

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



**MISSOURI STATE OPERATING PERMIT**

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

Permit No. MO-0131008

Owner: Mid-Missouri Energy, LLC  
Address: 15311 North Saline 65 Highway, Malta Bend, MO 65339

Continuing Authority: same as above  
Address: same as above

Facility Name: Mid-Missouri Energy, LLC  
Facility Address: 15311 North Saline 65 Highway, Malta Bend, MO 65339

Legal Description: Sec. 24, T51N, R23W, Saline County  
UTM Coordinates: see following page

Receiving Stream: Salt Fork  
First Classified Stream and ID: Salt Fork (C) WBID# 0899  
USGS Basin & Sub-watershed No.: Salt Branch-Salt Fork (44.13 sq. mi.) 10300104-0405

authorizes activities pursuant to the terms and conditions of this permit in accordance with the Missouri Clean Water Law and/or the National Pollutant Discharge Elimination System; it does not apply to other regulated activities.

**FACILITY DESCRIPTION**

Ethanol fuel plant; and also produces corn oil; SIC # 2869; NAICS # 325110. This facility does not require a certified wastewater operator per 10 CSR 20-9.030 as this facility is privately owned and domestic wastewater is managed in a sub-surface system <3000 gallons/day.

OUTFALL #005 –sampling point for non-process wastewater: non-contact cooling tower blowdown, reverse osmosis reject, and softener system discharge. Combined flows from internal monitoring points #001, #002, and #003. Compliance point for permit although discharges to waters of the state are through feature #006. Process wastewater is not discharged under this permit.

UTM Coordinates: X = 466956, Y = 4338612

Design flow: 0.9415 MGD

Actual flow: 0.208 MGD

OUTFALL #006 – Actual discharge point of stormwater and wastewater; no sampling: X = 466421, Y = 4338721

April 1, 2024  
Effective Date

March 31, 2029  
Expiration Date

  
John Hoke, Director, Water Protection Program

**A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS**

OUTFALL #005 main outfall		TABLE A-1 INTERIM EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS			
The facility is authorized to discharge from outfall(s) as specified. In accordance with 10 CSR 20-7.031, the final effluent limitations outlined in Table A-2 must be achieved as soon as possible but no later than <b>April 1, 2027</b> . These interim effluent limitations are effective beginning <b>April 1, 2024</b> and remain in effect through <b>March 31, 2027</b> or as soon as possible. Discharges shall be controlled, limited, and monitored by the facility as specified below:					
EFFLUENT PARAMETERS	UNITS	INTERIM EFFLUENT LIMITATIONS		MONITORING REQUIREMENTS	
		DAILY MAXIMUM	MONTHLY AVERAGE	MINIMUM MEASUREMENT FREQUENCY	SAMPLE TYPE
LIMIT SET: M					
PHYSICAL					
Flow	MGD	*	*	once/month	24 hr. total
CONVENTIONAL					
Biochemical Oxygen Demand – 5 day	mg/L	80	30	once/month	grab
Chemical Oxygen Demand	mg/L	120	90	once/month	grab
Chlorine, Total Residual ‡	µg/L	18 (ML130)	9 (ML130)	once/month	grab
Oil & Grease	mg/L	15	10	once/month	grab
pH †	SU	6.5 to 9.0	-	once/month	grab
Total Suspended Solids	mg/L	100	50	once/month	grab
METALS					
Aluminum, Total Recoverable	µg/L	750	340	once/month	grab
Copper, Total Recoverable	µg/L	*	*	once/month	grab
Iron, Total Recoverable	µg/L	1579	840	once/month	grab
NUTRIENTS					
Ammonia as N – Jan, Nov	mg/L	12.1	3.8	once/month	grab
Ammonia as N – Feb, Mar, Dec	mg/L	10.1	3.4	once/month	grab
Ammonia as N – Apr	mg/L	10.1	2.9	once/month	grab
Ammonia as N – May, Jun	mg/L	12.1	1.8	once/month	grab
Ammonia as N – Jul	mg/L	3.9	1.4	once/month	grab
Ammonia as N – Aug	mg/L	12.1	1.6	once/month	grab
Ammonia as N – Sep	mg/L	12.1	2.1	once/month	grab
Ammonia as N – Oct	mg/L	4.5	3.0	once/month	grab
OTHER					
Chloride	mg/L	*	*	once/month	grab
Sulfate	mg/L	*	*	once/month	grab
Chloride plus Sulfate	mg/L	1000	*	once/month	grab
MONITORING REPORTS SHALL BE SUBMITTED <u>MONTHLY</u> ; THE FIRST REPORT IS DUE <u>MAY 28, 2024</u> .					
LIMIT SET: Q					
NUTRIENTS					
Kjeldahl Nitrogen, Total (TKN)	mg/L	*	*	once/quarter ◇	grab
Nitrate plus Nitrite as N	mg/L	*	*	once/quarter ◇	grab
Nitrogen, Total (TN)	mg/L	*	*	once/quarter ◇	grab
Phosphorus, Total P (TP)	mg/L	*	*	once/quarter ◇	grab
MONITORING REPORTS SHALL BE SUBMITTED <u>QUARTERLY</u> ; THE FIRST REPORT IS DUE <u>JULY 28, 2024</u> .					
LIMIT SET: A (ANNUAL)					
OTHER					
Whole Effluent Toxicity, Chronic :	TU <sub>c</sub>	*		once/year	grab
MONITORING REPORTS SHALL BE SUBMITTED <u>ANNUALLY</u> ; THE FIRST REPORT IS DUE <u>JANUARY 28, 2025</u> .					

OUTFALL #005 <i>main outfall</i>		TABLE A-2 FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS			
The facility is authorized to discharge from outfall(s) as specified. The final effluent limitations shall become effective on <b>April 1, 2027</b> and remain in effect until expiration of the permit. Discharges shall be controlled, limited, and monitored by the facility as specified below:					
EFFLUENT PARAMETERS	UNITS	FINAL EFFLUENT LIMITATIONS		MONITORING REQUIREMENTS	
		DAILY MAXIMUM	MONTHLY AVERAGE	MINIMUM MEASUREMENT FREQUENCY	SAMPLE TYPE
LIMIT SET: M					
PHYSICAL					
Flow	MGD	*	*	once/month	24 hr. total
CONVENTIONAL					
Biochemical Oxygen Demand – 5 day	mg/L	80	30	once/month	grab
Chemical Oxygen Demand	mg/L	120	90	once/month	grab
Chlorine, Total Residual ‡	µg/L	18 (ML130)	9 (ML130)	once/month	grab
Oil & Grease	mg/L	15	10	once/month	grab
pH †	SU	6.5 to 9.0	-	once/month	grab
Total Suspended Solids	mg/L	100	50	once/month	grab
METALS					
Aluminum, Total Recoverable	µg/L	750	340	once/month	grab
Copper, Total Recoverable	µg/L	26.9	13.4	once/month	grab
Iron, Total Recoverable	µg/L	1579	840	once/month	grab
NUTRIENTS					
Ammonia as N – Jan, Nov	mg/L	12.1	3.8	once/month	grab
Ammonia as N – Feb, Mar, Dec	mg/L	10.1	3.4	once/month	grab
Ammonia as N – Apr	mg/L	10.1	2.9	once/month	grab
Ammonia as N – May, Jun	mg/L	12.1	1.8	once/month	grab
Ammonia as N – Jul	mg/L	3.9	1.4	once/month	grab
Ammonia as N – Aug	mg/L	12.1	1.6	once/month	grab
Ammonia as N – Sep	mg/L	12.1	2.1	once/month	grab
Ammonia as N – Oct	mg/L	4.5	3.0	once/month	grab
OTHER					
Chloride	mg/L	*	*	once/month	grab
Sulfate	mg/L	*	*	once/month	grab
Chloride plus Sulfate	mg/L	1000	*	once/month	grab
MONITORING REPORTS SHALL BE SUBMITTED <u>MONTHLY</u> ; THE FIRST REPORT IS DUE <u>MAY 28, 2027</u> .					
LIMIT SET: Q					
NUTRIENTS					
Kjeldahl Nitrogen, Total (TKN)	mg/L	*	*	once/quarter ◇	grab
Nitrate plus Nitrite as N	mg/L	*	*	once/quarter ◇	grab
Nitrogen, Total (TN)	mg/L	*	*	once/quarter ◇	grab
Phosphorus, Total P (TP)	mg/L	*	*	once/quarter ◇	grab
MONITORING REPORTS SHALL BE SUBMITTED <u>QUARTERLY</u> ; THE FIRST REPORT IS DUE <u>JULY 28, 2027</u> .					
LIMIT SET: A (ANNUAL)					
OTHER					
Whole Effluent Toxicity, Chronic :	TU <sub>c</sub>	1.1		once/year	grab
MONITORING REPORTS SHALL BE SUBMITTED <u>ANNUALLY</u> ; THE FIRST REPORT IS DUE <u>JANUARY 28, 2028</u> .					

**NOTES:**

- \* Monitoring and reporting requirement only
- † pH: the facility will report the minimum and maximum values; pH is not to be averaged.
- ∴ WET tests: see special conditions
- ‡ Chlorine, Total Residual. This permit contains a Total Residual Chlorine (TRC) limit (or monitoring). The effluent limit is below the minimum quantification level of the most sensitive EPA approved CLTRC methods. The Department has determined the current acceptable minimum level (ML) for total residual chlorine is 130 µg/L when using the DPD Colorimetric Method #4500 –

CL G. from Standard Methods for the Examination of Waters and Wastewater. The facility will conduct analyses in accordance with this method, or equivalent, and report actual analytical values. Measured and detection values greater than or equal to the minimum quantification level of 130 µg/L will be considered violations of the permit and non-detect values less than the minimum quantification level of 130 µg/L will be considered to be in compliance with the permit limitation. The minimum quantification level does not authorize the discharge of chlorine in excess of the effluent limits stated in the permit. The facility shall report less than "<" the value obtained on the meter for non-detections. The less than symbol shall not be used for detections. The facility shall not log the ML as the quantified value unless the quantified value is the ML. Do not chemically dechlorinate unless it is necessary to meet permit limits.

◇ Quarterly sampling

MINIMUM QUARTERLY SAMPLING REQUIREMENTS			
QUARTER	MONTHS	QUARTERLY EFFLUENT PARAMETERS	REPORT IS DUE
First	January, February, March	Sample at least once during any month of the quarter	April 28 <sup>th</sup>
Second	April, May, June	Sample at least once during any month of the quarter	July 28 <sup>th</sup>
Third	July, August, September	Sample at least once during any month of the quarter	October 28 <sup>th</sup>
Fourth	October, November, December	Sample at least once during any month of the quarter	January 28 <sup>th</sup>

## B. SCHEDULE OF COMPLIANCE

Schedules of compliance are allowed per 40 CFR 122.47 and 10 CSR 20-7.031(11). The facility shall attain compliance with final effluent limitations established in this permit as soon as reasonably achievable:

1. The facility shall submit interim progress reports detailing progress made in attaining compliance with the final effluent limits every 12 months from effective date. The first report is due **April 1, 2025**. The report will be emailed to the regional office.
2. Within 3 years of the effective date of this permit, the facility shall attain compliance with the final effluent limits at outfall #005 for total recoverable copper and chronic toxicity.

## C. STANDARD CONDITIONS

In addition to specified conditions stated herein, this permit is subject to the attached Part I standard conditions dated August 1, 2014, and hereby incorporated as though fully set forth herein.

## D. SPECIAL CONDITIONS

1. Prescribed Stormwater Best Management Practices:
  - (a) The facility shall ensure that all bulk, raw, partially processed products, final products, and solid wastes, such as mash or DDGS, are not exposed to stormwater. These must be kept indoors or in sealed containers or tankers.
  - (b) The facility shall maintain the stormwater collection basin in good working order; solids should be removed if engineered retention time is decreased by half or more.
  - (c) The facility shall maintain an effective SWPPP; see SWPPP special condition.
  - (d) The facility shall follow all prescribed Site-wide minimum Best Management Practices (BMPs); see special conditions.
2. 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 facility 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 required to stabilize the sample during shipping.
  - (c) Test conditions must meet all test acceptability criteria required by the EPA Method used in the analysis.
  - (d) The laboratory shall not chemically dechlorinate the sample.
  - (e) The Allowable Effluent Concentration (AEC) is 100%, the dilution series is: 100%, 50%, 25%, 12.5%, and 6.25%.



- (f) All chemical and physical analysis of the effluent sample performed in conjunction with the WET test shall be performed at the 100% effluent concentration.
- (g) The facility must submit a full laboratory report for all toxicity testing. The report must include a quantification of chronic toxic units ( $TU_c = 100/IC_{25}$ ) for each species, and 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% Inhibition Effect Concentration ( $IC_{25}$ ), or No Effect Concentration ( $NOEC_{25}$ ) is the effluent concentration causing 25% reduction in mean young per female or in growth for the test population.

After completion of the SOC the following apply:

- (h) Accelerated Testing Trigger: If the regularly scheduled WET test exceeds the  $TU_c$  limit, the facility shall conduct accelerated follow-up WET testing as prescribed here. Results of the follow-up accelerated WET testing shall be reported in  $TU_c$ . This permit requires the following additional toxicity testing if any one test result exceeds a  $TU_c$  limit.
  - (i) A multiple dilution test shall be performed for both test species within 60 calendar days of becoming aware the regularly scheduled WET test exceeded a  $TU$  limit, and once every two weeks until one of the following conditions are met:
    - i. Three consecutive multiple-dilution tests are below the  $TU_c$  limit. No further tests need to be performed until the next regularly scheduled test period.
    - ii. A total of three multiple-dilution tests exceed the  $TU_c$  limit (do not need to be sequential)
  - (2) Follow-up tests do not negate an initial test result.
  - (3) The facility shall submit a summary of all accelerated WET test results for the test series along with complete copies of the laboratory reports as received from the laboratory within 14 calendar days of the availability of the third test exceeding a  $TU_c$  limit.
  - (4) The facility may begin a TIE or TRE during the follow-up testing phase.
  - (j) TIE/TRE Trigger: The following shall apply upon the exceedance of the  $TU_c$  limit in three accelerated follow-up WET tests. The facility must contact the Department within 14 calendar days from availability of the test results to ascertain as to whether a TIE or TRE is appropriate. If the facility does not contact the Department upon the third follow up test exceeding a  $TU_c$  limit, a toxicity identification evaluation (TIE) or toxicity reduction evaluation (TRE) is automatically triggered. The facility shall submit a plan for conducting a TIE or TRE within 60 calendar days of the date of the automatic trigger or the Department's direction to perform either a TIE or TRE. The plan shall be based on EPA Methods and include a schedule for completion. This plan shall be approved by the Department before the TIE or TRE is begun.
3. Spills, Overflows, and Other Unauthorized Discharges.
- (a) Any spill, overflow, or other discharge(s) not specifically authorized are unauthorized discharges.
  - (b) If an unauthorized discharge cause or permit any contaminants to discharge or enter waters of the state, the unauthorized discharge must be reported to the regional office as soon as practicable but no more than 24 hours after the discovery of the discharge. If the spill or overflow needs to be reported after normal business hours or on the weekend, the facility must call the Department's 24 hour spill line at 573-634-2436.
4. Electronic Discharge Monitoring Report (eDMR) Submission System. The NPDES Electronic Reporting Rule, 40 CFR Part 127, reporting of effluent monitoring data and any report required by the permit (unless specifically directed otherwise by the permit), shall be submitted via an electronic system to ensure timely, complete, accurate, and nationally consistent set of data for the NPDES program. The eDMR system is currently the only Department-approved reporting method for this permit unless specified elsewhere in this permit, or a waiver is granted by the Department. The facility must register in the Department's eDMR system through the Missouri Gateway for Environmental Management (MoGEM) before the first report is due. All reports uploaded into the system shall be reasonably named so they are easily identifiable, such as "WET Test Chronic Outfall 002 Jan 2023", or "Outfall004-DailyData-Mar2025".
5. Stormwater Pollution Prevention Plan (SWPPP).
- The facility's SIC code or description is found in 40 CFR 122.26(b)(14) and/or 10 CSR 20-6.200(2) and hence shall implement a Stormwater Pollution Prevention Plan (SWPPP) which must be prepared and implemented upon permit effective date. The SWPPP must be kept on-site and not sent to the Department unless specifically requested. The SWPPP must be reviewed and updated annually or if site conditions affecting stormwater change. The facility shall select, install, use, operate, and maintain the Best Management Practices prescribed in the SWPPP in accordance with the concepts and methods described in: *Developing Your Stormwater Pollution Prevention Plan, A Guide for Industrial Operators*, (EPA 833-B-09-002 March 2021) [https://www.epa.gov/sites/production/files/2021-03/documents/swppp\\_guide\\_industrial\\_2021\\_030121.pdf](https://www.epa.gov/sites/production/files/2021-03/documents/swppp_guide_industrial_2021_030121.pdf) The purpose of the SWPPP and the Best Management Practices (BMPs) listed herein is the prevention of pollution of waters of the state. A deficiency of a BMP means it was ineffective at providing the necessary protections for which it was designed. Corrective action describes the steps the facility took to eliminate the deficiency.
- The SWPPP must include:
- (a) A listing of specific contaminants and their control measures (BMPs) and a narrative explaining how BMPs are implemented to control and minimize the amount of contaminants potentially entering stormwater.

- (b) A map with all outfalls and structural BMPs marked.
  - (c) If within the boundaries of a regulated Municipal Separate Storm Sewer System (MS4s), list the name of the regulated MS4.
  - (d) A schedule for at least once per month site inspections and brief written reports. The inspection report must include precipitation information for the entire period since last inspection, as well as observations and evaluations of BMP effectiveness. A BMP is considered to be disrupted if it is rendered ineffective as a result of damage or improper maintenance. Categorization of a deficiency is reliant on the length of time required to correct each disrupted BMP. Corrective action after discovering a disrupted BMP must be taken as soon as possible. Throughout coverage under this permit, the facility must perform ongoing SWPPP review and revision to incorporate any site condition changes.
    - (1) Operational deficiencies are disrupted BMPs which the facility is able to and must correct within 7 calendar days.
    - (2) Minor structural deficiencies are disrupted BMPs which the facility is able to and must correct within 14 calendar days.
    - (3) Major structural deficiencies (deficiencies projected to take longer than 14 days to correct) are disrupted BMPs which must be reported as an uploaded attachment through the eDMR system with the DMRs. The initial report shall consist of the deficiency noted, the proposed remedies, the interim or temporary remedies (including proposed timing of the placement of the interim measures), and an estimate of the timeframe needed to wholly complete the repairs or construction. If required by the Department, the facility shall work with the regional office to determine the best course of action. The facility may consider temporary structures to control stormwater runoff. The facility shall correct the major structural deficiency as soon as reasonably achievable.
    - (4) All actions taken to correct the deficiencies shall be included with the written report, including photographs, and kept with the SWPPP. Additionally, corrective action of major structural deficiencies shall be reported as an uploaded attachment through the eDMR system with the DMRs.
    - (5) BMP failure causing discharge through an unregistered outfall is considered an illicit discharge and must be reported in accordance with Standard Conditions Part I.
    - (6) Inspection reports must be kept on site with the SWPPP and maintained for a period of five (5) years. These must be made available to Department personnel upon request. Electronic versions of the documents and photographs are acceptable.
  - (e) A provision for designating a responsible individual for environmental matters and a provision for providing training to all personnel involved in housekeeping, material handling (including but not limited to loading and unloading), storage, and staging of all operational, maintenance, storage, and cleaning areas. Proof of training shall be submitted upon request by the Department.
6. Site-wide minimum Best Management Practices (BMPs). At a minimum, the facility shall adhere to the following:
- (a) Provide good housekeeping practices on the site to keep trash from entry into waters of the state. Dumpsters must remain closed when not in use.
  - (b) Prevent the spillage or loss of fluids, oil, grease, fuel, etc. from vehicle maintenance, equipment cleaning, warehouse activities, and other areas, to prevent the contamination of stormwater from these substances.
  - (c) Provide collection facilities and arrange for proper disposal of waste products including but not limited to petroleum waste products, and solvents.
  - (d) Store all paint, solvents, petroleum products, petroleum waste products (except fuels), and storage containers (such as drums, cans, or cartons) so these materials are not exposed to stormwater or provide other prescribed BMPs such as plastic lids and/or portable spill pans to prevent the commingling of stormwater with container contents. Commingled water may not be discharged under this permit. Provide spill prevention control, and/or management sufficient to prevent any spills of these pollutants from entering waters of the state. Any containment system used to implement this requirement shall be constructed of materials compatible with the substances contained and shall also prevent the contamination of groundwater. Spill records shall be retained on-site or readily accessible electronically.
  - (e) Provide sediment and erosion control sufficient to prevent or minimize sediment loss off of the property, and to protect embankments from erosion.
  - (f) Wash water for vehicles, building(s), or pavement must be handled in a no-discharge manner (infiltration, hauled off-site, etc.). Describe the no-discharge method used and include all pertinent information (quantity/frequency, soap use, effluent destination, BMPs, etc.) in the application for renewal. If wash water is not produced, note this instead.
  - (g) Outdoor fire protection test water must be handled in a no-discharge manner. The facility typically releases 18,750 gallons of non-chlorinated water which infiltrates into the ground. This activity is allowed under a *de minimis* determination.
  - (h) After snow or ice, if the facility applies sand/salt to the pavement of parking lots, sidewalks, or stairs, the facility shall sweep the lots to remove sand/salt as soon as possible after snow or ice melt, collect excess solids, and minimize and control the discharge of solids into stormwater inlets. Salt and sand shall be stored in a manner minimizing mobilization in stormwater (for example: under roof, in covered container, in secondary containment, under tarp, etc.).
7. Secondary Containment
- The drainage area around the secondary containment area and the interior of the containment area shall be inspected monthly. Solids, sludge, and soluble debris shall not be allowed to accumulate in the secondary containment.
- (a) The interior of the secondary containment area shall be checked at least monthly for signs of leaks, spills, or releases of petroleum.

- (b) All petroleum captured in the secondary containment area shall be expeditiously removed and the source of the petroleum determined. Leaks or otherwise compromised equipment or appurtenances shall be promptly addressed/repaired.
  - (c) Before releasing water accumulated in petroleum secondary containment areas, the water and area must be examined for hydrocarbon odor and presence of sheen to protect the general criteria found at 10 CSR 20-7.031(4).
  - (d) Unimpacted stormwater (i.e. free from hydrocarbon odor and presence of sheen), must be drained from the secondary containment as soon as reasonably possible after a precipitation event.
  - (e) If subparts (a) and (b) above were not followed, impacted stormwater shall not be discharged from the secondary containment and shall instead be managed in accordance with legally approved methods for disposal of process wastewater, such as being sent to an accepting wastewater treatment facility.
  - (f) If subparts (a) and (b) were followed, impacted stormwater can only be drained from the secondary containment after removal of all odor or sheen utilizing appropriate methods.
  - (g) The area surrounding the secondary containment must be free of signs of vegetative stress or other indicia of petroleum discharge.
  - (h) The area below the outlet of the secondary containment area must be maintained to minimize soil washout, such as with stabilized vegetation, rip rap, or by releasing accumulated water slowly.
  - (i) Records of all inspections, testing, and/or treatment of water accumulated in secondary containment shall be available on demand to the Department. Electronic records retention is acceptable. These records must be included in the SWPPP.
8. 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 for permit shield, and the CWA §402(k) for toxic substances. This permit may be reopened and modified, or alternatively revoked and reissued to comply with any applicable effluent standard or limitation issued or approved under CWA §§301(b)(2)(C) and (D), §304(b)(2), and §307(a)(2), if the effluent standard or limitation so issued or approved contains different conditions or is otherwise more stringent than any effluent limitation in the permit; or controls any pollutant not already limited in the permit. This permit may be modified, revoked and reissued, or terminated for cause, including determination new pollutants found in the discharge not identified in the application for the new or revised permit. The filing of a request by the facility for a permit modification, termination, notice of planned changes, or anticipated non-compliance does not stay any permit condition.
9. Outfalls #005 and #006 must be clearly marked in the field.
10. Report no discharge when a discharge does not occur during the report period. It is a violation of this permit to report no-discharge when a discharge has occurred.
11. Reporting of Non-Detects.
- (a) Compliance analysis conducted by the facility or any contracted laboratory shall be conducted in such a way the precision and accuracy of the analyzed result can be enumerated. See sufficiently sensitive test method requirements in Standard Conditions Part I, §A, No. 4 regarding proper testing and detection limits used for sample analysis. For the purposes of this permit, the definitions in 40 CFR 136 apply; method detection limit (MDL) and laboratory-established reporting limit (RL) are used interchangeably in this permit. The reporting limits established by the laboratory must be below the lowest effluent limits established for the specified parameter (including any parameter's future limit after an SOC) in the permit unless the permit provides for an ML.
  - (b) The facility shall not report a sample result as "non-detect" without also reporting the MDL. Reporting "non-detect" without also including the MDL will be considered failure to report, which is a violation of this permit.
  - (c) For the daily maximum, the facility shall report the highest value; if the highest value was a non-detect, use the less than "<" symbol and the laboratory's highest method detection limit (MDL) or the highest reporting limit (RL); whichever is higher (e.g. <6).
  - (d) When calculating monthly averages, zero shall be used in place of any value(s) not detected. Where all data used in the average are below the MDL or RL, the highest MDL or RL shall be reported as "<#" for the average as indicated in item (c).
12. Failure to pay fees associated with this permit is a violation of the Missouri Clean Water Law (644.055 RSMo).
13. This permit does not cover land disturbance activities.
14. This permit does not apply to fertilizer products receiving a current exemption under the Missouri Clean Water Law and regulations in 10 CSR 20-6.015(3)(B)8, and are land applied in accordance with the exemption.
15. This permit does not allow stream channel or wetland alterations unless approved by Clean Water Act §404 permitting authorities.
16. This permit does not authorize in-stream treatment, the placement of fill materials in flood plains, placement of solid materials into any waterway, the obstruction of stream flow, or changing the channel of a defined drainage course.

17. All records required by this permit may be maintained electronically per 432.255 RSMo. These records can be maintained in a searchable format.
18. **Changes in Discharges of Toxic Pollutant.**  
In addition to the reporting requirements under 40 CFR 122.41, all existing manufacturing, commercial, mining, and silvicultural dischargers must notify the Director per 40 CFR 122.42(a)(1) and (2) as soon as recognizing:
  - (a) An activity has occurred or will occur which would result in the discharge, on a routine or frequent basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following notification levels:
    - (1) One hundred micrograms per liter (100 µg/L);
    - (2) Two hundred micrograms per liter (200 µg/L) for acrolein and acrylonitrile;
    - (3) Five hundred micrograms per liter (500 µg/L) for 2,4-dinitrophenol and for 2-methyl-4, 6-dinitrophenol;
    - (4) One milligram per liter (1 mg/L) for antimony;
    - (5) Five (5) times the maximum concentration value reported for the pollutant in the permit application in accordance with 40 CFR 122.21(g)(7); or
    - (6) The notification level established by the Department in accordance with 40 CFR 122.44(f).
  - (b) Any activity has occurred or will occur which would result in any discharge, on a non-routine or infrequent basis, of a toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following “notification levels”:
    - (1) Five hundred micrograms per liter (500 µg/L);
    - (2) One milligram per liter (1 mg/L) for antimony;
    - (3) Ten (10) times the maximum concentration value reported for the pollutant in the permit application in accordance with 40 CFR 122.21(g)(7).
    - (4) The level established by the Director in accordance with 40 CFR 122.44(f).
  - (c) Authorization of new or expanded pollutant discharges may be required under a permit modification or renewal, and may require an antidegradation review.
19. This permit does not authorize the facility to accept, treat, or discharge wastewater from other sources unless explicitly authorized herein. If the facility would like to accept, treat, or discharge wastewater from another activity or facility, the permit must be modified to include external wastewater pollutant sources in the permit.
20. Any discharges (or qualified activities such as land application) not expressly authorized in this permit, and not clearly disclosed in the permit application, cannot become authorized or shielded from liability under CWA section 402(k) or Section 644.051.16, RSMo, by disclosure to EPA, state, or local authorities after issuance of this permit via any means, including any other permit applications, funding applications, the SWPPP, discharge monitoring reporting, or during an inspection. Submit a permit modification application, as well as an antidegradation determination if appropriate, to request authorization of new or expanded discharges.

#### E. NOTICE OF RIGHT TO APPEAL

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

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

**MISSOURI DEPARTMENT OF NATURAL RESOURCES**  
**FACT SHEET**  
**FOR THE PURPOSE OF RENEWAL OF**  
**MO-0131008**  
**MID-MISSOURI ENERGY**

The Federal Water Pollution Control Act (Clean Water Act (CWA) §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 (§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 644 RSMo as amended). MSOPs may also cover underground injection, non-discharging facilities, and land application facilities. Permits are issued for a period of five (5) years unless otherwise specified for less.

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 applicable regulations, rationale for the development of limitations and conditions, and the public participation process for the Missouri State Operating Permit (MSOP or permit) listed below. A factsheet is not an enforceable part of a permit.

**PART I. FACILITY INFORMATION**

Facility Type:	Industrial: minor, >1 MGD
SIC Code(s):	2869
NAICS Code(s):	325193
Application Date:	06/30/2021

**FACILITY DESCRIPTION**

Manufactures ethanol for fuel. Mid-Missouri Energy, Inc, is an ethanol production facility permitted to produce up to 66 million gallons per year (MM gal/yr) of denatured fuel grade ethanol; and also produces corn oil. Dried Distillers Grain and Solubles (DDGS) and carbon dioxide are by-products of the process. Process wastewater is treated and recycled back into the process and is not discharged. Non-process/utility water including cooling tower blowdown, water softener, and reverse osmosis wastewater is discharged with storm water south to the Salt Fork.

This permit continues to recognize there is not an effluent limitation guideline for this type of facility therefore internal monitoring points are not required. The facility has one wastewater outfall; #005 is for non-process wastewater. While the facility has indicated stormwater and non-process wastewater mix prior to leaving the facility's property, the facility has also indicated the manhole is not accessible at all times of the year and the safety of sampling personnel may be compromised therefore stormwater sampling is removed in favor of prescribed BMPs. This point is identified as a manhole with a discharge of 81.9 GPM (0.1179 MGD), and integrated as outfall #006, although no NPDES sampling requirements are being instituted for this outfall either; outfall #006 is the location of the end of pipe that discharges directly to Salt Fork. Because sampling stormwater and wastewater separately at this site is not expected to increase stream toxicity or concentration of other parameters, best professional judgment was utilized to cite facility safety taking precedence above overall sampling values. The facility pipes wastewater to Salt Fork, a "C" stream, where there are no mixing considerations.

This facility shares water with a co-located facility, ArchView (AV) which is a CO2 processing plant. They receive CO2 from MME's fermentation. They are their own entity and not directly associated with MME. AV is supplied with potable water that goes to their cooling tower. They have the same water treatment provider as MME, so the same treatment chemicals are used. AV then returns the used water back into MME's cooling tower.

Items listed in the facility (or outfall) description, applicable to the operation, maintenance, control, and resultant effluent quality are required to be enumerated in the facility description. The facility description ensures the facility continues to operate the wastewater (or stormwater) controls listed in the permit to preserve and maintain the effluent quality pursuant to 40 CFR 122.21(e). Any planned changes to the facility (which changes the facility or outfall description) are required to be reported to the Department pursuant to 40 CFR 122.41(l)(1)(ii). If the facility does not or cannot use all of their disclosed treatment devices, this is considered bypassing pursuant to 40 CFR 122.41(m) in the case of wastewater, and BMP disruption in the case of stormwater.

**FACILITY PERFORMANCE HISTORY & COMMENTS**

The electronic discharge monitoring reports were reviewed for the last permit term. See Part IV for limit derivation and specific determinations. The last inspection was in 2014.

The application listed several parameters present in the stormwater and wastewater without quantifying that information with sampling results. A special condition is included to require these data be obtained in the first year of the effective date of this permit. Future applications must provide data for parameters alleged present. Sampling for these parameters at the next renewal, if alleged present, is also required.

#### CONTINUING AUTHORITY

Pursuant to 10 CSR 20-6.010(2)(A) and (E), the Department has received the appropriate continuing authority authorized signature from the facility. The Missouri Secretary of State continuing authority charter number for this facility is LC014405173; this number was verified to be associated with the facility and precisely matches the continuing authority reported by the facility.

Pursuant to 10 CSR 20-6.010(2)(B)4, this facility is a Level 4 Authority.

✓ Pursuant to 10 CSR 20-6.010(2)(D), the facility demonstrated the closest collection system was greater than 2000 feet from the property line per 10 CSR 20-6.010(2)(C)3.

#### OTHER ENVIRONMENTAL PERMITS

In accordance with 40 CFR 122.21(f)(6), the Department evaluated other environmental permits currently held by this facility. This facility has the following permits: air, 092017-009; <https://www.epa.gov/sites/default/files/2015-08/documents/mid-missouri-ltr-determination.pdf> the EPA granted a Clean Air Act renewable fuel Efficient Producer status in 2015.

#### PERMITTED FEATURES TABLE

OUTFALL	AVERAGE FLOW	DESIGN FLOW	TREATMENT LEVEL	EFFLUENT TYPE
#005	0.208 MGD	0.9415 MGD	n/a	wastewater

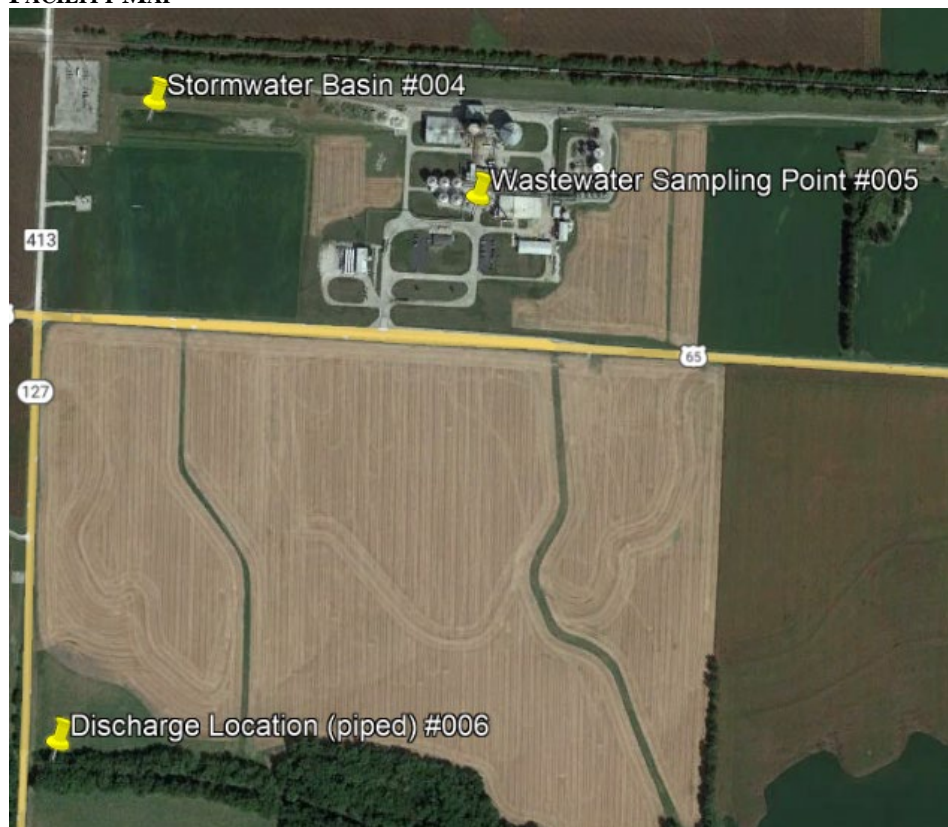
*Inactive:*

#001 – non-contact cooling tower blowdown; dechlorination; UTM Coordinates: X = 466973, Y = 4338640; design flow: 0.1735 MGD

#002 – reverse osmosis reject water (uses groundwater); UTM Coordinates: X = 466973, Y = 4338640; design flow: 0.0774 MGD

#003 – water softener system reject; UTM Coordinates: X = 466972, Y = 4338640; design flow: 0.0017 MGD

#### FACILITY MAP





## **PART II. RECEIVING WATERBODY INFORMATION**

### **RECEIVING WATERBODY TABLE:**

OUTFALL	WATERBODY NAME	CLASS	WBID	DESIGNATED USES	DISTANCE TO SEGMENT	12-DIGIT HUC
all	Salt Fork	C	0899	GEN, HHP, IRR, LWW, SCR, WBC-B, WWH (ALP)	0.1 mi	Salt Branch-Salt Fork (44.13 sq. mi.) 10300104-0405

\* The previous permit identified WBID# 3960 and 100K Extent-Remaining Stream; these changes are due to a new numbering system and new naming convention for streams and lakes based on the HUC8 watershed number, the actual receiving stream has not changed.

Classes are representations of hydrologic flow volume or lake basin size per 10 CSR 20-7.031(1)(E).

Designated uses are described in 10 CSR 20-7.031(1)(F).

WBID: Waterbody Identification Number per 10 CSR 20-7.031(1)(Q) and (S)

HUC: Hydrologic Unit Code <https://water.usgs.gov/GIS/huc.html>

Water Quality Standards Search [https://apps5.mo.gov/mocwis\\_public/waterQualityStandardsSearch.do](https://apps5.mo.gov/mocwis_public/waterQualityStandardsSearch.do)

### **EXISTING WATER QUALITY & IMPAIRMENTS**

The receiving waterbody(s) segment(s), upstream, and downstream confluence water quality was reviewed. The USGS

<https://waterdata.usgs.gov/nwis/sw> or the Department's quality data database was reviewed.

[https://apps5.mo.gov/mocwis\\_public/wqa/waterbodySearch.do](https://apps5.mo.gov/mocwis_public/wqa/waterbodySearch.do) and <https://apps5.mo.gov/wqa/> The Department's quality data database was reviewed. [https://apps5.mo.gov/mocwis\\_public/wqa/waterbodySearch.do](https://apps5.mo.gov/mocwis_public/wqa/waterbodySearch.do) and <https://apps5.mo.gov/wqa/> Impaired waterbodies

which may be impacted by discharges from this facility were determined. Impairments include waterbodies on the 305(b) or 303(d) list and those waterbodies or watersheds under a TMDL. <https://dnr.mo.gov/water/what-were-doing/water-planning/quality-standards-impaired-waters-total-maximum-daily-loads/tmdls> Section 303(d) of the federal Clean Water Act requires each state identify waters not meeting water quality standards and for which adequate water pollution controls have not been required.

<https://dnr.mo.gov/water/what-were-doing/water-planning/quality-standards-impaired-waters-total-maximum-daily-loads/impaired-waters> 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 impaired waters not addressed by normal water pollution control programs. A TMDL is a calculation of the maximum amount of a given pollutant a water body can absorb before its water quality is affected; hence, the purpose of a TMDL is to determine the pollutant loading a specific waterbody can assimilate without exceeding water quality standards. If a water body is determined to be impaired as listed on the §303(d) list, then a watershed management plan or TMDL for that watershed may be developed. The TMDL shall include the WLA calculation.

- ✓ There are no upstream or downstream impairments. The facility is adjacent to the Missouri River which is listed on the 2002 TMDL for chlordane and PCBs. This facility does not discharge into this river, nor considered a source of the above listed pollutant(s), or considered to contribute to the impairment.

### **WATERBODY MIXING CONSIDERATIONS**

For all wastewater outfalls, mixing zone and zone of initial dilution are not allowed per 10 CSR 20-7.031(5)(A)4.B.(I)(a) and (b), as the base stream flow does not provide dilution to the effluent. For information how this regulation is used in determining effluent limits with or without mixing, see WASTELOAD ALLOCATION in Part III. If the base stream flow is above 0.1 cfs, mixing may be applied if 1) zones of passage are present, 2) mixing velocities are sufficient and stream bank configuration allows, 3) the aquatic life support system is maintained, 4) mixing zones do not overlap, 5) there are no drinking water intakes in the vicinity downstream, 6) the stream or lake has available pollutant loading to be allocated, and 7) downstream uses are protected. If mixing was not allowed in this permit, the facility may submit information, such as modeling, as to why mixing may be afforded to the outfall.

## **PART III. RATIONALE AND DERIVATION OF PERMIT CONDITIONS**

### **ANTIBACKSLIDING**

Federal Regulations [CWA §303(d)(4); CWA §402(c); 40 CFR Part 122.44(l)] require a reissued permit to be as stringent as the previous permit with some exceptions. Backsliding (a less stringent permit limitation) is only allowed under certain conditions.

- ✓ Limitations in this operating permit reissuance conform to the anti-backsliding provisions of CWA §402(o), and 40 CFR 122.44.
- ✓ Data for outfall #005 was obtained for arsenic, barium, boron, cobalt, tin, and titanium. No further sampling is required; these parameters do not have RP per RPA and RPD. Other metals are limited in this permit; any metals in the discharge have similar properties therefore any treatments implemented by the facility to treat those metals will also treat for these. In a meeting on February 17, 2023, the EPA verbally agreed that removal of limits for a parameter with no RP is not considered backsliding; although none of these parameters were limited in the previous permit; they were monitoring only.
- ✓ Reporting precipitation was removed from this permit. Precipitation monitoring is no longer required as rainfall data can be easily acquired using online databases which are available to the public. The facility SWPPP continues to require the precipitation information be kept to determine if BMPs are effective.

- ✓ Mixing was added to outfall #005 which resulted in less stringent limits for ammonia; an antidegradation review was completed for the revised limits; assimilative capacity was calculated for each month. The stream is not impaired therefore backsliding is allowed.

#### **ANTIDEGRADATION REVIEW**

Discharges with new, altered, or expanding flows, the Department is to document, by means of antidegradation review, if the use of a water body's available assimilative capacity is justified. See <https://dnr.mo.gov/document-search/antidegradation-implementation-procedure>. The prescribed minimum BMPs required in the permit for stormwater are developed by the Department pursuant to 10 CSR 20-7.031(3), and BMP use for stormwater discharges is authorized under 40 CFR 122.44(k)(2). The facility must pay for the Department to complete the review. 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. Per 10 CSR 20-7.015(4)(A), new discharges to losing streams shall be permitted only after other alternatives including land application, discharges to a gaining stream, or connection to a regional wastewater treatment facility have been evaluated and determined to be unacceptable for environmental and/or economic reasons.

- ✓ Not applicable; the facility has not submitted information proposing expanded or altered process water discharge; no further degradation proposed therefore no further review necessary.

#### **BEST MANAGEMENT PRACTICES**

Minimum site-wide best management practices are established in this permit to ensure all facilities are managing their sites equally to protect waters of the state from certain activities which could cause negative effects in receiving water bodies. While not all sites require a SWPPP because the SIC codes are specifically exempted in 40 CFR 122.26(b)(14), these best management practices are not specifically included for stormwater purposes. These practices are minimum requirements for all industrial sites to protect waters of the state. If the minimum best management practices are not followed, the facility may violate general criteria [10 CSR 20-7.031(4)]. Statutes are applicable to all permitted facilities in the state, therefore pollutants cannot be released unless in accordance with 644.011 and 644.016 (17) RSMo.

#### **CLOSURE**

To properly decontaminate and close a wastewater basin, the facility must draft a complete closure plan, and include the Closure Request Form #2512 <https://dnr.mo.gov/document-search/facility-closure-request-form-mo-780-2512>. The publication, Wastewater Treatment Plant Closure - PUB2568 found at <https://dnr.mo.gov/print/document-search/pub2568> may be helpful to develop the closure plan. The regional office will then approve the closure plan, and provide authorization to begin the work. The regional office contact information can be found here: <https://dnr.mo.gov/about-us/division-environmental-quality/regional-office>

#### **COST ANALYSIS FOR COMPLIANCE (CAFCom)**

Pursuant to 644.145 RSMo, when incorporating a new requirement for discharges from publicly owned facilities, or when enforcing provisions of this chapter or the CWA, pertaining to any portion of a publicly owned facility, the Department 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 CWA. This process is completed through a CAFCom. Permits not including new requirements may be deemed affordable.

- ✓ The Department is not required to complete a cost analysis for compliance because the facility is not publicly owned.

#### **CHANGES IN DISCHARGES OF TOXIC POLLUTANT**

This special condition reiterates the federal rules found in 40 CFR 122.44(f) for technology treatments and 122.42(a)(1) for all other toxic substances. In these rules, the facility is required to report changes in amounts of toxic substances discharged. Toxic substances are defined in 40 CFR 122.2 as "...any pollutant listed as toxic under section 307(a)(1)" or, in the case of "sludge use or disposal practices," any pollutant identified in regulations implementing section 405(d) of the CWA." Section 307 of the clean water act then refers to those parameters listed in 40 CFR 401.15 and any other toxic parameter the Department determines is applicable for reporting under these rules in the permit. The facility must also consider any other toxic pollutant in the discharge as reportable under this condition and must report all increases to the Department as soon as discovered in the effluent. The Department may open the permit to implement any required effluent limits pursuant to CWA §402(k) where sufficient data was not supplied within the application but was supplied at a later date by either the facility or other resource determined to be representative of the discharge, such as sampling by Department personnel.

#### **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.

- ✓ Not applicable; the facility is not currently under Water Protection Program enforcement action.



## **DISCHARGE MONITORING REPORTING – ELECTRONIC (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 requiring electronic data reporting. To comply with the federal rule, the Department is requiring all facilities to submit discharge monitoring data and reports online. To review historical data, the Department's database has a publically facing search engine, available at [https://apps5.mo.gov/mocwis\\_public/dmrDisclaimer.do](https://apps5.mo.gov/mocwis_public/dmrDisclaimer.do)

Registration and other information regarding MoGEM can be found at <https://dnr.mo.gov/mogem>. Information about the eDMR system can be found at <https://dnr.mo.gov/env/wpp/edmr.htm>. The first user shall register as an Organization Official and the association to the facility must be approved by the Department. To access the eDMR system, use: <https://apps5.mo.gov/mogems/welcome.action> For assistance using the eDMR system, contact [edmr@dnr.mo.gov](mailto:edmr@dnr.mo.gov) or call 855-789-3889 or 573-526-2082. To assist the facility in entering data into the eDMR system, the permit describes limit sets designators in each table in Part A of the permit. Facility personnel will use these identifiers to ensure data entry is being completed appropriately. For example, M for monthly, Q for quarterly, A for annual, and others as identified.

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 facility must first submit an eDMR Waiver Request form available on the Department's web page. A request must be made for each operating permit. An approved waiver is not 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.

✓ This facility has not been granted a waiver, nor would this facility qualify for a waiver.

## **DOMESTIC WASTEWATER, SLUDGE, AND BIOSOLIDS**

Domestic wastewater is defined as wastewater originating primarily from the sanitary conveyances of bathrooms and kitchens. Domestic wastewater excludes stormwater, wash water, animal waste, process and ancillary wastewater.

✓ Not applicable; this facility discharges domestic wastewater subsurface with flows of 3,000 gallons per day or less as calculated in accordance with 19 CSR 20-3.060(1)(E) and tables 2A and 2B. The domestic wastewater system is jurisdiction of the Missouri Department of Health and Senior Services or Local Public Health Agency. This permit does not authorize any industrial wastewater for introduction into the sub-surface system.

Sewage sludge is solid, semi-solid, 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 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. Biosolids are solid materials resulting from domestic wastewater treatment meeting federal and state criteria for productive use (i.e. fertilizer) and after having pathogens removed.

✓ Not applicable; domestic wastewater at this site falls under the jurisdiction of the Department of Health and Senior Services; see above.

## **EFFLUENT LIMITATIONS**

Two general types of effluent limitations, technology-based effluent limits (TBELs) and water quality based effluent limits (WQBELs) are reviewed. Permits are required to establish the most stringent or most protective limit. If the TBEL or WQBEL does not provide adequate protection for the receiving water, then the other must be used per 10 CSR 20-7.015(9)(A) or 40 CFR 122.44(b)(1). See WASTELOAD ALLOCATION below which describes how WQBEL wasteload allowances are established under the permit. Effluent limitations derived and established for this permit are based on current operations of the facility. Any flow through the outfall is considered a discharge and must be sampled and reported as provided in the permit. Daily maximums and monthly averages are required per 40 CFR 122.45(d)(1) for continuous discharges (not from a POTW).

## **EMERGENCY DISCHARGE**

For non-discharging permits, some permits may allow a small amount of wastewater discharge under very specific circumstances.

✓ Not applicable; this permit does not contain conditions allowing emergency discharges.

## **FEDERAL EFFLUENT LIMITATION GUIDELINES**

Effluent Limitation Guidelines, or ELGs, are found at 40 CFR 400-499. <https://www.ecfr.gov/current/title-40/chapter-I/subchapter-N> These are limitations established by the EPA based on the SIC code and the type of work a facility is conducting. Most ELGs are for process wastewater and some address stormwater. Effluent guidelines are not always established for every pollutant present in a point source discharge. In many instances, EPA promulgates effluent guidelines for an indicator pollutant. Industrial facilities complying with the effluent guidelines for the indicator pollutant will also control other pollutants (e.g. pollutants with a similar chemical structure). For example, EPA may choose to regulate only one of several metals present in the effluent from an industrial category, and compliance with the effluent guidelines will ensure similar metals present in the discharge are adequately controlled. All are

technology based limitations which must be met by the applicable facility at all times. If Reasonable Potential is established for any particular parameter, and water-quality derived effluent limits are more protective of the receiving water's quality, the WQS will be used as the limiting factor in accordance with 40 CFR 122.44(d) and 10 CSR 20-7.015(9)(A).

- ✓ The facility has an associated Effluent Limit Guideline (ELG) at 40 CFR 414 applicable to process wastewater, however, this facility does not discharge process wastewater.

### GENERAL CRITERIA CONSIDERATIONS

In accordance with 40 CFR 122.44(d)(1), effluent limitations shall be placed into permits for pollutants determined to cause, have reasonable potential to cause, or to contribute to, an excursion above any water quality standard, including narrative water quality criteria. In order to comply with this regulation, permit decisions were made by completing a reasonable potential determination on whether discharges have reasonable potential to cause, or contribute to an excursion of the general criteria listed in 10 CSR 20-7.031(4). See Part III REASONABLE POTENTIAL for more information. In instances where reasonable potential exists, the permit includes limitations to address the reasonable potential. In discharges where reasonable potential does not exist, the permit may include monitoring to later determine the discharge's potential to impact the narrative criteria. Additionally, 644.076.1 RSMo, as well as Part I §D – Administrative Requirements of Standard Conditions included in this permit state it shall be unlawful for any person to cause or allow any discharge of water contaminants from any water contaminant or point source located in Missouri in violation of §§644.006 to 644.141 of the Missouri Clean Water Law or any standard, rule, or regulation promulgated by the commission. See Part IV for specific determinations.

### GROUNDWATER MONITORING

Groundwater is a water of the state according to 644.016(27) RSMo, is subject to regulations at 10 CSR 20-7.015(7) and 10 CSR 20-7.031(6), and must be protected accordingly.

- ✓ This facility is not required to monitor groundwater for the water protection program.

### LAND APPLICATION

Land application, or surficial dispersion of wastewater and/or sludge, is performed by facilities as an alternative to discharging. Authority to regulate these activities is pursuant to 644.026 RSMo. The Department implements requirements for these types of operations pursuant to 10 CSR 20-6.015(4)(A)1 which instructs the Department to develop permit conditions containing limitations, monitoring, reporting, and other requirements to protect soils, crops, surface waters, groundwater, public health, and the environment.

- ✓ Not applicable; this permit does not authorize operation of a surficial land application system to disperse wastewater or sludge.

### LAND DISTURBANCE

Land disturbance, sometimes called construction activities, are actions which cause disturbance of the root layer or soil; these include clearing, grading, and excavating of the land. 40 CFR 122.26(b)(14) and 10 CSR 20-6.200(3) requires permit coverage for these activities. Coverage is not required for facilities when only providing maintenance of original line and grade, hydraulic capacity, or to continue the original purpose of the facility.

- ✓ Not applicable; this permit does not provide coverage for land disturbance activities. The facility may obtain a separate land disturbance permit (MORA) online at <https://dnr.mo.gov/water/business-industry-other-entities/permits-certification-engineering-fees/stormwater/construction-land-disturbance> MORA permits do not cover disturbance of contaminated soils, however, site specific permits such as this one can be modified to include appropriate controls for land disturbance of contaminated soils by adding site-specific BMP requirements and additional outfalls.

### MAJOR WATER USER

Any surface or groundwater user with a water source and the equipment necessary to withdraw or divert 100,000 gallons (or 70 gallons per minute) or more per day combined from all sources from any stream, river, lake, well, spring, or other water source is considered a major water user in Missouri. <https://dnr.mo.gov/water/business-industry-other-entities/reporting/major-water-users> All major water users are required by law to register water use annually (Missouri Revised Statutes Chapter 256.400 Geology, Water Resources and Geodetic Survey Section). <https://dnr.mo.gov/document-search/frequently-asked-major-water-user-questions-pub2236/pub2236>

- ✓ Applicable; this facility is a major water user and is registered with the state under registration number 43172855.

### METALS

Effluent limitations for total recoverable metals were developed using methods and procedures outlined in the *Technical Support Document For Water Quality-based Toxic Controls* (EPA/505/2-90-001) and *The Metals Translator: Guidance For Calculating a Total Recoverable Permit Limit From a Dissolved Criterion* (EPA 823-B-96-007). "Aquatic Life Protection" in 10 CSR 20-7.031 Tables A1 and A2, as well as general criteria protections in 10 CSR 20-7.031(4) apply to this discharge. The hardness value used for hardness-dependent metals calculations is typically based on the ecoregion's 50<sup>th</sup> percentile (also known as the median) per 10 CSR 20-7.015(1)(CC), and is reported in the calculations below, unless site specific data was provided. Per a memorandum dated August 6, 2019, the Director has determined limit derivation must use the median of the Level III Ecoregion to calculate permit limits, or site specific data if applicable. Additional use criterion (HHP, DWS, GRW, IRR, or LWV) may also be used, as applicable, to determine

the most protective effluent limit for the receiving waterbody's class and uses. HHP, DWS, GRW, IRR, or LWW do not take hardness into account.

#### **MODIFICATION REQUESTS**

Facilities have the option to request a permit modification from the Department at any time under RSMo 644.051.9. Requests must be submitted to the Water Protection Program with the appropriate forms and fees paid per 10 CSR 20-6.011. It is recommended facilities contact the program early so the correct forms and fees are submitted, and the modification request can be completed in a timely fashion. Minor modifications, found in 40 CFR 122.63, are processed without the need for a public comment period. Major modifications, those requests not explicitly fitting under 40 CFR 122.63, do require a public notice period. Modifications to permits must be completed when: a new pollutant is found in the discharge; operational or functional changes occur which affect the technology, function, or outcome of treatment; the facility desires alternate numeric benchmarks; or other changes are needed to the permit.

