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-0044300 |
| Owner: | City of Jefferson |
| Address: | 320 East McCarty Street, Jefferson City, MO 65101 |
| Continuing Authority: | Same as above |
| Address: | Same as above |
| Facility Name: | Algoa Regional Wastewater Treatment Facility |
| Facility Address: | 8501 Fenceline Road, Jefferson City, MO 65101 |
| Legal Description: | Landgrant 2616, Cole County |
| UTM Coordinates: | X = 581833, Y = 4267935 |
| Receiving Stream: | Missouri River (P) |
| First Classified Stream and ID: | Missouri River (P) (701) |
| USGS Basin & Sub-watershed No.: | (10300102-1306) |

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 C Operator.
Influent bar screen / two basin, four-cell lagoon / UV disinfection / sludge retained in lagoon or biosolids are land applied
Design population equivalent is 8,000.
Design flow is 800,000 gallons per day.
Actual flow is 600,500 gallons per day.
Design sludge production is 120 dry tons/year.

Permitted Feature INF – Influent monitoring location prior to bar screen

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.

December 1, 2020
Effective Date

Edward B. Galbraith, Director, Division of Environmental Quality

June 30, 2025
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-1** shall become effective on **December 1, 2020** and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:

**Limit Set: M**

| EFFLUENT PARAMETER(S) | UNITS | FINAL EFFLUENT LIMITATIONS | | | MONITORING REQUIREMENTS | |
|---|---|---|---|---|---|---|
| | | DAILY MAXIMUM | WEEKLY AVERAGE | MONTHLY AVERAGE | MEASUREMENT FREQUENCY | SAMPLE TYPE |
| Flow | MGD | * | | * | once/weekday** | 24 hr. total |
| Biochemical Oxygen Demand$_5$ | mg/L | | 65 | 45 | once/month | grab |
| Total Suspended Solids | mg/L | | 110 | 70 | once/month | grab |
| *E. coli* (**Note 1, Page 3**) | #/100mL | | 1,030 | 206 | once/week | grab |
| Ammonia as N | mg/L | * | | * | once/month | grab |
| **EFFLUENT PARAMETER(S)** | **UNITS** | **MINIMUM** | | **MAXIMUM** | **MEASUREMENT FREQUENCY** | **SAMPLE TYPE** |
| pH – Units*** | SU | 6.0 | | | once/month | grab |

| EFFLUENT PARAMETER(S) | UNITS | MONTHLY AVERAGE MINIMUM | MEASUREMENT FREQUENCY | SAMPLE TYPE |
|---|---|---|---|---|
| Biochemical Oxygen Demand$_5$ – Percent Removal (**Note 2, Page 3**) | % | 65 | once/month | calculated |
| Total Suspended Solids – Percent Removal (**Note 2, Page 3**) | % | 65 | once/month | calculated |

MONITORING REPORTS SHALL BE SUBMITTED **MONTHLY**; THE FIRST REPORT IS DUE JANUARY 28, 2021. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

**Limit Set: Q**

| EFFLUENT PARAMETER(S) | UNITS | DAILY MAXIMUM | WEEKLY AVERAGE | MONTHLY AVERAGE | MEASUREMENT FREQUENCY | SAMPLE TYPE |
|---|---|---|---|---|---|---|
| Oil & Grease | mg/L | 15 | | 10 | once/quarter**** | grab |
| Total Phosphorus | mg/L | * | | * | once/quarter**** | grab |
| Total Kjeldahl Nitrogen | mg/L | * | | * | once/quarter**** | grab |
| Nitrite + Nitrate | mg/L | * | | * | once/quarter**** | grab |

MONITORING REPORTS SHALL BE SUBMITTED **QUARTERLY**; THE FIRST REPORT IS DUE APRIL 28, 2021. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

* Monitoring requirement only.
** Once each weekday means: Monday, Tuesday, Wednesday, Thursday, and Friday.
*** pH is measured in pH units and is not to be averaged.
**** See table below for quarterly sampling requirements.

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

**Note 1** – Effluent limitations and monitoring requirements for *E. coli* are applicable only during the recreational season from April 1 through October 31. The Monthly Average Limit for *E. coli* is expressed as a geometric mean.

**Note 2** – Influent sampling for $BOD_5$ 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: [(Average Influent –Average Effluent) / Average Influent] x 100% = Percent Removal. Influent and effluent samples are to be taken during the same month. The Average Influent and Average Effluent values are to be calculated by adding the respective values together and dividing by the number of samples taken during the month. Influent samples are to be collected as a grab sample.

| **PERMITTED FEATURE INF** | **TABLE B-1. INFLUENT MONITORING REQUIREMENTS** | | | | | |
|---|---|---|---|---|---|---|
| The monitoring requirements in **Table B-1** shall become effective on **December 1, 2020** 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**) | mg/L | | | * | once/month | grab |
| Total Suspended Solids (**Note 2**) | mg/L | | | * | once/month | grab |
| MONITORING REPORTS SHALL BE SUBMITTED **MONTHLY**; THE FIRST REPORT IS DUE JANUARY 28, 2021. | | | | | | |
| **Limit Set: IQ** | | | | | | |
| Ammonia as N | mg/L | * | | * | once/quarter**** | grab |
| Total Phosphorus | mg/L | * | | * | once/quarter**** | grab |
| Total Kjeldahl Nitrogen | mg/L | * | | * | once/quarter**** | grab |
| Nitrite + Nitrate | mg/L | * | | * | once/quarter**** | grab |
| MONITORING REPORTS SHALL BE SUBMITTED **QUARTERLY**; THE FIRST REPORT IS DUE APRIL 28, 2021. | | | | | | |

* Monitoring requirement only.
**** See table below for quarterly sampling requirements.

| **Quarterly Minimum Sampling Requirements** | | | |
|---|---|---|---|
| **Quarter** | **Months** | **Quarterly Influent Parameters** | **Report is Due** |
| First | January, February, March | Sample at least once during any month of the quarter | April 28th |
| Second | April, May, June | Sample at least once during any month of the quarter | July 28th |
| Third | July, August, September | Sample at least once during any month of the quarter | October 28th |
| Fourth | October, November, December | Sample at least once during any month of the quarter | January 28th |

## C. STANDARD CONDITIONS

In addition to specified conditions stated herein, this permit is subject to the attached Parts I, II, & III standard conditions dated August 1, 2014, May 1, 2013, and August 1, 2019, and hereby incorporated as though fully set forth herein.

**D. SPECIAL CONDITIONS**

1. Electronic Discharge Monitoring Report (eDMR) Submission System. Per 40 CFR Part 127 National Pollutant Discharge Elimination System (NPDES) Electronic Reporting Rule, reporting of effluent monitoring data and any report required by the permit (unless specifically directed otherwise by the permit) shall be submitted by the permittee via an electronic system to ensure timely, complete, accurate, and nationally consistent set of data about the NPDES program.
   (a) eDMR Registration Requirements. The permittee must register with the Department's eDMR system through the Missouri Gateway for Environmental Management (MoGEM) before the first report is due. Registration and other information regarding MoGEM can be found at https://dnr.mo.gov/mogem. Information about the eDMR system can be found at https://dnr.mo.gov/env/wpp/edmr.htm. The first user shall register as an Organization Official and the association to the facility must be approved by the Department. Regarding Standard Conditions Part I, Section B, #7, the eDMR system is currently the only Department approved reporting method for this permit unless a waiver is granted by the Department. See paragraph (c) below.
   (b) Electronic Submissions. To access the eDMR system, use the following link in your web browser: https://apps5.mo.gov/mogems/welcome.action. If you experience difficulties with using the eDMR system you may contact edmr@dnr.mo.gov or call 855-789-3889 or 573-526-2082 for assistance.
   (c) Waivers from Electronic Reporting. The permittee must electronically submit compliance monitoring data and reports unless a waiver is granted by the Department in compliance with 40 CFR Part 127. Only permittees with an approved waiver request may submit monitoring data and reports on paper to the Department for the period that the approved electronic reporting waiver is effective. The permittee may obtain an electronic reporting waiver by first submitting an eDMR Waiver Request Form: http://dnr.mo.gov/forms/780-2692-f.pdf. The Department will either approve or deny this electronic reporting waiver request within 120 calendar days.

2. The full implementation of this operating permit, which includes implementation of any applicable schedules of compliance, shall constitute compliance with all applicable federal and state statutes and regulations in accordance with §644.051.16, RSMo, and the Clean Water Act (CWA) section 402(k); however, this permit may be reopened and modified, or alternatively revoked and reissued:
   (a) To comply with any applicable effluent standard or limitation issued or approved under Sections 301(b)(2)(C) and (D), 304(b)(2), and 307(a)(2) of the CWA, if the effluent standard or limitation so issued or approved:
      (1) contains different conditions or is otherwise more stringent than any effluent limitation in the permit; or
      (2) controls any pollutant not limited in the permit.
   (b) To incorporate an approved pretreatment program or modification thereto pursuant to 40 CFR 403.8(c) or 40 CFR 403.18(e), respectively.

3. All outfalls must be clearly marked in the field.

4. Report as no-discharge when a discharge does not occur during the report period.

5. Reporting of Non-Detects:
   (a) An analysis conducted by the permittee or their contracted laboratory shall be conducted in such a way that the precision and accuracy of the analyzed result can be enumerated.
   (b) The permittee shall not report a sample result as "Non-Detect" without also reporting the detection limit of the test. Reporting as "Non Detect" without also including the detection limit will be considered failure to report, which is a violation of this permit.
   (c) The permittee shall provide the "Non-Detect" sample result using the less than sign and the minimum detection limit (e.g. <10).
   (d) Where the permit contains a Minimum Level (ML) and the permittee is granted authority in the permit to report zero in lieu of the < ML for a specified parameter (conventional, priority pollutants, metals, etc.), then zero (0) is to be reported for that parameter.
   (e) See Standard Conditions Part I, Section A, #4 regarding proper detection limits used for sample analysis.
   (f) When a parameter is not detected above ML, the permittee must report the data qualifier signifying less than ML for that parameter (e.g., < 50 µg/L, if the ML for the parameter is 50 µg/L). For reporting an average based on a mix of values detected and not detected, assign a value of "0" for all non-detects for that reporting period and report the average of all the results.

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

**D. SPECIAL CONDITIONS (continued)**

7. The permittee shall comply with any applicable requirements listed in 10 CSR 20-9, unless the facility has received written notification that the Department has approved a modification to the requirements. The monitoring frequencies contained in this permit shall not be construed by the permittee as a modification of the monitoring frequencies listed in 10 CSR 20-9. To request a modification of the operational control testing requirements listed in 10 CSR 20-9, the permittee shall submit a permit modification application and fee to the Department requesting a deviation from the operational control monitoring requirements. Upon approval of the request, the Department will modify the permit.

8. The permittee shall develop and implement a program for maintenance and repair of its collection system. The permittee may compare collection system performance results and other data with the benchmarks used in the Departments' Capacity, Management, Operation, And Maintenance (CMOM) Model located at http://dnr.mo.gov/env/wpp/permits/docs/cmom-template.doc. Additional information regarding the Departments' CMOM Model is available at http://dnr.mo.gov/pubs/pub2574.htm.

   The permittee shall also submit a report via the Electronic Discharge Monitoring Report (eDMR) Submission System annually, by January 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.

9. Bypasses are not authorized at this facility unless they meet the criteria in 40 CFR 122.41(m). If a bypass occurs, the permittee shall report in accordance to 40 CFR 122.41(m)(3), and with Standard Condition Part I, Section B, subsection 2. Bypasses are to be reported to the Central Field Operations Office during normal business hours or by using the online Sanitary Sewer Overflow/Facility Bypass Application located at: https://dnr.mo.gov/mogem/ or the Environmental Emergency Response spill-line at 573-634-2436 outside of normal business hours. Once an electronic reporting system compliant with 40 CFR Part 127, the National Pollutant Discharge Elimination System (NPDES) Electronic Reporting Rule, is available all bypasses must be reported electronically via the new system. Blending, which is the practice of combining a partially-treated wastewater process stream with a fully-treated wastewater process stream prior to discharge, is not considered a form of bypass. If the permittee wishes to utilize blending, the permittee shall file an application to modify this permit to facilitate the inclusion of appropriate monitoring conditions.

10. The facility must be sufficiently secured to restrict entry by children, livestock and unauthorized persons as well as to protect the facility from vandalism.

11. An Operation and Maintenance (O & M) manual shall be maintained by the permittee and made available to the operator. The O & M manual shall include key operating procedures and a brief summary of the operation of the facility.

12. An all-weather access road to the treatment facility shall be maintained.

13. The outfall sewer shall be protected and maintained against the effects of floodwater, ice, or other hazards as to reasonably insure its structural stability, freedom from stoppage, and that a sample of the effluent can be obtained at a point after the final treatment process and before the discharge mixes with the receiving waters.

14. The lagoon(s) shall be operated and maintained to ensure their structural integrity, which includes maintaining adequate freeboard and keeping the berms free of deep-rooted vegetation, animal dens, or other potential sources of damage.

15. The facility shall ensure that adequate provisions are provided to prevent or minimize surface water intrusion into the lagoon and to divert stormwater runoff around the lagoon and protect embankments from erosion

16. Sewer Extension Authority Supervised Program: The City of Jefferson has a department approved Sewer Program. The applicable reporting requirements for the program are detailed in Special Condition #19 of the Missouri State Operating Permit MO-0094846 for the Jefferson City RWRF.

17. Pretreatment Program: The City of Jefferson is required to implement and update the previously approved pretreatment program. The applicable reporting requirements for the program are detailed in Special Condition #20 of the Missouri State Operating Permit MO-0094846 for the Jefferson City RWRF.

**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-0044300
# ALGOA REGIONAL WASTEWATER TREATMENT FACILITY

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

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

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

This Factsheet is for a Minor facility.

## Part I – Facility Information

Facility Type: POTW

Facility Description: Influent bar screen / two basin, four-cell lagoon / UV disinfection / sludge retained in lagoon

Have any changes occurred at this facility or in the receiving water body that affects effluent limit derivation?
✓ No.

Application Date: 12/30/19
Expiration Date: 06/30/20

**OUTFALL(S) TABLE:**

| OUTFALL | DESIGN FLOW (CFS) | TREATMENT LEVEL | EFFLUENT TYPE |
|---|---|---|---|
| #001 | 1.24 | Equivalent to Secondary | Domestic |

Facility Performance History:
This facility was last inspected on April 17, 2019. The conditions of the facility at the time of inspection were found to be satisfactory.

A review of Discharge Monitoring Reports from the last permit cycle showed one exceedance (month/year): $BOD_5$ – 05/18

Comments:
Changes in this permit include the addition of quarterly monitoring for influent nutrients and the removal of the Acute WET test. See Part VI of the Fact Sheet for further information regarding the addition, revision, and removal of effluent parameters.

## Part II – Operator Certification Requirements

✓ This facility is required to have a certified operator.

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

Owned or operated by or for a

- ☒ - Municipalities
- ☐ - County
- ☐ - Public Sewer District
- ☐ - State agency
- ☐ - Public Water Supply Districts
- ☐ - Private Sewer Company regulated by the Public Service Commission

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

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

Operator's Name: Clara Haenchen
Certification Number: 4924
Certification Level: WW-A

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

## Part III – Operational Control Testing Requirements

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

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

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

  ✓ The facility is a lagoon that is designed to discharge and is required to conduct operational control monitoring as follows:

| Operational Monitoring Parameter | Frequency |
|---|---|
| Precipitation | Twice/Week |
| Flow – Influent or Effluent | Twice/Week |
| pH – Primary Cell | Twice/Week |
| Dissolved Oxygen – Primary Cell | Twice/Week |

## Part IV – Receiving Stream Information

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

| WATER-BODY NAME | CLASS | WBID | DESIGNATED USES* | 12-DIGIT HUC | DISTANCE TO CLASSIFIED SEGMENT (MI) |
|---|---|---|---|---|---|
| Missouri River | P | 701 | AQL, DWS, HHP, IND, IRR, LWW, SCR, WBC-B | 10300102-1306 | Direct Discharge |

*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 |
| Missouri River | 33,498 | 34,633 | 36,691 |

* Data from USGS Gauge Station 06910450 located on the Missouri River at Jefferson City, MO. The Jefferson City Regional Water Reclamation Facility (RWRF) discharges between the stream gauge and the Algoa Regional WWTF discharge location. As a result, the flow from Jefferson City RWRF was added to the flow data obtained from the gauge station prior to determining low flow values.

**MIXING CONSIDERATIONS TABLE:**

| MIXING ZONE (CFS) [10 CSR 20-7.031(5)(A)4.B.(II)(a)] | | | ZONE OF INITIAL DILUTION (CFS) [10 CSR 20-7.031(5)(A)4.B.(II)(b)] | | |
|---|---|---|---|---|---|
| 1Q10 | 7Q10 | 30Q10 | 1Q10 | 7Q10 | 30Q10 |
| 8374.5 | 8658.25 | 9172.75 | 12.4 | 12.4 | 12.4 |

*For streams with 7Q10 low flows greater than 20 cfs, the zone of initial dilution can be no more than ten times the effluent design flow volume per 10 CSR 20-7.031(5)(A)4.B.(III). This facility has a design flow of 1.24 cfs resulting in a ZID of 12.4 cfs, which was utilized in the Waste Load Allocation calculations on Page 14 of this fact sheet.

**RECEIVING STREAM MONITORING REQUIREMENTS:**
No receiving water monitoring requirements recommended at this time.

Receiving Water Body's Water Quality
Currently, 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.

## Part V – Rationale and Derivation of Effluent Limitations & Permit Conditions

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

- ✓ The facility does not discharge to a Losing Stream as defined by [10 CSR 20-2.010(40)] & [10 CSR 20-7.031(1)(O)], or is an existing facility.

**ANTI-BACKSLIDING:**
A provision in the Federal Regulations [CWA §303(d)(4); CWA §402(o); 40 CFR Part 122.44(l)] that requires a reissued permit to be as stringent as the previous permit with some exceptions.

- ✓ Limitations in this operating permit for the reissuance of this permit conform to the anti-backsliding provisions of Section 402(o) of the Clean Water Act, and 40 CFR Part 122.44.
  - ✓ Information is available which was not available at the time of permit issuance (other than revised regulations, guidance, or test methods) and which would have justified the application of a less stringent effluent limitation at the time of permit issuance.
    - **Acute Whole Effluent Toxicity (WET) test**. The previous permit included requirements to conduct an Acute WET test once during the permit cycle. Due to the fact that the facility has passed previous Acute WET tests and has shown consistent compliance with final effluent limits, it has been determined by the permit writer that the discharge has no reasonable potential to exceed whole effluent toxicity and the requirements to conduct an Acute WET test have been removed. This permit still includes final effluent limitations for known toxic pollutants; therefore, it remains protective of water quality.

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

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

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

- ✓ The facility does not have stormwater discharges or the stormwater outfalls onsite have no industrial exposure.

**AREA-WIDE WASTE TREATMENT MANAGEMENT & CONTINUING AUTHORITY:**
As per [10 CSR 20-6.010(2)(C)], …An applicant may utilize a lower preference continuing authority by submitting, as part of the application, when a higher level authority is available, must submit information to the Department for review and approval, provided it does not conflict with any area-wide management plan approved under section 208 of the Federal Clean Water Act or any other regional sewage service and treatment plan approved for higher preference authority by the Department.

**BIOSOLIDS & SEWAGE SLUDGE:**
Biosolids are solid materials resulting from domestic wastewater treatment that meet federal and state criteria for beneficial uses (i.e. fertilizer). Sewage sludge is solids, semi-solids, or liquid residue generated during the treatment of domestic sewage in a treatment works; including but not limited to, domestic septage; scum or solids removed in primary, secondary, or advanced wastewater treatment process; and a material derived from sewage sludge. Sewage sludge does not include ash generated during the firing of sewage sludge in a sewage sludge incinerator or grit and screening generated during preliminary treatment of domestic sewage in a treatment works.

- ✓ Permittee is authorized to land apply biosolids in accordance with Standard Conditions III.

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

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

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

Operational Monitoring Lagoon: http://dnr.mo.gov/forms/780-2801-f.pdf
Operational Monitoring Mechanical: http://dnr.mo.gov/forms/780-2800-f.pdf
I&I Report: http://dnr.mo.gov/forms/780-2690-f.pdf

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

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

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

**NUMERIC LAKE NUTRIENT CRITERIA**

✓ This facility does not discharge into a lake watershed where numeric lake nutrient criteria are applicable.

**PRETREATMENT PROGRAM:**
The reduction of the amount of pollutants, the elimination of pollutants, or the alteration of the nature of pollutant properties in wastewater prior to or in lieu of discharging or otherwise introducing such pollutants into a Publicly Owned Treatment Works [40 CFR Part 403.3(q)].

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

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

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

✓ This permittee has an approved pretreatment program in accordance with the requirements of [40 CFR Part 403] and [10 CSR 20-6.100] and is expected to implement and enforce its approved program.

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

In accordance with [40 CFR Part 122.44(d)(1)(iii)] if the permit writer determines that any given pollutant has the reasonable potential to cause, or contribute to an in-stream excursion above the WQS, the permit must contain effluent limits for that pollutant.

- ✓ An RPA analysis was completed for the last permit cycle. Due to permit synchronization, the previous permit cycle was reduced to a time period of less than 5 years. Therefore, all RPA results from short term permit have been carried over to this permit.

**REMOVAL EFFICIENCY:**
Removal efficiency is a method by which the Federal Regulations define Secondary Treatment and Equivalent to Secondary Treatment, which applies to Biochemical Oxygen Demand 5-day ($BOD_5$) and Total Suspended Solids (TSS) for Publicly Owned Treatment Works (POTWs)/municipals.

- ✓ Equivalent to Secondary Treatment is 65% removal [40 CFR Part 133.105(a)(3) & (b)(3)].

**SANITARY SEWER OVERFLOWS (SSO) AND INFLOW AND INFILTRATION (I&I):**
Sanitary Sewer Overflows (SSOs) are defined as untreated sewage releases and are considered bypassing under state regulation [10 CSR 20-2.010(12)] and should not be confused with the federal definition of bypass. SSOs result from a variety of causes including blockages, line breaks, and sewer defects that can either allow wastewater to backup within the collection system during dry weather conditions or allow excess stormwater and groundwater to enter and overload the collection system during wet weather conditions. SSOs can also result from lapses in sewer system operation and maintenance, inadequate sewer design and construction, power failures, and vandalism. SSOs include overflows out of manholes, cleanouts, broken pipes, and other into waters of the state and onto city streets, sidewalks, and other terrestrial locations.

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

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

- ✓ At this time, the Department recommends the US EPA's Guide for Evaluating Capacity, Management, Operation and Maintenance (CMOM) Programs at Sanitary Sewer Collection Systems (Document # EPA 305-B-05-002) or the Departments' CMOM Model located at http://dnr.mo.gov/env/wpp/permits/docs/cmom-template.doc. For additional information regarding the Departments' CMOM Model, see the CMOM Plan Model Guidance document at http://dnr.mo.gov/pubs/pub2574.htm. The CMOM identifies some of the criteria used to evaluate a collection system's management, operation, and maintenance and was intended for use by the EPA, state, regulated community, and/or third party entities. The CMOM is applicable to small, medium, and large systems; both public and privately owned; and both regional and satellite collection systems. The CMOM does not substitute for the Clean Water Act, the Missouri Clean Water Law, and both federal and state regulations, as it is not a regulation.

**SCHEDULE OF COMPLIANCE (SOC):**
Per 644.051.4 RSMo, a permit may be issued with a Schedule of Compliance (SOC) to provide time for a facility to come into compliance with new state or federal effluent regulations, water quality standards, or other requirements. Such a schedule is not allowed if the facility is already in compliance with the new requirement, or if prohibited by other statute or regulation. A SOC includes an enforceable sequence of interim requirements (actions, operations, or milestone events) leading to compliance with the Missouri Clean Water Law, its implementing regulations, and/or the terms and conditions of an operating permit. *See also* Section 502(17) of the Clean Water Act, and 40 CFR §122.2. For new effluent limitations, the permit may include interim monitoring for the specific parameter to demonstrate the facility is not already in compliance with the new requirement. Per 40 CFR § 122.47(a)(1), 10 CSR 20-7.031(11), and 10 CSR 20-7.015(9), compliance must occur as soon as possible. If the permit provides a schedule for meeting new water quality based effluent limits, a SOC must include an enforceable, final effluent limitation in the permit even if the SOC extends beyond the life of the permit.

A SOC is not allowed:

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

In order to provide guidance to Permit Writers in developing SOCs, and attain a greater level of consistency, on April 9, 2015 the Department issued an updated policy on development of SOCs. This policy provides guidance to Permit Writers on the standard time frames for schedules for common activities, and guidance on factors that may modify the length of the schedule such as a Cost Analysis for Compliance.

✓ This permit does not contain an SOC.

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

✓ The permittee's Sewer Extension Authority Supervised Program has been reauthorized. Please see **Appendix – Sewer Extension Authority Supervised Program Reauthorization Letter** for applicable conditions.

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

In accordance with the EPA's *Developing Your Stormwater Pollution Prevention Plan, A Guide for Industrial Operators*, (Document number EPA 833-B-09-002) [published by the United States Environmental Protection Agency (USEPA) in June 2015], BMPs are measures or practices used to reduce the amount of pollution entering (regarding this operating permit) waters of the state. BMPs may take the form of a process, activity, or physical structure.

Additionally in accordance with the Stormwater Management, a SWPPP is a series of steps and activities to (1) identify sources of pollution or contamination, and (2) select and carry out actions which prevent or control the pollution of stormwater discharges. The purpose of a SWPPP is to comply with all applicable stormwater regulations by creating an adaptive management plan to control and mitigate stream pollution from stormwater runoff. Developing a SWPPP provides opportunities to employ appropriate BMPs to minimize the risk of pollutants being discharged during storm events. The following paragraph outlines the general steps the permittee should take to determine which BMPs will work to achieve the benchmark values or limits in the permit. This section is not intended to be all encompassing or restrict the use of any physical BMP or operational and maintenance procedure assisting in pollution control. Additional steps or revisions to the SWPPP may be required to meet the requirements of the permit.

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

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

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

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

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

**VARIANCE:**

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

✓ 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:

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

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

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

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

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

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

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

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

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

- ☐ Facility is a designated Major.
- ☐ Facility continuously or routinely exceeds its design flow.
- ☐ Facility that exceeds its design population equivalent (PE) for $BOD_5$ whether or not its design flow is being exceeded.
- ☐ Facility (whether primarily domestic or industrial) that alters its production process throughout the year.
- ☐ Facility handles large quantities of toxic substances, or substances that are toxic in large amounts.
- ☐ Facility has Water Quality-based Effluent Limitations for toxic substances (other than $NH_3$)
- ☐ Facility is a municipality with a Design Flow ≥ 22,500 gpd.
- ☐ Other – please justify.

✓ At this time, the permittee is not required to conduct WET test for this facility. Due to the fact that the facility has passed previous Acute WET tests and has shown consistent compliance with final effluent limits, it has been determined by the permit writer that the discharge has no reasonable potential to exceed whole effluent toxicity; therefore, the requirements to conduct an Acute WET test have been removed. This permit still includes final effluent limitations for toxic pollutants and remains protective of water quality.

**40 CFR 122.41(M) - BYPASSES:**

The federal Clean Water Act (CWA), Section 402 prohibits wastewater dischargers from "bypassing" untreated or partially treated sewage (wastewater) beyond the headworks. A bypass is defined as an intentional diversion of waste streams from any portion of a treatment facility, [40 CFR 122.41(m)(1)(i)]. Additionally, Missouri regulation 10 CSR 20-7.015(9)(G) states a bypass means the intentional diversion of waste streams from any portion of a treatment facility, except in the case of blending, to waters of the state. Only under exceptional and specified limitations do the federal regulations allow for a facility to bypass some or all of the flow from its treatment process. Bypasses are prohibited by the CWA unless a permittee can meet all of the criteria listed in 40 CFR 122.41(m)(4)(i)(A), (B), & (C). Any bypasses from this facility are subject to the reporting required in 40 CFR 122.41(l)(6) and per Missouri's Standard Conditions I, Section B, part 2.b. Additionally, Anticipated Bypasses include bypasses from peak flow basins or similar devices designed for peak wet weather flows.

✓ This facility does not anticipate bypassing.

**303(d) LIST & TOTAL MAXIMUM DAILY LOAD (TMDL):**

Section 303(d) of the federal Clean Water Act requires that each state identify waters that are not meeting water quality standards and for which adequate water pollution controls have not been required. Water quality standards protect such beneficial uses of water as whole body contact (such as swimming), maintaining fish and other aquatic life, and providing drinking water for people, livestock and wildlife. The 303(d) list helps state and federal agencies keep track of waters that are impaired but not addressed by normal water pollution control programs.

A TMDL is a calculation of the maximum amount of a given pollutant that a body of water can absorb before its water quality is affected. If a water body is determined to be impaired as listed on the 303(d) list, then a watershed management plan will be developed that shall include the TMDL calculation.

✓ This facility discharges to a stream with an EPA approved TMDL. The Missouri River (P) (701) has a TMDL for Chlordane and PCBs. This facility is not considered to be a source of the pollutants.

## Part VI – Effluent Limits Determination

**OUTFALL #001 – MAIN FACILITY OUTFALL**

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

**EFFLUENT LIMITATIONS TABLE:**

| PARAMETER | Unit | Basis for Limits | Daily Maximum | Weekly Average | Monthly Average | Previous Permit Limit | Sampling Frequency | Reporting Frequency | Sample Type **** |
|---|---|---|---|---|---|---|---|---|---|
| Flow | MGD | 1 | * | | * | */* | 1/weekday | monthly | T |
| $BOD_5$ | mg/L | 1 | | 65 | 45 | 65/45 | 1/month | monthly | G |
| TSS | mg/L | 1 | | 110 | 70 | 110/70 | 1/month | monthly | G |
| *Escherichia coli*** | #/100mL | 1, 3 | | 1,030 | 206 | 1,030/206 | 1/week | monthly | G |
| Ammonia as N | mg/L | 2, 3 | * | | * | */* | 1/month | monthly | G |
| Oil & Grease | mg/L | 1, 3 | 15 | | 10 | 15/10 | 1/quarter | quarterly | G |
| Total Phosphorus | mg/L | 1 | * | | * | */* | 1/quarter | quarterly | G |
| Total Kjeldahl Nitrogen | mg/L | 1 | * | | * | */* | 1/quarter | quarterly | G |
| Nitrite + Nitrate | mg/L | 1 | * | | * | */* | 1/quarter | quarterly | G |
| PARAMETER | Unit | Basis for Limits | Minimum | | Maximum | Previous Permit Limit | Sampling Frequency | Reporting Frequency | Sample Type |
| pH | SU | 1 | 6.0 | | | >6.0 | 1/month | monthly | G |
| PARAMETER | Unit | Basis for Limits | Daily Minimum | | Monthly Avg. Min | Previous Permit Limit | Sampling Frequency | Reporting Frequency | Sample Type |
| $BOD_5$ Percent Removal | % | 1 | | | 65 | 65 | 1/month | monthly | M |
| TSS Percent Removal | % | 1 | | | 65 | 65 | 1/month | monthly | M |

* - Monitoring requirement only.
** - #/100mL; the Monthly Average for *E. coli* is a geometric mean.
*** - Parameter not previously established in previous state operating permit.

**** - G = Grab
T = 24-hr. total
M = Measured/calculated

**Basis for Limitations Codes**:

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

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

- **Flow**. In accordance with [40 CFR Part 122.44(i)(1)(ii)] the volume of effluent discharged from each outfall is needed to assure compliance with permitted effluent limitations. If the permittee is unable to obtain effluent flow, then it is the responsibility of the permittee to inform the Department, which may require the submittal of an operating permit modification.

- **Biochemical Oxygen Demand ($BOD_5$)**. Operating permit retains 65 mg/L as a Weekly Average and 45 mg/L as a Monthly Average from the previous permit. Effluent limits were established in accordance with 10 CSR 20-7.015(2) for discharges to the Missouri or Mississippi Rivers.

- **Total Suspended Solids (TSS)**. Operating permit retains 110 mg/L as a Weekly Average and 70 mg/L as a Monthly Average from the previous permit. Effluent limits were established in accordance with 10 CSR 20-7.015(2) for discharges to the Missouri or Mississippi Rivers.

Please note that the final effluent limits for BOD and TSS contained in the permit are Equivalent to Secondary limits as per 10 CSR 20-7.015. Any changes made to the lagoon system that modifies it such that it no longer functions as a typical lagoon will result in the facility no longer qualifying for Equivalent to Secondary limitations. The facility may be required to also follow the Missouri Antidegradation Rule and Implementation Procedure if the discharge is expanded.

- ***Escherichia coli (E. coli)***. Monthly average of 206 per 100 mL as a geometric mean and Weekly Average of 1,030 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 (B) designated use of the receiving stream, as per 10 CSR 20-7.015(9)(B). An effluent limit for both monthly average and weekly average is required by 40 CFR 122.45(d). The Geometric Mean is calculated by multiplying all of the data points and then taking the nth root of this product, where n = # of samples collected. For example: Five *E. coli* samples were collected with results of 1, 4, 6, 10, and 5 (#/100mL). Geometric Mean = $5^{th}$ root of (1)(4)(6)(10)(5) = $5^{th}$ root of 1,200 = 4.1 #/100mL.

- **Total Ammonia Nitrogen.** Due to permit synchronization, the previous permit cycle was monitor to a time period of less than 5 years. Therefore, the RPA results and final effluent limitations were retained from the previous short term permit. Please see **Appendix – RPA Results**.

- **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**. >6.0 SU. pH limitations [10 CSR 20-7.015] are protective of the water quality standard [10 CSR 20-7.031(5)(E)], due to the assimilative capacity of the receiving stream.

- **Biochemical Oxygen Demand ($BOD_5$) Percent Removal**. In accordance with 40 CFR Part 133, removal efficiency is a method by which the Federal Regulations define Secondary Treatment and Equivalent to Secondary Treatment, which applies to $BOD_5$ and TSS for Publicly Owned Treatment Works (POTWs)/municipals. This facility is required to meet 65% removal efficiency for $BOD_5$.

- **Total Suspended Solids (TSS) Percent Removal**. In accordance with 40 CFR Part 133, removal efficiency is a method by which the Federal Regulations define Secondary Treatment and Equivalent to Secondary Treatment, which applies to $BOD_5$ and TSS for Publicly Owned Treatment Works (POTWs)/municipals. This facility is required to meet 65% removal efficiency for TSS.

**Parameters Removed**.

- **Acute Whole Effluent Toxicity (WET) test**. The previous permit included requirements to conduct an Acute WET test once during the permit cycle. Due to the fact that the facility has passed previous Acute WET tests and has shown consistent compliance with final effluent limits, it has been determined by the permit writer that the discharge has no reasonable potential to exceed whole effluent toxicity and the requirements to conduct an Acute WET test have been removed. This permit still includes final effluent limitations for known toxic pollutants; therefore, it remains protective of water quality.

**Sampling Frequency Justification**: The Department has determined that previously established sampling and reporting frequency is sufficient to characterize the facility's effluent and be protective of water quality. Weekly sampling is required for *E. coli*, per 10 CSR 20-7.015(9)(D)7.A.

**Sampling Type Justification**: As per 10 CSR 20-7.015, $BOD_5$ and TSS samples collected for lagoons may be grab samples. Grab samples must be collected for pH, *E. coli*, and Oil & Grease in accordance with recommended analytical methods. For further information on sampling and testing methods please review 10 CSR 20-7.015(9)(D) 2.

**PERMITTED FEATURE INF – INFLUENT MONITORING**

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

**INFLUENT MONITORING TABLE:**

| PARAMETER | Unit | Basis for Limits | Daily Maximum | Weekly Average | Monthly Average | Previous Permit Limit | Sampling Frequency | Reporting Frequency | Sample Type **** |
|---|---|---|---|---|---|---|---|---|---|
| $BOD_5$ | mg/L | 1 | | | * | *** | 1/month | monthly | C |
| TSS | mg/L | 1 | | | * | *** | 1/month | monthly | C |
| Ammonia as N | mg/L | 1 | * | | * | *** | 1/quarter | quarterly | C |
| Total Phosphorus | mg/L | 1 | * | | * | *** | 1/quarter | quarterly | C |
| Total Kjeldahl Nitrogen | mg/L | 1 | * | | * | *** | 1/quarter | quarterly | C |
| Nitrite + Nitrate | mg/L | 1 | * | | * | *** | 1/quarter | quarterly | C |

* - Monitoring requirement only.
**** - G = Grab
*** - Parameter not previously established in previous state operating permit.

**Basis for Limitations Codes**:

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

**Influent Parameters**

- **Biochemical Oxygen Demand ($BOD_5$) and Total Suspended Solids (TSS)**. An influent sample is required to determine the removal efficiency. In accordance with 40 CFR Part 133, removal efficiency is a method by which the Federal Regulations define Secondary Treatment and Equivalent to Secondary Treatment, which applies to $BOD_5$ and TSS for Publicly Owned Treatment Works (POTWs)/municipals.

- **Total Phosphorus, Total Kjeldahl Nitrogen, Nitrite + Nitrate, and Ammonia**. Influent monitoring for Total Phosphorus, Total Kjeldahl Nitrogen, Nitrite + Nitrate, and Ammonia required per 10 CSR 20-7.015(9)(D)8.

**Sampling Frequency Justification**: The sampling and reporting frequencies for Total Phosphorus and Total Kjeldahl Nitrogen, Nitrite + Nitrate, and Ammonia parameters were established to match the required sampling frequency of these parameters in the effluent, per [10 CSR 20-7.015(9)(D)8.]. The sampling and reporting frequencies for influent $BOD_5$ 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 April 17, 2019, 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 equivalent to secondary treatment technology and is currently in compliance with the equivalent to secondary treatment technology based effluent limits established in this permit and there has been no indication to the Department that the stream has had issues maintaining beneficial uses as a result of this discharge. Based on the information reviewed during the drafting of this permit, these final effluent limitations appear to have protected against the excursion of this criterion in the past. Therefore, the discharge does not have the reasonable potential to cause or contribute to an excursion of this criterion.
(B) Waters shall be free from oil, scum and floating debris in sufficient amounts to be unsightly or prevent full maintenance of beneficial uses. Please see (A) above as justification is the same.
(C) Waters shall be free from substances in sufficient amounts to cause unsightly color or turbidity, offensive odor or prevent full maintenance of beneficial uses. Please see (A) above as justification is the same.
(D) Waters shall be free from substances or conditions in sufficient amounts to result in toxicity to human, animal or aquatic life. This permit contains final effluent limitations which are protective of both acute and chronic toxicity for various pollutants that are either expected to be discharged by domestic wastewater facilities or that were disclosed by this facility on the application for permit coverage. Based on the information reviewed during the drafting of this permit, it has been determined if the facility meets final effluent limitations established in this permit, there is no reasonable potential for the discharge to cause an excursion of this criterion.
(E) Waters shall provide for the attainment and maintenance of water quality standards downstream including waters of another state. Please see (D) above as justification is the same.
(F) There shall be no significant human health hazard from incidental contact with the water. Please see (D) above as justification is the same.
(G) There shall be no acute toxicity to livestock or wildlife watering. Please see (D) above as justification is the same.
(H) Waters shall be free from physical, chemical or hydrologic changes that would impair the natural biological community. Please see (A) above as justification is the same.
(I) Waters shall be free from used tires, car bodies, appliances, demolition debris, used vehicles or equipment and solid waste as defined in Missouri's Solid Waste Law, section 260.200, RSMo, except as the use of such materials is specifically permitted pursuant to section 260.200-260.247. The discharge from this facility is made up of treated domestic wastewater. No evidence of an excursion of this criterion has been observed by the Department in the past and the facility has not disclosed any other information related to the characteristics of the discharge on their permit application which has the potential to cause or contribute to an excursion of this narrative criterion. Additionally, any solid wastes received or produced at this facility are wholly contained in appropriate storage facilities, are not discharged, and are disposed of offsite. This discharge is subject to Standard Conditions Part III, which contains requirements for the management and disposal of sludge to prevent its discharge. Therefore, this discharge does not have reasonable potential to cause or contribute to an excursion of this criterion.

## Part VII – Cost Analysis for Compliance

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

- ✓ The Department is 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 Jefferson**

| New Permit Requirements | | | |
|---|---|---|---|
| Quarterly influent sampling for Total Phosphorus, Total Kjeldahl Nitrogen, Nitrite + Nitrate, and Ammonia as N | | | |
| Estimated Annual Cost | Annual Median Household Income (MHI) | Estimated Monthly User Rate | User Rate as a Percent of MHI |
| $468 | $57,753 | $34.19 | 0.79% |

## Part VIII – Administrative Requirements

On the basis of preliminary staff review and the application of applicable standards and regulations, the Department, as administrative agent for the Missouri Clean Water Commission, proposes to issue a permit(s) subject to certain effluent limitations, schedules, and special conditions contained herein and within the operating permit. The proposed determinations are tentative pending public comment.

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

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

**PERMIT SYNCHRONIZATION:**
The Department of Natural Resources is currently undergoing a synchronization process for operating permits. Permits are normally issued on a five-year term, but to achieve synchronization many permits will need to be issued for less than the full five years allowed by regulation. The intent is that all permits within a watershed will move through the Watershed Based Management (WBM) cycle together 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. With permit synchronization, this permit will expire in the 2nd Quarter of calendar year 2025.

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

- ✓ The Public Notice period for this operating permit was from October 9, 2020 to November 9, 2020. No comments received.

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

**COMPLETED BY:**

**ASHLEY KEELY, ENVIRONMENTAL SPECIALIST III**
**MISSOURI DEPARTMENT OF NATURAL RESOURCES**
**WATER PROTECTION PROGRAM**
**OPERATING PERMITS SECTION - DOMESTIC WASTEWATER UNIT**
**(573) 751-7326**
**ASHLEY.KEELY@DNR.MO.GOV**

# Appendices

## APPENDIX - CLASSIFICATION WORKSHEET:

| Item | Points Possible | Points Assigned |
|---|---|---|
| Maximum Population Equivalent (P.E.) served , peak day | 1 pt./10,000 PE or major fraction thereof. (Max 10 pts.) | |
| Design Flow (avg. day) or peak month's flow (avg. day) whichever is larger | 1 pt. / MGD or major fraction thereof. (Max 10 pts.) | |
| Effluent Discharge | | |
| Missouri or Mississippi River | 0 | 0 |
| All other stream discharges except to losing streams and stream reaches supporting whole body contact recreation | 1 | |
| Discharge to lake or reservoir outside of designated whole body contact recreational area | 2 | |
| Discharge to losing stream, or stream, lake or reservoir area supporting whole body contact recreation | 3 | |
| 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 | 0 |
| Reoccurring deviations or excessive variations of 100 to 200 percent in strength and/or flow | 2 | |
| Reoccurring deviations or excessive variations of more than 200 percent in strength and/or flow | 4 | |
| Department-approved pretreatment program | 6 | |
| Preliminary Treatment | | |
| STEP systems (operated by the permittee) | 3 | |
| Screening and/or comminution | 3 | 3 |
| Grit removal | 3 | |
| Plant pumping of main flow | 3 | |
| Flow equalization | 5 | |
| Primary Treatment | | |
| Primary clarifiers | 5 | |
| Chemical addition (except chlorine, enzymes) | 4 | |
| Secondary Treatment | | |
| Trickling filter and other fixed film media with or without secondary clarifiers | 10 | |
| Activated sludge (including aeration, oxidation ditches, sequencing batch reactors, membrane bioreactors, and contact stabilization) | 15 | |
| Stabilization ponds without aeration | 5 | |
| Aerated lagoon | 8 | 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)** | ---- | 11 |

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

| ITEM | POINTS POSSIBLE | POINTS ASSIGNED |
|---|---|---|
| Solids Handling | | |
| Sludge Holding | 5 | 5 |
| Anaerobic digestion | 10 | |
| Aerobic digestion | 6 | |
| Evaporative sludge drying | 2 | |
| Mechanical dewatering | 8 | |
| Solids reduction (incineration, wet oxidation) | 12 | |
| Land application | 6 | 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 | |
| More advanced determinations, such as BOD seeding procedures, fecal coliform, nutrients, total oils, phenols, etc. | 7 | 7 |
| Highly sophisticated instrumentation, such as atomic absorption and gas chromatograph | 10 | |
| Total from page **TWO (2)** | ---- | 11 |
| Total from page **ONE (1)** | --- | 22 |
| Grand Total | --- | 33 |

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

**APPENDIX – RPA RESULTS FROM PERMIT ISSUED APRIL 1, 2018**:

| Parameter | CMC* | RWC Acute* | CCC* | RWC Chronic* | n** | Range max/min | CV*** | MF | RP Yes/No |
|---|---|---|---|---|---|---|---|---|---|
| Total Ammonia as Nitrogen (Summer) mg/L | 12.1 | 10.62 | 1.5 | 0.04 | 34 | 27.9/0.3 | 1.82 | 4.19 | NO |
| Total Ammonia as Nitrogen (Winter) mg/L | 12.1 | 6.91 | 3.1 | 0.03 | 30 | 25.8/0.3 | 1.05 | 2.94 | NO |

N/A – Not Applicable
* - Units are (mg/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 – ALTERNATIVE**:

**APPENDIX – SEWER EXTENSION AUTHORITY SUPERVISED PROGRAM REAUTHORIZATION LETTER:**

Missouri Department of NATURAL RESOURCES
dnr.mo.gov
Eric R. Greitens, Governor
Carol S. Comer, Director

JUN 12 2017

Mr. Eric Seaman, P.E.
Wastewater Division Director
320 E. McCarty Street
Jefferson City, MO 65101

RE: City of Jefferson – ACT152, Sewer Extension Authority Supervised Program Reauthorization

Dear Mr. Seaman:

The Missouri Department of Natural Resources' Water Protection Program has reevaluated the City of Jefferson Sewer Extension Authority Supervised Program (Program) and has approved its reauthorization. This Program delegates administrative responsibility of construction sewer extension permits to the City of Jefferson. Reporting requirements for this program are included in the associated Missouri State Operating Permits (MSOP).

The Program for the City of Jefferson applies to construction permits for sewer extensions that discharge to the following MSOP(s):

- MO-0094846 [Jefferson City RWRF]
- MO-0044330 [Algoa Regional WWTF]

This approval is granted until it is reauthorized during the operating permit renewal.

This reauthorization does not supersede any requirements of the operating permit or enforcement actions. Nothing in this reauthorization removes any obligations to comply with county or other local ordinances or restrictions.

If you were adversely affected by this decision, you may be entitled to an appeal before the Administrative Hearing Commission (AHC) pursuant to 10 CSR 20-1.020 and Section 621.250, RSMo. To appeal, you must file a petition with the AHC within 30 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. Contact information for the AHC is: Administrative Hearing Commission, United States Post Office Bldg., Third Floor, 131 West High Street, P.O. Box 1557, Jefferson City, MO 65102, Phone: 573-751-2422, Fax: 573-751-5018, and Website: www.oa.mo.gov/ahc.

Recycled paper

Mr. Eric Seaman, P.E.
Page Two

If you have any questions concerning this matter, please contact Ms. Leasue Meyers, of the Water Protection Program, at 573-751-7906 or Department of Natural Resources, P.O. Box 176, Jefferson City, MO 65102.

Thank you for your efforts to help ensure clean water in Missouri.

Sincerely,

WATER PROTECTION PROGRAM

David J. Lamb
Acting Director

DJL:lmn

Enclosure

c: Northeast Regional Office

Activity No. ACT152

**SEWER EXTENSION AUTHORITY SUPERVISED PROGRAM REAUTHORIZATION**

## I. CONDITIONS:

1. This approval is limited to sewer extensions proposed within the City of Jefferson boundaries for which the receiving wastewater treatment facility is owned, operated, and maintained by the City of Jefferson.

2. Upon completion of accepted construction, the City of Jefferson will become the continuing authority for the operation, maintenance, and modernization of the sewer extension.

3. Additional requirements may be necessary to comply with the requirements contained in 10 CSR 20-4, "Grants and Loans" when funding from the department is requested.

4. Any updates to the City of Jefferson's Standard Sanitary Sewer Specifications Revised 2015 will require a subsequent review and approval by the department.

   A. This approval is limited to only wastewater components. Other items contained in this standard specification and details such as drinking water, roadways, structural, mechanical, electrical, etc. were not reviewed.

5. This approval may be reopened and modified to comply with any new or amended design regulations in 10 CSR 20-6.010 and 10 CSR 20-8.

## II. ANNUAL REPORTS:

The City of Jefferson must submit an annual report by January 28th of each year to the Engineering Section. The electronic submittals may be emailed to DNR.WPPEngineerSection@dnr.mo.gov. The report shall contain the following for each sewer extension:

1. Name of sewer extension;

2. Population or number of lots to be served;

3. Type of wastewater (i.e. domestic or industrial);

4. Design flow in gallons per day;

5. Length of sewer and force main;

6. Capacity of each pump station, if applicable;
7. The ultimate receiving wastewater treatment facility;
8. Date sewer extension permit is issued;
9. Dates of leakage and deflection tests passing;
10. Dates of City of Jefferson construction inspections;
11. Date sewer extension construction is accepted; and
12. The remaining capacity of each wastewater treatment facility.

