MGL	ND	LBS	3	600/624-1 MOD	0.005
1,2-DICHLORO-PROPANE	ND	MGL	ND	LBS	ND	MGL	ND	LBS	3	600/624-1 MOD	0.005
1,3-DICHLORO-PROPYLENE	ND	MGL	ND	LBS	ND	MGL	ND	LBS	3	600/624-1 MOD	0.005
ETHYLBENZENE	ND	MGL	ND	LBS	ND	MGL	ND	LBS	3	600/624-1 MOD	0.005
METHYL BROMIDE	ND	MGL	ND	LBS	ND	MGL	ND	LBS	3	600/624-1 MOD	0.010
METHYL CHLORIDE	ND	MGL	ND	LBS	ND	MGL	ND	LBS	3	600/624-1 MOD	0.005
METHYLENE CHLORIDE	ND	MGL	ND	LBS	ND	MGL	ND	LBS	3	600/624-1 MOD	0.005
1,1,2,2-TETRA-CHLOROETHANE	ND	MGL	ND	LBS	ND	MGL	ND	LBS	3	600/624-1 MOD	0.005
TETRACHLOROETHYLEN E	ND	MGL	ND	LBS	ND	MGL	ND	LBS	3	600/624-1 MOD	0.005
TOLUENE	ND	MGL	ND	LBS	ND	MGL	ND	LBS	3	600/624-1 MOD	0.005
1,1,1-TRICHLORO-ETHANE	ND	MGL	ND	LBS	ND	MGL	ND	LBS	3	600/624-1 MOD	0.005
1,1,2-TRICHLORO-ETHANE	ND	MGL	ND	LBS	ND	MGL	ND	LBS	3	600/624-1 MOD	0.005
TRICHLOROETHYLENE	ND	MGL	ND	LBS	ND	MGL	ND	LBS	3	600/624-1 MOD	0.005
VINYL CHLORIDE	ND	MGL	ND	LBS	ND	MGL	ND	LBS	3	600/624-1 MOD	0.005
ACID-EXTRACTABLE COMPOUNDS											
P-CHLORO-M-CRESOL	ND	MGL	ND	LBS	ND	MGL	ND	LBS	3	600/625-1 MOD	0.010
2-CHLOROPHENOL	ND	MGL	ND	LBS	ND	MGL	ND	LBS	3	600/625-1 MOD	0.010
2,4-DICHLOROPHENOL	ND	MGL	ND	LBS	ND	MGL	ND	LBS	3	600/625-1 MOD	0.010
2,4-DIMETHYLPHENOL	ND	MGL	ND	LBS	ND	MGL	ND	LBS	3	600/625-1 MOD	0.010
4,6-DINITRO-O-CRESOL	ND	MGL	ND	LBS	ND	MGL	ND	LBS	3	600/625-1 MOD	0.050
2,4-DINITROPHENOL	ND	MGL	ND	LBS	ND	MGL	ND	LBS	3	600/625-1 MOD	0.020
2-NITROPHENOL	ND	MGL	ND	LBS	ND	MGL	ND	LBS	3	600/625-1 MOD	0.010
4-NITROPHENOL	ND	MG	ND	LBS	ND	MGL	ND	LBS	3	600/625-1 MOD	0.020

FACILITY NAME HERCULANEUM WWTP				PERMIT NO. MO- 0027111				OUTFALL NO. 001			
PART D – EXPANDED EFFLUENT TESTING DATA											
18. EXPANDED EFFLUENT TESTING DATA											
Complete Once for Each Outfall Discharging Effluent to Waters of the State.											
POLLUTANT	MAXIMUM DAILY DISCHARGE				AVERAGE DAILY DISCHARGE					ANALYTICAL METHOD	ML/MDL RL
	Conc.	Units	Mass	Units	Conc.	Units	Mass	Units	No. of Samples		
PENTACHLOROPHENOL	ND	MGL	ND	LBS	ND	LBS	ND	LBS	3	600/625-1 MOD	0.050
PHENOL	ND	MGL	ND	LBS	ND	LBS	ND	LBS	3	600/625-1 MOD	0.010
2,4,6-TRICHLOROPHENOL	ND	MGL	ND	LBS	ND	LBS	ND	LBS	3	600/625-1 MOD	0.020
BASE-NEUTRAL COMPOUNDS											
ACENAPHTHENE	ND	MGL	ND	LBS	ND	LBS	ND	LBS	3	600/625-1 MOD	0.010
ACENAPHTHYLENE	ND	MGL	ND	LBS	ND	LBS	ND	LBS	3	600/625-1 MOD	0.010
ANTHRACENE	ND	MGL	ND	LBS	ND	LBS	ND	LBS	3	600/625-1 MOD	0.010
BENZIDINE	ND	MGL	ND	LBS	ND	LBS	ND	LBS	3	600/625-1 MOD	0.080
BENZO(A)ANTHRACENE	ND	MGL	ND	LBS	ND	LBS	ND	LBS	3	600/625-1 MOD	0.010
BENZO(A)PYRENE	ND	MGL	ND	LBS	ND	LBS	ND	LBS	3	600/625-1 MOD	0.010
3,4-BENZO-FLUORANTHENE	ND	MGL	ND	LBS	ND	LBS	ND	LBS	3	600/625-1 MOD	0.010
BENZO(GH) PHERYLENE	ND	MGL	ND	LBS	ND	LBS	ND	LBS	3	600/625-1 MOD	0.010
BENZO(K) FLUORANTHENE	ND	MGL	ND	LBS	ND	LBS	ND	LBS	3	600/625-1 MOD	0.010
BIS (2-CHLOROTHOXY) METHANE	ND	MGL	ND	LBS	ND	LBS	ND	LBS	3	600/625-1 MOD	0.010
BIS (2-CHLOROETHYL) – ETHER	ND	MGL	ND	LBS	ND	LBS	ND	LBS	3	600/625-1 MOD	0.010
BIS (2-CHLOROISO-PROPYL) ETHER	ND	MGL	ND	LBS	ND	LBS	ND	LBS	3	600/625-1 MOD	0.010
BIS (2-ETHYLHEXYL) PHTHALATE	ND	MGL	ND	LBS	ND	LBS	ND	LBS	3	600/625-1 MOD	0.010
4-BROMOPHENYL PHENYL ETHER	ND	MGL	ND	LBS	ND	LBS	ND	LBS	3	600/625-1 MOD	0.010
BUTYL BENZYL PHTHALATE	ND	MGL	ND	LBS	ND	LBS	ND	LBS	3	600/625-1 MOD	0.010
2-CHLORONAPH-THALENE	ND	MGL	ND	LBS	ND	LBS	ND	LBS	3	600/625-1 MOD	0.010
4-CHLORPHENYL PHENYL ETHER	ND	MGL	ND	LBS	ND	LBS	ND	LBS	3	600/625-1 MOD	0.010
CHRYSENE	ND	MGL	ND	LBS	ND	LBS	ND	LBS	3	600/625-1 MOD	0.010
DI-N-BUTYL PHTHALATE	ND	MGL	ND	LBS	ND	LBS	ND	LBS	3	600/625-1 MOD	0.010
DI-N-OCTYL PHTHALATE	ND	MGL	ND	LBS	ND	LBS	ND	LBS	3	600/625-1 MOD	0.010
DIBENZO (A,H) ANTHRACENE	ND	MGL	ND	LBS	ND	LBS	ND	LBS	3	600/625-1 MOD	0.010
1,2-DICHLORO-BENZENE	ND	MGL	ND	LBS	ND	LBS	ND	LBS	3	600/624-1 MOD	0.005
1,3-DICHLORO-BENZENE	ND	MGL	ND	LBS	ND	LBS	ND	LBS	3	600/624-1 MOD	0.005
1,4-DICHLORO-BENZENE	ND	MGL	ND	LBS	ND	LBS	ND	LBS	3	600/624-1 MOD	0.005
3,3-DICHLORO-BENZIDINE	ND	MGL	ND	LBS	ND	LBS	ND	LBS	3	600/625-1 MOD	0.020
DIETHYL PHTHALATE	ND	MGL	ND	LBS	ND	LBS	ND	LBS	3	600/625-1 MOD	0.010
DIMETHYL PHTHALATE	NDM	MGL	ND	LBS	ND	LBS	ND	LBS	3	600/625-1 MOD	0.010

MAKE ADDITIONAL COPIES OF THIS FORM FOR EACH OUTFALL

FACILITY NAME HERCULANEUM WWTP	PERMIT NO. MO- 0027111	OUTFALL NO. 001
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PART E – TOXICITY TESTING DATA
19. TOXICITY TESTING DATA

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.

- A. POTWs with a design flow rate greater than or equal to 1 million gallons per day.
- B. POTWs with a pretreatment program (or those that are required to have one under 40 CFR Part 403).
- C. POTWs required by the permitting authority to submit data for these parameters.
 - 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.
 - 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.