Modifications are not required when utilizing or changing additives in accordance with the publication <https://dnr.mo.gov/document-search/additive-usage-wastewater-treatment-facilities-pub2653/pub2653> nor are required when a temporary change or provisional discharge has been authorized by the regional office. While provisional discharges may be authorized by the regional office, they will not be granted for more than the time necessary for the facility to obtain an official modification from the Water Protection Program. Temporary provisional discharges due to weather events or other unforeseen circumstances may or may not necessitate a permit modification. The facility may ask for a Compliance Assistance Visit (CAV) from the regional office to assist in the decision-making process; CAVs are provided free to the permitted entity.

#### **MUNICIPAL SEPARATE STORM SEWER SYSTEMS (MS4)**

This permit allows discharge to waters of the state. The discharges this permit allows may flow into and through the city's stormwater collection system. Regulated MS4s are managed by public entities, cities, municipalities, or counties. Phase I MS4s are Kansas City, Independence, and Springfield. Phase II MS4s are determined by population or location in an urbanized area. Regulated MS4s are required to develop and maintain a stormwater management program. These programs have requirements for developing and implementing a plan to detect and eliminate illicit discharges to the storm sewer system. Phase I MS4s also maintain oversight programs for industrial and high risk runoff. Regulated MS4s may keep a list of all of the other regulated dischargers (wastewater and stormwater) flowing through their system. If this facility discharges into a separate storm sewer system, the facility must make contact with the owner/operator of that system to coordinate with them. Regulated MS4 operators may request to inspect facilities discharging into their system; a list of regulated MS4s can be viewed at <https://dnr.mo.gov/document-search/missouris-regulated-municipal-separate-storm-sewer-systems-ms4s> or search by permit ID: MOR04 at [https://apps5.mo.gov/mocwis\\_public/permitSearch.do](https://apps5.mo.gov/mocwis_public/permitSearch.do) to determine if this facility needs to contact a local stormwater authority.

#### **NUTRIENT MONITORING**

Nutrient monitoring is required for facilities characteristically or expected to discharge nutrients (nitrogenous compounds and/or phosphorus) when the design flow is equal to or greater than 0.1 MGD per 10 CSR 20-7.015(9)(D)8. This requirement is applicable to all Missouri waterways.

- ✓ The total design flow for this facility is >0.1 MGD and the facility discharges nutrients, therefore nutrient monitoring is required  
This facility is required to monitor for ammonia, total Kjeldahl nitrogen, nitrate plus nitrite, and phosphorus.

Water quality standards per 10 CSR 20-7.031(5)(N) describe nutrient criteria requirements assigned to lakes (which include reservoirs) in Missouri, equal to or greater than 10 acres during normal pool conditions. The Department's Nutrient Criteria Implementation Plan (NCIP) may be reviewed at: <https://dnr.mo.gov/document-search/nutrient-criteria-implementation-plan-july-27-2018> Discharges of wastewater in to lakes or lake watersheds designated as L1 (drinking water use) are prohibited per 10 CSR 20-7.015(3)(C).

- ✓ Not applicable; this facility does not discharge in a lake watershed.

#### **OPERATOR CERTIFICATION REQUIREMENTS**

Operators or supervisors of operations at regulated domestic wastewater treatment facilities shall be certified in accordance with 10 CSR 20-9 and any other applicable state law or regulation.

- ✓ Not applicable; this facility is not required to have a certified operator. This permit does not cover domestic wastewater or the domestic wastewater population equivalent (PE) is less than two hundred (200) individuals. Additionally, this facility is not owned or operated by a municipality, public sewer district, county, public water supply district, or private sewer company regulated by the Public Service Commission, or operated by a state or federal agency. Private entities are exempted from the population equivalent requirement unless the Department has reason to believe a certified operator is necessary.

#### **PERMIT SHIELD**

The permit shield provision of the Clean Water Act (Section 402(k)) and Missouri Clean Water Law (644.051.16 RSMo) provides that when a permit holder is in compliance with its NPDES permit or MSOP, it is effectively in compliance with certain sections of the Clean Water Act, and equivalent sections of the Missouri Clean Water Law. In general, the permit shield is a legal defense against

certain enforcement actions, but is only available when the facility is in compliance with its permit and satisfies other specific conditions, including having completely disclosed all discharges and all facility processes and activities to the Department at time of application. It is the facility's responsibility to ensure that all potential pollutants, waste streams, discharges, and activities, as well as wastewater land application, storage, and treatment areas, are all fully disclosed to the Department at the time of application or during the draft permit review process. Previous permit applications are not necessarily evaluated or considered during permit renewal actions. All relevant disclosures must be provided with each permit application, including renewal applications, even when the same information was previously disclosed in a past permit application. Subsequent requests for authorization to discharge additional pollutants, expanded or newly disclosed flows, or for authorization for previously unpermitted and undisclosed activities or discharges, will likely require an official permit modification, including another public participation process.

#### **PRETREATMENT**

This permit does not regulate pretreatment requirements for facilities discharging to an accepting permitted wastewater treatment facility. If applicable, the receiving entity (the publicly owned treatment works - POTW) is to ensure compliance with any effluent limitation guidelines for pretreatment listed in 40 CFR Subchapter N per 10 CSR 20-6.100. Pretreatment regulations per 644.016 RSMo are limitations on the introduction of pollutants or water contaminants into publicly owned treatment works or facilities.

✓ Not applicable, this facility does not discharge industrial wastewater to a POTW. Domestic wastewater is not subject to pretreatment requirements.

#### **REASONABLE POTENTIAL (RP)**

Regulations per 10 CSR 20-7.015(9)(A)2 and 40 CFR 122.44(d)(1)(i) requires effluent limitations for all pollutants which are (or may be) discharged at a level causing or have the reasonable potential to cause (or contribute to) an in-stream excursion above narrative or numeric water quality standards. Per 10 CSR 20-7.031(4), general criteria shall be applicable to all waters of the state at all times; however, acute toxicity criteria may be exceeded by permit allowance in zones of initial dilution, and chronic toxicity criteria may be exceeded by permit allowance in mixing zones. A reasonable potential analysis (RPA) is a numeric RP decision calculated using effluent data provided by the facility for parameters that have a numeric Water Quality Standard (WQS). If 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 the pollutant per 40 CFR Part 122.44(d)(1)(iii) and the most stringent limits per 10 CSR 20-7.031(9)(A). The RPA is performed using the *Technical Support Document for Water Quality Based Toxics Control (TSD)* methods (EPA/505/2-90-001) for continuous discharges. See additional considerations under Part II WATERBODY MIXING CONSIDERATIONS and Part III WASTELOAD ALLOCATIONS. Wasteload allocations are determined utilizing the same equations and statistical methodology. Absent sufficient effluent data, effluent limits are derived without consideration of effluent variability and is assumed to be present unless found to be absent to meet the requirements of antidegradation review found in 10 CSR 20-7.031(3) and reporting of toxic substances pursuant to 40 CFR 122.44(f). The Department's permit writer's manual (<https://dnr.mo.gov/water/business-industry-other-entities/technical-assistance-guidance/wastewater-permit-writers-manual>), the EPA's permit writer's manual (<https://www.epa.gov/npdes/npdes-permit-writers-manual>), program policies, and best professional judgment guide each decision. Each parameter in each outfall is carefully considered; and all applicable information regarding: technology based effluent limitations, effluent limitation guidelines, water quality standards, inspection reports, stream water quality information, stream flows, uses assigned to each waterbody, and all applicable site specific information and data gathered by the facility through discharge monitoring reports and renewal (or new) application sampling.

Reasonable potential determinations (RPD) are based on physical conditions of the site as provided in Sections 3.1.2, 3.1.3, and 3.2 of the TSD using best professional judgement. An RPD consists of evaluating visual observations for compliance with narrative criteria, non-numeric information, or small amounts of numerical data (such as 1 data point supplied in the application). Narrative criteria with RP typically translate to a numeric WQS, so a parameter's establishment being based on narrative criteria does not necessarily make the decision an RPD vs RP—how the data is collected does, however. For example, a facility with orange discharge can have RP for narrative criteria like color, but a numeric iron limit is established to account for the violation of narrative criteria based on effluent data submitted by the facility. When insufficient data is received to make a determination on RP based on numeric effluent data, the RPD decisions are based on best professional judgment considering the type of effluent discharged, the current operational controls in place, and historical overall management of the site. In the case of iron causing excursions of narrative criteria for color, if a facility has not had iron monitoring in a previous permit, adding iron monitoring would be an RPD, since numeric data isn't being used in the determination, but observable, site-specific conditions are.

When the facility is performing surficial or subsurface land application, the volume of water, frequency of application, type of vegetation, soil type, land slopes, and general overall operating conditions are considered. 10 CSR 20-8 are regulations for the minimum operating conditions for land application; these regulations cannot be excused even if there is no RP. RP is reserved for discharging outfalls given that these outfalls are the only ones which water quality standards apply to, but the process is similar as the site conditions are compared to regulations, soil sampling, pollutant profile, and other site specific conditions. In the case of non-discharging outfalls, an RPD is instead used to determine monitoring requirements.

The TSD RPA method cannot be performed on stormwater as the flow is intermittent and highly variable. A stormwater RPD consists of reviewing application data and discharge monitoring data and comparing those data to narrative or numeric water quality criteria.



For stormwater outfalls, considerations are required per 10 CSR 6.200(6)(B)2: A. application and other information supplied by the facility; B. effluent guidelines; C. best professional judgment; D. water quality; and E. BMPs.

RPDs are also performed for WET testing in wastewater. While no WET regulations specific to industrial wastewater exist, 40 CFR 122.21(j)(5) implies the following can be considered: 1) the variability of the pollutants; 2) the ratio of wastewater flow to receiving stream flow; and 3) current technology employed to remove toxic pollutants. Generally, sufficient data does not exist to mathematically determine RPA for WET, but instead compares the data for other toxic parameters in the wastewater with the necessity to implement WET testing with either monitoring or limits. When toxic parameters exhibit RP, WET testing is generally included in the permit as an RPD. However, if all toxic parameters are controlled via limitations or have exhibited no toxicity in the past, then WET testing may be waived. Only in instances where the wastewater is well characterized can WET testing be waived.

WET testing is not implemented for stormwater as 10 CSR 20-7.015(9)(L) does not apply to stormwater. Precipitation can itself be acidic, or may contain run-in from other un-controlled areas and can provide false positives. Stormwater discharges do not adhere to the same principles of wastewater RPAs because stormwater discharges are not continuous, and at the time of precipitation discharge the receiving stream is also no longer at base (0) flow, meaning that using RP to develop WET testing requirements for stormwater is unrepresentative. The Department works with the Missouri Department of Conservation and has understanding of streams already exhibiting toxicity, even without the influence of industrial wastewater or stormwater. Facilities discharging to streams with historical toxicity are required to use laboratory water for dilution, instead of water from the receiving stream.

TSD methods encountered may be § 3.3.2, § 5.7.3 for metals, and § 5.4.1 for chloride. Part IV EFFLUENT LIMIT DETERMINATIONS provides specific decisions related to this permit.

- ✓ In a meeting on February 17, 2023, the EPA verbally agreed that removal of limits for a parameter with no RP is not considered backsliding.
- ✓ The previous permit indicated “There Shall Be No Discharge of Floating Solids or Visible Foam in Other Than Trace Amounts” under each table. The statement was not evaluated against actual site conditions therefore, this general criteria was re-assessed. It was determined that this facility discharges solids but not foam in amounts which would indicate reasonable potential, therefore the statement was removed and TSS limits were retained. Removal of these narrative criteria is not subject to antibacksliding provisions as there is no RP for foam.
- ✓ A statistical RPA was conducted on appropriate parameters. A more detailed version including calculations of this RPA is available upon request.

Parameter:	Units	CMC Acute	CCC Chronic	Listing	Daily Max	Monthly Average	n#	CV	n Max	MF	RWC Acute	RWC Chronic	RP
Ammonia (early life stages+)	mg/L	14.44	3.52	AQL	8.6	3.27	1	0.600	3.25	13.2	42.9	42.9	Yes
Copper, TR	µg/L	26.89	16.87	AQL	26.89	13.40	8	0.600	38	3.3	126.5	126.5	Yes
Iron, TR	µg/L	n/a	1000	AQL	1764.17	768.38	49	0.804	1840	2.0	3683.8	3683.8	Yes

Units are (µg/L) unless otherwise noted.

n/a	Not Applicable
n	number of samples; if the number of samples is 10 or greater, then the CV value must be used in the QBEL for the applicable constituent.
CV	Coefficient of Variation (CV) is calculated by dividing the Standard Deviation of the sample set by the mean of the same sample set.
CCC	continuous chronic concentration
CMC	continuous maximum concentration
RWC	Receiving Water Concentration: concentration of a toxicant or the parameter in the receiving water after mixing (if applicable)
MF	Multiplying Factor; 99% confidence level and 99% probability basis
RP	Reasonable Potential: 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).

## REGIONAL OFFICES (ROS)

Regional Offices will provide a compliance assistance visit at a facility's request; a regional map with links to phone numbers can be found here: <https://dnr.mo.gov/about-us/division-environmental-quality/regional-office>. Or use <https://dnr.mo.gov/compliance-assistance-enforcement> to request assistance from the Region online.

## RENEWAL REQUIREMENTS

The renewal special condition permit requirement is designed to guide the facility to prepare and include all relevant and applicable information in accordance with 10 CSR 20-6.010(7)(A)-(C), and if applicable, federal regulations. The special condition may not include all requirements and requests for additional information may be made at the time of permit renewal under 644.051.13(5) RSMo and 40 CFR 122.21(h). Prior to submittal, the facility must review the entire submittal to confirm all required information and data is provided; it is the facility's responsibility to discern if additional information is required. Failure to fully disclose applicable information with the application or application addendums may result in a permit revocation per 10 CSR 20-6.010(8)(A) and may result in the forfeiture of permit shield protection authorized in 644.051.16 RSMo. Forms are located at: <https://dnr.mo.gov/water/business-industry-other-entities/permits-certification-engineering-fees/wastewater>

### **SAMPLING FREQUENCY JUSTIFICATION**

Sampling and reporting frequency was generally retained from previous permit. 40 CFR 122.45(d)(1) indicates all continuous discharges, such as wastewater discharges, shall be permitted with daily maximum and monthly average limits. Minimum sampling frequency for all parameters is annually per 40 CFR 122.44(i)(2).

Sampling frequency for stormwater-only outfalls is typically quarterly even though BMP inspection occurs monthly or more often dependent on site needs. The facility may sample more frequently if additional data is required to determine if best management operations and technology are performing as expected.

### **SAMPLING TYPE JUSTIFICATION**

Sampling type was continued from the previous permit. The sampling types are representative of the discharges, and are protective of water quality. Discharges with altering effluent will consider implementing composite sampling; discharges with uniform effluent can have grab samples. Grab samples are usually appropriate for stormwater. Parameters which must have grab sampling are: pH, ammonia, *E. coli*, total residual chlorine, free available chlorine, hexavalent chromium, dissolved oxygen, total phosphorus, volatile organic compounds, and others. For further information on sampling and testing methods see 10 CSR 20-7.015(9)(D)2.

### **SCHEDULE OF COMPLIANCE (SOC)**

A schedule of remedial measures included in a permit, including an enforceable sequence of interim requirements (actions, effluent limits, operations, or milestone events) leading to compliance with the Missouri Clean Water Law, its implementing regulations, and the terms and conditions of an operating permit. SOC's are allowed under 40 CFR 122.47 and 10 CSR 20-7.031(11) providing certain conditions are met. An 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 in accordance with 40 CFR 125.3.
- For a newly constructed facility in most cases per 644.029 RSMo. Newly constructed facilities must meet all applicable effluent limitations (technology and water quality) when discharge begins. New facilities are required to install the appropriate control technologies as specified in a permit or antidegradation review. A SOC is allowed for a new water quality based effluent limit 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 specifically granted for conducting these activities.

In order to provide guidance in developing SOC's, and to attain a greater level of consistency, the Department issued a policy on development of SOC's on October 25, 2012. The policy provides guidance for standard time frames for schedules for common activities, and guidance on factors to modify the length of the schedule.

- ✓ Applicable; the time given for effluent limitations of this permit listed under Interim Effluent Limitations 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. See permit Sections A and B for compliance dates.

### **SECONDARY CONTAINMENT:**

The Department has established minimum requirements for secondary containment areas. These conditions are necessary to prevent contamination in stormwater before storm events, and before stormwater has a risk for contamination in these areas. By including dry inspection requirements, the Department can be confident in the site's operational controls. By fixing all leaks and removing debris from the secondary containment areas prior to precipitation events, stormwater collected in the areas are unlikely to yield contamination or elicit sheen thereby allowing immediate removal of stormwater which is in compliance with SPCC plans.

The Department is establishing a permit requirement for visual inspection frequency commiserate with the potential for contamination for secondary containment(s) to protect waters of the state from petroleum contamination, oils and greases, or sheen pursuant to 10 CSR 20-7.031(4)(B); and other water contaminants as necessary. These conditions establish permissible allowances for the facility to discharge stormwater that was either free of sheen or has been cleaned of sheen, but only if the facility has demonstrated, through inspections, the facility has been effectively maintaining tanks and appurtenances in the secondary containment areas.

Historic petroleum secondary containment language required laboratory testing for benzene, toluene, ethylbenzene, and xylene (BTEX) upon sheen observance; to have all laboratory testing completed prior to release of the contained stormwater; and to be below established numeric limits for BTEX prior to release. However, it was noted by commenters that when the Department requires facilities to keep the sheeny accumulated stormwater in the secondary containment for long periods of time (time needed to obtain laboratory results for BTEX, it is contrary to other relevant regulations, which state contaminated stormwater must be disposed of as quickly as possible. Facilities then developed alternative actions, such as tanking sheeny secondary containment stormwater until the expedited BTEX laboratory analysis was completed, then releasing the water from the tank. These alternative methods of tanking sheeny stormwater are both costly and resource-intensive, requiring worker time which needs to be directed to other facility activities. By shifting worker time from post-sheen-occurrence management to pre-contamination dry-inspections, the Department has alleviated several commenter's concerns regarding past secondary containment special conditions.

By allowing on-site sheen removal, then discharge, the Department is allowing expedited drainage of the secondary containment without delay. When a facility properly maintains tanks and appurtenances via these series of inspections and provides sheen removal prior to release, then the facility can maintain compliance with Missouri's requirements for the safe storage and handling of flammable and combustible liquids (2 CSR 90-30.050), storage tank secondary containment volume requirements (40 CFR 112), and Missouri's general water quality criteria 10 CSR 20-7.031(4)(B).

The Department revised petroleum secondary containment special conditions in permits based on National Fire Protection Association (NFPA) standards [mainly NFPA 30], enforceable under Missouri fire prevention codes [2 CSR 90-30.050], and Spill Prevention, Control, and Countermeasure (SPCC) [40 CFR 112] requirements. 2 CSR 90-30.050(20) and (21) specifically reference the Department of Natural Resources' environmental regulations. To apply these referenced conditions, this permit requires periodic secondary containment inspections.

It is acceptable for the inspections this permit requires to contradict the facility's SPCC plan inspection frequency, as these two requirements have different goals; the frequencies designated in the SPCC plan are based on the facility's evaluation of a tankage system's potential for catastrophic failure, not small leaks that result in sheeny stormwater. The inspection frequency this permit identifies for secondary containments have the capability to identify small leaks from appurtenances which have the possibility to cause contamination in standing stormwater, not simply a catastrophic failure. SPCC requirements pursuant to 40 CFR 112.8(c)(3)(iv) and 40 CFR 112.12(c)(3)(iv) also dictate that release of contaminated stormwater is prohibited unless regulated under an NPDES permit which allows for bypassing pursuant to 40 CFR 122.41(m)(3). As this permit does not allow bypassing, the facility must follow the inspection steps listed in the special conditions of this permit.

Many facilities are subject to the requirements outlined by the EPA in 40 CFR 112.3, also known as the SPCC plan: detailing the equipment, workforce, procedures, and steps necessary to prevent, control, and provide adequate countermeasures to a discharge. These regulations minimally require secondary containment and diversion structures be maintained. Title 40 regulations are developed by the Environmental Protection Agency. The self-certified SPCC plan a facility designs, while aimed to protect waters of the state and United States (WOTS/WOTUS), may differ considerably from site to site. This permit's conditions serves to treat similar facilities similarly. The EPA did not establish minimum frequency container or containment inspections; this permit does establish a minimum frequency, and concurrent inspections for this permit and per the SPCC plan may occur. This permit does not require a professional engineer (PE) inspect the tankage systems.

#### **SPILLS, OVERFLOWS, AND OTHER UNAUTHORIZED DISCHARGE REPORTING**

Per 260.505 RSMo, any emergency involving a hazardous substance must be reported to the Department's 24 hour Environmental Emergency Response hotline at (573) 634-2436 at the earliest possible moment after discovery. The Department may require the submittal of a written report detailing measures taken to clean up a spill. These reporting requirements apply whether or not the spill results in chemicals or materials leaving the permitted property or reaching waters of the state. This requirement is in addition to the noncompliance reporting requirement found in Standard Conditions Part I.

<https://revisor.mo.gov/main/OneSection.aspx?section=260.500&bid=13989&hl=>

Any other spills, overflows, or unauthorized discharges reaching waters of the state must be reported to the regional office during normal business hours, or after normal business hours, to the Department's 24 hour Environmental Emergency Response spill line at 573-634-2436.

Certain industrial facilities are subject to the self-implementing regulations for Oil Pollution Prevention in 40 CFR 112, and are required to initiate and follow Spill Prevention, Control, and Countermeasure (SPCC) Plans. This permit, as issued, is not intended to be a replacement for any SPCC plan, nor can this permit's conditions be automatically relaxed based on the SPCC plan if the permit is more stringent than the plan.

#### **SLUDGE – INDUSTRIAL**

Industrial sludge is solid, semi-solid, or liquid residue generated during the treatment of industrial process or non-process wastewater in a treatment works; including but not limited to, scum or solids removed in primary, secondary, or advanced wastewater treatment process; scum and solids filtered from water supplies and backwashed; and any material derived from industrial sludge. Industrial sludge could also be derived from lagoon dredging or other similar maintenance activities. Certain oil sludge, like those from oil water separators, are subject to self-implementing federal regulations under 40 CFR 279 for used oils.

✓ Not applicable; industrial sludge is not generated at this facility.

#### **STANDARD CONDITIONS**

The standard conditions Part I attached to this permit incorporate all sections of 10 CSR 20-6.010(8) and 40 CFR 122.41(a) through (n) by reference as required by law. These conditions, in addition to the conditions enumerated within the standard conditions must be reviewed by the facility to ascertain compliance with this permit, state regulations, state statutes, federal regulations, and the Clean Water Act. Standard Conditions Part III, if attached to this permit, incorporate requirements dealing with domestic wastewater, domestic sludge, and land application of domestic wastes.

## STORMWATER PERMITTING: LIMITATIONS AND BENCHMARKS

Because of the fleeting nature of stormwater discharges, the Department, under the direction of EPA guidance, has determined monthly averages are capricious measures of stormwater-only discharges. The *Technical Support Document for Water Quality Based Toxics Control* (EPA/505/2-90-001; 1991) §3.1 indicates most procedures within the document apply only to water quality based approaches, not end-of-pipe technology-based controls. Hence, stormwater-only outfalls will generally only contain a maximum daily limit (MDL), a benchmark, or a monitoring requirement as dictated by site specific conditions, the BMPs in place, the BMPs proposed, past performance of the facility, and the receiving water's current quality.

Sufficient rainfall to cause a discharge for one hour or more from a facility would not necessarily cause significant flow in a receiving stream. Acute Water Quality Standards (WQSs) are based on one hour of exposure, and must be protected at all times. Therefore, industrial stormwater facilities with toxic contaminants present in the stormwater may have the potential to cause a violation of acute WQSs if toxic contaminants occur in sufficient amounts. In this instance, the permit may apply daily maximum limitations.

Conversely, it is unlikely for rainfall to cause a discharge for four continuous days from a facility; if this does occur however, the receiving stream will also likely sustain a significant amount of flow providing dilution. Most chronic WQSs are based on a four-day exposure with some exceptions. Under this scenario, most industrial stormwater facilities have limited potential to cause a violation of chronic water quality standards in the receiving stream.

A standard mass-balance equation cannot be calculated for stormwater because stormwater flow and flow in the receiving stream cannot be determined for conditions on any given day or storm event without real-time ad-hoc monitoring. The amount of stormwater discharged from the facility will vary based on current and previous rainfall, soil saturation, humidity, detention time, BMPs, surface permeability, etc. Flow in the receiving stream will vary based on climatic conditions, size of watershed, area of surfaces with reduced permeability (houses, parking lots, and the like) in the watershed, hydrogeology, topography, etc. Decreased permeability may increase the stream flow dramatically over a short period of time (flash).

Numeric benchmark values are based on site specific requirements taking in to account a number of factors but cannot be applied to any process water discharges. First, the technology in place at the site to control pollutant discharges in stormwater is evaluated. Other permits are also reviewed for similar activities. A review of the guidance forming the basis of Environmental Protection Agency's (EPA's) *Multi-Sector General Permit for Stormwater Discharges Associated with Industrial Activity* (MSGP) may also occur. Because precipitation events are sudden and momentary, benchmarks based on state or federal standards or recommendations use the Criteria Maximum Concentration (CMC) value, or acute standard may also be used. The CMC is the estimate of the highest concentration of a material in surface water to which an aquatic community can be exposed briefly without resulting in an unacceptable effect. The CMC for aquatic life is intended to be protective of the vast majority of the aquatic communities in the United States. If a facility has not disclosed BMPs applicable to the pollutants for the site, the facility may not be eligible for benchmarks.

40 CFR 122.44(b)(1) requires the permit implement the most stringent limitations for each discharge, including industrially exposed stormwater; and 40 CFR 122.44(d)(1)(i) and (iii) requires the permit to include water-quality based effluent limitations where reasonable potential has been found. However, because of the non-continuous nature of stormwater discharges, staff are unable to perform statistical Reasonable Potential Analysis (RPA) under most stormwater discharge scenarios. Reasonable potential determinations (RPDs; see REASONABLE POTENTIAL above) using best professional judgment are performed.

Benchmarks require the facility to monitor, and if necessary, replace and update stormwater control measures. Benchmark concentrations are not effluent limitations. A benchmark exceedance, therefore, is not a permit violation; however, failure to take corrective action is a violation of the permit. Benchmark monitoring data is used to determine the overall effectiveness of control measures and to assist the facility in knowing when additional corrective actions may be necessary to comply with the conditions of the permit.

BMP inspections typically occur more frequently than sampling. Sampling frequencies are based on the facility's ability to comply with the benchmarks and the requirements of the permit. Inspections must occur after large rain events and any other time an issue is noted; sampling after a benchmark exceedance may need to occur to show the corrective action taken was meaningful.

When a permitted feature or outfall consists of only stormwater, a benchmark may be implemented if there is no RP for water quality excursions.

- ✓ Not applicable, benchmarks are not available for this permit because there is not a sampling location that safely and effectively samples stormwater independently. Stormwater is managed utilizing best management practices. Removal of sampling requirements is not considered backsliding when prescribed best management practices are just as effective; and when executed correctly, more effective over time than sporadic analytical sampling.
- ✓ The prescribed minimum BMPs required in the permit for stormwater are developed by the Department pursuant to 10 CSR 20-7.031(3), and BMP use for stormwater discharges is authorized under 40 CFR 122.44(k)(2).



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

A SWPPP must be prepared by the facility if the SIC code or facility description type is found in 40 CFR 122.26(b)(14) and/or 10 CSR 20-6.200(2). A SWPPP may be required of other facilities where stormwater has been identified as necessitating better management. 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.

Pursuant to 40 CFR 122.44(k), Best Management Practices (BMPs) must be used to control or abate the discharge of pollutants when: 1) Authorized under §304(e) of the Clean Water Act (CWA) for the control of toxic pollutants and hazardous substances from ancillary industrial activities; 2) Authorized under §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. A BMP may take the form of a numeric benchmark. In accordance with the EPA's *Developing Your Stormwater Pollution Prevention Plan, A Guide for Industrial Operators*, (EPA 833-B-09-002) published by the EPA in 2015 and again in 2021 [https://www.epa.gov/sites/default/files/2021-03/documents/swppp\\_guide\\_industrial\\_2021\\_030121.pdf](https://www.epa.gov/sites/default/files/2021-03/documents/swppp_guide_industrial_2021_030121.pdf) BMPs are measures or practices used to reduce the amount of pollution entering waters of the state from a permitted facility. 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 storm water discharges. Additional information can be found in *Stormwater Management for Industrial Activities: Developing Pollution Prevention Plans and Best Management Practices* (EPA 832-R-92-006; September 1992).

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 facility can 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.

The facility can review the precipitation frequency maps for development of appropriate BMPs. The online map [https://hdsc.nws.noaa.gov/hdsc/pfds/pfds\\_map\\_cont.html?bkmrk=mo](https://hdsc.nws.noaa.gov/hdsc/pfds/pfds_map_cont.html?bkmrk=mo) can be targeted to the facility location and is useful when designing detention structures and planning for any structural BMP component. The stormwater map can also be used to determine if the volume of stormwater caused a disrupted BMP; and if the BMP must be re-designed to incorporate additional stormwater flows.

Areas which must 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 shall be formulated to best control the amount of pollutant being released and discharged by each activity or source. This must 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 must be taken to repair, improve, or replace the failing BMP. This internal evaluation is required at least once per month but may be continued more frequently if BMPs continue to fail. If failures do occur, continue this trial and error process until appropriate BMPs have been established.

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

Alternative Analysis (AA) evaluation of the BMPs is a structured evaluation of BMPs which are reasonable and cost effective. The AA evaluation can include practices 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 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), §II.B.

If parameter-specific numeric benchmark exceedances continue to occur and the facility 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 facility 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 must 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, which includes an appropriate fee; the application is found at: <https://dnr.mo.gov/water/business-industry-other-entities/permits-certification-engineering-fees/wastewater>

- ✓ Applicable; a SWPPP shall be developed and implemented for this facility; see specific requirements in the SPECIAL CONDITIONS section of the permit.

#### **SUFFICIENTLY SENSITIVE ANALYTICAL METHODS**

Please review Standard Conditions Part 1, §A, No. 4. The analytical and sampling methods used shall conform to the reference methods listed in 10 CSR 20-7.015 or 40 CFR 136 unless alternates are approved by the Department and incorporated within this permit. The facility shall use sufficiently sensitive analytical methods for detecting, identifying, and measuring the concentrations of pollutants. The facility shall ensure the selected methods are able to quantify the presence of pollutants in any given discharge at concentrations 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. The reporting limits established by the chosen laboratory must be below the lowest effluent limits established for the specified parameter (including any parameter's future limit after an SOC) in the permit unless the permit provides for an ML or if the facility provides a written rationale to the Department. It is the facility's responsibility to ensure the laboratory has adequate equipment and controls in place to quantify the pollutant. Inflated reporting limits will not be accepted by the Department if the reporting limit is above the parameter value stipulated in the permit. A method is "sufficiently sensitive" when; 1) the method quantifies the pollutant below the level of the applicable water quality criterion 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 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 and or 40 CFR 136. These methods are also required for parameters listed as monitoring only, as the data collected may be used to determine if numeric limitations need to be established. A facility is responsible for working with their contractors to ensure the analysis performed is sufficiently sensitive.

#### **UNDERGROUND INJECTION CONTROL (UIC)**

The UIC program for all classes of wells in the State of Missouri is administered by the Missouri Department of Natural Resources and approved by EPA pursuant to §§1422 and 1425 of the Safe Drinking Water Act (SDWA) and 40 CFR 147 Subpart AA. Injection wells are classified based on the liquids which are being injected. Class I wells are hazardous waste wells which are banned by 577.155 RSMo; Class II wells are established for oil and natural gas production; Class III wells are used to inject fluids to extract minerals; Class IV wells are also banned by Missouri in 577.155 RSMo; Class V wells are shallow injection wells; some examples are heat pump wells and groundwater remediation wells. Domestic wastewater being disposed of sub-surface is also considered a Class V well. In accordance with 40 CFR 144.82, construction, operation, maintenance, conversion, plugging, or closure of injection wells shall not cause movement of fluids containing any contaminant into Underground Sources of Drinking Water (USDW) if the presence of any contaminant may cause a violation of any drinking water standards or groundwater standards under 10 CSR 20-7.031, or other health based standards, or may otherwise adversely affect human health. If the director finds the injection activity may endanger USDWs, the Department may require closure of the injection wells, or other actions listed in 40 CFR 144.12(c), (d), or (e). In accordance with 40 CFR 144.26, the facility shall submit a Class V Well Inventory Form for each active or new underground injection well drilled, or when the status of a well changes, to the Missouri Department of Natural Resources, Geological Survey Program, P.O. Box 250, Rolla, Missouri 65402. The Class V Well Inventory Form can be requested from the Geological Survey Program or can be found at the following web address: <https://dnr.mo.gov/document-search/class-v-well-inventory-form-mo-780-1774> Single family residential septic systems and non-residential septic systems used solely for sanitary waste and having the capacity to serve fewer than 20 persons a day are excluded from the UIC requirements (40 CFR 144.81(9)). The Department implements additional requirements for these types of operations pursuant to 10 CSR 20-6.015(4)(A)1 which instructs the Department to develop permit conditions containing limitations, monitoring, reporting, and other requirements to protect soils, crops, surface waters, groundwater, public health, and the environment. 10 CSR 20-8.200(7) requires a 10 foot setback from the property line and is included in this permit are established to protect groundwater, surface water, and to comply with the WQS. Subsurface systems must have preliminary treatment to improve the quality of the effluent prior to dispersal pursuant to 10 CSR 20-8. Design standards per 10 CSR 20-8.200(7) require Subsurface Absorption Systems to meet the following. (A) Site Restrictions. 1. Subsurface systems shall— A. Exclude unstabilized fill and soils that have been highly compacted and/or disturbed, such as old road beds, foundations, or similar things; B. Provide adequate surface drainage where slopes are less than two percent (2%); C. Provide surface and subsurface water diversion where necessary, such as a curtain or perimeter drain; and D. Have a ten foot (10') buffer from the property line. 2. The vertical separation between the bottom of the drip lines and/or the trench and a limiting layer, including but not limited to bedrock; restrictive horizon; or seasonal high water table, shall be no less than: A. Twenty-four inches (24"); or B. Twelve inches for systems dispersing secondary or higher quality effluent; or C. Forty-eight inches where karst features are present unless the site can be reclassified. (B) Preliminary treatment. Subsurface systems shall be, at a minimum, preceded by preliminary treatment. For design of a secondary treatment system, follow the provisions in 10 CSR 20-8.180 or section (3) of this rule. (C) Loading rates shall not exceed the values assigned by the site and soil evaluation

- ✓ This facility has disclosed sub-surface septic tanks with lateral lines are used at the site, but only 19 employees use each of the systems. If additional people use the system (20 or more any day) then the facility will need to register either or both systems as a UIC Class V system. If the facility decides to register these systems, that should be reported in the next application for renewal.
- ✓ There are two septic systems on site.
- ✓ Truck drivers to not utilize the subsurface systems; they utilize chemical toilets.

#### VARIANCE

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 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. Thermal variances are regulated separately and are found under 644.

- ✓ Not applicable; this permit is not drafted under premise of a petition for variance.

#### WASTELOAD ALLOCATIONS (WLA) FOR LIMITS

As per [10 CSR 20-2.010; definitions], the WLA is the maximum amount of pollutant each discharger is allowed to discharge into the receiving stream without endangering water quality. Only streams with available load allocations can be granted discharge allowances. Outfalls afforded mixing allocations provide higher limits because the receiving stream is able to accept more pollutant loading without causing adverse impacts to the environment or aquatic life.

- ✓ Applicable; wasteload allocations for toxic parameters were calculated using water quality criteria or water quality model results and by applying the dilution equation below. These equations are statistical equations (See Part III – REASONABLE POTENTIAL ANALYSIS) used to calculate the hypothetical or actual variability of the wastewater and the spreadsheet output obtains an effluent limit. Most toxic parameter's WLAs are calculated using the *Technical Support Document For Water Quality-Based Toxics Control* or "TSD" EPA/505/2-90-001; 3/1991, §4.5.5.

$$C = \frac{(Cs \times Qs) + (Ce \times Qe)}{(Qe + Qs)}$$

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

- ✓ For ammonia: The Department previously followed the 2007 ammonia guidance method for derivation of ammonia limits. However, the EPA's Technical Support Document for Water Quality-Based Toxic Controls (TSD) establishes other alternatives to limit derivation. The Department has determined the approach established in TSD §5.4.2, which allows for direct application of both the acute and chronic wasteload allocations (WLA) as permit limits, is more appropriate limit derivation approach for ammonia. Using this method for a discharge to a waterbody where mixing is not allowed, the criterion continuous concentration (CCC) and the criterion maximum concentration (CMC) will equal the chronic and acute WLA respectively. WLAs are then applied as effluent limits, per §5.4.2 of the TSD, where the CMC is the daily maximum and the CCC is the monthly average. The direct application of both acute and chronic criteria as WLA is also applicable for facilities discharging into receiving waterbodies with mixing considerations. The CCC and CMC will need to be calculated into WLA with mixing considerations using the standard mass-balance equation. In the event mixing considerations derive an AML less stringent than the MDL, the AML and MDL will be equal and based on the MDL.
- ✓ For chloride, the Department uses TSD §5.4.1 for two-value steady state acute and chronic protection of aquatic life. It allows comparison of two independent WLAs (acute and chronic) to determine which is more limiting for a discharge. The WLA output provides two numbers for protection against two types of toxic effects, acute and chronic permit limitations resulting in a daily maximum and monthly average limit.
- ✓ Criteria maximum concentration (CMC) are the acute in-stream standards for a specific pollutant.
- ✓ Criteria continuous concentration (CCC) are the chronic in-stream standards for a specific pollutant.
- ✓ Acute wasteload allocations (WLAa) are designated as daily maximum limits (maximum daily limit: MDL), were determined using applicable water quality criteria
- ✓ Chronic wasteload allocations (WLAc) are designated as monthly average limits (average monthly limit: AML) and are typically the most stringent limits applied. Facilities subject to average monthly limits are welcome to take additional samples in the month to meet any lower limit by averaging the results. When only one sample is taken in the month, the sample result is applied to both the daily maximum and monthly average.
- ✓ Mixing: when a stream's flow 7Q10 is above 0.1 cfs, (or lake width is sufficient) the discharge may be afforded mixing allowances. The mixing criteria for toxics are found at 10 CSR 20-7.031(5)(A)4 and a full explanation of mixing is found in Part II – WATERBODY MIXING CONSIDERATIONS.
- ✓ Number of Samples "n": effluent quality is determined by the underlying distribution of daily values, 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 assumption which is, at a minimum, targeted to comply with the values dictated by the WLA. Therefore, it is recommended the actual planned frequency of monitoring 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 uses an assumed number of samples “n = 4”. See additional information under Part III – REASONABLE POTENTIAL ANALYSIS

#### **WASTELOAD ALLOCATION (WLA) MODELING**

Facilities may submit site specific studies to better determine the site specific wasteload allocations applied in permits.

- ✓ Not applicable; a WLA study was either not submitted or determined not applicable by Department staff.

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

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

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

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

A WET test is a quantifiable method to conclusively determine if discharges from the facility cause toxicity to aquatic life by itself, in combination with, or through synergistic responses, typically when mixed with receiving stream water. Under the CWA §101(a)(3), requiring WET testing is reasonably appropriate for Missouri State Operating Permits to quantify toxicity. WET testing is also required by 40 CFR 122.44(d)(1) when RP is found. WET testing ensures the provisions in 10 CSR 20-6 and Missouri’s Water Quality Standards in 10 CSR 20-7 are being met; the acute WQS for WET is 0.3 TUa. Under 10 CSR 20-6.010(8)(A)4, the Department may require other terms and conditions it deems necessary to ensure compliance with the CWA and related regulations of the Missouri Clean Water Commission. Missouri Clean Water Law (MCWL) RSMo 644.051.3 requires the Department to set permit conditions complying with the MCWL and CWA. 644.051.4 RSMo specifically references toxicity as an item the Department must consider in permits (along with water quality-based effluent limits); and RSMo 644.051.5 is the basic authority to require testing conditions. Requirements found in the federal application requirements for POTWs (40 CFR 122.21(j)(5)) do not apply to industrial facilities, therefore WET testing can be implemented on a case by case basis following the factors outlined below. Annual testing is the minimum testing frequency if reasonable potential is found; monitoring requirements promulgated in 40 CFR 122.44(i)(2) state “requirements to report monitoring results shall be established on a case-by-case basis with a frequency dependent on the nature and effect of the discharge, but in no case less than once per year.” To determine reasonable potential, factors considered are: 1) history of toxicity; 2) quantity and quality of substances (either limited or not) in the permit with aquatic life protections assigned; and 3) operational controls on toxic pollutants. See Part III under REASONABLE POTENTIAL for additional information. A facility does not have to be designated as a major facility to receive WET testing; and being a major facility does not automatically require WET testing. Additionally per 40 CFR 122.44(d)(1)(v), limits on whole effluent toxicity are not necessary where the permitting authority demonstrates in the fact sheet, using the procedures in 40 CFR 122.44(d)(1)(ii) of this section, that chemical-specific limits or specified operational controls are sufficient to attain and maintain applicable numeric and narrative water quality standards.

If WET limits are applied to this facility, follow up testing applies. When a facility exceeds the TU established in the permit, three additional follow-up tests are triggered. The follow up test results do not negate the initial testing result. If the facility is within the prescribed TU limit for all three follow up tests, then no further testing is required until the next regularly scheduled tests. If one or more additional tests exceed the TU limit, the facility may consider beginning the Toxicity Identification Evaluation (TIE) and Toxicity Identification Reduction (TRE) processes instead of waiting for three consecutive TU exceedances. The TIE and TRE process can take up to two years, especially when toxicity is variable or transient. We urge facilities to work closely with their WET testing laboratory to follow nationwide guidance for determining causes of toxicity and curative activities to remove toxicity. Additional wastewater controls may be necessary; and while, generally, no Construction Permit (CP) is required for adding treatment at industrial facilities, the facility may check with the Engineering Section to determine a plan of action.

If WET testing failures are from a known toxic parameter, and the facility is working with the Department to alleviate that pollutant’s toxicity in the discharge, please contact the Department prior to conducting follow-up WET testing. Under certain conditions, follow-up testing may be waived when the facility is already working to reduce and eliminate toxicity in the effluent.

For the purposes of reporting, the laboratory may supply either the TU value, the LC<sub>50</sub> or the NOEC. If the laboratory only supplied the LC<sub>50</sub> or the NOEC value, the toxic unit is calculated by 100/LC<sub>50</sub> for acute tests, or 100/NOEC for chronic tests. The TU value is entered in the eDMR system.

- ✓ Applicable; WET testing is found in this permit. See additional information regarding the decision points for WET testing in Part IV of the fact sheet.

## **PART IV. EFFLUENT LIMIT DETERMINATIONS**

### **OUTFALL #005 – WASTEWATER** **EFFLUENT LIMITATIONS TABLE:**

PARAMETERS	UNIT	DAILY MAX	MONTHLY AVG.	PREVIOUS PERMIT LIMITS	MINIMUM SAMPLING FREQUENCY	REPORTING FREQUENCY	SAMPLE TYPE
PHYSICAL							
FLOW	MGD	*	*	SAME	ONCE/MONTH	MONTHLY	24 Hr. Tot
CONVENTIONAL							
BOD-5	mg/L	80	30	SAME	ONCE/MONTH	MONTHLY	GRAB
CHEMICAL OXYGEN DEMAND	mg/L	120	90	SAME	ONCE/MONTH	MONTHLY	GRAB
CHLORINE, TOTAL RESIDUAL (TRC) ‡	µg/L	18.0 (ML130)	6.7 (ML130)	SIMILAR	ONCE/MONTH	MONTHLY	GRAB
OIL & GREASE	mg/L	15	10	SAME	ONCE/MONTH	MONTHLY	GRAB
pH †	SU	6.5 TO 9.0	-	SAME	ONCE/MONTH	MONTHLY	GRAB
TOTAL SUSPENDED SOLIDS (TSS)	mg/L	100	50	SAME	ONCE/MONTH	MONTHLY	GRAB
METALS							
ALUMINUM, TR	µg/L	750	340	SAME	ONCE/MONTH	MONTHLY	GRAB
COPPER, TR	µg/L	*	*	INTERIM	ONCE/MONTH	MONTHLY	GRAB
COPPER, TR	µg/L	26.9	13.4	NEW FINAL	ONCE/MONTH	MONTHLY	GRAB
IRON, TR	µg/L	1579	840	SAME	ONCE/MONTH	MONTHLY	GRAB
NUTRIENTS							
AMMONIA AS N – JANUARY	mg/L	12.1	3.8	***	ONCE/MONTH	MONTHLY	GRAB
AMMONIA AS N – FEBRUARY	mg/L	10.1	3.4	***	ONCE/MONTH	MONTHLY	GRAB
AMMONIA AS N – MARCH	mg/L	10.1	3.4	***	ONCE/MONTH	MONTHLY	GRAB
AMMONIA AS N – APRIL	mg/L	10.1	2.9	***	ONCE/MONTH	MONTHLY	GRAB
AMMONIA AS N – MAY	mg/L	12.1	1.8	***	ONCE/MONTH	MONTHLY	GRAB
AMMONIA AS N – JUNE	mg/L	12.1	1.8	***	ONCE/MONTH	MONTHLY	GRAB
AMMONIA AS N – JULY	mg/L	3.9	1.4	SAME	ONCE/MONTH	MONTHLY	GRAB
AMMONIA AS N – AUGUST	mg/L	12.1	1.6	***	ONCE/MONTH	MONTHLY	GRAB
AMMONIA AS N – SEPTEMBER	mg/L	12.1	2.1	***	ONCE/MONTH	MONTHLY	GRAB
AMMONIA AS N – OCTOBER	mg/L	4.5	3.0	SAME	ONCE/MONTH	MONTHLY	GRAB
AMMONIA AS N – NOVEMBER	mg/L	12.1	3.8	***	ONCE/MONTH	MONTHLY	GRAB
AMMONIA AS N – DECEMBER	mg/L	10.1	3.4	***	ONCE/MONTH	MONTHLY	GRAB
KJELDAHL NITROGEN, TOTAL (TKN)	mg/L	*	*	NEW	ONE/QUARTER	QUARTERLY	GRAB
NITRATE PLUS NITRITE AS N	mg/L	*	*	NEW	ONE/QUARTER	QUARTERLY	GRAB
NITROGEN, TOTAL (TN)	mg/L	*	*	SAME	ONE/QUARTER	QUARTERLY	GRAB
PHOSPHORUS, TOTAL P (TP)	mg/L	*	*	SAME	ONE/QUARTER	QUARTERLY	GRAB
OTHER							
CHLORIDE	mg/L	*	*	SAME	ONCE/MONTH	MONTHLY	GRAB
SULFATE	mg/L	*	*	SAME	ONCE/MONTH	MONTHLY	GRAB
CHLORIDE PLUS SULFATE	mg/L	1000	*	SAME	ONCE/MONTH	MONTHLY	GRAB
WET TEST - CHRONIC	TUc	1.1	-	SAME	ANNUALLY	ANNUALLY	GRAB

- \* monitoring and reporting requirement only
- \*\*\* see narrative below
- † report the minimum and maximum pH values; pH is not to be averaged
- ‡ An ML is established for TRC; see permit.
- new parameter not established in previous state operating permit
- interim parameter requirements prior to end of SOC

final parameter requirements at end of SOC  
TR total recoverable

## DERIVATION AND DISCUSSION OF LIMITS:

### PHYSICAL:

#### Flow

In accordance with [40 CFR Part 122.44(i)(1)(ii)] the volume of effluent discharged from each outfall is needed to ensure compliance with permitted effluent limitations. If the facility is unable to obtain effluent flow, then it is the responsibility of the facility to inform the Department, which may require the submittal of an operating permit modification. The facility will report the total flow in millions of gallons per day (MGD), monthly monitoring continued from previous permit. The facility reported from 0.1 to 0.33 MGD in the last permit term.

### CONVENTIONAL:

#### Biochemical Oxygen Demand 5 Days (BOD-5)

80 mg/L daily maximum and 30 mg/L monthly average. Included and continued from the previous permit using best professional judgment and antibacksliding regulations. There is no numeric water quality standard for COD; however, increased oxygen demand may impact instream water quality. The facility reported from non-detect to 53 mg/L in the last permit term; additional sampling in the month can be completed to average the monthly data. It is noted that dissolved oxygen does have a WQS and is limited in this permit. See below.

#### Chemical Oxygen Demand (COD)

120 mg/L daily maximum and 90 mg/L monthly average. Included and continued from the previous permit using best professional judgment and antibacksliding regulations. There is no numeric water quality standard for COD; however, increased oxygen demand may impact instream water quality. The facility reported from non-detect to 53 mg/L in the last permit term; there were no effluent violations for this parameter. This is a technology limit continued per 10 CSR 20-7.015(9)(I)1 for best professional judgment of industrial wastewater. It is noted that dissolved oxygen does have a WQS and is monitored and limited in this permit. See below.

#### Chlorine, Total Residual (TRC)

The facility reported non-detects in the last permit term due to the detection limit, but limits are maintained to ensure chlorine is being utilized in the system effectively and efficiently. There are no technology limits established for this parameter therefore water quality limits are the most protective. The effluent limits are calculated as follows. The Department has established an ML for this parameter; the ML is 130 µg/L, see note ‡ in the permit.

Acute AQL: 19 µg/L

Chronic AQL: 11 µg/L

LTAa:  $WLAa * LTAa \text{ multiplier} = 19 * 0.3210 = 6.1005$  [CV: 0.6, 99th %ile]

LTAc:  $WLAc * LTAc \text{ multiplier} = 11 * 0.5274 = 5.801$  [CV: 0.6, 99th %ile]

use most protective LTA: 5.8017678850773

Daily Maximum:  $MDL = LTA * MDL \text{ multiplier} = 5.801 * 3.1147 = 18.069$  µg/L [CV: 0.6, 99th %ile]

Monthly Average:  $AML = LTA * AML \text{ multiplier} = 5.801 * 1.55242 = 9.0068$  µg/L [CV: 0.6, 95th %ile, n=4]

Because the recalculated monthly average is higher than the previous permit's monthly average, the previous permit's monthly average will be kept to ensure there is not backsliding.

#### Oil & Grease

15 mg/L daily maximum; 10 mg/L monthly average; continued from previous permit using RPD. The facility reported from non-detect to 14.5 mg/L in the last permit term. Oil and grease is considered a conventional pollutant. Oil and grease is a comprehensive test which measures for gasoline, diesel, crude oil, creosote, kerosene, heating oils, heavy fuel oils, lubricating oils, waxes, and some asphalt and pitch. The test can also detect some volatile organics such as benzene, toluene, ethylbenzene, or xylene, but these constituents are often lost during testing due to their boiling points. An RPD on this parameter found RP based on data supplied by the permittee. Oils and greases of different densities will possibly form sheen or unsightly bottom deposits at levels which vary from 10 mg/L. To protect the general criteria, it is the responsibility of the facility to visually observe the discharge and receiving waters for sheen or bottom deposits. The limit this permit applies does not allow the facility to violate general criteria pursuant to 10 CSR 20-7.015(4) even if data provided are below the numeric limit.

AQL Chronic: 10 mg/L per 10 CSR 20-7.031 Table A1

Set chronic standard equal to chronic WLA per TSD §5.4.2 (EPA/505/2-90-001); multiply by 1.5 to obtain acute limit.

$10 \text{ mg/L} * 1.5 = 15 \text{ mg/L}$

### **pH**

6.5 to 9.0 SU – instantaneous grab sample is included and continued from the previous permit using best professional judgment per 10 CSR 20-7.015(9)(I)1 and antibacksliding regulations per 40 CFR § 122.44(I). Water quality limits [10 CSR 20-7.031(5)(E)] are applicable to this outfall. pH is a fundamental water quality indicator. Additionally, metals leachability and ammonia availability in wastewater is dependent on pH. Limitations in this permit will protect against aquatic organism toxicity, downstream water quality issues, human health hazard contact, and negative physical changes in accordance with the general criteria at 10 CSR 20-7.031(4) and the Clean Water Act's (CWA) goal of 100% fishable and swimmable rivers and streams. Technology limits of 6.0 to 9.0 are not protective enough of the receiving stream.

### **Total Suspended Solids (TSS)**

100 mg/L daily maximum and 50 mg/L monthly average. Included and continued from the previous permit using best professional judgment per 10 CSR 20-7.015(9)(I)1 and antibacksliding regulations per 40 CFR § 122.44(I). There is no numeric water quality standard for TSS; increased suspended solids in runoff can lead to decreased available oxygen for aquatic life and an increase of surface water temperatures in a receiving stream. Suspended solids can also be carriers of toxins, which can adsorb to the suspended particles; therefore, total suspended solids are a valuable indicator parameter for other pollution. The facility reported from non-detect to 16 mg/L in the last permit term; there were no effluent violations for this parameter.

## **METALS:**

### **Aluminum, Total Recoverable**

Previous permit limits were 750 µg/L daily maximum, 340 µg/L monthly average; the facility reported between 42.1 and 360 µg/L in the last permit term. This parameter has RP based on RPD; see fact sheet Part III, REASONABLE POTENTIAL DETERMINATIONS. This facility utilizes anti-scale, flocculants, and polymers in the process. Historic limits must be retained to conform to antibacksliding regulations.

### **Copper, Total Recoverable**

Previous permit limits were monitoring only; the facility reported between non-detect and 38 µg/L in the last permit term. This parameter has RP; see fact sheet Part III, REASONABLE POTENTIAL. The facility is not able to meet the new limits therefore an SOC is afforded; see fact sheet Part III SCHEDULE OF COMPLIANCE.

