STATE OF MISSOURI

DEPARTMENT OF NATURAL RESOURCES

MISSOURI CLEAN WATER COMMISSION

MISSOURI STATE OPERATING PERMIT

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

Permit No.	MO-0139050
Owner:	Kerry Ingredients Inc.
Address:	3400 Millington Road, Beloit, WI 53511
Continuing Authority:	Kerry Ingredients Inc.
Address:	3400 Millington Road, Beloit, WI 53511
Facility Name:	Kerry Ingredients and Flavours - Greenville
Address:	HCR 2 Box 2560, Highway E, Greenville, MO 63944
Legal Description:	Sec. 34, T29N, R6E, Wayne County
UTM Coordinates:	#003: X = 732295, Y = 4114034
	UIC: X = 732321; Y = 4114039
Receiving Stream:	Tributary to Goose Creek
First Classified Stream and ID:	Presume Use Stream (C) WBID# 5031
USGS Basin & Sub-watershed No.:	07140107-0102 – Bear Creek

authorizes activities pursuant to the terms and conditions of this permit in accordance with the Missouri Clean Water Law and the National Pollutant Discharge Elimination System; it does not apply to other regulated activities. Underground Injection Control is regulated by the Safe Drinking Water Act and authorized by 40 CFR 147 Subpart AA.

FACILITY DESCRIPTION

Facility type; SIC # 2087; NAICS # 311942 – spice and extract manufacturing. Domestic wastewater is managed in a sub-surface system (UI1). Outfalls #001 and #002 are stormwater covered under a general permit.

OUTFALL #003 – cooling tower blowdown; treatment is to be determined but will meet effluent limits at the end of the SOC.

Design Flow:	0.0288 MGD
Average Flow:	0.0068 MGD

FEATURE UI1 – underground injection; 2, 1,000 gallon tank series; laterals shorter than 100 feet each; non-process wastewater: domestic wastewater ~10 persons/day (475 gpd), and water softener backwash (225 gpd).

April 1, 2025
Effective Date

March 31, 2030
Expiration Date

John Hoke, Director, Water Protection Program

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

OUTFALL #003 *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 **October 1, 2026**. These interim effluent limitations are effective beginning **April 1, 2025,** and remain in effect through **September 30, 2026,** 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: CT					
PHYSICAL					
Flow	MGD	*	*	one/month	24 hr. total
Temperature	°F	90	90	one/month	grab
CONVENTIONAL					
Chemical Oxygen Demand	mg/L	*	*	once/month	grab
Chlorine, Total Residual ‡	µg/L	17 ML130	8 ML130	once/month	grab
pH †	SU	6.5 to 9.0	-	once/month	grab
Total Suspended Solids	mg/L	100	30	once/month	grab
METALS					
Aluminum, Total Recoverable	µg/L	*	*	once/month	grab
Copper, Total Recoverable	µg/L	351	212	once/month	grab
Iron, Total Recoverable	µg/L	*	*	once/month	grab
Mercury, Total	µg/L	*	*	once/month	grab
Zinc, Total Recoverable	µg/L	*	*	once/month	grab
NUTRIENTS					
Nitrogen, Total (TN) ♠	mg/L	*	*	once/month	grab
Phosphorous, Total (TP)	mg/L	*	*	once/month	grab
OTHER					
Chloride	mg/L	378	188	once/month	grab
MONITORING REPORTS SHALL BE SUBMITTED MONTHLY; THE FIRST REPORT IS DUE MAY 28, 2025.					
LIMIT SET: W					
Whole Effluent Toxicity, Chronic ⁝	TU_c	1.6		once/year	grab
MONITORING REPORTS SHALL BE SUBMITTED ANNUALLY; THE FIRST REPORT IS DUE JANUARY 28, 2026.					

OUTFALL #003 *main outfall*	**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 **October 1, 2026,** 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: CT					
PHYSICAL					
Flow	MGD	*	*	one/month	24 hr. total
Temperature	°F	90	90	one/month	grab
CONVENTIONAL					
Chemical Oxygen Demand	mg/L	*	*	once/month	grab
Chlorine, Total Residual ‡	µg/L	17 ML130	8 ML130	once/month	grab
pH †	SU	6.5 to 9.0	-	once/month	grab
Total Suspended Solids	mg/L	100	30	once/month	grab
METALS					
Aluminum, Total Recoverable	µg/L	750	281	once/month	grab
Copper, Total Recoverable	µg/L	351	212	once/month	grab
Iron, Total Recoverable	µg/L	1643	819	once/month	grab
Mercury, Total	µg/L	*	*	once/month	grab
Zinc, Total Recoverable	µg/L	238	119	once/month	grab
NUTRIENTS					
Nitrogen, Total (TN) ♠	mg/L	*	*	once/month	grab
Phosphorous, Total (TP)	mg/L	*	*	once/month	grab
OTHER					
Chloride	mg/L	378	188	once/month	grab
MONITORING REPORTS SHALL BE SUBMITTED MONTHLY; THE FIRST REPORT IS DUE NOVEMBER 28, 2026.					
LIMIT SET: W					
Whole Effluent Toxicity, Chronic ⁝	TU_c	1.6		once/year	grab
MONITORING REPORTS SHALL BE SUBMITTED ANNUALLY; THE FIRST REPORT IS DUE JANUARY 28, 2027.					

* Monitoring and reporting requirement only

‡ 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.

† pH: the facility will report the minimum and maximum values; pH is not to be averaged.

♠ Total Nitrogen: this permit establishes reporting for total nitrogen, (TN), which is a calculation using TKN + Nitrate + Nitrite.

⁝ WET tests: see special condition #1

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:

Within 1 year of the effective date of this permit, the facility shall submit a status report detailing progress made in attaining the final effluent limits.

Within 1.5 years of the effective date of this permit, the facility shall attain compliance with the final effluent limits at outfall #003, for total recoverable aluminum, total recoverable iron, and total recoverable zinc.

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. 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.
   (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 exceeds the TU_c limit (do not need to be sequential)

   (1) Follow-up tests do not negate an initial test result.
   (2) 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.
   (3) The facility may begin a TIE or TRE during the follow-up testing phase.

(continued)

D. SPECIAL CONDITIONS (CONTINUED)

(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.

2. 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.

3. Any discharge not meeting permitted limits may be pumped and hauled to an accepting wastewater treatment facility, or otherwise properly disposed.

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. 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 require stormwater coverage. Currently the facility must maintain MOR130068. Stormwater conditions are not being implemented under this permit.

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, 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) The facility shall not discharge substances resulting from an on-site spill.
   (f) Provide sediment and erosion control sufficient to prevent or minimize sediment loss off the property, and to protect embankments from erosion.
   (g) 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.
   (h) Salt and sand shall be stored in a manner minimizing mobilization in stormwater (for example: under roof, in covered container, under tarp, etc.).

D. SPECIAL CONDITIONS (CONTINUED)

7. Reporting 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).

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

9. All outfalls and permitted features 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. This permit does not cover land disturbance activities.

12. 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.

13. This permit does not allow stream channel or wetland alterations unless approved by Clean Water Act §404 permitting authorities.

14. 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.

15. All records required by this permit may be maintained electronically. These records can be maintained in a searchable format.

16. 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.

D. SPECIAL CONDITIONS (CONTINUED)

17. 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.

18. The full implementation of this operating permit, which includes implementation of any applicable schedules of compliance, shall constitute compliance with Sections 301, 302, 306, 307, and 403 of the federal Clean Water Act, except for standards imposed under Section 307 for toxic pollutants injurious to human health, and with equivalent provisions of the Missouri Clean Water Law, in accordance with Section 644.051.16 RSMo and CWA §402(k). 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.

19. 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, and an antidegradation determination if appropriate, to request authorization of new or expanded discharges.

20. Renewal Application Requirements.
    (a) This facility shall submit an appropriate and complete application to the Department no less than 180 days prior to the expiration date listed on page 1 of the permit.
    (b) Application materials shall include complete Form A, and Form C. If the form names have changed, the facility must ensure they are submitting the correct forms as required by regulation.
    (c) Sufficiently sensitive analytical methods must be used. A sufficiently sensitive method is one that can effectively describe the presence or absence of a pollutant at or below that pollutant's permit limit or water quality standard.
    (d) The facility may use the electronic submission system to submit the application to the Program, if available.

E. UNDERGROUND INJECTION CONTROL

1. In accordance with 40 CFR 144.26, the permittee 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/uic-class-v-injection-well-inventory-mo-780-1774 Only one submittal is required for the life of the Class V well.

2. Report "operational shutdown" when injection does not occur during the entire reporting period.

3. Subsurface Wastewater Dispersal System(s) under this permit are Class V well(s).

4. Subsurface Distribution System Site Restrictions (10 CSR 20-8.200(7))
    (a) Subsurface land application shall not occur within 100 feet of any well, sinkhole, or losing stream.
    (b) All systems shall not allow effluent to surface, reach waters of the state, effect a stream, or effect any nearby buildings or dwellings.
    (c) Subsurface distribution area(s) access must be controlled to prevent damage from traffic, heavy vehicles, livestock, construction, or digging.
    (d) Subsurface distribution areas shall have adequate surface drainage and maintain vegetation (if appropriate).
    (e) Systems shall be placed at or greater than 10 feet from the property line.

5. The facility shall maintain all service and maintenance records for at least five years. These records shall be made available to Department personnel upon request.

E. UNDERGROUND INJECTION CONTROL (CONTINUED)

6. 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 (USDWs). If the presence of any contaminant may cause a violation of primary drinking water standards or groundwater standards under 10 CSR 20-7.031, or other health-based standards, or may otherwise adversely affect human health the Department may require closure of the injection wells, or other actions listed in 40 CFR 144.12(c), (d), or (e).

7. The facility shall develop, maintain, and implement an Operation and Maintenance (O&M) manual.
   (a) The manual must include all necessary items to ensure the operation and integrity of the waste handling system.
   (b) The O&M manual must include key operating procedures, an aerial or topographic site map with the feature outlined, and a brief summary of the operation of the facility.
   (c) The O&M manual shall be made available to the operator.
   (d) The O&M manual shall be reviewed and updated at least every five years or when changes have occurred and be made available to Department personnel upon request.
   (e) The O&M manual may be maintained electronically.

8. Requirements prior to abandonment.
   (a) The permittee shall submit a subsurface dispersal system removal plan to the Water Protection Program, which contains at least the details to comply with the following abandonment requirements:
      (1) The permittee shall close the well in a manner that prevents the movement of fluid containing any contaminant into an USDW, if the presence of that contaminant may cause a violation of any primary drinking water regulation under 40 CFR part 141 or may otherwise adversely affect the health of persons.
      (2) If the Department has determined that the proposed well abandonment plan is not acceptable to the site, the permittee must grout the well full length with neat cement or bentonite.
      (3) The permittee shall dispose of or otherwise manage any soil, gravel, sludge, liquids, or other materials removed from or adjacent to the well in accordance with all applicable Federal, State, and local regulations and requirements.
      (4) After a cessation of operations, the permittee shall remove the subsurface system in accordance with the plan unless the permittee:
         (i) Provides a written notice to the Water Protection Program that the well will be used within the next two years; and
         (ii) Describes actions or procedures, satisfactory to the Water Protection Program, that the owner or operator will take to ensure that the well will not endanger USDWs during the period of temporary abandonment. These actions and procedures shall include compliance with the technical requirements applicable to active injection wells unless waived by the Water Protection Program.

F. 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-0139050
KERRY INGREDIENTS AND FLAVOURS

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.

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. This permit is also issued under the authority of the Save Drinking Water Act, authorized by the EPA for State of Missouri administration at 40 CFR 147.1301 which incorporates portions of RSMo 644, 10 CSR 20-6, and 10 CSR 20-7 by reference. A factsheet is not an enforceable part of a permit.

PART I. FACILITY INFORMATION

Facility Type:	Industrial	Non-categorical
Rating:	10/26/2023	Minor
SIC Code(s):	2087	Flavoring Extracts and Flavoring Syrups, Not Elsewhere Classified
NAICS Code(s):	311942	Spice and Extract Manufacturing
Modification Date:	02/01/2023	Biotic Ligand Model - Dissolved Metals Translator (DMT) for Copper
Expiration Date:	01/31/2024	
Last Inspection:	06/13/2019	In compliance

FACILITY DESCRIPTION

Kerry's Greenville facility manufactures and distributes smoke process products for the food and beverage industry. The major operations conducted at the facility consist of sawdust and wood chip handling and drying, calciner operations (thermal treatment applied to the sawdust/wood chips), raw material and finished product storage, and material loading/unloading. Water is supplied to the facility via an onsite groundwater well withdrawing from an aquifer at a depth of 720 feet (pump positioned at approximately 480 feet).

Outfall #003 is noncontact cooling tower blowdown.

Other wastewater streams generated and injected into the septic system (UIC #1) onsite currently include domestic wastewater, miscellaneous process washdowns, and water softener backwash (if unable to be incorporated into product). These wastewater streams are currently managed through the onsite septic system which makes the septic system an Underground Injection Control (UIC) feature. This feature is new to this permit, although the facility has been injecting these wastewaters since at least 2009 according to satellite imagery.

Kerry recently began pursuing an expansion project which would increase the production capacity at the facility requiring utilities supporting these functions to be expanded (i.e. water softening and cooling water). The septic system is not hydraulically capable of managing the increased cooling water flow therefore outfall #003 was added as a surface water discharge in 2018.

Only items listed under outfall #003 are permitted for discharge by this permit.

Stormwater from this facility is managed by permit MOR130068.