Indicate the number of whole effluent toxicity tests conducted in the past four and one-half years: 1 chronic 3 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 ND Most Recent	3 RD Most Recent
A. Test Information			
Test Method Number	EPA-2000/2002	EPA 821-R-02-013	EPA 2000/2000
Final Report Number	EAS LOG# 2506426	60295148	2302401
Outfall Number	001	001	001
Dates Sample Collected	6-9-2020/6-10-2020	2-25-19/3-1-19	9-18-18/9-19-18
Date Test Started	6-10-2020	2-27-19	9-19-18
Duration	48 Hours	8 days	48 Hours
B. Toxicity Test Methods Followed			
Manual Title	SM-WATER/WASTEWATER	EPA 1000-0/1002.0	SM-WATER/WASTEWATER
Edition Number and Year of Publication	18 th 1992	ToxSTAT 3-4 2 nd 2002	18 th 1992
Page Number(s)			
C. Sample collection method(s) used. For multiple grab samples, indicate the number of grab samples used			
24-Hour Composite	1	3	1
Grab		3	
D. Indicate where the sample was taken in relation to disinfection (Check all that apply for each)			
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"/>
E. Describe the point in the treatment process at which the sample was collected			
Sample Was Collected:	OUT FALL 001	OUT FALL 001	OUT FALL 001
F. Indicate whether the test was intended to assess chronic toxicity, acute toxicity, or both			
Chronic Toxicity	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Acute Toxicity	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
G. Provide the type of test performed			
Static	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Static-renewal	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Flow-through	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
H. Source of dilution water. If laboratory water, specify type; if receiving water, specify source			
Laboratory Water	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Receiving Water	<input checked="" type="checkbox"/> Joachim Creek	<input checked="" type="checkbox"/> Joachim Creek	<input checked="" type="checkbox"/> Joachim Creek

FACILITY NAME Herculeum WWP	PERMIT NO. MO- 0027111	OUTFALL NO. 001	
PART E – TOXICITY TESTING DATA			
19. TOXICITY TESTING DATA (continued)			
	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	JACHIM CREEK	JACHIM CREEK	JACHIM CREEK
Salt Water			
J. Percentage of effluent used for all concentrations in the test series			
	100/50/25/12.5/6.25	100/50/25/12.5/6.25	100/50/25/12.5/6.25
K. Parameters measured during the test (State whether parameter meets test method specifications)			
pH	YES	YES	YES
Salinity	YES	YES	YES
Temperature	YES	YES	YES
Ammonia	YES	YES	YES
Dissolved Oxygen	YES	YES	YES
L. Test Results			
Acute:			
Percent Survival in 100% Effluent	100%	NA	100%
LC50	> 100%		> 100%
95% C.I.	0.943 GL - 1.534 GL		1.015 - 1.496
Control Percent Survival	> 90%		90%
Other (Describe)			
Chronic:			
NOEC	NA	100%	NA
IC25		> 100%	
Control Percent Survival		100%	
Other (Describe)			
M. Quality Control/ Quality Assurance			
Is reference toxicant data available?	YES	YES	YES
Was reference toxicant test within acceptable bounds?	YES	YES	YES
What date was reference toxicant test run (MM/DD/YYYY)?	06/03/2020	03/12/2019	9-12-2018
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) X			
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.

MAKE ADDITIONAL COPIES OF THIS FORM FOR EACH OUTFALL

FACILITY NAME

Herculeum WWTP

PERMIT NO.

MO- 0027111

OUTFALL NO.

001

PART F – INDUSTRIAL USER DISCHARGES AND RCRA/CERCLA WASTES

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

20. GENERAL INFORMATION**20.1** Does the treatment works have, or is it subject to, an approved pretreatment program?☐ Yes☒ 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 0Number of CIUs 0**21. INDUSTRIES CONTRIBUTING MORE THAN 5% OF THE ACTUAL FLOW TO THE FACILITY OR OTHER SIGNIFICANT INDUSTRIAL USERS INFORMATION**

Supply the following information for each SIU. If more than one SIU discharges to the treatment works, provide the information requested for each. Submit additional pages as necessary.

NAME

MAILING ADDRESS

CITY

STATE

ZIP CODE

21.1 Describe all of the industrial processes that affect or contribute to the SIU's discharge**21.2** Describe all of the principle processes and raw materials that affect or contribute to the SIU's discharge.

Principal Product(s):

Raw Material(s):

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 ☐ Continuous ☐ 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 ☐ Continuous ☐ Intermittent**21.4** Pretreatment Standards. Indicate whether the SIU is subject to the following:**a. Local Limits**☐ Yes☐ No**b. Categorical Pretreatment Standards**☐ Yes☐ 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?☐ Yes☐ No

If Yes, describe each episode

MAKE ADDITIONAL COPIES OF THIS FORM FOR EACH OUTFALL

FACILITY NAME:

Herculeum WWTP

PERMIT NO.

MO- 0027111

OUTFALL NO.

001

PART F – INDUSTRIAL USER DISCHARGES AND RCRA/CERCLA WASTES**22. RCRA HAZARDOUS WASTE RECEIVED BY TRUCK, RAIL, OR DEDICATED PIPELINE**

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?
☐ Yes ☒ No

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

☐ Truck☐ Rail☐ Dedicated Pipe**22.3 Waste Description**

EPA Hazardous Waste Number	Amount (volume or mass)	Units

23. CERCLA (SUPERFUND) WASTEWATER, RCRA REMEDIATION/CORRECTIVE ACTION WASTEWATER, AND OTHER REMEDIAL ACTIVITY WASTEWATER

23.1 Does the treatment works currently (or has it been notified that it will) receive waste from remedial activities?
☐ Yes ☒ No

Provide a list of sites and the requested information for each current and future site.

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).

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)

23.4 Waste Treatment

a. Is this waste treated (or will it be treated) prior to entering the treatment works?
☐ Yes ☐ No

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

b. Is the discharge (or will the discharge be) continuous or intermittent?
☐ Continuous ☐ Intermittent

If intermittent, describe the discharge schedule:

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

MAKE ADDITIONAL COPIES OF THIS FORM FOR EACH OUTFALL

FACILITY NAME

HerculaneumWWTP

PERMIT NO.

MO- 0027111

OUTFALL NO.

001

PART G – COMBINED SEWER SYSTEMS

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

24. GENERAL INFORMATION**24.1 System Map.** Provide a map indicating the following: (May be included with basic application information.)

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

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

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

24.3 Percent of collection system that is combined sewer**24.4** Population served by combined sewer collection system**24.5** Name of any satellite community with combined sewer collection system**25. CSO OUTFALLS. COMPLETE THE FOLLOWING ONCE FOR EACH CSO DISCHARGE POINT****25.1** Description of Outfall

- 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?

- ☐ Rainfall
- ☐ CSO Pollutant Concentrations
- ☐ CSO
- ☐ CSO Flow Volume
- ☐ Receiving Water Quality

f. How many storm events were monitored last year?

25.2 CSO Events

- a. Give the Number of CSO Events in the Last Year Events ☐ Actual ☐ Approximate
- b. Give the Average Duration Per CSO Event Hours ☐ Actual ☐ Approximate
- c. Give the Average Volume Per CSO Event Million Gallons ☐ Actual ☐ Approximate
- d. Give the minimum rainfall that caused a CSO event in the last year _____ inches of rainfall

25.3 Description of Receiving Waters

- 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)

25.4 CSO Operations

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

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



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CITY OF HERCULANEUM
#1 Parkwood Court
Herculaneum, MO 63048

April 23, 2021
Lab No. 21E-0509
Invoice No. INSTL6760
Page 1 of 7

Attention: Leonard Kohler

REPORT OF ANALYSIS

MATERIAL: Water Sample, Herculaneum Wastewater
Collected 04/08/21, 07:30

UNITS: Milligrams per Liter (mg/L) except as otherwise noted

RESULTS:

Conc.
Conc.

ANALYTE	RESULTS	RL	TEST METHOD	DATE OF ANALYSIS
pH, std. units	7.19	---	4500 H ⁺ B	04/09/2021
Biological Oxygen Demand	<10	10	5210 B	04/09/2021
E.coli, Colonies/100 mL	2940	20	9222 D	04/09/2021
Total Suspended Solids	<5	5	2540 D	04/22/2021
Total Phosphorus	0.97	0.20	200.7	04/13/2021
Total Kjeldahl Nitrogen	1.4	0.2	4500-N _{org} B	04/20/2021
Cyanide, Total	0.0082	0.0050	335.4	04/13/2021
Nitrate + Nitrite-N	13.6	0.1	300.0	04/14/2021
Ammonia-N	1.2	0.2	4500-NH ₃ B,C	04/19/2021
Total Residual Chlorine	0.02	0.02	HACH 8167	04/08/2021
Dissolved Oxygen	8.59	---	D.O. PROBE	04/08/2021
Oil & Grease	<5	5	1664	04/09/2021
Total Hardness as CaCO ₃	206	1.0	2540B / 200.7	04/13/2021

RL: Minimum Reporting Limit
ND: None Detected Above the RL

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Water Protection Program



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#1 Parkwood Court
Herculaneum, MO 63048

April 23, 2021
Lab No. 21E-0509
Invoice No. INSTL6760
Page 2 of 7

Attention: Leonard Kohler

REPORT OF ANALYSIS

MATERIAL: Water Sample, Herculaneum Wastewater
Collected 04/08/21, 07:30

METHOD: 200.7 (ICP-AES) & 200.8 (ICP-AES)

UNITS: Milligrams per Liter (mg/L)

ANALYTE	RESULTS	RL	DATE OF ANALYSIS
Aluminum	<0.10	0.10	04/13/2021
Antimony	<0.02	0.02	04/13/2021
Arsenic	<0.02	0.02	04/13/2021
Beryllium	<0.02	0.02	04/13/2021
Cadmium	<0.02	0.02	04/13/2021
*Chromium, Trivalent	<0.01	0.01	04/13/2021
*Chromium, Hexavalent	<0.01	0.01	04/13/2021
Copper	<0.05	0.05	04/13/2021
Iron	<0.05	0.05	04/13/2021
Lead	<0.05	0.02	04/16/2021
Mercury	<0.002	0.002	04/16/2021
Nickel	<0.02	0.02	04/13/2021
Selenium	<0.02	0.02	04/13/2021
Silver	<0.02	0.05	04/13/2021
Thallium	<0.02	0.02	04/13/2021
Zinc	<0.02	0.05	04/13/2021

RL: Minimum Reporting Limit
ND: None Detected Above the RL

* Hexavalent and Trivalent Chromium determined by total chromium less than 0.01 mg/L



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CITY OF HERCULANEUM

#1 Parkwood Court
Herculaneum, MO 63048

April 23, 2021

Lab No. 21E-0509

Invoice No. INSTL6760

Page 3 of 7

Attention: Leonard Kohler

REPORT OF ANALYSIS

MATERIAL: Water Sample, Herculaneum Wastewater
Collected 04/08/21, 07:30

METHOD: 600 / 624-1 Modified

UNITS: Milligrams per Liter (mg/L)

RESULTS:

VOLATILE ORGANIC COMPOUNDS

ANALYTE	RESULTS	RL	DILUTION FACTOR	DATE OF ANALYSIS
1,1,1-Trichloroethane	ND	0.005	1	04/12/2021
1,1,2,2-Tetrachloroethane	ND	0.005	1	04/12/2021
1,1,2-Trichloroethane	ND	0.005	1	04/12/2021
1,1-Dichloroethane	ND	0.005	1	04/12/2021
1,1-Dichloroethene	ND	0.005	1	04/12/2021
1,2-Dichloroethane	ND	0.005	1	04/12/2021
1,2-Dichloropropane	ND	0.005	1	04/12/2021
1,2-Dichlorobenzene	ND	0.00	1	04/12/2021
1,3-Dichlorobenzene	ND	0.005	1	04/12/2021
1,4-Dichlorobenzene	ND	0.005	1	04/12/2021
2-Chloroethyl vinyl ether	ND	0.005	1	04/12/2021
Acrolein	ND	0.050	1	04/12/2021
Acrylonitrile	ND	0.010	1	04/12/2021
Benzene	ND	0.005	1	04/12/2021
Bromodichloromethane	ND	0.005	1	04/12/2021
Bromoform	ND	0.005	1	04/12/2021
Bromomethane	ND	0.010	1	04/12/2021
Carbon tetrachloride	ND	0.005	1	04/12/2021
Chlorobenzene	ND	0.005	1	04/12/2021

RL: Minimum Reporting Limit

ND: None Detected Above the RL



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April 23, 2021
Lab No. 21E-0509
Invoice No. INSTL6760
Page 4 of 7

Attention: Leonard Kohler

REPORT OF ANALYSIS

MATERIAL: Water Sample, Herculaneum Wastewater
Collected 04/08/21, 07:30

UNITS: Milligrams per Liter (mg/L)

VOLATILE ORGANIC COMPOUNDS CONTINUED

ANALYTE	RESULTS	RL	DILUTION FACTOR	DATE OF ANALYSIS
Chloroform	ND	0.005	1	04/12/2021
Chloromethane	ND	0.010	1	04/12/2021
Dibromochloromethane	ND	0.005	1	04/12/2021
Ethylbenzene	ND	0.005	1	04/12/2021
Methylene chloride	ND	0.005	1	04/12/2021
Tetrachloroethene	ND	0.005	1	04/12/2021
Toluene	ND	0.005	1	04/12/2021
trans-1,2-Dichloroethene	ND	0.010	1	04/12/2021
trans-1,3-Dichloropropene	ND	0.005	1	04/12/2021
Trichloroethene	ND	0.005	1	04/12/2021
Vinyl chloride	ND	0.005	1	04/12/2021

RL: Minimum Reporting Limit
ND: None Detected Above the RL



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CITY OF HERCULANEUM

#1 Parkwood Court
Herculaneum, MO 63048

April 23, 2021

Lab No. 21E-0509

Invoice No. INSTL6760

Page 5 of 7

Attention: Leonard Kohler

REPORT OF ANALYSIS

MATERIAL: Water Sample, Herculaneum Wastewater
Collected 04/08/21, 07:30

METHOD: 600 / 625-1 Modified

UNITS: Milligrams per Liter (mg/L)

RESULTS:

SEMI-VOLATILE ORGANIC COMPOUNDS

ANALYTE	RESULTS	RL	DILUTION FACTOR	DATE OF ANALYSIS
1,2- Diphenylhydrazine	ND	0.010	1	04/12/2021
2,4,6-Trichlorophenol	ND	0.020	1	04/12/2021
2,4-Dichlorophenol	ND	0.010	1	04/12/2021
2,4-Dimethylphenol	ND	0.010	1	04/12/2021
2,4-Dinitrophenol	ND	0.020	1	04/12/2021
2,4-Dinitrotoluene	ND	0.010	1	04/12/2021
2,6-Dinitrotoluene	ND	0.010	1	04/12/2021
2-Chloronaphthalene	ND	0.010	1	04/12/2021
2-Chlorophenol	ND	0.010	1	04/12/2021
2-Nitrophenol	ND	0.011	1	04/12/2021
3,3-Dichlorobenzidine	ND	0.020	1	04/12/2021
4,6-Dinitro-2-methylphenol	ND	0.050	1	04/12/2021
4-Bromophenyl phenyl ether	ND	0.010	1	04/12/2021
p-Chloro-m-cresol	ND	0.010	1	04/12/2021
4-Chlorophenyl phenyl ether	ND	0.010	1	04/12/2021
4-Nitrophenol	ND	0.020	1	04/12/2021
Acenaphthene	ND	0.010	1	04/12/2021
Acenaphthylene	ND	0.010	1	04/12/2021
Anthracene	ND	0.010	1	04/12/2021
Benzidine	ND	0.080	1	04/12/2021
Benzo(a)anthracene	ND	0.010	1	04/12/2021

RL: Minimum Reporting Limit

ND: None Detected Above the RL



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 Herculanum, MO 63048

April 23, 2021
 Lab No. 21E-0509
 Invoice No. INSTL6760
 Page 6 of 7

Attention: Leonard Kohler

REPORT OF ANALYSIS

MATERIAL: Water Sample, Herculanum Wastewater
 Collected 04/08/21, 07:30

UNITS: Milligrams per Liter (mg/L)

SEMI-VOLATILE ORGANIC COMPOUNDS CONTINUED

ANALYTE	RESULTS	RL	DILUTION FACTOR	DATE OF ANALYSIS
Benzo(a)pyrene	ND	0.010	1	04/12/2021
Benzo(b)fluoranthene	ND	0.010	1	04/12/2021
Benzo(g,h,i)perylene	ND	0.010	1	04/12/2021
Benzo(k)fluoranthene	ND	0.010	1	04/12/2021
Bis(2-chloroethoxy)methane	ND	0.010	1	04/12/2021
Bis(2-chloroethyl)ether	ND	0.010	1	04/12/2021
Bis(2-chloroisopropyl)ether	ND	0.010	1	04/12/2021
Bis(2-ethylhexyl)phthalate	ND	0.010	1	04/12/2021
Butyl benzyl phthalate	ND	0.010	1	04/12/2021
Chrysene	ND	0.010	1	04/12/2021
Dibenzo(a,h)anthracene	ND	0.010	1	04/12/2021
Diethyl phthalate	ND	0.010	1	04/12/2021
Dimethyl phthalate	ND	0.010	1	04/12/2021
Di-n-butyl phthalate	ND	0.010	1	04/12/2021
Di-n-octyl phthalate	ND	0.010	1	04/12/2021
Fluoranthene	ND	0.010	1	04/12/2021
Fluorene	ND	0.010	1	04/12/2021
Hexachlorobenzene	ND	0.010	1	04/12/2021
Hexachlorobutadiene	ND	0.010	1	04/12/2021
Hexachlorocyclopentadiene	ND	0.020	1	04/12/2021

RL: Minimum Reporting Limit
 ND: None Detected Above the RL



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CITY OF HERCULANEUM
#1 Parkwood Court
Herculaneum, MO 63048

April 23, 2021
Lab No. 21E-0509
Invoice No. INSTL6760
Page 7 of 7

Attention: Leonard Kohler

REPORT OF ANALYSIS

MATERIAL: Water Sample, Herculaneum Wastewater
Collected 04/08/21, 07:30

UNITS: Milligrams per Liter (mg/L)

SEMI-VOLATILE ORGANIC COMPOUNDS CONTINUED

ANALYTE	RESULTS	RL	DILUTION FACTOR	DATE OF ANALYSIS
Hexachloroethane	ND	0.010	1	04/12/2021
Indo(1,2,3-cd)pyrene	ND	0.010	1	04/12/2021
Isophorone	ND	0.010	1	04/12/2021
Naphthalene	ND	0.010	1	04/12/2021
Nitrobenzene	ND	0.010	1	04/12/2021
N-Nitrosodimethylamine	ND	0.010	1	04/12/2021
N-Nitroso-di-n-propylamine	ND	0.010	1	04/12/2021
N-Nitrosodiphenylamine	ND	0.010	1	04/12/2021
Pentachlorophenol	ND	0.050	1	04/12/2021
Phenanthrene	ND	0.010	1	04/12/2021
Phenol	ND	0.010	1	04/12/2021
Pyrene	ND	0.010	1	04/12/2021

RL: Minimum Reporting Limit
ND: None Detected Above the RL

KK/tz

Kimberly Kostelac, Manager
Environmental Testing





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2nd
Test
5-5

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CITY OF HERCULANEUM

#1 Parkwood Court
Herculaneum, MO 63048

May 3, 2021

Lab No. 21E-0554

Invoice No. INSTL7147

Page 1 of 7

Attention: Tom Anderson

REPORT OF ANALYSIS

MATERIAL: Water Sample, Herculaneum Wastewater
Collected 04/15/21, 07:45

UNITS: Milligrams per Liter (mg/L) except as otherwise noted

RESULTS:

ANALYTE	RESULTS	RL	TEST METHOD	DATE OF ANALYSIS
pH, std. units	7.52	---	4500 H ⁺ B	04/15/2021
Biological Oxygen Demand	<10	10	5210 B	04/16/2021
E.coli, Colonies/100 mL	993	7	9222 D	04/16/2021
Total Suspended Solids	<5	5	2540 D	04/16/2021
Total Phosphorus	<0.20	0.20	200.7	04/29/2021
Total Kjeldahl Nitrogen	3.7	0.2	4500-N _{org} B	04/20/2021
Cyanide, Total	<0.005	0.005	335.4	04/21/2021
Nitrate + Nitrite-N	18.2	0.1	300.0	04/19/2021
Ammonia-N	3.5	0.2	4500-NH ₃ B,C	04/20/2021
Total Residual Chlorine	0.02	0.02	HACH 8167	04/15/2021
Dissolved Oxygen	8.86	---	D.O. PROBE	04/15/2021
Oil & Grease	<5	5	1664	04/16/2021
Total Hardness as CaCO ₃	251	1.0	2540B / 200.7	04/29/2021

RL: Minimum Reporting Limit
ND: None Detected Above the RL

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Water Protection Program



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 Chemical, Metallurgical, Mechanical, Nondestructive, Environmental Testing, Analyses and Field Service.