Acute AQL:  $e^{(1.0166 * \ln 200 - 3.062490) * (1.136672 - \ln 200 * 0.041838)} = 25.815 \text{ µg/L [at hardness 200]}$

Chronic AQL:  $e^{(0.7977 * \ln 200 - 3.909) * (1.101672 - \ln 200 * 0.041938)} = 16.193 \text{ µg/L [at hardness 200]}$

Acute WLA:  $C_e = ((0.309 \text{ cfsDF} + 0 \text{ cfsZID}) * 26.891 - (0 \text{ cfsZID} * 0 \text{ background})) / 0.309 \text{ cfsDF} = 26.891$

Chronic WLA:  $C_e = ((0.309 \text{ cfsDF} + 0 \text{ cfsMZ}) * 16.868 - (0 \text{ cfsMZ} * 0 \text{ background})) / 0.309 \text{ cfsDF} = 16.868$

LTAa:  $WLAa * LTAa \text{ multiplier} = 26.891 * 0.321 = 8.634 \text{ [CV: 0.6, 99th \%ile]}$

LTAc:  $WLAc * LTAc \text{ multiplier} = 16.868 * 0.527 = 8.897 \text{ [CV: 0.6, 99th \%ile]}$

use most protective LTA: 8.634

Daily Maximum:  $MDL = LTA * MDL \text{ multiplier} = 8.634 * 3.114 = 26.9 \text{ µg/L [CV: 0.6, 99th \%ile]}$

Monthly Average:  $AML = LTA * AML \text{ multiplier} = 8.634 * 1.552 = 13.4 \text{ µg/L [CV: 0.6, 95th \%ile, n=4]}$

Future compliance will be monitored. However, if the facility finds treatment for this parameter difficult, underground injection may be appropriate. The drinking water standards for copper are 1300 µg/L, therefore this wastewater may be suitable for underground injection.

### **Iron, Total Recoverable**

Previous permit limits were 1579 µg/L daily maximum, 840 µg/L monthly average; the facility reported between 50 and 1840 µg/L in the last permit term. This parameter has RP; see fact sheet Part III, REASONABLE POTENTIAL. The last permit limit calculations used 162 mg/L for the hardness, this permit can allow a hardness of 200 mg/L. Because of the highly variable data, the new calculations provided about the same effluent limits. Recalculation of the effluent limits utilizing site specific data was overly stringent because the data were so variable, therefore the previous permit's limits were retained utilizing best professional judgment. The facility continues to have RP for this parameter, several data were over the established monthly average, but the facility can continue to meet the daily maximum.

Iron may be a limiting factor for possible future underground injection. The groundwater standards for iron are 300 µg/L. This parameter at these levels would not be suitable for UIC, but would likely be suitable for irrigation.

## **NUTRIENTS:**

### **Ammonia, Total as Nitrogen**

The application indicated the ammonia in the wastewater is from the well water, and recycling the wastewater in the processes. However, the facility's discharge is the only applicable consideration in relation to the water quality standards for surface water. Only technological limits can be afforded intake credit; water quality-based limits are generally not allowed to consider the intake

water. Secondly, the intake water is from the groundwater; a different waterbody than the discharge to surface water. The facility reported from 0.1 to 3.25 mg/L in the last permit term. Early life stages are present [10 CSR 20-7.031(5)(B)7.C & Table B3], and salmonids are absent based on WWH designation of stream; total ammonia nitrogen criteria apply. See Part III – WASTELOAD ALLOCATIONS for more information. Since the last permit term, the Department has taken an alternative approach to ammonia limit derivation. See Part III WASTELOAD ALLOCATIONS and REASONABLE POTENTIAL.

This pollutant was the only pollutant identified as a pollutant of concern in the 2017 TBEL analysis. The limitations for this parameter are found below. Technology used by this permittee are not equivalent to POTWs therefore a technology-based limitation will not be included for this permit; water quality based effluent limits are more protective at this time. Two-season limits continued from the previous permit as those values remain protective of the receiving stream. See antidegradation narrative below.

Season	Temp (°C)	pH (SU)	2017 & 2023 CMC	2017 & 2023 CCC	2017 Daily Maximum	2017 Monthly Average	2023 Daily Maximum	2023 Monthly Average
Summer	26	7.8	12.1	1.5	3.9	1.4	4.5	1.7
Winter	6	7.8	12.1	3.1	4.5	3.0	9.3	3.6

**Previous Limits:**

Summer: 3.9 mg/L daily maximum; 1.4 mg/L monthly average (April through September)

Winter: 4.5 mg/L daily maximum; 3.0 mg/L monthly average (October through March)

The revised limits calculated below added mixing considerations and the assimilative capacity of the stream was evaluated. A review was completed on the discharge for ammonia; and the limits were recalculated based on current procedures as a monthly limit. The stream is not impaired therefore, per antibacksliding requirements at 33 USC 1342(o)(1) referring to 33 USC 1313 (d)(4)(B), the WQBEL limit can be changed because a review of possible degradation was completed.

**Previous Limits:**

Month	CC	FAC (lbs/day)	AML (mg/L)	AC (lbs/day)	% FAC remaining
January	3.12	7.01	3	5.01	28.57
February	2.73	6.13	3	5.01	18.32
March	2.73	6.13	3	5.01	18.32
April	2.33	5.23	1.4	2.34	55.34
May	1.94	4.35	1.4	2.34	46.24
June	1.51	3.37	1.4	2.34	30.67
July	1.10	2.46	1.4	2.34	5.03
August	1.33	2.97	1.4	2.34	21.29
Sept	1.70	3.80	1.4	2.34	38.55
Oct	2.58	5.78	3	5.01	13.42
Nov	3.12	7.01	3	5.01	28.57
Dec	2.73	6.13	3	5.01	18.32

**Revised Limits:**

Month	CC	FAC (lbs/day)	AML (mg/L)	AC (lbs/day)	% FAC remaining
January	3.12	7.01	3.6	6.01	14.28
February	2.73	6.13	3.6	6.01	1.98
March	2.73	6.13	3.6	6.01	1.98
April	2.33	5.23	1.7	2.84	45.77
May	1.94	4.35	1.7	2.84	34.72
June	1.51	3.37	1.7	2.84	15.81
July	1.10	2.46	1.7	2.84	-15.32
August	1.33	2.97	1.7	2.84	4.42
Sept	1.70	3.80	1.7	2.84	25.39
Oct	2.58	5.78	3.6	6.01	-3.89
Nov	3.12	7.01	3.6	6.01	14.28



Month	CC	FAC (lbs/day)	AML (mg/L)	AC (lbs/day)	% FAC remaining
Dec	2.73	6.13	3.6	6.01	1.98
Stream flow, Qs:		0.108		cfs	
Discharge flow, Qd:		0.309		cfs	
Existing Water Quality, Cs:		0.01		mg/L	
Conversion factor:		5.4		(constant, for cfs)	
Chronic Criterion, Cc:		variable		mg/L	

Limits may be revised for all months except July and October because there is no available assimilative capacity (FAC is negative) for those months.

#### January

Acute AQL WQS (CMC):  $(0.411/(1+10^{7.204-pH[7.8]}))+(58.4/(1+10^{pH[7.8]-7.204})) = 12.1 \text{ mg/L}$

Chronic AQL WQS (CCC):  $(0.0577/(1+10^{7.688-pH[7.8]}))+(2.487/(1+10^{pH[7.8]-7.688}))*\text{MIN}(2.85,(1.45*10^{0.028*(25-temp[2.9])})) = 3.1 \text{ mg/L}$

Acute WLA:  $((0.309 \text{ cfsDF} + 0 \text{ cfs1Q10ZID}) * 12.1 \text{ CMC} - (0 \text{ cfs1Q10ZID} * 0.01 \text{ bkg})) / 0.30944572 \text{ cfsDF} = 12.1 \text{ mg/L}$

Chronic WLA:  $((0.309 \text{ cfsDF} + 0.071 \text{ cfs30Q10MZ}) * 3.122 \text{ CCC} - (0.071 \text{ cfs30Q10MZ} * 0.01 \text{ bkg})) / 0.309 \text{ cfsDF} = 3.8 \text{ mg/L}$

#### February

Acute AQL WQS (CMC):  $(0.411/(1+10^{7.204-pH[7.9]}))+(58.4/(1+10^{pH[7.9]-7.204})) = 10.1 \text{ mg/L}$

Chronic AQL WQS (CCC):  $(0.0577/(1+10^{7.688-pH[7.9]}))+(2.487/(1+10^{pH[7.9]-7.688}))*\text{MIN}(2.85,(1.45*10^{0.028*(25-temp[4])})) = 2.7 \text{ mg/L}$

Acute WLA:  $C_e = ((0.309 \text{ cfsDF} + 0 \text{ cfs1Q10ZID}) * 10.1 \text{ CMC} - (0 \text{ cfs1Q10ZID} * 0.01 \text{ bkg})) / 0.30944572 \text{ cfsDF} = 10.1 \text{ mg/L}$

Chronic WLA:  $((0.309 \text{ cfsDF} + 0.071 \text{ cfs30Q10MZ}) * 2.732 \text{ CCC} - (0.071 \text{ cfs30Q10MZ} * 0.01 \text{ bkg})) / 0.309 \text{ cfsDF} = 3.4 \text{ mg/L}$

#### March

Acute AQL WQS (CMC):  $(0.411/(1+10^{7.204-pH[7.9]}))+(58.4/(1+10^{pH[7.9]-7.204})) = 10.1 \text{ mg/L}$

Chronic AQL WQS (CCC):  $(0.0577/(1+10^{7.688-pH[7.9]}))+(2.487/(1+10^{pH[7.9]-7.688}))*\text{MIN}(2.85,(1.45*10^{0.028*(25-temp[10.6])})) = 2.7 \text{ mg/L}$

Acute WLA:  $C_e = ((0.309 \text{ cfsDF} + 0 \text{ cfs1Q10ZID}) * 10.1 \text{ CMC} - (0 \text{ cfs1Q10ZID} * 0.01 \text{ bkg})) / 0.30944572 \text{ cfsDF} = 10.1 \text{ mg/L}$

Chronic WLA:  $((0.309 \text{ cfsDF} + 0.071 \text{ cfs30Q10MZ}) * 2.732 \text{ CCC} - (0.071 \text{ cfs30Q10MZ} * 0.01 \text{ bkg})) / 0.309 \text{ cfsDF} = 3.4 \text{ mg/L}$

#### April

Acute AQL WQS (CMC):  $(0.411/(1+10^{7.204-pH[7.9]}))+(58.4/(1+10^{pH[7.9]-7.204})) = 10.1 \text{ mg/L}$

Chronic AQL WQS (CCC):  $(0.0577/(1+10^{7.688-pH[7.9]}))+(2.487/(1+10^{pH[7.9]-7.688}))*\text{MIN}(2.85,(1.45*10^{0.028*(25-temp[17])})) = 2.3 \text{ mg/L}$

Acute WLA:  $((0.309 \text{ cfsDF} + 0 \text{ cfs1Q10ZID}) * 10.1 \text{ CMC} - (0 \text{ cfs1Q10ZID} * 0.01 \text{ bkg})) / 0.30944572 \text{ cfsDF} = 10.1 \text{ mg/L}$

Chronic WLA:  $((0.309 \text{ cfsDF} + 0.071 \text{ cfs30Q10MZ}) * 2.333 \text{ CCC} - (0.071 \text{ cfs30Q10MZ} * 0.01 \text{ bkg})) / 0.309 \text{ cfsDF} = 2.9 \text{ mg/L}$

#### May

Acute AQL WQS (CMC):  $(0.411/(1+10^{7.204-pH[7.8]}))+(58.4/(1+10^{pH[7.8]-7.204})) = 12.1 \text{ mg/L}$

Chronic AQL WQS (CCC):  $(0.0577/(1+10^{7.688-pH[7.8]}))+(2.487/(1+10^{pH[7.8]-7.688}))*\text{MIN}(2.85,(1.45*10^{0.028*(25-temp[22])})) = 1.9 \text{ mg/L}$

Acute WLA:  $((0.309 \text{ cfsDF} + 0 \text{ cfs1Q10ZID}) * 12.1 \text{ CMC} - (0 \text{ cfs1Q10ZID} * 0.01 \text{ bkg})) / 0.30944572 \text{ cfsDF} = 12.1 \text{ mg/L}$

Chronic WLA:  $((0.309 \text{ cfsDF} + 0.071 \text{ cfs30Q10MZ}) * 1.94 \text{ CCC} - (0.071 \text{ cfs30Q10MZ} * 0.01 \text{ bkg})) / 0.309 \text{ cfsDF} = 2.4 \text{ mg/L}$

#### June

Acute AQL WQS (CMC):  $(0.411/(1+10^{7.204-pH[7.8]}))+(58.4/(1+10^{pH[7.8]-7.204})) = 12.1 \text{ mg/L}$

Chronic AQL WQS (CCC):  $(0.0577/(1+10^{7.688-pH[7.8]}))+(2.487/(1+10^{pH[7.8]-7.688}))*\text{MIN}(2.85,(1.45*10^{0.028*(25-temp[26])})) = 1.5 \text{ mg/L}$

Acute WLA:  $((0.309 \text{ cfsDF} + 0 \text{ cfs1Q10ZID}) * 12.1 \text{ CMC} - (0 \text{ cfs1Q10ZID} * 0.01 \text{ bkg})) / 0.30944572 \text{ cfsDF} = 12.1 \text{ mg/L}$

Chronic WLA:  $((0.309 \text{ cfsDF} + 0.071 \text{ cfs30Q10MZ}) * 1.506 \text{ CCC} - (0.071 \text{ cfs30Q10MZ} * 0.01 \text{ bkg})) / 0.309 \text{ cfsDF} = 1.8 \text{ mg/L}$

#### August

Acute AQL WQS (CMC):  $(0.411/(1+10^{7.204-pH[7.8]}))+(58.4/(1+10^{pH[7.8]-7.204})) = 12.1 \text{ mg/L}$

Chronic AQL WQS:  $(0.0577/(1+10^{7.688-pH[7.8]}))+(2.487/(1+10^{pH[7.8]-7.688}))*\text{MIN}(2.85,(1.45*10^{0.028*(25-temp[28])})) = 1.3 \text{ mg/L}$

Acute WLA:  $((0.309 \text{ cfsDF} + 0 \text{ cfs1Q10ZID}) * 12.1 \text{ CMC} - (0 \text{ cfs1Q10ZID} * 0.01 \text{ bkg})) / 0.30944572 \text{ cfsDF} = 12.1 \text{ mg/L}$

Chronic WLA:  $((0.309 \text{ cfsDF} + 0.071 \text{ cfs30Q10MZ}) * 1.328 \text{ CCC} - (0.071 \text{ cfs30Q10MZ} * 0.01 \text{ bkg})) / 0.309 \text{ cfsDF} = 1.6 \text{ mg/L}$

#### September

Acute AQL WQS:  $(0.411/(1+10^{7.204-pH[7.8]}))+(58.4/(1+10^{pH[7.8]-7.204})) = 12.1 \text{ mg/L}$

Chronic AQL WQS:  $(0.0577/(1+10^{7.688-pH[7.8]}))+(2.487/(1+10^{pH[7.8]-7.688}))*\text{MIN}(2.85,(1.45*10^{0.028*(25-temp[24.1])})) = 1.7 \text{ mg/L}$

Acute WLA:  $((0.309 \text{ cfsDF} + 0 \text{ cfs1Q10ZID}) * 12.1 \text{ CMC} - (0 \text{ cfs1Q10ZID} * 0.01 \text{ bkg})) / 0.30944572 \text{ cfsDF} = 12.1 \text{ mg/L}$

Chronic WLA:  $((0.309 \text{ cfsDF} + 0.071 \text{ cfs30Q10MZ}) * 1.698 \text{ CCC} - (0.071 \text{ cfs30Q10MZ} * 0.01 \text{ bkg})) / 0.309 \text{ cfsDF} = 2.1 \text{ mg/L}$

#### November

Acute AQL WQS:  $(0.411/(1+10^{7.204-pH[7.8]}))+(58.4/(1+10^{pH[7.8]-7.204})) = 12.1 \text{ mg/L}$

Chronic AQL WQS:  $(0.0577/(1+10^{7.688-pH[7.8]}))+(2.487/(1+10^{pH[7.8]-7.688}))*\text{MIN}(2.85,(1.45*10^{0.028*(25-temp[11.6])})) = 3.1 \text{ mg/L}$

Acute WLA:  $((0.309 \text{ cfsDF} + 0 \text{ cfs1Q10ZID}) * 12.1 \text{ CMC} - (0 \text{ cfs1Q10ZID} * 0.01 \text{ bkg})) / 0.30944572 \text{ cfsDF} = 12.1 \text{ mg/L}$

Chronic WLA:  $((0.309 \text{ cfsDF} + 0.071 \text{ cfs30Q10MZ}) * 3.122 \text{ CCC} - (0.071 \text{ cfs30Q10MZ} * 0.01 \text{ bkg})) / 0.309 \text{ cfsDF} = 3.8 \text{ mg/L}$

#### December

Acute AQL WQS:  $(0.411/(1+10^{7.204-pH[7.9]}))+(58.4/(1+10^{pH[7.9]-7.204})) = 10.1 \text{ mg/L}$

Chronic AQL WQS:  $(0.0577/(1+10^{7.688-pH[7.9]}))+(2.487/(1+10^{pH[7.9]-7.688}))*\text{MIN}(2.85,(1.45*10^{0.028*(25-temp[5])})) = 2.7 \text{ mg/L}$

Acute WLA:  $((0.309 \text{ cfsDF} + 0 \text{ cfs1Q10ZID}) * 10.1 \text{ CMC} - (0 \text{ cfs1Q10ZID} * 0.01 \text{ bkg})) / 0.30944572 \text{ cfsDF} = 10.1 \text{ mg/L}$

Chronic WLA:  $((0.309 \text{ cfsDF} + 0.071 \text{ cfs30Q10MZ}) * 2.732 \text{ CCC} - (0.071 \text{ cfs30Q10MZ} * 0.01 \text{ bkg})) / 0.309 \text{ cfsDF} = 3.4 \text{ mg/L}$

### Kjeldahl Nitrogen, Total (TKN)

Nitrogen is expected to be present in this discharge therefore quarterly monitoring is required per 10 CSR 20-7.015(9)(D)8. Previous data show the presence of nitrogen therefore monitoring is continued.

### **Nitrate plus Nitrite**

Nitrogen is expected to be present in this discharge therefore quarterly monitoring is required per 10 CSR 20-7.015(9)(D)8. Previous data show the presence of nitrogen therefore monitoring is continued. Dependent on the nitrate content of the wastewater, this wastewater may not be suitable for UIC if nitrate is above 10 mg/L.

### **Nitrogen, Total (TN)**

Nitrogen is expected to be present in this discharge therefore quarterly monitoring is required per 10 CSR 20-7.015(9)(D)8. Previous data show the presence of nitrogen therefore monitoring is continued.

### **Phosphorus, Total P (TP)**

Phosphorus was marked as present in this discharge and the data range from 0.5 to 5.15 mg/L in the last permit term therefore quarterly monitoring is required per 10 CSR 20-7.015(9)(D)8.

## **OTHER:**

### **Chloride**

Chloride limits were removed in the last permit because there was no reasonable potential. The facility reported from 46.4 to 119 mg/L in the last permit term, there continues to be no RP for chloride individually. Monitoring required to determine chloride plus sulfate below. The facility shall sample and independently report the analytical value of chloride. Chloride levels below about 150 mg/L are generally suitable for irrigation.

### **Sulfate**

Monitoring required to determine chloride plus sulfate below. The facility shall sample and independently report the analytical value of sulfate. The facility reported from 1.5 to 804 mg/L in the last permit term. There are no sulfate WQS applied to the local receiving streams therefore no comparison was made to any WQS or technology limits.

### **Chloride Plus Sulfate**

The facility reported from 87 to 922 mg/L in the last permit term. This discharge continues to have RP. Limits are retained from the previous permit and pursuant to 10 CSR 20-7.031(L) at 1000 mg/L for daily maximum, monitoring only for monthly average.

### **Whole Effluent Toxicity (WET) Test, Chronic**

Using RPD, there is reasonable potential to cause toxicity in the receiving stream based on the factors listed in Part III, REASONABLE POTENTIAL, and WHOLE EFFLUENT TOXICITY (WET) TEST although the facility reported no toxicity in the last permit term. The chronic WLA is converted to a long-term average concentration (LTAA<sub>c</sub>) using:  $WLA_{a,c} = WLA_a \times ACR$ . A default acute to chronic ratio (ACR) value of 3.7 is used based on §1.3.4 (page 18) and Appendix A of the March 1991 TSD for chemical manufacturers. The standard Allowable Effluent Concentration (AEC) for facilities without mixing considerations is 100%. The standard dilution series for facilities discharging to waterbodies with no mixing considerations is 100%, 50%, 25%, 12.5%, & 6.25% as 10 CSR 20-7.015(9)(L)4.A states the dilution series must be proportional. See the permit for the dilution series. A limit is being applied based on RP, no SOC is permissible as the facility is able to meet the limits. Toxicity testing would be eliminated if wastewater was irrigated or injected.

Acute AQL: 0.3 TU<sub>a</sub>

Chronic Assumption: 1 TU<sub>c</sub>

The AEC is  $(0.309 \text{ CFSdf} / (0 \text{ CFSzid} + 0.309 \text{ CFSdf})) = 100\%$

LTAA<sub>c</sub>:  $WLA_a * LTAA \text{ multiplier} = 1.11 * 0.321 = 0.356$  [CV: 0.6, 99th %ile]

LTAc:  $WLA_c * LTAc \text{ multiplier} = 1 * 0.527 = 0.527$  [CV: 0.6, 99th %ile]

use most protective LTA: 0.356

Daily Maximum:  $MDL = LTA * MDL \text{ multiplier} = 0.356 * 3.114 = 1.1 \text{ TU}_c$  [CV: 0.6, 99th %ile]

## **PART V. ADMINISTRATIVE REQUIREMENTS**

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

### **PERMIT SYNCHRONIZATION**

Permits are normally issued on a five-year term, but to achieve watershed synchronization some permits will need to be issued for less than the full five years as allowed by regulation. The intent is all permits within a watershed will move through the Watershed Based Management (WBM) cycle together and all expire in the same fiscal year. This will allow the Department to explore a watershed based permitting effort at some point in the future.

- ✓ Industrial permits are not being synchronized.

### **PUBLIC NOTICE**

The Department shall give public notice 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 or with 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 facility must be notified of the denial in writing. <https://dnr.mo.gov/water/what-were-doing/public-notice> The Department must issue public notice of a pending operating permit. The public comment period is the length of time not less than 30 days following the date of the public notice within which interested persons may submit written comments about the proposed permit.

For persons wishing to submit comments regarding this proposed operating permit, 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. All comments must be in written form.

- ✓ The Public Notice period for this operating permit is January 26, 2024 through February 26, 2024. No comments were received.

**DATE OF FACT SHEET:** FEBRUARY 27, 2024

### **COMPLETED BY:**

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

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

## Part I – General Conditions

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

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

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

### Section B – Reporting Requirements

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



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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.

**NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)  
RENEWAL OPERATING PERMIT APPLICATION TO DISCHARGE  
STORMWATER & NON-PROCESS WASTEWATER**

**OPERATING PERMIT # MO-0131008**

**MID-MISSOURI ENERGY, LLC  
DENATURED ETHANOL PLANT  
15311 NORTH SALINE 65 HWY MALTA BEND, SALINE COUNTY, MISSOURI**

Prepared for:

Mid-Missouri Energy, LLC  
15311 N. Saline 65 Highway  
Malta Bend, Missouri 65339

**June 2021**

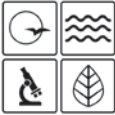
Prepared by:

**Air Resource Specialists, Inc.**  
1901 Sharp Point Drive, Suite F  
Fort Collins, Colorado 80525  
Telephone: 970-484-7941  
Fax: 970-484-3423





# FORMS



MISSOURI DEPARTMENT OF NATURAL RESOURCES  
WATER PROTECTION PROGRAM  
**FORM A – APPLICATION FOR NONDOMESTIC PERMIT UNDER MISSOURI  
CLEAN WATER LAW**

**FOR AGENCY USE ONLY**

CHECK NUMBER

DATE RECEIVED

FEE SUBMITTED

JET PAY CONFIRMATION NUMBER

**PLEASE READ ALL THE ACCOMPANYING INSTRUCTIONS BEFORE COMPLETING THIS FORM.  
SUBMITTAL OF AN INCOMPLETE APPLICATION MAY RESULT IN THE APPLICATION BEING RETURNED.**

**IF YOUR FACILITY IS ELIGIBLE FOR A NO EXPOSURE EXEMPTION:**

Fill out the No Exposure Certification Form (Mo 780-2828): <https://dnr.mo.gov/forms/780-2828-f.pdf>

**1. REASON FOR APPLICATION:**

- ☐ a. This facility is now in operation under Missouri State Operating Permit (permit) MO – \_\_\_\_\_, is submitting an application for renewal, and there is no proposed increase in design wastewater flow. Annual fees will be paid when invoiced and there is no additional permit fee required for renewal.
- ☐ b. This facility is now in operation under permit MO – \_\_\_\_\_, is submitting an application for renewal, and there is a proposed increase in design wastewater flow. Antidegradation Review may be required. Annual fees will be paid when invoiced and there is no additional permit fee required for renewal.
- ☐ c. This is a facility submitting an application for a new permit (for a new facility). Antidegradation Review may be required. New permit fee is required.
- ☒ d. This facility is now in operation under Missouri State Operating Permit (permit) MO – 0131008 and is requesting a modification to the permit. Antidegradation Review may be required. Modification fee is required.

**2. FACILITY**

NAME Mid-Missouri Energy, LLC		TELEPHONE NUMBER WITH AREA CODE 660.595.0144	
ADDRESS (PHYSICAL) 15311 North Saline 65 Highway	CITY Malta Bend	STATE MO	ZIP CODE 65339

**3. OWNER**

NAME Mid-Missouri Energy, LLC		TELEPHONE NUMBER WITH AREA CODE 660.595.0144	
EMAIL ADDRESS shawnd@midmissourienergy.com			
ADDRESS (MAILING) 15311 North Saline 65 Highway	CITY Malta Bend	STATE MO	ZIP CODE 65339

**4. CONTINUING AUTHORITY**

NAME Mid-Missouri Energy, LLC		TELEPHONE NUMBER WITH AREA CODE 660.595.0144	
EMAIL ADDRESS shawnd@midmissourienergy.com			
ADDRESS (MAILING) 15311 North Saline 65 Highway	CITY Malta Bend	STATE MO	ZIP CODE 65339

**5. OPERATOR CERTIFICATION**

NAME Exempt	CERTIFICATE NUMBER Exempt	TELEPHONE NUMBER WITH AREA CODE Exempt	
ADDRESS (MAILING) Exempt	CITY Exempt	STATE Exempt	ZIP CODE Exempt

**6. FACILITY CONTACT**

NAME Shawn Davis	TITLE Environmental H&S Manager	TELEPHONE NUMBER WITH AREA CODE 660.595.0144
E-MAIL ADDRESS shawnd@midmissourienergy.com		

**7. DOWNSTREAM LANDOWNER(S)** Attach additional sheets as necessary.

NAME Thomas Blackburn			
ADDRESS 330 E. Degraffenreid	CITY Springfield	STATE MO	ZIP CODE 65810

**8. ADDITIONAL FACILITY INFORMATION****8.1** Legal Description of Outfalls. (Attach additional sheets if necessary.)*For Universal Transverse Mercator (UTM), use Zone 15 North referenced to North American Datum 1983 (NAD83)*

001 SW  $\frac{1}{4}$  SW  $\frac{1}{4}$  Sec 24 T 51N R 23W Salin County  
UTM Coordinates Easting (X): 466974 m Northing (Y): 4338633 m

002 SW  $\frac{1}{4}$  SW  $\frac{1}{4}$  Sec 24 T 51N R 23W Salin County  
UTM Coordinates Easting (X): 466974 m Northing (Y): 4338633 m

003 SW  $\frac{1}{4}$  SW  $\frac{1}{4}$  Sec 24 T 51N R 23W Salin County  
UTM Coordinates Easting (X): 466974 m Northing (Y): 4338633 m

004 SW  $\frac{1}{4}$  SW  $\frac{1}{4}$  Sec 24 T 51N R 23W Salin County  
UTM Coordinates Easting (X): 466974 m Northing (Y): 4338713 m

Include all subsurface discharges and underground injection systems for permit consideration.

**8.2** Primary Standard Industrial Classification (SIC) and Facility North American Industrial Classification System (NAICS) Codes.

Primary SIC 2869 and NAICS 325193 SIC 2869 and NAICS 325193  
SIC 2869 and NAICS 325193 SIC 2869 and NAICS 325193

**9. ADDITIONAL FORMS AND MAPS NECESSARY TO COMPLETE THIS APPLICATION**

- A. Is this permit for a manufacturing, commercial, mining, solid/hazardous waste, or silviculture facility? YES ☒ NO ☐  
If yes, complete Form C.
- B. Is the facility considered a "Primary Industry" under EPA guidelines (40 CFR Part 122, Appendix A) : YES ☒ NO ☐  
If yes, complete Forms C and D.
- C. Is wastewater land applied? YES ☐ NO ☒  
If yes, complete Form I.
- D. Are sludge, biosolids, ash, or residuals generated, treated, stored, or land applied? YES ☐ NO ☒  
If yes, complete Form R.
- E. Have you received or applied for any permit or construction approval under the CWA or any other environmental regulatory authority? YES ☐ NO ☒  
If yes, please include a list of all permits or approvals for this facility:  
Environmental Permits for this facility: \_\_\_\_\_
- F. Do you use cooling water in your operations at this facility? YES ☒ NO ☐  
If yes, please indicate the source of the water: well water
- G. Attach a map showing all outfalls and the receiving stream at 1" = 2,000' scale.

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

Per 40 CFR Part 127 National Pollutant Discharge Elimination System (NPDES) Electronic Reporting Rule, reporting of effluent limits and monitoring shall be submitted by the permittee via an electronic system to ensure timely, complete, accurate, and nationally consistent set of data. **One of the following must be checked in order for this application to be considered complete.** Please visit <https://dnr.mo.gov/env/wpp/edmr.htm> for information on the Department's eDMR system and how to register.

☐ - I will register an account online to participate in the Department's eDMR system through the Missouri Gateway for Environmental Management (MoGEM) before any reporting is due, in compliance with the Electronic Reporting Rule.

☒ - I have already registered an account online to participate in the Department's eDMR system through MoGEM.

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

☐ - The permit I am applying for does not require the submission of discharge monitoring reports.

## 11. FEES

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

For new permits: <https://magic.collectorsolutions.com/magic-ui/payments/mo-natural-resources/591>

For modifications: <https://magic.collectorsolutions.com/magic-ui/payments/mo-natural-resources/596>

## 12. CERTIFICATION

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

NAME AND OFFICIAL TITLE (TYPE OR PRINT)

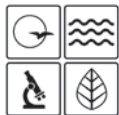
Tyler Edmundson, Plant Manager

TELEPHONE NUMBER WITH AREA CODE

660.595.0143

SIGNATURE

DATE SIGNED



MISSOURI DEPARTMENT OF NATURAL RESOURCES  
 WATER PROTECTION PROGRAM, WATER POLLUTION CONTROL BRANCH  
**FORM C – APPLICATION FOR DISCHARGE PERMIT – MANUFACTURING, COMMERCIAL,  
 MINING, SILVICULTURE OPERATIONS, AND STORMWATER**

**GENERAL INFORMATION (PLEASE SEE INSTRUCTIONS)**

1.0 NAME OF FACILITY  
 Mid-Missouri Energy, LLC

1.1 THIS FACILITY IS OPERATING UNDER MISSOURI STATE OPERATING PERMIT (MSOP) NUMBER:  
 MO-0131008

1.2 IS THIS A NEW FACILITY? PROVIDE CONSTRUCTION PERMIT (CP) NUMBER IF APPLICABLE.  
 NA

1.3 Describe the nature of the business, in detail. Identify the goods and services provided by the business. Include descriptions of all raw, intermediate, final products, byproducts, or waste products used in the production or manufacturing process, stored outdoors, loaded or transferred and any other pertinent information for potential sources of wastewater or stormwater discharges.

Mid-Missouri Energy, Inc. is an ethanol production facility permitted to produce up to 66 million gallons per year (MMgal/yr) of denatured fuel grade ethanol. Dried Distillers Grain and Solubles (DDGS) and carbon dioxide are by-products of the process. Process wastewater is treated and recycled back into the process. Non-process/utility water including cooling tower blowdown, water softener, and reverse osmosis wastewater is discharged with storm water south to the Salt Fork.

**FLOWS, TYPE, AND FREQUENCY**

2.0 Attach a line drawing showing the water flow through the facility. Indicate sources of intake water, operations contributing wastewater to the effluent, and treatment units labeled to correspond to the more detailed descriptions in item B. Construct a water balance on the line drawing by showing average and maximum flows between intakes, operations, treatment units, evaporation, public sewers, and outfalls. If a water balance cannot be determined (e.g., for certain mining activities), provide a pictorial description of the nature and amount of any sources of water and any collection or treatment measures.

2.1 For each outfall (1) below, provide: (2) a description of all operations contributing wastewater to the effluent, including process wastewater, sanitary wastewater, cooling water, stormwater runoff, and any other process or non-process wastewater, (3) the average flow and maximum flow (put max in parentheses) contributed by each operation and the sum of those operations, (4) the treatment received by the wastewater, and (5) the treatment type code. Continue on additional sheets if necessary.

1. OUTFALL NO.	2. OPERATION(S) CONTRIBUTING FLOW; INCLUDE ALL PROCESSES AND SUB PROCESSES AT EACH OUTFALL	3. AVERAGE FLOW AND (MAXIMUM FLOW), INCLUDE UNITS.	4. TREATMENT DESCRIPTION	5. TREATMENT CODES FROM TABLE A
001	Non-contact Cooling Tower	*0.142(0.309)MGD	Dechlorination	4-A, 2-E
002	Reverse Osmosis Reject	*0.066(0.112)MGD	Discharge	4-A
003	Water Softener System	*0.0003(0.025)MGD	Discharge	4-A
004	Storm Water Runoff	*3.773(12.723)MGD	Storm Water Pond	4-A, 1-U, 1-F
005	Combined flows from 001-003	*0.209(0.424)MGD	Discharge	4-A
006	Combined Flows from 004-005	*005 + various SW	Discharge	4-A
		*2016-2020 average		

Attach additional pages if necessary.

## 2.2 INTERMITTENT DISCHARGES

Except for stormwater runoff, leaks, or spills, are any of the discharges described in items 2.0 or 2.1 intermittent or seasonal?

☒ Yes (complete the following table)

☐ No (go to section 2.3)

1. OUTFALL NUMBER	2. OPERATION(S) CONTRIBUTING FLOW	3. FREQUENCY		4. FLOW				C. DURATION <i>(in days)</i>
				A. FLOW RATE <i>(in mgd)</i>		B. TOTAL VOLUME <i>(specify with units)</i>		
		A. DAYS PER WEEK <i>(specify average)</i>	B. MONTHS PER YEAR <i>(specify average)</i>	1. MAXIMUM DAILY	2. LONG TERM AVERAGE	4. LONG TERM DAILY	3. MAXIMUM AVERAGE	
003	Water Softener System	2x/mo	12	0.0250	0.0003	323 gal/day	17.4 gpm	<1

## 2.3 PRODUCTION

A. Does an effluent limitation guideline (ELG) promulgated by EPA under section 304 of the Clean Water Act apply to your facility? Indicate the part and subparts applicable.

☐ Yes 40 CFR \_\_\_\_\_ Subpart(s) \_\_\_\_\_ ☒ No (go to section 2.5)

B. Are the limitations in the effluent guideline(s) expressed in terms of production (or other measure of operation)? Describe in C below.

☐ Yes (complete C.) ☒ No (go to section 2.5)

C. If you answered "yes" to B, list the quantity representing an actual measurement of your maximum level of production, expressed in the terms and units used in the applicable effluent guideline and indicate the affected outfalls.

A. OUTFALL(S)	B. QUANTITY PER DAY	C. UNITS OF MEASURE	D. OPERATION, PRODUCT, MATERIAL, ETC. (specify)

## 2.4 IMPROVEMENTS

A. Are you required by any federal, state, or local authority to meet any implementation schedule for the construction, upgrading, or operation of wastewater treatment equipment or practices or any other environmental programs which may affect the discharges described in this application? This includes, but is not limited to, permit conditions, administrative or enforcement orders, enforcement compliance schedule letters, stipulations, court orders, and grant or loan conditions.

☐ Yes (complete the following table)

☐ No (go to 2.6)

1. IDENTIFICATION OF CONDITION, AGREEMENT, ETC.	2. AFFECTED OUTFALLS	3. BRIEF DESCRIPTION OF PROJECT	4. FINAL COMPLIANCE DATE	
			A. REQUIRED	B. PROJECTED

B. Optional: provide below or attach additional sheets describing water pollution control programs or other environmental projects which may affect discharges. Indicate whether each program is underway or planned, and indicate actual or planned schedules for construction. This may include proposed bmp projects for stormwater.



## 2.5 SLUDGE MANAGEMENT

Describe the removal of any industrial or domestic biosolids or sludges generated at your facility. Include names and contact information for any haulers used. Note the frequency, volume, and methods (incineration, landfilling, composting, etc) used. See Form A for additional forms which may need to be completed.

NA

## DATA COLLECTION AND REPORTING REQUIREMENTS FOR APPLICANTS

### 3.0 EFFLUENT (AND INTAKE) CHARACTERISTICS (SEE INSTRUCTIONS)

A. & B. See instructions before continuing – complete one Table 1 for **each outfall** (and intake) – annotate the outfall (intake) number or designation in the space provided. The facility is not required to complete intake data unless required by the department or rule.

C. Use the space below to list any pollutants listed in the instructions section 3.0 C. Table B which you know or have reason to believe is discharged or may be discharged from any outfall not listed in parts 3.0 A or B on Table 1. For every pollutant listed, briefly describe the reasons you believe it to be present and report any analytical data in your possession.

1. POLLUTANT	2. SOURCE	3. OUTFALL(S)	4. ANALYTICAL RESULTS (INCLUDE UNITS)
Ammonia	Well Water	intake	0.241 mg/L (Dec 2019 - May 2021 average)
Ammonia is not listed in	Table B, but the facility has a limit in	the permit	and wishes to take into account the level of
nutrients in the incoming	well water to increase the permitted	limit. As part	of a water and chemical reducing strategy,
the wastewater discharge	from Outfall 005 has been reduced	and become	more concentrated, resulting in a higher
concentration of Ammonia	but not an increase in the total	Ammonia	released.

#### 3.1 Whole Effluent Toxicity Testing

A. To your knowledge, have any Whole Effluent Toxicity (WET) tests been performed on the facility discharges (or on receiving waters in relation to your discharge) within the last three years?

☒ Yes (go to 3.1 B)

☐ No (go to 3.2)

#### 3.1 B

Disclose wet testing conditions, including test duration (chronic or acute), the organisms tested, and the testing results. Provide any results of toxicity identification evaluations (TIE) or toxicity reduction evaluations (TRE) if applicable. Please indicate the conclusions of the test(s) including any pollutants identified as causing toxicity and steps the facility is taking to remedy the toxicity.

MME collects a 24-hr composite sample once per year in July, from the Salt Fork (receiving water) downstream of the facility outfall. WET testing is completed on this sample per Special Condition 1 in the permit. WET tests included as Appendix B.

### 3.2 CONTRACT ANALYSIS INFORMATION

Were any of the analyses reported herein, above, or on Table 1 performed by a contract laboratory or consulting firm?

☒ Yes (list the name, address, telephone number, and pollutants analyzed by each laboratory or firm.) ☐ No (go to 4.0)

A. LAB NAME	B. ADDRESS	C. TELEPHONE (area code and number)	D. POLLUTANTS ANALYZED (list or group)
Midwest Laboratories, Inc.	13611 B. Street Omaha NE 68144	402.334.7770	Aquatic toxicity, TSS, HEM, BOD, Chlorides
Fremont Industries, Inc.	4400 Valley Ind. Blvd. N Shakopee, MN 55379	952.445.4121	Water treatment Process only.

<b>4.0 STORMWATER</b>			
<b>4.1</b> Do you have industrial stormwater discharges from the site? If so, attach a site map outlining drainage areas served by each outfall. Indicate the following attributes within each drainage area: pavement or other impervious surfaces; buildings; outdoor storage areas; material loading and unloading areas; outdoor industrial activities; structural stormwater control measures; hazardous waste treatment, storage, and disposal units; and wells or springs in the area.			
OUTFALL NUMBER	TOTAL AREA DRAINED (PROVIDE UNITS)	TYPES OF SURFACES (VEGETATED, STONE , PAVED, ETC)	BEST MANAGEMENT PRACTICES EMPLOYED; INCLUDE STRUCTURAL BMPS AND TREATMENT DESIGN FLOW FOR BMPS DESCRIBE HOW FLOW IS MEASURED
004	~16 acres	Vegetated, paved	Flow is measured by measuring water depth in the the SW pond before and
			after discharging water. Prior to 2018, the flow was measured using a
			calculation utilizing the diameter of the pipe and discharge time, but this
			method did not account for possible blockages in the pipe and head pressure,
			resulting in skewed results. BMPS followed as listed in permit Special
			Condition 10.
<b>4.2 STORMWATER FLOWS</b> Provide the date of sampling with the flows, and how the flows were estimated. 1x/quarter per permit. See above.			
<b>SIGNATORY REQUIREMENTS</b>			
<b>5.0 CERTIFICATION</b>  I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.			
NAME AND OFFICIAL TITLE (TYPE OR PRINT)			TELEPHONE NUMBER WITH AREA CODE
Tyler Edmundson			660.595.0143
SIGNATURE (SEE INSTRUCTIONS)			DATE SIGNED

**SEE INSTRUCTIONS; PLEASE PRINT OR TYPE.**

You may report some or all of this information on separate sheet (use *similar format*) instead of completing these pages.

**FORM C TABLE 1 FOR 3.0 - ITEMS A AND B**

EFFLUENT (AND INTAKE) CHARACTERISTICS										THIS OUTFALL IS: Non-contact cooling water		OUTFALL NO. 001	
3.0 PART A – You must provide the results of at least one analysis for every pollutant in Part A. Complete one table for each outfall or proposed outfall. See instructions.													
2. VALUES										3. UNITS (specify if blank)			
1. POLLUTANT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUES		C. LONG TERM AVERAGE VALUES		D. NO. OF ANALYSES	A. CONCENTRATION	B. MASS				
	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS							
A. Biochemical Oxygen Demand, 5-day (BOD <sub>5</sub> )	Discharges	to	outfall	005/006									
B. Chemical Oxygen Demand (COD)	Discharges	to	outfall	005/006									
C. Total Organic Carbon (TOC)	Discharges	to	outfall	005/006									
D. Total Suspended Solids (TSS)	Discharges	to	outfall	005/006									
E. Ammonia as N	Discharges	to	outfall	005/006									
F. Flow	VALUE	0.3093 (2016-2020)	VALUE	0.3093 (2016-2020)	VALUE	0.1420 (2016-2020)	1827					MILLIONS OF GALLONS PER DAY (MGD)	
G. Temperature (winter)	VALUE	70.0 F (2016-2017)	VALUE	70.0 F (2016-2017)	VALUE	66.8 F (2016-2017)	24					°F	
H. Temperature (summer)	VALUE	80.0 F (2016-2017)	VALUE	80.0 F (2016-2017)	VALUE	72.5 F (2016-2017)	24					°F	
I. pH	MINIMUM	7.87 (2016-2017)	MAXIMUM	7.87 (2016-2017)	AVERAGE	7.25 (2016-2017)	24					STANDARD UNITS (SU)	
3.0 PART B – Mark "X" in column 2A for each pollutant you know or have reason to believe is present. Mark "X" in column 2B for each pollutant you believe to be absent. If you mark Column 2A for any pollutant, you must provide the results for at least one analysis for the pollutant. Complete one table for each outfall (intake). Provide results for additional parameters not listed here in Part 3.0 C.													
1. POLLUTANT AND CAS NUMBER (if available)	2. MARK "X"		3. VALUES						4. UNITS				
	A. BELIEVED PRESENT	B. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUES		C. LONG TERM AVERAGE VALUES		D. NO. OF ANALYSES	A. CONCENTRATION	B. MASS		
			CONCENTRATION	MASS	CONCENTRATION	MASS	CONCENTRATION	MASS					
Subpart 1 – Conventional and Non-Conventional Pollutants													
A. Alkalinity (CaCO <sub>3</sub> )		X	MINIMUM			MINIMUM							
B. Bromide (24959-67-9)	X												
C. Chloride (16887-00-6)		X											
D. Chlorine, Total Residual	X		Discharges	to	outfall	005							
E. Color		X											
F. Conductivity		X											
F. Cyanide, Amenable to Chlorination		X											

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK "X"		3. VALUES						4. UNITS		
	A. BELIEVED PRESENT	B. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE		C. LONG TERM AVERAGE VALUE		D. NO. OF ANALYSES	A. CONCENTRATION	B. MASS
			CONCENTRATION	MASS	CONCENTRATION	MASS	CONCENTRATION	MASS			
Subpart 1 – Conventional and Non-Conventional Pollutants (Continued)											
G. <i>E. coli</i>		X									
H. Fluoride (16984-48-8)	X										
I. Nitrate plus Nitrate (as N)	X										
J. Kjeldahl, Total (as N)	X										
K. Nitrogen, Total Organic (as N)	X										
L. Oil and Grease		X									
M. Phenols, Total		X									
N. Phosphorus (as P), Total (7723-14-0)	X										
O. Sulfate (as SO <sup>4</sup> ) (14808-79-8)	X										
P. Sulfide (as S)		X									
Q. Sulfite (as SO <sup>3</sup> ) (14265-45-3)		X									
R. Surfactants	X										
S. Trihalomethanes, Total		X									
Subpart 2 – Metals											
1M. Aluminum, Total Recoverable (7429-90-5)	X										
2M. Antimony, Total Recoverable (7440-36-9)	X										
3M. Arsenic, Total Recoverable (7440-38-2)	X										
4M. Barium, Total Recoverable (7440-39-3)	X										
5M. Beryllium, Total Recoverable (7440-41-7)		X									
6M. Boron, Total Recoverable (7440-42-8)	X										
7M. Cadmium, Total Recoverable (7440-43-9)		X									
8M. Chromium III Total Recoverable (16065-83-1)		X									
9M. Chromium VI, Dissolved (18540-29-9)		X									
10M. Cobalt, Total Recoverable (7440-48-4)	X										

1. POLLUTANT AND CAS NUMBER <i>(if available)</i>	2. MARK "X"		3. VALUES						4. UNITS		
	A. BELIEVED PRESENT	B. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE		C. LONG TERM AVERAGE VALUE		D. NO. OF ANALYSES	A. CONCEN- TRATION	B. MASS
			CONCENTRATION	MASS	CONCENTRATION	MASS	CONCENTRATION	MASS			
Subpart 2 – Metals (Continued)											
11M. Copper, Total Recoverable (7440-50-8)	X										
12M. Iron, Total Recoverable (7439-89-6)	X										
13M. Lead, Total Recoverable (7439-92-1)		X									
14M. Magnesium, Total Recoverable (7439-95-4)	X										
15M. Manganese, Total Recoverable (7439-96-5)	X										
16M. Mercury, Total Recoverable (7439-97-6)		X									
17M. Methylmercury (22967926)		X									
18M. Molybdenum, Total Recoverable (7439-98-7)	X										
19M. Nickel, Total Recoverable (7440-02-0)		X									
20M. Selenium, Total Recoverable (7782-49-2)	X										
21M. Silver, Total Recoverable (7440-22-4)		X									
22M. Thallium, Total Recoverable (7440-28-0)		X									
23M. Tin, Total Recoverable (7440-31-5)		X									
24M. Titanium, Total Recoverable (7440-32-6)	X										
25M. Zinc, Total Recoverable (7440-66-6)		X									
Subpart 3 – Radioactivity											
1R. Alpha Total		X									
2R. Beta Total		X									
3R. Radium Total		X									
4R. Radium 226 plus 228 Total		X									

**SEE INSTRUCTIONS; PLEASE PRINT OR TYPE.**

 You may report some or all of this information on separate sheet *(use similar format)* instead of completing these pages.

**FORM C TABLE 1 FOR 3.0 - ITEMS A AND B**

EFFLUENT (AND INTAKE) CHARACTERISTICS								THIS OUTFALL IS: Reverse Osmosis Reject		OUTFALL NO. 002	
3.0 PART A – You must provide the results of at least one analysis for every pollutant in Part A. Complete one table for each outfall or proposed outfall. See instructions.											
1. POLLUTANT	2. VALUES							3. UNITS <i>(specify if blank)</i>			
	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUES		C. LONG TERM AVERAGE VALUES		D. NO. OF ANALYSES	A. CONCENTRATION	B. MASS		
	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS					
A. Biochemical Oxygen Demand, 5-day (BOD <sub>5</sub> )	Discharges	to	outfall	005/006							
B. Chemical Oxygen Demand (COD)	Discharges	to	outfall	005/006							
C. Total Organic Carbon (TOC)	Discharges	to	outfall	005/006							
D. Total Suspended Solids (TSS)	Discharges	to	outfall	005/006							
E. Ammonia as N	Discharges	to	outfall	005/006							
F. Flow	VALUE	0.1123 (2016-2020)		VALUE	0.1123 (2016-2020)		VALUE	0.0664 (2016-2020)		1815	MILLIONS OF GALLONS PER DAY (MGD)
G. Temperature <i>(winter)</i>	VALUE	Discharges to Outfall 005/006		VALUE	Discharges to Outfall 005/006		VALUE	Discharges to Outfall 005/006		0	°F
H. Temperature <i>(summer)</i>	VALUE	Discharges to Outfall 005/006		VALUE	Discharges to Outfall 005/006		VALUE	Discharges to Outfall 005/006		0	°F
I. pH	MINIMUM	7.8 (2016-2017)		MAXIMUM	7.8 (2016-2017)		AVERAGE	7.6 (2016-2017)		24	STANDARD UNITS (SU)
3.0 PART B – Mark “X” in column 2A for each pollutant you know or have reason to believe is present. Mark “X” in column 2B for each pollutant you believe to be absent. If you mark Column 2A for any pollutant, you must provide the results for at least one analysis for the pollutant. Complete one table for each outfall (intake). Provide results for additional parameters not listed here in Part 3.0 C.											
1. POLLUTANT AND CAS NUMBER <i>(if available)</i>	2. MARK “X”		3. VALUES							4. UNITS	
	A. BELIEVED PRESENT	B. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUES		C. LONG TERM AVERAGE VALUES		D. NO. OF ANALYSES	A. CONCENTRATION	B. MASS
			CONCENTRATION	MASS	CONCENTRATION	MASS	CONCENTRATION	MASS			
Subpart 1 – Conventional and Non-Conventional Pollutants											
A. Alkalinity (CaCO <sub>3</sub> )		X	MINIMUM		MINIMUM		MINIMUM				
B. Bromide (24959-67-9)	X										
C. Chloride (16887-00-6)		X									
D. Chlorine, Total Residual	X		Discharges	to	outfall	005					
E. Color		X									
F. Conductivity		X									
F. Cyanide, Amenable to Chlorination		X									



1. POLLUTANT AND CAS NUMBER <i>(if available)</i>	2. MARK "X"		3. VALUES							4. UNITS	
	A. BELIEVED PRESENT	B. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE		C. LONG TERM AVERAGE VALUE		D. NO. OF ANALYSES	A. CONCEN- TRATION	B. MASS
			CONCENTRATION	MASS	CONCENTRATION	MASS	CONCENTRATION	MASS			
Subpart 1 – Conventional and Non-Conventional Pollutants (Continued)											
G. <i>E. coli</i>		X									
H. Fluoride (16984-48-8)	X										
I. Nitrate plus Nitrate <i>(as N)</i>	X										
J. Kjeldahl, Total <i>(as N)</i>	X										
K. Nitrogen, Total Organic <i>(as N)</i>	X										
L. Oil and Grease		X									
M. Phenols, Total		X									
N. Phosphorus <i>(as P)</i> , Total (7723-14-0)	X										
O. Sulfate <i>(as SO<sup>4</sup>)</i> (14808-79-8)	X										
P. Sulfide <i>(as S)</i>		X									
Q. Sulfite <i>(as SO<sup>3</sup>)</i> (14265-45-3)		X									
R. Surfactants	X										
S. Trihalomethanes, Total		X									
Subpart 2 – Metals											
1M. Aluminum, Total Recoverable (7429-90-5)	X										
2M. Antimony, Total Recoverable (7440-36-9)	X										
3M. Arsenic, Total Recoverable (7440-38-2)	X										
4M. Barium, Total Recoverable (7440-39-3)	X										
5M. Beryllium, Total Recoverable (7440-41-7)		X									
6M. Boron, Total Recoverable (7440-42-8)	X										
7M. Cadmium, Total Recoverable (7440-43-9)		X									
8M. Chromium III Total Recoverable (16065-83-1)		X									
9M. Chromium VI, Dissolved (18540-29-9)		X									
10M. Cobalt, Total Recoverable (7440-48-4)	X										

1. POLLUTANT AND CAS NUMBER <i>(if available)</i>	2. MARK "X"		3. VALUES							4. UNITS	
	A. BELIEVED PRESENT	B. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE		C. LONG TERM AVERAGE VALUE		D. NO. OF ANALYSES	A. CONCEN- TRATION	B. MASS
			CONCENTRATION	MASS	CONCENTRATION	MASS	CONCENTRATION	MASS			
<b>Subpart 2 – Metals (Continued)</b>											
11M. Copper, Total Recoverable (7440-50-8)	X										
12M. Iron, Total Recoverable (7439-89-6)	X										
13M. Lead, Total Recoverable (7439-92-1)		X									
14M. Magnesium, Total Recoverable (7439-95-4)	X										
15M. Manganese, Total Recoverable (7439-96-5)	X										
16M. Mercury, Total Recoverable (7439-97-6)		X									
17M. Methylmercury (22967926)		X									
18M. Molybdenum, Total Recoverable (7439-98-7)	X										
19M. Nickel, Total Recoverable (7440-02-0)		X									
20M. Selenium, Total Recoverable (7782-49-2)	X										
21M. Silver, Total Recoverable (7440-22-4)		X									
22M. Thallium, Total Recoverable (7440-28-0)		X									
23M. Tin, Total Recoverable (7440-31-5)		X									
24M. Titanium, Total Recoverable (7440-32-6)	X										
25M. Zinc, Total Recoverable (7440-66-6)		X									
<b>Subpart 3 – Radioactivity</b>											
1R. Alpha Total		X									
2R. Beta Total		X									
3R. Radium Total		X									
4R. Radium 226 plus 228 Total		X									

**SEE INSTRUCTIONS; PLEASE PRINT OR TYPE.**

 You may report some or all of this information on separate sheet *(use similar format)* instead of completing these pages.