**III. REAUTHORIZATION REQUEST:**

- The City of Jefferson must submit a request for reauthorization to the Engineering Section at least 180 days prior to the expiration date of the Jefferson City RWRF operating permt, MO-0094846. The request shall contain the following:

  1. The current standard technical specifications and typical detail drawings signed, sealed, and dated by a Missouri registered professional engineer.
  2. A list and current number of Missouri registered professional engineers and other qualified staff reviewing plans, issuing sewer extension permits, preparing reports, inspecting construction, and enforcing local and state requirements under the Program.
  3. A written statement from the City of Jefferson ensuring that permanent plans of all permitted and constructed sewer extensions records are maintained.

Leasue Meyers, EI
Engineering Section
leasue.meyers@dnr.mo.gov

**APPENDIX – COST ANALYSIS FOR COMPLIANCE:**

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

**Algoa Regional WWTF, Permit Renewal**
**City of Jefferson**
**Missouri State Operating Permit #MO-0044300**

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 influent Total Phosphorus, Total Kjeldahl Nitrogen, Nitrate + Nitrite, and Ammonia as N.

**Connections**
The number of connections was from the financial questionnaire and the Department's fee tracking website.

| Connection Type | Algoa Regional WWTF | City of Jefferson |
|---|---|---|
| Residential | 18 | 18,299 |
| Commercial | 13 | 2,339 |
| Industrial | 0 | 20 |
| **Total** | **31** | **20,658*** |

* The Algoa Regional WWTF is owned and operated by the City of Jefferson. This cost analysis was completed using the number of connections reported by the City of Jefferson to the Department.

**Data Collection for this Analysis**
This cost analysis is based on data available to the Department as provided by the permittee and data obtained from readily available sources. For the most accurate analysis, it is essential that the permittee provides the Department with current information about the City's financial and socioeconomic situation. The financial questionnaire available to permittees on the Department's website (http://dnr.mo.gov/forms/780-2511-f.pdf) is a required attachment to the permit renewal application. If the financial questionnaire is not submitted with the renewal application, the Department sends a request to complete the form with the welcome correspondence. If certain data was not provided by the permittee to the Department and the data is not obtainable through readily available sources, this analysis will state that the information is "unknown".

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

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

| Criterion 1 Table. Current Financial Information for the City of Jefferson | |
|---|---|
| Current Monthly User Rates per 5,000 gallons* | $34.19 |
| Median Household Income (MHI)[1] | $51,753 |
| Current Annual Operating Costs (excludes depreciation) | $569,000 |

*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 – Influent | Quarterly | $24 | $96 |
| Total Kjeldahl Nitrogen – Influent | Quarterly | $33 | $132 |
| Nitrate + Nitrite – Influent | Quarterly | $40 | $160 |
| Ammonia – Influent | Quarterly | $20 | $80 |
| Total Estimated Annual Cost of New Permit Requirements | | | $468 |

| **Criterion 2B Table. Estimated Costs for New Permit Requirements** | | |
|---|---|---|
| (1) | Estimated Annual Cost | $468 |
| 0(2) | Estimated Monthly User Cost for New Requirements [2] | $0.002 |
| | Estimated Monthly User Cost for New Requirements as a Percent of MHI [3] | 0.00004% |
| (3) | Total Monthly User Cost* | $34.19 |
| | Total Monthly User Cost as a Percent of MHI [4] | 0.793% |

* 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.

**Nutrient Monitoring**
Nutrients are mineral compounds that are required for organisms to grow and thrive. Of the six (6) elemental macronutrients, nitrogen and phosphorus are generally not readily available and limit growth of organisms. Excess nitrogen and phosphorus will cause a shift in the ecosystem's food web. Once excess nitrogen and phosphorus are introduced into a waterbody, some species' populations will dramatically increase, while other populations will not be able to sustain life. Competition and productivity are two factors in which nutrients can alter aquatic ecosystems and the designated uses of a waterbody. For example, designated uses, such as drinking water sources and recreational uses, become impaired when algal blooms take over a waterbody. These blooms can cause foul tastes and odors in the drinking water, unsightly appearance, and fish mortality in the waterbody. Some algae also produce toxins that may cause serious adverse health conditions such as liver damage, tumor promotion, paralysis, and kidney damage. The monitoring requirements for nitrogen and phosphorus have been added to the permit to provide data regarding the health of the receiving stream's aquatic life. A healthy ecosystem is beneficial as it provides reduced impacts on human and aquatic health as well as recreational opportunities.

**(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 entire wastewater collection and treatment systems is $45,665,800. The community reported that each user pays $34.19 monthly, of which, 51% (or $17.44) is used toward payments on the current outstanding debt.

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

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

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 Jefferson**

| No. | Administrative Unit | Jefferson City | Missouri State | United States |
|---|---|---|---|---|
| 1 | Population (2018) | 43,013 | 6,090,062 | 322,903,030 |
| 2 | Percent Change in Population (2000-2018) | 8.5% | 8.8% | 14.7% |
| 3 | 2018 Median Household Income (in 2019 Dollars) | $51,753 | $54,530 | $61,385 |
| 4 | Percent Change in Median Household Income (2000-2018) | -14.9% | -6.3% | -4.7% |
| 5 | Median Age (2018) | 37.7 | 38.5 | 37.9 |
| 6 | Change in Median Age in Years (2000-2018) | 1.2 | 2.4 | 2.6 |
| 7 | Unemployment Rate (2018) | 4.0% | 5.1% | 5.9% |
| 8 | Percent of Population Below Poverty Level (2018) | 13.5% | 14.2% | 14.1% |
| 9 | Percent of Household Received Food Stamps (2018) | 11.8% | 11.6% | 12.2% |
| 10 | (Primary) County Where the Community Is Located | Cole County | | |

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

The community reported plans to replace aeration equipment and remove sludge in the next few years.

**(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 Jefferson to seek funding from an outside source.

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

The community reported that the utility and community are recovering from flooding and a tornado in 2019, as well as a local shortage of affordable housing.

**Conclusion and Finding**

As a result of new regulations, the Department is proposing modifications to the current operating permit that may require the permittee to increase monitoring. The Department has considered the eight (8) criteria presented in subsection 644.145 RSMo to evaluate the cost associated with the new permit requirements.

This analysis examined whether the new sampling requirements affect the ability of an individual customer or household to pay a utility bill without undue hardship or unreasonable sacrifice in the essential lifestyle or spending patterns of the individual or household. After reviewing the above criteria, the Department finds that the new sampling requirements may result in a low burden with regard to the community's overall financial capability and a low financial impact for most individual customers/households; therefore, the new permit requirements are affordable.

**References**

1. (A) 2018 MHI in 2018 Dollar: United States Census Bureau. United States Census Bureau. 2014-2018 American Community Survey 5-Year Estimates, Table B19013: Median Household Income in the Past 12 Months (in 2018 Inflation-Adjusted Dollars). https://data.census.gov/cedsci/table?q=B19013&tid=ACSDT5Y2018.B19013&vintage=2018.
   (B) 2000 MHI in 1999 Dollar: (1) For United States, United States Census Bureau (2003) 2000 Census of Population and Housing, Summary Social, Economic, and Housing Characteristics, PHC-2-1 Part 1. United States Summary, Table 5. Work Status and Income in 1999: 2000, Washington, DC. https://www.census.gov/prod/cen2000/phc-2-1-pt1.pdf. (2) For Missouri State, United States Census Bureau (2003) 2000 Census of Population and Housing, Summary Social, Economic, and Housing Characteristics, PHC-2-27, Missouri, Table 10. Work Status and Income in 1999: 2000, Washington, DC. https://www.census.gov/prod/cen2000/phc-2-27-pt1.pdf.
   (C) 2019 CPI, 2018 CPI and 1999 CPI: U.S. Department of Labor Bureau of Labor Statistics (2019) Consumer Price Index - All Urban Consumers, U.S. City Average. All Items. 1982-84=100. http://data.bls.gov/timeseries/CUUR0000SA0?data_tool=Xgtable.
   (D) 2018 MHI in 2019 Dollar = 2018 MHI in 2018 Dollar x 2019 CPI /2018 CPI; 2000 MHI in 2019 Dollar = 2000 MHI in 1999 Dollar x 2019 CPI /1999 CPI.
   (E) Percent Change in Median Household Income (2000-2018) = (2018 MHI in 2019 Dollar - 2000 MHI in 2019 Dollar) / (2000 MHI in 2019 Dollar).
2. ($468/20,658)/12 = $0.002 (Estimated Monthly User Cost for New Requirements)
3. ($0.002/($51,753/12))100% = 0.00004% (New Sampling Only)
4. ($34.19/($51,753/12))100% = 0.793% (Total User Cost)
5. (A) Total Population in 2018: United States Census Bureau. 2014-2018 American Community Survey 5-Year Estimates, Table B01003: Total Population - Universe: Total Population. https://data.census.gov/cedsci/table?q=B010003%20population&tid=ACSDT5Y2018.B01003&vintage=2018.
   (B) Total Population in 2000: (1) For United States, United States Census Bureau (2002) 2000 Census of Population and Housing, Summary Social, Economic, and Housing Characteristics, PHC-1-1 Part 1. United States Summary, Table 1. Age and Sex: 2000, Washington, DC. https://www.census.gov/prod/cen2000/phc-1-1-pt1.pdf.
   (2) For Missouri State, United States Census Bureau (2002) 2000 Census of Population and Housing, Summary Population and Housing Characteristics, PHC-1-27, Missouri, Table 2. Place of Birth, Residence in 1995, and Language: 2000, Washington, DC. http://www.census.gov/prod/cen2000/phc-2-27-pt1.pdf.
   (C) Percent Change in Population (2000-2018) = (Total Population in 2018 - Total Population in 2000) / (Total Population in 2000).
6. (A) Median Age in 2018: United States Census Bureau. 2014-2018 American Community Survey 5-Year Estimates, Table B01002: Median Age by Sex - Universe: Total population. https://data.census.gov/cedsci/table?q=B01002&tid=ACSDT5Y2018.B01002&vintage=2018.
   (B) Median Age in 2000: (1) For United States, United States Census Bureau (2002) 2000 Census of Population and Housing, Summary Social, Economic, and Housing Characteristics, PHC-1-1 Part 1. United States Summary, Table 1. Age and Sex: 2000, Washington, DC., Page 2. https://www.census.gov/prod/cen2000/phc-1-1-pt1.pdf.
   (2) For Missouri State, United States Census Bureau (2002) 2000 Census of Population and Housing, Summary Population and Housing Characteristics, PHC-1-27, Missouri, Table 2. Place of Birth, Residence in 1995, and Language: 2000, Washington, DC. http://www.census.gov/prod/cen2000/phc-2-27-pt1.pdf.
   (C) Change in Median Age in Years (2000-2018) = (Median Age in 2018 - Median Age in 2000).
7. United States Census Bureau. 2014-2018 American Community Survey 5-Year Estimates, B23025: Employment Status for the Population 16 Years and Over - Universe: Population 16 years and Over. https://data.census.gov/cedsci/table?q=B23025&tid=ACSDT5Y2018.B23025.
8. United States Census Bureau. 2014-2018 American Community Survey 5-Year Estimates, Table S1701: Poverty Status in the Past 12 Months. https://data.census.gov/cedsci/table?q=S1701&tid=ACSST5Y2018.S1701.
9. United States Census Bureau. 2014-2018 American Community Survey 5-Year Estimates, Table B22003: Receipt of Food Stamps/SNAP in the Past 12 Months by Poverty Status in the Past 12 Months for Households - Universe: Households. https://data.census.gov/cedsci/table?q=B22003&tid=ACSDT5Y2018.B22003.

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

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

## Part I – General Conditions
## Section A – Sampling, Monitoring, and Recording

1. **Sampling Requirements.**
   a. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.
   b. All samples shall be taken at the outfall(s) or Missouri Department of Natural Resources (Department) approved sampling location(s), and unless specified, before the effluent joins or is diluted by any other body of water or substance.

2. **Monitoring Requirements**.
   a. Records of monitoring information shall include:
      i. The date, exact place, and time of sampling or measurements;
      ii. The individual(s) who performed the sampling or measurements;
      iii. The date(s) analyses were performed;
      iv. The individual(s) who performed the analyses;
      v. The analytical techniques or methods used; and
      vi. The results of such analyses.
   b. If the permittee monitors any pollutant more frequently than required by the permit at the location specified in the permit using test procedures approved under 40 CFR Part 136, or another method required for an industry-specific waste stream under 40 CFR subchapters N or O, the results of such monitoring shall be included in the calculation and reported to the Department with the discharge monitoring report data (DMR) submitted to the Department pursuant to Section B, paragraph 7.

3. **Sample and Monitoring Calculations.** Calculations for all sample and monitoring results which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified in the permit.

4. **Test Procedures**. The analytical and sampling methods used shall conform to the reference methods listed in 10 CSR 20-7.015 unless alternates are approved by the Department. The facility shall use sufficiently sensitive analytical methods for detecting, identifying, and measuring the concentrations of pollutants. The facility shall ensure that the selected methods are able to quantify the presence of pollutants in a given discharge at concentrations that are low enough to determine compliance with Water Quality Standards in 10 CSR 20-7.031 or effluent limitations unless provisions in the permit allow for other alternatives. A method is "sufficiently sensitive" when; 1) the method minimum level is at or below the level of the applicable water quality criterion for the pollutant or, 2) the method minimum level is above the applicable water quality criterion, but the amount of pollutant in a facility's discharge is high enough that the method detects and quantifies the level of pollutant in the discharge, or 3) the method has the lowest minimum level of the analytical methods approved under 10 CSR 20-7.015. These methods are also required for parameters that are listed as monitoring only, as the data collected may be used to determine if limitations need to be established. A permittee is responsible for working with their contractors to ensure that the analysis performed is sufficiently sensitive.

5. **Record Retention.** Except for records of monitoring information required by the permit related to the permittee's sewage sludge use and disposal activities, which shall be retained for a period of at least five (5) years (or longer as required by 40 CFR part 503), the permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by the permit, and records of all data used to complete the application for the permit, for a period of at least three (3) years from the date of the sample, measurement, report or application. This period may be extended by request of the Department at any time.

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

## Section B – Reporting Requirements

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

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.

## 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.
   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 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

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 permittees 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.

10. **Duty to Provide Information.** The permittee shall furnish to the Department, within a reasonable time, any information which the Department may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit or to determine compliance with this permit. The permittee shall also furnish to the Department upon request, copies of records required to be kept by this permit.

11. **Inspection and Entry.** The permittee shall allow the Department, or an authorized representative (including an authorized contractor acting as a representative of the Department), upon presentation of credentials and other documents as may be required by law, to:
    a. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of the permit;
    b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
    c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and
    d. Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the Federal Clean Water Act or Missouri Clean Water Law, any substances or parameters at any location.

12. **Closure of Treatment Facilities.**
    a. Persons who cease operation or plan to cease operation of waste, wastewater, and sludge handling and treatment facilities shall close the facilities in accordance with a closure plan approved by the Department.
    b. Operating Permits under 10 CSR 20-6.010 or under 10 CSR 20-6.015 are required until all waste, wastewater, and sludges have been disposed of in accordance with the closure plan approved by the Department and any disturbed areas have been properly stabilized. Disturbed areas will be considered stabilized when perennial vegetation, pavement, or structures using permanent materials cover all areas that have been disturbed. Vegetative cover, if used, shall be at least 70% plant density over 100% of the disturbed area.

13. **Signatory Requirement.**
    a. All permit applications, reports required by the permit, or information requested by the Department shall be signed and certified. (See 40 CFR 122.22 and 10 CSR 20-6.010)
    b. The Federal Clean Water Act provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or non-compliance shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than six (6) months per violation, or by both.
    c. The Missouri Clean Water Law provides that any person who knowingly makes any false statement, representation or certification in any application, record, report, plan, or other document filed or required to be maintained pursuant to sections 644.006 to 644.141 shall, upon conviction, be punished by a fine of not more than ten thousand dollars, or by imprisonment for not more than six months, or by both.

14. **Severability.** The provisions of the permit are severable, and if any provision of the permit, or the application of any provision of the permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of the permit, shall not be affected thereby.

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

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

**1. Definitions**

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

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

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

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

**2. Identification of Industrial Discharges**

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

**3. Application Information**

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

**4. Notice to the Department**

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

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

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

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

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

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

### SECTION A – GENERAL REQUIREMENTS

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

## SECTION B – DEFINITIONS

1. Best Management Practices are practices to prevent or reduce the pollution of waters of the state and include agronomic loading rates (nitrogen based), soil conservation practices, spill prevention and maintenance procedures and other site restrictions.
2. Biosolids means organic fertilizer or soil amendment produced by the treatment of domestic wastewater sludge.
3. Biosolids land application facility is a facility where biosolids are spread onto the land at agronomic rates for production of food, feed or fiber. The facility includes any structures necessary to store the biosolids until soil, weather, and crop conditions are favorable for land application.
4. Class A biosolids means a material that has met the Class A pathogen reduction requirements or equivalent treatment by a Process to Further Reduce Pathogens (PFRP) in accordance with 40 CFR Part 503.
5. Class B biosolids means a material that has met the Class B pathogen reduction requirements or equivalent treatment by a Process to Significantly Reduce Pathogens (PSRP) in accordance with 40 CFR Part 503.
6. Domestic wastewater means wastewater originating from the sanitary conveniences of residences, commercial buildings, factories and institutions; or co-mingled sanitary and industrial wastewater processed by a (POTW) or a privately owned facility.
7. Feed crops are crops produced primarily for consumption by animals.
8. Fiber crops are crops such as flax and cotton.
9. Food crops are crops consumed by humans which include, but is not limted 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.
   a. 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.
   b. Apply biosolids only at the agronomic rate of nitrogen needed (see 5.c. of this section).
   c. The applicator must document the Plant Available Nitrogen (PAN) loadings, available nitrogen in the soil, and crop

nitrogen removal when either of the following occurs: 1) When biosolids are greater than 50,000 mg/kgTN; or 2) When biosolids are land applied at an application rate greater than two dry tons per acre per year.

i. PAN can be determined as follows:

(Nitrate + nitrite nitrogen) + (organic nitrogen x 0.2) + (ammonia nitrogen x volatilization factor[1]).

[1] Volatilization factor is 0.7 for surface application and 1 for subsurface application. Alternative volitalization 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 outstandingstate 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 mthods or technology refletive 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 included the use of methods or technology refletive 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:
        (Nitrate + nitrite nitrogen) + (organic nitrogen x 0.2) + (ammonia nitrogen x volatilization factor[1]).
        [1] Volatilization factor is 0.7 for surface application and 1 for subsurface application. Alternative volitalization 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 ≥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 ≥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.

RECEIVED

DEC 30 2019

Water Protection Program

34202

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

| FOR AGENCY USE ONLY | |
|---|---|
| CHECK NUMBER | |
| DATE RECEIVED: 12/30/19 | FEE SUBMITTED: 0 |
| JET PAY CONFIRMATION NUMBER | |

## PART A – BASIC APPLICATION INFORMATION

**1. THIS APPLICATION IS FOR:**

☐ An operating permit for a new or unpermitted facility. Construction Permit # _____
(Include completed Antidegradation Review or request to conduct an Antidegradation Review, see instructions)

☑ An operating permit renewal: Permit #MO- 0044300 Expiration Date 06/30/20

☐ 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 | | TELEPHONE NUMBER WITH AREA CODE | |
|---|---|---|---|
| Algoa Regional Wastewater Treatment Facility | | 573-634-6444 | |
| ADDRESS (PHYSICAL) | CITY | STATE | ZIP CODE |
| 8501 Fenceline Road | Jeffeson City | MO | 65101 |

**2.1 LEGAL DESCRIPTION** (Facility Site): Sec. 1/4,1/4,, T 44 , R 10 — COUNTY: Cole

**2.2** UTM Coordinates Easting (X): 581833.004 Northing (Y): 4267934.566
*For Universal Transverse Mercator (UTM), Zone 15 North referenced to North American Datum 1983 (NAD83)*

**2.3** Name of receiving stream: Missouri River (P)(0701)

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

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

| NAME | EMAIL ADDRESS | TELEPHONE NUMBER WITH AREA CODE | |
|---|---|---|---|
| City of Jefferson | eseaman@jeffcitymo.org | 573-634-6410 | |
| ADDRESS | CITY | STATE | ZIP CODE |
| 320 East McCarty Street | Jefferson City | MO | 65101 |

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

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

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

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

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

| NAME | EMAIL ADDRESS | TELEPHONE NUMBER WITH AREA CODE | |
|---|---|---|---|
| City of Jefferson | eseaman@jeffcitymo.org | 573-634-6410 | |
| ADDRESS | CITY | STATE | ZIP CODE |
| 320 East McCarty Street | Jefferson City | MO | 65101 |

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 | TITLE | CERTIFICATE NUMBER (IF APPLICABLE) |
|---|---|---|
| Clara Haenchen | Treatment Plant Manager | A-4924 |
| EMAIL ADDRESS | TELEPHONE NUMBER WITH AREA CODE | |
| chaenchen@jeffcitymo.org | 573-634-6444 | |

**6. FACILITY CONTACT**

| NAME | TITLE | | |
|---|---|---|---|
| Clara Haenchen | Treatment Plant Manager | | |
| EMAIL ADDRESS | TELEPHONE NUMBER WITH AREA CODE | | |
| chaenchen@jeffcitymo.org | 573-634-6444 | | |
| ADDRESS | CITY | STATE | ZIP CODE |
| 320 East McCarty Street | Jefferson City | MO | 65101 |

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Water Protection Program

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 | |
|---|---|
| Algoa Regional Wastewater Treatment Facility | |
| PERMIT NO. | COUNTY |
| MO-0044300 | Cole |

## APPLICATION OVERVIEW

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

## BASIC APPLICATION INFORMATION

A. Basic application information for all applicants. All applicants must complete Part A.

B. Additional application information for all applicants. All applicants must complete Part B.

C. Certification. All applicants must complete Part C.

## SUPPLEMENTAL APPLICATION INFORMATION

D. Expanded Effluent Testing Data. A treatment works that discharges effluent to surface water of the United States and meets one or more of the following criteria must complete *Part D - Expanded Effluent Testing Data*:

1. Has a design flow rate greater than or equal to 1 million gallons per day.
2. Is required to have or currently has a pretreatment program.
3. Is otherwise required by the permitting authority to provide the information.

E. Toxicity Testing Data. A treatment works that meets one or more of the following criteria must complete *Part E - Toxicity Testing Data*:

1. Has a design flow rate greater than or equal to 1 million gallons per day.
2. Is required to have or currently has a pretreatment program.
3. Is otherwise required by the permitting authority to provide the information.

F. Industrial User Discharges and Resource Conservation and Recovery Act / Comprehensive Environmental Response, Compensation and Liability Act Wastes. A treatment works that accepts process wastewater from any significant industrial users, also known as SIUs, or receives a Resource Conservation and Recovery Act or CERCLA wastes must complete *Part F - Industrial User Discharges and Resource Conservation and Recovery Act /CERCLA Wastes*.

SIUs are defined as:

1. All Categorical Industrial Users, or CIUs, subject to Categorical Pretreatment Standards under 40 Code of Federal Regulations 403.6 and 40 Code of Federal Regulations 403.6 and 40 CFR Chapter 1, Subchapter N.
2. Any other industrial user that meets one or more of the following:
   - i. Discharges an average of 25,000 gallons per day or more of process wastewater to the treatment works (with certain exclusions).
   - ii. Contributes a process waste stream that makes up five percent or more of the average dry weather hydraulic or organic capacity of the treatment plant.
   - iii. Is designated as an SIU by the control authority.
   - 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 *Part G - Combined Sewer Systems*.

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

| FACILITY NAME | PERMIT NO. | OUTFALL NO. |
|---|---|---|
| Algoa Regional Wastewater Treatment Facilit | MO- 0044300 | 001 |

**PART A – BASIC APPLICATION INFORMATION**

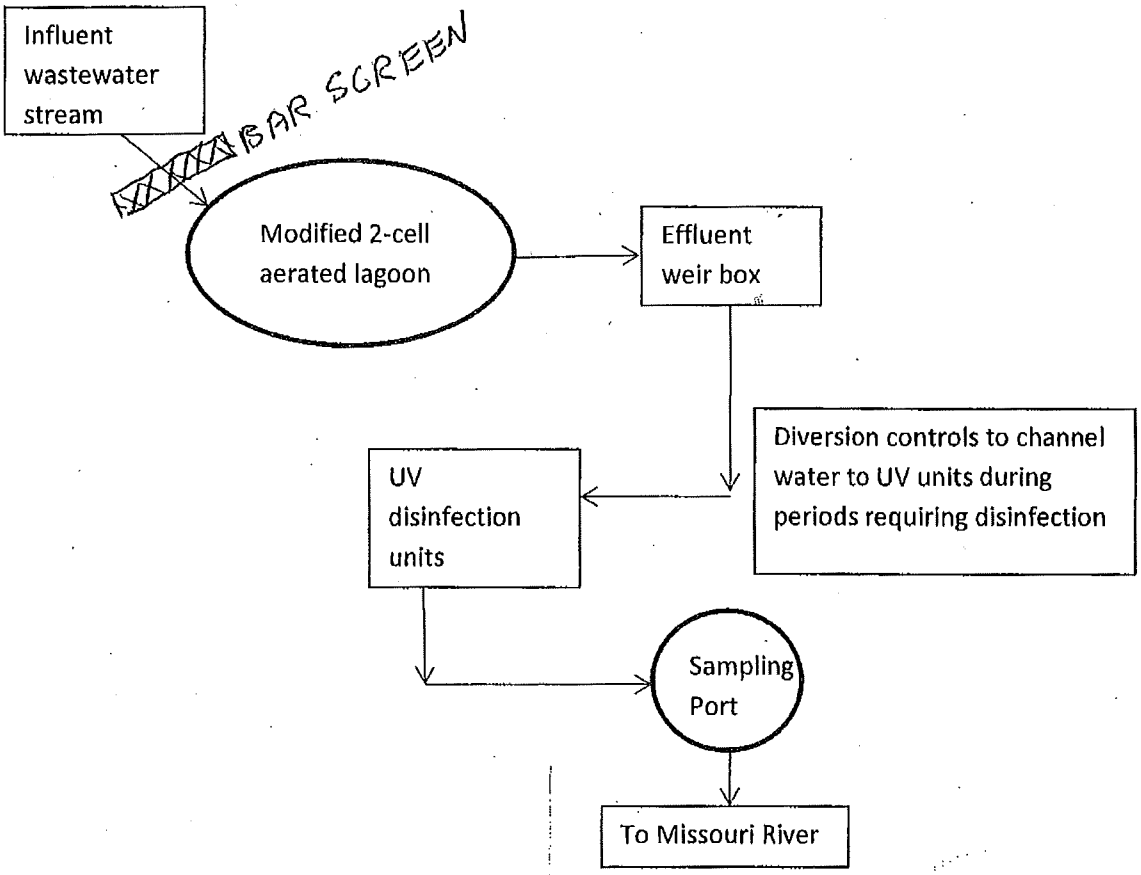
**7. FACILITY INFORMATION**

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

See attachement

FIGURE 7.1

Jefferson City
Algoa Regional Treatment Facility
MO-0044300
Process Diagram



| FACILITY NAME | PERMIT NO. | OUTFALL NO. |
|---|---|---|
| Algoa Regional Wastewater Treatment Facilit | MO- 0044300 | 001 |

## PART A – BASIC APPLICATION INFORMATION

### 7. FACILITY INFORMATION (continued)

**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

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.

**7.3** Facility SIC Code: 4952 | Discharge SIC Code:

**7.4** Number of people presently connected or population equivalent (P.E.): 5100 Design P.E. 8000

**7.5** Connections to the facility:

Number of units presently connected: 31

Residential: 18 Commericial: 13 Industrial _____

**7.6** Design Flow 800,000 | Actual Flow 642,000

**7.7** Will discharge be continuous through the year? Yes ☑ No ☐
Discharge will occur during the following months: Jan-Dec
How many days of the week will discharge occur? 7

**7.8** Is industrial wastewater discharged to the facility? Yes ☐ No ☑
If yes, describe the number and types of industries that discharge to your facility. Attach sheets as necessary

Refer to the APPLICATION OVERVIEW to determine whether additional information is needed for Part F.

| | | | |
|---|---|---|---|
| **7.9** | Does the facility accept or process leachate from landfills?: | Yes ☑ | No ☐ |
| **7.10** | Is wastewater land applied?<br>**If yes**, please attach Form I See: https://dnr.mo.gov/forms/780-1686-f.pdf | Yes ☐ | No ☑ |
| **7.11** | Does the facility discharge to a losing stream or sinkhole? | Yes ☐ | No ☑ |
| **7.12** | Has a wasteload allocation study been completed for this facility? | Yes ☐ | No ☑ |

### 8. LABORATORY CONTROL INFORMATION

LABORATORY WORK CONDUCTED BY PLANT PERSONNEL

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

| FACILITY NAME | PERMIT NO. | OUTFALL NO. |
|---|---|---|
| Algoa Regional Wastewater Treatment Facili | MO- 0044300 | 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 ☐ No ☑

**9.2** Sludge production (Including sludge received from others): Design Dry Tons/Year 120 Actual Dry Tons/Year

**9.3** Sludge storage provided: _____ Cubic feet; _____ Days of storage; _____ Average percent solids of sludge;

☐ No sludge storage is provided. ☑ Sludge is stored in lagoon.

**9.4** Type of storage:

☐ Holding Tank ☐ Building
☐ Basin ☑ Lagoon
☐ Concrete Pad ☐ Other (Describe) _____

**9.5** Sludge Treatment:

☐ Anaerobic Digester ☐ Storage Tank ☐ Lime Stabilization ☑ Lagoon
☐ Aerobic Digester ☐ Air or Heat Drying ☐ Composting ☐ Other (Attach Description)

**9.6** Sludge use or disposal:

☑ Land Application ☐ Contract Hauler ☐ Hauled to Another Treatment Facility ☐ Solid Waste Landfill
☐ Surface Disposal (Sludge Disposal Lagoon, Sludge Held For More Than Two Years) ☐ Incineration
☑ Other (Attach Explanation Sheet) Periodic Removal and Land Application. Last conducted 2012.

**9.7** Person responsible for hauling sludge to disposal facility:
☐ By Applicant ☐ By Others (complete below)

| NAME | | EMAIL ADDRESS | |
|---|---|---|---|
| ADDRESS | CITY | STATE | ZIP CODE |
| CONTACT PERSON | TELEPHONE NUMBER WITH AREA CODE | PERMIT NO. MO- | |

**9.8** Sludge use or disposal facility:
☑ By Applicant ☐ By Others (Complete below)

| NAME | | EMAIL ADDRESS | |
|---|---|---|---|
| ADDRESS | CITY | STATE | ZIP CODE |
| CONTACT PERSON | TELEPHONE NUMBER WITH AREA CODE | PERMIT NO. MO- | |

**9.9** Does the sludge or biosolids disposal comply with Federal Sludge Regulation 40 CFR 503?
☑ Yes ☐ No (Explain)

**END OF PART A**

| FACILITY NAME | PERMIT NO. | OUTFALL NO. |
|---|---|---|
| Algoa Regional Wastewater Treatment Facilit | MO- 0044300 | 001 |

## PART B – ADDITIONAL APPLICATION INFORMATION

### 10. COLLECTION SYSTEM

**10.1** Are there any municipal satellite collection systems connected to this facility? ☐ Yes ☑ 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) 8 miles

**10.3** Does significant infiltration occur in the collection system? ☐Yes ☑ No
If yes, briefly explain any steps underway or planned to minimize inflow and infiltration:

### 11. BYPASSING

Does any bypassing occur anywhere in the collection system or at the treatment facility? Yes ☑ No ☐
If yes, explain:
Under widespread flooding conditions, Missouri River forecast to reach 32 feet or above. UV shut down to protect equipment from flooding.

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

| NAME | |
|---|---|
| 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.
Potential aeration replacement and future cleanout.

| FACILITY NAME | PERMIT NO. | OUTFALL NO. |
|---|---|---|
| Algoa Regional Wastewater Treatment Facili | MO- 0044300 | 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=2d29852e2dcdf91badc043bd5fc3d4df&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) | 7.5 | S.U. | 8.2 | S.U. | 11 |
| pH (Maximum) | 8.8 | S.U. | 8.2 | S.U. | 11 |
| Flow Rate | 1.447 | MGD | 0.713 | MGD | 335 |

*For pH report a minimum and a maximum daily value

| POLLUTANT | | MAXIMUM DAILY DISCHARGE | | AVERAGE DAILY DISCHARGE | | | ANALYTICAL METHOD | ML/MDL |
|---|---|---|---|---|---|---|---|---|
| | | Conc. | Units | Conc. | Units | Number of Samples | | |
| Conventional and Nonconventional Compounds | | | | | | | | |
| BIOCHEMICAL OXYGEN DEMAND (Report One) | $BOD_5$ | 32 | mg/L | 14.9 | mg/L | 11 | SM 5210B | |
| | $CBOD_5$ | | mg/L | | mg/L | | | |
| E. COLI | | 43.2 | #/100 mL | 3.9 | #/100 mL | 26 | SM 9553B | |
| TOTAL SUSPENDED SOLIDS (TSS) | | 43 | mg/L | 25.5 | mg/L | 12 | SM 2540D | |
| TOTAL PHOSPHORUS | | 5.56 | mg/L | 3.46 | mg/L | 11 | EPA 365.4 | 0.044 |
| TOTAL KJELDAHL NITROGEN | | 28 | mg/L | 10.6 | mg/L | 9 | EPA 351.2 | 0.37 |
| NITRITES + NITRATES | | 11.5 | mg/L | 2.95 | mg/L | 11 | EPA 353.2 | 0.34 |
| AMMONIA AS N | | 26.2 | mg/L | 8.4 | mg/L | 11 | EPA 350.1 | 0.079 |
| CHLORINE* (TOTAL RESIDUAL, TRC) | | | mg/L | | mg/L | | | |
| DISSOLVED OXYGEN | | | mg/L | | mg/L | | | |
| OIL and GREASE | | <5.6 | mg/L | <4.3 | mg/L | 6 | EPA 1664A | 4.9 |
| OTHER: _____ | | | mg/L | | mg/L | | | |

*Report only if facility chlorinates

**END OF PART B**

| FACILITY NAME | PERMIT NO. | OUTFALL NO. |
|---|---|---|
| Algoa Regional Wastewater Treatment Facili | MO- 0044300 | 001 |

**PART C – CERTIFICATION**

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

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

☐ - You have completed and submitted with this permit application the required documentation to participate in the eDMR system.

☑ - You have previously submitted the required documentation to participate in the eDMR system and/or you are currently using the eDMR system.

☐ - You have submitted a written request for a waiver from electronic reporting. See instructions for further information regarding waivers.

**16. JETPAY**

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

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

**17. CERTIFICATION**

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

**ALL APPLICANTS MUST COMPLETE THE FOLLOWING CERTIFICATION.**

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

| PRINTED NAME | OFFICIAL TITLE (MUST BE AN OFFICER OF THE COMPANY OR CITY OFFICIAL) |
|---|---|
| Eric Seaman | Wastewater Division Director |

SIGNATURE

TELEPHONE NUMBER WITH AREA CODE
573-634-6410

DATE SIGNED
23 DEC 19

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

Send Completed Form to:

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

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

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

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

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

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

| FACILITY NAME | PERMIT NO. | OUTFALL NO. |
|---|---|---|
| Algoa Regional Wastewater Treatment Facility | MO- 0044300 | 001 |

## PART D – EXPANDED EFFLUENT TESTING DATA

### 18. EXPANDED EFFLUENT TESTING DATA

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

If the treatment works has a design flow greater than or equal to 1 MGD or it has (or is required to have) a pretreatment program, or is otherwise required by the permitting authority to provide the data, then provide effluent testing data for the following pollutants. Provide the indicated effluent testing information **for each outfall through which effluent is discharged**. Do not include information of combined sewer overflows in this section. All information reported must be based on data collected and analyzed using sufficiently sensitive methods found in 40 CFR Part 136. See 40 CFR 136.3 for sufficiently sensitive methods: https://www.ecfr.gov/cgi-bin/text-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.

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

| POLLUTANT | MAXIMUM DAILY DISCHARGE | | | | AVERAGE DAILY DISCHARGE | | | | | ANALYTICAL METHOD | ML/MDL |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Conc. | Units | Mass | Units | Conc. | Units | Mass | Units | No. of Samples | | |
| **METALS (TOTAL RECOVERABLE), CYANIDE, PHENOLS AND HARDNESS** | | | | | | | | | | | |
| ALUMINUM | <0.252 | mg/L | | | <0.176 | mg/L | | | 3 | 6020A,200.7 | 33ug |
| ANTIMONY | <0.015 | mg/L | | | <0.009 | mg/L | | | 3 | 200.8/200.7 | 6.5 |
| ARSENIC | <0.01 | mg/L | | | 0.008 | mg/L | | | 3 | 200.8/200.7 | 4.1 |
| BERYLLIUM | <0.004 | mg/L | | | <0.003 | mg/L | | | 3 | 200.8/200.7 | 0.25 |
| CADMIUM | <0.005 | mg/L | | | <0.005 | mg/L | | | 3 | 200.8/200.7 | 0.56 |
| CHROMIUM III | <0.01 | mg/L | | | <0.008 | mg/L | | | 3 | 3500CR/625 | 1 |
| CHROMIUM VI | <0.01 | mg/L | | | <0.008 | mg/L | | | 3 | 3500CR/7196 | 3.1 |
| COPPER | <0.01 | mg/L | | | 0.008 | mg/L | | | 3 | 200.8/200.7 | 3.4 |
| IRON | 0.54 | mg/L | | | 0.227 | mg/L | | | 3 | 6020A/200.7 | 14 |
| LEAD | <0.02 | mg/L | | | 0.012 | mg/L | | | 3 | 200.8/200.7 | 3.4 |
| MERCURY | <0.02 | mg/L | | | 0.007 | mg/L | | | 3 | 200.8/245.1 | 0.066 |
| NICKEL | <0.01 | mg/L | | | <0.008 | mg/L | | | 3 | 200.8/200.7 | 1.2 |
| SELENIUM | <0.015 | mg/L | | | <0.008 | mg/L | | | 3 | 200.8/200.7 | 6.6 |
| SILVER | <0.007 | mg/L | | | <0.006 | mg/L | | | 3 | 200.8/200.7 | 1.8 |
| THALLIUM | <0.02 | mg/L | | | <0.008 | mg/L | | | 3 | 200.8/200.7 | 3.4 |
| ZINC | <0.05 | mg/L | | | 0.025 | mg/L | | | 3 | 200.8/200.7 | 6.1 |
| CYANIDE | 0.0057 | mg/L | | | 0.0052 | mg/L | | | 3 | 4500CNE | 3.9 |
| TOTAL PHENOLIC COMPOUNDS | <0.005 | mg/L | | | <0.005 | mg/L | | | 3 | 5530B/420.1 | 0.000016 |
| HARDNESS (as $CaCO_3$) | 466 | mg/L | | | 326 | mg/L | | | 3 | 2340B/200.7 | 6500 |
| **VOLATILE ORGANIC COMPOUNDS** | | | | | | | | | | | |
| ACROLEIN | <0.01 | mg/L | | | <0.053 | mg/L | | | 3 | EPA 624 | 50 |
| ACRYLONITRILE | <0.05 | mg/L | | | <0.027 | mg/L | | | 3 | EPA 624 | 50 |
| BENZENE | <0.005 | mg/L | | | <0.002 | mg/L | | | 3 | EPA 624 | 0.12 |
| BROMOFORM | <0.005 | mg/L | | | <0.002 | mg/L | | | 3 | EPA 624 | 0.11 |
| CARBON TETRACHLORIDE | <0.005 | mg/L | | | <0.002 | mg/L | | | 3 | EPA 624 | 0.1 |

| FACILITY NAME | PERMIT NO. | OUTFALL NO. |
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## PART D – EXPANDED EFFLUENT TESTING DATA

### 18. EXPANDED EFFLUENT TESTING DATA

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

| POLLUTANT | MAXIMUM DAILY DISCHARGE | | | | AVERAGE DAILY DISCHARGE | | | | | ANALYTICAL METHOD | ML/MDL |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Conc. | Units | Mass | Units | Conc. | Units | Mass | Units | No. of Samples | | |
| CHLOROBENZENE | <0.005 | mg/L | | | <0.002 | mg/L | | | 3 | EPA 624 | 0.081 |
| CHLORODIBROMO-METHANE | <0.005 | mg/L | | | <0.002 | mg/L | | | 3 | EPA 624 | 0.24 |
| CHLOROETHANE | <0.01 | mg/L | | | <0.004 | mg/L | | | 3 | EPA 624 | 0.2 |
| 2-CHLORO-ETHYLVINYL ETHER | <0.01 | mg/L | | | <0.005 | mg/L | | | 3 | EPA 624 | 0.29 |
| CHLOROFORM | <0.005 | mg/L | | | <0.002 | mg/L | | | 3 | EPA 624 | 0.14 |
| DICHLOROBROMO-METHANE | <0.005 | mg/L | | | <0.002 | mg/L | | | 3 | EPA 624 | 0.13 |
| 1,1-DICHLORO-ETHANE | <0.005 | mg/L | | | <0.002 | mg/L | | | 3 | EPA 624 | 0.13 |
| 1,2-DICHLORO-ETHANE | <0.005 | mg/L | | | <0.002 | mg/L | | | 3 | EPA 624 | 0.14 |
| TRANS-1,2-DICHLOROETHYLENE | <0.02 | mg/L | | | <0.007 | mg/L | | | 3 | EPA 624 | 0.17 |
| 1,1-DICHLORO-ETHYLENE | <0.005 | mg/L | | | <0.002 | mg/L | | | 3 | EPA 624 | 0.11 |
| 1,2-DICHLORO-PROPANE | <0.005 | mg/L | | | <0.002 | mg/L | | | 3 | EPA 624 | 0.097 |
| 1,3-DICHLORO-PROPYLENE | <0.015 | mg/L | | | <0.006 | mg/L | | | 3 | EPA 624 | 0.12 |
| ETHYLBENZENE | <0.005 | mg/L | | | <0.002 | mg/L | | | 3 | EPA 624 | 0.057 |
| METHYL BROMIDE | <0.01 | mg/L | | | <0.005 | mg/L | | | 3 | EPA 624 | 0.66 |
| METHYL CHLORIDE | <0.01 | mg/L | | | <0.01 | mg/L | | | 3 | EPA 624 | 0.2 |
| METHYLENE CHLORIDE | <0.005 | mg/L | | | <0.002 | mg/L | | | 3 | EPA 624 | 0.21 |
| 1,1,2,2-TETRA-CHLOROETHANE | <0.005 | mg/L | | | <0.002 | mg/L | | | 3 | EPA 624 | 0.12 |
| TETRACHLORO-ETHANE | <0.005 | mg/L | | | <0.002 | mg/L | | | 3 | EPA 624 | 0.15 |
| TOLUENE | <0.005 | mg/L | | | <0.002 | mg/L | | | 3 | EPA 624 | 0.048 |
| 1,1,1-TRICHLORO-ETHANE | <0.005 | mg/L | | | <0.002 | mg/L | | | 3 | EPA 624 | 0.057 |
| 1,1,2-TRICHLORO-ETHANE | <0.005 | mg/L | | | <0.002 | mg/L | | | 3 | EPA 624 | 0.25 |
| TRICHLOROETHYLENE | <0.005 | mg/L | | | <0.002 | mg/L | | | 3 | EPA 624 | 0.15 |
| VINYL CHLORIDE | <0.005 | mg/L | | | <0.002 | mg/L | | | 3 | EPA 624 | 0.11 |
| **ACID-EXTRACTABLE COMPOUNDS** | | | | | | | | | | | |
| P-CHLORO-M-CRESOL | <0.007 | mg/L | | | <0.006 | mg/L | | | 3 | EPA 625 | 0.74 |
| 2-CHLOROPHENOL | <0.007 | mg/L | | | <0.006 | mg/L | | | 3 | EPA 625 | 0.72 |
| 2,4-DICHLOROPHENOL | <0.009 | mg/L | | | <0.006 | mg/L | | | 3 | EPA 625 | 0.65 |
| 2,4-DIMETHYLPHENOL | <0.005 | mg/L | | | <0.005 | mg/L | | | 3 | EPA 625 | 0.65 |
| 4,6-DINITRO-O-CRESOL | <0.024 | mg/L | | | <0.013 | mg/L | | | 3 | EPA 625 | 0.76 |
| 2,4-DINITROPHENOL | <0.048 | mg/L | | | <0.019 | mg/L | | | 3 | EPA 625 | 0.97 |
| 2-NITROPHENOL | <0.009 | mg/L | | | <0.007 | mg/L | | | 3 | EPA 625 | 0.68 |
| 4-NITROPHENOL | <0.006 | mg/L | | | <0.006 | mg/L | | | 3 | EPA 625 | 2.4 |

| FACILITY NAME | PERMIT NO. | OUTFALL NO. |
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**PART D – EXPANDED EFFLUENT TESTING DATA**

**18. EXPANDED EFFLUENT TESTING DATA**

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

| POLLUTANT | MAXIMUM DAILY DISCHARGE | | | | AVERAGE DAILY DISCHARGE | | | | | ANALYTICAL METHOD | ML/MDL |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Conc. | Units | Mass | Units | Conc. | Units | Mass | Units | No. of Samples | | |
| PENTACHLOROPHENOL | <0.01 | mg/L | | | <0.007 | mg/L | | | 3 | EPA 625 | 0.73 |
| PHENOL | <0.005 | mg/L | | | <0.005 | mg/L | | | 3 | EPA 625 | 2.4 |
| 2,4,6-TRICHLOROPHENOL | <0.005 | mg/L | | | <0.004 | mg/L | | | 3 | EPA 625 | 0.74 |
| **BASE-NEUTRAL COMPOUNDS** | | | | | | | | | | | |
| ACENAPHTHENE | <0.005 | mg/L | | | <0.004 | mg/L | | | 3 | EPA 625 | 0.63 |
| ACENAPHTHYLENE | <0.005 | mg/L | | | <0.004 | mg/L | | | 3 | EPA 625 | 0.63 |
| ANTHRACENE | <0.005 | mg/L | | | <0.004 | mg/L | | | 3 | EPA 625 | 0.65 |
| BENZIDINE | <0.048 | mg/L | | | <0.038 | mg/L | | | 3 | EPA 625 | 8.5 |
| BENZO(A)ANTHRACENE | <0.005 | mg/L | | | <0.004 | mg/L | | | 3 | EPA 625 | 0.66 |
| BENZO(A)PYRENE | <0.021 | mg/L | | | <0.01 | mg/L | | | 3 | EPA 625 | 0.7 |
| 3,4-BENZO-FLUORANTHENE | <0.005 | mg/L | | | <0.004 | mg/L | | | 3 | EPA 625 | 0.89 |
| BENZO(GH) PHERYLENE | <0.005 | mg/L | | | <0.004 | mg/L | | | 3 | EPA 625 | 0.67 |
| BENZO(K) FLUORANTHENE | <0.005 | mg/L | | | <0.004 | mg/L | | | 3 | EPA 625 | 0.98 |
| BIS (2-CHLOROTHOXY) METHANE | <0.005 | mg/L | | | <0.004 | mg/L | | | 3 | EPA 625 | 0.65 |
| BIS (2-CHLOROETHYL) – ETHER | <0.006 | mg/L | | | <0.003 | mg/L | | | 3 | EPA 625 | 0.73 |
| BIS (2-CHLOROISO-PROPYL) ETHER | <0.006 | mg/L | | | <0.003 | mg/L | | | 3 | EPA 625 | 0.68 |
| BIS (2-ETHYLHEXYL) PHTHALATE | <0.005 | mg/L | | | <0.004 | mg/L | | | 3 | EPA 625 | 0.95 |
| 4-BROMOPHENYL PHENYL ETHER | <0.005 | mg/L | | | <0.004 | mg/L | | | 3 | EPA 625 | 0.69 |
| BUTYL BENZYL PHTHALATE | <0.005 | mg/L | | | <0.004 | mg/L | | | 3 | EPA 625 | 0.62 |
| 2-CHLORONAPH-THALENE | <0.005 | mg/L | | | <0.004 | mg/L | | | 3 | EPA 625 | 0.77 |
| 4-CHLORPHENYL PHENYL ETHER | <0.005 | mg/L | | | <0.004 | mg/L | | | 3 | EPA 625 | 0.79 |
| CHRYSENE | <0.005 | mg/L | | | <0.004 | mg/L | | | 3 | EPA 625 | 0.7 |
| DI-N-BUTYL PHTHALATE | <0.005 | mg/L | | | <0.004 | mg/L | | | 3 | EPA 625 | 0.57 |
| DI-N-OCTYL PHTHALATE | <0.005 | mg/L | | | <0.004 | mg/L | | | 3 | EPA 625 | 0.92 |
| DIBENZO (A,H) ANTHRACENE | <0.005 | mg/L | | | <0.004 | mg/L | | | 3 | EPA 625 | 0.71 |
| 1,2-DICHLORO-BENZENE | <0.005 | mg/L | | | <0.002 | mg/L | | | 3 | EPA 625 | 0.066 |
| 1,3-DICHLORO-BENZENE | <0.005 | mg/L | | | <0.002 | mg/L | | | 3 | EPA 625 | 0.1 |
| 1,4-DICHLORO-BENZENE | <0.005 | mg/L | | | <0.002 | mg/L | | | 3 | EPA 625 | 0.05 |
| 3,3-DICHLORO-BENZIDINE | <0.019 | mg/L | | | <0.014 | mg/L | | | 3 | EPA 625 | 0.72 |
| DIETHYL PHTHALATE | <0.005 | mg/L | | | <0.004 | mg/L | | | 3 | EPA 625 | 0.63 |
| DIMETHYL PHTHALATE | <0.005 | mg/L | | | <0.004 | mg/L | | | 3 | EPA 625 | 0.6 |

