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-0098752
Owner:	Missouri Mining Investments, LLC
Address:	7733 Forsyth Bl. Suite 1600, Clayton, MO 63105
Continuing Authority:	Same as above
Address:	Same as above
Facility Name:	Madison Mine
Facility Address:	1050 County Road 263, Fredericktown, MO 63645
Legal Description:	Landgrant 2073 & 3089, Madison County
UTM Coordinates:	See following pages
Receiving Stream:	See following pages
First Classified Stream and ID:	See following pages
USGS Basin & Sub-watershed N	o.:08020202-0102: Saline Creek-Little St Francis River (50.21 sq. mi.)

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

FACILITY DESCRIPTION

Metallic mineral mine; SIC # 1031 (lead and zinc ores), 1099 (other ores), and 1629 (heavy construction); NAICS # 212230 (copper, nickel, lead, and zinc mining), 212299 (other metal mining), and 237990 (other heavy and civil engineering construction). See following pages. This facility does not require a certified wastewater operator per 10 CSR 20-9.030 as this facility is privately owned.

Process Wastewater is not authorized for discharge. Mine dewatering and seep water is considered non-process wastewater. Process wastewater is not authorized to be placed in any stormwater basin; or any basin not designed to 10 CSR 20-8 standards *and* approved by the Program to be utilized for wastewater.

July 1, 2024 Effective Date

June 30, 2029 Expiration Date

John Hoke, Director, Water Protection Program

FACILITY DESCRIPTION (CONTINUED)

DISCHARGES:

<u>OUTFALL #001</u> – continuous dam toe/blanket drain dry weather discharge; intermittent stormwater runoff from D tailing piles, unvegetated areas, and areas adjacent to Tollar Branch; and discharge of land disturbance stormwater runoff. Sampling location is positioned that both dam toe drainage and stormwater are collected at the same location.

1	0
UTM Coordinates:	X = 740253, Y = 4158471
Receiving Stream:	Tollar Branch (C)
First Classified Stream and ID:	Tollar Branch (C) WBID# 4102
Design Flow:	4.0 MGD (combined dam toe drain and stormwater)
Average Flow:	Dependent upon precipitation

OUTFALL #002– continuous groundwater seepage, and intermittent discharge of stormwater runoff (from A, B, C, and E tailings piles
and MET pond, all capped 2023); areas adjacent to the tributary to Saline Creek; and discharge of land disturbance stormwater runoff.
UTM Coordinates:X = 740254, Y = 4159553
NHD Tributary to Saline CreekFirst Classified Stream and ID:
Design Flow:Saline Creek (P) WBID# 2859 (305(b), nickel)
2.5 MGD (combined seep and stormwater)
Dependent upon precipitation

<u>OUTFALL # 003</u> – eliminated by plugging in 2002. This mine decline is listed as the historical and only cause of cobalt pollution to Goose Creek/ Saline Creek.

INSTREAM MONITORING - eliminated in 2008 renewal

<u>OUTFALL #MDW</u> – Mine Dewatering Wastewater – this facility may only discharge wastewater from mine dewatering under the terms and conditions of an antidegradation review (temporary or permanent). The review must be completed and approved prior to discharge. The effluent limits contained in this permit are minimum limits and future antidegradation review may condition 1) more stringent limits; 2) timeframes; or 3) any other stipulation supplied in the antidegradation document. A Missouri state operating permit is the only mechanism to allow specified wastewater discharges.

The antidegradation review is public noticed with this permit. There will be a surge basin then treated with a CoMag system. The surge basin may also accept stormwater to be treated in the CoMag system. No other wastewaters are permissible for addition to the surge basin and CoMag system.

UTM Coordinates:	X = 740254, $Y = 4159553$ (next to outfall #002, not the same pipe)
Receiving Stream:	NHD Tributary to Saline Creek
First Classified Stream and ID:	Saline Creek (P) WBID# 2859 (TMDL, but discharge is downstream of listed segment)
Design Flow:	4.32 MGD

<u>PERMITTED AREA #SW1</u> – new 2024 renewal; sheet flow stormwater discharge from warehouse area; includes warehouse, shop building, pilot test plant, QA/QC laboratory, office space, 500 gallon gasoline tank. See minimum BMP requirements for this area in

special conditions.	
UTM Coordinates:	X = 740254, Y = 4159553
Receiving Stream:	NHD Tributary to Saline Creek
First Classified Stream and ID:	Saline Creek (P) WBID# 2859 (TMDL, but discharge is downstream of listed segment)
Design Flow:	2.5 MGD
Average Flow:	Dependent upon precipitation
<u>OUTFALL #008</u> – new 2024 renews	al. This is a stormwater only outfall on the far east side of the property.
UTM Coordinates:	X = 742014, Y = 4159422
Receiving Stream:	NHD Tributary to Goose Creek
First Classified Stream and ID:	Goose Creek (P) WBID# 2860, a tributary to Saline Creek (TMDL)
Design Flow:	unknown
Average Flow:	Dependent upon precipitation

FACILITY DESCRIPTION (CONTINUED)

WASTEWATER HOLDING STRUCTURES #005, #006, AND #009:

- These basins are no-discharge. There is no allowance to discharge from these basins directly.
- The facility will utilize froth flotation and hydromet processes which will recirculate process water.
- Processing wastewater will consist of tailings slurry and will contain low levels of metals and residual chemicals from the froth floating process.
- A hydromet plant is being built. This permit does not include the allowance to discharge from any metals contact or non-contact wastewater (categorical, non-categorical, process, or non-process) unless specifically allowed.
- Chemicals in use are: Methyl Isobutyl Carbinol (MIC), Sodium Hydroxide, Potassium Amyl, Xanthate (PAX) and a flocculent
- Only wastewater from the processing of surface tailings is authorized for wastewater holding structures #006. MET pond water, groundwater, mine dewatering, and stormwater may be piped into permitted feature #006. Other wastewater is not permissible for input into these wastewater holding structures.
- Feature #009 may only hold mine dewatering wastewater and stormwater.
- Treatment: recycling, settling, no discharge.
- May haul wastewater to an accepting facility if necessary to maintain no-discharge status.
- If the facility performs TCLP on the sludge, the analytical results in full must be sent to the Water Protection Program within two months of the testing.

<u>PERMITTED FEATURE #005</u> – Earthen wastewater holding structure #1 for process wastewater; discharge prohibited. Permitted feature was added per CP#0002087.

UTM Coordinates:	X = 740682, Y = 4158464
Design Flow:	0 discharge
Removed:	March 25, 2024, See fact sheet Part V.

<u>PERMITTED FEATURE #006</u> – Earthen wastewater holding structure #2 for process wastewater; discharge prohibited. Permitted feature was added per CP#0002202. The facility may pump groundwater or mine dewatering wastewater into this basin. The facility may not pump this basin out to any permitted feature.

UTM Coordinates:	X = 740682, Y = 4158464
Design Flow:	0 discharge

<u>PERMITTED FEATURE #009</u> – Earthen wastewater holding structure for mine dewatering surge wastewater. No CP is required for this project as mine dewatering is not considered process wastewater under 40 CFR 440 Subpart J. Wastewater from this basin must undergo treatment and be discharged though outfall #MDW. Wastewater from processing is not permitted to enter this basin. This basin is designed to not discharge, and discharge is prohibited. Permitted feature was added in the 2024 renewal.

UTM Coordinates (Centroid): X = 741547; Y = 4159072Design Flow: 0 discharge

LAND APPLICATION AREAS #004 AND #007:

Application authorization, irrigation, and dust suppression authorization rescinded. This facility does not have authorization to land apply, irrigate, or suppress dust with wastewater.

PERMITTED FEATURE #004– A through E tailings areas added at the 2018 renewal; however for this renewal, the applicationallowance was rescinded because all of the tailings areas are capped.UTM Coordinates:X = 740549, Y = 4158318 centroid

<u>PERMITTED FEATURE #007</u> – area for dust suppression; D Tailings. Added per CP# 0002230; however, permitted feature #004 includes this area already and the allowance to apply wastewater is rescinded. UTM Coordinates: X = 740682, Y = 4158464 centroid

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

OUTFALLS #001 & #002

wastewater (dam toe drain (#001) and seep (#002)) and stormwater

TABLE A-1 INTERIM EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

The facility is authorized to discharge from outfalls 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 <u>JULY 1, 2027</u>. These interim effluent limitations are effective beginning <u>JULY 1, 2024</u> and remain in effect through <u>JUNE 30, 2027</u> or as soon as possible. Discharges shall be controlled, limited, and monitored by the facility as specified below:

		INTERIM EFFLU	JENT LIMITATIONS	MONITORING REQUIREMENTS			
Effluent Parameters	UNITS	Daily Maximum	Monthly Average	Minimum Measurement Frequency	SAMPLE TYPE		
LIMIT SET: M – MONTHLY							
PHYSICAL							
Flow	MGD	*	*	one/week *	24 hr. total		
CONVENTIONAL							
pH †	SU	6.5 to 9.0	-	one/week *	grab		
Total Suspended Solids	mg/L	45	30	one/month	grab		
METALS							
Cadmium, Total Recoverable	μg/L	0.5	0.2	once/month	grab		
Cobalt, Total Recoverable	μg/L	1103	693	once/month	grab		
Copper, Total Recoverable	μg/L	15.3	5.6	once/month	grab		
Cyanide, Total 🗼	μg/L	*	*	once/month	grab		
Lead, Total Recoverable	μg/L	6.5	2.2	once/month	grab		
Nickel, Total Recoverable	μg/L	80.9	49.9	once/month	grab		
Zinc, Total Recoverable	μg/L	130.2	87.0	once/month	grab		
OTHER							
Chloride	mg/L	*	*	once/month	grab		
Sulfate	mg/L	*	*	once/month	grab		
Chloride plus Sulfate	mg/L	1000	1000	once/month	grab		
MONITORING REPORTS SHALL	BE SUBMITT	ed <u>Monthly;</u> Th	HE FIRST REPORT IS I	DUE <u>AUGUST 28, 2</u>	<u>024</u> .		
LIMIT SET: Q – QUARTERLY							
Arsenic, Total	μg/L	*	*	once/quarter ◊	grab		
Oil and Grease	mg/L	*	*	once/quarter ◊	grab		
Whole Effluent Toxicity, Acute ** (#002)	TUa	0.3 (ML1.0)	-	once/quarter ◊	grab		
MONITORING REPORTS SHALL F	BE SUBMITTE	O QUARTERLY; T	HE FIRST REPORT IS	DUE <u>OCTOBER 28,</u>	2024.		
LIMIT SET: A – ANNUAL							
Whole Effluent Toxicity, Acute * (#001)	TUa	0.3 (ML1.0)		once/year	grab		
MONITORING REPORTS SHALL BE SUBMITTED ANNUALLY; THE FIRST REPORT IS DUE JANUARY 28, 2025.							

* Monitoring and reporting requirement only

 \downarrow Cyanide, Total. The monthly average effluent limit is below the accepted minimum quantification level (ML). The department has determined the current acceptable minimum level (ML) of cyanide to be 5 µg/L. A laboratory method must be used that effectively quantifies cyanide at or above this level. Measured values greater than or equal to the minimum quantification level of 5 µg/L will be considered violations of the monthly average within this permit and values less than the minimum quantification level of 5 µg/L will be considered to be in compliance with the monthly average permit limitation. The minimum quantification level does not authorize monthly average discharges of cyanide in excess of the effluent limits stated in the permit.

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

** See special conditions for WET testing and TIE/TRE requirements.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (CONTINUED)

OUTFALLS #001 & #002

wastewater and stormwater

TABLE A-2 FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

The facility is authorized to discharge from outfalls as specified. The final effluent limitations shall become effective on <u>JULY 1, 2027</u> and remain in effect until expiration of the permit. Discharges shall be controlled, limited, and monitored by the facility as specified below:

		FINAL EFFLUE	NT LIMITATIONS	MONITORING REQUIREMENTS			
Effluent Parameters	Units	Daily Maximum	Monthly Average	Minimum Measurement Frequency	SAMPLE TYPE		
LIMIT SET: M							
PHYSICAL							
Flow	MGD	*	*	one/week *	24 hr. total		
CONVENTIONAL							
pH [†]	SU	6.5 to 9.0	-	one/week *	grab		
Total Suspended Solids	mg/L	45	30	once/month	grab		
METALS							
Cadmium, Total Recoverable	μg/L	0.5	0.2	once/month	grab		
Cobalt, Total Recoverable	μg/L	220	24	once/month	grab		
Copper, Total Recoverable	μg/L	15.3	5.6	once/month	grab		
Cyanide, Total ¼ (outfall #001)	μg/L	8.5	4.3 (ML5)	once/month	grab		
Cyanide, Total ¼ (outfall #002)	μg/L	*	*	once/month	grab		
Lead, Total Recoverable	μg/L	6.5	2.2	once/month	grab		
Nickel, Total Recoverable	μg/L	80.9	49.9	once/month	grab		
Zinc, Total Recoverable	μg/L	130.2	87.0	once/month	grab		
OTHER							
Chloride	mg/L	*	*	once/month	grab		
Sulfate	mg/L	*	*	once/month	grab		
Chloride plus Sulfate	mg/L	1000	1000	once/month	grab		
MONITORING REPORTS SHALL	BE SUBMITT	ED <u>Monthly;</u> Thi	E FIRST REPORT IS	DUE <u>AUGUST 28, 20</u>	<u>027</u> .		
LIMIT SET: Q – QUARTERLY							
Arsenic, Total	μg/L	*	*	once/quarter ◊	grab		
Oil and Grease	mg/L	*	*	once/quarter ◊	grab		
Whole Effluent Toxicity, Acute * (#002)	TU_a	0.3 (ML1.0)	-	once/quarter ◊	grab		
MONITORING REPORTS SHALL F	BE SUBMITTEI	O <u>Quarterly;</u> Th	E FIRST REPORT IS	DUE OCTOBER 28,	<u>2027</u> .		
LIMIT SET: A - ANNUAL							
Whole Effluent Toxicity, Acute ** (#001)	TU _a	0.3 (ML1.0)	-	once/year	grab		
MONITORING REPORTS SHALL BE SUBMITTED ANNUALLY; THE FIRST REPORT IS DUE JANUARY 28, 2028.							

♦ Quarterly sampling

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

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (CONTINUED)

OUTFALL #MDW mine dewatering	TEMPORARY (TIME-LIMITED) DISCHARGE ALLOWANCE TABLE A-3 Final Effluent Limitations And Monitoring Requirements						
The facility is authorized to discharge from this outfall as specified. The final effluent limitations shall become effective on <u>JULY 1, 2024</u> and remain in effect until <u>JUNE 30, 2026</u> . Discharges after this date are not authorized. Discharges shall be controlled, limited, and monitored by the facility as specified below:							
		FINAL EFFLU	ENT LIMITATIONS	MONITORING REQUIREMENTS			
EFFLUENT PARAMETERS	Units	DAILY MONTHLY MAXIMUM AVERAGE		Minimum Measurement Frequency	SAMPLE TYPE		
LIMIT SET: M - MONTHLY				-			
PHYSICAL							
Flow	MGD	*	*	one/month ‡ *	24 hr. total		
CONVENTIONAL							
pH [†]	SU	6.5 to 9.0	-	one/month ‡ *	grab		
Total Suspended Solids	mg/L	30	20	one/month ‡ *	grab		
METALS							
Cadmium, Total Recoverable	μg/L	1.6	0.8	one/month ‡ *	grab		
Cobalt, Total Recoverable	μg/L	220	24	one/month ‡ *	grab		
Copper, Total Recoverable	μg/L	17.9	8.9	one/month ‡ *	grab		
Cyanide, Total 🗼	μg/L	8.5	4.3	one/month ‡ *	grab		
Lead, Total Recoverable	μg/L	7.3	3.6	one/month ‡ *	grab		
Mercury, Total	μg/L	1.3	0.6	one/month ‡ *	grab		
Nickel, Total Recoverable	μg/L	107	53.3	one/month ‡ *	grab		
Zinc, Total Recoverable	μg/L	150	74.7	one/month ‡ *	grab		
Other							
Chloride	mg/L	*	*	once/month	grab		
Sulfate	mg/L	*	*	once/month	grab		
Chloride plus Sulfate	mg/L	*	*	once/month	grab		
MONITORING REPORT	S SHALL BE SUBMITT	TED MONTHLY; T	HE FIRST REPORT IS	DUE AUGUST 28, 2	024.		
LIMIT SET: Q - QUARTERLY							
OTHER							
Whole Effluent Toxicity, Chronic ,	** TU _c	1.6	-	once/quarter ◊	grab		
MONITORING REPORTS SHALL BE SUBMITTED QUARTERLY; THE FIRST REPORT IS DUE OCTOBER 28, 2024.							

* One sample per week is a calendar week from Monday to Sunday. A sample can be taken any day during the week. If the week is split between two months, only the sample taken in that month is used to calculate that monthly average. Two samples in one week for two months in a week in is not required.

- Weekly sampling is to occur for at least the first six months of mine dewatering treatment plant operation. A minimum of 24 samples showing 95% compliance with the requirements of Table A-3 is required so the facility may reduce once per week sampling to once per month sampling.
 - A) Each parameter must be analytically measured below the permit limits (or established ML) to be considered appropriately measured.
 - B) Any and all treatment system upgrades or changes which treat any specific pollutant, starts the sample count over for that pollutant. If the changes effect all pollutants, the count restarts for all pollutants.
 - C) The treatment system designed to remove these pollutants cannot be altered to reduce the level of treatment to each of the parameters the system is designed to treat pursuant to 40 CFR 122.21(e).