**FORM C TABLE 1 FOR 3.0 - ITEMS A AND B**

EFFLUENT (AND INTAKE) CHARACTERISTICS								THIS OUTFALL IS: Water Softener System		OUTFALL NO. 003	
3.0 PART A – You must provide the results of at least one analysis for every pollutant in Part A. Complete one table for each outfall or proposed outfall. See instructions.											
1. POLLUTANT	2. VALUES							3. UNITS <i>(specify if blank)</i>			
	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUES		C. LONG TERM AVERAGE VALUES		D. NO. OF ANALYSES	A. CONCENTRATION	B. MASS		
	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS					
A. Biochemical Oxygen Demand, 5-day (BOD <sub>5</sub> )	Discharges	to	outfall	005/006							
B. Chemical Oxygen Demand (COD)	Discharges	to	outfall	005/006							
C. Total Organic Carbon (TOC)	Discharges	to	outfall	005/006							
D. Total Suspended Solids (TSS)	Discharges	to	outfall	005/006							
E. Ammonia as N	Discharges	to	outfall	005/006							
F. Flow	VALUE	0.0250 (2016-2020)		VALUE	0.0250 (2016-2020)		VALUE	0.0003 (2016-2020)		1815	MILLIONS OF GALLONS PER DAY (MGD)
G. Temperature <i>(winter)</i>	VALUE	Discharges to Outfall 005/006		VALUE	Discharges to Outfall 005/006		VALUE	Discharges to Outfall 005/006		0	°F
H. Temperature <i>(summer)</i>	VALUE	Discharges to Outfall 005/006		VALUE	Discharges to Outfall 005/006		VALUE	Discharges to Outfall 005/006		0	°F
I. pH	MINIMUM	ND		MAXIMUM	6.8 (2016-2017)		AVERAGE	6.3 (2016-2017)		24	STANDARD UNITS (SU)
3.0 PART B – Mark “X” in column 2A for each pollutant you know or have reason to believe is present. Mark “X” in column 2B for each pollutant you believe to be absent. If you mark Column 2A for any pollutant, you must provide the results for at least one analysis for the pollutant. Complete one table for each outfall (intake). Provide results for additional parameters not listed here in Part 3.0 C.											
1. POLLUTANT AND CAS NUMBER <i>(if available)</i>	2. MARK “X”		3. VALUES							4. UNITS	
	A. BELIEVED PRESENT	B. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUES		C. LONG TERM AVERAGE VALUES		D. NO. OF ANALYSES	A. CONCENTRATION	B. MASS
			CONCENTRATION	MASS	CONCENTRATION	MASS	CONCENTRATION	MASS			
Subpart 1 – Conventional and Non-Conventional Pollutants											
A. Alkalinity (CaCO <sub>3</sub> )		X	MINIMUM		MINIMUM		MINIMUM				
B. Bromide (24959-67-9)	X										
C. Chloride (16887-00-6)		X									
D. Chlorine, Total Residual	X		Discharges	to	outfall	005					
E. Color		X									
F. Conductivity		X									
F. Cyanide, Amenable to Chlorination		X									

1. POLLUTANT AND CAS NUMBER <i>(if available)</i>	2. MARK "X"		3. VALUES							4. UNITS	
	A. BELIEVED PRESENT	B. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE		C. LONG TERM AVERAGE VALUE		D. NO. OF ANALYSES	A. CONCEN- TRATION	B. MASS
			CONCENTRATION	MASS	CONCENTRATION	MASS	CONCENTRATION	MASS			
Subpart 1 – Conventional and Non-Conventional Pollutants (Continued)											
G. <i>E. coli</i>		X									
H. Fluoride (16984-48-8)	X										
I. Nitrate plus Nitrate <i>(as N)</i>	X										
J. Kjeldahl, Total (as N)	X										
K. Nitrogen, Total Organic <i>(as N)</i>	X										
L. Oil and Grease		X									
M. Phenols, Total		X									
N. Phosphorus <i>(as P)</i> , Total (7723-14-0)	X										
O. Sulfate <i>(as SO<sup>4</sup>)</i> (14808-79-8)	X										
P. Sulfide <i>(as S)</i>		X									
Q. Sulfite <i>(as SO<sup>3</sup>)</i> (14265-45-3)		X									
R. Surfactants	X										
S. Trihalomethanes, Total		X									
Subpart 2 – Metals											
1M. Aluminum, Total Recoverable (7429-90-5)	X										
2M. Antimony, Total Recoverable (7440-36-9)	X										
3M. Arsenic, Total Recoverable (7440-38-2)	X										
4M. Barium, Total Recoverable (7440-39-3)	X										
5M. Beryllium, Total Recoverable (7440-41-7)		X									
6M. Boron, Total Recoverable (7440-42-8)	X										
7M. Cadmium, Total Recoverable (7440-43-9)		X									
8M. Chromium III Total Recoverable (16065-83-1)		X									
9M. Chromium VI, Dissolved (18540-29-9)		X									
10M. Cobalt, Total Recoverable (7440-48-4)	X										

1. POLLUTANT AND CAS NUMBER <i>(if available)</i>	2. MARK "X"		3. VALUES							4. UNITS	
	A. BELIEVED PRESENT	B. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE		C. LONG TERM AVERAGE VALUE		D. NO. OF ANALYSES	A. CONCEN- TRATION	B. MASS
			CONCENTRATION	MASS	CONCENTRATION	MASS	CONCENTRATION	MASS			
Subpart 2 – Metals (Continued)											
11M. Copper, Total Recoverable (7440-50-8)	X										
12M. Iron, Total Recoverable (7439-89-6)	X										
13M. Lead, Total Recoverable (7439-92-1)		X									
14M. Magnesium, Total Recoverable (7439-95-4)	X										
15M. Manganese, Total Recoverable (7439-96-5)	X										
16M. Mercury, Total Recoverable (7439-97-6)		X									
17M. Methylmercury (22967926)		X									
18M. Molybdenum, Total Recoverable (7439-98-7)	X										
19M. Nickel, Total Recoverable (7440-02-0)		X									
20M. Selenium, Total Recoverable (7782-49-2)	X										
21M. Silver, Total Recoverable (7440-22-4)		X									
22M. Thallium, Total Recoverable (7440-28-0)		X									
23M. Tin, Total Recoverable (7440-31-5)		X									
24M. Titanium, Total Recoverable (7440-32-6)	X										
25M. Zinc, Total Recoverable (7440-66-6)		X									
Subpart 3 – Radioactivity											
1R. Alpha Total		X									
2R. Beta Total		X									
3R. Radium Total		X									
4R. Radium 226 plus 228 Total		X									

**SEE INSTRUCTIONS; PLEASE PRINT OR TYPE.**

 You may report some or all of this information on separate sheet *(use similar format)* instead of completing these pages.

**FORM C TABLE 1 FOR 3.0 - ITEMS A AND B**

EFFLUENT (AND INTAKE) CHARACTERISTICS								THIS OUTFALL IS: Storm Water Runoff		OUTFALL NO. 004	
3.0 PART A – You must provide the results of at least one analysis for every pollutant in Part A. Complete one table for each outfall or proposed outfall. See instructions.											
1. POLLUTANT	2. VALUES							3. UNITS <i>(specify if blank)</i>			
	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUES		C. LONG TERM AVERAGE VALUES		D. NO. OF ANALYSES	A. CONCENTRATION	B. MASS		
	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS					
A. Biochemical Oxygen Demand, 5-day (BOD <sub>5</sub> )	25		25		8.68		19	mg/L			
B. Chemical Oxygen Demand (COD)	115		115		55.9		21	mg/L			
C. Total Organic Carbon (TOC)	NA										
D. Total Suspended Solids (TSS)	128		128		17.4		21	mg/L			
E. Ammonia as N	NA										
F. Flow	VALUE 12,723,384 (2016-2020)		VALUE 12,723,384 (2016-2020)		VALUE 3,772,723 (2016-2020)		10	MILLIONS OF GALLONS PER DAY (MGD)			
G. Temperature <i>(winter)</i>	VALUE NA		VALUE NA		VALUE NA		0	°F			
H. Temperature <i>(summer)</i>	VALUE NA		VALUE NA		VALUE NA		0	°F			
I. pH	MINIMUM 9.4 (2016-2020)		MAXIMUM 9.4 (2016-2020)		AVERAGE 7.1 (2016-2020)		22	STANDARD UNITS (SU)			
3.0 PART B – Mark “X” in column 2A for each pollutant you know or have reason to believe is present. Mark “X” in column 2B for each pollutant you believe to be absent. If you mark Column 2A for any pollutant, you must provide the results for at least one analysis for the pollutant. Complete one table for each outfall (intake). Provide results for additional parameters not listed here in Part 3.0 C.											
1. POLLUTANT AND CAS NUMBER <i>(if available)</i>	2. MARK “X”		3. VALUES						4. UNITS		
	A. BELIEVED PRESENT	B. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUES		C. LONG TERM AVERAGE VALUES		D. NO. OF ANALYSES	A. CONCENTRATION	B. MASS
			CONCENTRATION	MASS	CONCENTRATION	MASS	CONCENTRATION	MASS			
Subpart 1 – Conventional and Non-Conventional Pollutants											
A. Alkalinity (CaCO <sub>3</sub> )		X	MINIMUM		MINIMUM		MINIMUM				
B. Bromide (24959-67-9)	X										
C. Chloride (16887-00-6)	X		63.3		63.3		29.9		13	mg/L	g
D. Chlorine, Total Residual	X										
E. Color		X									
F. Conductivity		X									
F. Cyanide, Amenable to Chlorination		X									



1. POLLUTANT AND CAS NUMBER <i>(if available)</i>	2. MARK "X"		3. VALUES							4. UNITS	
	A. BELIEVED PRESENT	B. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE		C. LONG TERM AVERAGE VALUE		D. NO. OF ANALYSES	A. CONCEN- TRATION	B. MASS
			CONCENTRATION	MASS	CONCENTRATION	MASS	CONCENTRATION	MASS			
Subpart 1 – Conventional and Non-Conventional Pollutants (Continued)											
G. <i>E. coli</i>		X									
H. Fluoride (16984-48-8)	X										
I. Nitrate plus Nitrate <i>(as N)</i>	X										
J. Kjeldahl, Total (as N)	X										
K. Nitrogen, Total Organic <i>(as N)</i>	X										
L. Oil and Grease	X		N.D.	N.D.	N.D.	N.D.	N.D.	N.D.			
M. Phenols, Total		X									
N. Phosphorus <i>(as P)</i> , Total (7723-14-0)	X										
O. Sulfate <i>(as SO<sup>4</sup>)</i> (14808-79-8)	X										
P. Sulfide <i>(as S)</i>		X									
Q. Sulfite <i>(as SO<sup>3</sup>)</i> (14265-45-3)		X									
R. Surfactants	X										
S. Trihalomethanes, Total		X									
Subpart 2 – Metals											
1M. Aluminum, Total Recoverable (7429-90-5)	X										
2M. Antimony, Total Recoverable (7440-36-9)	X										
3M. Arsenic, Total Recoverable (7440-38-2)	X										
4M. Barium, Total Recoverable (7440-39-3)	X										
5M. Beryllium, Total Recoverable (7440-41-7)		X									
6M. Boron, Total Recoverable (7440-42-8)	X										
7M. Cadmium, Total Recoverable (7440-43-9)		X									
8M. Chromium III Total Recoverable (16065-83-1)		X									
9M. Chromium VI, Dissolved (18540-29-9)		X									
10M. Cobalt, Total Recoverable (7440-48-4)	X										

1. POLLUTANT AND CAS NUMBER <i>(if available)</i>	2. MARK "X"		3. VALUES							4. UNITS	
	A. BELIEVED PRESENT	B. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE		C. LONG TERM AVERAGE VALUE		D. NO. OF ANALYSES	A. CONCEN- TRATION	B. MASS
			CONCENTRATION	MASS	CONCENTRATION	MASS	CONCENTRATION	MASS			
Subpart 2 – Metals (Continued)											
11M. Copper, Total Recoverable (7440-50-8)	X										
12M. Iron, Total Recoverable (7439-89-6)	X										
13M. Lead, Total Recoverable (7439-92-1)		X									
14M. Magnesium, Total Recoverable (7439-95-4)	X										
15M. Manganese, Total Recoverable (7439-96-5)	X										
16M. Mercury, Total Recoverable (7439-97-6)		X									
17M. Methylmercury (22967926)		X									
18M. Molybdenum, Total Recoverable (7439-98-7)	X										
19M. Nickel, Total Recoverable (7440-02-0)		X									
20M. Selenium, Total Recoverable (7782-49-2)	X										
21M. Silver, Total Recoverable (7440-22-4)		X									
22M. Thallium, Total Recoverable (7440-28-0)		X									
23M. Tin, Total Recoverable (7440-31-5)		X									
24M. Titanium, Total Recoverable (7440-32-6)	X										
25M. Zinc, Total Recoverable (7440-66-6)		X									
Subpart 3 – Radioactivity											
1R. Alpha Total		X									
2R. Beta Total		X									
3R. Radium Total		X									
4R. Radium 226 plus 228 Total		X									

**SEE INSTRUCTIONS; PLEASE PRINT OR TYPE.**

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**FORM C TABLE 1 FOR 3.0 - ITEMS A AND B**

EFFLUENT (AND INTAKE) CHARACTERISTICS								THIS OUTFALL IS: Combined flows from 001-003				OUTFALL NO. 005	
3.0 PART A – You must provide the results of at least one analysis for every pollutant in Part A. Complete one table for each outfall or proposed outfall. See instructions.													
1. POLLUTANT	2. VALUES							3. UNITS <i>(specify if blank)</i>					
	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUES		C. LONG TERM AVERAGE VALUES		D. NO. OF ANALYSES	A. CONCENTRATION	B. MASS				
	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS							
A. Biochemical Oxygen Demand, 5-day (BOD <sub>5</sub> )	21		21		6.69		60	mg/L					
B. Chemical Oxygen Demand (COD)	85		85		40.7		59	mg/L					
C. Total Organic Carbon (TOC)													
D. Total Suspended Solids (TSS)	31		31		7.8		60	mg/L					
E. Ammonia as N	1.7		1.7		0.57		60	mg/L					
F. Flow	VALUE 0.4243 (2019)		VALUE 0.4243 (2019)		VALUE 0.2087 (2016-2020)			MILLIONS OF GALLONS PER DAY (MGD)					
G. Temperature <i>(winter)</i>	VALUE 72		VALUE 72		VALUE 65.5		0	°F					
H. Temperature <i>(summer)</i>	VALUE 78		VALUE 78		VALUE 71.0		0	°F					
I. pH	MINIMUM 7.6 (2016-2020)		MAXIMUM 7.6 (2016-2020)		AVERAGE 7.0 (2016-2020)		60	STANDARD UNITS (SU)					
3.0 PART B – Mark “X” in column 2A for each pollutant you know or have reason to believe is present. Mark “X” in column 2B for each pollutant you believe to be absent. If you mark Column 2A for any pollutant, you must provide the results for at least one analysis for the pollutant. Complete one table for each outfall (intake). Provide results for additional parameters not listed here in Part 3.0 C.													
1. POLLUTANT AND CAS NUMBER <i>(if available)</i>	2. MARK “X”		3. VALUES						4. UNITS				
	A. BELIEVED PRESENT	B. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUES		C. LONG TERM AVERAGE VALUES		D. NO. OF ANALYSES	A. CONCENTRATION	B. MASS		
			CONCENTRATION	MASS	CONCENTRATION	MASS	CONCENTRATION	MASS					
Subpart 1 – Conventional and Non-Conventional Pollutants													
A. Alkalinity (CaCO <sub>3</sub> )		X	MINIMUM		MINIMUM		MINIMUM						
B. Bromide (24959-67-9)	X												
C. Chloride (16887-00-6)	X		187		187		93.5		90	mg/L	g		
D. Chlorine, Total Residual	X												
E. Color		X											
F. Conductivity		X											
F. Cyanide, Amenable to Chlorination		X											

1. POLLUTANT AND CAS NUMBER <i>(if available)</i>	2. MARK "X"		3. VALUES							4. UNITS	
	A. BELIEVED PRESENT	B. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE		C. LONG TERM AVERAGE VALUE		D. NO. OF ANALYSES	A. CONCEN- TRATION	B. MASS
			CONCENTRATION	MASS	CONCENTRATION	MASS	CONCENTRATION	MASS			
Subpart 1 – Conventional and Non-Conventional Pollutants (Continued)											
G. <i>E. coli</i>		X									
H. Fluoride (16984-48-8)	X										
I. Nitrate plus Nitrate (as N)	X										
J. Kjeldahl, Total (as N)	X										
K. Nitrogen, Total Organic (as N)	X										
L. Oil and Grease		X									
M. Phenols, Total		X									
N. Phosphorus (as P), Total (7723-14-0)	X										
O. Sulfate (as SO <sup>4</sup> ) (14808-79-8)	X										
P. Sulfide (as S)		X									
Q. Sulfite (as SO <sup>3</sup> ) (14265-45-3)		X									
R. Surfactants	X										
S. Trihalomethanes, Total		X									
Subpart 2 – Metals											
1M. Aluminum, Total Recoverable (7429-90-5)	X										
2M. Antimony, Total Recoverable (7440-36-9)	X										
3M. Arsenic, Total Recoverable (7440-38-2)	X										
4M. Barium, Total Recoverable (7440-39-3)	X										
5M. Beryllium, Total Recoverable (7440-41-7)		X									
6M. Boron, Total Recoverable (7440-42-8)	X										
7M. Cadmium, Total Recoverable (7440-43-9)		X									
8M. Chromium III Total Recoverable (16065-83-1)		X									
9M. Chromium VI, Dissolved (18540-29-9)		X									
10M. Cobalt, Total Recoverable (7440-48-4)	X										

1. POLLUTANT AND CAS NUMBER <i>(if available)</i>	2. MARK "X"		3. VALUES							4. UNITS	
	A. BELIEVED PRESENT	B. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE		C. LONG TERM AVERAGE VALUE		D. NO. OF ANALYSES	A. CONCEN- TRATION	B. MASS
			CONCENTRATION	MASS	CONCENTRATION	MASS	CONCENTRATION	MASS			
Subpart 2 – Metals (Continued)											
11M. Copper, Total Recoverable (7440-50-8)	X										
12M. Iron, Total Recoverable (7439-89-6)	X										
13M. Lead, Total Recoverable (7439-92-1)		X									
14M. Magnesium, Total Recoverable (7439-95-4)	X										
15M. Manganese, Total Recoverable (7439-96-5)	X										
16M. Mercury, Total Recoverable (7439-97-6)		X									
17M. Methylmercury (22967926)		X									
18M. Molybdenum, Total Recoverable (7439-98-7)	X										
19M. Nickel, Total Recoverable (7440-02-0)		X									
20M. Selenium, Total Recoverable (7782-49-2)	X										
21M. Silver, Total Recoverable (7440-22-4)		X									
22M. Thallium, Total Recoverable (7440-28-0)		X									
23M. Tin, Total Recoverable (7440-31-5)		X									
24M. Titanium, Total Recoverable (7440-32-6)	X										
25M. Zinc, Total Recoverable (7440-66-6)		X									
Subpart 3 – Radioactivity											
1R. Alpha Total		X									
2R. Beta Total		X									
3R. Radium Total		X									
4R. Radium 226 plus 228 Total		X									

**SEE INSTRUCTIONS; PLEASE PRINT OR TYPE.**

You may report some or all of this information on separate sheet *(use similar format)* instead of completing these pages.

**FORM C TABLE 1 FOR 3.0 - ITEMS A AND B**

EFFLUENT (AND INTAKE) CHARACTERISTICS								THIS OUTFALL IS: Combined flows from 004-005		OUTFALL NO. 006	
3.0 PART A – You must provide the results of at least one analysis for every pollutant in Part A. Complete one table for each outfall or proposed outfall. See instructions.											
1. POLLUTANT	2. VALUES							3. UNITS <i>(specify if blank)</i>			
	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUES		C. LONG TERM AVERAGE VALUES		D. NO. OF ANALYSES	A. CONCENTRATION	B. MASS		
	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS					
A. Biochemical Oxygen Demand, 5-day (BOD <sub>5</sub> )	see outfall 005	actual volume	dependent upon	precipitaion							
B. Chemical Oxygen Demand (COD)											
C. Total Organic Carbon (TOC)											
D. Total Suspended Solids (TSS)											
E. Ammonia as N											
F. Flow	VALUE		VALUE		VALUE			MILLIONS OF GALLONS PER DAY (MGD)			
G. Temperature <i>(winter)</i>	VALUE		VALUE		VALUE		0	°F			
H. Temperature <i>(summer)</i>	VALUE		VALUE		VALUE		0	°F			
I. pH	MINIMUM		MAXIMUM		AVERAGE			STANDARD UNITS (SU)			
3.0 PART B – Mark “X” in column 2A for each pollutant you know or have reason to believe is present. Mark “X” in column 2B for each pollutant you believe to be absent. If you mark Column 2A for any pollutant, you must provide the results for at least one analysis for the pollutant. Complete one table for each outfall (intake). Provide results for additional parameters not listed here in Part 3.0 C.											
1. POLLUTANT AND CAS NUMBER <i>(if available)</i>	2. MARK “X”		3. VALUES							4. UNITS	
	A. BELIEVED PRESENT	B. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUES		C. LONG TERM AVERAGE VALUES		D. NO. OF ANALYSES	A. CONCENTRATION	B. MASS
			CONCENTRATION	MASS	CONCENTRATION	MASS	CONCENTRATION	MASS			
Subpart 1 – Conventional and Non-Conventional Pollutants											
A. Alkalinity (CaCO <sub>3</sub> )		X	MINIMUM		MINIMUM		MINIMUM				
B. Bromide (24959-67-9)	X										
C. Chloride (16887-00-6)	X		187		187		93.5		90	mg/L	g
D. Chlorine, Total Residual	X										
E. Color		X									
F. Conductivity		X									
F. Cyanide, Amenable to Chlorination		X									



1. POLLUTANT AND CAS NUMBER <i>(if available)</i>	2. MARK "X"		3. VALUES							4. UNITS	
	A. BELIEVED PRESENT	B. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE		C. LONG TERM AVERAGE VALUE		D. NO. OF ANALYSES	A. CONCEN- TRATION	B. MASS
			CONCENTRATION	MASS	CONCENTRATION	MASS	CONCENTRATION	MASS			
Subpart 1 – Conventional and Non-Conventional Pollutants (Continued)											
G. <i>E. coli</i>		X									
H. Fluoride (16984-48-8)	X										
I. Nitrate plus Nitrate <i>(as N)</i>	X										
J. Kjeldahl, Total (as N)	X										
K. Nitrogen, Total Organic <i>(as N)</i>	X										
L. Oil and Grease		X									
M. Phenols, Total		X									
N. Phosphorus <i>(as P)</i> , Total (7723-14-0)	X										
O. Sulfate <i>(as SO<sup>4</sup>)</i> (14808-79-8)	X										
P. Sulfide <i>(as S)</i>		X									
Q. Sulfite <i>(as SO<sup>3</sup>)</i> (14265-45-3)		X									
R. Surfactants	X										
S. Trihalomethanes, Total		X									
Subpart 2 – Metals											
1M. Aluminum, Total Recoverable (7429-90-5)	X										
2M. Antimony, Total Recoverable (7440-36-9)	X										
3M. Arsenic, Total Recoverable (7440-38-2)	X										
4M. Barium, Total Recoverable (7440-39-3)	X										
5M. Beryllium, Total Recoverable (7440-41-7)		X									
6M. Boron, Total Recoverable (7440-42-8)	X										
7M. Cadmium, Total Recoverable (7440-43-9)		X									
8M. Chromium III Total Recoverable (16065-83-1)		X									
9M. Chromium VI, Dissolved (18540-29-9)		X									
10M. Cobalt, Total Recoverable (7440-48-4)	X										

1. POLLUTANT AND CAS NUMBER <i>(if available)</i>	2. MARK "X"		3. VALUES							4. UNITS	
	A. BELIEVED PRESENT	B. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE		C. LONG TERM AVERAGE VALUE		D. NO. OF ANALYSES	A. CONCEN- TRATION	B. MASS
			CONCENTRATION	MASS	CONCENTRATION	MASS	CONCENTRATION	MASS			
Subpart 2 – Metals (Continued)											
11M. Copper, Total Recoverable (7440-50-8)	X										
12M. Iron, Total Recoverable (7439-89-6)	X										
13M. Lead, Total Recoverable (7439-92-1)		X									
14M. Magnesium, Total Recoverable (7439-95-4)	X										
15M. Manganese, Total Recoverable (7439-96-5)	X										
16M. Mercury, Total Recoverable (7439-97-6)		X									
17M. Methylmercury (22967926)		X									
18M. Molybdenum, Total Recoverable (7439-98-7)	X										
19M. Nickel, Total Recoverable (7440-02-0)		X									
20M. Selenium, Total Recoverable (7782-49-2)	X										
21M. Silver, Total Recoverable (7440-22-4)		X									
22M. Thallium, Total Recoverable (7440-28-0)		X									
23M. Tin, Total Recoverable (7440-31-5)		X									
24M. Titanium, Total Recoverable (7440-32-6)	X										
25M. Zinc, Total Recoverable (7440-66-6)		X									
Subpart 3 – Radioactivity											
1R. Alpha Total		X									
2R. Beta Total		X									
3R. Radium Total		X									
4R. Radium 226 plus 228 Total		X									



MISSOURI DEPARTMENT OF NATURAL RESOURCES  
WATER PROTECTION PROGRAM, WATER POLLUTION BRANCH  
**FORM D – APPLICATION FOR DISCHARGE PERMIT –  
PRIMARY INDUSTRIES**

**FOR AGENCY USE ONLY**

CHECK NO.

DATE RECEIVED

FEE SUBMITTED

**NOTE: DO NOT ATTEMPT TO COMPLETE THIS FORM BEFORE READING THE ACCOMPANYING INSTRUCTIONS**

1.00 NAME OF FACILITY

Mid-Missouri Energy, LLC

1.10 THIS FACILITY IS NOW IN OPERATION UNDER MISSOURI OPERATING PERMIT NUMBER

**MO - 0131008**

This form is to be filled out in addition to forms A and C "Application for Discharge Permit" for the Industries listed below:

**INDUSTRY CATEGORY**

Adhesives and sealants	Ore mining
Aluminum forming	Organic chemicals manufacturing
Auto and other laundries	Paint and ink formulation
Battery manufacturing	Pesticides
Coal mining	Petroleum refining
Coil coating	Pharmaceutical preparations
Copper forming	Photographic equipment and supplies
Electric and electronic compounds	Plastic and synthetic materials manufacturing
Electroplating	Plastic processing
Explosives manufacturing	Porcelain enameling
Foundries	Printing and publishing
Gum and wood chemicals	Pulp and paperboard mills
Inorganic chemicals manufacturing	Rubber processing
Iron and steel manufacturing	Soap and detergent manufacturing
Leather tanning and finishing	Steam electric power plants
Landfill	Textile mills
Mechanical products manufacturing	Timber products processing
Nonferrous metals manufacturing	

# APPLICATION FOR DISCHARGE PERMIT FORM D – PRIMARY INDUSTRIES

TABLE II	
NPDES # (IF ASSIGNED)	OUTFALL NUMBER
MO-0131008	004

**1.30** If you are a primary industry and this outfall contains process wastewater, refer to Table A in the instructions to determine which of the GC/MS fractions you must test for. Mark "X" in column 2-A for all such GC/MS fractions that apply to your industry and for ALL toxic metals, cyanides, and total phenols. Mark "X" in column 2-B for each pollutant you know or have reason to believe is present. Mark "X" in column 2-C for each pollutant you believe to be absent. If you mark either columns 2-A or 2-B for any pollutant, you must provide the results of at least one analysis for that pollutant. Note that there are seven pages to this part, please review each carefully. Complete one table (*all seven pages*) for each outfall. See instructions for additional details and requirements.

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK "X"			3. EFFLUENT						4. UNITS		5. INTAKE (optional)			
	A. TEST-ING REQUIRED	B. BELIEVE D PRESENT	C. BELIEVE D ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE (if available)		C. LONG TERM AVRG. VALUE (if available)		D. NO. OF ANALYSES	A. CONCEN- TRATION	B. MASS	A. LONG TERM AVRG. VALUE		B. NO OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
METALS, AND TOTAL PHENOLS															
1M. Antimony, Total (7440-36-9)			✓												
2M. Arsenic, Total (7440-38-2)			✓												
3M. Beryllium, Total (7440-41-7)			✓												
4M. Cadmium, Total (7440-43-9)			✓												
5M. Chromium III (16065-83-1)			✓												
6M. Chromium VI (18540-29-9)			✓												
7M. Copper, Total (7440-50-8)			✓												
8M. Lead, Total (7439-92-1)			✓												
9M. Magnesium Total (7439-95-4)			✓												
10M. Mercury, Total (7439-97-6)	—	□	✓												
11M. Molybdenum Total (7439-98-7)	—	□	✓												
12M. Nickel, Total (7440-02-0)	—	□	✓												
13M. Selenium, Total (7782-49-2)	—	□	✓												
14M. Silver, Total (7440-22-4)	—	□	✓												
15M. Thallium, Total (7440-28-0)	—	□	✓												
16M. Tin Total (7440-31-5)	—	□	✓												
17M. Titanium Total (7440-32-6)	—	□	✓												
18M. Zinc, Total (7440-66-6)	□	□	✓												



1. POLLUTANT AND CAS NUMBER (if available)	2. MARK "X"			3. EFFLUENT						4. UNITS		5. INTAKE (optional)		
	A. TESTING RE-REQUIRED	B. BELIEVED PRESENT	C. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE (if available)		C. LONG TERM AVRG. VALUE (if available)						
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS					
GC/MS FRACTION – VOLATILE COMPOUNDS (continued)														
22V. Methylene Chloride (75-09-2)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>											
23V. 1,1,2,2 – Tetra- chloroethane (79-34-5)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>											
24V. Tetrachloroethylene (127-18-4)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>											
25V. Toluene (108-88-3)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>											
26V. 1,2 – Trans Dichloroethylene (156-60-5)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>											
27V. 1,1,1 – Tri – chloroethane (71-55-6)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>											
28V. 1,1,2 – Tri- chloroethane (79-00-5)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>											
29V. Trichloro – ethylene (79-01-6)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>											
30V. Trichloro – fluoromethane (75-69-4)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>											
31V. Vinyl Chloride (75-01-4)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>											

<b>GC/MS FRACTION – ACID COMPOUNDS</b>													
1A. 2 – Chlorophenol (95-57-8)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>										
2A. 2,4 – Dichloro – phenol (120-83-2)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>										
3A. 2,4 – Dimethyl – phenol (105-67-9)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>										
4A. 4,6 – Dinitro - O- Cresol (534-52-1)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>										
5A. 2,4 – Dinitro – phenol (51-28-5)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>										
6A. 2-Nitrophenol (88-75-5)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>										
7A. 4-Nitrophenol (100-02-7)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>										
8A. P – Chloro – M Cresol (59-50-7)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>										
9A. Pentachloro – phenol (87-86-5)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>										
10A. Phenol (108-952)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>										
11A. 2,4,6 – Trichloro- phenol (88-06-2)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>										
12A. 2 - methyl – 4,6 dinitrophenol (534-52-1)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>										

## CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK "X"			3. EFFLUENT				4. UNITS		5. INTAKE (optional)		
	A. TESTING REQUIRED	B. BELIEVED PRESENT	C. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE (if available)		C. LONG TERM AVRG. VALUE (if available)		D. NO. OF ANALYSES	A. CONCEN- TRATION	B. MASS
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS		(1) CONCENTRATION	(2) MASS
<b>GC/MS FRACTION – BASE/NEUTRAL COMPOUNDS</b>												
1B. Acenaphthene (83-32-9)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>									
2B. Acenaphthylene (208-96-8)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>									
3B. Anthracene (120-12-7)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>									
4B. Benzidine (92-87-5)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>									
5B. Benzo (a) Anthracene (56-55-3)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>									
6B. Benzo (a) Pyrene (50-32-8)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>									
7B. 3,4 – Benzofluoranthene (205-99-2)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>									
8B. Benzo (ghi) Perylene (191-24-2)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>									
9B. Benzo (k) Fluoranthene (207-08-9)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>									
10B. Bis (2-Chloroethoxy) Methane (111-91-1)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>									
11B. Bis (2-Chloroethyl) Ether (111-44-4)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>									
12B. Bis (2- Chloroisopropyl) Ether (39638-32-9)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>									
13B. Bis (2-Ethylhexyl) Phthalate (117-81-7)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>									
14B. 4-Bromophenyl Phenyl Ether (101-55-3)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>									
15B. Butyl Benzyl Phthalate (85-68-7)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>									
16B. 2- Chloronaphthalene (91-58-7)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>									
17B. 4-Chlorophenyl Phenyl Ether (7005-72-3)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>									
18B. Chrysene (218-01-9)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>									
19B. Dibenzo (a,h) Anthracene (53-70-3)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>									
20B. 1,2 – Dichlorobenzene (95-50-1)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>									
21B. 1,3 – Dichlorobenzene (541-73-1)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>									



## CONTINUED FROM PAGE 5

NPDES # (IF ASSIGNED)	OUTFALL NUMBER
MO-0131008	004

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK "X"			3. EFFLUENT						4. UNITS		5. INTAKE (optional)			
	A. TESTING REQUIRED	B. BELIEVED PRESENT	C. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE (if available)		C. LONG TERM AVRG. VALUE (if available)		D. NO. OF ANALYSES	A. CONCEN- TRATION	B. MASS	A. LONG TERM AVRG.		B. NO OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS						
GC/MS FRACTION – BASE/NEUTRAL COMPOUNDS (continued)															
22B. 1, 4-Dichlorobenzene (106-46-7)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>												
23B. 3, 3'-Dichlorobenzidine (91-94-1)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>												
24B. Diethyl Phthalate (84-66-2)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>												
25B. Dimethyl Phthalate (131-11-3)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>												
26B. Di-N-butyl Phthalate (84-74-2)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>												
27B. 2, 4-Dinitrotoluene (121-14-2)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>												
28B. 2, 6-Dinitrotoluene (606-20-2)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>												
29B. Di-N-Octylphthalate (117-84-0)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>												
30B. 1, 2-Diphenylhydrazine (as Azobenzene) (122-66-7)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>												
31B. Fluoranthene (206-44-0)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>												
32B. Fluorene (86-73-7)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>												
33B. Hexachlorobenzene (87-68-3)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>												
34B. Hexachlorobutadiene (87-68-3)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>												
35B. Hexachloro-cyclopentadiene (77-47-4)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>												
36B. Hexachloroethane (67-72-1)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>												
37B. Indeno (1,2,3-c-d) Pyrene (193-39-5)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>												
38B. Isophorone (78-59-1)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>												
39B. Naphthalene (91-20-3)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>												
40B. Nitrobenzene (98-95-3)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>												
41B. N-Nitro-sodimethylamine (62-75-9)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>												

CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK "X"			3. EFFLUENT				4. UNITS		5. INTAKE (optional)				
	A. TESTING REQUIRED	B. BELIEVED PRESENT	C. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE (if available)		C. LONG TERM AVRG. VALUE (if available)		D. NO. OF ANALYSES	A. CONCEN- TRATION	B. MASS		
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS					
									(1) CONCENTRATION			(2) MASS		
<b>GC/MS FRACTION – BASE/NEUTRAL COMPOUNDS (continued)</b>														
42B. N-Nitroso N-Propylamine (621-64-7)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>											
43B. N-Nitro- sodiphenylamine (86-30- 6)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>											
44B. Phenanthrene (85-01-8)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>											
45B. Pyrene (129-00-0)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>											
46B. 1,2,4-Tri- chlorobenzene (120-82-1)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>											
<b>GC/MS FRACTION - PESTICIDES</b>														
1P. Aldrin (309-00-2)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>											
2P. α-BHC (319-84-6)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>											
3P. β-BHC (319-84-6)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>											
4P. γ-BHC (58-89-9)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>											
5P. δ-BHC (319-86-8)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>											
6P. Chlordane (57-74-9)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>											
7P. 4,4'-DDT (50-29-3)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>											
8P. 4,4'-DDE (72-55-9)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>											
9P. 4,4'-DDD (72-54-8)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>											
10P. Dieldrin (60-57-1)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>											
11P. α-Endosulfan (115-29-7)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>											
12P. β-Endosulfan (115-29-7)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>											
13P. Endosulfan Sulfate (1031-07-8)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>											
14P. Endrin (72-20-8)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>											
15P. Endrin Aldehyde (7421-93-4)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>											
16P. Heptachlor (76-44-8)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>											



<b>2.00 POTENTIAL DISCHARGES NOT COVERED BY ANALYSIS</b> A. IS ANY POLLUTANT LISTED IN ITEM 1.30 A SUBSTANCE OR A COMPONENT OF A SUBSTANCE WHICH YOU DO OR EXPECT THAT YOU WILL OVER THE NEXT FIVE YEARS USE OR MANUFACTURE AS AN INTERMEDIATE OR FINAL PRODUCT OR BYPRODUCT? <div style="display: flex; justify-content: space-between; margin-top: 5px;"> <span><input type="checkbox"/> <b>YES</b> (LIST ALL SUCH POLLUTANTS BELOW)</span> <span><input checked="" type="checkbox"/> <b>NO</b> (GO TO B)</span> </div>			
B. ARE YOUR OPERATIONS SUCH THAT YOUR RAW MATERIALS, PROCESSES OR PRODUCTS CAN REASONABLE BE EXPECTED TO VARY SO THAT YOUR DISCHARGES OF POLLUTANTS MAY DURING THE NEXT FIVE YEARS EXCEED TWO TIMES THE MAXIMUM VALUES REPORTED IN ITEM 1.30? <div style="display: flex; justify-content: space-between; margin-top: 5px;"> <span><input type="checkbox"/> <b>YES</b> (COMPLETE C BELOW)</span> <span><input checked="" type="checkbox"/> <b>NO</b> (GO TO SECTION 3.00)</span> </div>			
C. IF YOU ANSWERED "YES" TO ITEM B, EXPLAIN BELOW AND DESCRIBE IN DETAIL THE SOURCES AND EXPECTED LEVELS OF SUCH POLLUTANTS THAT YOU ANTICIPATE WILL BE DISCHARGED FROM EACH OUTFALL OVER THE NEXT FIVE YEARS, TO THE BEST OF YOUR ABILITY AT THIS TIME. CONTINUE ON ADDITIONAL SHEETS IF YOU NEED MORE SPACE.  <div style="height: 100px; border: 1px solid black; padding: 5px;">NA</div>			
<b>3.00 CONTRACT ANALYSIS INFORMATION</b> WERE ANY OF THE ANALYSES REPORTED IN 1.30 PERFORMED BY A CONTRACT LABORATORY OR CONSULTING FIRM? <div style="display: flex; justify-content: space-between; margin-top: 5px;"> <span><input type="checkbox"/> <b>YES</b> (LIST THE NAME, ADDRESS, AND TELEPHONE NUMBER OF, AND ANALYZED BY, EACH SUCH LABORATORY OR FIRM BELOW)</span> <span><input checked="" type="checkbox"/> <b>NO</b> (GO TO SECTION 4.00)</span> </div>			
<b>A. NAME</b>	<b>B. ADDRESS</b>	<b>C. TELEPHONE</b> (area code and number)	<b>D. POLLUTANTS ANALYZED</b> (list)
<b>4.00 CERTIFICATION</b> I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.			
NAME AND OFFICIAL TITLE (TYPE OR PRINT)		PHONE NUMBER (AREA CODE AND NUMBER)	
Tyler Edmundson		(660) 595-0143	
SIGNATURE		DATE SIGNED	

APPLICATION FOR DISCHARGE PERMIT  
FORM D – PRIMARY INDUSTRIES

TABLE II	
NPDES # (IF ASSIGNED)	OUTFALL NUMBER
MO-0131008	005

**1.30** If you are a primary industry and this outfall contains process wastewater, refer to Table A in the instructions to determine which of the GC/MS fractions you must test for. Mark “X” in column 2-A for all such GC/MS fractions that apply to your industry and for ALL toxic metals, cyanides, and total phenols. Mark “X” in column 2-B for each pollutant you know or have reason to believe is present. Mark “X” in column 2-C for each pollutant you believe to be absent. If you mark either columns 2-A or 2-B for any pollutant, you must provide the results of at least one analysis for that pollutant. Note that there are seven pages to this part, please review each carefully. Complete one table (*all seven pages*) for each outfall. See instructions for additional details and requirements.

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK "X"			3. EFFLUENT						4. UNITS		5. INTAKE (optional)				
	A. TESTING REQUIRED	B. BELIEVE D PRESENT	C. BELIEVE D ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE (if available)		C. LONG TERM AVRG. VALUE (if available)		D. NO. OF ANALYSES	A. CONCEN- TRATION	B. MASS	A. LONG TERM AVRG. VALUE		B. NO OF ANALYSES	
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS		
METALS, AND TOTAL PHENOLS																
1M. Antimony, Total (7440-36-9)			✓													
2M. Arsenic, Total (7440-38-2)			✓													
3M. Beryllium, Total (7440-41-7)			✓													
4M. Cadmium, Total (7440-43-9)			✓													
5M. Chromium III (16065-83-1)			✓													
6M. Chromium VI (18540-29-9)			✓													
7M. Copper, Total (7440-50-8)			✓													
8M. Lead, Total (7439-92-1)			✓													
9M. Magnesium Total (7439-95-4)			✓													
10M. Mercury, Total (7439-97-6)	—	☐	✓													
11M. Molybdenum Total (7439-98-7)	—	☐	✓													
12M. Nickel, Total (7440-02-0)	—	☐	✓													
13M. Selenium, Total (7782-49-2)	—	☐	✓													
14M. Silver, Total (7440-22-4)	—	☐	✓													
15M. Thallium, Total (7440-28-0)	—	☐	✓													
16M. Tin Total (7440-31-5)	—	☐	✓													
17M. Titanium Total (7440-32-6)	—	☐	✓													
18M. Zinc, Total (7440-66-6)	☐	☐	✓													

CONTINUED FROM PAGE 3

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NPDES # (IF ASSIGNED)  
MO-0131008

OUTFALL NUMBER  
005

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK "X"			3. EFFLUENT				D. NO. OF ANALYSES	4. UNITS		5. INTAKE (optional)				
	A. TESTING RE-QUIRED	B. BELIEVED PRESENT	C. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE (if available)			C. LONG TERM AVRG. VALUE (if available)		A. CONCEN- TRATION	B. MASS	A. LONG TERM AVRG. VALUE		B. NO OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS		(1) CONCENTRATION	(2) MASS			(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION – VOLATILE COMPOUNDS (continued)															
22V. Methylene Chloride (75-09-2)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>												
23V. 1,1,2,2 – Tetra-chloroethane (79-34-5)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>												
24V. Tetrachloroethylene (127-18-4)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>												
25V. Toluene (108-88-3)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>												
26V. 1,2 – Trans Dichloroethylene (156-60-5)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>												
27V. 1,1,1 – Tri – chloroethane (71-55-6)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>												
28V. 1,1,2 – Tri- chloroethane (79-00-5)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>												
29V. Trichloro – ethylene (79-01-6)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>												
30V. Trichloro – fluoromethane (75-69-4)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>												
31V. Vinyl Chloride (75-01-4)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>												
GC/MS FRACTION – ACID COMPOUNDS															
1A. 2 – Chlorophenol (95-57-8)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>												
2A. 2,4 – Dichloro – phenol (120-83-2)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>												
3A. 2,4 – Dimethyl – phenol (105-67-9)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>												
4A. 4,6 – Dinitro - O- Cresol (534-52-1)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>												
5A. 2,4 – Dinitro – phenol (51-28-5)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>												
6A. 2-Nitrophenol (88-75-5)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>												
7A. 4-Nitrophenol (100-02-7)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>												
8A. P – Chloro – M Cresol (59-50-7)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>												
9A. Pentachloro – phenol (87-86-5)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>												
10A. Phenol (108-952)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>												
11A. 2,4,6 – Trichloro-phenol (88-06-2)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>												
12A. 2 - methyl – 4,6 dinitrophenol (534-52-1)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>												

MO 780-1516 (06-13)

PAGE 4

CONTINUE ON PAGE 5



## CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK "X"			3. EFFLUENT				4. UNITS		5. INTAKE (optional)			
	A. TESTING REQUIRED	B. BELIEVED PRESENT	C. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE (if available)		C. LONG TERM AVRG. VALUE (if available)		D. NO. OF ANALYSES	A. LONG TERM AVRG. VALUE	B. MASS	B. NO OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS		
<b>GC/MS FRACTION – BASE/NEUTRAL COMPOUNDS</b>													
1B. Acenaphthene (83-32-9)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>										
2B. Acenaphthylene (208-96-8)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>										
3B. Anthracene (120-12-7)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>										
4B. Benzidine (92-87-5)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>										
5B. Benzo (a) Anthracene (56-55-3)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>										
6B. Benzo (a) Pyrene (50-32-8)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>										
7B. 3,4 – Benzofluoranthene (205-99-2)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>										
8B. Benzo (ghi) Perylene (191-24-2)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>										
9B. Benzo (k) Fluoranthene (207-08-9)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>										
10B. Bis (2-Chloroethoxy) Methane (111-91-1)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>										
11B. Bis (2-Chloroethyl) Ether (111-44-4)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>										
12B. Bis (2- Chloroisopropyl) Ether (39638-32-9)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>										
13B. Bis (2-Ethylhexyl) Phthalate (117-81-7)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>										
14B. 4-Bromophenyl Phenyl Ether (101-55-3)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>										
15B. Butyl Benzyl Phthalate (85-68-7)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>										
16B. 2- Chloronaphthalene (91-58-7)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>										
17B. 4-Chlorophenyl Phenyl Ether (7005-72-3)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>										
18B. Chrysene (218-01-9)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>										
19B. Dibenzo (a,h) Anthracene (53-70-3)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>										
20B. 1,2 – Dichlorobenzene (95-50-1)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>										
21B. 1,3 – Dichlorobenzene (541-73-1)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>										

## CONTINUED FROM PAGE 5

NPDES # (IF ASSIGNED) MO-0131008	OUTFALL NUMBER 005
-------------------------------------	-----------------------

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK "X"			3. EFFLUENT				4. UNITS		5. INTAKE (optional)				
	A. TESTING REQUIRED	B. BELIEVED PRESENT	C. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE (if available)		C. LONG TERM AVRG. VALUE (if available)		D. NO. OF ANALYSES	A. CONCEN- TRATION	B. MASS	A. LONG TERM AVRG. VALUE	B. NO OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS
GC/MS FRACTION – BASE/NEUTRAL COMPOUNDS (continued)														
22B. 1, 4-Dichlorobenzene (106-46-7)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>											
23B. 3, 3'-Dichlorobenzidine (91-94-1)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>											
24B. Diethyl Phthalate (84-66-2)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>											
25B. Dimethyl Phthalate (131-11-3)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>											
26B. Di-N-butyl Phthalate (84-74-2)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>											
27B. 2,4-Dinitrotoluene (121-14-2)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>											
28B. 2,6-Dinitrotoluene (606-20-2)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>											
29B. Di-N-Octylphthalate (117-84-0)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>											
30B. 1,2-Diphenylhydrazine (as Azobenzene) (122-66-7)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>											
31B. Fluoranthene (206-44-0)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>											
32B. Fluorene (86-73-7)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>											
33B. Hexachlorobenzene (87-68-3)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>											
34B. Hexachlorobutadiene (87-68-3)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>											
35B. Hexachloro-cyclopentadiene (77-47-4)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>											
36B. Hexachloroethane (67-72-1)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>											
37B. Indeno (1,2,3-c-d) Pyrene (193-39-5)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>											
38B. Isophorone (78-59-1)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>											
39B. Naphthalene (91-20-3)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>											
40B. Nitrobenzene (98-95-3)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>											
41B. N-Nitro-sodiumethylamine (62-75-9)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>											

CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK "X"			3. EFFLUENT				4. UNITS		5. INTAKE (optional)						
	A. TESTING REQUIRED	B. BELIEVED PRESENT	C. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE (if available)		C. LONG TERM AVRG. VALUE (if available)		D. NO. OF ANALYSES	A. LONG TERM AVRG. VALUE	B. MASS	B. NO OF ANALYSES			
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS			(1) CONCENTRATION				
<b>GC/MS FRACTION – BASE/NEUTRAL COMPOUNDS (continued)</b>																
42B. N-Nitroso N-Propylamine (621-64-7)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>													
43B. N-Nitro- sodiphenylamine (86-30- 6)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>													
44B. Phenanthrene (85-01-8)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>													
45B. Pyrene (129-00-0)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>													
46B. 1,2,4-Tri- chlorobenzene (120-82-1)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>													
<b>GC/MS FRACTION - PESTICIDES</b>																
1P. Aldrin (309-00-2)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>													
2P. α-BHC (319-84-6)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>													
3P. β-BHC (319-84-6)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>													
4P. γ-BHC (58-89-9)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>													
5P. δ-BHC (319-86-8)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>													
6P. Chlordane (57-74-9)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>													
7P. 4,4'-DDT (50-29-3)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>													
8P. 4,4'-DDE (72-55-9)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>													
9P. 4,4'-DDD (72-54-8)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>													
10P. Dieldrin (60-57-1)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>													
11P. α-Endosulfan (115-29-7)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>													
12P. β-Endosulfan (115-29-7)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>													
13P. Endosulfan Sulfate (1031-07-8)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>													
14P. Endrin (72-20-8)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>													
15P. Endrin Aldehyde (7421-93-4)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>													
16P. Heptachlor (76-44-8)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>													



## 2.00 POTENTIAL DISCHARGES NOT COVERED BY ANALYSIS

- A. IS ANY POLLUTANT LISTED IN ITEM 1.30 A SUBSTANCE OR A COMPONENT OF A SUBSTANCE WHICH YOU DO OR EXPECT THAT YOU WILL OVER THE NEXT FIVE YEARS USE OR MANUFACTURE AS AN INTERMEDIATE OR FINAL PRODUCT OR BYPRODUCT?

☐ **YES** (LIST ALL SUCH POLLUTANTS BELOW)

☒ **NO** (GO TO B)

- B. ARE YOUR OPERATIONS SUCH THAT YOUR RAW MATERIALS, PROCESSES OR PRODUCTS CAN REASONABLE BE EXPECTED TO VARY SO THAT YOUR DISCHARGES OF POLLUTANTS MAY DURING THE NEXT FIVE YEARS EXCEED TWO TIMES THE MAXIMUM VALUES REPORTED IN ITEM 1.30?

☐ **YES** (COMPLETE C BELOW)

☒ **NO** (GO TO SECTION 3.00)

- C. IF YOU ANSWERED "YES" TO ITEM B, EXPLAIN BELOW AND DESCRIBE IN DETAIL THE SOURCES AND EXPECTED LEVELS OF SUCH POLLUTANTS THAT YOU ANTICIPATE WILL BE DISCHARGED FROM EACH OUTFALL OVER THE NEXT FIVE YEARS, TO THE BEST OF YOUR ABILITY AT THIS TIME. CONTINUE ON ADDITIONAL SHEETS IF YOU NEED MORE SPACE.

NA

## 3.00 CONTRACT ANALYSIS INFORMATION

WERE ANY OF THE ANALYSES REPORTED IN 1.30 PERFORMED BY A CONTRACT LABORATORY OR CONSULTING FIRM?