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**PART D – EXPANDED EFFLUENT TESTING DATA**

**18. EXPANDED EFFLUENT TESTING DATA**

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

| POLLUTANT | MAXIMUM DAILY DISCHARGE | | | | AVERAGE DAILY DISCHARGE | | | | | ANALYTICAL METHOD | ML/MDL |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Conc. | Units | Mass | Units | Conc. | Units | Mass | Units | No. of Samples | | |
| 2,4-DINITRO-TOLUENE | <0.006 | mg/L | | | <0.004 | mg/L | | | 3 | EPA 625 | 0.56 |
| 2,6-DINITRO-TOLUENE | <0.005 | mg/L | | | <0.004 | mg/L | | | 3 | EPA 625 | 0.63 |
| 1,2-DIPHENYL-HYDRAZINE | <0.008 | mg/L | | | <0.005 | mg/L | | | 3 | EPA 625 | 0.57 |
| FLUORANTHENE | <0.005 | mg/L | | | <0.004 | mg/L | | | 3 | EPA 625 | 0.72 |
| FLUORENE | <0.005 | mg/L | | | <0.004 | mg/L | | | 3 | EPA 625 | 0.59 |
| HEXACHLOROBENZENE | <0.005 | mg/L | | | <0.004 | mg/L | | | 3 | EPA 625 | 0.9 |
| HEXACHLOROBUTADIENE | <0.005 | mg/L | | | <0.005 | mg/L | | | 3 | EPA 625 | 0.77 |
| HEXACHLOROCYCLO-PENTADIENE | <0.005 | mg/L | | | <0.005 | mg/L | | | 3 | EPA 625 | 0.63 |
| HEXACHLOROETHANE | <0.005 | mg/L | | | <0.005 | mg/L | | | 3 | EPA 625 | 0.7 |
| INDENO (1,2,3-CD) PYRENE | <0.005 | mg/L | | | <0.004 | mg/L | | | 3 | EPA 625 | 0.64 |
| ISOPHORONE | <0.005 | mg/L | | | <0.004 | mg/L | | | 3 | EPA 625 | 0.51 |
| NAPHTHALENE | <0.005 | mg/L | | | <0.004 | mg/L | | | 3 | EPA 625 | 0.65 |
| NITROBENZENE | <0.005 | mg/L | | | <0.004 | mg/L | | | 3 | EPA 625 | 0.49 |
| N-NITROSODI-PROPYLAMINE | <0.005 | mg/L | | | <0.004 | mg/L | | | 3 | EPA 625 | 0.62 |
| N-NITROSODI-METHYLAMINE | <0.005 | mg/L | | | <0.004 | mg/L | | | 3 | EPA 625 | 0.76 |
| N-NITROSODI-PHENYLAMINE | <0.005 | mg/L | | | <0.004 | mg/L | | | 3 | EPA 625 | 0.38 |
| PHENANTHRENE | <0.005 | mg/L | | | <0.004 | mg/L | | | 3 | EPA 625 | 0.64 |
| PYRENE | <0.005 | mg/L | | | <0.004 | mg/L | | | 3 | EPA 625 | 0.65 |
| 1,2,4-TRICHLOROBENZENE | <0.005 | mg/L | | | <0.004 | mg/L | | | 3 | EPA 625 | 0.83 |

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

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| see attached | | | | | | | | | | | |
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**END OF PART D**

**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<br>Algoa Regional Wastewater Treatment Facility | PERMIT NO.<br>MO- 0044300 | OUTFALL NO.<br>001 |

## 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: _____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 | 2ND Most Recent | 3RD Most Recent |
|---|---|---|---|
| A. Test Information | | | |
| Test Method Number | EPA 821/R-02/012 | USEPA 2000/2002 | USEPA 2000/2002 |
| Final Report Number | PACE# 60317621 | EAS#2305706 | EAS#2202110 |
| Outfall Number | 001 | 001 | 001 |
| Dates Sample Collected | 10-9-2019 | 11-6/2018 | 11-14-2017 |
| Date Test Started | 10-10-2019 | 11-7/2018 | 11-15/2017 |
| Duration | 48HRS | 48HRS | 48HRS |
| B. Toxicity Test Methods Followed | | | |
| Manual Title | EPA 821/R-02/012 | Standard Methods | Standard Methods |
| Edition Number and Year of Publication | USEPA 2002 | 18th, 1992 | 18th, 1992 |
| Page Number(s) | | 8.1-8.82 | 8.0-8.82 |
| C. Sample collection method(s) used. For multiple grab samples, indicate the number of grab samples used | | | |
| 24-Hour Composite | | | |
| Grab | X | X | X |
| D. Indicate where the sample was taken in relation to disinfection (Check all that apply for each) | | | |
| Before Disinfection | ☐ | ☐ | ☐ |
| After Disinfection | ☑ | ☑ | ☑ |
| After Dechlorination | ☐ | ☐ | ☐ |
| E. Describe the point in the treatment process at which the sample was collected | | | |
| Sample Was Collected: | | | |
| F. Indicate whether the test was intended to assess chronic toxicity, acute toxicity, or both | | | |
| Chronic Toxicity | ☐ | ☐ | ☐ |
| Acute Toxicity | ☑ | ☑ | ☑ |
| G. Provide the type of test performed | | | |
| Static | ☑ | ☑ | ☑ |
| Static-renewal | ☐ | ☐ | ☐ |
| Flow-through | ☐ | ☐ | ☐ |
| H. Source of dilution water. If laboratory water, specify type; if receiving water, specify source | | | |
| Laboratory Water | ☑ | ☑ | ☑ |
| Receiving Water | ☐ | ☐ | ☐ |

| FACILITY NAME | PERMIT NO. | OUTFALL NO. |
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**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 | X | X | X |
| Salt Water | | | |
| J. Percentage of effluent used for all concentrations in the test series | | | |
| | 2.25, 4.5, 9, 18, 36 | 2.25, 4.5, 9, 18, 36 | 2.25, 4.5, 9, 18, 36 |
| | | | |
| | | | |
| K. Parameters measured during the test (State whether parameter meets test method specifications) | | | |
| pH | Yes | Yes | Yes |
| Salinity | | | |
| Temperature | Yes | Yes | Yes |
| Ammonia | | | |
| Dissolved Oxygen | Yes | Yes | Yes |
| L. Test Results | | | |
| Acute: | | | |
| Percent Survival in 100% Effluent | 100% | 100% | 100% |
| $LC_{50}$ | >36% | >36% | >36% |
| 95% C.I. | NA | NA | NA |
| Control Percent Survival | 100% | 100% | 100% |
| Other (Describe) | | | |
| Chronic: | | | |
| NOEC | | | |
| $IC_{25}$ | | | |
| Control Percent Survival | | | |
| 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)? | 10/02/2019 | 11/07/2018 | 11/08/2017 |
| Other (Describe) | | | |

Is the treatment works involved in a toxicity reduction evaluation? ☐ Yes ☑ No

If yes, describe:

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

Date Submitted (MM/DD/YYYY)

Summary of Results (See Instructions)

**END OF PART E**

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

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

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## 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 0

Number of CIUs 0

### 21. INDUSTRIES CONTRIBUTING MORE THAN 5 PERCENT 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**

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## 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**

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**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.**

RECEIVED

DEC 30 2019

Water Protection Program

MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER PROTECTION PROGRAM

# FINANCIAL QUESTIONNAIRE

| NOTE ► | FINANCIAL INFORMATION THAT IS NOT PROVIDED THROUGH THIS FORM WILL BE OBTAINED BY THE DEPARTMENT FROM READILY AVAILABLE SOURCES. |
|---|---|

## 1. GENERAL INFORMATION

| FACILITY NAME | PERMIT NUMBER |
|---|---|
| Algoa Regional Wastewater Treatment Facility | #MO- 0044300 |
| CITY | COUNTY |
| Jefferson City | Cole |

## 2. GENERAL FINANCIAL INFORMATION (ALL FACILITIES)

2.1 Number of connections to the facility: Residential 18 Commercial 13 Industrial _____

| | | |
|---|---|---|
| 2.2 | Current sewer user rate (Based on a 5,000 gallon per month usage): | $34.19 |
| 2.3 | Current annual operating costs for the facility (excludes depreciation): | $569,000 |
| 2.4 | Bond rating (if applicable): | A+ |
| 2.5 | Bonding capacity: | $178,781,052 |
| 2.6 | Current outstanding debt relating to wastewater collection and treatment: | $45,665,800 (entire system) |
| 2.7 | Amount within the current user rate used toward payments on outstanding debt related to the current wastewater infrastructure: | 51% |

2.8 Attach any relevant financial statements. see www.jefferscitymo.gov/government/cafr.php

## 3. FINANCIAL INFORMATION REQUIRED FROM MUNICIPALITIES

| | | |
|---|---|---|
| 3.1 | Municipality's Full Market Property Value: | $893,905,260 |
| 3.2 | Municipality's Overall Net Debt: | $58,516,896 |
| 3.3 | Municipality's Property Tax Revenues (levied) [A]: | $4,896,931 |
| 3.4 | Municipality's Property Tax Revenues (collected) [B]: | $4,761,805 |
| 3.5 | Municipality's Property Tax Collection Rate ([B]/[A]): | 97.2% |

## 4. FINANCIAL INFORMATION REQUIRED FROM SEWER DISTRICTS

4.1 Total connections to the sewer district: Residential _____ Commercial _____ Industrial _____

4.2 When facilities require upgrades, how are the costs divided? Will the homes connected to the upgraded facility bear the costs? Will the costs be divided across the sewer district?

## 5. ADDITIONAL CONSIDERATIONS (ALL FACILITIES)

5.1 Provide a list of major infrastructure or other investments in environmental projects. Include project timing and costs and indicate any possible overlap or complications (attach sheets as necessary):

Aeration equipment replacement and sludge removal in next few years.

5.2 Provide a list of any other relevant local community economic conditions that may impact the ability to afford new permit requirements (attach sheets as necessary):

Utility and Community recovering from tornado and flooding in 2019. Affordable housing shortage.

## 6. CERTIFICATION

| FINANCIAL CONTACT | OFFICIAL TITLE |
|---|---|
| Eric Seaman | Wastewater Division Director |
| EMAIL ADDRESS | TELEPHONE NUMBER WITH AREA CODE |
| eseaman@jeffcitymo.org | 573-634-6443 |

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

| OWNER OR AUTHORIZED REPRESENTATIVE | OFFICIAL TITLE |
|---|---|
| Eric Seaman | Wastewater Division Director |
| SIGNATURE | DATE SIGNED |
| Eric Seaman | 23 DEC 19 |

### INSTRUCTIONS FOR COMPLETING THE FINANCIAL QUESTIONNAIRE

The Financial Questionnaire it to be completed by municipalities, sewer districts, and water supply districts when filing for renewal of their Missouri State Operating Permit. The Financial Questionnaire is to be submitted as an attachment to *FORM B: APPLICATION FOR OPERATING PERMIT FOR FACILITIES THAT RECEIVE PRIMARILY DOMESTIC WASTE AND HAVE A DESIGN FLOW LESS THAN OR EQUAL TO 100,000 GALLONS PER DAY* and *FORM B2: APPLICATION FOR OPERATING PERMIT FOR FACILITIES THAT RECEIVE PRIMARILY DOMESTIC WASTE AND HAVE A DESIGN FLOW MORE THAN 100,000 GALLONS PER DAY.*

1. GENERAL INFORMATION – Provide the name by which the facility is locally known, the Missouri State Operating Permit number, and the city and county where the facility is located.
2. GENERAL FINANCIAL INFORMATION (ALL FACILITIES) – Municipalities, sewer districts, and water supply districts are to complete.
2.1 Self-explanatory.
2.2 Provide the rate that a household would be charged for sewer service if they use 5,000 gallons per month.
2.3 Provide the cost to operate and maintain the wastewater facility annually.
2.4 Bond ratings can be found here: https://emma.msrb.org/IssuerHomePage/HomepagesForC6?cusip6=795169.
2.5 General obligation bond capacity allowed by constitution: Cities = up to 20% of taxable tangible property; Sewer districts = up to 5% of taxable tangible property.
2.6 Provide the amount of debt owed on wastewater collection and treatment. Debt information is typically available from your community's annual financial statements
2.7 Provide the amount of a user's monthly sewer bill that is used toward debt owed on wastewater collection and treatment. This may be a percentage or dollar amount.
2.8 Self-explanatory.
3. FINANCIAL INFORMATION REQUIRED FROM MUNICIPALITIES – Municipalities are to complete.
3.1 Full Market Property Value is typically available through your community or state assessor's office.
3.2 Debt information is typically available from your community's annual financial statements.
3.3 Property tax revenues are typically available from your community's annual financial statements. Property tax rates for Missouri communities can be found in the annual auditor's report: https://app.auditor.mo.gov/AuditReports/AudRpt2.aspx?id=31.
3.4 Property Taxes Levied = (Real Property Assessed Value) * (Property Tax Rate).
This information is typically available through your community or state assessor's office and your community's annual financial statements. Property tax rates for Missouri communities can be found in the annual auditor's report: https://app.auditor.mo.gov/AuditReports/AudRpt2.aspx?id=31.
3.5 Property tax collection rate = (Property Tax Revenues) ÷ (Property Taxes Levied).
4. FINANCIAL INFORMATION REQUIRED FROM SEWER DISTRICTS – Sewer Districts and Water Supply Districts are to complete.
4.1-4.2 Self-explanatory.
5. ADDITIONAL CONSIDERATIONS (ALL FACILITIES) – Municipalities, sewer districts, and water supply districts are to complete.
5.1-5.2 Self-explanatory.
6. CERTIFICATION – Provide the name and contact information for the individual who can respond to financial information requests for your community. This form must be signed by your community's "owner" or "authorized representative". The owner for a municipality is either the principal executive officer or ranking elected official.

If there are any questions concerning this form or your Missouri State Operating Permit, contact the Department of Natural Resources, Water Protection Program, Operating Permits Section at 800-361-4827 or 573-751-6825.

| Pollutant | 11/9/2017 | 8/28/2018 | 9/4/2019 |
|---|---|---|---|
| | | | |
| (TCDD) | | | |
| 1,1,1,2-Tetrachloroethane | | | |
| 1,1,1-Trichloroethane | <0.001 | <0.005 | <0.001 |
| 1,1,1-trichloroethane | | <0.005 | |
| 1,1,2,2-Tetrachloroethane | <0.001 | <0.005 | <0.001 |
| 1,1,2-Trichloroethane | <0.001 | <0.005 | <0.001 |
| 1,1-Dichloroethene | <0.001 | <0.005 | <0.001 |
| 1,2,3-Trichloropropane | | | |
| 1,2,4,5-tetrachlorobenzene | | | |
| 1,2,4-trichlorobenzene | <0.005 | <0.0012 | <0.0048 |
| 1,2-Dichlorobenzene | <0.001 | <0.005 | <0.001 |
| 1,2-Dichloroethane | <0.001 | <0.005 | <0.001 |
| 1,2-Dichloropropane | <0.001 | <0.005 | <0.001 |
| 1,2-Diphenylhydrazine | <0.005 | <0.0023 | |
| 1,3-Dichlorobenzene | <0.001 | <0.005 | <0.001 |
| 1,3-dinitrobenzene | | | |
| 1,4-Dichlorobenzene | <0.001 | <0.005 | <0.001 |
| 1,4-dithiane | | | |
| 2,4,5-T | | | |
| 2,4,5-TP | | | |
| 2,4,5-trichlorophenol | | | |
| 2,4,6-Trichlorophenol | <0.005 | <0.004 | |
| 2,4-D | | | |
| 2,4-dichlorophenol | <0.005 | <0.0089 | <0.0048 |
| 2,4-Dimethylphenol | <0.005 | <0.005 | <0.0048 |
| 2,4-Dinitrophenol | <0.005 | <0.005 | <0.0476 |
| 2,4-Dinitrotoluene | <0.005 | <0.0016 | <0.0057 |
| 2-Chloronaphthalene | <0.005 | <0.0013 | <0.0048 |
| 2-Chlorophenol | <0.006 | <0.0072 | <0.0048 |
| 2-chlorotoluene | | | |
| 2-chlorotoluene | | | |
| 2-Nitrophenol | <0.0067 | <0.0087 | <0.0048 |
| 2-Nitrophenol | | | |
| 3,3'-Dichlorobenzidine | <0.012 | <0.012 | <0.019 |
| 3,3'-dichlorobenzidine | | <0.012 | |
| 4,4'-DDD | <0.001 | <0.001 | <0.0001 |
| 4,4'-DDE | <0.001 | <0.001 | <0.0001 |
| 4,4'-DDT | <0.001 | <0.001 | <0.0001 |
| 4,6-dinitro-2-methylphenol | <0.01 | >0.005 | <0.0238 |
| Acenaphthene | <0.005 | <0.0021 | <0.0048 |
| Acrolein | <0.01 | <0.05 | <0.1 |
| Acrylonitrile | <0.01 | <0.05 | <0.02 |
| Aldrin | <0.0005 | <0.0005 | <0.00005 |
| Alpha-BHC | <0.0005 | <0.0005 | <0.00005 |
| Alpha-endosulfan | | | |
| aluminum | 0.252 | <0.2 | <0.075 |
| Ametryn | | | |
| Anthracene | <0.005 | <0.0015 | <0.0048 |
| Antimony | 0.006 | <0.006 | <0.015 |
| Aroclor-1016 | <0.005 | <0.005 | <0.0001 |
| Aroclor-1221 | <0.01 | <0.01 | <0.0001 |
| Aroclor-1232 | <0.005 | <0.005 | <0.0001 |
| Aroclor-1242 | <0.005 | <0.005 | <0.0001 |
| Aroclor-1248 | <0.005 | <0.005 | <0.0001 |
| Aroclor-1254 | <0.01 | <0.01 | <0.0001 |
| Aroclor-1260 | <0.01 | <0.01 | <0.0001 |
| Arsenic | 0.009 | <0.005 | <0.01 |
| Asbestos | | | |
| Atrazine | | | |
| Barium | <0.1 | <0.1 | 0.0769 |
| Baygon | | | |
| Bentazon | | | |
| Benzene | <0.001 | <0.005 | <0.001 |
| Benzidine | <0.026 | <0.04 | <0.0476 |
| Benzo(a)pyrene | <0.005 | <0.021 | <0.0048 |

WBC: Whole Body Contact Recreat
SCR: Secondary Contact Recreatio
AQL: Protection of Aquatic Life
DWS: Drinking Wate Supply
LWW: Livestock and Wildlife Wate

| Pollutant | 11/9/2017 | 8/28/2018 | 9/4/2019 |
|---|---|---|---|
| | | | |
| Beryllium | <0.004 | <0.004 | <0.001 |
| Beta-BHC | <0.0005 | <0.0005 | <0.00005 |
| Bis (chloromethyl) ether | | | |
| Bis(2-chloroethyl)ether | <0.0005 | <0.0021 | <0.0057 |
| Bis(2-chloroisopropyl) ether | <0.0005 | <0.0019 | <0.0057 |
| Bis(2-ethylhexyl)adipate | | | |
| Bis(2-ethylhexyl)phthalate | <0.003 | <0.0044 | <0.0048 |
| Boron | | | |
| Bromacil | | | |
| Bromochloromethane | | | |
| Bromoform | <0.001 | <0.005 | <0.001 |
| Bromomethane | <0.001 | <0.01 | <0.005 |
| Bromomethane | | <0.01 | |
| Butylate | | | |
| Butylbenzyl phthalate | <0.005 | <0.0015 | <0.0048 |
| Cadmium | <0.005 | <0.005 | <0.005 |
| Carbaryl | | | |
| Carbofuran | | | |
| Carbon tetrachloride | <0.001 | <0.005 | <0.001 |
| Carboxin | | | |
| Chloramben | | | |
| Chlordane | <0.005 | <0.005 | <0.0005 |
| Chloride | 140 | 191 | 175 |
| Chlorine | 0.14 | 0.08 | 0.18 |
| Chlorobenzene | <0.001 | <0.005 | <0.001 |
| Chlorodibromomethane | | | |
| Chloroform | <0.001 | <0.005 | <0.001 |
| Chloromethane | <0.001 | <0.01 | <0.001 |
| Chloropyrifos | | | |
| Chromium | <0.01 | <0.01 | <0.005 |
| Chromium VI | <0.005 | <0.01 | <0.01 |
| cis-1,2-dichloroethene | <0.001 | <0.005 | <0.001 |
| Cobalt | | | |
| Copper | 0.009 | <0.005 | <0.01 |
| Cyanide | <0.005 | <0.005 | 0.0057 |
| Dalapon | | | |
| DCPA (dacthal) | | | |
| Delta-BHC | <0.0005 | <0.0005 | <0.00005 |
| demeton | | | |
| Diazinon | | | |
| Dibromochloropropane | | <0.005 | |
| Dicamba | | | |
| Dichlorobromomethane | | | |
| Dichlorodifluoromethane | | | |
| dichloropropene | | | |
| Dieldrin | <0.001 | <0.001 | <0.0001 |
| Diethyl phthalate | <0.005 | <0.002 | <0.0048 |
| diisopropyl methylphosphonate | | | |
| Dimethyl methylphosphonate | | | |
| Dimethyl phthalate | <0.005 | <0.0016 | <0.0048 |
| Di-n-butyl phthalate | <0.005 | <0.0021 | <0.0048 |
| Dinoseb | | | |
| Diphenamid | | | |
| Diphenylamine | | | |
| Diquat | | | |
| disulfaton | | | |
| Diuron | | | |
| E. coli | | | |
| Endothall | | | |
| Endrin | <0.001 | <0.001 | <0.0001 |
| Endrin aldehyde | <0.001 | <0.001 | <0.0001 |
| Ethylbenzene | <0.001 | <0.005 | <0.001 |
| Ethylene dibromide | | | |
| Fenamiphos | | | |
| Fluometron | | | |
| Fluoranthene | <0.005 | <0.0022 | <0.0048 |

| Pollutant | 11/9/2017 | 8/28/2018 | 9/4/2019 |
|---|---|---|---|
| | | | |
| Fluorene | <0.005 | <0.0018 | <0.0048 |
| Fluoride | 0.79 | 0.76 | 0.7 |
| Fonofos | | | |
| Gamma-BHC | <0.0005 | <0.0005 | <0.00005 |
| Glyphosate | | | |
| guthion | | | |
| Heptachlor | <0.0005 | <0.0005 | <0.00005 |
| Heptachlor epoxide | <0.0005 | <0.0005 | <0.00005 |
| Hexachlorobenzene | <0.005 | <0.0014 | <0.0048 |
| Hexachlorobutadiene | <0.005 | <0.0018 | |
| Hexachlorocyclopentadiene | <0.004 | <0.0051 | <0.0048 |
| Hexachloroethane | <0.005 | <0.0021 | <0.0048 |
| Hexazinone | | | |
| Iron | 0.54 | 0.09 | <0.05 |
| Isophorone | <0.005 | <0.0018 | <0.0048 |
| Lead | <0.02 | <0.005 | <0.01 |
| Malathion | | | |
| Maleic hydrazide | | | |
| Manganese | | | |
| MCPA | | | |
| Mercury | <0.0005 | <0.0002 | <0.02 |
| Methoxychlor | <0.005 | <0.005 | <0.0005 |
| Methyl parathion | | | |
| Methylene chloride | <0.001 | <0.005 | <0.001 |
| Metolachlor | | | |
| Metribuzin | | | |
| Mirex | | | |
| Naphthalene | <0.005 | <0.0019 | <0.0048 |
| Nickel | <0.01 | <0.01 | <0.005 |
| Nitrate N | 5.4 | 0.12 | 2.3 |
| Nitrobenzene | <0.005 | <0.0027 | <0.0048 |
| Nitroguanidine | | | |
| N-nitrosodimethylamine | <0.005 | <0.00098 | <0.0048 |
| N-nitrosodi-n-propylamine | <0.005 | <0.0024 | <0.0048 |
| N-nitrosodiphenylamine | <0.005 | <0.0016 | <0.0048 |
| n-nitrosopyrrolidene | | | |
| Oil and Grease | | | |
| Oxamyl (vydate) | | | |
| Para(1,4)-dichlorobenzene | | | |
| Paraquat | | | |
| Parathion | | | |
| pentachlorobenzene | | | |
| Pentachlorophenol | <0.01 | <0.005 | <0.0048 |
| Phenol | <0.005 | <0.005 | <0.0048 |
| Picloram | | | |
| Pronamide | | | |
| Propachlor | | | |
| Propazine | | | |
| Propham | | | |
| Pyrene | <0.005 | <0.00074 | <0.0048 |
| Selenium | <0.005 | <0.005 | <0.015 |
| Silver | <0.005 | <0.005 | <0.007 |
| Simazine | | | |
| Styrene | | | |
| Sulfate (SO4) | 31.1 | 22.4 | 27 |
| Tebuthiuron | | | |
| terbacil | | | |
| Terbufos | | | |
| Tetrachloroethene | <0.001 | <0.005 | <0.001 |
| Thallium | <0.002 | <0.002 | <0.02 |
| Toluene | <0.001 | <0.005 | <0.001 |
| Toxaphene | <0.005 | <0.005 | <0.001 |
| Trans-1,2-dichloroethene | <0.001 | <0.02 | <0.001 |
| Trichloroethene | <0.001 | <0.005 | <0.001 |
| Trichlorofluoromethane | | | <0.001 |
| Trichlorofluoromethane | | | |

| Pollutant | 11/9/2017 | 8/28/2018 | 9/4/2019 |
|---|---|---|---|
| | | | |
| Trifluralin | | | |
| Trihalomethanes | | | |
| Trinitroglycerol | | | |
| Trinitrotoluene | | | |
| Vinyl Chloride | <0.001 | <0.005 | <0.001 |
| Xylene (total) | <0.015 | | <0.001 |
| Zinc | | 0.005 | <0.05 |

**ENGINEERING SURVEYS AND SERVICES**
**TESTING LABORATORIES**
1113 Fay Street * Columbia, Missouri 65201 * (573) 449-2546
632 E Dunklin Street * Jefferson City, Missouri 65101 * (573) 636-3308
1775 West Main Street * Sedalia, Missouri 65301 * (660) 826-1818

Date: 12 December 2017
Lab Number: L7570

Project: City of Jefferson

Location: Jefferson City, Missouri

Date Received: 09 November 2017

Sample No. / 2818 / Algae Lagoon Eff, PP, Composite, 11/9/17, 9:25am
Description :

**TEST RESULTS:**

| Parameter: | 2818 | Units | Method |
|---|---|---|---|
| Biochemical Oxygen Demand | 89 | mg/l | 5210 B |
| Total Suspended Solids | 237 | mg/l | 2540D |
| Chemical Oxygen Demand | 220 | mg/l | 5220B |
| Fluoride | 0.79 | mg/l | 9214 |
| Ammonia | 0.8 | mg/l | 4500NH3 C |
| Kjeldahl Nitrogen | 32.5 | mg/l | 4500N org |
| Nitrate Nitrogen | 5.40 | mg/l | SM18-419D |
| Organic Nitrogen | 31.7 | mg/l | 4500Norg C |
| Phosphorous, Total | 5.70 | mg/l | 4500PBE |
| Sulfate | 31.1 | mg/l | 9038 |
| Total Hardness | 468 | mg eq. CaCo3/l | 2340 B |
| Calcium | 141 | mg/l | 6020A |
| Magnesium | 27.6 | mg/l | 6020A |
| Sodium | 84.9 | mg/l | 6020A |
| Antimony | 0.005 | mg/l | 6020A |
| Arsenic | 0.009 | | 6020A |

Sample secured and delivered to laboratory by others

Method number from "Standard Methods for the Examination of Water & Wastewater", current edition, unless noted otherwise.

cc: Community Development
1 Clara Hamrchen
Hamrchen,Wilbers, Kleiner
37010

*Engineering Surveys & Services*

BY:

Derek J. Brester

**ENGINEERING SURVEYS AND SERVICES**
**TESTING LABORATORIES**
1113 Fay Street * Columbia, Missouri 65201 * (573) 449-2546
632 E Dunklin Street * Jefferson City, Missouri 65101 * (573) 636-3308
1775 West Main Street * Sedalia, Missouri 65301 * (660) 826-1818

Date: 12 December 2017
Lab Number: L7570

Project: City of Jefferson

Location: Jefferson City, Missouri

Date Received: 09 November 2017

Sample No. / 2818 / Algae Lagoon Eff, PP, Composite, 11/9/17, 9:25am
Description :

**TEST RESULTS:**

| Parameter: | 2818 | Units | Method |
|---|---|---|---|
| Barium | <0.10 | mg/l | 6020A |
| Beryllium | <0.004 | mg/l | 6020A |
| Cadmium | <0.005 | mg/l | 6020A |
| Chromium | <0.010 | mg/l | 6020A |
| Copper | 0.009 | mg/l | 6020A |
| Lead | <0.02 | mg/l | 6020A |
| Mercury | <0.0005 | mg/l | 6020A |
| Molybdenum | <0.10 | mg/l | 6020A |
| Nickel | <0.01 | mg/l | 6020A |
| Selenium | <0.005 | mg/l | 6020A |
| Silver | <0.005 | mg/l | 6020A |
| Thallium | <0.002 | mg/l | 6020A |
| Aluminum | 0.252 | mg/l | 6020A |
| Iron | 0.54 | mg/l | 6020A |
| Chromium, Trivalent | <0.010 | mg/l | 3500 Cr |
| Digestion | Yes | | |

Sample secured and delivered to laboratory by others

Method number from "Standard Methods for the Examination of Water & Wastewater", current edition, unless noted otherwise.

cc: Community Development
1 Clara Hamrchen
Hamrchen,Wilbers, Kleiner
37011

*Engineering Surveys & Services*

BY:

Derek J. Brester

**ENGINEERING SURVEYS AND SERVICES**
**TESTING LABORATORIES**
1113 Fay Street * Columbia, Missouri 65201 * (573) 449-2646
802 El Dorado Drive * Jefferson City, Missouri 65101 * (573) 636-3303
1175 West Main Street * Sedalia, Missouri 65301 * (660) 826-8618

Date: 12 December 2017
Lab Number: L7570

Project: City of Jefferson

Location: Jefferson City, Missouri

Date Received: 09 November 2017

Sample No. / Description: 2818 / Algae Lagoon Eff, PP, Composite, 11/9/17, 9:25 am

**TEST RESULTS:**

| Parameter: | 2818 | Units | Method |
|---|---|---|---|
| Chloride | 140 | mg/l | 4500Cl C |
| Total Phenolic Compounds | <0.005* | mg/l | 5520 B, D |
| Total Nitrogen | 38.1 | mg/l | |
| Pesticides & PCB | ** | ug/l | EPA 8081 |
| Semivolatile Organics | ** | ug/l | EPA 625 |

Sample secured and delivered to laboratory by others **See attached PDC report
* Analysis by PDC Laboratories

Method number from "Standard Methods for the Examination of Water & Wastewater", current edition, unless noted otherwise.

cc: Community Development
1 Clara Hanrahan
Hanrahan, Wilbers, Kiefner
37012

*Engineering Surveys & Services*

BY: Derek J. Broster

**ENGINEERING SURVEYS AND SERVICES**
**TESTING LABORATORIES**
1113 Fay Street * Columbia, Missouri 65201 * (573) 449-2646
802 El Dorado Drive * Jefferson City, Missouri 65101 * (573) 636-3303
1175 West Main Street * Sedalia, Missouri 65301 * (660) 826-8618

Date: 12 December 2017
Lab Number: L7570

Project: City of Jefferson

Location: Jefferson City, Missouri

Date Received: 09 November 2017

Sample No. / Description: 2819 / Algae Lagoon Eff, PP, Grab, 11/9/17, 9:30am

**TEST RESULTS:**

| Parameter: | 2819 | Units | Detection | Method |
|---|---|---|---|---|
| Acidity | -252 | mg CaCO3/l | | 2310 B |
| Alkalinity | 274 | mg CaCO3/l | | 2320 B |
| Conductivity | 1,200 | umhos/cm | | 2510 B |
| Chlorine, Residual | 0.14 | mg/l | | 4500-Cl G |
| Grease & Oil | 1.5 | mg/l | | EPA 1664 |
| Phosphate, Ortho | 2.74 | mg/l | | 4500-P E |
| Sulfide | <0.4 | mg/l | | 5034 |
| Sulfite | <0.6 | mg/l | | 4500-SO3-B |
| Chromium, Hexavalent | <0.005 | mg/l | | 3500 Cr D |
| Nitrite Nitrogen | 0.204 | mg/l | | 4500-NO2-B |
| Cyanide | <0.005 | mg/l | | 4500CN CE |
| Volatile Organic Compounds | ** | ug/l | | EPA 624 |
| Carbon (TOC) | 13* | mg/l | | 5310 |

Sample secured and delivered to laboratory by others *Analysis by PDC Laboratories
**See attached PDC report

Method number from "Standard Methods for the Examination of Water & Wastewater", current edition, unless noted otherwise.

cc: Community Development
1 Clara Hanrahan
Hanrahan, Wilbers, Kiefner
37013

*Engineering Surveys & Services*

BY: Derek J. Broster

## SAMPLE CHAIN OF CUSTODY RECORD

**ENGINEERING SURVEYS & SERVICES**
1113 Fay Street * Columbia, Missouri 65201 * (573) 449-2646
802 El Dorado Drive * Jefferson City, Missouri 65101 * (573) 636-3303
1175 W. Main Street * Sedalia, Missouri 65301 * (660) 826-8618

711283-4

| Sample ID | Date/Time Collected | Tests Requested | Sample Container | Preserv. | Comments |
|---|---|---|---|---|---|
| SN 2818 Effluent Composite | 11/9/17 9:25am | Total Phenols<br>Pesticides + PCB - 608<br>Semivolatile Organics - 625 | 500ml a<br>1000 a<br>1000 a | $H_2SO_4$<br>None<br>None | JN 7575 |
| SN 2819 Effluent Grab | 11/9/17 9:30am | Volatile Organic Compound - 624 extend (include 2-CEVE)<br>TOC | 2 vials<br>2 vials<br>2 vials | None<br>HCl<br>$H_2SO_4$ | |
| SN 2820 Influent Composite | 11/9/17 9:10am | Total Phenols | 500m | None | |
| SN 2821 Influent Grab | 11/9/17 9:15am | Surfactants<br>BTEX | 1000 p<br>2 vials | None<br>HCl | |
| | | (P.P lists) | | | |
| | | Report to MDL Values<br>Please call with any questions | | | |
| | | Thanks, Derek | | | |
| SN 2825 Anaerobic Grab | 11/9/17 6:30am | Total Volatile Acids | 500 p | None | JN 7545 |
| | | | | | |

Sample Collected By _____ Company/Organization Engineering Surveys + Services
Date/Time _____ Address Columbia, MO

| Samples Relinquished By/Phone | Samples Received By | Date/Time |
|---|---|---|
| | | 9 NOV 17 2:10pm |
| | | |
| | | |
| | | 11 NOV 10:00 |

# SAMPLE CHAIN OF CUSTODY RECORD

ENGINEERING SURVEYS & SERVICES
1113 Fay Street * Columbia, Missouri 65201 * (573) 449-2646
802 El Dorado Drive * Jefferson City, Missouri 65101 * (573) 636-3303
1175 W. Main Street * Sedalia, Missouri 65301 * (660) 826-8618

1112083-4

| Sample ID | Date/Time Collected | Tests Requested | Sample Container | Preserv. | Comments |
|---|---|---|---|---|---|
| SN 2818 Effluent Composite | 11/8/17 9:25am | Total Phenols<br>Pesticides + PCB - 608<br>Semivolatile Organics - 625 | 500ml a<br>1000 a<br>1000 a | H2SO4<br>None<br>None | JN 7539 |
| SN 2819 Effluent Grab | 11/8/17 9:32am | Volatile Organic Compound - 624 priority pollutants<br>include 3-CBZ8<br>TOC | 2 vials<br>2 vials<br>2 vials | None<br>HCl<br>H2SO4 | |
| SN 2820 Influent Composite | 11/8/17 9:10am | Total Phenols | 500m | None | |
| SN 2821 Influent Grab | 11/8/17 9:15am | Surfactants<br>BTEX | 1000 p<br>2 vials | None<br>HCl | |
| | | (P.P lists) | | | |
| | | Report to MDL Values<br>Please call with any questions | | | |
| | | Thanks,<br>Derek | | | |
| SN 2825 Anaerobic Grab | 11/8/17 6:32am | Total Volatile Acids | 500p | None | JN 7545 |
| | | | | | |

Sample Collected By _____ Company/Organization Engineering Surveys + Services

Date/Time _____ Address Columbia, MO

| Samples Relinquished By/Phone | Samples Received By | Date/Time |
|---|---|---|
| [signature] | | 9 NOV 17 2:10pm |
| | | |
| | | |
| | [signature] | 11 NOV 10:00 |



ENGINEERING SURVEYS AND SERVICES
TESTING LABORATORIES
1113 Fay Street * Columbia, Missouri 65201 * (573) 449-2646
802 El Dorado Drive * Jefferson City, Missouri 65101 * (573) 636-3303
1175 West Main Street * Sedalia, Missouri 65301 * (660) 826-8618

Date: 12 December 2017
Lab Number: L7570

Project: City of Jefferson

Location: Jefferson City, Missouri

Date Received: 09 November 2017

Sample No. / Description: 2820 / Algae Lagoon, Semiannual Influent Composite, 11/9/17, 9:05am

TEST RESULTS:

| Parameter: | 2820 | Units | Detection | Method |
|---|---|---|---|---|
| Kjeldahl Nitrogen | 59.4 | mg/l | | 4500N org |
| Nitrate Nitrogen | 0.62 | mg/l | | SM16-4110 |
| Phosphorous, Total | 9.68 | mg/l | | 4500PBE |
| Antimony | <0.006 | mg/l | | 6020A |
| Arsenic | <0.005 | mg/l | | 6020A |
| Cadmium | <0.005 | mg/l | | 6020A |
| Copper | 0.062 | mg/l | | 6020A |
| Chromium | <0.010 | mg/l | | 6020A |
| Lead | <0.02 | mg/l | | 6020A |
| Mercury | <0.0005 | mg/l | | 6020A |
| Molybdenum | <0.10 | mg/l | | 6020A |
| Iron | 0.90 | mg/l | | 6020A |
| Manganese | 0.057 | mg/l | | 6020A |
| Nickel | <0.01 | mg/l | | 6020A |
| Selenium | <0.005 | mg/l | | 6020A |
| Silver | <0.005 | mg/l | | 6020A |

Sample secured and delivered to laboratory by others

Method number from "Standard Methods for the Examination of Water & Wastewater", current edition, unless noted otherwise.

cc: Community Development
1 Clara Hoenchen
Hoenchen,Wilbers, Kiefner
37614

*Engineering Surveys & Services*

BY: [signature]

Derek J. Brester

ENGINEERING SURVEYS AND SERVICES
TESTING LABORATORIES
1113 Fay Street * Columbia, Missouri 65201 * (573) 449-2646
802 El Dorado Drive * Jefferson City, Missouri 65101 * (573) 636-3303
1175 West Main Street * Sedalia, Missouri 65301 * (660) 826-8618

Date: 13 December 2017
Lab Number: L7570

Project: City of Jefferson

Location: Jefferson City, Missouri

Date Received: 09 November 2017

Sample No. / Description: 2820 / Algae Lagoon, Semiannual Influent Composite, 11/9/17, 9:05am

TEST RESULTS:

| Parameter: | 2820 | Units | Detection | Method |
|---|---|---|---|---|
| Zinc | 0.192 | mg/l | | 6020A |
| Digestion | Yes | | | |
| Cyanide | <0.005 | mg/l | | 4500CNCE |
| Total Phenolic Compounds | 0.049* | mg/l | | 5530 B, D |

Sample secured and delivered to laboratory by others
* Analysis by PDC Laboratories

Method number from "Standard Methods for the Examination of Water & Wastewater", current edition, unless noted otherwise.

cc: Community Development
1 Clara Hoenchen
Hoenchen,Wilbers, Kiefner
37645

*Engineering Surveys & Services*

BY: [signature]

Derek J. Brester

PDC Laboratories, Inc.
2231 West Altorfer Drive
Peoria, IL 61615
(800) 752-6551

NOTES

Specific method revisions used for analysis are available upon request.

Certifications

CHI - McHenry, IL
TNI Accreditation for Drinking Water, Wastewater, Hazardous and Solid Wastes Fields of Testing through IL EPA Lab No. 100278
Illinois Department of Public Health Bacteriological Analysis in Drinking Water Approved Laboratory Registry No. 17558

PIA - Peoria, IL
TNI Accreditation for Drinking Water, Wastewater, Hazardous and Solid Wastes Fields of Testing through IL EPA Lab No. 100330
Illinois Department of Public Health Bacteriological Analysis in Drinking Water Approved Laboratory Registry No. 17553
Wastewater Certifications: Arkansas (88-0677), Iowa (240), Kansas (E-10338)
Hazardous/Solid Waste Certifications: Arkansas (88-0677), Iowa (240), Kansas (E-10338)

SPMO - Springfield, MO
USEPA DWP-QA Program

STL - St. Louis, MO
TNI Accreditation for Wastewater, Hazardous and Solid Wastes Fields of Testing through KIL Lab No. E-10389
Illinois Department of Public Health Bacteriological Analysis in Drinking Water Approved Laboratory Registry No. 171050
Drinking Water Certifications: Missouri (10350)
Missouri Department of Natural Resources

* Not a TNI accredited analyte

Qualifiers

Pc Chemical preservation discrepancy noted at the time of analysis
Q3 Matrix Spike/Matrix Spike Duplicate both failed % Recovery

Certified by: Kurt Stepping, Senior Project Manager

Customer # 273102 www.pdclab.com

PDC Laboratories, Inc.
2231 West Altorfer Drive
Peoria, IL 61615
(800) 752-6651

## ANALYTICAL RESULTS

Sample: 7112093-03 — Sampled: 11/09/17 09:05
Name: JN 7570 SN 2820 — Received: 11/10/17 10:00
Matrix: Waste Water - Composite

| Parameter | Result | Unit | Qualifier | Prepared | Analyzed | Analyst | Method |
|---|---|---|---|---|---|---|---|
| **General Chemistry - PIA** | | | | | | | |
| Phenolics | 0.043 | mg/L | | 11/17/17 12:44 | 11/17/17 12:44 | ALS | EPA 420.4 - QC 15-210-00-1-A |

Sample: 7112093-04 — Sampled: 11/09/17 09:15
Name: JN 7570 SN 2821 — Received: 11/10/17 10:00
Matrix: Waste Water - Grab

| Parameter | Result | Unit | Qualifier | Prepared | Analyzed | Analyst | Method |
|---|---|---|---|---|---|---|---|
| **General Chemistry - PIA** | | | | | | | |
| Surfactants - MBAS | 1.0 | mg/L | | 11/16/17 16:00 | 11/17/17 16:03 | AMM | SM 5540C |
| **Volatile Organics - PIA** | | | | | | | |
| Benzene | < 5.0 | ug/L | | 11/14/17 09:11 | 11/14/17 19:23 | MAB | EPA 624 |
| Ethylbenzene | < 5.0 | ug/L | | 11/14/17 09:11 | 11/14/17 19:22 | MAB | EPA 624 |
| m,p-Xylene | < 5.0 | ug/L | | 11/14/17 09:11 | 11/14/17 19:22 | MAB | EPA 624 |
| o-Xylene | < 5.0 | ug/L | | 11/14/17 09:11 | 11/14/17 19:22 | MAB | EPA 624 |
| Toluene | < 5.0 | ug/L | | 11/14/17 09:11 | 11/14/17 19:22 | MAB | EPA 624 |
| Xylenes - Total | < 15 | ug/L | | 11/14/17 09:11 | 11/14/17 19:22 | MAB | EPA 624 |



ENGINEERING SURVEYS AND SERVICES
TESTING LABORATORIES
1113 Fay Street * Columbia, Missouri 65201 * (573) 443-3946
602 B Dorado Drive * Jefferson City, Missouri 65101 * (573) 635-3303
1715 West Main Street * Salem, Missouri 65560 * (573) 826-5319

Date: 13 December 2017
Lab Number: L7570

Project: City of Jefferson
Location: Jefferson City, Missouri
Date Received: 09 November 2017
Sample No. / Description: 2821 / Algae Lagoon Influent Grab, 11/9/17, 9:15am

### TEST RESULTS:

| Parameter: | 2821 | Units | Detection | Method |
|---|---|---|---|---|
| Ammonia | 36.4 | mg/l | | 4500NH3B C |
| Nitrite Nitrogen | <0.010 | mg/l | | 4500-NO2 B |
| Grease & Oil | 40.0 | mg/l | | EPA1664 |
| Surfactants (MBAS) | 1.0* | mg/l | | 5540 C |
| Benzene | <5.0* | ug/l | | 8260 B |
| Ethylbenzene | <5.0* | ug/l | | 8260 |
| Toluene | <5.0* | ug/l | | 8260 B |
| Xylene | <15* | ug/l | | 8260 |

Sample secured and delivered to laboratory by others
*Analysis by PDC Laboratories
Higher detection limit for Nitrite due to interference
Method number from "Standard Methods for the Examination of Water & Wastewater", current edition, unless noted otherwise.

cc: Community Development
1 Clara Haenchen
Haenchen,Wibers, Kiefner
37018

*Engineering Surveys & Services*
BY:
Derek J. Brester

ENGINEERING SURVEYS AND SERVICES
TESTING LABORATORIES
1113 Fay Street * Columbia, Missouri 65201 * (573) 443-3946
602 B Dorado Drive * Jefferson City, Missouri 65101 * (573) 635-3303
1715 West Main Street * Salem, Missouri 65560 * (573) 826-5319

Date: 12 December 2017
Lab Number: L7670

Project: City of Jefferson
Location: Jefferson City, Missouri
Date Received: 15 November 2017
Sample No. / Description: 2948 / Algae Lagoon Effluent, 11/15/17, 9:30am

### TEST RESULTS:

| Parameter: | 2948 | Units | Detection | Method |
|---|---|---|---|---|
| Surfactants (MBAS) | <0.20* | mg/l | | 5540 C |
| Chloride | 137 | mg/l | | 4500Cl C |
| Sulfate | 28.4 | mg/l | | 9036 |
| Nitrite Nitrogen | 0.198 | mg/l | | 4500-NO2 B |

Sample secured and delivered to laboratory by others
*Analysis by PDC Laboratories
Method number from "Standard Methods for the Examination of Water & Wastewater", current edition, unless noted otherwise.

cc: Community Development
1 Clara Haenchen
Haenchen,Wibers, Kiefner
37018

*Engineering Surveys & Services*
BY:
Derek J. Brester

PDC Laboratories, Inc.
2231 West Altorfer Drive
Peoria, IL 61615
(800) 752-6651

## ANALYTICAL RESULTS

Sample: 7112093-02 — Sampled: 11/09/17 09:30
Name: JN 7570 SN 2819 — Received: 11/10/17 10:00
Matrix: Waste Water - Grab

| Parameter | Result | Unit | Qualifier | Prepared | Analyzed | Analyst | Method |
|---|---|---|---|---|---|---|---|
| **General Chemistry - PIA** | | | | | | | |
| Total Organic Carbon (TOC) | 13 | mg/L | Q3 | 11/21/17 17:04 | 11/21/17 17:04 | LAM | SM 5310C |
| **Volatile Organics - PIA** | | | | | | | |
| 1,1,1-Trichloroethane | < 1.0 | ug/L | Pc | 11/13/17 09:18 | 11/13/17 21:59 | MAB | EPA 624 |
| 1,1,2,2-Tetrachloroethane | < 1.0 | ug/L | Pc | 11/13/17 09:18 | 11/13/17 21:59 | MAB | EPA 624 |
| 1,1,2-Trichloroethane | < 1.0 | ug/L | Pc | 11/13/17 09:18 | 11/13/17 21:59 | MAB | EPA 624 |
| 1,1-Dichloroethane | < 1.0 | ug/L | Pc | 11/13/17 09:18 | 11/13/17 21:59 | MAB | EPA 624 |
| 1,1-Dichloroethene | < 1.0 | ug/L | Pc | 11/13/17 09:18 | 11/13/17 21:59 | MAB | EPA 624 |
| 1,2-Dichlorobenzene | < 1.0 | ug/L | Pc | 11/13/17 09:18 | 11/13/17 21:59 | MAB | EPA 624 |
| 1,2-Dichloroethane | < 1.0 | ug/L | Pc | 11/13/17 09:18 | 11/13/17 21:59 | MAB | EPA 624 |
| 1,2-Dichloropropane | < 1.0 | ug/L | Pc | 11/13/17 09:18 | 11/13/17 21:59 | MAB | EPA 624 |
| 1,3-Dichlorobenzene | < 1.0 | ug/L | Pc | 11/13/17 09:18 | 11/13/17 21:59 | MAB | EPA 624 |
| 1,3-Dichloropropene - Total | < 2.0 | ug/L | Pc | 11/13/17 09:18 | 11/13/17 21:59 | MAB | EPA 624* |
| 1,4-Dichlorobenzene | < 1.0 | ug/L | Pc | 11/13/17 09:18 | 11/13/17 21:59 | MAB | EPA 624 |
| 2-Chloroethylvinyl ether | < 1.0 | ug/L | | 11/13/17 10:38 | 11/13/17 14:16 | JJE | EPA 624 |
| Acrolein | < 10 | ug/L | Pc | 11/13/17 09:18 | 11/13/17 21:59 | MAB | EPA 624 |
| Acrylonitrile | < 10 | ug/L | Pc | 11/13/17 09:18 | 11/13/17 21:59 | MAB | EPA 624 |
| Benzene | < 1.0 | ug/L | Pc | 11/13/17 09:18 | 11/13/17 21:59 | MAB | EPA 624 |
| Bromodichloromethane | < 1.0 | ug/L | Pc | 11/13/17 09:18 | 11/13/17 21:59 | MAB | EPA 624 |
| Bromoform | < 1.0 | ug/L | Pc | 11/13/17 09:18 | 11/13/17 21:59 | MAB | EPA 624 |
| Bromomethane | < 1.0 | ug/L | Pc | 11/13/17 09:18 | 11/13/17 21:59 | MAB | EPA 624 |
| Carbon tetrachloride | < 1.0 | ug/L | Pc | 11/13/17 09:18 | 11/13/17 21:59 | MAB | EPA 624 |
| Chlorobenzene | < 1.0 | ug/L | Pc | 11/13/17 09:18 | 11/13/17 21:59 | MAB | EPA 624 |
| Chloroethane | < 1.0 | ug/L | Pc | 11/13/17 09:18 | 11/13/17 21:59 | MAB | EPA 624 |
| Chloroform | < 1.0 | ug/L | Pc | 11/13/17 09:18 | 11/13/17 21:59 | MAB | EPA 624 |
| Chloromethane | < 1.0 | ug/L | Pc | 11/13/17 09:18 | 11/13/17 21:59 | MAB | EPA 624 |
| cis-1,2-Dichloroethene | < 1.0 | ug/L | Pc | 11/13/17 09:18 | 11/13/17 21:59 | MAB | EPA 624* |
| Dibromochloromethane | < 1.0 | ug/L | Pc | 11/13/17 09:18 | 11/13/17 21:59 | MAB | EPA 624 |
| Ethylbenzene | < 1.0 | ug/L | Pc | 11/13/17 09:18 | 11/13/17 21:59 | MAB | EPA 624 |
| Methylene chloride | < 1.0 | ug/L | Pc | 11/13/17 09:18 | 11/13/17 21:59 | MAB | EPA 624 |
| Tetrachloroethene | < 1.0 | ug/L | Pc | 11/13/17 09:18 | 11/13/17 21:59 | MAB | EPA 624 |
| Toluene | < 1.0 | ug/L | Pc | 11/13/17 09:18 | 11/13/17 21:59 | MAB | EPA 624 |
| trans-1,2-Dichloroethene | < 1.0 | ug/L | Pc | 11/13/17 09:18 | 11/13/17 21:59 | MAB | EPA 624 |
| Trichloroethene | < 1.0 | ug/L | Pc | 11/13/17 09:18 | 11/13/17 21:59 | MAB | EPA 624 |
| Vinyl chloride | < 1.0 | ug/L | Pc | 11/13/17 09:18 | 11/13/17 21:59 | MAB | EPA 624 |

PDC Laboratories, Inc.
2231 West Altorfer Drive
Peoria, IL 61615
(800) 752-6651

## ANALYTICAL RESULTS

Sample: 7112033-01
Name: JN7570 SN:2818
Matrix: Waste Water - Composite

Sampled: 11/06/17 09:25
Received: 11/10/17 10:00

| Parameter | Result | Unit | Qualifier | Prepared | Analyzed | Analyst | Method |
|---|---|---|---|---|---|---|---|
| Fluoranthene | < 5.0 | ug/L | | 11/14/17 12:55 | 11/15/17 20:15 | KAF | EPA 625 |
| Fluorene | < 5.0 | ug/L | | 11/14/17 12:55 | 11/15/17 20:15 | KAF | EPA 625 |
| Pyrene | < 5.0 | ug/L | | 11/14/17 12:55 | 11/15/17 20:15 | KAF | EPA 625 |



PDC Laboratories, Inc.
PROFESSIONAL • DEPENDABLE • COMMITTED

November 27, 2017

Derek Bresler
Engineering Surveys & Services
1113 Fay Street
Columbia, MO 65201

Dear Derek Bresler:

Please find enclosed the analytical results for the sample(s) the laboratory received on 11/10/17 10:00 am and logged in under work order 7112033. All testing is performed according to our current TNI certifications unless otherwise noted. This report cannot be reproduced, except in full, without the written permission of PDC Laboratories, Inc.