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 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 their disclosed treatment devices, this is considered bypassing pursuant to 40

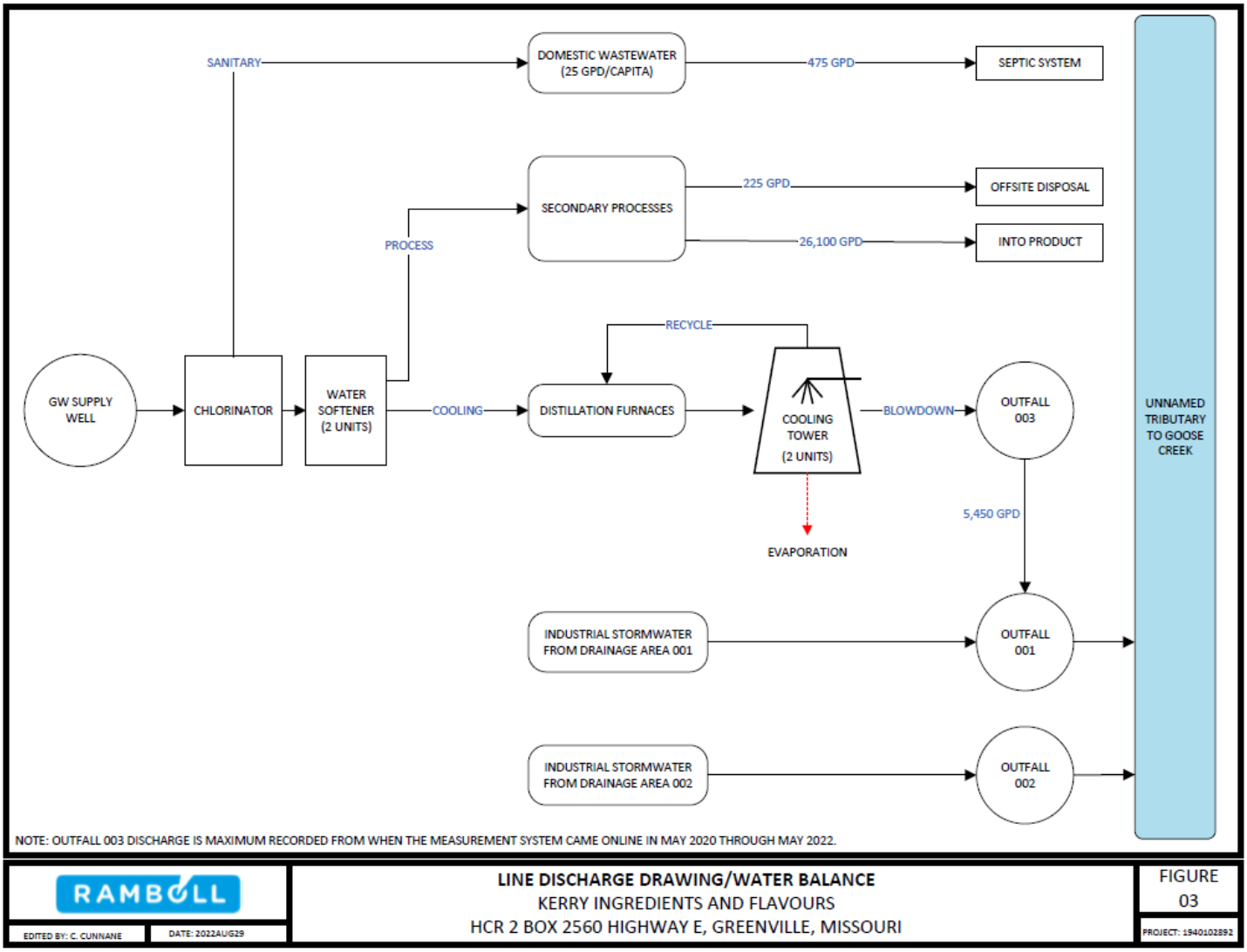
CFR 122.41(m). If the facility wishes to not use a treatment device in the future, this will require a permit modification to remove that treatment device from the facility description.

PERMITTED FEATURES TABLE

OUTFALL	AVERAGE FLOW	DESIGN FLOW	TREATMENT LEVEL	EFFLUENT TYPE
#003	0.0068 MGD	0.0288 MGD	effluent limits	cooling tower blowdown
#UI1	700 MGD	700 MGD	no surface discharge; settling, subsurface dispersal	domestic wastewater, miscellaneous process washdowns, and water softener backwash

FACILITY MAP

WATER BALANCE DIAGRAM:



FACILITY PERFORMANCE HISTORY & COMMENTS

The electronic discharge monitoring reports were reviewed for the last five years. The facility reported "Frozen Conditions" for the 2019 WET test. However, the facility had all year to obtain a sample, therefore "frozen" is not a legitimate NODI code for the WET test. The facility failed to sample two months; the facility reported lost sample one month. TRC was exceeded 8 times; pH was exceeded 3 times; and TSS was exceeded 4 times.

The 2019 inspection was reviewed; nothing of note was recorded in the inspection.

An April 2023 inspection noted continued non-compliance with effluent limits. Most of the exceedances were for copper; since then, a biotic ligand model dissolved metals translator was completed; therefore, the facility is now in compliance for copper.

Data must be entered into the eDMR system in the units found in the permit. To convert from mg/L to µg/L, multiply by 1000, or move the decimal place 3 numerals to the right.

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 charter number for the continuing authority for this facility is F00405044; this number was verified by the permit writer to be associated with the facility and precisely matches the continuing authority reported by the facility in an email dated 12/17/2018. 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 indicated, through 2018 antidegradation review, the closest collection system was greater than 2,000 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 a Part 70 Air operating permit OP2021-008: Liquid smoke is produced by burning hardwood sawdust in an oxygen deficient atmosphere (pyrolysis) in a series of calciners. The smoke generated by these calciners is condensed and then refined to create the liquid smoke product.

Application

The application was received July 28, 2023. The application was verified to remain accurate of the actual operating conditions of the facility on December 4, 2024, because it is greater than one year old. Prior to public notice, the facility has reviewed the permit draft and coordinated with the department ensuring that the draft permit is representative of the facility operations and the application received for this facility.

Part II. Receiving Waterbody Information

Receiving Waterbody Table:

Outfall	Waterbody Name	Class	WBID	Designated Uses	Distance to Segment	12-digit HUC
#003	Tributary to Presumed Use Stream	n/a Losing	n/a	n/a	0.0 mi	071401070102: Bear Creek
	Presumed Use Stream locally known as Goose Creek	C Losing	5031*	GEN, HHP, IRR, LWW, SCR, WBC-B, WWH (ALP)	0.2 mi	
#UI1	Groundwater	n/a	n/a	GRW	45 feet**	

* 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.
** Depth to groundwater was estimated; the depth from the surface to groundwater is approximately 50 feet.
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

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 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 beneficial uses of water provided in 10 CSR 20-7.031. 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.

✓ There are no upstream or downstream impairments near this facility.

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.

Part III. Rationale and Derivation of Permit Conditions

Antibacksliding

Federal antibacksliding requirements per CWA §402(o) and 40 CFR § 122.44(l) https://www.ecfr.gov/current/title-40/chapter-I/subchapter-D/part-122#p-122.44(l) generally prohibit a reissued permit from containing effluent limitations that are less stringent than the previous permit, with some exceptions. All renewed permits are analyzed for evidence of backsliding. There are several express statutory exceptions to the antibacksliding requirements, located in CWA § 402(o)(2) and 40 CFR 122.44(l). Parameters are discussed individually in Part IV of the fact sheet.

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 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.

✓ The December 2018 antidegradation review remains applicable to outfall #003 discharges. The review concluded that without treatment, the facility would cause significant degradation to the receiving stream therefore treatment is required. In the absence of listing a particular treatment methodology, the facility will be subject to effluent limits.

BEST MANAGEMENT PRACTICES (BMPS)

Minimum site-wide best management practices (BMPs) 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) or 10 CSR 20-6.200(2), these best management practices are not specifically included only 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 per 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 storage structure, treatment structure, lagoon, basin, or device, 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

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 publicly facing search engine, available at 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 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.

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, or ancillary wastewater.
✓ Applicable; this facility does not fall under the jurisdiction of the Health Department and discharges domestic wastewater subsurface; see Underground Injection Control (UIC) requirements below and in the permit. This facility discharges domestic wastewater subsurface mixed with industrial wastewater.

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 per 10 CSR 20-7.015(9)(A) and 40 CFR 122.44(b)(1). 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 per permit requirements. Daily maximums and monthly averages are required for continuous discharges per 40 CFR 122.45(d)(1). Weekly limits are not available for non-POTWs.

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 (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 type of activities 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 based effluent limits are more protective of the receiving water's quality, the WQBEL 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 does not have an associated ELG.

FIRE PROTECTION (HYDRANT) TESTING WATER (OUTDOOR)
The regulatory discharge allowance only extends to actual fire-fighting activities. These regulations are only found in 10 CSR 20-6.200(1)(D). Hydrant testing wastewater can be considered a water contaminant source pursuant to 644.016(25), dependent on the management strategies, which is why the Department asks for additional information about these wastewaters. The Federal and State requirements necessitate a reasonable potential determination for all wastewater; hydrant testing is a type of wastewater with intermittent discharge, and is not considered an emergency. Information regarding fire protection is included under illicit discharges for MS4s, and no other regulation allows for any further exemptions, unless the Department makes a finding of de minimis. Missouri Clean Water Law requires the Department to perform due diligence for all wastewater discharges and all permits (general and site specific). Permit conditions now have specific requirements to manage outdoor hydrant testing logically; and relevant to the pollutants contained in the fire protection testing wastewater. If the facility follows the appropriate management strategy, the permit will cover the discharges. If the facility does not use chlorinated water in the fire protection system, then the facility may allow the wastewater to directly enter a stream or storm collection system, given that sufficient energy dissipation strategies are followed to ensure that solids from soils or other sources are not being entrained in the wastewater. For facilities with chlorinated fire protection testing water, the facility must utilize a strategy to ensure chlorinated water is not being introduced into the waterbody. This could be by allowing the water to soak in to the surrounding vegetation, or by retaining the water through a permanent or temporary berm for sufficient time to infiltrate, or other appropriate BMP. Other management strategies exist, and it is the responsibility of the facility to operate all systems to minimize pollution to waters of the state and United States.

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, and 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.

GOOD HOUSEKEEPING PRACTICES
Good housekeeping is a practical, cost-effective way to maintain a clean and orderly facility to prevent potential pollution sources from coming into contact with stormwater. It includes establishing protocols to reduce the possibility of mishandling materials or equipment and employee training. Common areas where good housekeeping practices should be followed include trash containers and adjacent areas, material storage areas, vehicle, and equipment maintenance areas, and loading docks. Good housekeeping practices must include a schedule for regular pickup and disposal of garbage and waste materials and routine inspections of drums, tanks, and containers for leaks and structural conditions. Practices also include containing and covering garbage, waste materials, and debris. Involving employees in routine monitoring of housekeeping practices is an effective means of ensuring the continued implementation of these measures.

Specific good housekeeping may include:
- ◆ Spill and overflow protection under chemical or fuel connectors to contain spillage at liquid storage tanks
- ◆ Load covers on residue hauling vehicles and ensure gates on trucks are sealed and the truck body is in good condition
- ◆ Containment curbs around loading/unloading areas or tanks
- ◆ Techniques to reduce solids residue which may be tracked on to access roads traveled by residue trucks or residue handling vehicles.
- ◆ Techniques to reduce solid residue on exit roads leading into and out of residue handling areas

Where feasible, minimizing exposure of potential pollutant sources to precipitation is an important control option. Minimizing exposure prevents pollutants, including debris, from coming into contact with precipitation and can reduce the need for BMPs to treat contaminated stormwater runoff. It can also prevent debris from being picked up by stormwater and carried into drains and surface waters. Examples of BMPs for exposure minimization include covering materials or activities with temporary structures (e.g., tarps) when wet weather is expected or moving materials or activities to existing or new permanent structures (e.g., buildings, silos, sheds). Even the simple practice of keeping a dumpster lid closed can be a very effective pollution prevention measure. For erosion and sediment control, BMPs must be selected and implemented to limit erosion on areas of your site that, due to topography, activities, soils, cover, materials, or other factors, are likely to experience erosion. Erosion control BMPs such as seeding, mulching, and sodding prevent soil from becoming dislodged and should be considered first. Sediment control BMPs such as silt fences, sediment ponds, and stabilized entrances trap sediment after it has eroded. Sediment control BMPs should be used to back-up erosion control BMPs.

The SWPPP (if required for this facility) must contain a narrative evaluation of the appropriateness of stormwater management practices that divert, infiltrate, reuse, or otherwise manage stormwater runoff so as to reduce the discharge of pollutants. Appropriate measures are highly site-specific, but may include, among others, vegetative swales, collection and reuse of stormwater, inlet controls, snow management, infiltration devices, and wet retention measures. A combination of preventive and treatment BMPs will yield the most effective stormwater management for minimizing the offsite discharge of pollutants via stormwater runoff. BMPs schedules must also address preventive maintenance records or logbooks, regular facility inspections, spill prevention and response, and employee training.

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 as there are no sub-surface discharges.

ICE-MELT PRODUCT REMOVAL
The Department is authorized to require BMPs for facilities per 40 CFR 122.44(k)(2). The facility should, to the extent practicable, remove large pieces of salt as soon as possible. After winter weather has ceased for the year, the facility needs to inspect all low-lying areas for extra salt and sand and remove these as soon as possible. Salt applied to large areas has the potential to cause freshwater salinization which could result in a fish kill of sensitive species. To reduce potential for solids entering a stream, sand or other traction control materials will need to be evaluated against the probability that these materials could cause general criteria violations of solids and bottom deposits per 10 CSR 20-7.031(4).

LAND APPLICATION
Land application, which is surficial dispersion of wastewater or surficial spreading of sludge can be 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. Sub-surface dispersion or application of wastewater is considered a Class V UIC system; See UNDERGROUND INJECTION CONTROL section below.
- ✓ 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 may 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.

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, and 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 50th 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 LWW) 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.

✓ Monitoring for hardness was removed; the facility may continue to sample for hardness if they like and report the results at the next renewal.

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 256.400 RSMo to register water use annually. https://dnr.mo.gov/document-search/frequently-asked-major-water-user-questions-pub2236/pub2236

✓ It is unknown if this facility falls under the definition of major water user and is not registered with the Department. The facility must register with the Department if the requirements are met. Registration can be completed at this website: https://apps5.mo.gov/MWU/activeDirectoryLogin.jsp

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.

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.

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, including 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.

REASONABLE POTENTIAL (RP)

Regulations per 10 CSR 20-7.015(9)(A)2 and 40 CFR 122.44(d)(1)(i) require 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 or derived WQBEL, the permit must contain a WQBEL 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, WQBELs 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 WQBEL, 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 20-6.200(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 typically not implemented for stormwater. 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 when performing WET tests.