☐ **YES** (LIST THE NAME, ADDRESS, AND TELEPHONE NUMBER OF, AND ANALYZED BY, EACH SUCH LABORATORY OR FIRM BELOW)

☒ **NO** (GO TO SECTION 4.00)

A. NAME	B. ADDRESS	C. TELEPHONE (area code and number)	D. POLLUTANTS ANALYZED (list)

## 4.00 CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

NAME AND OFFICIAL TITLE (TYPE OR PRINT)

Tyler Edmundson

PHONE NUMBER (AREA CODE AND NUMBER)

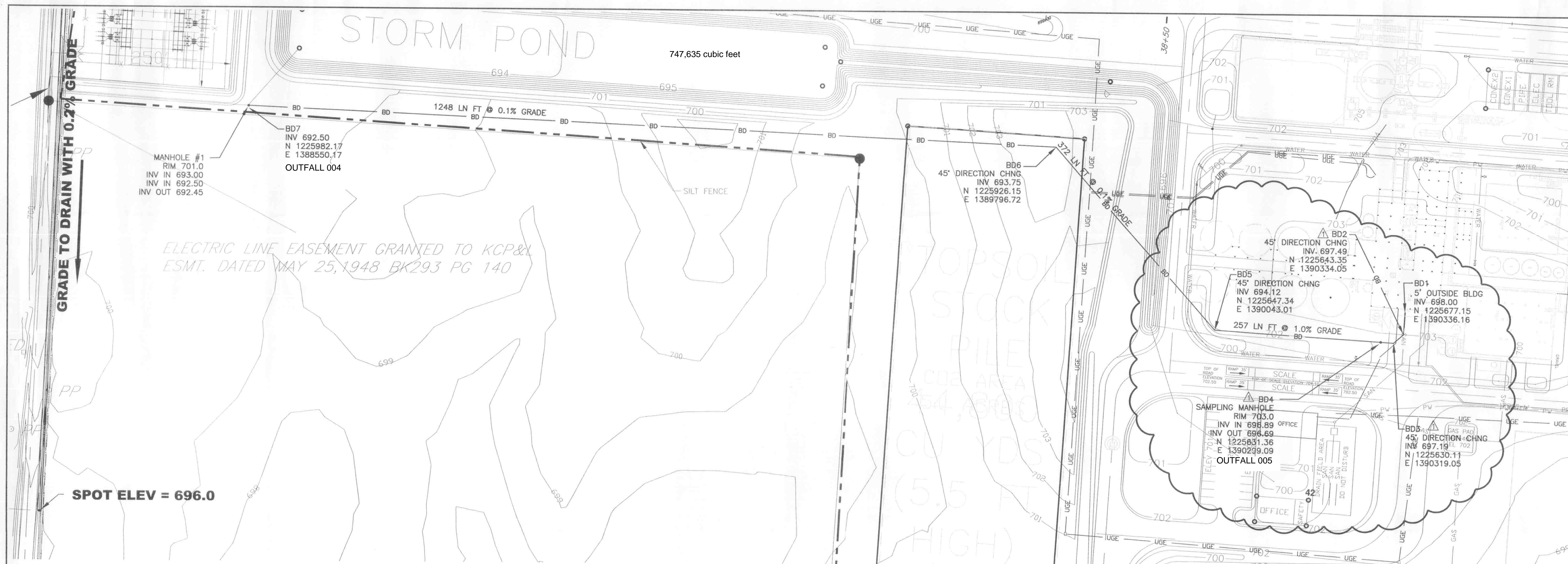
(660) 595-0143

SIGNATURE

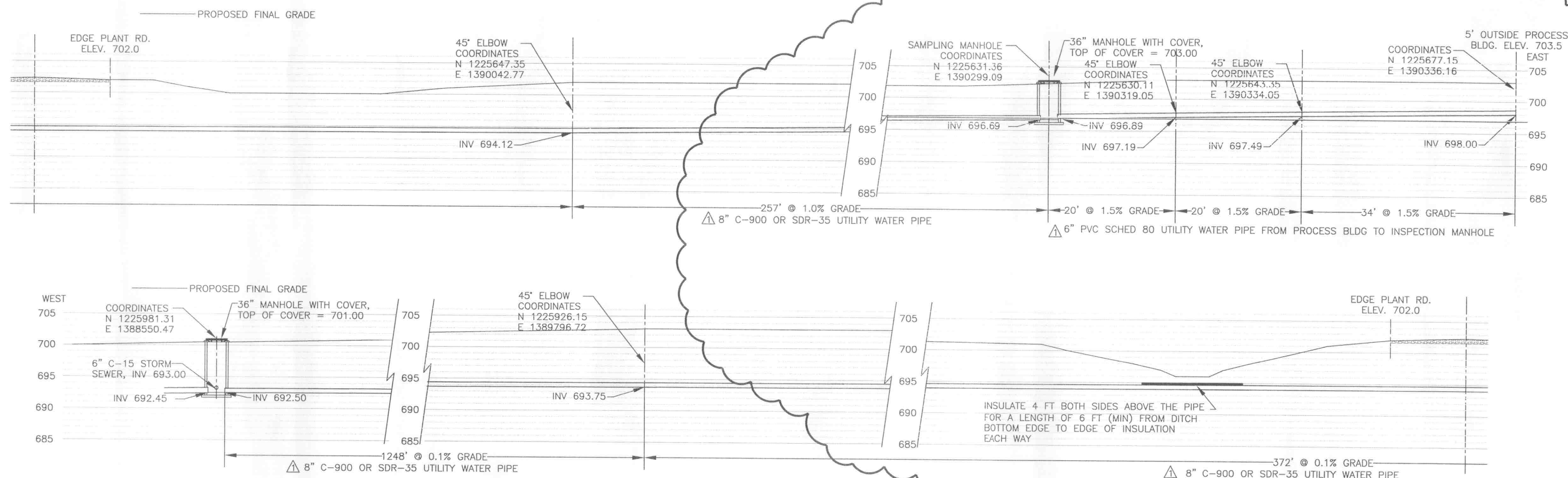
DATE SIGNED

## **APPENDIX A**

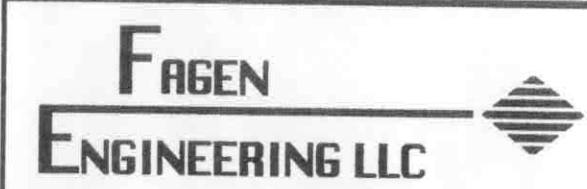
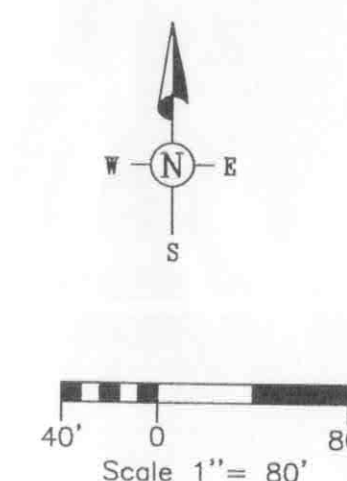




**UTILITY WATER BLOWDOWN LINE ROUTING**  
SCALE: 1"=80'



**CROSS SECTION @ UTILITY WATER BLOWDOWN LINE (8" - 1620' @ 0.1%, 8" - 328' @ 1.0%)**  
SCALE: 1"= 10'



CIVIL - STRUCTURAL - MECHANICAL - ELECTRICAL ENGINEERS

501 West Highway 212, P.O. Box 159  
Granite Falls, MN 56241 Tel. 320-564-4573

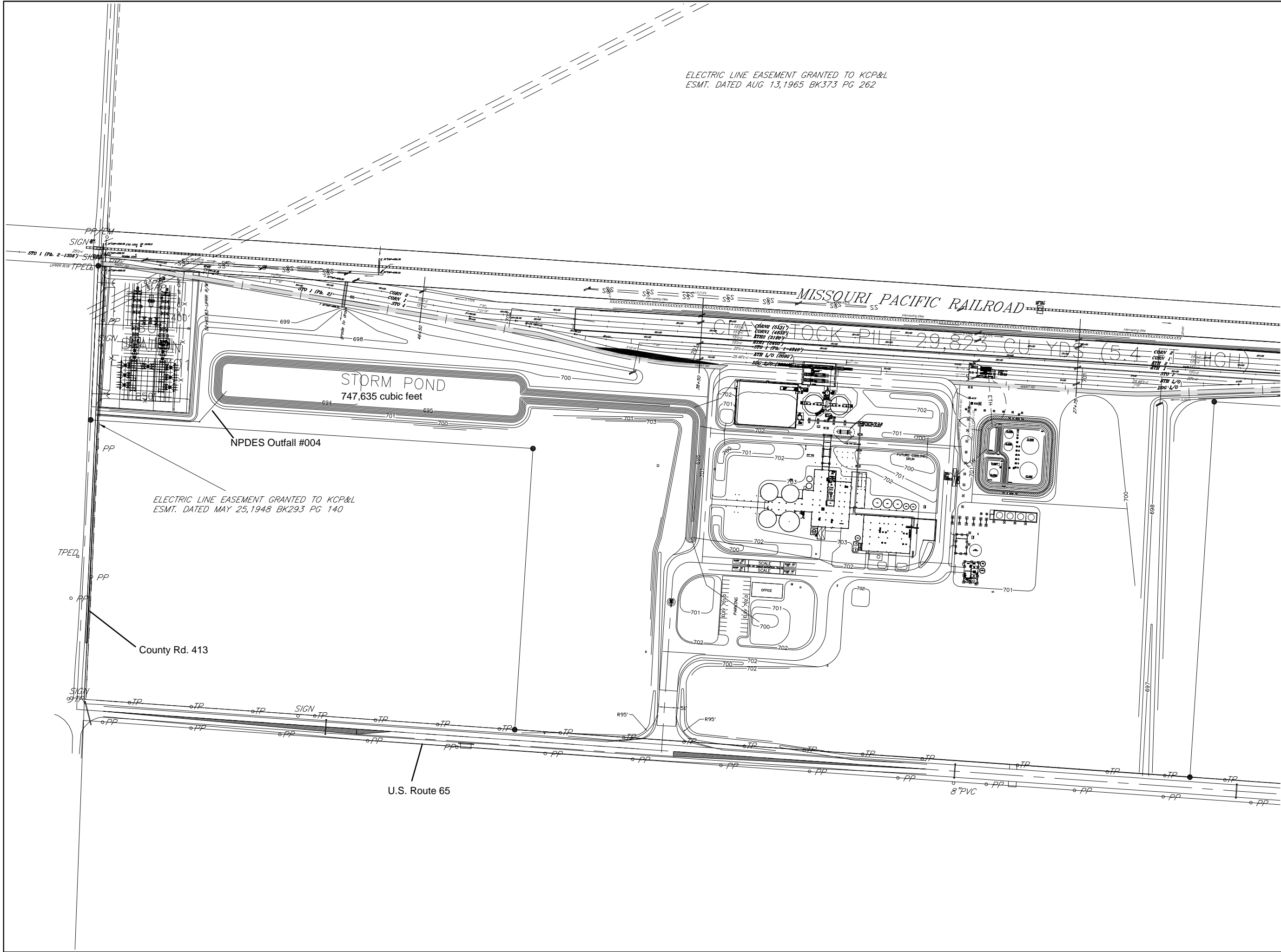
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MID MISSOURI ENERGY, LLC  
MALTA BEND, MISSOURI

UTILITY WATER BLOWDOWN ROUTING

DRAWN: ALB	SHEET NUMBER
CHK'D: THH	220
DATE: 30 JUN 04	
SCALE: AS NOTED	
JOB NUMBER	
EG 1581	REVISION NUMBER 1





NO.	REVISION	BY	CHKD	DATE

Scale 1" = 120'

**Mid-Missouri Energy**

**FAGEN ENGINEERING LLC**  
CIVIL - STRUCTURAL - MECHANICAL - ELECTRICAL ENGINEERS  
501 West Highway 212, P.O. Box 159  
Granite Falls, MN 56241 Tel. 320-564-4573  
This drawing was prepared for use on a specific site and is not suitable for use on different project sites or at a later time. All rights are reserved, no design or plan shall be used or reproduced in any form without the written permission from Fagen Engineering LLC. © Copyright.

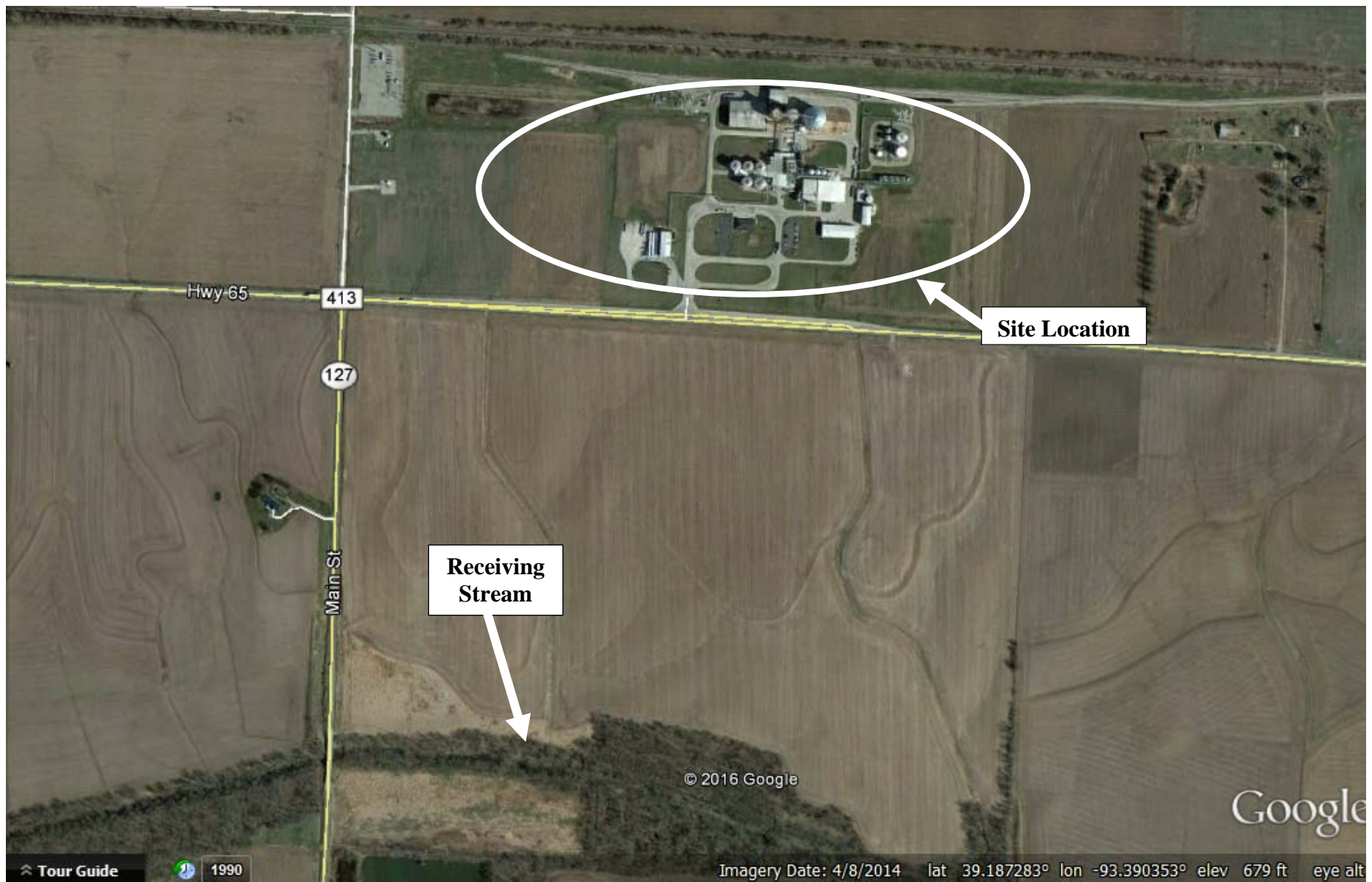
**MID MISSOURI ENERGY, LLC**  
MALTA BEND, MISSOURI

**MID-MISSOURI ENERGY PROPERTY LAYOUT**

DRAWN: THH CHK'D: RJP DATE: 30 JUN 04 SCALE: 1" = 120'	SHEET NUMBER  REVISION NUMBER 0
---	---------------------------------------

EG 1581

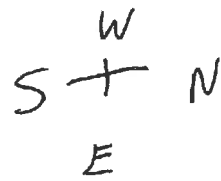
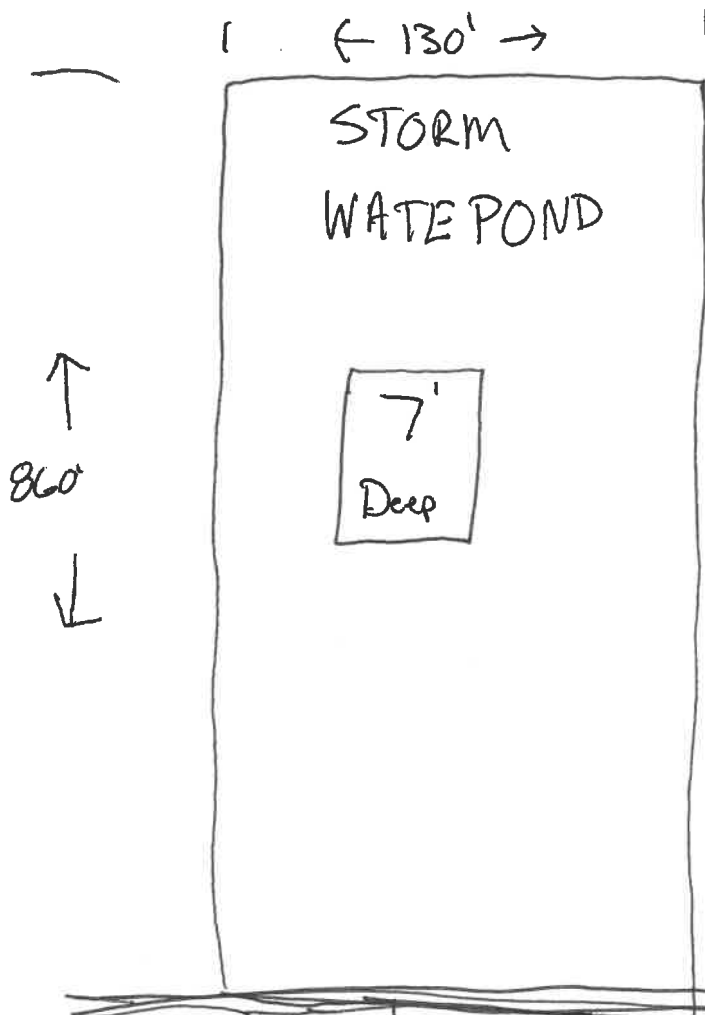




## AERIAL SITE LOCATION MAP – MID-MISSOURI ENERGY, LLC

### NPDES Discharge Operating Permit Renewal

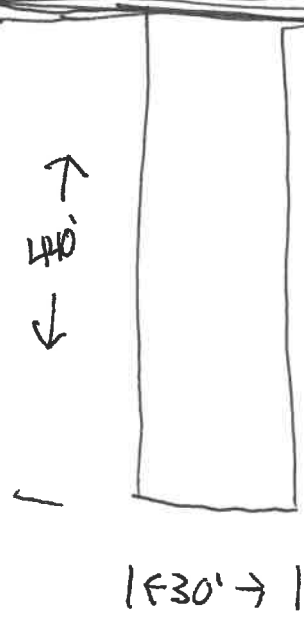
Malta Bend, Missouri



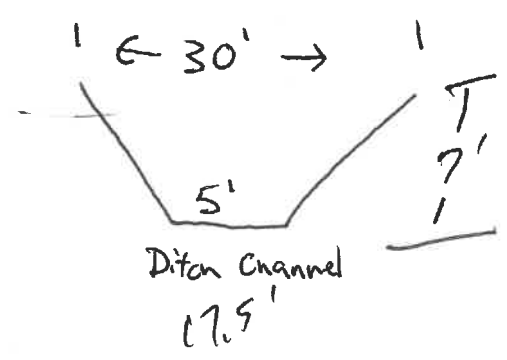
TOTAL  
SW POND

---

= 6,257,457



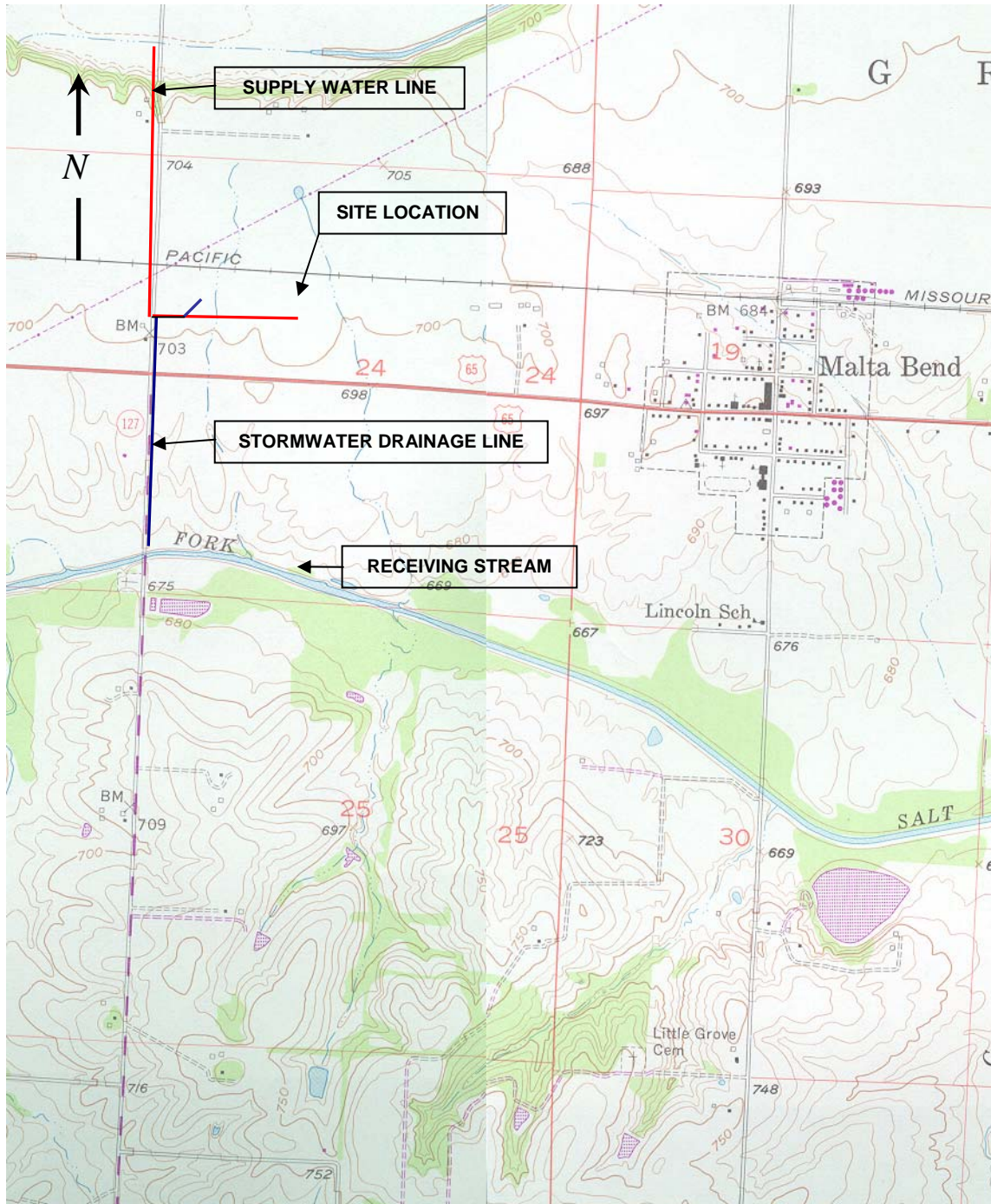
TOTAL = 403,200  
FILL @ 6' = 345,600



## Stormwater Pond Discharge Volume

Water Depth	Stormwater Pond		Drainage Ditch		Total Stormwater Gallons
	Cubic feet	gallons	Cubic feet	gallons	
0.5	55900	418,132	1296.405	9,697	427,829
1.0	111800	836,264	2985.62	22,332	858,596
1.5	167700	1,254,396	5067.645	37,906	1,292,302
2.0	223600	1,672,528	7542.48	56,418	1,728,946
2.5	279500	2,090,660	10410.125	77,868	2,168,528
3.0	335400	2,508,792	13670.58	102,256	2,611,048
3.5	391300	2,926,924	17323.845	129,582	3,056,506
4.0	447200	3,345,056	21369.92	159,847	3,504,903
4.5	503100	3,763,188	25808.805	193,050	3,956,238
5.0	559000	4,181,320	30640.5	229,191	4,410,511
5.5	614900	4,599,452	35865.005	268,270	4,867,722
6.0	670800	5,017,584	41482.32	310,288	5,327,872
6.5	726700	5,435,716	47492.445	355,243	5,790,959
7.0	782600	5,853,848	53900	403,172	6,257,020

	Length	Width		
Pond	860	130		
Ditch	440	5	30	3.571
		Bottom	Top	Linear Increase per Foot



SCALE 1" = 2000'

**SOURCE:**

**USGS 7.5 MINUTE TOPOGRAPHIC QUADRANGLE  
SERIES, GRAND PASS, MO; 1953, PHOTO REV. 1978  
AND MALTA BEND, MO; 1953, PHOTO REV. 1978**

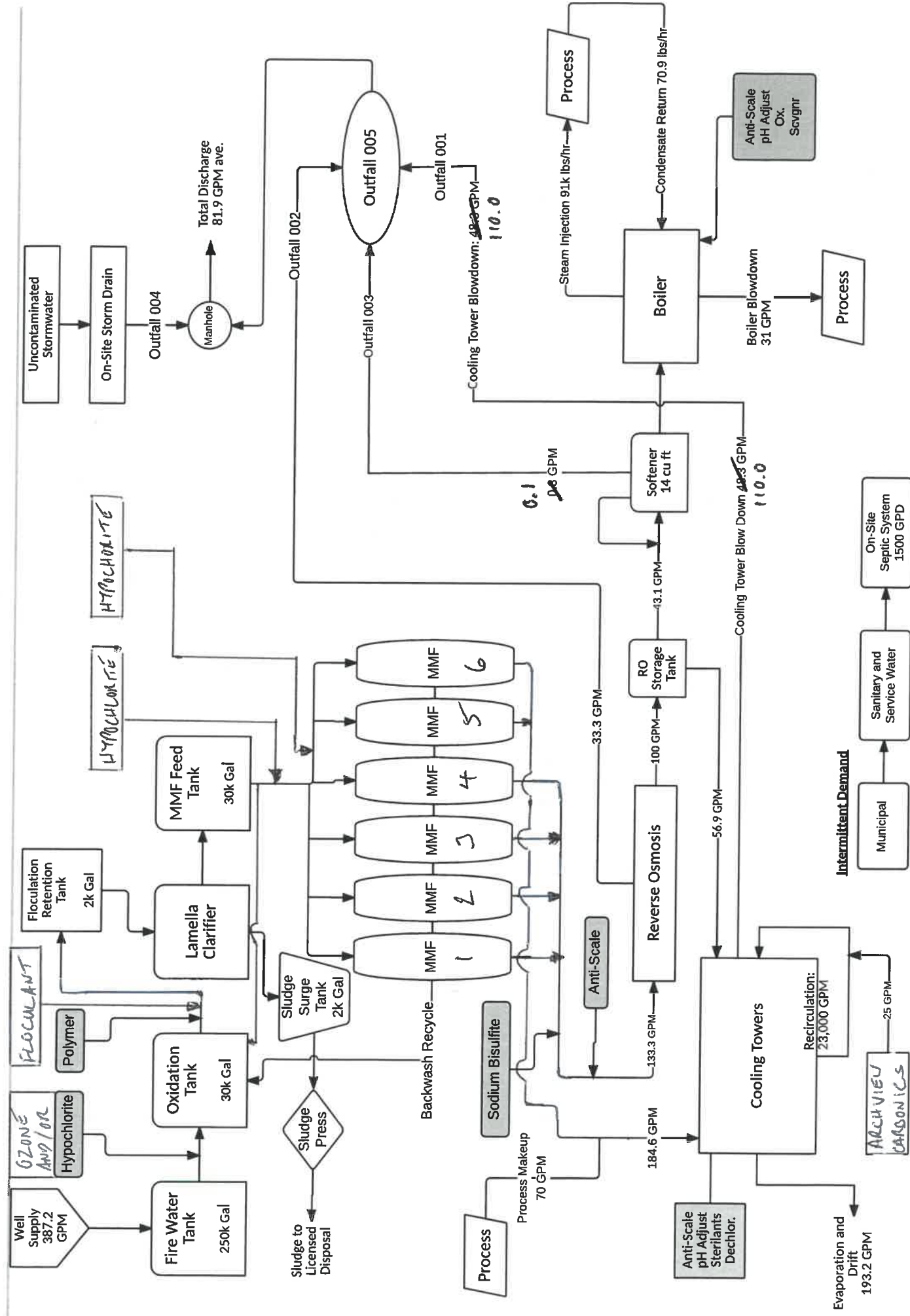
*Locations of facility and water lines are approximate and should  
not be used to find exact coordinates.*

**SITE LOCATION MAP**

**MID-MISSOURI ENERGY, LLC  
ETHANOL PLANT  
Sections 14, 23, and 24; T51N, R23W  
MALTA BEND, MISSOURI**



## Water Flow Diagram



## **APPENDIX B**



Midwest Laboratories  
13611 B Street  
Omaha, NE 68144  
P 402-334-7770  
F 402-334-9121  
[www.midwestlabs.com](http://www.midwestlabs.com)

12 August 2016

Work Order: 1517873

TYLER EDMUNDSON  
MID-MISSOURI ENERGY LLC - 17764  
15311 N SALINE 65 HWY  
MALTA BEND, MO 65339-  
RE: Missouri Toxicity

Enclosed are the results of analyses for samples received by the laboratory on 2016-08-02 15:10. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads "Heather Ramig". The signature is written in a cursive, flowing style.

Heather Ramig  
Project Manager  
[heather@midwestlabs.com](mailto:heather@midwestlabs.com)  
402-829-9891



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MID-MISSOURI ENERGY LLC - 17764  
15311 N SALINE 65 HWY  
MALTA BEND, MO 65339-

Project: Missouri Toxicity

Project Manager: TYLER EDMUNDSON

**Reported:**  
2016-08-12 09:19

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Effluent	1517873-01	Aqueous	2016-08-02 08:15	2016-08-02 15:10
Effluent	1517873-02	Aqueous	2016-08-02 08:15	2016-08-02 15:10

#### Containers used for the following Analyses:

- 1517873-01 A: SM 4500-CL D
- \* 1517873-01 B: SM 4500-NH3 C-1997
- 1517873-01 C: SM 2320 B-1997, SM 2510 B
- 1517873-01 D: SM 2540 C-1997
- \* 1517873-01 E: Total Metals per EPA 200.7
- \* 1517873-02 B: SM 4500-NH3 C-1997

\* Note: Indicates environmental chemistry container was received unpreserved and was preserved at the laboratory.





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15311 N SALINE 65 HWY  
MALTA BEND, MO 65339-

Project: Missouri Toxicity

Project Manager: TYLER EDMUNDSON

**Reported:**  
2016-08-12 09:19

**Sample ID: Effluent**  
**Laboratory ID: 1517873-01**  
**Sampled Date/Time: 2016-08-02 08:15**

Analyte	Result	Reporting Limit	Units	Method	Prepared	Analyzed	Reviewer	(Container) / Notes
<b>Total Metals</b>								
Hardness	784.5	0.66	mg Eq CaCO3/L	SM 2340 B-1997	2016-08-05	2016-08-05		
Calcium	202.7	0.10	mg/L	EPA 200.7	2016-08-05	2016-08-05	kkh9	(E)
Magnesium	67.59	0.10	mg/L	EPA 200.7	2016-08-05	2016-08-05	kkh9	(E)
<b>Environmental Chemistry</b>								
Alkalinity, Total (as CaCO3)	166	10	mg/L	SM 2320 B-1997	2016-08-04	2016-08-04	mjs5	(C)
Ammonia as N	0.52	0.10	mg/L	SM 4500-NH3 C-1997	2016-08-08	2016-08-08	mjs5	(B)
Specific conductance	2240	2	umhos/c m	SM 2510 B	2016-08-08	2016-08-08	cmw2	(C)
Total Dissolved Solids	1770	10	mg/L	SM 2540 C-1997	2016-08-04	2016-08-05	mjs5	(D)
<b>Environmental Chemistry (in lab, exceeds regulatory hold time)</b>								
Chlorine, Total	<	0.010	mg/L	SM 4500-CL D	2016-08-02/14:00	2016-08-02/14:00	cmw2	(A)



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15311 N SALINE 65 HWY  
MALTA BEND, MO 65339-

Project: Missouri Toxicity

Project Manager: TYLER EDMUNDSON

**Reported:**  
2016-08-12 09:19

**Sample ID: Effluent**  
**Laboratory ID: 1517873-02**  
**Sampled Date/Time: 2016-08-02 08:15**

Analyte	Result	Reporting Limit	Units	Method	Prepared	Analyzed	Reviewer	(Container) / Notes
<b>Environmental Chemistry</b>								
Ammonia as N	0.43	0.10	mg/L	SM 4500-NH3 C-1997	2016-08-09	2016-08-09	cmw2	(B)



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MALTA BEND, MO 65339-

Project: Missouri Toxicity

Project Manager: TYLER EDMUNDSON

**Reported:**  
2016-08-12 09:19

### Total Metals - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
---------	--------	--------------------	-------	----------------	------------------	------	----------------	-----	--------------	-------

#### Batch B605658

##### Blank (B605658-BLK1)

Prepared & Analyzed: 2016-08-05

Calcium	<	0.10	mg/L
Magnesium	<	0.10	mg/L

##### LCS (B605658-BS1)

Prepared & Analyzed: 2016-08-05

Calcium	44.97	0.10	mg/L	51.0	88.2	85-115
Magnesium	19.43	0.10	mg/L	21.0	92.5	85-115



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15311 N SALINE 65 HWY  
MALTA BEND, MO 65339-

Project: Missouri Toxicity

Project Manager: TYLER EDMUNDSON

**Reported:**  
2016-08-12 09:19

### Environmental Chemistry - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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#### Batch B605618

##### Blank (B605618-BLK1)

Prepared: 2016-08-04 Analyzed: 2016-08-05

Total Dissolved Solids < 10 mg/L

##### LCS (B605618-BS1)

Prepared: 2016-08-04 Analyzed: 2016-08-05

Total Dissolved Solids 1006 10 mg/L 1000 101 90-110

##### Duplicate (B605618-DUP1)

Source: 1517318-01

Prepared: 2016-08-04 Analyzed: 2016-08-05

Total Dissolved Solids 1862 10 mg/L 1890 1.49 10

##### Duplicate (B605618-DUP2)

Source: 1517748-01

Prepared: 2016-08-04 Analyzed: 2016-08-05

Total Dissolved Solids 1982 10 mg/L 2000 0.904 10

#### Batch B605621

##### Blank (B605621-BLK1)

Prepared & Analyzed: 2016-08-04

Alkalinity, Total (as CaCO3) < 10 mg/L

##### LCS (B605621-BS1)

Prepared & Analyzed: 2016-08-04

Alkalinity, Total (as CaCO3) 982.0 10 mg/L 1000 98.2 90-110

##### LCS (B605621-BS2)

Prepared & Analyzed: 2016-08-04

Alkalinity, Total (as CaCO3) 984.0 10 mg/L 1000 98.4 90-110

##### Duplicate (B605621-DUP1)

Source: 1511564-01

Prepared & Analyzed: 2016-08-04

Alkalinity, Total (as CaCO3) 234.8 10 mg/L 234.8 0.00 10

##### Duplicate (B605621-DUP2)

Source: 1517658-10

Prepared & Analyzed: 2016-08-04

Alkalinity, Total (as CaCO3) 195.0 10 mg/L 190.8 2.18 10



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MALTA BEND, MO 65339-

Project: Missouri Toxicity

Project Manager: TYLER EDMUNDSON

**Reported:**  
2016-08-12 09:19

### Environmental Chemistry - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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#### Batch B605687

##### Blank (B605687-BLK1)

Prepared & Analyzed: 2016-08-08

Ammonia as N < 0.10 mg/L

##### LCS (B605687-BS1)

Prepared & Analyzed: 2016-08-08

Ammonia as N 7.810 0.10 mg/L 8.00 97.6 90-110

##### Matrix Spike (B605687-MS1)

Source: 1517554-01

Prepared & Analyzed: 2016-08-08

Ammonia as N 383.8 2.50 mg/L 200 187.6 98.1 90-110

##### Matrix Spike Dup (B605687-MSD1)

Source: 1517554-01

Prepared & Analyzed: 2016-08-08

Ammonia as N 385.6 2.50 mg/L 200 187.6 99.0 90-110 0.447 10

#### Batch B605723

##### LCS (B605723-BS1)

Prepared & Analyzed: 2016-08-08

Specific conductance 992.6 2 umhos/cm 1000 99.3 95-105

##### Duplicate (B605723-DUP1)

Source: 1517850-10

Prepared & Analyzed: 2016-08-08

Specific conductance < 2 umhos/cm < 10

#### Batch B605747

##### Blank (B605747-BLK1)

Prepared & Analyzed: 2016-08-09

Ammonia as N < 0.10 mg/L

##### LCS (B605747-BS1)

Prepared & Analyzed: 2016-08-09

Ammonia as N 7.840 0.10 mg/L 8.00 98.0 90-110



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Project: Missouri Toxicity

Project Manager: TYLER EDMUNDSON

**Reported:**  
2016-08-12 09:19

### Environmental Chemistry - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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#### Batch B605747

##### Matrix Spike (B605747-MS1)

Source: 1517116-02

Prepared & Analyzed: 2016-08-09

Ammonia as N	491.7	5.00	mg/L	400	107.6	96.0	90-110			
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##### Matrix Spike Dup (B605747-MSD1)

Source: 1517116-02

Prepared & Analyzed: 2016-08-09

Ammonia as N	497.2	5.00	mg/L	400	107.6	97.4	90-110	1.11	10	
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Project Manager: TYLER EDMUNDSON

**Reported:**  
2016-08-12 09:19

**Environmental Chemistry (in lab, exceeds regulatory hold time) - Quality Control**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B605570										
Blank (B605570-BLK1)				Prepared & Analyzed: 2016-08-02						
Chlorine, Total	<	0.010	mg/L							
Blank (B605570-BLK2)				Prepared & Analyzed: 2016-08-02						
Chlorine, Total	<	0.010	mg/L							
LCS (B605570-BS1)				Prepared & Analyzed: 2016-08-02						
Chlorine, Total	0.2130	0.010	mg/L	0.200		106	90-110			
LCS Dup (B605570-BSD1)				Prepared & Analyzed: 2016-08-02						
Chlorine, Total	0.2190	0.010	mg/L	0.200		110	90-110	2.78	10	
Duplicate (B605570-DUP1)				Source: 1517873-01		Prepared & Analyzed: 2016-08-02				
Chlorine, Total	<	0.010	mg/L		<				10	



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15311 N SALINE 65 HWY  
MALTA BEND, MO 65339-

Project: Missouri Toxicity

Project Manager: TYLER EDMUNDSON

**Reported:**  
2016-08-12 09:19

### Certified Analyses included in this Report

Method	Analyte	Certifications
<i>EPA 200.7 in Aqueous</i>	Calcium Magnesium	TX,KS,FL,UT,OK,IA FL,KS,TX,UT,OK,IA
<i>SM 2320 B-1997 in Aqueous</i>	Alkalinity, Total (as CaCO <sub>3</sub> )	FL,TX,KS,UT,IA,OK
<i>SM 2540 C-1997 in Aqueous</i>	Total Dissolved Solids	IA,FL,KS,OK,TX,WA
<i>SM 4500-NH<sub>3</sub> C-1997 in Aqueous</i>	Ammonia as N	FL,KS,TX,UT,IA,OK

### Non-Certified Analyses included in this Report

Method	Analyte
<i>SM 2510 B in Aqueous</i>	Specific conductance
<i>SM 4500-CL D in Aqueous</i>	Chlorine, Total

Code	Description	Number	Expires
FL	Florida Department of Health	E87918	06/30/2017
IA	Iowa Department of Natural Resources	064	05/01/2017
KS	Kansas Department of Health and Environment	E-10402 Pending	07/31/2016
OK	Oklahoma Department of Environmental Quality	2015-051	08/31/2016
TX	Texas Commission on Environmental Quality	T104704416-13-5	07/31/2017
UT	State of Utah Department of Health	NE000012013-3 Pending	07/31/2016
WA	State of Washington Department of Ecology	C912	06/07/2017





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15311 N SALINE 65 HWY  
MALTA BEND, MO 65339-

Project: Missouri Toxicity

Project Manager: TYLER EDMUNDSON

**Reported:**  
2016-08-12 09:19

### Notes and Definitions

< Less than reporting limit

NR Not Reported

dry Sample results reported on a dry weight basis

RPD Relative Percent Difference

EPA 624, EPA 8260, OA-1, and GRO analyses are conducted in the facility located at 13606 B Street, Omaha, NE 68144. All other analyses are conducted in the main facility located at 13611 B Street, Omaha, NE 68144.

**Date:** 8/12/16

**Analysis performed by:** Laura Moore

**RE:** Whole Effluent Toxicity Test Results

**Facility:** Mid-Missouri Energy LLC

**Date Collected:** 8/2/16

**Time Collected:** 08:15

**Date Received:** 8/2/16

**Time Received:** 15:10

**Project #:** Missouri Toxicity

**Customer Sample ID:** Effluent

**MWL Lab Number:** 1517873-01

**Relinquished by:**

**Sampler:**

Enclosed please find Whole Effluent Toxicity test results for the sample(s) received as described above. The values reported are in conformance with internal and method quality control guidelines, unless otherwise noted. If you have questions or need more information, please contact us.

**Analysis Report**  
**48-Hour Acute Toxicity Test**  
EPA 821-R-02-012 (Organisms 2000.0 / 2002.0)

**Project #:** Missouri Toxicity  
**Lab Number:** 1517873-01  
**Facility:** Mid-Missouri Energy LLC

Testing Laboratory:	Sample Received Description:
Midwest Laboratories, Inc. 13611 B Street Omaha, NE 68144	<b>Color:</b> very light yellow <b>Odor:</b> odorless <b>Temp:</b> 5.8 °C

Reference Toxicity Data:			
<i>P. promelas</i>		<i>C. dubia</i>	
Reference: KCl		Reference: NaCl	
LC50: 0.924	g/L	LC50: 2.205	g/L
Date: July 2016		Date: July 2016	

Conditions:	
<i>P. promelas</i>	<i>C. dubia</i>
Organism Health: HO	Organism Health: HO
Age: 2 days	Age: <24 hrs
Lot: 160731	Brood: 10
Start Time: 15:20	Start Time: 15:35
Start Date: 8/2/16	Start Date: 8/2/16
End Time: 14:10	End Time: 14:30
End Date: 8/4/16	End Date: 8/4/16

Notes:

Test organisms kept in Biomonitoring Incubator #1

Organisms subjected to 16 Hours Light; 8 Hours Dark @ 50-100 ft-c and 25±1°C

Water used for Controls and Dilutions: Moderately Hard Synthetic Water Lot#: 172527

Balance 47 used to weigh any necessary reagents and verify pipette

Acute Water Volumes – used ~250-300 mLs/replicate for fish and ~25-30mLs/replicate for fleas

Acute Feeding – Fish and fleas fed according to section 9.11 in EPA method 821-R-02-012

Pipette BIO S/N L34706D used for flea feeding

Healthy Organisms (HO)	healthy fish = not bent in half, orange in color, swimming vigorously
	healthy fleas = brown in color, swimming vigorously, large brood (5 or more neonates)
Moderately Healthy (MHO)	fish = clear in color, swimming vigorously
	fleas = clear in color, swimming vigorously, smaller brood (less than 5 neonates)
Unhealthy Organisms (UHO)	fish = bent in half, not eaten (clear in color), not swimming (lethargic)
	fleas = not eaten (clear in color), not swimming (lethargic), very few/mostly dead neonates

**Analysis Report**  
**48-Hour Acute Toxicity Test**

EPA 821-R-02-012 (Organisms 2000.0 / 2002.0)

**Project #:** Missouri Toxicity

**Lab Number:** 1517873-01

**Facility:** Mid-Missouri Energy LLC

---

**Daily Readings**

Dilution	Initial Reading		
	DO	Temp(°C)	pH
100%	5.9	24.5	7.1
50%	7.0	24.4	7.4
25%	7.8	24.4	7.6
12.5%	8.0	24.6	7.9
6.25%	8.0	24.5	8.0
Control	7.8	24.4	8.0

Dilution	24 Hour Reading		
	DO	Temp(°C)	pH
100%	6.5	25.5	8.1
50%	6.9	25.4	8.2
25%	7.2	25.5	8.2
12.5%	7.3	25.4	8.2
6.25%	7.4	25.6	8.2
Control	7.4	25.6	8.2

Dilution	48 Hour Reading		
	DO	Temp(°C)	pH
100%	7.3	25.6	8.3
50%	7.4	25.6	8.4
25%	7.5	25.7	8.3
12.5%	7.6	25.7	8.3
6.25%	7.5	25.6	8.3
Control	7.2	25.5	8.2

***Pimephales promelas* (Fathead Minnow)**  
**Survival Data Summary Table**  
**EPA 821-R-02-012**

**Project #:** Missouri Toxicity  
**Lab Number:** 1517873-01  
**Facility:** Mid-Missouri Energy LLC

Concentration	Replicate Number	Number of Survivors		
		Hours		Final Total
		24	48	
100%	1	10	10	
	2	10	10	
	Total	20	20	20
50%	1	10	10	
	2	10	10	
	Total	20	20	20
25%	1	10	10	
	2	10	10	
	Total	20	20	20
12.5%	1	10	10	
	2	10	10	
	Total	20	20	20
6.25%	1	10	10	
	2	10	10	
	Total	20	20	20
Control	1	10	10	
	2	10	10	
	Total	20	20	20

**Fathead Minnow (*P. promelas*)**

**LC50:** >100%

**Tua:** <1.00

**P-value:** 1.00

**Method:** Fisher Exact/Bonferroni-Holm Test

***Ceriodaphnia dubia* (Water Flea)**  
**Survival Data Summary Table**  
**EPA 821-R-02-012**

**Project #:** Missouri Toxicity  
**Lab Number:** 1517873-01  
**Facility:** Mid-Missouri Energy LLC

Concentration	Replicate Number	Number of Survivors		
		Hours		Final Total
		24	48	
100%	1	5	5	
	2	5	5	
	3	5	5	
	4	5	5	
	<b>Total</b>	<b>20</b>	<b>20</b>	<b>20</b>
50%	1	5	5	
	2	5	5	
	3	5	5	
	4	5	4	
	<b>Total</b>	<b>20</b>	<b>19</b>	<b>19</b>
25%	1	5	5	
	2	5	5	
	3	5	5	
	4	5	5	
	<b>Total</b>	<b>20</b>	<b>20</b>	<b>20</b>
12.5%	1	5	5	
	2	5	5	
	3	5	5	
	4	5	5	
	<b>Total</b>	<b>20</b>	<b>20</b>	<b>20</b>
6.25%	1	5	5	
	2	5	5	
	3	5	5	
	4	5	5	
	<b>Total</b>	<b>20</b>	<b>20</b>	<b>20</b>
Control	1	5	5	
	2	5	5	
	3	5	5	
	4	5	5	
	<b>Total</b>	<b>20</b>	<b>20</b>	<b>20</b>

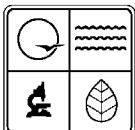
**Water Flea (*C. dubia*)**

**LC50:** >100%

**Tua:** <1.00

**P-value:** 0.83

**Method:** Steel Many-One Rank Sum Test



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 Mid-Missouri Energy LLC	DATE AND TIME COLLECTED EFFLUENT 08/02/2016 UPSTREAM _____
PERMIT NUMBER	PERMIT OUTFALL NUMBER
COLLECTOR'S NAME	
RECEIVING STREAM COLLECTION SITE AND DESCRIPTION	
PERMIT ALLOWABLE EFFLUENT CONCENTRATION (AEC)	EFFLUENT SAMPLE TYPE (CHECK ONE) <input checked="" type="checkbox"/> 24 HR COMPOSITE <input type="checkbox"/> GRAB <input type="checkbox"/> OTHER _____
SAMPLE NUMBER EFFLUENT _____ UPSTREAM _____	UPSTREAM SAMPLE TYPE (CHECK ONE) <input type="checkbox"/> 24 HR COMPOSITE <input type="checkbox"/> GRAB <input type="checkbox"/> OTHER _____
PERMITTED EFFLUENT DAILY MAXIMUM LIMITATION FOR CHLORINE _____ mg/L	PERMITTED EFFLUENT DAILY MAXIMUM LIMITATION FOR AMMONIA _____ mg/L

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

PERFORMING LABORATORY Midwest Laboratories, Inc.	TEST TYPE Acute	
FINAL REPORT NUMBER 1517873	TEST DURATION 48 hours	
DATE OF LAST REFERENCE TOXICANT TESTING 07/26/2016	TEST METHOD EPA 821-R-02-012 2000.0/2002.0	
DATE AND TIME SAMPLES RECEIVED AT LABORATORY 08/02/2016 15:10	TEST START DATE AND TIME 08/02/2016 15:20	TEST END DATE AND TIME 08/04/2016 14:10
SAMPLE DECHLORINATED PRIOR TO ANALYSIS? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO EFFLUENT <u>X</u> UPSTREAM _____	TEST ORGANISM #1 AND AGE P. Promelas 2 days	TEST ORGANISM #2 AND AGE C. Dubia <24 hours
SAMPLE FILTERED <sup>1</sup> PRIOR TO ANALYSIS? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO EFFLUENT <u>X</u> UPSTREAM _____	90 PERCENT OR GREATER SURVIVAL IN SYNTHETIC CONTROL? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	DILUTION WATER USED TO ACHIEVE AEC Moderately Hard Synthetic Water
FILTER MESH SIEVE SIZE 2 60 micron	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 N/A	UPSTREAM ORGANISM #2 PERCENT MORTALITY N/A
pH ADJUSTED? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO EFFLUENT <u>X</u> UPSTREAM _____	TEST RESULT AT AEC FOR ORGANISM #1 <input checked="" type="checkbox"/> PASS <input type="checkbox"/> FAIL	TEST RESULT AT AEC FOR ORGANISM #2 <input checked="" type="checkbox"/> PASS <input type="checkbox"/> FAIL

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

PARAMETER	RESULT	METHOD	WHEN ANALYZED
Temperature °C	24.5	EPA 170.1	08/02/2016
pH Standard Units	7.1	EPA 150.0	08/02/2016
Conductance µMols	2240	SM 2510 B	08/08/2016
Dissolved Oxygen mg/L	5.9	EPA 360.1	08/02/2016
Total Residual Chlorine mg/L	<0.01	SM 4500-CL D	08/02/2016
Unionized Ammonia mg/L	<0.1	Calculation	08/08/2016
* Total Alkalinity mg/L	166	SM 2320 B	08/04/2016
* Total Hardness mg/L	784	Calculation	08/05/2016

\* 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	24.4	EPA 170.1	08/02/2016
pH Standard Units	8.0	EPA 150.0	08/02/2016
Conductance µMohs	348	SM 2510 B	07/29/2016
Dissolved Oxygen mg/L	7.8	EPA 360.1	08/02/2016
Total Residual Chlorine mg/L	N/A	SM 4500-CL D	
Unionized Ammonia mg/L	N/A	Calculation	
* Total Alkalinity mg/L	72	SM 2320 B	07/29/2016
* Total Hardness mg/L	111	Calculation	07/29/2016
* 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.