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

PDC Laboratories, Inc. appreciates the opportunity to provide you with analytical expertise. We are always trying to improve our customer service and we welcome you to contact the Vice President, John LaPayne with any feedback you have about your experience with our laboratory.

Sincerely,

Senior Project Manager
(309) 692-6689 x1719
kstepping@pdclab.com



PDC Laboratories, Inc.
2231 West Altorfer Drive
Peoria, IL 61615
(800) 752-6651

## ANALYTICAL RESULTS

Sample: 7112033-01
Name: JN7570 SN:2818
Matrix: Waste Water - Composite

Sampled: 11/06/17 09:25
Received: 11/10/17 10:00

| Parameter | Result | Unit | Qualifier | Prepared | Analyzed | Analyst | Method |
|---|---|---|---|---|---|---|---|
| **General Chemistry - PIA** | | | | | | | |
| Phenolics | < 0.0050 | mg/L | | 11/17/17 12:40 | 11/17/17 12:40 | ALS | EPA 420.4 - QC 10-210-46-1-A |
| **Pesticides - PIA** | | | | | | | |
| 4,4'-DDD | < 1.0 | ug/L | | 11/14/17 13:01 | 11/17/17 02:21 | JMT | EPA 608 |
| 4,4'-DDE | < 1.0 | ug/L | | 11/14/17 13:01 | 11/17/17 02:21 | JMT | EPA 608 |
| 4,4'-DDT | < 1.0 | ug/L | | 11/14/17 13:01 | 11/17/17 02:21 | JMT | EPA 608 |
| Alpha | < 0.50 | ug/L | | 11/14/17 13:01 | 11/17/17 02:21 | JMT | EPA 608 |
| Alpha-BHC | < 0.50 | ug/L | | 11/14/17 13:01 | 11/17/17 02:21 | JMT | EPA 608 |
| Aroclor 1016 | < 5.0 | ug/L | | 11/14/17 13:01 | 11/17/17 02:21 | JMT | EPA 608 |
| Aroclor 1221 | < 10 | ug/L | | 11/14/17 13:01 | 11/17/17 02:21 | JMT | EPA 608 |
| Aroclor 1232 | < 5.0 | ug/L | | 11/14/17 13:01 | 11/17/17 02:21 | JMT | EPA 608 |
| Aroclor 1242 | < 5.0 | ug/L | | 11/14/17 13:01 | 11/17/17 02:21 | JMT | EPA 608 |
| Aroclor 1248 | < 5.0 | ug/L | | 11/14/17 13:01 | 11/17/17 02:21 | JMT | EPA 608 |
| Aroclor 1254 | < 10 | ug/L | | 11/14/17 13:01 | 11/17/17 02:21 | JMT | EPA 608 |
| Aroclor 1260 | < 10 | ug/L | | 11/14/17 13:01 | 11/17/17 02:21 | JMT | EPA 608 |
| Aroclors - Total | < 5.0 | ug/L | | 11/14/17 13:01 | 11/17/17 02:21 | JMT | EPA 608 |
| Beta-BHC | < 0.50 | ug/L | | 11/14/17 13:01 | 11/17/17 02:21 | JMT | EPA 608 |
| Chlordane (technical) | < 5.0 | ug/L | | 11/14/17 13:01 | 11/17/17 02:21 | JMT | EPA 608 |
| Delta-BHC | < 0.50 | ug/L | | 11/14/17 13:01 | 11/17/17 02:21 | JMT | EPA 608 |
| Dieldrin | < 1.0 | ug/L | | 11/14/17 13:01 | 11/17/17 02:21 | JMT | EPA 608 |
| Endosulfan I | < 0.50 | ug/L | | 11/14/17 13:01 | 11/17/17 02:21 | JMT | EPA 608 |
| Endosulfan II | < 1.0 | ug/L | | 11/14/17 13:01 | 11/17/17 02:21 | JMT | EPA 608 |
| Endosulfan sulfate | < 1.0 | ug/L | | 11/14/17 13:01 | 11/17/17 02:21 | JMT | EPA 608 |
| Endrin | < 1.0 | ug/L | | 11/14/17 13:01 | 11/17/17 02:21 | JMT | EPA 608 |
| Endrin aldehyde | < 1.0 | ug/L | | 11/14/17 13:01 | 11/17/17 02:21 | JMT | EPA 608 |
| gamma-BHC (Lindane) | < 0.50 | ug/L | | 11/14/17 13:01 | 11/17/17 02:21 | JMT | EPA 608 |
| Heptachlor | < 0.50 | ug/L | | 11/14/17 13:01 | 11/17/17 02:21 | JMT | EPA 608 |
| Heptachlor epoxide | < 0.50 | ug/L | | 11/14/17 13:01 | 11/17/17 02:21 | JMT | EPA 608 |
| Methoxychlor | < 5.0 | ug/L | | 11/14/17 13:01 | 11/17/17 02:21 | JMT | EPA 608 |
| Toxaphene | < 5.0 | ug/L | | 11/14/17 13:01 | 11/17/17 02:21 | JMT | EPA 608 |
| **Semivolatile Organics - PIA** | | | | | | | |
| 1,2,4-Trichlorobenzene | < 5.0 | ug/L | | 11/14/17 12:55 | 11/15/17 20:15 | KAF | EPA 625 |
| 1,2-Diphenylhydrazine | < 5.0 | ug/L | | 11/14/17 12:55 | 11/15/17 20:15 | KAF | EPA 625* |
| 2,3,7,8-TCDD Dioxin | < 5.0 | ug/L | | 11/14/17 12:55 | 11/15/17 20:15 | KAF | EPA 625* |
| 2,4,6-Trichlorophenol | < 5.0 | ug/L | | 11/14/17 12:55 | 11/15/17 20:15 | KAF | EPA 625 |
| 2,4-Dichlorophenol | < 5.0 | ug/L | | 11/14/17 12:55 | 11/15/17 20:15 | KAF | EPA 625 |
| 2,4-Dimethylphenol | < 5.0 | ug/L | | 11/14/17 12:55 | 11/15/17 20:15 | KAF | EPA 625 |
| 2,4-Dinitrophenol | < 5.0 | ug/L | | 11/14/17 12:55 | 11/15/17 20:15 | KAF | EPA 625 |
| 2,4-Dinitrotoluene | < 5.0 | ug/L | | 11/14/17 12:55 | 11/15/17 20:15 | KAF | EPA 625 |
| 2,6-Dinitrotoluene | < 5.0 | ug/L | | 11/14/17 12:55 | 11/15/17 20:15 | KAF | EPA 625 |



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## ANALYTICAL RESULTS

Sample: 7112033-01
Name: JN7570 SN:2818
Matrix: Waste Water - Composite

Sampled: 11/06/17 09:25
Received: 11/10/17 10:00

| Parameter | Result | Unit | Qualifier | Prepared | Analyzed | Analyst | Method |
|---|---|---|---|---|---|---|---|
| 2-Chloronaphthalene | < 5.0 | ug/L | | 11/14/17 12:55 | 11/15/17 20:15 | KAF | EPA 625 |
| 2-Chlorophenol | < 5.0 | ug/L | | 11/14/17 12:55 | 11/15/17 20:15 | KAF | EPA 625 |
| 2-Nitrophenol | < 5.2 | ug/L | | 11/14/17 12:55 | 11/15/17 20:15 | KAF | EPA 625 |
| 3,3'-Dichlorobenzidine | < 12 | ug/L | | 11/14/17 12:55 | 11/15/17 20:15 | KAF | EPA 625* |
| 4,6-Dinitro-2-methylphenol | < 10 | ug/L | | 11/14/17 12:55 | 11/15/17 20:15 | KAF | EPA 625 |
| 4-Bromophenyl-phenylether | < 5.0 | ug/L | | 11/14/17 12:55 | 11/15/17 20:15 | KAF | EPA 625 |
| 4-Chloro-3-methylphenol | < 5.0 | ug/L | | 11/14/17 12:55 | 11/15/17 20:15 | KAF | EPA 625 |
| 4-Chlorophenyl-phenylether | < 5.0 | ug/L | | 11/14/17 12:55 | 11/15/17 20:15 | KAF | EPA 625 |
| 4-Nitrophenol | < 5.1 | ug/L | | 11/14/17 12:55 | 11/15/17 20:15 | KAF | EPA 625 |
| Acenaphthene | < 5.0 | ug/L | | 11/14/17 12:55 | 11/15/17 20:15 | KAF | EPA 625 |
| Acenaphthylene | < 5.0 | ug/L | | 11/14/17 12:55 | 11/15/17 20:15 | KAF | EPA 625 |
| Anthracene | < 5.0 | ug/L | | 11/14/17 12:55 | 11/15/17 20:15 | KAF | EPA 625 |
| Benzidine | < 20 | ug/L | | 11/14/17 12:55 | 11/15/17 20:15 | KAF | EPA 625 |
| Benzo(a)anthracene | < 5.0 | ug/L | | 11/14/17 12:55 | 11/15/17 20:15 | KAF | EPA 625 |
| Benzo(a)pyrene | < 5.0 | ug/L | | 11/14/17 12:55 | 11/15/17 20:15 | KAF | EPA 625 |
| Benzo(b)fluoranthene | < 5.0 | ug/L | | 11/14/17 12:55 | 11/15/17 20:15 | KAF | EPA 625 |
| Benzo(g,h,i)perylene | < 5.0 | ug/L | | 11/14/17 12:55 | 11/15/17 20:15 | KAF | EPA 625 |
| Benzo(k)fluoranthene | < 5.0 | ug/L | | 11/14/17 12:55 | 11/15/17 20:15 | KAF | EPA 625 |
| Bis(2-chloroethoxy)methane | < 5.0 | ug/L | | 11/14/17 12:55 | 11/15/17 20:15 | KAF | EPA 625 |
| Bis(2-chloroethyl)ether | < 5.0 | ug/L | | 11/14/17 12:55 | 11/15/17 20:15 | KAF | EPA 625 |
| Bis(2-chloroisopropyl)ether | < 5.0 | ug/L | | 11/14/17 12:55 | 11/15/17 20:15 | KAF | EPA 625 |
| Bis(2-ethylhexyl)phthalate | < 5.0 | ug/L | | 11/14/17 12:55 | 11/15/17 20:15 | KAF | EPA 625 |
| Butylbenzylphthalate | < 5.0 | ug/L | | 11/14/17 12:55 | 11/15/17 20:15 | KAF | EPA 625 |
| Chrysene | < 5.0 | ug/L | | 11/14/17 12:55 | 11/15/17 20:15 | KAF | EPA 625 |
| Dibenz(a,h)anthracene | < 5.0 | ug/L | | 11/14/17 12:55 | 11/15/17 20:15 | KAF | EPA 625 |
| Diethyl phthalate | < 5.0 | ug/L | | 11/14/17 12:55 | 11/15/17 20:15 | KAF | EPA 625 |
| Dimethyl phthalate | < 5.0 | ug/L | | 11/14/17 12:55 | 11/15/17 20:15 | KAF | EPA 625 |
| Di-n-butyl phthalate | < 5.0 | ug/L | | 11/14/17 12:55 | 11/15/17 20:15 | KAF | EPA 625 |
| Di-n-octyl phthalate | < 5.0 | ug/L | | 11/14/17 12:55 | 11/15/17 20:15 | KAF | EPA 625 |
| Fluoranthene | < 5.0 | ug/L | | 11/14/17 12:55 | 11/15/17 20:15 | KAF | EPA 625 |
| Fluorene | < 5.0 | ug/L | | 11/14/17 12:55 | 11/15/17 20:15 | KAF | EPA 625 |
| Hexachlorobenzene | < 5.0 | ug/L | | 11/14/17 12:55 | 11/15/17 20:15 | KAF | EPA 625 |
| Hexachlorobutadiene | < 5.0 | ug/L | | 11/14/17 12:55 | 11/15/17 20:15 | KAF | EPA 625 |
| Hexachlorocyclopentadiene | < 4.0 | ug/L | | 11/14/17 12:55 | 11/15/17 20:15 | KAF | EPA 625 |
| Hexachloroethane | < 5.0 | ug/L | | 11/14/17 12:55 | 11/15/17 20:15 | KAF | EPA 625 |
| Indeno(1,2,3-cd)pyrene | < 5.0 | ug/L | | 11/14/17 12:55 | 11/15/17 20:15 | KAF | EPA 625 |
| Isophorone | < 5.0 | ug/L | | 11/14/17 12:55 | 11/15/17 20:15 | KAF | EPA 625 |
| Naphthalene | < 5.0 | ug/L | | 11/14/17 12:55 | 11/15/17 20:15 | KAF | EPA 625 |
| Nitrobenzene | < 5.0 | ug/L | | 11/14/17 12:55 | 11/15/17 20:15 | KAF | EPA 625 |
| N-Nitrosodimethylamine | < 5.0 | ug/L | | 11/14/17 12:55 | 11/15/17 20:15 | KAF | EPA 625 |
| N-Nitrosodi-n-propylamine | < 5.0 | ug/L | | 11/14/17 12:55 | 11/15/17 20:15 | KAF | EPA 625 |
| N-Nitrosodiphenylamine | < 5.0 | ug/L | | 11/14/17 12:55 | 11/15/17 20:15 | KAF | EPA 625 |
| Pentachlorophenol | < 10 | ug/L | | 11/14/17 12:55 | 11/15/17 20:15 | KAF | EPA 625 |

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## NOTES

Specific method revisions used for analysis are available upon request.

**Certifications**

CHI - McHenry, IL
TNI Accreditation for Drinking Water, Wastewater, Hazardous and Solid Wastes Fields of Testing through IL EPA Lab No. 100278
Illinois Department of Public Health Bacteriological Analysis in Drinking Water Approved Laboratory Registry No. 17556

PIA - Peoria, IL
TNI Accreditation for Drinking Water, Wastewater, Hazardous and Solid Wastes Fields of Testing through IL EPA Lab No. 100230
Illinois Department of Public Health Bacteriological Analysis in Drinking Water Approved Laboratory Registry No. 17553
Missouri Department of Natural Resources Certificate of Approval for Microbiological Laboratory Service No. 870
Drinking Water Certifications: Iowa (240); Kansas (E-10333); Missouri (870)
Wastewater Certifications: Arkansas (88-0677); Iowa (240); Kansas (E-10336)
Hazardous/Solid Waste Certifications: Arkansas (88-0677); Iowa (240); Kansas (E-10335)

SPIL - Springfield, IL
NELAP/ELAC accreditation through the Illinois EPA, Lab No. 100323

SPMO - Springfield, MO
USEPA DWR-QA Program

STL - St. Louis, MO
TNI Accreditation for Wastewater, Hazardous and Solid Wastes Fields of Testing through KS Lab No. E-10389
Illinois Department of Public Health Bacteriological Analysis in Drinking Water Approved Laboratory Registry No. 171050
Drinking Water Certifications: Missouri (1060)
Missouri Department of Natural Resources

* Not a TNI accredited analyte

**Qualifiers**

HS Headspace present
Pc Chemical preservation discrepancy noted at the time of analysis

Certified by: Kurt Stepping, Senior Project Manager



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**ENGINEERING SURVEYS AND SERVICES TESTING LABORATORIES**
1113 Fay Street * Columbia, Missouri 65201 * (573) 449-2646
802 Dr Dunda Drive * Jefferson City, Missouri 65101 * (573) 636 3670
1775 West Main Street * Sedalia, Missouri 65301 * (660) 826-8618

Date: 20 September 2018
Lab Number: L7570

Project: City of Jefferson
Location: Jefferson City, Missouri
Date Received: 28 August 2018

Sample No. / Description: 8540 / Annual Expanded Effluent (PP), Composite, 8/28/18, 8:30am

**TEST RESULTS:**

| Parameter: | 8540 | Units | Method |
|---|---|---|---|
| Iron | 0.09 | mg/l | 6020A |
| Digestion | Yes | | |
| Total Phenolic Compounds | ** | mg/l | 5520 B, D |
| Pesticides & PCB | ** | ug/l | EPA 8081 |
| Semivolatile Organics | ** | ug/l | EPA 8270 |

Sample secured and delivered to laboratory by others
**See attached report from PDC Laboratories

Method number from "Standard Methods for the Examination of Water & Wastewater", current edition, unless noted otherwise

cc: Community Development
email: Jenny

*Engineering Surveys & Services*
BY: Derek J. Brester

41439

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**ENGINEERING SURVEYS AND SERVICES TESTING LABORATORIES**
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802 Dr Dunda Drive * Jefferson City, Missouri 65101 * (573) 636 3670
1775 West Main Street * Sedalia, Missouri 65301 * (660) 826-8618

Date: 20 September 2018
Lab Number: L7570

Project: City of Jefferson
Location: Jefferson City, Missouri
Date Received: 28 August 2018

Sample No. / Description: 8541 / Annual Expanded Effluent (PP), Grab, 8/28/18, 8:40am

**TEST RESULTS:**

| Parameter: | 8541 | Units | Detection | Method |
|---|---|---|---|---|
| Acidity | -294 | mg CaCO3/l | | 2310 B |
| Alkalinity | 314 | mg CaCO3/l | | 2320 B |
| Chlorine, Residual | 0.08 | mg/l | | 4500-Cl G |
| Conductivity | 1,270 | umhos/cm | | 2510 B |
| Sulfide | <0.4 | mg/l | | 9034 |
| Sulfite | <0.6 | mg/l | | 4500-SO3-B |
| Phosphate, Ortho | 3.37 | mg/l | | 4500-P E |
| Nitrite Nitrogen | 0.026 | mg/l | | 4500-NO2-B |
| Chromium, Hexavalent | <0.01* | mg/l | | 3500 Cr D |
| Grease & Oil | < 1.0 | mg/l | | EPA 1664 |
| Cyanide | <0.005 | mg/l | | 4500CNCE |
| Ammonia | 0.8 | mg/l | | 4500-NH3 C |
| Carbon (TOC) | ** | mg/l | | 9060 |
| Volatile Organic Compound | ** | ug/l | | EPA 8260 |
| Surfactants (MBAS) | ** | mg/l | | 5540 C |

Sample secured and delivered to laboratory by others
**See attached report from PDC Laboratories
*Higher detection limit due to sample interference

Method number from "Standard Methods for the Examination of Water & Wastewater", current edition, unless noted otherwise.

cc: Community Development
email: Jenny

*Engineering Surveys & Services*
BY: Derek J. Brester

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(800) 752-6651

## ANALYTICAL RESULTS

Sample: 8085480-03
Name: JN#7570 SN#8540
Alias: INFLUENT COMPOSITE
Sampled: 08/28/18 00:00
Received: 08/29/18 09:10
Matrix: Waste Water - Composite

| Parameter | Result | Unit | Qualifier | Prepared | Analyzed | Analyst | Method |
|---|---|---|---|---|---|---|---|
| **General Chemistry - PIA** | | | | | | | |
| Phenolics | 0.043 | mg/L | | 09/01/18 12:09 | 09/01/18 12:09 | ALS | EPA 420.4 |
| **Total Metals - PIA** | | | | | | | |
| Mercury | < 0.00030 | mg/L | | 09/06/18 12:42 | 09/06/18 14:21 | TAT | EPA 245.1 |

Sample: 8085480-04
Name: JN#7570 SN#8540
Alias: INFLUENT GRAB
Sampled: 08/28/18 08:55
Received: 08/29/18 09:10
Matrix: Waste Water - Grab

| Parameter | Result | Unit | Qualifier | Prepared | Analyzed | Analyst | Method |
|---|---|---|---|---|---|---|---|
| **General Chemistry - PIA** | | | | | | | |
| Surfactants - MBAS | 0.57 | mg/L | | 09/29/18 14:29 | 09/29/18 14:29 | SAH | SM 5540C |
| **Volatile Organics - PIA** | | | | | | | |
| Benzene | < 5.0 | ug/L | | 09/31/18 09:24 | 09/31/18 17:43 | MAB | EPA 624 |
| Ethylbenzene | < 5.0 | ug/L | | 09/31/18 09:24 | 09/31/18 17:43 | MAB | EPA 624 |
| m,p-Xylene | < 5.0 | ug/L | | 09/31/18 09:24 | 09/31/18 17:43 | MAB | EPA 624 |
| o-Xylene | < 5.0 | ug/L | | 09/31/18 09:24 | 09/31/18 17:43 | MAB | EPA 624 |
| Toluene | < 5.0 | ug/L | | 09/31/18 09:24 | 09/31/18 17:43 | MAB | EPA 624 |
| Xylenes, Total | < 15 | ug/L | | 09/31/18 09:24 | 09/31/18 17:43 | MAB | EPA 624 |

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802 El Dorado Drive * Jefferson City, Missouri 65101 * (573) 636-3303
1175 West Main Street * Sedalia, Missouri 65301 * (660) 826-8618

Date: 20 September 2018
Lab Number: L7570

**Project:** City of Jefferson

**Location:** Jefferson City, Missouri

**Date Received:** 28 August 2018

**Sample No. / Description :** 8540 / Annual Expanded Effluent (PP), Composite, 8/28/18, 8:30am

**TEST RESULTS:**

| Parameter: | 8540 | Units | Detection | Method |
|---|---|---|---|---|
| Biochemical Oxygen Demand | 24 | mg/l | | 5210 B |
| Total Suspended Solids | 48 | mg/l | | 2540D |
| Chemical Oxygen Demand | 49.8 | mg/l | | 5220B |
| Chloride | 191 | mg/l | | 4500Cl C |
| Sulfate | 22.4 | mg/l | | 9038 |
| Fluoride | 0.76 | mg/l | | 9214 |
| Kjeldahl Nitrogen | 5.6 | mg/l | | 4500N org |
| Nitrate Nitrogen | 0.12 | mg/l | | SM18-4110D |
| Total Nitrogen | 5.7 | mg/l | | |
| Organic Nitrogen | 5.0 | mg/l | | 4500Norg C |
| Phosphorous, Total | 5.01 | mg/l | | 4500-P B,E |
| Total Hardness | 275 | mg eq. CaCO3/l | | 2340 B |
| Calcium | 64.7 | mg/l | | 6020A |
| Magnesium | 27.5 | mg/l | | 6020A |
| Sodium | 164 | mg/l | | 6020A |
| Antimony | <0.005 | | | 200.8 |

Sample secured and delivered to laboratory by others
**See attached report from PDC Laboratories

Method number from "Standard Methods for the Examination of Water & Wastewater", current edition, unless noted otherwise.

cc: Community Development

email: Jerry

*Engineering Surveys & Services*

BY: D.J. Brester

41497

Derek J. Brester

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**ENGINEERING SURVEYS AND SERVICES**
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1175 West Main Street * Sedalia, Missouri 65301 * (660) 826-8618

Date: 20 September 2018
Lab Number: L7570

**Project:** City of Jefferson

**Location:** Jefferson City, Missouri

**Date Received:** 28 August 2018

**Sample No. / Description :** 8540 / Annual Expanded Effluent (PP), Composite, 8/28/18, 8:30am

**TEST RESULTS:**

| Parameter: | 8540 | Units | Method |
|---|---|---|---|
| Arsenic | <0.005 | mg/l | 200.8 |
| Barium | <0.100 | mg/l | 200.8 |
| Beryllium | <0.004 | mg/l | 200.8 |
| Cadmium | <0.005 | mg/l | 200.8 |
| Chromium | <0.010 | mg/l | 200.8 |
| Chromium, Trivalent | <0.010 | mg/l | 3500 Cr |
| Copper | <0.005 | mg/l | 200.8 |
| Lead | <0.005 | mg/l | 200.8 |
| Mercury | ** | mg/l | |
| Molybdenum | 0.019 | mg/l | 200.8 |
| Nickel | <0.01 | mg/l | 200.8 |
| Selenium | <0.005 | mg/l | 200.8 |
| Silver | <0.005 | mg/l | 200.8 |
| Thallium | <0.002 | mg/l | 200.8 |
| Zinc | 0.005 | mg/l | 200.8 |
| Aluminum | <0.200 | mg/l | 200.8 |

Sample secured and delivered to laboratory by others
**See attached report from PDC Laboratories

Method number from "Standard Methods for the Examination of Water & Wastewater", current edition, unless noted otherwise.

cc: Community Development

email: Jerry

*Engineering Surveys & Services*

BY: D.J. Brester

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Derek J. Brester

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PDC

# SAMPLE CHAIN OF CUSTODY RECORD

ENGINEERING SURVEYS & SERVICES
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802 El Dorado Drive * Jefferson City, Missouri 65101 * (573) 636-3303
1175 W. Main Street * Sedalia, Missouri 65301 * (660) 826-8618

JN85450-4

| Sample ID | Date/Time Collected | Tests Requested | Sample Container | Preserv. | Comments |
|---|---|---|---|---|---|
| SN 8540 Expanded Effluent Comp | 28Aug18 | Total Phenols<br>Semivolatile Organics - 625<br>Pesticides + PCBs - 608<br>Mercury - 245.1 | 500m<br>2-1000m<br>250p | $H_2SO_4$<br>None<br>$HNO_3$ | JN7570 |
| SN 8541 Expanded Effluent Grab | 28Aug18 0840 | TOC (Total Organic Carbon)<br>Volatile Organics - 624 extended include 2-CEVE | 2 vials<br>2 vials<br>2 vials | $H_2SO_4$<br>HCl<br>None | |
| | | Surfactants (MBAS) | 1000p | None | |
| SN 8542 Influent Composite | 28Aug18 | Total Phenols<br>Mercury - 245.1 | 500m<br>250p | $H_2SO_4$<br>$HNO_3$ | |
| SN 8543 Influent Grab | 28Aug18 0855 | BTEX<br>Surfactants | 2 vials<br>1000p | HCl<br>None | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

Sample Collected By _____ Company/Organization Engineering Surveys + ~~Columbia Air~~ Services

Date/Time _____ Address Columbia, MO

| Samples Relinquished By/Phone | Samples Received By | Date/Time |
|---|---|---|
| D.J. Brester | | 28Aug18 1:15pm |
| | | |
| | | |
| | | 8/29/18 8.6°C |

COLLA 63

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Peoria, IL 61615
(800) 752-6651

## ANALYTICAL RESULTS

Sample: 8086490-02
Name: JN#7570 SN#8541
Alias: EXPANDED EFFLUENT GRAB

Sampled: 08/28/18 08:40
Received: 08/29/18 09:10
Matrix: Waste Water - Grab

| Parameter | Result | Unit | Qualifier | Prepared | Analyzed | Analyst | Method |
|---|---|---|---|---|---|---|---|
| **General Chemistry - PIA** | | | | | | | |
| Surfactants - MBAS | < 0.20 | mg/L | | 08/30/18 14:29 | 08/30/18 14:29 | SAH | SM 5540C |
| Total Organic Carbon (TOC) | 12 | mg/L | | 09/01/18 23:56 | 09/01/18 23:56 | SAH | SM 5310C |
| **Volatile Organics - PIA** | | | | | | | |
| 1,1,1-Trichloroethane | < 5.0 | ug/L | | 09/05/18 09:05 | 09/05/18 20:48 | MAB | EPA 624 |
| 1,1,2,2-Tetrachloroethane | < 5.0 | ug/L | | 09/05/18 09:05 | 09/05/18 20:48 | MAB | EPA 624 |
| 1,1,2-Trichloroethane | < 5.0 | ug/L | | 09/05/18 09:05 | 09/05/18 20:48 | MAB | EPA 624 |
| 1,1-Dichloroethane | < 5.0 | ug/L | | 09/05/18 09:05 | 09/05/18 20:48 | MAB | EPA 624 |
| 1,1-Dichloroethene | < 5.0 | ug/L | | 09/05/18 09:05 | 09/05/18 20:48 | MAB | EPA 624 |
| 1,2-Dichlorobenzene | < 5.0 | ug/L | | 09/05/18 09:05 | 09/05/18 20:48 | MAB | EPA 624 |
| 1,2-Dichloroethane | < 5.0 | ug/L | | 09/05/18 09:05 | 09/05/18 20:48 | MAB | EPA 624 |
| 1,2-Dichloropropane | < 5.0 | ug/L | | 09/05/18 09:05 | 09/05/18 20:48 | MAB | EPA 624 |
| 1,3-Dichlorobenzene | < 5.0 | ug/L | | 09/05/18 09:05 | 09/05/18 20:48 | MAB | EPA 624 |
| 1,3-Dichloropropene - Total | < 15 | ug/L | | 09/05/18 09:05 | 09/05/18 20:48 | MAB | EPA 624* |
| 1,4-Dichlorobenzene | < 5.0 | ug/L | | 09/05/18 09:05 | 09/05/18 20:48 | MAB | EPA 624 |
| 2-Chloroethylvinylether | < 5.0 | ug/L | HS, Pc | 09/04/18 08:38 | 09/04/18 12:14 | MAB | EPA 624 |
| Acrolein | < 50 | ug/L | | 09/05/18 09:05 | 09/05/18 20:48 | MAB | EPA 624 |
| Acrylonitrile | < 50 | ug/L | | 09/05/18 09:05 | 09/05/18 20:48 | MAB | EPA 624 |
| Benzene | < 5.0 | ug/L | | 09/05/18 09:05 | 09/05/18 20:48 | MAB | EPA 624 |
| Bromodichloromethane | < 5.0 | ug/L | | 09/05/18 09:05 | 09/05/18 20:48 | MAB | EPA 624 |
| Bromoform | < 5.0 | ug/L | | 09/05/18 09:05 | 09/05/18 20:48 | MAB | EPA 624 |
| Bromomethane | < 10 | ug/L | | 09/05/18 09:05 | 09/05/18 20:48 | MAB | EPA 624 |
| Carbon tetrachloride | < 5.0 | ug/L | | 09/05/18 09:05 | 09/05/18 20:48 | MAB | EPA 624 |
| Chlorobenzene | < 5.0 | ug/L | | 09/05/18 09:05 | 09/05/18 20:48 | MAB | EPA 624 |
| Chloroethane | < 10 | ug/L | | 09/05/18 09:05 | 09/05/18 20:48 | MAB | EPA 624 |
| Chloroform | < 5.0 | ug/L | | 09/05/18 09:05 | 09/05/18 20:48 | MAB | EPA 624 |
| Chloromethane | < 10 | ug/L | | 09/05/18 09:05 | 09/05/18 20:48 | MAB | EPA 624 |
| cis-1,2-Dichloroethene | < 5.0 | ug/L | | 09/05/18 09:05 | 09/05/18 20:48 | MAB | EPA 624* |
| Dibromochloromethane | < 5.0 | ug/L | | 09/05/18 09:05 | 09/05/18 20:48 | MAB | EPA 624 |
| Ethylbenzene | < 5.0 | ug/L | | 09/05/18 09:05 | 09/05/18 20:48 | MAB | EPA 624 |
| Methylene chloride | < 5.0 | ug/L | | 09/05/18 09:05 | 09/05/18 20:48 | MAB | EPA 624 |
| Tetrachloroethene | < 5.0 | ug/L | | 09/05/18 09:05 | 09/05/18 20:48 | MAB | EPA 624 |
| Toluene | < 5.0 | ug/L | | 09/05/18 09:05 | 09/05/18 20:48 | MAB | EPA 624 |
| trans-1,2 Dichloroethene | < 20 | ug/L | | 09/05/18 09:05 | 09/05/18 20:48 | MAB | EPA 624 |
| Trichloroethene | < 5.0 | ug/L | | 09/05/18 09:05 | 09/05/18 20:48 | MAB | EPA 624 |
| Vinyl chloride | < 5.0 | ug/L | | 09/05/18 09:05 | 09/05/18 20:48 | MAB | EPA 624 |

Customer #: 275332 www.pdclab.com 

ENGINEERING SURVEYS AND SERVICES
TESTING LABORATORIES
1113 Fay Street * Columbia, Missouri 65201 * (573) 449-2646
802 El Dorado Drive * Jefferson City, Missouri 65101 * (573) 636-3303
1775 West Main Street * Sedalia, Missouri 65301 * (660) 826-6518

Date: 20 September 2018
Lab Number: L7570

Project: City of Jefferson

Location: Jefferson City, Missouri

Date Received: 28 August 2018

Sample No. / Description: 8542 / Semiannual Influent Composite, 8/28/18, 8:60am

TEST RESULTS:

| Parameter: | 8542 | Units | Detection | Method |
|---|---|---|---|---|
| Kjeldahl Nitrogen | 50.4 | mg/l | | 4500N org |
| Nitrate Nitrogen | 0.30 | mg/l | | EM16-41ED |
| Total Nitrogen | 50.7 | mg/l | | |
| Phosphorous, Total | 11.6 | mg/l | | 4500-P B,E |
| Arsenic | <0.005 | mg/l | | 200.8 |
| Cadmium | <0.005 | mg/l | | 200.8 |
| Chromium | 0.013 | mg/l | | 200.8 |
| Copper | 0.110 | mg/l | | 200.8 |
| Lead | 0.011 | mg/l | | 200.8 |
| Mercury | ** | mg/l | | |
| Molybdenum | 0.022 | mg/l | | 200.8 |
| Iron | 3.42 | mg/l | | 6020A |
| Manganese | 0.168 | mg/l | | 200.8 |
| Nickel | 0.01 | mg/l | | 200.8 |
| Silver | <0.005 | mg/l | | 200.8 |
| Zinc | 0.380 | | | 200.8 |

Sample secured and delivered to laboratory by others
**See attached report from PDC Laboratories

Method number from "Standard Methods for the Examination of Water & Wastewater", current edition, unless noted otherwise.

cc: Community Development
email: Jenny

*Engineering Surveys & Services*

BY: Derek J. Brester

41501

ENGINEERING SURVEYS AND SERVICES
TESTING LABORATORIES
1113 Fay Street * Columbia, Missouri 65201 * (573) 449-2646
802 El Dorado Drive * Jefferson City, Missouri 65101 * (573) 636-3303
1775 West Main Street * Sedalia, Missouri 65301 * (660) 826-6518

Date: 20 September 2018
Lab Number: L7570

Project: City of Jefferson

Location: Jefferson City, Missouri

Date Received: 28 August 2018

Sample No. / Description: 8542 / Semiannual Influent Composite, 8/28/18, 8:60am

TEST RESULTS:

| Parameter: | 8542 | Units | Method |
|---|---|---|---|
| Digestion | Yes | | |
| Total Phenolic Compounds | ** | mg/l | 5530 B, D |

Sample secured and delivered to laboratory by others
**See attached report from PDC Laboratories

Method number from "Standard Methods for the Examination of Water & Wastewater", current edition, unless noted otherwise.

cc: Community Development
email: Jenny

*Engineering Surveys & Services*

BY: Derek J. Brester

41502

PDC Laboratories, Inc.
2231 West Altorfer Drive
Peoria, IL 61615
(800) 752-6651

## ANALYTICAL RESULTS

Sample: 8086490-01
Name: JN#7570 SN#8540
Alias: EXPANDED EFFLUENT COMP

Sampled: 08/28/18 00:00
Received: 08/29/18 09:10
Matrix: Waste Water - Composite

| Parameter | Result | Unit | Qualifier | Prepared | Analyzed | Analyst | Method |
|---|---|---|---|---|---|---|---|
| Phenol | < 4.2 | ug/L | | 09/01/18 08:49 | 09/04/18 22:09 | KAF | EPA 625 |
| Pyrene | < 0.74 | ug/L | | 09/01/18 08:49 | 09/04/18 22:09 | KAF | EPA 625 |
| **Total Metals - PIA** | | | | | | | |
| Mercury | < 0.00020 | mg/L | | 09/06/18 12:42 | 09/06/18 14:19 | TAT | EPA 245.1 |

Customer #: 275332 www.pdclab.com 

PDC Laboratories, Inc.
2231 West Altorfer Drive
Peoria, IL 61615
(800) 752-6651

## ANALYTICAL RESULTS

**Sample:** 8085490-01 **Sampled:** 08/28/18 00:00
**Name:** JN#7570 SN#8540 **Received:** 08/29/18 09:10
**Alias:** EXPANDED EFFLUENT COMP **Matrix:** Waste Water - Composite

| Parameter | Result | Unit | Qualifier | Prepared | Analyzed | Analyst | Method |
|---|---|---|---|---|---|---|---|
| 2-Chlorophenol | < 7.2 | ug/L | | 08/31/18 08:49 | 09/04/18 22:09 | KAF | EPA 625 |
| 2-Nitrophenol | < 8.7 | ug/L | | 08/31/18 08:49 | 09/04/18 22:09 | KAF | EPA 625 |
| 3,3'-Dichlorobenzidine | < 12 | ug/L | | 08/31/18 08:49 | 09/04/18 22:09 | KAF | EPA 625* |
| 4,6-Dinitro-2-methylphenol | < 5.0 | ug/L | | 08/31/18 08:49 | 09/04/18 22:09 | KAF | EPA 625 |
| 4-Bromophenyl phenyl ether | < 1.2 | ug/L | | 08/31/18 08:49 | 09/04/18 22:09 | KAF | EPA 625 |
| 4-Chloro-3-methylphenol | < 7.0 | ug/L | | 08/31/18 08:49 | 09/04/18 22:09 | KAF | EPA 625 |
| 4-Chlorophenyl phenyl ether | < 1.3 | ug/L | | 08/31/18 08:49 | 09/04/18 22:09 | KAF | EPA 625 |
| 4-Nitrophenol | < 6.1 | ug/L | | 08/31/18 08:49 | 09/04/18 22:09 | KAF | EPA 625 |
| Acenaphthene | < 2.1 | ug/L | | 08/31/18 08:49 | 09/04/18 22:09 | KAF | EPA 625 |
| Acenaphthylene | < 1.8 | ug/L | | 08/31/18 08:49 | 09/04/18 22:09 | KAF | EPA 625 |
| Anthracene | < 1.5 | ug/L | | 08/31/18 08:49 | 09/04/18 22:09 | KAF | EPA 625 |
| Benzidine | < 40 | ug/L | | 08/31/18 08:49 | 09/04/18 22:09 | KAF | EPA 625 |
| Benzo(a)anthracene | < 1.8 | ug/L | | 08/31/18 08:49 | 09/04/18 22:09 | KAF | EPA 625 |
| Benzo(a)pyrene | < 2.1 | ug/L | | 08/31/18 08:49 | 09/04/18 22:09 | KAF | EPA 625 |
| Benzo(b)fluoranthene | < 2.6 | ug/L | | 08/31/18 08:49 | 09/04/18 22:09 | KAF | EPA 625 |
| Benzo(g,h,i)perylene | < 3.4 | ug/L | | 08/31/18 08:49 | 09/04/18 22:09 | KAF | EPA 625 |
| Benzo(k)fluoranthene | < 1.9 | ug/L | | 08/31/18 08:49 | 09/04/18 22:09 | KAF | EPA 625 |
| Bis(2-chloroethoxy) methane | < 2.4 | ug/L | | 08/31/18 08:49 | 09/04/18 22:09 | KAF | EPA 625 |
| Bis(2-chloroethyl) ether | < 2.1 | ug/L | | 08/31/18 08:49 | 09/04/18 22:09 | KAF | EPA 625 |
| Bis(2-chloroisopropyl) ether | < 1.9 | ug/L | | 08/31/18 08:49 | 09/04/18 22:09 | KAF | EPA 625 |
| Bis(2-ethylhexyl) phthalate | < 4.4 | ug/L | | 08/31/18 08:49 | 09/04/18 22:09 | KAF | EPA 625 |
| Butyl benzyl phthalate | < 1.5 | ug/L | | 08/31/18 08:49 | 09/04/18 22:09 | KAF | EPA 625 |
| Chrysene | < 1.3 | ug/L | | 08/31/18 08:49 | 09/04/18 22:09 | KAF | EPA 625 |
| Dibenzo(a,h)anthracene | < 0.93 | ug/L | | 08/31/18 08:49 | 09/04/18 22:09 | KAF | EPA 625 |
| Diethyl phthalate | < 2.0 | ug/L | | 08/31/18 08:49 | 09/04/18 22:09 | KAF | EPA 625 |
| Dimethyl phthalate | < 1.8 | ug/L | | 08/31/18 08:49 | 09/04/18 22:09 | KAF | EPA 625 |
| Di-n-butyl phthalate | < 2.1 | ug/L | | 08/31/18 08:49 | 09/04/18 22:09 | KAF | EPA 625 |
| Di-n-octyl phthalate | < 2.1 | ug/L | | 08/31/18 08:49 | 09/04/18 22:09 | KAF | EPA 625 |
| Fluoranthene | < 2.2 | ug/L | | 08/31/18 08:49 | 09/04/18 22:09 | KAF | EPA 625 |
| Fluorene | < 1.8 | ug/L | | 08/31/18 08:49 | 09/04/18 22:09 | KAF | EPA 625 |
| Hexachlorobenzene | < 1.4 | ug/L | | 08/31/18 08:49 | 09/04/18 22:09 | KAF | EPA 625 |
| Hexachlorobutadiene | < 1.8 | ug/L | | 08/31/18 08:49 | 09/04/18 22:09 | KAF | EPA 625 |
| Hexachlorocyclopentadiene | < 6.1 | ug/L | | 08/31/18 08:49 | 09/04/18 22:09 | KAF | EPA 625 |
| Hexachloroethane | < 2.1 | ug/L | | 08/31/18 08:49 | 09/04/18 22:09 | KAF | EPA 625 |
| Indeno(1,2,3-cd)pyrene | < 1.6 | ug/L | | 08/31/18 08:49 | 09/04/18 22:09 | KAF | EPA 625 |
| Isophorone | < 1.8 | ug/L | | 08/31/18 08:49 | 09/04/18 22:09 | KAF | EPA 625 |
| Naphthalene | < 1.9 | ug/L | | 08/31/18 08:49 | 09/04/18 22:09 | KAF | EPA 625 |
| Nitrobenzene | < 2.7 | ug/L | | 08/31/18 08:49 | 09/04/18 22:09 | KAF | EPA 625 |
| N-Nitrosodimethylamine | < 0.96 | ug/L | | 08/31/18 08:49 | 09/04/18 22:09 | KAF | EPA 625 |
| N-Nitrosodi-n-propylamine | < 2.4 | ug/L | | 08/31/18 08:49 | 09/04/18 22:09 | KAF | EPA 625 |
| N-Nitrosodiphenylamine | < 1.8 | ug/L | | 08/31/18 08:49 | 09/04/18 22:09 | KAF | EPA 625 |
| Pentachlorophenol | < 5.0 | ug/L | | 08/31/18 08:49 | 09/04/18 22:09 | KAF | EPA 625 |
| Phenanthrene | < 2.1 | ug/L | | 08/31/18 08:49 | 09/04/18 22:09 | KAF | EPA 625 |



**ENGINEERING SURVEYS AND SERVICES**
**TESTING LABORATORIES**
1113 Fay Street * Columbia, Missouri 65201 * (573) 449-2646
802 El Dorado Drive * Jefferson City, Missouri 65101 * (573) 636-3303
1775 West Main Street * Sedalia, Missouri 65301 * (660) 826-8618

**Date:** 20 September 2018
**Lab Number:** L7570

**Project:** City of Jefferson

**Location:** Jefferson City, Missouri **Date Received:** 28 August 2018

**Sample No. / Description :** 8543 / Semiannual Influent Grab, 8/28/18, 8.55am

### TEST RESULTS:

| Parameter: | 8543 | Units | Detection | Method |
|---|---|---|---|---|
| Ammonia | 12.9 | mg/l | | 4500NH3B C |
| Nitrite Nitrogen | <0.005 | mg/l | | 4500-NO2-B |
| Grease & Oil | 42.9 | mg/l | | EPA1664 |
| Cyanide | <0.005 | mg/l | | 4500CNCE |
| Surfactants (MBAS) | ** | mg/l | | 5540 C |
| BTEX | ** | ug/l | | |

Sample secured and delivered to laboratory by others
**See attached report from PDC Laboratories

Method number from "Standard Methods for the Examination of Water & Wastewater", current edition, unless noted otherwise.

cc: Community Development

email Jerry

41503

*Engineering Surveys & Services*

BY: [signature]

**Derek J. Brester**

# PDC Laboratories, Inc.

PROFESSIONAL • DEPENDABLE • COMMITTED

September 17, 2018

Derek Brester
Engineering Surveys & Services
1113 Fay Street
Columbia, MO 65201

Dear Derek Brester:

Please find enclosed the analytical results for the sample(s) the laboratory received on 8/29/18 9:10 am and logged in under work order 8085490. All testing is performed according to our current TNI certifications unless otherwise noted. This report cannot be reproduced, except in full, without the written permission of PDC Laboratories, Inc.