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 general, removal of a WQBEL if there is no RP is not considered backsliding, see ANTIBACKSLIDING for additional information.

- ✓ 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 criterion was re-assessed. It was determined that this facility does discharge solids in amounts which would indicate reasonable potential, therefore the permit maintains TSS limits.
- ✓ 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 Min	n Max	MF	RWC Acute	RWC Chronic	RP
Aluminum (Al)	µg/L	750	n/a	AQL	750	288.50	35	1.083	0.13	4820	2.8	13476	13476	Yes
Iron (Fe)	µg/L	n/a	1000	AQL	1643	819	3	0.600	710	1180	5.6	6633	6633	Yes
Zinc (Zn)	µg/L	237	235	AQL	238	119	3	0.600	61.5	99	5.6	556.5	556.5	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 WQBEL 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

- ✓ This facility shall submit an appropriate and complete application to the Department no less than 180 days prior to the expiration date listed on page 1 of the permit.
- ✓ The facility may email cleanwaterpermits@dnr.mo.gov to submit the application to the Program. A paper copy is not necessary if submitted via email. For larger applications, a drop-box type service may also be used.
- ✓ Application materials shall include complete Form A, and Form C. If the form name has changed, then the facility should ensure they are submitting the correct forms as required by regulation.

SAMPLING FREQUENCY JUSTIFICATION
Sampling and reporting frequency were 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 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 compliance is time allowed to meet future more stringent limitations. The SOC can also be 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. SOCs 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 SOCs, and to attain a greater level of consistency, the Department issued a policy on development of SOCs 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 WQBELs in 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 WQBEL(s). See permit Sections A and B for compliance dates.

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 holding structure 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.

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.

- ✓ Not applicable under this permit, this facility has stormwater-only outfalls but are regulated under MOR130068 at this time. The facility may not terminate permit MOR130068 until the stormwater outfalls are listed under this 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)
Class V wells are sub-surface dispersal or injection of any industrial wastewater; and in certain circumstances, may also be considered a Class V well if it is domestic wastewater. They can also be shallow injection wells like heat pumps and groundwater remediation wells. UIC systems may be described as having "septic tanks" or "lateral lines" in addition to the traditional well type of injection. 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. 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.

- ✓ Applicable; this facility has disclosed UIC is occurring; see UNDERGROUND INJECTION CONTROL section in the permit for conditions relating to this system.
- ✓ The facility submitted a replacement Class V Well Inventory Form on August 3, 2017.
- ✓ On November 13, 2024 the facility provided additional information for the domestic wastewater, cooling water, softener backwash into the UIC system.
- ✓ Kerry Ingredients and Flavours has approximately 10 employees. The septic system was designed for a total hydraulic load of approximately 1,000 gpd. The design load included sanitary, cooling tower, water softener backwash, and future growth. Since

the installation of the UIC, the cooling tower blowdown load has been removed from the system. In order to accommodate the required treatment capacity, two 1,000-gallon septic tanks are used in series.

- ✓ The septic contributions are from toilets and sinks; no showers or laundry facilities are on site. The maximum flow rate is estimated at 475 gpd. The softener backwash is intermittent. The majority of the stream goes into the product after secondary processes. It is estimated approximately 225 gpd goes to the septic system.
- ✓ The department evaluated the pollutant loading of the potential pollutants of concern. The data supplied supports the continued allowance of the subsurface injection of domestic wastewater and of softener backwash. The pollutants identified in the report are below levels necessitating effluent limits on the sub-surface discharge.

WASTELOAD ALLOCATIONS (WLA) FOR LIMITS

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

- ✓ 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

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.

- ✓ While this permit does not establish final effluent limitations for nutrients, the increased monitoring of nutrients is the primary step in the implementation of the new nutrient criteria for phosphorus and in the future, nitrogen.
- ✓ The proposed changes to aluminum and ammonia criteria by the EPA is environmentally necessary to ensure the criteria are reflective of the most current science available while protecting the water quality standards of the receiving stream.

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_{50}, or the NOEC. If the laboratory only supplied the LC_{50} or the NOEC value, the toxic unit is calculated by $100/LC_{50}$ for acute tests, or 100/NOEC for chronic tests. The TU value is entered in the eDMR system. Reports showing no toxicity are usually entered as <1.

- ✓ 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. WET limits are also part of the 2018 antidegradation review therefore must be continued. Elevated effluent toxicity was found in the WET samples collected July 2022. Other samples for July 2022 were reviewed. Nothing that is currently monitored appeared to have caused the elevated toxicity.

PART IV. EFFLUENT LIMIT DETERMINATIONS

OUTFALL #003 – COOLING TOWER BLOWDOWN

EFFLUENT LIMITATIONS TABLE:

PARAMETERS	UNIT	DAILY MAX	MONTHLY AVG.	PREVIOUS PERMIT LIMITS	MINIMUM SAMPLING FREQUENCY	REPORTING FREQUENCY	SAMPLE TYPE
PHYSICAL							
FLOW	MGD	*	*	SAME	ONE/MONTH	MONTHLY	24 HR. TOT
TEMPERATURE	°F	90	90	SAME	ONE/MONTH	MONTHLY	GRAB
CONVENTIONAL							
CHEMICAL OXYGEN DEMAND (COD)	mg/L	*	*	SAME	ONE/MONTH	MONTHLY	GRAB
CHLORINE, TOTAL RESIDUAL (TRC)	µg/L	17	8	SAME	ONE/MONTH	MONTHLY	GRAB
pH †	SU	6.5 TO 9.0	-	SAME	ONE/MONTH	MONTHLY	GRAB
TOTAL SUSPENDED SOLIDS (TSS)	mg/L	100	30	SAME	ONE/MONTH	MONTHLY	GRAB
METALS							
ALUMINUM, TR	µg/L	*	*	INTERIM	ONE/MONTH	MONTHLY	GRAB
ALUMINUM, TR	µg/L	750	281	FINAL	ONE/MONTH	MONTHLY	GRAB
COPPER, TR	µg/L	351	212	SAME	ONE/MONTH	MONTHLY	GRAB
IRON, TR	µg/L	*	*	INTERIM	ONE/MONTH	MONTHLY	GRAB
IRON, TR	µg/L	1643	819	FINAL	ONE/MONTH	MONTHLY	GRAB
MERCURY	µg/L	*	*	NEW	ONE/MONTH	MONTHLY	GRAB
ZINC, TR	µg/L	*	*	INTERIM	ONE/MONTH	MONTHLY	GRAB
ZINC, TR	µg/L	238	119	FINAL	ONE/MONTH	MONTHLY	GRAB
NUTRIENTS							
NITROGEN, TOTAL (TN)	mg/L	*	*	SAME	ONE/MONTH	MONTHLY	GRAB
PHOSPHORUS, TOTAL P (TP)	mg/L	*	*	SAME	ONE/MONTH	MONTHLY	GRAB
OTHER							
CHLORIDE	mg/L	378	188	SAME	ONE/MONTH	MONTHLY	GRAB
WET TEST - CHRONIC	TUc	1.6	-	SAME	ONE/YEAR	ANNUALLY	GRAB

* monitoring and reporting requirement only
† 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
Per 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 maximum daily flow and average in millions of gallons per day (MGD), monthly monitoring continued from previous permit. The facility reported from 0.005 to 0.063 MGD in the last permit term.

Temperature
In accordance with 10 CSR 20-7.031(5)(D), water contaminant sources shall not cause or contribute to stream temperature in excess of ninety degrees Fahrenheit (90 °F) or change the stream temperature by more than 5 degrees Fahrenheit. This parameter

must be measured within the 15-minute holding time. 90 °F daily maximum and monthly average continued from the 2018 antidegradation review. There is RP for this parameter; the facility reported from 41.9 to 90 °F during the last permit term.

CONVENTIONAL:

Chemical Oxygen Demand (COD)
Monitoring is continued from the previous permit. The requirement is appropriate based on the activities at the site and is continued pursuant to 10 CSR 20-7.015(9)(I)1 utilizing best professional judgment and in compliance with antibacksliding regulations. There is no numeric water quality standard for COD; however, increased oxygen demand may impact instream water quality. COD is also a valuable indicator parameter. COD monitoring allows the facility to identify increases in COD may indicate materials/chemicals coming into contact with stormwater causing an increase in oxygen demand. Increases in COD may indicate a need for maintenance or improvement of BMPs. The facility reported from non-detect to 93 mg/L in the last permit term.

Chlorine, Total Residual (TRC) and/or Bromine
17 µg/L daily maximum, 8 µg/L monthly average. The facility reported from 20 to 370 µg/L in the last permit term. This pollutant has reasonable potential based on the data supplied. There are no technology limits established for this parameter therefore water quality limits are the most protective. The effluent limits are the same as the previous permit to comply with antibacksliding and antidegradation requirements. The Department has established an ML for this parameter; the ML is 130 µg/L, see note ‡ in the permit. This parameter must be measured within the 15-minute holding time.

The permittee uses chorine and/or bromine in the cooling system. Both chlorine and bromine behave nearly identically in the freshwater environment causing rapid chemical oxidation reactions with available molecules. These halogens are found in the same category of the periodic table, are highly reactive, and neither is found elementally in nature. When determining free available chlorine, the analytical method is the same for both parameters, although no approved method for bromine is found in 40 CFR 136. Detection for chlorine has interferences of other strongly oxidizing molecules and specifically lists bromine presence as interference if only chlorine is to be measured. All field tests measure chlorine, bromine, and any other oxidizing agents present such as iodate, chlorine dioxide, ozone, permanganate, hydrogen peroxide, and disinfection byproducts such as chlorite and chlorate without indemnity and provide the summation of these parameters in the colorimetric result. Effluent limitation guidelines and Missouri Water Quality Standards do not include bromine; however, given the inherent similarity, the permit writer has determined bromine and chlorine may be considered the same pollutant therefore they are both covered under this permit. The permit writer has determined using chlorine limitations from the effluent limitation guideline at 40 CFR 423 for freely available chlorine, and Missouri Water Quality Standards for total recoverable chlorine to be the best course forward at this time to provide coverage for bromine under technology-based limitations and analysis and calculations for water quality-based limitations.

In the absence of a specific treatment technology, the permit effluent limits will be retained instead of a particular treatment type.

pH
6.5 to 9.0 SU – instantaneous grab sample. Water quality limits per 10 CSR 20-7.031(5)(E) are appropriate as WQBEL is more protective than the TBEL, and there is RP. This parameter must be measured within the 15-minute holding time. 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.

Total Suspended Solids (TSS)
100 mg/L daily maximum and 30 mg/L monthly average per 2018 antidegradation review. The facility reported from 2.5 to 95.8 mg/L in the last permit term. The wastewater discharge was reviewed for compliance with general criteria; there is RP for a general criteria violation based on the data and the results of the antidegradation analysis. The limit is appropriate based on the activities at the site and is continued pursuant to 10 CSR 20-7.015(9)(I)1 utilizing best professional judgment and in compliance with antibacksliding and antidegradation regulations.

METALS:

Aluminum, Total Recoverable
Previous permit limits were monitoring only; the facility reported between 0.13 and 4820 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. At some time during the last permit term, the ion exchange treatment system was removed from service. However, historical influent data was compared to effluent data, and the ion exchange system was very effective at removing aluminum.

The facility must implement treatment and continue to use the chosen treatment at all times. On January 30, 2024, the facility provided an application addendum. Aluminum was sampled in the total and dissolved fractions; however, aluminum is not available for a metals translator.

In the course of reviewing several dissolved metals translator studies, it has come to the attention of the Watershed Protection Section that Missouri's acute aluminum criterion for the protection of aquatic life of 750 µg/L appears to have been established incorrectly. While the corresponding freshwater acute Criterion Maximum Concentration (CMC) for aluminum published in the federal National Recommended Water Quality Criteria – Aquatic Life Criteria Table (304(a) criteria) is also 750 µg/L, it is noted in the table that this federal criterion is expressed in terms of total recoverable metal in the water column. Missouri's criterion, on the other hand, is clearly expressed in terms of dissolved metals in the water column, as established at 10 CSR § 20-7.031(5)(B)2.

The following paragraphs summarize the history that led to the adoption of the incorrect aluminum criterion of 750 µg/L as total dissolved, which was compiled by the Water Quality Standards Unit of the Water Protection Program.

Beginning in 1993, there was increased correspondence between the Missouri Department of Natural Resources and the Environmental Protection Agency Region 7 office in regard to metals criteria. Current EPA regulation at the time recommended the usage of total recoverable metals in order to accurately measure bioavailable metals that aquatic lifeforms might be exposed to in their environment. As determined in a letter written to Missouri DNR from EPA Region 7, "approval of both Missouri's and Nebraska's adoption of water quality criteria for metals based on EPA Section 304(a) guidance criteria expressed as dissolved without conversion is premised on a 1:1 translation of dissolved criteria to water quality-based permit limits expressed as total recoverable. A departure from this approach invalidates the approvability of state water quality criteria expressed as dissolved metals based on EPA Section 304(a) guidance criteria."

EPA Region 7 explicitly explained that without proper adjustment of Missouri's existing metals criteria a standards-to-permit translator could not be utilized to reflect the actual dissolved metals criteria. It was stated by DNR that adjustments required by recently released EPA guidelines had not been made because staff had not had time to propose adjustments to numeric limits.

A comment specifically in regard to aluminum made mention of it not being required by EPA's National Toxics Rule, and if it was adopted it should be expressed as dissolved. Missouri DNR's response to this comment simply stated that EPA recommended the inclusion of aluminum, highlighting dissolved metals already being specified for aquatic-life protection. Changes had been proposed to align to the latest published drinking water standards and other EPA requirements using the latest values to conform to the National Toxics Rule. Newly received updated criteria were incorporated except when they conflicted with final drinking water standards, represented minor changes, or were believed to be too stringent due to naturally occurring concentrations of aluminum.