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (CONTINUED)

PERMITTED F #006 & # no discharge wastew	EATURES 009 ater structure	es	TABLE A-4 No Discharge: Final Monitoring Requirements				
The facility is not authorized to discharge from these features. The final requirements shall become effective on JULY 1, 2024 and remain in effect until empiritation of the normality these features shall be maniford and empiritarially controlled by the facility as analified below.					<u>24</u> and remain in d below:		
MONITORING	UNITS	A n	MONITORING REQUIREMENTS A measurement is required each month for freeboard without exception.				
PARAMETERS		DAILY MINIMUM	MONTHLY AVERAGE	MINIMUM MEASUREMENT FREQUENCY	SAMPLE Type009872		
LIMIT SET: OM							
Freeboard	feet	2	2 * once/month measured				
Moni	MONITORING REPORTS SHALL BE SUBMITTED MONTHLY; THE FIRST REPORT IS DUE AUGUST 28, 2024						

* Monitoring and reporting requirement only

OUTFALL #008 Stormwater Only	TABLE A-5 FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS						
The facility is authorized to dischar remain in effect until expiration o	The facility is authorized to discharge from this outfall as specified. The final effluent limitations shall become effective on <u>JULY 1, 2024</u> and remain in effect until expiration of the permit. Discharges shall be controlled, limited and monitored by the facility as specified below:						
		FINAL LIN	FINAL LIMITATIONS		MONITORING REQUIREMENTS		
EFFLUENT PARAMETER	S UNITS	Daily Maximum	Monthly Average	BENCH- MARKS	Minimum Measurement Frequency	SAMPLE TYPE	
LIMIT SET: Q							
PHYSICAL							
Flow	MGD	*		-	once/quarter ◊	24 Hr Est.	
CONVENTIONAL							
Chemical Oxygen Demand	mg/L	**		120	once/quarter ◊	grab	
Oil & Grease	mg/L	**		10	once/quarter ◊	grab	
pH [†]	SU	*		-	once/quarter ◊	grab	
Total Suspended Solids	mg/L	**		100	once/quarter ◊	grab	
METALS							
Arsenic, TR	μg/L	**		340	once/quarter ◊	grab	
Cadmium, TR	μg/L	**		6.6	once/quarter ◊	grab	
Cobalt, TR	μg/L	**		220	once/quarter ◊	grab	
Copper, TR	μg/L	**		18	once/quarter ◊	grab	
Cyanide, Total	μg/L	**		22	once/quarter ◊	grab	
Lead, TR	μg/L	**		86	once/quarter ◊	grab	
Nickel, TR	μg/L	**		585	once/quarter ◊	grab	
Zinc, TR	μg/L	**		147	once/quarter ◊	grab	
MONITORING REPO	ORTS SHALL BE SUBMIT	ted <u>Quarteri</u>	<u>.y;</u> The First I	REPORT IS DU	ле <u>OCTOBER 28, 20</u>	<u>24</u> .	

** Monitoring and reporting requirement with numeric benchmark. See Special Conditions for additional requirements.

B. SCHEDULE OF COMPLIANCE

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

- 1. The facility shall submit interim progress reports detailing progress made in attaining compliance with the final effluent limits every 12 months from effective date. The first report is due **July 1, 2025**.
- 2. Within 3 years of the effective date of this permit, the facility shall attain compliance with the final effluent limits at outfall #001 for total cyanide and total recoverable cobalt.

B. SCHEDULE OF COMPLIANCE (CONTINUED)

3. Within 3 years of the effective date of this permit, the facility shall attain compliance with the final effluent limits at outfall #002 for total recoverable cobalt.

C. STANDARD CONDITIONS

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

D. SPECIAL CONDITIONS

- 1. Best Available Technology (BAT) Determinations:
 - (a) For the entire site, the facility maintains and must continue to maintain a SWPPP and implement iterative changes as necessary to control stormwater and reduce pollutants from leaving the site.
 - (b) For outfall #001 dam toe drain, and per 40 CFR 125.3(c)(3):
 - i. The interim BAT permit determination for technology for the dam toe drain is no treatment.
 - ii. The facility will determine the pollutants and average level of those pollutants discharged from only the toe dam drain. At least 6 samples of the dam drainage water should be collected without the influence of stormwater. The facility may use any appropriate data, and data collected for another purpose (such as under a Dissolved Metals Translator study) if relevant.
 - iii. The facility will evaluate technologies for feasibility and cost, and determine a BAT which the facility can employ to decrease or remove the identified pollutants of concern.
 - iv. This information will be submitted to the department 2 years from the effective date of this permit.
 - (c) For outfall #002 seep, and in accordance with 40 CFR 125.3(c)(2)(ii) and 40 CFR 125.3(a)(2)(v)(B), this permit incorporates Best Available Technology (BAT) requirements to eliminate all wastewater from outfall #002 by pumping down the mine and eliminating the seep. The facility must dewater the mine to stop the seep as soon as possible. The facility should request a permit modification to change the outfall description to "stormwater only" after the seep has stopped. At that time, the department will reevaluate the outfall's limits and will likely implement benchmarks instead which are more appropriate for stormwater only.
 - (d) For basins #006 and #009, no discharge is the BAT.
 - (e) For outfall #MDW, and in compliance with 10 CSR 20-7.031(3), a CoMag system is the current identified BAT for this waste stream.
- 2. Acute Whole Effluent Toxicity (WET) tests shall be conducted as follows:
 - (a) Freshwater Species and Test Methods: Species and short-term test methods for estimating the acute toxicity of NPDES effluents are found in the most recent edition of *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms* (EPA/821/R-02/012; Table IA, 40 CFR Part 136). The permittee shall concurrently conduct 48-hour, static, non-renewal toxicity tests with the following species:
 - o The fathead minnow, Pimephales promelas (Acute Toxicity EPA Test Method 2000.0).
 - The daphnid, *Ceriodaphnia dubia* (Acute Toxicity EPA Test Method 2002.0).
 - (b) Chemical and physical analysis of the upstream control sample and effluent sample shall occur immediately upon being received by the laboratory, prior to any manipulation of the effluent sample beyond preservation methods consistent with federal guidelines for WET testing required to stabilize the sample during shipping. Where upstream receiving water is not available or known to be toxic, other approved control water should be used.
 - (c) The ML established for this test is 1.0 TU_a. The effluent limit 0.3 TU_a (i.e. water quality standard) is below the accepted minimum quantification level (ML). The department has determined the current acceptable minimum level (ML) of Acute WET to be 1 TU_a. Laboratory methods must effectively quantify toxicity at or above this level. Measured values greater than or equal to the minimum quantification level of 1 TU_a will be considered violations of the monthly average within this permit and values less than the minimum quantification level of 1 TU_a will be considered in compliance with the monthly average permit limitation.
 - (d) Test conditions must meet all test acceptability criteria required by the EPA Method used in the analysis.
 - (e) The laboratory shall not chemically dechlorinate the sample.
 - (f) The Allowable Effluent Concentration (AEC) is 100%; the dilution series is: 6.25%, 12.5%, 25%, 50%, and 100%.
 - (g) All chemical and physical analysis of the effluent sample performed in conjunction with the WET test shall be performed at the 100% effluent concentration.
 - (h) The facility must submit a full laboratory report for all toxicity testing. The report must include a quantification of acute toxic units ($TU_a = 100/LC_{50}$) reported according to the test methods manual chapter on report preparation and test review. The Lethal Concentration 50% (LC_{50}) is the effluent concentration causing death in 50% of the test organisms at a specific time.

- (i) Accelerated Testing Trigger: If the regularly scheduled acute WET test exceeds the TU_a limit, the permittee shall conduct accelerated follow-up WET testing as prescribed in the following conditions. Results of the follow-up accelerated WET testing shall be reported in TU_a. This permit requires the following additional toxicity testing if any one test result exceeds a TU_a limit.
 - (1) A multiple dilution test shall be performed for both test species within 30 calendar days of becoming aware the regularly scheduled WET test exceeded a TU_a limit, and once every two weeks until one of the following conditions are met:
 - i. Three <u>consecutive</u> multiple-dilution tests are below the TU_a limit. No further tests need to be performed until the next regularly scheduled test period.
 - ii. A total of three multiple-dilution tests exceed the TU_a limit (do not need to be sequential)
 - (2) Follow-up tests do not negate an initial test result.
 - (3) The permittee 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_a limit.
 - (4) The facility may begin a Toxicity Identification Evaluation (TIE) or Toxicity Reduction Evaluation (TRE) during the follow-up testing phase.
- 3. 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:
 - o The fathead minnow, *Pimephales promelas* (Survival and Growth Test Method 1000.0).
 - o 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) For effluent dilution, the laboratory shall use synthetic laboratory water with artificial hardness equivalent ± 5 mg/L of the stream hardness.
 - (f) The Allowable Effluent Concentration (AEC) is 100%, the dilution series is: 100%, 50%, 25%, 12.5%, and 6.25%.
 - (g) All chemical and physical analysis of the effluent sample performed in conjunction with the WET test shall be performed at the 100% effluent concentration.
 - (h) 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/IC₂₅) 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 (IC₂₅), or No Effect Concentration (NOEC₂₅) is the effluent concentration causing 25% reduction in mean young per female or in growth for the test population.
 - (i) 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.
 - (j) 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 <u>consecutive</u> multiple-dilution tests are below the TU_c limit. No further tests need to be performed until the next regularly scheduled test period.
 - ii. A total of three multiple-dilution tests exceed the TU_c limit (do not need to be sequential)
 - (2) Follow-up tests do not negate an initial test result.
 - (3) The facility shall submit a summary of all accelerated WET test results for the test series along with complete copies of the laboratory reports as received from the laboratory within 14 calendar days of the availability of the third test exceeding a TU_c limit.
 - (4) The facility may begin a TIE or TRE during the follow-up testing phase.

- 4. Toxic Effluent Events.
 - (a) TIE/TRE Trigger: The following applies upon the exceedance of the TUa or TUc limit in any three accelerated follow-up WET tests. The permittee must contact the department within 14 calendar days from availability of the test results; and begin to perform a TIE. The permittee shall submit a plan for conducting a TIE and/or TRE within 30 calendar days after the third toxic event. The plan shall be based on EPA Methods and include a schedule for completion. This plan must be approved by the department before the TIE or TRE is begun.
 - (b) Reopener: The results of the TIE or TRE may implicate a specific parameter in the toxicity. The permit may be reopened to implement numeric limits or conditions required to protect the receiving streams from toxicity.
- 5. Specific minimum Best Management Practices (BMPs) for Stormwater Area # SW1. These BMPs may be duplicated throughout the site where necessary.
 - (a) Fueling BMPs
 - (1) Fueling hoses will have check-valves to prevent spills
 - (2) Drip pans will be used when necessary
 - (3) Spills and leaks will be cleaned up immediately
 - (4) Monthly inspections will be completed; a Spill Prevention, Control, and Countermeasure (SPCC) plan will be followed.
 - (5) Personnel will be trained for proper fueling procedures
 - (6) Jersey barriers must be placed around tanks to prevent vehicle collisions
 - (b) Vehicle and equipment staging and parking
 - (1) Drip pans will be used when necessary
 - (2) Area will be checked frequently for leaking devices
 - (3) Only dry clean-up methods will be used
 - (4) All affected employees must be trained at least annually for the proper storage and inspection items; proof of training will be kept with the SWPPP.
 - (5) Storage of obsolete equipment will be drained of fluids prior to long term storage.
 - (c) Maintenance activities and Shop Area
 - (a) There are no floor drains in the shop; nor shall the facility install floor drains.
 - (b) Used fluids must be promptly moved to the appropriate container; drip pans and containers must be emptied on a regular basis.
 - (c) All significant materials must be stored under cover in a stormproof shelter; or capped and all bungs intact.
 - (d) Track out shall be minimized to every extent possible.
- 6. If dewatering bags are used to collect sediment into the no-discharge wastewater holding structures, the bags must be placed on the berms of the wastewater holding structures so the water flows into the wastewater holding structures. Dewatering bags must not be placed on top of each other. When the bags are full, they must be removed from the wastewater holding structures for proper reuse or disposal. Wastewater holding structures berm integrity is required to be maintained. Berms must be inspected for rills, erosion, and other issues at least weekly when dewatering bags are used. These inspections must be kept with the SWPPP. Dewatering bags may only be used with permitted feature #006.
- 7. Concrete truck wash water and cementitious material is not permitted to discharge. This wastewater shall be managed in a nodischarge fashion. Fines and solids shall be disposed of properly.
- 8. Solid waste, or waste materials not covered under the Metallic Minerals permit, is not permissible for placement under this permit. All solid waste must be disposed of properly.
- 9. If the facility is disposing of wastewater sludge to a landfill, the sludge may require a TCLP analysis. Any sludge TCLP information must be sent to the Water Protection Program within two months of receipt of the testing results. An email to the Regional Office is appropriate.
- 10. Domestic wastewater, including showers, is not authorized for discharge, surface dispersal or application, or subsurface dispersal under this permit. Current operations include restroom wastewater holding tanks that are pumped and hauled.
- 11. Tire, truck, or vehicle wash water is not authorized for land application or discharge under this permit.
- 12. Site-wide minimum BMPs. At a minimum, the facility shall adhere to the following:
 - (a) Provide good housekeeping practices on the site to keep trash from entry into waters of the state. Dumpsters must remain closed when not in use.

- (b) Prevent the spillage or loss of fluids, oil, grease, fuel, etc. from vehicle maintenance, equipment cleaning, warehouse activities, and other areas, to prevent the contamination of stormwater from these substances.
- (c) Provide collection facilities and arrange for proper disposal of waste products including but not limited to petroleum waste products, and solvents.
- (d) Store all paint, solvents, petroleum products, petroleum waste products (except fuels), and storage containers (such as drums, cans, or cartons) so these materials are not exposed to stormwater or provide other prescribed BMPs such as plastic lids and/or portable spill pans to prevent the commingling of stormwater with container contents. Commingled water may not be discharged under this permit. Provide spill prevention control, and/or management sufficient to prevent any spills of these pollutants from entering waters of the state. Any containment system used to implement this requirement shall be constructed of materials compatible with the substances contained and shall also prevent the contamination of groundwater. Spill records must be retained on-site or electronically.
- (e) Ensure adequate provisions are provided to prevent surface water intrusion into the wastewater storage wastewater holding structure(s)s and to divert stormwater runoff around the wastewater storage wastewater holding structure(s).
- (f) Provide sediment and erosion control sufficient to prevent or minimize sediment loss off of 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) Outdoor fire protection test water must be handled in a no-discharge manner (infiltration, hauled off-site, etc.) to protect receiving streams from toxicity. Process wastewater may not be used for hydrant testing. If chlorinated, describe the no-discharge method used and include all pertinent information (quantity/frequency, source water, effluent destination (wastewater holding structure(s), field, etc.), and BMPs utilized.) in the application for renewal. If outdoor fire protection test water is not produced or not chlorinated, note this instead. Mine dewatering wastewater may be used for hydrant testing only when in compliance with permit limits for outfall #MDW. Data obtained over this permit term will be evaluated at the next permit renewal.
- (i) After snow or ice, if the facility applies sand/salt to the pavement of parking lots, sidewalks, or stairs, the facility shall sweep excess to remove sand/salt as soon as possible after snow or ice melt, collect excess solids, and minimize and control the discharge of solids into stormwater. Salt and sand shall be stored in a manner minimizing mobilization in stormwater (for example: under roof, in covered container, in secondary containment, under tarp, etc.).
- 13. 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 caused or allowed any contaminants to discharge offsite 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.
 - (c) If the unauthorized discharge was an overflow from a no-discharge wastewater holding structure(s), the report must include all records confirming operation and maintenance records documenting proper maintenance. Operations must demonstrate the ability to meet the no-discharge requirement by maintaining the wastewater holding structures with the requirements of 10 CSR 20-8.200. The facility must document that the amount of water being recycled through the plant, and any other appropriate justification on operations and maintenance at the site and why the discharge occurred.
- 14. No-Discharge Wastewater Holding Structure(s) Minimum Best Management Practices (BMPs):
 - (a) To prevent unauthorized discharges, the no-discharge wastewater structure(s) must be properly designed, operated, and maintained to contain all wastewater plus run-in and direct precipitation.
 - (b) During normal weather conditions, the liquid level in the storage structure shall be maintained below the upper operating level, so adequate storage capacity is available for use during adverse weather periods. The liquid level in the storage structure must be lowered on a routine schedule based on the design storage period. Typically this can be accomplished prior to expected seasonal wet and winter climate periods.
 - (c) Maintain liquid level in the no-discharge wastewater structure at least 2.0 feet from the bottom of the discharge pipe, top of the wastewater holding structure(s), or the bottom of the overflow canal, whichever is lowest.
 - (d) The inspections will note any issues with the no-discharge structure and will record the level of liquid as indicated by the depth marker.
 - (e) To maintain structural integrity and to maintain no discharge, wastewater holding structure(s) shall be inspected at least weekly, the berms of the storage wastewater holding structure(s) shall be mowed and kept free of any deep-rooted vegetation, animal dens, or other potential sources of damage, any leaks or issues shall be noted and repaired as soon as possible. Electronic records retention is acceptable.

- (f) The facility shall ensure adequate berms are provided to prevent surface water intrusion and run-in into the wastewater holding structure(s), will also divert stormwater runoff from around the storage wastewater holding structure(s), and will protect embankments from erosion.
- (g) The minimum and maximum operating water levels for the wastewater holding structure(s) shall be clearly marked.
- (h) The minimum storage capacity for the wastewater holding structure(s) shall be 75 days each per 10 CSR 20-8.200(6)(C)1.A. for Madison County facilities.
- (i) This site must exclude entry into the wastewater holding structure(s). This can be accomplished by a fence surrounding the wastewater holding structure(s), or the entire site.
- (j) It is a violation of this permit to place material in the emergency spillway or otherwise cause it to cease to function properly, as this may result in a catastrophic failure of the storage wastewater holding structure(s).
- (k) Record Keeping:
 - (1) The facility will note number of days the storage structure discharged during the month, the discharge flow, reason the discharge occurred, and effluent analysis performed including analytical result laboratory pages and any clean-up actions taken.
 - (2) One sample for each wastewater discharge source (each wastewater holding structure(s), etc.) shall be obtained and submitted to the department by the 28th day of the month following discharge. The facility shall take samples for parameters listed in any table of Section A of the permit, and any additional parameters sampled. The submission must include the date of sampling and have the wastewater identified. Submission of laboratory results sheets will meet this requirement.
 - (3) Records will be submitted to the regional office (electronically) by the 28th day of the month following the discharge.
- 15. Any discharge not meeting permitted limits may be pumped and hauled to an accepting wastewater treatment facility, or otherwise properly disposed.
- 16. 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".
- 17. Stormwater Pollution Prevention Plan (SWPPP).

The facility's SIC code or description is found in 40 CFR 122.26(b)(14) and/or 10 CSR 20-6.200(2) and hence shall implement a Stormwater Pollution Prevention Plan (SWPPP) which must be prepared and implemented upon permit effective date. The SWPPP must be kept on-site and not sent to the department unless specifically requested. The SWPPP must be reviewed and updated annually or if site conditions affecting stormwater change. The facility shall select, install, use, operate, and maintain the Best Management Practices prescribed in the SWPPP in accordance with the concepts and methods described in: *Developing Your Stormwater Pollution Prevention Plan, A Guide for Industrial Operators*, (EPA 833-B-09-002 March 2021)

<u>https://www.epa.gov/sites/production/files/2021-03/documents/swppp_guide_industrial_2021_030121.pdf</u> The purpose of the SWPPP and the Best Management Practices (BMPs) listed herein is the prevention of pollution of waters of the state. A deficiency of a BMP means it was ineffective at providing the necessary protections for which it was designed. Corrective action describes the steps the facility took to eliminate the deficiency.