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

PDC Laboratories, Inc. appreciates the opportunity to provide you with analytical expertise. We are always trying to improve our customer service and we welcome you to contact the Vice President, John LaPayne with any feedback you have about your experience with our laboratory.

Sincerely,

[signature]

Kurt Stepping
Senior Project Manager
(309) 692-9688 x1719
kstepping@pdclab.com

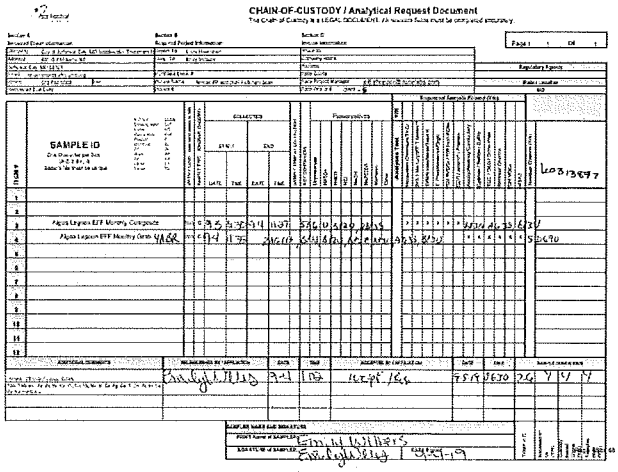


PDC Laboratories, Inc.
2231 West Altorfer Drive
Peoria, IL 61615
(800) 752-6651

## ANALYTICAL RESULTS

**Sample:** 8085490-01 **Sampled:** 08/28/18 00:00
**Name:** JN#7570 SN#8540 **Received:** 08/29/18 09:10
**Alias:** EXPANDED EFFLUENT COMP **Matrix:** Waste Water - Composite

| Parameter | Result | Unit | Qualifier | Prepared | Analyzed | Analyst | Method |
|---|---|---|---|---|---|---|---|
| **General Chemistry - PIA** | | | | | | | |
| Phenolics | < 0.0050 | mg/L | | 08/31/18 12:09 | 08/31/18 17:09 | ALS | EPA 420.4 |
| **Pesticides - PIA** | | | | | | | |
| 4,4'-DDD | < 1.0 | ug/L | | 08/30/18 13:58 | 09/10/18 19:35 | ELS | EPA 608 |
| 4,4'-DDE | < 1.0 | ug/L | | 08/30/18 13:58 | 09/10/18 19:35 | ELS | EPA 608 |
| 4,4'-DDT | < 1.0 | ug/L | | 08/30/18 13:58 | 09/10/18 19:35 | ELS | EPA 608 |
| Aldrin | < 0.50 | ug/L | | 08/30/18 13:58 | 09/10/18 19:35 | ELS | EPA 608 |
| Alpha BHC | < 0.50 | ug/L | | 08/30/18 13:58 | 09/10/18 19:35 | ELS | EPA 608 |
| Aroclor 1016 | < 5.0 | ug/L | | 08/30/18 13:58 | 09/10/18 19:35 | ELS | EPA 608 |
| Aroclor 1221 | < 10 | ug/L | | 08/30/18 13:58 | 09/10/18 19:35 | ELS | EPA 608 |
| Aroclor 1232 | < 5.0 | ug/L | | 08/30/18 13:58 | 09/10/18 19:35 | ELS | EPA 608 |
| Aroclor 1242 | < 5.0 | ug/L | | 08/30/18 13:58 | 09/10/18 19:35 | ELS | EPA 608 |
| Aroclor 1248 | < 5.0 | ug/L | | 08/30/18 13:58 | 09/10/18 19:35 | ELS | EPA 608 |
| Aroclor 1254 | < 10 | ug/L | | 08/30/18 13:58 | 09/10/18 19:35 | ELS | EPA 608 |
| Aroclor 1260 | < 10 | ug/L | | 08/30/18 13:58 | 09/10/18 19:35 | ELS | EPA 608 |
| Aroclors - Total | < 50 | ug/L | | 08/30/18 13:58 | 09/10/18 19:35 | ELS | EPA 608 |
| Beta-BHC | < 0.50 | ug/L | | 08/30/18 13:58 | 09/10/18 19:35 | ELS | EPA 608 |
| Chlordane (technical) | < 5.0 | ug/L | | 08/30/18 13:58 | 09/10/18 19:35 | ELS | EPA 608 |
| Delta-BHC | < 0.50 | ug/L | | 08/30/18 13:58 | 09/10/18 19:35 | ELS | EPA 608 |
| Dieldrin | < 1.0 | ug/L | | 08/30/18 13:58 | 09/10/18 19:35 | ELS | EPA 608 |
| Endosulfan I | < 0.50 | ug/L | | 08/30/18 13:58 | 09/10/18 19:35 | ELS | EPA 608 |
| Endosulfan II | < 1.0 | ug/L | | 08/30/18 13:58 | 09/10/18 19:35 | ELS | EPA 608 |
| Endosulfan sulfate | < 1.0 | ug/L | | 08/30/18 13:58 | 09/10/18 19:35 | ELS | EPA 608 |
| Endrin | < 1.0 | ug/L | | 08/30/18 13:58 | 09/10/18 19:35 | ELS | EPA 608 |
| Endrin aldehyde | < 1.0 | ug/L | | 08/30/18 13:58 | 09/10/18 19:35 | ELS | EPA 608 |
| gamma-BHC (Lindane) | < 0.50 | ug/L | | 08/30/18 13:58 | 09/10/18 19:35 | ELS | EPA 608 |
| Heptachlor | < 0.50 | ug/L | | 08/30/18 13:58 | 09/10/18 19:35 | ELS | EPA 608 |
| Heptachlor epoxide | < 0.50 | ug/L | | 08/30/18 13:58 | 09/10/18 19:35 | ELS | EPA 608 |
| Methoxychlor | < 5.0 | ug/L | | 08/30/18 13:58 | 09/10/18 19:35 | ELS | EPA 608 |
| Toxaphene | < 5.0 | ug/L | | 08/30/18 13:58 | 09/10/18 19:35 | ELS | EPA 608 |
| **Semivolatile Organics - PIA** | | | | | | | |
| 1,2,4-Trichlorobenzene | < 1.2 | ug/L | | 08/31/18 08:49 | 09/04/18 22:09 | KAF | EPA 625 |
| 1,2-Diphenylhydrazine | < 2.3 | ug/L | | 08/31/18 08:49 | 09/04/18 22:09 | KAF | EPA 625* |
| 2,3,7,8-TCDD Screen | < 50 | ug/L | | 08/31/18 08:49 | 09/04/18 22:09 | KAF | EPA 625* |
| 2,4,6-Trichlorophenol | < 4.0 | ug/L | | 08/31/18 08:49 | 09/04/18 22:09 | KAF | EPA 625 |
| 2,4-Dichlorophenol | < 6.8 | ug/L | | 08/31/18 08:49 | 09/04/18 22:09 | KAF | EPA 625 |
| 2,4-Dimethylphenol | < 5.0 | ug/L | | 08/31/18 08:49 | 09/04/18 22:09 | KAF | EPA 625 |
| 2,4-Dinitrophenol | < 5.0 | ug/L | | 08/31/18 08:49 | 09/04/18 22:09 | KAF | EPA 625 |
| 2,4-Dinitrotoluene | < 1.8 | ug/L | | 08/31/18 08:49 | 09/04/18 22:09 | KAF | EPA 625 |
| 2,6-Dinitrotoluene | < 2.3 | ug/L | | 08/31/18 08:49 | 09/04/18 22:09 | KAF | EPA 625 |
| 2-Chloronaphthalene | < 1.3 | ug/L | | 08/31/18 08:49 | 09/04/18 22:09 | KAF | EPA 625 |



CHAIN-OF-CUSTODY / Analytical Request Document

| Item # | SAMPLE ID | Collected Date | Collected Time | Grab | Composite | Preservatives | Requested Analysis | Lab ID |
|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | 60313897 |
| 2 | | | | | | | | |
| 3 | Alpha Lagoon EFF Monthly Composite | 9-5-19 | 11:37 | | | | | |
| 4 | Alpha Lagoon EFF Monthly Comp YABR | 9-5-19 | 11:35 | | | | | 0690 |
| 5 | | | | | | | | |
| 6 | | | | | | | | |
| 7 | | | | | | | | |
| 8 | | | | | | | | |
| 9 | | | | | | | | |
| 10 | | | | | | | | |
| 11 | | | | | | | | |
| 12 | | | | | | | | |

Relinquished by / Affiliation: Emily Wilbers, 9-5 1100
Accepted by / Affiliation: Emily Wilbers, 9-5-19
Temp °C: 2.6

Pace Analytical
www.pacelabs.com

Pace Analytical Services, LLC
9608 Loiret Blvd
Lenexa, KS 66219
(913)659-5665

September 26, 2019

Clara Haenchen
City of Jefferson City Wastewater Treatment Plant
401 Old Mokane Rd
Jefferson City, MO 65101

RE: Project: ANNUAL PP AND DNR POLLUTANT
Pace Project No.: 60313897

Dear Clara Haenchen:
Enclosed are the analytical results for sample(s) received by the laboratory on September 05, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

Revised report_rev1

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

Sincerely,

Jeffrey Shopper
jeff.shopper@pacelabs.com
1(913)563-1408
Project Manager

Enclosures

cc: Bradley Kleffner, City of Jefferson WWTP
Jacob Schwoerer, City of Jefferson City, MO Wastewater Treatment Plant
Emily Wilbers, City of Jefferson City WWTP

**REPORT OF LABORATORY ANALYSIS**

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Pace Analytical
www.pacelabs.com

Pace Analytical Services, LLC
9608 Loiret Blvd
Lenexa, KS 66219
(913)659-5665

**CERTIFICATIONS**

Project: ANNUAL PP AND DNR POLLUTANT
Pace Project No.: 60313897

**Indiana Certification IDs**
7726 Moller Road, Indianapolis, IN 46268
Illinois Certification #: 200074
Indiana Certification #: C-49-06
Kansas/NELAP Certification #: E-10177
Kentucky UST Certification #: 80226
Kentucky WW Certification #: 96019
Michigan Department of Environmental Quality, Laboratory #9050
Ohio VAP Certification #: CL0065
Oklahoma Certification #: 2018-101
Texas Certification #: T104704355
West Virginia Certification #: 330
Wisconsin Certification #: 999788130
USDA Soil Permit #: P330-16-00257

**Kansas Certification IDs**
9608 Loiret Boulevard, Lenexa, KS 66219
Missouri Inorganic Drinking Water Certification #: 10060
Arkansas Drinking Water
Arkansas Certification #: 19-016-0
Arkansas Drinking Water
Illinois Certification #: 004455
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116
Louisiana Certification #: 03055
Nevada Certification #: KS000212018-1
Oklahoma Certification #: 9205/9935
Florida: Cert E871149 SEKS WET
Texas Certification #: T104704407-18-11
Utah Certification #: KS000212018-8
Illinois Certification #: 004592
Kansas Field Laboratory Accreditation: # E-92587
Missouri SEKS Micro Certification: 10070

**REPORT OF LABORATORY ANALYSIS**

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Pace Analytical
www.pacelabs.com

**Sample Condition Upon Receipt**

WO#: 60313897

Client Name: City of Jefferson City
Courier: FedEx ☐ UPS ☐ VAXT Clay ☐ PEX ☐ ECI ☐ Pace ☐ Xroads ☐ Client ☐ Other ☐
Tracking #: _____ Pace Shipping Label Used? Yes ☐ No ☒
Custody Seal on Cooler/Box Present: Yes ☒ No ☐ Seals intact: Yes ☒ No ☐
Packing Material: Bubble Wrap ☐ Bubble Bags ☒ Foam ☐ None ☐ Other ☒ ZIPLOC
Thermometer Used: T300 Type of Ice: (Wet) Blue None
Cooler Temperature (°C): As-read 2.6 Corr. Factor +0.0 Corrected 2.6
Date and initials of person examining contents: 9-5-19 AT
Temperature should be above freezing to 6°C

| | | | |
|---|---|---|---|
| Chain of Custody present | ☒Yes ☐No ☐N/A | | |
| Chain of Custody relinquished | ☒Yes ☐No ☐N/A | | |
| Samples arrived within holding time | ☒Yes ☐No ☐N/A | | |
| Short Hold Time analyses (<72hr): | ☒Yes ☐No ☐N/A | CLHG, NOX, TRCL, MBAS, OTHOP | |
| Rush Turn Around Time requested: | ☐Yes ☒No ☐N/A | | |
| Sufficient volume | ☒Yes ☐No ☐N/A | | |
| Correct containers used | ☒Yes ☐No ☐N/A | | |
| Pace containers used | ☒Yes ☐No ☐N/A | | |
| Containers intact | ☒Yes ☐No ☐N/A | | |
| Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs? | ☐Yes ☐No ☒N/A | | |
| Filtered volume received for dissolved tests? | ☐Yes ☐No ☒N/A | | |
| Sample labels match COC: Date / time / ID / analyses | ☒Yes ☐No ☐N/A | | |
| Samples contain multiple phases? Matrix: WT | ☐Yes ☒No ☐N/A | | |
| Containers requiring pH preservation in compliance? (HNO3, H2SO4, HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO) | ☒Yes ☐No ☐N/A | List sample IDs, volumes, lot #'s of preservative and the date/time added. | |
| Cyanide water sample checks: Lead acetate strip turns dark? (Record only) | ☐Yes ☒No | | |
| Potassium Iodide test strip turns blue/purple? (Preserve) | ☐Yes ☒No | | |
| Trip Blank present | ☐Yes ☒No ☐N/A | There is head space in YABR | |
| Headspace in VOA vials (>6mm): | ☐Yes ☒No ☐N/A | about Quarter Size | |
| Samples from USDA Regulated Area: State: | ☐Yes ☐No ☒N/A | | |
| Additional labels attached to 5035A / TX1005 vials in the field? | ☐Yes ☐No ☒N/A | | |

Client Notification/ Resolution: Copy COC to Client? Y / N Field Data Required? Y / N
Person Contacted: _____ Date/Time: _____
Comments/ Resolution: _____
Project Manager Review: _____ Date: _____

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## QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: ANNUAL PP AND DNR POLLUTANT
Pace Project No.: 60313697

| Lab ID | Sample ID | QC Batch Method | QC Batch | Analytical Method | Analytical Batch |
|---|---|---|---|---|---|
| 60313697001 | ALGOA LAGOON EFF MONLTY COMP | EPA 410.4 | 609168 | EPA 410.4 | 609620 |
| 60313697001 | ALGOA LAGOON EFF MONLTY COMP | EPA 420.1 | 607735 | EPA 420.1 | 607942 |
| 60313697002 | ALGOA LAGOON EFF MONLTY GRAB | SM 4500-CN-E | 608013 | SM 4500-CN-E | 608211 |
| 60313697002 | ALGOA LAGOON EFF MONLTY GRAB | SM 5310C | 609458 | | |
| 60313697001 | ALGOA LAGOON EFF MONLTY COMP | EPA 7196 | 607529 | | |



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## SAMPLE SUMMARY

Project: ANNUAL PP AND DNR POLLUTANT
Pace Project No.: 60313697

| Lab ID | Sample ID | Matrix | Date Collected | Date Received |
|---|---|---|---|---|
| 60313697001 | ALGOA LAGOON EFF MONLTY COMP | Water | 09/04/19 11:27 | 09/05/19 08:30 |
| 60313697002 | ALGOA LAGOON EFF MONLTY GRAB | Water | 09/04/19 11:35 | 09/05/19 08:30 |



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## SAMPLE ANALYTE COUNT

Project: ANNUAL PP AND DNR POLLUTANT
Pace Project No.: 60313697

| Lab ID | Sample ID | Method | Analysts | Analytes Reported | Laboratory |
|---|---|---|---|---|---|
| 60313697001 | ALGOA LAGOON EFF MONLTY COMP | EPA 608.3 | KAV | 8 | PASI-I |
| | | EPA 608.3 | KAV | 23 | PASI-I |
| | | EPA 200.7 | JDE | 20 | PASI-K |
| | | EPA 245.1 | HXC | 1 | PASI-K |
| | | EPA 625 | JMT | 60 | PASI-K |
| | | TKN+NO3+NO2 Calculation | LDB | 1 | PASI-K |
| | | TKN-NH3 Calculation | LDB | 1 | PASI-K |
| | | Trivalent Chromium Calculation | LDB | 1 | PASI-K |
| | | EPA 300.0 | MGS | 3 | PASI-K |
| | | EPA 351.2 | AJS | 1 | PASI-K |
| | | EPA 353.2 | AJS | 3 | PASI-K |
| | | EPA 365.4 | JWR | 1 | PASI-K |
| | | EPA 410.4 | MAP | 1 | PASI-K |
| | | EPA 420.1 | CNB | 1 | PASI-K |
| | | EPA 7196 | LDB | 1 | PASI-K |
| 60313697002 | ALGOA LAGOON EFF MONLTY GRAB | EPA 624 Low | EAG | 39 | PASI-K |
| | | EPA 120.1 | AJS2 | 1 | PASI-K |
| | | EPA 1664A | JDA | 1 | PASI-K |
| | | SM 2310B | LDB | 1 | PASI-K |
| | | SM 2320B | LDB | 2 | PASI-K |
| | | SM 4500-Cl G | MAP | 1 | PASI-K |
| | | SM 4500-S-2 D | MAP | 1 | PASI-K |
| | | SM 4500-SO3 B | MGS | 1 | PASI-K |
| | | SM 5540C | MAP | 1 | PASI-K |
| | | EPA 365.1 | LDB | 1 | PASI-K |
| | | SM 4500-CN-E | CNB | 1 | PASI-K |
| | | SM 5310C | LDB | 1 | PASI-K |



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## QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: ANNUAL PP AND DNR POLLUTANT
Pace Project No.: 60313697

| Lab ID | Sample ID | QC Batch Method | QC Batch | Analytical Method | Analytical Batch |
|---|---|---|---|---|---|
| 60313697001 | ALGOA LAGOON EFF MONLTY COMP | EPA 608.3 | 520708 | EPA 608.3 | 520801 |
| 60313697001 | ALGOA LAGOON EFF MONLTY COMP | EPA 608.3 | 520708 | EPA 608.3 | 520802 |
| 60313697001 | ALGOA LAGOON EFF MONLTY COMP | EPA 200.7 | 608781 | EPA 200.7 | 608794 |
| 60313697001 | ALGOA LAGOON EFF MONLTY COMP | EPA 245.1 | 607768 | EPA 245.1 | 607775 |
| 60313697001 | ALGOA LAGOON EFF MONLTY COMP | EPA 625 | 607510 | EPA 625 | 607940 |
| 60313697002 | ALGOA LAGOON EFF MONLTY GRAB | EPA 624 Low | 608279 | | |
| 60313697002 | ALGOA LAGOON EFF MONLTY GRAB | EPA 120.1 | 610458 | | |
| 60313697002 | ALGOA LAGOON EFF MONLTY GRAB | EPA 1664A | 609118 | | |
| 60313697002 | ALGOA LAGOON EFF MONLTY GRAB | SM 2310B | 609727 | | |
| 60313697002 | ALGOA LAGOON EFF MONLTY GRAB | SM 2320B | 608485 | | |
| 60313697002 | ALGOA LAGOON EFF MONLTY GRAB | SM 4500-Cl G | 608087 | | |
| 60313697002 | ALGOA LAGOON EFF MONLTY GRAB | SM 4500-S-2 D | 608089 | | |
| 60313697002 | ALGOA LAGOON EFF MONLTY GRAB | SM 4500-SO3 B | 609831 | | |
| 60313697002 | ALGOA LAGOON EFF MONLTY GRAB | SM 5540C | 607549 | SM 5540C | 608237 |
| 60313697001 | ALGOA LAGOON EFF MONLTY COMP | TKN+NO3+NO2 Calculation | 610545 | | |
| 60313697001 | ALGOA LAGOON EFF MONLTY COMP | TKN-NH3 Calculation | 610560 | | |
| 60313697001 | ALGOA LAGOON EFF MONLTY COMP | Trivalent Chromium Calculation | 610562 | | |
| 60313697001 | ALGOA LAGOON EFF MONLTY COMP | EPA 300.0 | 609006 | | |
| 60313697001 | ALGOA LAGOON EFF MONLTY COMP | EPA 351.2 | 609504 | EPA 351.2 | 609907 |
| 60313697001 | ALGOA LAGOON EFF MONLTY COMP | EPA 353.2 | 607555 | | |
| 60313697002 | ALGOA LAGOON EFF MONLTY GRAB | EPA 365.1 | 607737 | | |
| 60313697001 | ALGOA LAGOON EFF MONLTY COMP | EPA 365.4 | 609744 | EPA 365.4 | 610130 |

## QUALIFIERS

Project: ANNUAL PP AND DNR POLLUTANT
Pace Project No.: 60313697

**DEFINITIONS**

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

**LABORATORIES**

PASI-I Pace Analytical Services - Indianapolis
PASI-K Pace Analytical Services - Kansas City

**ANALYTE QUALIFIERS**

D3 Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference
D6 The precision between the sample and sample duplicate exceeded laboratory control limits.
E Analyte concentration exceeded the calibration range. The reported result is estimated.
H6 Analysis initiated outside of the 15 minute EPA required holding time
H7 Re-extraction or re-analysis could not be performed within method holding time.
L2 Analyte recovery in the laboratory control sample (LCS) was below QC limits. Results for this analyte in associated samples may be biased low.
M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery
N2 The lab does not hold NELAC/TNI accreditation for this parameter but other accreditations/certifications may apply. A complete list of accreditations/certifications is available upon request.
R1 RPD value was outside control limits.
S0 Surrogate recovery outside laboratory control limits.
6U MBAS, calculated as LAS, Mol wt 342.2 g/mol


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## ANALYTICAL RESULTS

Project: ANNUAL PP AND DNR POLLUTANT
Pace Project No.: 60313697

Sample: ALGOA LAGOON EFF MONTLY COMP — Lab ID: 60313697001 — Collected: 09/04/19 11:27 — Received: 09/05/19 08:30 — Matrix: Water

| Parameters | Results | Units | Report Limit | MDL | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|---|
| **608.3 PCB** | Analytical Method: EPA 608.3 Preparation Method: EPA 608.3 | | | | | | | | |
| PCB-1016 (Aroclor 1016) | ND | ug/L | 0.10 | 0.035 | 1 | 09/10/19 08:18 | 09/11/19 18:55 | 12674-11-2 | |
| PCB-1221 (Aroclor 1221) | ND | ug/L | 0.10 | 0.035 | 1 | 09/10/19 08:18 | 09/11/19 18:55 | 11104-28-2 | |
| PCB-1232 (Aroclor 1232) | ND | ug/L | 0.10 | 0.035 | 1 | 09/10/19 08:18 | 09/11/19 18:55 | 11141-16-5 | |
| PCB-1242 (Aroclor 1242) | ND | ug/L | 0.10 | 0.035 | 1 | 09/10/19 08:18 | 09/11/19 18:55 | 53469-21-9 | |
| PCB-1248 (Aroclor 1248) | ND | ug/L | 0.10 | 0.035 | 1 | 09/10/19 08:18 | 09/11/19 18:55 | 12672-29-6 | |
| PCB-1254 (Aroclor 1254) | ND | ug/L | 0.10 | 0.035 | 1 | 09/10/19 08:18 | 09/11/19 18:55 | 11097-69-1 | |
| PCB-1260 (Aroclor 1260) | ND | ug/L | 0.10 | 0.031 | 1 | 09/10/19 08:18 | 09/11/19 18:55 | 11096-82-5 | |
| Surrogates | | | | | | | | | |
| Tetrachloro-m-xylene (S) | 69 | %. | 14-132 | | 1 | 09/10/19 08:18 | 09/11/19 18:55 | 877-09-8 | |
| **608.3 Pesticides** | Analytical Method: EPA 608.3 Preparation Method: EPA 608.3 | | | | | | | | |
| Aldrin | ND | ug/L | 0.050 | 0.012 | 1 | 09/10/19 08:18 | 09/18/19 21:08 | 309-00-2 | H7,L2 |
| alpha-BHC | ND | ug/L | 0.050 | 0.0050 | 1 | 09/10/19 08:18 | 09/18/19 21:08 | 319-84-6 | |
| beta-BHC | ND | ug/L | 0.050 | 0.0050 | 1 | 09/10/19 08:18 | 09/18/19 21:08 | 319-85-7 | |
| delta-BHC | ND | ug/L | 0.050 | 0.017 | 1 | 09/10/19 08:18 | 09/18/19 21:08 | 319-86-8 | |
| gamma-BHC (Lindane) | ND | ug/L | 0.050 | 0.0041 | 1 | 09/10/19 08:18 | 09/18/19 21:08 | 58-89-9 | |
| Chlordane (Technical) | ND | ug/L | 0.50 | 0.38 | 1 | 09/10/19 08:18 | 09/18/19 21:08 | 57-74-9 | |
| alpha-Chlordane | ND | ug/L | 0.050 | 0.0061 | 1 | 09/10/19 08:18 | 09/18/19 21:08 | 5103-71-9 | N2 |
| gamma-Chlordane | ND | ug/L | 0.050 | 0.0085 | 1 | 09/10/19 08:18 | 09/18/19 21:08 | 5103-74-2 | N2 |
| 4,4'-DDD | ND | ug/L | 0.10 | 0.012 | 1 | 09/10/19 08:18 | 09/18/19 21:08 | 72-54-8 | |
| 4,4'-DDE | ND | ug/L | 0.10 | 0.017 | 1 | 09/10/19 08:18 | 09/18/19 21:08 | 72-55-9 | |
| 4,4'-DDT | ND | ug/L | 0.10 | 0.036 | 1 | 09/10/19 08:18 | 09/18/19 21:08 | 50-29-3 | |
| Dieldrin | ND | ug/L | 0.10 | 0.0056 | 1 | 09/10/19 08:18 | 09/18/19 21:08 | 60-57-1 | |
| Endosulfan I | ND | ug/L | 0.050 | 0.011 | 1 | 09/10/19 08:18 | 09/18/19 21:08 | 959-98-8 | |
| Endosulfan II | ND | ug/L | 0.10 | 0.012 | 1 | 09/10/19 08:18 | 09/18/19 21:08 | 33213-65-9 | |
| Endosulfan sulfate | ND | ug/L | 0.10 | 0.014 | 1 | 09/10/19 08:18 | 09/18/19 21:08 | 1031-07-8 | |
| Endrin | ND | ug/L | 0.10 | 0.018 | 1 | 09/10/19 08:18 | 09/18/19 21:08 | 72-20-8 | |
| Endrin aldehyde | ND | ug/L | 0.10 | 0.018 | 1 | 09/10/19 08:18 | 09/18/19 21:08 | 7421-93-4 | |
| Endrin ketone | ND | ug/L | 0.10 | 0.019 | 1 | 09/10/19 08:18 | 09/18/19 21:08 | 53494-70-5 | N2 |
| Heptachlor | ND | ug/L | 0.050 | 0.0081 | 1 | 09/10/19 08:18 | 09/18/19 21:08 | 76-44-8 | |
| Heptachlor epoxide | ND | ug/L | 0.050 | 0.0067 | 1 | 09/10/19 08:18 | 09/18/19 21:08 | 1024-57-3 | |
| Methoxychlor | ND | ug/L | 0.50 | 0.17 | 1 | 09/10/19 08:18 | 09/18/19 21:08 | 72-43-5 | |
| Toxaphene | ND | ug/L | 1.0 | 0.0063 | 1 | 09/10/19 08:18 | 09/18/19 21:08 | 8001-35-2 | |
| Surrogates | | | | | | | | | |
| Decachlorobiphenyl (S) | 50 | %. | 18-116 | | 1 | 09/10/19 08:18 | 09/18/19 21:08 | 2051-24-3 | |
| **200.7 Metals, Total** | Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 | | | | | | | | |
| Aluminum | ND | ug/L | 75.0 | 33.0 | 1 | 09/11/19 15:44 | 09/12/19 12:15 | 7429-90-5 | |
| Antimony | ND | ug/L | 15.0 | 6.5 | 1 | 09/11/19 15:44 | 09/12/19 12:15 | 7440-36-0 | |
| Arsenic | ND | ug/L | 10.0 | 4.1 | 1 | 09/11/19 15:44 | 09/12/19 12:15 | 7440-38-2 | |
| Barium | 74.9 | ug/L | 5.0 | 1.4 | 1 | 09/11/19 15:44 | 09/12/19 12:15 | 7440-39-3 | |
| Beryllium | ND | ug/L | 1.0 | 0.25 | 1 | 09/11/19 15:44 | 09/12/19 12:15 | 7440-41-7 | |
| Cadmium | ND | ug/L | 5.0 | 0.56 | 1 | 09/11/19 15:44 | 09/12/19 12:15 | 7440-43-9 | |
| Calcium | 63700 | ug/L | 200 | 50.0 | 1 | 09/11/19 15:44 | 09/12/19 12:15 | 7440-70-2 | |
| Chromium | ND | ug/L | 5.0 | 1.0 | 1 | 09/11/19 15:44 | 09/12/19 12:15 | 7440-47-3 | |


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## ANALYTICAL RESULTS

Project: ANNUAL PP AND DNR POLLUTANT
Pace Project No.: 60313697

Sample: ALGOA LAGOON EFF MONTLY COMP — Lab ID: 60313697001 — Collected: 09/04/19 11:27 — Received: 09/05/19 08:30 — Matrix: Water

| Parameters | Results | Units | Report Limit | MDL | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|---|
| **200.7 Metals, Total** | Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 | | | | | | | | |
| Copper | ND | ug/L | 10.0 | 3.4 | 1 | 09/11/19 15:44 | 09/12/19 12:15 | 7440-50-8 | |
| Iron | ND | ug/L | 50.0 | 14.0 | 1 | 09/11/19 15:44 | 09/12/19 12:15 | 7439-89-6 | |
| Lead | ND | ug/L | 10.0 | 3.4 | 1 | 09/11/19 15:44 | 09/12/19 12:15 | 7439-92-1 | |
| Magnesium | 24700 | ug/L | 50.0 | 13.0 | 1 | 09/11/19 15:44 | 09/12/19 12:15 | 7439-95-4 | |
| Molybdenum | 69.1 | ug/L | 20.0 | 2.8 | 1 | 09/11/19 15:44 | 09/12/19 12:15 | 7439-98-7 | |
| Nickel | ND | ug/L | 5.0 | 1.2 | 1 | 09/11/19 15:44 | 09/12/19 12:15 | 7440-02-0 | |
| Selenium | ND | ug/L | 15.0 | 6.9 | 1 | 09/11/19 15:44 | 09/12/19 12:15 | 7782-49-2 | |
| Silver | ND | ug/L | 7.0 | 1.8 | 1 | 09/11/19 15:44 | 09/12/19 12:15 | 7440-22-4 | |
| Sodium | 126000 | ug/L | 500 | 144 | 1 | 09/11/19 15:44 | 09/12/19 12:15 | 7440-23-5 | M1 |
| Thallium | ND | ug/L | 20.0 | 3.4 | 1 | 09/11/19 15:44 | 09/12/19 12:15 | 7440-28-0 | |
| Hardness, Total(SM 2340B) | 236000 | ug/L | 500 | 197 | 1 | 09/11/19 15:44 | 09/12/19 12:15 | | |
| Zinc | ND | ug/L | 50.0 | 9.1 | 1 | 09/11/19 15:44 | 09/12/19 12:15 | 7440-66-6 | |
| **245.1 Mercury** | Analytical Method: EPA 245.1 Preparation Method: EPA 245.1 | | | | | | | | |
| Mercury | ND | ug/L | 0.20 | 0.068 | 1 | 09/06/19 09:55 | 09/09/19 16:11 | 7439-97-6 | |
| **625 MSSV** | Analytical Method: EPA 625 Preparation Method: EPA 625 | | | | | | | | |
| Acenaphthene | ND | ug/L | 4.8 | 0.63 | 1 | 09/05/19 17:08 | 09/06/19 23:19 | 83-32-9 | |
| Acenaphthylene | ND | ug/L | 4.8 | 0.63 | 1 | 09/05/19 17:08 | 09/06/19 23:19 | 208-96-8 | |
| Anthracene | ND | ug/L | 4.8 | 0.65 | 1 | 09/05/19 17:08 | 09/06/19 23:19 | 120-12-7 | |
| Benzidine | ND | ug/L | 47.6 | 8.5 | 1 | 09/05/19 17:08 | 09/06/19 23:19 | 92-87-5 | |
| Benzo(a)anthracene | ND | ug/L | 4.8 | 0.66 | 1 | 09/05/19 17:08 | 09/06/19 23:19 | 56-55-3 | |
| Benzo(a)pyrene | ND | ug/L | 4.8 | 0.70 | 1 | 09/05/19 17:08 | 09/06/19 23:19 | 50-32-8 | |
| Benzo(b)fluoranthene | ND | ug/L | 4.8 | 0.69 | 1 | 09/05/19 17:08 | 09/06/19 23:19 | 205-99-2 | |
| Benzo(g,h,i)perylene | ND | ug/L | 4.8 | 0.87 | 1 | 09/05/19 17:08 | 09/06/19 23:19 | 191-24-2 | |
| Benzo(k)fluoranthene | ND | ug/L | 4.8 | 0.68 | 1 | 09/05/19 17:08 | 09/06/19 23:19 | 207-08-9 | |
| 4-Bromophenylphenyl ether | ND | ug/L | 4.8 | 0.69 | 1 | 09/05/19 17:08 | 09/06/19 23:19 | 101-55-3 | |
| Butylbenzylphthalate | ND | ug/L | 4.8 | 0.62 | 1 | 09/05/19 17:08 | 09/06/19 23:19 | 85-68-7 | |
| 4-Chloro-3-methylphenol | ND | ug/L | 4.8 | 0.74 | 1 | 09/05/19 17:08 | 09/06/19 23:19 | 59-50-7 | |
| bis(2-Chloroethoxy)methane | ND | ug/L | 4.8 | 0.65 | 1 | 09/05/19 17:08 | 09/06/19 23:19 | 111-91-1 | |
| bis(2-Chloroethyl) ether | ND | ug/L | 5.7 | 0.73 | 1 | 09/05/19 17:08 | 09/06/19 23:19 | 111-44-4 | |
| bis(2-Chloroisopropyl) ether | ND | ug/L | 5.7 | 0.68 | 1 | 09/05/19 17:08 | 09/06/19 23:19 | 108-60-1 | |
| 2-Chloronaphthalene | ND | ug/L | 4.8 | 0.77 | 1 | 09/05/19 17:08 | 09/06/19 23:19 | 91-58-7 | |
| 2-Chlorophenol | ND | ug/L | 4.8 | 0.72 | 1 | 09/05/19 17:08 | 09/06/19 23:19 | 95-57-8 | |
| 4-Chlorophenylphenyl ether | ND | ug/L | 4.8 | 0.79 | 1 | 09/05/19 17:08 | 09/06/19 23:19 | 7005-72-3 | |
| Chrysene | ND | ug/L | 4.8 | 0.70 | 1 | 09/05/19 17:08 | 09/06/19 23:19 | 218-01-9 | |
| Dibenz(a,h)anthracene | ND | ug/L | 4.8 | 0.71 | 1 | 09/05/19 17:08 | 09/06/19 23:19 | 53-70-3 | |
| 3,3'-Dichlorobenzidine | ND | ug/L | 19.0 | 0.72 | 1 | 09/05/19 17:08 | 09/06/19 23:19 | 91-94-1 | |
| 2,4-Dichlorophenol | ND | ug/L | 4.8 | 0.65 | 1 | 09/05/19 17:08 | 09/06/19 23:19 | 120-83-2 | |
| Diethylphthalate | ND | ug/L | 4.8 | 0.63 | 1 | 09/05/19 17:08 | 09/06/19 23:19 | 84-66-2 | |
| 2,4-Dimethylphenol | ND | ug/L | 4.8 | 0.65 | 1 | 09/05/19 17:08 | 09/06/19 23:19 | 105-67-9 | |
| Dimethylphthalate | ND | ug/L | 4.8 | 0.69 | 1 | 09/05/19 17:08 | 09/06/19 23:19 | 131-11-3 | |
| Di-n-butylphthalate | ND | ug/L | 4.8 | 0.57 | 1 | 09/05/19 17:08 | 09/06/19 23:19 | 84-74-2 | |
| 4,6-Dinitro-2-methylphenol | ND | ug/L | 23.8 | 0.76 | 1 | 09/05/19 17:08 | 09/06/19 23:19 | 534-52-1 | |
| 2,4-Dinitrophenol | ND | ug/L | 47.6 | 0.97 | 1 | 09/05/19 17:08 | 09/06/19 23:19 | 51-28-5 | |


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## QUALITY CONTROL DATA

Project: ANNUAL PP AND DNR POLLUTANT
Pace Project No.: 60313697

QC Batch: 607529 — Analysis Method: EPA 7196
QC Batch Method: EPA 7196 — Analysis Description: 7196 Chromium, Hexavalent
Associated Lab Samples: 60313697001

METHOD BLANK: 2482390 — Matrix: Water
Associated Lab Samples: 60313697001

| Parameter | Units | Blank Result | Reporting Limit | MDL | Analyzed | Qualifiers |
|---|---|---|---|---|---|---|
| Chromium, Hexavalent | mg/L | ND | 0.010 | 0.0031 | 09/05/19 10:20 | |

LABORATORY CONTROL SAMPLE: 2482391

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| Chromium, Hexavalent | mg/L | 0.1 | 0.11 | 107 | 90-110 | |

MATRIX SPIKE SAMPLE: 2482392

| Parameter | Units | 60313697001 Result | Spike Conc. | MS Result | MS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|---|
| Chromium, Hexavalent | mg/L | ND | 0.1 | 0.094 | 91 | 85-115 | |

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.


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## QUALITY CONTROL DATA

Project: ANNUAL PP AND DNR POLLUTANT
Pace Project No.: 60313697

QC Batch: 609458 — Analysis Method: SM 5310C
QC Batch Method: SM 5310C — Analysis Description: 5310C Total Organic Carbon
Associated Lab Samples: 60313697002

METHOD BLANK: 2490102 — Matrix: Water
Associated Lab Samples: 60313697002

| Parameter | Units | Blank Result | Reporting Limit | MDL | Analyzed | Qualifiers |
|---|---|---|---|---|---|---|
| Total Organic Carbon | mg/L | ND | 1.0 | 0.29 | 09/18/19 02:13 | |

LABORATORY CONTROL SAMPLE: 2490103

| Parameter | Units | Spike Conc | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| Total Organic Carbon | mg/L | 5 | 5.5 | 110 | 80-120 | |

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.



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## ANALYTICAL RESULTS

Project: ANNUAL PP AND DNR POLLUTANT
Pace Project No.: 60313697

Sample: ALGOA LAGOON EFF MONLTY COMP — Lab ID: 60313697001 — Collected: 09/04/19 11:27 — Received: 09/05/19 08:30 — Matrix: Water

| Parameters | Results | Units | Report Limit | MDL | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|---|
| **625 MSSV** | Analytical Method: EPA 625 Preparation Method: EPA 625 | | | | | | | | |
| 2,4-Dinitrotoluene | ND | ug/L | 5.7 | 0.58 | 1 | 09/05/19 17:08 | 09/06/19 23:19 | 121-14-2 | |
| 2,6-Dinitrotoluene | ND | ug/L | 4.8 | 0.63 | 1 | 09/05/19 17:08 | 09/06/19 23:19 | 606-20-2 | |
| Di-n-octylphthalate | ND | ug/L | 4.8 | 0.92 | 1 | 09/05/19 17:08 | 09/06/19 23:19 | 117-84-0 | |
| 1,2-Diphenylhydrazine | ND | ug/L | 7.6 | 0.57 | 1 | 09/05/19 17:08 | 09/06/19 23:19 | 122-66-7 | |
| bis(2-Ethylhexyl)phthalate | ND | ug/L | 4.8 | 0.95 | 1 | 09/05/19 17:08 | 09/06/19 23:19 | 117-81-7 | |
| Fluoranthene | ND | ug/L | 4.8 | 0.72 | 1 | 09/05/19 17:08 | 09/06/19 23:19 | 206-44-0 | |
| Fluorene | ND | ug/L | 4.8 | 0.59 | 1 | 09/05/19 17:08 | 09/06/19 23:19 | 86-73-7 | |
| Hexachloro-1,3-butadiene | ND | ug/L | 4.8 | 0.77 | 1 | 09/05/19 17:08 | 09/06/19 23:19 | 87-68-3 | |
| Hexachlorobenzene | ND | ug/L | 4.8 | 0.90 | 1 | 09/05/19 17:08 | 09/06/19 23:19 | 118-74-1 | |
| Hexachlorocyclopentadiene | ND | ug/L | 4.8 | 0.83 | 1 | 09/05/19 17:08 | 09/06/19 23:19 | 77-47-4 | |
| Hexachloroethane | ND | ug/L | 4.8 | 0.70 | 1 | 09/05/19 17:08 | 09/06/19 23:19 | 67-72-1 | |
| Indeno(1,2,3-cd)pyrene | ND | ug/L | 4.8 | 0.64 | 1 | 09/05/19 17:08 | 09/06/19 23:19 | 193-39-5 | |
| Isophorone | ND | ug/L | 4.8 | 0.51 | 1 | 09/05/19 17:08 | 09/06/19 23:19 | 78-59-1 | |
| Naphthalene | ND | ug/L | 4.8 | 0.65 | 1 | 09/05/19 17:08 | 09/06/19 23:19 | 91-20-3 | |
| Nitrobenzene | ND | ug/L | 4.8 | 0.49 | 1 | 09/05/19 17:08 | 09/06/19 23:19 | 98-95-3 | |
| 2-Nitrophenol | ND | ug/L | 4.8 | 0.68 | 1 | 09/05/19 17:08 | 09/06/19 23:19 | 88-75-5 | |
| 4-Nitrophenol | ND | ug/L | 4.8 | 2.4 | 1 | 09/05/19 17:08 | 09/06/19 23:19 | 100-02-7 | |
| N-Nitrosodimethylamine | ND | ug/L | 4.8 | 0.76 | 1 | 09/05/19 17:08 | 09/06/19 23:19 | 62-75-9 | |
| N-Nitroso-di-n-propylamine | ND | ug/L | 4.8 | 0.62 | 1 | 09/05/19 17:08 | 09/06/19 23:19 | 621-64-7 | |
| N-Nitrosodiphenylamine | ND | ug/L | 4.8 | 0.38 | 1 | 09/05/19 17:08 | 09/06/19 23:19 | 86-30-6 | |
| Pentachlorophenol | ND | ug/L | 4.8 | 0.73 | 1 | 09/05/19 17:08 | 09/06/19 23:19 | 87-86-5 | |
| Phenanthrene | ND | ug/L | 4.8 | 0.64 | 1 | 09/05/19 17:08 | 09/06/19 23:19 | 85-01-8 | |
| Phenol | ND | ug/L | 4.8 | 2.4 | 1 | 09/05/19 17:08 | 09/06/19 23:19 | 108-95-2 | |
| Pyrene | ND | ug/L | 4.8 | 0.65 | 1 | 09/05/19 17:08 | 09/06/19 23:19 | 129-00-0 | |
| 1,2,4-Trichlorobenzene | ND | ug/L | 4.8 | 0.83 | 1 | 09/05/19 17:08 | 09/06/19 23:19 | 120-82-1 | |
| 2,4,6-Trichlorophenol | ND | ug/L | 4.8 | 0.74 | 1 | 09/05/19 17:08 | 09/06/19 23:19 | 88-06-2 | |
| *Surrogates* | | | | | | | | | |
| 2,4,6-Tribromophenol (S) | 0 | % | 24-126 | | 1 | 09/05/19 17:08 | 09/06/19 23:19 | 118-79-6 | D3,S0 |
| 2-Fluorobiphenyl (S) | 0 | % | 24-110 | | 1 | 09/05/19 17:08 | 09/06/19 23:19 | 321-60-8 | S0 |
| 2-Fluorophenol (S) | 0 | % | 20-59 | | 1 | 09/05/19 17:08 | 09/06/19 23:19 | 367-12-4 | S0 |
| Nitrobenzene-d5 (S) | 0 | % | 24-110 | | 1 | 09/05/19 17:08 | 09/06/19 23:19 | 4165-60-0 | S0 |
| Phenol-d6 (S) | 0 | % | 11-42 | | 1 | 09/05/19 17:08 | 09/06/19 23:19 | 13127-88-3 | S0 |
| Terphenyl-d14 (S) | 0 | % | 35-118 | | 1 | 09/05/19 17:08 | 09/06/19 23:19 | 1718-51-0 | S0 |
| **Total Nitrogen Calculation** | Analytical Method: TKN+NO3+NO2 Calculation | | | | | | | | |
| Nitrogen | 6.1 | mg/L | 0.10 | | 1 | | 09/19/19 15:52 | 7727-37-9 | |
| **Total Organic Nitrogen Calc.** | Analytical Method: TKN-NH3 Calculation | | | | | | | | |
| Total Organic Nitrogen | 6.1 | mg/L | 0.50 | 0.50 | 1 | | 09/19/19 18:02 | | |
| **Trivalent Chromium Calculation** | Analytical Method: Trivalent Chromium Calculation | | | | | | | | |
| Chromium, Trivalent | ND | mg/L | 0.010 | 0.010 | 1 | | 09/19/19 18:04 | 16065-83-1 | |
| **300.0 IC Anions 28 Days** | Analytical Method: EPA 300.0 | | | | | | | | |
| Chloride | 175 | mg/L | 10.0 | 2.2 | 10 | | 09/12/19 22:01 | 16887-00-6 | MI |



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## ANALYTICAL RESULTS

Project: ANNUAL PP AND DNR POLLUTANT
Pace Project No.: 60313697

Sample: ALGOA LAGOON EFF MONLTY COMP — Lab ID: 60313697001 — Collected: 09/04/19 11:27 — Received: 09/05/19 08:30 — Matrix: Water

| Parameters | Results | Units | Report Limit | MDL | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|---|
| **300.0 IC Anions 28 Days** | Analytical Method: EPA 300.0 | | | | | | | | |
| Fluoride | 0.70 | mg/L | 0.20 | 0.085 | 1 | | 09/12/19 21:31 | 16984-48-8 | |
| Sulfate | 27.0 | mg/L | 10.0 | 2.3 | 10 | | 09/12/19 22:01 | 14808-79-8 | |
| **351.2 Total Kjeldahl Nitrogen** | Analytical Method: EPA 351.2 Preparation Method: EPA 351.2 | | | | | | | | |
| Nitrogen, Kjeldahl, Total | 5.6 | mg/L | 0.50 | 0.37 | 1 | 09/16/19 09:03 | 09/17/19 10:00 | 7727-37-9 | |
| **353.2 Nitrogen, NO2/NO3 unpres** | Analytical Method: EPA 353.2 | | | | | | | | |
| Nitrogen, NO2 plus NO3 | 2.5 | mg/L | 0.10 | 0.038 | 1 | | 09/05/19 12:33 | | |
| Nitrogen, Nitrate | 2.3 | mg/L | 0.10 | 0.087 | 1 | | 09/05/19 12:33 | 14797-55-8 | |
| Nitrogen, Nitrite | 0.23 | mg/L | 0.10 | 0.087 | 1 | | 09/05/19 12:33 | 14797-65-0 | |
| **365.4 Total Phosphorus** | Analytical Method: EPA 365.4 Preparation Method: EPA 365.4 | | | | | | | | |
| Phosphorus | 3.4 | mg/L | 0.10 | 0.044 | 1 | 09/17/19 10:00 | 09/18/19 10:01 | 7723-14-0 | |
| **410.4 COD** | Analytical Method: EPA 410.4 Preparation Method: EPA 410.4 | | | | | | | | |
| Chemical Oxygen Demand | 69.6 | mg/L | 10.0 | 3.7 | 1 | 09/13/19 11:12 | 09/16/19 08:40 | | |
| **Phenolics, Total Recoverable** | Analytical Method: EPA 420.1 Preparation Method: EPA 420.1 | | | | | | | | |
| Phenolics, Total Recoverable | ND | mg/L | 0.050 | 0.016 | 1 | 09/06/19 10:45 | 09/06/19 15:58 | 64743-03-9 | |
| **7196 Chromium, Hexavalent** | Analytical Method: EPA 7196 | | | | | | | | |
| Chromium, Hexavalent | ND | mg/L | 0.010 | 0.0031 | 1 | | 09/05/19 10:21 | 18540-29-9 | |
| | Analytical Method: EPA 350.1 | | | | | | | | |
| Nitrogen, Ammonia | 0.47 | mg/L | 0.10 | 0.079 | 1 | | 09/18/19 15:14 | 7664-41-7 | |