In late 1993 EPA was still urging Missouri Department of Natural Resources to adjust their metals' criteria from dissolved to total recoverable. EPA's Protection of Aquatic Life-Chronic Criterion was listed at 87 µg/l. EPA Region 7 sent an updated list containing pollutants of concern requiring that Missouri DNR would have to adopt EPA's suggested criteria or justify exclusion of said criteria. Aluminum was listed as a pollutant that was currently in the 304(a) criteria, however the National Toxics Rule did not include it in promulgation.

At the Clean Water Commission meeting, December 15-16, 1993, in Springfield, Missouri, aluminum was once more brought to the attention of the stakeholders and committee members present. It was stated that staff had not had time to propose adjustments to the numeric limits in response to recently received EPA guidelines. Once again, the point was made that aluminum was not required by EPA's National Toxics Rule, and because of this it should be expressed as dissolved. EPA recommended the inclusion of aluminum, and dissolved metals were already specified for aquatic-life protection. Changes had been proposed to conform with the latest published drinking water standards, other EPA requirements, and the National Toxics Rule. New values were incorporated except when they conflicted with final drinking water standards, represented only minor changes, or were believed to be too stringent to meet because of naturally occurring aluminum concentrations. It was also mentioned that criteria for human health-fish consumption that are less stringent than existing aquatic life protection criteria were deemed unnecessary because aquatic-life protection criteria already applied to all classified waters at the time.

In the March 1994 Code of State Regulations, metals were to be analyzed for aquatic life protection and human health protection-fish consumption in the following manner: mercury-total recoverable metals; all other metals-dissolved metals; drinking water supply-dissolved metals; all other beneficial uses-total recoverable metals. Aluminum listed on Table A as 750 µg/l (acute criterion) under column I-Protection of Aquatic Life.

It wasn't until September 2000 that the United States Environmental Protection Agency finalized the 1993-1994 Missouri DNR's proposed water quality standards regulations in a multi-faceted approval letter. As stated in the approval document, "EPA is approving ten water quality criteria for the protection of aquatic life for selenium, aluminum, chloride, chlorine, oil and grease,

sulfate plus chloride; all the State-adopted criteria are as stringent or more stringent than those criteria for the protection of aquatic life published by EPA under section 304(a) of the Clean Water Act." The EPA approval letter failed to provide adequate scientific reasoning behind the approval of Missouri's incorrect aluminum criterion—this was most likely due to an unanticipated extended approval timeframe, staff changes, and the unawareness of new EPA staff in regard to the error in the original standards proposal from 1993.

Because of this difference in Federal and State standards, a dissolved metals translator cannot be done for aluminum. Any deviation from a 1:1 translator from dissolved to total recoverable would cause permitted limits to exceed Federal aquatic life criteria for aluminum.

Additionally, the state is seeking to update the WQS for aluminum which will incorporate pH, DOC and hardness into the equation, as was alluded to in the application addendum. However, until then, the WQS for aluminum remains at 750 µg/L, therefore, must be implemented. To raise the effluent limits, an antidegradation review may be required.

Acute AQL: 750 µg/L
LTAa: WLAa * LTAa multiplier = 750 * 0.178 = 133.575 [CV: 1.165, 99th %ile]
Daily Max: MDL = LTA * MDL multiplier = 133.575 * 5.615 = 750 µg/L [CV: 1.165, 99th %ile]
Monthly Avg: AML = LTA * AML multiplier = 133.575 * 2.103 = 280.9 µg/L [CV: 1.165, 95th %ile, n=4]

In the absence of a specific treatment technology, the permit effluent limits will be retained instead of a particular treatment type.

Copper, Total Recoverable
Previous permit limits were 351 µg/L daily maximum, 212 µg/L monthly average; the facility reported between 1 and 172 µg/L in the last permit term. The limits are continued based on antibacksliding requirements and to continue to implement the results of the 2023 biotic ligand model for a dissolved metals translator. A Biotic Ligand Model (BLM) was submitted for copper. The results of the study are implemented in this modification. See Appendix B. The May 4, 2022, approval from DNR's Watershed Protection Section listed the Chromic Maximum Concentration (CMC) as 390 µg/L, and the Chronic Continuous Concentration (CCC) as 242 µg/L. The hardness used for the study was 169 mg/L. The values below were calculated utilizing normal TSD methods for calculating a permit limit from WQS. Study data was used to determine facility variability (CV). Table A-1 was changed to reflect these values. The conditions for copper were superseded in the previous modification.

In the absence of a specific treatment technology, the permit effluent limits will be retained instead of a particular treatment type.

Copper Limit Derivation
CMC: 390 µg/L
CCC: 242 µg/L
LTAa: WLAa * LTAa multiplier = 390 * 0.449 = 175.176 [CV: 0.388, 99th %ile]
LTAc: WLAc * LTAc multiplier = 242 * 0.652 = 157.695 [CV: 0.388, 99th %ile]
use most protective LTA: 157.695
Daily Maximum: MDL = LTA * MDL multiplier = 157.695 * 2.226 = 351.1 µg/L [CV: 0.388, 99th %ile]
Monthly Average: AML = LTA * AML multiplier = 157.695 * 1.346 = 212.3 µg/L [CV: 0.388, 95th %ile, n=4]

In the absence of a specific treatment technology, the permit effluent limits will be retained instead of a particular treatment type.

Iron, Total Recoverable
New requirement; the facility reported 710 µg/L in the application. The facility has one year to re-establish the treatment system. 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. At some time during the last permit term, the ion exchange treatment system was removed from service, but treatment must be re-established to meet the limits consistently.
Chronic AQL: 1000 µg/L
LTAc: WLAc * LTAc multiplier = 1000 * 0.527 = 527.433 [CV: 0.6, 99th %ile]
Daily Maximum: MDL = LTA * MDL multiplier = 527.433 * 3.114 = 1642.7 µg/L [CV: 0.6, 99th %ile]
Monthly Average: AML = LTA * AML multiplier = 527.433 * 1.552 = 818.8 µg/L [CV: 0.6, 95th %ile, n=4]

In the absence of a specific treatment technology, the permit effluent limits will be retained instead of a particular treatment type.

Mercury, Total Recoverable
New monitoring requirement; the facility reported 0.00708 µg/L in the application.

Zinc, Total Recoverable
New requirement; the facility reported 90 µg/L in the application, and 61 µg/L in the application addendum received January 30, 2024. The addendum value does not supersede the original value. The facility has one year to re-establish the treatment system, 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. At some time during the last permit term, the ion exchange treatment system was removed from service but treatment will need to be re-established.
Acute AQL: e^(1.0166 * ln224 – 3.062490) * (1.136672 – ln224 *0.041838) = 232.545 µg/L [at hardness 224]
Chronic AQL: e^(0.7977 * ln224 – 3.909) * (1.101672 – ln224*0.041938) = 232.545 µg/L
TR Conversion: AQL/Translator = 232.545 / 0.978 = 237.776
TR Conversion: AQL/Translator = 232.545 / 0.986 = 235.847
LTAa: WLAa * LTAa multiplier = 237.776 * 0.321 = 76.346 [CV: 0.6, 99th %ile]
LTAc: WLAc * LTAc multiplier = 235.847 * 0.527 = 124.394 [CV: 0.6, 99th %ile]
use most protective LTA: 76.346
Daily Maximum: MDL = LTA * MDL multiplier = 76.346 * 3.114 = 237.8 µg/L [CV: 0.6, 99th %ile]
Monthly Average: AML = LTA * AML multiplier = 76.346 * 1.552 = 118.5 µg/L [CV: 0.6, 95th %ile, n=4]

In the absence of a specific treatment technology, the permit effluent limits will be retained instead of a particular treatment type.

NUTRIENTS:

Nitrogen, Total (TN)
Monitoring continued; the facility reported from non-detect to 6.4 mg/L over the last permit term. There are currently no stream assessments for nutrient eutrophication. The data suggest there may be excessive nutrients in the stream. The results of the stream sampling will be evaluated and compared to the facility data in the next permit term. Total nitrogen (TN) is a calculation using TKN + Nitrate + Nitrite.

Phosphorus, Total P (TP)
Monitoring continued; the facility reported from non-detect to 6.4 mg/L over the last permit term. There are currently no stream assessments for nutrient eutrophication. The data suggest there may be excessive nutrients in the stream. The results of the stream sampling will be evaluated and compared to the facility data in the next permit term.

OTHER:

Chloride
378 mg/L daily maximum and 188 mg/L monthly average continued from the previous permit and from the 2018 antidegradation review. The facility reported from 7.76 to 65 mg/L in the last permit term. Antidegradation review limits must be maintained per 10 CSR 20-7.015(9)(A)5.

Sulfate
Monitoring requirement removed. There is no RP. Monitoring in antidegradation reviews is not required to be continued if there is no RP.

Chloride Plus Sulfate
Monitoring requirement removed. There is no RP. Monitoring in antidegradation reviews is not required to be continued if there is no RP.

Whole Effluent Toxicity (WET) Test, Chronic
1.6 TUc limit for *Ceriodaphnia dubia* and *Pimephales promelas* continued from the previous permit. 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. The facility reported from non-detect to 1.3 TUc in the last permit term. This parameter is also part of the antidegradation review therefore limits must be kept. The chronic WLA is converted to a long-term average concentration (LTAa,c) using: WLAa,c = WLAa × ACR. A default acute to chronic ratio (ACR) value of 10 is used based on §1.3.4 (page 18) and Appendix A of the March 1991 TSD. 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; continued from the previous permit.

In the absence of a specific treatment technology, the permit effluent limits will be retained instead of a particular treatment type.

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.

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-notices The Department must issue public notice of a draft operating permit. The public comment period is the length of time not less than 30 days following the date of the public notice which interested persons may submit written comments about the proposed permit.

For persons 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 starts January 10, 2025, and ended February 10, 2025.
- ✓ One comment letter was received, with two requests from the facility.

1. Removal of ion exchange as cooling tower blowdown treatment (throughout Permit and Fact Sheet).

Kerry requests the removal of ion exchange as the treatment option for the cooling tower blowdown as being the only type of treatment. Although the December 2018 antidegradation review recommended ion exchange, Kerry would like to investigate other treatment alternatives, such as pH adjustment, aeration, and/or precipitation to meet end-of-pipe discharge limits. According to the Permit fact sheet (18. Antidegradation Review Preliminary Determination), the Department of Natural Resources recognizes other alternative treatments in order to meet Permit limits at end-of-pipe.

Response: granted; the permit effluent limits will be retained instead of a particular treatment type. Notably, once treatment is established, it cannot be removed without notification to the department which may also require a permit modification.

2. Part B. Schedule of Compliance

Kerry requests an increase in the schedule of compliance from 12 months from the Permit effective data to 18 months from the Permit effective data in order to investigate, trial and implement alternative treatments for a reduction in total recoverable aluminum, total recoverable iron, and total recoverable zinc. The alternative option that achieves Permit limits, is practicable, economically efficient, and affordable will be selected.

Response: granted; the schedule was extended to 1.5 years.

DATE OF FACT SHEET: February 18, 2024

COMPLETED BY:
PAM HACKLER, ENVIRONMENTAL SCIENTIST
MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER PROTECTION PROGRAM
OPERATING PERMITS SECTION - INDUSTRIAL UNIT
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Appendix 1: Water Quality and Antidegradation Review

For the Protection of Water Quality
and Determination of Effluent Limits for Discharge to
Tributary to Goose Creek

by
Kerry Ingredients and Flavours - Greenville

December 2018

Table of Contents

1. Facility Information

FACILITY NAME: Kerry Ingredients and Flavours - Greenville NPDES #: MO-0139050

FACILITY TYPE: INDUSTRIAL – Food Preparation – SIC #2099
FACILITY DESCRIPTION: As a result of the submitted alternative analysis, the applicant's preferred alternative is implementation of an ion exchange for the non-contact cooling tower blowdown water. The design flow will be 0.0288 MGD from Outfall #003.

COUNTY:	Wayne	UTM COORDINATES:	X = 732322 / Y = 4114162
12- DIGIT HUC:	07140107-0102	LEGAL DESCRIPTION:	NW ¼, Section 34, T29N, R6E
EDU*:	Ozark/Upper St. Francis/Castor	ECOREGION:	Ozark Highland

* - Ecological Drainage Unit

2. Water Quality Information

In accordance with Missouri's Water Quality Standard [10 CSR 20-7.031(3)] and federal antidegradation policy at Title 40 Code of Federal Regulation (CFR) Section 131.12 (a), the Missouri Department of Natural Resources (Department) developed a statewide antidegradation policy and corresponding procedures to implement the policy. A proposed discharge to a water body will be required to undergo a level of Antidegradation Review which documents that the use of a water body's available assimilative capacity is justified. Effective August 30, 2008, and revised July 13, 2016, a facility is required to use *Missouri's Antidegradation Implementation Procedure (AIP)* for new and expanded wastewater discharges.

3. Water Quality History:

New outfall – no history. No receiving water information.

OUTFALL	DESIGN FLOW (CFS)	TREATMENT LEVEL	RECEIVING WATERBODY	DISTANCE TO CLASSIFIED SEGMENT (MI)
003	0.0445	Ion Exchange	Tributary to Goose Creek	0.2

3. Receiving Waterbody Information

WATERBODY NAME	CLASS	WBID	LOW-FLOW VALUES (CFS)			DESIGNATED USES**
			1Q10	7Q10	30Q10	
Tributary to Goose Creek	-	-	0.0	0.0	0.0	General Criteria
8-20-13 MUDD V1.0	C	3960	-	-	-	AQL, HHP, IRR, LWW, SCR, WBC(B)

** Irrigation (IRR), Livestock & Wildlife Protection (LWP), Protection of Warm Water Aquatic Life (AQL), Human Health Protection (HHP), Cool Water Fishery (CLF), Cold Water Fishery (CDF), Whole Body Contact Recreation – Category A (WBC-A), Whole Body Contact Recreation – Category B (WBC-B), Secondary Contact Recreation (SCR), Drinking Water Supply (DWS), Industrial (IND), Groundwater (GRW).