- The SWPPP must include:
- (a) A listing of specific contaminants and their control measures (BMPs) and a narrative explaining how BMPs are implemented to control and minimize the amount of contaminants potentially entering stormwater.
- (b) A map with all outfalls and structural BMPs marked.
- (c) If within the boundaries of a regulated Municipal Separate Storm Sewer System (MS4s), list the name of the regulated MS4.
- (d) A schedule for at least once per month site inspections and brief written reports. The inspection report must include precipitation information for the entire period since last inspection, as well as observations and evaluations of BMP effectiveness. A BMP is considered to be disrupted if it is rendered ineffective as a result of damage or improper maintenance. Categorization of a deficiency is reliant on the length of time required to correct each disrupted BMP. Corrective action after discovering a disrupted BMP must be taken as soon as possible. Throughout coverage under this permit, the facility must perform ongoing SWPPP review and revision to incorporate any site condition changes.
 - (1) Operational deficiencies are disrupted BMPs which the facility is able to and must correct within 7 calendar days.
 - (2) Minor structural deficiencies are disrupted BMPs which the facility is able to and must correct within 14 calendar days.

- (3) Major structural deficiencies (deficiencies projected to take longer than 14 days to correct) are disrupted BMPs which must be reported as an uploaded attachment through the eDMR system with the DMRs. The initial report shall consist of the deficiency noted, the proposed remedies, the interim or temporary remedies (including proposed timing of the placement of the interim measures), and an estimate of the timeframe needed to wholly complete the repairs or construction. If required by the department, the facility shall work with the regional office to determine the best course of action. The facility may consider temporary structures to control stormwater runoff. The facility shall correct the major structural deficiency as soon as reasonably achievable. Severe major structural deficiencies must be coordinated with the regional office directly.
- (4) All actions taken to correct the deficiencies shall be included with the written report, including photographs, and kept with the SWPPP. Additionally, corrective action of major structural deficiencies shall be reported as an uploaded attachment through the eDMR system with the DMRs.
- (5) BMP failure causing discharge through an unregistered outfall is considered an illicit discharge and must be reported in accordance with Standard Conditions Part I.
- (6) Inspection reports must be kept on site with the SWPPP and maintained for a period of five (5) years. These must be made available to department personnel upon request. Electronic versions of the documents and photographs are acceptable.
- (e) A provision for designating a responsible individual for environmental matters and a provision for providing at least annual training to all personnel involved in housekeeping, material handling (including but not limited to loading and unloading), storage, and staging of all operational, maintenance, storage, and cleaning areas. Proof of training shall be submitted upon request by the department.
- 18. Proper and continued operation and maintenance pursuant to 40 CFR 122.41(e). At all times the facility shall properly operate, maintain, and control all systems of treatment and control (and related appurtenances) which are installed or used by the facility to achieve compliance with the conditions of this permit. Proper operation and maintenance also, includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems which are installed by a facility only when the operation is necessary to achieve compliance with the conditions of the permit.
- 19. Stormwater Benchmarks. This permit stipulates numeric pollutant benchmarks applicable to the facility's stormwater discharges.
 - (a) Benchmarks do not constitute direct numeric effluent limitations; therefore, a benchmark exceedance alone is not a permit violation. Stormwater monitoring, numeric benchmark compliance, and visual inspections shall be used to determine the overall effectiveness of the BMPs identified in the SWPPP.
 - (b) If a sample exceeds a benchmark concentration, the facility must review the SWPPP and BMPs to determine what improvements or additional controls are needed to reduce pollutant concentrations in future stormwater discharges.
 - (c) Every time a numeric benchmark exceedance occurs, a Corrective Action Report (CAR) must be completed. A CAR is a document recording the efforts undertaken by the facility to improve BMPs to meet benchmarks in future samples. CARs must be retained with the SWPPP and be available to the department upon request. This permit may require CARs be submitted to the department upon permit renewal; see Renewal Requirements section below.
 - (d) Failure to take corrective action to address numeric benchmark exceedance, and failure to make measureable progress towards achieving the numeric benchmark(s), is a permit violation.
 - (e) Stormwater benchmarks and required minimum BMPs as described in this permit are enforceable permit conditions. Any requested change(s) to numeric benchmark values or deviation from minimum BMP requirements must be established through the permitting process. Assessment, evaluation, and implementation of specific BMPs to meet numeric benchmarks or minimum BMP requirements, must be addressed through the SWPPPs and CARs.

20. Petroleum Secondary Containment.

The drainage area around the secondary containment area and the interior of the containment area shall be inspected monthly. Solids, sludge, and soluble debris shall not be allowed to accumulate in the secondary containment.

- (a) The interior of the secondary containment area shall be checked at least monthly for signs of leaks, spills, and releases of petroleum.
- (b) All petroleum captured in the secondary containment area shall be expeditiously removed and the source of the petroleum determined. Leaks or otherwise compromised equipment or appurtenances shall be promptly addressed/repaired.
- (c) Before releasing water accumulated in petroleum secondary containment areas, the water and area must be examined for hydrocarbon odor and presence of sheen to protect the general criteria found at 10 CSR 20-7.031(4).
- (d) Unimpacted stormwater (i.e. free from hydrocarbon odor and presence of sheen), must be drained from the secondary containment as soon as reasonably possible after a precipitation event.
- (e) If subparts (a) and (b) above were not followed, impacted stormwater shall not be discharged from the secondary containment and shall instead be managed in accordance with legally approved methods for disposal of process wastewater, such as being sent to an accepting wastewater treatment facility.

- (f) If subparts (a) and (b) were followed, impacted stormwater can only be drained from the secondary containment after removal of all odor or sheen utilizing appropriate methods.
- (g) The area surrounding the secondary containment must be free of signs of vegetative stress or other indicia of petroleum discharge.
- (h) The area below the outlet of the secondary containment area must be maintained to minimize soil washout, such as with stabilized vegetation, rip rap, or by releasing accumulated water slowly.
- (i) Records of all inspections, testing, and/or treatment of water accumulated in secondary containment shall be available on demand to the department. Electronic records retention is acceptable. These records must be included in the SWPPP.
- 21. 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.
- 22. All outfalls and permitted features must be clearly marked in the field.
- 23. 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.
- 24. Reporting of Non-Detects.
 - (a) Compliance analysis conducted by the facility or any contracted laboratory shall be conducted in such a way the precision and accuracy of the analyzed result can be enumerated. See sufficiently sensitive test method requirements in Standard Conditions Part I, §A, No. 4 regarding proper testing and detection limits used for sample analysis. For the purposes of this permit, the definitions in 40 CFR 136 apply; method detection limit (MDL) and laboratory-established reporting limit (RL) are used interchangeably in this permit. The reporting limits established by the laboratory must be below the lowest effluent limits established for the specified parameter (including any parameter's future limit after an SOC) in the permit unless the permit provides for an ML.
 - (b) The facility shall not report a sample result as "non-detect" without also reporting the MDL. Reporting "non-detect" without also including the MDL will be considered failure to report, which is a violation of this permit.
 - (c) For the daily maximum, the facility shall report the highest value; if the highest value was a non-detect, use the less than "<" symbol and the laboratory's highest method detection limit (MDL) or the highest reporting limit (RL); whichever is higher (e.g. <6).</p>
 - (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).
- 25. Failure to pay fees associated with this permit is a violation of the Missouri Clean Water Law (644.055 RSMo).
- 26. This permit does not allow stream channel or wetland alterations unless approved by Clean Water Act §404 permitting authorities.
- 27. 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.
- 28. All records required by this permit may be maintained electronically; these records may be maintained in a searchable format.
- 29. 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 μ g/L);
 - (2) Two hundred micrograms per liter (200 μ g/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 μ g/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.
- 30. 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.
- 31. 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 644.051.19, RSMo, by disclosure to EPA, state, or local authorities after issuance of this permit via any means, including any other permit applications, funding applications, the SWPPP, discharge monitoring reporting, or during an inspection. Submit a permit modification application, as well as an antidegradation determination if appropriate, to request authorization of new or expanded discharges.
- 32. Closure plans pursuant to 10 CSR 20-6.010(12) are required for any wastewater holding structure(s) or holding structure which have or have had wastewater, solids, or sludge in them for any amount of time. Cleanout of all wastewater, solids, or sludge are required prior to use for stormwater, or else will be considered wastewater henceforth. Wastewater holding structure(s)s permitted under a Metallic Minerals Waste Management Act permit may not require clean closure. Contact the Water Program to inquire if a wastewater holding structure(s) is in need of clean closure.

E. LAND DISTURBANCE

The facility will not be required to procure a separate general permit (MO-RA000000) for land disturbance activities which discharge through outfalls authorized in this permit. If land disturbance activities discharge to any location other than through a permitted outfall, a separate MORA general permit is required, or this permit may be modified to include any such outfall. The general permit does not cover disturbance of contaminated soils therefore modification to this permit is required if contaminated soil disturbance stormwater is being discharged at another location.

- 1. BMPs for land disturbance must prevent discharges from causing or contributing to an exceedance of water quality standards, including general criteria. All pollution prevention measures must be described in the SWPPP; at a minimum such measures must be designed, installed, implemented, and maintained in the following manner:
 - (a) Control stormwater volume, velocity, and peak flow rates within the site to minimize soil erosion;
 - (b) Control stormwater discharges, including both peak flow rates and total stormwater volume, to minimize erosion at outfalls and to minimize downstream channel and stream bank erosion and scour;
 - (c) Minimize the amount of exposed soil during construction activity;
 - (d) Minimize the disturbance of steep slopes;
 - (e) Minimize sediment discharges from the site. Installation of BMPs necessary to prevent soil erosion and sedimentation at the downgradient project boundary (e.g. buffers, perimeter controls, exit point controls, storm drain inlet protection) must be complete prior to the start of all phases of construction. Additional BMPs shall be installed as necessary throughout the life of the project;
 - (f) Inlets susceptible to receiving sediment shall have inlet protection;
 - (g) Remove any sediment from stormwater controls per the manufacturer's instructions or before it has accumulated to one-half of the above-ground height of the control;
 - (h) Provide and maintain natural buffers around surface waters and direct stormwater to vegetated areas to increase sediment removal and maximize stormwater infiltration and filtering, unless infeasible;
 - (i) Minimize soil compaction and preserve topsoil where practicable;

E. LAND DISTURBANCE (CONTINUED)

- (j) All BMPs shall be regularly maintained and remain in effective operating condition during the entire duration of the project, with timely repairs (generally less than 1 month) until final stabilization has been achieved;
- (k) Minimize sediment trackout from the site and sediment transport onto roadways;
 - (1) Restrict vehicle traffic to designated exit points.
 - (2) Use appropriate stabilization techniques or BMPs at all points that exit onto paved roads or areas outside of the site.
 - (3) Use additional controls to remove sediment from vehicle and equipment tires prior to exit from facility where necessary.
 - (4) Remove all tracked out sediment within the same day or by the end of the next day if no forecast of rain.
- (l) Concrete washout facilities shall be used to contain concrete waste from the activities onsite, unless the washout of trucks and equipment is managed properly at an offsite location. The washout facility shall be managed to prevent solid and/or liquid waste from entering waters of the state by the following:
 - (1) Direct the wash water into leak-proof containers or pits designed so that no overflows can occur due to inadequate sizing or precipitation;
 - (2) Locate washout activities a minimum of 50 feet from waters of the state, stormwater inlets, and/or stormwater conveyances;
 - (3) Washout facilities shall be cleaned, or new facilities must be constructed and ready for use, once the washout is 75% full. Ensure waste concrete is properly removed when solidified;
 - (4) Designate the washout area(s) and conduct such activities only in these areas; and
 - (5) Ensure contractors are aware of the location, such as by marking the area(s) on the map or signage visible to the truck and/or equipment operators.
- 2. In addition to the SWPPP requirements found in the permit section above, the following shall be included in a "Land Disturbance" section of the SWPPP:
 - (a) Location of the land disturbance with a map showing location of the disturbance at the site, outfalls, and site boundaries. The map must also include the following:
 - (1) Direction of stormwater flow;
 - (2) Location and type of structural BMPs; and
 - (3) Locations where stabilization practices are expected to occur.
 - (b) Function of the land disturbance (e.g. building a storage area, remediation, tree removal, etc.);
 - (c) Estimates of total area to be disturbed through excavation, tree removal, grading, or other construction activities;
 - (d) Whether a Clean Water Act Section 404 permit and 401 water quality certification is required for the project;
 - (e) A list and description of selected BMPs in use for land disturbance at the site. The list shall include structural, operational, managerial, and procedural BMPs used or intended for use. Procedural BMPs are activities or behaviors such as street sweeping or good housekeeping techniques. Descriptions shall include whether the BMP is temporary or permanent; the site conditions required for effective use of the BMP (maximum slope, etc.); BMP installation/construction procedures, including representative drawings as necessary; and operation and maintenance procedures for the BMPs. Procedural BMPs shall be described based on frequency required, interval between executions, or other detailed site conditions or qualifying events shown to be applicable to each procedural BMP. The descriptions must indicate where and how BMPs will be implemented to address specific and variable site locations including, but not limited to, entry/exit, slopes, stream buffer zones, allowable dewatering activities, sediment stockpiles, and stabilization measures.
 - (f) The land disturbance BMPs will be inspected after the following conditions, and a record of the additional inspections will be kept with the SWPPP:
 - At least once every seven (7) calendar days and within 48 hours after any storm event equal to or greater than a 2-year, 24-hour storm has ceased during a normal work day or within 72 hours if the rain event ceases during a non-work day, such as a weekend or holiday; or
 - (2) Once every 14 calendar days and within 24 hours of the occurrence of a storm event of 0.25 inches of precipitation or greater or the occurrence of runoff from snowmelt. To determine if a storm event of 0.25 inches or greater has occurred on your site, the responsible individual must either keep a properly maintained rain gauge on site or obtain the storm event information from a weather station for the location.
 - i. If inspections occur every 14 calendar days, there is a storm event at the site continuing for multiple days, and each day of the storm produces 0.25 inches or more of rain, the facility is required to conduct an inspection within 24 hours of the first day of the storm and within 24 hours after the end of the storm.
 - ii. An individual must conduct an inspection within 24 hours once a storm event has produced 0.25 inches within a 24 hour period, even if the storm event is still continuing.

E. LAND DISTURBANCE (CONTINUED)

- (g) A section recording the dates the land disturbance section of the SWPPP is updated and the purpose of the update. The land disturbance section of the SWPPP shall be updated when the design, operation, or maintenance of land disturbance BMPs are changed; when design of the land disturbance project is changed and could significantly alter the quality of stormwater discharges; facility site inspections indicate deficiencies in land disturbance BMPs, or the BMPs are found to be ineffective at minimizing and controlling erosion and sedimentation; or the department notifies the facility in writing of deficiencies in land disturbance BMPs or the SWPPP, including notification that discharges from the site caused violations of water quality standards, including general criteria found at 10 CSR 20-7.031(4).
- (h) The facility shall be responsible for notifying each contractor or entity (including, but not limited to, utility crews, city employees or their agents, or other personnel) who will perform work which could impact stormwater runoff at the site. These notifications shall include notice of the existence of the SWPPP and what actions or precautions shall be taken while on site to minimize the potential for erosion and the potential for damaging any BMP. The permittee is solely responsible to ensure timely correction of any damage to any established BMP and any subsequent water quality violation resulting from the damage.
- 3. For disturbed soil areas on site that have ceased activities, either temporarily or permanently, the permittee shall initiate stabilization immediately in accordance with the options below:
 - (a) Where activities have been permanently ceased, final stabilization must be initiated immediately.
 - (b) For any areas of soil disturbance where activities have ceased and will not resume for a period exceeding 14 calendar days, the permittee shall construct BMPs immediately to establish interim stabilization.
 - (1) Extension to the 14-day completion period for stabilization may be made due to weather and equipment malfunctions.
 - (2) In these circumstances, the justification for the extension to the 14-day completion period shall be documented in the SWPPP.
 - (3) The discontinuation or continuation of the extension may be determined by review of department staff when on site.
 - (c) If the slope of the area is greater than 3:1 (three feet horizontal to one foot vertical) then the permittee shall establish interim stabilization within seven days of ceasing operations on that part of the site.
 - (d) Stabilization must be initiated immediately;
 - (e) For soil disturbing activities that have been permanently ceased on any portion of the site, final stabilization of disturbed areas must be initiated immediately;
 - (1) Extension to the 14-day completion period for stabilization may be made due to weather and equipment malfunctions. In these circumstances, the justification for the extension to the 14 day shall be documented in the SWPPP.
 - (2) The discontinuation or continuation of the extension may be determined by review of the department staff when on site.
 - (3) Alternatives may exist for contaminated soils but must be described fully in the SWPPP.
- 4. Until stabilization is complete, interim sediment control shall consist of well-established and well-maintained BMPs that are reasonably certain to protect waters of the state from sediment pollution over an extended period of time. This may require adding more BMPs to an area than is normally used during daily operations. The types of BMPs used must be suited to the area disturbed, taking into account the number of acres exposed, and the steepness of the slopes.

The following activities would constitute the immediate initiation of stabilization:

- (a) Prepping the soil for vegetative or non-vegetative stabilization as long as seeding, planting, and/or installation of non-vegetative stabilization products takes place as soon as practicable;
- (b) Applying mulch or other non-vegetative product to the exposed areas;
- (c) Seeding or planting the exposed areas;
- (d) Finalizing arrangements to have stabilization product fully installed in compliance with the deadlines for completing stabilization;
- (e) If vegetative stabilization measures are being implemented, stabilization is considered "installed" when all activities necessary to seed or plant the area are completed. Installed does not mean established.
- (f) If non-vegetative stabilization measures are being implemented, stabilization is considered "installed" when all such measures are implemented or applied. Non-vegetative stabilization shall prevent erosion and shall be chosen for site conditions, such as slope and flow of stormwater.

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 644.051.9 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-0098752 MADISON MINE

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

As per [40 CFR Part 124.8(a)] and [10 CSR 20-6.020(1)(A)2.] a factsheet shall be prepared to give pertinent information regarding applicable regulations, rationale for the development of limitations and conditions, and the public participation process for the Missouri State Operating Permit (MSOP or permit) listed below. A factsheet is not an enforceable part of a permit.