CITY OF HERCULANEUM
 #1 Parkwood Court
 Herculanum, MO 63048

May 3, 2021
 Lab No. 21E-0554
 Invoice No. INSTL7147
 Page 2 of 7

Attention: Tom Anderson

REPORT OF ANALYSIS

MATERIAL: Water Sample, Herculanum Wastewater
 Collected 04/15/21, 07:45

METHOD: 200.7 (ICP-AES) & 200.8 (ICP-AES)

UNITS: Milligrams per Liter (mg/L)

ANALYTE	RESULTS	RL	DATE OF ANALYSIS
Aluminum	<0.10	0.10	04/29/2021
Antimony	<0.02	0.02	04/29/2021
Arsenic	0.46	0.02	04/29/2021
Beryllium	<0.02	0.02	04/29/2021
Cadmium	<0.02	0.02	04/29/2021
*Chromium, Trivalent	<0.01	0.01	04/29/2021
*Chromium, Hexavalent	<0.01	0.01	04/29/2021
Copper	<0.05	0.05	04/29/2021
Iron	<0.05	0.05	04/29/2021
Lead	0.32	0.02	04/29/2021
Mercury	<0.002	0.002	04/16/2021
Nickel	<0.02	0.02	04/29/2021
Selenium	<0.02	0.02	04/29/2021
Silver	<0.05	0.05	04/29/2021
Thallium	<0.02	0.02	04/29/2021
Zinc	<0.05	0.05	04/29/2021

RL: Minimum Reporting Limit
 ND: None Detected Above the RL

* Hexavalent and Trivalent Chromium determined by total chromium less than 0.01 mg/L



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May 3, 2021
 Lab No. 21E-0554
 Invoice No INSTL7147
 Page 3 of 7

Attention: Tom Anderson

REPORT OF ANALYSIS

MATERIAL: Water Sample, Herculanum Wastewater
 Collected 04/15/21, 07:45

METHOD: 600 / 624-1 Modified

UNITS: Milligrams per Liter (mg/L)

RESULTS:

VOLATILE ORGANIC COMPOUNDS

ANALYTE	RESULTS	RL	DILUTION FACTOR	DATE OF ANALYSIS
1,1,1-Trichloroethane	ND	0.005	1	04/16/2021
1,1,2,2-Tetrachloroethane	ND	0.005	1	04/16/2021
1,1,2-Trichloroethane	ND	0.005	1	04/16/2021
1,1-Dichloroethane	ND	0.005	1	04/16/2021
1,1-Dichloroethene	ND	0.005	1	04/16/2021
1,2-Dichloroethane	ND	0.005	1	04/16/2021
1,2-Dichloropropane	ND	0.005	1	04/16/2021
1,2-Dichlorobenzene	ND	0.005	1	04/16/2021
1,3-Dichlorobenzene	ND	0.005	1	04/16/2021
1,4-Dichlorobenzene	ND	0.005	1	04/16/2021
2-Chloroethyl vinyl ether	ND	0.005	1	04/16/2021
Acrolein	ND	0.050	1	04/16/2021
Acrylonitrile	ND	0.010	1	04/16/2021
Benzene	ND	0.005	1	04/16/2021
Bromodichloromethane	ND	0.005	1	04/16/2021
Bromoform	ND	0.005	1	04/16/2021
Bromomethane	ND	0.010	1	04/16/2021
Carbon tetrachloride	ND	0.005	1	04/16/2021
Chlorobenzene	ND	0.005	1	04/16/2021

RL: Minimum Reporting Limit
 ND: None Detected Above the RL



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May 3, 2021
Lab No. 21E-0554
Invoice No. INSTL7147
Page 4 of 7

Attention: Tom Anderson

REPORT OF ANALYSIS

MATERIAL: Water Sample, Herculaneum Wastewater
Collected 04/15/21, 07:45

METHOD: 6001624-1 Modified

UNITS: Milligrams per Liter (mg/L)

VOLATILE ORGANIC COMPOUNDS CONTINUED

ANALYTE	RESULTS	RL	DILUTION FACTOR	DATE OF ANALYSIS
Chloroform	ND	0.005	1	04/16/2021
Chloromethane	ND	0.010	1	04/16/2021
Dibromochloromethane	ND	0.005	1	04/16/2021
Ethylbenzene	ND	0.005	1	04/16/2021
Methylene chloride	ND	0.005	1	04/16/2021
Tetrachloroethene	ND	0.005	1	04/16/2021
Toluene	ND	0.005	1	04/16/2021
trans-1,2-Dichloroethene	ND	0.010	1	04/16/2021
trans-1,3-Dichloropropene	ND	0.005	1	04/16/2021
Trichloroethene	ND	0.005	1	04/16/2021
Vinyl chloride	ND	0.005	1	04/16/2021

RL: Minimum Reporting Limit
ND: None Detected Above the RL



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May 3, 2021
 Lab No. 21E-0554
 Invoice No. INSTL7147
 Page 5 of 7

Attention: Tom Anderson

REPORT OF ANALYSIS

MATERIAL: Water Sample, Herculanum Wastewater
 Collected 04/15/21, 07:45

METHOD: 600 / 625-1 Modified

UNITS: Milligrams per Liter (mg/L)

RESULTS:

SEMI-VOLATILE ORGANIC COMPOUNDS

ANALYTE	RESULTS	RL	DILUTION FACTOR	DATE OF ANALYSIS
1,2- Diphenylhydrazine	ND	0.010	1	04/16/2021
2,4,6-Trichlorophenol	ND	0.020	1	04/16/2021
2,4-Dichlorophenol	ND	0.010	1	04/16/2021
2,4-Dimethylphenol	ND	0.010	1	04/16/2021
2,4-Dinitrophenol	ND	0.020	1	04/16/2021
2,4-Dinitrotoluene	ND	0.010	1	04/16/2021
2,6-Dinitrotoluene	ND	0.010	1	04/16/2021
2-Chloronaphthalene	ND	0.010	1	04/16/2021
2-Chlorophenol	ND	0.010	1	04/16/2021
2-Nitrophenol	ND	0.010	1	04/16/2021
3,3-Dichlorobenzidine	ND	0.020	1	04/16/2021
4,6-Dinitro-2-methylphenol	ND	0.050	1	04/16/2021
4-Bromophenyl phenyl ether	ND	0.010	1	04/16/2021
p-Chloro-m-cresol	ND	0.010	1	04/16/2021
4-Chlorophenyl phenyl ether	ND	0.010	1	04/16/2021
4-Nitrophenol	ND	0.020	1	04/16/2021
Acenaphthene	ND	0.010	1	04/16/2021
Acenaphthylene	ND	0.010	1	04/16/2021
Anthracene	ND	0.010	1	04/16/2021
Benzidine	ND	0.080	1	04/16/2021
Benzo(a)anthracene	ND	0.010	1	04/16/2021

RL: Minimum Reporting Limit
 ND: None Detected Above the RL



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May 3, 2021
 Lab No. 21E-0554
 Invoice No. INSTL7147
 Page 6 of 7

Attention: Tom Anderson

REPORT OF ANALYSIS

MATERIAL: Water Sample, Herculanum Wastewater
 Collected 04/15/21, 07:45

UNITS: Milligrams per Liter (mg/L)

SEMI-VOLATILE ORGANIC COMPOUNDS CONTINUED

ANALYTE	RESULTS	RL	DILUTION FACTOR	DATE OF ANALYSIS
Benzo(a)pyrene	ND	0.010	1	04/16/2021
Benzo(b)fluoranthene	ND	0.010	1	04/16/2021
Benzo(g,h,i)perylene	ND	0.010	1	04/16/2021
Benzo(k)fluoranthene	ND	0.010	1	04/16/2021
Bis(2-chloroethoxy)methane	ND	0.010	1	04/16/2021
Bis(2-chloroethyl)ether	ND	0.010	1	04/16/2021
Bis(2-chloroisopropyl)ether	ND	0.010	1	04/16/2021
Bis(2-ethylhexyl)phthalate	ND	0.010	1	04/16/2021
Butyl benzyl phthalate	ND	0.010	1	04/16/2021
Chrysene	ND	0.010	1	04/16/2021
Dibenzo(a,h)anthracene	ND	0.010	1	04/16/2021
Diethyl phthalate	ND	0.010	1	04/16/2021
Dimethyl phthalate	ND	0.010	1	04/16/2021
Di-n-butyl phthalate	ND	0.010	1	04/16/2021
Di-n-octyl phthalate	ND	0.010	1	04/16/2021
Fluoranthene	ND	0.010	1	04/16/2021
Fluorene	ND	0.010	1	04/16/2021
Hexachlorobenzene	ND	0.010	1	04/16/2021
Hexachlorobutadiene	ND	0.010	1	04/16/2021
Hexachlorocyclopentadiene	ND	0.020	1	04/16/2021

RL: Minimum Reporting Limit
 ND: None Detected Above the RL



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May 3, 2021

Lab No. 21E-0554

Invoice No. INSTL7147

Page 7 of 7

Attention: Tom Anderson

REPORT OF ANALYSIS

MATERIAL: Water Sample, Herculaneum Wastewater
Collected 04/15/21, 07:45

UNITS: Milligrams per Liter (mg/L)

SEMI-VOLATILE ORGANIC COMPOUNDS CONTINUED

ANALYTE	RESULTS	RL	DILUTION FACTOR	DATE OF ANALYSIS
Hexachloroethane	ND	0.010	1	04/16/2021
Indo(1,2,3-cd)pyrene	ND	0.010	1	04/16/2021
Isophorone	ND	0.010	1	04/16/2021
Naphthalene	ND	0.010	1	04/16/2021
Nitrobenzene	ND	0.010	1	04/16/2021
N-Nitrosodimethylamine	ND	0.010	1	04/16/2021
N-Nitroso-di-n-propylamine	ND	0.010	1	04/16/2021
N-Nitrosodiphenylamine	ND	0.010	1	04/16/2021
Pentachlorophenol	ND	0.050	1	04/16/2021
Phenanthrene	ND	0.010	1	04/16/2021
Phenol	ND	0.010	1	04/16/2021
Pyrene	ND	0.010	1	04/16/2021