Sample: ALGOA LAGOON EFF MONLTY GRAB — Lab ID: 60313697002 — Collected: 09/04/19 11:35 — Received: 09/05/19 08:30 — Matrix: Water

| Parameters | Results | Units | Report Limit | MDL | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|---|
| **624 Volatile Organics** | Analytical Method: EPA 624 Low | | | | | | | | |
| Acrolein | ND | ug/L | 100 | 2.0 | 1 | | 09/10/19 14:44 | 107-02-8 | |
| Acrylonitrile | ND | ug/L | 20.0 | 1.6 | 1 | | 09/10/19 14:44 | 107-13-1 | |
| Benzene | ND | ug/L | 1.0 | 0.12 | 1 | | 09/10/19 14:44 | 71-43-2 | |
| Bromodichloromethane | ND | ug/L | 1.0 | 0.13 | 1 | | 09/10/19 14:44 | 75-27-4 | |
| Bromoform | ND | ug/L | 1.0 | 0.11 | 1 | | 09/10/19 14:44 | 75-25-2 | |
| Bromomethane | ND | ug/L | 5.0 | 0.66 | 1 | | 09/10/19 14:44 | 74-83-9 | |
| Carbon tetrachloride | ND | ug/L | 1.0 | 0.10 | 1 | | 09/10/19 14:44 | 56-23-5 | |
| Chlorobenzene | ND | ug/L | 1.0 | 0.081 | 1 | | 09/10/19 14:44 | 108-90-7 | |
| Chloroethane | ND | ug/L | 1.0 | 0.20 | 1 | | 09/10/19 14:44 | 75-00-3 | |
| 2-Chloroethylvinyl ether | ND | ug/L | 10.0 | 0.29 | 1 | | 09/10/19 14:44 | 110-75-8 | |
| Chloroform | ND | ug/L | 1.0 | 0.14 | 1 | | 09/10/19 14:44 | 67-66-3 | |



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## QUALITY CONTROL DATA

Project: ANNUAL PP AND DNR POLLUTANT
Pace Project No.: 60313697

QC Batch: 608013 — Analysis Method: SM 4500-CN-E
QC Batch Method: SM 4500-CN-E — Analysis Description: 4500CNE Cyanide, Total
Associated Lab Samples: 60313697002

METHOD BLANK: 2484288 — Matrix: Water
Associated Lab Samples: 60313697002

| Parameter | Units | Blank Result | Reporting Limit | MDL | Analyzed | Qualifiers |
|---|---|---|---|---|---|---|
| Cyanide | mg/L | ND | 0.0050 | 0.0039 | 09/09/19 12:30 | |

LABORATORY CONTROL SAMPLE: 2484289

| Parameter | Units | Spike Conc | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| Cyanide | mg/L | 0.1 | 0.10 | 102 | 69-126 | |

SAMPLE DUPLICATE: 2484291

| Parameter | Units | 60313726001 Result | Dup Result | RPD | Max RPD | Qualifiers |
|---|---|---|---|---|---|---|
| Cyanide | mg/L | 0.024 | 0.028 | 17 | 46 | |

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## QUALITY CONTROL DATA

Project: ANNUAL PP AND DNR POLLUTANT
Pace Project No.: 60313897

QC Batch: 607735 — Analysis Method: EPA 420.1
QC Batch Method: EPA 420.1 — Analysis Description: 420.1 Phenolics Macro
Associated Lab Samples: 60313897001

METHOD BLANK: 2483198 — Matrix: Water
Associated Lab Samples: 60313897001

| Parameter | Units | Blank Result | Reporting Limit | MDL | Analyzed | Qualifiers |
|---|---|---|---|---|---|---|
| Phenolics, Total Recoverable | mg/L | ND | 0.050 | 0.016 | 09/06/19 15:33 | |

LABORATORY CONTROL SAMPLE: 2483199

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| Phenolics, Total Recoverable | mg/L | 0.25 | 0.24 | 93 | 90-110 | |

MATRIX SPIKE SAMPLE: 2483202

| Parameter | Units | 60313346001 Result | Spike Conc. | MS Result | MS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|---|
| Phenolics, Total Recoverable | mg/L | 0.23 | 0.25 | 0.48 | 97 | 90-110 | |

SAMPLE DUPLICATE: 2483201

| Parameter | Units | 60313159001 Result | Dup Result | RPD | Max RPD | Qualifiers |
|---|---|---|---|---|---|---|
| Phenolics, Total Recoverable | mg/L | ND | ND | | 20 | |

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## ANALYTICAL RESULTS

Project: ANNUAL PP AND DNR POLLUTANT
Pace Project No.: 60313897

Sample: ALGOA LAGOON EFF MONLTY GRAB — Lab ID: 60313897002 — Collected: 09/04/19 11:35 — Received: 09/05/19 06:30 — Matrix: Water

| Parameters | Results | Units | Report Limit | MDL | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|---|
| **624 Volatile Organics** | Analytical Method: EPA 624 Low | | | | | | | | |
| Chloromethane | ND | ug/L | 1.0 | 0.20 | 1 | | 09/10/19 14:44 | 74-87-3 | |
| Dibromochloromethane | ND | ug/L | 1.0 | 0.24 | 1 | | 09/10/19 14:44 | 124-48-1 | |
| 1,2-Dichlorobenzene | ND | ug/L | 1.0 | 0.066 | 1 | | 09/10/19 14:44 | 95-50-1 | |
| 1,3-Dichlorobenzene | ND | ug/L | 1.0 | 0.10 | 1 | | 09/10/19 14:44 | 541-73-1 | |
| 1,4-Dichlorobenzene | ND | ug/L | 1.0 | 0.050 | 1 | | 09/10/19 14:44 | 106-46-7 | |
| 1,1-Dichloroethane | ND | ug/L | 1.0 | 0.13 | 1 | | 09/10/19 14:44 | 75-34-3 | |
| 1,2-Dichloroethane | ND | ug/L | 1.0 | 0.14 | 1 | | 09/10/19 14:44 | 107-06-2 | |
| 1,1-Dichloroethene | ND | ug/L | 1.0 | 0.11 | 1 | | 09/10/19 14:44 | 75-35-4 | |
| cis-1,2-Dichloroethene | ND | ug/L | 1.0 | 0.14 | 1 | | 09/10/19 14:44 | 156-59-2 | N2 |
| trans-1,2-Dichloroethene | ND | ug/L | 1.0 | 0.17 | 1 | | 09/10/19 14:44 | 156-60-5 | |
| 1,2-Dichloropropane | ND | ug/L | 1.0 | 0.097 | 1 | | 09/10/19 14:44 | 78-87-5 | |
| cis-1,3-Dichloropropene | ND | ug/L | 1.0 | 0.16 | 1 | | 09/10/19 14:44 | 10061-01-5 | |
| trans-1,3-Dichloropropene | ND | ug/L | 1.0 | 0.12 | 1 | | 09/10/19 14:44 | 10061-02-6 | |
| Ethylbenzene | ND | ug/L | 1.0 | 0.057 | 1 | | 09/10/19 14:44 | 100-41-4 | |
| Methylene Chloride | ND | ug/L | 1.0 | 0.21 | 1 | | 09/10/19 14:44 | 75-09-2 | |
| 1,1,2,2-Tetrachloroethane | ND | ug/L | 1.0 | 0.12 | 1 | | 09/10/19 14:44 | 79-34-5 | |
| Tetrachloroethene | ND | ug/L | 1.0 | 0.15 | 1 | | 09/10/19 14:44 | 127-18-4 | |
| Toluene | ND | ug/L | 1.0 | 0.048 | 1 | | 09/10/19 14:44 | 108-88-3 | |
| 1,1,1-Trichloroethane | ND | ug/L | 1.0 | 0.057 | 1 | | 09/10/19 14:44 | 71-55-6 | |
| 1,1,2-Trichloroethane | ND | ug/L | 1.0 | 0.25 | 1 | | 09/10/19 14:44 | 79-00-5 | |
| Trichloroethene | ND | ug/L | 1.0 | 0.15 | 1 | | 09/10/19 14:44 | 79-01-6 | |
| Trichlorofluoromethane | ND | ug/L | 1.0 | 0.12 | 1 | | 09/10/19 14:44 | 75-69-4 | |
| Vinyl chloride | ND | ug/L | 1.0 | 0.11 | 1 | | 09/10/19 14:44 | 75-01-4 | |
| Xylene (Total) | ND | ug/L | 3.0 | 0.21 | 1 | | 09/10/19 14:44 | 1330-20-7 | N2 |
| **Surrogates** | | | | | | | | | |
| 4-Bromofluorobenzene (S) | 98 | % | 80-120 | | 1 | | 09/10/19 14:44 | 460-00-4 | |
| Toluene-d8 (S) | 100 | % | 80-120 | | 1 | | 09/10/19 14:44 | 2037-26-5 | |
| 1,2-Dichloroethane-d4 (S) | 99 | % | 80-120 | | 1 | | 09/10/19 14:44 | 17060-07-0 | |
| Preservation pH | 7.0 | | 1.0 | 0.10 | 1 | | 09/10/19 14:44 | | |
| **120.1 Specific Conductance** | Analytical Method: EPA 120.1 | | | | | | | | |
| Specific Conductance | 983 | umhos/cm | 1.0 | 1.0 | 1 | | 09/19/19 15:43 | | |
| **HEM, Oil and Grease** | Analytical Method: EPA 1664A | | | | | | | | |
| Oil and Grease | ND | mg/L | 4.9 | 1.3 | 1 | | 09/13/19 08:41 | | |
| **2310B Acidity, Total** | Analytical Method: SM 2310B | | | | | | | | |
| Acidity, Total | ND | mg/L | 20.0 | 1.0 | 1 | | 09/17/19 09:40 | | |
| **2320B Alkalinity** | Analytical Method: SM 2320B | | | | | | | | |
| Alkalinity Bicarbonate (CaCO3) | 287 | mg/L | 20.0 | 6.5 | 1 | | 09/10/19 18:12 | | |
| Alkalinity, Total as CaCO3 | 287 | mg/L | 20.0 | 6.5 | 1 | | 09/10/19 18:12 | | |
| **4500CL G Chlorine, Residual** | Analytical Method: SM 4500-Cl G | | | | | | | | |
| Chlorine, Total Residual | 0.18 | mg/L | 0.050 | 0.010 | 1 | | 09/09/19 13:42 | 7782-50-5 | H6 |

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## ANALYTICAL RESULTS

Project: ANNUAL PP AND DNR POLLUTANT
Pace Project No.: 60313897

Sample: ALGOA LAGOON EFF MONLTY GRAB — Lab ID: 60313897002 — Collected: 09/04/19 11:35 — Received: 09/05/19 06:30 — Matrix: Water

| Parameters | Results | Units | Report Limit | MDL | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|---|
| **4500S2D Sulfide, Total** | Analytical Method: SM 4500-S-2 D | | | | | | | | |
| Sulfide, Total | ND | mg/L | 0.050 | 0.039 | 1 | | 09/09/19 12:12 | 18496-25-8 | |
| **4500SO3B Sulfite, Iodometric** | Analytical Method: SM 4500-SO3 B | | | | | | | | |
| Sulfite | ND | mg/L | 2.0 | 2.0 | 1 | | 09/16/19 15:23 | | H6 |
| **5540C MBAS Surfactants** | Analytical Method: SM 5540C Preparation Method: SM 5540C | | | | | | | | |
| MBAS, Calculated as LAS | 0.24 | mg/L | 0.20 | 0.064 | 1 | 09/05/19 11:20 | 09/05/19 17:14 | | SU |
| **365.1 Orthophosphate as P** | Analytical Method: EPA 365.1 | | | | | | | | |
| Orthophosphate as P | 3.0 | mg/L | 0.10 | 0.054 | 1 | | 09/06/19 09:04 | | |
| **4500CNE Cyanide, Total** | Analytical Method: SM 4500-CN E Preparation Method: SM 4500-CN-E | | | | | | | | |
| Cyanide | 0.0057 | mg/L | 0.0050 | 0.0039 | 1 | 09/09/19 09:03 | 09/09/19 12:47 | 57-12-5 | |
| **5310C TOC** | Analytical Method: SM 5310C | | | | | | | | |
| Total Organic Carbon | 9.3 | mg/L | 2.0 | 0.58 | 2 | | 09/16/19 05:48 | 7440-44-0 | |



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## QUALITY CONTROL DATA

Project: ANNUAL PP AND DNR POLLUTANT
Pace Project No.: 60313897

QC Batch: 609166 — Analysis Method: EPA 410.4
QC Batch Method: EPA 410.4 — Analysis Description: 410.4 Water Analysis
Associated Lab Samples: 60313897001

METHOD BLANK: 2488365 — Matrix: Water
Associated Lab Samples: 60313897001

| Parameter | Units | Blank Result | Reporting Limit | MDL | Analyzed | Qualifiers |
|---|---|---|---|---|---|---|
| Chemical Oxygen Demand | mg/L | ND | 10.0 | 3.7 | 09/16/19 08:27 | |

LABORATORY CONTROL SAMPLE: 2488366

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| Chemical Oxygen Demand | mg/L | 50 | 53.1 | 106 | 90-110 | |

MATRIX SPIKE SAMPLE: 2488367

| Parameter | Units | 60313977001 Result | Spike Conc. | MS Result | MS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|---|
| Chemical Oxygen Demand | mg/L | 38.8 | 50 | 85.6 | 99 | 90-110 | |

MATRIX SPIKE SAMPLE: 2488369

| Parameter | Units | 60313983001 Result | Spike Conc. | MS Result | MS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|---|
| Chemical Oxygen Demand | mg/L | 25.1 | 50 | 75.3 | 100 | 90-110 | |

SAMPLE DUPLICATE: 2488368

| Parameter | Units | 60313983001 Result | Dup Result | RPD | Max RPD | Qualifiers |
|---|---|---|---|---|---|---|
| Chemical Oxygen Demand | mg/L | 2330 | 2220 | 5 | 25 | |

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## QUALITY CONTROL DATA

Project: ANNUAL PP AND DNR POLLUTANT
Pace Project No.: 60313897

QC Batch: 609744 — Analysis Method: EPA 365.4
QC Batch Method: EPA 365.4 — Analysis Description: 365.4 Phosphorus
Associated Lab Samples: 60313897001

METHOD BLANK: 2490980 — Matrix: Water
Associated Lab Samples: 60313897001

| Parameter | Units | Blank Result | Reporting Limit | MDL | Analyzed | Qualifiers |
|---|---|---|---|---|---|---|
| Phosphorus | mg/L | ND | 0.10 | 0.044 | 09/18/19 09:22 | |

LABORATORY CONTROL SAMPLE: 2490981

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| Phosphorus | mg/L | 2 | 2.0 | 99 | 90-110 | |

MATRIX SPIKE SAMPLE: 2490982

| Parameter | Units | 60313837009 Result | Spike Conc. | MS Result | MS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|---|
| Phosphorus | mg/L | 4.9 | 2 | 5.9 | 73 | 90-110 | E,M1 |

MATRIX SPIKE SAMPLE: 2490984

| Parameter | Units | 60314009001 Result | Spike Conc. | MS Result | MS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|---|
| Phosphorus | mg/L | 3.9 | 2 | 5.8 | 87 | 90-110 | E,M1 |

SAMPLE DUPLICATE: 2490983

| Parameter | Units | 60313837010 Result | Dup Result | RPD | Max RPD | Qualifiers |
|---|---|---|---|---|---|---|
| Phosphorus | mg/L | 1.4 | 1.5 | 4 | 10 | |

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## QUALITY CONTROL DATA

Project: ANNUAL PP AND DNR POLLUTANT
Pace Project No.: 60313897

QC Batch: 607766 — Analysis Method: EPA 245.1
QC Batch Method: EPA 245.1 — Analysis Description: 245.1 Mercury
Associated Lab Samples: 60313897001

METHOD BLANK: 2483292 — Matrix: Water
Associated Lab Samples: 60313897001

| Parameter | Units | Blank Result | Reporting Limit | MDL | Analyzed | Qualifiers |
|---|---|---|---|---|---|---|
| Mercury | ug/L | ND | 0.20 | 0.068 | 09/09/19 15:43 | |

LABORATORY CONTROL SAMPLE: 2483293

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| Mercury | ug/L | 5 | 5.0 | 99 | 85-115 | |

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2483294 — 2483295

| Parameter | Units | 60313753001 Result | MS Spike Conc. | MSD Spike Conc. | MS Result | MSD Result | MS % Rec | MSD % Rec | % Rec Limits | RPD | Max RPD | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | ug/L | ND | 5 | 5 | 4.9 | 4.9 | 99 | 97 | 70-130 | 1 | 20 | |

MATRIX SPIKE SAMPLE: 2483296

| Parameter | Units | 60314025001 Result | Spike Conc. | MS Result | MS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|---|
| Mercury | ug/L | ND | 5 | 5.0 | 99 | 70-130 | |

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## QUALITY CONTROL DATA

Project: ANNUAL PP AND DNR POLLUTANT
Pace Project No.: 60313897

QC Batch: 608781 — Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 — Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60313897001

METHOD BLANK: 2489779 — Matrix: Water
Associated Lab Samples: 60313897001

| Parameter | Units | Blank Result | Reporting Limit | MDL | Analyzed | Qualifiers |
|---|---|---|---|---|---|---|
| Aluminum | ug/L | ND | 75.0 | 33.0 | 09/12/19 12:13 | |
| Antimony | ug/L | ND | 15.0 | 6.5 | 09/12/19 12:13 | |
| Arsenic | ug/L | ND | 10.0 | 4.1 | 09/12/19 12:13 | |
| Barium | ug/L | ND | 5.0 | 1.4 | 09/12/19 12:13 | |
| Beryllium | ug/L | ND | 1.0 | 0.25 | 09/12/19 12:13 | |
| Cadmium | ug/L | ND | 5.0 | 0.56 | 09/12/19 12:13 | |
| Calcium | ug/L | ND | 200 | 50.0 | 09/12/19 12:13 | |
| Chromium | ug/L | ND | 5.0 | 1.0 | 09/12/19 12:13 | |
| Copper | ug/L | ND | 10.0 | 3.4 | 09/12/19 12:13 | |
| Hardness, Total(SM 2340B) | ug/L | ND | 500 | 197 | 09/12/19 12:13 | |
| Iron | ug/L | ND | 50.0 | 14.0 | 09/12/19 12:13 | |
| Lead | ug/L | ND | 10.0 | 3.4 | 09/12/19 12:13 | |
| Magnesium | ug/L | ND | 50.0 | 13.0 | 09/12/19 12:13 | |
| Molybdenum | ug/L | ND | 20.0 | 2.6 | 09/12/19 12:13 | |
| Nickel | ug/L | ND | 5.0 | 1.2 | 09/12/19 12:13 | |
| Selenium | ug/L | ND | 15.0 | 6.6 | 09/12/19 12:13 | |
| Silver | ug/L | ND | 7.0 | 1.8 | 09/12/19 12:13 | |
| Sodium | ug/L | ND | 500 | 144 | 09/12/19 12:13 | |
| Thallium | ug/L | ND | 20.0 | 3.4 | 09/12/19 12:13 | |
| Zinc | ug/L | ND | 50.0 | 6.1 | 09/12/19 12:13 | |

LABORATORY CONTROL SAMPLE: 2489780

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| Aluminum | ug/L | 10000 | 10500 | 105 | 85-115 | |
| Antimony | ug/L | 1000 | 1060 | 106 | 85-115 | |
| Arsenic | ug/L | 1000 | 1000 | 100 | 85-115 | |
| Barium | ug/L | 1000 | 1050 | 105 | 85-115 | |
| Beryllium | ug/L | 1000 | 1050 | 105 | 85-115 | |
| Cadmium | ug/L | 1000 | 1050 | 105 | 85-115 | |
| Calcium | ug/L | 10000 | 10700 | 107 | 85-115 | |
| Chromium | ug/L | 1000 | 1050 | 105 | 85-115 | |
| Copper | ug/L | 1000 | 1040 | 104 | 85-115 | |
| Hardness, Total(SM 2340B) | ug/L | 66200 | 69600 | 105 | 85-115 | |
| Iron | ug/L | 10000 | 10600 | 106 | 85-115 | |
| Lead | ug/L | 1000 | 1130 | 113 | 85-115 | |
| Magnesium | ug/L | 10000 | 10400 | 104 | 85-115 | |
| Molybdenum | ug/L | 1000 | 1080 | 108 | 85-115 | |
| Nickel | ug/L | 1000 | 1090 | 109 | 85-115 | |
| Selenium | ug/L | 1000 | 1070 | 107 | 85-115 | |

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## QUALITY CONTROL DATA

Project: ANNUAL PP AND DNR POLLUTANT
Pace Project No.: 60313897

QC Batch: 607737 — Analysis Method: EPA 365.1
QC Batch Method: EPA 365.1 — Analysis Description: 365.1 Orthophosphate as P
Associated Lab Samples: 60313897002

METHOD BLANK: 2483205 — Matrix: Water
Associated Lab Samples: 60313897002

| Parameter | Units | Blank Result | Reporting Limit | MDL | Analyzed | Qualifiers |
|---|---|---|---|---|---|---|
| Orthophosphate as P | mg/L | ND | 0.10 | 0.054 | 09/06/19 03:59 | |

LABORATORY CONTROL SAMPLE: 2483206

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| Orthophosphate as P | mg/L | 2 | 2.1 | 107 | 90-110 | |

MATRIX SPIKE SAMPLE: 2483207

| Parameter | Units | 60313771004 Result | Spike Conc. | MS Result | MS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|---|
| Orthophosphate as P | mg/L | ND | 2 | 2.2 | 105 | 90-110 | |

SAMPLE DUPLICATE: 2483208

| Parameter | Units | 60313897002 Result | Dup Result | RPD | Max RPD | Qualifiers |
|---|---|---|---|---|---|---|
| Orthophosphate as P | mg/L | 3.0 | 3.0 | 1 | 30 | |

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## QUALITY CONTROL DATA

Project: ANNUAL PP AND DNR POLLUTANT
Pace Project No.: 60313697

QC Batch: 607655 — Analysis Method: EPA 353.2
QC Batch Method: EPA 353.2 — Analysis Description: 353.2 Nitrate + Nitrite, Unpres.
Associated Lab Samples: 60313697001

METHOD BLANK: 2482506 — Matrix: Water
Associated Lab Samples: 60313697001

| Parameter | Units | Blank Result | Reporting Limit | MDL | Analyzed | Qualifiers |
|---|---|---|---|---|---|---|
| Nitrogen, Nitrate | mg/L | ND | 0.10 | 0.067 | 09/05/19 12:17 | |
| Nitrogen, Nitrite | mg/L | ND | 0.10 | 0.067 | 09/05/19 12:17 | |
| Nitrogen, NO2 plus NO3 | mg/L | ND | 0.10 | 0.038 | 09/05/19 12:17 | |

LABORATORY CONTROL SAMPLE: 2482507

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| Nitrogen, Nitrate | mg/L | 1 | 0.98 | 98 | 70-130 | |
| Nitrogen, Nitrite | mg/L | 1 | 1.0 | 102 | 90-110 | |
| Nitrogen, NO2 plus NO3 | mg/L | 2 | 2.0 | 100 | 90-110 | |

MATRIX SPIKE SAMPLE: 2482508

| Parameter | Units | 60313721003 Result | Spike Conc. | MS Result | MS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|---|
| Nitrogen, Nitrate | mg/L | 1.4 | 1 | 2.4 | 95 | 70-130 | |
| Nitrogen, Nitrite | mg/L | ND | 1 | 1.1 | 108 | 90-110 | |
| Nitrogen, NO2 plus NO3 | mg/L | 1.4 | 2 | 3.5 | 102 | 90-110 | |

MATRIX SPIKE SAMPLE: 2482510

| Parameter | Units | 60313699001 Result | Spike Conc. | MS Result | MS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|---|
| Nitrogen, Nitrate | mg/L | ND | 1 | 0.98 | 98 | 70-130 | |
| Nitrogen, Nitrite | mg/L | ND | 1 | 1.1 | 109 | 90-110 | |
| Nitrogen, NO2 plus NO3 | mg/L | ND | 2 | 2.1 | 103 | 90-110 | |

SAMPLE DUPLICATE: 2482509

| Parameter | Units | 60313722005 Result | Dup Result | RPD | Max RPD | Qualifiers |
|---|---|---|---|---|---|---|
| Nitrogen, Nitrate | mg/L | 4.1 | 4.0 | 3 | 20 | |
| Nitrogen, Nitrite | mg/L | ND | ND | | 20 | |
| Nitrogen, NO2 plus NO3 | mg/L | 4.1 | 4.0 | 3 | 20 | |

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## QUALITY CONTROL DATA

Project: ANNUAL PP AND DNR POLLUTANT
Pace Project No.: 60313697

LABORATORY CONTROL SAMPLE: 2466760

| Parameter | Units | Spike Conc | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| Silver | ug/L | 500 | 521 | 104 | 85-115 | |
| Sodium | ug/L | 10000 | 10500 | 105 | 85-115 | |
| Thallium | ug/L | 1000 | 1050 | 105 | 85-115 | |
| Zinc | ug/L | 1000 | 1060 | 106 | 85-115 | |

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2466761 — 2466762

| Parameter | Units | 60313697001 Result | MS Spike Conc. | MSD Spike Conc. | MS Result | MSD Result | MS % Rec | MSD % Rec | % Rec Limits | RPD | Max RPD | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Aluminum | ug/L | ND | 10000 | 10000 | 9830 | 9370 | 98 | 94 | 70-130 | 3 | 20 | |
| Antimony | ug/L | ND | 1000 | 1000 | 995 | 972 | 99 | 97 | 70-130 | 2 | 20 | |
| Arsenic | ug/L | ND | 1000 | 1000 | 942 | 920 | 94 | 92 | 70-130 | 2 | 20 | |
| Barium | ug/L | 78.9 | 1000 | 1000 | 1040 | 1020 | 96 | 94 | 70-130 | 2 | 20 | |
| Beryllium | ug/L | ND | 1000 | 1000 | 974 | 953 | 97 | 95 | 70-130 | 2 | 20 | |
| Cadmium | ug/L | ND | 1000 | 1000 | 954 | 932 | 95 | 93 | 70-130 | 2 | 20 | |
| Calcium | ug/L | 53700 | 10000 | 10000 | 62700 | 61500 | 89 | 80 | 70-130 | 1 | 20 | |
| Chromium | ug/L | ND | 1000 | 1000 | 955 | 941 | 96 | 94 | 70-130 | 1 | 20 | |
| Copper | ug/L | ND | 1000 | 1000 | 948 | 931 | 94 | 93 | 70-130 | 2 | 20 | |
| Hardness, Total(SM 2340B) | ug/L | 236000 | 66200 | 66200 | 295000 | 291000 | 89 | 84 | 70-130 | 1 | 20 | |
| Iron | ug/L | ND | 10000 | 10000 | 9720 | 9520 | 97 | 95 | 70-130 | 2 | 20 | |
| Lead | ug/L | ND | 1000 | 1000 | 1000 | 983 | 100 | 98 | 70-130 | 2 | 20 | |
| Magnesium | ug/L | 24700 | 10000 | 10000 | 33600 | 33300 | 89 | 86 | 70-130 | 1 | 20 | |
| Molybdenum | ug/L | 69.1 | 1000 | 1000 | 1060 | 1030 | 99 | 96 | 70-130 | 2 | 20 | |
| Nickel | ug/L | ND | 1000 | 1000 | 968 | 949 | 97 | 95 | 70-130 | 2 | 20 | |
| Selenium | ug/L | ND | 1000 | 1000 | 970 | 946 | 97 | 95 | 70-130 | 2 | 20 | |
| Silver | ug/L | ND | 500 | 500 | 475 | 470 | 95 | 94 | 70-130 | 1 | 20 | |
| Sodium | ug/L | 126000 | 10000 | 10000 | 134000 | 132000 | 78 | 54 | 70-130 | 2 | 20 | M1 |
| Thallium | ug/L | ND | 1000 | 1000 | 931 | 915 | 93 | 91 | 70-130 | 2 | 20 | |
| Zinc | ug/L | ND | 1000 | 1000 | 958 | 947 | 95 | 94 | 70-130 | 1 | 20 | |

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## QUALITY CONTROL DATA

Project: ANNUAL PP AND DNR POLLUTANT
Pace Project No.: 60313697

QC Batch: 608279 — Analysis Method: EPA 624 Low
QC Batch Method: EPA 624 Low — Analysis Description: 624 MSV
Associated Lab Samples: 60313697002

METHOD BLANK: 2485008 — Matrix: Water
Associated Lab Samples: 60313697002

| Parameter | Units | Blank Result | Reporting Limit | MDL | Analyzed | Qualifiers |
|---|---|---|---|---|---|---|
| 1,1,1-Trichloroethane | ug/L | ND | 1.0 | 0.057 | 09/10/19 14:02 | |
| 1,1,2,2-Tetrachloroethane | ug/L | ND | 1.0 | 0.12 | 09/10/19 14:02 | |
| 1,1,2-Trichloroethane | ug/L | ND | 1.0 | 0.25 | 09/10/19 14:02 | |
| 1,1-Dichloroethane | ug/L | ND | 1.0 | 0.13 | 09/10/19 14:02 | |
| 1,1-Dichloroethene | ug/L | ND | 1.0 | 0.11 | 09/10/19 14:02 | |
| 1,2-Dichlorobenzene | ug/L | ND | 1.0 | 0.066 | 09/10/19 14:02 | |
| 1,2-Dichloroethane | ug/L | ND | 1.0 | 0.14 | 09/10/19 14:02 | |
| 1,2-Dichloropropane | ug/L | ND | 1.0 | 0.097 | 09/10/19 14:02 | |
| 1,3-Dichlorobenzene | ug/L | ND | 1.0 | 0.10 | 09/10/19 14:02 | |
| 1,4-Dichlorobenzene | ug/L | ND | 1.0 | 0.090 | 09/10/19 14:02 | |
| 2-Chloroethyl Vinyl Ether | ug/L | ND | 10.0 | 0.29 | 09/10/19 14:02 | |
| Acrolein | ug/L | ND | 100 | 2.0 | 09/10/19 14:02 | |
| Acrylonitrile | ug/L | ND | 20.0 | 1.6 | 09/10/19 14:02 | |
| Benzene | ug/L | ND | 1.0 | 0.12 | 09/10/19 14:02 | |
| Bromodichloromethane | ug/L | ND | 1.0 | 0.13 | 09/10/19 14:02 | |
| Bromoform | ug/L | ND | 1.0 | 0.11 | 09/10/19 14:02 | |
| Bromomethane | ug/L | ND | 5.0 | 0.68 | 09/10/19 14:02 | |
| Carbon tetrachloride | ug/L | ND | 1.0 | 0.10 | 09/10/19 14:02 | |
| Chlorobenzene | ug/L | ND | 1.0 | 0.081 | 09/10/19 14:02 | |
| Chloroethane | ug/L | ND | 1.0 | 0.20 | 09/10/19 14:02 | |
| Chloroform | ug/L | ND | 1.0 | 0.14 | 09/10/19 14:02 | |
| Chloromethane | ug/L | ND | 1.0 | 0.20 | 09/10/19 14:02 | |
| cis-1,2-Dichloroethene | ug/L | ND | 1.0 | 0.14 | 09/10/19 14:02 | N2 |
| cis-1,3-Dichloropropene | ug/L | ND | 1.0 | 0.16 | 09/10/19 14:02 | |
| Dibromochloromethane | ug/L | ND | 1.0 | 0.24 | 09/10/19 14:02 | |
| Ethylbenzene | ug/L | ND | 1.0 | 0.057 | 09/10/19 14:02 | |
| Methylene Chloride | ug/L | ND | 1.0 | 0.21 | 09/10/19 14:02 | |
| Tetrachloroethene | ug/L | ND | 1.0 | 0.15 | 09/10/19 14:02 | |
| Toluene | ug/L | ND | 1.0 | 0.048 | 09/10/19 14:02 | |
| trans-1,2-Dichloroethene | ug/L | ND | 1.0 | 0.17 | 09/10/19 14:02 | |
| trans-1,3-Dichloropropene | ug/L | ND | 1.0 | 0.12 | 09/10/19 14:02 | |
| Trichloroethene | ug/L | ND | 1.0 | 0.15 | 09/10/19 14:02 | |
| Trichlorofluoromethane | ug/L | ND | 1.0 | 0.12 | 09/10/19 14:02 | |
| Vinyl chloride | ug/L | ND | 1.0 | 0.11 | 09/10/19 14:02 | |
| Xylene (Total) | ug/L | ND | 3.0 | 0.21 | 09/10/19 14:02 | N2 |
| 1,2-Dichloroethane-d4 (S) | % | 102 | 80-120 | | 09/10/19 14:02 | |
| 4-Bromofluorobenzene (S) | % | 100 | 80-120 | | 09/10/19 14:02 | |
| Toluene-d8 (S) | % | 101 | 80-120 | | 09/10/19 14:02 | |

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## QUALITY CONTROL DATA

Project: ANNUAL PP AND DNR POLLUTANT
Pace Project No.: 60313697

QC Batch: 609504 — Analysis Method: EPA 351.2
QC Batch Method: EPA 351.2 — Analysis Description: 351.2 TKN
Associated Lab Samples: 60313697001

METHOD BLANK: 2490252 — Matrix: Water
Associated Lab Samples: 60313697001

| Parameter | Units | Blank Result | Reporting Limit | MDL | Analyzed | Qualifiers |
|---|---|---|---|---|---|---|
| Nitrogen, Kjeldahl, Total | mg/L | ND | 0.50 | 0.37 | 09/17/19 09:35 | |

LABORATORY CONTROL SAMPLE: 2490253

| Parameter | Units | Spike Conc | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| Nitrogen, Kjeldahl, Total | mg/L | 5 | 5.2 | 105 | 90-110 | |

MATRIX SPIKE SAMPLE: 2490254

| Parameter | Units | 60314009001 Result | Spike Conc. | MS Result | MS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|---|
| Nitrogen, Kjeldahl, Total | mg/L | 11.2 | 5 | 18.4 | 143 | 90-110 | M1 |

MATRIX SPIKE SAMPLE: 2490258

| Parameter | Units | 60314030001 Result | Spike Conc. | MS Result | MS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|---|
| Nitrogen, Kjeldahl, Total | mg/L | 425 | 50 | 454 | 58 | 90-110 | M1 |

SAMPLE DUPLICATE: 2490255

| Parameter | Units | 60313697003 Result | Dup Result | RPD | Max RPD | Qualifiers |
|---|---|---|---|---|---|---|
| Nitrogen, Kjeldahl, Total | mg/L | 32.3 | 31.5 | 2 | 10 | |

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## QUALITY CONTROL DATA

Project: ANNUAL PP AND DNR POLLUTANT
Pace Project No.: 60313897

QC Batch: 809811 — Analysis Method: EPA 350.1
QC Batch Method: EPA 350.1 — Analysis Description: 350.1 Ammonia
Associated Lab Samples: 60313897001

METHOD BLANK: 2491223 — Matrix: Water
Associated Lab Samples: 60313897001

| Parameter | Units | Blank Result | Reporting Limit | MDL | Analyzed | Qualifiers |
|---|---|---|---|---|---|---|
| Nitrogen, Ammonia | mg/L | ND | 0.10 | 0.079 | 09/18/19 14:41 | |

LABORATORY CONTROL SAMPLE: 2491224

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| Nitrogen, Ammonia | mg/L | 5 | 4.9 | 98 | 90-110 | |

MATRIX SPIKE SAMPLE: 2491225

| Parameter | Units | 60313966002 Result | Spike Conc. | MS Result | MS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|---|
| Nitrogen, Ammonia | mg/L | 0.32 | 5 | 5.5 | 104 | 90-110 | |

MATRIX SPIKE SAMPLE: 2491227

| Parameter | Units | 60313812005 Result | Spike Conc. | MS Result | MS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|---|
| Nitrogen, Ammonia | mg/L | ND | 5 | 5.1 | 102 | 90-110 | |

SAMPLE DUPLICATE: 2491226

| Parameter | Units | 60314029001 Result | Dup Result | RPD | Max RPD | Qualifiers |
|---|---|---|---|---|---|---|
| Nitrogen, Ammonia | mg/L | 54.5 | 55.3 | 1 | 18 | |

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## QUALITY CONTROL DATA

Project: ANNUAL PP AND DNR POLLUTANT
Pace Project No.: 60313897

LABORATORY CONTROL SAMPLE: 2485009

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| 1,1,1-Trichloroethane | ug/L | 20 | 21.8 | 109 | 80-114 | |
| 1,1,2,2-Tetrachloroethane | ug/L | 20 | 21.8 | 109 | 67-123 | |
| 1,1,2-Trichloroethane | ug/L | 20 | 21.0 | 105 | 80-117 | |
| 1,1-Dichloroethane | ug/L | 20 | 20.7 | 103 | 75-117 | |
| 1,1-Dichloroethene | ug/L | 20 | 21.2 | 106 | 66-126 | |
| 1,2-Dichlorobenzene | ug/L | 20 | 21.2 | 106 | 81-115 | |
| 1,2-Dichloroethane | ug/L | 20 | 20.9 | 105 | 71-110 | |
| 1,2-Dichloropropane | ug/L | 20 | 21.6 | 108 | 78-115 | |
| 1,3-Dichlorobenzene | ug/L | 20 | 21.2 | 106 | 81-115 | |
| 1,4-Dichlorobenzene | ug/L | 20 | 20.2 | 101 | 80-113 | |
| 2-Chloroethylvinyl ether | ug/L | 20 | 22.9 | 114 | 10-187 | |
| Acrolein | ug/L | 200 | 212 | 106 | 10-195 | |
| Acrylonitrile | ug/L | 200 | 230 | 115 | 72-121 | |
| Benzene | ug/L | 20 | 21.1 | 106 | 79-114 | |
| Bromodichloromethane | ug/L | 20 | 21.9 | 110 | 79-116 | |
| Bromoform | ug/L | 20 | 23.7 | 118 | 72-128 | |
| Bromomethane | ug/L | 20 | 34.5 | 173 | 15-185 | |
| Carbon tetrachloride | ug/L | 20 | 22.8 | 114 | 70-130 | |
| Chlorobenzene | ug/L | 20 | 21.6 | 108 | 65-135 | |
| Chloroethane | ug/L | 20 | 14.4 | 72 | 41-138 | |
| Chloroform | ug/L | 20 | 19.9 | 99 | 78-110 | |
| Chloromethane | ug/L | 20 | 19.9 | 99 | 17-148 | |
| cis-1,2-Dichloroethene | ug/L | 20 | 21.3 | 106 | 80-114 | N2 |
| cis-1,3-Dichloropropene | ug/L | 20 | 20.6 | 103 | 79-116 | |
| Dibromochloromethane | ug/L | 20 | 22.8 | 114 | 70-135 | |
| Ethylbenzene | ug/L | 20 | 21.1 | 105 | 83-118 | |
| Methylene Chloride | ug/L | 20 | 18.5 | 93 | 70-118 | |
| Tetrachloroethene | ug/L | 20 | 21.8 | 109 | 74-124 | |
| Toluene | ug/L | 20 | 20.8 | 104 | 82-115 | |
| trans-1,2-Dichloroethene | ug/L | 20 | 21.3 | 107 | 75-118 | |
| trans-1,3-Dichloropropene | ug/L | 20 | 20.9 | 104 | 81-118 | |
| Trichloroethene | ug/L | 20 | 21.0 | 105 | 62-124 | |
| Trichlorofluoromethane | ug/L | 20 | 22.2 | 111 | 84-128 | |
| Vinyl chloride | ug/L | 20 | 23.1 | 115 | 39-159 | |
| Xylene (Total) | ug/L | 60 | 64.2 | 107 | 82-114 | N2 |
| 1,2-Dichloroethane-d4 (S) | % | | | 101 | 60-120 | |
| 4-Bromofluorobenzene (S) | % | | | 100 | 60-120 | |
| Toluene-d8 (S) | % | | | 101 | 60-120 | |

MATRIX SPIKE SAMPLE: 2485010

| Parameter | Units | 60313846002 Result | Spike Conc. | MS Result | MS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|---|
| 1,1,1-Trichloroethane | ug/L | ND | 20 | 18.8 | 93 | 52-162 | |
| 1,1,2,2-Tetrachloroethane | ug/L | ND | 20 | 15.7 | 78 | 46-157 | |
| 1,1,2-Trichloroethane | ug/L | ND | 20 | 15.2 | 76 | 52-150 | |

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## QUALITY CONTROL DATA

Project: ANNUAL PP AND DNR POLLUTANT
Pace Project No.: 60313897

MATRIX SPIKE SAMPLE: 2485010

| Parameter | Units | 60313846002 Result | Spike Conc. | MS Result | MS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethane | ug/L | ND | 20 | 16.9 | 84 | 59-155 | |
| 1,1-Dichloroethene | ug/L | ND | 20 | 18.8 | 94 | 10-234 | |
| 1,2-Dichlorobenzene | ug/L | ND | 20 | 15.6 | 78 | 18-190 | |
| 1,2-Dichloroethane | ug/L | ND | 20 | 15.0 | 74 | 49-155 | |
| 1,2-Dichloropropane | ug/L | ND | 20 | 16.1 | 81 | 10-210 | |
| 1,3-Dichlorobenzene | ug/L | ND | 20 | 18.0 | 90 | 59-156 | |
| 1,4-Dichlorobenzene | ug/L | ND | 20 | 15.7 | 78 | 18-190 | |
| 2-Chloroethylvinyl ether | ug/L | ND | 20 | 15.0 | 75 | 10-225 | |
| Acrolein | ug/L | ND | 200 | 37.4J | 19 | 10-175 | |
| Acrylonitrile | ug/L | ND | 200 | 149 | 74 | 35-134 | |
| Benzene | ug/L | ND | 20 | 16.8 | 84 | 37-151 | |
| Bromodichloromethane | ug/L | ND | 20 | 15.7 | 78 | 35-155 | |
| Bromoform | ug/L | ND | 20 | 16.1 | 81 | 45-169 | |
| Bromomethane | ug/L | ND | 20 | 26.0 | 130 | 10-242 | |
| Carbon tetrachloride | ug/L | ND | 20 | 20.1 | 101 | 70-140 | |
| Chlorobenzene | ug/L | ND | 20 | 15.9 | 80 | 37-160 | |
| Chloroethane | ug/L | ND | 20 | 9.8 | 49 | 14-230 | |
| Chloroform | ug/L | ND | 20 | 15.0 | 74 | 51-138 | |
| Chloromethane | ug/L | ND | 20 | 14.6 | 73 | 10-273 | |
| cis-1,2-Dichloroethene | ug/L | ND | 20 | 16.3 | 81 | 43-132 | N2 |
| cis-1,3-Dichloropropene | ug/L | ND | 20 | 14.8 | 74 | 10-227 | |
| Dibromochloromethane | ug/L | ND | 20 | 16.2 | 81 | 53-149 | |
| Ethylbenzene | ug/L | ND | 20 | 16.0 | 80 | 37-162 | |
| Methylene Chloride | ug/L | ND | 20 | 13.7 | 68 | 10-221 | |
| Tetrachloroethene | ug/L | ND | 20 | 17.6 | 88 | 64-148 | |
| Toluene | ug/L | ND | 20 | 16.7 | 83 | 47-150 | |
| trans-1,2-Dichloroethene | ug/L | ND | 20 | 17.4 | 87 | 54-156 | |
| trans-1,3-Dichloropropene | ug/L | ND | 20 | 14.9 | 75 | 17-183 | |
| Trichloroethene | ug/L | ND | 20 | 17.1 | 86 | 70-157 | |
| Trichlorofluoromethane | ug/L | ND | 20 | 20.6 | 103 | 17-181 | |
| Vinyl chloride | ug/L | ND | 20 | 19.1 | 95 | 10-251 | |
| Xylene (Total) | ug/L | ND | 60 | 48.2 | 80 | 43-137 | N2 |
| 1,2-Dichloroethane-d4 (S) | % | | | | 97 | 60-120 | |
| 4-Bromofluorobenzene (S) | % | | | | 103 | 60-120 | |
| Toluene-d8 (S) | % | | | | 101 | 60-120 | |
| Preservation pH | | 7.0 | | 7.0 | | | |

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## QUALITY CONTROL DATA

Project: ANNUAL PP AND DNR POLLUTANT
Pace Project No.: 60313897

QC Batch: 809008 — Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 — Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60313897001

METHOD BLANK: 2487714 — Matrix: Water
Associated Lab Samples: 60313897001

| Parameter | Units | Blank Result | Reporting Limit | MDL | Analyzed | Qualifiers |
|---|---|---|---|---|---|---|
| Chloride | mg/L | ND | 1.0 | 0.22 | 09/12/19 16:47 | |
| Fluoride | mg/L | ND | 0.20 | 0.085 | 09/12/19 16:47 | |
| Sulfate | mg/L | ND | 1.0 | 0.23 | 09/12/19 16:47 | |

LABORATORY CONTROL SAMPLE: 2487715

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| Chloride | mg/L | 5 | 5.0 | 99 | 90-110 | |
| Fluoride | mg/L | 2.5 | 2.6 | 104 | 90-110 | |
| Sulfate | mg/L | 5 | 4.8 | 96 | 90-110 | |

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2487716 — 2487717

| Parameter | Units | 60313820001 MS Result | MS Spike Conc. | MSD Spike Conc. | MS Result | MSD Result | MS % Rec | MSD % Rec | % Rec Limits | RPD | Max RPD | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | mg/L | 596 | 500 | 500 | 1160 | 1140 | 112 | 109 | 80-120 | 1 | 15 | |
| Fluoride | mg/L | ND | 250 | 250 | 261 | 263 | 104 | 105 | 80-120 | 1 | 15 | |
| Sulfate | mg/L | ND | 500 | 500 | 710 | 707 | 142 | 141 | 80-120 | 0 | 15 | M1 |

MATRIX SPIKE SAMPLE: 2487718

| Parameter | Units | 60313897001 Result | Spike Conc. | MS Result | MS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|---|
| Chloride | mg/L | 175 | 50 | 240 | 129 | 80-120 | E M1 |
| Fluoride | mg/L | 0.70 | 2.5 | 3.4 | 108 | 80-120 | |
| Sulfate | mg/L | 27.0 | 50 | 81.4 | 109 | 80-120 | |

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## QUALITY CONTROL DATA

Project: ANNUAL PP AND DNR POLLUTANT
Pace Project No.: 60313697

QC Batch: 607549 — Analysis Method: SM 5540C
QC Batch Method: SM 5540C — Analysis Description: 5540C MBAS Surfactants
Associated Lab Samples: 60313697002

METHOD BLANK: 2482480 — Matrix: Water
Associated Lab Samples: 60313697002

| Parameter | Units | Blank Result | Reporting Limit | MDL | Analyzed | Qualifiers |
|---|---|---|---|---|---|---|
| MBAS, Calculated as LAS | mg/L | ND | 0.20 | 0.094 | 09/05/19 17:09 | SU |

LABORATORY CONTROL SAMPLE: 2482481

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| MBAS, Calculated as LAS | mg/L | 1 | 0.95 | 95 | 60-120 | SU |

MATRIX SPIKE SAMPLE: 2482482

| Parameter | Units | 60313900002 Result | Spike Conc. | MS Result | MS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|---|
| MBAS, Calculated as LAS | mg/L | 1.4 | 0.5 | 1.6 | 45 | 33-139 | SU |

SAMPLE DUPLICATE: 2482483

| Parameter | Units | 60313697002 Result | Dup Result | RPD | Max RPD | Qualifiers |
|---|---|---|---|---|---|---|
| MBAS, Calculated as LAS | mg/L | 0.24 | 0.24 | 1 | 19 | SU |

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## QUALITY CONTROL DATA

Project: ANNUAL PP AND DNR POLLUTANT
Pace Project No.: 60313697

QC Batch: 520708 — Analysis Method: EPA 608.3
QC Batch Method: EPA 608.3 — Analysis Description: 608.3 PCB
Associated Lab Samples: 60313697001

METHOD BLANK: 2401883 — Matrix: Water
Associated Lab Samples: 60313697001

| Parameter | Units | Blank Result | Reporting Limit | MDL | Analyzed | Qualifiers |
|---|---|---|---|---|---|---|
| PCB-1016 (Aroclor 1016) | ug/L | ND | 0.10 | 0.035 | 09/11/19 15:57 | |
| PCB-1221 (Aroclor 1221) | ug/L | ND | 0.10 | 0.035 | 09/11/19 15:57 | |
| PCB-1232 (Aroclor 1232) | ug/L | ND | 0.10 | 0.035 | 09/11/19 15:57 | |
| PCB-1242 (Aroclor 1242) | ug/L | ND | 0.10 | 0.035 | 09/11/19 15:57 | |
| PCB-1248 (Aroclor 1248) | ug/L | ND | 0.10 | 0.035 | 09/11/19 15:57 | |
| PCB-1254 (Aroclor 1254) | ug/L | ND | 0.10 | 0.035 | 09/11/19 15:57 | |
| PCB-1260 (Aroclor 1260) | ug/L | ND | 0.10 | 0.031 | 09/11/19 15:57 | |
| Tetrachloro-m-xylene (S) | % | 83 | 14-132 | | 09/11/19 15:57 | |

LABORATORY CONTROL SAMPLE: 2401884

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| PCB-1016 (Aroclor 1016) | ug/L | 0.5 | 0.49 | 99 | 50-140 | |
| PCB-1260 (Aroclor 1260) | ug/L | 0.5 | 0.51 | 102 | 8-140 | |
| Tetrachloro-m-xylene (S) | % | | | 59 | 14-132 | |