PART I. FACILITY INFORMATION

Facility Type:	Industrial: Major (Score 130, 08/29/2008), Primary, Categorical; >1 MGD
SIC Code(s):	1031, 1099, 1629
NAICS Code(s):	212230, 212299, 237990
Application Date:	03/31/2021 AP# 37089
Modification Date:	11/01/2019 for CP# 0002087
Permit Expiration Date:	09/30/2021

Other environmental permits currently held pursuant to 40 CFR 122.21(f)(6):

Construction Permits:CP# 0002087 AP# 32871 08/28/2019-08/27/2021; Statement of Work Complete received 9/9/2019
CP# 0002202 AP# 36063 02/17/2021-02/16/2023; Statement of Work Complete received 4/30/2022Land Disturbance Permits:MORA12000 03/27/2019 & MORA12592 08/14/2018; MORA17224 – all expired 02/07/2022Metallic Minerals Mining:MMWM# 2301770Air:AP202008036 08-28-2020, Sec 5 & 6: de minimis and minor; tailings processing, 213 days used
No Part 70 Air permit found – it is unknown if the facility needs a Part 70 Air permit.Hazardous Waste:none found (mining wastes are generally Bevill exempt wastes)

FACILITY DESCRIPTION:

Metallic mineral mining, surface mining of historic tailings (completed in 2023; historic tailings are capped), and sub-surface mining (not yet started). According to <u>https://www.mocobalt.com/</u> the site holds approximately 35 million pounds of recoverable cobalt. The main purpose of cobalt is for a cathode complexed with nickel and lithium in high performance batteries. This renewal incorporates the conditions required for CP# 0002202. Features added under this permit are permitted features #006, #007, #SW1, and #009. This facility has changed ownership several times since its inception in 1847. Mining of lead was its initial use, however, this area is recognized as having high cobalt reserves therefore new mining interests have emerged.

40 CFR 440.104(b)(1) states there shall be no discharge of process wastewater to navigable waters from mills that use the frothflotation process alone, or in conjunction with other processes, for the beneficiation of copper, lead, zinc, gold, silver, or molybdenum ores or any combination of these ores.

40 CFR 440.104(b)(2)(ii) states, in the event there is a build up of contaminants in the recycle water which significantly interferes with the ore recovery process and this interference can not be eliminated through appropriate treatment of the recycle water, the permitting authority may allow a discharge of process wastewater in an amount necessary to correct the interference problem after installation of appropriate treatment. An antidegradation review and permit modification would be required for this discharge. The facility shall have the burden of demonstrating to the department that the discharge is necessary to eliminate interference in the ore recovery process and that the interference could not be eliminated through appropriate treatment of the recycle water.

Items listed in the facility (or outfall) description, applicable to the operation, maintenance, control, and resultant effluent quality are required to be enumerated in the facility description. The facility description ensures the facility continues to operate the wastewater (or stormwater) controls listed in the permit to preserve and maintain the effluent quality pursuant to 40 CFR 122.21(e). Any planned changes to the facility (which changes the facility or outfall description) are required to be reported to the department pursuant to

40 CFR 122.41(l)(1)(ii). If the facility does not or cannot use all of their disclosed treatment devices, this is considered bypassing pursuant to 40 CFR 122.41(m) in the case of wastewater, and BMP disruption in the case of stormwater.

This facility receives potable water from the city of Fredericktown, and the facility uses pumped groundwater for certain processes. No wastewater is known to be piped to the city of Fredericktown at this time. This includes domestic wastewater.

PERMITTED FEATURES TABLE:

OUTFALL	AVERAGE FLOW	DESIGN FLOW	Treatment Level	EFFLUENT TYPE	
#001	precip dependent	4.0 MGD	BMPs	stormwater and wastewater (dam toe drain)	
#002	precip dependent	2.5 MGD	BMPs	stormwater and wastewater (contaminated groundwater seep)	
#006	0 discharge	0 discharge	no discharge	earthen wastewater holding structure(s); wastewater	
#008	unknown	n/a	BMPs	stormwater only	
#MDW	unknown	4.32 MGD	WQS	mine dewatering; new 2024 permit; see Appendix 1 for antidegradation review and temporary wastewater discharge allowance	
#SW1	precip dependent	n/a stormwater	BMPs	stormwater only from the new warehouse area; the northernmost bounds of the site, new at 2024 renewal	

BMPs are Best Management Practices; some specific BMPs are required in the permit. Other BMPs are enumerated in the SWPPP which the facility determines are appropriate.

INACTIVE FORMERLY PERMITTED FEATURES:

<u>OUTFALL #003</u>: no discharge permissible; this outfall was a former discharge point for the mine "decline" or entrance. With the exception of a brief period of mine dewatering by AMC in the early 1980s, the decline had been discharging untreated water into Goose Creek for approximately 30 years. At times, the discharge contributed the entire flow of Goose Creek. Outfall #003 was eliminated as a result of the closure of the mine decline (entrance) and accompanying air shaft in September of 2002. The closure was part of a Settlement Agreement issued by the department. Sometime after the closure, the seep water from the former entrance resurfaced within approximately 100 yards southeast of outfall #002.

<u>PERMITTED FEATURES #004 AND #007</u>: Land application, irrigation, and dust suppression allowance was removed at this renewal. See LAND APPLICATION in Part III below for more information.

PERMITTED FEATURE #005: removed March 25, 2024 because this basin has been closed.

FACILITY PERFORMANCE HISTORY, INSPECTIONS, & COMMENTS:

The electronic discharge monitoring reports were reviewed for the last five years. Numerous numeric permit limit exceedances occurred. This facility is in Water Protection Program enforcement. The facility has plans to begin pumping the mine down, or mine dewatering. When this occurs, the seep at outfall #002 is expected to decrease or cease. The toe dam drain may also cease at outfall #001. Limits are provided in this renewal to discharge mine dewatering, pending an antidegradation. Mine dewatering wastewater is categorical pursuant to 40 CFR 440; mine dewatering is not process wastewater pursuant to the same. Wastewater holding structure(s)s holding any type of wastewater; (process, non-process, or categorical) are required to undergo closure pursuant to 10 CSR 20-6.010(12) unless designed to hold wastes in perpetuity such as those permitted under a metallic minerals mining permit.

CONTINUING AUTHORITY:

Pursuant to 10 CSR 20-6.010(2)(A) and (E), the department has received the appropriate continuing authority authorized signature from the facility. The Missouri Secretary of State continuing authority charter number for this facility is LC001563199; this number was verified by the permit writer to be associated with the facility and precisely matches the continuing authority reported by the facility. On May 22, 2019, the department received a modification application which indicated a change of name on the application to Missouri Cobalt (MoCo). On July 19, 2019, the Water Program confirmed that the continuing authority name remains Missouri Mining Investments, LLC (MMI), and not change the continuing authority to Missouri Cobalt. On February 22, 2022, the facility provided the business address change to Clayton, Missouri.

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 provided a written statement dated 2/11/2022 from the higher level authority declining management of the facility under 10 CSR 20-6.010(2)(C)1.
 - ✓ This provision does not supersede or prohibit any domestic wastewater proposed to be routed to the accepting wastewater treatment service. The acceptance of domestic wastewater does not meet the definition of becoming managed by a preferential higher authority.

✓ This provision does not prohibit pretreatment or industrial user negotiation this facility may have with the local accepting wastewater treatment service. An industrial user status is not a change of continuing authority. This facility may be subject to local limits applied by the accepting wastewater treatment facility if industrial wastewater is sent to the local authority.

FACILITY MAP:



Locations are approximate. Satellite imagery collected February 24, 2024. Outfall #008 was established on the east side of the property. Below is imagery showing new de-vegetation to the east of the historical tailings areas; these areas were capped in 2023.

The facility has commented that the portions under the control of the facility are not the only areas which have the ability to contribute contaminants to Saline Creek. Namely, there are other operable units (OU, identified under Superfund; see https://cumulis.epa.gov/supercpad/SiteProfiles/index.cfm?fuseaction=second.Cleanup&id=0701102#bkground) that have not been remediated and do not have a vegetative cap. These areas are known to discharge stormwater with entrained contaminants. See Frazier Property pin above. Sampling that was conducted below outfall #002 (Sampling Site #1), and within Saline Creek showed elevated pollutants of concern that can not be 100% attributable to the facility. And to reiterate, when the facility is issued this permit and begins to pump out the mine, the seep water at outfall #002 will stop, thus greatly reducing pollutants of concern discharged to Saline Creek. Property ownership can be found on the Madison County Assessor Map https://www.arcgis.com/apps/webappviewer/index.html?id=e43680bb4b1c418b894a169e7995af14

MINE DEWATERING BASIN:



MILL WATER BALANCE DIAGRAM:



MINE DEWATERING PROCESS FLOW DIAGRAM:



PART II. RECEIVING WATERBODY INFORMATION

RECEIVING WATERBODY TABLE:

OUTFALL	WATERBODY NAME	CLASS	WBID	DESIGNATED USES	DISTANCE TO SEGMENT	12-digit HUC	
#001	Tollar Branch*	С	4102*	AQL, GEN, HHP, IRR, LWW, SCR, WBC-B, WWH (ALP)	0 mi		
#002, #SW1 #MDW	Tributary to Saline Creek	n/a	n/a	GEN**	0.0 mi		
	Saline Creek	Р	2859	AQL, GEN, HHP, IRR, LWW, SCR, WBC-B, WWH (ALP)	0.7 mi	08020202-0102 Saline Creek-	
#008	Tributary to Goose Creek	n/a	n/a	none	0 mi	River	
	Goose Creek	Р	2860	AQL, GEN, HHP, IRR, LWW, SCR, WBC-B, WWH (ALP), TMDL	0.1 mi	(50.21 sq. mi.)	
	Saline Creek	Р	2859	AQL, GEN, HHP, IRR, LWW, SCR, WBC-B, WWH (ALP), TMDL	0.42 mi		

Outfalls #001, #002, #008 and #MDW are the only outfalls designated for discharge; stormwater area #SW1 also discharges sheet flow.

* During the last permit term, the historic 08/20/2013 designated Class C stream received an official name and unique identifier, Tollar Branch https://apps5.mo.gov/wqa/

** On 1/21/2022, the Watershed Protection Section determined the NHD line, a delineated tributary to Saline Creek shall have general criteria protections.

Classes are representations of hydrologic flow volume or lake wastewater holding structure(s) size as defined in 10 CSR 20-7.031(1)(F). L1: Lakes with drinking water supply - wastewater discharges are not permitted to occur to L1 watersheds per 10 CSR 20-7.015(3)(C); L2: major reservoirs; L3: all other public and private lakes; P: permanent streams; C: streams which may cease flow in dry periods but maintain pools supporting aquatic life; E: streams which do not maintain surface flow; and W: wetlands. Losing streams are defined in 10 CSR 20-7.031(1)(O) and are designated on the losing stream dataset or determined by the department to lose 30% or more of flow to the subsurface.

WBID: Waterbody Identification Number: Missouri Use Designation Dataset per 10 CSR 20-7.031(1)(Q) and (S) as 100K Extent-Remaining Streams or newer; data can be found as an ArcGIS shapefile on MSDIS at <u>ftp://msdis.missouri.edu/pub/Inland_Water_Resources/MO_2014_WQS_Stream_Classifications_and_Use_shp.zip;</u> New C streams described on the dataset per 10 CSR 20-7.031(2)(A)3 as 100K Extent Remaining Streams.

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

Designated Uses: see 10 CSR 20-7.031(1)(C)

Other Applicable Criteria:

10 CSR 20-7.031(4): **GEN** – general criteria; acute toxicity criteria applicable to NHD data set line per 1/21/2022 Watershed Protection email. Water Quality Standards Search <u>https://apps5.mo.gov/mocwis_public/waterQualityStandardsSearch.do</u>

General Criteria (GEN): general criteria apply to all waterbodies, even those lacking designated uses, such as NHD lines that cross property boundaries. 10 CSR 20-7.031(4)(J) waters in mixing zones, ephemeral aquatic habitat and waters of the state lacking designated uses shall be subject to the following requirements: the acute toxicity criteria of Tables A1, A2, and B1 and the requirements of subsection (5)(B) which state water contaminants shall not cause the criteria in Tables A1, A2, B1, B2, and B3 to be exceeded. Given these citations, the acute and chronic WQS can be applied to the waterbody in question. The general criteria are also applied to protect downstream uses pursuant to 10 CSR 20-7.031(4)(E); the numeric WQS in the aforementioned tables are used to protect downstream acute and chronic uses.

EXISTING WATER QUALITY & IMPAIRMENTS:

The receiving waterbody(s) segment(s), upstream, and downstream confluence water quality was reviewed. The USGS <u>https://waterdata.usgs.gov/nwis/sw</u> or the department's quality data database was reviewed.

<u>https://apps5.mo.gov/mocwis_public/wqa/waterbodySearch.do</u> and <u>https://apps5.mo.gov/wqa/</u> The department's quality data database was reviewed. <u>https://apps5.mo.gov/mocwis_public/wqa/waterbodySearch.do</u> and <u>https://apps5.mo.gov/wqa/</u> 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. <u>https://dnr.mo.gov/water/what-were-doing/water-planning/quality-standards-impaired-waters-total-maximum-daily-loads/tmdls</u> 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/impairedwaters Water quality standards protect such beneficial uses of water as whole body contact (such as swimming), maintaining fish and other aquatic life, and providing drinking water for people, livestock, and wildlife. The 303(d) list helps state and federal agencies keep track of impaired waters not addressed by normal water pollution control programs. A TMDL is a calculation of the maximum amount of a given pollutant a water body can absorb before its water quality is affected; hence, the purpose of a TMDL is to determine the pollutant loading a specific waterbody can assimilate without exceeding water quality standards. If a water body is determined to be impaired as listed on the §303(d) list, then a watershed management plan or TMDL for that watershed may be developed. The TMDL shall include the WLA calculation.

- Receiving streams Tollar Branch, outfall #001 (WBID# 4102), Saline Creek, outfall #002 (WBID# 2859), Goose Creek, upstream and after historical outfall #003, (WBID# 2861 & 2860), and the confluence waters of the Little St. Francis River (WBID # 2854) were reviewed.
 - ✓ Tollar Branch has not been assessed. This is a new WBID listing, and is category 3A as the WBID was newly assigned.
 - ✓ Saline Creek was last assessed in 2021; listing category 4A. This waterbody is impaired by nickel and cobalt, likely caused by this facility although other Superfund Operable Units (OUs) exist in this area, not under the control of this facility. This facility has capped all of the old tailings areas in 2023 and are working toward significantly reducing contaminants exiting the site from stormwater. Once the facility is allowed to start pumping out the mine under this renewal (outfall #MDW), the seep at outfall #002 will also stop thereby further reducing contaminant loading to Saline Creek. TMDL approved 1999 with chronic nickel criteria, but may need to be updated to reflect changes in nickel standards. This permit reviewed the revised standards for nickel; see effluent limits determination section. The uses not supported are aquatic life. The supported uses are irrigation, and livestock and wildlife watering. https://dnr.mo.gov/document-search/goose-saline-creek-nickel-cobalt-total-maximum-daily-load
 - ✓ Goose Creek segment 2861 was assessed in 2016. This segment is upstream of the former entry point of the artesian flow from the Madison Mine and aquatic life, irrigation, and livestock and wildlife watering uses are all supported.
 - ✓ Goose Creek segment 2860 was assessed in 2018. This segment was downstream of historic outfall #003 and the noted artesian flow; in 2018 the assessment returned the stream to compliance because the shaft was plugged. Aquatic life, irrigation, and livestock and wildlife watering uses are all supported currently but were not in the past.
 - Little Saint Francis River was last assessed in 2018. An invertebrate study shows an impairment and the aquatic life use is not supported. The note for this waterbody indicated new sediment data shows Logtown Branch and below is high in lead. Logtown Branch is listed as an unnamed stream northwest of Madison Mine, Little Saint Francis River flows generally south and Madison Mine does not appear to be a contributor to the lead in this assessment. Logtown Branch is downstream of Mine LaMotte.
 - ✓ The Watershed Protection Section reviewed this permit in March, 2022 and had the following comments:
 - The criteria for nickel has become more stringent since the TMDL was written, but because no further discharge is allowed from outfall #003, no further action is needed on this item.
 - ✓ Outfall MDW is downstream of the listed impairment.
 - ✓ In a meeting on December 16, 2022, the department met with EPA regarding water quality standards and impaired waters. department staff clarified that Saline Creek (WBID# 2859) is listed under category 4A in the department's 305(b) Report. In the 305(b) Report, the department lists Saline Creek (WBID# 2859) as impaired for nickel in its entirety. Category 4A means that a TMDL has been approved to address the impairment. After further review of the TMDL, the department clarified that the TMDL specifically addresses only 0.5 miles of an upper portion of Saline Creek (WBID# 2859). Current data indicates the lower 1.7 miles of Saline Creek (WBID 2859) has been and is still impaired for nickel. This portion of Saline Creek (WBID 2859) is not addressed by the TMDL. The department will correct this discrepancy in future 303(d) lists. Because

Saline Creek (WBID# 2859) is listed as impaired in the 305(b) Report and current data indicates Saline Creek (WBID# 2859) is impaired, consideration for the impairment is therefore included in this permit. The June 23, 2020 305(b) Report, can be reviewed on the department's website: <u>https://dnr.mo.gov/document/2020-missouri-integrated-water-quality-report-305b-report</u>



This image shows the Goose Creek TMDL segment (green line). The green shaded area is the drainage area applicable to that portion of the stream under the TMDL. Outfall #002 discharges on an unnamed tributary (NHD line, blue tributary) to Saline Creek.

WATERBODY MIXING CONSIDERATIONS:

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

PART III. RATIONALE AND DERIVATION OF PERMIT CONDITIONS

ANTIBACKSLIDING

Federal antibacksliding requirements [CWA §402(o) and 40 CFR § 122.44(l) <u>https://www.ecfr.gov/current/title-40/chapter-</u> <u>I/subchapter-D/part-122#p-122.44(l)</u> 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.

During the review period since the first public notice of this permit (August 5, 2022 through September 5, 2022), the EPA has provided numerous thoughts, feedback, and finally, has concluded that all effluent limits must be maintained from the last permit without the option to backslide (to a less stringent permit limit) under any circumstances, unless an express exception applies. The generally accepted definition of backsliding is any effluent limit that is less stringent than what is currently effective in the permit.

The department throughout the process has noted the EPA's concerns, while attempting to provide amenable resolutions per the historic permitting practices and the department's interpretation of backsliding regulations, including using a more representative hardness. The department has noted that rulemaking changes have occurred since the last permit was issued; including the EPA's approval of new hardness regulations, to use the 50th percentile, instead of the 25th percentile in calculating permit limits. However, the

facility has agreed to keep historical effluent limits at this time given the immediate need to begin pumping out the mine and to use new outfall #MDW to begin subsurface mining.

The permittee is currently in the process or contemplating the use of completing Dissolved Metals Translator (DMT) studies. Based on EPA's current objections, while a future DMT may be considered, an antidegradation review will also be required to raise effluent limits, including an alternatives analysis with a discussion of treatment technology options.