RL: Minimum Reporting Limit

ND: None Detected Above the RL

Kimberly Kostelac, Manager
Environmental Testing

KK/vk





3rd
Test

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CITY OF HERCULANEUM

#1 Parkwood Court
Herculaneum, MO 63048

May 7, 2021
Lab No. 21E-0568
Invoice No. INSTL7352
Page 1 of 7

Attention: Leonard Kohler

REPORT OF ANALYSIS

MATERIAL: Water Sample, Herculaneum Wastewater
Collected 04/20/2021, 08:00

UNITS: Milligrams per Liter (mg/L) except as otherwise noted

RESULTS:

ANALYTE	RESULTS	RL	TEST METHOD	DATE OF ANALYSIS
pH, std. units	6.96	---	4500 H ⁺ B	04/20/2021
Biological Oxygen Demand	<10	10	5210 B	04/21/2021
E.coli, Colonies/100 mL	9	1	9222 D	04/21/2021
Total Suspended Solids	15	5	2540 D	04/28/2021
Total Phosphorus	2.78	0.20	200.7	04/29/2021
Total Kjeldahl Nitrogen	2.5	0.2	4500-N _{org} B	04/26/2021
Cyanide, Total	<0.005	0.005	335.4	04/22/2021
Nitrate + Nitrite-N	28.6	0.1	300.0	04/21/2021
Ammonia-N	2.2	0.2	4500-NH ₃ B,C	04/26/2021
Total Residual Chlorine	0.02	0.02	HACH 8167	04/20/2021
Dissolved Oxygen	9.79	---	D.O. PROBE	04/20/2021
Oil & Grease	<5	5	1664	04/22/2021
Total Hardness as CaCO ₃	246	1.0	2540B / 200.7	04/29/2021

RL: Minimum Reporting Limit
ND: None Detected Above the RL

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CITY OF HERCULANEUM
 #1 Parkwood Court
 Herculanum, MO 63048

May 7, 2021
 Lab No. 21E-0568
 Invoice No. INSTL7352
 Page 2 of 7

Attention: Leonard Kohler

REPORT OF ANALYSIS

MATERIAL: Water Sample, Herculanum Wastewater
 Collected 04/20/2021, 08:00

METHOD: 200.7 (ICP-AES) & 200.8 (ICP-AES)

UNITS: Milligrams per Liter (mg/L)

Average

ANALYTE	RESULTS	RL	DATE OF ANALYSIS
Aluminum	<0.10	0.10	04/29/2021
Antimony	<0.005	0.005	04/29/2021
Arsenic	0.07	0.02	04/29/2021
Beryllium	<0.005	0.005	04/29/2021
Cadmium	<0.005	0.005	04/29/2021
*Chromium, Trivalent	<0.01	0.01	04/29/2021
*Chromium, Hexavalent	<0.01	0.01	04/29/2021
Copper	<0.05	0.05	04/29/2021
Iron	0.16	0.05	04/29/2021
Lead	<0.005	0.005	04/29/2021
Mercury	<0.0005	0.0005	04/29/2021
Nickel	<0.02	0.02	04/29/2021
Selenium	<0.005	0.005	04/29/2021
Silver	<0.005	0.005	04/29/2021
Thallium	<0.005	0.005	04/29/2021
Zinc	0.091	0.05	04/29/2021

RL: Minimum Reporting Limit
 ND: None Detected Above the RL

* Hexavalent and Trivalent Chromium determined by total chromium less than 0.01 mg/L



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CITY OF HERCULANEUM

#1 Parkwood Court
Herculaneum, MO 63048

May 7, 2021

Lab No. 21E-0568

Invoice No. INSTL7352

Page 3 of 7

Attention: Leonard Kohler

REPORT OF ANALYSIS

MATERIAL: Water Sample, Herculaneum Wastewater
Collected 04/20/2021, 08:00

METHOD: 600 / 624-1 Modified

UNITS: Milligrams per Liter (mg/L)

RESULTS:

VOLATILE ORGANIC COMPOUNDS

ANALYTE	RESULTS	RL	DILUTION FACTOR	DATE OF ANALYSIS
1,1,1-Trichloroethane	ND	0.005	1	04/21/2021
1,1,2,2-Tetrachloroethane	ND	0.005	1	04/21/2021
1,1,2-Trichloroethane	ND	0.005	1	04/21/2021
1,1-Dichloroethane	ND	0.005	1	04/21/2021
1,1-Dichloroethene	ND	0.005	1	04/21/2021
1,2-Dichloroethane	ND	0.005	1	04/21/2021
1,2-Dichloropropane	ND	0.005	1	04/21/2021
1,2-Dichlorobenzene	ND	0.005	1	04/21/2021
1,3-Dichlorobenzene	ND	0.005	1	04/21/2021
1,4-Dichlorobenzene	ND	0.005	1	04/21/2021
2-Chloroethyl vinyl ether	ND	0.005	1	04/21/2021
Acrolein	ND	0.050	1	04/21/2021
Acrylonitrile	ND	0.010	1	04/21/2021
Benzene	ND	0.005	1	04/21/2021
Bromodichloromethane	ND	0.005	1	04/21/2021
Bromoform	ND	0.005	1	04/21/2021
Bromomethane	ND	0.010	1	04/21/2021
Carbon tetrachloride	ND	0.005	1	04/21/2021
Chlorobenzene	ND	0.005	1	04/21/2021

RL: Minimum Reporting Limit
ND: None Detected Above the RL



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May 7, 2021
Lab No. 21E-0568
Invoice No. INSTL7352
Page 4 of 7

Attention: Leonard Kohler

REPORT OF ANALYSIS

MATERIAL: Water Sample, Herculaneum Wastewater
Collected 04/20/2021, 08:00

UNITS: Milligrams per Liter (mg/L)

VOLATILE ORGANIC COMPOUNDS CONTINUED

ANALYTE	RESULTS	RL	DILUTION FACTOR	DATE OF ANALYSIS
Chloroform	ND	0.005	1	04/21/2021
Chloromethane	ND	0.010	1	04/21/2021
Dibromochloromethane	ND	0.005	1	04/21/2021
Ethylbenzene	ND	0.005	1	04/21/2021
Methylene chloride	ND	0.005	1	04/21/2021
Tetrachloroethene	ND	0.005	1	04/21/2021
Toluene	ND	0.005	1	04/21/2021
trans-1,2-Dichloroethene	ND	0.010	1	04/21/2021
trans-1,3-Dichloropropene	ND	0.005	1	04/21/2021
Trichloroethene	ND	0.005	1	04/21/2021
Vinyl chloride	ND	0.005	1	04/21/2021

RL: Minimum Reporting Limit
ND: None Detected Above the RL



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CITY OF HERCULANEUM

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May 7, 2021

Lab No. 21E-0568

Invoice No. INSTL7352

Page 5 of 7

Attention: Leonard Kohler

REPORT OF ANALYSIS

MATERIAL: Water Sample, Herculaneum Wastewater
Collected 04/20/2021, 08:00

METHOD: 600 / 625-1 Modified

UNITS: Milligrams per Liter (mg/L)

RESULTS:

SEMI-VOLATILE ORGANIC COMPOUNDS

ANALYTE	RESULTS	RL	DILUTION FACTOR	DATE OF ANALYSIS
1,2- Diphenylhydrazine	ND	0.010	1	04/22/2021
2,4,6-Trichlorophenol	ND	0.020	1	04/22/2021
2,4-Dichlorophenol	ND	0.010	1	04/22/2021
2,4-Dimethylphenol	ND	0.010	1	04/22/2021
2,4-Dinitrophenol	ND	0.020	1	04/22/2021
2,4-Dinitrotoluene	ND	0.010	1	04/22/2021
2,6-Dinitrotoluene	ND	0.010	1	04/22/2021
2-Chloronaphthalene	ND	0.010	1	04/22/2021
2-Chlorophenol	ND	0.010	1	04/22/2021
2-Nitrophenol	ND	0.010	1	04/22/2021
3,3-Dichlorobenzidine	ND	0.020	1	04/22/2021
4,6-Dinitro-2-methylphenol	ND	0.050	1	04/22/2021
4-Bromophenyl phenyl ether	ND	0.010	1	04/22/2021
p-Chloro-m-cresol	ND	0.010	1	04/22/2021
4-Chlorophenyl phenyl ether	ND	0.010	1	04/22/2021
4-Nitrophenol	ND	0.020	1	04/22/2021
Acenaphthene	ND	0.010	1	04/22/2021
Acenaphthylene	ND	0.010	1	04/22/2021
Anthracene	ND	0.010	1	04/22/2021
Benzidine	ND	0.080	1	04/22/2021
Benzo(a)anthracene	ND	0.010	1	04/22/2021

RL: Minimum Reporting Limit

ND: None Detected Above the RL



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May 7, 2021
 Lab No. 21E-0568
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 Page 6 of 7

Attention: Leonard Kohler

REPORT OF ANALYSIS

MATERIAL: Water Sample, Herculanum Wastewater
 Collected 04/20/2021, 08:00

UNITS: Milligrams per Liter (mg/L)

SEMI-VOLATILE ORGANIC COMPOUNDS CONTINUED

ANALYTE	RESULTS	RL	DILUTION FACTOR	DATE OF ANALYSIS
Benzo(a)pyrene	ND	0.010	1	04/22/2021
Benzo(b)fluoranthene	ND	0.010	1	04/22/2021
Benzo(g,h,i)perylene	ND	0.010	1	04/22/2021
Benzo(k)fluoranthene	ND	0.010	1	04/22/2021
Bis(2-chloroethoxy)methane	ND	0.010	1	04/22/2021
Bis(2-chloroethyl)ether	ND	0.010	1	04/22/2021
Bis(2-chloroisopropyl)ether	ND	0.010	1	04/22/2021
Bis(2-ethylhexyl)phthalate	ND	0.010	1	04/22/2021
Butyl benzyl phthalate	ND	0.010	1	04/22/2021
Chrysene	ND	0.010	1	04/22/2021
Dibenzo(a,h)anthracene	ND	0.010	1	04/22/2021
Diethyl phthalate	ND	0.010	1	04/22/2021
Dimethyl phthalate	ND	0.010	1	04/22/2021
Di-n-butyl phthalate	ND	0.010	1	04/22/2021
Di-n-octyl phthalate	ND	0.010	1	04/22/2021
Fluoranthene	ND	0.010	1	04/22/2021
Fluorene	ND	0.010	1	04/22/2021
Hexachlorobenzene	ND	0.010	1	04/22/2021
Hexachlorobutadiene	ND	0.010	1	04/22/2021
Hexachlorocyclopentadiene	ND	0.020	1	04/22/2021

RL: Minimum Reporting Limit
 ND: None Detected Above the RL



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 SEE REVERSE FOR CONDITIONS.