## CETIS Analytical Report

Report Date: 11 Aug-16 13:57 (p 1 of 2)  
 Test Code: 1517873-01pp | 14-8633-4435

Fish 48-h Acute Survival Test				Midwest Laboratories, Inc.	
Analysis ID:	17-5702-6143	Endpoint:	48h Proportion Survived	CETIS Version:	CETISv1.8.4
Analyzed:	11 Aug-16 13:57	Analysis:	Linear Interpolation (ICPIN)	Official Results:	Yes
Batch ID:	08-3829-7650	Test Type:	Survival (48h)	Analyst:	Laura Moore
Start Date:	02 Aug-16 15:20	Protocol:	EPA/821/R-02-012 (2002)	Diluent:	Mod-Hard Synthetic Water
Ending Date:	04 Aug-16 14:10	Species:	Pimephales promelas	Brine:	Generic commercial salts
Duration:	47h	Source:	Aquatic Biosystems, CO	Age:	2day
Sample ID:	20-8642-0826	Code:	7C5C415A	Client:	Mid-Missouri Energy
Sample Date:	02 Aug-16 08:15	Material:	POTW Effluent	Project:	
Receive Date:	02 Aug-16 15:10	Source:	NPDES Permit # (XX99999999)		
Sample Age:	7h (5.8 °C)	Station:			

Linear Interpolation Options					
X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	82141	200	Yes	Two-Point Interpolation

Point Estimates						
Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
EC50	>100	N/A	N/A	<1	NA	NA

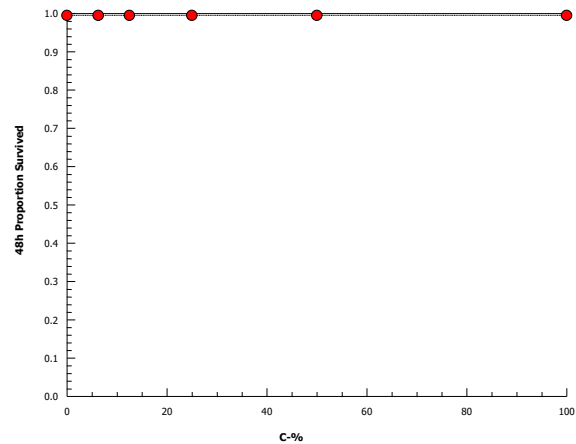
48h Proportion Survived Summary			Calculated Variate(A/B)								
C-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	A	B
0	Dilution Water	2	1	1	1	0	0	0.0%	0.0%	20	20
6.25		2	1	1	1	0	0	0.0%	0.0%	20	20
12.5		2	1	1	1	0	0	0.0%	0.0%	20	20
25		2	1	1	1	0	0	0.0%	0.0%	20	20
50		2	1	1	1	0	0	0.0%	0.0%	20	20
100		2	1	1	1	0	0	0.0%	0.0%	20	20

48h Proportion Survived Detail			
C-%	Control Type	Rep 1	Rep 2
0	Dilution Water	1	1
6.25		1	1
12.5		1	1
25		1	1
50		1	1
100		1	1

48h Proportion Survived Binomials			
C-%	Control Type	Rep 1	Rep 2
0	Dilution Water	10/10	10/10
6.25		9/10	10/10
12.5		10/10	10/10
25		10/10	10/10
50		10/10	10/10
100		10/10	10/10

Fish 48-h Acute Survival Test		Midwest Laboratories, Inc.	
Analysis ID:	17-5702-6143	Endpoint:	48h Proportion Survived
Analized:	11 Aug-16 13:57	Analysis:	Linear Interpolation (ICPIN)
		CETIS Version:	CETISv1.8.4
		Official Results:	Yes

Graphics



## CETIS Analytical Report

Report Date: 11 Aug-16 13:58 (p 1 of 2)  
 Test Code: 1517873-01pp | 14-8633-4435

Fish 48-h Acute Survival Test				Midwest Laboratories, Inc.	
Analysis ID:	06-0536-4674	Endpoint:	48h Proportion Survived	CETIS Version:	CETISv1.8.4
Analyzed:	11 Aug-16 13:58	Analysis:	STP 2x2 Contingency Tables	Official Results:	Yes
Batch ID:	08-3829-7650	Test Type:	Survival (48h)	Analyst:	Laura Moore
Start Date:	02 Aug-16 15:20	Protocol:	EPA/821/R-02-012 (2002)	Diluent:	Mod-Hard Synthetic Water
Ending Date:	04 Aug-16 14:10	Species:	Pimephales promelas	Brine:	Generic commercial salts
Duration:	47h	Source:	Aquatic Biosystems, CO	Age:	2day
Sample ID:	20-8642-0826	Code:	7C5C415A	Client:	Mid-Missouri Energy
Sample Date:	02 Aug-16 08:15	Material:	POTW Effluent	Project:	
Receive Date:	02 Aug-16 15:10	Source:	NPDES Permit # (XX99999999)		
Sample Age:	7h (5.8 °C)	Station:			

Data Transform	Zeta	Alt Hyp	Trials	Seed	NOEL	LOEL	TOEL	TU
Untransformed		C > T	NA	NA	100	>100	NA	1

## Fisher Exact/Bonferroni-Holm Test

Control	vs	C-%	Test Stat	P-Value	P-Type	Decision(α:5%)
Dilution Water		6.25	1	1.0000	Exact	Non-Significant Effect
		12.5	1	1.0000	Exact	Non-Significant Effect
		25	1	1.0000	Exact	Non-Significant Effect
		50	1	1.0000	Exact	Non-Significant Effect
		100	1	1.0000	Exact	Non-Significant Effect

## Data Summary

C-%	Control Type	NR	R	NR + R	Prop NR	Prop R	%Effect
0	Dilution Water	20	0	20	1	0	0.0%
6.25		20	0	20	1	0	0.0%
12.5		20	0	20	1	0	0.0%
25		20	0	20	1	0	0.0%
50		20	0	20	1	0	0.0%
100		20	0	20	1	0	0.0%

## 48h Proportion Survived Detail

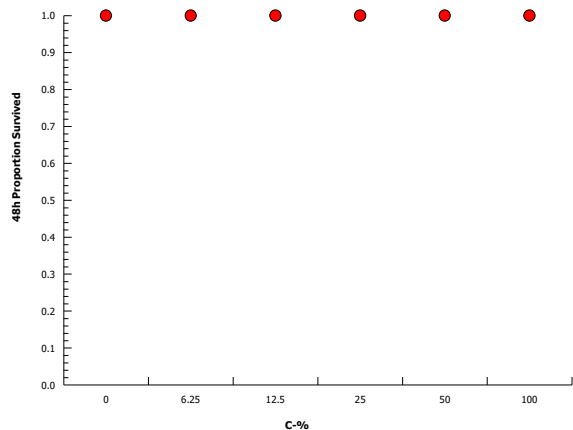
C-%	Control Type	Rep 1	Rep 2
0	Dilution Water	1	1
6.25		1	1
12.5		1	1
25		1	1
50		1	1
100		1	1

## 48h Proportion Survived Binomials

C-%	Control Type	Rep 1	Rep 2
0	Dilution Water	10/10	10/10
6.25		9/10	10/10
12.5		10/10	10/10
25		10/10	10/10
50		10/10	10/10
100		10/10	10/10

Fish 48-h Acute Survival Test			Midwest Laboratories, Inc.
Analysis ID:	06-0536-4674	Endpoint:	48h Proportion Survived
Analized:	11 Aug-16 13:58	Analysis:	STP 2x2 Contingency Tables
		CETIS Version:	CETISv1.8.4
		Official Results:	Yes

Graphics



## CETIS Analytical Report

Report Date: 11 Aug-16 14:01 (p 1 of 2)  
 Test Code: 1517873-01cd | 18-8910-7053

Ceriodaphnia 48-h Acute Survival Test				Midwest Laboratories, Inc.	
Analysis ID:	08-6860-2394	Endpoint:	48h Proportion Survived	CETIS Version:	CETISv1.8.4
Analyzed:	11 Aug-16 14:00	Analysis:	Linear Interpolation (ICPIN)	Official Results:	Yes
Batch ID:	09-5323-4102	Test Type:	Survival (48h)	Analyst:	Laura Moore
Start Date:	02 Aug-16 15:35	Protocol:	EPA/821/R-02-012 (2002)	Diluent:	Mod-Hard Synthetic Water
Ending Date:	04 Aug-16 14:30	Species:	Ceriodaphnia dubia	Brine:	Not Applicable
Duration:	47h	Source:	In-House Culture	Age:	<24h
Sample ID:	16-3534-7261	Code:	61796B3D	Client:	Mid-Missouri Energy
Sample Date:	02 Aug-16 08:15	Material:	POTW Effluent	Project:	
Receive Date:	02 Aug-16 15:10	Source:	NPDES Permit # (XX99999999)		
Sample Age:	7h (5.8 °C)	Station:			

Linear Interpolation Options					
X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	1732903	200	Yes	Two-Point Interpolation

Test Acceptability Criteria				
Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	1	0.9 - NL	Yes	Passes Acceptability Criteria

Point Estimates						
Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
EC50	>100	N/A	N/A	<1	NA	NA

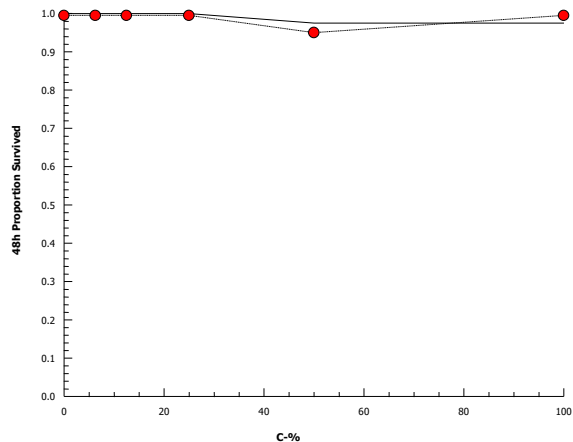
48h Proportion Survived Summary			Calculated Variate(A/B)									
C-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	A	B	
0	Dilution Water	4	1	1	1	0	0	0.0%	0.0%	20	20	
6.25		4	1	1	1	0	0	0.0%	0.0%	20	20	
12.5		4	1	1	1	0	0	0.0%	0.0%	20	20	
25		4	1	1	1	0	0	0.0%	0.0%	20	20	
50		4	0.95	0.8	1	0.05	0.1	10.5%	5.0%	19	20	
100		4	1	1	1	0	0	0.0%	0.0%	20	20	

48h Proportion Survived Detail					
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Water	1	1	1	1
6.25		1	1	1	1
12.5		1	1	1	1
25		1	1	1	1
50		1	1	1	0.8
100		1	1	1	1

48h Proportion Survived Binomials			
C-%	Control Type	Rep 1	Rep 2
0	Dilution Water	10/10	10/10
6.25		9/10	10/10
12.5		10/10	10/10
25		10/10	10/10
50		10/10	10/10
100		10/10	10/10

Ceriodaphnia 48-h Acute Survival Test		Midwest Laboratories, Inc.
Analysis ID: 08-6860-2394	Endpoint: 48h Proportion Survived	CETIS Version: CETISv1.8.4
Analyzed: 11 Aug-16 14:00	Analysis: Linear Interpolation (ICPIN)	Official Results: Yes

Graphics



## CETIS Analytical Report

Report Date: 11 Aug-16 14:01 (p 1 of 2)  
 Test Code: 1517873-01cd | 18-8910-7053

Ceriodaphnia 48-h Acute Survival Test				Midwest Laboratories, Inc.	
Analysis ID:	08-8351-3701	Endpoint:	48h Proportion Survived	CETIS Version:	CETISv1.8.4
Analyzed:	11 Aug-16 14:01	Analysis:	Nonparametric-Control vs Treatments	Official Results:	Yes
Batch ID:	09-5323-4102	Test Type:	Survival (48h)	Analyst:	Laura Moore
Start Date:	02 Aug-16 15:35	Protocol:	EPA/821/R-02-012 (2002)	Diluent:	Mod-Hard Synthetic Water
Ending Date:	04 Aug-16 14:30	Species:	Ceriodaphnia dubia	Brine:	Not Applicable
Duration:	47h	Source:	In-House Culture	Age:	<24h
Sample ID:	16-3534-7261	Code:	61796B3D	Client:	Mid-Missouri Energy
Sample Date:	02 Aug-16 08:15	Material:	POTW Effluent	Project:	
Receive Date:	02 Aug-16 15:10	Source:	NPDES Permit # (XX99999999)		
Sample Age:	7h (5.8 °C)	Station:			

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	NOEL	LOEL	TOEL	TU
Angular (Corrected)	NA	C > T	NA	NA	9.2%	100	>100	NA	1

## Steel Many-One Rank Sum Test

Control	vs	C-%	Test Stat	Critical	Ties	DF	P-Value	P-Type	Decision(α:5%)
Dilution Water		6.25	18	10	1	6	0.8333	Asymp	Non-Significant Effect
		12.5	18	10	1	6	0.8333	Asymp	Non-Significant Effect
		25	18	10	1	6	0.8333	Asymp	Non-Significant Effect
		50	16	10	1	6	0.6105	Asymp	Non-Significant Effect
		100	18	10	1	6	0.8333	Asymp	Non-Significant Effect

## Test Acceptability Criteria

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	1	0.9 - NL	Yes	Passes Acceptability Criteria

## ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.01181415	0.002362829	5	1	0.4457	Non-Significant Effect
Error	0.04253092	0.002362829	18			
Total	0.05434507		23			

## Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Mod Levene Equality of Variance	1	4.25	0.4457	Equal Variances
Variances	Levene Equality of Variance	9	4.25	0.0002	Unequal Variances
Distribution	Shapiro-Wilk W Normality	0.4634	0.884	<0.0001	Non-normal Distribution

## 48h Proportion Survived Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Dilution Water	4	1	1	1	1	1	1	0	0.0%	0.0%
6.25		4	1	1	1	1	1	1	0	0.0%	0.0%
12.5		4	1	1	1	1	1	1	0	0.0%	0.0%
25		4	1	1	1	1	1	1	0	0.0%	0.0%
50		4	0.95	0.7909	1	1	0.8	1	0.05	10.5%	5.0%
100		4	1	1	1	1	1	1	0	0.0%	0.0%

## Angular (Corrected) Transformed Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Dilution Water	4	1.345	1.345	1.346	1.345	1.345	1.345	0	0.0%	0.0%
6.25		4	1.345	1.345	1.346	1.345	1.345	1.345	0	0.0%	0.0%
12.5		4	1.345	1.345	1.346	1.345	1.345	1.345	0	0.0%	0.0%
25		4	1.345	1.345	1.346	1.345	1.345	1.345	0	0.0%	0.0%
50		4	1.286	1.096	1.475	1.345	1.107	1.345	0.05953	9.26%	4.43%
100		4	1.345	1.345	1.346	1.345	1.345	1.345	0	0.0%	0.0%

# CETIS Analytical Report

Report Date: 11 Aug-16 14:01 (p 2 of 2)  
Test Code: 1517873-01cd | 18-8910-7053

## Ceriodaphnia 48-h Acute Survival Test

Midwest Laboratories, Inc.

Analysis ID: 08-8351-3701      Endpoint: 48h Proportion Survived      CETIS Version: CETISv1.8.4  
Analyzed: 11 Aug-16 14:01      Analysis: Nonparametric-Control vs Treatments      Official Results: Yes

### 48h Proportion Survived Detail

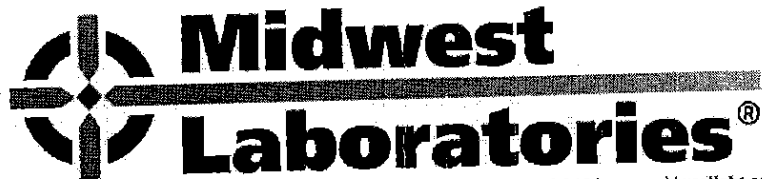
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Water	1	1	1	1
6.25		1	1	1	1
12.5		1	1	1	1
25		1	1	1	1
50		1	1	1	0.8
100		1	1	1	1

### Angular (Corrected) Transformed Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Water	1.345	1.345	1.345	1.345
6.25		1.345	1.345	1.345	1.345
12.5		1.345	1.345	1.345	1.345
25		1.345	1.345	1.345	1.345
50		1.345	1.345	1.345	1.107
100		1.345	1.345	1.345	1.345







13611 B Street, Omaha, Nebraska 68144 (402) 334-7770 FAX (402) 334-9121 www.midwestlabs.com



WORKORDER:  
**1517873**  
**COC**  
Sticker #: 2



# Regulatory

This sheet **MUST** be filled out before samples can be processed. To ensure that holding times are met, it is your responsibility that a completed form comes attached to the Chain of Custody. **Samples must be received on ice.**

Is this sample for regulatory/permit reporting?



Yes



No

What city/state was your sample collected in?

MASTA BEND MO.

What agency/state are you reporting to?

MO DNR

What type of sample? (Circle One)

Drinking Water

Ground Water

Wastewater

Solid waste

Hazardous Waste

UST

Storm Water

Process Water

**SEE REVERSE SIDE FOR SAMPLING INSTRUCTIONS**

RC FORM 14-2 Effective 07/01/16

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# Sample Acceptance Checklist

Document Number: RC CHKLIST 001

Revision No.: 2

Effective Date: 12/20/15

Page 1 of 1

Lab Number:

Thermometer Used: ☐ Therm Fisher IR 13

Sample Temperature (°C): 5.3

Cooler Intact: ☒ Yes ☐ No

Received on Ice: ☒ Yes ☐ No

Hand Delivered: ☒ Yes ☐ No

Date & Initials of person accepting samples: CM 8/2/16

Comments:

Chain of Custody present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A	
Chain of Custody complete?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A	
Sample ID(s):	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A	
Sample Location(s):	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A	
Client Contact:	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A	
Analysis Requested:	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A	
Sampler name on COC?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A	
Date & Time of collection:	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A	
Sample labels match COC?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A	
Written in indelible ink?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A	
Labels indicate proper preservation?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A	
Chain of Custody relinquished with signature?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A	
Samples arrived within hold time?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A	
Sufficient volume?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A	
Appropriate containers used?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A	<u>In CAP 8/2/16</u>
Filtered volume received for dissolved tests?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A	
Headspace in VOA vials?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A	
Trip Blank present?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> N/A	
Temperature Blank present?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> N/A	

Client Notification/Resolution: Date/Time Contacted: \_\_\_\_\_

Person Contacted: \_\_\_\_\_ Contacted By: \_\_\_\_\_

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



WORKORDER:  
**1517873**  
**COC**  
Sticker #: 3





Midwest Laboratories  
13611 B Street  
Omaha, NE 68144  
P 402-334-7770  
F 402-334-9121  
www.midwestlabs.com

28 July 2017

Work Order: 1527977

TYLER EDMUNDSON  
MID-MISSOURI ENERGY LLC - 17764  
15311 N SALINE 65 HWY  
MALTA BEND, MO 65339-  
RE: Missouri Toxicity

Enclosed are the results of analyses for samples received by the laboratory on 2017-07-19 10:20. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads "Heather Ramig". The signature is written in a cursive, flowing style.

Heather Ramig  
Project Manager  
heather@midwestlabs.com  
402-829-9891



Midwest Laboratories  
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MID-MISSOURI ENERGY LLC - 17764  
15311 N SALINE 65 HWY  
MALTA BEND, MO 65339-

Project: Missouri Toxicity

Project Manager: TYLER EDMUNDSON

**Reported:**  
2017-07-28 13:16

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Effluent	1527977-01	Aqueous	2017-07-18 13:00	2017-07-19 10:20
Effluent	1527977-02	Aqueous	2017-07-18 13:00	2017-07-19 10:20

#### Containers used for the following Analyses:

- 1527977-01 A: SM 4500-CL D
- \* 1527977-01 B: SM 4500-NH3 C-1997
- 1527977-01 C: SM 2320 B-1997, SM 2510 B
- \* 1527977-01 D: Total Metals per EPA 200.7
- 1527977-01 E: SM 2540 C-1997
- \* 1527977-02 A: SM 4500-NH3 C-1997

\* Note: Indicates environmental chemistry container was received unpreserved and was preserved at the laboratory.



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15311 N SALINE 65 HWY  
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Project: Missouri Toxicity

Project Manager: TYLER EDMUNDSON

**Reported:**  
2017-07-28 13:16

**Sample ID: Effluent**  
**Laboratory ID: 1527977-01**  
**Sampled Date/Time: 2017-07-18 13:00**

Analyte	Result	Reporting Limit	Units	Method	Prepared	Analyzed	Reviewer	(Container) / Notes
<b>Total Metals</b>								
Hardness	641.6	0.66	mg Eq CaCO3/L	SM 2340 B-1997	2017-07-21	2017-07-22		
Calcium	171.6	0.10	mg/L	EPA 200.7	2017-07-21	2017-07-22	kkh9	(D)
Magnesium	51.76	0.10	mg/L	EPA 200.7	2017-07-21	2017-07-22	kkh9	(D)
<b>Environmental Chemistry</b>								
Alkalinity, Total (as CaCO3)	145	10	mg/L	SM 2320 B-1997	2017-07-24	2017-07-24	cmw2	(C)
Ammonia as N	0.38	0.10	mg/L	SM 4500-NH3 C-1997	2017-07-24	2017-07-24	cmw2	(B)
Specific conductance	1760	2	umhos/cm	SM 2510 B	2017-07-19	2017-07-19	mjs5	(C)
Total Dissolved Solids	1400	10	mg/L	SM 2540 C-1997	2017-07-20	2017-07-21	mjs5	(E)
<b>Environmental Chemistry (in lab, exceeds regulatory hold time)</b>								
Chlorine, Total	<	0.010	mg/L	SM 4500-CL D	2017-07-19/14:00	2017-07-19/14:00	mjs5	(A)



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Project: Missouri Toxicity

Project Manager: TYLER EDMUNDSON

**Reported:**  
2017-07-28 13:16

**Sample ID: Effluent**  
**Laboratory ID: 1527977-02**  
**Sampled Date/Time: 2017-07-18 13:00**

Analyte	Result	Reporting Limit	Units	Method	Prepared	Analyzed	Reviewer	(Container) / Notes
<b>Environmental Chemistry</b>								
Ammonia as N	<	0.10	mg/L	SM 4500-NH3 C-1997	2017-07-24	2017-07-24	cmw2	(A)



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Project: Missouri Toxicity

Project Manager: TYLER EDMUNDSON

**Reported:**  
2017-07-28 13:16

### Total Metals - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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#### Batch B705393

##### Blank (B705393-BLK1)

Prepared: 2017-07-21 Analyzed: 2017-07-22

Calcium	<	0.10	mg/L
Magnesium	<	0.10	mg/L

##### LCS (B705393-BS1)

Prepared: 2017-07-21 Analyzed: 2017-07-22

Calcium	53.01	0.10	mg/L	51.0	104	85-115
Magnesium	19.32	0.10	mg/L	21.0	92.0	85-115





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Project Manager: TYLER EDMUNDSON

**Reported:**  
2017-07-28 13:16

### Environmental Chemistry - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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#### Batch B705316

##### LCS (B705316-BS1)

Prepared & Analyzed: 2017-07-19

Specific conductance	992.1	2	umhos/cm	1000		99.2	95-105			
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##### LCS (B705316-BS2)

Prepared & Analyzed: 2017-07-19

Specific conductance	984.4	2	umhos/cm	1000		98.4	95-105			
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##### Duplicate (B705316-DUP1)

Source: 1528640-01

Prepared & Analyzed: 2017-07-19

Specific conductance	1225	2	umhos/cm		1224			0.0817	10	
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##### Duplicate (B705316-DUP2)

Source: 1528211-01

Prepared & Analyzed: 2017-07-19

Specific conductance	2854	2	umhos/cm		2847			0.246	10	
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#### Batch B705341

##### Blank (B705341-BLK1)

Prepared: 2017-07-20 Analyzed: 2017-07-21

Total Dissolved Solids	<	10	mg/L							
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##### LCS (B705341-BS1)

Prepared: 2017-07-20 Analyzed: 2017-07-21

Total Dissolved Solids	1024	10	mg/L	1000		102	90-110			
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##### Duplicate (B705341-DUP1)

Source: 1528569-01

Prepared: 2017-07-20 Analyzed: 2017-07-21

Total Dissolved Solids	1460	10	mg/L		1460			0.00	10	
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##### Duplicate (B705341-DUP2)

Source: 1528795-01

Prepared: 2017-07-20 Analyzed: 2017-07-21

Total Dissolved Solids	588.0	10	mg/L		574.0			2.41	10	
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#### Batch B705417

##### Blank (B705417-BLK1)

Prepared & Analyzed: 2017-07-24

Ammonia as N	<	0.10	mg/L							
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MALTA BEND, MO 65339-

Project: Missouri Toxicity

Project Manager: TYLER EDMUNDSON

**Reported:**  
2017-07-28 13:16

### Environmental Chemistry - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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#### Batch B705417

##### LCS (B705417-BS1)

Prepared & Analyzed: 2017-07-24

Ammonia as N	7.780	0.10	mg/L	8.00		97.2	90-110			
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##### Matrix Spike (B705417-MS1)

Source: 1527588-02

Prepared & Analyzed: 2017-07-24

Ammonia as N	86.67	1.00	mg/L	80.0	12.03	93.3	90-110			
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##### Matrix Spike Dup (B705417-MSD1)

Source: 1527588-02

Prepared & Analyzed: 2017-07-24

Ammonia as N	89.21	1.00	mg/L	80.0	12.03	96.5	90-110	2.89	10	
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#### Batch B705434

##### Blank (B705434-BLK1)

Prepared & Analyzed: 2017-07-24

Alkalinity, Total (as CaCO3)	<	10	mg/L							
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##### LCS (B705434-BS1)

Prepared & Analyzed: 2017-07-24

Alkalinity, Total (as CaCO3)	1001	10	mg/L	1000		100	90-110			
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##### Duplicate (B705434-DUP1)

Source: 1527964-01

Prepared & Analyzed: 2017-07-24

Alkalinity, Total (as CaCO3)	169.3	10	mg/L		179.4			5.79	10	
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##### Duplicate (B705434-DUP2)

Source: 1528053-05

Prepared & Analyzed: 2017-07-24

Alkalinity, Total (as CaCO3)	176.1	10	mg/L		170.9			3.00	10	
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#### Batch B705456

##### Blank (B705456-BLK1)

Prepared & Analyzed: 2017-07-24

Ammonia as N	<	0.10	mg/L							
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MALTA BEND, MO 65339-

Project: Missouri Toxicity

Project Manager: TYLER EDMUNDSON

**Reported:**  
2017-07-28 13:16

### Environmental Chemistry - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch B705456</b>										
<b>LCS (B705456-BS1)</b>				Prepared & Analyzed: 2017-07-24						
Ammonia as N	7.670	0.10	mg/L	8.00		95.9	90-110			
<b>Matrix Spike (B705456-MS1)</b>				Source: 1528703-02 Prepared & Analyzed: 2017-07-24						
Ammonia as N	92.37	1.00	mg/L	80.0	16.33	95.0	90-110			
<b>Matrix Spike Dup (B705456-MSD1)</b>				Source: 1528703-02 Prepared & Analyzed: 2017-07-24						
Ammonia as N	93.87	1.00	mg/L	80.0	16.33	96.9	90-110	1.61	10	



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**Reported:**  
2017-07-28 13:16

**Environmental Chemistry (in lab, exceeds regulatory hold time) - Quality Control**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch B705326</b>										
<b>Blank (B705326-BLK1)</b>				Prepared & Analyzed: 2017-07-19						
Chlorine, Total	<	0.010	mg/L							
<b>LCS (B705326-BS1)</b>				Prepared & Analyzed: 2017-07-19						
Chlorine, Total	0.1930	0.010	mg/L	0.200		96.5	90-110			
<b>LCS Dup (B705326-BSD1)</b>				Prepared & Analyzed: 2017-07-19						
Chlorine, Total	0.1990	0.010	mg/L	0.200		99.5	90-110	3.06	10	
<b>Duplicate (B705326-DUP1)</b>		<b>Source: 1527278-01</b>		Prepared & Analyzed: 2017-07-19						
Chlorine, Total	<	0.010	mg/L		<				10	



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MALTA BEND, MO 65339-

Project: Missouri Toxicity

Project Manager: TYLER EDMUNDSON

**Reported:**  
2017-07-28 13:16

### Certified Analyses included in this Report

Method	Analyte	Certifications
<i>EPA 200.7 in Aqueous</i>	Calcium Magnesium	TX,KS,FL,UT,OK,IA FL,KS,TX,UT,OK,IA
<i>SM 2320 B-1997 in Aqueous</i>	Alkalinity, Total (as CaCO <sub>3</sub> )	FL,TX,KS,UT,IA,OK
<i>SM 2510 B in Aqueous</i>	Specific conductance	KS
<i>SM 2540 C-1997 in Aqueous</i>	Total Dissolved Solids	IA,FL,KS,OK,TX,WA
<i>SM 4500-NH<sub>3</sub> C-1997 in Aqueous</i>	Ammonia as N	FL,KS,TX,UT,IA,OK

### Non-Certified Analyses included in this Report

Method	Analyte
<i>SM 4500-CL D in Aqueous</i>	Chlorine, Total

Code	Description	Number	Expires
FL	Florida Department of Health	E87918	06/30/2017
FL-B	Florida Department of Health	E871122	06/30/2017
IA	Iowa Department of Natural Resources	064	05/01/2017
KS	Kansas Department of Health and Environment	E-10402	04/30/2018
OK	Oklahoma Department of Environmental Quality	2016-085	08/31/2017
TX	Texas Commission on Environmental Quality	T104704416-13-5	07/31/2017
UT	State of Utah Department of Health	NE000012013-3 Pending	07/31/2016
WA	State of Washington Department of Ecology	C912	06/07/2018



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Project: Missouri Toxicity

Project Manager: TYLER EDMUNDSON

**Reported:**  
2017-07-28 13:16

### Notes and Definitions

< Less than reporting limit

NR Not Reported

dry Sample results reported on a dry weight basis

RPD Relative Percent Difference

EPA 624, EPA 8260, OA-1, and GRO analyses are conducted in the facility located at 13606 B Street, Omaha, NE 68144. All other analyses are conducted in the main facility located at 13611 B Street, Omaha, NE 68144.

**Date:** 7/24/17

**Analysis performed by:** Laura Moore

**RE:** Whole Effluent Toxicity Test Results

**Facility:** Mid-Missouri Energy LLC

**Date Collected:** 7/18/17

**Time Collected:** 13:00

**Date Received:** 7/19/17

**Time Received:** 10:20

**Project #:** Missouri Toxicity

**Customer Sample ID:** Effluent

**MWL Lab Number:** 1527977-01

**Relinquished by:**

**Sampler:**

Enclosed please find Whole Effluent Toxicity test results for the sample(s) received as described above. The values reported are in conformance with internal and method quality control guidelines, unless otherwise noted. If you have questions or need more information, please contact us.

**Analysis Report**  
**48-Hour Acute Toxicity Test**  
EPA 821-R-02-012 (Organisms 2000.0 / 2002.0)

**Project #:** Missouri Toxicity  
**Lab Number:** 1527977-01  
**Facility:** Mid-Missouri Energy LLC

Testing Laboratory:	Sample Received Description:
Midwest Laboratories, Inc. 13611 B Street Omaha, NE 68144	<b>Color:</b> light yellow <b>Odor:</b> slightly musty <b>Temp:</b> 5.4 °C

Reference Toxicity Data:	
<i>P. promelas</i>	<i>C. dubia</i>
Reference: KCl	Reference: NaCl
LC50: 0.943 g/L	LC50: 2.127 g/L
Date: June 2017	Date: June 2017

Conditions:	
<i>P. promelas</i>	<i>C. dubia</i>
Organism Health: HO	Organism Health: HO
Age: 3 days	Age: <24 hours
Lot: 170716	Brood: 170703-1
Start Time: 15:25	Start Time: 15:35
Start Date: 7/19/17	Start Date: 7/19/17
End Time: 15:30	End Time: 15:40
End Date: 7/21/17	End Date: 7/21/17

Notes:	
Test organisms kept in Biomonitoring Incubator #1	
Organisms subjected to 16 Hours Light; 8 Hours Dark @ 50-100 ft-c and 25±1°C	
Water used for Controls and Dilutions: Moderately Hard Synthetic Water	Lot#: 208175
Balance 47 used to weigh any necessary reagents and verify pipette	
Acute Water Volumes – used ~250-300 mLs/replicate for fish and ~25-30mLs/replicate for fleas	
Acute Feeding – Fish and fleas fed according to section 9.11 in EPA method 821-R-02-012	
Pipette BIO S/N L34706D used for flea feeding	
Healthy Organisms (HO)	healthy fish = not bent in half, orange in color, swimming vigorously healthy fleas = brown in color, swimming vigorously, large brood (5 or more neonates)
Moderately Healthy (MHO)	fish = clear in color, swimming vigorously fleas = clear in color, swimming vigorously, smaller brood (less than 5 neonates)
Unhealthy Organisms (UHO)	fish = bent in half, not eaten (clear in color), not swimming (lethargic) fleas = not eaten (clear in color), not swimming (lethargic), very few/mostly dead neonates



**Analysis Report**  
**48-Hour Acute Toxicity Test**

EPA 821-R-02-012 (Organisms 2000.0 / 2002.0)

**Project #:** Missouri Toxicity

**Lab Number:** 1527977-01

**Facility:** Mid-Missouri Energy LLC

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**Daily Readings**

Dilution	Initial Reading		
	DO	Temp(°C)	pH
100%	7.1	24.5	7.3
50%	7.7	24.5	7.6
25%	7.8	24.7	7.8
12.5%	7.8	24.6	8.0
6.25%	7.7	24.6	8.1
Control	7.5	24.6	8.1

Dilution	24 Hour Reading		
	DO	Temp(°C)	pH
100%	5.5	25.1	8.3
50%	5.9	25.2	8.3
25%	6.1	25.3	8.3
12.5%	6.3	25.3	8.3
6.25%	6.7	25.1	8.3
Control	7.2	25.2	8.2

Dilution	48 Hour Reading		
	DO	Temp(°C)	pH
100%	5.2	25.7	8.4
50%	5.4	25.8	8.4
25%	5.5	25.6	8.3
12.5%	6.3	25.6	8.4
6.25%	6.2	25.6	8.3
Control	6.8	25.8	8.3

***Pimephales promelas* (Fathead Minnow)**  
**Survival Data Summary Table**  
**EPA 821-R-02-012**

**Project #:** Missouri Toxicity  
**Lab Number:** 1527977-01  
**Facility:** Mid-Missouri Energy LLC

Concentration	Replicate Number	Number of Survivors		
		Hours		Final Total
		24	48	
100%	1	9	9	
	2	10	9	
	<b>Total</b>	<b>19</b>	<b>18</b>	<b>18</b>
50%	1	10	10	
	2	10	9	
	<b>Total</b>	<b>20</b>	<b>19</b>	<b>19</b>
25%	1	10	10	
	2	10	10	
	<b>Total</b>	<b>20</b>	<b>20</b>	<b>20</b>
12.5%	1	10	10	
	2	9	9	
	<b>Total</b>	<b>19</b>	<b>19</b>	<b>19</b>
6.25%	1	10	10	
	2	10	10	
	<b>Total</b>	<b>20</b>	<b>20</b>	<b>20</b>
Control	1	10	10	
	2	10	10	
	<b>Total</b>	<b>20</b>	<b>20</b>	<b>20</b>

**Fathead Minnow (*P. promelas*)**

**LC50:** >100%

**Tua:** <1.00

**P-value:** 0.08

**Method:** Dunnett Multiple Comparison Test

***Ceriodaphnia dubia* (Water Flea)**  
**Survival Data Summary Table**  
**EPA 821-R-02-012**

**Project #:** Missouri Toxicity  
**Lab Number:** 1527977-01  
**Facility:** Mid-Missouri Energy LLC

Concentration	Replicate Number	Number of Survivors		
		Hours		Final Total
		24	48	
100%	1	5	5	
	2	5	5	
	3	5	5	
	4	5	5	
	<b>Total</b>	<b>20</b>	<b>20</b>	<b>20</b>
50%	1	5	5	
	2	5	5	
	3	5	5	
	4	5	5	
	<b>Total</b>	<b>20</b>	<b>20</b>	<b>20</b>
25%	1	5	5	
	2	5	5	
	3	5	5	
	4	5	5	
	<b>Total</b>	<b>20</b>	<b>20</b>	<b>20</b>
12.5%	1	5	4	
	2	5	5	
	3	5	5	
	4	5	5	
	<b>Total</b>	<b>20</b>	<b>19</b>	<b>19</b>
6.25%	1	5	5	
	2	5	5	
	3	5	5	
	4	5	5	
	<b>Total</b>	<b>20</b>	<b>20</b>	<b>20</b>
Control	1	5	5	
	2	5	5	
	3	5	5	
	4	5	5	
	<b>Total</b>	<b>20</b>	<b>20</b>	<b>20</b>

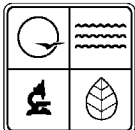
**Water Flea (*C. dubia*)**

**LC50:** >100%

**Tua:** <1.00

**P-value:** 0.83

**Method:** Steel Many-One Rank Sum Test



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 Mid-Missouri Energy LLC	DATE AND TIME COLLECTED EFFLUENT 07/18/2017 UPSTREAM _____
PERMIT NUMBER	PERMIT OUTFALL NUMBER
COLLECTOR'S NAME	
RECEIVING STREAM COLLECTION SITE AND DESCRIPTION	
PERMIT ALLOWABLE EFFLUENT CONCENTRATION (AEC)	EFFLUENT SAMPLE TYPE (CHECK ONE) <input checked="" type="checkbox"/> 24 HR COMPOSITE <input type="checkbox"/> GRAB <input type="checkbox"/> OTHER _____
SAMPLE NUMBER EFFLUENT _____ UPSTREAM _____	UPSTREAM SAMPLE TYPE (CHECK ONE) <input type="checkbox"/> 24 HR COMPOSITE <input type="checkbox"/> GRAB <input type="checkbox"/> OTHER _____
PERMITTED EFFLUENT DAILY MAXIMUM LIMITATION FOR CHLORINE _____ mg/L	PERMITTED EFFLUENT DAILY MAXIMUM LIMITATION FOR AMMONIA _____ mg/L

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

PERFORMING LABORATORY Midwest Laboratories, Inc.	TEST TYPE Acute	
FINAL REPORT NUMBER 1527977	TEST DURATION 48 hours	
DATE OF LAST REFERENCE TOXICANT TESTING 06/28/2017	TEST METHOD EPA 821-R-02-012 2000.0/2002.0	
DATE AND TIME SAMPLES RECEIVED AT LABORATORY 07/19/2017 10:20	TEST START DATE AND TIME 07/19/2017 15:25	TEST END DATE AND TIME 07/21/2017 15:30
SAMPLE DECHLORINATED PRIOR TO ANALYSIS? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO EFFLUENT <u>X</u> UPSTREAM _____	TEST ORGANISM #1 AND AGE P. Promelas 3 days	TEST ORGANISM #2 AND AGE C. Dubia <24 hours
SAMPLE FILTERED <sup>1</sup> PRIOR TO ANALYSIS? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO EFFLUENT <u>X</u> UPSTREAM _____	90 PERCENT OR GREATER SURVIVAL IN SYNTHETIC CONTROL? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	DILUTION WATER USED TO ACHIEVE AEC Moderately Hard Synthetic Water
FILTER MESH SIEVE SIZE 2 60 micron	EFFLUENT ORGANISM #1 PERCENT MORTALITY AT AEC 10%	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 N/A	UPSTREAM ORGANISM #2 PERCENT MORTALITY N/A
pH ADJUSTED? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO EFFLUENT <u>X</u> UPSTREAM _____	TEST RESULT AT AEC FOR ORGANISM #1 <input checked="" type="checkbox"/> PASS <input type="checkbox"/> FAIL	TEST RESULT AT AEC FOR ORGANISM #2 <input checked="" type="checkbox"/> PASS <input type="checkbox"/> FAIL

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

PARAMETER	RESULT	METHOD	WHEN ANALYZED
Temperature °C	24.5	EPA 170.1	07/19/2017
pH Standard Units	7.3	EPA 150.0	07/19/2017
Conductance µMols	1760	SM 2510 B	07/19/2017
Dissolved Oxygen mg/L	7.1	EPA 360.1	07/19/2017
Total Residual Chlorine mg/L	<0.01	SM 4500-CL D	07/19/2017
Unionized Ammonia mg/L	<0.1	Calculation	07/24/2017
* Total Alkalinity mg/L	145	SM 2320 B	07/24/2017
* Total Hardness mg/L	642	Calculation	07/22/2017

\* 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	24.6	EPA 170.1	07/19/2017
pH Standard Units	8.1	EPA 150.0	07/19/2017
Conductance µMohs	350	SM 2510 B	07/12/2017
Dissolved Oxygen mg/L	7.5	EPA 360.1	07/19/2017
Total Residual Chlorine mg/L	N/A	SM 4500-CL D	
Unionized Ammonia mg/L	N/A	Calculation	
* Total Alkalinity mg/L	75	SM 2320 B	07/12/2017
* Total Hardness mg/L	107	Calculation	07/12/2017

\* 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.

## CETIS Analytical Report

Report Date: 24 Jul-17 15:23 (p 1 of 2)  
 Test Code: 1527977-01pp | 02-1323-5333

Fish 48-h Acute Survival Test				Midwest Laboratories, Inc.	
Analysis ID:	16-2962-5723	Endpoint:	48h Proportion Survived	CETIS Version:	CETISv1.8.4
Analyzed:	24 Jul-17 15:23	Analysis:	Linear Interpolation (ICPIN)	Official Results:	Yes
Batch ID:	03-8145-3953	Test Type:	Survival (48h)	Analyst:	Laura Moore
Start Date:	19 Jul-17 15:25	Protocol:	EPA/821/R-02-012 (2002)	Diluent:	Mod-Hard Synthetic Water
Ending Date:	21 Jul-17 15:30	Species:	Pimephales promelas	Brine:	Generic commercial salts
Duration:	48h	Source:	Aquatic Biosystems, CO	Age:	3day
Sample ID:	20-7402-2270	Code:	7B9F117E	Client:	Mid-Missouri Energy
Sample Date:	18 Jul-17 13:00	Material:	POTW Effluent	Project:	
Receive Date:	19 Jul-17 10:20	Source:	NPDES Permit # (XX99999999)		
Sample Age:	26h (5.4 °C)	Station:			

Linear Interpolation Options					
X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	1685929	200	Yes	Two-Point Interpolation

Point Estimates						
Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
EC50	>100	N/A	N/A	<1	NA	NA

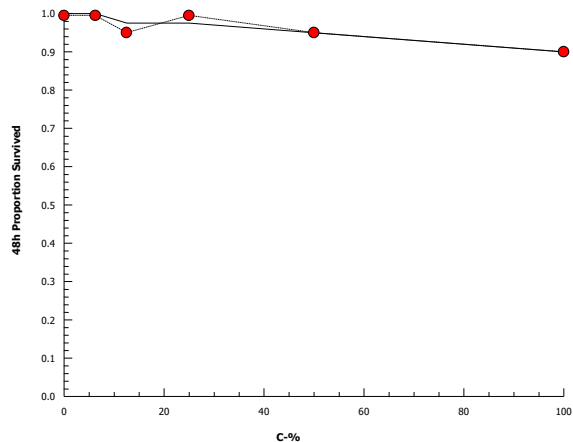
48h Proportion Survived Summary			Calculated Variate(A/B)									
C-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	A	B	
0	Dilution Water	2	1	1	1	0	0	0.0%	0.0%	20	20	
6.25		2	1	1	1	0	0	0.0%	0.0%	20	20	
12.5		2	0.95	0.9	1	0.05	0.07071	7.44%	5.0%	19	20	
25		2	1	1	1	0	0	0.0%	0.0%	20	20	
50		2	0.95	0.9	1	0.05	0.07071	7.44%	5.0%	19	20	
100		2	0.9	0.9	0.9	0	0	0.0%	10.0%	18	20	

48h Proportion Survived Detail			
C-%	Control Type	Rep 1	Rep 2
0	Dilution Water	1	1
6.25		1	1
12.5		1	0.9
25		1	1
50		1	0.9
100		0.9	0.9

48h Proportion Survived Binomials			
C-%	Control Type	Rep 1	Rep 2
0	Dilution Water	5/5	5/5

Fish 48-h Acute Survival Test		Midwest Laboratories, Inc.	
Analysis ID:	16-2962-5723	Endpoint:	48h Proportion Survived
Analysed:	24 Jul-17 15:23	Analysis:	Linear Interpolation (ICPIN)
		CETIS Version:	CETISv1.8.4
		Official Results:	Yes

Graphics



## CETIS Analytical Report

Report Date: 24 Jul-17 15:24 (p 1 of 2)  
 Test Code: 1527977-01pp | 02-1323-5333

Fish 48-h Acute Survival Test				Midwest Laboratories, Inc.	
Analysis ID:	10-2858-8914	Endpoint:	48h Proportion Survived	CETIS Version:	CETISv1.8.4
Analyzed:	24 Jul-17 15:24	Analysis:	Parametric-Control vs Treatments	Official Results:	Yes
Batch ID:	03-8145-3953	Test Type:	Survival (48h)	Analyst:	Laura Moore
Start Date:	19 Jul-17 15:25	Protocol:	EPA/821/R-02-012 (2002)	Diluent:	Mod-Hard Synthetic Water
Ending Date:	21 Jul-17 15:30	Species:	Pimephales promelas	Brine:	Generic commercial salts
Duration:	48h	Source:	Aquatic Biosystems, CO	Age:	3day
Sample ID:	20-7402-2270	Code:	7B9F117E	Client:	Mid-Missouri Energy
Sample Date:	18 Jul-17 13:00	Material:	POTW Effluent	Project:	
Receive Date:	19 Jul-17 10:20	Source:	NPDES Permit # (XX99999999)		
Sample Age:	26h (5.4 °C)	Station:			

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	NOEL	LOEL	TOEL	TU
Angular (Corrected)	NA	C > T	NA	NA	11.6%	100	>100	NA	1

## Dunnett Multiple Comparison Test

Control	vs	C-%	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
Dilution Water		6.25	0	2.83	0.188	2	0.8333	CDF	Non-Significant Effect
		12.5	1.225	2.83	0.188	2	0.3490	CDF	Non-Significant Effect
		25	0	2.83	0.188	2	0.8333	CDF	Non-Significant Effect
		50	1.225	2.83	0.188	2	0.3490	CDF	Non-Significant Effect
		100	2.449	2.83	0.188	2	0.0802	CDF	Non-Significant Effect

## ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.04426555	0.00885311	5	2	0.2117	Non-Significant Effect
Error	0.02655933	0.004426555	6			
Total	0.07082488		11			

## Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Distribution	Shapiro-Wilk W Normality	0.7744	0.802	0.0049	Non-normal Distribution

## 48h Proportion Survived Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Dilution Water	2	1	1	1	1	1	1	0	0.0%	0.0%
6.25		2	1	1	1	1	1	1	0	0.0%	0.0%
12.5		2	0.95	0.3147	1	0.95	0.9	1	0.05	7.44%	5.0%
25		2	1	1	1	1	1	1	0	0.0%	0.0%
50		2	0.95	0.3147	1	0.95	0.9	1	0.05	7.44%	5.0%
100		2	0.9	0.8985	0.9015	0.9	0.9	0.9	0	0.0%	10.0%

## Angular (Corrected) Transformed Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Dilution Water	2	1.412	1.409	1.415	1.412	1.412	1.412	0	0.0%	0.0%
6.25		2	1.412	1.409	1.415	1.412	1.412	1.412	0	0.0%	0.0%
12.5		2	1.331	0.2952	2.366	1.331	1.249	1.412	0.08149	8.66%	5.77%
25		2	1.412	1.409	1.415	1.412	1.412	1.412	0	0.0%	0.0%
50		2	1.331	0.2952	2.366	1.331	1.249	1.412	0.08149	8.66%	5.77%
100		2	1.249	1.247	1.251	1.249	1.249	1.249	0	0.0%	11.5%

## 48h Proportion Survived Detail

C-%	Control Type	Rep 1	Rep 2
0	Dilution Water	1	1
6.25		1	1
12.5		1	0.9
25		1	1
50		1	0.9
100		0.9	0.9



Fish 48-h Acute Survival Test Midwest Laboratories, Inc.

Analysis ID: 10-2858-8914 Endpoint: 48h Proportion Survived CETIS Version: CETISv1.8.4  
Analyzed: 24 Jul-17 15:24 Analysis: Parametric-Control vs Treatments Official Results: Yes

Angular (Corrected) Transformed Detail

C-%	Control Type	Rep 1	Rep 2
0	Dilution Water	1.412	1.412
6.25		1.412	1.412
12.5		1.412	1.249
25		1.412	1.412
50		1.412	1.249
100		1.249	1.249

## CETIS Analytical Report

Report Date: 24 Jul-17 15:27 (p 1 of 2)  
 Test Code: 1527977-01cd | 13-4076-1059

Ceriodaphnia 48-h Acute Survival Test				Midwest Laboratories, Inc.	
Analysis ID:	02-7707-8681	Endpoint:	48h Proportion Survived	CETIS Version:	CETISv1.8.4
Analyzed:	24 Jul-17 15:27	Analysis:	Linear Interpolation (ICPIN)	Official Results:	Yes
Batch ID:	07-3547-8757	Test Type:	Survival (48h)	Analyst:	Laura Moore
Start Date:	19 Jul-17 15:35	Protocol:	EPA/821/R-02-012 (2002)	Diluent:	Mod-Hard Synthetic Water
Ending Date:	21 Jul-17 15:40	Species:	Ceriodaphnia dubia	Brine:	Not Applicable
Duration:	48h	Source:	In-House Culture	Age:	<24h
Sample ID:	21-1552-2015	Code:	7E184DDF	Client:	Mid-Missouri Energy
Sample Date:	18 Jul-17 13:00	Material:	POTW Effluent	Project:	
Receive Date:	19 Jul-17 10:20	Source:	NPDES Permit # (XX99999999)		
Sample Age:	27h (5.4 °C)	Station:			

Linear Interpolation Options					
X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	327534	200	Yes	Two-Point Interpolation

Test Acceptability Criteria				
Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	1	0.9 - NL	Yes	Passes Acceptability Criteria

Point Estimates						
Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
EC50	>100	N/A	N/A	<1	NA	NA

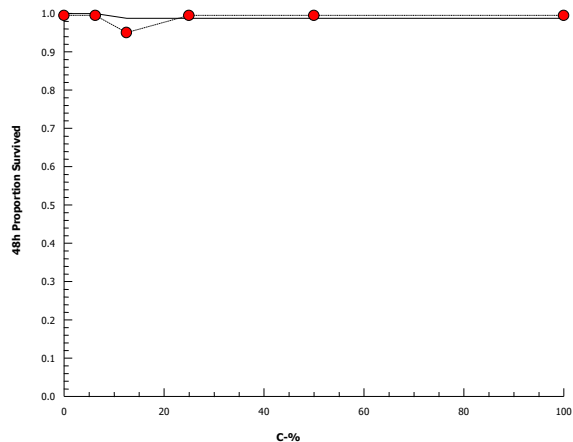
48h Proportion Survived Summary			Calculated Variate(A/B)									
C-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	A	B	
0	Dilution Water	4	1	1	1	0	0	0.0%	0.0%	20	20	
6.25		4	1	1	1	0	0	0.0%	0.0%	20	20	
12.5		4	0.95	0.8	1	0.05	0.1	10.5%	5.0%	19	20	
25		4	1	1	1	0	0	0.0%	0.0%	20	20	
50		4	1	1	1	0	0	0.0%	0.0%	20	20	
100		4	1	1	1	0	0	0.0%	0.0%	20	20	

48h Proportion Survived Detail					
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Water	1	1	1	1
6.25		1	1	1	1
12.5		0.8	1	1	1
25		1	1	1	1
50		1	1	1	1
100		1	1	1	1

48h Proportion Survived Binomials					
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Water	5/5	5/5	5/5	5/5

Ceriodaphnia 48-h Acute Survival Test		Midwest Laboratories, Inc.
Analysis ID: 02-7707-8681	Endpoint: 48h Proportion Survived	CETIS Version: CETISv1.8.4
Analyzed: 24 Jul-17 15:27	Analysis: Linear Interpolation (ICPIN)	Official Results: Yes

Graphics



## CETIS Analytical Report

Report Date: 24 Jul-17 15:27 (p 1 of 2)  
 Test Code: 1527977-01cd | 13-4076-1059

Ceriodaphnia 48-h Acute Survival Test				Midwest Laboratories, Inc.	
Analysis ID:	12-1857-8277	Endpoint:	48h Proportion Survived	CETIS Version:	CETISv1.8.4
Analyzed:	24 Jul-17 15:27	Analysis:	Nonparametric-Control vs Treatments	Official Results:	Yes
Batch ID:	07-3547-8757	Test Type:	Survival (48h)	Analyst:	Laura Moore
Start Date:	19 Jul-17 15:35	Protocol:	EPA/821/R-02-012 (2002)	Diluent:	Mod-Hard Synthetic Water
Ending Date:	21 Jul-17 15:40	Species:	Ceriodaphnia dubia	Brine:	Not Applicable
Duration:	48h	Source:	In-House Culture	Age:	<24h
Sample ID:	21-1552-2015	Code:	7E184DDF	Client:	Mid-Missouri Energy
Sample Date:	18 Jul-17 13:00	Material:	POTW Effluent	Project:	
Receive Date:	19 Jul-17 10:20	Source:	NPDES Permit # (XX99999999)		
Sample Age:	27h (5.4 °C)	Station:			

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	NOEL	LOEL	TOEL	TU
Angular (Corrected)	NA	C > T	NA	NA	9.2%	100	>100	NA	1

## Steel Many-One Rank Sum Test

Control	vs	C-%	Test Stat	Critical	Ties	DF	P-Value	P-Type	Decision(α:5%)
Dilution Water		6.25	18	10	1	6	0.8333	Asymp	Non-Significant Effect
		12.5	16	10	1	6	0.6105	Asymp	Non-Significant Effect
		25	18	10	1	6	0.8333	Asymp	Non-Significant Effect
		50	18	10	1	6	0.8333	Asymp	Non-Significant Effect
		100	18	10	1	6	0.8333	Asymp	Non-Significant Effect

## Test Acceptability Criteria

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	1	0.9 - NL	Yes	Passes Acceptability Criteria

## ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.01181415	0.002362829	5	1	0.4457	Non-Significant Effect
Error	0.04253092	0.002362829	18			
Total	0.05434507		23			

## Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Mod Levene Equality of Variance	1	4.25	0.4457	Equal Variances
Variances	Levene Equality of Variance	9	4.25	0.0002	Unequal Variances
Distribution	Shapiro-Wilk W Normality	0.4634	0.884	<0.0001	Non-normal Distribution

## 48h Proportion Survived Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Dilution Water	4	1	1	1	1	1	1	0	0.0%	0.0%
6.25		4	1	1	1	1	1	1	0	0.0%	0.0%
12.5		4	0.95	0.7909	1	1	0.8	1	0.05	10.5%	5.0%
25		4	1	1	1	1	1	1	0	0.0%	0.0%
50		4	1	1	1	1	1	1	0	0.0%	0.0%
100		4	1	1	1	1	1	1	0	0.0%	0.0%

## Angular (Corrected) Transformed Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Dilution Water	4	1.345	1.345	1.346	1.345	1.345	1.345	0	0.0%	0.0%
6.25		4	1.345	1.345	1.346	1.345	1.345	1.345	0	0.0%	0.0%
12.5		4	1.286	1.096	1.475	1.345	1.107	1.345	0.05953	9.26%	4.43%
25		4	1.345	1.345	1.346	1.345	1.345	1.345	0	0.0%	0.0%
50		4	1.345	1.345	1.346	1.345	1.345	1.345	0	0.0%	0.0%
100		4	1.345	1.345	1.346	1.345	1.345	1.345	0	0.0%	0.0%

# CETIS Analytical Report

Report Date: 24 Jul-17 15:27 (p 2 of 2)  
Test Code: 1527977-01cd | 13-4076-1059

## Ceriodaphnia 48-h Acute Survival Test

Midwest Laboratories, Inc.

Analysis ID: 12-1857-8277      Endpoint: 48h Proportion Survived      CETIS Version: CETISv1.8.4  
Analyzed: 24 Jul-17 15:27      Analysis: Nonparametric-Control vs Treatments      Official Results: Yes

### 48h Proportion Survived Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Water	1	1	1	1
6.25		1	1	1	1
12.5		0.8	1	1	1
25		1	1	1	1
50		1	1	1	1
100		1	1	1	1

### Angular (Corrected) Transformed Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Water	1.345	1.345	1.345	1.345
6.25		1.345	1.345	1.345	1.345
12.5		1.107	1.345	1.345	1.345
25		1.345	1.345	1.345	1.345
50		1.345	1.345	1.345	1.345
100		1.345	1.345	1.345	1.345



Lab Work Order Number: 1527977  
Date Generated: 06/14/2017

Page 1 of 1

[illegible]

**Matrix Codes:** A=Aqueous

**Preservation Codes:** 1=Cool 6°C

Sample Type Codes: D = Drinking Water (Safe Drinking Water Act), G = Groundwater, W = Wastewater (Clean Water Act), S/H = Solid/Hazardous Waste (RCRA), U = Underground Storage Tank (UST), P = Process Water

Chain of Custody will have a signature upon receipt but no subsequent signatures.

RC Form 15 - Effective 10/31/2013



Work Order 1527977



13611 B Street, Omaha, Nebraska 68144 (402) 334-7770 FAX (402) 334-9121 www.midwestlabs.co



WORKORDER:  
**1527977**  
**COC**  
Sticker #: 2



# Regulatory

This sheet **MUST** be filled out before samples can be processed. To ensure that holding times are met, it is your responsibility that a completed form comes attached to the Chain of Custody. **Samples must be received on ice.**

Is this sample for regulatory/permit reporting?

☒ Yes ☐ No

What city/state was your sample collected in?

~~MO DNR~~ MALTA BEND MO.

What agency/state are you reporting to?

MO DNR

What type of sample? (Circle One)

Drinking Water

Ground Water

Wastewater

Solid waste

Hazardous Waste

UST

Storm Water

Process Water

SEE REVERSE SIDE FOR SAMPLING INSTRUCTIONS

RC FORM 14-2 Effective 07/01/16

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DOCUMENT

BIOMONITORING

Sample Collection Information Sheet

The sample collected for the whole effluent toxicity test must be a 24-hour composite of the final effluent taken at one-hour intervals unless stated otherwise in NPDES permit. The samples should be kept cool (6°C) until they reach the laboratory. Please pack ice around the containers.

The samples must be received in our laboratory no later than 24 hours after being taken. They must arrive before 12:00 noon on your scheduled arrival date. Please contact the laboratory at least one week in advance to schedule a biomonitoring event.

Additional Notes

To minimize the loss of toxicity due to volatilization of toxic constituents, the sample containers should be completely filled, leaving minimal air space between the contents and the lid.

- \* The sample containers should be rinsed with source water before being filled with sample.
- \* If samples are collected from a lagoon during drawdown, you may need to composite your samples manually by collecting small aliquot (e.g. one liter) amounts and pouring them into the larger biomonitoring kit as they are collected.

- \* The sample provided to the laboratory should be dechlorinated or sampled before chlorination occurs at the facility. Our laboratory can dechlorinate samples if needed, please indicate below if sample needs dechlorination.

- \* Chronic Toxicity Analysis requires renewing with fresh effluent every other day. The lab must receive an effluent usually on Tuesdays, Thursdays, and Saturdays.
- \* ARS Labels will be provided for Tuesday and Thursday deliveries. Client is responsible for arranging guaranteed Saturday delivery. Midwest ARS UPS Labels do not guarantee Saturday delivery.

- \* If your samples are scheduled to arrive on Saturday, please contact Heather Ramig at 402-829-9891 so we can alert our receiving department.

SIZE and DESCRIPTION

FILL 2 1/2 gallon container

PRESERVATIVE

Keep cool 6°C

PLACE ALL CONTAINERS IN THE PROVIDED COOLER, PACK WITH ICE, AND FORWARD TO THE LAB WITHIN 24 HOURS ON:

(Date of Submit) 7-18-17 Must Schedule

Dechlorination Needed: Yes ☐ No ☒



1527977  
COC  
Sticker #: 3







Lab Number: \_\_\_\_\_

Thermometer Used: Therm Fisher IR

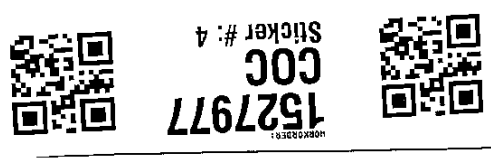
Sample Temperature (°C): 54

Cooler Intact: Yes  
Received on Ice: Yes  
Hand Delivered: Yes

Date & Initials of person accepting samples: 7/19/17

Chain of Custody present?	Yes	No	N/A	Comments:
Chain of Custody complete?	Yes	No	N/A	
Sample ID(s):	Yes	No	N/A	
Sample Location(s):	Yes	No	N/A	
Client Contact:	Yes	No	N/A	
Analysis Requested:	Yes	No	N/A	
Sampler name on COC?	Yes	No	N/A	
Date & Time of collection:	Yes	No	N/A	
Sample labels match COC?	Yes	No	N/A	
Written in indelible ink?	Yes	No	N/A	
Labels indicate proper preservation?	Yes	No	N/A	
Chain of Custody relinquished with signature?	Yes	No	N/A	
Samples arrived within hold time?	Yes	No	N/A	
Sufficient volume?	Yes	No	N/A	
Appropriate containers used?	Yes	No	N/A	
Filtered volume received for dissolved tests?	Yes	No	N/A	
Headspace in VOA vials?	Yes	No	N/A	
Trip Blank present?	Yes	No	N/A	

Client Notification/Resolution: \_\_\_\_\_  
Date/Time Contacted: \_\_\_\_\_  
Person Contacted: \_\_\_\_\_  
Contacted By: \_\_\_\_\_  
Comments/Resolution: \_\_\_\_\_





REFERENCE #60275551

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

August 2, 2018

Mid-Missouri Energy, LLC  
Attn: David Stanton  
15311 N. Saline 65 HWY  
Malta Bend, MO 65339

Re: Lab Project Number: 60275551  
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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**CHRONIC TOXICITY TEST FOR  
Mid-Missouri Energy, LLC**

PERMIT # M-KS68-OO04

PERFORMED ON:

Pimephales promelas

and

Ceriodaphnia dubia

PREPARED FOR:

Mid-Missouri Energy, LLC  
Attn: David Stanton  
15311 N. Saline 65 HWY  
Malta Bend, MO 65339  
1-660-595-0144

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

August 2, 2018  
**REPORT OF LABORATORY ANALYSIS**

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**REPORT OF LABORATORY ANALYSIS**

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## SUMMARY

A Chronic Whole Effluent Toxicity Test using the 7-day chronic fathead minnows (*Pimephales promelas*), static renewal larval survival and growth test, and three brood 7-day chronic Cladoceran (*Ceriodaphnia dubia*), static renewal survival and reproduction test, was conducted on effluent discharge water collected at MID-MISSOURI ENERGY, LLC effluent discharge from July 23, 2018 to July 27, 2018. All the test methods followed are as listed in EPA 821-R-02-013, "Short Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms."

