

STATE OF MISSOURI  
**DEPARTMENT OF NATURAL RESOURCES**  
MISSOURI CLEAN WATER COMMISSION



**MISSOURI STATE OPERATING PERMIT**

In compliance with the Missouri Clean Water Law, (Chapter 644 R.S. Mo. as amended, hereinafter, the Law), and the Federal Water Pollution Control Act (Public Law 92-500, 92<sup>nd</sup> Congress) as amended,

Permit No. MO-0025186

Owner: City of Carl Junction  
Address: P.O. Box 447, Carl Junction, MO 64834

Continuing Authority: Same as above  
Address: Same as above

Facility Name: Carl Junction Wastewater Treatment Facility  
Facility Address: Joplin Street and Valley View Drive intersection, Carl Junction, MO 64834

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

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

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

**FACILITY DESCRIPTION**

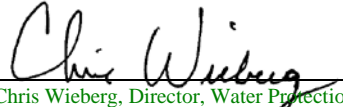
See Page 2

This permit authorizes only wastewater and stormwater discharges under the Missouri Clean Water Law and the National Pollutant Discharge Elimination System; it does not apply to other regulated areas. This permit may be appealed in accordance with Section 621.250 RSMo, Section 640.013 RSMo and Section 644.051.6 of the Law.

August 1, 2017      February 1, 2018  
Effective Date      Modification Date

  
Edward B. Galbraith, Director, Division of Environmental Quality

July 31, 2022  
Expiration Date

  
Chris Wieberg, Director, Water Protection Program

**FACILITY DESCRIPTION (continued):**

Outfall #001 – POTW – SIC #4952

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

Influent lift station / bar screen / three (3) oxidation ditches / three (3) secondary clarifiers / flow equalization basin / UV disinfection / two (2) aerobic sludge digesters / two-cell sludge storage lagoon / sludge is land applied / facility does not have materials stored or conduct operations in a manner that would cause the discharge of pollutants via stormwater.

Design population equivalent is 12,000.

Design flow is 1.6 MGD.

Actual flow is 960,000 gallons per day.

Design sludge production is 230 dry tons/year.

Legal Description:	NW ¼, SW ¼, Sec. 8, T28N, R33W, Jasper County
UTM Coordinates:	X= 361524, Y= 4114303
Receiving Stream and ID:	Center Creek (P) (3203)
First Classified Stream and ID:	Center Creek (P) (3203) 303(d) List
USGS Basin & Sub-watershed No.:	(11070207-0608)

Permitted Feature SM1 – Instream Monitoring

Instream monitoring location – Upstream – See Special Condition #24

Permitted Feature SM2 – Instream Monitoring

Instream monitoring location – Downstream – bridge over Center Creek on Joplin Street

Legal Description:	NW ¼, SW ¼, Sec. 8, T28N, R33W, Jasper County
UTM Coordinates:	X= 361387, Y= 4114244
Classified Stream and ID:	Center Creek (P) (3203) 303(d) List
USGS Basin & Sub-watershed No.:	(11070207-0608)

OUTFALL #001	TABLE A-1 FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS					
	The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The final effluent limitations shall become effective on <b>August 1, 2017</b> and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:					
EFFLUENT PARAMETER(S)	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
Flow	MGD	*		*	once/day	24 hr. total
Biochemical Oxygen Demand <sub>5</sub>	mg/L		36	24	twice/month	composite**
Total Suspended Solids	mg/L		36	24	twice/month	composite**
<i>E. coli</i> (Note 1)	#/100mL		630	126	once/week	grab
Ammonia as N (Apr 1 – Sep 30) (Oct 1 – Mar 31)	mg/L	14.5 *		3.0 *	once/month	grab
MONITORING REPORTS SHALL BE SUBMITTED <u>MONTHLY</u> ; THE FIRST REPORT IS DUE <u>SEPTEMBER 28, 2017</u> . THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.						
EFFLUENT PARAMETER(S)	UNITS	MINIMUM		MAXIMUM	MEASUREMENT FREQUENCY	SAMPLE TYPE
pH – Units ***	SU	6.0		9.0	once/month	grab
MONITORING REPORTS SHALL BE SUBMITTED <u>MONTHLY</u> ; THE FIRST REPORT IS DUE <u>SEPTEMBER 28, 2017</u> .						
EFFLUENT PARAMETER(S)			UNITS	MONTHLY AVERAGE MINIMUM	MEASUREMENT FREQUENCY	SAMPLE TYPE
Biochemical Oxygen Demand <sub>5</sub> – Percent Removal (Note 2)			%	85	once/month	calculated
Total Suspended Solids – Percent Removal (Note 2)			%	85	once/month	calculated
MONITORING REPORTS SHALL BE SUBMITTED <u>MONTHLY</u> ; THE FIRST REPORT IS DUE <u>SEPTEMBER 28, 2017</u> .						

\* Monitoring requirement only.

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

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

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

Note 2 – Influent sampling is not required when the facility does not discharge effluent during the reporting period. Samples are to be collected prior to any treatment process. Percent removal is calculated by the following formula:  $[(\text{Influent} - \text{Effluent}) / \text{Influent}] \times 100\% = \text{Percent Removal}$ . The Monthly Average Minimum Percent removal is to be reported as the average of all daily calculated removal efficiencies. Influent samples are to be collected as a 24-hour composite sample, composed of 48 aliquots (subsamples) collected at 30 minute intervals by an automatic sampling device.

OUTFALL #001	TABLE A-2 INTERIM EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS					
	The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The interim effluent limitations shall become effective on <b>August 1, 2017</b> and remain in effect through <b>July 31, 2023</b> . Such discharges shall be controlled, limited and monitored by the permittee as specified below:					
EFFLUENT PARAMETER(S)	UNITS	INTERIM EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
Oil & Grease	mg/L	15		10	once/quarter****	grab
Total Phosphorus	mg/L	*		*	once/quarter****	grab
Total Nitrogen	mg/L	*		*	once/quarter****	grab
Cyanide, Amenable to Chlorination	µg/L	*		*	once/quarter****	composite**
Cadmium, Total Recoverable	µg/L	*		*	once/quarter****	composite**
Lead, Total Recoverable	µg/L	*		*	once/quarter****	composite**
Zinc, Total Recoverable	µg/L	*		*	once/quarter****	composite**
MONITORING REPORTS SHALL BE SUBMITTED <u>QUARTERLY</u> ; THE FIRST REPORT IS DUE <u>OCTOBER 28, 2017</u> .						

OUTFALL #001	TABLE A-3 FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS					
	The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The final effluent limitations shall become effective on <b>August 1, 2023</b> and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:					
EFFLUENT PARAMETER(S)	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
Oil & Grease	mg/L	15		10	once/quarter****	grab
Total Phosphorus	mg/L	*		*	once/quarter****	grab
Total Nitrogen	mg/L	*		*	once/quarter****	grab
Cyanide, Amenable to Chlorination	µg/L	*		*	once/quarter****	composite**
Cadmium, Total Recoverable	µg/L	*		*	once/quarter****	composite**
Lead, Total Recoverable	µg/L	*		*	once/quarter****	composite**
Zinc, Total Recoverable	µg/L	233.1		104.2	once/quarter****	composite**
MONITORING REPORTS SHALL BE SUBMITTED <u>QUARTERLY</u> ; THE FIRST REPORT IS DUE <u>OCTOBER 28, 2023</u> .						

\* Monitoring requirement only.

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

\*\*\* See table on Page 6 for quarterly sampling requirements.

OUTFALL #001	<b>TABLE A-4</b> <b>WHOLE EFFLUENT TOXICITY</b> <b>FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS</b>					
	The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The final effluent limitations shall become effective on <b>August 1, 2017</b> and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:					
EFFLUENT PARAMETER(S)	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
Acute Whole Effluent Toxicity (Note 3)	TU <sub>a</sub>	*			once/year	composite**
MONITORING REPORTS SHALL BE SUBMITTED <u>ANNUALLY</u> ; THE FIRST REPORT IS DUE <u>DECEMBER 28, 2017</u> .						
Chronic Whole Effluent Toxicity (Note 4)	TU <sub>c</sub>	*			once/permit cycle	composite**
<u>WET TEST</u> REPORTS SHALL BE SUBMITTED <u>ONCE PER PERMIT CYCLE</u> ; THE FIRST REPORT IS DUE <u>DECEMBER 28, 2020</u> .						

PERMITTED FEATURE <u>SM1</u>	<b>TABLE B-1</b> <b>INSTREAM MONITORING REQUIREMENTS</b>					
	The monitoring requirements shall become effective on <b>August 1, 2017</b> and remain in effect until expiration of the permit. The stream shall be monitored by the permittee as specified below:					
PARAMETER(S)	UNITS	MONITORING REQUIREMENTS				
		DAILY MAXIMUM		MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
Total Phosphorus	mg/L	*		*	once/quarter****	grab
Total Nitrogen	mg/L	*		*	once/quarter****	grab
MONITORING REPORTS SHALL BE SUBMITTED <u>QUARTERLY</u> ; THE FIRST REPORT IS DUE <u>OCTOBER 28, 2017</u> .						

PERMITTED FEATURE <u>SM2</u>	<b>TABLE B-2</b> <b>INSTREAM MONITORING REQUIREMENTS</b>					
	The monitoring requirements shall become effective on <b>August 1, 2017</b> and remain in effect until expiration of the permit. The stream shall be monitored by the permittee as specified below:					
PARAMETER(S)	UNITS	MONITORING REQUIREMENTS				
		DAILY MAXIMUM		MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
Total Hardness	mg/L	*		*	once/quarter****	grab
MONITORING REPORTS SHALL BE SUBMITTED <u>QUARTERLY</u> ; THE FIRST REPORT IS DUE <u>OCTOBER 28, 2017</u> .						

\* Monitoring requirement only.

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

\*\*\*\* See table on Page 6 for quarterly sampling requirements.

Note 3 – The Acute WET test shall be conducted once per year during the 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>, and 5<sup>th</sup> year of the permit cycle. See Special Condition #21 for additional requirements.

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

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

### **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 March 1, 2015, and hereby incorporated as though fully set forth herein.

### **D. SPECIAL CONDITIONS**

1. 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 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 Clean Water Act, if the effluent standard or limitation so issued or approved:
    - (1) contains different conditions or is otherwise more stringent than any effluent limitation in the permit; or
    - (2) controls any pollutant not limited in the permit.
  - (b) To incorporate an approved pretreatment program pursuant to 40 CFR 403.8(a).
2. All outfalls must be clearly marked in the field. This does not include instream monitoring locations.
3. Permittee will cease discharge by connection to a facility with an area-wide management plan per 10 CSR 20-6.010(3)(B) within 90 days of notice of its availability.
4. Report as no-discharge when a discharge does not occur during the report period. For instream samples, report as “no flow” if no stream flow occurs during the report period.
5. Changes in existing pollutants or the addition of new pollutants to the treatment facility

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

- (a) Any new introduction of pollutants into the POTW from an indirect discharger which would be subject to section 301 or 306 of CWA if it were directly discharging those pollutants; and
  - (b) Any substantial change in the volume or character of pollutants being introduced into that POTW by a source introducing pollutants into the POTW at the time of issuance of the permit.
  - (c) For purposes of this paragraph, adequate notice shall include information on:
    - (1) the quality and quantity of effluent introduced into the POTW, and
    - (2) any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW.
6. Reporting of Non-Detects:
    - (a) An analysis conducted by the permittee or their contracted laboratory shall be conducted in such a way that the precision and accuracy of the analyzed result can be enumerated.
    - (b) 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 calculating monthly averages, one-half of the method detection limit (MDL) should be used instead of a zero. Where all data are below the MDL, the “<MDL” shall be reported as indicated in item (c).

**D. SPECIAL CONDITIONS (continued)**

7. It is a violation of the Missouri Clean Water Law to fail to pay fees associated with this permit (644.055 RSMo).
8. The permittee shall comply with any applicable requirements listed in 10 CSR 20-9, unless the facility has received written notification that the Department has approved a modification to the requirements. The monitoring frequencies contained in this permit shall not be construed by the permittee as a modification of the monitoring frequencies listed in 10 CSR 20-9. If a modification of the monitoring frequencies listed in 10 CSR 20-9 is needed, the permittee shall submit a written request to the Department for review and, if deemed necessary, approval.
9. The permittee has developed and is currently implementing a program for maintenance and repair of the collection system.  
  
The permittee shall also submit a report via the Electronic Discharge Monitoring Report (eDMR) Submission System annually, by January 28<sup>th</sup>, for the previous calendar year. The report shall contain the following information:
  - (a) A summary of the efforts to locate and eliminate sources of excessive infiltration and inflow into the collection system serving the facility for the previous year.
  - (b) A summary of the general maintenance and repairs to the collection system serving the facility for the previous year.
  - (c) A summary of any planned maintenance and repairs to the collection system serving the facility for the upcoming calendar year. This list shall include locations (GPS, 911 address, manhole number, etc.) and actions to be taken.
10. Bypasses are not authorized at this facility unless they meet the criteria in 40 CFR 122.41(m). If a bypass occurs, the permittee shall report in accordance to 40 CFR 122.41(m)(3), and with Standard Condition Part I, Section B, subsection 2.b. Bypasses are to be reported to the Southwest Regional Office during normal business hours or by using the online Sanitary Sewer Overflow/Facility Bypass Application located at: <http://dnr.mo.gov/modnrcag/> or the Environmental Emergency Response hotline at 573-634-2436 outside of normal business hours. Once an electronic reporting system compliant with 40 CFR Part 127, the National Pollutant Discharge Elimination System (NPDES) Electronic Reporting Rule, is available all bypasses must be reported electronically via the new system. Blending, which is the practice of combining a partially-treated wastewater process stream with a fully-treated wastewater process stream prior to discharge, is not considered a form of bypass. If the permittee wishes to utilize blending, the permittee shall file an application to modify this permit to facilitate the inclusion of appropriate monitoring conditions.
11. The facility must be sufficiently secured to restrict entry by children, livestock and unauthorized persons as well as to protect the facility from vandalism.
12. At least one gate must be provided to access the wastewater treatment facility and provide for maintenance and mowing. The gate shall remain closed except when temporarily opened by; the permittee to access the facility, perform operational monitoring, sampling, maintenance, mowing, or for inspections by the Department. The gate shall be closed and locked when the facility is not staffed.
13. At least one (1) warning sign shall be placed on each side of the facility enclosure in such positions as to be clearly visible from all directions of approach. There shall also be one (1) sign placed for every five hundred feet (500') (150 m) of the perimeter fence. A sign shall also be placed on each gate. Minimum wording shall be SEWAGE TREATMENT FACILITY—KEEP OUT. Signs shall be made of durable materials with characters at least two inches (2") high and shall be securely fastened to the fence, equipment or other suitable locations.
14. 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.
15. An all-weather access road shall be provided to the treatment facility.
16. The discharge from the wastewater treatment facility shall be conveyed to the receiving stream via a closed pipe or a paved or rip-rapped open channel. Sheet or meandering drainage is not acceptable. The outfall sewer shall be protected against the effects of floodwater, ice or other hazards as to reasonably insure its structural stability and freedom from stoppage. The outfall shall be maintained so that a sample of the effluent can be obtained at a point after the final treatment process and before the discharge mixes with the receiving waters.
17. Land application of biosolids shall be conducted in accordance with Standard Conditions III and a Department approved biosolids management plan. Land application of biosolids during frozen, snow covered, or saturated soil conditions in accordance with the additional requirements specified in WQ426 shall occur only with prior approval from the Department.
18. The berms of the storage basins shall be mowed and kept free of any deep-rooted vegetation, animal dens, or other potential sources of damage to the berms.

**D. SPECIAL CONDITIONS (continued)**

19. The facility shall ensure that adequate provisions are provided to prevent surface water intrusion into the storage basin and to divert stormwater runoff around the basin and protect embankments from erosion.
20. Acute Whole Effluent Toxicity (WET) tests shall be conducted as follows:
  - (a) Freshwater Species and Test Methods: Species and short-term test methods for estimating the acute toxicity of NPDES effluents are found in the most recent edition of *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms* (EPA/821/R-02/012; Table IA, 40 CFR Part 136). The permittee shall concurrently conduct 48-hour, static, non-renewal toxicity tests with the following species:
    - The fathead minnow, *Pimephales promelas* (Acute Toxicity EPA Test Method 2000.0).
    - The daphnid, *Ceriodaphnia dubia* (Acute Toxicity EPA Test Method 2002.0).
  - (b) Chemical and physical analysis of the upstream control sample and effluent sample shall occur immediately upon being received by the laboratory, prior to any manipulation of the effluent sample beyond preservation methods consistent with federal guidelines for WET testing that are required to stabilize the sample during shipping. Where upstream receiving water is not available or known to be toxic, other approved control water may be used.
  - (c) Test conditions must meet all test acceptability criteria required by the EPA Method used in the analysis.
  - (d) The Allowable Effluent Concentration (AEC) for this facility is 82% with the dilution series being: 100%, 82%, 64%, 46%, and 28%.
  - (e) All chemical and physical analysis of the effluent sample performed in conjunction with the WET test shall be performed at the 100% effluent concentration.
  - (f) The facility must submit a full laboratory report for all toxicity testing. The report must include a quantification of acute toxic units ( $TU_a = 100/LC_{50}$ ) reported according to the test methods manual chapter on report preparation and test review. The Lethal Concentration 50 Percent ( $LC_{50}$ ) is the effluent concentration that would cause death in 50 percent of the test organisms at a specific time.
21. Chronic Whole Effluent Toxicity (WET) tests shall be conducted as follows:
  - (a) Freshwater Species and Test Methods: Species and short-term test methods for estimating the chronic toxicity of NPDES effluents are found in the most recent edition of *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms* (EPA/821/R-02/013; Table IA, 40 CFR Part 136). The permittee shall concurrently conduct 7-day, static, renewal toxicity tests with the following species:
    - The fathead minnow, *Pimephales promelas* (Survival and Growth Test Method 1000.0).
    - The daphnid, *Ceriodaphnia dubia* (Survival and Reproduction Test Method 1002.0).
  - (b) Chemical and physical analysis of the upstream control sample and effluent sample shall occur immediately upon being received by the laboratory, prior to any manipulation of the effluent sample beyond preservation methods consistent with federal guidelines for WET testing that are required to stabilize the sample during shipping. Where upstream receiving water is not available or known to be toxic, other approved control water may be used.
  - (c) Test conditions must meet all test acceptability criteria required by the EPA Method used in the analysis.
  - (d) The Allowable Effluent Concentration (AEC) is 31%, the dilution series is: 77.5%, 62%, 46.5%, 31%, and 15.5%.
  - (e) All chemical and physical analysis of the effluent sample performed in conjunction with the WET test shall be performed at the 100% effluent concentration.
  - (f) The facility must submit a full laboratory report for all toxicity testing. The report must include a quantification of chronic toxic units ( $TU_c = 100/IC_{25}$ ) reported according to the *Methods for Measuring the Chronic Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms* chapter on report preparation and test review. The 25 percent Inhibition Effect Concentration ( $IC_{25}$ ) is the toxic or effluent concentration that would cause 25 percent reduction in mean young per female or in growth for the test populations.

**D. SPECIAL CONDITIONS (continued)**

22. Electronic Discharge Monitoring Report (eDMR) Submission System.

- (a) Discharge Monitoring Reporting Requirements. The permittee must electronically submit compliance monitoring data via the eDMR system. In regards to Standard Conditions Part I, Section B, #7, the eDMR system is currently the only Department approved reporting method for this permit.
- (b) Programmatic Reporting Requirements. The following reports (if required by this permit) must be electronically submitted as an attachment to the eDMR system until such a time when the current or a new system is available to allow direct input of the data:
  - (1) Collection System Maintenance Annual Reports;
  - (2) Schedule of Compliance Progress Reports;
  - (3) Sludge/Biosolids Annual Reports; and
    - i. In addition to the annual Sludge/Biosolids report submitted to the department, the permittee must submit Sludge/Biosolids Annual Reports electronically using EPA's NPDES Electronic Reporting Tool ("NeT") (<https://cdx.epa.gov/>).
  - (4) Any additional report required by the permit excluding bypass reporting.  
After such a system has been made available by the department, required data shall be directly input into the system by the next report due date.
- (c) Other actions. The following shall be submitted electronically after such a system has been made available by the department:
  - (1) General Permit Applications/Notices of Intent to discharge (NOIs);
  - (2) Notices of Termination (NOTs);
  - (3) No Exposure Certifications (NOEs); and
  - (4) Bypass reporting, See Special Condition #10 for 24-hr. bypass reporting requirements.
- (d) Electronic Submissions. To access the eDMR system, use the following link in your web browser: <https://edmr.dnr.mo.gov/edmr/E2/Shared/Pages/Main/Login.aspx>.
- (e) Waivers from Electronic Reporting. The permittee must electronically submit compliance monitoring data and reports unless a waiver is granted by the department in compliance with 40 CFR Part 127. The permittee may obtain an electronic reporting waiver by first submitting an eDMR Waiver Request Form: <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. 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.

23. Receiving Water Monitoring Conditions

- (a) Downstream receiving water samples should be taken at the location(s) specified on Page 2 of this permit. In the event that a safe, accessible location is not present at the location(s) listed, a suitable location can be negotiated with the Department. Samples should be taken at least four feet from the bank or from the middle of the stream (whichever is less) and 6-inches below the surface if possible. The upstream receiving water sample should be collected at a point upstream from any influence of the effluent, where the water is visibly flowing down stream.
- (b) When conducting in-stream monitoring, the permittee shall record observations that include: the time of day, weather conditions, unusual stream characteristics (e.g., septic conditions, algae growth, etc.), the stream segment (e.g., riffle, pool or run) from where the sample was collected. These observations shall be submitted with the sample results.
- (c) Samples shall not be collected from areas with especially turbulent flow, still water or from the stream bank, unless these conditions are representative of the stream reach or no other areas are available for sample collection. Sampling should not be made when significant precipitation has occurred recently. The sampling event should be terminated and rescheduled if any of the following conditions occur:
  - If turbidity in the stream increases notably; or
  - If rainfall over the past two weeks exceeds 2.5 inches or exceeds 1 inch in the last 24 hours
- (d) Always use the correct sampling technique and handling procedure specified for the parameter of interest. Please refer to the latest edition of Standard Methods for the Examination of Water and Wastewater for further discussion of proper sampling techniques. All analyses must be conducted in accordance with an approved EPA method. Meters shall be calibrated immediately (within 1 hour) prior to the sampling event.
- (e) Please contact the Department if you need additional instructions or assistance.

#### **E. SCHEDULE OF COMPLIANCE**

The facility shall attain compliance with final effluent limitations as soon as reasonably achievable or no later than **six (6) years** of the effective date of this permit.

1. The permittee shall submit interim progress reports detailing progress made in attaining compliance with the final effluent limits 12 months from effective date.
2. Within **6 years** of the effective date of this permit, the permittee shall attain compliance with the final effluent limits.

Please submit progress reports to the Missouri Department of Natural Resources via the Electronic Discharge Monitoring Report (eDMR) Submission System.

**MISSOURI DEPARTMENT OF NATURAL RESOURCES**  
**STATEMENT OF BASIS**  
**MO-0025186**  
**CARL JUNCTION WASTEWATER TREATMENT FACILITY**

This Statement of Basis (Statement) gives pertinent information regarding modification(s) to the above listed operating permit. A Statement is not an enforceable part of a Missouri State Operating Permit.

**Part I – Facility Information**

Facility Type: POTW

Facility SIC Code(s): #4952

Facility Description:

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

Influent lift station / bar screen / three (3) oxidation ditches / three (3) secondary clarifiers / flow equalization basin / UV disinfection / two (2) aerobic sludge digesters / two-cell sludge storage lagoon / sludge is land applied / facility does not have materials stored or conduct operations in a manner that would cause the discharge of pollutants via stormwater.

**Part II – Modification Rationale**

This operating permit is hereby modified to update special condition #9 to replace the semi-annual inflow and infiltration report requirements with an annual inflow and infiltration report requirement.

No other changes were made at this time.

**Part III – 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.

**PUBLIC NOTICE:**

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

☒ - The Public Notice period for this operating permit was from December 1, 2017 to January 2, 2018. No responses received.

**DATE OF FACT SHEET:** NOVEMBER 14, 2017

**COMPLETED BY:**

**SAMANTHA OSTMANN, ENVIRONMENTAL SPECIALIST**  
**MISSOURI DEPARTMENT OF NATURAL RESOURCES**  
**WATER PROTECTION PROGRAM**  
**OPERATING PERMITS SECTION - DOMESTIC WASTEWATER UNIT**  
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**MISSOURI DEPARTMENT OF NATURAL RESOURCES**  
**FACT SHEET**  
**FOR THE PURPOSE OF RENEWAL**  
**OF**  
**MO-0025186**  
**CARL JUNCTION 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 Major.

**Part I – Facility Information**

Facility Type: POTW - SIC #4952

Facility Description: Influent lift station / bar screen / three (3) oxidation ditches / three (3) secondary clarifiers / flow equalization basin / UV disinfection / two (2) aerobic sludge digesters / two-cell sludge storage lagoon / sludge is land applied / facility does not have materials stored or conduct operations in a manner that would cause the discharge of pollutants via stormwater.

Application Date: 01/14/16  
Expiration Date: 05/09/16

**OUTFALL(S) TABLE:**

OUTFALL	DESIGN FLOW (CFS)	TREATMENT LEVEL	EFFLUENT TYPE
#001	2.48	Secondary	Domestic

**Facility Performance History:**

This facility was last inspected on June 23, 2014. The conditions of the facility at the time of inspection were found to be satisfactory. A review of the past five years of data submitted by the permittee shows an Oil & Grease exceedance in January 2016 and *E. coli* exceedances in August 2013 and October 2013. No other effluent limit exceedances were reported.

**Comments:**

This permit reflects upgrades at the facility including additional pumping facilities, an additional oxidation ditch, an additional secondary clarifier, and a UV disinfection system. The capacity has increased and Outfall #001 has moved from a tributary to Center Creek to Center Creek (P) (3203).

Changes in this permit include the addition of effluent monitoring for total phosphorus, total nitrogen, cadmium, lead, and chronic whole effluent toxicity. Effluent limits for zinc have also been added. Further, instream monitoring of total phosphorus, total nitrogen, and total hardness have been added. Also, cyanide effluent limits have been removed and replaced with a monitoring requirement. See Part VI of the Fact Sheet for further information regarding the addition and removal of effluent parameters.

Special conditions were updated to include the addition reporting of Non-detects requirements, receiving stream monitoring requirements, eDMR reporting requirements, and chronic WET testing requirements.

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

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

Owned or operated by or for a

☒ - Municipalities

☐ - Federal agency

☐ - County

☐ - Public Sewer District

☐ - State agency

☐ - Private Sewer Company regulated by the Public Service Commission

☐ - Public Water Supply Districts

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

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

Operator's Name: Larry Jay Morton

Certification Number: 2656

Certification Level: A

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

## **Part III– Operational Monitoring**

☒ - As per [10 CSR 20-9.010(4)], the facility is required to conduct operational monitoring.

## **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)
Center Creek	P	3203	AQL, CLF, WBC-A, SCR, HHP, IRR, LWW, IND	11070207-0608	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 1<sup>st</sup> classified receiving stream's beneficial water uses to be maintained are in the receiving stream table in accordance with [10 CSR 20-7.031(1)(C)].

Uses which may be 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 HHP) = 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 (C, E, P, P1)	LOW-FLOW VALUES (CFS)*		
	1Q10	7Q10	30Q10
Center Creek (P)	19.5	22.0	26.8

\* - Low flow data from report by Allgeier, Martin, and Associates; see Appendix – Water Quality and Antidegradation Analysis

**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
4.88	5.50	6.70	0.488	0.550	N/A

**RECEIVING STREAM MONITORING REQUIREMENTS:**

**Permitted Feature #SM1** – Upstream – See Special Condition #24

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

**Permitted Feature #SM2** – Downstream – See Page 2 of the permit

Downstream hardness monitoring has been added to the permit in order to develop a site-specific hardness for determining reasonable potential and calculating hardness-dependent metals limits.

Receiving Water Body's Water Quality

This facility discharges to Center Creek (P) (3203) which is on the 2016 Missouri 303(d) List for cadmium and lead impairments from the tristate mining district. Cadmium and lead monitoring have been added to this permit because of results reported above the water quality criteria in the expanded effluent testing provided to the Department included with the renewal application.

Center Creek also has a 2006 TMDL written for zinc impairments. The TMDL states that permit writers are to calculate wasteload allocations (WLAs) for zinc using the design flow, water quality criteria for zinc at a hardness of 147 mg/L, and applicable dilution. It states that the facility must discharge according to concentration limits in its permit. The calculations for the WLA did not imply there needed to be a reduction of the zinc load to the receiving stream and that compliance with current water quality standards was sufficient. As a result, effluent limitations for zinc have been calculated utilizing a hardness of 172.75 based on the last five years' worth of instream data. The zinc effluent limits in this permit meet the assumptions and requirements of the TMDL.

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

### **ALTERNATIVE EVALUATIONS FOR NEW FACILITIES:**

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

☒ - The facility does not discharge to a Losing Stream as defined by [10 CSR 20-2.010(36)] & [10 CSR 20-7.031(1)(N)], or is an existing facility.

### **ANTI-BACKSLIDING:**

A provision in the Federal Regulations [CWA §303(d)(4); CWA §402(o); 40 CFR Part 122.44(l)] that requires a reissued permit to be as stringent as the previous permit with some exceptions. Limitations in this operating permit for the reissuance of this permit conform to the anti-backsliding provisions of Section 402(o) of the Clean Water Act, and 40 CFR Part 122.44.