ANTIDEGRADATION REVIEW:

For 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. In accordance with Missouri's water quality regulations for antidegradation [10 CSR 20-7.031(3)], degradation may be justified by documenting the socio-economic importance of a discharge after determining the necessity of the discharge. Facilities must submit the antidegradation review request to the department prior to establishing, altering, or expanding discharges. See https://dnr.mo.gov/document-search/antidegradation-implementation-procedure 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.

- ✓ See Appendix 1. There is no regulatory requirement that the antidegradation review be public noticed prior to the permit which includes conditions for the antideg.
- ✓ The minimum BMPs, see below, assigned in this permit, and under the SWPPP requirements for stormwater; and the review of stormwater BMPs at the site by the facility, provide on-going on-site analysis to ensure degradation is not occurring which meet the antidegradation requirements for stormwater. The prescribed minimum BMPs required in the permit for stormwater are developed by the department pursuant to 10 CSR 20-7.031(3), and BMP use for stormwater discharges is authorized under 40 CFR 122.44(k)(2).

On June 9, 2023, the EPA formally commented on the draft permit. "Antidegradation Analysis. The MoDNR's Antidegradation Implementation Policy applies to any new or expanded discharge. For waters that are not impaired or where existing water quality has not been determined, a Tier 2 review is required by the AIP. Tier 2 reviews require an alternatives analysis. The draft permit is based only on a July 22, 2022, "Antidegradation Review for a Temporary Discharge" for the discharge from the new Outfall MDW and does not include an alternative analysis nor does it include a comprehensive antidegradation review as required by Missouri's AIP. An Antidegradation for a Temporary Discharge review can only be used when there is a "temporary degradation" not resulting in a "significant degradation." Missouri's AIP states that in situations involving bioaccumulative pollutants, the applicant may be required by the department to proceed directly into defining the "necessity" (i.e. performing the alternative analysis) of the discharge unless it can be demonstrated that there are no attendant risks to the environment and human health. In this instance, the new MDW discharge includes pollutants of concern that are bioaccumulative (e.g. cadmium, mercury, lead, cobalt, and nickel), and the new MDW discharge is not "temporary" as defined by Missouri's AIP, rather it is "significant" and includes the discharge of bioaccumulative pollutants. It appears MoDNR must incorporate [See EPA WQS action letter dated July 30, 2019] a Tier 2 antidegradation analysis for the new MDW discharge into the draft permit to ensure consistency with the AIP and protection of water quality."

Department Response:

After further discussions with EPA it was determined that the federal definition of "temporary" is not the same as a temporary discharge under Missouri's AIP language, therefore the AIP continues to allow a time-limited discharge. Besides the "temporary" determination, an evaluation of the parameters demonstrated that the facilities were considered Tier 1 pollutants and as such the Antidegradation Implementation Procedure requires the facility to meet Water Quality Standards until a Wasteload Allocation is established through the TMDL process. In reviewing the existing discharge characteristics of the mine seep and stormwater and the requirement that the facility meet water quality standards at the point of discharge at Outfall #MDW, the discharge will reduce concentrations of all metals currently being discharged into the Tributary to Saline Creek. The Antidegradation Review was not updated for any parameters except for Total Recoverable Cobalt. Total Recoverable Cobalt was reevaluated and additional research was completed, including an evaluation of Ohio's Water Quality Standard for aquatic life protection for cobalt. The proposed time-limited Antidegradation Review sets the maximum daily effluent limit to the recommended acute toxicity threshold of $220 \,\mu$ g/L and the monthly average effluent limit to the recommended chronic toxic threshold of $24 \,\mu$ g/L.

BEST MANAGEMENT PRACTICES:

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

BIOACCUMULATION OF POLLUTANTS:

Since the first PN of the permit, the EPA brought up concerns regarding bioaccumulation of metals.

Response:

A bioaccumulative pollutant is a chemical that will concentrate in the tissues of an organism over time. Older organisms have higher concentrations than younger organisms. Bioaccumulation is concerning when a pollutant has toxic effects. Cobalt is a bioaccumulative pollutant that is toxic to aquatic life. Therefore, the concentration of cobalt that aquatic life are exposed to must be low enough that tissue concentrations will not reach toxic levels following exposure. Current research shows that while cobalt is bioaccumulative, the rate at which it bioaccumulates in aquatic life is minimal and does not impact the overall derivation of the criteria.

All of Missouri's WQS are based on appropriate considerations for bioaccumulation therefore this permit already addresses bioaccumulation on a pollutant by pollutant basis.

CLOSURE:

To properly decontaminate and close a wastewater holding structure(s), the facility must draft a complete closure plan, and include the Closure Request Form #2512 <u>https://dnr.mo.gov/document-search/facility-closure-request-form-mo-780-2512</u> The publication, Wastewater Treatment Plant Closure - PUB2568 found at <u>https://dnr.mo.gov/print/document-search/pub2568</u> 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: <u>https://dnr.mo.gov/about-us/division-environmental-quality/regional-office</u> For earthen wastewater holding structure(s)s included under a construction permit (CP) **and** a Metallic Minerals Waste Management Act (MMWM) permit, clean closure is not required. At a minimum, any waste, wastewater, solids, or sludge holding structure not constructed pursuant to a CP and a MMWM permit, including wastewater, sludge, solids and contamination is required for removal when the facility ceases operations.

COBALT LIMITS:

The first public notice draft of the permit, from August 5, 2022 to September 5, 2022, contained Missouri's WQS which continued limits for cobalt based on irrigation and wildlife protection uses, for which the water quality standard is 1000 μ g/L. Those limits, after calculation using the TSD methods, were 1643 μ g/L daily maximum, and 819 μ g/L monthly average for all outfalls. The facility demonstrated RP for cobalt at all outfalls for the irrigation and livestock and wildlife protection (IRR/LWP) standards. IRR/LWP do not intrinsically protect for aquatic life toxicity; nor are IRR/LWP designed for that purpose. The EPA provided a markup of the November 7, 2022 draft which included a narrative of discussions between EPA and DNR. In this, the EPA requested that the WET test for outfall #MDW be switched from acute testing to chronic testing requirements to protect for chronic toxicity. At that time, EPA requested the department implement a numeric WQBEL for cobalt based on protection of aquatic life toxicity in warm water habitat (WWH).

Departmental Memorandum for Establishment of Cobalt Values for Aquatic Life Toxicity Protections DATE: February 1, 2023

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

Madison Mine is an active mine in the state of Missouri and holds an estimated 72 million pounds of recoverable cobalt. Currently, the Missouri Department of Natural Resources (department) has established cobalt water quality criteria for the protection of the irrigation, livestock, and wildlife protection, and groundwater designated uses, each set at 1,000 micrograms per liter (µg/L). Missouri does not have a cobalt aquatic life protection criteria. While cobalt is an essential micronutrient, it becomes toxic to aquatic life when levels are too high. Cobalt can inhibit enzymes, which causes a decrease in tissue respiration and metabolism. [Environment Canada. (May, 2017) "Federal Environmental Quality Guidelines for Cobalt."] Cobalt also impacts the citric acid cycle and the functionality of liver enzymes. Currently the U.S. Environmental Protection Agency (EPA) does not have an aquatic life criteria for cobalt. However, in 2020, Stubblefield et al. developed a chronic and acute aquatic life criteria for cobalt by using EPA's species sensitivity distribution approach. Madison Mine averages a dissolved cobalt discharge of 1,195 µg/L. Creating a toxicity threshold for the site will ensure that water quality is maintained and aquatic life are protected in the areas surrounding the cobalt mines.

Invertebrates and plants are more sensitive to cobalt than fish and the toxicity endpoints are species dependent. The effect on amphipod, *Hyalella azteca*, is growth inhibition whereas the effect on water flea, *Ceriodaphnia dubia*, is reproduction. Excluding duckweed, amphipod, *Hyalella azteca*, is the most sensitive species to chronic cobalt exposure, followed by water flea, *Ceriodaphnia dubia*, and snail, *Lymnea stagnalis*. For acute cobalt exposure, flathead minnow, *Pimephales promelas*, is also sensitive. [Stubblefield W.A. et al. (2020) "Acute and Chronic Toxicity of Cobalt to Freshwater Organisms: Using a Species Sensitivity Distribution Approach to Establish International Water Quality Standards." *Environmental Toxicology and Chemistry*, 39(4), pp. 799-811.] All of these species are known to live or have the potential to live in Saline Creek (WBID 2859), which is approximately 0.5 miles

downstream from Madison Mine Outfall #002. Outfall #001 discharges to Tollar Branch (WBID 4102) approximately 1.9 miles upstream from the confluence of Saline Creek and Tollar Branch.

The department reviewed species distribution data provided by Missouri Department of Conservation (MDC), which showed that Spike mussel, *Elliptio dilatata*, and several species of *Lampsilis* mussels live in Little St. Francis River (WBID 2854), which is approximately 1.3 miles downstream of the Saline Creek and Tollar Branch confluence. Spike mussel is in the same genus as the endangered Elephantear mussel <u>https://mdc.mo.gov/discover-nature/field-guide/elephantear</u> and *Lampsilis* mussels are in the same genus as the endangered Pink Mucket mussel <u>https://mdc.mo.gov/discover-nature/field-guide/elephantear</u> and *Lampsilis* mussels are in the same genus as the endangered Pink Mucket mussel <u>https://mdc.mo.gov/discover-nature/field-guide/pink-mucket</u>.3,4 Species distribution information from the Missouri Department of Conservation indicated that both endangered species live in adjacent counties to Madison County. 3,4 Because the related species habitats are downstream of the facility, the department believes there is potential these endangered species could also live in or around Saline Creek and Little St. Francis River. There is a lack of cobalt toxicity data and no toxicity threshold for mussels. Stubblefield et al. (2020) tested the sensitivity of snail, *Lymnea stagnalis* and made the assumption that if the snail is protected, mussels will also be protected.

Cobalt is hardness dependent, but not as strongly as other metals. Canada is the only regulating authority using a hardness dependent equation to develop cobalt criteria. Few regulatory entities in the United States have promulgated cobalt aquatic life protection criteria. New York, Minnesota, and Pennsylvania have criteria for cobalt but do not use a hardness equation. Stubblefield et al. (2020) noted that while there may be a relationship between cobalt toxicity and hardness, there is not enough data to develop an equation yet. In accordance with 10 CSR 20-7.031(1)(A), the department derived acute criteria using three-tenths (0.3) of the median lethal concentration, or the no observed effect concentration for representative species; that species was *Ceriodaphnia dubia*. A review of available literature and criteria derived by other states was conducted. The department recommends an acute toxicity threshold of 646.2 μ g/L as the Criteria Maximum Concentration (CMC). Additionally, in accordance with 10 CSR 20-7.031(1)(D), the department derived the chronic criteria using commonly used endpoints such as the no observed effect concentration or inhibition concentration of representative species. A review of available literature and criteria derived by other states was conducted. The department recommends a chronic toxicity threshold of 7.13 μ g/L as the Criterion Continuous Concentration (CCC).

This is not a statewide criteria. The acute and chronic toxicity thresholds for cobalt will only affect Madison Mine (Permit ID MO0098752) and will be used to establish reasonable potential (RP) and water quality-based effluent limitations pursuant to 40 CFR 122.4(d)(1)(i). The discharge data were reviewed. Madison Mine has RP at outfall #001, #002, and #MDW for this parameter. Madison Mine is not authorized to discharge process wastewater to waters of the state.

If you have any questions about this memorandum or the recommended criteria, please contact Ashley Grupe by phone at 573-751-1419, or by email at <u>ashley.grupe@dnr.mo.gov</u> AG/ks

EPA Comments:

On June 9, 2023, the EPA formally commented: "Cobalt Water Quality Based Effluent Limitation. The draft permit does not include a water quality based effluent limit for cobalt that is consistent with the narrative criteria, and as a result the limit in the draft permit does not protect aquatic life. The EPA's regulations at 40 CFR 122.44(d)(1) require NPDES permits to include limitations to control all pollutants that may result in an "excursion above any State WQS, including State narrative criteria for water quality." Missouri's General Criteria, at 10 CSR 20-7.031(4)(D), requires that "Waters shall be free from substances or conditions in sufficient amounts to result in toxicity to human, animal, or aquatic life." The EPA has provided information to MoDNR supporting numeric water quality criteria (as narrative translators) consisting of an acute criterion of 599.5 ug Co/L and a chronic criterion of 7.13 ug Co/L to protect aquatic life."

On December 20, 2023, the EPA sent a "Request for Information letter" that addresses the inclusion of chronic cobalt effluent limitation considerations. "The chronic threshold for cobalt seems absent from the antidegradation analysis. Please include the chronic threshold for cobalt, specifically for the new discharge of the mine dewatering. For further reference see Appendix D-1 of EPA's Technical Support Document for Water Quality-based Toxics Control. The duration for acute toxicity is a 1-hour averaging period. The duration for chronic toxicity is a 4-day averaging period. The average frequency for toxics is one criterion excursion every 3 years. Per the Toxics TSD, "The purpose of the average frequency of allowed excursions is to provide an appropriate average period of time during which the aquatic community can recover from the effect of an excursion and then function normally for a period of time before the next excursion. The average frequency is intended to ensure that the community is not constantly recovering from effects caused by excursions of aquatic-life criteria." The EPA cannot conclude that there will not be chronic impacts of the mine dewatering over 2 years which is far greater than the chronic duration of 4-days."

Facility Comments:

The facility commented on September 11, 2023 that these limits are not lawful, are arbitrary, and are capricious. The facility noted that WET testing has not shown toxicity recently, and that EPA has unfairly targeted Madison Mine. The facility argues that Stubblefield is not consistent with true site conditions.

"EPA references the Stubblefield report, as a basis for cobalt limits, however, the studies took place within several different laboratories where water quality parameters (including hardness and pH) were significantly different from Saline Creek. In the narrative, Stubblefield writes "The existing literature and these data highlight the need for developing both acute and chronic toxicity assessments. Owing to the effect of site-specific water quality parameters (e.g. hardness, pH) on the bioavailability and toxicity of metals, future assessments of Co toxicity will build upon the data reported herein and will address the effects of these parameters." Further, since Toller Branch is intermittent and dry at times, it could not be used as a comparison because aquatic life uses may not be attainable. Finally, the results presented in Stubblefield show a wide range of toxicity on any given test organism demonstrating the effects of water quality are highly variable and must be better understood before Stubblefield's analyses are used for criteria development, especially those site-specific in nature."

"EOI maintains EPA and MDNR have ignored other contributing factors to the overall degradation of Saline Creek, primarily the uncontrolled releases from the Coope[r]/Frazier property immediately adjacent to the MMI property. How can the overall water quality of Saline Creek be restored without compliance from all the contributing sources of impairment. Again, this specific focus on MMI for compliance reinforces the arbitrary focus on Madison Mine rather than including other responsible parties."

Department Response and Summary of Conclusions since Public Notice:

The department has followed all legal allowances for the development of a numeric limit from a general criterion; specifically for the protection and propagation of fish, shellfish, and wildlife; and these numeric limits were implemented in the permit lawfully under regulations for reasonable potential. The department expects, and has evidence (2018 pump tests) to support, that the cessation of the seep from outfall #002 will immediately and drastically improve the cobalt discharges from outfall #002 to the tributary to Saline Creek. See also ANTIDEGRADATION REVIEW. Outfall #002 and outfall #MDW will be discharging to the same tributary; although #MDW will be piped from east of the C Tailings area.

EPA as Petitioner of WWH-Cobalt Water-Quality-Based Effluent Limit (WQBEL)

Pursuant to 10 CSR 20-7.031(5)(S), when water quality criteria in 10 CSR 20-7.031 are either underprotective or overprotective of water quality due to factors influencing bioavailability, or nonanthropogenic conditions for a given water body segment, petitioners may request site-specific criteria. In this instance, the EPA was the petitioner of this requirement. The petitioner must provide the department with sufficient documentation to show that the current criteria are not adequate and that the proposed site-specific criteria will protect all existing and/or potential uses of the water body. In this instance however, a site-specific criteria is not being established because EPA must approve site-specific criteria under CWA 304(a) and the processes that legally amend Missouri's Water Quality Standards (the same process as if Missouri were establishing state-wide criteria); and the discharges to the receiving stream are anthropogenic.

Legal Authority to Establish Toxicity-Based-WQBEL for Cobalt

Missouri's statewide cobalt criteria were developed for irrigation (IRR) and wildlife (LWP) protection uses; at 1000 μ g/L. Cobalt is a primary pollutant of concern (POC) at this site given that this site has indicated it plans to mine for cobalt, among other metals. After the EPA commented that toxicity to aquatic organisms may not be protected, the department reviewed additional resources the EPA provided. The department agrees that both nearfield (acute) and farfield (chronic) effects from toxicity require protection at all outfalls. The department disagrees that those protections must be numeric cobalt limits. Primarily and in particular because the EPA has not identified any cobalt criteria for any given use under CWA 304(a). Additionally, while the state has duly adopted criteria for the IRR/LWP use, the state has not adopted criteria for cobalt for protection of aquatic life in warm water habitat (WWH), i.e. toxicity, utilizing the requirements set forth in CWA 304(a) and 40 CFR 131.

The department or EPA may use the term "general criteria," or "narrative criteria," or "narrative water quality criteria" interchangeably. The umbrella regulatory language refers to "general criteria" within 10 CSR 20-7.031(4) et seq. These protections are mandatory.

Because of the mandatory protections from toxicity, the department translated toxicity utilizing established toxic criterion found in 10 CSR 20-7.031(4)(J)2.B; where the maximum computed percent effluent at the edge of the zone of initial dilution must be less than three tenths (0.3) of the LC₅₀ for the most sensitive of at least two (2) representative, diverse species. The acute toxicity endpoint is lethality, measured by LC₅₀. Pursuant to 10 CSR 20-7.031(1)(A), for substances not listed in Tables A1, A2, and B1, three-tenths (0.3) of the median lethal concentration, or the no observed acute effect concentration for representative species, may be used to determine absence of acute toxicity. General criteria are applicable to all waters of the state at all times including mixing zones. No water contaminant, by itself or in combination with other substances, shall prevent the waters of the state from meeting the conditions in 10 CSR 20-7.031(4) therefore both acute and chronic toxicity warrants protection and the calculation provided for the WET test effluent limit for outfall #MDW shows how that is derived.

All streams in Missouri are listed for aquatic life use pursuant to 10 CSR 20-7.031(F); the streams in the vicinity of Madison Mine are listed for warm water habitat (WWH) pursuant to 10 CSR 20-7.031(F)1.A and therefore toxicity to aquatic life is prohibited. The studies supplied and referenced were determined to correlate with organisms found in local streams.