Statistically significant ( $p < 0.05$ ) mortality is determined by Dunnet's procedure using average percent survival of each test concentration versus the average survival of the controls. If significant mortality occurs, median lethal concentrations (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 821-R-02-013, November 2002 and by use of Toxstat version 3.4.

In minnow section of testing, it was observed that the effluent had no significant effect on the survival of the larvae at the 100% concentration. No significant mortality was observed in the other effluent concentrations after the 7-day exposure period. The No Observed Effect Concentration (NOEC) was determined to be 100% for survival. The LC50 was estimated to be  $>100\%$  effluent. No significant reduction in growth was observed in the 100% effluent concentration. The Toxic Units is  $<1$ . The IC25 is  $>100$ . The NOEC for growth in effluent was determined to be 100%.

In Cladoceran section of testing, it was observed that the effluent had no significant effect on the survival of the organisms in the 100% effluent concentration. No significant mortality was observed in the other effluent concentrations after the 7-day exposure period. The No Observed Effect Concentration (NOEC) was determined to be 100% for survival. The LC50 was estimated to be  $>100\%$  effluent. No significant reduction in reproduction was observed in the 100% effluent concentrations. The Toxic Units is  $<1$ . The IC25 is  $>100$ . The NOEC for reproduction in effluent was determined to be 100%.

The chronic toxicity exhibited by the fathead minnows and the *Ceriodaphnia* treated by the effluent sampled from July 23 to July 27 from MID-MISSOURI ENERGY, LLC effluent discharge, is acceptable as described in EPA 821-R-02-013.

## REPORT OF LABORATORY ANALYSIS

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## INTRODUCTION

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

## TEST MATERIAL

Mid-Missouri Energy, LLC personnel collected sampling of the effluent. A sample of the effluent was delivered to Pace by commercial carrier on 7-24-18. Subsequent samples followed by delivery on 7-26-18 and on 7-28-18. All samples were stored at  $\leq 6^{\circ}$  Celsius. Moderately Hard Synthetic Water was used as a control and also to make the required dilutions in the test as described in EPA 821-R-02-013.

## TEST METHODS

Pace used EPA test method 1000.0 for conducting the Fathead Minnow, Pimephales promelas, Larval Survival and Growth Test. EPA test method 1002.0 was used for conducting the Cladoceran, Ceriodaphnia dubia, Survival and Reproduction Test. The tests were conducted to estimate the LC50, NOEC, and LOEC for survival, growth, and reproduction of these test species.

The Pimephales and Ceriodaphnia tests were initiated on 7-24-18 and carried out until 7-31-18. The Pimephales tests were conducted in 500 ml plastic jars with 250 ml of test solution. Ten larvae were placed in each of at least 4 replicates to make a total of 40 larvae per sample concentration. The Ceriodaphnia tests were carried out in 35ml vials containing 25 ml of test solution. One Neonate was placed in each of 10 replicates to make a total of 10 neonates per sample concentration.

## TEST ORGANISMS

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

## REPORT OF LABORATORY ANALYSIS

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## RESULTS

### REPORT OF LABORATORY ANALYSIS

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**TABLE 1**

Permittee: MID-MISSOURI ENERGY, LLC Effluent discharge.

Date Sampled	No. 1: 7-23-18	8:00
	No. 2: 7-25-18	8:00
	No. 3: 7-27-18	8:00
Test Initiated: 11:00	Date: 7-24-18	

Dilution Water used: Moderately Hard Synthetic Water

**FATHEAD MINNOW LARVAE GROWTH AND SURVIVAL**  
**(Pimephales promelas)**

DATA TABLE FOR GROWTH OF FATHEAD MINNOWS

Effluent Concentration (%)	Average Dry Weight in Milligrams in Replicate Chambers				Mean Dry Weight (mg)	CV% *
	A	B	C	D		
Control 0%	0.507	0.423	0.483	0.505	0.480	7.97
Dilution 1 6.25%	0.438	0.483	0.448	0.433	0.451	5.00
Dilution 2 12.5%	0.475	0.457	0.412	0.406	0.438	7.73
Dilution 3 25%	0.504	0.545	0.493	0.540	0.521	4.97
Dilution 4 50%	0.430	0.526	0.472	0.492	0.480	8.35
Dilution 5 100%	0.470	0.422	0.505	0.492	0.472	7.73

\* Coefficient of Variation = Standard Deviation X 100 / Mean

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Permittee: MID-MISSOURI ENERGY, LLC Effluent discharge.

### FATHEAD MINNOW SURVIVAL

Conc. %	Percent Survival in Replicate Chambers				Mean Percent Survival			CV %
	A	B	C	D	24hr	48hr	7 day	
Control 0%	100	100	100	100	100	100	100	0.00
Dilution 1 6.25%	100	100	100	90	100	100	97.5	5.94
Dilution 2 12.5%	100	100	100	90	100	100	97.5	5.94
Dilution 3 25%	100	100	100	100	100	100	100	0.00
Dilution 4 50%	100	100	100	100	100	100	100	0.00
Dilution 5 100%	100	100	100	100	100	100	100	0.00

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Permittee: MID-MISSOURI ENERGY, LLC Effluent discharge.

### CERIODAPHNIA SURVIVAL AND REPRODUCTION

#### DATA TABLE FOR CERIODAPHNIA YOUNG PRODUCTION

Replicate	Control 0%	Dilution 1 6.25%	Dilution 2 12.5%	Dilution 3 25%	Dilution 4 50%	Dilution 5 100%
1	24	21	19	23	23	22
2	19	23	21	19	20	23
3	23	22	23	20	17	19
4	25	24	16	17	22	22
5	16	20	17	20	22	20
6	22	15	21	21	19	22
7	20	23	21	24	18	22
8	20	20	20	20	21	26
9	16	15	20	19	22	19
10	21	25	19	22	17	20
Mean	20.6	20.8	19.7	20.5	20.1	21.5
SD	3.062	3.458	2.058	2.068	2.234	2.121
CV %	14.87	16.62	10.44	10.09	11.11	9.87

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Permittee: MID-MISSOURI ENERGY, LLC Effluent discharge.

CERIODAPHNIA MEAN PERCENT SURVIVAL

Time Elapsed	Percent Effluent (%)					
	Control 0%	Dilution 1 6.25%	Dilution 2 12.5%	Dilution 3 25%	Dilution 4 50%	Dilution 5 100%
24 hrs	100	100	100	100	100	100
48 hrs	100	100	100	100	100	100
7-day	100	100	100	100	100	100
SD	0.000	0.000	0.000	0.000	0.000	0.000
CV %	0.00	0.00	0.00	0.00	0.00	0.00

**REPORT OF LABORATORY ANALYSIS**

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**TABLE 2**  
**SUMMARY OF TEST CONDITIONS FOR THE FATHEAD MINNOW**  
**(*Pimephales promelas*) LARVAL SURVIVAL AND GROWTH TEST**

1. Test type	Static renewal
2. Temperature	25 degrees Celsius
3. Light quality	Ambient laboratory light
4. Light intensity	Ambient laboratory levels
5. Photoperiod	16 hr light, 8 hr dark
6. Test chamber size	500 ml
7. Test solution volume	250 ml
8. Renewal of test concentrations	Daily
9. Age of test organism	< 24 hours
10. No. larvae/chamber	10
11. No. replicates/concentration	4
12. No. larvae/concentration	40
13. Feeding regime	Feed 0.15 g newly hatched brine shrimp nauplii two times daily. Larvae are not fed 12 hours prior to termination of test.
14. Cleaning	Siphon daily, immediately before test solution renewal
15. Aeration	None

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**TABLE 2 (CONT.)**

16. Dilution Water	Moderately Hard Synthetic Water prepared with MILLI-Q deionized water and reagent grade chemicals
17. Effluent concentrations	0%, 6.25%, 12.5%, 25%, 50%, 100%
18. Test duration	7 days
19. Endpoints	Survival and growth
20. Test acceptability	80% or greater survival in the controls, Average dry weight in controls >0.25 mg, Coefficient of variation in the control must not exceed 40%.

**TABLE 2 (CONT.)**

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

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

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**TABLE 2 (CONT.)**

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

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**TABLE 2 (SECTION 2)**

**BIOMONITORING CHRONIC TOXICITY REPORT  
FATHEAD MINNOW (Pimephales promelas)  
CHEMICAL PARAMETERS CHART**

Permittee: MID-MISSOURI ENERGY, LLC Effluent discharge.

ANALYSTS: Pace Analytical Services, Inc.  
Timothy Harrell  
Mike Bollin

SAMPLE NO. 1 COLLECTED: DATE: 7-23-18

SAMPLE NO. 2 COLLECTED: DATE: 7-25-18

SAMPLE NO. 3 COLLECTED: DATE: 7-27-18

**TABLE 2 (SECTION 2)  
INITIAL WATER QUALITY  
EFFLUENT CONCENTRATION**

	Control	100%
PH	7.62	7.86
D.O.	8.20	7.30
Temp	25.0	25.0
Alk	60	276
Hard	90	650
Cond	314	1597
Chlorine	<0.1	<0.1

\* D.O. is reported as mg/L  
Alkalinity is reported as mg/L CaCO<sub>3</sub>  
Hardness is reported as mg/L CaCO<sub>3</sub>  
Conductance is reported as umhos  
Chlorine is reported as mg/L

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## TEST WATER QUALITY

### 24-Hour Water Quality Measurements

Effluent Concentration (%)	PH	D.O. (mg/l)	Temperature (C)
0% Control	7.68	7.00	25.0
6.25% Effluent	7.84	7.00	25.0
12.5% Effluent	7.97	6.90	25.0
25% Effluent	8.11	6.90	25.0
50% Effluent	8.21	6.90	25.0
100% Effluent	8.42	6.80	25.0

### 48-Hour Water Quality Measurements

Effluent Concentration (%)	PH	D.O. (mg/l)	Temperature (C)
0% Control	7.68	7.10	25.2
6.25% Effluent	7.74	7.10	25.2
12.5% Effluent	7.92	7.10	25.2
25% Effluent	8.06	7.00	25.2
50% Effluent	8.22	7.00	25.2
100% Effluent	8.45	7.00	25.2

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FINAL WATER QUALITY

EFFLUENT CONCENTRATION

	Control	100%
pH	7.76	8.49
D.O.	7.10	7.00
Temp	24.9	24.9
Alk	62	304
Hard	88	762
Cond	329	1721

- \* D.O. is reported as mg/L  
Alkalinity is reported as mg/L CaCO<sub>3</sub>  
Hardness is reported as mg/L CaCO<sub>3</sub>  
Conductance is reported as umhos

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## TEST VALIDITY

The Pimephales promelas control survival rate was 100. The mean dry weight (growth) of the Pimephales promelas was determined at 0.480 g/organism in the controls. The percent coefficient of variation (%CV) values for the fathead minnow control for survival and growth were 0.00 and 7.97. The Ceriodaphnia dubia survival rates were 100 in the control. The Ceriodaphnia in the control produced an average of 20.6 young over the seven-day exposure period. Percent CV values for Ceriodaphnia dubia control survival and reproduction was 0.00 and 14.87. Control data met or exceeded all criteria set out by EPA 821-R-02-013 for test acceptance.

## CONCLUSIONS

The No Observed Effect Concentration (NOEC) for Pimephales promelas was 100% for survival and 100% for growth. The No Observed Effect Concentration (NOEC) for Ceriodaphnia dubia was 100% for Survival and 100% for Reproduction. The tests were ran using a synthetic control against effluent concentrations of 6.25%, 12.5%, 25%, 50%, and 100%. The effluent sampled on 7-23-18, 7-25-18, and 7-27-18 exhibited acceptable chronic toxicity in Pimephales promelas and in Ceriodaphnia dubia during the exposure period as described in EPA 821-R-02-013.

## REPORT OF LABORATORY ANALYSIS

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**APPENDIX C**

**REFERENCE TOXICANTS**

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

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

Reference Toxicant (NaCl) Pimephales promelas

Concentration of Toxicant	Avg. # of Live Organisms/replicate			
	0 hrs	24 hrs	48 hrs	7 days
10 g/l	40	6	2	0
8 g/l	40	34	25	3
6 g/l	40	39	33	21
4 g/l	40	40	40	38
2 g/l	40	40	40	40

IC25 (4.80 g/l Sodium Chloride)

Survival NOEC: 4.0 g/l

Reference Toxicant (NaCl) Ceriodaphnia Dubia

Concentration of Toxicant	Avg. # of Live Organisms/replicate			
	0 hrs	24 hrs	48 hrs	7 days
2.5 g/l	10	4	0	0
2.0 g/l	10	10	8	1
1.5 g/l	10	10	10	10
1.0 g/l	10	10	10	10
0.5 g/l	10	10	10	10

IC25 (1.14 g/l Sodium Chloride)

Survival NOEC: 1.5 g/l

Submitted By:



Timothy Harrell, Technical Director

**REPORT OF LABORATORY ANALYSIS**

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60215551 Mid MO Energy FATHEAD SURVIVAL  
File: 6275551A Transform: ARC SINE(SQUARE ROOT(Y))

Chi-square test for normality: actual and expected frequencies

---

INTERVAL	<-1.5	-1.5 to <-0.5	-0.5 to 0.5	>0.5 to 1.5	>1.5
EXPECTED	1.608	5.808	9.168	5.808	1.608
OBSERVED	0	2	22	0	0

---

Calculated Chi-Square goodness of fit test statistic = 29.4810

Table Chi-Square value (alpha = 0.01) = 13.277

Data FAIL normality test. Try another transformation.

Warning - The first three homogeneity tests are sensitive to non-normal data and should not be performed.

60215551 Mid MO Energy FATHEAD SURVIVAL  
File: 6275551A Transform: ARC SINE(SQUARE ROOT(Y))

Shapiro - Wilk's test for normality

---

D = 0.040

W = 0.614

Critical W (P = 0.05) (n = 24) = 0.916

Critical W (P = 0.01) (n = 24) = 0.884

---

Data FAIL normality test. Try another transformation.

Warning - The first three homogeneity tests are sensitive to non-normal data and should not be performed.

60215551 Mid MO Energy FATHEAD SURVIVAL  
 File: 6275551A Transform: ARC SINE(SQUARE ROOT(Y))

SUMMARY STATISTICS ON TRANSFORMED DATA TABLE 1 of 2

GRP	IDENTIFICATION	N	MIN	MAX	MEAN
1	CONTROL	4	1.412	1.412	1.412
2	6.25%	4	1.249	1.412	1.371
3	12.5%	4	1.249	1.412	1.371
4	25%	4	1.412	1.412	1.412
5	50%	4	1.412	1.412	1.412
6	100%	4	1.412	1.412	1.412

60215551 Mid MO Energy FATHEAD SURVIVAL  
 File: 6275551A Transform: ARC SINE(SQUARE ROOT(Y))

SUMMARY STATISTICS ON TRANSFORMED DATA TABLE 2 of 2

GRP	IDENTIFICATION	VARIANCE	SD	SEM	C.V. %
1	CONTROL	0.000	0.000	0.000	0.00
2	6.25%	0.007	0.081	0.041	5.94
3	12.5%	0.007	0.081	0.041	5.94
4	25%	0.000	0.000	0.000	0.00
5	50%	0.000	0.000	0.000	0.00
6	100%	0.000	0.000	0.000	0.00

60215551 Mid MO Energy FATHEAD SURVIVAL  
 File: 6275551A Transform: ARC SINE(SQUARE ROOT(Y))

ANOVA TABLE

SOURCE	DF	SS	MS	F
Between	5	0.009	0.002	0.800
Within (Error)	18	0.040	0.002	
Total	23	0.049		

Critical F value = 2.77 (0.05,5,18)  
 Since  $F < \text{Critical } F$  FAIL TO REJECT  $H_0$ : All equal

60215551 Mid MO Energy FATHEAD SURVIVAL  
 File: 6275551A Transform: ARC SINE(SQUARE ROOT(Y))

## DUNNETT'S TEST - TABLE 1 OF 2

Ho:Control&lt;Treatment

GROUP	IDENTIFICATION	TRANSFORMED MEAN	MEAN CALCULATED IN ORIGINAL UNITS	T STAT	SIG
1	CONTROL	1.412	1.000		
2	6.25%	1.371	0.975	1.225	
3	12.5%	1.371	0.975	1.225	
4	25%	1.412	1.000	0.000	
5	50%	1.412	1.000	0.000	
6	100%	1.412	1.000	0.000	

Dunnett table value = 2.41 (1 Tailed Value, P=0.05, df=18,5)

60215551 Mid MO Energy FATHEAD SURVIVAL

File: 6275551A Transform: ARC SINE(SQUARE ROOT(Y))

## DUNNETT'S TEST - TABLE 2 OF 2

Ho:Control&lt;Treatment

GROUP	IDENTIFICATION	NUM OF REPS	Minimum Sig Diff (IN ORIG. UNITS)	% of CONTROL	DIFFERENCE FROM CONTROL
1	CONTROL	4			
2	6.25%	4	0.031	3.1	0.025
3	12.5%	4	0.031	3.1	0.025
4	25%	4	0.031	3.1	0.000
5	50%	4	0.031	3.1	0.000
6	100%	4	0.031	3.1	0.000

60275551 Mid MO Energy FATHEAD GROWTH  
File: 6275551B Transform: NO TRANSFORMATION

Shapiro - Wilk's test for normality

---

D = 0.020

W = 0.947

Critical W (P = 0.05) (n = 24) = 0.916

Critical W (P = 0.01) (n = 24) = 0.884

---

Data PASS normality test at P=0.01 level. Continue analysis.

60275551 Mid MO Energy FATHEAD GROWTH  
File: 6275551B Transform: NO TRANSFORMATION

Bartlett's test for homogeneity of variance

---

Calculated B1 statistic = 1.29

---

Table Chi-square value = 15.09 (alpha = 0.01, df = 5)

Table Chi-square value = 11.07 (alpha = 0.05, df = 5)

---

Data PASS B1 homogeneity test at 0.01 level. Continue analysis.

60275551 Mid MO Energy FATHEAD GROWTH  
 File: 6275551B Transform: NO TRANSFORMATION

SUMMARY STATISTICS ON TRANSFORMED DATA TABLE 1 of 2

GRP	IDENTIFICATION	N	MIN	MAX	MEAN
1	CONTROL	4	0.425	0.507	0.480
2	6.25%	4	0.433	0.483	0.451
3	12.5%	4	0.406	0.475	0.438
4	25%	4	0.493	0.545	0.521
5	50%	4	0.430	0.526	0.480
6	100%	4	0.422	0.505	0.472

60275551 Mid MO Energy FATHEAD GROWTH  
 File: 6275551B Transform: NO TRANSFORMATION

SUMMARY STATISTICS ON TRANSFORMED DATA TABLE 2 of 2

GRP	IDENTIFICATION	VARIANCE	SD	SEM	C.V. %
1	CONTROL	0.001	0.038	0.019	7.97
2	6.25%	0.001	0.023	0.011	5.00
3	12.5%	0.001	0.034	0.017	7.73
4	25%	0.001	0.026	0.013	4.97
5	50%	0.002	0.040	0.020	8.35
6	100%	0.001	0.036	0.018	7.73

60275551 Mid MO Energy FATHEAD GROWTH  
 File: 6275551B Transform: NO TRANSFORMATION

ANOVA TABLE

SOURCE	DF	SS	MS	F
Between	5	0.016	0.003	2.942
Within (Error)	18	0.020	0.001	
Total	23	0.037		

Critical F value = 2.77 (0.05,5,18)  
 Since F > Critical F REJECT Ho: All equal

60275551 Mid MO Energy FATHEAD GROWTH  
 File: 6275551B Transform: NO TRANSFORMATION



## DUNNETT'S TEST

TABLE 1 OF 2

Ho:Control&lt;Treatment

GROUP	IDENTIFICATION	TRANSFORMED MEAN	MEAN CALCULATED IN ORIGINAL UNITS	T STAT	SIG
1	CONTROL	0.480	0.480		
2	6.25%	0.451	0.451	1.246	
3	12.5%	0.438	0.438	1.796	
4	25%	0.521	0.521	-1.711	
5	50%	0.480	0.480	0.000	
6	100%	0.472	0.472	0.327	

Dunnett table value = 2.41 (1 Tailed Value, P=0.05, df=18,5)

60275551 Mid MO Energy FATHEAD GROWTH

File: 6275551B

Transform: NO TRANSFORMATION

## DUNNETT'S TEST

TABLE 2 OF 2

Ho:Control&lt;Treatment

GROUP	IDENTIFICATION	NUM OF REPS	Minimum Sig Diff (IN ORIG. UNITS)	% of CONTROL	DIFFERENCE FROM CONTROL
1	CONTROL	4			
2	6.25%	4	0.057	11.9	0.030
3	12.5%	4	0.057	11.9	0.043
4	25%	4	0.057	11.9	-0.041
5	50%	4	0.057	11.9	0.000
6	100%	4	0.057	11.9	0.008

# FISHER'S EXACT TEST

IDENTIFICATION	NUMBER OF		
	ALIVE	DEAD	TOTAL ANIMALS
CONTROL	10	0	10
6.25%	10	0	10
TOTAL	20	0	20

CRITICAL FISHER'S VALUE (10,10,10) ( $p=0.05$ ) IS 6. b VALUE IS 10.  
 Since b is greater than 6 there is no significant difference  
 between CONTROL and TREATMENT at the 0.05 level.

# FISHER'S EXACT TEST

IDENTIFICATION	NUMBER OF		
	ALIVE	DEAD	TOTAL ANIMALS
CONTROL	10	0	10
12.5%	10	0	10
TOTAL	20	0	20

CRITICAL FISHER'S VALUE (10,10,10) ( $p=0.05$ ) IS 6. b VALUE IS 10.  
 Since b is greater than 6 there is no significant difference  
 between CONTROL and TREATMENT at the 0.05 level.

# FISHER'S EXACT TEST

IDENTIFICATION	NUMBER OF		
	ALIVE	DEAD	TOTAL ANIMALS
CONTROL	10	0	10
25%	10	0	10

TOTAL	20	0	20
-------	----	---	----

CRITICAL FISHER'S VALUE (10,10,10) ( $p=0.05$ ) IS 6. b VALUE IS 10.  
 Since b is greater than 6 there is no significant difference  
 between CONTROL and TREATMENT at the 0.05 level.

#### FISHER'S EXACT TEST

IDENTIFICATION	NUMBER OF		
	ALIVE	DEAD	TOTAL ANIMALS
CONTROL	10	0	10
50%	10	0	10
TOTAL	20	0	20

CRITICAL FISHER'S VALUE (10,10,10) ( $p=0.05$ ) IS 6. b VALUE IS 10.  
 Since b is greater than 6 there is no significant difference  
 between CONTROL and TREATMENT at the 0.05 level.

#### FISHER'S EXACT TEST

IDENTIFICATION	NUMBER OF		
	ALIVE	DEAD	TOTAL ANIMALS
CONTROL	10	0	10
100%	10	0	10
TOTAL	20	0	20

CRITICAL FISHER'S VALUE (10,10,10) ( $p=0.05$ ) IS 6. b VALUE IS 10.  
 Since b is greater than 6 there is no significant difference  
 between CONTROL and TREATMENT at the 0.05 level.

#### SUMMARY OF FISHER'S EXACT TESTS

NUMBER	NUMBER	SIG
--------	--------	-----

GROUP	IDENTIFICATION	EXPOSED	DEAD	(P=.05)
	CONTROL	10	0	
1	6.25%	10	0	
2	12.5%	10	0	
3	25%	10	0	
4	50%	10	0	
5	100%	10	0	

60275551 Mid MO Energy CERIODAPHNIA DUBIA SURVIVA  
File: 6275551D Transform: NO TRANSFORM

SUMMARY STATISTICS ON TRANSFORMED DATA TABLE 1 of 2

GRP	IDENTIFICATION	N	MIN	MAX	MEAN
1	CONTROL	10	1.000	1.000	1.000
2	6.25%	10	1.000	1.000	1.000
3	12.5%	10	1.000	1.000	1.000
4	25%	10	1.000	1.000	1.000
5	50%	10	1.000	1.000	1.000
6	100%	10	1.000	1.000	1.000

60275551 Mid MO Energy CERIODAPHNIA DUBIA SURVIVA  
File: 6275551D Transform: NO TRANSFORM

SUMMARY STATISTICS ON TRANSFORMED DATA TABLE 2 of 2

GRP	IDENTIFICATION	VARIANCE	SD	SEM	C.V. %
1	CONTROL	0.000	0.000	0.000	0.00
2	6.25%	0.000	0.000	0.000	0.00
3	12.5%	0.000	0.000	0.000	0.00
4	25%	0.000	0.000	0.000	0.00
5	50%	0.000	0.000	0.000	0.00
6	100%	0.000	0.000	0.000	0.00

60275551 Mid Mo Energy CERIODAPHNIA DUBIA REPRODU  
File: 6275551E Transform: NO TRANSFORMATION

Chi-square test for normality: actual and expected frequencies

---

INTERVAL	<-1.5	-1.5 to <-0.5	-0.5 to 0.5	>0.5 to 1.5	>1.5
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
EXPECTED	4.020	14.520	22.920	14.520	4.020
OBSERVED	6	11	23	17	3

---

Calculated Chi-Square goodness of fit test statistic = 2.5112  
Table Chi-Square value (alpha = 0.01) = 13.277

Data PASS normality test. Continue analysis.

60275551 Mid Mo Energy CERIODAPHNIA DUBIA REPRODU  
File: 6275551E Transform: NO TRANSFORMATION

---

Bartlett's test for homogeneity of variance  
Calculated B1 statistic = 4.78

---

Table Chi-square value = 15.09 (alpha = 0.01, df = 5)  
Table Chi-square value = 11.07 (alpha = 0.05, df = 5)

Data PASS B1 homogeneity test at 0.01 level. Continue analysis.

60275551 Mid Mo Energy CERIODAPHNIA DUBIA REPRODU  
 File: 6275551E Transform: NO TRANSFORMATION

SUMMARY STATISTICS ON TRANSFORMED DATA TABLE 1 of 2

GRP	IDENTIFICATION	N	MIN	MAX	MEAN
1	CONTROL	10	16.000	25.000	20.600
2	6.25%	10	15.000	25.000	20.800
3	12.5%	10	16.000	23.000	19.700
4	25%	10	17.000	24.000	20.500
5	50%	10	17.000	23.000	20.100
6	100%	10	19.000	26.000	21.500

60275551 Mid Mo Energy CERIODAPHNIA DUBIA REPRODU  
 File: 6275551E Transform: NO TRANSFORMATION

SUMMARY STATISTICS ON TRANSFORMED DATA TABLE 2 of 2

GRP	IDENTIFICATION	VARIANCE	SD	SEM	C.V. %
1	CONTROL	9.378	3.062	0.968	14.87
2	6.25%	11.956	3.458	1.093	16.62
3	12.5%	4.233	2.058	0.651	10.44
4	25%	4.278	2.068	0.654	10.09
5	50%	4.989	2.234	0.706	11.11
6	100%	4.500	2.121	0.671	9.87

60275551 Mid Mo Energy CERIODAPHNIA DUBIA REPRODU  
 File: 6275551E Transform: NO TRANSFORMATION

ANOVA TABLE

SOURCE	DF	SS	MS	F
Between	5	18.933	3.787	0.578
Within (Error)	54	354.000	6.556	
Total	59	372.933		

Critical F value = 2.45 (0.05,5,40)  
 Since  $F < \text{Critical } F$  FAIL TO REJECT  $H_0$ : All equal

60275551 Mid Mo Energy CERIODAPHNIA DUBIA REPRODU  
 File: 6275551E Transform: NO TRANSFORMATION

## DUNNETT'S TEST - TABLE 1 OF 2

Ho:Control&lt;Treatment

GROUP	IDENTIFICATION	TRANSFORMED MEAN	MEAN CALCULATED IN ORIGINAL UNITS	T STAT	SIG
1	CONTROL	20.600	20.600		
2	6.25%	20.800	20.800	-0.175	
3	12.5%	19.700	19.700	0.786	
4	25%	20.500	20.500	0.087	
5	50%	20.100	20.100	0.437	
6	100%	21.500	21.500	-0.786	

Dunnett table value = 2.31 (1 Tailed Value, P=0.05, df=40,5)

60275551 Mid Mo Energy CERIODAPHNIA DUBIA REPRODU  
 File: 6275551E Transform: NO TRANSFORMATION

## DUNNETT'S TEST - TABLE 2 OF 2

Ho:Control&lt;Treatment

GROUP	IDENTIFICATION	NUM OF REPS	Minimum Sig Diff (IN ORIG. UNITS)	% of CONTROL	DIFFERENCE FROM CONTROL
1	CONTROL	10			
2	6.25%	10	2.645	12.8	-0.200
3	12.5%	10	2.645	12.8	0.900
4	25%	10	2.645	12.8	0.100
5	50%	10	2.645	12.8	0.500
6	100%	10	2.645	12.8	-0.900



Conc. ID	1	2	3	4	5	6
Conc. Tested	0	6.25	12.5	25	50	100
Response 1	24	21	19	23	23	22
Response 2	19	23	21	19	20	23
Response 3	23	22	23	20	17	19
Response 4	25	24	16	17	22	22
Response 5	16	20	17	20	22	20
Response 6	22	15	21	21	19	22
Response 7	20	23	21	24	18	22
Response 8	20	20	20	20	21	26
Response 9	16	15	20	19	22	19
Response 10	21	25	19	22	17	20

\*\*\* Inhibition Concentration Percentage Estimate \*\*\*

Toxicant/Effluent: Mid MO

Test Start Date: 7/24/18 Test Ending Date: 7/31/18

Test Species: Dubia

Test Duration: 7 Day

DATA FILE:

Conc. ID	Number Replicates	Concentration	Response Means	Std. Dev.	Pooled Response Means
1	10	0.000	20.600	3.062	20.700
2	10	6.250	20.800	3.458	20.700
3	10	12.500	19.700	2.058	20.450
4	10	25.000	20.500	2.068	20.450
5	10	50.000	20.100	2.234	20.450
6	10	100.000	21.500	2.121	20.450

\*\*\* No Linear Interpolation Estimate can be calculated from the input data since none of the (possibly pooled) group response means were less than 75% of the control response mean.

Conc. ID	1	2	3	4	5	6
Conc. Tested	0	6.25	12.5	25	50	100
Response 1	.507	.438	.475	.504	.430	.470
Response 2	.425	.483	.457	.545	.526	.422
Response 3	.483	.448	.412	.493	.472	.505
Response 4	.505	.433	.406	.540	.492	.492

\*\*\* Inhibition Concentration Percentage Estimate \*\*\*

Toxicant/Effluent: Mid MO Energy

Test Start Date: 7/24/18 Test Ending Date: 7/31/18

Test Species: Fathead

Test Duration: 7 Day

DATA FILE:

Conc. ID	Number Replicates	Concentration	Response Means	Std. Dev.	Pooled Response Means
1	4	0.000	0.480	0.038	0.480
2	4	6.250	0.451	0.023	0.472
3	4	12.500	0.438	0.034	0.472
4	4	25.000	0.521	0.026	0.472
5	4	50.000	0.480	0.040	0.472
6	4	100.000	0.472	0.036	0.472

\*\*\* No Linear Interpolation Estimate can be calculated from the input data since none of the (possibly pooled) group response means were less than 75% of the control response mean.



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

[illegible]



CHAIN-OF-CUSTODY / Analytical Request Document

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

Company:	Mid-Missouri Energy, LLC	Report To:	David Stanton	Attention:	Matt Endicott	Regulatory Agency:	Missouri
Address:	15311 N. Saline 65 Hwy	Copy To:		Company Name:	Mid-Missouri Energy, LLC	State / Location:	MO
Mailing Address:	Maila Bend, MO 65339	Purchase Order No.:	MM1 L 62246	Address:	15311 N. SALINE 65 HWY		
Email To:	davidst@midmissourienergy.com	Client Project ID:	WET Testing	Pace Quote Reference:	Jamie Church		
Phone:	660-595-0144	Container Order Number:		Pace Profile #:	11068, line 2		
Requested Due Date/TAT:	Fax 660 595 0147						

ITEM#	SAMPLE ID One Character per box. (A-Z, 0-9 / -) Sample IDs must be unique	MATRIX		CODE		MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED				SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives							Analyses Test	Y/N	Residual Chlorine (Y/N)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
		Drinking Water	DW	Water	WT			Waste Water	WW	Product	P			Soil/Solid	SL	Oil	OL	Wipe	WP	AR				OT	Other	TS	START	END	Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
1	WET TEST, SAMPLE #2																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														

### Sample Condition Upon Receipt

Client Name:

mid missouri

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

Tracking #:

Custody Seal on Cooler/Box Present: Yes ☒ No ☐ Face Shipping Label Used? Yes ☐ No ☒  
 Packing Material: Seals intact: Yes ☒ No ☐

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

Thermometer Used: T-243

Thermometer Used: T-243

Cooler Temperature (°C): As-read 3.3 Corr. Factor -.9 Corrected 2.4

Temperature should be above freezing to 6°C

Date and initials of person examining contents:

7/26/18  
To 8:00

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

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

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

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

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

Sufficient volume: ☒ Yes ☐ No ☐ N/A

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

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

Containers intact: ☒ Yes ☐ No ☐ N/A

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

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

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

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

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

Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)  
cyanide water sample check:

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

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

ip Blank present: ☐ Yes ☐ No ☒ N/A

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

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

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

ent Notification/ Resolution: Copy COC to Client? Y / ~~N~~ N/A

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

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

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

\_\_\_\_\_

\_\_\_\_\_

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

\_\_\_\_\_

## Section A

**Required Client Information:**

Company:	Mid-Missouri Energy, LLC		
Address:	15311 N. Saline 65 Hwy		
	Maita Bend, MO 65339		
Email To:	davidst1@midmissourienergy.com		
Phone:	660-595-0144	Fax	
Requested Due Date/TAT:			

## Section B

**Required Project Information:**

Report To: David Stanton  
Copy To:  
Purchase Order No: MM1 L 62246  
Client/Project ID: WET Testing  
Container Order Number: 875820

## Section C

**Invoice Information:**

Attention:	Matt Endicott
Company Name:	Mid-Missouri Energy, LLC
Address:	
Pace Quote Reference:	
Pace Project Manager:	Jamie Church
Pace Profile #:	11068, line 2

Requested Analysis Filtered (Y/N)

Regulatory Agency	MDNR
State / Location	MO

Page : 1 Of 1

[illegible]

# Sample Condition Upon Receipt

Client Name:

Mid Missouri

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

Tracking #:

Pace Shipping Label Used? Yes ☐ No ☒

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

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

Thermometer Used: T-243 Type of Ice: Wet ☒ Blue ☐ None ☐

Cooler Temperature (°C): As-read 2.9 Corr. Factor -.9 Corrected 2.0

Date and initials of person examining contents:

7/28/18  
10 8:00

Temperature should be above freezing to 6°C

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

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

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

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

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

Sufficient volume: ☒ Yes ☐ No ☐ N/A

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

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

Containers intact: ☒ Yes ☐ No ☐ N/A

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

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

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

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

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

NO<sub>3</sub>, H<sub>2</sub>SO<sub>4</sub>, HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide)

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

anide water sample checks: ☐ Yes ☐ No

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

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

p Blank present: ☐ Yes ☐ No ☒ N/A

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

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

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

ent Notification/ Resolution: Copy COC to Client? Y / N

Field Data Required? Y / N

rson Contacted: Date/Time:

mmments/ Resolution:

ject Manager Review: Date:

August 05, 2019

David Stanton  
Mid-Missouri Energy, LLC.  
15311 N. Saline 65 Hwy  
Malta Bend, MO 65339

RE: Project: WET TESTING  
Pace Project No.: 60309541

Dear David Stanton:

Enclosed are the analytical results for sample(s) received by the laboratory on July 23, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,



Jamie Church  
jamie.church@pacelabs.com  
314-838-7223  
Project Manager

Enclosures



## REPORT OF LABORATORY ANALYSIS

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## CERTIFICATIONS

Project: WET TESTING

Pace Project No.: 60309541

---

### **Southeast Kansas Certification IDs**

808 West McKay, Frontenac, KS 66763

Arkansas Certification #: 18-016-0

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10426

Louisiana Certification #: 03055

Oklahoma Certification #: 9935

Texas Certification #: T104704407

Utah Certification #: KS00021

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## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: WET TESTING

Pace Project No.: 60309541

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60309541001	WET TEST	Water	07/22/19 09:00	07/23/19 08:00

## REPORT OF LABORATORY ANALYSIS

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## SAMPLE ANALYTE COUNT

Project: WET TESTING

Pace Project No.: 60309541

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60309541001	WET TEST	EPA 821/R-02/013	TDH	1	PASI-SE

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: WET TESTING

Pace Project No.: 60309541

<b>Sample: WET TEST</b>		<b>Lab ID: 60309541001</b>	Collected: 07/22/19 09:00	Received: 07/23/19 08:00	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>Chronic Toxicity</b>		Analytical Method: EPA 821/R-02/013						
Toxicity, Chronic	<b>Complete</b>		1.0	1		07/23/19 13:00		

## REPORT OF LABORATORY ANALYSIS

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## QUALIFIERS

Project: WET TESTING

Pace Project No.: 60309541

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### DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

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

TNI - The NELAC Institute.

### LABORATORIES

PASI-SE Pace Analytical Services - SE Kansas

## REPORT OF LABORATORY ANALYSIS

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without the written consent of Pace Analytical Services, LLC.

## QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: WET TESTING

Pace Project No.: 60309541

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60309541001	WET TEST	EPA 821/R-02/013	600875		

## REPORT OF LABORATORY ANALYSIS

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without the written consent of Pace Analytical Services, LLC.



Client Name:

Mid-Missouri Energy

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

Tracking #:

Pace Shipping Label Used? Yes ☐ No ☒

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

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

Thermometer Used: T-243 Type of Ice: Wet ☒ Blue ☐ None ☐

Cooler Temperature (°C): As-read 3.1 Corr. Factor -0.9 Corrected 2.2

Date and initials of person examining contents:

7/23/19  
to 8:00

Temperature should be above freezing to 6°C

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

Client Notification/ Resolution:

Copy COC to Client? Y / N

Field Data Required? Y / N

Person Contacted:

Date/Time:

Comments/ Resolution:

Project Manager Review:

Jami Church

7/24/19

Date:





**REFERENCE #60309541**

August 1, 2019

Mid-Missouri Energy, LLC  
Attn: David Stanton  
15311 N. Saline 65 HWY  
Malta Bend, MO 65339

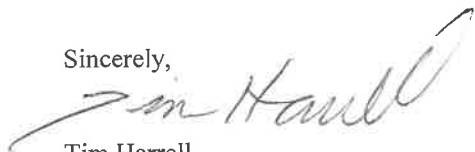
Re: Lab Project Number: 60309541  
Client Project ID: Wet Test

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

REFERENCE #60309541

**CHRONIC TOXICITY TEST FOR  
Mid-Missouri Energy, LLC**

PERMIT # MO-0131008

PERFORMED ON:

Pimephales promelas

and

Ceriodaphnia dubia

PREPARED FOR:

Mid-Missouri Energy, LLC  
Attn: David Stanton  
15311 N. Saline 65 HWY  
Malta Bend, MO 65339  
1-660-595-0144

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

August 1, 2019

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## SUMMARY

A Chronic Whole Effluent Toxicity Test using the 7-day chronic fathead minnows (Pimephales promelas), static renewal larval survival and growth test, and three brood 7-day chronic Cladoceran (Ceriodaphnia dubia), static renewal survival and reproduction test, was conducted on effluent discharge water collected at Mid-Missouri Energy, LLC effluent discharge from July 22, 2019 to July 26, 2019. All the test methods followed are as listed in EPA 821-R-02-013, "Short Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms."

Statistically significant ( $p < 0.05$ ) mortality is determined by Dunnet's procedure using average percent survival of each test concentration versus the average survival of the controls. If significant mortality occurs, median lethal concentrations are calculated using effluent concentrations and their corresponding percent mortality data. The 95% confidence intervals are calculated where appropriate by the Spearman-Kärber method. Statistical analysis is accomplished by following steps in EPA 821-R-02-013, November 2002 and by use of Toxstat version 3.4.

In minnow section of testing, it was observed that the effluent had no significant effect on the survival of the larvae at the 100% concentration. No significant mortality was observed in the other effluent concentrations after the 7-day exposure period. The No Observed Effect Concentration (NOEC) was determined to be 100% for survival. No significant reduction in growth was observed in the 100% effluent concentration. The Toxic Units is  $< 1$ . The  $IC_{25}$  is  $> 100$ . The NOEC for growth in effluent was determined to be 100%.

In Cladoceran section of testing, it was observed that the effluent had no significant effect on the survival of the organisms in the 100% effluent concentration. No significant mortality was observed in the other effluent concentrations after the 7-day exposure period. The No Observed Effect Concentration (NOEC) was determined to be 100% for survival. No significant reduction in reproduction was observed in the 100% effluent concentrations. The Toxic Units is  $< 1$ . The  $IC_{25}$  is  $> 100$ . The NOEC for reproduction in effluent was determined to be 100%.

The chronic toxicity exhibited by the fathead minnows and the Ceriodaphnia treated by the effluent sampled from July 22 to July 26 from the Mid-Missouri Energy, LLC effluent discharge, is acceptable as described in EPA 821-R-02-013.

## INTRODUCTION

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

## TEST MATERIAL

Mid-Missouri Energy, LLC personnel collected sampling of the effluent. A sample of the effluent was delivered to Pace by commercial carrier on 7-23-19. Subsequent samples followed by delivery on 7-25-19 and on 7-27-19. All samples were stored at  $\leq 6^{\circ}$  Celsius. Moderately Hard Synthetic was used as a control and also to make the required dilutions in the test as described in EPA 821-R-02-013.

## TEST METHODS

Pace used EPA test method 1000.0 for conducting the Fathead Minnow, Pimephales promelas, Larval Survival and Growth Test. EPA test method 1002.0 was used for conducting the Cladoceran, Ceriodaphnia dubia, Survival and Reproduction Test. The tests were conducted to estimate the LC50, NOEC, and LOEC for survival, growth, and reproduction of these test species.

The Pimephales and Ceriodaphnia tests were initiated on 7-23-19 and carried out until 7-30-19. The Pimephales tests were conducted in 500 ml plastic jars with 250 ml of test solution. Ten larvae were placed in each of at least 4 replicates to make a total of 40 larvae per sample concentration. The Ceriodaphnia tests were carried out in 35ml vials containing 25 ml of test solution. One Neonate was placed in each of 10 replicates to make a total of 10 neonates per sample concentration.

## TEST ORGANISMS

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

**REFERENCE #60309541**

**RESULTS**

TABLE 1

Permittee: Mid-Missouri Energy, LLC Effluent discharge.

Date Sampled	No. 1: 7-22-19	9:00
	No. 2: 7-24-19	9:00
	No. 3: 7-26-19	9:00

Test Initiated: 13:00

Date: 7-23-19

Dilution Water used: Moderately Hard Synthetic

**FATHEAD MINNOW LARVAE GROWTH AND SURVIVAL**  
**(Pimephales promelas)**

DATA TABLE FOR GROWTH OF FATHEAD MINNOWS

Effluent Concentration (%)	Average Dry Weight in Milligrams in Replicate Chambers				Mean Dry Weight (mg)	CV% *
	A	B	C	D		
Control 0%	0.513	0.485	0.533	0.507	0.510	3.88
Dilution 1 6.25%	0.560	0.513	0.549	0.455	0.519	9.11
Dilution 2 12.5%	0.493	0.508	0.443	0.463	0.477	6.14
Dilution 3 25%	0.442	0.589	0.614	0.458	0.526	16.80
Dilution 4 50%	0.531	0.602	0.581	0.515	0.557	7.36
Dilution 5 100%	0.512	0.573	0.428	0.540	0.513	12.09

\* Coefficient of Variation = Standard Deviation X 100 / Mean

# REFERENCE #60309541

Permittee: Mid-Missouri Energy, LLC Effluent discharge.

## FATHEAD MINNOW SURVIVAL

Conc. %	Percent Survival in Replicate Chambers				Mean Percent Survival			CV %
	A	B	C	D	24hr	48hr	7 day	
Control 0%	100	100	100	100	100	100	100	0.00
Dilution 1 6.25%	100	100	100	90	100	100	97.5	5.94
Dilution 2 12.5%	100	100	100	90	100	100	97.5	5.94
Dilution 3 25%	100	100	100	100	100	100	100	0.00
Dilution 4 50%	100	100	100	100	100	100	100	0.00
Dilution 5 100%	100	100	90	100	100	100	97.5	5.94



Permittee: Mid-Missouri Energy, LLC Effluent discharge.

### **CERIODAPHNIA SURVIVAL AND REPRODUCTION**

DATA TABLE FOR CERIODAPHNIA YOUNG PRODUCTION

Replicate	Control 0%	Dilution 1 6.25%	Dilution 2 12.5%	Dilution 3 25%	Dilution 4 50%	Dilution 5 100%
1	18	22	24	27	20	19
2	26	20	18	19	26	22
3	20	23	26	24	24	25
4	17	18	17	24	22	16
5	26	24	18	23	17	25
6	20	19	22	23	21	20
7	24	25	24	20	24	23
8	27	17	24	28	21	26
9	16	23	23	26	24	18
10	24	26	26	18	29	28
Mean	21.8	22.8	22.6	22.7	22.5	23.5
SD	4.077	3.057	3.360	3.360	3.360	3.882
CV %	18.70	14.09	15.13	14.48	14.74	17.48

REFERENCE #60309541

Permittee: Mid-Missouri Energy, LLC Effluent discharge.

CERIODAPHNIA MEAN PERCENT SURVIVAL

Percent Effluent (%)						
Time Elapsed	Control 0%	Dilution 1 6.25%	Dilution 2 12.5%	Dilution 3 25%	Dilution 4 50%	Dilution 5 100%
24 hrs	100	100	100	100	100	100
48 hrs	100	100	100	100	100	100
7-day	100	100	100	100	100	100
SD	0.000	0.000	0.000	0.000	0.000	0.000
CV %	0.00	0.00	0.00	0.00	0.00	0.00

**TABLE 2**  
**SUMMARY OF TEST CONDITIONS FOR THE FATHEAD MINNOW**  
**(*Pimephales promelas*) LARVAL SURVIVAL AND GROWTH TEST**

1. Test type	Static renewal
2. Temperature	25 degrees Celsius
3. Light quality	Ambient laboratory light
4. Light intensity	Ambient laboratory levels
5. Photoperiod	16 hr light, 8 hr dark
6. Test chamber size	500 ml
7. Test solution volume	250 ml
8. Renewal of test concentrations	Daily
9. Age of test organism	< 24 hours
10. No. larvae/chamber	10
11. No. replicates/concentration	4
12. No. larvae/concentration	40
13. Feeding regime	Feed 0.15 g newly hatched brine shrimp nauplii two times daily. Larvae are not fed 12 hours prior to termination of test.
14. Cleaning	Siphon daily, immediately before test solution renewal
15. Aeration	None

**TABLE 2 (CONT.)**

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

**TABLE 2 (CONT.)**

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

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

**TABLE 2 (CONT.)**

# REFERENCE #60309541

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

**TABLE 2 (SECTION 2)**

**BIOMONITORING CHRONIC TOXICITY REPORT  
FATHEAD MINNOW (Pimephales promelas)  
CHEMICAL PARAMETERS CHART**

Permittee: Mid-Missouri Energy, LLC Effluent discharge.

ANALYSTS: Pace Analytical Services, Inc.  
Timothy Harrell  
Mike Bollin

SAMPLE NO. 1 COLLECTED: DATE: 7-22-19

SAMPLE NO. 2 COLLECTED: DATE: 7-24-19

SAMPLE NO. 3 COLLECTED: DATE: 7-26-19

**TABLE 2 (SECTION 2)  
INITIAL WATER QUALITY  
EFFLUENT CONCENTRATION**

	Control	100%
PH	7.62	7.89
D.O.	8.20	7.90
Temp	25.0	25.0
Alk	62	142
Hard	90	630
Cond	316	1200
Chlorine	<0.1	<0.1

- \* D.O. is reported as mg/L
- Alkalinity is reported as mg/L CaCO<sub>3</sub>
- Hardness is reported as mg/L CaCO<sub>3</sub>
- Conductance is reported as umhos
- Chlorine is reported as mg/L

## TEST WATER QUALITY

## 24-Hour Water Quality Measurements

Effluent Concentration (%)	PH	D.O. (mg/l)	Temperature (C)
0% Control	7.78	7.10	25.1
6.25% Effluent	7.91	7.10	24.9
12.5% Effluent	8.11	7.10	24.9
25% Effluent	8.19	7.10	24.9
50% Effluent	8.25	7.10	24.9
100% Effluent	8.32	7.10	24.9

## 48-Hour Water Quality Measurements

Effluent Concentration (%)	PH	D.O. (mg/l)	Temperature (C)
0% Control	7.76	7.00	25.3
6.25% Effluent	7.90	7.00	25.0
12.5% Effluent	8.12	7.00	25.0
25% Effluent	8.21	7.00	25.0
50% Effluent	8.26	7.10	25.0
100% Effluent	8.33	7.10	25.0

REFERENCE #60309541

FINAL WATER QUALITY

EFFLUENT CONCENTRATION

	Control	100%
pH	7.79	8.19
D.O.	7.10	6.80
Temp	24.8	24.8
Alk	64	138
Hard	96	596
Cond	344	1413

- \* D.O. is reported as mg/L
- Alkalinity is reported as mg/L CaCO<sub>3</sub>
- Hardness is reported as mg/L CaCO<sub>3</sub>
- Conductance is reported as umhos



### TEST VALIDITY

The Pimephales promelas control survival rate was 100. The mean dry weight (growth) of the Pimephales promelas was determined at 0.510 g/organism in the controls. The percent coefficient of variation (%CV) values for the fathead minnow control for survival and growth were 0.00 and 3.88. The Ceriodaphnia dubia survival rates were 100 in the control. The Ceriodaphnia in the control produced an average of 21.8 young over the seven-day exposure period. Percent CV values for Ceriodaphnia dubia control survival and reproduction was 0.00 and 18.70. Control data met or exceeded all criteria set out by EPA 821-R-02-013 for test acceptance.

### CONCLUSIONS

The No Observed Effect Concentration (NOEC) for Pimephales promelas was 100% for survival and 100% for growth. The No Observed Effect Concentration (NOEC) for Ceriodaphnia dubia was 100% for Survival and 100% for Reproduction. The tests were ran using an synthetic control against effluent concentrations of 6.25%, 12.5%, 25%, 50%, and 100%. The effluent sampled on 7-22-19, 7-24-19, and 7-26-19 exhibited acceptable chronic toxicity in Pimephales promelas and in Ceriodaphnia dubia during the exposure period as described in EPA 821-R-02-013.

## APPENDIX C

## REFERENCE TOXICANTS

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

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

Start: 7/23/19 13:00

End: 7/30/19 12:00

Reference Toxicant (NaCl) Pimephales promelas

Concentration of Toxicant	Avg. # of Live Organisms/replicate			
	0 hrs	24 hrs	48 hrs	7 days
10 g/l	40	7	2	0
8 g/l	40	34	29	6
6 g/l	40	37	33	25
4 g/l	40	40	40	40
2 g/l	40	40	40	40

IC25 (5.15 g/l Sodium Chloride)

Survival NOEC: 4.0 g/l

Reference Toxicant (NaCl) Ceriodaphnia Dubia

Concentration of Toxicant	Avg. # of Live Organisms/replicate			
	0 hrs	24 hrs	48 hrs	7 days
2.5 g/l	10	4	0	0
2.0 g/l	10	10	8	2
1.5 g/l	10	10	10	10
1.0 g/l	10	10	10	10
0.5 g/l	10	10	10	10

IC25 (1.18 g/l Sodium Chloride)

Survival NOEC: 1.5 g/l

Submitted By:   
Timothy Harrell, Technical Director

60309541 MidMO FATHEAD SURVIVAL

File: 6309541A Transform: ARC SINE(SQUARE ROOT(Y))

Chi-square test for normality: actual and expected frequencies

---

INTERVAL	<-1.5	-1.5 to <-0.5	-0.5 to 0.5	>0.5 to 1.5	>1.5
EXPECTED	1.608	5.808	9.168	5.808	1.608
OBSERVED	0	3	21	0	0

---

~~Calculated Chi-Square goodness of fit test statistic = 25.6517~~

Table Chi-Square value (alpha = 0.01) = 13.277

Data FAIL normality test. Try another transformation.

Warning - The first three homogeneity tests are sensitive to non-normal data and should not be performed.

60309541 MidMO FATHEAD SURVIVAL

File: 6309541A Transform: ARC SINE(SQUARE ROOT(Y))

Shapiro - Wilk's test for normality

D = 0.060

W = 0.668

Critical W (P = 0.05) (n = 24) = 0.916

Critical W (P = 0.01) (n = 24) = 0.884

Data FAIL normality test. Try another transformation.

Warning - The first three homogeneity tests are sensitive to non-normal data and should not be performed.