☒ - Information is available which was not available at the time of permit issuance (other than revised regulations, guidance, or test methods) and which would have justified the application of a less stringent effluent limitation at the time of permit issuance.

- **Ammonia as N (summer months)**. Effluent limitations were re-calculated for Ammonia based new information derived from discharge monitoring reports and on the current Missouri Water Quality Standards for Ammonia. The newly established limitations for summer months are still protective of water quality.
- **Ammonia as N (winter months)**. Statistical analysis conducted using the past five years of monitoring data submitted by the permittee shows no reasonable potential for the discharge to cause or contribute to an instream excursion of the ammonia water quality standard in the winter months. A monitoring only requirement replaced winter effluent limits.
- **pH**. 6.0 – 9.0 SU effluent limits are protective of the water quality standard [10 CSR 20-7.031(5)(E)] due to the buffering capacity of the mixing zone.
- **Cyanide**. Statistical analysis conducted using the past five years of monitoring data submitted by the permittee shows no reasonable potential for the discharge to cause or contribute to an instream excursion of the cyanide water quality standard. A monitoring only requirement replaced effluent limits.
- **Whole Effluent Toxicity**. WET testing requirements were changed from pass/fail to monitoring only for toxic units. This change reflects modifications to Missouri's Effluent Regulation found at 10 CSR 20-7.015. 40 CFR 122.44(d)(1)(ii) requiring the department to establish effluent limitations to control all parameters which have the reasonable potential to cause or contribute to an excursion above any state water quality standard, including state narrative criteria. The previous permit imposed a pass/fail limitation without collecting sufficient numerical data to conduct an analytical reasonable potential analysis. The permit writer has made a reasonable potential determination which concluded the facility does not have reasonable potential at this time but monitoring is required. Implementation of the toxic unit monitoring requirement will allow the department to effect numeric criteria in accordance with water quality standards established under §303 of the CWA.

☒ - The Department determines that technical mistakes or mistaken interpretations of law were made in issuing the permit under section 402(a)(1)(b).

- **General Criteria**. The previous permit contained a special condition which described a specific set of prohibitions related to general criteria found in 10 CSR 20-7.031(4). In order to comply with 40 CFR 122.44(d)(1), the permit writer has conducted reasonable potential determinations for each general criterion and established numeric effluent limitations where reasonable potential exists. While the removal of the previous permit special condition creates the appearance of backsliding, since this permit establishes numeric limitations where reasonable potential to cause or contribute to an excursion of the general criteria exists the permit maintains sufficient effluent limitations and monitoring requirements in order to protect water quality, this permit is equally protective as compared to the previous permit. Therefore, given this new information, and the fact that the previous permit special condition was not consistent with 40 CFR 122.44(d)(1), an error occurred in the establishment of the general criteria as a special condition of the previous permit. Please see Part VI – Effluent Limits Determination for more information regarding the reasonable potential determinations for each general criterion related to this facility.

### **ANTIDEGRADATION:**

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

☒ - This permit contains new and/or expanded discharge; please see **APPENDIX – WATER QUALITY AND ANTIDEGRADATION REVIEW**.

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(3)(B)], ...An applicant may utilize a lower preference continuing authority by submitting, as part of the application, a statement waiving preferential status from each existing higher preference authority, providing the waiver does not conflict with any area-wide management plan approved under section 208 of the Federal Clean Water Act or any other regional sewage service and treatment plan approved for higher preference authority by the Department.

**BIOSOLIDS & SEWAGE SLUDGE:**

Biosolids are solid materials resulting from domestic wastewater treatment that meet federal and state criteria for beneficial uses (i.e. fertilizer). Sewage sludge is solids, semi-solids, or liquid residue generated during the treatment of domestic sewage in a treatment works; including but not limited to, domestic septage; scum or solids removed in primary, secondary, or advanced wastewater treatment process; and a material derived from sewage sludge. Sewage sludge does not include ash generated during the firing of sewage sludge in a sewage sludge incinerator or grit and screening generated during preliminary treatment of domestic sewage in a treatment works. Additional information regarding biosolids and sludge is located at the following web address: <http://extension.missouri.edu/main/DisplayCategory.aspx?C=74>, items WQ422 through WQ449.

☒ - Permittee has and a Department approved biosolids management plan, and is authorized to land applies 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.

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>. A request must be made for each facility. If more than one facility is owned or operated by a single entity, 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 not currently using the eDMR data reporting system. The permittee shall submit an eDMR Permit Holder and Certifier Registration form within **90 days** of the effective date of this permit.

**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

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

**REASONABLE POTENTIAL ANALYSIS (RPA):**

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

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

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

**REMOVAL EFFICIENCY:**

Removal efficiency is a method by which the Federal Regulations define Secondary Treatment and Equivalent to Secondary Treatment, which applies to Biochemical Oxygen Demand 5-day (BOD<sub>5</sub>) and Total Suspended Solids (TSS) for Publicly Owned Treatment Works (POTWs)/municipals.

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

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

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

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

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

☒ - The permittee has developed and is currently implementing a program for maintenance and repair of the collection system. The permittee shall continue to submit semi-annual reports as required by the Revised Settlement Agreement entered into in 2011.

**SCHEDULE OF COMPLIANCE (SOC):**

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

A SOC is not allowed:

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

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

☒ - The time given for effluent limitations of this permit listed under Interim Effluent Limitation and Final Effluent Limitations were established in accordance with [10 CSR 20-7.031(11)]. The facility has been given a schedule of compliance to meet final effluent limits for zinc. The six (6) year schedule of compliance will allow the City adequate time to assess which method or combination of methods will be used to comply with the new zinc limits. The City can then employ the chosen method(s) in the six year timeframe. The schedule has been established at six (6) years in accordance with the Department's "Schedule of Compliance, Policy for Staff Drafting Operating Permits". Please see the Cost Analysis for Compliance attached as an appendix to the permit for further detail on how the socio-economic status of the community has impacted this SOC.

**SEWER EXTENSION AUTHORITY SUPERVISED PROGRAM:**

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

☒ - The permittee does not have a department approved Sewer Extension Authority Supervised Program.

**STORMWATER POLLUTION PREVENTION PLAN (SWPPP):**

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

In accordance with the EPA's *Developing Your Stormwater Pollution Prevention Plan, A Guide for Industrial Operators*, (Document number EPA 833-B-09-002) [published by the United States Environmental Protection Agency (USEPA) in February 2009], BMPs are measures or practices used to reduce the amount of pollution entering (regarding this operating permit) waters of the state. BMPs may take the form of a process, activity, or physical structure.

Additionally in accordance with the Stormwater Management, a SWPPP is a series of steps and activities to (1) identify sources of pollution or contamination, and (2) select and carry out actions which prevent or control the pollution of stormwater discharges. 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>.

☒ - A No Exposure Certification for Exclusion form NPDES Stormwater Permitting was submitted to the Department in June 2017. The permittee certifies that there are no discharges of stormwater contaminated by exposure to industrial activities or materials from the facility or site identified in the No Exposure Certification; therefore, the requirement for the development and implementation of a SWPPP is not needed.

**VARIANCE:**

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

☒ - This operating permit is not drafted under premises of a petition for variance.

**WASTELOAD ALLOCATIONS (WLA) FOR LIMITS:**

As per [10 CSR 20-2.010(78)], the amount of pollutant each discharger is allowed by the Department to release into a given stream after the Department has determined total amount of pollutant that may be discharged into that stream without endangering its water quality.

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

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

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

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

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

**Number of Samples "n":**

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

**WLA MODELING:**

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

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

**WATER QUALITY STANDARDS:**

Per [10 CSR 20-7.031(4)], General Criteria shall be applicable to all waters of the state at all times including mixing zones. Additionally, [40 CFR 122.44(d)(1)] directs the Department to establish in each NPDES permit to include conditions to achieve water quality established under Section 303 of the Clean Water Act, including State narrative criteria for water quality.

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

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

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

Under the federal Clean Water Act (CWA) §101(a)(3), requiring WET testing is reasonably appropriate for site-specific Missouri State Operating Permits for discharges to waters of the state issued under the National Pollutant Discharge Elimination System (NPDES). WET testing is also required by 40 CFR 122.44(d)(1). WET testing ensures that the provisions in the 10 CSR 20-6.010(8)(A)7. and the Water Quality Standards 10 CSR 20-7.031(4)(D),(F),(G),(I)2.A & B are being met. Under [10 CSR 20-6.010(8)(A)4], the Department may require other terms and conditions that it deems necessary to assure compliance with the Clean Water Act and related regulations of the Missouri Clean Water Commission. In addition the following MCWL apply: §§644.051.3 requires the Department to set permit conditions that comply with the MCWL and CWA; 644.051.4 specifically references toxicity as an item we must consider in writing permits (along with water quality-based effluent limits, pretreatment, etc...); and 644.051.5 is the basic authority to require testing conditions. WET test will be required by facilities meeting the following criteria:

- ☒ Facility is a designated Major.
- ☐ Facility continuously or routinely exceeds its design flow.
- ☐ Facility exceeds its design population equivalent (PE) for BOD<sub>5</sub> whether or not its design flow is being exceeded.
- ☐ Facility (whether primarily domestic or industrial) alters its production process throughout the year.
- ☐ Facility handles large quantities of toxic substances, or substances that are toxic in large amounts.
- ☒ Facility has Water Quality-based Effluent Limitations for toxic substances (other than NH<sub>3</sub>)
- ☒ Facility is a municipality with a Design Flow ≥ 22,500 gpd.

**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.

☒ - Bypasses occur or have occurred at this facility. The permittee has not entered into a VCA with the Department because the Revised Settlement Agreement entered into in 2011 includes eliminating the discharge from Outfall #002.

**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 303(d) listed stream. This facility discharges to Center Creek (P) (3203) which is on the 2016 Missouri 303(d) List for cadmium and lead impairments from the tristate mining district. Cadmium and lead monitoring have been added to this permit because of results reported above the water quality criteria in the expanded effluent testing provided to the Department included with the renewal application. Once a TMDL is developed, the permit will be modified to include WLAs from the TMDL.

☒ - This facility discharges to a stream with an EPA approved TMDL. Center Creek also has a 2006 TMDL written for zinc impairments. The TMDL states that permit writers are to calculate WLAs for zinc using the design flow, water quality criteria for zinc at a hardness of 147 mg/L, and applicable dilution. It states that the facility must discharge according to concentration limits in its permit. The calculations for the WLA did not imply there needed to be a reduction of the zinc load to the receiving stream and that compliance with current water quality standards was sufficient. As a result, effluent limitations for zinc have been calculated utilizing a hardness of 172.75 based on the last five years’ worth of instream data. The zinc effluent limits in this permit meet the assumptions and requirements of the TMDL.

## Part VI – Effluent Limits Determination

### APPLICABLE DESIGNATIONS OF WATERS OF THE STATE:

As per Missouri's Effluent Regulations [10 CSR 20-7.015], the waters of the state are divided into the below listed seven (7) categories. Each category lists effluent limitations for specific parameters, which are presented in each outfall's Effluent Limitation Table and further discussed in the Derivation & Discussion of Limits section.

- |   |   |
|---|---|
| <input type="checkbox"/> Missouri or Mississippi River [10 CSR 20-7.015(2)] | <input type="checkbox"/> Metropolitan No-Discharge [10 CSR 20-7.015(5)]   |
| <input type="checkbox"/> Lake or Reservoir [10 CSR 20-7.015(3)]             | <input type="checkbox"/> Subsurface Water [10 CSR 20-7.015(7)]            |
| <input type="checkbox"/> Losing [10 CSR 20-7.015(4)]                        | <input checked="" type="checkbox"/> All Other Waters [10 CSR 20-7.015(8)] |

### OUTFALL #001 – MAIN FACILITY OUTFALL

#### EFFLUENT LIMITATIONS TABLE:

PARAMETER	Unit	Basis for Limits	Daily Maximum	Weekly Average	Monthly Average	Previous Permit Limit	Sampling Frequency	Reporting Frequency	Sample Type ****
Flow	MGD	1	*		*	*/	Daily	Monthly	T
BOD <sub>5</sub>	mg/L	4		36	24	45/30	Twice/month	Monthly	C
TSS	mg/L	4		36	24	45/30	Twice/month	Monthly	C
<i>Escherichia coli</i> **	#/100mL	1, 3		630	126	630/126	Weekly	Monthly	G
Ammonia as N (Apr 1 – Sep 30)	mg/L	2, 3	14.5		3.0	4.9/0.9	Monthly	Monthly	G
Ammonia as N (Oct 1 – Mar 31)	mg/L	2, 3	*		*	11.0/2.7	Monthly	Monthly	G
Oil & Grease	mg/L	1, 3	15		10	15/10	Quarterly	Quarterly	G
Total Nitrogen	mg/L	1	*		*	***	Quarterly	Quarterly	G
Total Phosphorus	mg/L	1	*		*	***	Quarterly	Quarterly	G
Cyanide, Amenable to Chlorination	µg/L	2, 3	*		*	8.2/4.1	Quarterly	Quarterly	G
Cadmium, Total Recoverable	µg/L	2, 3	*		*	***	Quarterly	Quarterly	G
Lead, Total Recoverable	µg/L	2, 3	*		*	***	Quarterly	Quarterly	G
Zinc, Total Recoverable	µg/L	2, 3, 8	233.1		104.2	*/	Quarterly	Quarterly	G
Acute Whole Effluent Toxicity	TU <sub>a</sub>	1, 9	*			Pass/Fail	Annually	Annually	C
Chronic Whole Effluent Toxicity	TU <sub>c</sub>	1, 9	*			***	Once/permit cycle	Once/permit cycle	C
PARAMETER	Unit	Basis for Limits	Minimum		Maximum	Previous Permit Limit	Sampling Frequency	Reporting Frequency	Sample Type
pH	SU	1	6.0		9.0	6.5-9.0	Monthly	Monthly	G
PARAMETER	Unit	Basis for Limits	Daily Minimum		Monthly Avg Min	Previous Permit Limit	Sampling Frequency	Reporting Frequency	Sample Type
BOD <sub>5</sub> Percent Removal	%	1			85	85	Monthly	Monthly	M
TSS Percent Removal	%	1			85	85	Monthly	Monthly	M

\* - Monitoring requirement only.

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

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

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

G = Grab

T = 24-hr. total

M = Measured/calculated

#### Basiss for Limitations Codes:

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

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

- **Flow.** In accordance with [40 CFR Part 122.44(i)(1)(ii)] the volume of effluent discharged from each outfall is needed to assure compliance with permitted effluent limitations. If the permittee is unable to obtain effluent flow, then it is the responsibility of the permittee to inform the Department, which may require the submittal of an operating permit modification.
- **Biochemical Oxygen Demand (BOD<sub>5</sub>).** 36 mg/L as a weekly average and 24 mg/L as a monthly average per the Water Quality and Antidegradation Review that can be found in the Appendix of this Fact Sheet.
- **Total Suspended Solids (TSS).** 36 mg/L as a weekly average and 24 mg/L as a monthly average per the Water Quality and Antidegradation Review that can be found in the Appendix of this Fact Sheet.
- **Escherichia coli (E. coli).** Monthly average of 126 per 100 mL as a geometric mean and Weekly Average of 630 per 100 mL as a geometric mean during the recreational season (April 1 – October 31), to protect Whole Body Contact Recreation (A) designated use of the receiving stream, as per 10 CSR 20-7.031(5)(C). An effluent limit for both monthly average and weekly average is required by 40 CFR 122.45(d). The Geometric Mean is calculated by multiplying all of the data points and then taking the nth root of this product, where n = # of samples collected. For example: Five E. coli samples were collected with results of 1, 4, 6, 10, and 5 (#/100mL). Geometric Mean = 5<sup>th</sup> root of (1)(4)(6)(10)(5) = 5<sup>th</sup> root of 1,200 = 4.1 #/100mL.
- **Total Ammonia Nitrogen.** Early Life Stages Present Total Ammonia Nitrogen criteria apply [10 CSR 20-7.031(5)(B)7.C. & Table B3]. Background total ammonia nitrogen = 0.01 mg/L.

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

**Summer: April 1 – September 30**

Chronic WLA:  $C_e = ((2.48 + 6.70)1.5 - (6.70 * 0.01))/2.48$   
 $C_e = 5.53 \text{ mg/L}$

Acute WLA:  $C_e = ((2.48 + 0.488)12.1 - (0.488 * 0.01))/2.48$   
 $C_e = 14.48 \text{ mg/L}$

$LTA_c = 5.53 \text{ mg/L} (0.532) = 2.94 \text{ mg/L}$   
 $LTA_a = 14.48 \text{ mg/L} (0.136) = 1.97 \text{ mg/L}$

[CV = 1.62, 99<sup>th</sup> Percentile, 30 day avg.]  
[CV = 1.62, 99<sup>th</sup> Percentile]

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

MDL =  $1.97 \text{ mg/L} (7.35) = \mathbf{14.5 \text{ mg/L}}$   
AML =  $1.97 \text{ mg/L} (1.54) = \mathbf{3.0 \text{ mg/L}}$

[CV = 1.62, 99<sup>th</sup> Percentile]  
[CV = 1.62, 95<sup>th</sup> Percentile, n = 30]

**Winter: October 1 – March 31**

Monitoring only; statistical analysis conducted using the past five years of ammonia effluent data submitted by the permittee shows no reasonable potential for the discharge to cause or contribute to an instream excursion of the ammonia water quality standard during the winter months. Monitoring data will be used during the next permit renewal to determine if reasonable potential exists.

- **Oil & Grease.** Conventional pollutant, effluent limitation for protection of aquatic life; 10 mg/L monthly average, 15 mg/L daily maximum.
- **Total Phosphorus and Total Nitrogen.** Monitoring required for facilities greater than 100,000 gpd design flow per 10 CSR 20-7.015(9)(D)7. Total Nitrogen shall be determined by testing for Total Kjeldahl Nitrogen (TKN) and Nitrate + Nitrite and reporting the sum of the results (reported as N). Nitrate + Nitrite can be analyzed together or separately.
- **Cyanide, Amenable to Chlorination.** Monitoring only; statistical analysis conducted using the past five years of cyanide effluent data submitted by the permittee shows no reasonable potential for the discharge to cause or contribute to an instream excursion of the cyanide water quality standard during the winter months. Monitoring data will be used during the next permit renewal to determine if reasonable potential exists.

- **Cadmium and Lead, Total Recoverable.** Monitoring only; results from expanded effluent testing that were submitted with the application for permit renewal show results for cadmium and lead that exceed the water quality criteria for those parameters. Quarterly monitoring will allow adequate data at the next permit renewal to conduct statistical analysis in order to determine if there is reasonable potential for the discharge to cause or contribute to an instream excursion of cadmium and/or lead water quality standards.
- **Zinc, Total Recoverable.** Protection of Aquatic Life Chronic and Acute Criteria = 162.75 µg/L.

Effluent limitations for total recoverable zinc was developed using methods and procedures outlined in the “Technical Support Document for Water Quality-based Toxic Controls” (EPA/505/2-90-001) and “The Metals Translator: Guidance for Calculating a Total Recoverable Permit Limit from a Dissolved Criterion” (EPA 823-B-96-007). General warm-water fishery criteria apply and a water hardness of 172.75 mg/L is used in the conversion below. The hardness was calculated from the past five years of instream data at a collection point near Smithfield, MO.

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

METAL	CONVERSION FACTORS	
	ACUTE	CHRONIC
Zinc	0.978	0.986

Chronic:  $186.60/0.986 = 189.25 \text{ µg/L}$   
Acute:  $186.60/0.978 = 190.80 \text{ µg/L}$

Chronic WLA:  $C_e = ((2.48 + 5.50)189.25 - (5.50 * 0.0))/2.48$   
 $C_e = 608.95 \text{ µg/L}$

Acute WLA:  $C_e = ((2.48 + 0.55)190.80 - (0.55 * 0.0))/2.48$   
 $C_e = 233.11 \text{ µg/L}$

$LTA_c = 608.95 (0.456) = 277.6 \text{ µg/L}$  [CV = 0.76, 99<sup>th</sup> Percentile]  
 $LTA_a = 233.11 (0.262) = 60.99 \text{ µg/L}$  [CV = 0.76, 99<sup>th</sup> Percentile]

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

$MDL = 60.99 (3.82) = 233.1 \text{ µg/L}$  [CV = 0.76, 99<sup>th</sup> Percentile]  
 $AML = 60.99 (1.71) = 104.2 \text{ µg/L}$  [CV = 0.76, 95<sup>th</sup> Percentile, n = 4]

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

Classified P with other than default Mixing Considerations, the AEC% is determined as follows:  
Acute AEC% =  $((2.48 + 0.55) / 2.48)^{-1} * 100 = 81.8\%$

The Acute AEC is 82%, the dilution series is: 100%, 82%, 64%, 46%, and 28%.

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

Classified P with other than default Mixing Considerations, the AEC% is determined as follows:  
Chronic AEC% =  $((2.48 + 5.50) / 2.48)^{-1} * 100 = 31.1\%$

The Chronic AEC is 31%, the dilution series is: 77.5%, 62%, 46.5%, 31%, and 15.5%.

- **pH.** 6.0-9.0 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 buffering capacity of the mixing zone.

- **Biochemical Oxygen Demand (BOD<sub>5</sub>) Percent Removal.** In accordance with 40 CFR Part 133.102(a)(3) & (b)(3), removal efficiency is a method by which the Federal Regulations define Secondary Treatment and Equivalent to Secondary Treatment, which applies to Biochemical Oxygen Demand 5-day (BOD<sub>5</sub>) and Total Suspended Solids (TSS) for Publicly Owned Treatment Works (POTWs)/municipals. This facility is required to meet 85% removal efficiency for BOD<sub>5</sub>.
- **Total Suspended Solids (TSS) Percent Removal.** In accordance with 40 CFR Part 133.105(a)(3) & (b)(3), removal efficiency is a method by which the Federal Regulations define Secondary Treatment and Equivalent to Secondary Treatment, which applies to Biochemical Oxygen Demand 5-day (BOD<sub>5</sub>) and Total Suspended Solids (TSS) for Publicly Owned Treatment Works (POTWs)/municipals. This facility is required to meet 85% removal efficiency for TSS.

**Sampling Frequency Justification:**

The sampling and reporting frequencies for all parameters have been reassessed. Cyanide, cadmium, lead, and zinc have been set at quarterly as this amount of samples are adequate to determine compliance with the water quality standard and to conduct reasonable potential analysis at renewal. The frequency for oil and grease has been reduced from monthly to quarterly due to satisfactory facility performance. Ammonia and pH frequencies have been reduced from twice per month to monthly due to the low variability of the effluent and the size of the discharge. Chronic WET tests shall be conducted no less than once per permit cycle for facilities designated as majors. For all other parameters, the sampling and reporting frequencies have been determined to be appropriate; therefore, they have been retained from the previous permit.

**Sampling Type Justification:**

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

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

In accordance with 40 CFR 122.44(d)(1), effluent limitations shall be placed into the permit for those pollutants which have been determined to cause, have the reasonable potential to cause, or contribute to an excursion above any State water quality standard, including State narrative criteria for water quality. The rule further states that pollutants which have been determined to cause, have the reasonable potential to cause, or contribute to an excursion above a narrative criterion within an applicable State water quality standard, the permit shall contain a numeric effluent limitation to protect that narrative criterion. In order to comply with this regulation, the permit writer will complete reasonable potential determinations on whether the discharge will violate any of the general criteria listed in 10 CSR 20-7.031(4). These specific requirements are listed below followed by derivation and discussion (the lettering matches that of the rule itself, under 10 CSR 20-7.031(4)). It should also be noted that Section 644.076.1, RSMo as well as Section D – Administrative Requirements of Standard Conditions Part I of this permit states that it shall be unlawful for any person to cause or permit any discharge of water contaminants from any water contaminant or point source located in Missouri that is in violation of sections 644.006 to 644.141 of the Missouri Clean Water Law or any standard, rule or regulation promulgated by the commission.

- (A) Waters shall be free from substances in sufficient amounts to cause the formation of putrescent, unsightly or harmful bottom deposits or prevent full maintenance of beneficial uses. The discharge from this facility is made up of treated domestic wastewater. No evidence of an excursion of this criterion has been observed by the department in the past and the facility has not disclosed any other information related to the characteristics of the discharge on their permit application which has the potential to cause or contribute to an excursion of this narrative criterion. Additionally, this facility utilizes secondary treatment technology and is currently in compliance with effluent limitations established in the Water Quality and Antidegradation Review found in the Appendix of this permit that are more stringent than technology based effluent limits. 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 expected to be discharged by domestic wastewater facilities, that were disclosed by this facility on the application for permit coverage, and that are listed as pollutants in the TMDL. 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.

**OUTFALL #001 – GENERAL CRITERIA CONSIDERATIONS (CONTINUED):**

- (E) There shall be no significant human health hazard from incidental contact with the water. Please see (D) above as justification is the same.
- (F) There shall be no acute toxicity to livestock or wildlife watering. Please see (D) above as justification is the same.
- (G) 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.
- (H) 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.

**PERMITTED FEATURES SM1 AND SM2 – INSTREAM MONITORING MONITORING REQUIREMENTS TABLE:**

PARAMETER	Unit	Basis for Limits	Daily Maximum	Weekly Average	Monthly Average	Previous Permit Limit	Sampling Frequency	Reporting Frequency	Sample Type ****
Total Nitrogen	mg/L	7	*		*	***	Quarterly	Quarterly	G
Total Phosphorus	mg/L	7	*		*	***	Quarterly	Quarterly	G
Total Hardness	mg/L	7	*		*	***	Quarterly	Quarterly	G

\* - Monitoring requirement only.

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

\*\*\*\* - G = Grab

**Basis for Limitations Codes:**

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

**PERMITTED FEATURES SM1 AND SM2 – DERIVATION AND DISCUSSION OF MONITORING REQUIREMENTS:**

- Total Phosphorus and Total Nitrogen.** Facilities with a design flow greater than 100,000 gallons per day are required to sample their effluent quarterly for Total Phosphorus and Total Nitrogen per 10 CSR 20-7.015(9)(D)7. Upstream monitoring for these parameters is necessary to determine background stream concentrations in order to complete calculations that determine instream nutrient loading.
- Total Hardness.** Downstream hardness monitoring has been added to the permit in order to develop a site-specific hardness for determining reasonable potential and calculating hardness-dependent metals limits.

**Sampling Frequency Justification:**

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

**Sampling Type Justification**

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

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

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

## **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.

### **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 2<sup>nd</sup> Quarter of calendar year 2022.

### **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 June 9, 2017 – July 10, 2017. Responses to the Public Notice of this operating permit did not warrant the modification of effluent limits and/or the terms and conditions of this permit

**DATE OF FACT SHEET:** MARCH 27, 2017

### **COMPLETED BY:**

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

## Appendices

### APPENDIX - CLASSIFICATION WORKSHEET:

ITEM	POINTS POSSIBLE	POINTS ASSIGNED
Maximum Population Equivalent (P.E.) served (Max 10 pts.)	1 pt./10,000 PE or major fraction thereof.	1
Maximum: 10 pt Design Flow (avg. day) or peak month; use greater (Max 10 pts.)	1 pt. / MGD or major fraction thereof.	1
EFFLUENT DISCHARGE RECEIVING WATER SENSITIVITY:		
Missouri or Mississippi River	0	-
All other stream discharges except to losing streams and stream reaches supporting whole body contact	1	-
Discharge to lake or reservoir outside of designated whole body contact recreational area	2	-
Discharge to losing stream, or stream, lake or reservoir area supporting whole body contact recreation	3	3
PRELIMINARY TREATMENT - Headworks		
Screening and/or comminution	3	3
Grit removal	3	-
Plant pumping of main flow (lift station at the headworks)	3	3
PRIMARY TREATMENT		
Primary clarifiers	5	-
Combined sedimentation/digestion	5	-
Chemical addition (except chlorine, enzymes)	4	-
REQUIRED LABORATORY CONTROL – performed by plant personnel (highest level only)		
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	-
ALTERNATIVE FATE OF EFFLUENT		
Direct reuse or recycle of effluent	6	-
Land Disposal – low rate	3	-
High rate	5	-
Overland flow	4	-
Total from page <b>ONE (1)</b>	----	18

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

ITEM	POINTS POSSIBLE	POINTS ASSIGNED
<b>VARIATION IN RAW WASTE (highest level only) (DMR exceedances and Design Flow exceedances)</b>		
Variation do not exceed those normally or typically expected	0	-
Recurring deviations or excessive variations of 100 to 200 % in strength and/or flow	2	2
Recurring deviations or excessive variations of more than 200 % in strength and/or flow	4	-
Raw wastes subject to toxic waste discharge	6	-
<b>SECONDARY TREATMENT</b>		
Trickling filter and other fixed film media with secondary clarifiers	10	-
Activated sludge with secondary clarifiers (including extended aeration and oxidation ditches)	15	15
Stabilization ponds without aeration	5	-
Aerated lagoon	8	-
Advanced Waste Treatment Polishing Pond	2	-
Chemical/physical – without secondary	15	-
Chemical/physical – following secondary	10	-
Biological or chemical/biological	12	-
Carbon regeneration	4	-
<b>DISINFECTION</b>		
Chlorination or comparable	5	-
Dechlorination	2	-
On-site generation of disinfectant (except UV light)	5	-
UV light	4	4
<b>SOLIDS HANDLING – SLUDGE</b>		
Solids Handling Thickening	5	5
Anaerobic digestion	10	-
Aerobic digestion	6	6
Evaporative sludge drying	2	-
Mechanical dewatering	8	-
Solids reduction (incineration, wet oxidation)	12	-
Land application	6	6
Total from page <b>TWO (2)</b>	----	38
Total from page <b>ONE (1)</b>	---	18
Grand Total	---	56

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

# **APPENDIX – RPA RESULTS:**

Parameter	CMC*	RWC Acute*	CCC*	RWC Chronic*	n**	Range max/min	CV***	MF	RP Yes/No
Total Ammonia as Nitrogen (Summer) mg/L	12.1	8.29	1.5	2.69	20.00	1.8/0	1.62	5.51	YES
Total Ammonia as Nitrogen (Winter) mg/L	12.1	3.23	3.1	1.05	18.00	0.86/0.1	1.22	4.49	NO
Total Ammonia as Nitrogen (Summer) mg/L ( <i>future</i> )	3.4	8.29	0.7	2.69	20.00	1.8/0	1.62	5.51	YES
Total Ammonia as Nitrogen (Winter) mg/L ( <i>future</i> )	8.1	3.23	2.3	1.05	18.00	0.86/0.1	1.22	4.49	NO
Zinc, Total Recoverable	190.8	1202.62	189.2	456.63	59.00	808/60.8	0.8	1.82	YES
Cyanide, Amenable to Chlorination	22.0	11.99	5.0	4.55	36.00	10/2.5	0.5	1.47	NO

N/A – Not Applicable

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

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

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

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

n – Is the number of samples.