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2401885 2401886

| Parameter | Units | 50235070001 Result | MS Spike Conc. | MSD Spike Conc. | MS Result | MSD Result | MS % Rec | MSD % Rec | % Rec Limits | RPD | Max RPD | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PCB-1016 (Aroclor 1016) | ug/L | ND | 1 | 1 | 1.1 | 1.1 | 111 | 108 | 50-140 | 5 | 36 | |
| PCB-1260 (Aroclor 1260) | ug/L | ND | 1 | 1 | 0.43 | 0.44 | 43 | 44 | 8-140 | 2 | 38 | |
| Tetrachloro-m-xylene (S) | % | | | | | | 84 | 92 | 14-132 | | | |

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## QUALITY CONTROL DATA

Project: ANNUAL PP AND DNR POLLUTANT
Pace Project No.: 60313697

QC Batch: 520708 — Analysis Method: EPA 608.3
QC Batch Method: EPA 608.3 — Analysis Description: 608.3 Pesticides
Associated Lab Samples: 60313697001

METHOD BLANK: 2401877 — Matrix: Water
Associated Lab Samples: 60313697001

| Parameter | Units | Blank Result | Reporting Limit | MDL | Analyzed | Qualifiers |
|---|---|---|---|---|---|---|
| 4,4'-DDD | ug/L | ND | 0.10 | 0.012 | 09/13/19 15:12 | |
| 4,4'-DDE | ug/L | ND | 0.10 | 0.017 | 09/13/19 15:12 | |
| 4,4'-DDT | ug/L | ND | 0.10 | 0.036 | 09/13/19 15:12 | |
| Aldrin | ug/L | ND | 0.050 | 0.012 | 09/13/19 15:12 | |
| alpha-BHC | ug/L | ND | 0.050 | 0.0050 | 09/13/19 15:12 | |
| alpha-Chlordane | ug/L | ND | 0.050 | 0.0061 | 09/13/19 15:12 | N2 |
| beta-BHC | ug/L | ND | 0.050 | 0.0090 | 09/13/19 15:12 | |
| Chlordane (Technical) | ug/L | ND | 0.50 | 0.33 | 09/13/19 15:12 | |
| delta-BHC | ug/L | ND | 0.050 | 0.017 | 09/13/19 15:12 | |
| Dieldrin | ug/L | ND | 0.10 | 0.0056 | 09/13/19 15:12 | |
| Endosulfan I | ug/L | ND | 0.050 | 0.011 | 09/13/19 15:12 | |
| Endosulfan II | ug/L | ND | 0.10 | 0.012 | 09/13/19 15:12 | |
| Endosulfan sulfate | ug/L | ND | 0.10 | 0.014 | 09/13/19 15:12 | |
| Endrin | ug/L | ND | 0.10 | 0.018 | 09/13/19 15:12 | |
| Endrin aldehyde | ug/L | ND | 0.10 | 0.018 | 09/13/19 15:12 | |
| Endrin ketone | ug/L | ND | 0.10 | 0.019 | 09/13/19 15:12 | N2 |
| gamma-BHC (Lindane) | ug/L | ND | 0.050 | 0.0041 | 09/13/19 15:12 | |
| gamma-Chlordane | ug/L | ND | 0.050 | 0.0035 | 09/13/19 15:12 | N2 |
| Heptachlor | ug/L | ND | 0.050 | 0.0051 | 09/13/19 15:12 | |
| Heptachlor epoxide | ug/L | ND | 0.050 | 0.0067 | 09/13/19 15:12 | |
| Methoxychlor | ug/L | ND | 0.50 | 0.17 | 09/13/19 15:12 | |
| Toxaphene | ug/L | ND | 1.0 | 0.0063 | 09/13/19 15:12 | |
| Decachlorobiphenyl (S) | % | 91 | 18-118 | | 09/13/19 15:12 | |

LABORATORY CONTROL SAMPLE: 2401878

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| 4,4'-DDD | ug/L | 0.2 | 0.22 | 110 | 31-141 | |
| 4,4'-DDE | ug/L | 0.2 | 0.19 | 94 | 30-145 | |
| 4,4'-DDT | ug/L | 0.2 | 0.22 | 109 | 25-160 | |
| Aldrin | ug/L | 0.1 | .028J | 28 | 42-140 | L2 |
| alpha-BHC | ug/L | 0.1 | 0.11 | 109 | 37-140 | |
| alpha-Chlordane | ug/L | 0.1 | 0.089 | 89 | 45-140 | N2 |
| beta-BHC | ug/L | 0.1 | 0.10 | 103 | 17-147 | |
| delta-BHC | ug/L | 0.1 | 0.085 | 85 | 19-140 | |
| Dieldrin | ug/L | 0.2 | 0.21 | 103 | 35-146 | |
| Endosulfan I | ug/L | 0.1 | 0.099 | 99 | 45-153 | |
| Endosulfan II | ug/L | 0.2 | 0.22 | 108 | 1-202 | |
| Endosulfan sulfate | ug/L | 0.2 | 0.20 | 100 | 28-144 | |
| Endrin | ug/L | 0.2 | 0.21 | 106 | 30-147 | |

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## QUALITY CONTROL DATA

Project: ANNUAL PP AND DNR POLLUTANT
Pace Project No.: 60313697

QC Batch: 609831 — Analysis Method: SM 4500-SO3 B
QC Batch Method: SM 4500-SO3 B — Analysis Description: 4500SO3B Sulfite
Associated Lab Samples: 60313697002

METHOD BLANK: 2490609 — Matrix: Water
Associated Lab Samples: 60313697002

| Parameter | Units | Blank Result | Reporting Limit | MDL | Analyzed | Qualifiers |
|---|---|---|---|---|---|---|
| Sulfite | mg/L | ND | 2.0 | 2.0 | 09/16/19 15:18 | H6 |

LABORATORY CONTROL SAMPLE: 2490610

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| Sulfite | mg/L | 15 | 14.0 | 93 | 60-120 | H6 |

SAMPLE DUPLICATE: 2490611

| Parameter | Units | 60313600002 Result | Dup Result | RPD | Max RPD | Qualifiers |
|---|---|---|---|---|---|---|
| Sulfite | mg/L | ND | ND | | 20 | H6 |

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## QUALITY CONTROL DATA

Project: ANNUAL PP AND DNR POLLUTANT
Pace Project No.: 60313697

QC Batch: 608089 — Analysis Method: SM 4500-S-2 D
QC Batch Method: SM 4500-S-2 D — Analysis Description: 4500S2D Sulfide, Total
Associated Lab Samples: 60313697002

METHOD BLANK: 2484452 — Matrix: Water
Associated Lab Samples: 60313697002

| Parameter | Units | Blank Result | Reporting Limit | MDL | Analyzed | Qualifiers |
|---|---|---|---|---|---|---|
| Sulfide, Total | mg/L | ND | 0.050 | 0.039 | 09/09/19 12:10 | |

LABORATORY CONTROL SAMPLE: 2484453

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| Sulfide, Total | mg/L | 0.5 | 0.48 | 96 | 80-120 | |

MATRIX SPIKE SAMPLE: 2484454

| Parameter | Units | 60313695002 Result | Spike Conc. | MS Result | MS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|---|
| Sulfide, Total | mg/L | ND | 0.5 | 0.20 | 40 | 75-125 | M1 |

SAMPLE DUPLICATE: 2484455

| Parameter | Units | 60313695004 Result | Dup Result | RPD | Max RPD | Qualifiers |
|---|---|---|---|---|---|---|
| Sulfide, Total | mg/L | ND | ND | | 20 | |

SAMPLE DUPLICATE: 2484456

| Parameter | Units | 60314010002 Result | Dup Result | RPD | Max RPD | Qualifiers |
|---|---|---|---|---|---|---|
| Sulfide, Total | mg/L | ND | ND | | 20 | |

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## QUALITY CONTROL DATA

Project: ANNUAL PP AND DNR POLLUTANT
Pace Project No.: 60313697

LABORATORY CONTROL SAMPLE: 2401878

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| Endrin aldehyde | ug/L | 0.2 | 0.21 | 108 | 35-178 | |
| Endrin ketone | ug/L | 0.2 | 0.20 | 102 | 47-167 | N2 |
| gamma-BHC (Lindane) | ug/L | 0.1 | 0.11 | 112 | 32-140 | |
| gamma-Chlordane | ug/L | 0.1 | 0.077 | 77 | 45-140 | N2 |
| Heptachlor | ug/L | 0.1 | 0.044J | 44 | 34-140 | |
| Heptachlor epoxide | ug/L | 0.1 | 0.10 | 104 | 37-142 | |
| Methoxychlor | ug/L | 1 | 1.1 | 108 | 34-193 | |
| Decachlorobiphenyl (S) | %. | | | 83 | 18-118 | |

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2401879 — 2401880

| Parameter | Units | 60313641001 Result | MS Spike Conc. | MSD Spike Conc. | MS Result | MSD Result | MS % Rec | MSD % Rec | % Rec Limits | RPD | Max RPD | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4,4'-DDD | ug/L | ND | 0.2 | 0.2 | 0.18 | 0.10 | 88 | 51 | 31-141 | 54 | 39 | R1 |
| 4,4'-DDE | ug/L | ND | 0.2 | 0.2 | 0.21 | 0.12 | 104 | 60 | 30-145 | 53 | 35 | R1 |
| 4,4'-DDT | ug/L | ND | 0.2 | 0.2 | 0.16 | 0.12 | 79 | 59 | 25-160 | 28 | 42 | |
| Aldrin | ug/L | ND | 0.1 | 0.1 | 0.11 | 0.068 | 109 | 68 | 42-140 | 49 | 35 | R1 |
| alpha-BHC | ug/L | ND | 0.1 | 0.1 | 0.11 | 0.066 | 106 | 66 | 37-140 | 10 | 30 | |
| alpha-Chlordane | ug/L | ND | 0.1 | 0.1 | 0.077 | 0.44J | 77 | 44 | 45-140 | | 35 | M1,N2 |
| beta-BHC | ug/L | ND | 0.1 | 0.1 | 0.13 | 0.082 | 129 | 82 | 17-147 | 44 | 44 | |
| delta-BHC | ug/L | ND | 0.1 | 0.1 | 0.13 | 0.077 | 130 | 77 | 19-140 | 51 | 52 | |
| Dieldrin | ug/L | ND | 0.2 | 0.2 | 0.14 | 0.11 | 72 | 56 | 36-146 | 25 | 49 | |
| Endosulfan I | ug/L | ND | 0.1 | 0.1 | 0.079 | 0.46J | 79 | 46 | 45-153 | | 28 | |
| Endosulfan II | ug/L | ND | 0.2 | 0.2 | 0.15 | 0.11 | 73 | 57 | 1-202 | 25 | 53 | |
| Endosulfan sulfate | ug/L | ND | 0.2 | 0.2 | 0.18 | 0.13 | 88 | 65 | 26-144 | 31 | 38 | |
| Endrin | ug/L | ND | 0.2 | 0.2 | 0.22 | 0.16 | 112 | 81 | 30-147 | 33 | 48 | |
| Endrin aldehyde | ug/L | ND | 0.2 | 0.2 | 0.51J | 0.44J | 25 | 22 | 10-156 | | 30 | |
| Endrin ketone | ug/L | ND | 0.2 | 0.2 | 0.19 | 0.13 | 93 | 67 | 17-183 | 33 | 30 | N2,R1 |
| gamma-BHC (Lindane) | ug/L | ND | 0.1 | 0.1 | 0.13 | 0.095 | 127 | 95 | 32-140 | 29 | 35 | |
| gamma-Chlordane | ug/L | ND | 0.1 | 0.1 | 0.44J | 0.48J | 44 | 48 | 45-140 | | 35 | M1,N2 |
| Heptachlor | ug/L | ND | 0.1 | 0.1 | 0.11 | 0.085 | 105 | 85 | 34-140 | 48 | 43 | R1 |
| Heptachlor epoxide | ug/L | ND | 0.1 | 0.1 | 0.10 | 0.067 | 100 | 67 | 37-142 | 39 | 28 | R1 |
| Methoxychlor | ug/L | ND | 1 | 1 | 1.0 | 0.62 | 103 | 62 | 19-166 | 49 | 36 | R1 |
| Decachlorobiphenyl (S) | %. | | | | | | 13 | 11 | 18-118 | | | S0 |

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## QUALITY CONTROL DATA

Project: ANNUAL PP AND DNR POLLUTANT
Pace Project No.: 60313697

QC Batch: 607510 — Analysis Method: EPA 625
QC Batch Method: EPA 625 — Analysis Description: 625 MSS
Associated Lab Samples: 60313697001

METHOD BLANK: 2482278 — Matrix: Water
Associated Lab Samples: 60313697001

| Parameter | Units | Blank Result | Reporting Limit | MDL | Analyzed | Qualifiers |
|---|---|---|---|---|---|---|
| 1,2,4-Trichlorobenzene | ug/L | ND | 5.0 | 0.87 | 09/06/19 20:42 | |
| 1,2-Diphenylhydrazine | ug/L | ND | 8.0 | 0.60 | 09/06/19 20:42 | |
| 2,4,6-Trichlorophenol | ug/L | ND | 5.0 | 0.77 | 09/06/19 20:42 | |
| 2,4-Dichlorophenol | ug/L | ND | 5.0 | 0.68 | 09/06/19 20:42 | |
| 2,4-Dimethylphenol | ug/L | ND | 5.0 | 0.69 | 09/06/19 20:42 | |
| 2,4-Dinitrophenol | ug/L | ND | 50.0 | 1.0 | 09/06/19 20:42 | |
| 2,4-Dinitrotoluene | ug/L | ND | 8.0 | 0.59 | 09/06/19 20:42 | |
| 2,6-Dinitrotoluene | ug/L | ND | 5.0 | 0.68 | 09/06/19 20:42 | |
| 2-Chloronaphthalene | ug/L | ND | 5.0 | 0.81 | 09/06/19 20:42 | |
| 2-Chlorophenol | ug/L | ND | 5.0 | 0.75 | 09/06/19 20:42 | |
| 2-Nitrophenol | ug/L | ND | 5.0 | 0.72 | 09/06/19 20:42 | |
| 3,3'-Dichlorobenzidine | ug/L | ND | 20.0 | 0.78 | 09/06/19 20:42 | |
| 4,6-Dinitro-2-methylphenol | ug/L | ND | 25.0 | 0.60 | 09/06/19 20:42 | |
| 4-Bromophenylphenyl ether | ug/L | ND | 5.0 | 0.72 | 09/06/19 20:42 | |
| 4-Chloro-3-methylphenol | ug/L | ND | 5.0 | 0.78 | 09/06/19 20:42 | |
| 4-Chlorophenylphenyl ether | ug/L | ND | 5.0 | 0.83 | 09/06/19 20:42 | |
| 4-Nitrophenol | ug/L | ND | 5.0 | 2.5 | 09/06/19 20:42 | |
| Acenaphthene | ug/L | ND | 5.0 | 0.66 | 09/06/19 20:42 | |
| Acenaphthylene | ug/L | ND | 5.0 | 0.66 | 09/06/19 20:42 | |
| Anthracene | ug/L | ND | 5.0 | 0.68 | 09/06/19 20:42 | |
| Benzidine | ug/L | ND | 50.0 | 8.0 | 09/06/19 20:42 | |
| Benzo(a)anthracene | ug/L | ND | 5.0 | 0.70 | 09/06/19 20:42 | |
| Benzo(a)pyrene | ug/L | ND | 5.0 | 0.74 | 09/06/19 20:42 | |
| Benzo(b)fluoranthene | ug/L | ND | 5.0 | 0.94 | 09/06/19 20:42 | |
| Benzo(g,h,i)perylene | ug/L | ND | 5.0 | 0.70 | 09/06/19 20:42 | |
| Benzo(k)fluoranthene | ug/L | ND | 5.0 | 1.0 | 09/06/19 20:42 | |
| bis(2-Chloroethoxy)methane | ug/L | ND | 5.0 | 0.68 | 09/06/19 20:42 | |
| bis(2-Chloroethyl) ether | ug/L | ND | 6.0 | 0.78 | 09/06/19 20:42 | |
| bis(2-Chloroisopropyl) ether | ug/L | ND | 6.0 | 0.72 | 09/06/19 20:42 | |
| bis(2-Ethylhexyl)phthalate | ug/L | ND | 5.0 | 1.0 | 09/06/19 20:42 | |
| Butylbenzylphthalate | ug/L | ND | 5.0 | 0.65 | 09/06/19 20:42 | |
| Chrysene | ug/L | ND | 5.0 | 0.74 | 09/06/19 20:42 | |
| Di-n-butylphthalate | ug/L | ND | 5.0 | 0.60 | 09/06/19 20:42 | |
| Di-n-octylphthalate | ug/L | ND | 5.0 | 0.97 | 09/06/19 20:42 | |
| Dibenz(a,h)anthracene | ug/L | ND | 5.0 | 0.74 | 09/06/19 20:42 | |
| Diethylphthalate | ug/L | ND | 5.0 | 0.66 | 09/06/19 20:42 | |
| Dimethylphthalate | ug/L | ND | 5.0 | 0.63 | 09/06/19 20:42 | |
| Fluoranthene | ug/L | ND | 5.0 | 0.75 | 09/06/19 20:42 | |
| Fluorene | ug/L | ND | 5.0 | 0.62 | 09/06/19 20:42 | |
| Hexachloro-1,3-butadiene | ug/L | ND | 5.0 | 0.81 | 09/06/19 20:42 | |
| Hexachlorobenzene | ug/L | ND | 5.0 | 0.95 | 09/06/19 20:42 | |

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## QUALITY CONTROL DATA

Project: ANNUAL PP AND DNR POLLUTANT
Pace Project No.: 60313697

QC Batch: 606087 — Analysis Method: SM 4500-Cl G
QC Batch Method: SM 4500-Cl G — Analysis Description: 4500CL G Chlorine, Total Residual
Associated Lab Samples: 60313697002

METHOD BLANK: 2484448 — Matrix: Water
Associated Lab Samples: 60313697002

| Parameter | Units | Blank Result | Reporting Limit | MDL | Analyzed | Qualifiers |
|---|---|---|---|---|---|---|
| Chlorine, Total Residual | mg/L | ND | 0.050 | 0.010 | 09/09/19 13:41 | H6 |

LABORATORY CONTROL SAMPLE: 2484449

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| Chlorine, Total Residual | mg/L | 1 | 1.1 | 107 | 90-120 | H6 |

SAMPLE DUPLICATE: 2484450

| Parameter | Units | 60313400001 Result | Dup Result | RPD | Max RPD | Qualifiers |
|---|---|---|---|---|---|---|
| Chlorine, Total Residual | mg/L | ND | ND | | 10 | H6 |

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## QUALITY CONTROL DATA

Project: ANNUAL PP AND DNR POLLUTANT
Pace Project No.: 60313697

QC Batch: 608485 — Analysis Method: SM 2320B
QC Batch Method: SM 2320B — Analysis Description: 2320B Alkalinity
Associated Lab Samples: 60313697002

METHOD BLANK: 2485708 — Matrix: Water
Associated Lab Samples: 60313697002

| Parameter | Units | Blank Result | Reporting Limit | MDL | Analyzed | Qualifiers |
|---|---|---|---|---|---|---|
| Alkalinity, Total as CaCO3 | mg/L | ND | 20.0 | 6.5 | 09/10/19 16:00 | |
| Alkalinity,Bicarbonate (CaCO3) | mg/L | ND | 20.0 | 6.5 | 09/10/19 16:00 | |

LABORATORY CONTROL SAMPLE: 2485707

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| Alkalinity, Total as CaCO3 | mg/L | 500 | 514 | 103 | 90-110 | |

SAMPLE DUPLICATE: 2485708

| Parameter | Units | 60313697002 Result | Dup Result | RPD | Max RPD | Qualifiers |
|---|---|---|---|---|---|---|
| Alkalinity, Total as CaCO3 | mg/L | 287 | 291 | 1 | 10 | |
| Alkalinity,Bicarbonate (CaCO3) | mg/L | 287 | 291 | 1 | 10 | |

SAMPLE DUPLICATE: 2485709

| Parameter | Units | 60314020005 Result | Dup Result | RPD | Max RPD | Qualifiers |
|---|---|---|---|---|---|---|
| Alkalinity, Total as CaCO3 | mg/L | 181 | 187 | 4 | 10 | |
| Alkalinity,Bicarbonate (CaCO3) | mg/L | 181 | 187 | 4 | 10 | |

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## QUALITY CONTROL DATA

Project: ANNUAL PP AND DNR POLLUTANT
Pace Project No.: 60313697

METHOD BLANK: 2492278 — Matrix: Water
Associated Lab Samples: 60313697001

| Parameter | Units | Blank Result | Reporting Limit | MDL | Analyzed | Qualifiers |
|---|---|---|---|---|---|---|
| Hexachlorocyclopentadiene | ug/L | ND | 5.0 | 0.66 | 09/06/19 20:42 | |
| Hexachloroethane | ug/L | ND | 5.0 | 0.74 | 09/06/19 20:42 | |
| Indeno(1,2,3-cd)pyrene | ug/L | ND | 5.0 | 0.67 | 09/06/19 20:42 | |
| Isophorone | ug/L | ND | 5.0 | 0.54 | 09/06/19 20:42 | |
| N-Nitroso-di-n-propylamine | ug/L | ND | 5.0 | 0.68 | 09/06/19 20:42 | |
| N-Nitrosodimethylamine | ug/L | ND | 5.0 | 0.60 | 09/06/19 20:42 | |
| N-Nitrosodiphenylamine | ug/L | ND | 5.0 | 0.40 | 09/06/19 20:42 | |
| Naphthalene | ug/L | ND | 5.0 | 0.68 | 09/06/19 20:42 | |
| Nitrobenzene | ug/L | ND | 5.0 | 0.51 | 09/06/19 20:42 | |
| Pentachlorophenol | ug/L | ND | 5.0 | 0.78 | 09/06/19 20:42 | |
| Phenanthrene | ug/L | ND | 5.0 | 0.67 | 09/06/19 20:42 | |
| Phenol | ug/L | ND | 5.0 | 2.5 | 09/06/19 20:42 | |
| Pyrene | ug/L | ND | 5.0 | 0.63 | 09/06/19 20:42 | |
| 2,4,6-Tribromophenol (S) | % | 60 | 24-126 | | 09/06/19 20:42 | |
| 2-Fluorobiphenyl (S) | % | 55 | 24-110 | | 09/06/19 20:42 | |
| 2-Fluorophenol (S) | % | 38 | 20-59 | | 09/06/19 20:42 | |
| Nitrobenzene-d5 (S) | % | 66 | 24-110 | | 09/06/19 20:42 | |
| Phenol-d5 (S) | % | 25 | 11-42 | | 09/06/19 20:42 | |
| Terphenyl-d14 (S) | % | 63 | 35-118 | | 09/06/19 20:42 | |

LABORATORY CONTROL SAMPLE: 2492279

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| 1,2,4-Trichlorobenzene | ug/L | 50 | 29.0 | 58 | 54-93 | |
| 1,2-Diphenylhydrazine | ug/L | 50 | 38.8 | 78 | 62-105 | |
| 2,4,6-Trichlorophenol | ug/L | 50 | 34.0 | 68 | 63-100 | |
| 2,4-Dichlorophenol | ug/L | 50 | 33.0 | 66 | 59-95 | |
| 2,4-Dimethylphenol | ug/L | 50 | 30.2 | 60 | 55-92 | |
| 2,4-Dinitrophenol | ug/L | 50 | 33.2J | 66 | 35-137 | |
| 2,4-Dinitrotoluene | ug/L | 50 | 37.5 | 75 | 65-113 | |
| 2,6-Dinitrotoluene | ug/L | 50 | 35.2 | 70 | 65-108 | |
| 2-Chloronaphthalene | ug/L | 50 | 33.4 | 67 | 60-98 | |
| 2-Chlorophenol | ug/L | 50 | 32.8 | 66 | 51-89 | |
| 2-Nitrophenol | ug/L | 50 | 34.4 | 69 | 54-110 | |
| 3,3'-Dichlorobenzidine | ug/L | 50 | 43.6 | 87 | 64-163 | |
| 4,6-Dinitro-2-methylphenol | ug/L | 50 | 39.0 | 78 | 58-125 | |
| 4-Bromophenylphenyl ether | ug/L | 50 | 33.5 | 67 | 61-107 | |
| 4-Chloro-3-methylphenol | ug/L | 50 | 35.6 | 71 | 62-98 | |
| 4-Chlorophenylphenyl ether | ug/L | 50 | 33.4 | 67 | 63-102 | |
| 4-Nitrophenol | ug/L | 50 | 15.5 | 31 | 18-50 | |
| Acenaphthene | ug/L | 50 | 34.3 | 69 | 62-101 | |
| Acenaphthylene | ug/L | 50 | 33.9 | 68 | 62-100 | |
| Anthracene | ug/L | 50 | 36.2 | 72 | 63-105 | |
| Benzidine | ug/L | 50 | ND | 11 | 10-123 | |

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## QUALITY CONTROL DATA

Project: ANNUAL PP AND DNR POLLUTANT
Pace Project No.: 60313697

LABORATORY CONTROL SAMPLE: 2492279

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| Benzo(a)anthracene | ug/L | 50 | 35.8 | 71 | 65-105 | |
| Benzo(a)pyrene | ug/L | 50 | 35.7 | 71 | 59-110 | |
| Benzo(b)fluoranthene | ug/L | 50 | 35.5 | 71 | 60-114 | |
| Benzo(g,h,i)perylene | ug/L | 50 | 35.9 | 72 | 60-110 | |
| Benzo(k)fluoranthene | ug/L | 50 | 35.7 | 71 | 59-110 | |
| bis(2-Chloroethoxy)methane | ug/L | 50 | 36.0 | 72 | 60-97 | |
| bis(2-Chloroethyl) ether | ug/L | 50 | 36.2 | 72 | 53-97 | |
| bis(2-Chloroisopropyl) ether | ug/L | 50 | 37.3 | 75 | 54-98 | |
| bis(2-Ethylhexyl)phthalate | ug/L | 50 | 39.6 | 79 | 61-121 | |
| Butylbenzylphthalate | ug/L | 50 | 39.1 | 78 | 59-125 | |
| Chrysene | ug/L | 50 | 34.7 | 69 | 63-109 | |
| Di-n-butylphthalate | ug/L | 50 | 39.8 | 79 | 65-112 | |
| Di-n-octylphthalate | ug/L | 50 | 40.9 | 82 | 56-127 | |
| Dibenz(a,h)anthracene | ug/L | 50 | 35.9 | 72 | 60-111 | |
| Diethylphthalate | ug/L | 50 | 36.8 | 74 | 65-103 | |
| Dimethylphthalate | ug/L | 50 | 35.9 | 72 | 64-103 | |
| Fluoranthene | ug/L | 50 | 37.3 | 75 | 64-109 | |
| Fluorene | ug/L | 50 | 35.0 | 70 | 65-101 | |
| Hexachloro-1,3-butadiene | ug/L | 50 | 26.4 | 53 | 48-94 | |
| Hexachlorobenzene | ug/L | 50 | 31.7 | 63 | 59-106 | |
| Hexachlorocyclopentadiene | ug/L | 50 | 18.8 | 38 | 19-56 | |
| Hexachloroethane | ug/L | 50 | 26.0 | 52 | 47-90 | |
| Indeno(1,2,3-cd)pyrene | ug/L | 50 | 35.5 | 71 | 60-110 | |
| Isophorone | ug/L | 50 | 38.0 | 76 | 62-97 | |
| N-Nitroso-di-n-propylamine | ug/L | 50 | 38.9 | 78 | 59-100 | |
| N-Nitrosodimethylamine | ug/L | 50 | 26.2 | 52 | 20-67 | |
| N-Nitrosodiphenylamine | ug/L | 50 | 34.3 | 69 | 64-102 | |
| Naphthalene | ug/L | 50 | 33.2 | 66 | 55-94 | |
| Nitrobenzene | ug/L | 50 | 36.5 | 73 | 59-95 | |
| Pentachlorophenol | ug/L | 50 | 31.2 | 62 | 54-121 | |
| Phenanthrene | ug/L | 50 | 35.9 | 72 | 63-105 | |
| Phenol | ug/L | 50 | 16.0 | 32 | 17-44 | |
| Pyrene | ug/L | 50 | 35.6 | 71 | 63-108 | |
| 2,4,6-Tribromophenol (S) | % | | | 61 | 24-126 | |
| 2-Fluorobiphenyl (S) | % | | | 62 | 24-110 | |
| 2-Fluorophenol (S) | % | | | 37 | 20-59 | |
| Nitrobenzene-d5 (S) | % | | | 70 | 24-110 | |
| Phenol-d5 (S) | % | | | 25 | 11-42 | |
| Terphenyl-d14 (S) | % | | | 65 | 35-118 | |

MATRIX SPIKE SAMPLE: 2492280

| Parameter | Units | 60313841001 Result | Spike Conc. | MS Result | MS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|---|
| 1,2,4-Trichlorobenzene | ug/L | ND | 200 | 84.3 | 42 | 44-109 | M1 |
| 1,2-Diphenylhydrazine | ug/L | ND | 200 | 113 | 57 | 16-120 | |

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## QUALITY CONTROL DATA

Project: ANNUAL PP AND DNR POLLUTANT
Pace Project No.: 60313697

QC Batch: 609727 — Analysis Method: SM 2310B
QC Batch Method: SM 2310B — Analysis Description: 2310B Acidity, Total
Associated Lab Samples: 60313697002

METHOD BLANK: 2490944 — Matrix: Water
Associated Lab Samples: 60313697002

| Parameter | Units | Blank Result | Reporting Limit | MDL | Analyzed | Qualifiers |
|---|---|---|---|---|---|---|
| Acidity, Total | mg/L | ND | 20.0 | 1.0 | 09/17/19 09:40 | |

LABORATORY CONTROL SAMPLE: 2490945

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| Acidity, Total | mg/L | 490 | 509 | 104 | 90-110 | |

SAMPLE DUPLICATE: 2490946

| Parameter | Units | 60313697002 Result | Dup Result | RPD | Max RPD | Qualifiers |
|---|---|---|---|---|---|---|
| Acidity, Total | mg/L | ND | ND | | 13 | |

SAMPLE DUPLICATE: 2490947

| Parameter | Units | 60314020003 Result | Dup Result | RPD | Max RPD | Qualifiers |
|---|---|---|---|---|---|---|
| Acidity, Total | mg/L | ND | ND | | 13 | |

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## QUALITY CONTROL DATA

Project: ANNUAL PP AND DNR POLLUTANT
Pace Project No.: 60313697

QC Batch: 609118 — Analysis Method: EPA 1664A
QC Batch Method: EPA 1664A — Analysis Description: 1664 HEM, Oil and Grease
Associated Lab Samples: 60313697002

METHOD BLANK: 2488011 — Matrix: Water
Associated Lab Samples: 60313697002

| Parameter | Units | Blank Result | Reporting Limit | MDL | Analyzed | Qualifiers |
|---|---|---|---|---|---|---|
| Oil and Grease | mg/L | ND | 5.0 | 1.3 | 09/13/19 08:38 | |

LABORATORY CONTROL SAMPLE: 2488012

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| Oil and Grease | mg/L | 40 | 39.8 | 100 | 78-114 | |

MATRIX SPIKE SAMPLE: 2488013

| Parameter | Units | 60314479002 Result | Spike Conc. | MS Result | MS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|---|
| Oil and Grease | mg/L | 18.0 | 95 | 114 | 98 | 78-114 | |

SAMPLE DUPLICATE: 2488014

| Parameter | Units | 60314479003 Result | Dup Result | RPD | Max RPD | Qualifiers |
|---|---|---|---|---|---|---|
| Oil and Grease | mg/L | 16.9 | 37.7 | 76 | 18 D3 | |

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## QUALITY CONTROL DATA

Project: ANNUAL PP AND DNR POLLUTANT
Pace Project No.: 60313697

MATRIX SPIKE SAMPLE: 2492280

| Parameter | Units | 60313841001 Result | Spike Conc. | MS Result | MS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|---|
| 2,4,6-Trichlorophenol | ug/L | ND | 200 | 119 | 59 | 37-123 | |
| 2,4-Dichlorophenol | ug/L | ND | 200 | 114 | 57 | 39-115 | |
| 2,4-Dimethylphenol | ug/L | ND | 200 | 119 | 59 | 32-110 | |
| 2,4-Dinitrophenol | ug/L | ND | 200 | 129J | 65 | 10-154 | |
| 2,4-Dinitrotoluene | ug/L | ND | 200 | 114 | 57 | 39-122 | |
| 2,6-Dinitrotoluene | ug/L | ND | 200 | 128 | 64 | 50-119 | |
| 2-Chloronaphthalene | ug/L | ND | 200 | 98.7 | 49 | 60-95 M1 | |
| 2-Chlorophenol | ug/L | ND | 200 | 103 | 52 | 35-91 | |
| 2-Nitrophenol | ug/L | ND | 200 | 110 | 55 | 29-132 | |
| 3,3'-Dichlorobenzidine | ug/L | ND | 200 | 14.5J | 7 | 10-156 M1 | |
| 4,6-Dinitro-2-methylphenol | ug/L | ND | 200 | 118 | 59 | 10-155 | |
| 4-Bromophenylphenyl ether | ug/L | ND | 200 | 113 | 56 | 53-115 | |
| 4-Chloro-3-methylphenol | ug/L | ND | 200 | 146 | 73 | 39-105 | |
| 4-Chlorophenylphenyl ether | ug/L | ND | 200 | 106 | 53 | 29-111 | |
| 4-Nitrophenol | ug/L | ND | 200 | 75.9 | 38 | 17-49 | |
| Acenaphthene | ug/L | ND | 200 | 105 | 53 | 47-110 | |
| Acenaphthylene | ug/L | ND | 200 | 102 | 51 | 33-110 | |
| Anthracene | ug/L | ND | 200 | 111 | 55 | 27-114 | |
| Benzidine | ug/L | ND | 200 | ND | 0 | 10-16 M1 | |
| Benzo(a)anthracene | ug/L | ND | 200 | 113 | 57 | 33-113 | |
| Benzo(a)pyrene | ug/L | ND | 200 | 115 | 57 | 26-116 | |
| Benzo(b)fluoranthene | ug/L | ND | 200 | 122 | 61 | 28-121 | |
| Benzo(g,h,i)perylene | ug/L | ND | 200 | 104 | 52 | 24-116 | |
| Benzo(k)fluoranthene | ug/L | ND | 200 | 106 | 53 | 26-116 | |
| bis(2-Chloroethoxy)methane | ug/L | ND | 200 | 116 | 58 | 33-109 | |
| bis(2-Chloroethyl) ether | ug/L | 73.1 | 200 | 107 | 17 | 27-108 M1 | |
| bis(2-Chloroisopropyl) ether | ug/L | ND | 200 | 112 | 56 | 36-113 | |
| bis(2-Ethylhexyl)phthalate | ug/L | ND | 200 | 141 | 85 | 33-129 | |
| Butylbenzylphthalate | ug/L | ND | 200 | 129 | 64 | 32-131 | |
| Chrysene | ug/L | ND | 200 | 108 | 54 | 30-116 | |
| Di-n-butylphthalate | ug/L | ND | 200 | 124 | 62 | 31-120 | |
| Di-n-octylphthalate | ug/L | ND | 200 | 137 | 68 | 27-142 | |
| Dibenz(a,h)anthracene | ug/L | ND | 200 | 107 | 53 | 25-119 | |
| Diethylphthalate | ug/L | ND | 200 | 115 | 57 | 30-112 | |
| Dimethylphthalate | ug/L | ND | 200 | 109 | 55 | 29-111 | |
| Fluoranthene | ug/L | ND | 200 | 113 | 57 | 28-115 | |
| Fluorene | ug/L | ND | 200 | 107 | 54 | 59-111 M1 | |
| Hexachloro-1,3-butadiene | ug/L | ND | 200 | 66.1 | 33 | 24-103 | |
| Hexachlorobenzene | ug/L | ND | 200 | 101 | 51 | 28-111 | |
| Hexachlorocyclopentadiene | ug/L | ND | 200 | 32.8 | 16 | 10-68 | |
| Hexachloroethane | ug/L | ND | 200 | 71.1 | 36 | 40-110 M1 | |
| Indeno(1,2,3-cd)pyrene | ug/L | ND | 200 | 106 | 53 | 25-117 | |
| Isophorone | ug/L | ND | 200 | 112 | 56 | 28-107 | |
| N-Nitroso-di-n-propylamine | ug/L | ND | 200 | 116 | 58 | 28-110 | |
| N-Nitrosodimethylamine | ug/L | ND | 200 | 65.6 | 46 | 16-66 | |
| N-Nitrosodiphenylamine | ug/L | ND | 200 | 109 | 54 | 28-111 | |
| Naphthalene | ug/L | ND | 200 | 98.8 | 49 | 23-107 | |

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## QUALITY CONTROL DATA

Project: ANNUAL PP AND DNR POLLUTANT
Pace Project No.: 60313697

MATRIX SPIKE SAMPLE: 2492280

| Parameter | Units | 60313841001 Result | Spike Conc. | MS Result | MS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|---|
| Nitrobenzene | ug/L | ND | 200 | 108 | 54 | 35-116 | |
| Pentachlorophenol | ug/L | ND | 200 | 127 | 64 | 14-147 | |
| Phenanthrene | ug/L | ND | 200 | 109 | 54 | 54-113 | |
| Phenol | ug/L | 61.1 | 200 | 112 | 26 | 16-42 | |
| Pyrene | ug/L | ND | 200 | 117 | 59 | 52-115 | |
| 2,4,6-Tribromophenol (S) | % | | | | 52 | 24-129 | |
| 2-Fluorobiphenyl (S) | % | | | | 48 | 24-110 | |
| 2-Fluorophenol (S) | % | | | | 32 | 20-59 | |
| Nitrobenzene-d5 (S) | % | | | | 56 | 24-110 | |
| Phenol-d6 (S) | % | | | | 22 | 11-42 | |
| Terphenyl-d14 (S) | % | | | | 65 | 35-118 | |

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.



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

## QUALITY CONTROL DATA

Project: ANNUAL PP AND DNR POLLUTANT
Pace Project No.: 60313697

QC Batch: 610488 — Analysis Method: EPA 120.1
QC Batch Method: EPA 120.1 — Analysis Description: 120.1 Specific Conductance
Associated Lab Samples: 60313697002

METHOD BLANK: 2493803 — Matrix: Water
Associated Lab Samples: 60313697002

| Parameter | Units | Blank Result | Reporting Limit | MDL | Analyzed | Qualifiers |
|---|---|---|---|---|---|---|
| Specific Conductance | umhos/cm | ND | 1.0 | 1.0 | 09/19/19 15:42 | |

SAMPLE DUPLICATE: 2493804

| Parameter | Units | 60313697002 Result | Dup Result | RPD | Max RPD | Qualifiers |
|---|---|---|---|---|---|---|
| Specific Conductance | umhos/cm | 983 | 983 | 0 | 20 | |

SAMPLE DUPLICATE: 2493805

| Parameter | Units | 60314203004 Result | Dup Result | RPD | Max RPD | Qualifiers |
|---|---|---|---|---|---|---|
| Specific Conductance | umhos/cm | 993 | 958 | 1 | 20 | |

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.

Pace Analytical Services, LLC
9608 Loiret Blvd
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(913)599-5665

October 22, 2019

Clara Haenchen
City of Jefferson City Wastewater Treatment Plant
401 Old Mokane Rd
Jefferson City, MO 65101

RE: Project: ACUTE WET TEST ALGOA
Pace Project No.: 60317621

Dear Clara Haenchen:
Enclosed are the analytical results for sample(s) received by the laboratory on October 10, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

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

Enclosures

cc: Bradley Kleffner, City of Jefferson WWTP
Jacob Schroerer, City of Jefferson City, MO Wastewater Treatment Plant
Emily Wilbers, City of Jefferson City WWTP

REPORT OF LABORATORY ANALYSIS
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Lenexa, KS 66219
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## CERTIFICATIONS

Project: ACUTE WET TEST ALGOA
Pace Project No.: 60317621

**Southeast Kansas Certification IDs**
603 West McKay, Frontenac, KS 66763
Arkansas Certification #: 18-018-0
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10426

Louisiana Certification #: 03055
Oklahoma Certification #: 9935
Texas Certification #: T104704407
Utah Certification #: KS000021

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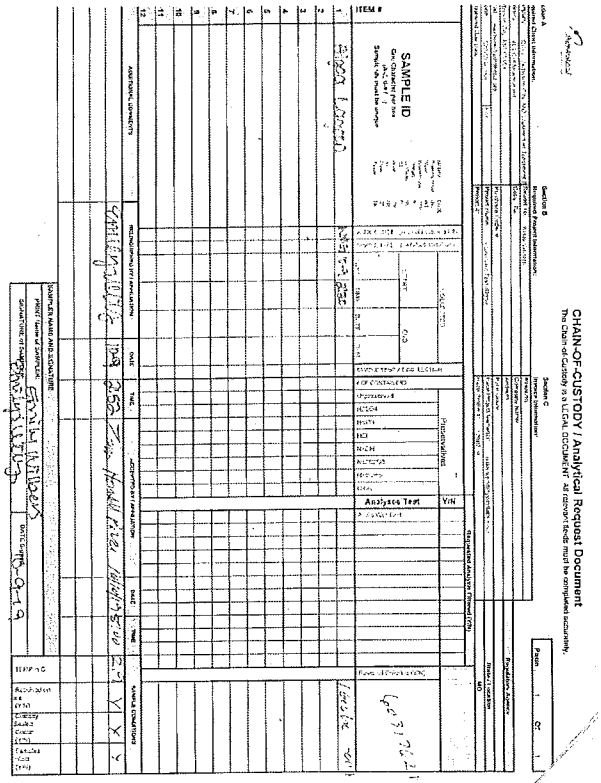

PACE # 60317621

QUALITY ASSURANCE:

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

REFERENCE TOXICANT (NaCl)
Ceriodaphnia
# OF LIVE ORGANISMS

| CONC OF TOXICANT | TEST INITIATION | 24 HOUR EXPOSURE | 48 HOUR EXPOSURE |
|---|---|---|---|
| 3.0 g/l | 20 | 2 | 0 |
| 2.5 g/l | 20 | 15 | 8 |
| 2.0 g/l | 20 | 19 | 18 |
| 1.5 g/l | 20 | 20 | 20 |
| 1.0 g/l | 20 | 20 | 20 |

LC50 = 2.33 g/l NaCl

REFERENCE TOXICANT (NaCl)
Pimephales
# OF LIVE ORGANISMS

| CONC OF TOXICANT | TEST INITIATION | 24 HOUR EXPOSURE | 48 HOUR EXPOSURE |
|---|---|---|---|
| 10.0 g/l | 40 | 6 | 0 |
| 8.0 g/l | 40 | 38 | 25 |
| 6.0 g/l | 40 | 39 | 38 |
| 4.0 g/l | 40 | 40 | 40 |
| 2.0 g/l | 40 | 40 | 40 |

LC50 = 8.27g/l NaCl

Submitted By: Tim Harrell
Timothy Harrell
Technical Director





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

SAMPLE SUMMARY

Project: ACUTE WET TEST ALGOA
Pace Project No.: 60317621

| Lab ID | Sample ID | Matrix | Date Collected | Date Received |
|---|---|---|---|---|
| 60317621001 | ALGOA LAGOON | Water | 10/09/19 14:20 | 10/10/19 08:00 |

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SAMPLE ANALYTE COUNT

Project: ACUTE WET TEST ALGOA
Pace Project No.: 60317621

| Lab ID | Sample ID | Method | Analysts | Analytes Reported | Laboratory |
|---|---|---|---|---|---|
| 60317621001 | ALGOA LAGOON | EPA 821/R-02/012 | MEB | 1 | PASI-SE |

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PACE # 60317621

INITIAL WATER QUALITY:

Initial Measurements Synthetic Water

| pH | D.O. (mg/l) | Cond. (umhos) | Cl2 (mg/l) | Temp (C) | Hard (mg/l) | Alk (mg/l) |
|---|---|---|---|---|---|---|
| 7.59 | 8.10 | 340 | <0.1 | 25.0 | 98 | 64 |

Initial Measurements of 100% Effluent

| PH | D.O. (mg/l) | Cond. (umhos) | Cl2 (mg/l) | Temp (C) | Hard (mg/l) | Alk (mg/l) |
|---|---|---|---|---|---|---|
| 8.14 | 8.20 | 1269 | <0.1 | 25.0 | 266 | 384 |

TEST WATER QUALITY:

24-hour Water Quality Measurements

| EFFLUENT CONC (%) | PH | D.O. (mg/l) | TEMP (C) | COND. (umhos) |
|---|---|---|---|---|
| Synthetic | 7.68 | 7.80 | 24.9 | 347 |
| 2.25% | 7.69 | 7.80 | 24.9 | 349 |
| 4.5% | 7.71 | 7.80 | 24.9 | 356 |
| 9% | 7.76 | 7.80 | 24.9 | 371 |
| 18% | 7.82 | 7.90 | 24.9 | 402 |
| 36% | 7.91 | 7.90 | 24.9 | 760 |

48-hour Water Quality Measurements

| EFFLUENT CONC (%) | PH | D.O. (mg/l) | TEMP (C) | COND. (umhos) |
|---|---|---|---|---|
| Synthetic | 7.74 | 7.50 | 25.0 | 356 |
| 2.25% | 7.76 | 7.50 | 25.0 | 361 |
| 4.5% | 7.79 | 7.60 | 25.0 | 374 |
| 9% | 7.86 | 7.60 | 25.0 | 386 |
| 18% | 7.94 | 7.70 | 25.0 | 511 |
| 36% | 8.01 | 7.80 | 25.0 | 769 |

PACE # 60317621

**WATER CHEMISTRY RESULTS:**

Total residual chlorine (Cl2) - The effluent sample from the City of Jefferson City (Algoa Lagoon) discharge had <0.1 mg/l detectable level of total residual chlorine upon receipt in the laboratory.

Dissolved Oxygen (D.O.) - Dissolved oxygen reading of the 100% effluent sample was 8.20 mg/l after being raised to the test temperature of 25° C. At termination D.O. was 7.80 mg/l in the 36% effluent, which falls into acceptable limits. Aeration was not required in this test.

pH - The pH of the 100% effluent was 8.14 upon receipt in the laboratory and the synthetic control had a 7.59. At termination the pH measurement in the 36% effluent sample was 8.01.

Conductance - The conductance of the effluent sample was 1269 umhos and the synthetic control was 340 umhos.





Pace Analytical Services, LLC
9608 Loiret Blvd
Lenexa, KS 66219
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## ANALYTICAL RESULTS

Project: ACUTE WET TEST ALGOA
Pace Project No.: 60317621

Sample: ALGOA LAGOON — Lab ID: 60317621001 — Collected: 10/09/19 14:20 — Received: 10/10/19 08:00 — Matrix: Water

| Parameters | Results | Units | Report Limit | MDL | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|---|
| **Acute Toxicity** | Analytical Method: EPA 821/R-02/012 | | | | | | | | |
| Toxicity, Acute | Complete | | 1.0 | 1.0 | 1 | | 10/10/19 14:00 | | |



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## QUALIFIERS

Project: ACUTE WET TEST ALGOA
Pace Project No.: 60317621

**DEFINITIONS**

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

**LABORATORIES**

PASI-SE Pace Analytical Services - SE Kansas



REPORT OF LABORATORY ANALYSIS
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PACE # 60317621

**THE Pimephales RESULTS** - Minnows exposed to effluent collected at the City of Jefferson City (Algoa Lagoon) effluent discharge exhibited no significant mortality in the 36% effluent concentration during the 48 hr exposure period. The synthetic control showed no significant mortality during the testing period. The LC50 value of the effluent to fathead minnows is estimated to be >36% the TUa <2.78.

| CONC. | REP # | 0 HOURS | 24 HOURS | 48 HOURS | % MORTALITY |
|---|---|---|---|---|---|
| SYNTHETIC | 1 | 10 | 10 | 10 | 0 |
| " | 2 | 10 | 10 | 10 | 0 |
| " | 3 | 10 | 10 | 10 | 0 |
| " | 4 | 10 | 10 | 10 | 0 |
| 2.25% | 1 | 10 | 10 | 10 | 0 |
| " | 2 | 10 | 10 | 10 | 0 |
| " | 3 | 10 | 10 | 10 | 0 |
| " | 4 | 10 | 10 | 10 | 0 |
| 4.5% | 1 | 10 | 10 | 10 | 0 |
| " | 2 | 10 | 10 | 10 | 0 |
| " | 3 | 10 | 10 | 10 | 0 |
| " | 4 | 10 | 10 | 10 | 0 |
| 9% | 1 | 10 | 10 | 10 | 0 |
| " | 2 | 10 | 10 | 10 | 0 |
| " | 3 | 10 | 10 | 10 | 0 |
| " | 4 | 10 | 10 | 10 | 0 |
| 18% | 1 | 10 | 10 | 10 | 0 |
| " | 2 | 10 | 10 | 10 | 0 |
| " | 3 | 10 | 10 | 10 | 0 |
| " | 4 | 10 | 10 | 10 | 0 |
| 36% | 1 | 10 | 10 | 10 | 0 |
| " | 2 | 10 | 10 | 10 | 0 |
| " | 3 | 10 | 10 | 10 | 0 |
| " | 4 | 10 | 10 | 10 | 0 |

*AVG. MORTALITY @ (36% EFFLUENT) =0.0%*

## RESULTS:

THE Ceriodaphnia MORTALITY RESULTS - There was no significant mortality observed of the freshwater invertebrate, Ceriodaphnia dubia, during the 48 hour exposure period to the 36% effluent concentrations. There was no significant mortality in the synthetic control. The LC50 value of the sample to Ceriodaphnia is approximately >36% the TUa <2.78.