2810 Clark Avenue • St. Louis, MO 63103-2574 • (314) 531-8080 • FAX (314) 531-8085

Chemical, Metallurgical, Mechanical, Nondestructive, Environmental Testing, Analyses and Field Service.

CITY OF HERCULANEUM

#1 Parkwood Court
Herculaneum, MO 63048

May 7, 2021

Lab No. 21E-0568

Invoice No. INSTL7352

Page 7 of 7

Attention: Leonard Kohler

REPORT OF ANALYSIS

MATERIAL: Water Sample, Herculaneum Wastewater
Collected 04/20/21, 08:00

UNITS: Milligrams per Liter (mg/L)

SEMI-VOLATILE ORGANIC COMPOUNDS CONTINUED

ANALYTE	RESULTS	RL	DILUTION FACTOR	DATE OF ANALYSIS
Hexachloroethane	ND	0.010	1	04/22/2021
Indo(1,2,3-cd)pyrene	ND	0.010	1	04/22/2021
Isophorone	ND	0.010	1	04/22/2021
Naphthalene	ND	0.010	1	04/22/2021
Nitrobenzene	ND	0.010	1	04/22/2021
N-Nitrosodimethylamine	ND	0.010	1	04/22/2021
N-Nitroso-di-n-propylamine	ND	0.010	1	04/22/2021
N-Nitrosodiphenylamine	ND	0.010	1	04/22/2021
Pentachlorophenol	ND	0.050	1	04/22/2021
Phenanthrene	ND	0.010	1	04/22/2021
Phenol	ND	0.010	1	04/22/2021
Pyrene	ND	0.010	1	04/22/2021

RL: Minimum Reporting Limit
ND: None Detected Above the RL

KK/vbk

Kimberly Kostelac, Manager
Environmental Testing



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Environmental Analysis South, Inc.

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



REPORT OF ACUTE TOXICITY TESTING

Herculaneum WWTP

Outfall 001 (composite) AEC = 100%

MO-0027111

EAS LOG# 2506426

June 10, 2020 through June 12, 2020

2.2. REFERENCE TOXICITY TEST:

Environmental Analysis South performs monthly reference toxicity tests. The most recent reference test was initiated on June 3, 2020 using KCL Lot #41713. Following are the results:

2.2.1. *P. promelas* - 48 hr. Acute Test – LC_{50} = 1.238 g/l 95%CI (0.943 g/l - 1.534 g/l)

EAS %CV = 11.9%

National Warning Limits (75th percentile) = 19%CV

National Control Limits (90th percentile) = 33%CV

2.2.2. *C. dubia* - 48 hr. Acute Test – LC_{50} = 0.440 g/l 95%CI (0.297 g/l - 0.583 g/l)

EAS %CV = 15.2%

National Warning Limits (75th percentile) = 29%CV

National Control Limits (90th percentile) = 34%CV

LITERATURE CITED:

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

RECEIVED

JUN 07 2021

Water Protection Program

Environmental Analysis South, Inc.

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REPORT OF ACUTE TOXICITY TESTING

Herculaneum WWTP

Outfall 001 (composite) AEC = 100%

MO-0027111

EAS LOG# 2506426

June 10, 2020 through June 12, 2020

1. REPORT SUMMATION:

1.1. Multiple Dilution Data Summation

Test Solution	<i>Pimephales promelas</i> Acute Toxicity Test 48 Hour Survival	<i>Ceriodaphnia dubia</i> Acute Toxicity Test 48 Hour Survival
Reconstituted Control (RC)	100%	100%
Upstream Control (UC)	100%	100%
6.25% Effluent	100%	100%
12.5% Effluent	100%	100%
25% Effluent	100%	100%
50% Effluent	100%	100%
100% Effluent	100%	100%
Estimated 48 Hour LC ₅₀ Value	>100% Effluent	>100% Effluent
TUa Result	<1.00	<1.00
Result of Toxicity Test	Monitor	Monitor

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

Conclusion:

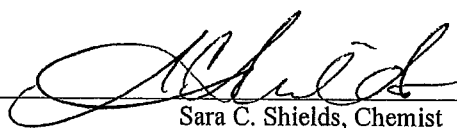
Pimephales promelas 48 hour WET results:

LC 50 > 100% by the Graphical Method
NOAEC = 100% using Steel's Many-One Rank Test
TUa < 1.00

Ceriodaphnia dubia 48 hour WET results:

LC 50 > 100% by the Graphical Method
NOAEC = 100% using Steel's Many-One Rank Test
TUa < 1.00

Approved by _____


Sara C. Shields, Chemist

Environmental Analysis South, Inc.

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REPORT OF ACUTE TOXICITY TESTING

Herculaneum WWTP

Outfall 001 (composite) AEC = 100%

MO-0027111

EAS LOG# 2506426

June 10, 2020 through June 12, 2020

2. TEST METHOD SUMMARY

2.1. TEST CONDITIONS AND METHODS:

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

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

All test organisms were cultured according to EPA approved methods (USEPA 2002). The *Ceriodaphnia dubia* and the *Pimephales promelas* were obtained from ARO (Aquatic Research Organisms) located in Hampton, New Hampshire and shipped overnight for use in the whole effluent toxicity test.

Field Temp 001=73.5F/Ups=74.8F
Upstream: S1 Joachim Creek
Collected: 06/10/20 0800 hrs by LK

1. The first step is to identify the problem or question that needs to be answered. This involves understanding the context and the specific requirements of the task.

100% T12 report

1880

100%, 100% report

[illegible]

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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[illegible][illegible][illegible][illegible]

Date: 6/12/20

Herculanum WWTP, Outfall 001, composite **EAS LOG# 2506426**

Date Test Began:	June 10, 2020	Time Test Began:	1100 hrs	Analyst 1:	DFW
Date Test Finished:	June 12, 2020	Time Test Finished:	1100 hrs	Analyst 2:	KJR
				Analyst 3:	SCS

P. promelas (PP)

AGE: days

HATCH NUMBER: 06032020ABS

[illegible]

Ceriodaphnia dubia (CD) AGE: hours HATCH NUMBER:

[illegible]

Approved by: 



MISSOURI DEPARTMENT OF NATURAL RESOURCES
NPDES MONITORING REPORT FOR WHOLE EFFLUENT TOXICITY TESTS

RETURN FORM TO: Southeast Regional Office
2155 N. Westwood Blvd. Poplar Bluff, MO 63901

Facility Name	Herculaneum WWTP	Receiving Water	S1 Joachim Creek
Permit Number	MO-0027111	Laboratory Name	Environmental Analysis South, Inc.
Outfall	001	Laboratory Report #	MO_2506426

SAMPLE INFORMATION

Sample Number	Sample Collection				Sample Temperature (°C)		pH (SU)	Hand delivered? (If yes, ≤ 4 hrs?)	Hold Time ≤ 36 hours?	Sample Acceptable
	Effluent or Upstream	Sample Type	Beginning Date	End Date	At Collection	At Lab	At Lab			
1	2506426Eff	composite	06/09/10	06/10/20	23.1	24	7.15	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N
2	2506426A Upst	grab	06/10/20	06/10/20	23.8	25	7.42	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N
3								<input type="checkbox"/> Y <input type="checkbox"/> N	<input type="checkbox"/> Y <input type="checkbox"/> N	<input type="checkbox"/> Y <input type="checkbox"/> N
4								<input type="checkbox"/> Y <input type="checkbox"/> N	<input type="checkbox"/> Y <input type="checkbox"/> N	<input type="checkbox"/> Y <input type="checkbox"/> N

Describe any unusual conditions during sampling that might influence test results

TEST INFORMATION - ACUTE					QA/QC CONDITIONS - ACUTE				
Test Method:	C. dubia 2002.0	P. promelas 2000.0						YES	NO
Date Test Initiated:	06/10/2020				Did test conditions meet all test acceptability criterion required by the specified method?			<input checked="" type="checkbox"/>	<input type="checkbox"/>
AEC/TWC Info:	AEC = 100%				Temperatures maintained during test (20 ± 1°C)			<input type="checkbox"/>	<input checked="" type="checkbox"/>
Dilution Series	100%	50%	25%	12.5%	Temperatures maintained during test (25 ± 1°C)			<input checked="" type="checkbox"/>	<input type="checkbox"/>
	6.25%				Dissolved oxygen ≥ 4.0 mg/L throughout test?			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Dilution Water:	C. dubia	RW <input checked="" type="checkbox"/>	LW <input type="checkbox"/>		Effluent pH maintained within 6.0 - 9.0 SU throughout test?			<input checked="" type="checkbox"/>	<input type="checkbox"/>
	P. promelas	RW <input checked="" type="checkbox"/>	LW <input type="checkbox"/>		Concurrent or monthly reference tests within acceptable limits?			<input checked="" type="checkbox"/>	<input type="checkbox"/>
RW = Receiving Stream Control LW = Lab Water Control					Were effluent samples modified prior to testing? (ex. filtration, aeration, chemical addition including de-chlorination or pH adjustment)			<input type="checkbox"/>	<input checked="" type="checkbox"/>
Comments:					Comments:				

WATER CHEMISTRY (All values reported in mg/L, except for pH and conductivity)

Sample Type	Sample Number	Conductivity (µmhos)	Unionized Ammonia	Hardness	Alkalinity	pH (SU) After Warming	Total Residual Chlorine	Other	Other	Other
Upstream	2506426A	449	<0.010	213	168	7.68	<0.04	DO=6.9		
Effluent	2506426	981	<0.010	281	85.6	7.60	<0.04	DO=6.5		
Lab Water	RC4257	246	<0.010	80.8	65.6	7.50	<0.04	DO=8.4		