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

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

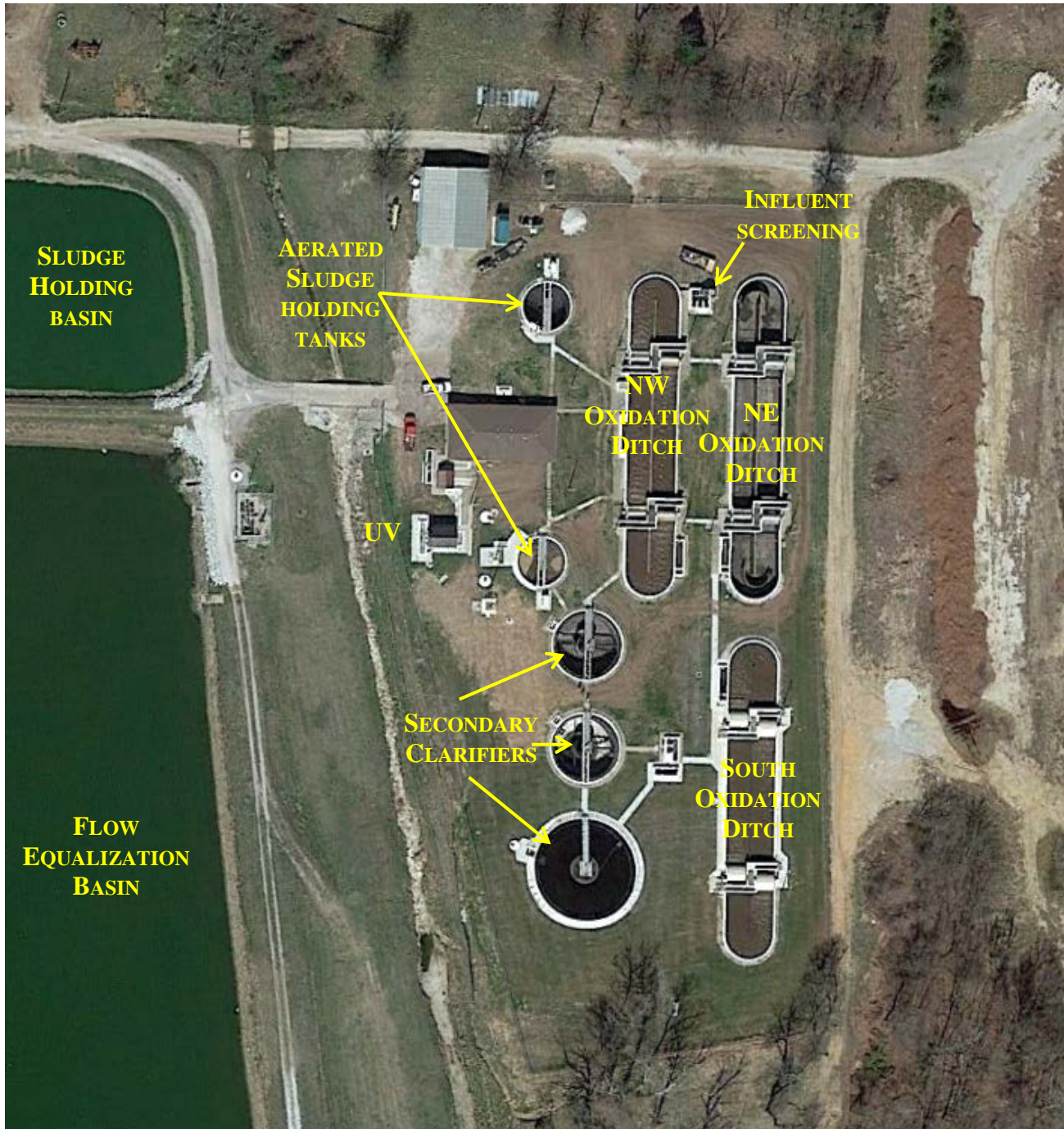
Reasonable Potential Analysis is conducted as per (TSD, EPA/505/2-90-001, Section 3.3.2). A more detailed version including calculations of this RPA is available upon request.

# **APPENDIX – OUTFALL LOCATION:**



**APPENDIX – FACILITY LAYOUT:**

Influent lift station / bar screen / three (3) oxidation ditches / three (3) secondary clarifiers / flow equalization basin / UV disinfection / two (2) aerobic sludge digesters / two-cell sludge storage lagoon / sludge is land applied.



**APPENDIX – COST ANALYSIS FOR COMPLIANCE:**

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

**Carl Junction WWTF, Permit Renewal  
City of Carl Junction  
Missouri State Operating Permit #MO-0025186**

Section 644.145 RSMo requires the Department of Natural Resources (“Department” or “DNR”) to make a “finding of affordability” when “issuing permits under” or “enforcing provisions of” state or federal clean water laws “pertaining to any portion of a combined or separate sanitary sewer system for publicly-owned treatment works.” This cost analysis does not dictate that a permittee will upgrade their facility, or how the permittee will comply with the new permit requirements.

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 DNR website (<http://dnr.mo.gov/forms/780-2511-f.pdf>) should have been submitted with the permit renewal application. If it was not submitted with the renewal application, the Department sent a request to complete the form with the welcome letter.

The Department is required to issue a permit with final effluent limits in accordance with 644.051.1.(1) RSMo, 644.051.1.(2) RSMo, and the Clean Water Act.

Residential Connections:	<u>3,174</u>
Commercial Connections:	<u>128</u>
Industrial Connections:	<u>0</u>
Total Connections for this facility:	<u>3,302</u>

**New Permit Requirements:**

The permit requires compliance with new effluent limitations for total recoverable zinc. The permit also requires compliance with the following new sampling requirements:

- Quarterly sampling of Total Phosphorus effluent and instream
- Quarterly sampling of Total Nitrogen effluent and instream
- Quarterly sampling of Cadmium effluent
- Quarterly sampling of Lead effluent
- Chronic Whole Effluent Toxicity (WET) Test once per permit cycle
- Development and Implementation of a Stormwater Pollution Prevention Plan (SWPPP)

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

**Costs associated with compliance with zinc limits:**

Currently, it is unknown to the department what method the City of Carl Junction will use to comply with new zinc limits; therefore, the potential costs are unknown. The City will need to assess the source of zinc into the treatment facility. If it is entering through the collection system, identifying and repairing sources of inflow and infiltration could allow the facility to attain compliance with the new zinc limits. The department currently does not have sufficient information to adequately estimate this cost as the extent of repairs or replacement of the collection is unknown. Should cost estimates of this work be identified at a later date, the department is committed to reevaluating this analysis based on the new information. It is also possible for the City to conduct a Water Effects Ratio (WER) study to develop site-specific zinc limits. Metals can be substantially less toxic in an effluent/receiving water matrix than in clean laboratory water, on which water quality criteria for metals is based. The cost of a WER study is variable.

### Cost associated with new sampling requirements:

The total cost estimated for new sampling requirements is as follows:

New Requirement	Sample Location	Sampling Frequency	Estimated Cost per Sample	Estimated Annual Cost
Total Phosphorus	Effluent	Quarterly	\$24	\$96
Total Nitrogen	Effluent	Quarterly	\$73	\$292
Total Phosphorus	Instream	Quarterly	\$24	\$96
Total Nitrogen	Instream	Quarterly	\$73	\$292
Cadmium, TR	Effluent	Quarterly	\$31	\$124
Lead, TR	Effluent	Quarterly	\$30	\$120
Chronic WET Test	Effluent	Once per permit cycle	\$1,550	\$310
Development and Implementation of a SWPPP			\$10,000	\$2,000
<b>TOTAL</b>				<b>\$3,330</b>

The total estimated costs for development and implementation of a SWPPP and the chronic WET test are divided among five years of the permit to get the annual average. The estimated cost for the SWPPP considers a \$20/hour employee working 500 hours. The total estimated annual cost for new sampling requirements is \$3,330. This cost, if financed through user fees, might cost each household an extra \$0.08<sup>1</sup> per month.

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

Currently, it is unknown to the department what method the City of Carl Junction will use to comply with new zinc limits; therefore, the potential costs are unknown as is the City's financial capability to raise or secure necessary funding.

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

Potential costs to comply with new zinc limits are unknown; however, the costs for new sampling requirements can be estimated. The total cost estimated for the new sampling requirements is \$3,330 annually. This cost, if financed through user fees, might cost each household an extra \$0.08 per month. This would make the additional cost per household as a percent of median household income (MHI) 0.002%<sup>2</sup> based on the City's MHI of \$55,719. Due to the minimal cost associated with new sampling requirements, the Department anticipates an extremely low to no rate increase will be necessary that could impact individuals or households of the community.

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

The investment in wastewater will provide several social, environmental and economic benefits. 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 fulfill the goals of restoring and maintaining the chemical, physical and biological integrity of the receiving stream; and, where attainable, to achieve 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.

### **Reduction of Inflow and Infiltration**

Inflow and Infiltration (I&I) refers to surfacewater and groundwater that enters the sanitary sewer collection system. A certain amount of I&I is unavoidable and is accounted for in the initial sewer design capacity. Due to the age and deterioration of some collection systems, it is not uncommon for wet-weather peak flows to be an order of magnitude larger than the average daily flows. When the I&I exceeds the designed allowances, sewer capacity is met and usually results in sewer system overflows, increased conveyance costs, and the reduction of future population service capacity.

Minimizing I&I is an economical incentive for your community as it reduces; the operational costs of wastewater conveyance, treatment and disposal costs and capital costs to upgrade to a new treatment plant.

The evaluation of I&I within your collection system is the first step to minimizing liability from public health risks and water pollution and determining where significant sources of I&I contribute to the collection system.

### **Stormwater Pollution Prevention Plan**

Stormwater runoff is water from rain or snowmelt that does not immediately infiltrate into the ground and flows over or through natural or man-made storage or conveyance systems. When undeveloped areas are converted to land uses with impervious surfaces such as buildings, parking lots, and roads, the natural hydrology of the land is altered and can result in increased surface runoff rates, volumes, and pollutant loads. Stormwater runoff picks up industrial pollutants and typically discharges them directly into nearby waterbodies or indirectly via storm sewer systems. Runoff from areas where industrial activities occur can contain toxic pollutants (e.g., heavy metals and organic chemicals) and other pollutants such as trash, debris, and oil and grease, when facility practices allow exposure of industrial materials to stormwater. This increased flow and pollutant load can impair waterbodies, degrade biological habitats, pollute drinking water sources, and cause flooding and hydrologic changes to the receiving water, such as channel erosion. Industrial facilities typically perform a portion of their activities in outdoor areas exposed to the elements. This may include activities such as material storage and handling, vehicle fueling and maintenance, shipping and receiving, and salt storage, all of which can result in pollutants being exposed to precipitation and capable of being carried off in stormwater runoff. Also, facilities may have performed industrial activities outdoors in the past and materials from those activities still remain exposed to precipitation. In addition, accidental spills and leaks, improper waste disposal, and illicit connections to storm sewers may also lead to exposure of pollutants to stormwater.

A SWPPP is a written document that identifies the industrial activities conducted at the site, including any structural control practices, which the industrial facility operator will implement to prevent pollutants from making their way into stormwater runoff. The SWPPP also must include descriptions of other relevant information, such as the physical features of the facility, and procedures for spill prevention, conducting inspections, and training of employees. The SWPPP is intended to be a “living” document, updated as necessary, such that when industrial activities or stormwater control practices are modified or replaced, the SWPPP is similarly revised to reflect these changes.

### **Whole Effluent Toxicity (WET) test**

The WET Test is a quantifiable method of determining if discharge from a facility may be causing toxicity to aquatic life by itself or in combination with receiving stream water. WET tests are required under 10 CSR 20-6.010(8)(A)4 to be performed by specialists properly trained in conducting the test according to 40 CFR 136. This test will help ensure that the existing permit limits are providing adequate protection for aquatic life at minimal expense to the permittee.

### **(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 their outstanding debt for their current wastewater collection and treatment systems to be \$2,340,000. The community reported that each user pays \$3.83 each month, which 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.**

A schedule of compliance will be provided based on the results of this cost analysis. The schedule of compliance is provided to ensure that the entity has time to reasonably plan for compliance with the new permit requirements. For compliance assistance, please visit the Department's Community Assistance webpage at <https://dnr.mo.gov/assistance/>. If it is determined by the permittee that a longer schedule of compliance is necessary due to financial reasons, please contact the permit writer and request modification of the permit schedule.

An integrated plan may be an appropriate option if they community needs to meet other environmental obligations as well as the new requirements within this permit. The integrated plan needs to be well thought out with specific timeframes built into the management plan in which the municipality can reasonably commit. The plan should be designed to allow your municipality to meet their Clean Water Act obligations by maximizing their infrastructure improvement dollars through the appropriate sequencing of work. For further information on how to develop an integrated plan, please see the Department publication, "Missouri Integrated Planning Framework," at <http://dnr.mo.gov/pubs/pub2684.htm>.

If the permittee can demonstrate that the proposed pollution controls result in substantial and widespread economic and social impact, the permittee may use Factor 6 of the Use Attainability Analysis (UAA) 40 CFR 131.10(g)(6) in the form of a variance. This process is completed by determining the treatment type with the highest attainable effluent quality that would not result in a socio-economic hardship. For more information on variance requests, please contact the Water Protection Program's Special Projects Coordinator at 573-751-9391.

**(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.**

- If available, connection to a larger centralized sewer system in the area may be more cost effective for the community. This can be incorporated into an integrated plan.
- An opportunity may exist for the relocation of the point of discharge to a receiving stream capable of a greater mixing zone.
- The permittee may apply for State Revolving Fund (SRF) financial support in order to help fund a Capital Improvements Plan. Other loans and grants also exist for which the facility may be eligible. Contact information for the Department's Financial Assistance Center (FAC) and more information can be found on the Department's website at <http://dnr.mo.gov/env/wpp/srf/wastewater-assistance.htm>.

**Socioeconomic Data<sup>3-11</sup>:** The following table characterizes the current overall socioeconomic condition of the community as compared to the overall socioeconomic condition of the State of Missouri. The following information was compiled using the latest U.S. Census data.

Potentially Distressed Populations – City of Carl Junction	
Total Population (2015)	7,577
Percent Population Growth/Decline (2000-2015)	+43.1%
2015 Median Household Income (in 2016 Dollar)	\$55,719
Percent Change in Median Household Income (2000-2015)	-5.83%
Median Age (2015)	36
Percent Change in Median Age (2000-2015)	4.3%
Unemployment Rate (2015)	2.9%
Percent of Population Below Poverty Level (2015)	10.8%
Percent of Households Receiving Food Stamps (2015)	8.4%

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

The community did not report any other investments relating to environmental improvements. The current user rate is \$24.81 per 5,000 gallons per month.

**(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;**

This operating permit renewal requires new or expanded conditions; therefore new costs for the City of Carl Junction are anticipated. To comply with new zinc limits, it is unknown to the department what those costs might be. The new sampling requirements associated with this permit will not impose a financial burden on the community, nor will the new sampling requirements require the City of Carl Junction to seek funding from an outside source.

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

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

The Department contracted with Wichita State University to complete an assessment tool that would allow for predictions on rural Missouri community populations and future sustainability. The purpose of the study is to use a statistical modeling analysis in order to determine factors associated with each rural Missouri community that would predict the future population changes that could occur in each community. A stepwise regression model was applied to 19 factors which were determined as predictors of rural population change in Missouri. The model established a hierarchy of the predicting factors which allowed the model to place a weighted value on each of the factors. A total of 745 rural towns and villages in Missouri received a weighted value for each of the predicting factors. The weighted values for each town / village were then added together to determine an overall decision score. The overall decision scores were then divided into five categories and each town was assigned to a different categorical group based on the overall decision score. The categorical groups were developed from the range of overall scores across all rural towns and villages within Missouri. The range covers 1,191 score points (-245 to 946).

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

**Conclusion and Finding**

As a result of new regulations, the Department is proposing modifications to the current operating permit that will require the permittee to increase sampling and comply with new effluent limits for zinc. The Department identified the actions for which cost analysis for compliance is required under Section 644.145 RSMo.

The Department estimates the cost for new sampling requirements is \$3,330 per year. Should these additional costs be financed through user fees, it may require user fees 0.002% of the community's MHI.

The costs for compliance with new zinc limits are unknown to the department as it is unknown what method the City of Carl Junction will use to comply. Once the City has made that determination, the costs estimates may be submitted to the department so that this cost analysis can be reevaluated. The community's facility plan that is submitted as a part of the construction permit process includes a discussion of community details, what the community can afford, existing obligations, future growth potential, and an evaluation of options available to the community with cost information. The cost information provided through the facility plan process, which is developed by the community and their engineer, is more comprehensive of the community's individual factors in relation to permit compliance and costing information.

The Department considered the eight (8) criteria presented in subsection 644.145.3 when evaluating the cost associated with the relevant actions. The Department is committed to reassessing the cost analysis for compliance at renewal to determine if the initial schedule of compliance will accommodate the socioeconomic data and financial capability of the community at that time. By working more closely with your community, the Department and permittees will be able to identify opportunities to extend the schedule of compliance, if appropriate. Because each community is unique, we want to make sure that you have the opportunity to consider all your options and tailor solutions to best meet your community's needs. The Department understands the economic challenges associated with achieving compliance, and is committed to using all available tools to make an accurate and practical finding of affordability for the communities in the State.

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

# **Water Quality and Antidegradation Review**

*For the Protection of Water Quality  
and Determination of Effluent Limits for Discharge to Center Creek*

*by*

***City of Carl Junction Wastewater Treatment Facility***



February, 2012

## 1. Facility Information

FACILITY NAME: City of Carl Junction WWTF NPDES #: Mo-0025186

FACILITY TYPE/DESCRIPTION: The facility has a flow equalization basin / oxidation ditch / ultraviolet disinfection / sludge storage lagoon. Sludge is land applied. The current design flow will be 1.27 MGD. To accommodate growth to 2033, the city proposes to expand to 1.6 MGD with a peak flow of 5.7 MGD. The new facility will include additional pumping facilities, a new oxidation ditch and clarifier, and ultraviolet disinfection. The current discharge goes to a dry weather creek and then drains to a ditch, flowing about a ¼ mile to Center Creek. Construction of a new outfall that directly discharges to Center Creek has commenced, and the operating permit for the modification has been public noticed. Construction of a relocated outfall will consist of: 1) gravity sewer system including approximately 1,480 linear feet of twenty-one-inch (21") nominal diameter SDR-35 PVC gravity sewer line and 40 linear feet of twenty-one-inch (21") nominal diameter ductile iron pipe; 2) three (3) standard manholes; and 3) all the necessary appurtenances to make a complete and usable gravity sewer outfall line.

COUNTY:	Jasper	UTM COORDINATES:	X= 361459 / Y= 4114276
12- DIGIT HUC:	11070207-0608	LEGAL DESCRIPTION:	SE¼, NW¼, SW¼, Sec. 08, T28N, R33W
EDU*:	Ozark/Neosho	ECOREGION:	Ozark/Highlands

\* - Ecological Drainage Unit

## 2. Water Quality Information

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

A review of the Discharge Monitoring Reports revealed that DO sampling was missing for September 2008, August, 2008 and December 2004 – June 2008; Total Nitrogen was missing for April 2005 and December 2004; Total Phosphorus was missing for December 2004; and Ammonia had exceedances for April 2010 and missing Ammonia for December 2004.

The facility is currently in a Settlement Agreement with the Department signed on 11/29/2007. The Agreement is to address the bypasses that occur in the collection system (SSOs). The Settlement Agreement is being revised to include language for the Peak Flow Outfall (Outfall #002). The Settlement Agreement was approved by the City on April 19, 2011.

OUTFALL	DESIGN FLOW (CFS)	TREATMENT LEVEL	RECEIVING WATERBODY	DISTANCE TO CLASSIFIED SEGMENT (MI)
001	2.48	Secondary	Center Creek	0.0
002	-	Emergency Outfall	Bypass secondary treatment -	Not allowed

## 3. Receiving Waterbody Information

WATERBODY NAME	CLASS	WBID	LOW-FLOW VALUES (CFS)			DESIGNATED USES**
			1Q10	7Q10	30Q10	
Center Creek	P	03203	19.5	22	26.8	LWW, CLF, IND, IRR, LWW, SCR, WBC-A

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

RECEIVING WATER BODY SEGMENT #1: Center Creek

Upper end segment\* UTM coordinates: X= 361459 / Y= 4114276 (Outfall)

Lower end segment\* UTM coordinates: X= 356378 / Y= 4112847 ( Confluence with Spring River)

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

#### 4. General Comments

Allgeier, Martin, and Associates, Inc. Consulting Engineering prepared, on behalf of City of Carl Junction, the *Antidegradation Review* as part of the *Engineering Report Wastewater Treatment Facility, Carl Junction, Missouri*, dated August 2011. Applicant elected to determine that the discharge of all pollutants of concern (POC) (with exceptions listed below) is non-degrading or insignificant to the receiving stream. This analysis was conducted to fulfill the requirements of the AIP. Information that was provided by the applicant in the submitted report and summary forms in Appendix D was used to develop this review document.

Geohydrological Evaluation was requested but not completed (see attached letter) and the receiving stream is gaining for discharge purposes (Appendix A: Map and DGLS letter ).

A Missouri Department of Conservation (MDC) Natural Heritage Review Report was obtained by the applicant; MDC found no record of wildlife preserves, no critical habitats, or state or federal endangered-list species records within one mile of the site.

Dissolved oxygen modeling (Appendix C) analysis was completed by the applicant and is attached in Appendix C of this review. Staff believes that the results of the model are protective of the water quality standards for dissolved oxygen.

Center Creek is 303(d) listed for the list of pollutants below:

Cadmium (W)	Mill tailings (Abandoned)
Lead (S)	Mill tailings (Abandoned)
Zinc (S)	Mill tailings (Abandoned)
Bacteria	Rural NPS

The Total Maximum Daily Load (TMDL) that was approved by EPA in 2006 determined a wasteload allocation (WLA) = 1.05 lbs/day using the design flow of the facility and the target zinc concentration (water quality standards). According the TMDL, *“The WLA corresponds to the maximum point source load deliverable to the stream. In practice, these facilities rarely operate at full capacity especially for stormwater outfalls, thus long-term average flows (and loads) are less than design flow. For this reason, the permit writer has to calculate the effluent limits considering the design flow of a facility, stream 7Q10 flow for any available dilution, and the calculated WLA.”*

Kansas Department of Health and Environment (KDHE) and the EPA issued a Total Maximum Daily Load (TMDL) on the Spring River and its tributaries in 2005. Center Creek is a tributary beginning in Missouri and flowing through Kansas to its confluence with Spring River. KDHE mussel surveys show the Spring River above the confluence of Center Creek supports a diverse community comprising at least 27 species. Below the confluence, abundance and diversity in mussel populations decrease notably along the river.

#### 5. Antidegradation Review Information

The following is a review of the *Antidegradation Review* as part of the *Engineering Report Wastewater Treatment Facility, Carl Junction, Missouri*, dated August 2011.

##### 5.1. TIER DETERMINATION

Below is a list of pollutants of concern reasonably expected to be in the discharge (see Appendix D: Tier Determination and Effluent Limit Summary). Pollutants of concern are defined as those pollutants “proposed for discharge that affects beneficial use(s) in waters of the state. POCs include pollutants that create conditions unfavorable to beneficial uses in the water body receiving the discharge or proposed to receive the discharge.” (AIP, Page 7). Tier 2 was assumed for all POCs, except Zinc, Cadmium, Lead and bacteria. Zinc, Cadmium, Lead and bacteria are 303 (d) listed within Center Creek (see Appendix D).

Table 1. Pollutants of Concern and Tier Determination

POLLUTANTS OF CONCERN	TIER	DEGRADATION	COMMENT
BOD5/DO	*	Insignificant	
Total Suspended Solids (TSS)	**	Insignificant	
Ammonia as N	*	Insignificant	
pH	***	Insignificant	Permit limits applied
Cyanide	*	Insignificant	
Oil & Grease (mg/L)	*	Insignificant	Permit limits applied
Zinc, Total Recoverable	1	Insignificant	TMDL requirement
Cadmium, Total Recoverable	1	Insignificant	303 (d) listed
Lead, Total Recoverable	1	Insignificant	303 (d) listed
Bacteria/Escherichia coli (E. coli)	1	Insignificant	Permit limits applied. 303 (d) listed

\*Tier determination not possible with the demonstration of mass loading maintenance. Tier determination not possible: \*\* No in-stream standards for these parameters. \*\*\* Standards for these parameters are ranges.

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

- ☒ Tier Determination and Effluent Summary. For pollutants of concern, the attachments are:
- ☒ Attachment B
- ☒ No Degradation Evaluation

## 5.2. EXISTING WATER QUALITY

## 5.3. DEMONSTRATION OF INSIGNIFICANCE

In Section II.A of the *Missouri's Antidegradation Rule and Implementation Procedure*, a demonstration of insignificance of the discharge requires the applicant to show a reduction, or maintenance of loading, i.e., no change in ambient water quality concentrations in the receiving waters. As demonstrated in the *Engineering Report Wastewater Treatment Facility, Carl Junction, Missouri*, dated August 2011, Table 2 below summarizes the results of current loading based on the current permit concentrations and proposed loadings based on the proposed permit concentrations.

Table 2. Net Change in Loadings Based upon Current and Proposed Permit Limits.

POLLUTANTS OF CONCERN	CURRENT WEEKLY AVERAGE OR MAXIMUM DAILY LIMIT (MG/L)	PROPOSED MAXIMUM DAILY LIMIT (NOTE 1) (MG/L)	CURRENT LOADING (LBS/DAY)	PROPOSED LOADING (LBS/DAY)	NET CHANGE (LBS/DAY)
BOD5	45(AWL)	36 (AWL)	476.6	467.0	-9.6
Total Suspended Solids (TSS)	45 (AWL)	36 (AWL)	476.6	467.0	-9.6
pH	6.5-9.0 SI units	6.5-9.0 SI units	Not applicable	Not applicable	Not applicable
Ammonia (Summer)	15.1	12.0	159.9	160.1	0.0
Ammonia (Winter)	15.1	12.0	159.9	160.1	0.0
Escherichia coli (E. coli)	Regulatory limits apply	Regulatory limits apply	Not applicable**	Not applicable	Not applicable
Cyanide	0.028	0.022	0.3	0.29	-0.01
Cadmium	Not applicable**	Not applicable**	-	-	-
Lead	Not applicable**	Not applicable**	-	-	-
Zinc	Not applicable**	Not applicable**	-	-	-
Oil and Grease	15	15	Not applicable	Not applicable	Not applicable

\*WQBEL=water quality based effluent limit. \*\*See Derivation and Discussion of Limits, Section 10. \*\*\*Value is in the current permit, rather than the expired permit. AWL = average weekly limit.

Note 1—Except for TSS and BOD, the proposed effluent limits that were provided by applicant were determined by using the *ratio of current flow (1.27 MGD) to proposed design flow or 0.79; thus 79% of the current limit is applied as the proposed limit.*

Current design flow (Qd) = 1.27 MGD  
Mass conversion -- 1 mg/L = 8.34 lbs/million gallons  
Wasteload Allocation (WLA) = maximum daily or weekly average

Existing Load (lbs/day) = Mass conversion \* WLA \* Qd

**Example:** 8.34 (lbs/MG)/(mg/L) \* 1 mg/L \* 1.27 MGD = 10.6 lbs/day

#### 5..4 DEMONSTRATION OF NECESSITY AND SOCIAL AND ECONOMIC IMPORTANCE

Missouri's antidegradation implementation procedures specify that if the proposed activity does not result in significant degradation then a demonstration of necessity (i.e., alternatives analysis) and a determination of social and economic importance are not required. Thus, the Tier 2 Review is not required.