The department has established effluent limits appropriate to the site conditions utilizing the regulatory stipulations found in 40 CFR 122.44(d)(1)(vi)(B) based on relevant information.

Additionally, chronic WET testing performed quarterly will serve as a surrogate for very-low cobalt limits at outfall #MDW until further information is collected. Acute WET testing is established annually at outfalls #001 and #002 because, while there is reasonable potential, the department has established final numeric effluent limits for cobalt which can take the place of chronic WET testing in accordance with 40 CFR 122.44(d)(1)(v). These considerations are all allowed under 40 CFR 122.44(d)(1)(vi)(C). The department has utilized the acute toxicity criterion, 0.3, to calculate chronic WQBEL based on methods outlined in the departmental memorandum.

The department utilized a translation of the narrative criteria using toxicity as the basis. These values are slightly different than the values in the literature provided by EPA; however, the scientific basis of the development of the narrative translation is appropriate. The department has developed numeric effluent limits for cobalt based on narrative toxicity criteria. These limits were developed by applying the state's general criteria as numeric values. Cobalt effluent limits were then established using calculated cobalt toxicity for *Ceriodaphnia dubia* which the department demonstrates will attain and maintain applicable general water quality criteria and will fully protect the designated use (free from toxicity).

The department has included the regulatory reopener clause for toxicity as is required by 40 CFR 122.44(d)(1)(vi)(C)(4). The reopeners are found in Special Condition #4 (b) and Special Condition #20. Additionally, the department has statutory authority pursuant to 640.016.4 RSMo to reopen permits for cause when the department determines that immediate action is necessary to protect human health, public welfare, or the environment.

Reasonable potential (RP)

The department has developed effluent limitations for cobalt to protect aquatic life from toxicity as the data showed there was reasonable potential to cause or contribute to exceedances of the general criteria for toxicity (10 CSR 20-7.031(4)) under 40 CFR 122.44(d). Reasonable potential determinations (RPD) are based on physical conditions and overall assessment of the site as provided in Sections 3.1.2, 3.1.3, and 3.2 of the Technical Support Document (TSD, EPA/505/2-90-001) using best professional judgment, the application materials, and inspection reports. An RPD consists of evaluating overall site conditions for compliance with general criteria, non-numeric information, or treatment types installed. General criteria with reasonable potential (RP) typically translate to a numeric WQBEL. For example, a facility with orange discharge can have RP for narrative criteria like color [10 CSR 20-7.031(4)((C)], but a numeric iron limit is established to account for the exceedance of narrative criteria; even if no numeric iron data is submitted by the facility.

Reasonable potential is a scenario with a credible chance of occurrence without considering extreme or highly unlikely circumstances. In terms of water quality, the department considers situations where toxicity is reasonably certain to occur based on scientific data. The department has a sufficient amount of numeric effluent data for cobalt from the facility and from sampling upstream and downstream of the facility, however, best professional judgment is necessary to determine if the type of effluent discharged, the current operational controls in place, and historical overall management of the site necessitates additional controls to protect for toxicity. In the case of cobalt causing excursions of narrative criteria for toxicity, adding a cobalt WQBEL and/or WET testing WQBEL for toxicity is valid, since numeric cobalt criteria (i.e. promulgated state water quality standards) are not being used in the determination, but instead, site-specific toxicity conditions are.

The department determined that there was reasonable potential for cobalt toxicity using reasonable potential determinations (RPD).

Whole Effluent Toxicity (WET) Testing

Pursuant to 40 CFR 122.44(d)(1)(iii), the department is not required to implement a WQBEL for cobalt (although it has the authority to do so), because there is no state-developed and EPA-approved numeric criteria established for cobalt aquatic life toxicity; however, there are IRR/LWP protections established in 10 CSR 20-7.031. In all cases within this permit, the limits are equal to or more protective than the CWA 304(a)-established IRR/LWP-based WQBELs established in the previous permit. The second public notice of the permit did contain a chronic WET test for outfall #MDW as that is the wastewater outfall associated with mine dewatering. Thus, at outfalls #001 and #002, final numeric cobalt limits protect for chronic cobalt toxicity; and at outfall #MDW, Whole Effluent Toxicity limits protect for chronic cobalt toxicity.

The facility has intermittently showed toxicity during whole effluent toxicity (WET) testing; however, historic testing only included acute testing, which is a short term 48 hour exposure test. The two organisms the department uses in WET testing are the minnow, *Pimephales promelas*, and the water flea, *Ceriodaphnia dubia*. These two organisms are variable in their sensitivity to different pollutants. For example, the water flea is usually the more sensitive species of the two for many pollutants, such as metals and other organic compounds; however, the minnow is more sensitive to ammonia. Because of the varying sensitivities, the department followed EPA guidance and promulgated a two-species WET testing requirement in regulation pursuant to 10 CSR 20-7.015(9)(L)4.B. While other species may be utilized for WET testing in Missouri (per the same regulation), the commercial laboratories performing WET testing do not have other species readily available. While a laboratory could begin to utilize another species for WET testing, only

species with 40 CFR 136 methods have standard procedures for stable temperatures, feeding regimens, and light requirements under freshwater and warmwater EPA methods. None of the methods for freshwater and warmwater have the crustacean *Hyalella azteca* or the snail *Lymnea stagnalis* available for use. Therefore, the argument that "passing" historical WET tests, therefore cobalt limits based on toxicity are unnecessary, is unfounded, especially given that chronic (long term, 5 day) tests have not been conducted. For most pollutants and species, a longer exposure time would result in higher mortality and reduced fecundity.

However *Hyalella* and *Lymnea* are used in experimental laboratories because of their wide ecological distribution. See February 1, 2023 memo. These species have similar numeric chronic toxic endpoints to *Ceriodaphnia*. An excerpt of Stubblefield, et. al chronic endpoints shows the following.

TABLE 7: Summary of chronic toxicity data for aquatic organisms exposed to cobalt chloride (micrograms of Co per liter dissolved)

Test species	Common name	Most sensitive endpoint	EC10 (95% CI)	EC20 (95% CI)
Lemna minor	Duckweed	7-d growth rate	4.9 (2.7-8.7)	NC
Hyalella azteca	Amphipod	Growth rate (28-d dry weight)	7.55 (4.00–14.27)	17.58 (11.92–14.27)
Ceriodaphnia dubia	Water flea	7-d reproduction	7.89 (0.72-86.37)	11.08 (1.88–65.29)
Lymnaea stagnalis	Snail	28-d growth rate	9.61 (3.65–25.24)	23.07 (12.03-44.22)

While the department has chosen to provide a schedule of compliance for outfalls #001 and #002 utilizing the chronic endpoints in the toxicity WQBEL calculation. While reasonable potential is positive for cobalt at all outfalls, different mechanisms of protection are occurring. The department included acute WET testing (a shorter duration test) for outfalls #001 and #002, relying on chronic endpoints in the cobalt WWH WQBEL to protect for chronic cobalt exposure. Alternatively, the department has included chronic WET testing for #MDW, which also relies on the chronic endpoints for cobalt toxicity. Regardless of the mechanism, the department is protecting the receiving streams from cobalt toxicity at all outfalls and at all times, acute; the short term, and chronically; the long term.

Missouri's water quality standards include an acute water quality standard for toxicity, set at 0.3, and given that the new discharge will improve water quality simply because the seep is stopped, the department is satisfied with the absence of chronic translated values for cobalt because outfall #MDW WET test is a chronic test designed to determine if long term toxicity would be present from the outfall #MDW discharge. The chronic test is implemented based on the site conditions and to protect all pollutants which may be present in the discharge from chronic aquatic toxicity. The Department has tentatively determined that there may be an excursion of the narrative criteria for chronic toxicity at outfall #MDW because the pollutant may be present in sufficient amounts after treatment to cause a condition which would result in chronic toxicity to aquatic life for the 6 to 12 months the facility will be discharging under the temporary CoMag system. RP is founded because the treatment system has not yet been fully evaluated for cobalt removal.

Given there are practical limitations to WET testing, such as holding time and effluent availability for chronic testing (chronic tests require three samples be obtained over 5 days for effluent renewal in the testing chamber), and the fact that precipitation has a very high influence at outfalls #001 and #002, acute testing was continued for outfalls #001 and #002.

Pursuant to 40 CFR 122.47(a)(2), "the first NPDES permit issued to a new source or a new discharger shall contain a schedule of compliance only when necessary to allow a reasonable opportunity to attain compliance with requirements issued or revised after commencement of construction but less than three years before commencement of the relevant discharge". The facility has not yet begun construction of the treatment facilities for outfall #MDW, but also is not certain of the actual level of treatment which will be applied. In light of this information, the department has the authority and the flexibility to ascertain what effluent limits are appropriate and at what time those limits are appropriate. Upon issuance of this permit, the facility will begin to implement procedures to pump out the mine workings; additionally, the facility will implement a treatment system which is capable of meeting the time-limited effluent limits. The new treatment system, a CoMag system, while successfully employed at other sites, has not undergone thorough testing for cobalt removal. During this interim period, the facility will make adjustments to the system.

In late 2022 though June of 2023, the Department further consulted with the facility regarding their concerns of the validity of the Stubblefield paper, and limits that the CoMag system likely could not meet. The department continued to review information supplied by the EPA and then rested on the Ohio values.

In the 2022 public notice, concern was raised about the cobalt effluent limit. Currently the U.S. Environmental Protection Agency (EPA) does not have an aquatic life criteria for cobalt. Stubblefield et al. developed estimated toxicity values for chronic and acute aquatic life protections for cobalt by using EPA's species sensitivity distribution approach. Stubblefield et al. (2020) noted that while there may be a relationship between cobalt toxicity and hardness, there is not enough data to develop a hardness-based equation yet. Therefore, hardness is not considered at this time. Cobalt has hardness-dependent tendencies, but not as strongly as other metals. Canada is the only regulating authority using a hardness dependent equation to develop cobalt criteria. Few regulatory entities in the United States have promulgated cobalt aquatic life protection criteria. New York, Minnesota, and Pennsylvania have criteria for cobalt but do not use a hardness equation.

The department believes that Ohio's requirements are more consistent with Missouri's development methodology of WQS therefore Ohio's aquatic life values were chosen for Madison Mine. Ohio's cobalt aquatic life criteria values which was methodically evaluated; and is what the department utilized in the absence of Missouri Cobalt Aquatic Life Criteria or EPA Cobalt Aquatic Life Criteria. Missouri Code of State Regulations allows for development of acute and chronic aquatic life criteria in absence of EPA recommendations. Ohio has already completed a literature review of toxicology studies and has calculated acute and chronic criteria according to EPA guidance and their Ohio regulations. Ohio's values account for missing taxonomic groups by using conservative factors in their calculations. Ohio's values also contain a more robust dataset from 13 different studies rather than the single study by Stubblefield et al. 2020 which is why Ohio's information was given more weight than Stubblefield et. al. paper.

While the acute and chronic toxicity definitions in Missouri 10 CSR 20-7.031(1)(A) and 10 CSR 20-7.031(1)(D) list potential options for calculating criteria, the word "may" allows the department to use other methods based on best professional judgement. It was determined, after consultation with the EPA, the watershed protection section, and other knowledgeable experts, to use Ohio's criteria for permit toxicity thresholds.

Ohio's values are not considered criteria in Missouri because they have not been adopted as criteria in Missouri 10 CSR 20-7.031. They shall be used as toxicity thresholds to protect narrative criteria for NPDES permits. Missouri's aquatic life are expected to be protected using these thresholds. The department is recommending setting the maximum daily effluent limit to the acute toxicity threshold and the monthly average effluent limits to the chronic toxic threshold, which is one of the approaches utilized in <u>EPA's</u> <u>Technical Support Document</u> Section 5.4.2, and was implemented in this permit.

Temporary Antidegradation Review

A full antidegradation review must consider the technology employed by the facility; currently there is no technology in place at the site. The acute cobalt value was translated to numeric limits based on appropriate procedures that considered the type and duration of discharge. The department has latitude and authority to determine effluent limitations based on a number of factors; and the department may include a WET test to serve as a surrogate parameter. The department also has the authority to re-open a permit for cause pursuant to 40 CFR 122.62. However, the department has already time-limited the temporary antidegradation review started in August of 2022 and public noticed from May 30, 2023 through June 29, 2023. Through the entire process, the department has been very clear that the temporary antidegradation discharge authorization was only for two years.

The facility has stated that the investors control the financing of the site and that the CoMag system has yet to be purchased. After pricing and purchasing the system, the system will have to be transported to the site, installed, and started up. The department estimated that after investor approval, this could take anywhere from 3 months to 9 months. After the system is installed, the operational controls will be evaluated and re-worked to determine the best procedures for operating the system. Once the CoMag system is operational, the facility will collect data and submit that data to the Department. The department expects approximately 3 to 6 month's worth of cobalt data before a new antidegradation review will need to be started.

The facility must renew the antidegradation review prior to 24 months from the date of issuance of the permit or the facility loses the ability to discharge from outfall #MDW in 24 months from the date of issuance; not from the date of installing the CoMag system. The permit clearly rescinds the allowance to discharge mine dewatering wastewater after 24 months. The facility must complete a renewed antidegradation review prior to 24 months from the date this permit is issued. Failure to complete the renewed antidegradation review within 24 months from the issuance of this permit will result in immediate deauthorization against any discharges from outfall #MDW.

The CoMag system is expected to bring the cobalt levels in the discharge down significantly to below the acute toxicity thresholds but additional information is required to perform a full antidegradation review. The installation of the CoMag system and cessation of the outfall #002 seep will reduce overall cobalt levels in the receiving stream.

COST ANALYSIS FOR COMPLIANCE (CAFCOM):

Pursuant to 644.145 RSMo, when incorporating a new requirement for discharges from publicly owned facilities, or when enforcing provisions of this chapter or the CWA, pertaining to any portion of a publicly owned facility, the department shall make a finding of affordability on the costs to be incurred and the impact of any rate changes on ratepayers upon which to base such permits and decisions, to the extent allowable under this chapter and the CWA. This process is completed through a CAFCom. Permits not including new requirements may be deemed affordable.

- ✓ The department is not required to complete a cost analysis for compliance because the facility is not publicly owned.
- ✓ This permit does not implement requirements for a financial capability analysis (FCA) as this permittee is not a public entity.

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.

Applicable; the facility is currently under water protection enforcement action because the numeric permit limits and other permit requirements are not being met.

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 historic 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.

Per 40 CFR 127.15 and 127.24, permitted facilities may request a temporary waiver for up to 5 years or a permanent waiver from electronic reporting from the department. To obtain an electronic reporting waiver, a facility must first submit an eDMR Waiver Request form available on the department's web page. A request must be made for each operating permit. An approved waiver is not transferable. The department must review and notify the facility within 120 calendar days of receipt if the waiver request has been approved or rejected [40 CFR 124.27(a)]. During the department review period as well as after a waiver is granted, the facility must continue submitting a hard-copy of any reports required by their permit. The department will enter data submitted in hard-copy from those facilities allowed to do so, and electronically submit the data to the EPA on behalf of the facility.

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

DOMESTIC WASTEWATER, SLUDGE, AND BIOSOLIDS:

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

- ✓ Not applicable; this facility holds all domestic wastewater in tanks and is removed by a third party. This also applies to chemical toilets.
- ✓ The facility will need to install showers to comply with mining and OSHA regulations for mine workers. The facility has not provided information which would require inclusion under this permit.

EFFLUENT LIMITATIONS:

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

EMERGENCY DISCHARGE:

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

- The construction permit provided an emergency discharge authorization without determining if that discharge would cause exceedances of in-stream WQS. Without a sufficient pollutant profile, emergency discharges cannot be authorized. Authorization for any discharge can only be permitted though a Missouri State Operating Permit.
- ✓ If a discharge occurs from Permitted Feature #006 or #009, it must be reported per special conditions and standard conditions.

ENVIRONMENTAL JUSTICE AND TITLE VI OF THE CIVIL RIGHTS ACT OF 1964

The department has no federal or state statutory or regulatory basis to conduct internally, or require the facility to conduct, any analysis, including cumulative impacts analysis, as a direct result of federal environmental justice policy. Additionally, if the department acted in such a manner without statutory or regulatory authority, it would further have no basis to articulate the results of that analysis into new or different permit conditions. In short, the department does not have the authority to establish any Environmental Justice-related conditions as part of the permitting obligation.

The purpose of an operating permit is to incorporate or otherwise establish all applicable regulatory requirements at the time of permit issuance. The NPDES operating permit identifies, in one document, the regulatory requirements pertaining to discharges of water, to which the facility is subject. The permit's fact sheet enables the State, EPA, the permittee, and the public to better understand those requirements and determine whether the permit's requirements are being met. The NPDES permit does not apply to other regulated areas, such as air or waste materials.

The permit does not and cannot address air pollution or solid waste, and therefore only water concerns are reviewed. There is no basis in law to make adjustments to water permit conditions based upon another media.

Environmental Justice

Environmental justice is solely federal policy guidance. As discussed above, the department can only impose permit conditions for which there is basis in statute or regulation. The department will not violate state law in order to meet the spirit of a federal policy, the department does not have the regulatory authority to do so.

There are fundamental differences between Title VI, which is applicable federal law, and environmental justice, which is federal policy guidance. As discussed above, the department can only impose permit conditions for which there is basis in statute or regulation.

Title VI of the Civil Rights Act of 1964

It is important to note that presence of a pollutant does not automatically equate to exposure, risk, harm, disparity, or adversity. The permit review and issuance process are facially neutral actions, and therefore the Title VI analysis must be limited to whether there is adversity or harm, disparity, and causation. The department used the same permit practice with this permit, as with other permits across the state. This impartiality ensures that this permit's decisions do not have a sufficiently adverse or disparate effect based on race, color, national origin, or sex.

Under Title VI, adversity exists if a fact-specific inquiry determines that the nature, size, or likelihood of the impact is sufficient to make it an actionable harm. The presence of a discharge or a regulated water contaminant source does not automatically equate to harm, much less actionable harm. This operating permit implements the appropriate and relevant requirements under Missouri Clean Water Law.

FEDERAL EFFLUENT LIMITATION GUIDELINES:

Effluent Limitation Guidelines, or ELGs, are found at 40 CFR 400-499. <u>https://www.ecfr.gov/current/title-40/chapter-I/subchapter-N</u> These are limitations established by the EPA based on the SIC code and the type of work a facility is conducting. Most ELGs are for process wastewater and some address stormwater. Effluent guidelines are not always established for every pollutant present in a point source discharge. In many instances, EPA promulgates effluent guidelines for an indicator pollutant. Industrial facilities complying with the effluent guidelines for the indicator pollutant will also control other pollutants (e.g. pollutants with a similar chemical structure). For example, EPA may choose to regulate only one of several metals present in the effluent from an industrial category, and compliance with the effluent guidelines will ensure similar metals present in the discharge are adequately controlled. All are technology based limitations which must be met by the applicable facility at all times. If Reasonable Potential is established for any particular parameter, and water-quality derived effluent limits are more protective of the receiving water's quality, the WQS will be used as the limiting factor in accordance with 40 CFR 122.44(d) and 10 CSR 20-7.015(9)(A).