RECEIVING WATER BODY SEGMENT #1: Tributary to Goose Creek and Goose Creek
Upper end segment* UTM coordinates: X = 732326 / Y = 4114162 (Outfall)
Lower end segment* UTM coordinates: X = 739372 / Y = 4115374 (confluence with Bear Creek)

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

4. General Comments

Ramboll Engineering prepared, on behalf of Kerry Ingredients and Flavours - Greenville, the *Antidegradation Report (Executive Summary)* for Kerry Ingredients and Flavours - Greenville dated July 27, 2018. Applicant elected to assume that all pollutants of concern (POC) are significantly degrading the receiving stream in the absence of existing water quality. An alternative analysis was conducted to fulfill the requirements of the AIP. No dissolved oxygen modeling analysis was submitted for review. Information that was provided by the applicant in the submitted report and summary forms in Appendix C was used to develop this review document.

Geohydrological Evaluation has been requested and the report is expected to show that that the receiving stream is gaining for discharge purposes (Appendix A: Map). This report is expected before the end of the year and if the report states losing, then the pollutants will need to be re-evaluated for groundwater protection in the WQAR.

A Missouri Department of Conservation Natural Heritage Review was obtained by the applicant; and records of endangered species were found for the project area. It is recommended that the U.S. Fish and Wildlife Service and the Missouri Department of Conservation be contacted for further coordination (see Appendix B).

5. Antidegradation Review Information

The following is a review of the *Antidegradation Report* dated July 27, 2018.

6. Tier Determination

Below is a list of pollutants of concern reasonably expected to be in the discharge (see Appendix C), Pollutants of concern are defined as those pollutants "proposed for discharge that affects beneficial use(s) in waters of the state. POCs include pollutants that create conditions unfavorable to beneficial uses in the water body receiving the discharge or proposed to receive the discharge." (AIP, Page 7). Tier 2 was assumed for all POCs (see Appendix C).

Table: Pollutants of Concern and Tier Determination

POLLUTANTS OF CONCERN	TIER*	DEGRADATION	COMMENT
Temperature	2	Significant	
Chemical Oxygen Demand	**	Significant	
Total Suspended Solids (TSS)	**	Significant	
Total Nitrogen	2	Significant	
Total Phosphorus	2	Significant	
Chloride	2	Significant	
Sulfate	2	Significant	
Chlorine/Bromine, Total Recoverable	2	Significant	
pH	***	Significant	Permit limits applied
Aluminum, Total Recoverable	2	Significant	
Copper, Total Recoverable	2	Significant	
Whole Effluent Toxicity - Chronic	2	Significant	

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

For pollutants of concern, the attachments are: Attachment A, Tier 2 with significant degradation.

7. Existing Water Quality

No existing water quality data was submitted. All POCs were considered to be Tier 2 and significantly degraded in the absence of existing water quality.

8. No Discharge Evaluation

According to 10 CSR 20-6.010 (4)(D), reports for the purpose of constructing a wastewater treatment facility shall consider the feasibility of constructing and operating a no discharge facility. Because Missouri's antidegradation implementation procedures specify that if the proposed activity results in significant degradation then a demonstration of necessity (i.e., alternatives analysis) and a determination of social and economic importance are required. Part of that analysis as shown below is the non-degrading or no discharge evaluation. See Section 5.4.1 discussion for the regionalization alternative.

Surface irrigation was considered impracticable due to lack of adequate available land for application of wastewater.

9. Demonstration of Necessity and Social and Economic Importance

Missouri's antidegradation implementation procedures specify that if the proposed activity does result in significant degradation then a demonstration of necessity (i.e., alternatives analysis) and a determination of social and economic importance are required. Six alternatives from non-degrading to less degrading to degrading alternatives were evaluated. Alternative #1, non-degrading surface irrigation, was eliminated as impracticable due to not enough adequate land available. Alternative #2, non-degrading reuse/recycle, was eliminated as impracticable due to being too much water. Alternative #3, non-degrading discharge to regional wastewater system, was eliminated as impracticable due to distance and inadequate capacity. Only the ion exchange, Alternative #4, was considered practicable. Alternative #5, filtration is not expected to achieve reduction in the copper concentration due to the copper being in the dissolved form. Alternative, #6, chemical precipitation could be effective, but effectiveness treatability studies would need to be conducted and this study cannot reliably be conducted until the system is operating. Due to this uncertainty, this technology was considered impracticable.

10. Regionalization Alterative

Within Section II B 1. of the AIP, discussion of the potential for discharge to a regional wastewater collection system is mentioned. The applicant provided discussion of this alternative. The alternative analysis mentions the City of Greenville as the regional authority, but does not have adequate capacity. This authority is not operative in the area at this time so a waiver required under 10 CSR 20-6.010(3) (B) 1 Continuing Authorities was not obtained.

NEEDS A WAIVER TO PREVENT CONFLICT WITH AREA WIDE MANAGEMENT PLAN APPROVED UNDER SECTION 208 OF THE CLEAN WATER ACT AND/OR UNDER 10 CSR 20-6.010(3) (B) 1 OR 2 CONTINUING AUTHORITIES? (Y OR N) N

11. Losing Stream Alterative Discharge Location

Under 10 CSR 20-7.015(4) (A), *discharges to losing stream shall be permitted only after other alternatives including land application, discharge to gaining stream and connection to a regional facility have been evaluated and determined to be unacceptable*

for environmental and/or economic reasons. Without new information, it is believed that the discharge does not discharge to a losing stream segment or will not discharge with 2 miles of a losing stream segment.

12. Social and Economic Importance Evaluation

The applicant first identified the community that will be affected by the proposed degradation of water quality. The affected community is those living near the site, City of Greenville, and Wayne County. Secondly, a number of relevant factors were identified including increasing by 60 percent the locally sourced raw material purchases, 142 temporary and 4 full-time employees will be employed due to this expansion, and Wayne County has high poverty rate and low median household income. Within a Social and Economic Benefits section each factor was evaluated. Appendix D, Attachment A: Tier 2 with Significant Degradation form contains a summary of this information.

13. General Assumptions of the Water Quality and Antidegradation Review

1. A Water Quality and Antidegradation Review (WQAR) assumes that [10 CSR 20-6.010(3) Continuing Authorities and 10 CSR 20-6.010(4) (D), consideration for no discharge] has been or will be addressed in a Missouri State Operating Permit or Construction Permit Application.
2. A WQAR does not indicate approval or disapproval of alternative analysis as per [10 CSR 20-7.015(4) Losing Streams], and/or any section of the effluent regulations.
3. Changes to Federal and State Regulations made after the drafting of this WQAR may alter Water Quality Based Effluent Limits (WQBEL).
4. Effluent limitations derived from Federal or Missouri State Regulations (FSR) may be WQBEL or Effluent Limit Guidelines (ELG).
5. WQBEL supersede ELG only when they are more stringent. Mass limits derived from technology based limits are still appropriate.
6. A WQAR does not allow discharges to waters of the state, and shall not be construed as a National Pollution Discharge Elimination System or Missouri State Operating Permit to discharge or a permit to construct, modify, or upgrade.
7. Limitations and other requirements in a WQAR may change as Water Quality Standards, Methodology, and Implementation procedures change.
8. Nothing in this WQAR removes any obligations to comply with county or other local ordinances or restrictions.

14. Mixing Considerations

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

15. Permit Limits and Monitoring Information

OUTFALL #003

TABLE: EFFLUENT LIMITS OUTFALL 003

PARAMETER	UNITS	DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	BASIS FOR LIMIT (NOTE 1)	MONITORING FREQUENCY
FLOW	MGD	*		*	FSR	ONCE/MONTH
TEMPERATURE	°F	90		90	FSR	ONCE/MONTH
CHEMICAL OXYGEN DEMAND$_5$	MG/L	*		*	PEL	ONCE/MONTH
TOTAL SUSPENDED SOLIDS	MG/L	100		30	PEL	ONCE/MONTH
TOTAL NITROGEN	MG/L	*		*	PEL	ONCE/MONTH
TOTAL PHOSPHORUS	MG/L	*		*	PEL	ONCE/MONTH
CHLORIDE	MG/L	378		188	FSR	ONCE/MONTH
SULFATE		*		*	FSR	ONCE/MONTH
CHLORINE/BROMINE, TOTAL RESIDUAL	µG/L	17 ML<130		8 ML<130	FSR	ONCE/MONTH
PH	SU	6.5– 9.0		6.5 – 9.0	FSR	ONCE/MONTH
ALUMINUM, TOTAL RECOVERABLE	µG/L	*		*	FSR	ONCE/MONTH
COPPER, TOTAL RECOVERABLE	µG/L	22.0		14.0	FSR	ONCE/MONTH
HARDNESS	MG/L	*		*	FSR	ONCE/MONTH
WHOLE EFFLUENT TOX. –CHRONIC	TUC	1.6		-	FSR	ONCE/YEAR

Note 1– Water Quality-based Effluent Limitation – WQBEL; or Minimally Degrading Effluent Limit –MDEL; or Preferred Alternative Effluent Limit – PEL; or Technology-based Effluent Limit – TBEL; or No Degradation effluent Limit – NDEL; or Federal/State Regulation – FSR; or Not Applicable – N/A. Also, please see the General Assumptions of the WQAR #4 & #5.

* Monitoring requirements only.

16. Receiving Water Monitoring Requirements
No receiving water monitoring requirements recommended at this time.

17. Derivation and Discussion of Limits
Wasteload allocations and limits were calculated using two methods:

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

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

Where C = downstream concentration
C_s = upstream concentration
Q_s = upstream flow
C_e = effluent concentration
Q_e = effluent flow

Chronic wasteload allocations were determined using applicable chronic water quality criteria (CCC: criteria continuous concentration) and stream volume of flow at the edge of the mixing zone (MZ). Acute wasteload allocations were determined using applicable water quality criteria (CMC: criteria maximum concentration) and stream volume of flow at the edge of the zone of initial dilution (ZID). Water quality-based maximum daily and average monthly effluent limitations were calculated using methods and procedures outlined in USEPA's "Technical Support Document For Water Quality-based Toxics Control" (EPA/505/2-90-001).

2) Alternative Analysis-based – Using the preferred alternative's treatment capacity for conventional pollutants such as BOD_5 and TSS that are provided by the consultant as the WLA, the significantly-degrading effluent average monthly and average weekly limits are determined by applying the WLA as the average monthly (AML) and multiplying the AML by 1.5 to derive the average weekly limit (AWL). For toxic and nonconventional pollutant such as ammonia, the treatment capacity is applied as the significantly-degrading effluent monthly average (AML). A maximum daily can be derived by dividing the AML by 1.19 to determine the long-term average (LTA). The LTA is then multiplied by 3.11 to obtain the maximum daily limitation. This is an accepted procedure that is defined in USEPA's "Technical Support Document For Water Quality-based Toxics Control" (EPA/505/2-90-001).

Note: Significantly-degrading effluent limits have been based on the authority included in Section III.

OUTFALL #003 – LIMIT DERIVATION

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

Temperature. In accordance with 10 CSR 20-7.031(5)(D), water contaminant sources shall not cause or contribute to stream temperature in excess of ninety degrees Fahrenheit (90 °F).

Chemical Oxygen Demand (COD). There is no water quality standard for COD; however, increased oxygen demand may impact instream water quality. COD is also a valuable indicator parameter. An increase in COD may indicate excessive materials/chemicals treating the cooling water and may indicate a need for maintenance or improvement of operational controls.

Total Suspended Solids (TSS). There is no water quality standard for TSS; however, excessive sediment discharges may impact instream water quality. TSS is also a valuable indicator parameter. An increase in TSS may indicate a need for maintenance of improvement of operational controls. 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. From consultation with the permittee the proposed limits of 100 mg/L daily maximum and 30 mg/L monthly average are considered achievable.

Nitrogen, Total. Monitoring only. The permittee indicated that this pollutant is present in the discharge. Monitoring will be included to determine reasonable potential.

Phosphorus, Total. Monitoring only. The permittee indicated that this pollutant is present in the discharge. Monitoring will be included to determine reasonable potential.

Chloride. Protection of Aquatic Life CCC = 860 mg/L, CMC = 230 mg/L [10 CSR 20-7.031(4)(L)].

LTA_c = 230 (0.527) = 121.2 mg/L
LTA_a = 860 (0.321) = 276.1 mg/L
Use most protective number of LTA_a or LTA_c.
MDL = 121.2 (3.11) = 378 mg/L
AML = 121.2 (1.55) = 188 mg/L

The ”base case” for chloride was no treatment as the facility believed that there is no reasonable potential for this pollutant. The ion exchange treatment for copper will provide some treatment for chlorides as a side benefit, therefore the ion exchange is considered the preferred alternative for chloride. Because the efficiency of ion exchange for removing chloride is unknown, water quality based limits will be placed in the permit. A reasonable potential analysis may be conducted at renewal as there is not enough data at this time.

Sulfate. Monitoring only. The permittee indicated that this pollutant is present in the discharge. Monitoring will be included to determine reasonable potential.

Chlorine/Bromine, Total Residual (TRC/TRB). Warm-water Protection of Aquatic Life CCC = 10 µg/L, CMC = 19 µg/L [10 CSR 20-7.031, Table A]. Background = 0 µg/L. The permittee uses chorine and/or bromine in the cooling system. Both chlorine and bromine behave nearly identically in the freshwater environment causing rapid chemical oxidation reactions with available molecules. These halogens are found in the same category of the periodic table, are highly reactive, and neither is found elementally in nature. When determining free available chlorine, the analytical method is the same for both parameters; although no approved method for bromine is found in 40 CFR 136. Detection for chlorine has interferences of other strongly oxidizing molecules and specifically lists bromine presence as interference if only chlorine is to be measured. All field tests measure chlorine, bromine, and any other oxidizing agents present such as iodate, chlorine dioxide, ozone, permanganate, hydrogen peroxide, and disinfection byproducts such as chlorite and chlorate without indemnity, and provide the summation of these parameters in the colorimetric result. Effluent limitation guidelines and Missouri Water Quality Standards do not include bromine; however, given the inherent similarity, the permit writer has determined bromine and chlorine may be considered the same pollutant therefore they are both covered under this permit. The permit writer has determined using chlorine limitations from the effluent limitation guideline at 40 CFR 423 for freely available chlorine, and Missouri Water Quality Standards for total recoverable chlorine to be the best course forward at this time to provide coverage for bromine under technology-based limitations and analysis and calculations for water quality-based limitations. Part IV provides the determination of the limits.