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

1. A Water Quality and Antidegradation Review (WQAR) assumes that [10 CSR 20-6.010(3) Continuing Authorities and 10 CSR 20-6.010(4) (D), consideration for no discharge] has been or will be addressed in a Missouri State Operating Permit or Construction Permit Application.
2. A WQAR does not indicate approval or disapproval of alternative analysis as per [10 CSR 20-7.015(4) Losing Streams], and/or any section of the effluent regulations.
3. Changes to Federal and State Regulations made after the drafting of this WQAR may alter Water Quality Based Effluent Limits (WQBEL).
4. Effluent limitations derived from Federal or Missouri State Regulations (FSR) may be WQBEL or Effluent Limit Guidelines (ELG).
5. WQBEL supersede ELG only when they are more stringent. Mass limits derived from technology based limits are still appropriate.
6. A WQAR does not allow discharges to waters of the state, and shall not be construed as a National Pollution Discharge Elimination System or Missouri State Operating Permit to discharge or a permit to construct, modify, or upgrade.
7. Limitations and other requirements in a WQAR may change as Water Quality Standards, Methodology, and Implementation procedures change.
8. Nothing in this WQAR removes any obligations to comply with county or other local ordinances or restrictions.
9. If the proposed treatment technology is not covered in 10 CSR 20-8 Design Guides, the treatment process may be considered a new technology. As a new technology, the permittee will need to work with the review engineer to ensure equipment is sized properly. The operating permit may contain additional requirements to evaluate the effectiveness of the technology once the facility is in operation. This Antidegradation Review is based on the information provided by the facility and is not a comprehensive review of the proposed treatment technology. If the review engineer determines the proposed technology will not consistently meet proposed effluent limits, the permittee will be required to revise their Antidegradation Report.

### 7. Mixing Considerations

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

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

Low-flow values were determined by Allgeier, Martin, and Associates, Inc. (see Appendix B).

	Flow (cfs)	MZ (cfs)	ZID (cfs)
<b>7Q10</b>	22.0	5.5	0.55
<b>1Q10</b>	19.5	4.88	0.488
<b>30Q10</b>	26.8	6.7	NA

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

$$Acute AEC\% = ((2.48 + 0.55) / 2.48)^{-1} \times 100 = 55\%$$

## 8. Permit Limits and Monitoring Information

WASTELOAD ALLOCATION  
STUDY CONDUCTED (Y OR N):

N

USE ATTAINABILITY  
ANALYSIS CONDUCTED (Y OR N):

N\*

WHOLE BODY CONTACT  
USE RETAINED (Y OR N):

Y

\*Comments were received during the public comment period. Whole Body Contact Recreation Use exists, therefore no UAA conducted for Center Creek.

### OUTFALL #001

WET TEST (Y OR N):

Y

FREQUENCY:

ONCE/YEAR

AEC:

55%

METHOD:

MULTIPLE

TABLE 3. EFFLUENT LIMITS

PARAMETER	UNITS	DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	BASIS FOR LIMIT (NOTE 2)	MONITORING FREQUENCY
FLOW	MGD	*		*	FSR	daily
BIOCHEMICAL OXYGEN DEMAND <sub>5</sub> ***	MG/L		36	24	NDEL	twice/month
TOTAL SUSPENDED SOLIDS***	MG/L		36	24	NDEL	Twice/month
pH	SU	6.5–9.0		6.5–9.0	FSR	Twice/month
AMMONIA AS N (APR 1 – SEPT 30)	MG/L	12.0		2.9	NDEL	Twice/month
AMMONIA AS N (OCT 1 – MAR 31)	MG/L	12.0		2.3	NDEL	Twice/month
ESCHERICHIA COLIFORM (E. COLI)	NOTE 1		630**	126**	FSR	Once/week
CYANIDE	µg/L	22 (16 ML)		11 (16 ML)	FSR	Once/month
ZINC, TOTAL RECOVERABLE	µg/L	217		108	WQBEL	Once/month
LEAD, TOTAL RECOVERABLE	µg/L	*		*	NA	Once/month
CHROMIUM, TOTAL RECOVERABLE	µg/L	*		*	NA	Once/month
DISSOLVED OXYGEN	MG/L	5.0 MINIMUM		5.0 MINIMUM	FSR	Once/month
HARDNESS	MG/L	*		*	NA	Once/month

NOTE 1 – COLONIES/100 ML

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

\* - Monitoring requirements only.

\*\* - The Monthly and Weekly Average for E. coli shall be reported as a Geometric Mean. The Weekly Average for *E. coli* will be expressed as a geometric mean if more than one (1) sample is collected during a calendar week (Sunday through Saturday).

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

## 9. Receiving Water Monitoring Requirements

No receiving water monitoring requirements recommended at this time.

## 10. Derivation and Discussion of Limits

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

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

Where C = downstream concentration

C<sub>s</sub> = upstream concentration

Q<sub>s</sub> = upstream flow

C<sub>e</sub> = effluent concentration

Q<sub>e</sub> = effluent flow

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

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

### 10.1. OUTFALL #001 – MAIN FACILITY OUTFALL LIMIT DERIVATION

- **Flow.** In accordance with [40 CFR Part 122.44(i)(1)(ii)] the volume of effluent discharged from each outfall is needed to assure compliance with permitted effluent limitations. If the permittee is unable to obtain effluent flow, then it is the responsibility of the permittee to inform the department, which may require the submittal of an operating permit modification.
- **Biochemical Oxygen Demand (BOD<sub>5</sub>).** BOD<sub>5</sub> limits of 24 mg/L monthly average, 36 mg/L average weekly limits were proposed.

Parameter	Limit	WLA (mg/L)	(LBS/MG)/(mg/L)	Current Qd MGD	Current Load (lbs/ day)	Expanded Qd MGD	Expansion limit (mg/L)
BOD	Monthly	30.0	8.34	1.27	317.8	1.6	23.8
	Weekly	45.0	8.34	1.27	476.6	1.6	35.7

To protect beneficial uses within the Center Creek, the consultant used 35 mg/L CBOD<sub>5</sub> as input to the Streeter Phelps analysis. Staff verified the calculations (Appendix C, calculations with plot). Streeter Phelps modeling simulated using the proposed design flow indicated a 2.78 mg/L dissolved oxygen deficit below the calculated dissolved oxygen saturation value. The facility DMRs indicated that the oxidation ditch had an average monthly discharge of DO of approximately 5.3 mg/L. This discharge of DO maintained the receiving stream DO above the water quality standards throughout the reach (see Appendix C, Plot). Staff modeled the current discharge CBOD<sub>5</sub> value of 45 mg/L. The modeled difference was very insignificant.

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

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

- **Total Suspended Solids (TSS).** 24 mg/L monthly average, 36 mg/L average weekly limit. According to EPA, because TSS and BOD are closely correlated, we apply the same limits for TSS as BOD. The influent monitoring may be required for this facility in its Missouri State Operating Permit.

Parameter	Limit	WLA (mg/L)	(LBS/MG)/(mg/L)	Current Qd MGD	Current Load (lbs/ day)	Expanded Qd MGD	Expansion limit (mg/L)
TSS	Monthly	30.0	8.34	1.27	317.8	1.6	23.8
	Weekly	45.0	8.34	1.27	476.6	1.6	35.7

- **pH.** pH shall be maintained in the range from 6.5 to nine (6.5 – 9.0) standard units [10 CSR 20-7.015 (8)(A)2.].
- **Dissolved Oxygen.** Dissolved oxygen (DO) in the effluent shall be maintained above the minimum of 5.0 mg/L [10 CSR 20-7.031.]. The facility DMRs indicated that the oxidation ditch had an average monthly discharge of DO of approximately 5.3 mg/L. In Streeter Phelps Modeling, the discharge of DO is essential to maintaining the receiving stream DO above the water quality standards throughout the reach.
- **Total Ammonia Nitrogen.** Early Life Stages Present Total Ammonia Nitrogen criteria apply [10 CSR 20-7.031(4)(B)7.C. & Table B3]. Background total ammonia nitrogen = 0.01 mg/L

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

Summer: April 1 – September 30, Winter: October 1 – March 31.

Using the current modified permit, the ammonia limitation were developed using mass balance with stream dilution as shown below. The table shows the concentration of the ammonia discharge using the expanded effluent flow.

Modified permit							
Parameter	Limit	WLA (mg/L)	(LBS/MG)/(mg/L)	Current Qd MGD	Current Load (lbs/ day)	Expanded Qd MGD	Expansion limit (mg/L)
Ammonia Summer	Monthly	2.9	8.34	1.27	30.7	1.6	2.3
	Maximum	15.1	8.34	1.27	159.9	1.6	12.0
Winter	Monthly	3.7	8.34	1.27	39.2	1.6	2.9
	Maximum	15.1	8.34	1.27	159.9	1.6	12.0

Season	Maximum Daily Limit (mg/l)	Average Monthly Limit (mg/l)
Summer	12.0	2.3
Winter	12.0	2.9

- **Cyanide, Amenable to Chlorination.** Protection of Aquatic Life CCC = 5 µg/L, CMC = 22 µg/L. Limitation are 0.011 mg/L monthly average, 0.022 mg/L as maximum daily limit.

Parameter	Limit	WLA (mg/L)	(LBS/MG)/(mg/L)	Current Qd MGD	Curent Load (lbs/ day)	Expanded Qd MGD	Expansion limit (mg/L)
Cyanide	Monthly	0.014	8.34	1.27	0.1	1.6	0.011
	Maximum	0.028	8.34	1.27	0.3	1.6	0.022

This effluent limit is below the minimum quantification level (ML) of the most common and practical EPA approved methods. The department has determined the current acceptable ML for Cyanide amenable to Chlorination to be 16 µg/L when using the Cyanide by Automated Colorimetric Method #335.3 from the U.S.EPA National Exposure Research Laboratory. The permittee will conduct analyses in accordance with this method, or equivalent, and report actual analytical values. Measured values greater than or equal to the minimum quantification level of 16 µg/L will be considered violations of the permit and values less than the minimum quantification level of 16 µg/L will be considered to be in compliance with the permit limitation. The minimum quantification level does not authorize the discharge of Cyanide in excess of the effluent limits stated in the permit.

- ***E. coli*.** Effluent limitations for WBC(A) are 126 colonies per 100 ml monthly average and 630 colonies per 100 ml weekly average [10 CSR 20-7.015 (8)(A)4.] and [10 CSR 20-7.031(4)(C), Table A].  
For facilities greater than 100,00 gpd: At a minimum, weekly monitoring is required during the recreational season (April 1 – October 31), with compliance to be determined by calculating the geometric mean of all samples collected during the reporting period (samples collected during the calendar week for the weekly average, and samples collected during the calendar month for the monthly average). The weekly average requirement is consistent with EPA federal regulation 40 CFR 122.45(d). Further, the limit may change depending on the outcome of future state effluent regulation revision. Please see **GENERAL ASSUMPTIONS OF THE WQAR #7**.
- **Oil & Grease.** Conventional pollutant, [10 CSR 20-7.031, Table A]. Effluent limitation for protection of aquatic life; 10 mg/L monthly average, 15 mg/L daily maximum.

## Metals

### Hardness Dependent Metals:

Effluent limitations for total recoverable metals were developed using methods and procedures outlined in EPA/505/2-90-001 and “The Metals Translator: Guidance for Calculating a Total Recoverable Permit Limit from a Dissolved Criterion” (EPA 823-B-96-007). General warm-water fishery criteria apply and water hardness = 162 mg/L.

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

METAL	CONVERSION FACTORS	
	ACUTE	CHRONIC
Cadmium	0.924	0.889
Lead	0.721	0.721
Zinc	0.98	0.98

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

Staff followed the Center Creek TMDL WLA for zinc at the proposed design flow and applied monitoring only for cadmium and lead as they were not addressed in the TMDL. The facility is not the source of any of the impairments, but as an antidegradation rule requirement, the city cannot contribute to further degradation of water quality with their discharge. The sediment in Center Creek is contaminated by cadmium, lead, and zinc that eroded from former huge chat piles that were created from the mining of lead and zinc (MDNR Factsheet). Staff believes that monitoring only is appropriate for lead and cadmium because the city’s discharge will likely be well below the water quality standards, and staff does not have a waste load allocation calculation to follow. The TMDL for cadmium and lead is scheduled to be completed in 2012.

- **Cadmium, Total Recoverable**. Monitoring Only. Protection of Aquatic Life Chronic Criteria = 0.3 µg/L, Acute Criteria = 7.1 µg/L (dissolved). After adjustment:  
MO Chronic = 0.3/0.889 = 0.4 µg/L (total recoverable)  
MO Acute = 7.1/0.924 = 7.7 µg/L (total recoverable)

The KDHE TMDL has set the wasteload allocation for these metals at zero. However, Kansas did not have enough data to set an appropriate TMDL

- **Lead, Total Recoverable**. Monitoring Only. Protection of Aquatic Life Chronic Criteria = 4 µg/L, Acute Criteria = 100 µg/L. After adjustment:  
Chronic = 4.0/0.720 = 5.6 µg/L  
Acute = 100.0/0.720 = 138.9 µg/L

- **Zinc, Total Recoverable**  
Missouri General Warm Water Fishery Protection of Aquatic Life CCC = 165 µg/L, CMC = 165 µg/L. Background assumed to be = 0 µg/L. In 2005, Kansas developed and EPA approved a TMDL for the Spring River tributaries. For purposes of protecting both Missouri's Water Quality Standards and Kansas Water Quality Standards and ensuring that the effluent limitations calculated below satisfy the TMDL; staff will develop limits for Zinc Total Recoverable in µg/L. From the calculations, Missouri's water quality standards are more stringent than the TMDL standard. Reasonable potential analysis will be conducted during the next permit reissuance.

KS WQS Chronic = 180.0 µg/L

The Center Creek is major sources of metals pollution in the Spring River. As a result, Missouri chose to include Kansas' Water Quality Standards in the zinc targets for these TMDLs, which were approved by the EPA on October 25, 2006.

Water quality based effluent limits:

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

$$1 \text{ CFS} = 0.6463 \text{ MGD}$$

$$1 \text{ mg/L} = 8.34 \text{ lb/MGD}$$

$$Q_s = 5.5 \text{ CFS} (0.6463) = 3.55 \text{ MGD}$$

Using the *TMDL for Center and Turkey Creeks*' WLA for this facility as C (target concentration) = 1.05 LBs/day or 0.0787 mg/L:

$$\text{WLA: } C_e = ((1.6 + 3.55)(0.0787) - (3.55 * 0.01)) / 1.6$$

$$C_e = 0.231 \text{ mg/L or } 231 \text{ µg/L}$$

$$\text{MDL} = 231 \text{ µg/L} (2.01) = 464 \text{ µg/L}$$

$$\text{AML} = 231 \text{ µg/L}$$

$$\text{MO WQS Chronic} = 165 / 0.98 = 162 \text{ µg/L}$$

$$\text{MO WQS Acute} = 165 / 0.98 = 162 \text{ µg/L}$$

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

Chronic

$$C_e = ((1.6 + 5.5)162 - (5.5 * 0.0)) / 1.6$$

$$C_e = 715 \text{ µg/L}$$

$$\text{WLA}_c = 715 \text{ µg/L}$$

Acute

$$C_e = ((1.6 + 0.55)162 - (0.55 * 0.0)) / 1.6$$

$$C_e = 217 \text{ µg/L}$$

$$\text{WLA}_a = 217 \text{ µg/L}$$

$$\text{LTA}_c = 715(0.527) = 377 \text{ µg/L}$$

$$\text{LTA}_a = 217(0.321) = 69.7 \text{ µg/L}$$

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

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

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

$$\text{MDL} = 69.7(3.11) = 217 \text{ µg/L}$$

$$\text{AML} = 69.7(1.55) = 108 \text{ µg/L}$$

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

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

Because mass balance with dilution using the MO WQS is more protective than the TMDL WLA developed using the KDHE WQS, staff assigned the limitations above using the MO WQS.

- **Hardness.** Monitoring only requirement.

*10.2. OUTFALL #002 – EMERGENCY OUTFALL*

Diversion from secondary treatment. Discharge from this outfall shall be considered an unauthorized bypass pursuant to 40 CFR 122.41(m) and shall be reported, pursuant to 40 CFR 122.41(m).

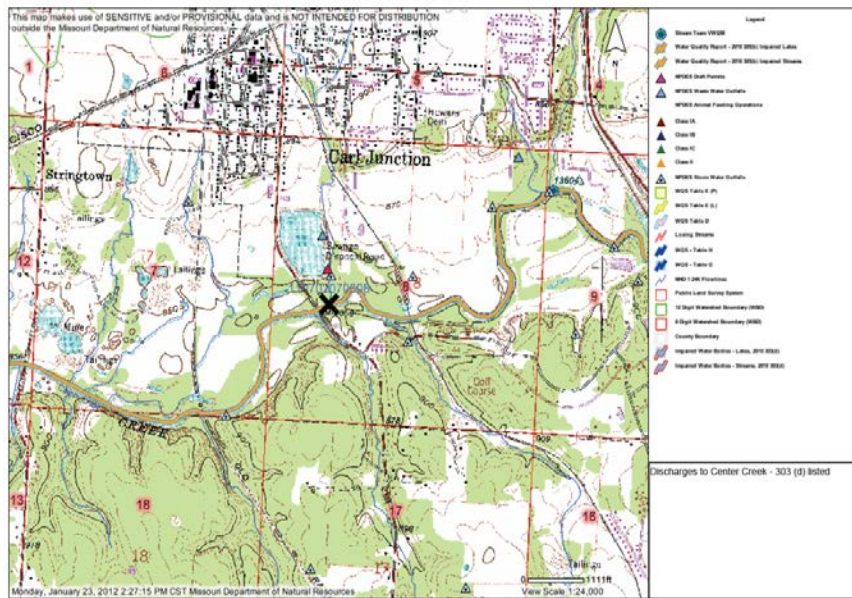
**11. ANTIDegradation Review Preliminary Determination**

The proposed new facility discharge, City of Carl Junction WWTF, 1.6 MGD will result in no degradation of the segment identified in the Center Creek. Per the requirements of the AIP, the effluent limits in this review were developed to be protective of beneficial uses and to retain the remaining assimilative capacity. MDNR has determined that the submitted review is sufficient and meets the requirements of the AIP. No further analysis is needed for this discharge.

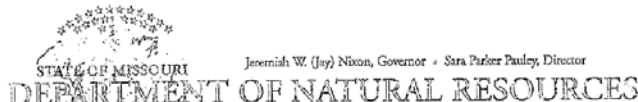
Reviewer: Todd Blanc,  
Date: February 8, 2012  
Unit Chief: John Rustige, P.E.

## APPENDIX A: MAP OF DISCHARGE LOCATION AND DGLS LETTER

### Carl Junction WWTF Outfall Location



Missouri Department of Natural Resources  
Disclaimer: Although this map has been compiled by the Missouri Department of Natural Resources, no warranty, expressed or implied, is made by the department as to the accuracy of the data and related materials. The act of distribution shall not constitute any such warranty, and no responsibility is assumed by the department in the use of these data or related materials.



Jeremiah W. (Jay) Nixon, Governor • Sara Parker Paulby, Director

[www.dnr.mo.gov](http://www.dnr.mo.gov)

September 13, 2011

Mr. Dean A. Willis, P.E.  
Allgeier, Martin and Associates, Inc.  
P.O. Box 2627  
Joplin, MO 64803-2627

**Re: Wastewater Treatment Plant Improvements  
City of Carl Junction  
Jasper County, Missouri**

Dear Mr. Willis:

Thank you for the opportunity to comment on the City of Carl Junction's wastewater system improvements project. As these improvements do not include construction of waste containing earthen impoundments, this project does not require a geohydrologic collapse potential evaluation. Because a new NPDES wastewater discharge is not proposed, there is no need for a geologic stream evaluation. Land application areas are not proposed, so the on-site determination of sinkholes and geologic stream classification is not required, therefore, a geohydrologic site evaluation is not required from this office and we have no comment on the proposed project at this time.

If you are in need of further assistance from our office, please feel free to contact me at (573) 368-2129.

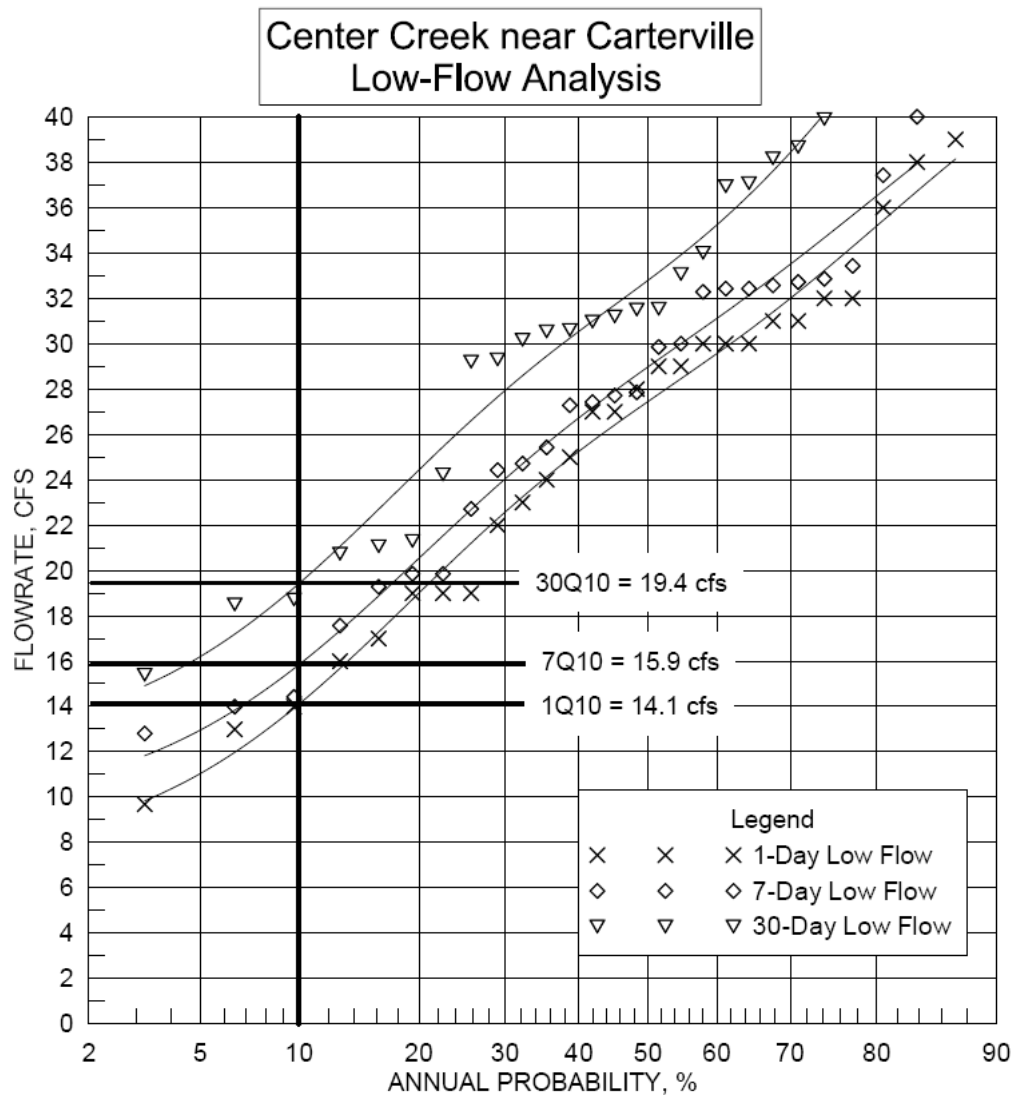
Sincerely,

DIVISION OF GEOLOGY AND LAND SURVEY

Sherri Stoner, R.G.  
Environmental Assistance Unit  
Environmental Geology Section  
Geological Survey Program

c. WPP/FAC

**APPENDIX B: LOW FLOW CALCULATIONS PRESENTED BY ALLGEIER, MARTIN, AND ASSOCIATES, NEW MIXING ZONE INFORMATION.**



USGS 07186400 Center Creek near Carterville, MO  
 Latitude 37°08'26", Longitude 94°22'57" NAD27  
 Jasper County, Missouri, Hydrologic Unit 11070207  
 Drainage area: 232 square miles  
 Datum of gage: 913.21 feet above sea level NGVD29

Carl Junction WWTP Low Flow Computations  
jpw 2/22/2011

At Carterville

$$\text{Flow1Q10} := 14.1 \quad \text{Flow7Q10} := 15.9 \quad \text{Flow30Q10} := 19.4$$

Drainage area at Carterville = 232 square miles  
Drainage area at Carl Junction WWTP = 292 square miles

$$A_c := 232 \quad A_{cj} := 292$$

Use discharge transfer method to compute low flow values at Carl Junction based on values at Carterville. (Mertes 1968, Witala et al. 1961, Walesh, 1989)

$$\frac{Q_a}{Q_b} := \left( \frac{A_a}{A_b} \right)^n$$

The exponent n is computed using average annual flows from a similar nearby stream. Using Spring River at La Russel and at Carthage to determine n.

$$\text{At La Russel} \quad A_1 := 306 \quad Q_{1\text{avg}} := 266$$

$$\text{At Carthage} \quad A_2 := 425 \quad Q_{2\text{avg}} := 422$$

$$n := \frac{\ln\left(\frac{Q_{1\text{avg}}}{Q_{2\text{avg}}}\right)}{\ln\left(\frac{A_1}{A_2}\right)} \quad n = 1.405$$

For Carl Junction

$$CJ1Q10 := \frac{\text{Flow1Q10}}{\left( \frac{A_c}{A_{cj}} \right)^n} \quad CJ1Q10 = 19.5$$

$$CJ7Q10 := \frac{\text{Flow7Q10}}{\left( \frac{A_c}{A_{cj}} \right)^n} \quad CJ7Q10 = 22.0$$

$$CJ30Q10 := \frac{\text{Flow30Q10}}{\left( \frac{A_c}{A_{cj}} \right)^n} \quad CJ30Q10 = 26.8$$

## APPENDIX C: STREETER PHELPS MODEL USING PROPOSED DESIGN FLOW

Streeter-Phelps analysis of critical dissolved oxygen sag.

Based on Lotus File DOSAG2.WK1 Revised 19-Oct-93

### INPUT

#### 1. EFFLUENT CHARACTERISTICS

Discharge (cfs):	2.48
CBOD5 (mg/L):	35
NBOD (mg/L):	5
Dissolved Oxygen (mg/L):	summer monthly ave. facility DMRs 5.3
Temperature (deg C):	26

#### 2. RECEIVING WATER CHARACTERISTICS

Upstream Discharge (cfs):	5.5
Upstream CBOD5 (mg/L):	2.0
Upstream NBOD (mg/L):	0.2
Upstream Dissolved Oxygen (mg/L):	5
Upstream Temperature (deg C):	26
Elevation (ft NGVD):	850
Downstream Average Channel Slope (ft/ft):	0.0008
Downstream Average Channel Depth (ft):	1
Downstream Average Channel Velocity (fps):	1.19

**Allegier, Martin, Associates provided geomorphology.**

#### 3. REAERATION RATE (Base e) AT 20 deg C (day<sup>-1</sup>):

24.27

Reference	Applic. Vel (fps)	Applic. Dep (ft)	Suggested Values
Churchill	1.5 - 6	2 - 50	13.73
O'Connor and Dobbins	.1 - 1.5	2 - 50	14.14
Owens	.1 - 6	1 - 2	24.27
Tsivoglou-Wallace	.1 - 6	.1 - 2	6.57

#### 4. BOD DECAY RATE (Base e) AT 20 deg C (day<sup>-1</sup>):

0.74

Reference	Suggested Value
Wright and McDonnell, 1979	0.74

### OUTPUT

#### 1. INITIAL MIXED RIVER CONDITION

CBOD5 (mg/L):	12.3
NBOD (mg/L):	1.7
Dissolved Oxygen (mg/L):	5.1
Temperature (deg C):	26.0

#### 2. TEMPERATURE ADJUSTED RATE CONSTANTS (Base e)

Reaeration (day <sup>-1</sup> ):	27.98
BOD Decay (day <sup>-1</sup> ):	0.97

#### 3. CALCULATED INITIAL ULTIMATE CBODU AND TOTAL BODU

Initial Mixed CBODU (mg/L):	18.0
Initial Mixed Total BODU (CBODU + NBOD, mg/L):	19.7

#### 4. INITIAL DISSOLVED OXYGEN DEFICIT

Saturation Dissolved Oxygen (mg/L):	7.869
Initial Deficit (mg/L):	2.78

#### 5. TRAVEL TIME TO CRITICAL DO CONCENTRATION (days):

0.000000

#### 6. DISTANCE TO CRITICAL DO CONCENTRATION (feet):

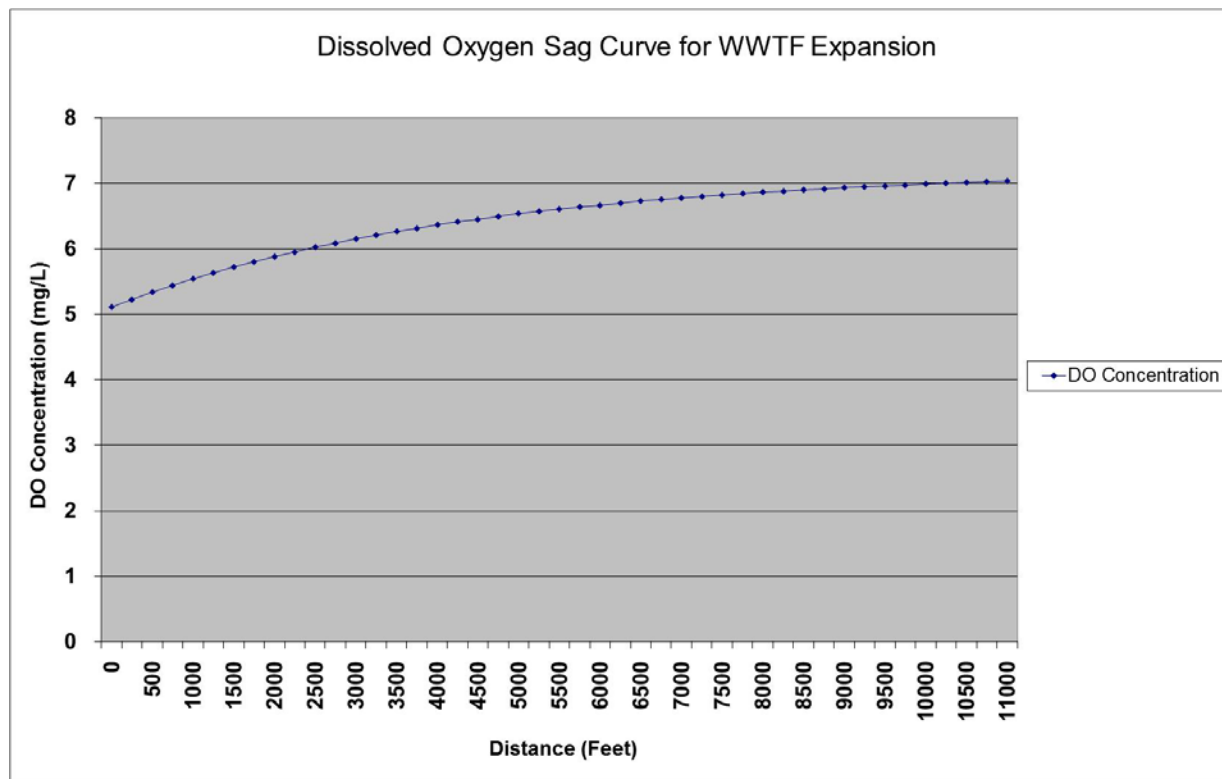
0.00

#### 7. CRITICAL DO DEFICIT (mg/L):

2.78

#### 8. CRITICAL DO CONCENTRATION (mg/L):

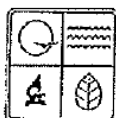
5.09



#### APPENDIX D: ANTIDegradation REVIEW SUMMARY ATTACHMENTS

The attachments that follow contain summary information provided by the applicant, City of Carl Junction. MDNR staff determined that changes must be made to the information contained within these attachments. The following were modified and can be found within the MDNR WQAR:

- 1) Tier Determination and Effluent Limit Summary Sheet: Additional POCs and Limits above were added in the above review beyond those in the form.
- 2) Attachment B: Tier 2 – Minimal Degradation: No changes.
- 3) No Degradation Evaluation: No changes.