The facility has an associated Effluent Limit Guideline (ELG) at 40 CFR 440 applicable to the wastewater discharge at this site, and is applied under 40 CFR 125.3(a). However, this facility has not proposed to discharge processing wastewater at this time, only mine dewatering. See Part IV: EFFLUENT LIMITS DETERMINATION.

FEES

Fees are due annually; failure to pay fees associated with this permit is a violation of the Missouri Clean Water Law (644.055 RSMo).

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, the permit writer has completed 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). In instances where reasonable potential exists, the permit includes limitations to address the reasonable potential. In discharges where

reasonable potential does not exist, the permit may include monitoring to later determine the discharge's potential to impact the narrative criteria. Additionally, 644.076.1 RSMo, as well as Part I §D – Administrative Requirements of Standard Conditions included in this permit state it shall be unlawful for any person to cause or allow any discharge of water contaminants from any water contaminant or point source located in Missouri in violation of §§644.006 to 644.141 of the Missouri Clean Water Law or any standard, rule, or regulation promulgated by the commission. See Part IV for specific determinations.

GROUNDWATER MONITORING:

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

This facility is not required to monitor groundwater for the water protection program; however, this facility is monitoring the groundwater at the site for the Land Reclamation Program because this is a metallic minerals mine; MMWM# 2301770; listed for cobalt mining. The Missouri Cobalt webpage mentions they will be mining for cobalt, nickel, and copper.

LAND APPLICATION:

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

✓ The facility disclosed they apply water using a spray from a tank truck to apply only to areas requiring dust suppression. The facility was also using water to irrigate to establish vegetation. Wastewater is not permitted for these uses; therefore, there are no conditions in this permit that allow for dust suppression, land application, or irrigation. However, the facility will need to continue to suppress dust at this site and irrigate vegetation. Water spray from a truck is standard practice for roadways at mines and for land disturbance activities. The facility did not supply a pollutant profile of the wastewater which would allow for conditions to be added to the permit to use wastewater for dust control or irrigation. TCLP is not a valid method to test for pollutants of concern for land application.

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.

✓ Applicable; this permit provides coverage for land disturbance activities. These activities have SWPPP requirements and may be combined with the standard site SWPPP. Land disturbance BMPs may be designed to control the expected peak discharges, the University of Missouri has design storm events for the 25 year 24 hour storm; these can be found at: http://ag3.agebb.missouri.edu/design_storm/comparison_reports/20191117_25yr_24hr_comparison_table.htm; to calculate peak discharges, the website https://www.lmnoeng.com/Hydrology/rational.php has the rational equation to calculate expected discharge volume from the peak storm events. MORA permits do not cover disturbance of contaminated soils, however, site specific permits such as this one can be modified to include appropriate controls for land disturbance of contaminated soils by adding site-specific BMP requirements and additional outfalls.

MAJOR WATER USER:

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

✓ It is unknown if this facility currently falls under the definition of major water user; this facility is not registered with the department. The facility may need to register with the department once withdrawal of groundwater begins. Registration can be completed at this website: <u>https://apps5.mo.gov/MWU/</u> if necessary.

METALS:

Effluent limitations for total recoverable metals were developed using methods and procedures outlined in the *Technical Support Document For Water Quality-based Toxic Controls* (EPA/505/2-90-001) and *The Metals Translator: Guidance For Calculating a Total Recoverable Permit Limit From a Dissolved Criterion* (EPA 823-B-96-007). "Aquatic Life Protection" in 10 CSR 20-7.031 Tables A1 and A2, as well as general criteria protections in 10 CSR 20-7.031(4) apply to this discharge.

✓ This facility has and will continue to have daily maximums and monthly average limits for metals of concern. Because the monthly averages are lower than the daily maximums, the facility may sample early in the month, and the facility may sample more than once per month if above the monthly average limit to show that BMP improvement is occurring and to meet the monthly average limit.

✓ Given the highly variable discharge (both flow and parameter concentrations) from these outfalls, likely because of the stormwater influence, the limits calculated were not based on the variability of the effluent (site specific DMR data was omitted). The limits are based on the standard variation of 0.6 CV. If limits were provided in this permit based on the effluent variability, the daily maximum would increase, but the monthly average would decrease to untenable levels.

Hardness for Metals:

On June 9, 2023, the EPA submitted the following formal comment:

"Metals Hardness Calculation. Missouri's EPA-approved WQS at 10 CSR 20-7.031(1)(CC), requires the use of a value that is representative and protective of the waterbodies' uses. The Upper St. Francis/Castor Ecoregion, and its median hardness value of 110 mg/L CaCO₃, appears to be the appropriate ecoregion. This facility is within this Ecoregion and this Ecoregion is more representative. Using this smaller scale area would result in more stringent permit limits and would be in accordance with WQS. The EPA requests the MoDNR consider the Upper St. Francis/Castor ecoregion and recalculate the water quality based effluent limits for the metal parameters using the more representative hardness value to be consistent with Missouri's recently updated WQS. The EPA notes the use of the more representative median harness value will likely not result in effluent limits less stringent than the current permit and may negate the requirement for an antibacksliding analysis for the metals parameters."

Response:

The department has site specific information for the receiving waterbodies which indicate that the local water median hardness is 130 mg/L. 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 permit writers 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. Effluent limits were calculated using 130 mg/L. During the last permit term, the hardness used to calculate effluent limits was 110 mg/L; and prior to that, 193 mg/L.

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 permit writer 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.

✓ If the facility proposes to modify their operations to accept wastes from other mines, begin recycling operations, begin operations with batteries (recycling or production), to change the mineral extraction technique, or to install a treatment system other than one already described in the facility description, the facility <u>must</u> contact the water protection program to determine what changes are necessary to their operating permit. The department has up to 180 days to act on a <u>complete</u> permit modification request, which may include a minimum of 30 day public notice. If there is an expansion of wastewater discharges or new pollutants are being added to the waste streams, or if a new wastewater stream is proposed, an Antidegradation Review may be required. The Antidegradation process is separate from the permit modification timeline. Both Antidegradation and permit modifications have a fee that must be paid. The operating permit modification must be issued before operations change to accept the new waste or beginning new operations.

NUTRIENT MONITORING:

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

✓ The total design flow for this facility is >1 MGD and the facility disclosed they discharge ammonia at outfall #001 and #002, therefore nutrient monitoring is required on a monthly basis per 10 CSR 20-7.015(9)(D)8.B for discharges equal to or greater than 1 MGD. Per the department's nutrient plan, this facility is required to monitor for ammonia, total Kjeldahl nitrogen, nitrate plus nitrite, and phosphorus.

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

✓ Not applicable; this facility does not discharge into a lake watershed.
OIL/WATER SEPARATOR SYSTEMS AND USED OIL

Oil water separator (OWS) systems are frequently found at industrial sites where process water, wastewater, or stormwater may contain oils, petroleum, greases, oily wastewaters, or other immiscible liquids requiring separation. Food industry discharges typically require treatment prior to discharge to publicly owned treatment works. Per 10 CSR 26-2.010(2)(B), all oil water separators classified as underground storage tanks (UST) which meet the volume requirements, must be operated according to manufacturer's specifications. OWS which are USTs may be authorized in NPDES permits per 10 CSR 26-2.010(2)(B) or otherwise will be regulated as a underground petroleum storage tank under tank rules. A facility may operate an OWS which is not considered a UST for the wastewater or stormwater at any facility without specific NPDES permit authorization. Alternatively, a facility is not required to cover a UST OWS under the NPDES permit if they desire to obtain alternative regulatory compliance. OWS treating animal, vegetable, or food grade oils are not required to be authorized under 10 CSR 20-26-2.020(2)(B). All best management practices for all OWS systems must be adhered. In 2017, field-poured concrete tanks, previously exempted from the tanks rules, lost their exempt status. Facilities must re-evaluate these concrete structures pursuant to these now relevant rules. Adjacent USTs are not covered by these regulations.

Any and all water treatment systems designed to remove floating immiscible oils are termed oil water separators. If a device is intended to capture oil and separate it from water which is to be discharged, this generally qualifies that oil as used oil (if it is petroleum-based in nature). Used oil and oily sludge must be disposed of in accordance with 10 CSR 25-11.279. Pursuant to 40 CFR 279.20(b)(2)(ii)(B), separating used petroleum-based oil from wastewater generated on-site (to make the wastewater acceptable for discharge or reuse pursuant to Federal or state regulations governing the management or discharge of wastewaters) are considered used oil generators and not processors under self-implementing 40 CFR 279 Standards For The Management Of Used Oil. Oily wastes generated by OWS are also generally subject to Spill Prevention, Control, and Countermeasure (SPCC) regulations.

OPERATOR CERTIFICATION REQUIREMENTS:

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

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

PERMIT SHIELD:

The permit shield provision of the Clean Water Act (Section 402(k)) and Missouri Clean Water Law (644.051.16 RSMo) provides that when a permit holder is in compliance with its NPDES permit or MSOP, it is effectively in compliance with certain sections of the Clean Water Act, and equivalent sections of the Missouri Clean Water Law. In general, the permit shield is a legal defense against certain enforcement actions, but is only available when the facility is in compliance with its permit and satisfies other specific conditions, including having completely disclosed all discharges and all facility processes and activities to the department at time of application. It is the facility's responsibility to ensure that all potential pollutants, waste streams, discharges, and activities, as well as wastewater land application, dust suppression, 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 flows, or for authorization for previously unpermitted and undisclosed activities or discharges, will likely require an official permit modification, including another public participation process.

PRETREATMENT:

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

✓ Not applicable, this facility does not discharge industrial wastewater to a POTW. Domestic wastewater is not subject to pretreatment requirements. This facility may contact the local WWTP to determine if any specific wastewater generated on site could be discharged to the WWTP.

REASONABLE POTENTIAL (RP):

Regulations per 10 CSR 20-7.015(9)(A)2 and 40 CFR 122.44(d)(1)(i) requires effluent limitations for all pollutants which are (or may be) discharged at a level causing or have the reasonable potential to cause (or contribute to) an in-stream excursion above narrative or numeric water quality standards. Per 10 CSR 20-7.031(4), general criteria shall be applicable to all waters of the state at all times; however, acute toxicity criteria may be exceeded by permit allowance in zones of initial dilution, and chronic toxicity criteria may be exceeded by permit writer determines any given pollutant has the reasonable potential to

cause or contribute to an in-stream excursion above the WQS, the permit must contain effluent limits for the pollutant per 40 CFR Part 122.44(d)(1)(iii) and the most stringent limits per 10 CSR 20-7.031(9)(A).

Permit writers use reasonable potential determinations (RPD) as provided in Sections 3.1.2, 3.1.3, and 3.2 of the TSD. An RPD consists of evaluating visual observations, non-numeric information, or small amounts of numerical data (such as 1 data point supplied in the application). A stormwater RPD consists of reviewing application data and/or discharge monitoring data and comparing those data to narrative or numeric water quality criteria. RPD decisions are based on minimal numeric samples, the type of effluent proposed for discharge, or the unavailability of numerical RPA for a parameter, such as pH, or oil and grease. Absent effluent data, effluent limits are derived without consideration of effluent variability and is assumed to be present unless found to be absent to meet the requirements of antidegradation review found in 10 CSR 20-7.031(3) and reporting of toxic substances pursuant to 40 CFR 122.44(f).

Reasonable potential determinations 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 is 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 permit writers compare 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. 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. Permit writers do not implement WET testing for stormwater as 10 CSR 20-7.015(9)(L) does not apply to stormwater. Precipitation can itself be acidic or may contain run-in from other un-controlled areas and can provide false positives. The department works with the Missouri Department of Conservation and has knowledge of streams already exhibiting toxicity, even without the influence of industrial wastewater or stormwater. Facilities discharging to streams with historic toxicity are required to use laboratory water for dilution, instead of the receiving stream.

Permit writers use the department's permit writer's manual (<u>https://dnr.mo.gov/water/business-industry-other-entities/technical-assistance-guidance/wastewater-permit-writers-manual</u>), the EPA's permit writer's manual (<u>https://www.epa.gov/npdes/npdes-permit-writers-manual</u>), program policies, and best professional judgment. For each parameter in each permit, the permit writer carefully considers 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. Best professional judgment is based on the experience of the permit writer, cohorts in the department and resources at the EPA, research, and maintaining continuity of permits if necessary.

For stormwater permits, the permit writer is required per 10 CSR 6.200(6)(B)2 to consider: A. application and other information supplied by the facility; B. effluent guidelines; C. best professional judgment of the permit writer; D. water quality; and E. BMPs. Part IV provides specific decisions related to this permit.

Secondly, permit writers use mathematical reasonable potential analysis (RPA) using the *Technical Support Document for Water Quality Based Toxics Control (TSD)* methods (EPA/505/2-90-001) for continuous discharges. The TSD RPA method cannot be performed on stormwater as the flow is intermittent. 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.

- ✓ Statistical RPAs were not performed for this permit where variability is not used for certain water quality limits such as pH, oil and grease, or when insufficient data exist such as in WET testing.
- ✓ A statistical RPA was conducted on appropriate parameters and was conducted as per (TSD § 3.3.2). A more detailed version including calculations of this RPA is available upon request. See Part IV for Limits and further parameter-specific discussion.

Parameter:	Units	CMC Acute	CCC Chronic	Listing	Daily Max	Monthly Average	n#	CV	n Max	MF	RWC Acute	RWC Chronic	RP
Arsenic	μg/L	340	150	AQL	251.99	120.79	20	0.652	4.1	2.45	10.04	10.04	No
Cadmium, TR	μg/L	6.59	0.97	AQL	0.97	0.97	11	0.000	0.2	1.00	0.20	0.20	No
Chloride	mg/L	860	230	AQL	324	205	35	0.347	9	1.48	13.34	13.34	No
Chloride + Sulfate	mg/L	1000	n/a	AQL	1000	n/a	54	1.027	1609	2.21	3551.07	3551.07	Yes
Copper, TR	μg/L	17.92	11.67	AQL	17.92	7.59	44	0.857	53.5	2.16	115.82	115.82	Yes
Cyanide	µg/L	22	5	AQL	9.33	3.12	35	1.736	112	3.96	443.37	443.37	Yes
Lead, TR	µg/L	113.97	4.44	AQL	7.84	3.41	52	0.805	43.8	1.96	85.87	85.87	Yes
Nickel, TR	µg/L	586.15	65.13	AQL	119.10	47.10	53	1.008	235	2.20	517.31	517.31	Yes
Zinc, TR	µg/L	149.95	148.73	AQL	149.95	89.94	16	0.396	64.2	1.87744	120.5315	120.5315	No

Outfall #001

Outfall #002

Parameter:	Units	CMC Acute	CCC Chronic	Listing	Daily Max	Monthly Average	n#	CV	n Max	MF	RWC Acute	RWC Chronic	RP
Arsenic	μg/L	340	150	AQL	200.23	136.32	22	0.282	2.4	1.49	3.58	3.58	No
Cadmium, TR	μg/L	6.59	0.97	AQL	1.61	0.79	35	0.614	2	1.94	3.87	3.87	Yes
Chloride	mg/L	860	230	AQL	264	220	35	0.125	7	1.16	8.10	8.10	No
Chloride + Sulfate	mg/L	1000	n/a	AQL	1000	n/a	54	0.239	884	1.25	1101.42	1101.42	Yes
Copper, TR	μg/L	17.92	11.67	AQL	17.92	5.52	51	2.921	963	4.24	4085.34	4085.34	Yes
Cyanide	μg/L	22	5	AQL	5.20	5.20	26	0.000	5	1.00	5.00	5.00	No
Lead, TR	μg/L	113.97	4.44	AQL	8.21	2.95	51	1.316	94.7	2.62	248.54	248.54	Yes
Nickel, TR	μg/L	586.15	65.13	AQL	87.51	59.03	54	0.290	3050	1.30	3975.45	3975.45	Yes
Zinc, TR	μg/L	149.95	148.73	AQL	149.95	107.94	51	0.237	163	1.25	204.07	204.07	Yes

Units are (μ g/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: <u>https://dnr.mo.gov/about-us/division-environmental-quality/regional-office</u>. Or use <u>https://dnr.mo.gov/compliance-assistance-enforcement</u> to request assistance from the Region online.

RENEWAL REQUIREMENTS:

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

SAMPLING FREQUENCY JUSTIFICATION:

Sampling frequency was increased for the main contaminants of concern at this site. The main contaminants of concern were determined to be pH, cobalt, copper, lead, and nickel. For new discharges, weekly monitoring was implemented based on new discharges from Appendix U of the Water Pollution Control Permit Manual. 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 have composite sampling; discharges with uniform effluent can have grab samples. Grab samples are usually appropriate for stormwater. Parameters which must have grab sampling are: pH, ammonia, *E. coli*, total residual chlorine, free available chlorine, hexavalent chromium, dissolved oxygen, total phosphorus, volatile organic compounds, and others. For further information on sampling and testing methods see 10 CSR 20-7.015(9)(D)2.

SCHEDULE OF COMPLIANCE (SOC):

A schedule of remedial measures included in a permit, including an enforceable sequence of interim requirements (actions, effluent limits, operations, or milestone events) leading to compliance with the Missouri Clean Water Law, its implementing regulations, and/or 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 to permit writers on standard time frames for schedules for common activities, and guidance on factors to modify the length of the schedule.

✓ Applicable; the time given for effluent limitations of this permit listed under Interim Effluent Limitations and Final Effluent Limitations were established in accordance with [10 CSR 20-7.031(11)]. The facility has been given a schedule of compliance to meet final effluent limits. See permit Sections A and B for compliance parameters and 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 lagoon dredging or other similar maintenance activities. Certain oil sludge, like those from oil water separators, are subject to self-implementing federal regulations under 40 CFR 279 for used oils.

✓ Not applicable; industrial sludge and tailings are managed by maintaining in waste disposal areas per the metallic mineral mining permit and the wastewater holding structure(s)s permitted under this permit.

SOLID WASTE - PROHIBITION

The facility shall ensure solid waste is not placed onto or allowed to migrate from the site. Solid waste is defined as solids and liquids not specifically authorized under the Metallic Minerals permit for allowance to place in the tailings areas. A condition was added to the permit based on the satellite imagery.