Acute WLA: C_e = 19 µg/L
Chronic WLA:C_e = 10 µg/L
LTA_a = 19 (0.321) = 6.1 µg/L
LTA_c = 10 (0.527) = 5.3 µg/L
Use most protective number of LTA_a or LTA_c.
MDL = 5.3 (3.11) = 16.5 µg/L
AML = 5.3 (1.55) = 8.2 µg/L

Standard compliance language for TRC, including the minimum level (ML), will be described in the permit.

- **pH**. The Water Quality Standard at 10 CSR 20-7.031(5)(E) states water contaminants shall not cause pH to be outside the range of 6.5 to 9.0 standard pH units.

Metals

Hardness Dependent Metals:

Effluent limitations for total recoverable metals were developed using methods and procedures outlined in EPA/505/2-90-001 and “The Metals Translator: Guidance for Calculating a Total Recoverable Permit Limit from a Dissolved Criterion” (EPA 823-B-96-007). General warm-water fishery criteria apply and water hardness = 162 mg/L. This hardness is the department current default procedure. Please note that the Clean Water Commission has adopted changes to the water quality standard such that the hardness value on the 50 percentile value and a new default way based on ecoregions would use a value of 110 mg/L for this facility. This is not being applied because these standards have not yet been approved by the U.S. Environmental Protection Agency.

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

Aluminum, Total Recoverable. Monitoring only. The permittee indicated that they believe this pollutant is present in the

discharge. The permit writer has used best professional judgment to include monitoring to determine if reasonable potential exists for the discharge to cause toxicity within the receiving stream.

Copper, Total Recoverable. Daily maximum limit of 22 µg/L, monthly average limit of 14 µg/L. Application received on 7/27/2018 reported 56.1 µg/L of copper as a reference sample for this outfall. This value exceeds water quality standards. Effluent limits will be included in this permit to protect the aquatic life water quality standard found in 10 CSR 20-7.031 Table A. Copper water quality standards are dependent on hardness. Site specific hardness was not available for this outfall, and a standard hardness of 162 mg/L was used to calculate limits.

METAL	CONVERSION FACTORS	
	ACUTE	CHRONIC
Copper	0.960	0.960

Acute AQL WQS: $e^{(0.9422 * \ln 162 - 1.7003)} * 0.960 = 21.2$[at Hardness 110]
Chronic AQL WQS: $e^{(0.8545 * \ln 162 - 1.7020)} * 0.960 = 13.5$[at Hardness 110]
Acute TR WQS: $21.2 \div 0.96 = 22.0$ [Total Recoverable Conversion]
Chronic TR WQS: $13.5 \div 0.96 = 14.0$ [Total Recoverable Conversion]
Acute WLA: $C_e = 22.0$ µg/L [WLA=WQS when no mixing]
Chronic WLA: $C_e = 14.0$ µg/L
The preferred alternative for copper is the installation and operation of an ion exchange process. The ion exchange unit is anticipated to achieve copper concentrations lower than WQBELs, calculated above, but the design and removal efficiency is not yet known so WQBELs will be applied as an upper limit. As stated above, these water quality standards are dependent on hardness and therefore these limits will be recalculated with the hardness data available at the time of renewal.

Whole Effluent Toxicity (WET) Test, Chronic. A WET test is a quantifiable method to determine discharges from the facility cause toxicity to aquatic life by itself, in combination with, or through synergistic responses, when mixed with receiving stream water. Under the federal Clean Water Act (CWA) §101(a)(3), requiring WET testing is reasonably appropriate for site-specific Missouri State Operating Permits for discharges to waters of the state issued under the National Pollutant Discharge Elimination System (NPDES). WET testing is also required by 40 CFR 122.44(d)(1). WET testing ensures the provisions in 10 CSR 20-6 and the Water Quality Standards in 10 CSR 20-7 are being met. Under 10 CSR 20-6.010(8)(A)4, the Department may require other terms and conditions it deems necessary to assure compliance with the CWA and related regulations of the Missouri Clean Water Commission. The following Missouri Clean Water Laws (MCWL) apply: §644.051.3. requires the Department to set permit conditions complying with the MCWL and CWA; §644.051.4 specifically references toxicity as an item we must consider in writing permits (along with water quality-based effluent limits); and §644.051.5. is the basic authority to require testing conditions. Due to this being a new facility with Water Quality-Based Effluent Limitations for toxic substances, WET testing is required.

The permit writer has determined this facility has reasonable potential to cause toxicity in the receiving stream. Acute tests are not required when chronic tests are performed; the acute toxicity can be back-calculated based on chronic test data.

WQS: no toxics in toxic amounts [10 CSR 20-7.031(4)(J)2.B.] = 0.3 TUa, 1.0 TUc
Acute WLA: $C_e = ((\#\# cfs_{DF} + \#\# cfs_{ZID7Q10}) 0.3 TUa - (\#\# cfs_{ZID7Q10} * 0 TUa_{Background})) \div \#\# cfs_{DF}$
$C_e = 0.3 TUa * 10 = 3.0 TUa,c$ ACR: acute-to-chronic ratio = 10]
(The acute WLA is converted to a long-term average concentration (LTAa,c) using: WLAa,c = WLAa × ACR. A default acute to chronic ratio [ACR] value of 10 is used based on section 1.3.4 (page 18) and Appendix A of the March 1991 TSD.)
Chronic WLA: $C_e = ((\#\# cfs_{DF} + \#\# cfs_{MZ7Q10}) 1.0 TUa,c - (\#\# cfs_{MZ7Q10} * 0 TUc_{Background})) \div \#\# cfs_{DF}$
$C_e = 1.0 TUa,c$
$LTA_{a,c}$: 3.0 (0.321) = 0.963 TUa,c
LTA_c: 1.0 (0.527) = **0.527 TUa,c**
Use most protective number of $LTA_{a,c}$ or LTA_c.
MDL: 0.527 (3.11) = 1.64 TUc = **1.6 TUc**

The standard Allowable Effluent Concentration (AEC) for facilities discharging to streams without mixing considerations or lakes is 100%. The standard dilution series for facilities discharging to waterbodies without mixing considerations is 100%, 50%, 25%, 12.5%, & 6.25%.

Annual testing is the minimum testing frequency; 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."

18. Antidegradation Review Preliminary Determination

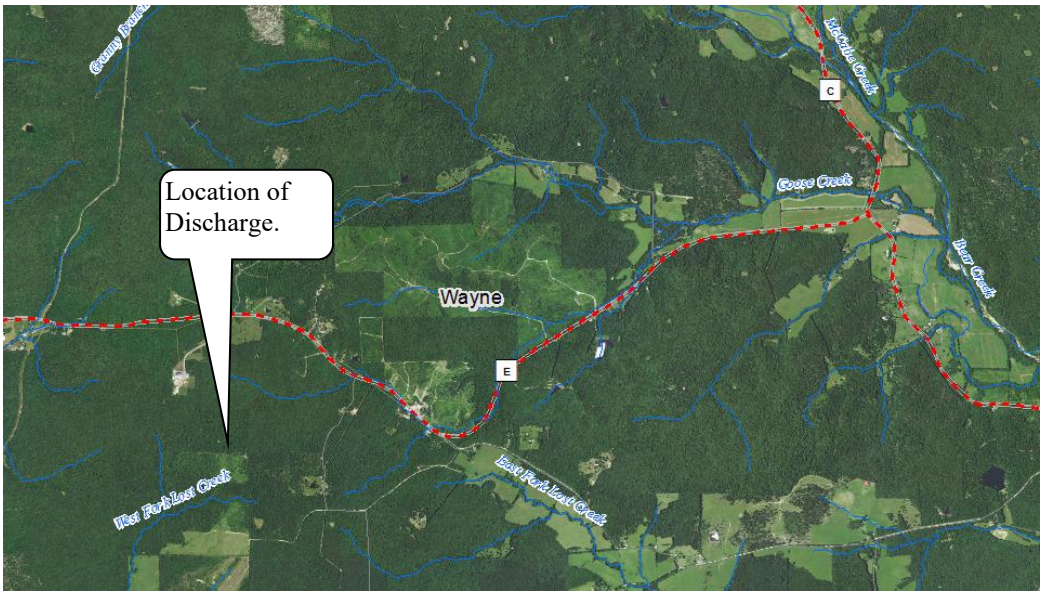
The proposed new cooling tower discharge, Kerry Ingredients and Flavours - Greenville, 28,800 gallons per day will result in significant degradation of the segment identified in the Tributary to Goose Creek. Ion exchange was determined to be the base case technology (lowest cost alternative that meets technology and water quality based effluent limitations). The other technologies were evaluated, and determined to be not practicable.

It has also been determined that the other treatment options presented (filtration or chemical precipitation) may also be considered reasonable alternatives provided they are designed to be capable of meeting the effluent limitations developed based on the preferred alternative. If any of these options are selected, you may proceed with the appropriate facility plan, construction permit application, or other future submittals without the need to modify this Antidegradation review document.

Per the requirements of the AIP, the effluent limits in this review were developed to be protective of beneficial uses and to attain the highest statutory and regulatory requirements. The Department has determined that the submitted review is sufficient and meets the requirements of the AIP. No further analysis is needed for this discharge.

Reviewer: Keith Forck
Date: 12/13/2018
Unit Chief: John Rustige, P.E.

Appendix A: Map of Discharge Location



Appendix B: Natural Heritage Review

Missouri Department of Conservation

Missouri Department of Conservation's Mission is to protect and manage the forest, fish, and wildlife resources of the state and to facilitate and provide opportunities for all citizens to use, enjoy and learn about these resources.

Natural Heritage Review Level Three Report: Species Listed Under the Federal Endangered Species Act

There are records for species listed under the Federal Endangered Species Act, and possibly also records for species listed Endangered by the state, or Missouri Species and/or Natural Communities of Conservation Concern within or near the the defined Project Area. Please contact the U.S. Fish and Wildlife Service and the Missouri Department of Conservation for further coordination.

Foreword: Thank you for accessing the Missouri Natural Heritage Review Website developed by the Missouri Department of Conservation with assistance from the U.S. Fish and Wildlife Service, the U.S. Army Corps of Engineers, Missouri Department of Transportation and NatureServe. The purpose of this website is to provide information to federal, state and local agencies, organizations, municipalities, corporations and consultants regarding sensitive fish, wildlife, plants, natural communities and habitats to assist in planning, designing and permitting stages of projects.

PROJECT INFORMATION

Project Name and ID Number: Kerry CTBD_Internal Outfall #4849
Project Description: Outfall 101: NW ¼, NW ¼, Sec 34, T29N, R6E, Wayne County (37° 8' 41.5" N / 90° 23' 2.5" W) OUTFALL 101 to currently permitted Outfall 001 – DISCHARGE TO UNNAMED TRIBUTARY TO GOOSE CREEK (TO BEAR CREEK, THEN UPPER CASTOR RIVER). Outfall 001 currently permitted for stormwater.
Project Type: Waste Transfer, Treatment, and Disposal, Liquid waste/Effluent, Effluent Discharge, Effluent discharge - renewal or modification of discharge to stream
Contact Person: robin richards
Contact Information: rrichards@ramboll.com or 703-516-2432

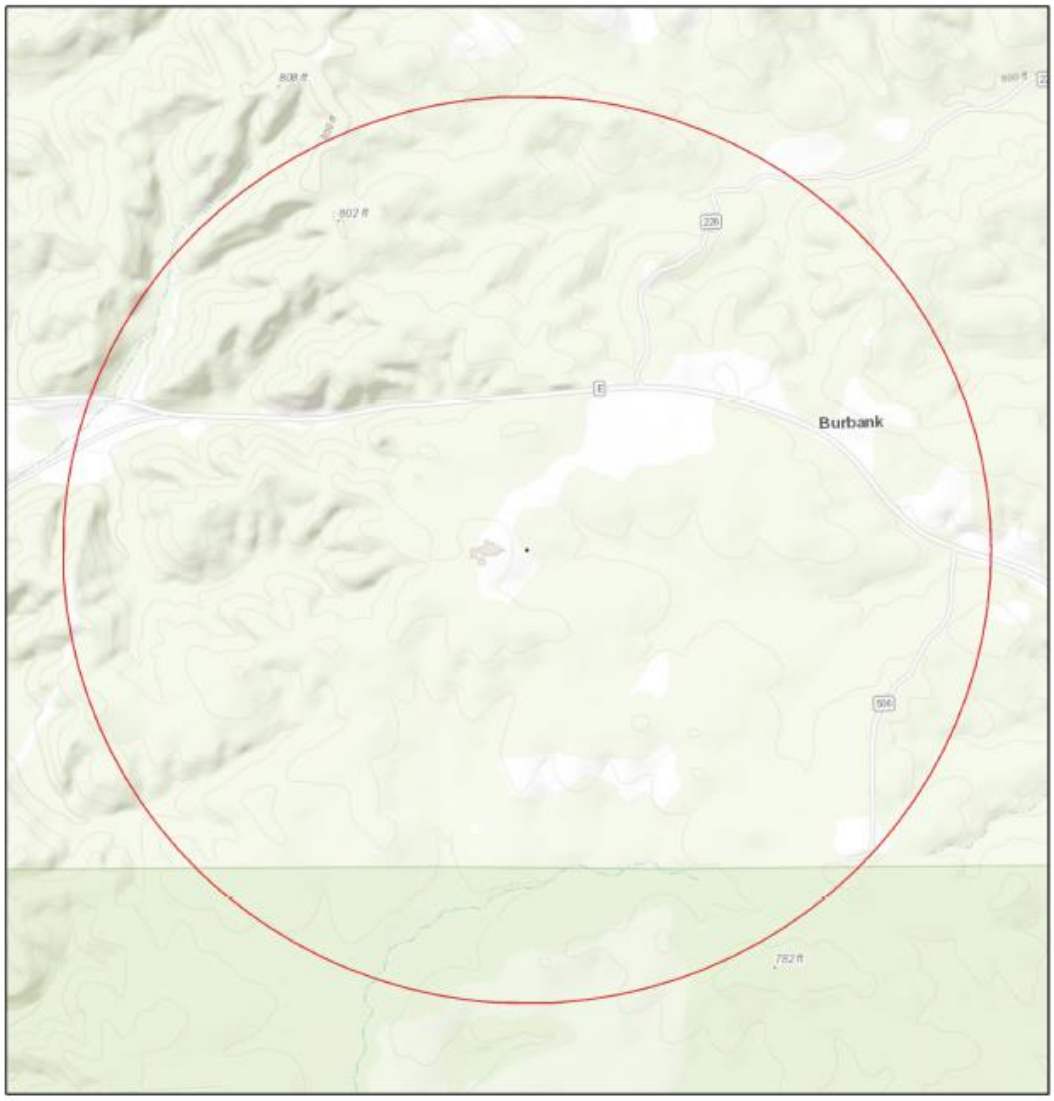
Disclaimer: The NATURAL HERITAGE REVIEW REPORT produced by this website identifies if a species tracked by the Natural Heritage Program is known to occur within or near the area submitted for your project, and shares suggested recommendations on ways to avoid or minimize project impacts to sensitive species or special habitats. If an occurrence record is present, or the proposed project might affect federally listed species, the user must contact the Department of Conservation or U.S. Fish and Wildlife Service for more information. The Natural Heritage Program tracks occurrences of sensitive species and natural communities where the species or natural community has been found. Lack of an occurrence record does not mean that a sensitive plant, animal or natural community is not present on or near the project area. Depending on the project, current habitat conditions, and geographic location in the state, surveys may be necessary. Additionally, because land use conditions change and animals move, the existence of an occurrence record does not mean the species/habitat is still present. Therefore, Reports include information about records near but not necessarily on the project site.