MISSOURI DEPARTMENT OF NATURAL RESOURCES  
WATER PROTECTION PROGRAM  
ANTIDEGRADATION REVIEW SUMMARY  
TIER DETERMINATION AND EFFLUENT LIMIT SUMMARY

<b>1. FACILITY</b>			
NAME City of Carl Junction WWTF		TELEPHONE NUMBER WITH AREA CODE 417-649-7686	
ADDRESS (PHYSICAL) South Joplin Street	CITY Carl Junction	STATE MO	ZIP CODE 64834-8307
<b>2. RECEIVING WATER BODY SEGMENT #1</b>			
NAME Center Creek			
2.1 UPPER END OF SEGMENT (Location of discharge) UTM _____ OR Lat _____ Long _____ 37°09'53"N 94°33'37"W			
2.2 LOWER END OF SEGMENT UTM _____ OR Lat _____ Long _____ 37°09'04"N 94°37'01"W			
<small>Per the Missouri Antidegradation Rule and Implementation Procedure, or AIP, the definition of a segment, "a segment is a section of water that is bound, at a minimum, by significant existing sources and confluences with other significant water bodies."</small>			
<b>3. WATER BODY SEGMENT #2 (IF APPLICABLE)</b>			
NAME Not Applicable			
3.1 UPPER END OF SEGMENT UTM _____ OR Lat _____ Long _____			
3.2 LOWER END OF SEGMENT UTM _____ OR Lat _____ Long _____			
<b>4. WATER BODY SEGMENT #3 (IF APPLICABLE)</b>			
NAME Not Applicable			
4.1 UPPER END OF SEGMENT UTM _____ OR Lat _____ Long _____			
4.2 LOWER END OF SEGMENT UTM _____ OR Lat _____ Long _____			
<b>5. PROJECT INFORMATION</b>			
Is the receiving water body an Outstanding National Resource Water, an Outstanding State Resource Water, or drainage thereto? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
In Tables D and E of 10 CSR 20-7.031, Outstanding National Resource Waters and Outstanding State Resource Water are listed. Per the Antidegradation Implementation Procedure Section 1.B.3., "any degradation of water quality is prohibited in these waters unless the discharge only results in temporary degradation." Therefore, if degradation is significant or minimal, the Antidegradation Review will be denied.			
Will the proposed discharge of all pollutants of concern, or POCs, result in no net increase in the ambient water quality concentration of the receiving water after mixing? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			
If yes, submit a summary table showing the levels of each pollutant of concern before and after the proposed discharge in the receiving water and then complete Attachment B for the first downstream classified water body segment.			
Will the discharge result in temporary degradation? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
If yes, complete Attachment C.			
Has the project been determined as non-degrading? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			
If yes, complete No Degradation Evaluation – Conclusion of Antidegradation Review form.			
Submit with the appropriate Construction Permit Application as no antidegradation review is required.			
If yes to one of the above questions, skip to Section 8 - Wet Weather.			

## 6. EXISTING WATER QUALITY DATA OR MODEL SUMMARY

Obtaining Existing Water Quality is possible by three methods according to the Antidegradation Implementation Procedure Section II.A.1.: (1) using previously collected data with an appropriate Quality Assurance Project Plan, or QAPP (2) collecting water quality data by approved the Missouri Department of Natural Resources methodology or (3) using an appropriate water quality model. QAPPs must be submitted to the department for approval well in advance (six months) of the proposed activity. Provide all the appropriate corresponding data and reports which were approved by the department Water Quality Monitoring and Assessment Section.

Date existing water quality data was provided by the Water Quality Monitoring and Assessment Section:

Approval date of the QAPP by the Water Quality Monitoring and Assessment Section:

Approval date of the project sampling plan by the Water Quality Monitoring and Assessment Section:

Approval date of the data collected for all appropriate pollutants of concern by the Water Quality Monitoring and Assessment Section:

Comments/Discussion:

## 7. POLLUTANTS OF CONCERN AND TIER DETERMINATION(S)

Pollutants of Concern to be considered include those pollutants reasonably expected to be present in the discharge per the Antidegradation Implementation Procedure Section II.S. The tier protection levels are specified and defined in rule at 10 CSR 20-7.031 (2).

### Water Body Segment One Pollutants of Concern and Tier Determination(s)

Tier 1	Tier 2 with Minimal Degradation	Tier 2 with Significant Degradation

Note: Add an asterisk to items that you only assume are Tier 2 with significant degradation.

### Water Body Segment Two Pollutants of Concern and Tier Determination(s)

Tier 1	Tier 2 with Minimal Degradation	Tier 2 with Significant Degradation

- For pollutants of concern that are Tier 2 with significant degradation, complete Attachment A.
- For pollutants of concern that are Tier 2 with minimal degradation, complete Attachment B.
- For pollutants of concern that are Tier 1, complete Attachment D. Additionally, a Tier 2 review must be conducted for each pollutant of concern on the appropriate water body segment.

## 8. WET WEATHER ANTICIPATIONS

If an applicant anticipates excessive inflow or infiltration and pursues approval from the department to bypass secondary treatment, a feasibility analysis is required. The feasibility analysis must comply with the criteria of all applicable state and federal regulations including 40 CFR 122.41(m)(4). Attach the feasibility analysis to this report. N/A

What is the Wet Weather Flow Peaking Factor in relation to design flow?

Wet Weather Design Summary:

# 9. SUMMARY OF THE PROPOSED ANTIDEGRADATION REVIEW EFFLUENT LIMITS

What are the proposed pollutants of concern and their respective effluent limits that the selected treatment option will comply with:

Pollutant of Concern	Units	Wasteload Allocation	Average Monthly Limit	Daily Maximum Limit
BOD5	mg/l		24	
TSS	mg/l		24	
Dissolved Oxygen	mg/l		5.0	
Ammonia	mg/l		2.9/2.3	12.0
Bacteria (E. Coli)	#/100 ml		126	
Cyanide	ug/l		11.1	22.3

These proposed limits must not violate water quality standards, be protective of beneficial uses and achieve the highest statutory and regulatory requirements.

Attach the Antidegradation Review report and all supporting documentation.

**CONSULTANT:** I have prepared or reviewed this form and all attached reports and documentation. The conclusion proposed is consistent with the Antidegradation Implementation Procedure and current state and federal regulation.

SIGNATURE Dean A. Willis DATE 1-30-2012

NAME AND OFFICIAL TITLES  
Dean A. Willis, First Vice President

COMPANY NAME  
Allgeier, Martin and Associates, Inc.

ADDRESS CITY STATE ZIP CODE  
P.O. Box 2627 Joplin MO 64803-2627

TELEPHONE NUMBER WITH AREA CODE E-MAIL ADDRESS  
417-680-7200 dean.willis@amce.com

**OWNER:** I have read and reviewed the prepared documents and agree with this submittal.

SIGNATURE Steve Lawver DATE 1/31/12

NAME AND OFFICIAL TITLES  
Steve Lawver, City Administrator

ADDRESS CITY STATE ZIP CODE  
P.O. Box 447 Carl Junction MO 64834

TELEPHONE NUMBER WITH AREA CODE E-MAIL ADDRESS  
417-649-7237 cjcityhall@carljunction.org

**CONTINUING AUTHORITY:** Continuing Authority is the permanent organization that will be responsible for the operation, maintenance and modernization of the facility. The regulatory requirement regarding continuing authority is found in 10 CSR 20-6.010(3) available at [www.sos.mo.gov/adrules/csr/current/10csr/10c20-6a.pdf](http://www.sos.mo.gov/adrules/csr/current/10csr/10c20-6a.pdf).

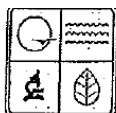
I have read and reviewed the prepared documents and agree with this submittal.

SIGNATURE Same as Owner Steve Lawver DATE 1/31/12

NAME AND OFFICIAL TITLES  
Steve Lawver, City Administrator

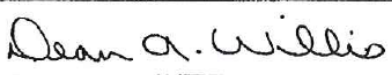


ADDRESS CITY STATE ZIP CODE  
P.O. Box 447 Carl Junction MO 64834

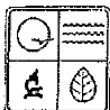
TELEPHONE NUMBER WITH AREA CODE E-MAIL ADDRESS  
417-649-7237 cityhall@carljunction.org



MISSOURI DEPARTMENT OF NATURAL RESOURCES  
WATER PROTECTION PROGRAM, WATER POLLUTION CONTROL BRANCH  
**ANTIDEGRADATION REVIEW SUMMARY**  
**ATTACHMENT B: TIER 2 – MINIMAL DEGRADATION**

<b>1. FACILITY</b>						
NAME City of Carl Junction WWTF				TELEPHONE WITH AREA CODE 417-649-7686		
ADDRESS (PHYSICAL) South Joplin Street			CITY Carl Junction	STATE MO	ZIP CODE 64834-8307	
<b>2. RECEIVING WATER BODY SEGMENT #1</b>						
NAME Center Creek						
<b>3. WATER BODY SEGMENT #2 (IF APPLICABLE)</b>						
NAME						
<b>4. ASSIMILATIVE CAPACITY TABLE</b>						
Determining the facility assimilative capacity, or FAC, and the segment assimilative capacity, or SAC for each pollutant of concern is explained in detail in the Antidegradation Implementation Procedure Section II.A.3. and Appendix 3. POCs to be considered include those pollutants reasonably expected to be present in the discharge per the Antidegradation Implementation Procedure Section II.A. Provide all calculations in the Antidegradation Review report.						
Pollutant of Concern	Facility Assimilative Capacity (lbs/day)		New Load (lbs/day)		Percent of Facility Assimilative Capacity (%)	
BOD (5)			0		0	
TSS			0		0	
Ammonia			0		0	
Cyanide			0		0	
Pollutant of Concern	Water Body Segment #1 SAC	Cumulative Net Increase in Load	Cumulative % of Water Body Segment #1 SAC	Water Body Segment #2 SAC	Cumulative Net Increase in Load	Cumulative % of Water Body Segment #2 SAC
BOD(5)		0	0			
TSS		0	0			
Ammonia		0	0			
Cyanide		0	0			
<b>Assimilative Capacity Summary</b>						
Is degradation considered minimal for all Pollutants of Concern? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No						
Degradation is considered minimal if the new or proposed loading is less than 10 percent of the FAC and the cumulative degradation is less than 20 percent of the SAC according to the Antidegradation Implementation Procedure Section II.A.3. If yes, an alternatives analysis and a social and economic importance analysis are not required.						
Comments/Discussion No increase in loading is proposed for each POC.						
<b>MINIMAL DEGRADATION CALCULATIONS</b>						

<b>5. OIL AND GREASE</b>	
Is this a publicly owned treatment works, or POTW, restaurant, school or other domestic wastewater treatment facility with oil and grease as a Pollutant of Concern? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
In accordance with 10 CSR 20-7.031(3)(B), waters shall be free from oil, scum and floating debris in sufficient amounts to be unsightly or prevent full maintenance of beneficial uses. In accordance with 10 CSR 20-7.031 Table A, oil and grease has a chronic toxicity of 10 mg/L for protection of aquatic life. This facility will meet the effluent limits (MDL and AML of 15 mg/L and 10 mg/L, respectively).	
<b>6. DECHLORINATION</b>	
If Chlorination and Dechlorination is the existing or proposed method of disinfection treatment, will the effluent discharged be equal to or less than the Water Quality Standards for Total Residual Chlorine stated in Table A of 10 CSR 20-7.031? <b>NA</b>	
<input type="checkbox"/> Yes <input type="checkbox"/> No	
Based on the disinfection treatment system being designed for total removal of Total Residual Chlorine, minimal degradation for Total Residual Chlorine is assumed and the facility will be required to meet the water quality based effluent limits. These compliance limits for Total Residual Chlorine are much less than the method detection limit of 0.13 mg/L.	
<b>7. PROPOSED PROJECT SUMMARY</b>	
Attach the Antidegradation Review report and all supporting documentation. Previously submitted.	
<b>CONSULTANT:</b> I have prepared or reviewed this from and all attached reports and documentation. The conclusion proposed in consistent with the AIP and current state and federal regulations.	
SIGNATURE 	DATE 1-30-2012
PRINT NAME Dean A. Willis	
TELEPHONE NUMBER WITH AREA CODE 417-680-7200	E-MAIL ADDRESS dean.willis@amce.com
<b>OWNER:</b> I have read and reviewed the prepared documents and agree with this submittal.	
SIGNATURE 	DATE 1/31/12
<b>CONTINUING AUTHORITY:</b> I have read and reviewed the prepared documents and agree with this submittal.	
SIGNATURE Same as owner. 	DATE



MISSOURI DEPARTMENT OF NATURAL RESOURCES  
WATER PROTECTION PROGRAM, WATER POLLUTION CONTROL BRANCH  
**NO DEGRADATION EVALUATION**  
**CONCLUSION OF ANTIDEGRADATION REVIEW**  
(Submit this form with the appropriate Permit Application)

**1. FACILITY**

NAME City of Carl Junction WWTF		COUNTY Jasper	
ADDRESS (PHYSICAL) South Joplin Street	CITY Carl Junction	STATE MO	ZIP CODE 64834-8307
FACILITY CONTACT: Marvin Lundeen, Chief Operator		TELEPHONE NUMBER WITH AREA CODE 417-649-7686	

**2. NO DEGRADATION OPTIONS**

- ☐ Renewal without changes
- ☐ Sewer extensions
- ☐ CSO elimination projects
- ☐ No-discharge with land application
- ☐ No-discharge with subsurface irrigation
- ☐ Recycle or reuse of effluent
- ☐ Discharge to a regional wastewater collection and treatment system.
- ☒ Addition or replacement of disinfection system for an existing wastewater facility: Ultraviolet or Ozone  
The facility will be required to meet regulatory effluent limits for bacteria.
- ☐ Addition or replacement for chlorination or dechlorination disinfection system of existing facility.  
The chlorination or dechlorination disinfection treatment system design must be for total removal of Total Residual Chlorine. Therefore, the facility will be required to meet the water quality-bases effluent limits determined by the permit writer or the following water quality-bases effluent limits:

Beneficial Use of Classified Water	MDL (µg/l)	AML (µg/l)
Warm-water fishery	17	8.2
Cold-water fishery	3.3	1.6

Note: These compliance limits for Total Residual Chlorine are much less than minimum quantification level, or ML, of 0.13. The facility will be required to meet regulatory effluent limits for bacteria.

☒ Other, please describe: Expansion of activated sludge biological treatment facilities

Consulted with Water Protection Staff:

NAME Todd Blanc	DATE 01/24/2012
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**3. NO DEGRADATION PROPOSED PROJECT SUMMARY**

Wastewater treatment plant expansion including diversion structure, return activated sludge pumps, additional activated sludge facilities, clarifier, uV disinfection, sludge handling facilities, standby power.



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MISSOURI CLEAN WATER COMMISSION  
REVISED  
AUGUST 1, 2014

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

## Part I – General Conditions

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

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

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

### Section B – Reporting Requirements

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



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

## Section C – Bypass/Upset Requirements

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

## Section D – Administrative Requirements

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



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imposed in a pretreatment program approved under section 402(a)(3) or 402(b)(8) of the Act, is subject to criminal penalties of \$2,500 to \$25,000 per day of violation, or imprisonment of not more than one (1) year, or both. In the case of a second or subsequent conviction for a negligent violation, a person shall be subject to criminal penalties of not more than \$50,000 per day of violation, or by imprisonment of not more than two (2) years, or both. Any person who knowingly violates such sections, or such conditions or limitations is subject to criminal penalties of \$5,000 to \$50,000 per day of violation, or imprisonment for not more than three (3) years, or both. In the case of a second or subsequent conviction for a knowing violation, a person shall be subject to criminal penalties of not more than \$100,000 per day of violation, or imprisonment of not more than six (6) years, or both. Any person who knowingly violates section 301, 302, 303, 306, 307, 308, 318 or 405 of the Act, or any permit condition or limitation implementing any of such sections in a permit issued under section 402 of the Act, and who knows at that time that he thereby places another person in imminent danger of death or serious bodily injury, shall, upon conviction, be subject to a fine of not more than \$250,000 or imprisonment of not more than 15 years, or both. In the case of a second or subsequent conviction for a knowing endangerment violation, a person shall be subject to a fine of not more than \$500,000 or by imprisonment of not more than 30 years, or both. An organization, as defined in section 309(c)(3)(B)(iii) of the CWA, shall, upon conviction of violating the imminent danger provision, be subject to a fine of not more than \$1,000,000 and can be fined up to \$2,000,000 for second or subsequent convictions.

- c. Any person may be assessed an administrative penalty by the EPA Director for violating section 301, 302, 306, 307, 308, 318 or 405 of this Act, or any permit condition or limitation implementing any of such sections in a permit issued under section 402 of this Act. Administrative penalties for Class I violations are not to exceed \$10,000 per violation, with the maximum amount of any Class I penalty assessed not to exceed \$25,000. Penalties for Class II violations are not to exceed \$10,000 per day for each day during which the violation continues, with the maximum amount of any Class II penalty not to exceed \$125,000.
  - d. It is unlawful for any person to cause or permit any discharge of water contaminants from any water contaminant or point source located in Missouri in violation of sections 644.006 to 644.141 of the Missouri Clean Water Law, or any standard, rule or regulation promulgated by the commission. In the event the commission or the director determines that any provision of sections 644.006 to 644.141 of the Missouri Clean Water Law or standard, rules, limitations or regulations promulgated pursuant thereto, or permits issued by, or any final abatement order, other order, or determination made by the commission or the director, or any filing requirement pursuant to sections 644.006 to 644.141 of the Missouri Clean Water Law or any other provision which this state is required to enforce pursuant to any federal water pollution control act, is being, was, or is in imminent danger of being violated, the commission or director may cause to have instituted a civil action in any court of competent jurisdiction for the injunctive relief to prevent any such violation or further violation or for the assessment of a penalty not to exceed \$10,000 per day for each day, or part thereof, the violation occurred and continues to occur, or both, as the court deems proper. Any person who willfully or negligently commits any violation in this paragraph shall, upon conviction, be punished by a fine of not less than \$2,500 nor more than \$25,000 per day of violation, or by imprisonment for not more than one year, or both. Second and successive convictions for violation of the same provision of this paragraph by any person shall be punished by a fine of not more than \$50,000 per day of violation, or by imprisonment for not more than two (2) years, or both.
2. **Duty to Reapply.**
- a. If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and obtain a new permit.
  - b. A permittee with a currently effective site-specific permit shall submit an application for renewal at least 180 days before the expiration date of the existing permit, unless permission for a later date has been granted by the Department. (The Department shall not grant permission

for applications to be submitted later than the expiration date of the existing permit.)

- c. A permittee with currently effective general permit shall submit an application for renewal at least 30 days before the existing permit expires, unless the permittee has been notified by the Department that an earlier application must be made. The Department may grant permission for a later submission date. (The Department shall not grant permission for applications to be submitted later than the expiration date of the existing permit.)
3. **Need to Halt or Reduce Activity Not a Defense.** It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.
4. **Duty to Mitigate.** The permittee shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.
5. **Proper Operation and Maintenance.** The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems which are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit.
6. **Permit Actions.**
- a. Subject to compliance with statutory requirements of the Law and Regulations and applicable Court Order, this permit may be modified, suspended, or revoked in whole or in part during its term for cause including, but not limited to, the following:
    - i. Violations of any terms or conditions of this permit or the law;
    - ii. Having obtained this permit by misrepresentation or failure to disclose fully any relevant facts;
    - iii. A change in any circumstances or conditions that requires either a temporary or permanent reduction or elimination of the authorized discharge; or
    - iv. Any reason set forth in the Law or Regulations.
  - b. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition.
7. **Permit Transfer.**
- a. Subject to 10 CSR 20-6.010, an operating permit may be transferred upon submission to the Department of an application to transfer signed by the existing owner and the new owner, unless prohibited by the terms of the permit. Until such time the permit is officially transferred, the original permittee remains responsible for complying with the terms and conditions of the existing permit.
  - b. The Department may require modification or revocation and reissuance of the permit to change the name of the permittee and incorporate such other requirements as may be necessary under the Missouri Clean Water Law or the Federal Clean Water Act.
  - c. The Department, within 30 days of receipt of the application, shall notify the new permittee of its intent to revoke or reissue or transfer the permit.
8. **Toxic Pollutants.** The permittee shall comply with effluent standards or prohibitions established under section 307(a) of the Federal Clean Water Act for toxic pollutants and with standards for sewage sludge use or disposal established under section 405(d) of the Federal Clean Water Act within the time provided in the regulations that establish these standards or prohibitions or standards for sewage sludge use or disposal, even if the permit has not yet been modified to incorporate the requirement.
9. **Property Rights.** This permit does not convey any property rights of any sort, or any exclusive privilege.



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



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

**1. Definitions**

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

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

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

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

**2. Identification of Industrial Discharges**

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

**3. Application Information**

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

**4. Notice to the Department**

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

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

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

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

**STANDARD CONDITIONS FOR NPDES PERMITS**  
**ISSUED BY**  
**THE MISSOURI DEPARTMENT OF NATURAL RESOURCES**  
**MISSOURI CLEAN WATER COMMISSION**  
**March 1, 2015**

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

**SECTION A – GENERAL REQUIREMENTS**

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

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

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

## **SECTION B – DEFINITIONS**

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

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

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

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

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

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

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

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

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

## **SECTION G – LAND APPLICATION**

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

### **5. Public Contact Sites:**

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

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

### **6. Agricultural and Silvicultural Sites:**

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

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

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

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

**TABLE 1**

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

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

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

**TABLE 2**

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

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

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

**TABLE 3**

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

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

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

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

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

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

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

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

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

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

## SECTION H – CLOSURE REQUIREMENTS

1. This section applies to all wastewater facilities (mechanical, industrial, and lagoons) and sludge or biosolids storage and treatment facilities and incineration ash ponds. It does not apply to land application sites.
2. Permittees of a domestic wastewater facility who plan to cease operation must obtain Department approval of a closure plan which addresses proper removal and disposal of all residues, including sludge, biosolids. Mechanical plants, sludge lagoons, ash ponds and other storage structures must obtain approval of a closure plan from the Department. Permittee must maintain this permit until the facility is closed in accordance with the approved closure plan per 10 CSR 20 – 6. 010 and 10 CSR 20 – 6.015.
3. Residuals that are left in place during closure of a lagoon or earthen structure or ash pond shall not exceed the agricultural loading rates as follows:
  - a. Residuals shall meet the monitoring and land application limits for agricultural rates as referenced in Section H of these standard conditions.
  - b. If a wastewater treatment lagoon has been in operation for 15 years or more without sludge removal, the sludge in the lagoon qualifies as a Class B biosolids with respect to pathogens due to anaerobic digestion, and testing for fecal coliform is not required. For other lagoons, testing for fecal coliform is required to show compliance with Class B biosolids limitations. In order to reach Class B biosolids requirements, fecal coliform must be less than 2,000,000 colony forming units or 2,000,000 most probable number. All fecal samples must be presented as geometric mean per gram.
  - c. The allowable nitrogen loading that may be left in the lagoon shall be based on the plant available nitrogen (PAN) loading. For a grass cover crop, the allowable PAN is 300 pounds/acre.
    - i. PAN can be determined as follows:
$$(\text{Nitrate} + \text{nitrite nitrogen}) + (\text{organic nitrogen} \times 0.2) + (\text{ammonia nitrogen} \times \text{volatilization factor}^1).$$
<sup>1</sup> Volatilization factor is 0.7 for surface application and 1 for subsurface application.
4. When closing a domestic wastewater treatment lagoon with a design treatment capacity equal or less than 150 persons, the residuals are considered “septage” under the similar treatment works definition. See Section B of these standard conditions. Under the septage category, residuals may be left in place as follows:
  - a. Testing for metals or fecal coliform is not required
  - b. If the wastewater treatment lagoon has been in use for less than 15 years, mix lime with the sludge at a rate of 50 pounds of hydrated lime per 1000 gallons (134 cubic feet) of sludge.
  - c. The amount of sludge that may be left in the lagoon shall be based on the plant available nitrogen (PAN) loading. 100 dry tons/acre of sludge may be left in the basin without testing for nitrogen. If 100 dry tons/acre or more will be left in the lagoon, test for nitrogen and determine the PAN using the calculation above. Allowable PAN loading is 300 pounds/acre.
5. Residuals left within the domestic lagoon shall be mixed with soil on at least a 1 to 1 ratio, the lagoon berm shall be demolished, and the site shall be graded and contain  $\geq 70\%$  vegetative density over 100% of the site so as to avoid ponding of storm water and provide adequate surface water drainage without creating erosion.
6. Lagoons and/or earthen structure and/or ash pond closure activities shall obtain a storm water permit for land disturbance activities that equal or exceed one acre in accordance with 10 CSR 20-6.200
7. When closing a mechanical wastewater and/or industrial process wastewater plant; all sludge must be cleaned out and disposed of in accordance with the Department approved closure plan before the permit for the facility can be terminated.
  - a. Land must be stabilized which includes any grading, alternate use or fate upon approval by the Department, remediation, or other work that exposes sediment to stormwater per 10 CSR 20-6.200. The site shall be graded and contain  $\geq 70\%$  vegetative density over 100% of the site, so as to avoid ponding of storm water and provide adequate surface water drainage without creating erosion.
  - b. Per 10 CSR 20-6.015(4)(B)6, Hazardous Waste shall not be land applied or disposed during industrial and mechanical plant closures unless in accordance with Missouri Hazardous Waste Management Law and Regulations under 10 CSR 25.
  - c. After demolition of the mechanical plant / industrial plant, the site must only contain clean fill defined in RSMo 260.200 (5) as uncontaminated soil, rock, sand, gravel, concrete, asphaltic concrete, cinderblocks, brick, minimal amounts of wood and metal, and inert solids as approved by rule or policy of the Department for fill or other beneficial use. Other solid wastes must be removed.
8. If sludge from the domestic lagoon or mechanical treatment plant exceeds agricultural rates under Section G and/or H, a landfill permit or solid waste disposal permit must be obtained if the permittee chooses to seek authorization for on-site sludge disposal under the Missouri Solid Waste Management Law and regulations per 10 CSR 80, and the permittee must comply with the surface disposal requirements under 40 CFR 503, Subpart C.