**Ceriodaphnia MORTALITY DATA**

**# ALIVE**

| CONC. | REP # | 0 HOURS | 24 HOURS | 48 HOURS | % MORT. |
|---|---|---|---|---|---|
| SYNTHETIC | 1 | 5 | 5 | 5 | 0 |
| " | 2 | 5 | 5 | 5 | 0 |
| " | 3 | 5 | 5 | 5 | 0 |
| " | 4 | 5 | 5 | 5 | 0 |
| 2.25% | 1 | 5 | 5 | 5 | 0 |
| " | 2 | 5 | 5 | 5 | 0 |
| " | 3 | 5 | 5 | 5 | 0 |
| " | 4 | 5 | 5 | 5 | 0 |
| 4.5% | 1 | 5 | 5 | 5 | 0 |
| " | 2 | 5 | 5 | 5 | 0 |
| " | 3 | 5 | 5 | 5 | 0 |
| " | 4 | 5 | 5 | 5 | 0 |
| 9% | 1 | 5 | 5 | 5 | 0 |
| " | 2 | 5 | 5 | 5 | 0 |
| " | 3 | 5 | 5 | 5 | 0 |
| " | 4 | 5 | 5 | 5 | 0 |
| 18% | 1 | 5 | 5 | 5 | 0 |
| " | 2 | 5 | 5 | 5 | 0 |
| " | 3 | 5 | 5 | 5 | 0 |
| " | 4 | 5 | 5 | 5 | 0 |
| 36% | 1 | 5 | 5 | 5 | 0 |
| " | 2 | 5 | 5 | 5 | 0 |
| " | 3 | 5 | 5 | 5 | 0 |
| " | 4 | 5 | 5 | 5 | 0 |

***AVG. MORTALITY @ (36% EFFLUENT) =0.0%***





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

## QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: ACUTE WET TEST ALGOA
Pace Project No.: 60317621

| Lab ID | Sample ID | QC Batch Method | QC Batch | Analytical Method | Analytical Batch |
|---|---|---|---|---|---|
| 60317621001 | ALGOA LAGOON | EPA 821/R-02/012 | 815769 | | |

## REPORT OF LABORATORY ANALYSIS

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Pace Analytical — Sample Condition Upon Receipt

**WO#: 60317621**

60317621

Client Name: Teffcity

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

Tracking #:

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

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

Thermometer Used: T-243 Type of Ice: Wet ☒ Blue ☐ None ☐

Cooler Temperature (°C): As-read 3.7 Corr Factor -0.8 Corrected 2.9

Temperature should be above freezing to 6°C

Date and Initials of person examining contents: 10/10/19 8:00 TH

| | | | |
|---|---|---|---|
| Chain of Custody present | ☒ Yes | ☐ No | ☐ N/A |
| Chain of Custody relinquished | ☒ Yes | ☐ No | ☐ N/A |
| Samples arrived within hold/dis time | ☒ Yes | ☐ No | ☐ N/A |
| Short Hold Time analyses (<72hr): | ☒ Yes | ☐ No | ☐ N/A |
| Rush Turn Around Time requested | ☐ Yes | ☒ No | ☐ N/A |
| Sufficient volume | ☒ Yes | ☐ No | ☐ N/A |
| Correct containers used | ☒ Yes | ☐ No | ☐ N/A |
| Pace containers used | ☒ Yes | ☐ No | ☐ N/A |
| Containers intact | ☒ Yes | ☐ No | ☐ N/A |
| Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs? | ☐ Yes | ☐ No | ☒ N/A |
| Filtered volume received for dissolved tests? | ☐ Yes | ☐ No | ☒ N/A |
| Sample labels match COC: Date / time / ID / analyses | ☒ Yes | ☐ No | ☐ N/A |
| Samples contain multiple phases? Matrix | ☐ Yes | ☒ No | ☐ N/A |
| Containers requiring pH preservation in compliance? (HNO3, H2SO4, HCl<2, NaOH>9 Sulfide, NaOH>10 Cyanide) (exceptions: VOA, Coliform, DRO, Phenolics) | ☐ Yes | ☐ No | ☒ N/A |
| Cyanide water sample checks: Lead acetate strip turns dark? (Reported if +) Potassium iodide test strip turns blue/purple? (Reported if +) | | | |
| Trip Blank present | ☐ Yes | ☐ No | ☒ N/A |
| Headspace in VOA vials ( >6mm) | ☐ Yes | ☐ No | ☒ N/A |
| Samples from USDA Regulated Area: State: | ☐ Yes | ☐ No | ☒ N/A |
| Additional labels attached to 5035A / TX1005 vials in the field | | | ☒ |

List sample IDs, volumes, lot #'s of preservative and the date/time added:

Client Notification/ Resolution: Date/Time: By: Field Data required? Y / N

Person Contacted: Date/Time:

Comments/ Resolution:

Project Manager Review: Date:





### Pimephales *ACUTE METHODS:*

This static toxicity test was conducted using 500 ml polypropylene container as test chambers containing 750 ml of test solution. Food was administered prior to test initiation, but not during the testing period. Ten Pimephales, 1 – 14 days old, from a single spawn, were randomly selected and placed in each of 4 test chambers. A total of 40 organisms were exposed to each test concentration. Observations of mortality were made at 24 and 48 hours of exposure.

### WATER QUALITY METHODS:

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

### DATA ANALYSIS:

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

## INTRODUCTION:

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

## TEST ORGANISMS:

Ceriodaphnia dubia - The genetic stock of Ceriodaphnia dubia used in this acute toxicity Test were originally obtained from a private breeder. Ceriodaphnia are cultured in house at Pace Analytical Services, Inc. Culture methods of Ceriodaphnia were obtained from EPA821-C-02-036 November 2002.

Pimephales promelas - The fathead minnows used in this acute toxicity test were cultured in-house at Pace Analytical Services, Inc., Frontenac, KS and/or were obtained from a private breeder. Fathead minnows are maintained at Pace Analytical Services until use for acute toxicity between the ages of 1 and 14 days. Information for culturing fathead minnows was taken from EPA821-C-02-036 November 2002.

## MATERIALS AND METHODS:

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

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

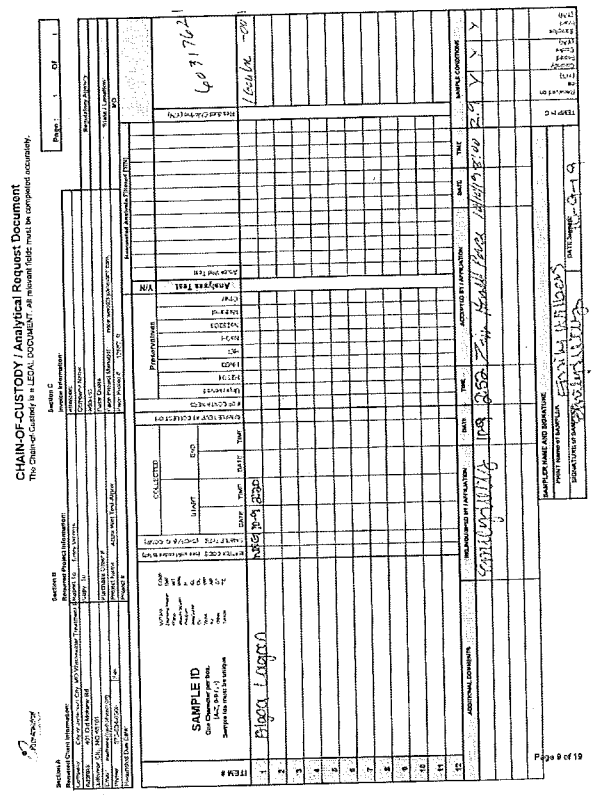
Effluent and synthetic control test solutions were not aerated during the testing period.

### Ceriodaphnia *ACUTE METHODS:*

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










October 14, 2019

City of Jefferson City (Algoa Lagoon)
Emily Wibers
401 Old Mokane RD
Jefferson City, MO 65101

Re: Lab Project Number: 60317621
Client Project ID: Wet Test

Dear:

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

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

Sincerely,

Tim Harrell

Tim Harrell
Tim.Harrell@pacelabs.com
Technical Director





# Pace Analytical Services, Inc.

## 808 West McKay, Frontenac, KS 66763

**LABORATORY REPORT:**

| | |
|---|---|
| **CLIENT:** City of Jefferson City (Algoa Lagoon)<br>Attn: Emily Wibers<br>401 Old Mokane rd.<br>Jefferson City, MO 65101<br>573-634-6566 | Date Reported: 10-14-19<br>Date Initiated: 10-10-19<br>Time Set: 14:00<br>Date Terminated: 10-12-19 |

## BIOMONITORING STUDY

### *ACUTE TOXICITY*

### *Permit # MO-0044300*

### *FINDING AND CONCLUSIONS:*

Acute toxicity testing was performed on duplicate samples of effluent collected from the City of Jefferson City (Algoa Lagoon) effluent discharge. Acute toxicity, as defined by significant mortality for at least one of two aquatic test species during a 48 hour period of exposure, was not detected in Ceriodaphnia exposed to the 36% effluent, and was not detected in fathead minnows exposed to the 36% effluent. The LC50 for the Ceriodaphnia was >36% and >36% for the Pimephales. The test species utilized in this test were the water flea, Ceriodaphnia dubia and the fathead minnow, Pimephales promelas. Detailed results of the toxicity testing are provided in the Acute Toxicity Reports. In addition to the acute toxicity testing, water temperature, pH, dissolved oxygen, total hardness, total alkalinity, conductivity, and chlorine determinations were performed on the effluent and control samples.

## SAMPLING PROCEDURES:

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

**ENGINEERING SURVEYS AND SERVICES**
**TESTING LABORATORIES**
1113 Fay Street * Columbia, Missouri 65201 * (573) 442-2446
609 El Dorado Drive * Jefferson City, Missouri 65101 * (573) 636-3303
1175 West Main Street * Sedalia, Missouri 65301 * (660) 826-8419

**Date:** 20 November 2018
**Lab Number:** L7570

**Project:** City of Jefferson

**Location:** Jefferson City, Missouri

**Date Received:** 05 November 2018

**Sample No. / Description :** 1042 / Algoa Lagoon Effluent, 11-6-18, 9:30 am

**TEST RESULTS:**

| Parameter: | 1042 | Units | Detection | Method |
|---|---|---|---|---|
| Whole Effluent Toxicity | ** | | n/a | |

Sample secured and delivered to laboratory by others
**See attached report from EA South Laboratory

Method number from "Standard Methods for the Examination of Water & Wastewater", current edition, unless noted otherwise.

cc: Community Development

email Jenny

*Engineering Surveys & Services*

BY:

Derek J. Brester

42487

Environmental Analysis South, Inc.
4000 East Jackson Blvd. • Jackson, MO 63755 • 573-204-8817 • Fax 573-204-8816

eas

**REPORT OF ACUTE TOXICITY TESTING**
**Algoa Regional Wastewater Treatment Facility**
**Outfall 001(grab) AEC = 9%**
**MO-0044300**
**EAS LOG# 2305705**
**November 7, 2018 through November 9, 2018**

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


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

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 | Algoa Regional WWTF | Receiving Water | Missouri River–not available |
| Permit Number | MO-0044300 | Laboratory Name | Environmental Analysis South, Inc. |
| Outfall | 001 | Laboratory Report # | MO_2305706 |

SAMPLE INFORMATION

| Sample Number | Sample Collection: Effluent or Upstream | Sample Type | Beginning Date | End Date | Sample Temperature (°C): At Collection | At Lab | pH (SU) At Lab | Heat Addressed (If yes, ≤4 hrs)? | Hold Time ≤36 hours? | Sample Acceptable |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Effluent | grab | 11/06/18 | 11/06/18 | | 6 | 7.95 | ☐Y ■N | ■Y ☐N | ■Y ☐N |
| 2 | | | | | | | | ☐Y ☐N | ☐Y ☐N | ☐Y ☐N |
| 3 | | | | | | | | ☐Y ☐N | ☐Y ☐N | ☐Y ☐N |
| 4 | | | | | | | | ☐Y ☐N | ☐Y ☐N | ☐Y ☐N |

Describe any unusual conditions during sampling that might influence test results

TEST INFORMATION - ACUTE

| | | | | |
|---|---|---|---|---|
| Test Method | C. dubia | 2002.0 | P. promelas | 2002.0 |
| Date Test Initiated | 11/07/2018 | | | |
| AEC/IWC Info | AEC = 9% | | | |
| Dilution Series | 36% | 18% | 9% | 4.5% |
| | 2.25% | | | |
| Diluent Water | C. dubia | RW ☐ | LW ■ | |
| | P. promelas | RW ☐ | LW ■ | |
| | RW = Receiving Stream Control | | LW = Lab Water Control | |

Comments:
Receiving stream control (Missouri River) was not available

QA/QC CONDITIONS - ACUTE

| | YES | NO |
|---|---|---|
| Did test conditions meet all test acceptability criteria required by the specified method? | ✓ | |
| Temperatures maintained during test (20 ± 1°C) | | ✓ |
| Temperature maintained during test (20 ± 1°C) | ✓ | |
| Dissolved oxygen ≥ 40 mg/L throughout test | ✓ | |
| Effluent pH maintained within 6.0 - 9.0 SU throughout test | ✓ | |
| Concentrations of toxicants in dilution kept within acceptable limits? | ✓ | |
| Were effluent samples conditioned prior to testing? (ex. filtering, aeration, chemical addition including dechlorination or pH adjustment) | ✓ | |

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 | | | | | | | | | | |
| Effluent | 2305706 | 1157 | <0.020 | 232 | 269 | 8.23 | <0.04 | DO=4.1 | | |
| Lab Water | RC4218 | 261 | <0.020 | 80.8 | 60.8 | 8.30 | <0.04 | DO=8.8 | | |

Comments

| TUa Equ = Monitoring only. | | | | | | |
|---|---|---|---|---|---|---|
| Pimephales promelas Acute Results | LC50= | >36% | Confidence Interval % = | N/A | TUa= | <2.78 |
| Ceriodaphnia dubia Acute Results | LC50= | >36% | Confidence Interval % = | N/A | TUa= | <2.78 |

| Receiving Water Controls | | | | Lab Water Controls | | | |
|---|---|---|---|---|---|---|---|
| Fathead Minnow | | Ceriodaphnia dubia | | Fathead Minnow | | Ceriodaphnia dubia | |
| Survival ≥ 90% | ☐Y ☐N | Survival ≥ 90% | ☐Y ☐N | Survival ≥ 90% | ■Y ☐N | Survival ≥ 90% | ■Y ☐N |

Comments

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

Version 1.0

# Environmental Analysis South, Inc.

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

eas

**REPORT OF ACUTE TOXICITY TESTING**
**Algoa Regional Wastewater Treatment Facility**
**Outfall 001(grab) AEC = 9%**
**MO-0044300**
**EAS LOG# 2305706**
**November 7, 2018 through November 9, 2018**

**1. REPORT SUMMATION:**

**1.1. Multiple Dilution Data Summation**

| Test Solution | *Pimephales promelas* Acute Toxicity Test 48 Hour Survival | *Ceriodaphnia dubia* Acute Toxicity Test 48 Hour Survival |
|---|---|---|
| Reconstituted Control (RC) | 100% | 100% |
| Upstream Control (UC) | N/A | N/A |
| 2.25% Effluent | 100% | 100% |
| 4.5% Effluent | 100% | 100% |
| 9% Effluent | 100% | 100% |
| 18% Effluent | 100% | 100% |
| 36% Effluent | 100% | 100% |
| Estimated 48 Hour $LC_{50}$ Value | >36% Effluent | >36% Effluent |
| TUa Value | <2.78 | <2.78 |
| 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>36% using the Graphical Method
NOAEC = 36% by Steel's Many-One Rank Test
TUa>2.78

Ceriodaphnia dubia 48 hour WET results: LC 50>36% using the Graphical Method
NOAEC = 36% by Steel's Many-One Rank Test
TUa>2.78

Approved by: Sara C. Shields, Chemist





# Environmental Analysis South, Inc.

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

eas

**REPORT OF ACUTE TOXICITY TESTING**
**Algoa Regional Wastewater Treatment Facility**
**Outfall 001(grab) AEC = 9%**
**MO-0044300**
**EAS LOG# 2305706**
**November 7, 2018 through November 9, 2018**

**2. TEST METHOD SUMMARY**

**2.1. TEST CONDITIONS AND METHODS:**

| | *Ceriodaphnia dubia:* | *Pimephales promelas:* |
|---|---|---|
| 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.



Analytical Chemistry • Research • Field Studies

148745

Multiple Tox report AEC 9% 18, 36 2.25, 4.5, 9, 18, 36

# SAMPLE CHAIN OF CUSTODY RECORD

ENGINEERING SURVEYS & SERVICES
1113 Fay Street * Columbia, Missouri 65201 * (573) 449-2646
802 El Dorado Drive * Jefferson City, Missouri 65101 * (573) 636-3303
1175 W. Main Street * Sedalia, Missouri 65301 * (660) 826-8618

| Sample ID | Date/Time Collected | Tests Requested | Sample Container | Preserv. | Comments |
|---|---|---|---|---|---|
| SN 1042 Algoa Effluent Grab | 6NOV18 | WET Test Multi dilution No upstream available (2) | 2 gallon cubitainer | None | JN 7570 MO-0044300 |
| = 2305706 | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

Sample Collected By _____ Company/Organization Engineering Surveys + Services

Date/Time _____ Address Columbia, MO

| Samples Relinquished By/Phone | Samples Received By | Date/Time |
|---|---|---|
| [illegible] | | 6NOV18 12:00pm |
| | [illegible] Fed Ex | 11/7/18 1055 |
| | | |
| | | |

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

CLIENT NAME: Algoa Regional WWTF, Outfall 001, grab
NPDES NUMBER: MO-0044300
TYPE OF METHOD: multiple dilution, 48 hr non-renewal WET, PP and CD species AEC=9%, Tus report
DATE & TIME OF COLLECTION: 11/6/2018
DATE & TIME OF SUBMISSION: 11/07/18 1055 hrs by Fed Ex

Upstream: Missouri River
Not available

| INITIAL OBSERVATIONS | DATE | TIME | ANALYST | QC LOT | QC EXP VALUE | INT EFFL | INT UC | INT RC |
|---|---|---|---|---|---|---|---|---|
| LOC NUMBER / ID NUMBER | | | | | | 2305706 | | RC4218 |
| pH - SU | 11/07/18 | 1115 hrs | SCS | SB114 (8.8-9.2) | 9.04 | 7.85 | | 8.49 |
| TEMPERATURE °C RECEIVED | 11/07/18 | 1115 hrs | SCS | EAS 106 | | 6 | | 21 |
| SPECIFIC CONDUCTANCE umhos | 11/07/18 | 1115 hrs | SCS | ERA P255-506 (437-490) | 475 | 1157 | | 281 |
| HARDNESS - ppm | 11/08/18 | 1315 hrs | SCS | QC036-507 (269-316) | 270 | 222 | | 60.8 |
| CHLORINE - ppm | 11/08/18 | 1115 hrs | SCS | AG298 (0.82 - 1.02) | 0.92 | <0.04 | | <0.04 |
| DISSOLVED OXYGEN - ppm | 11/07/18 | 1115 hrs | SCS | cal@840 | | 4.1 | | 8.8 |
| TOTAL ALKALINITY - ppm | 11/08/18 | 1400 hrs | SCS | P255-506 (48.5-57.8) | 53.2 | 289 | | 60.8 |
| INITIAL AMMONIA - ppm | 11/12/18 | 1500 hrs | JPC | DMRQA38 (4.16-6.59) | 5.36 | 0.042 | | <0.02 |
| TOTAL DISSOLVED SOLIDS -ppm | | | | | | | | |

| 0 HOUR OBSERVATIONS | DATE | TIME | ANALYST | QC LOT | QC EXP VALUE | RC | UC | 36% | 18% | 9% | 4.5% | 2.25% | X %AEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| pH - SU | 11/07/18 | 1200 hrs | SCS | SB114 (8.8-9.2) | 9.04 | 8.30 | | 8.23 | 8.16 | 8.12 | 8.20 | 7.98 | |
| TEMPERATURE °C | 11/07/18 | 1200 hrs | SCS | EAS 106 | | 23.6 | | 24.8 | 24.6 | 24.7 | 24.0 | 24.1 | |
| SPECIFIC CONDUCTANCE umhos | 11/07/18 | 1200 hrs | SCS | ERA P255-506 (437-490) | 475 | 268 | | 502 | 413 | 330 | 292 | 274 | |
| DISSOLVED OXYGEN - ppm | 11/07/18 | 1200 hrs | SCS | cal@840 | | 8.7 | | 8.7 | 8.7 | 8.7 | 8.7 | 8.2 | |

| 24 HOUR OBSERVATIONS - PP | DATE | TIME | ANALYST | QC LOT | QC EXP VALUE | RC | UC | 36% | 18% | 9% | 4.5% | 2.25% | X %AEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| pH - SU | 11/08/18 | 1200 hrs | SCS | SB114 (8.8-9.2) | 9.04 | 8.12 | | 8.33 | 8.24 | 8.24 | 8.30 | 8.44 | |
| TEMPERATURE °C | 11/08/18 | 1200 hrs | SCS | EAS 106 | | 25.0 | | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | |
| SPECIFIC CONDUCTANCE umhos | 11/08/18 | 1200 hrs | SCS | ERA P255-506 (437-490) | 475 | 298 | | 599 | 410 | 335 | 301 | 289 | |
| DISSOLVED OXYGEN - ppm | 11/08/18 | 1200 hrs | SCS | cal@840 | | 7.3 | | 8.1 | 8.1 | 8.1 | 8.1 | 8.2 | |

| 48 HOUR OBSERVATIONS - PP | DATE | TIME | ANALYST | QC LOT | QC EXP VALUE | RC | UC | 36% | 18% | 9% | 4.5% | 2.25% | X %AEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| pH - SU | 11/09/18 | 1200 hrs | SCS | SB114 (8.8-9.2) | 9.02 | 8.72 | | 8.30 | 8.27 | 8.31 | 8.38 | 8.46 | |
| TEMPERATURE °C | 11/09/18 | 1200 hrs | SCS | EAS 106 | | 25.0 | | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | |
| SPECIFIC CONDUCTANCE umhos | 11/09/18 | 1200 hrs | SCS | ERA P255-506 (437-490) | 481 | 292 | | 633 | 419 | 337 | 307 | 297 | |
| DISSOLVED OXYGEN - ppm | 11/09/18 | 1200 hrs | SCS | cal@840 | | 8.8 | | 7.7 | 7.8 | 7.8 | 7.9 | 8.0 | |
| FINAL AMMONIA - ppm | | | | DMRQA33 (10.0-16.8) | | | | | | | | | |

| 24 HOUR OBSERVATIONS - CD | DATE | TIME | ANALYST | QC LOT | QC EXP VALUE | RC | UC | 36% | 18% | 9% | 4.5% | 2.25% | X %AEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| pH - SU | 11/08/18 | 1200 hrs | SCS | SB114 (8.8-9.2) | 9.04 | 8.56 | | 8.41 | 8.39 | 8.41 | 8.47 | 8.62 | |
| TEMPERATURE °C | 11/08/18 | 1200 hrs | SCS | EAS 106 | | 25.0 | | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | |
| SPECIFIC CONDUCTANCE umhos | 11/08/18 | 1200 hrs | SCS | ERA P255-506 (437-490) | 475 | 257 | | 547 | 403 | 329 | 289 | 282 | |
| DISSOLVED OXYGEN - ppm | 11/08/18 | 1200 hrs | SCS | cal@840 | | 9.3 | | 9.2 | 9.2 | 9.3 | 9.4 | 9.4 | |

| 48 HOUR OBSERVATIONS - CD | DATE | TIME | ANALYST | QC LOT | QC EXP VALUE | RC | UC | 36% | 18% | 9% | 4.5% | 2.25% | X %AEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| pH - SU | 11/09/18 | 1200 hrs | SCS | SB114 (8.8-9.2) | 9.02 | 8.68 | | 8.49 | 8.50 | 8.58 | 8.70 | 8.72 | |
| TEMPERATURE °C | 11/09/18 | 1200 hrs | SCS | EAS 106 | | 25.0 | | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | |
| SPECIFIC CONDUCTANCE umhos | 11/09/18 | 1200 hrs | SCS | ERA P255-506 (437-490) | 481 | 284 | | 553 | 405 | 337 | 296 | 309 | |
| DISSOLVED OXYGEN - ppm | 11/09/18 | 1200 hrs | SCS | cal@840 | | 8.2 | | 8.0 | 8.7 | 8.9 | 9.0 | 9.1 | |
| FINAL AMMONIA - ppm | | | | DMRQA33 (10.0-16.8) | | | | | | | | | |

Approved by: [signature] Date: 11/13/18



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

Algoa Regional WWTF, Outfall 001, grab EAS LOC# 2305706

Date Test Began: November 7, 2018 Time Test Began: 1200 hrs
Date Test Finished: November 9, 2018 Time Test Finished: 1200 hrs

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

P. promelas (PP) AGE: 3 days HATCH NUMBER: 110918 EEU

| PERIOD | RC | UC | 36% | 18% | 9% | 4.5% | 2.25% | X% AEC |
|---|---|---|---|---|---|---|---|---|
| | ALIVE | ALIVE | ALIVE | ALIVE | ALIVE | ALIVE | ALIVE | ALIVE |
| 0 HR-PP | 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 | |
| 48 HR-PP | 10,10 | | 10,10 | 10,10 | 10,10 | 10,10 | 10,10 | |

Ceriodaphnia dubia (CD) AGE: <24 hours HATCH NUMBER: 110918 EEU

| PERIOD | RC | UC | 36% | 18% | 9% | 4.5% | 2.25% | X% AEC |
|---|---|---|---|---|---|---|---|---|
| | 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 | |
| 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 | |
| 48 HR-CD | 5,5,5,5 | | 5,5,5,5 | 5,5,5,5 | 5,5,5,5 | 5,5,5,5 | 5,5,5,5 | |

Approved by: [signature] Date: 11/13/18



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

Algoa Regional WWTF, Outfall 001, grab EAS#: 2305706

**Notes & Comments**

Outfall 001 aerated prior to test initiation due to low DO upon arrival to the lab

Prepared by: [signature] Date: 11/13/18



Environmental Analysis South, Inc.
4002 East Jackson Blvd. • Jackson, MO 63755 • 573-204-6317 • Fax 573-204-6316

**REPORT OF ACUTE TOXICITY TESTING**
**Algoa Regional Wastewater Treatment Facility**
**Outfall 001(grab) AEC = 9%**
**Missouri**
**EAS LOC# 2305706**
**November 7, 2018 through November 9, 2018**

**2.2. REFERENCE TOXICITY TEST:**
Environmental Analysis South performs monthly reference toxicity tests. The most recent reference test was initiated on November 7, 2018 using KCl. Lot #41713. Following are the results:

2.2.1. *P. promelas* - 48 hr. Acute Test – LC$_{50}$ = 1.227g/l 95%CI (0.929 g/l - 1.525 g/l)
EAS %CV = 12.7%
National Warning Limits (75th percentile) = 19%CV
National Control Limits (90th percentile) = 33%CV

2.2.2. *C. dubia* - 48 hr. Acute Test – LC$_{50}$ = 0.118 g/l 95%CI (0.170 g/l - 0.661 g/l)
EAS %CV = 28.6%
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, DC.
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 (TSDs H-20)*. June 2000. EPA 833-R-00-003.

**ENGINEERING SURVEYS AND SERVICES**
**TESTING LABORATORIES**
1113 Fay Street * Columbia, Missouri 65201 * (573) 449-0616
632 B Duncan Drive * Jefferson City, Missouri 65101 * (573) 636-3633
1775 West Main Street * Bonne, Missouri 63301 * (636) 816-6618

**Date:** 27 November 2017
**Lab Number:** L7570

**Project:** City of Jefferson

**Location:** Jefferson City, Missouri

**Date Received:** 14 November 2017

**Sample No. / Description :** 2923 / Algoa Lagoon Effluent, 11/14/17, 8:55am

**TEST RESULTS:**

| Parameter: | 2923 | Units | Detection | Method |
|---|---|---|---|---|
| Whole Effluent Toxicity | ** | | n/a | |

Sample secured by others
**See attached report

Method number from "Standard Methods for the Examination of Water & Wastewater", current edition, unless noted otherwise.

cc: Community Development
1 Clara Hanchen
Hanchen,Wilkens, Kiefner
36740

*Engineering Surveys & Services*

BY:

**Derek J. Brester**

Environmental Analysis South, Inc.
4000 East Jackson Blvd. • Jackson, MO 63755 • 573-204-8817 • Fax 573-204-8818

**REPORT OF ACUTE TOXICITY TESTING**
**Algoa Regional Wastewater Treatment Facility**
**Outfall 001(grab) AEC = 9%**
**MO-0044300**
**EAS LOG# 2202110**
**November 16, 2017 through November 17, 2017**

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


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






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

**MINIMUM REQUIRED ANALYTICAL RESULTS FOR THE 100% UPSTREAM SAMPLE[1]**

| PARAMETER | RESULT | METHOD | WHEN ANALYZED |
|---|---|---|---|
| Temperature °C | 21 | SM18 2550B stored at 4 degree C until test setup | 11/14/17 1345 hrs |
| pH Standard Units | 8.43 | SM18 4500-H B | 11/14/17 1345 hrs |
| Conductance µMohs | 249 | SM18 2510B | 11/14/17 1345 hrs |
| Dissolved Oxygen mg/L | 9.28.7 | SM18 4500-O G | 11/14/17 1345 hrs |
| Total Residual Chlorine mg/L | <0.04 | SM18 4500-Cl G | 11/14/17 1345 hrs |
| Unionized Ammonia mg/L | <0.05x0.12<0.010 | SM18 4500-NH3 F @ 25 degree C | 11/17/17 1515 hrs |
| *Total Alkalinity mg/L | 68.2 | SM18 2320B | 11/17/17 1300 hrs |
| *Total Hardness mg/L | 72.6 | SM18 2340 C | 11/17/17 1330 hrs |

*Recommended by USEPA guidance, not a required analysis.

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

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

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

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

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

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

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

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

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

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

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

| PARAMETER | RESULT | NOTES | WHEN ANALYZED |
|---|---|---|---|
| Temperature °C | 0 - 8 | Unless received by the laboratory on the same day as collected, values outside this range invalidate the test | Upon receipt |

[1] Where no upstream control is available, enter results from laboratory or synthetic control.

MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER PROTECTION PROGRAM - P.O. BOX 176, JEFFERSON CITY MO, 65102

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

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

| | |
|---|---|
| FACILITY NAME: Algoa Regional WWTF | DATE & TIME COLLECTED: EFFLUENT 11/14/17 UPSTREAM not available |
| PERMIT NUMBER: MO-0044300 | PERMIT OUTFALL NUMBER: Outfall # 001 |
| COLLECTOR'S NAME: Algoa Regional WWTF | |
| RECEIVING STREAM COLLECTION SITE AND DESCRIPTION: Missouri River–not available | |
| PERMIT ALLOWABLE EFFLUENT CONCENTRATION (AEC): 9% | EFFLUENT SAMPLE TYPE (CHECK ONE): ☐ 24HR COMPOSITE ☒ GRAB ☐ OTHER |
| SAMPLE NUMBER: EFFLUENT 2202110 UPSTREAM not available | UPSTREAM SAMPLE TYPE (CHECK ONE): ☐ 24HR COMPOSITE ☐ GRAB ☒ OTHER not available |
| PERMITTED EFFLUENT DAILY MAXIMUM LIMITATION FOR: CHLORINE ____ mg/L | PERMITTED EFFLUENT DAILY MAXIMUM LIMITATION FOR: AMMONIA ____ mg/L |

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

| | |
|---|---|
| PERFORMING LABORATORY: Environmental Analysis South, Inc. | TEST TYPE: Acute Static Non renewal Test Multiple Dilution |
| FINAL REPORT NUMBER: MO_2202110 | TEST DURATION: 48 hour |
| DATE OF LAST REFERENCE TOXICANT TESTING: November 15, 2017 | TEST METHOD: Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms |
| DATE AND TIME SAMPLES RECEIVED AT LABORATORY: 11/14/17 1330 hrs by DB (ES&S) | TEST START DATE AND TIME: 11/16/17 1100 hrs; TEST END DATE AND TIME: 11/17/17 1100 hrs |
| SAMPLE DECHLORINATED PRIOR TO ANALYSIS? ☐ YES ☒ NO EFFLUENT ____ UPSTREAM ____ | TEST ORGANISM #1 AND AGE: Pimephales promelas 8 days; TEST ORGANISM #2 AND AGE: Ceriodaphnia dubia < 24 hours |
| SAMPLE FILTERED[1] PRIOR TO ANALYSIS? ☐ YES ☒ NO EFFLUENT ____ UPSTREAM ____ | SEA OR GRANULE SURVIVAL IN SYNTHETIC CONTROL? ☒ YES ☐ NO; DILUTION WATER USED TO ACHIEVE AEC: Reconstituted Control (RC) |
| FILTER MESH SIEVE SIZE[2]: None | EFFLUENT ORGANISM #1 % MORTALITY AT AEC: LC50>36% Effluent; EFFLUENT ORGANISM #2 % MORTALITY AT AEC: LC50>36% Effluent |
| SAMPLE ADJUSTED TO AVOID TOXICITY? ☐ YES ☒ NO | UPSTREAM ORGANISM #1 % MORTALITY: RC=0%; UPSTREAM ORGANISM #2 % MORTALITY: RC=0% |
| pH ADJUSTED? ☐ YES ☒ NO EFFLUENT ____ UPSTREAM ____ | TEST RESULT AT AEC FOR ORGANISM #1: ☒ PASS ☐ FAIL; TEST RESULT AT AEC FOR ORGANISM #2: ☒ PASS ☐ FAIL |

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

| PARAMETER | RESULT | METHOD | WHEN ANALYZED |
|---|---|---|---|
| Temperature °C | 3 | SM18 2550B stored at 4 degree C until test setup | 11/14/17 1345 hrs |
| pH Standard Units | 7.86 | SM18 4500-H B | 11/14/17 1345 hrs |
| Conductance µMohs | 1155 | SM18 2510B | 11/14/17 1345 hrs |
| Dissolved Oxygen mg/L | 10.1 | 03/12/14 0945 hrsSM18 4500-O G | 11/14/17 1345 hrs |
| Total Residual Chlorine mg/L | <0.04 | SM18 4500-Cl G | 11/14/17 1345 hrs |
| Unionized Ammonia mg/L | <0.05x0.04<0.010 | SM18 4500-NH3 F @ 25 degree C | 11/17/17 1515 hrs |
| *Total Alkalinity mg/L | 273 | SM18 2320B | 11/17/17 1300 hrs |
| *Total Hardness mg/L | 281 | SM18 2340 C | 11/17/17 1330 hrs |

*Recommended by USEPA guidance, not a required analysis

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

MO 780-1899 (12-14) CONTINUED ON PAGE 2 



**REPORT OF ACUTE TOXICITY TESTING**
**Algoa Regional Wastewater Treatment Facility**
**Outfall 001(grab) AEC = 9%**
**MO-0044300**
**EAS LOG# 2202110**
**November 15, 2017 through November 17, 2017**

1. **REPORT SUMMATION:**

1.1. **Multiple Dilution Data Summation**

| Test Solution | *Pimephales promelas* Acute Toxicity Test 48 Hour Survival | *Ceriodaphnia dubia* Acute Toxicity Test 48 Hour Survival |
|---|---|---|
| Reconstituted Control (RC) | 100% | 100% |
| Upstream Control (UC) | N/A | N/A |
| 2.25% Effluent | 100% | 100% |
| 4.5% Effluent | 95% | 100% |
| 9% Effluent | 100% | 100% |
| 18% Effluent | 100% | 100% |
| 36% Effluent | 100% | 100% |
| **Estimated 48 Hour $LC_{50}$ Value** | >36% Effluent | >36% Effluent |
| To Pass: 1. Effluent - LC50 must be > AEC / 0.3 and 2. All concentrations * or < AEC must not have significant difference to control in survival. | 1. Yes 2. Yes | 1. Yes 2. Yes |
| **Result of Toxicity Test** | PASS | PASS |

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

**Conclusion:**
Pimephales promelas 48 hour WET results: LC 50>36% using Trimmed Spearman-Karber; NOAEC = 36% by Steel's Many-One Rank Test
Ceriodaphnia dubia 48 hour WET results: LC 50>36% using the Graphical Method; NOAEC = 36% by Steel's Many One Rank Test

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

Approved by _____ Sara C. Shields, Chemist







**REPORT OF ACUTE TOXICITY TESTING**
**Algoa Regional Wastewater Treatment Facility**
**Outfall 001(grab) AEC = 9%**
**MO-0044300**
**EAS LOG# 2202110**
**November 15, 2017 through November 17, 2017**

2. **TEST METHOD SUMMARY**
2.1. **TEST CONDITIONS AND METHODS:**

| | *Ceriodaphnia dubia:* | *Pimephales promelas:* |
|---|---|---|
| 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 C-K Associates Inc. located in Baton Rouge, Louisiana and shipped overnight for use in the whole effluent toxicity test.





143951

**SAMPLE CHAIN OF CUSTODY RECORD**
**ENGINEERING SURVEYS & SERVICES**
1113 Fay Street * Columbia, Missouri 65201 * (573) 449-2646
802 El Dorado Drive * Jefferson City, Missouri 65101 * (573) 636-3303
1175 W. Main Street * Sedalia, Missouri 65301 * (660) 826-8618

| Sample ID | Date/Time Collected | Tests Requested | Sample Container | Preserv. | Comments |
|---|---|---|---|---|---|
| Algoa Regional WWTF SN 2895 Rocky Fork EFF Composite | 11/13/17 to 11/14/17 | WET Test Multiple dilution | gallon cubitainer | None | JN 8867 |
| 2202108 | | | | | |
| Algoa Regional WWTF SBR Plant Eff Composite | 11/13/17 to 11/14/17 | WET Test Multiple dilution | gallon cubitainer | None | JN 7570 |
| 2202109 72, 36, 18, 9, 4.5 | | | | | |
| Algoa Regional Eff Grab | 11/14/17 | WET Test Multiple dilution | gallon cubitainer | None | JN 7570 |
| 2202110 36, 18, 9, 4.5, 2.25 | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

Sample Collected By _____ Company/Organization Engineering Surveys + Services

Date/Time _____ Address Columbia, MO

| Samples Relinquished By/Phone | Samples Received By | Date/Time |
|---|---|---|
| [illegible] | | 11/14/17 1:30 pm |
| | [illegible] | 11/14/17 13:30 |
| | | |
| | | |

CLIENT NAME: Algoa Regional WWTF, Outfall 001, grab
NPDES NUMBER: MO-0044300
TYPE OF METHOD: multiple dilution, 48 hr non-renewal WET, PP and CD species AEC=9%
DATE & TIME OF COLLECTION: 11/14/17 — Upstream: Missouri River
DATE & TIME OF SUBMISSION: 11/14/17 1330 hrs by DB (ESS&S) — Not available

| INITIAL OBSERVATIONS | DATE | TIME | ANALYST | QC LOT | QC EXP VALUE | INT EFFLUNT | UC | INT RC |
|---|---|---|---|---|---|---|---|---|
| LOG NUMBER / ID NUMBER | | | | | | 2202110 | | RC4995 |
| pH - SU | 11/14/17 | 1345 hrs | SCS | SB114 (8.8-9.2) | 8.97 | 7.86 | | 8.43 |
| TEMPERATURE °C RECEIVED | 11/14/17 | 1345 hrs | SCS | EAS 106 | | 2 | | 21 |
| SPECIFIC CONDUCTANCE umhos | 11/14/17 | 1345 hrs | SCS | ERA P255-506 (437-490) | 479 | 1155 | | 249 |
| HARDNESS - ppm | 11/17/17 | 1330 hrs | SCS | P257-607 (194-228) | 220 | 281 | | 72.6 |
| CHLORINE - ppm | 11/14/17 | 1345 hrs | SCS | A8296 (0.82 - 1.02) | 0.91 | <0.04 | | <0.04 |
| DISSOLVED OXYGEN - ppm | 11/14/17 | 1345 hrs | SCS | cal@840 | | 10.1 | | 9.7 |
| TOTAL ALKALINITY - ppm | 11/17/17 | 1300 hrs | SCS | P255-506 (40.3-48.2) | 47.6 | 273 | | 68.2 |
| INITIAL AMMONIA - ppm | 11/17/17 | 1515 hrs | JPC | EAS2963 (8-12) | 9.97 | <0.05 | | <0.05 |
| TOTAL DISSOLVED SOLIDS -ppm | | | | | | | | |

| 0 HOUR OBSERVATIONS | DATE | TIME | ANALYST | QC LOT | QC EXP VALUE | RC | UC | 36% | 18% | 9% | 4.5% | 2.25% | X %AEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| pH - SU | 11/15/17 | 1100 hrs | SCS | SB114 (8.8-9.2) | 9.02 | 8.34 | | 8.11 | 8.17 | 8.22 | 8.24 | 8.25 | |
| TEMPERATURE °C | 11/15/17 | 1100 hrs | SCS | EAS 106 | | 24.4 | | 24.5 | 24.2 | 24.5 | 24.6 | 24.9 | |
| SPECIFIC CONDUCTANCE umhos | 11/15/17 | 1100 hrs | SCS | ERA P255-506 (437-490) | 464 | 250 | | 576 | 416 | 325 | 286 | 267 | |
| DISSOLVED OXYGEN - ppm | 11/15/17 | 1100 hrs | SCS | cal@840 | | 8.9 | | 8.6 | 8.8 | 8.8 | 8.8 | 8.8 | |

| 24 HOUR OBSERVATIONS - PP | DATE | TIME | ANALYST | QC LOT | QC EXP VALUE | RC | UC | 36% | 18% | 9% | 4.5% | 2.25% | X %AEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| pH - SU | 11/16/17 | 1100 hrs | SCS | SB114 (8.8-9.2) | 8.98 | 7.86 | | 8.16 | 8.04 | 7.94 | 7.89 | 7.83 | |
| TEMPERATURE °C | 11/16/17 | 1100 hrs | SCS | EAS 106 | | 25.0 | | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | |
| SPECIFIC CONDUCTANCE umhos | 11/16/17 | 1100 hrs | SCS | ERA P255-506 (437-490) | 464 | 263 | | 506 | 414 | 334 | 295 | 278 | |
| DISSOLVED OXYGEN - ppm | 11/16/17 | 1100 hrs | SCS | cal@840 | | 8.1 | | 7.5 | 7.5 | 7.7 | 7.8 | 7.8 | |

| 48 HOUR OBSERVATIONS - PP | DATE | TIME | ANALYST | QC LOT | QC EXP VALUE | RC | UC | 36% | 18% | 9% | 4.5% | 2.25% | X %AEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| pH - SU | 11/17/17 | 1100 hrs | SCS | SB114 (8.8-9.2) | 8.97 | 8.38 | | 8.20 | 8.15 | 8.21 | 8.24 | 8.36 | |
| TEMPERATURE °C | 11/17/17 | 1100 hrs | SCS | EAS 106 | | 25.0 | | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | |
| SPECIFIC CONDUCTANCE umhos | 11/17/17 | 1100 hrs | SCS | ERA P255-506 (437-490) | 464 | 305 | | 633 | 431 | 342 | 303 | 301 | |
| DISSOLVED OXYGEN - ppm | 11/17/17 | 1100 hrs | SCS | cal@840 | | 8.4 | | 7.6 | 7.6 | 7.7 | 7.8 | 7.8 | |
| FINAL AMMONIA - ppm | | | | DMROA33 (10.0-10.8) | | | | | | | | | |

| 24 HOUR OBSERVATIONS - CD | DATE | TIME | ANALYST | QC LOT | QC EXP VALUE | RC | UC | 36% | 18% | 9% | 4.5% | 2.25% | X %AEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| pH - SU | 11/16/17 | 1100 hrs | SCS | SB114 (8.8-9.2) | 8.98 | 7.89 | | 8.27 | 8.19 | 8.14 | 8.09 | 7.93 | |
| TEMPERATURE °C | 11/16/17 | 1100 hrs | SCS | EAS 106 | | 25.0 | | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | |
| SPECIFIC CONDUCTANCE umhos | 11/16/17 | 1100 hrs | SCS | ERA P255-506 (437-490) | 464 | 250 | | 566 | 412 | 330 | 285 | 255 | |
| DISSOLVED OXYGEN - ppm | 11/16/17 | 1100 hrs | SCS | cal@840 | | 8.8 | | 8.1 | 9.2 | 9.3 | 9.2 | 9.2 | |

| 48 HOUR OBSERVATIONS - CD | DATE | TIME | ANALYST | QC LOT | QC EXP VALUE | RC | UC | 36% | 18% | 9% | 4.5% | 2.25% | X %AEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| pH - SU | 11/17/17 | 1100 hrs | SCS | SB114 (8.8-9.2) | 8.97 | 8.57 | | 8.29 | 8.21 | 8.24 | 8.34 | 8.45 | |
| TEMPERATURE °C | 11/17/17 | 1100 hrs | SCS | EAS 106 | | 25.0 | | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | |
| SPECIFIC CONDUCTANCE umhos | 11/17/17 | 1100 hrs | SCS | ERA P255-506 (437-490) | 464 | 294 | | 582 | 414 | 336 | 301 | 294 | |
| DISSOLVED OXYGEN - ppm | 11/17/17 | 1100 hrs | SCS | cal@840 | | 8.6 | | 8.4 | 8.4 | 8.5 | 8.4 | 8.1 | |
| FINAL AMMONIA - ppm | | | | DMROA33 (10.0-10.8) | | | | | | | | | |

Approved by: [signature] Date: 11/21/17



Algoa Regional WWTF, Outfall 001, grab EAS LOG# 2202110

Date Test Began: November 15, 2017 — Time Test Began: 1100 hrs
Date Test Finished: November 17, 2017 — Time Test Finished: 1100 hrs
Analyst 1: DFW
Analyst 2: KJR
Analyst 3: SCS
RC4995

P. promelas (PP) — AGE: 8 days — HATCH NUMBER: 365 c-k

| | RC | UC | 36% | 18% | 9% | 4.5% | 2.25% | 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 | |
| 24 HR-PP | 10,10 | | 10,10 | 10,10 | 10,10 | 10,10 | 10,10 | |
| 48 HR-PP | 10,10 | | 10,10 | 10,10 | 10,10 | 10,9 | 10,10 | |

Ceriodaphnia dubia (CD) — AGE: <24 hours — HATCH NUMBER: 3564 c-k

| | RC | UC | 36% | 18% | 9% | 4.5% | 2.25% | 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 | |
| 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 | |
| 48 HR-CD | 5,5,5,5 | | 5,5,5,5 | 5,5,5,5 | 5,5,5,5 | 5,5,5,5 | 5,5,5,5 | |

Approved by: [signature] Date: 11/21/17



Algoa Regional WWTF, Outfall 001, grab EAS#: 2202110

Notes & Comments

Prepared by: [signature] Date: 11/21/17

Environmental Analysis South, Inc.
4000 East Jackson Blvd. • Jackson, MO 63755 • 573-204-6317 • Fax 573-204-6318

REPORT OF ACUTE TOXICITY TESTING
Algoa Regional Wastewater Treatment Facility
Outfall 001(grab) AEC = 9%
MO-0044300
EAS LOG# 2202110
November 15, 2017 through November 17, 2017

**2.2. REFERENCE TOXICITY TEST:**
Environmental Analysis South performs monthly reference toxicity tests. The most recent reference test was initiated on November 8, 2017 using KCL Lot #1713. Following are the results:

2.2.1. *P. promelas* - 48 hr. Acute Test – $LC_{50}$ = 1.069 g/l 95%CI (0.897 g/l -1.497 g/l)
EAS %CV = 12.6%
National Warning Limits (75th percentile) = 15%CV
National Control Limits (90th percentile) = 33%CV

2.2.2. *C. dubia* - 48 hr. Acute Test – $LC_{50}$ = 0.439 g/l 95%CI (0.355 g/l - 0.647 g/l)
EAS %CV = 14.8%
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.
*Statistical Methods for Analyzing Toxicity Data, 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.

**City of Jefferson**
*Department of Public Works*
*320 E. McCarty St.*
*Jefferson City, MO 65101*

**Carrie Tergin, Mayor**
*Matthew J. Morasch, P.E., Director*
*Phone: 573-634-6410*
*Fax: 573-634-6562*

December 23, 2019

RECEIVED
DEC 30 2019
Water Protection Program

MDNR-Water Protection Program
P.O. Box 176
Jefferson City MO 65102
Attn: NPDES Permits and Engineering Section

Re: Renewal Application for MO-0044300

Please find attached form 780-1805 for the Algoa Regional WWTF.

We hereby request to view the draft copy prior to public notice in the interest of accuracy.

We have a Department approved sewer extension permit program and request it be reflected in the special conditions.

If you have any questions, please contact me at 634-6443 or eseaman@jeffcitymo.org.

Sincerely,

Eric Seaman, P.E.
Wastewater Division Director

CC: Clara Haenchen

Attachment