The Natural Heritage Report is not a site clearance letter for the project. It provides an indication of whether or not public lands and sensitive resources are known to be (or are likely to be) located close to the proposed project. Incorporating information from the Natural Heritage Program into project plans is an important step that can help reduce unnecessary impacts to Missouri's sensitive fish, forest and wildlife resources. However, the Natural Heritage Program is only one reference that should be used to evaluate potential adverse project impacts. Other types of information, such as wetland and soils maps and on-site inspections or surveys, should be considered. Reviewing current landscape and habitat information, and species' biological characteristics would additionally ensure that Missouri Species of Conservation Concern are appropriately identified and addressed in planning efforts.

U.S. Fish and Wildlife Service – Endangered Species Act (ESA) Coordination: Lack of a Natural Heritage Program occurrence record for federally listed species in your project area does not mean the species is not present, as the area may never have been surveyed. Presence of a Natural Heritage Program occurrence record does not mean the project will result in negative impacts. The information within this report is not intended to replace Endangered Species Act consultation with the U.S. Fish and Wildlife Service (USFWS) for listed species. Direct contact with the USFWS may be necessary to complete consultation and it is required for actions with a federal connection, such as federal funding or a federal permit; direct contact is also required if ESA concurrence is necessary. Visit the USFWS Information for Planning and Conservation (IPaC) website at https://ecos.fws.gov/ipac/ for further information. This site was developed to help streamline the USFWS environmental review process and is a first step in ESA coordination. The Columbia Missouri Ecological Field Services Office may be reached at 573-234-2132, or by mail at 101 Park Deville Drive, Suite A, Columbia, MO 65203.

Transportation Projects: If the project involves the use of Federal Highway Administration transportation funds, these recommendations may not fulfill all contract requirements. Please contact the Missouri Department of Transportation at 573-526-4778 or www.modot.mo.gov/ehp/index.htm for additional information on recommendations.

Kerry CTBD_Internal Outfall



October 3, 2018

1:19,015

0 0.15 0.3 0.6 mi
0 0.25 0.5 1 km

Project Boundary

Buffered Project Boundary

Species or Communities of Conservation Concern within the Area:

There are records for species listed under the Federal Endangered Species Act, and possibly also records for species listed Endangered by the state, or Missouri Species and/or Natural Communities of Conservation Concern within or near the the defined Project Area. Please contact the U.S. Fish and Wildlife Service and the Missouri Department of Conservation for further coordination.

MDC Natural Heritage Review
Resource Science Division
P.O. Box 180
Jefferson City, MO
65102-0180
Phone: 573-522-4115 ext. 3182
NaturalHeritageReview@mdc.mo.gov

U.S. Fish and Wildlife Service
Ecological Service
101 Park Deville Drive
Suite A
Columbia, MO
65203-0007
Phone: 573-234-2132

Other Special Search Results:

The project occurs on or near public land, MARK TWAIN NF, please contact USFS.

Project Type Recommendations:
Waste Transfer, Treatment, and Disposal - Liquid Effluent Discharge - New or Renewal of Permit: Clean Water Act permits issued by other agencies regulate both construction and operation of wastewater systems, and provide many important protections for fish and wildlife resources throughout the project area and at some distance downstream. Fish and wildlife almost always benefit when unnatural pollutants are removed from water, and concerns are minimal if construction is managed to minimize erosion and sedimentation/runoff to nearby streams and lakes, including adherence to any "Clean Water Permit" conditions.
Revegetation of disturbed areas is recommended to minimize erosion, as is restoration with of native plant species compatible with the local landscape and for wildlife needs. Annuals like ryegrass may be combined with native perennials for quicker green-up. Avoid aggressive exotic perennials such as crown vetch and sericea lespedeza.

Project Location and/or Species Recommendations:

Endangered Species Act Coordination - Indiana bats *(Myotis sodalis,* federal- and state-listed endangered) and **Northern long-eared bats** (*Myotis septentrionalis,* federal-listed threatened) may occur near the project area. Both of these species of bats hibernate during winter months in caves and mines. During the summer months, they roost and raise young under the bark of trees in wooded areas, often riparian forests and upland forests near perennial streams. During project activities, avoid degrading stream quality and where possible leave snags standing and preserve mature forest canopy. Do not enter caves known to harbor Indiana bats or Northern long-eared bats, especially from September to April. **If any trees need to be removed for your project, please contact the U.S. Fish and Wildlife Service (Ecological Services, 101 Park Deville Drive, Suite A, Columbia, Missouri 65203-0007; Phone 573-234-2132 ext. 100 for Ecological Services) for further coordination under the Endangered Species Act.**

The project location submitted and evaluated is within the range of the Gray Myotis (i.e., Gray Bat) in Missouri. Depending on habitat conditions of your project's location, Gray Myotis (*Myotis grisescens*, federal and state-listed endangered) could occur within the project area, as they forage over streams, rivers, lakes, and reservoirs. Avoid entry or disturbance of any cave inhabited by Gray Myotis and when possible retain forest vegetation along the stream and from the cave opening to the stream. See http://mdc.mo.gov/104 for best management recommendations.

Invasive exotic species are a significant issue for fish, wildlife and agriculture in Missouri. Seeds, eggs, and larvae may be moved to new sites on boats or construction equipment. Please inspect and clean equipment thoroughly before moving between project sites. See http://mdc.mo.gov//9633 for more information.

- Remove any mud, soil, trash, plants or animals from equipment before leaving any water body or work area.
- Drain water from boats and machinery that have operated in water, checking motor cavities, live-well, bilge and transom wells, tracks, buckets, and any other water reservoirs.
- When possible, wash and rinse equipment thoroughly with hard spray or HOT water (?140° F, typically available at do-it-yourself car wash sites), and dry in the hot sun before using again.

Streams and Wetlands – Clean Water Act Permits: Streams and wetlands in the project area should be protected from activities that degrade habitat conditions. For example, soil erosion, water pollution, placement of fill, dredging, in-stream activities, and riparian corridor removal, can modify or diminish aquatic habitats. Streams and wetlands may be protected under the Clean Water Act and require a permit for any activities that result in fill or other modifications to the site. Conditions provided within the U.S. Army Corps of Engineers (USACE) Clean Water Act Section 404 permit (http://www.nwk.usace.army.mil/Missions/RegulatoryBranch.aspx) and the Missouri Department of Natural Resources (DNR) issued Clean Water Act Section 401 Water Quality Certification (http://dnr.mo.gov/env/wpp/401/index.html), if required, should help minimize impacts to the aquatic organisms and aquatic habitat within the area. Depending on your project type, additional permits may be required by the Missouri Department of Natural Resources, such as permits for stormwater, wastewater treatment facilities, and confined animal feeding operations. Visit http://dnr.mo.gov/env/wpp/permits/index.html for more information on DNR permits. Visit both the USACE and DNR for more information on Clean Water Act permitting.

For further coordination with the Missouri Department of Conservation and the U.S. Fish and Wildlife Services, please see the contact information below.

MDC Natural Heritage Review
Resource Science Division
P.O. Box 180
Jefferson City, MO
65102-0180
Phone: 573-522-4115 ext. 3182
NaturalHeritageReview@mdc.mo.gov

U.S. Fish and Wildlife Service
Ecological Service
101 Park Deville Drive
Suite A
Columbia, MO
65203-0007
Phone: 573-234-2132

Miscellaneous Information

FEDERAL Concerns are species/habitats protected under the Federal Endangered Species Act and that have been known near enough to the project site to warrant consideration. For these, project managers must contact the U.S. Fish and Wildlife Service Ecological Services (101 Park Deville Drive Suite A, Columbia, Missouri 65203-0007; Phone 573-234-2132; Fax 573-234-2181) for consultation.

STATE Concerns are species/habitats known to exist near enough to the project site to warrant concern and that are protected under the Wildlife Code of Missouri (RSMo 3 CSR 1 0). "State Endangered Status" is determined by the Missouri Conservation Commission under constitutional authority, with requirements expressed in the Missouri Wildlife Code, rule 3CSR 1 0-4.111. Species tracked by the Natural Heritage Program have a "State Rank" which is a numeric rank of relative rarity. Species tracked by this program and all native Missouri wildlife are protected under rule 3CSR 10-4.110 General Provisions of the Wildlife Code.

Additional information on Missouri's sensitive species may be found at http://mdc.mo.gov/discover-nature/field-guide/endangered-species . Detailed information about the animals and some plants mentioned may be accessed at http://mdc4.mdc.mo.gov/applications/mofwis/mofwis_search1.aspx . If you would like printed copies of best management practices cited as internet URLs, please contact the Missouri Department of Conservation.

Appendix C: Antidegradation Review Summary Attachments
The attachments that follow contain summary information provided by the applicant.

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

ANTIDEGRADATION REVIEW SUMMARY FOR PUBLIC NOTICE
ATTACHMENT A: TIER 2 – SIGNIFICANT DEGRADATION

1. FACILITY

NAME		TELEPHONE NUMBER WITH AREA CODE	
KERRY INGREDIENTS AND FLAVOURS – GREENVILLE		573-224-3281	
ADDRESS (PHYSICAL)	**CITY**	**STATE**	**ZIP CODE**
HCR 2 BOX 2560 HIGHWAY E	GREENVILLE	MO	63944

2. OWNER

NAME AND OFFICIAL TITLES			
PAUL COSTEPHENS, PRODUCTION MANAGER			
ADDRESS	**CITY**	**STATE**	**ZIP CODE**
HCR 2 BOX 2560 HIGHWAY E	GREENVILLE	MO	63944
TELEPHONE NUMBER WITH AREA CODE	**E-MAIL ADDRESS**		
573-705-4601	PAUL.COSTEPHENS@KERRY.COM		

3. CONTINUING AUTHORITY The regulatory requirement regarding continuing authority is found in 10 CSR 20-6.010(3) available at www.sos.mo.gov/adrules/csr/current/10csr/10c20-6a.pdf.

NAME AND OFFICIAL TITLES			
EVAN VERBANIC, HSE MANAGER			
ADDRESS	**CITY**	**STATE**	**ZIP CODE**
3400 MILLINGTON ROAD	BELOIT	WI	53511
TELEPHONE NUMBER WITH AREA CODE	**E-MAIL ADDRESS**		
	EVAN.VERBANIC@KERRY.COM		

4. RECEIVING WATER BODY SEGMENT #1

NAME
GOOSE CREEK
(water body segment defined as location of first discharge to confluence with Bear Creek, downstream significant water body)

4.1 UPPER END OF SEGMENT (Location of discharge)
UTM_____ OR Lat 37° 8' 41.5" N, Long 90° 23' 2.5" W

4.2 LOWER END OF SEGMENT
UTM_____ OR Lat 37° 9' 15" N, Long 90° 18' 16" W

Per the Missouri Antidegradation Implementation Procedure, or AIP, the definition of a segment, "a segment is a section of water that is bound, at a minimum, by significant existing sources and confluences with other significant water bodies."

5. WATER BODY SEGMENT #2 (IF APPLICABLE, Use another form if a third segment is needed)

NAME
NOT APPLICABLE

5.1 UPPER END OF SEGMENT
UTM_____ OR Lat_____, Long_____

5.2 LOWER END OF SEGMENT
UTM_____ OR Lat_____, Long _____

6. WET WEATHER ANTICIPATIONS

If an applicant anticipates excessive inflow or infiltration and pursues approval from the department to bypass secondary treatment, a feasibility analysis is required. The feasibility analysis must comply with the criteria of all applicable state and federal regulations including 40 CFR 122.41(m)(4). Attach the feasibility analysis to the antidegradation review report. NOT APPLICABLE

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

Wet Weather Design Summary:

7. EXISTING WATER QUALITY DATA OR MODEL SUMMARY

Obtaining Existing Water Quality is possible by three methods according to the Antidegradation Implementation Procedure Section II.A.1.: (1) using previously collected data with an appropriate Quality Assurance Project Plan, or QAPP (2) collecting water quality data approved by the Missouri Department of Natural Resources methodology or (3) using an appropriate water quality model. QAPPs must be submitted to the department for approval well in advance (six months) of the proposed activity. Provide all the appropriate corresponding data and reports which were approved by the department Watershed Protection Section. **Additional information needed with the EWQ data includes**: 1) Date existing water quality data was provided by the Watershed Protection Section, 2) Approval date by the Watershed Protection Section of the QAPP, project sampling plan, and data collected for all appropriate POCs.

Comments/Discussion: Goose Creek is a designated low flow stream. Therefore, no existing water quality data are available and all applicable water quality criteria must be met at end of pipe.