Comments:

TU _a limit = Monitoring only.	Pimephales promelas Acute Results	LC50=	>100%	Confidence Interval % =	N/A	TU _a =	<1.00
	Ceriodaphnia dubia Acute Results	LC50=	>100%	Confidence Interval % =	N/A	TU _a =	<1.00

Receiving Water Controls				Lab Water Controls			
Fathead Minnow		Ceriodaphnia dubia		Fathead Minnow		Ceriodaphnia dubia	
Survival ≥ 90%	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	Survival ≥ 90%	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	Survival ≥ 90%	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	Survival ≥ 90%	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N

Comments:

SIGNATURE AND TITLE OF AUTHORIZED INDIVIDUAL, IN ACCORDANCE WITH 10 CSR 20-6.010	DATE	PHONE NUMBER
		573-204-8817

REFERENCE #60295148

CHRONIC TOXICITY TEST FOR
City of Herculaneum

PERMIT # MO-0027111

PERFORMED ON:

Pimephales promelas

and

Ceriodaphnia dubia

PREPARED FOR:

City of Herculaneum
Attn: Leonard Kohler
#1 Parkwood Court
Herculaneum, MO 63048
1-314-583-1357

PREPARED BY:
Pace Analytical Services, Inc.
808 West McKay
Frontenac, KS 66763
1-620-235-0003

March 7, 2019

CERTIFICATIONS

Project: CHRONIC TOXICITY

Pace Project No.: 60295148

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

Missouri Certification Number: 10090

Arkansas Drinking Water

WY STR Certification #: 2456.01

Arkansas Certification #: 18-016-0

Arkansas Drinking Water

Illinois Certification #: 004455

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116 / E10426

Louisiana Certification #: 03055

Nevada Certification #: KS000212018-1

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407-18-11

Utah Certification #: KS000212018-8

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 #: 18-016-0

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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REFERENCE #60295148

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

INTRODUCTION

Pace Analytical was contracted to perform this chronic toxicity test on effluent from CITY OF HERCULANEUM effluent discharge. Chronic toxicity was measured using the Pimephales promelas at larval for survival and growth test and the Ceriodaphnia dubia survival and reproduction test described in EPA 821-R-02-013, "Short Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms." The raw data of the study is stored at Pace Analytical Services, INC. 808 West McKay, Frontenac, KS 66763.

TEST MATERIAL

CITY OF HERCULANEUM personnel collected sampling of the effluent. A sample of the effluent was delivered to Pace by commercial carrier on 2-25-19. Subsequent samples followed by delivery on 2-27-19 and on 3-1-19. All samples were stored at $\leq 6^{\circ}$ Celsius. Upstream water was used as a control and also to make the required dilutions in the test as described in EPA 821-R-02-013.

TEST METHODS

Pace used EPA test method 1000.0 for conducting the Fathead Minnow, Pimephales promelas, Larval Survival and Growth Test. EPA test method 1002.0 was used for conducting the Cladoceran, Ceriodaphnia dubia, Survival and Reproduction Test. The tests were conducted to estimate the NOEC, and LOEC for survival, growth, and reproduction of these test species.

The Pimephales and Ceriodaphnia tests were initiated on 2-26-19 and carried out until 3-5-19. The Pimephales tests were conducted in 500 ml plastic jars with 250 ml of test solution. Ten larvae were placed in each of at least 4 replicates to make a total of 40 larvae per sample concentration. The Ceriodaphnia tests were carried out in 35ml vials containing 25 ml of test solution. One Neonate was placed in each of 10 replicates to make a total of 10 neonates per sample concentration.

TEST ORGANISMS

The organisms used in these tests were cultured at Pace under controlled temperature and photoperiod conditions and/or were purchased from an external supplier. Pace maintains records of all culture techniques used in producing organisms.

REPORT OF LABORATORY ANALYSIS

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SUMMARY

A Chronic Whole Effluent Toxicity Test using the 7-day chronic fathead minnows (Pimephales promelas), static renewal larval survival and growth test, and three brood 7-day chronic Cladoceran (Ceriodaphnia dubia), static renewal survival and reproduction test, was conducted on effluent discharge water collected at CITY OF HERCULANEUM effluent discharge from February 25, 2019 to March 1, 2019. All the test methods followed are as listed in EPA 821-R-02-013, "Short Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms."

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 are calculated using effluent concentrations and their corresponding percent mortality data. The 95% confidence intervals are calculated where appropriate by the Spearman-Kärber method. Statistical analysis is accomplished by following steps in EPA 821-R-02-013, November 2002 and by use of Toxstat version 3.4.

In minnow section of testing, it was observed that the effluent had no significant effect on the survival of the larvae at the 100% concentration. No significant mortality was observed in the other effluent concentrations after the 7-day exposure period. The No Observed Effect Concentration (NOEC) was determined to be 100% for survival. No significant reduction in growth was observed in the 100% effluent concentration. The Toxic Units is < 1 . The IC₂₅ is > 100 . The NOEC for growth in effluent was determined to be 100%.

In Cladoceran section of testing, it was observed that the effluent had no significant effect on the survival of the organisms in the 100% effluent concentration. No significant mortality was observed in the other effluent concentrations after the 7-day exposure period. The No Observed Effect Concentration (NOEC) was determined to be 100% for survival. No significant reduction in reproduction was observed in the 100% effluent concentrations. The Toxic Units is < 1 . The IC₂₅ is > 100 . The NOEC for reproduction in effluent was determined to be 100%.

The chronic toxicity exhibited by the fathead minnows and the Ceriodaphnia treated by the effluent sampled from February 25 to March 1 from CITY OF HERCULANEUM effluent discharge, is acceptable as described in EPA 821-R-02-013.

REPORT OF LABORATORY ANALYSIS

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REFERENCE #60295148

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

TEST VALIDITY

The Pimephales promelas control survival rate was 95. The mean dry weight (growth) of the Pimephales promelas was determined at 0.457 g/organism in the controls. The percent coefficient of variation (%CV) values for the fathead minnow control for survival and growth were 7.07 and 15.99. The Ceriodaphnia dubia survival rates were 100 in the control. The Ceriodaphnia in the control produced an average of 20.0 young over the seven-day exposure period. Percent CV values for Ceriodaphnia dubia control survival and reproduction was 0.00 and 16.16. Control data met or exceeded all criteria set out by EPA 821-R-02-013 for test acceptance.

CONCLUSIONS

The No Observed Effect Concentration (NOEC) for Pimephales promelas was 100% for survival and 100% for growth. The No Observed Effect Concentration (NOEC) for Ceriodaphnia dubia was 100% for Survival and 100% for Reproduction. The tests were ran using an upstream control against effluent concentrations of 6.25%, 12.5%, 25%, 50%, and 100%. The effluent sampled on 2-25-19, 2-27-19, and 3-1-19 exhibited acceptable chronic toxicity in Pimephales promelas and in Ceriodaphnia dubia during the exposure period as described in EPA 821-R-02-013.

REPORT OF LABORATORY ANALYSIS

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TABLE 2 (CONT.)

16. Dilution Water	Upstream
17. Effluent concentrations	0%, 6.25%, 12.5%, 25%, 50%, 100%
18. Test duration	7 days
19. Endpoints	Survival and growth
20. Test acceptability	80% or greater survival in the controls, Average dry weight in controls >0.25 mg, Coefficient of variation in the control must not exceed 40%.

TABLE 2 (CONT.)

**SUMMARY OF TEST CONDITIONS FOR THE CLADOCERAN
(Ceriodaphnia dubia) SURVIVAL AND REPRODUCTION TEST**

1. Test type	Static renewal
2. Temperature	25 degrees Celsius
3. Light quality	Ambient laboratory light
4. Light intensity	Ambient laboratory levels
5. Photoperiod	16 hr light, 8 hr dark
6. Test chamber size	30 ml
7. Test solution volume	25 ml

TABLE 2 (CONT.)

REPORT OF LABORATORY ANALYSIS

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APPENDIX C

REFERENCE TOXICANTS

The absence of significant control mortality during this test indicated the health of the organisms and indicated that any significant mortality in the test concentrations was not due to contaminants or variations in testing conditions.

Reference toxicity testing is routinely performed by staff members in our biomonitoring - bioassay laboratory.

Reference Toxicant (NaCl) Pimephales promelas

Concentration of Toxicant	Avg. # of Live Organisms/replicate			
	0 hrs	24 hrs	48 hrs	7 days
10 g/l	40	7	2	0
8 g/l	40	31	26	4
6 g/l	40	37	34	25
4 g/l	40	40	40	40
2 g/l	40	40	40	39

IC25 (5.23 g/l Sodium Chloride)

Survival NOEC: 4.0 g/l

Reference Toxicant (NaCl) Ceriodaphnia Dubia

Concentration of Toxicant	Avg. # of Live Organisms/replicate			
	0 hrs	24 hrs	48 hrs	7 days
2.5 g/l	10	4	0	0
2.0 g/l	10	10	9	1
1.5 g/l	10	10	10	10
1.0 g/l	10	10	10	10
0.5 g/l	10	10	10	10

IC25 (1.19 g/l Sodium Chloride)

Survival NOEC: 1.5 g/l

Submitted By:

Tim Harrell
Timothy Harrell, Technical Director

REPORT OF LABORATORY ANALYSIS

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8. Renewal of test concentrations	Daily
9. Age of test organism	< 24 hours
10. No. larvae/chamber	1
11. No. replicates/concentration	10
12. No. larvae/concentration	10
13. Feeding regime	Feed 0.1 ml YCT and 0.1 ml of Algae daily. Larvae are not fed 12 hours prior to termination of test.
14. Cleaning	Siphon daily, immediately before test solution renewal
15. Aeration	None
16. Dilution Water	Upstream
17. Effluent concentrations	0%, 6.25%, 12.5%, 25%, 50%, 100%
18. Test duration	Until 60% or more surviving control females have three broods or a maximum of 8 days.
19. Endpoints	Survival and Reproduction
20. Test acceptability	80% or greater survival in the controls, Average reproduction rate of 15 young / adult. Coefficient of variation in the control must not exceed 40%.