## SECTION I – MONITORING FREQUENCY

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

**TABLE 5**

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

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

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

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

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

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

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

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

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

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

## SECTION J – RECORD KEEPING AND REPORTING REQUIREMENTS

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

Major facilities (those serving 10,000 persons or 1 million gallons per day) shall report to both the Department and EPA. Other facilities need to report only to the Department. Reports shall be submitted to the addresses listed as follows:

DNR regional office listed in your permit  
(see cover letter of permit)  
ATTN: Sludge Coordinator

EPA Region VII  
Water Compliance Branch (WACM)  
Sludge Coordinator  
11201 Renner Blvd.  
Lenexa, KS 66219

5. Annual report contents. The annual report shall include the following:
- a. Sludge and biosolids testing performed. Include a copy or summary of all test results, even if not required by the permit.
  - b. Sludge or biosolids quantity shall be reported as dry tons for quantity generated by the wastewater treatment facility, the quantity stored on site at the end of the year, and the quantity used or disposed.
  - c. Gallons and % solids data used to calculate the dry ton amounts.
  - d. Description of any unusual operating conditions.
  - e. Final disposal method, dates, and location, and person responsible for hauling and disposal.
    - i. This must include the name, address for the hauler and sludge facility. If hauled to a municipal wastewater treatment facility, sanitary landfill, or other approved treatment facility, give the name of that facility.
    - ii. Include a description of the type of hauling equipment used and the capacity in tons, gallons, or cubic feet.
  - f. Contract Hauler Activities:

If contract hauler, provide a copy of a signed contract from the contractor. Permittee shall require the contractor to supply information required under this permit for which the contractor is responsible. The permittee shall submit a signed statement from the contractor that he has complied with the standards contained in this permit, unless the contract hauler has a separate sludge or biosolids use permit.
  - g. Land Application Sites:
    - i. Report the location of each application site, the annual and cumulative dry tons/acre for each site, and the landowners name and address. The location for each spreading site shall be given as a legal description for nearest 1/4, 1/4, Section, Township, Range, and county, or UTM coordinates. The facility shall report PAN when either of the following occurs: 1) When biosolids are greater than 50,000 mg/kg TN; or 2) when biosolids are land applied at an application rate greater than two dry tons per acre per year.
    - ii. If the "Low Metals" criteria are exceeded, report the annual and cumulative pollutant loading rates in pounds per acre for each applicable pollutant, and report the percent of cumulative pollutant loading which has been reached at each site.
    - iii. Report the method used for compliance with pathogen and vector attraction requirements.
    - iv. Report soil test results for pH, CEC, and phosphorus. If none was tested during the year, report the last date when tested and results.

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JAN 14 2016



MISSOURI DEPARTMENT OF NATURAL RESOURCES  
WATER PROTECTION PROGRAM, WATER POLLUTION CONTROL BRANCH

Water Protection Program

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

FACILITY NAME Carl Junction Wastewater Treatment Facility	
PERMIT NO. MO - 0025186	COUNTY Jasper
<b>APPLICATION OVERVIEW</b>	
<p>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.</p>	
<b>BASIC APPLICATION INFORMATION</b>	
<p>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.</p>	
<b>SUPPLEMENTAL APPLICATION INFORMATION</b>	
<p>D. Expanded Effluent Testing Data. A treatment works that discharges effluent to surface water of the United States and meets one or more of the following criteria must complete <i>Part D - Expanded Effluent Testing Data</i>:</p> <ol style="list-style-type: none"> <li>1. Has a design flow rate greater than or equal to 1 million gallons per day.</li> <li>2. Is required to have or currently has a pretreatment program.</li> <li>3. Is otherwise required by the permitting authority to provide the information.</li> </ol> <p>E. Toxicity Testing Data. A treatment works that meets one or more of the following criteria must complete <i>Part E - Toxicity Testing Data</i>:</p> <ol style="list-style-type: none"> <li>1. Has a design flow rate greater than or equal to 1 million gallons per day.</li> <li>2. Is required to have or currently has a pretreatment program.</li> <li>3. Is otherwise required by the permitting authority to provide the information.</li> </ol> <p>F. Industrial User Discharges and Resource Conservation and Recovery Act / Comprehensive Environmental Response, Compensation and Liability Act Wastes. A treatment works that accepts process wastewater from any significant industrial users, also known as SIUs, or receives a Resource Conservation and Recovery Act or CERCLA wastes must complete <i>Part F - Industrial User Discharges and Resource Conservation and Recovery Act /CERCLA Wastes</i>.</p> <p>SIUs are defined as:</p> <ol style="list-style-type: none"> <li>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.</li> <li>2. Any other industrial user that meets one or more of the following:             <ol style="list-style-type: none"> <li>i. Discharges an average of 25,000 gallons per day or more of process wastewater to the treatment works (with certain exclusions).</li> <li>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.</li> <li>iii. Is designated as an SIU by the control authority.</li> <li>iv. Is otherwise required by the permitting authority to provide the information.</li> </ol> </li> </ol> <p>G. Combined Sewer Systems. A treatment works that has a combined sewer system must complete <i>Part G - Combined Sewer Systems</i>.</p>	
<b>ALL APPLICANTS MUST COMPLETE PARTS A, B and C</b>	

RECEIVED

JAN 14 2016



MISSOURI DEPARTMENT OF NATURAL RESOURCES **Water Protection Program**  
 WATER PROTECTION PROGRAM, WATER POLLUTION CONTROL BRANCH  
**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

FEE SUBMITTED

1-14-16

0.00

**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- 0025186 Expiration Date 5/9/2016  
☐ 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 Carl Junction Wastewater Treatment Facility TELEPHONE NUMBER WITH AREA CODE 417-649-7686

ADDRESS (PHYSICAL) South Joplin Street CITY Carl Junction STATE MO ZIP CODE 64834

2.1 LEGAL DESCRIPTION (Facility Site): ne ¼, sw ¼, nw ¼, Sec. 8, T 28, R 33W COUNTY Jasper

2.2 UTM Coordinates Easting (X): 1185865 Northing (Y): 13499750  
 For Universal Transverse Mercator (UTM), Zone 15 North referenced to North American Datum 1983 (NAD83)

2.3 Name of receiving stream: Center Creek

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

**3. OWNER**

NAME City of Carl Junction EMAIL ADDRESS cjcityhall@carljunction.org TELEPHONE NUMBER WITH AREA CODE 417-649-7237

ADDRESS PO Box 447 CITY Carl Junction STATE MO ZIP CODE 64834

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

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 Same as Owner EMAIL ADDRESS TELEPHONE NUMBER WITH AREA CODE

ADDRESS CITY STATE ZIP CODE

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 Jay Morton TITLE Chief Operator CERTIFICATE NUMBER (IF APPLICABLE) 2656

EMAIL ADDRESS cjcityhall@carljunction.org TELEPHONE NUMBER WITH AREA CODE 417-649-7686

**6. FACILITY CONTACT**

NAME Jimmy Chialigoj TITLE Public Works Superintendent

EMAIL ADDRESS cjcityhall@carljunction.org TELEPHONE NUMBER WITH AREA CODE 417-649-7237

ADDRESS PO Box 447 CITY Carl Junction STATE MO ZIP CODE 64834

FACILITY NAME Carl Junction WWTF	PERMIT NO. MO- 0025186	OUTFALL NO. 1
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# **PART A – BASIC APPLICATION INFORMATION**

## **7. FACILITY INFORMATION**

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

See attached WWTP flow diagram.

Facility is oxidation ditch type activated sludge process with ultraviolet disinfection, flow equalization basin, and sludge storage lagoons.

FACILITY NAME Carl Junction WWTF	PERMIT NO. MO- 0025186	OUTFALL NO. 1
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# PART A – BASIC APPLICATION INFORMATION

## 7. FACILITY INFORMATION (continued)

**7.2 Topographic Map.** Attach to this application a topographic map of the area extending at least one mile beyond facility property boundaries. This map must show the outline of the facility and the following information.

- The area surrounding the treatment plant, including all unit processes.
- The location of the downstream landowner(s). (See Item 10.)
- 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.
- The actual point of discharge.
- 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.
- Any areas where the sewage sludge produced by the treatment works is stored, treated, or disposed.
- 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.

<b>7.3</b> Facility SIC Code: 4952	Discharge SIC Code: _____
---------------------------------------	------------------------------

**7.4** Number of people presently connected or population equivalent (P.E.): 8,600 Design P.E. 12,000

## 7.5 Connections to the facility:

Number of units presently connected:

Homes All Trailers All Apartments All Other (including industrial) NA

Number of Commercial Establishments: All

<b>7.6</b> Design Flow 1.60 MGD	Actual Flow Average Flow for 2015 was 1.25 MGD.
------------------------------------	--

**7.7** Will discharge be continuous through the year? Yes ☒ No ☐  
Discharge will occur during the following months: \_\_\_\_\_ How many days of the week will discharge occur? \_\_\_\_\_

**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? Yes ☐ No ☒  
If yes, is Form I attached? Yes ☐ No ☐

**7.11** Does the facility discharge to a losing stream or sinkhole? Yes ☐ No ☒

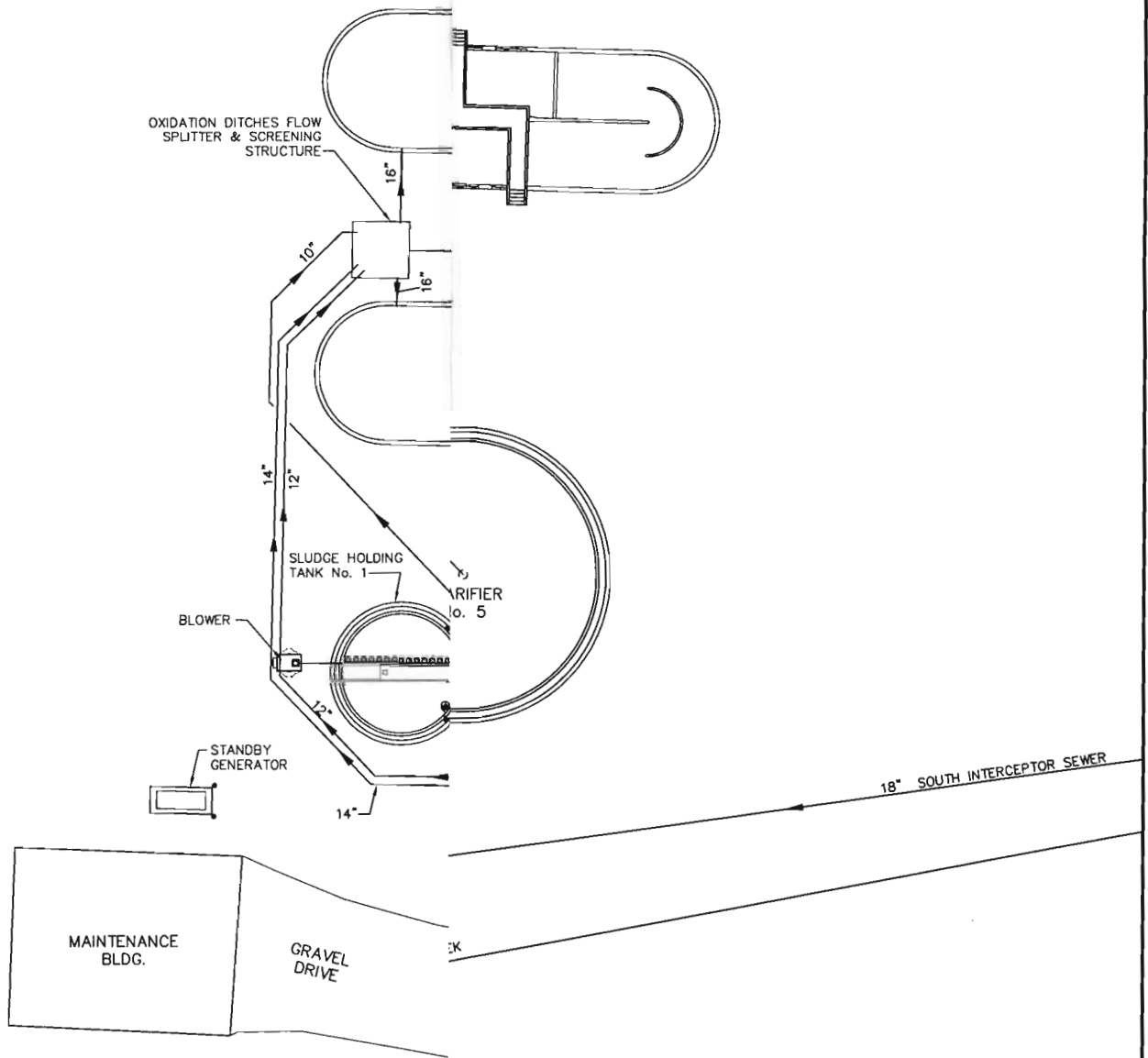
**7.12** Has a wasteload allocation study been completed for this facility? Yes ☒ No ☐

## 8. LABORATORY CONTROL INFORMATION

### LABORATORY WORK CONDUCTED BY PLANT PERSONNEL

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

FACILITY NAME Carl Junction WWTF	PERMIT NO. MO- 0025186	OUTFALL NO. 1
<b>PART A – BASIC APPLICATION INFORMATION</b>		
<b>9. SLUDGE HANDLING, USE AND DISPOSAL</b>		
9.1 Is the sludge a hazardous waste as defined by 10 CSR 25?      Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
9.2 Sludge production (Including sludge received from others): Design Dry Tons/Year 230      Actual Dry Tons/Year 160		
9.3 Sludge storage provided: <u>435,000</u> Cubic feet; <u>860</u> Days of storage; <u>4.0</u> Average percent solids of sludge;  <input type="checkbox"/> No sludge storage is provided. <input type="checkbox"/> Sludge is stored in lagoon.		
9.4 Type of storage: <div style="display: inline-block; width: 45%;"> <input checked="" type="checkbox"/> Holding Tank      <input type="checkbox"/> Building  <input checked="" type="checkbox"/> Basin      <input type="checkbox"/> Lagoon  <input type="checkbox"/> Concrete Pad      <input type="checkbox"/> Other (Describe) _____ </div>		
9.5 Sludge Treatment: <div style="display: flex; justify-content: space-between; margin-top: 5px;"> <div> <input type="checkbox"/> Anaerobic Digester    <input checked="" type="checkbox"/> Storage Tank  <input type="checkbox"/> Aerobic Digester    <input type="checkbox"/> Air or Heat Drying </div> <div> <input type="checkbox"/> Lime Stabilization      <input type="checkbox"/> Lagoon  <input type="checkbox"/> Composting      <input type="checkbox"/> Other (Attach Description) </div> </div>		
9.6 Sludge use or disposal: <div style="display: flex; justify-content: space-between; margin-top: 5px;"> <div> <input checked="" type="checkbox"/> Land Application    <input checked="" type="checkbox"/> Contract Hauler    <input type="checkbox"/> Hauled to Another Treatment Facility  <input type="checkbox"/> Surface Disposal (Sludge Disposal Lagoon, Sludge Held For More Than Two Years)  <input type="checkbox"/> Other (Attach Explanation Sheet) _____ </div> <div> <input type="checkbox"/> Solid Waste Landfill  <input type="checkbox"/> Incineration </div> </div>		
9.7 Person responsible for hauling sludge to disposal facility: <input type="checkbox"/> By Applicant <input type="checkbox"/> By Others (complete below)		
NAME Sludge removal, hauling, and land application is contracted annually to an outside		EMAIL ADDRESS firm. Work is bid.
ADDRESS	CITY	STATE    ZIP CODE
CONTACT PERSON	TELEPHONE NUMBER WITH AREA CODE	PERMIT NO. MO-
9.8 Sludge use or disposal facility: <input type="checkbox"/> By Applicant <input type="checkbox"/> By Others (Complete below)		
NAME Same as 9.7.		EMAIL ADDRESS
ADDRESS	CITY	STATE    ZIP CODE
CONTACT PERSON	TELEPHONE NUMBER WITH AREA CODE	PERMIT NO. MO-
9.9 Does the sludge or biosolids disposal comply with Federal Sludge Regulation 40 CFR 503? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No    (Explain)		
<b>END OF PART A</b>		



GRAPHIC SCALE



THE "ORIGINAL" OF THIS DOCUMENT, WITH PROFESSIONAL ENGINEER'S SEAL & DATED SIGNATURE, IS ON FILE AT THE OFFICES OF ALLGEIER, MARTIN AND ASSOCIATES, INC.



**ALLGEIER, MARTIN**  
CONSULTING  
7231 EAST 24th STREET, J

W DIAGRAM

DWG. NO.

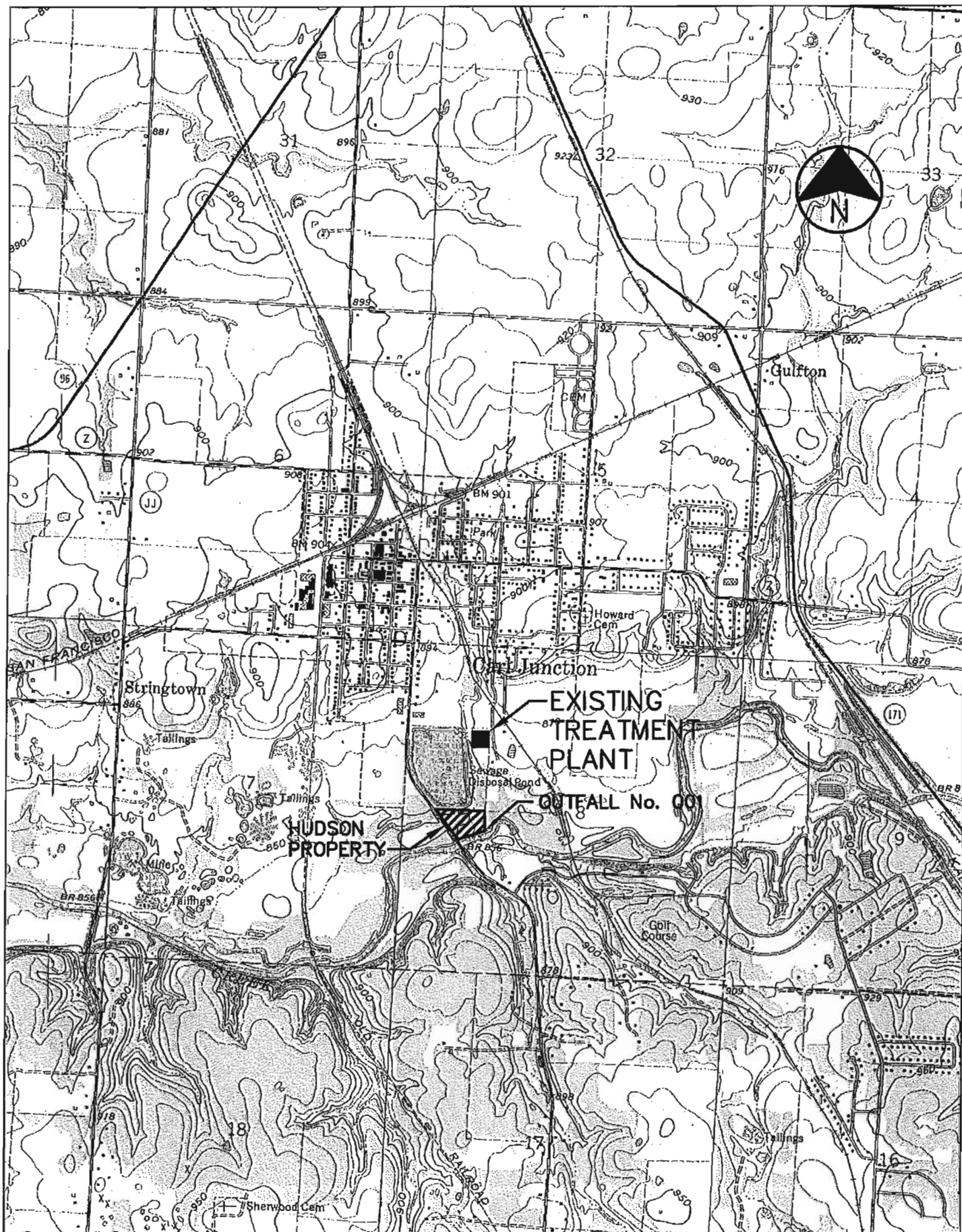


FIGURE 1 — LOCATION / TOPOGRAPHIC MAP

FACILITY NAME Carl Junction WWTF	PERMIT NO. MO- 0025186	OUTFALL NO. 1
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## PART B – ADDITIONAL APPLICATION INFORMATION

### 10. COLLECTION SYSTEM

10.1 Length of sanitary sewer collection system in miles  
52

10.2 Does significant infiltration occur in the collection system? ☒ Yes ☐ No

If yes, briefly explain any steps underway or planned to minimize inflow and infiltration:

A special sewer use charge has been established by the City to generate approximately \$150,000 annually to fund sewer system evaluation survey and sewer repair work. Flow monitoring, smoke testing, internal inspections and sewer repairs are ongoing.

### 11. BYPASSING

Does any bypassing occur anywhere in the collection system or at the treatment facility? Yes ☒ No ☐

If yes, explain:

Bypassing periodically occurs during major rainfall events. Bypassing is not a common occurrence.

### 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

N.A.

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.

None.

FACILITY NAME Carl Junction WWTF	PERMIT NO. MO- 0025186	OUTFALL NO. 1
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# **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.

Outfall Number

PARAMETER	MAXIMUM DAILY VALUE		AVERAGE DAILY VALUE		
	Value	Units	Value	Units	Number of Samples
pH (Minimum)	7.7	S.U.	NA	S.U.	48
pH (Maximum)	6.5	S.U.	NA	S.U.	48
Flow Rate	5.88	MGD	1.25	MGD	365

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

POLLUTANT	MAXIMUM DAILY DISCHARGE		AVERAGE DAILY DISCHARGE			ANALYTICAL METHOD	ML/MDL
	Conc.	Units	Conc.	Units	Number of Samples		

### Conventional and Nonconventional Compounds

BIOCHEMICAL OXYGEN DEMAND (Report One)	BOD <sub>5</sub>	20.0	mg/L	4.4	mg/L	24		
	CBOD <sub>5</sub>	NA	mg/L	NA	mg/L	NA		
E. COLI	20	#/100 mL	<10	#/100 mL	35			
TOTAL SUSPENDED SOLIDS (TSS)	21.0	mg/L	4.8	mg/L	24			
AMMONIA (as N)	1.8	mg/L	0.26	mg/L	25			
CHLORINE* (TOTAL RESIDUAL, TRC)	NA	mg/L	NA	mg/L	NA			
DISSOLVED OXYGEN	8.3	mg/L	5.8	mg/L	250			
OIL and GREASE	NA	mg/L	NA	mg/L	NA			
OTHER	NA	mg/L	NA	mg/L	NA			

\*Report only if facility chlorinates

**END OF PART B**

FACILITY NAME Carl Junction WWTF	PERMIT NO. MO- 0025186	OUTFALL NO. 1
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# **PART C – CERTIFICATION**

## **15. CERTIFICATION**

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

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

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

PRINTED NAME <i>Steven Lawver</i>	OFFICIAL TITLE (MUST BE AN OFFICER OF THE COMPANY OR CITY OFFICIAL) <i>City Administrator</i>
--------------------------------------	--

SIGNATURE <i>Steven Lawver</i>
-----------------------------------

TELEPHONE NUMBER WITH AREA CODE <i>(417) 649-7237</i>
--

DATE SIGNED <i>11/1/16</i>
-------------------------------

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

Send Completed Form to:

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

### **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 Carl Junction WWTF	PERMIT NO. MO- 0025186	OUTFALL NO. 1
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**PART D – EXPANDED EFFLUENT TESTING DATA**
**16. 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 million gallons per day or it has (or is required to have) a pretreatment program, or is otherwise required by the permitting authority to provide the data, then provide effluent testing data for the following pollutants. Provide the indicated effluent testing information **for each outfall through which effluent is discharged**. Do not include information 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. The facility shall use sufficiently sensitive analytical methods for detecting, identifying, and measuring the concentrations of pollutants. In addition, this data must comply with QA/QC requirements of 40 CFR Part 136 and other appropriate QA/QC requirements for standard methods for analytes not addressed by 40 CFR Part 136. Indicate in the blank rows provided below any data you may have on pollutants not specifically listed in this form. 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 apart.

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

POLLUTANT	MAXIMUM DAILY DISCHARGE				AVERAGE DAILY DISCHARGE					ANALYTICAL METHOD	ML/MDL
	Conc.	Units	Mass	Units	Conc.	Units	Mass	Units	No. of Samples		
<b>METALS (TOTAL RECOVERABLE), CYANIDE, PHENOLS AND HARDNESS</b>											
ALUMINUM											
ANTIMONY											
ARSENIC											
BERYLLIUM											
CADMIUM											
CHROMIUM III											
CHROMIUM VI											
COPPER											
IRON											
LEAD											
MERCURY											
NICKEL											
SELENIUM											
SILVER											
THALLIUM											
ZINC											
CYANIDE											
TOTAL PHENOLIC COMPOUNDS											
HARDNESS (as CaCO <sub>3</sub> )											
<b>VOLATILE ORGANIC COMPOUNDS</b>											
ACROLEIN											
ACRYLONITRILE											
BENZENE											
BROMOFORM											
CARBON TETRACHLORIDE											

FACILITY NAME Carl Junction WWTF

PERMIT NO. 0025186  
MO-

OUTFALL NO. 1

**PART D – EXPANDED EFFLUENT TESTING DATA****16. 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											
CHLORODIBROMO-METHANE											
CHLOROETHANE											
2-CHLORO-ETHYL VINYL ETHER											
CHLOROFORM											
DICHLOROBROMO-METHANE											
1,1-DICHLORO-ETHANE											
1,2-DICHLORO-ETHANE											
TRANS-1,2-DICHLOROETHYLENE											
1,1-DICHLORO-ETHYLENE											
1,2-DICHLORO-PROPANE											
1,3-DICHLORO-PROPYLENE											
ETHYLBENZENE											
METHYL BROMIDE											
METHYL CHLORIDE											
METHYLENE CHLORIDE											
1,1,2,2-TETRA-CHLOROETHANE											
TETRACHLORO-ETHANE											
TOLUENE											
1,1,1-TRICHLORO-ETHANE											
1,1,2-TRICHLORO-ETHANE											
TRICHLORETHYLENE											
VINYL CHLORIDE											
<b>ACID-EXTRACTABLE COMPOUNDS</b>											
P-CHLORO-M-CRESOL											
2-CHLOROPHENOL											
2,4-DICHLOROPHENOL											
2,4-DIMETHYLPHENOL											
4,6-DINITRO-O-CRESOL											
2,4-DINITROPHENOL											
2-NITROPHENOL											
4-NITROPHENOL											

FACILITY NAME	Carl Junction WWTF	PERMIT NO.	0025186	OUTFALL NO.	1
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# **PART D – EXPANDED EFFLUENT TESTING DATA**

## **16. 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											
PHENOL											
2,4,6-TRICHLOROPHENOL											
<b>BASE-NEUTRAL COMPOUNDS</b>											
ACENAPHTHENE											
ACENAPHTHYLENE											
ANTHRACENE											
BENZIDINE											
BENZO(A)ANTHRACENE											
BENZO(A)PYRENE											
3,4-BENZO-FLUORANTHENE											
BENZO(GH) PHERYLENE											
BENZO(K) FLUORANTHENE											
BIS (2-CHLOROTHOXY) METHANE											
BIS (2-CHLOROETHYL) – ETHER											
BIS (2-CHLOROISO-PROPYL) ETHER											
BIS (2-ETHYLHEXYL) PHTHALATE											
4-BROMOPHENYL PHENYL ETHER											
BUTYL BENZYL PHTHALATE											
2-CHLORONAPH-THALENE											
4-CHLORPHENYL PHENYL ETHER											
CHRYSENE											
DI-N-BUTYL PHTHALATE											
DI-N-OCTYL PHTHALATE											
DIBENZO (A,H) ANTHRACENE											
1,2-DICHLORO-BENZENE											
1,3-DICHLORO-BENZENE											
1,4-DICHLORO-BENZENE											
3,3-DICHLORO-BENZIDINE											
DIETHYL PHTHALATE											
DIMETHYL PHTHALATE											



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

FACILITY NAME Carl Junction WWTF	PERMIT NO. MO- 0025186	OUTFALL NO. 1
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**PART E – TOXICITY TESTING DATA**
**17. 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: 0 chronic 4 acute

Complete the following chart for the last three whole effluent toxicity tests. Allow one column per test. Copy this page if more than three tests are being reported.

	Most Recent	2 <sup>ND</sup> Most Recent	3 <sup>RD</sup> Most Recent
<b>A. Test Information</b>			
Test Method Number	EPA 821/R-02/012	EPA 821/R-02/012	EPA 821/R-02/012
Final Report Number	PACE # 60186468	PACE # 60176645	PACE # 60157477
Outfall Number	1	1	1
Dates Sample Collected	01/20/2015	08/27/2014	11/13/2013
Date Test Started	01/21/2015	08/27/2014	11/13/2013
Duration	48 Hours	48 Hours	48 Hours
<b>B. Toxicity Test Methods Followed</b>			
Manual Title			
Edition Number and Year of Publication			
Page Number(s)			
<b>C. Sample collection method(s) used. For multiple grab samples, indicate the number of grab samples used</b>			
24-Hour Composite	X	X	X
Grab			
<b>D. Indicate where the sample was taken in relation to disinfection (Check all that apply for each)</b>			
Before Disinfection	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
After Disinfection	<input type="checkbox"/> X	<input type="checkbox"/> X	<input type="checkbox"/> X
After Dechlorination	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>E. Describe the point in the treatment process at which the sample was collected</b>			
Sample Was Collected:	WWTP Effluent Structure	WWTP Effluent Structure	WWTP Effluent Structure
<b>F. Indicate whether the test was intended to assess chronic toxicity, acute toxicity, or both</b>			
Chronic Toxicity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Acute Toxicity	<input type="checkbox"/> X	<input type="checkbox"/> X	<input type="checkbox"/> X
<b>G. Provide the type of test performed</b>			
Static	<input type="checkbox"/> X	<input type="checkbox"/> X	<input type="checkbox"/> X
Static-renewal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Flow-through	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>H. Source of dilution water. If laboratory water, specify type; if receiving water, specify source</b>			
Laboratory Water	<input type="checkbox"/> X	<input type="checkbox"/> X	<input type="checkbox"/> X
Receiving Water	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

FACILITY NAME Carl Junction WWTF	PERMIT NO. MO- 0025186	OUTFALL NO. 1
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**PART E – TOXICITY TESTING DATA**
**17. 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			
	100 %	100%	100%
K. Parameters measured during the test (State whether parameter meets test method specifications)			
pH	X	X	X
Salinity			
Temperature	X	X	X
Ammonia	X		
Dissolved Oxygen	X	X	X
L. Test Results			
Acute:			
Percent Survival in 100% Effluent	100%	100%	100%
LC <sub>50</sub>	100%	100%	100%
95% C.I.			
Control Percent Survival			
Other (Describe)			
Chronic:			
NOEC			
IC <sub>25</sub>			
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)?	1/25/2015	08/29/2014	11/13/2013
Other (Describe)	Report Attached	Report Attached	Report Attached
Is the treatment works involved in a toxicity reduction evaluation? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
If yes, describe:			
If you have submitted biomonitoring test information, or information regarding the cause of toxicity, within the past four and one-half years, provide the dates the information was submitted to the permitting authority and a summary of the results.			
Date Submitted (MM/DD/YYYY) NA			
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.**

ATTACHMENT TO FORM B2 – PART D  
EXPANDED EFFLUENT TESTING DATA  
SECTION 16 – LABORATORY TEST RESULTS

The City of Carl Junction's Missouri State Operating Permit does not require testing for those pollutants set forth in Part D of Form B-2, therefore that information is not currently available. As a part of this permit application process the City has recently initiated the required testing for metals, VOCs, acid-extractable compounds, and base neutral compounds. At the recommendation of the MDNR staff, laboratory results will be submitted to MDNR as they are received. The initial sample has been sent to the lab for testing, and the second and third samples will be obtained approximately 2 months and 4 months from now, respectively.