8. SUMMARY OF THE POLLUTANTS OF CONCERN AND THE PROPOSED EFFLUENT LIMITS

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

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

Pollutants of Concern*	Units	Wasteload Allocation	Average Monthly Limit	Daily Maximum Limit
Outfall 101				
Copper, dissolved	mg/L		0.026	0.016
Outfall 102				
Zinc, dissolved	mg/L		0.211	0.211
Copper, dissolved	mg/L		0.026	0.016

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

*Assumed Tier 2.

9. IDENTIFYING ALTERNATIVES

Supply a summary of the alternatives considered and the level of treatment attainable with regards to the alternative. "For Discharges likely to cause significant degradation, an analysis of non-degrading and less-degrading alternatives must be provided," as stated in the Antidegradation Implementation Procedure Section II.B.1. Per 10 CSR 20-6.010(4)(D)1., the feasibility of a no-discharge system must be considered. Attach all supportive documentation in the Antidegradation Review report.

Applicants choosing to use a new wastewater technology that are considered an "unproven technology" in Missouri in their Tier 2 Reviews with alternative analysis must comply with the requirements set forth in the *New Technology Definitions and Requirements Factsheet* that can be found at: http://dnr.mo.gov/pubs/pub2453.pdf.

Non-degrading alternatives: Non-degrading alternatives evaluated include land application/irrigation, recycling or reuse, and discharge to a local publicly owned treatment works (POTW).

Less-degrading alternatives: Less-degrading alternatives evaluated included treatment with ion exchange or an evaporator.

Alternatives ranging from less-degrading to degrading including Preferred Alternative
(All treatment levels for POCs must at a minimum meet water quality standards):

Alternatives	**Level of Treatment Attainable for each Pollutant of Concern**					
	Zinc (mg/L)	Copper (mg/L)				
Land application / irrigation	N/A	N/A	Alternative results in no surface water discharge			
Recycling / reuse	N/A	N/A	Alternative results in no surface water discharge			
Discharge to POTW	N/A	N/A	Alternative results in no surface water discharge			
Treatment with Ion Exchange	< 0.211	< 0.016				

10. DETERMINATION OF THE REASONABLE ALTERNATIVE

Per the Antidegradation Implementation Procedure Section II.B.2, "a reasonable alternative is one that is practicable, economically efficient and affordable." Provide basis and supporting documentation in the Antidegradation Review report. **Please do not write "See Report" for any box below.**

Practicability Summary:

The practicability of an alternative is considered by evaluating the effectiveness, reliability, and potential environmental impacts. Factors for each alternative were ranked on a scale from zero (0) to five (5) ranging from impractical to reasonably practical respectively. The total scoring for each alternative is the product of the individual rankings. Alternatives are deemed practicable if the total score (product of the individual rankings) is greater than zero. For Outfall 101, none of the identified alternatives were determined to be practicable. For Outfall 102, both recycle/reuse and indirect discharge were determined to be practicable alternatives.

Economic Efficiency Summary:

Alternatives that are deemed practicable must undergo a direct cost comparison in order to determine economic efficiency. Alternatives from Section 6.1 above are deemed practicable if the total score is greater than zero.

All identified non-degrading and less-degrading alternatives were deemed to be impractical for implementation for the cooling tower blowdown discharge (Outfall 101). No economic efficiency evaluation is required.

Both recycle/reuse and indirect discharge were determined to be practical non-degrading alternatives to a direct discharge system. Kerry considers both options to be economically efficient for implementation.

Affordability Summary:

An affordability analysis may be used to determine if the alternative is too expensive to reasonably implement. However, any alternatives identified as practicable and economically efficient are considered affordable if the applicant does not supply an affordability analysis.

Kerry has chosen not to supply an affordability analysis and considers both recycle/reuse and indirect discharge of the softener backwash stream (Outfall 102) to be affordable. No identified alternatives meet the practicability requirements for Outfall 101 and therefore no affordability analysis was performed.

Preferred Chosen Alternative:

The preferred alternative for Outfall 101 is direct discharge of the cooling tower blowdown without additional treatment. This alternative results in greater than minimal degradation as it relates to the dissolved copper water quality standard. Therefore, the social and economic importance (SEI) of the discharge must be documented.

The preferred alternative for Outfall 102 is recycle/reuse. Currently, softener backwash is managed in this manner by recycling this stream into the product. Should modifications to guidelines prohibit such management practices in the future, Kerry will pursue indirect discharge to the Greenville WWTF via certified waste haulers.

Reasons for Rejecting the other Evaluated Alternatives:

The following identified alternatives for Outfall 101 did not meet practicability criteria for the following reasons:

- Non-degrading alternatives (land application/irrigation, reuse/recycling, and indirect discharge) were determined to be technically infeasible due primarily to the volume of the proposed discharge; and
- The less-degrading alternative (treatment with ion exchange) had many secondary environmental impacts including energy consumption and solid waste generation.

The following identified alternatives for Outfall 102 did not meet practicability criteria for the following reasons:

- The non-degrading alternative for land application/irrigation was technically infeasible due to introduction of substances with potential to adversely impact soils and vegetation
- The less-degrading alternative (treatment with ion exchange and/or evaporator) had many secondary environmental impacts including energy consumption and solid waste generation.

Comments/Discussion:

11. SOCIAL AND ECONOMIC IMPORTANCE OF THE PREFERRED ALTERNATIVE

If the preferred alternative will result in significant degradation, then it must be demonstrated that it will allow important economic and social development in accordance to the Antidegradation Implementation Procedure Section II.E. Social and Economic Importance is defined as the social and economic benefits to the community that will occur from any activity involving a new or expanding discharge

Identify the affected community:

The affected community is defined in 10 CSR 20-7.031(2)(B) as the community in the geographical area in which the waters are located. The affected community should include those living near the site of the proposed project as well as those in the community that are expected to directly or indirectly benefit from the project.

Greenville is a small city located on U.S. Highway 67 near the intersection of Route D and E. The population of Greenville was 511 as measured during the 2010 census. Greenville is located in Wayne County, Missouri along the St. Francis River. The estimated population for Wayne County in July 2017 was roughly 13,000 with approximately 5,600 households with 2.35 persons per household. Roughly 75% of the population earned a high school diploma or higher with 12% of the population possessing a Bachelor's degree or higher. The Wayne County median household income (in 2016 dollars) was $33,954 versus the national median household income of $55,322. Total employment in Wayne County in 2016 was 1,692. Additionally, the persons in poverty in Wayne County was 26% versus the national average of 12.7%.

Identify relevant factors that characterize the social and economic conditions of the affected community:

Relevant factors for the affected community include household income, persons in poverty, and employment.

Describe the important social and economic development associated with the project:

Through a cooperative effort with Missouri Department of Economic Development (DED), the Ozark Foothills Regional Planning Commission, Wayne County Enhanced Enterprise Zone Board and the Wayne County Commission, Kerry pursued expansion of its Greenville facility through a $14,295,000 investment. The facility produces a variety of liquid smoke products and currently employs 25 workers with plans to add four (4) additional permanent positions as a result of this expansion. The expansion will add approximately 20,650 square feet of manufacturing space including sawdust receiving and storage, production equipment, and additional office and conference space. Locally sourced raw material purchases are expected to increase by 60% due to this expansion with production increasing by the same amount. Additionally, 142 temporary contract personnel have been employed as a result of this expansion.

PROPOSED PROJECT SUMMARY:

As demonstrated above, the Kerry Greenville expansion yields increased employment opportunities for the community both directly at the facility and for vendors supporting the facility. Additionally, it should be noted that the streams (Outfall 101 and 102) requested for surface water discharge are relatively unpolluted streams with the presence of pollutants of concern due to background groundwater concentrations. Based on this evaluation, allowing degradation of water quality is necessary and accommodates important economic or social development in the area where the surface water is located.

Attach the Antidegradation Review report and all supporting documentation. This is a technical document, which must be signed, sealed and dated by a registered professional engineer of Missouri.

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

STATE OF MISSOURI * BETH NEWSOM ECKLEY * NUMBER PE-2008019538 * PROFESSIONAL ENGINEER

SIGNATURE	DATE
Beth Newsom Eckley	7/11/18

NAME AND OFFICIAL TITLES / LICENSE #	COMPANY NAME		
Beth Newsom Eckley, Managing Consultant\ PE-2008019538	Ramboll		
ADDRESS	**CITY**	**STATE**	**ZIP CODE**
1807 Park 270 Drive, Suite 450	St. Louis	MO	63146
TELEPHONE NUMBER WITH AREA CODE	**E-MAIL ADDRESS**		
314-590-2980	beckley@ramboll.com		

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

SIGNATURE	DATE
Paul Costello	7-12-18

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

SIGNATURE	DATE
	7/12/18

Appendix 2: BLM Model Approval

Missouri Department of NATURAL RESOURCES
dnr.mo.gov
Michael L. Parson, Governor — Dru Buntin, Director

MEMORANDUM

DATE: May 4, 2022

TO: Pam Hackler, Environmental Scientist
Industrial Wastewater Permit Section

THROUGH: John Hoke, Chief
Water Pollution Control Branch

THROUGH: Heather Peters, Chief
Watershed Protection Section

FROM: Ashley Grupe, Chief
Water Quality Standards Unit

SUBJECT: City of Greenville Kerry Ingredients and Flavours Biotic Ligand Model Study (MO-139050)

On behalf of Kerry Ingredients and Flavours-Greenville, Pace Analytical submitted to the Missouri Department of Natural Resources the results of a biotic ligand model (BLM) study for Outfall 003 dated January 18, 2022. This BLM was conducted under a Quality Assurance Project Plan (QAPP) approved by the Department on December 10, 2020. The BLM final report discussed the scope of the biotic ligand model study and the need to develop site-specific criteria for discharges of copper via Outfall 003. Results of this study are summarized in this memo and the tables that follow.

1. The sampling events were performed in agreement to the QAPP approved by the Department and thus data can be used for calculating site-specific criteria for copper.

2. The consultant removed two samples from data collection due to a lack of field data and laboratory holding time issues. The removal of these samples still resulted in the minimum number of samples required. The criterion formed with the input parameters developed the instantaneous water quality criteria (IWQC) to be used per recommendation by the Department.

3. The consultant demonstrated the differences in the aquatic life acute and chronic criteria by calculating the site-specific criteria utilizing the default hardness value for warm-water fishery criteria of 169 milligrams per liter (mg/L) and the 50th percentile site-specific hardness value from the BLM dataset of 89.4 mg/L. Calculations were performed using the 1995 EPA Update to Copper Criteria of:
   - Acute: CMC (µg/L) = $e^{(0.9422*\ln(\text{Hardness})-1.7003)} * 0.96$
   - Chronic: CCC (µg/L) = $e^{(0.8545*\ln(\text{Hardness})-1.702)} * 0.96$

In the final BLM report, Kerry Ingredients and Flavours requested a total copper criterion maximum concentration value (CMC) of 390 microgram per liter (µg/L) and criterion continuous concentration (CCC) value of 242 µg/L be used to compute the site-specific acute and chronic criteria for copper discharge, respectively. These values were developed using the average of 13 samples gathered over the 3 month period.

The Watershed Protection Section recommends using the site-specific criteria values proposed by the report as they are scientifically defensible and the BLM was conducted in accordance with guidance from the Department.

Kerry MO Field and BLM Analytical Results (Data Inputs)

Parameters	Temp (Field)	pH (Field)	Dissolved Organic Carbon (DOC)	Aklalinity	Ca, Total	Mg, Total	Na, Total	K, Total	SO4	Chloride	Cu, Total	Cu, Dissolved	Sulfide
Units	°C	s.u.	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	ug/L	ug/L	mg/L
1/25/2021	-1	-1	15.1	691	18.7	11.1	337	<1.00	19.9	23	94.3	61.2	<0.05
1/27/2021	3.8	8.11	14.5T8	633	22.6	11.2	290	<1.00	9.87	18.6	77.3	48.5	<0.05
1/29/2021	1479	8.65	14.2	607	20.8	10.5	265	<1.00	9.48	18.9	111	56	<0.05
2/1/2021	10.4	8.93	14.2	631	33.9	13.6	301	<1.00	9.9	18.6	149	62.2	<0.05
2/3/2021	15	8.88	14.4	617	21.1	10.6	288	<1.00	9.29	18.8	110	54.2	<0.05
2/5/2021	7.1	8.68	15.4	613	13.4	8.6	274	<1.00	10.1	18.8	68.9	52.9	<0.05
2/8/2021	15.5	8.77	13.7	543	14.4	7.42	235	<1.00	9.36	17.2	80.8	61.4	<0.05
3/1/2021	15.9	8.88	20.9	642	3.33	16.7	274	<1.00	12.9	27.3	187	115	<0.05

Parameters	Temp (Field)	pH (Field)	Dissolved Organic Carbon (DOC)	Aklalinity	Ca, Total	Mg, Total	Na, Total	K, Total	SO4	Chloride	Cu, Total	Cu, Dissolved	Sulfide
Units	°C	s.u.	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	ug/L	ug/L	mg/L
3/3/2021	18.6	8.75	20.1	629	21.1	12.8	278V	<1.00	12.2	26.1	128	95.8	<0.05
3/5/2021	15.7	8.8	16.2	635	17.8	11	30	<1.00	12.1	27.1	106	81.7	<0.05
3/10/2021	20	8.71	17.6	521	12.3	8.18	264	<1.00	10	18.2	74.8	56.1	<0.05
3/12/2021	19	8.81	16.4	635	14.3	11.2	303	1	11.9	21.1	70.9	69.9	<0.05
3/15/2021	11.1	8.52	16.5	553	11.9	8.6	262	<1.00	9.55	17.2	64.1	56.9	<0.05
3/18/021	17.4	8.81	15.4	603	12	8.34	289	<1.00	10.6	17.5	67.8	54.1	<0.05
3/22/2021	12.3	8.66	13.8	563	9.73	6.51	289	<1.00	10.6	16.4	46.5	40.8	<0.05

1 – Data missing from COC. Sampling event not used in BLM.
T8 – Samples received past / too close to hold time expiration at laboratory. Hold time for unpreserved DOC samples is 2 days. Data considered invalid and not used in BLM.
V – The sample concentration is too high to evaluate accurate spike recoveries. Data considered valid and used in BLM.