REPORT OF LABORATORY ANALYSIS

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TEST WATER QUALITY

24-Hour Water Quality Measurements

Effluent Concentration (%)	PH	D.O. (mg/l)	Temperature (C)
0% Upstream	8.24	6.70	24.9
6.25% Effluent	8.21	6.70	24.9
12.5% Effluent	8.19	6.70	24.9
25% Effluent	8.18	6.70	24.9
50% Effluent	8.15	6.60	24.9
100% Effluent	8.12	6.40	24.9

48-Hour Water Quality Measurements

Effluent Concentration (%)	PH	D.O. (mg/l)	Temperature (C)
0% Upstream	8.19	6.70	25.0
6.25% Effluent	8.16	6.70	25.0
12.5% Effluent	8.13	6.80	25.0
25% Effluent	8.10	6.80	25.0
50% Effluent	8.07	6.90	25.0
100% Effluent	8.00	7.00	25.0

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: CHRONIC TOXICITY
Pace Project No.: 60295148

QC Batch: 573142 Analysis Method: EPA 350.1
QC Batch Method: EPA 350.1 Analysis Description: 350.1 Ammonia
Associated Lab Samples: 60295148003

METHOD BLANK: 2350647
Associated Lab Samples: 60295148003

Matrix: Water

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, Ammonia	mg/L	ND	0.10	03/12/19 11:10	

LABORATORY CONTROL SAMPLE: 2350648

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, Ammonia	mg/L	5	5.3	105	90-110	

MATRIX SPIKE SAMPLE: 2350649

Parameter	Units	60295148003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Nitrogen, Ammonia	mg/L	ND	5	5.2	104	90-110	

MATRIX SPIKE SAMPLE: 2350651

Parameter	Units	60296221001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Nitrogen, Ammonia	mg/L	19.9	5	23.8	76	90-110	E,M1

SAMPLE DUPLICATE: 2350650

Parameter	Units	60295972002 Result	Dup Result	RPD	Max RPD	Qualifiers
Nitrogen, Ammonia	mg/L	8.8	8.8	1	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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ANALYTICAL RESULTS

Project: CHRONIC TOXICITY
Pace Project No.: 60295148

Sample: EFFLUENT COMPOSIT NH3		Lab ID: 60295148003	Collected: 02/25/19 08:00	Received: 02/27/19 06:45	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
350.1 Ammonia, Unionized	Analytical Method: EPA 350.1							
Unionized Ammonia as NH3	0	mg/L		1		03/13/19 15:48		
350.1 Ammonia	Analytical Method: EPA 350.1							
Nitrogen, Ammonia	ND	mg/L	0.10	1		03/12/19 11:13	7664-41-7	

REPORT OF LABORATORY ANALYSIS

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Environmental Analysis South, Inc.

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



REPORT OF ACUTE TOXICITY TESTING

Herculaneum Wastewater Treatment Plant

Outfall 001 (24 hr composite) AEC = 100%

MO-0027111

EAS LOG#2302401

September 19, 2018 through September 21, 2018

2.2. REFERENCE TOXICITY TEST:

Environmental Analysis South performs monthly reference toxicity tests. The most recent reference test was initiated on September 12, 2018 using KCL Lot #41713. Following are the results:

2.2.1. *P. promelas* - 48 hr. Acute Test – LC_{50} = 1.256g/l 95%CI (1.015 g/l – 1.496 g/l)

EAS %CV = 9.6%

National Warning Limits (75th percentile) = 19%CV

National Control Limits (90th percentile) = 33%CV

2.2.2. *C. dubia* - 48 hr. Acute Test – LC_{50} = 0.429 g/l 95%CI (0.191 g/l - 0.667g/l)

EAS %CV = 27.8%

National Warning Limits (75th percentile) = 29%CV

National Control Limits (90th percentile) = 34%CV

2.3. LITERATURE CITED:

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

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REPORT OF ACUTE TOXICITY TESTING Herculaneum Wastewater Treatment Plant Outfall 001 (24 hr composite) AEC = 100%

MO-0027111

EAS LOG#2302401

September 19, 2018 through September 21, 2018

1. REPORT SUMMATION:

1.1. Multiple Dilution Data Summation

Test Solution	<i>Pimephales promelas</i> Acute Toxicity Test 48 Hour Survival	<i>Ceriodaphnia dubia</i> Acute Toxicity Test 48 Hour Survival
Reconstituted Control (RC)	100%	100%
Upstream Control (UC)	100%	100%
6.25% Effluent	100%	100%
12.5% Effluent	100%	100%
25% Effluent	100%	100%
50% Effluent	100%	100%
100% Effluent	100%	90%
Estimated 48 Hour LC ₅₀ Value	>100% Effluent	>100% Effluent
Tua result	<1.00	<1.00
Result	Monitor only	Monitor only

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

Conclusion:

Pimephales promelas 48 hour WET results:

LC 50 > 100% using the Graphical Method
NOAEC = 100% by Steel's Many-One Rank Test
TUa < 1.00

Ceriodaphnia dubia 48 hour WET results:

LC 50 > 100% using Trimmed Spearman-Kärber
NOAEC = 100% by Steel's Many-One Rank Test
TUa < 1.00

Approved by _____

Sara C. Shields, Chemist



REPORT OF ACUTE TOXICITY TESTING
 Herculaneum Wastewater Treatment Plant
 Outfall 001 (24 hr composite) AEC = 100%

MO-0027111
 EAS LOG#2302401

September 19, 2018 through September 21, 2018

2. TEST METHOD SUMMARY

2.1. TEST CONDITIONS AND METHODS:

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

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

All test organisms were cultured according to EPA approved methods (USEPA 2002). The *Ceriodaphnia dubia* and the *Pimephales promelas* were obtained from Environmental Enterprises USA Inc. located in Slidell, Louisiana and shipped overnight for use in the whole effluent toxicity test.

NPDES NUMBER: MO-0027111

NPDES NUMBER: MO-0027111

TYPE OF METHOD: multiple dilution, 48 hrs, PP & CD, AEC=100%, T ua report

DATE & TIME OF COLLECTION: 09/18/18 0800 hrs - 09/19/18 0800 hrs by Leonard Koehler

DATE & TIME OF SUBMISSION: 09/19/18 1025 hrs by Leonard Kohler

Upstream: S1 Joachim Creek

Collected: 09/19/18 0755 hrs by LK

24 HOUR OBSERVATIONS - PP	DATE	TIME	ANALYST	QC LOT	QC EXP VALUE	RC	UC	100%	50%	25%	12.5%	6.25%	X %AEC
pH - SU	09/20/18	1100 hrs	SCS	SB114 (8-8-9.2)	8.92	7.86	8.48	8.34	8.46	8.50	8.52	8.55	
TEMPERATURE °C	09/20/18	1100 hrs	SCS	EAS 106		25.0	25.0	25.0	25.0	25.0	25.0	25.0	
SPECIFIC CONDUCTANCE umhos	09/20/18	1100 hrs	SCS	ERA P255-506 (437-490)	481	251	464	952	719	572	508	480	
DISSOLVED OXYGEN - ppm	09/20/18	1100 hrs	SCS	cal@840		8.3	7.9	7.9	7.9	7.8	7.9	7.8	
48 HOUR OBSERVATIONS - PP	DATE	TIME	ANALYST	QC LOT	QC EXP VALUE	RC	UC	100%	50%	25%	12.5%	6.25%	X %AEC
pH - SU	09/21/18	1100 hrs	SCS	SB114 (8-8-9.2)	8.92	8.50	8.55	8.32	8.45	8.51	8.56	8.62	
TEMPERATURE °C	09/21/18	1100 hrs	SCS	EAS 106		25.0	25.0	25.0	25.0	25.0	25.0	25.0	
SPECIFIC CONDUCTANCE umhos	09/21/18	1100 hrs	SCS	ERA P255-506 (437-490)	479	284	476	975	723	574	509	482	
DISSOLVED OXYGEN - ppm	09/21/18	1100 hrs	SCS	cal@840		8.2	8.2	7.8	7.7	8.2	8.2	8.2	
FINAL AMMONIA - ppm				DMRQA33 (10.0-16.8)									

[illegible]

Date: 07/24/18

Date: 07/24/18

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

Herculeanum Wastewater Treatment Plant, Outfall 001, 24 hr composite EAS LOG# 2302401

Date Test Began: September 19, 2018

Time Test Began: 1100 hrs

Analyst 1: DFW

Analyst 2: KJR

Analyst 3: SCS

Date Test Finished: September 21, 2018

Time Test Finished: 1100 hrs

P. promelas (PP)

AGE: 3 days

HATCH NUMBER: 091818EEU

	RC	UC	100%	50%	25%	12.5%	6.25%	X% AEC
PERIOD	ALIVE	ALIVE	ALIVE	ALIVE	ALIVE	ALIVE	ALIVE	ALIVE
0 HR-PP	10,10	10,10	10,10	10,10	10,10	10,10	10,10	
24 HR-PP	10,10	10,10	10,10	10,10	10,10	10,10	10,10	
48 HR-PP	10,10	10,10	10,10	10,10	10,10	10,10	10,10	

Ceriodaphnia dubia (CD)

AGE: <24 hours

HATCH NUMBER: 091818EEU

	RC	UC	100%	50%	25%	12.5%	6.25%	X% AEC
PERIOD	ALIVE	ALIVE	ALIVE	ALIVE	ALIVE	ALIVE	ALIVE	ALIVE
0 HR-CD	5,5,5,5	5,5,5,5	5,5,5,5	5,5,5,5	5,5,5,5	5,5,5,5	5,5,5,5	
24 HR-CD	5,5,5,5	5,5,5,5	5,5,5,5	5,5,5,5	5,5,5,5	5,5,5,5	5,5,5,5	
48 HR-CD	5,5,5,5	5,5,5,5	5,5,3,5	5,5,5,5	5,5,5,5	5,5,5,5	5,5,5,5	

Approved by:



Date:

09/24/18

Version 1.0