60309541 MidMO FATHEAD SURVIVAL

File: 6309541A Transform: ARC SINE(SQUARE ROOT(Y))

SUMMARY STATISTICS ON TRANSFORMED DATA TABLE 1 of 2

GRP	IDENTIFICATION	N	MIN	MAX	MEAN
1	CONTROL	4	1.412	1.412	1.412
2	6.25%	4	1.249	1.412	1.371
3	12.5%	4	1.249	1.412	1.371
4	25%	4	1.412	1.412	1.412
5	50%	4	1.412	1.412	1.412
6	100%	4	1.249	1.412	1.371

60309541 MidMO FATHEAD SURVIVAL

File: 6309541A Transform: ARC SINE(SQUARE ROOT(Y))

SUMMARY STATISTICS ON TRANSFORMED DATA TABLE 2 of 2

GRP	IDENTIFICATION	VARIANCE	SD	SEM	C.V. %
1	CONTROL	0.000	0.000	0.000	0.00
2	6.25%	0.007	0.081	0.041	5.94
3	12.5%	0.007	0.081	0.041	5.94
4	25%	0.000	0.000	0.000	0.00
5	50%	0.000	0.000	0.000	0.00
6	100%	0.007	0.081	0.041	5.94

60309541 MidMO FATHEAD SURVIVAL

File: 6309541A Transform: ARC SINE(SQUARE ROOT(Y))

ANOVA TABLE

SOURCE	DF	SS	MS	F
Between	5	0.010	0.002	0.600
Within (Error)	18	0.060	0.003	
Total	23	0.070		

Critical F value = 2.77 (0.05,5,18)

Since  $F < \text{Critical } F$  FAIL TO REJECT  $H_0$ : All equal

60309541 MidMO FATHEAD SURVIVAL

File: 6309541A Transform: ARC SINE(SQUARE ROOT(Y))

## DUNNETT'S TEST - TABLE 1 OF 2

Ho:Control&lt;Treatment

GROUP	IDENTIFICATION	TRANSFORMED MEAN	MEAN CALCULATED IN ORIGINAL UNITS	T STAT	SIG
1	CONTROL	1.412	1.000		
2	6.25%	1.371	0.975	1.000	
3	12.5%	1.371	0.975	1.000	
4	25%	1.412	1.000	0.000	
5	50%	1.412	1.000	0.000	
6	100%	1.371	0.975	1.000	

Dunnett table value = 2.41 (1 Tailed Value, P=0.05, df=18,5)

60309541 MidMO FATHEAD SURVIVAL

File: 6309541A Transform: ARC SINE(SQUARE ROOT(Y))

## DUNNETT'S TEST - TABLE 2 OF 2

Ho:Control&lt;Treatment

GROUP	IDENTIFICATION	NUM OF REPS	Minimum Sig Diff (IN ORIG. UNITS)	% of CONTROL	DIFFERENCE FROM CONTROL
1	CONTROL	4			
2	6.25%	4	0.040	4.0	0.025
3	12.5%	4	0.040	4.0	0.025
4	25%	4	0.040	4.0	0.000
5	50%	4	0.040	4.0	0.000
6	100%	4	0.040	4.0	0.025

60309541 MIDMo FATHEAD GROWTH  
File: 6309541B Transform: NO TRANSFORMATION

Shapiro - Wilk's test for normality

---

D = 0.050

W = 0.972

Critical W (P = 0.05) (n = 24) = 0.916

Critical W (P = 0.01) (n = 24) = 0.884

---

Data PASS normality test at P=0.01 level. Continue analysis.

60309541 MIDMo FATHEAD GROWTH  
File: 6309541B Transform: NO TRANSFORMATION

Bartlett's test for homogeneity of variance

Calculated B1 statistic = 6.78

---

Table Chi-square value = 15.09 (alpha = 0.01, df = 5)

Table Chi-square value = 11.07 (alpha = 0.05, df = 5)

---

Data PASS B1 homogeneity test at 0.01 level. Continue analysis.

60309541 MIDMo FATHEAD GROWTH

File: 6309541B Transform: NO TRANSFORMATION

SUMMARY STATISTICS ON TRANSFORMED DATA TABLE 1 of 2

GRP	IDENTIFICATION	N	MIN	MAX	MEAN
1	CONTROL	4	0.485	0.533	0.510
2	6.25%	4	0.455	0.560	0.519
3	12.5%	4	0.443	0.508	0.477
4	25%	4	0.442	0.614	0.526
5	50%	4	0.515	0.602	0.557
6	100%	4	0.428	0.573	0.513

60309541 MIDMo FATHEAD GROWTH

File: 6309541B Transform: NO TRANSFORMATION

SUMMARY STATISTICS ON TRANSFORMED DATA TABLE 2 of 2

GRP	IDENTIFICATION	VARIANCE	SD	SEM	C.V. %
1	CONTROL	0.000	0.020	0.010	3.88
2	6.25%	0.002	0.047	0.024	9.11
3	12.5%	0.001	0.029	0.015	6.14
4	25%	0.008	0.088	0.044	16.80
5	50%	0.002	0.041	0.020	7.36
6	100%	0.004	0.062	0.031	12.09

60309541 MIDMo FATHEAD GROWTH

File: 6309541B Transform: NO TRANSFORMATION

ANOVA TABLE

SOURCE	DF	SS	MS	F
Between	5	0.014	0.003	0.968
Within (Error)	18	0.050	0.003	
Total	23	0.064		

Critical F value = 2.77 (0.05,5,18)

Since  $F < \text{Critical } F$  FAIL TO REJECT  $H_0$ : All equal

60309541 MIDMo FATHEAD GROWTH

File: 6309541B Transform: NO TRANSFORMATION

## DUNNETT'S TEST

## TABLE 1 OF 2

Ho:Control&lt;Treatment

GROUP	IDENTIFICATION	TRANSFORMED MEAN	MEAN CALCULATED IN ORIGINAL UNITS	T STAT	SIG
1	CONTROL	0.510	0.510		
2	6.25%	0.519	0.519	-0.260	
3	12.5%	0.477	0.477	0.875	
4	25%	0.526	0.526	-0.434	
5	50%	0.557	0.557	-1.276	
6	100%	0.513	0.513	-0.100	

Dunnett table value = 2.41 (1 Tailed Value, P=0.05, df=18,5)

60309541 MIDMo FATHEAD GROWTH

File: 6309541B Transform: NO TRANSFORMATION

## DUNNETT'S TEST

## TABLE 2 OF 2

Ho:Control&lt;Treatment

GROUP	IDENTIFICATION	NUM OF REPS	Minimum Sig Diff (IN ORIG. UNITS)	% of CONTROL	DIFFERENCE FROM CONTROL
1	CONTROL	4			
2	6.25%	4	0.090	17.7	-0.010
3	12.5%	4	0.090	17.7	0.033
4	25%	4	0.090	17.7	-0.016
5	50%	4	0.090	17.7	-0.048
6	100%	4	0.090	17.7	-0.004



## FISHER'S EXACT TEST

=====			
NUMBER OF			
IDENTIFICATION	ALIVE	DEAD	TOTAL ANIMALS
CONTROL	10	0	10
6.25%	10	0	10
TOTAL	20	0	20
=====			

CRITICAL FISHER'S VALUE (10,10,10) ( $p=0.05$ ) IS 6. b VALUE IS 10.  
 Since b is greater than 6 there is no significant difference  
 between CONTROL and TREATMENT at the 0.05 level.

## FISHER'S EXACT TEST

=====			
NUMBER OF			
IDENTIFICATION	ALIVE	DEAD	TOTAL ANIMALS
CONTROL	10	0	10
12.5%	10	0	10
TOTAL	20	0	20
=====			

CRITICAL FISHER'S VALUE (10,10,10) ( $p=0.05$ ) IS 6. b VALUE IS 10.  
 Since b is greater than 6 there is no significant difference  
 between CONTROL and TREATMENT at the 0.05 level.

## FISHER'S EXACT TEST

=====			
NUMBER OF			
IDENTIFICATION	ALIVE	DEAD	TOTAL ANIMALS
CONTROL	10	0	10
25%	10	0	10
=====			

TOTAL 20 0 20

CRITICAL FISHER'S VALUE (10,10,10) (p=0.05) IS 6. b VALUE IS 10.  
 Since b is greater than 6 there is no significant difference  
 between CONTROL and TREATMENT at the 0.05 level.

# FISHER'S EXACT TEST

NUMBER OF

IDENTIFICATION	ALIVE	DEAD	TOTAL ANIMALS
CONTROL	10	0	10
50%	10	0	10
TOTAL	20	0	20

CRITICAL FISHER'S VALUE (10,10,10) (p=0.05) IS 6. b VALUE IS 10.  
 Since b is greater than 6 there is no significant difference  
 between CONTROL and TREATMENT at the 0.05 level.

# FISHER'S EXACT TEST

NUMBER OF

IDENTIFICATION	ALIVE	DEAD	TOTAL ANIMALS
CONTROL	10	0	10
100%	10	0	10
TOTAL	20	0	20

CRITICAL FISHER'S VALUE (10,10,10) (p=0.05) IS 6. b VALUE IS 10.  
 Since b is greater than 6 there is no significant difference  
 between CONTROL and TREATMENT at the 0.05 level.

# SUMMARY OF FISHER'S EXACT TESTS

NUMBER

NUMBER

SIG

GROUP	IDENTIFICATION	EXPOSED	DEAD	(P= .05)
	CONTROL	10	0	
1	6.25%	10	0	
2	12.5%	10	0	
3	25%	10	0	
4	50%	10	0	
5	100%	10	0	

60309541 MIDMO CERIODAPHNIA DUBIA SURVIVA  
 File: 6309541D Transform: NO TRANSFORM

SUMMARY STATISTICS ON TRANSFORMED DATA TABLE 1 of 2

GRP	IDENTIFICATION	N	MIN	MAX	MEAN
1	CONTROL	10	1.000	1.000	1.000
2	6.25%	10	1.000	1.000	1.000
3	12.5%	10	1.000	1.000	1.000
4	25%	10	1.000	1.000	1.000
5	50%	10	1.000	1.000	1.000
6	100%	10	1.000	1.000	1.000

60309541 MIDMO CERIODAPHNIA DUBIA SURVIVA  
 File: 6309541D Transform: NO TRANSFORM

SUMMARY STATISTICS ON TRANSFORMED DATA TABLE 2 of 2

GRP	IDENTIFICATION	VARIANCE	SD	SEM	C.V. %
1	CONTROL	0.000	0.000	0.000	0.00
2	6.25%	0.000	0.000	0.000	0.00
3	12.5%	0.000	0.000	0.000	0.00
4	25%	0.000	0.000	0.000	0.00
5	50%	0.000	0.000	0.000	0.00
6	100%	0.000	0.000	0.000	0.00

60309541 MIDMO CERIODAPHNIA DUBIA REPRODU  
File: 6309541E Transform: NO TRANSFORMATION

Chi-square test for normality: actual and expected frequencies

---

INTERVAL	<-1.5	-1.5 to <-0.5	-0.5 to 0.5	>0.5 to 1.5	>1.5
EXPECTED	4.020	14.520	22.920	14.520	4.020
OBSERVED	5	16	17	21	1

---

Calculated Chi-Square goodness of fit test statistic = 7.0795

Table Chi-Square value (alpha = 0.01) = 13.277

Data PASS normality test. Continue analysis.

60309541 MIDMO CERIODAPHNIA DUBIA REPRODU  
File: 6309541E Transform: NO TRANSFORMATION

Bartlett's test for homogeneity of variance

Calculated B1 statistic = 1.01

---

Table Chi-square value = 15.09 (alpha = 0.01, df = 5)  
Table Chi-square value = 11.07 (alpha = 0.05, df = 5)

Data PASS B1 homogeneity test at 0.01 level. Continue analysis.

60309541 MIDMO CERIODAPHNIA DUBIA REPRODU  
File: 6309541E Transform: NO TRANSFORMATION

SUMMARY STATISTICS ON TRANSFORMED DATA TABLE 1 of 2

GRP	IDENTIFICATION	N	MIN	MAX	MEAN
1	CONTROL	10	16.000	27.000	21.800
2	6.25%	10	17.000	26.000	21.700
3	12.5%	10	17.000	26.000	22.200
4	25%	10	18.000	28.000	23.200
5	50%	10	17.000	29.000	22.800
6	100%	10	16.000	28.000	22.200

60309541 MIDMO CERIODAPHNIA DUBIA REPRODU  
File: 6309541E Transform: NO TRANSFORMATION

SUMMARY STATISTICS ON TRANSFORMED DATA TABLE 2 of 2

GRP	IDENTIFICATION	VARIANCE	SD	SEM	C.V. %
1	CONTROL	16.622	4.077	1.289	18.70
2	6.25%	9.344	3.057	0.967	14.09
3	12.5%	11.289	3.360	1.062	15.13
4	25%	11.289	3.360	1.062	14.48
5	50%	11.289	3.360	1.062	14.74
6	100%	15.067	3.882	1.227	17.48

60309541 MIDMO CERIODAPHNIA DUBIA REPRODU  
File: 6309541E Transform: NO TRANSFORMATION

ANOVA TABLE

SOURCE	DF	SS	MS	F
Between	5	16.883	3.377	0.270
Within (Error)	54	674.100	12.483	
Total	59	690.983		

Critical F value = 2.45 (0.05,5,40)  
Since  $F < \text{Critical } F$  FAIL TO REJECT  $H_0$ : All equal

60309541 MIDMO CERIODAPHNIA DUBIA REPRODU  
File: 6309541E Transform: NO TRANSFORMATION

## DUNNETT'S TEST

## TABLE 1 OF 2

Ho:Control&lt;Treatment

GROUP	IDENTIFICATION	TRANSFORMED MEAN	MEAN CALCULATED IN ORIGINAL UNITS	T STAT	SIG
1	CONTROL	21.800	21.800		
2	6.25%	21.700	21.700	0.063	
3	12.5%	22.200	22.200	-0.253	
4	25%	23.200	23.200	-0.886	
5	50%	22.800	22.800	-0.633	
6	100%	22.200	22.200	-0.253	

Dunnett table value = 2.31 (1 Tailed Value, P=0.05, df=40,5)

60309541 MIDMO CERIODAPHNIA DUBIA REPRODU

File: 6309541E

Transform: NO TRANSFORMATION

## DUNNETT'S TEST

## TABLE 2 OF 2

Ho:Control&lt;Treatment

GROUP	IDENTIFICATION	NUM OF REPS	Minimum Sig Diff (IN ORIG. UNITS)	% of CONTROL	DIFFERENCE FROM CONTROL
1	CONTROL	10			
2	6.25%	10	3.650	16.7	0.100
3	12.5%	10	3.650	16.7	-0.400
4	25%	10	3.650	16.7	-1.400
5	50%	10	3.650	16.7	-1.000
6	100%	10	3.650	16.7	-0.400

Conc. ID	1	2	3	4	5	6
Conc. Tested	0	6.25	12.5	25	50	100
Response 1	18	22	24	27	20	19
Response 2	26	20	18	19	26	22
Response 3	20	23	26	24	24	25
Response 4	17	18	17	24	22	16
Response 5	26	24	18	23	17	25
Response 6	20	19	22	23	21	20
Response 7	24	25	24	20	24	23
Response 8	27	17	24	28	21	26
Response 9	16	23	23	26	24	18
Response 10	24	26	26	18	29	28

\*\*\* Inhibition Concentration Percentage Estimate \*\*\*

Toxicant/Effluent: Mid MO

Test Start Date: 7/23/19 Test Ending Date: 7/30/19

Test Species: Dubia

Test Duration: 7 day

DATA FILE:

Conc. ID	Number Replicates	Concentration	Response Means	Std. Dev.	Pooled Response Means
1	10	0.000	21.800	4.077	22.340
2	10	6.250	21.700	3.057	22.340
3	10	12.500	22.200	3.360	22.340
4	10	25.000	23.200	3.360	22.340
5	10	50.000	22.800	3.360	22.340
6	10	100.000	22.200	3.882	22.200

\*\*\* No Linear Interpolation Estimate can be calculated from the input data since none of the (possibly pooled) group response means were less than 75% of the control response mean.



Conc. ID	1	2	3	4	5	6
Conc. Tested	0	6.25	12.5	25	50	100
Response 1	.513	.560	.493	.442	.531	.512
Response 2	.485	.513	.508	.589	.602	.573
Response 3	.533	.549	.443	.614	.581	.428
Response 4	.507	.455	.463	.458	.515	.540

\*\*\* Inhibition Concentration Percentage Estimate \*\*\*

Toxicant/Effluent: Mid MO

Test Start Date: 7/23/19 Test Ending Date: 7/30/19

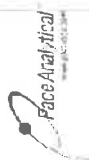
Test Species: Fathead

Test Duration: 7 day

DATA FILE: \_\_\_\_\_

Conc. ID	Number Replicates	Concentration	Response Means	Std. Dev.	Pooled Response Means
1	4	0.000	0.510	0.020	0.518
2	4	6.250	0.519	0.047	0.518
3	4	12.500	0.477	0.029	0.518
4	4	25.000	0.526	0.088	0.518
5	4	50.000	0.557	0.041	0.518
6	4	100.000	0.513	0.062	0.513

\*\*\* No Linear Interpolation Estimate can be calculated from the input data since none of the (possibly pooled) group response means were less than 75% of the control response mean.



# CHAIN-OF-CUSTODY / Analytical Request Document

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

Section A		Section B		Section C	
Required Client Information:		Required Project Information:		Invoice Information:	
Company:	Mid-Missouri Energy, LLC	Report To:	David Stanton	Attention:	Matt Endicott
Address:	15311 N. Saline 65 Hwy	Copy To:		Company Name:	Mid-Missouri Energy, LLC
Malta Bend, MO 65339		Purchase Order No.		Address:	
Email To:	davidst@midmissourienergy.com	Client Project ID:	WET Testing	Pace Quote Reference:	
Phone:	660-595-0144	Container Order Number:		Pace Project Manager:	Jamie Church
Requested Due Date/TAT:				Pace Profile #:	11088, line 2
				MO	
				State / Location	MO
				Regulatory Agency	MO/NN

ITEM#	MATRIX	CODE	COLLECTED		SAMPLE TYPE (G=GRAB C=COMP)	DATE	TIME	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS	TEMP in C	Received on Ice (Y/N)	Custody Sealed (Y/N)	Cooler (Y/N)	Samples Intact (Y/N)
			START	END														
1	WET TEST (MONDAY)		DATE 7-22-0900	TIME														
2																		
3																		
4																		
5																		
6																		
7																		
8																		
9																		
10																		
11																		
12																		

SAMPLER NAME AND SIGNATURE	
PRINT Name of SAMPLER:	David Stanton
SIGNATURE of SAMPLER:	[Signature]
DATE Signed: 7-22-19	

[illegible]

# Sample Condition Upon Receipt

Client Name:

Mid-Missouri Energy

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

Tracking #:

Pace Shipping Label Used? Yes ☐ No ☒

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

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

Thermometer Used: T-24.3 Type of Ice: Wet ☒ Blue ☐ None ☐

Cooler Temperature (°C): As-read 3.1 Corr. Factor -0.9 Corrected 2.2

Date and initials of person examining contents:

Temperature should be above freezing to 15°C

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

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

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

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

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

Sufficient volume: ☒ Yes ☐ No ☐ N/A

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

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

Containers intact: ☒ Yes ☐ No ☐ N/A

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

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

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

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

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

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

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

Cyanide water sample checks:

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

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

Trip Blank present: ☐ Yes ☐ No ☒ N/A

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

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

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

Client Notification/ Resolution: Copy COC to Client? Y / N

Field Data Required? Y / N

Person Contacted: Date/Time:

Comments/ Resolution:

Project Manager Review: Date:

SAMPLE NAME AND SIGNATURE PRINT NAME of SAMPLER: <u>DAVID S. ANTON</u> SIGNATURE of SAMPLER: <u>[Signature]</u>		TEMP in C Received on Ice (Y/N) Custody Sealed (Y/N) Samples Intact (Y/N)
DATE Signed: <u>7-26-14</u>		

Client Name:

Mid-Missouri

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

Tracking #:

Pace Shipping Label Used? Yes ☐ No ☒

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

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

Thermometer Used: T-243 Type of Ice: Wet ☒ Blue ☐ None ☐

Cooler Temperature (°C): As-read 3.1 Corr. Factor -0.9 Corrected 2.2

Date and initials of person examining contents:

Temperature should be above freezing to 6°C

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

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

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

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

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

Sufficient volume: ☒ Yes ☐ No ☐ N/A

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

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

Containers intact: ☒ Yes ☐ No ☐ N/A

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

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

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

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

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

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

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

Cyanide water sample checks:

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

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

Strip Blank present: ☐ Yes ☐ No ☒ N/A

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

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

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

Client Notification/ Resolution: Copy COC to Client? Y / N

Person Contacted: Date/Time: Field Data Required? Y / N

Comments/ Resolution:

Object Manager Review:

Date:

July 17, 2020

David Stanton  
Mid-Missouri Energy, LLC.  
15311 N. Saline 65 Hwy  
Malta Bend, MO 65339

RE: Project: WET TESTING  
Pace Project No.: 60341805

Dear David Stanton:

Enclosed are the analytical results for sample(s) received by the laboratory on July 07, 2020. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - SE Kansas

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

Sincerely,



Jamie Church  
jamie.church@pacelabs.com  
314-838-7223  
Project Manager

Enclosures



## REPORT OF LABORATORY ANALYSIS

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## CERTIFICATIONS

Project: WET TESTING

Pace Project No.: 60341805

---

### **Pace Analytical Services Southeast Kansas**

808 West McKay, Frontenac, KS 66763

Arkansas Certification #: 18-016-0

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10426

Louisiana Certification #: 03055

Oklahoma Certification #: 9935

Texas Certification #: T104704407

Utah Certification #: KS00021

---

## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: WET TESTING

Pace Project No.: 60341805

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60341805001	COMBINED OUTFALL 005	Water	07/06/20 08:00	07/07/20 08:45

## REPORT OF LABORATORY ANALYSIS

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## SAMPLE ANALYTE COUNT

Project: WET TESTING

Pace Project No.: 60341805

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60341805001	COMBINED OUTFALL 005	EPA 821/R-02/013	TDH	1	PASI-SE

PASI-SE = Pace Analytical Services - SE Kansas

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: WET TESTING

Pace Project No.: 60341805

<b>Sample: COMBINED OUTFALL 005</b>		<b>Lab ID: 60341805001</b>	Collected: 07/06/20 08:00	Received: 07/07/20 08:45	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>Chronic Toxicity</b>		Analytical Method: EPA 821/R-02/013 Pace Analytical Services - SE Kansas						
Toxicity, Chronic	<b>Complete</b>		1.0	1		07/07/20 11:00		

## REPORT OF LABORATORY ANALYSIS

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## QUALIFIERS

Project: WET TESTING

Pace Project No.: 60341805

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### DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

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

TNI - The NELAC Institute.

## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.

## QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: WET TESTING

Pace Project No.: 60341805

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60341805001	COMBINED OUTFALL 005	EPA 821/R-02/013	665943		

## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.



Sample Condition Upon Receipt

WO#: 60341805



Client Name: Mid-Missouri Energy

7/7/20

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

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

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

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

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

Cooler Temperature (°C): As-read 3.4 Corr. Factor -1.0 Corrected 2.4

Date and initials of person examining contents:

7/7/20  
EO 8:45

Temperature should be above freezing to 6°C

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

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

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

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

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

ITEM#	MATRIX Drinking Water Water Waste Water Product Soil/Solid Oil Wipe Air Other Tissue	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				# OF CONTAINERS	PRESERVATIVES	Y/N	Requested Analysis Filtered (Y/N)	Residual Chlorine (Y/N)								
					START		END							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
					DATE	TIME	DATE	TIME													
1	COMBINED OUTFALL O&S		✓	G	7-6-20	0800			17	✓			N								
2																					
3																					
4																					
5																					
6																					
7																					
8																					
9																					
10																					
11																					
12																					
			RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION			DATE	TIME	SAMPLE CONDITIONS										
						Ethanal approved for			7/7/20	8:45	2.4 Y Y Y										
			ADDITIONAL COMMENTS																		

Page 9 of 40

REFERENCE #60341805

**CHRONIC TOXICITY TEST FOR  
MID-MISSOURI ENERGY, LLC**

PERMIT # MO-0131008

PERFORMED ON:

Pimephales promelas

and

Ceriodaphnia dubia

PREPARED FOR:

Mid-Missouri Energy, LLC  
Attn: David Stanton  
15311 N. Saline 65 HWY  
Malta Bend, MO 65339  
1-660-595-0144

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

July 16, 2020



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## SUMMARY

A Chronic Whole Effluent Toxicity Test using the 7-day chronic fathead minnows (Pimephales promelas), static renewal larval survival and growth test, and three brood 7-day chronic Cladoceran (Ceriodaphnia dubia), static renewal survival and reproduction test, was conducted on effluent discharge water collected at MID-MISSOURI ENERGY, LLC effluent discharge from July 6, 2020 to July 10, 2020. All the test methods followed are as listed in EPA 821-R-02-013, "Short Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms."

Statistically significant ( $p < 0.05$ ) mortality is determined by Dunnet's procedure using average percent survival of each test concentration versus the average survival of the controls. If significant mortality occurs, median lethal concentrations are calculated using effluent concentrations and their corresponding percent mortality data. The 95% confidence intervals are calculated where appropriate by the Spearman-Kärber method. Statistical analysis is accomplished by following steps in EPA 821-R-02-013, November 2002 and by use of Toxstat version 3.4.

In minnow section of testing, it was observed that the effluent had no significant effect on the survival of the larvae at the 100% concentration. No significant mortality was observed in the other effluent concentrations after the 7-day exposure period. The No Observed Effect Concentration (NOEC) was determined to be 100% for survival. No significant reduction in growth was observed in the 100% effluent concentration. The Toxic Units is  $< 1$ . The IC<sub>25</sub> is  $> 100$ . The NOEC for growth in effluent was determined to be 100%.

In Cladoceran section of testing, it was observed that the effluent had no significant effect on the survival of the organisms in the 100% effluent concentration. No significant mortality was observed in the other effluent concentrations after the 7-day exposure period. The No Observed Effect Concentration (NOEC) was determined to be 100% for survival. No significant reduction in reproduction was observed in the 100% effluent concentrations. The Toxic Units is  $< 1$ . The IC<sub>25</sub> is  $> 100$ . The NOEC for reproduction in effluent was determined to be 100%.

The chronic toxicity exhibited by the fathead minnows and the Ceriodaphnia treated by the effluent sampled from July 6 to July 10 from the MID-MISSOURI ENERGY, LLC effluent discharge, is acceptable as described in EPA 821-R-02-013.

## INTRODUCTION

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

## TEST MATERIAL

MID-MISSOURI ENERGY, LLC personnel collected sampling of the effluent. A sample of the effluent was delivered to Pace by commercial carrier on 7-7-20. Subsequent samples followed by delivery on 7-9-20 and on 7-11-20. All samples were stored at  $\leq 6^{\circ}$  Celsius. Moderately Hard Synthetic was used as a control and also to make the required dilutions in the test as described in EPA 821-R-02-013.

## TEST METHODS

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

The Pimephales and Ceriodaphnia tests were initiated on 7-7-20 and carried out until 7-14-20. The Pimephales tests were conducted in 500 ml plastic jars with 250 ml of test solution. Ten larvae were placed in each of at least 4 replicates to make a total of 40 larvae per sample concentration. The Ceriodaphnia tests were carried out in 35ml vials containing 25 ml of test solution. One Neonate was placed in each of 10 replicates to make a total of 10 neonates per sample concentration.

## TEST ORGANISMS

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

TABLE 1

Permittee: MID-MISSOURI ENERGY, LLC Effluent discharge.

Date Sampled No. 1: 7-6-20 8:00

No. 2: 7-8-20 8:45

No. 3: 7-10-20 9:00

Test Initiated: 11:00

Date: 7-7-20

Dilution Water used: Moderately Hard Synthetic

## FATHEAD MINNOW LARVAE GROWTH AND SURVIVAL (*Pimephales promelas*)

### DATA TABLE FOR GROWTH OF FATHEAD MINNOWS

Effluent Concentration (%)	Average Dry Weight in Milligrams in Replicate Chambers				Mean Dry Weight (mg)	CV% *
	A	B	C	D		
Control 0%	0.392	0.503	0.458	0.422	0.444	10.78
Dilution 1 6.25%	0.414	0.421	0.351	0.443	0.407	9.70
Dilution 2 12.5%	0.440	0.377	0.422	0.385	0.406	7.38
Dilution 3 25%	0.451	0.432	0.436	0.417	0.434	3.22
Dilution 4 50%	0.453	0.417	0.410	0.403	0.421	5.29
Dilution 5 100%	0.387	0.411	0.523	0.441	0.441	13.46

\* Coefficient of Variation = Standard Deviation X 100 / Mean

REFERENCE #60341805

Permittee: MID-MISSOURI ENERGY, LLC Effluent discharge.

FATHEAD MINNOW SURVIVAL

Conc. %	Percent Survival in Replicate Chambers				Mean Percent Survival			CV %
	A	B	C	D	24hr	48hr	7 day	
Control 0%	100	100	100	100	100	100	100	0.0
Dilution 1 6.25%	100	100	100	100	100	100	100	0.0
Dilution 2 12.5%	100	100	100	100	100	100	100	0.0
Dilution 3 25%	100	100	100	100	100	100	100	0.0
Dilution 4 50%	100	100	100	100	100	100	100	0.0
Dilution 5 100%	100	100	100	100	100	100	100	0.0

# REFERENCE #60341805

Permittee: MID-MISSOURI ENERGY, LLC Effluent discharge.

## CERIODAPHNIA SURVIVAL AND REPRODUCTION

DATA TABLE FOR CERIODAPHNIA YOUNG PRODUCTION

Replicate	Control 0%	Dilution 1 6.25%	Dilution 2 12.5%	Dilution 3 25%	Dilution 4 50%	Dilution 5 100%
1	15	17	16	23	26	20
2	19	19	25	24	19	17
3	20	24	16	22	27	22
4	22	22	24	25	24	24
5	16	16	25	17	20	16
6	20	22	23	27	24	21
7	24	22	20	19	22	24
8	15	14	24	24	17	17
9	18	18	17	25	20	25
10	16	24	23	17	27	22
Mean	18.5	19.8	21.3	22.3	22.6	20.8
SD	3.064	3.490	3.713	3.498	3.534	3.225
CV %	16.56	17.62	17.43	15.68	15.64	15.50

## CERIODAPHNIA MEAN PERCENT SURVIVAL

Percent Effluent (%)						
Time Elapsed	Control 0%	Dilution 1 6.25%	Dilution 2 12.5%	Dilution 3 25%	Dilution 4 50%	Dilution 5 100%
24 hrs	100	100	100	100	100	100
48 hrs	100	100	100	100	100	100
7-day	100	100	100	100	100	100
SD	0.000	0.000	0.000	0.000	0.000	0.000
CV %	0.00	0.00	0.00	0.00	0.00	0.00

**TABLE 2**  
**SUMMARY OF TEST CONDITIONS FOR THE FATHEAD MINNOW**  
**(*Pimephales promelas*) LARVAL SURVIVAL AND GROWTH TEST**

1. Test type	Static renewal
2. Temperature	25 degrees Celsius
3. Light quality	Ambient laboratory light
4. Light intensity	Ambient laboratory levels
5. Photoperiod	16 hr light, 8 hr dark
6. Test chamber size	500 ml
7. Test solution volume	250 ml
8. Renewal of test concentrations	Daily
9. Age of test organism	< 24 hours
10. No. larvae/chamber	10
11. No. replicates/concentration	4
12. No. larvae/concentration	40
13. Feeding regime	Feed 0.15 g newly hatched brine shrimp nauplii two times daily. Larvae are not fed 12 hours prior to termination of test.
14. Cleaning	Siphon daily, immediately before test solution renewal
15. Aeration	None
16. Dilution Water	Moderately Hard Synthetic
17. Effluent concentrations	0%, 6.25%, 12.5%, 25%, 50%, 100%
18. Test duration	7 days
19. Endpoints	Survival and growth
20. Test acceptability	80% or greater survival in the controls, Average dry weight in controls >0.25 mg, Coefficient of variation in the control must not exceed 40%.

**TABLE 2 (CONT.)**  
**SUMMARY OF TEST CONDITIONS FOR THE CLADOCERAN**  
**(*Ceriodaphnia dubia*) SURVIVAL AND REPRODUCTION TEST**

1. Test type	Static renewal
2. Temperature	25 degrees Celsius
3. Light quality	Ambient laboratory light
4. Light intensity	Ambient laboratory levels
5. Photoperiod	16 hr light, 8 hr dark
6. Test chamber size	30 ml
7. Test solution volume	25 ml
8. Renewal of test concentrations	Daily
9. Age of test organism	< 24 hours
10. No. larvae/chamber	1
11. No. replicates/concentration	10
12. No. larvae/concentration	10
13. Feeding regime	Feed 0.1 ml YCT and 0.1 ml of Algae daily. Larvae are not fed 12 hours prior to termination of test.
14. Cleaning	Siphon daily, immediately before test solution renewal
15. Aeration	None
16. Dilution Water	Moderately Hard Synthetic
17. Effluent concentrations	0%, 6.25%, 12.5%, 25%, 50%, 100%
18. Test duration	Until 60% or more surviving control females have three broods or a maximum of 8 days.
19. Endpoints	Survival and Reproduction
20. Test acceptability	80% or greater survival in the controls, Average reproduction rate of 15 young / adult. Coefficient of variation in the control must not exceed 40%.



TABLE 2 (SECTION 2)

BIOMONITORING CHRONIC TOXICITY REPORT  
FATHEAD MINNOW (Pimephales promelas)  
CHEMICAL PARAMETERS CHART

Permittee: MID-MISSOURI ENERGY, LLC Effluent discharge.

ANALYSTS: Pace Analytical Services, Inc.

Timothy Harrell

Mike Bollin

Ethan Castagno

TABLE 2 (SECTION 2)  
INITIAL WATER QUALITY  
EFFLUENT CONCENTRATION

	Control	100%
PH	7.54	7.55
D.O.	8.20	8.10
Temp	25.0	25.0
Alk	58	60
Hard	88	820
Cond	360	1588
Chlorine	<0.1	<0.1

\* D.O. is reported as mg/L

Alkalinity is reported as mg/L CaCO<sub>3</sub>

Hardness is reported as mg/L CaCO<sub>3</sub>

Conductance is reported as umhos

Chlorine is reported as mg/L.

## REFERENCE #60341805

### TEST WATER QUALITY

#### 24-Hour Water Quality Measurements

Effluent Concentration (%)	PH	D.O. (mg/l)	Temperature (C)
0% Control	7.74	7.00	24.6
6.25% Effluent	7.78	7.00	25.3
12.5% Effluent	7.80	7.00	25.3
25% Effluent	7.83	7.10	25.3
50% Effluent	7.90	7.20	25.3
100% Effluent	7.96	7.20	25.3

#### 48-Hour Water Quality Measurements

Effluent Concentration (%)	PH	D.O. (mg/l)	Temperature (C)
0% Control	7.80	7.30	24.6
6.25% Effluent	7.85	7.30	25.0
12.5% Effluent	7.88	7.30	25.0
25% Effluent	7.90	7.30	25.0
50% Effluent	7.97	7.20	25.0
100% Effluent	8.03	7.20	25.0

## REFERENCE #60341805

### FINAL WATER QUALITY

#### EFFLUENT CONCENTRATION

	Control	100%
pH	7.78	8.06
D.O.	6.90	6.50
Temp	25.1	25.0
Alk	58	60
Hard	94	840
Cond	456	1944

- \* D.O. is reported as mg/L
- Alkalinity is reported as mg/L CaCO<sub>3</sub>
- Hardness is reported as mg/L CaCO<sub>3</sub>
- Conductance is reported as umhos

### TEST VALIDITY

The Pimephales promelas control survival rate was 100. The mean dry weight (growth) of the Pimephales promelas was determined at 0.444 g/organism in the controls. The percent coefficient of variation (%CV) values for the fathead minnow control for survival and growth were 0.00 and 10.78. The Ceriodaphnia dubia survival rates were 100 in the control. The Ceriodaphnia in the control produced an average of 18.5 young over the seven-day exposure period. Percent CV values for Ceriodaphnia dubia control survival and reproduction was 0.00 and 16.56. Control data met or exceeded all criteria set out by EPA 821-R-02-013 for test acceptance.

## REFERENCE #60341805

### REFERENCE TOXICANTS

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

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

Start: 6/16/20 11:40

End: 6/23/20 11:30

Reference Toxicant (NaCl)

Pimephales promelas

Concentration of Toxicant	Avg. # of Live Organisms/replicate			
	0 hrs	24 hrs	48 hrs	7 days
10 g/l	40	6	2	0
8 g/l	40	37	20	3
6 g/l	40	39	35	25
4 g/l	40	40	40	39
2 g/l	40	40	40	40

IC25 (5.10 g/l Sodium Chloride)

Survival NOEC: 4.0 g/l

Reference Toxicant (NaCl)

Ceriodaphnia Dubia

Concentration of Toxicant	Avg. # of Live Organisms/replicate			
	0 hrs	24 hrs	48 hrs	7 days
2.5 g/l	10	6	1	0
2.0 g/l	10	10	10	10
1.5 g/l	10	10	10	10
1.0 g/l	10	10	10	10
0.5 g/l	10	10	10	10

IC25 (1.12 g/l Sodium Chloride)

Survival NOEC: 1.5 g/l

Submitted By:



Timothy Harrell  
Technical Director

60341805 MIDMO FATHEAD SURVIVAL  
File: 6341805A Transform: ARC SINE(SQUARE ROOT(Y))

Chi-square test for normality: actual and expected frequencies

---

INTERVAL	<-1.5	-1.5 to <-0.5	-0.5 to 0.5	>0.5 to 1.5	>1.5
EXPECTED	1.608	5.808	9.168	5.808	1.608
OBSERVED	0	0	24	0	0

---

Calculated Chi-Square goodness of fit test statistic = 38.8272  
Table Chi-Square value (alpha = 0.01) = 13.277

Data FAIL normality test. Try another transformation.

Warning - The first three homogeneity tests are sensitive to non-normal data and should not be performed.

60341805 MIDMO FATHEAD SURVIVAL  
File: 6341805A Transform: ARC SINE(SQUARE ROOT(Y))

Shapiro - Wilk's test for normality

D = 0.000

W = 0.000

Critical W (P = 0.05) (n = 24) = 0.916  
Critical W (P = 0.01) (n = 24) = 0.884

Data FAIL normality test. Try another transformation.

Warning - The first three homogeneity tests are sensitive to non-normal data and should not be performed.

60341805 MIDMO FATHEAD SURVIVAL

File: 6341805A

Transform: ARC SINE(SQUARE ROOT(Y))

SUMMARY STATISTICS ON TRANSFORMED DATA TABLE 1 of 2

GRP	IDENTIFICATION	N	MIN	MAX	MEAN
1	CONTROL	4	1.412	1.412	1.412
2	6.25%	4	1.412	1.412	1.412
3	12.5%	4	1.412	1.412	1.412
4	25%	4	1.412	1.412	1.412
5	50%	4	1.412	1.412	1.412
6	100%	4	1.412	1.412	1.412

60341805 MIDMO FATHEAD SURVIVAL

File: 6341805A

Transform: ARC SINE(SQUARE ROOT(Y))

SUMMARY STATISTICS ON TRANSFORMED DATA TABLE 2 of 2

GRP	IDENTIFICATION	VARIANCE	SD	SEM	C.V. %
1	CONTROL	0.000	0.000	0.000	0.00
2	6.25%	0.000	0.000	0.000	0.00
3	12.5%	0.000	0.000	0.000	0.00
4	25%	0.000	0.000	0.000	0.00
5	50%	0.000	0.000	0.000	0.00
6	100%	0.000	0.000	0.000	0.00

60341805 MidMO FATHEAD GROWTH  
File: 6341805B Transform: NO TRANSFORMATION

Shapiro - Wilk's test for normality

---

D = 0.027

W = 0.971

Critical W (P = 0.05) (n = 24) = 0.916

Critical W (P = 0.01) (n = 24) = 0.884

---

Data PASS normality test at P=0.01 level. Continue analysis.

60341805 MidMO FATHEAD GROWTH  
File: 6341805B Transform: NO TRANSFORMATION

---

Bartlett's test for homogeneity of variance  
Calculated B1 statistic = 6.15

---

Table Chi-square value = 15.09 (alpha = 0.01, df = 5)  
Table Chi-square value = 11.07 (alpha = 0.05, df = 5)

---

Data PASS B1 homogeneity test at 0.01 level. Continue analysis.

60341805 MidMO FATHEAD GROWTH

File: 6341805B

Transform: NO TRANSFORMATION

SUMMARY STATISTICS ON TRANSFORMED DATA TABLE 1 of 2

GRP	IDENTIFICATION	N	MIN	MAX	MEAN
1	Control	4	0.392	0.503	0.444
2	6.25%	4	0.351	0.443	0.407
3	12.5%	4	0.377	0.440	0.406
4	25%	4	0.417	0.451	0.434
5	50%	4	0.403	0.453	0.421
6	100%	4	0.387	0.523	0.441

60341805 MidMO FATHEAD GROWTH

File: 6341805B

Transform: NO TRANSFORMATION

SUMMARY STATISTICS ON TRANSFORMED DATA TABLE 2 of 2

GRP	IDENTIFICATION	VARIANCE	SD	SEM	C.V. %
1	Control	0.002	0.048	0.024	10.78
2	6.25%	0.002	0.039	0.020	9.70
3	12.5%	0.001	0.030	0.015	7.38
4	25%	0.000	0.014	0.007	3.22
5	50%	0.000	0.022	0.011	5.29
6	100%	0.004	0.059	0.030	13.46

60341805 MidMO FATHEAD GROWTH

File: 6341805B

Transform: NO TRANSFORMATION

ANOVA TABLE

SOURCE	DF	SS	MS	F
Between	5	0.005	0.001	0.733
Within (Error)	18	0.027	0.001	
Total	23	0.032		

Critical F value = 2.77 (0.05,5,18)

Since F < Critical F FAIL TO REJECT Ho: All equal

60341805 MidMO FATHEAD GROWTH

File: 6341805B

Transform: NO TRANSFORMATION



## DUNNETT'S TEST

TABLE 1 OF 2

Ho:Control&lt;Treatment

GROUP	IDENTIFICATION	TRANSFORMED MEAN	MEAN CALCULATED IN ORIGINAL UNITS	T STAT	SIG
1	Control	0.444	0.444		
2	6.25%	0.407	0.407	1.337	
3	12.5%	0.406	0.406	1.382	
4	25%	0.434	0.434	0.357	
5	50%	0.421	0.421	0.842	
6	100%	0.441	0.441	0.119	

Dunnett table value = 2.41 (1 Tailed Value, P=0.05, df=18,5)

60341805 MidMO FATHEAD GROWTH

File: 6341805B

Transform: NO TRANSFORMATION

## DUNNETT'S TEST

TABLE 2 OF 2

Ho:Control&lt;Treatment

GROUP	IDENTIFICATION	NUM OF REPS	Minimum Sig Diff (IN ORIG. UNITS)	% of CONTROL	DIFFERENCE FROM CONTROL
1	Control	4			
2	6.25%	4	0.066	14.8	0.036
3	12.5%	4	0.066	14.8	0.038
4	25%	4	0.066	14.8	0.010
5	50%	4	0.066	14.8	0.023
6	100%	4	0.066	14.8	0.003

# FISHER'S EXACT TEST

IDENTIFICATION	NUMBER OF		
	ALIVE	DEAD	TOTAL ANIMALS
CONTROL	10	0	10
6.25%	10	0	10
TOTAL	20	0	20

CRITICAL FISHER'S VALUE (10,10,10) ( $p=0.05$ ) IS 6. b VALUE IS 10.  
 Since b is greater than 6 there is no significant difference  
 between CONTROL and TREATMENT at the 0.05 level.

# FISHER'S EXACT TEST

IDENTIFICATION	NUMBER OF		
	ALIVE	DEAD	TOTAL ANIMALS
CONTROL	10	0	10
12.5%	10	0	10
TOTAL	20	0	20

CRITICAL FISHER'S VALUE (10,10,10) ( $p=0.05$ ) IS 6. b VALUE IS 10.  
 Since b is greater than 6 there is no significant difference  
 between CONTROL and TREATMENT at the 0.05 level.

# FISHER'S EXACT TEST

IDENTIFICATION	NUMBER OF		
	ALIVE	DEAD	TOTAL ANIMALS
CONTROL	10	0	10
25%	10	0	10

TOTAL

20

0

20

CRITICAL FISHER'S VALUE (10,10,10) ( $p=0.05$ ) IS 6. b VALUE IS 10.

Since b is greater than 6 there is no significant difference  
between CONTROL and TREATMENT at the 0.05 level.

## FISHER'S EXACT TEST

NUMBER OF

IDENTIFICATION

ALIVE

DEAD

TOTAL ANIMALS

CONTROL

10

0

10

50%

10

0

10

TOTAL

20

0

20

CRITICAL FISHER'S VALUE (10,10,10) ( $p=0.05$ ) IS 6. b VALUE IS 10.

Since b is greater than 6 there is no significant difference  
between CONTROL and TREATMENT at the 0.05 level.

## FISHER'S EXACT TEST

NUMBER OF

IDENTIFICATION

ALIVE

DEAD

TOTAL ANIMALS

CONTROL

10

0

10

100%

10

0

10

TOTAL

20

0

20

CRITICAL FISHER'S VALUE (10,10,10) ( $p=0.05$ ) IS 6. b VALUE IS 10.

Since b is greater than 6 there is no significant difference  
between CONTROL and TREATMENT at the 0.05 level.

## SUMMARY OF FISHER'S EXACT TESTS

NUMBER

NUMBER

SIG

Page 29 of 40

GROUP	IDENTIFICATION	EXPOSED	DEAD	(P=.05)
	CONTROL	10	0	
1	6.25%	10	0	
2	12.5%	10	0	
3	25%	10	0	
4	50%	10	0	
5	100%	10	0	

60341805 MIDMo CERIODAPHNIA DUBIA REPRODU  
File: 6341805E Transform: NO TRANSFORMATION

Chi-square test for normality: actual and expected frequencies

INTERVAL	<-1.5	-1.5 to <-0.5	-0.5 to 0.5	>0.5 to 1.5	>1.5
EXPECTED	4.020	14.520	22.920	14.520	4.020
OBSERVED	4	17	19	19	1

Calculated Chi-Square goodness of fit test statistic = 4.7451  
Table Chi-Square value (alpha = 0.01) = 13.277

Data PASS normality test. Continue analysis.

60341805 MIDMo CERIODAPHNIA DUBIA REPRODU  
File: 6341805E Transform: NO TRANSFORMATION

Bartlett's test for homogeneity of variance  
Calculated B1 statistic = 0.41

Table Chi-square value = 15.09 (alpha = 0.01, df = 5)  
Table Chi-square value = 11.07 (alpha = 0.05, df = 5)

Data PASS B1 homogeneity test at 0.01 level. Continue analysis.

60341805 MIDMo CERIODAPHNIA DUBIA REPRODU  
 File: 6341805E Transform: NO TRANSFORMATION

SUMMARY STATISTICS ON TRANSFORMED DATA TABLE 1 of 2

GRP	IDENTIFICATION	N	MIN	MAX	MEAN
1	Control	10	15.000	24.000	18.500
2	6.25%	10	14.000	24.000	19.800
3	12.5%	10	16.000	25.000	21.300
4	25%	10	17.000	27.000	22.300
5	50%	10	17.000	27.000	22.600
6	100%	10	16.000	25.000	20.800

60341805 MIDMo CERIODAPHNIA DUBIA REPRODU  
 File: 6341805E Transform: NO TRANSFORMATION

SUMMARY STATISTICS ON TRANSFORMED DATA TABLE 2 of 2

GRP	IDENTIFICATION	VARIANCE	SD	SEM	C.V. %
1	Control	9.389	3.064	0.969	16.56
2	6.25%	12.178	3.490	1.104	17.62
3	12.5%	13.789	3.713	1.174	17.43
4	25%	12.233	3.498	1.106	15.68
5	50%	12.489	3.534	1.118	15.64
6	100%	10.400	3.225	1.020	15.50

60341805 MIDMo CERIODAPHNIA DUBIA REPRODU  
 File: 6341805E Transform: NO TRANSFORMATION

ANOVA TABLE

SOURCE	DF	SS	MS	F
Between	5	119.883	23.977	2.041
Within (Error)	54	634.300	11.746	
Total	59	754.183		

Critical F value = 2.45 (0.05,5,40)  
 Since  $F < \text{Critical } F$  FAIL TO REJECT  $H_0$ : All equal

60341805 MIDMo CERIODAPHNIA DUBIA REPRODU  
 File: 6341805E Transform: NO TRANSFORMATION

## DUNNETT'S TEST

TABLE 1 OF 2

Ho:Control&lt;Treatment

GROUP	IDENTIFICATION	TRANSFORMED MEAN	MEAN CALCULATED IN ORIGINAL UNITS	T STAT	SIG
1	Control	18.500	18.500		
2	6.25%	19.800	19.800	-0.848	
3	12.5%	21.300	21.300	-1.827	
4	25%	22.300	22.300	-2.479	
5	50%	22.600	22.600	-2.675	
6	100%	20.800	20.800	-1.501	

Dunnett table value = 2.31 (1 Tailed Value, P=0.05, df=40,5)

60341805 MIDMo CERIODAPHNIA DUBIA REPRODU

File: 6341805E Transform: NO TRANSFORMATION

## DUNNETT'S TEST

TABLE 2 OF 2

Ho:Control&lt;Treatment

GROUP	IDENTIFICATION	NUM OF REPS	Minimum Sig Diff (IN ORIG. UNITS)	% of CONTROL	DIFFERENCE FROM CONTROL
1	Control	10			
2	6.25%	10	3.541	19.1	-1.300
3	12.5%	10	3.541	19.1	-2.800
4	25%	10	3.541	19.1	-3.800
5	50%	10	3.541	19.1	-4.100
6	100%	10	3.541	19.1	-2.300

Conc. ID	1	2	3	4	5	6
Conc. Tested	0	6.25	12.5	25	50	100
Response 1	.392	.414	.440	.451	.453	.387
Response 2	.503	.421	.377	.432	.417	.411
Response 3	.458	.351	.422	.436	.410	.523
Response 4	.422	.443	.385	.417	.403	.441

\*\*\* Inhibition Concentration Percentage Estimate \*\*\*

Toxicant/Effluent: Mid MO

Test Start Date: 7/7/20 Test Ending Date: 7/14/20

Test Species: Fathead

Test Duration: 7 Day

DATA FILE:

Conc. ID	Number Replicates	Concentration	Response Means	Std. Dev.	Pooled Response Means
1	4	0.000	0.444	0.048	0.444
2	4	6.250	0.407	0.039	0.422
3	4	12.500	0.406	0.030	0.422
4	4	25.000	0.434	0.014	0.422
5	4	50.000	0.421	0.022	0.422
6	4	100.000	0.441	0.059	0.422

\*\*\* No Linear Interpolation Estimate can be calculated from the input data since none of the (possibly pooled) group response means were less than 75% of the control response mean.



Conc. ID	1	2	3	4	5	6
Conc. Tested	0	6.25	12.5	25	50	100
Response 1	15	17	16	23	26	20
Response 2	19	19	25	24	19	17
Response 3	20	24	16	22	27	22
Response 4	22	22	24	25	24	24
Response 5	16	16	25	17	20	16
Response 6	20	22	23	27	24	21
Response 7	24	22	20	19	22	24
Response 8	15	14	24	24	17	17
Response 9	18	18	17	25	20	25
Response 10	16	24	23	17	27	22

\*\*\* Inhibition Concentration Percentage Estimate \*\*\*

Toxicant/Effluent: Mid MO

Test Start Date: 7/7/20 Test Ending Date: 7/14/20

Test Species: Dubia

Test Duration: 7 Day

DATA FILE:

Conc. ID	Number Replicates	Concentration	Response Means	Std. Dev.	Pooled Response Means
1	10	0.000	18.500	3.064	20.900
2	10	6.250	19.800	3.490	20.900
3	10	12.500	21.300	3.713	20.900
4	10	25.000	22.300	3.498	20.900
5	10	50.000	22.600	3.534	20.900
6	10	100.000	20.800	3.225	20.800

\*\*\* No Linear Interpolation Estimate can be calculated from the input data since none of the (possibly pooled) group response means were less than 75% of the control response mean.



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Page : 1 Of 1



## Sample Condition Upon Receipt

Client Name:

Mid-Missouri Energy

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

Tracking #:

Pace Shipping Label Used? Yes ☐ No ☒

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

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

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

Cooler Temperature (°C): As-read 4.2 Corr. Factor -1.0 Corrected 3.2

Date and initials of person examining contents:

7/9/20  
EO 8:00

Temperature should be above freezing to 6°C

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

Client Notification/ Resolution:

Copy COC to Client? Y / N

Field Data Required? Y / N

Person Contacted:

Date/Time:

Comments/ Resolution:

Project Manager Review:

Date:







## Sample Condition Upon Receipt

Client Name:

Mid-missouri Energy

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

Tracking #:

Pace Shipping Label Used? Yes ☐ No ☒

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

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

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

Cooler Temperature (°C): As-read 3.0 Corr. Factor -1.0 Corrected 3.0

Date and initials of person examining contents:

7/11/20  
EO 8:00

Temperature should be above freezing to 6°C

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

Client Notification/ Resolution:

Copy COC to Client? Y / N

Field Data Required? Y / N

Person Contacted:

Date/Time:

Comments/ Resolution:

Project Manager Review:

Date:

**MID-MISSOURI ENERGY, LLC**

**51548**

Vendor ID	Name	Payment Number	Check Date	Document Number	
1MISDEPTNATRES	Missouri Department of Natural Res	00000130731	7/1/2021	51548	
Our Voucher Number	Date	Amount	Amount Paid	Discount	Net Amount Paid
2021	7/1/2021	\$750.00	\$750.00	\$0.00	\$750.00

*MO#131008 Mod fee*

**RECEIVED**

*JB JUL 08 2021*

**Water Protection Program**

\$750.00

\$750.00

\$0.00

\$750.00

<b>MID-MISSOURI ENERGY, LLC</b> <b>BUSINESS ACCOUNT</b> 15311 N. SALINE 65 HWY MALTA BEND, MO 65339 (660) 595-0144		<b>WOOD &amp; HUSTON BANK</b> MARSHALL, MISSOURI 65340 80-183/1019		<b>51548</b>
		DATE	AMOUNT	
		7/1/2021	\$750.00	
PAY	Seven Hundred Fifty Dollars and 00 Cents			
TO THE ORDER OF	Missouri Department of Natural Resources Water Protection Program PO Box 176 Jefferson City MO 65102-0176			
		 AUTHORIZED SIGNATURE		Security features. Details on back.

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9000067170