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

February 02, 2015

Dwayne Hole  
City of Carl Junction  
PO Box 447  
815 South Joplin St  
Carl Junction, MO 64834


RE: Project: ACUTE TOXICITY  
Pace Project No.: 60186468

Dear Dwayne Hole:

Enclosed are the analytical results for sample(s) received by the laboratory on January 20, 2015. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI 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,

  
Emily Webb for  
Richard Mannz  
richard.mannz@pacelabs.com  
PM Lab Management

Enclosures



#### REPORT OF LABORATORY ANALYSIS

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## CERTIFICATIONS

Project: ACUTE TOXICITY  
Pace Project No.: 60186468

---

### Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219  
WY STR Certification #: 2456.01  
Arkansas Certification #: 13-012-0  
Illinois Certification #: 003097  
Iowa Certification #: 118  
Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055  
Nevada Certification #: KS000212008A  
Oklahoma Certification #: 9205/9935  
Texas Certification #: T104704407  
Utah Certification #: KS00021

---

### Southeast Kansas Certification IDs

808 West McKay, Frontenac, KS 66763  
Arkansas Certification #: 13-012-0  
Iowa Certification #: 118  
Kansas/NELAP Certification #: E-10116  
Louisiana Certification #: 03055

Oklahoma Certification #: 2012-051  
Texas Certification #: T104704407-13-4  
Utah Certification #: KS000212013-3  
Minnesota Certification #: 495004

---

## REPORT OF LABORATORY ANALYSIS

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Lenexa, KS 66219  
(913)599-5665

## SAMPLE SUMMARY

Project: ACUTE TOXICITY  
Pace Project No.: 60186468

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60186468001	EFFLUENT	Water	01/20/15 08:00	01/20/15 09:35
60186468003	EFFLUENT	Water	01/20/15 08:00	01/20/15 18:13

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### SAMPLE ANALYTE COUNT

Project: ACUTE TOXICITY  
Pace Project No.: 60186468

Lab ID	Sample ID	Method	Analysts	Analytes Reported
60186468001	EFFLUENT	EPA 821/R-02/012	TDH	1
60186468003	EFFLUENT	EPA 350.1	OL	1

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## ANALYTICAL RESULTS

Project: ACUTE TOXICITY  
Pace Project No.: 60186468

Sample: EFFLUENT		Lab ID: 60186468001	Collected: 01/20/15 08:00	Received: 01/20/15 09:35	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
Acute Toxicity		Analytical Method: EPA 821/R-02/012						
Toxicity, Acute	Complete		1.0	1		01/21/15 14:30		

Sample: EFFLUENT		Lab ID: 60186468003	Collected: 01/20/15 08:00	Received: 01/20/15 18:13	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
350.1 Ammonia		Analytical Method: EPA 350.1						
Nitrogen, Ammonia	1.6 mg/L		0.10	1		01/25/15 10:29	7664-41-7	

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### QUALITY CONTROL DATA

Project: ACUTE TOXICITY  
Pace Project No.: 60186468

QC Batch: WETA/32622 Analysis Method: EPA 350.1  
QC Batch Method: EPA 350.1 Analysis Description: 350:1 Ammonia  
Associated Lab Samples: 60186468003

METHOD BLANK: 1511688 Matrix: Water  
Associated Lab Samples: 60186468003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, Ammonia	mg/L	ND	0.10	01/25/15 10:00	

LABORATORY CONTROL SAMPLE: 1511689

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, Ammonia	mg/L	2	2.1	104	90-110	

MATRIX SPIKE SAMPLE: 1511690

Parameter	Units	60186510003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Nitrogen, Ammonia	mg/L	1.4	2	1.8	18	90-110 M1	

MATRIX SPIKE SAMPLE: 1511692

Parameter	Units	60186581002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Nitrogen, Ammonia	mg/L	24.6	10	31.6	69	90-110 M1	

SAMPLE DUPLICATE: 1511691

Parameter	Units	60186540003 Result	Dup Result	RPD	Max RPD	Qualifiers
Nitrogen, Ammonia	mg/L	<0.10	ND		18	

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

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## QUALIFIERS

Project: ACUTE TOXICITY  
Pace Project No.: 60186468

### DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.  
ND - Not Detected at or above adjusted reporting limit.  
J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.  
MDL - Adjusted Method Detection Limit.  
PQL - Practical Quantitation Limit.  
RL - Reporting Limit.  
S - Surrogate  
1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.  
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.

### ANALYTE QUALIFIERS

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

## REPORT OF LABORATORY ANALYSIS

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Lenexa, KS 66219  
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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: ACUTE TOXICITY  
Pace Project No.: 60186468

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60186468001	EFFLUENT	EPA 821/R-02/012	BIO/1778		
60186468003	EFFLUENT	EPA 350.1	WETA/32622		

### REPORT OF LABORATORY ANALYSIS

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# Sample Condition Upon Receipt

WO#: 60186468



60186468

Client Name: Carl Junction

Courier: Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace ☐ Other ☒ Vin

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 ☒ zip

Thermometer Used: T-239 T-194

Type of Ice: Wet Blue ☐ None ☐ Samples received on ice, cooling process has begun.  
(circle one)

Cooler Temperature: 1.3

Date and initials of person examining contents: 8/12/15

Temperature should be above freezing to 6°C.

Chain of Custody present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody filled out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler name & signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples arrived within holding time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time analyses (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Pace containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
Containers intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Unpreserved 5035A soils frozen w/in 48hrs?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Filtered volume received for dissolved tests?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	12.
Sample labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Includes date/time/ID/analyses	Matrix: <u>WT</u>	13.
All containers needing preservation have been checked.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
All containers needing preservation are found to be in compliance with EPA recommendation.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	14.
Exceptions: VOA, coliform, TOC, O&G, WI-DRO (water), Phenolics	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Initial when completed
Trip Blank present:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Lot # of added preservative
Pace Trip Blank lot # (if purchased):		15.
Headspace in VOA vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	16.
Project sampled in USDA Regulated Area:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	17. List State:

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

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

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

Project Manager Review: [Signature]

Date: 1/21/2015



# Sample Condition Upon Receipt

60186468

Client Name: Carl Junction

Courier: Fed Ex ☐ UPS ☐ USPS ☐ Client ☒ Commercial ☐ Pace ☐ Other ☐

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

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

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

Thermometer Used: T-243

Type of Ice: Wet Blue ☐ None ☐ Samples received on ice, cooling process has begun.  
(circle one)

Cooler Temperature: 2.8

Temperature should be above freezing to 6°C

Date and Initials of person examining contents: 1/20/15 MB 0935

Chain of Custody present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody filled out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler name & signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples arrived within holding time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time analyses (<72hr):	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time requested:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
Pace containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Containers intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	11.
Unpreserved 5035A soils frozen w/in 48hrs?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	12.
Filtered volume received for dissolved tests?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13.
Sample labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	14.
Includes date/time/ID/analyses	Matrix: <u>WT</u>	15.
All containers needing preservation have been checked.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	16.
All containers needing preservation are found to be in compliance with EPA recommendation.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	17.
Exceptions VOA coliform, TOC, O&G, W, DRO (water), Phenolics	<u>MB</u> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Initial when completed
Trip Blank present:	<u>1/20/15</u> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Lot # of added preservative
Pace Trip Blank lot # (if purchased):		18.
Headspace in VOA vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	19.
Project sampled in USDA Regulated Area:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	20. List State:

Client Notification/ Resolution:

Copy COC to Client? Y / N

Field Data Required? Y / N

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

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

Project Manager Review: Richard [Signature]

Date: 1/21/2015

Page 10 of 11

# CHAIN-OF-CUSTODY / Analytical Request Document

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



<b>Section A</b> Required Client Information: Company: City of Carl Junction Address: 815 South Joplin Street Carl Junction, MO 64834 Email To: Phone: 417-649-7686 Fax: 417-649-6843 Requested Due Date/TAT:		<b>Section B</b> Required Project Information: Report To: Dwayne Hole (PO Box 447) Copy To: Purchase Order No.: MB 1/20/15 Project Name: Monthly NPDES Sampling Project Number:		<b>Section C</b> Invoice Information: Attention: Company Name: City of Carl Junction Address: PO BOX 447, Carl Junction 64834 Place Quote Reference: Place Project Manager: Richard Mannz (314) 838-7223 Place Profile #: 122		<b>REGULATORY AGENCY</b> <input checked="" type="checkbox"/> NPDES <input type="checkbox"/> GROUND WATER <input type="checkbox"/> DRINKING WATER <input type="checkbox"/> UST <input type="checkbox"/> RCRA <input type="checkbox"/> OTHER Site Location: MO STATE:	
<b>Section D</b> Required Client Information SAMPLE ID (A-Z, 0-9 / -) Sample IDs MUST BE UNIQUE		Valid Matrix Codes CODE DWY DRINKING WATER WWT WASTE WATER P PRODUCT SOILS SOIL OL OIL WPLE WASTE PESTICIDE AIR AIR OT OTHER TS TISSUE		MATRIX CODE (use bold codes to left) WT G		RELINQUISHED BY / AFFILIATION DATE TIME	
COLLECTED COMPOSITE START DATE TIME COMPOSITE END DATE TIME		SAMPLE TEMP AT COLLECTION DATE TIME		ACCEPTED BY / AFFILIATION DATE TIME		SAMPLE CONDITIONS Temp in °C Received on ice (Y/N) Custody Sealed (Y/N) Samples Intact (Y/N)	
SAMPLE TYPE (S, B, G, C, COMP) DATE TIME		# OF CONTAINERS DATE TIME		PRESERVATIVES H <sub>2</sub> SO <sub>4</sub> HNO <sub>3</sub> HCl NaOH Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> Other		Requested Analysis Filtered (Y/N)	
ADDITIONAL COMMENTS Do NOT USE UPSTREAM Effluent Upstream		ANALYSIS TEST DATE TIME		Pace Project No. / Lab ID 60186468		Residual Chlorine (Y/N)	

Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-Feb-2007



PACE # 60186468

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

January 26, 2015

Dwayne Hole  
City of Carl Junction  
35415 West 79<sup>th</sup> street  
Carl Junction, KS 66018

Re: Lab Project Number: 60186468  
Client Project ID: Wet Test

Dear:

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

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

Sincerely,

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

## REPORT OF LABORATORY ANALYSIS

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PACE # 60186468

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

## Pace Analytical Services, Inc.

808 West McKay, Frontenac, KS 66763

### LABORATORY REPORT:

<b>CLIENT:</b> Dwayne Hole City of Carl Junction P.O Box 447 Carl Junction, MO 64834	<b>Date Reported:</b> 1-26-15 <b>Date Initiated:</b> 1-21-15 <b>Time Set:</b> 14:30 <b>Date Terminated:</b> 1-23-15
---	--

### BIOMONITORING STUDY

#### ACUTE TOXICITY

Permit # MO-0134139

### FINDING AND CONCLUSIONS:

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

### SAMPLING PROCEDURES:

City of Carl Junction personnel collected a sample at the City of Carl Junction effluent discharge. The sample was preserved with ice and transported to Pace Analytical by City of Carl Junction personnel.

### REPORT OF LABORATORY ANALYSIS

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PACE # 60186468

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

## INTRODUCTION:

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

## TEST ORGANISMS:

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

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

## MATERIALS AND METHODS:

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

City of Carl Junction personnel collected the effluent tested from the City of Carl Junction discharge. Testing was performed using a 100% effluent, a series of dilutions, an upstream, and a synthetic control. The toxicity test was initiated within 36 hours of sample collection.

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

## Ceriodaphnia ACUTE METHODS:

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

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#### **Pimephales ACUTE METHODS:**

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

#### **WATER QUALITY METHODS:**

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

#### **DATA ANALYSIS:**

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

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Fax: 913.599.1759

August 29, 2014

Dwayne Hole  
City of Carl Junction  
35415 West 79<sup>th</sup> street  
Carl Junction, KS 66018

Re: Lab Project Number: 60176645  
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 NELAP standards, where applicable, unless otherwise narrated in the body of the report.

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

Sincerely,

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

## REPORT OF LABORATORY ANALYSIS

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## Pace Analytical Services, Inc.

808 West McKay, Frontenac, KS 66763

### LABORATORY REPORT:

CLIENT: Dwayne Hole City of Carl Junction P.O Box 447 Carl Junction, MO 64834	Date Reported: 8-29-14 Date Initiated: 8-27-14 Time Set: 11:30 Date Terminated: 8-29-14
--	--

### BIOMONITORING STUDY

#### ACUTE TOXICITY

Permit # MO-0134139

### FINDING AND CONCLUSIONS:

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

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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 1-1 days. Information for culturing fathead minnows was taken from EPA821-C-02-006 November 2002.

## MATERIALS AND METHODS:

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

City of Carl Junction personnel collected the effluent tested from the City of Carl Junction discharge. Testing was performed using a 100% effluent, a series of dilutions, an Upstream, and a synthetic control. The toxicity test was initiated within 36 hours of sample collection.

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

## Ceriodaphnia ACUTE METHODS:

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

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#### Pimephales ACUTE METHODS:

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

#### **WATER QUALITY METHODS:**

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

#### **DATA ANALYSIS:**

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

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## RESULTS:

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

### 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
Upstream	1	5	5	5	0
"	2	5	5	5	0
"	3	5	5	5	0
"	4	5	5	5	0
6.25%	1	5	5	5	0
"	2	5	5	5	0
"	3	5	5	5	0
"	4	5	5	5	0
12.5%	1	5	5	5	0
"	2	5	5	5	0
"	3	5	5	5	0
"	4	5	5	5	0
25%	1	5	5	5	0
"	2	5	5	5	0
"	3	5	5	5	0
"	4	5	5	5	0
50%	1	5	5	5	0
"	2	5	5	5	0
"	3	5	5	5	0
"	4	5	5	5	0
100%	1	5	5	5	0
"	2	5	5	5	0
"	3	5	5	5	0
"	4	5	5	5	0

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

## REPORT OF LABORATORY ANALYSIS

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

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
Upstream	1	10	10	10	0
"	2	10	10	10	0
"	3	10	10	10	0
"	4	10	10	10	0
6.25%	1	10	10	10	0
"	2	10	10	9	10
"	3	10	10	10	0
"	4	10	10	10	0
12.5%	1	10	10	10	0
"	2	10	10	10	0
"	3	10	10	10	0
"	4	10	10	10	0
25%	1	10	10	10	0
"	2	10	10	10	0
"	3	10	10	10	0
"	4	10	10	10	0
50%	1	10	10	10	0
"	2	10	10	10	0
"	3	10	10	10	0
"	4	10	10	10	0
100%	1	10	10	10	0
"	2	10	10	10	0
"	3	10	10	10	0
"	4	10	10	10	0

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

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### 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
Upstream	1	5	0	0	100
"	2	5	0	0	100
"	3	5	0	0	100
"	4	5	0	0	100
6.25%	1	5	5	5	0
"	2	5	5	5	0
"	3	5	5	5	0
"	4	5	5	5	0
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"	3	5	5	5	0
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"	2	5	5	5	0
"	3	5	5	5	0
"	4	5	5	5	0
50%	1	5	5	5	0
"	2	5	5	5	0
"	3	5	5	5	0
"	4	5	5	5	0
100%	1	5	5	5	0
"	2	5	5	5	0
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AVG. MORTALITY @ AEC (100% EFFLUENT) =0.0%

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

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**WATER CHEMISTRY RESULTS:**

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

Dissolved Oxygen (D.O.) - Dissolved oxygen reading of the 100% effluent sample was 7.30 mg/l after being raised to the test temperature of 25° C. At termination D.O. was 7.00 mg/l in the 100% effluent, which falls into acceptable limits. Aeration was not required in this test.

pH - The pH of the 100% effluent was 8.09 upon receipt in the laboratory and the synthetic control had a 7.56. At termination the pH measurement in the 100% effluent sample was 8.38.

Conductance - The conductance of the effluent sample was 717 umhos and the synthetic control was 380 umhos.

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**INITIAL WATER QUALITY:**

Initial Measurements Synthetic Water

pH	D.O. (mg/l)	Cond. (umhos)	Cl2 (mg/l)	Temp (C)	Hard (mg/l)	Alk (mg/l)
7.56	8.10	380	<0.1	25.0	86	58

Initial Measurements of Upstream

PH	D.O. (mg/l)	Cond. (umhos)	Cl2 (mg/l)	Temp (C)	Hard (mg/l)	Alk (mg/l)
7.79	7.30	480	<0.1	25.0	216	160

Initial Measurements of 100% Effluent

PH	D.O. (mg/l)	Cond. (umhos)	Cl2 (mg/l)	Temp (C)	Hard (mg/l)	Alk (mg/l)
8.09	7.30	717	<0.1	25.0	216	160

**TEST WATER QUALITY:**

24-hour Water Quality Measurements

EFFLUENT CONC (%)	PH	D.O. (mg/l)	TEMP (C)	COND. (umhos)
Synthetic	7.83	7.00	24.9	450
Upstream	8.18	7.20	24.9	532
6.25%	7.88	7.00	24.9	456
12.5%	8.03	7.00	24.9	467
25%	8.04	7.00	24.9	526
50%	8.14	7.10	24.9	614
100%	8.27	7.10	24.9	728

48-hour Water Quality Measurements

EFFLUENT CONC (%)	PH	D.O. (mg/l)	TEMP (C)	COND. (umhos)
Synthetic	7.84	6.40	24.8	459
Upstream	8.23	6.60	24.8	535
6.25%	7.92	6.50	24.8	489
12.5%	8.10	6.50	24.8	509
25%	8.14	6.70	24.8	542
50%	8.21	6.80	24.8	600
100%	8.38	7.00	24.8	773

**REPORT OF LABORATORY ANALYSIS**



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#### QUALITY ASSURANCE:

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

#### REFERENCE TOXICANT (NaCl)

Ceriodaphnia

# OF LIVE ORGANISMS

CONC OF TOXICANT	TEST INITIATION	24 HOUR EXPOSURE	48 HOUR EXPOSURE
3.0 g/l	20	3	0
2.5 g/l	20	15	6
2.0 g/l	20	20	19
1.5 g/l	20	20	20
1.0 g/l	20	20	20

LC50 = 2.35 g/l NaCl

#### REFERENCE TOXICANT (NaCl)

Pimephales

# OF LIVE ORGANISMS

CONC OF TOXICANT	TEST INITIATION	24 HOUR EXPOSURE	48 HOUR EXPOSURE
10.0 g/l	40	7	0
8.0 g/l	40	37	27
6.0 g/l	40	39	38
4.0 g/l	40	40	40
2.0 g/l	40	40	40

LC50 = 8.36 g/l NaCl

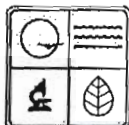
Submitted By:

*Tim Harrell*  
Timothy Harrell  
Technical Director

## REPORT OF LABORATORY ANALYSIS

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MISSOURI DEPARTMENT OF NATURAL RESOURCES  
WATER PROTECTION PROGRAM

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

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

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

FACILITY NAME		DATE AND TIME COLLECTED EFFLUENT <u>  </u> UPSTREAM <u>  </u>	
PERMIT NUMBER		PERMIT OUTFALL NUMBER	
COLLECTOR'S NAME			
RECEIVING STREAM COLLECTION SITE AND DESCRIPTION			
PERMIT ALLOWABLE EFFLUENT CONCENTRATION (AEC) <u>100 mg/L</u>		EFFLUENT SAMPLE TYPE (CHECK ONE) <input type="checkbox"/> 24 HR COMPOSITE <input type="checkbox"/> GRAB <input type="checkbox"/> OTHER <u>  </u>	
SAMPLE NUMBER EFFLUENT <u>  </u> UPSTREAM <u>STREAM</u>		UPSTREAM SAMPLE TYPE (CHECK ONE) <input type="checkbox"/> 24 HR COMPOSITE <input type="checkbox"/> GRAB <input type="checkbox"/> OTHER <u>  </u>	
PERMITTED EFFLUENT DAILY MAXIMUM LIMITATION FOR CHLORINE <u>NA</u> mg/L		PERMITTED EFFLUENT DAILY MAXIMUM LIMITATION FOR AMMONIA <u>  </u> mg/L	

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

PERFORMING LABORATORY PACE ANALYTICAL SERVICES		TEST TYPE Acute	
FINAL REPORT NUMBER 60186468		TEST DURATION 48 HOURS	
DATE OF LAST REFERENCE TOXICANT TESTING 1/7/15		TEST METHOD EPA 2000 AND 2002	
DATE AND TIME SAMPLES RECEIVED AT LABORATORY 1/20/15 9:35		TEST START DATE AND TIME 1/21/15 14:30	TEST END DATE AND TIME 1/23/15 13:00
SAMPLE DECHLORINATED PRIOR TO ANALYSIS? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO EFFLUENT <u>  </u> UPSTREAM <u>  </u>		TEST ORGANISM #1 AND AGE DUBIA <24 HOURS	TEST ORGANISM #2 AND AGE FATHEAD 8 DAYS
SAMPLE FILTERED <sup>1</sup> PRIOR TO ANALYSIS? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO EFFLUENT <u>  </u> UPSTREAM <u>  </u>		90 PERCENT OR GREATER SURVIVAL IN SYNTHETIC CONTROL? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	DILUTION WATER USED TO ACHIEVE AEC
FILTER MESH SIEVE SIZE 2		EFFLUENT ORGANISM #1 PERCENT MORTALITY AT AEC 0	EFFLUENT ORGANISM #2 PERCENT MORTALITY AT AEC 0
SAMPLE AERATED DURING TESTING? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		UPSTREAM ORGANISM #1 PERCENT MORTALITY 100	UPSTREAM ORGANISM #2 PERCENT MORTALITY 0
pH ADJUSTED? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO EFFLUENT <u>  </u> UPSTREAM <u>  </u>		TEST RESULT AT AEC FOR ORGANISM #1 <input checked="" type="checkbox"/> PASS <input type="checkbox"/> FAIL	TEST RESULT AT AEC FOR ORGANISM #2 <input checked="" type="checkbox"/> PASS <input type="checkbox"/> FAIL

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

PARAMETER	RESULT	METHOD	WHEN ANALYZED
Temperature °C	25	SM 2550B	1/21/15
pH Standard Units	8.09	SM 4500-H+ B	1/21/15
Conductance µMhos	717	EPA 120.1	1/21/15
Dissolved Oxygen mg/L	7.30	SM 4500-O G	1/21/15
Total Residual Chlorine mg/L	<.1	SM 4500-CL G	1/21/15
Unionized Ammonia mg/L			
* Total Alkalinity mg/L	160	SM 2320 B	1/21/15
* Total Hardness mg/L	216	SM2340 C	1/21/15

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

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

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

**WHOLE EFFLUENT TOXICITY (WET) TEST REPORT (Continued)**

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

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

PARAMETER	RESULT	METHOD	WHEN ANALYZED
Temperature °C	25	SM 2550B	1/21/15
pH Standard Units	7.79	SM 4500-H+ B	1/21/15
Conductance µMols	480	EPA 120.1	1/21/15
Dissolved Oxygen mg/L	7.30	SM 4500-O G	1/21/15
Total Residual Chlorine mg/L	<.1	SM 4500-CL G	1/21/15
Unionized Ammonia mg/L			
* Total Alkalinity mg/L	160	SM 2320 B	1/21/15
* Total Hardness mg/L	216	SM2340 C	1/21/15

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

**PRELIMINARY TEST ACCEPTABILITY MATRIX (FOR USE BY PERMITTEE IN DETERMINING TEST VALIDITY)****MINIMUM REQUIRED ANALYTICAL RESULTS FOR THE 100 PERCENT UPSTREAM SAMPLE<sup>3</sup>****PERMIT ALLOWABLE EFFLUENT CONCENTRATION, or AEC:** As indicated on permit. Test is invalid otherwise.**EFFLUENT SAMPLE TYPE:** As indicated on permit. Test is invalid otherwise.**TEST TYPE:** Acute Static Non-Renewal Test or other as indicated on permit. Test is invalid otherwise.**TEST DURATION:** Forty-eight hours or as indicated on permit. Test is invalid otherwise.**TEST ORGANISMS:** As indicated on permit. Test is invalid otherwise.**DILUTION WATER USED TO ACHIEVE AEC:** Upstream receiving water required if available.**TEST METHOD:** The only acceptable method is the **most current** edition of *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms*, or other as specifically assigned by EPA for determining National Pollutant Discharge Elimination System, or NPDES, compliance. Test is invalid otherwise.**TEST START DATE AND TIME:** Unless otherwise specified in writing by EPA, if >36 hours lapse between collection and initiation, test is invalid.**FILTER MESH SIEVE SIZE:** Unless otherwise specified in writing by EPA, if sieve size is smaller than 60 microns, test is invalid.**90 PERCENT OR GREATER SURVIVAL IN LABORATORY CONTROL(S) (Y/N):** If no, test is invalid.

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

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

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

Section A Required Client Information:				Section B Required Project Information:				Section C Invoice Information:			
Company: City of Carl Junction				Report To: Dwayne Hole (PO Box 447)				Attention:			
Address: 815 South Joplin Street				Copy To:				Company Name: City of Carl Junction			
Carl Junction, MO 64834				Purchase Order No.: MJB 1/20/15				Address: PO BOX 447, Carl Junction 64834			
Phone: 417-649-7686 Fax: 417-649-6843				Project Name: Monthly NPDES Sampling ACUTE Toxicity				Page Quote Reference: Richard Mannz (314) 838-7223			
Requested Due Date/TAT:				Project Number:				Page Profile #: 122			
<b>REGULATORY AGENCY</b>											
<input type="checkbox"/> NPDES <input type="checkbox"/> GROUND WATER <input type="checkbox"/> DRINKING WATER <input checked="" type="checkbox"/> UST <input type="checkbox"/> RCRA <input type="checkbox"/> OTHER _____ Site Location STATE: MO											

Section D Require Client Information		Valid Matrix Codes		COLLECTED				SAMPLE TEMP AT COLLECTION		Preservatives		Analysis Test		Residual Chlorine (Y/N)		
MATRIX CODE	CODE	MATRIX CODE	CODE	COMPOSITE START	COMPOSITE END/GRA	DATE	TIME	# OF CONTAINERS	Unpreserved	H <sub>2</sub> SO <sub>4</sub>	HNO <sub>3</sub>	HCl	NaOH	Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub>	Methanol	Other
ITEM #																
1	Output #1 Ecolit	G	C-19-143-HOI	12:00 PM	8 AM			1	X							
2	Effluent	C	1-A-18-BAM	12:00 PM	5:30 PM			1	X							
3	UPSTREAM	G	1-20-18-BAM	12:00 PM	8 AM			1	X							
4																
5																
6																
7																
8																
9																
10																
11																
12																

ADDITIONAL COMMENTS		RELINQUISHED BY / AFFILIATION		DATE		TIME		ACCEPTED BY / AFFILIATION		DATE		TIME	
Do not use upstream		Thayer Hall		1-20-15		0935		J. S. Vance		1-20-15		0935	
		Jeffrey Price		1-20-15		1600							

SAMPLER NAME AND SIGNATURE			
PRINT Name of SAMPLER: Thayer Hall			
SIGNATURE of SAMPLER: [Signature]			
DATE Signed (MM/DD/YYYY): 1-20-15			

SAMPLE CONDITIONS			
Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
	X	X	X



PACE # 60176645

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

#### WATER CHEMISTRY RESULTS:

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

Dissolved Oxygen (D.O.) - Dissolved oxygen reading of the 100% effluent sample was 7.90 mg/l after being raised to the test temperature of 25° C. At termination D.O. was 6.80 mg/l in the 100% effluent, which falls into acceptable limits. Aeration was not required in this test.

pH - The pH of the 100% effluent was 7.79 upon receipt in the laboratory and the synthetic control had a 7.47. At termination the pH measurement in the 100% effluent sample was 8.25.

Conductance - The conductance of the effluent sample was 741 umhos and the synthetic control was 388 umhos.

## REPORT OF LABORATORY ANALYSIS

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PACE # 60176645

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 Lenexa, KS 66219  
 Phone: 913.599.5665  
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**INITIAL WATER QUALITY:**

**Initial Measurements Synthetic Water**

pH	D.O. (mg/l)	Cond. (umhos)	Cl2 (mg/l)	Temp (C)	Hard (mg/l)	Alk (mg/l)
7.47	7.90	388	<0.1	25.0	98	62

**Initial Measurements of Upstream**

PH	D.O. (mg/l)	Cond. (umhos)	Cl2 (mg/l)	Temp (C)	Hard (mg/l)	Alk (mg/l)
7.95	7.60	463	<0.1	25.0	242	198

**Initial Measurements of 100% Effluent**

PH	D.O. (mg/l)	Cond. (umhos)	Cl2 (mg/l)	Temp (C)	Hard (mg/l)	Alk (mg/l)
7.79	7.90	741	<0.1	25.0	216	154

**TEST WATER QUALITY:**

**24-hour Water Quality Measurements**

EFFLUENT CONC (%)	PH	D.O. (mg/l)	TEMP (C)	COND. (umhos)
Synthetic	7.65	7.40	25.1	396
Upstream	8.03	7.20	25.1	481
6.25%	7.70	7.40	25.1	413
12.5%	7.70	7.40	25.1	424
25%	7.73	7.40	25.1	477
50%	7.78	7.30	25.1	596
100%	7.88	7.10	25.1	775

**48-hour Water Quality Measurements**

EFFLUENT CONC (%)	PH	D.O. (mg/l)	TEMP (C)	COND. (umhos)
Synthetic	7.69	7.10	25.0	402
Upstream	8.31	6.90	25.0	501
6.25%	7.89	7.10	25.0	413
12.5%	7.99	7.10	25.0	430
25%	8.02	7.00	25.0	496
50%	8.14	6.90	25.0	625
100%	8.25	6.80	25.0	811

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#### QUALITY ASSURANCE:

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

#### REFERENCE TOXICANT (NaCl)

Ceriodaphnia

# OF LIVE ORGANISMS

CONC OF TOXICANT	TEST INITIATION	24 HOUR EXPOSURE	48 HOUR EXPOSURE
3.0 g/l	20	3	0
2.5 g/l	20	15	6
2.0 g/l	20	20	19
1.5 g/l	20	20	20
1.0 g/l	20	20	20

LC50 = 2.35 g/l NaCl

#### REFERENCE TOXICANT (NaCl)

Pimephales

# OF LIVE ORGANISMS

CONC OF TOXICANT	TEST INITIATION	24 HOUR EXPOSURE	48 HOUR EXPOSURE
10.0 g/l	40	7	0
8.0 g/l	40	36	27
6.0 g/l	40	39	38
4.0 g/l	40	40	40
2.0 g/l	40	40	40

LC50 = 8.36 g/l NaCl

Submitted By:

*Tim Harrell*  
Timothy Harrell  
Technical Director

## REPORT OF LABORATORY ANALYSIS

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**Section A**

**Section B**

**Section C**

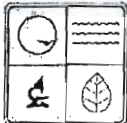
Invoice Information:

<b>Required Client Information:</b>		<b>Report To:</b> Dwayne Hole (PO Box 447)		<b>Company Name:</b> City of Carl Junction	
<b>Company:</b> City of Carl Junction		<b>Address:</b> 815 South Joplin Street		<b>Address:</b> PO Box 447, Carl Junction 64834	
<b>Address:</b> 815 South Joplin Street		<b>Copy To:</b>		<b>Reference:</b> Richard Mannz (314) 838-7223	
<b>Email To:</b> Carl Junction, MO 64834		<b>Purchase Order No.:</b>		<b>State Location:</b> MO	
<b>Phone:</b> 417-649-7686		<b>Fax:</b> 417-649-6843		<b>Project Name:</b> Monthly NPDES Sampling	
<b>Requested Due Date/AT:</b>		<b>Project Number:</b>		<b>State:</b> MO	

ITEM #	Section D Required Client Information	Valid Matrix Codes MATRIX CODE CODE DW WT WW P SL OL WP AR OT TS	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED		SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives	Analysis Test	Requested Analysis Filtered (Y/N)	Residual Chlorine (Y/N)	Pace Project No./Lab I.D.
					COMPOSITE START	COMPOSITE END/DATE							
1	Outfall #1 Ecol		WT G	C	8/27/14	8/27/14	8/27/14	1	Unpreserved	E. COLI			15057
2	EFF		WT G	C	8/27/14	8/27/14	8/27/14	2	H <sub>2</sub> SO <sub>4</sub>	TEST			15057
3	WATER		WT G	C	8/27/14	8/27/14	8/27/14	1	HNO <sub>3</sub>				15057
4	WASTE WATER		WT G	C	8/27/14	8/27/14	8/27/14	1	HCl				15057
5	WASTE WATER		WT G	C	8/27/14	8/27/14	8/27/14	1	NaOH				15057
6	WASTE WATER		WT G	C	8/27/14	8/27/14	8/27/14	1	Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub>				15057
7	WASTE WATER		WT G	C	8/27/14	8/27/14	8/27/14	1	Methanol				15057
8	WASTE WATER		WT G	C	8/27/14	8/27/14	8/27/14	1	Other				15057
9	WASTE WATER		WT G	C	8/27/14	8/27/14	8/27/14	1					15057
10	WASTE WATER		WT G	C	8/27/14	8/27/14	8/27/14	1					15057
11	WASTE WATER		WT G	C	8/27/14	8/27/14	8/27/14	1					15057
12	WASTE WATER		WT G	C	8/27/14	8/27/14	8/27/14	1					15057

<b>RELIQUISHED BY / AFFILIATION</b>		<b>DATE</b>		<b>TIME</b>		<b>ACCEPTED BY / AFFILIATION</b>		<b>DATE</b>		<b>TIME</b>		<b>SAMPLE CONDITIONS</b>	
Richard Mannz		8/27/14		9:30		Richard Mannz		8/27/14		09:30		3.7	
<b>SAMPLER NAME AND SIGNATURE</b>		<b>PRINT Name of SAMPLER:</b> Dwayne Hole		<b>SIGNATURE of SAMPLER:</b> Dwayne Hole		<b>DATE Signed (MM/DD/YY):</b> 8/27-14		<b>Temp in °C</b>		<b>Received on Ice (Y/N)</b>		<b>Custody Sealed Cooler (Y/N)</b>	

\*Important Note: By signing this form, you are accepting Pace's NET 30 day payment terms and agreeing to rate changes of 1.5% per month for any invoices not paid within 30 days.



MISSOURI DEPARTMENT OF NATURAL RESOURCES  
WATER PROTECTION PROGRAM

WHOLE EFFLUENT TOXICITY (WET) TEST REPORT

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

<b>PART A - TO BE COMPLETED IN FULL BY PERMITTEE</b>		8:00 AM TO 8:00 PM	
FACILITY NAME <b>CARL Junction WWTF</b>		DATE AND TIME COLLECTED <b>8-26-27/14</b> UPSTREAM <b>8-27-14</b>	
PERMIT NUMBER <b>MO-0025186</b>		PERMIT OUTLET NUMBER <b>#001</b>	
COLLECTOR'S NAME <b>Dwayne Hole</b>			
RECEIVING STREAM COLLECTION SITE AND DESCRIPTION <b>7000 LINEAL FEET UPSTREAM OF OUTLET #001 (CITY PARK)</b>			
PERMIT ALLOWABLE EFFLUENT CONCENTRATION (AEC) <b>100%</b>		EFFLUENT SAMPLE TYPE (CHECK ONE) <input checked="" type="checkbox"/> 24 HR COMPOSITE <input type="checkbox"/> GRAB <input type="checkbox"/> OTHER	
SAMPLE NUMBER <b>EFFLUENT #001</b> UPSTREAM <b>STREAM</b>		UPSTREAM SAMPLE TYPE (CHECK ONE) <input type="checkbox"/> 24 HR COMPOSITE <input checked="" type="checkbox"/> GRAB <input type="checkbox"/> OTHER	
PERMITTED EFFLUENT DAILY MAXIMUM LIMITATION FOR CHLORINE <b>NA</b> mg/L		PERMITTED EFFLUENT DAILY MAXIMUM LIMITATION FOR AMMONIA <b>11.0</b> mg/L	

<b>PART B - TO BE COMPLETED IN FULL BY PERFORMING LABORATORY</b>	
PERFORMING LABORATORY <b>PACE ANALYTICAL SERVICES</b>	TEST TYPE <b>Acute</b>
FINAL REPORT NUMBER <b>60176645</b>	TEST DURATION <b>48 HOURS</b>
DATE OF LAST REFERENCE TOXICANT TESTING <b>8/13/14</b>	TEST METHOD <b>EPA 2000 AND 2002</b>
DATE AND TIME SAMPLES RECEIVED AT LABORATORY <b>8/27/14 9:30</b>	TEST START DATE AND TIME <b>8/27/14 11:30</b>
SAMPLE DILUTED PRIOR TO ANALYSIS? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO <b>EFFLUENT</b> UPSTREAM	TEST ORGANISM #1 AND ACI <b>DUBIA &lt;24 HOURS</b>
SAMPLE FILTERED PRIOR TO ANALYSIS? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO <b>EFFLUENT</b> UPSTREAM	TEST ORGANISM #2 AND ACI <b>FATHEAD 8 DAYS</b>
FILTER MESH SIZE <b>2</b>	90 PERCENT OR GREATER SURVIVAL IN SYNTHETIC CONTROL? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
SAMPLE AERATED DURING TESTING? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	EFFLUENT ORGANISM #1 PERCENT MORTALITY AT AEC <b>0</b>
	UPSTREAM ORGANISM #1 PERCENT MORTALITY <b>0</b>
pH ADJUSTED? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	EFFLUENT ORGANISM #2 PERCENT MORTALITY AT AEC <b>0</b>
	UPSTREAM ORGANISM #2 PERCENT MORTALITY <b>0</b>
	TEST RESULT AT AEC FOR ORGANISM #1 <input checked="" type="checkbox"/> PASS <input type="checkbox"/> FAIL
	TEST RESULT AT AEC FOR ORGANISM #2 <input checked="" type="checkbox"/> PASS <input type="checkbox"/> FAIL

PART A - TO BE COMPLETED IN FULL BY PERMITTEE			
PARAMETER	RESULT	METHOD	WHEN ANALYZED
Temperature °C	25	SM 2550B	8/27/14
pH Standard Units	7.79	SM 4500-H+ B	8/27/14
Conductance µMhos	741	EPA 120.1	8/27/14
Dissolved Oxygen mg/L	7.90	SM 4500-O G	8/27/14
Total Residual Chlorine mg/L	<.1	SM 4500-CL G	8/27/14
Unionized Ammonia mg/L			
* Total Alkalinity mg/L	154	SM 2320 B	8/27/14
* Total Hardness mg/l	216	SM2340 B	8/27/14

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

† Samples shall only be filtered if indigenous organisms are present that may be confused with, or attack the test organisms.  
‡ Filters shall have a sieve size of 60 microns or greater.

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

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

PARAMETER	RESULT	METHOD	WHEN ANALYZED
Temperature °C	25	SM 2550B	8/27/14
pH Standard Units	7.95	SM 4500-H+ B	8/27/14
Conductance µMols	463	EPA 120.1	8/27/14
Dissolved Oxygen mg/L	7.60	SM 4500-O G	8/27/14
Total Residual Chlorine mg/L	< 1	SM 4500-CL G	8/27/14
Unionized Ammonia mg/L			
* Total Alkalinity mg/L	198	SM 2320 B	8/27/14
* Total Hardness mg/L	242	SM2340 B	8/27/14

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

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

PERMIT ALLOWABLE EFFLUENT CONCENTRATION, or AEC: As indicated on permit. Test is invalid otherwise.

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

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

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

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

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

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

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

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

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

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

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



COPY

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

November 20, 2013

Dwayne Hole  
City of Carl Junction  
PO Box 447  
815 South Joplin St  
Carl Junction, MO 64834

RE: Project: Wet Test - Multi Dilution  
Pace Project No.: 60157477

Dear Dwayne Hole:

Enclosed are the analytical results for sample(s) received by the laboratory on November 13, 2013. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI 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,

Andy Brownfield

andy.brownfield@pacelabs.com  
Project Manager

Enclosures



#### REPORT OF LABORATORY ANALYSIS

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Lenexa, KS 66219  
(913)599-5665

## CERTIFICATIONS

Project: Wet Test - Multi Dilution

Pace Project No.: 60157477

### Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

WY STR Certification #: 2456.01

Arkansas Certification #: 13-012-0

Illinois Certification #: 003097

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212008A

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407-13-4

Utah Certification #: KS000212013-3

Illinois Certification #: 003097

### Southeast Kansas Certification IDs

808 West McKay, Frontenac, KS 66763

Arkansas Certification #: 13-012-0

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Oklahoma Certification #: 2012-051

Texas Certification #: T104704407-13-4

Utah Certification #: KS000212013-3

Minnesota Certification #: 495004

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## SAMPLE SUMMARY

Project: Wet Test - Multi Dilution

Pace Project No.: 60157477

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60157477001	EFF	Water	11/13/13 08:00	11/13/13 11:15
60157477003	EFF	Water	11/13/13 08:00	11/13/13 18:15

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### SAMPLE ANALYTE COUNT

Project: Wet Test - Multi Dilution

Pace Project No.: 60157477

Lab ID	Sample ID	Method	Analysts	Analytes Reported
60157477001	EFF	EPA 821/R-02/012	TDH	1
60157477003	EFF	EPA 350.1	NDL	1

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## ANALYTICAL RESULTS

Project: Wet Test - Multi Dilution

Pace Project No.: 60157477

Sample: EFF		Lab ID: 60157477001	Collected: 11/13/13 08:00	Received: 11/13/13 11:15	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
Acute Toxicity		Analytical Method: EPA 821/R-02/012						
Toxicity, Acute	Complete		1.0	1		11/13/13 12:00		

Sample: EFF		Lab ID: 60157477003	Collected: 11/13/13 08:00	Received: 11/13/13 18:15	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
350.1 Ammonia		Analytical Method: EPA 350.1						
Nitrogen, Ammonia	ND mg/L		0.10	1		11/18/13 15:09	7664-41-7	

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### QUALITY CONTROL DATA

Project: Wet Test - Multi Dilution

Pace Project No.: 60157477

QC Batch: WETA/27144

Analysis Method: EPA 350.1

QC Batch Method: EPA 350.1

Analysis Description: 350.1 Ammonia

Associated Lab Samples: 60157477003

METHOD BLANK: 1291417

Matrix: Water

Associated Lab Samples: 60157477003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, Ammonia	mg/L	ND	0.10	11/18/13 15:01	

LABORATORY CONTROL SAMPLE: 1291418

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, Ammonia	mg/L	2	2.2	108	90-110	

MATRIX SPIKE SAMPLE: 1291419

Parameter	Units	60157556002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Nitrogen, Ammonia	mg/L	7.7	10	17.8	100	90-110	

MATRIX SPIKE SAMPLE: 1291421

Parameter	Units	60157649002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Nitrogen, Ammonia	mg/L	0.17	2	2.3	108	90-110	

SAMPLE DUPLICATE: 1291420

Parameter	Units	60157477003 Result	Dup Result	RPD	Max RPD	Qualifiers
Nitrogen, Ammonia	mg/L	ND	ND		18	

### REPORT OF LABORATORY ANALYSIS

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## QUALIFIERS

Project: Wet Test - Multi Dilution  
Pace Project No.: 60157477

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## DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

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.

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(913)599-5665

### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Wet Test - Multi Dilution  
Pace Project No.: 60157477

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60157477001	EFF	EPA 821/R-02/012	BIO/1668		
60157477003	EFF	EPA 350.1	WETA/27144		

### REPORT OF LABORATORY ANALYSIS

Date: 11/20/2013 10:54 AM

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PACE # 60157477

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Phone: 913.599.5665  
Fax: 913.599.1759

November 18, 2013

Dwayne Hole  
City of Carl Junction  
35415 West 79<sup>th</sup> street  
Carl Junction, KS 66018

Re: Lab Project Number: 60157477  
Client Project ID: Wet Test

Dear:

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

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

Sincerely,

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

## REPORT OF LABORATORY ANALYSIS

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## Pace Analytical Services, Inc.

808 West McKay, Frontenac, KS 66763

### LABORATORY REPORT:

CLIENT: Dwayne Hole	Date Reported: 11-18-13
City of Carl Junction	Date Initiated: 11-13-13
P.O Box 447	Time Arrived: 11:15
Carl Junction, MO 64834	Date Terminated: 11-15-13

### BIOMONITORING STUDY

#### ACUTE TOXICITY

Permit # MO-0134139

### FINDING AND CONCLUSIONS:

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

### SAMPLING PROCEDURES:

City of Carl Junction personnel collected a sample at the City of Carl Junction effluent discharge. The sample was preserved with ice and transported to Pace Analytical by City of Carl Junction.

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## INTRODUCTION:

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

## TEST ORGANISMS:

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

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

## MATERIALS AND METHODS:

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

City of Carl Junction personnel collected the effluent tested from the City of Carl Junction discharge. Testing was performed using a 100% effluent, series of dilutions, an Upstream, and a synthetic control. The toxicity test was initiated within 36 hours of sample collection.

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

## Ceriodaphnia ACUTE METHODS:

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

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#### Pimephales ACUTE METHODS:

This static toxicity test was conducted using 1000 ml mason jars as test chambers containing 250 ml of test solution. Food was administered prior to test initiation, but not during the testing period. Ten Pimephales, 1 – 14 days old, from a single spawn, were randomly selected and placed in each of 4 test chambers. A total of 40 organisms were exposed to each test concentration. Observations of mortality were made at 24 and 48 hours of exposure.

#### WATER QUALITY METHODS:

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

#### DATA ANALYSIS:

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

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## RESULTS:

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

### 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
Upstream	1	5	0	0	100
"	2	5	0	0	100
"	3	5	0	0	100
"	4	5	0	0	100
6.25%	1	5	5	5	0
"	2	5	5	5	0
"	3	5	5	5	0
"	4	5	5	5	0
12.5%	1	5	5	5	0
"	2	5	5	5	0
"	3	5	5	5	0
"	4	5	5	5	0
25%	1	5	5	5	0
"	2	5	5	5	0
"	3	5	5	5	0
"	4	5	5	5	0
50%	1	5	5	5	0
"	2	5	5	5	0
"	3	5	5	5	0
"	4	5	5	5	0
100%	1	5	5	5	0
"	2	5	5	5	0
"	3	5	5	5	0
"	4	5	5	5	0

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

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

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
Upstream	1	10	10	10	0
"	2	10	10	10	0
"	3	10	10	10	0
"	4	10	10	10	0
6.25%	1	10	10	10	0
"	2	10	10	10	0
"	3	10	10	10	0
"	4	10	10	10	0
12.5%	1	10	10	10	0
"	2	10	10	10	0
"	3	10	10	10	0
"	4	10	10	10	0
25%	1	10	10	10	0
"	2	10	10	10	0
"	3	10	10	10	0
"	4	10	10	10	0
50%	1	10	10	10	0
"	2	10	10	10	0
"	3	10	10	10	0
"	4	10	10	10	0
100%	1	10	10	10	0
"	2	10	10	10	0
"	3	10	10	10	0
"	4	10	10	10	0

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

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Fax: 913.599.1759

#### WATER CHEMISTRY RESULTS:

Total residual chlorine (Cl<sub>2</sub>) - The effluent sample from the City of Carl Junction 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 9.00 mg/l after being raised to the test temperature of 25° C. At termination D.O. was 7.50 mg/l in the 100% effluent, which falls into acceptable limits. Aeration was not required in this test.

pH - The pH of the 100% effluent was 7.65 upon receipt in the laboratory and the synthetic control had a 7.44. At termination the pH measurement in the 100% effluent sample was 8.39.

Conductance - The conductance of the effluent sample was 707 umhos and the synthetic control was 348 umhos.

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**INITIAL WATER QUALITY:**

Initial Measurements Synthetic Water

pH	D.O. (mg/l)	Cond. (umhos)	NH3-N (mg/l)	Cl2 (mg/l)	Temp (C)	Hard (mg/l)	Alk (mg/l)
7.44	8.30	348	<0.2	<0.1	25	92	62

Initial Measurements of Upstream

PH	D.O. (mg/l)	Cond. (umhos)	NH3-N (mg/l)	Cl2 (mg/l)	Temp (C)	Hard (mg/l)	Alk (mg/l)
7.82	9.00	495	N/A	<0.1	25	196	164

Initial Measurements of 100% Effluent

PH	D.O. (mg/l)	Cond. (umhos)	NH3-N (mg/l)	Cl2 (mg/l)	Temp (C)	Hard (mg/l)	Alk (mg/l)
7.65	9.00	707	N/A	<0.1	25	212	130

**TEST WATER QUALITY:**

24-hour Water Quality Measurements

EFFLUENT CONC (%)	PH	D.O. (mg/l)	TEMP (C)	COND. (umhos)
Synthetic	7.64	7.70	25	428
Upstream	8.24	7.80	25	523
6.25%	8.21	7.80	25	526
12.5%	8.19	7.80	25	531
25%	8.17	7.80	25	554
50%	8.09	7.80	25	636
100%	8.08	7.80	25	788

48-hour Water Quality Measurements

EFFLUENT CONC (%)	PH	D.O. (mg/l)	TEMP (C)	COND. (umhos)
Synthetic	7.68	7.20	25	490
Upstream	8.46	7.10	25	580
6.25%	8.45	7.20	25	452
12.5%	8.43	7.30	25	495
25%	8.43	7.30	25	597
50%	8.42	7.30	25	665
100%	8.39	7.50	25	870

**REPORT OF LABORATORY ANALYSIS**

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**QUALITY ASSURANCE:**

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

**REFERENCE TOXICANT (NaCl)**  
**Ceriodaphnia**  
**# OF LIVE ORGANISMS**

CONC OF TOXICANT	TEST INITIATION	24 HOUR EXPOSURE	48 HOUR EXPOSURE
3.0 g/l	20	6	0
2.5 g/l	20	16	10
2.0 g/l	20	20	20
1.5 g/l	20	20	20
1.0 g/l	20	20	20

LC50 = 2.50 g/l NaCl

**REFERENCE TOXICANT (NaCl)**  
**Pimephales**  
**# OF LIVE ORGANISMS**

CONC OF TOXICANT	TEST INITIATION	24 HOUR EXPOSURE	48 HOUR EXPOSURE
10.0 g/l	40	7	0
8.0 g/l	40	35	25
6.0 g/l	40	39	38
4.0 g/l	40	40	40
2.0 g/l	40	40	40

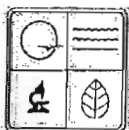
LC50 = 8.27 g/l NaCl

Submitted By:

*Timothy Harrell*  
Timothy Harrell  
Technical Director

**REPORT OF LABORATORY ANALYSIS**

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MISSOURI DEPARTMENT OF NATURAL RESOURCES  
WATER PROTECTION PROGRAM  
**WHOLE EFFLUENT TOXICITY (WET) TEST REPORT**  
(TO BE ATTACHED TO WET TESTS FOR SUBMISSION TO THE REGULATORY AUTHORITY)

<b>PART A - TO BE COMPLETED IN FULL BY PERMITTEE</b>	
FACILITY NAME <b>CARL Junction WWT</b>	DATE AND TIME COLLECTED <b>8:00 AM TR 8:00 AM</b>
PERMIT NUMBER <b>770-0025184</b>	EFFLUENT <b>11-13-13</b> UPSTREAM <b>11-13-13</b>
COLLECTOR'S NAME <b>DWAYNE HOLE</b>	PERMIT OUTFALL NUMBER <b>#001</b>
RECEIVING STREAM COLLECTION SITE AND DESCRIPTION <b>7000 LINEAL FEET UPSTREAM OF OUTFALL #001 (CITY PARK)</b>	
PERMIT ALLOWABLE EFFLUENT CONCENTRATION (AEC) <b>100%</b>	EFFLUENT SAMPLE TYPE (CHECK ONE) <input checked="" type="checkbox"/> 24 HR COMPOSITE <input type="checkbox"/> GRAB <input type="checkbox"/> OTHER
SAMPLE NUMBER <b>#001</b>	UPSTREAM SAMPLE TYPE (CHECK ONE) <input type="checkbox"/> 24 HR COMPOSITE <input checked="" type="checkbox"/> GRAB <input type="checkbox"/> OTHER
EFFLUENT <b>#001</b> UPSTREAM <b>STREAM</b>	PERMITTED EFFLUENT DAILY MAXIMUM LIMITATION FOR CHLORINE <b>NA</b> mg/L
	AMMONIA <b>12.3</b> mg/L

<b>PART B - TO BE COMPLETED IN FULL BY PERFORMING LABORATORY</b>		
PERFORMING LABORATORY <b>PACE ANALYTICAL SERVICES</b>	TEST TYPE <b>Acute</b>	
FINAL REPORT NUMBER <b>60157477</b>	TEST DURATION <b>48 HOURS</b>	
DATE OF LAST REFERENCE TOXICANT TESTING <b>11/6/13</b>	TEST METHOD <b>EPA 2000 AND 2002</b>	
DATE AND TIME SAMPLES RECEIVED AT LABORATORY <b>11/13/13 11:15</b>	TEST START DATE AND TIME <b>11/13/13 12:00</b>	TEST END DATE AND TIME <b>11/15/13 10:30</b>
SAMPLE DECHLORINATED PRIOR TO ANALYSIS? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO EFFLUENT <b>UPSTREAM</b>	TEST ORGANISM #1 AND AGE <b>DUBIA &lt;24 HOURS</b>	TEST ORGANISM #2 AND AGE <b>FATHEAD 8 DAYS</b>
SAMPLE FILTERED <sup>1</sup> PRIOR TO ANALYSIS? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO EFFLUENT <b>UPSTREAM</b>	90 PERCENT OR GREATER SURVIVAL IN SYNTHETIC CONTROL? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	DILUTION WATER USED TO ACHIEVE AEC
FILTER MESH SIZE <sup>2</sup>	EFFLUENT ORGANISM #1 PERCENT MORTALITY AT AEC <b>0</b>	EFFLUENT ORGANISM #2 PERCENT MORTALITY AT AEC <b>0</b>
SAMPLE AERATED DURING TESTING? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	UPSTREAM ORGANISM #1 PERCENT MORTALITY <b>100</b>	UPSTREAM ORGANISM #2 PERCENT MORTALITY <b>0</b>
pH ADJUSTED? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO EFFLUENT <b>UPSTREAM</b>	TEST RESULT AT AEC FOR ORGANISM #1 <input checked="" type="checkbox"/> PASS <input type="checkbox"/> FAIL	TEST RESULT AT AEC FOR ORGANISM #2 <input checked="" type="checkbox"/> PASS <input type="checkbox"/> FAIL

PART A - TO BE COMPLETED IN FULL BY PERMITTEE			
PARAMETER	RESULT	METHOD	WHEN ANALYZED
Temperature °C	25	SM 2550B	11/13/13
pH Standard Units	7.65	SM 4500-H+ B	11/13/13
Conductance µMols	707	EPA 120.1	11/13/13
Dissolved Oxygen mg/L	9.00	SM 4500-O G	11/13/13
Total Residual Chlorine mg/L	<1	SM 4500-CL G	11/13/13
Unionized Ammonia mg/L			
* Total Alkalinity mg/L	130	SM 2320 B	11/13/13
* Total Hardness mg/L	212	SM2340 B	11/13/13

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

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

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

**WHOLE EFFLUENT TOXICITY (WET) TEST REPORT (Continued)**

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

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

PARAMETER	RESULT	METHOD	WHEN ANALYZED
Temperature °C	25	SM 2550B	11/13/13
pH Standard Units	7.82	SM 4500-H+ B	11/13/13
Conductance µMhos	495	EPA 120.1	11/13/13
Dissolved Oxygen mg/L	9.00	SM 4500-O G	11/13/13
Total Residual Chlorine mg/L	< 1	SM 4500-CL G	11/13/13
Un-ionized Ammonia mg/L			
* Total Alkalinity mg/L	164	SM 2320 B	11/13/13
* Total Hardness mg/L	196	SM 2340 B	11/13/13

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

**PRELIMINARY TEST ACCEPTABILITY MATRIX (FOR USE BY PERMITTEE IN DETERMINING TEST VALIDITY)****MINIMUM REQUIRED ANALYTICAL RESULTS FOR THE 100 PERCENT UPSTREAM SAMPLE<sup>3</sup>****PERMIT ALLOWABLE EFFLUENT CONCENTRATION, or AEC:** As indicated on permit. Test is invalid otherwise.**EFFLUENT SAMPLE TYPE:** As indicated on permit. Test is invalid otherwise.**TEST TYPE:** Acute Static Non-Renewal Test or other as indicated on permit. Test is invalid otherwise.**TEST DURATION:** Forty-eight hours or as indicated on permit. Test is invalid otherwise.**TEST ORGANISMS:** As indicated on permit. Test is invalid otherwise.**DILUTION WATER USED TO ACHIEVE AEC:** Upstream receiving water required if available.**TEST METHOD:** The only acceptable method is the most current edition of *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms*, or other as specifically assigned by EPA for determining National Pollutant Discharge Elimination System, or NPDES, compliance. Test is invalid otherwise.**TEST START DATE AND TIME:** Unless otherwise specified in writing by EPA, if >36 hours lapse between collection and initiation, test is invalid.**FILTER MESH SIEVE SIZE:** Unless otherwise specified in writing by EPA, if sieve size is smaller than 60 microns, test is invalid.**90 PERCENT OR GREATER SURVIVAL IN LABORATORY CONTROL(S) (Y/N):** If no, test is invalid.

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

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