2024 imagery shows that this area no longer has refuse. However, the condition will remain in the permit because it is a best management practice.

STANDARD CONDITIONS:

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

STORMWATER PERMITTING: LIMITATIONS AND BENCHMARKS:

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

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

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

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

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

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

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

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

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

- ✓ Applicable; This facility has one stormwater-only outfall, #008, and one stormwater management area #SW1. However, because the stormwater and wastewater from toe drains and seeps are monitored together at outfalls #001 and #002 respectively, then the discharge from outfalls #001 and #002 are considered wastewater. If the facility wishes to establish an internal (upstream) monitoring point for wastewater before the outfalls combine, then the combination of wastewater and stormwater at outfalls #001 and #002 could be considered stormwater for the purposes of benchmarks as long as the facility has demonstrated that the final discharge has no reasonable potential to cause or contribute to exceedances of in-stream water quality standards pursuant to 10 CSR 20-7.031 and the facility strives to remain compliant with upstream wastewater permit requirements.
- Limit derivation in this permit was based on the combination of stormwater flow and wastewater flow. Because the wastewater is under influence of stormwater, then the permit must contain limits, not benchmarks. Because stormwater is highly variable, the TSD was not developed for stormwater; therefore, the derivation of permit limits have a standard CV of 0.6.

STORMWATER POLLUTION PREVENTION PLAN (SWPPP):

A SWPPP must be prepared by the facility if the SIC code is found in 40 CFR 122.26(b)(14) and/or 10 CSR 20-6.200(2). A SWPPP may be required of other facilities where stormwater has been identified as necessitating better management. The purpose of a SWPPP is to comply with all applicable stormwater regulations by creating an adaptive management plan to control and mitigate stream pollution from stormwater runoff.

Pursuant to 40 CFR 122.44(k), Best Management Practices (BMPs) must be used to control or abate the discharge of pollutants when: 1) Authorized under §304(e) of the Clean Water Act (CWA) for the control of toxic pollutants and hazardous substances from ancillary industrial activities; 2) Authorized under §402(p) of the CWA for the control of stormwater discharges; 3) Numeric effluent limitations are infeasible; or 4) the practices are reasonably necessary to achieve effluent limitations and standards or to carry out the purposes and intent of the CWA. A BMP may take the form of a numeric benchmark. In accordance with the EPA's *Developing Your Stormwater Pollution Prevention Plan, A Guide for Industrial Operators*, (EPA 833-B-09-002) published by the EPA in 2015 and again in 2021 <u>https://www.epa.gov/sites/default/files/2021-03/documents/swppp_guide_industrial_2021_030121.pdf</u> BMPs are measures or practices used to reduce the amount of pollution entering waters of the state from a permitted facility. BMPs may take the form of a process, activity, or physical structure. Additionally in accordance with the Stormwater Management, a SWPPP is a series of steps and activities to 1) identify sources of pollution or contamination, and 2) select and carry out actions which prevent or control the pollution of storm water discharges. Additional information can be found in *Stormwater Management for Industrial Activities: Developing Pollution Prevention Plans and Best Management Practices* (EPA 832-R-92-006; September 1992).

Developing a SWPPP provides opportunities to employ appropriate BMPs to minimize the risk of pollutants being discharged during storm events. The following paragraph outlines the general steps the facility will take to determine which BMPs will work to achieve the benchmark values or limits in the permit. This section is not intended to be all encompassing or restrict the use of any physical BMP or operational and maintenance procedure assisting in pollution control. Additional steps or revisions to the SWPPP may be required to meet the requirements of the permit.

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

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

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

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

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

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

SUFFICIENTLY SENSITIVE ANALYTICAL METHODS:

Please review Standard Conditions Part 1, §A, No. 4. The analytical and sampling methods used shall conform to the reference methods listed in 10 CSR 20-7.015 and/or 40 CFR 136 unless alternates are approved by the department and incorporated within this permit. The facility shall use sufficiently sensitive analytical methods for detecting, identifying, and measuring the concentrations of pollutants. The facility shall ensure the selected methods are able to quantify the presence of pollutants in any given discharge at concentrations low enough to determine compliance with Water Quality Standards in 10 CSR 20-7.031 or effluent limitations unless provisions in the permit allow for other alternatives. The reporting limits established by the chosen laboratory must be below the lowest effluent limits established for the specified parameter (including any parameter's future limit after an SOC) in the permit unless the permit provides for an ML or if the facility provides a written rationale to the department. It is the facility's responsibility to ensure the laboratory has adequate equipment and controls in place to quantify the pollutant. Inflated reporting limits will not be accepted by the department if the reporting limit is above the parameter value stipulated in the permit. A method is "sufficiently sensitive" when; 1) the method quantifies the pollutant below the level of the applicable water quality criterion or; 2) the method minimum level is above the applicable water quality criterion, but the amount of pollutant in a facility's discharge is high enough the method detects and quantifies the level of pollutant in the discharge, or 3) the method has the lowest minimum level of the analytical methods approved under 10 CSR 20-7.015 and or 40 CFR 136. These methods are also required for parameters listed as monitoring only, as the data collected may be used to determine if numeric limitations need to be established. A facility is responsible for working with their contractors to ensure the analysis performed is sufficiently sensitive.

UNDERGROUND INJECTION CONTROL (UIC):

The UIC program for all classes of wells in the State of Missouri is administered by the Missouri Department of Natural Resources and approved by EPA pursuant to §§1422 and 1425 of the Safe Drinking Water Act (SDWA) and 40 CFR 147 Subpart AA. Injection wells are classified based on the liquids which are being injected. Class I wells are hazardous waste wells which are banned by 577.155 RSMo; Class II wells are established for oil and natural gas production; Class III wells are used to inject fluids to extract minerals; Class IV wells are also banned by Missouri in 577.155 RSMo; Class V wells are shallow injection wells; some examples are heat pump wells and groundwater remediation wells. Domestic wastewater being disposed of sub-surface is also considered a Class V well. In accordance with 40 CFR 144.82, construction, operation, maintenance, conversion, plugging, or closure of injection wells shall not cause movement of fluids containing any contaminant into Underground Sources of Drinking Water (USDW) if the presence of any contaminant may cause a violation of any drinking water standards or groundwater standards under 10 CSR 20-7.031, or other health based standards, or may otherwise adversely affect human health. If the director finds the injection activity may endanger USDWs, the department may require closure of the injection wells, or other actions listed in 40 CFR 144.12(c), (d), or (e). In accordance with 40 CFR 144.26, the facility shall submit a Class V Well Inventory Form for each active or new underground injection well drilled, or when the status of a well changes, to the Missouri Department of Natural Resources, Geological Survey Program, P.O. Box 250, Rolla, Missouri 65402.

The Class V Well Inventory Form can be requested from the Geological Survey Program or can be found at the following web address: <u>https://dnr.mo.gov/document-search/class-v-well-inventory-form-mo-780-1774</u> 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.

✓ Not applicable; the facility has not submitted materials indicating the facility will be performing UIC at this site.

VARIANCE:

Per the Missouri Clean Water Law §644.061.4, variances shall be granted for such period of time and under such terms and conditions as specified by the commission in its order. The variance may be extended by affirmative action of the commission. In no event shall the variance be granted for a period of time greater than is reasonably necessary for complying with the Missouri Clean Water Law §§644.006 to 644.141 or any standard, rule or regulation promulgated pursuant to Missouri Clean Water Law §§644.006 to 644.141. Thermal variances are regulated separately and are found under 644.

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

WASTELOAD ALLOCATIONS (WLA) FOR LIMITS:

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

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

	Where $C = downstream concentration$
$\sim (Cs \times Qs) + (Ce \times Qe)$	Cs = upstream concentration
$C = \frac{\langle z \rangle}{\langle z \rangle}$	Qs = upstream flow
(Oe + Os)	Ce = effluent concentration
$(\boldsymbol{z} \boldsymbol{z}^{*})$	Qe = effluent flow

- ✓ For chloride, the department uses TSD §5.4.1 for two-value steady state acute and chronic protection of aquatic life. It allows comparison of two independent WLAs (acute and chronic) to determine which is more limiting for a discharge. The WLA output provides two numbers for protection against two types of toxic effects, acute and chronic permit limitations resulting in a daily maximum and monthly average limit.
- ✓ Criteria maximum concentration (CMC) are the acute in-stream standards for a specific pollutant.
- ✓ Criteria continuous concentration (CCC) are the chronic in-stream standards for a specific pollutant.
- ✓ Acute wasteload allocations (WLAa) are designated as daily maximum limits (maximum daily limit: MDL) were determined using applicable water quality criteria
- ✓ Chronic wasteload allocations (WLAc) are designated as monthly average limits (average monthly limit: AML) and are typically the most stringent limits applied. Facilities subject to average monthly limits are welcome to take additional samples in the month to meet any lower limit by averaging the results. When only one sample is taken in the month, the sample result is applied to both the daily maximum and monthly average.
- Mixing: when a stream's flow 7Q10 is above 0.1 cfs, (or lake width is sufficient) the discharge may be afforded mixing allowances. The mixing criteria for toxics are found at 10 CSR 20-7.031(5)(A)4 and a full explanation of mixing is found in Part II WATERBODY MIXING CONSIDERATIONS.
- ✓ Number of Samples "n": effluent quality is determined by the underlying distribution of daily values, determined by the Long Term Average (LTA) associated with a particular Wasteload Allocation (WLA) and by the Coefficient of Variation (CV) of the effluent concentrations. Increasing or decreasing the monitoring frequency does not affect this underlying assumption which will be, at a minimum, targeted to comply with the values dictated by the WLA. Therefore, it is recommended the actual planned frequency of monitoring be used to determine the value of "n" for calculating the AML. However, in situations where monitoring frequency is once per month or less, a higher value for "n" must be assumed for AML derivation purposes. Thus, the statistical procedure being employed uses an assumed number of samples "n = 4". See additional information under Part III – REASONABLE POTENTIAL ANALYSIS

WASTELOAD ALLOCATION (WLA) MODELING:

Facilities may submit site specific studies to better determine the site specific wasteload allocations applied in permits. ✓ Not applicable; a WLA study was either not submitted or determined not applicable by Department staff.

WATER QUALITY STANDARD REVISION:

In accordance with 644.058 RSMo, the department is required to utilize an evaluation of the environmental and economic impacts of modifications to water quality standards of twenty-five percent or more when making individual site-specific permit decisions. ✓ The WQS for hardness has changed since the last permit was issued. This was less than 25% because backsliding is not allowed.

• The wQS for hardness has changed since the last permit was issued. This was less than 25% because backshuling is not and

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.

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

PART IV. EFFLUENT LIMIT DETERMINATIONS

OUTFALLS #001 & #002 - DAM TOE DRAIN (#001), MINE SEEP (#002), AND STORMWATER (BOTH)

EFFLUENT LIMITATIONS TABLE:

PARAMETERS	Unit	DAILY MAX	Monthly Avg.	PREVIOUS PERMIT LIMITS	Minimum Sampling Frequency	Reporting Frequency	Sample Type
Physical					Ĩ	Ī	
FLOW	MGD	*	*	SAME	ONE/WEEK	MONTHLY	24 Hr. Tot
CONVENTIONAL							
OIL & GREASE	mg/L	*	*	NEW	ONE/QUARTER	QUARTERLY	GRAB
PH [†]	SU	6.5 то 9.0	-	SAME	ONE/WEEK	MONTHLY	GRAB
TOTAL SUSPENDED SOLIDS (TSS)	mg/L	45	30	SAME	ONE/MONTH	MONTHLY	GRAB
METALS							
Arsenic, TR	µg/L	*	*	SAME	ONE/QUARTER	QUARTERLY	GRAB
CADMIUM, TR	µg/L	0.5	0.2	SAME	ONE/MONTH	MONTHLY	GRAB
COBALT, TR (IRRIGATION)	µg/L	1103	693	SAME	ONE/MONTH	MONTHLY	GRAB
COBALT, TR (AQL, TOXICITY)	µg/L	220	24	FINAL	ONE/MONTH	MONTHLY	GRAB
COPPER, TR	µg/L	15.3	5.6	SAME	ONE/MONTH	MONTHLY	GRAB
CYANIDE, TOTAL (#001)	µg/L	*	*	SAME	ONE/MONTH	MONTHLY	GRAB
CYANIDE, TOTAL (#002)	µg/L	8.5	4.3	MONIT	ONE/MONTH	MONTHLY	GRAB
LEAD, TR	µg/L	6.5	2.2	SAME	ONE/MONTH	MONTHLY	GRAB
NICKEL, TR	µg/L	80.9	49.9	SAME	ONE/MONTH	MONTHLY	GRAB
ZINC, TR	µg/L	130.2	87.0	SAME	ONE/MONTH	MONTHLY	GRAB
Other							
Chloride	mg/L	*	*	SAME	ONE/MONTH	MONTHLY	GRAB
SULFATE	mg/L	*	*	SAME	ONE/MONTH	MONTHLY	GRAB
CHLORIDE PLUS SULFATE	mg/L	1000	1000	SAME	ONE/MONTH	MONTHLY	GRAB
WET TEST – ACUTE (#001)	TUa	0.3 (ML1.0)	-	SAME	ONE/YEAR	ANNUALLY	GRAB
WET TEST – ACUTE (#002)	TUa	0.3 (ML1.0)	-	ANNUALLY	ONE/QUARTER	QUARTERLY	GRAB

* monitoring and reporting requirement only

* see description for weekly sampling in the permit

[†] report the minimum and maximum pH values; pH is not to be averaged

. See permit for cyanide minimum method detection limit.

new parameter not established in previous state operating permit

interim interim limits prior to SOC end

final final limits after SOC

TR total recoverable

DERIVATION AND DISCUSSION OF LIMITS:

On June 9, 2023, the EPA formally commented:

Antibacksliding Outfalls 001 and 002. If the MoDNR includes less stringent limits for Outfalls 001 and 002, it must conduct a thorough antibacksliding analysis to demonstrate that less stringent limits are protective of the WQS in the receiving waterbodies, including antidegradation, pursuant to Section 402(0)(3) of the CWA. As discussed above, using the more representative ecoregional median hardness value to calculate the effluent limits for metals parameters likely would not invoke the requirement to perform the antibacksliding analysis. However, the use of any hardness value, or other factor, that results in less stringent limits requires the thorough antibacksliding analysis.

Response:

The second draft of this permit does not allow backsliding because an antidegradation review was not completed. See the following parameters for a discussion of the results of recalculations and the maintenance of the previous permits limits. Even using a site specific hardness criteria of 130 mg/L, most of the effluent limits are retained instead of updated.

On June 9, 2023, the EPA formally commented:

Technology Based Effluent Limitations. When developing effluent limits for a NPDES permit, a permit writer must consider limits based on both the technology and water quality and apply the more stringent of the two. Technology limits are determined either by an effluent limitation guideline or best professional judgment based on the BAT. Applicable to this facility is an ELG for copper mines. However, there is not an ELG for cobalt mining, so BAT would apply instead; 40 CFR 125.3(c)(3), requires "[w]here promulgated [ELGs] only apply to certain aspects of the discharger's operation, or to certain pollutants, other aspects or activities are subject to regulation on a case-by-case basis in order to carry out the provisions of the [CWA]." The facility intends to mine cobalt and treat any wastewater through a proposed CoMag System. It must be determined whether this treatment technology is BAT. [EPA is aware of only one other active cobalt mine in the United States, located in Idaho, which was permitted by EPA to discharge utilizing a Reverse Osmosis Membrane Separation and Vibratory Membrane Separation (VSEP) of RO for treatment. References are to operating or proposed treatment technologies and are in no way endorsements of those technologies or their manufacturers.]

Response:

Technology assessments can take many forms and not all are relevant to outfalls #001 and #002, Neither outfall #001 or #002 contain wastewater sources identified as process wastewater; in fact there is no "process" associated with either outfall #001 or #002. This mine is very different from other lead and copper mines in the state. This mine is undergoing a cleanup under Superfund at the same time they are gearing up to begin subsurface activities; therefore there are no similar ELGs for outfall #001 and 002. The department determined that outfalls #001 and #002 are fundamentally different than 40 CFR 440.

Outfall #001 consists of stormwater and a wastewater source of dam toe drainage. Dam toe drainage could be treated by several technologies discussed here. Because the outfall consists of dam toe drainage and stormwater, each source is considered individually as the methods of treatment are varied between the two. For the stormwater, the SWPPP is a recognized device for implementation of technology to protect pollution of waters of the state, and employs upstream devices such as rock checks, straw wattles, basins, and other devices to slow runoff and settle out solids and metals entrained within those solids.

There are numerous technologies and BMPs the facility could employ to treat the dam toe drainage. First, there is no data of the dam toe drain exclusively. therefore, the necessity of a collect, pump, and treat system is likely not warranted. Because there are so many variables at outfall #001, a final permit determination for the dam toe drainage could not be made at this time. A special condition requires the facility collect dam toe drainage samples to determine if any additional technological controls are warranted for the future, and if the pollutants are above the limits described in the permit, the facility shall implement a feasible technology that decreases pollutant loading.

Outfall #002 consists of a stormwater and seep from the mine workings. Past demonstrations have indicated that once the mine is pumped out and the level of the water in the mine decreases, this seep will stop. Therefore, it is the department's BAT determination for outfall #002 that the facility must implement mine dewatering as soon as possible which will stop the seep. A special condition was added to the permit to codify the BAT determination.

Additionally for outfall #002, the department recognizes that once the seep stops at outfall #002, this outfall will become stormwater only (barring any other unforeseen changes). The department can revise the permit, based on a facility-requested modification, and can revise the requirements of outfall #002 to be reflective of a stormwater-only discharge, such as the discharge of outfall #008.

For outfall #001, the department recognizes that a metals translator may be completed. The metals translator can provide for elevated effluent limits after an antidegradation review is also completed.

PHYSICAL:

Flow

In accordance with [40 CFR Part 122.44(i)(1)(ii)] the volume of effluent discharged from each outfall is needed to ensure compliance with permitted effluent limitations. If the facility is unable to obtain effluent flow, then it is the responsibility of the facility to inform the department, which may require the submittal of an operating permit modification. The facility will report the total flow in millions of gallons per day (MGD), monthly monitoring increased to weekly to gather a better representation of operations and because one other parameter is weekly. The facility reported from 0.0069 to 1.98 MGD at outfall #001 and from 0.015 to 0.33 MGD at outfall #002 in the last permit term.

CONVENTIONAL:

Oil and Grease

Oil and grease monitoring is established for this permit. The facility is utilizing heavy equipment throughout the site. Monthly monitoring for O&G is required due to these activities. Oil and grease is considered a conventional pollutant. Oil and grease is a comprehensive test which measures for gasoline, diesel, crude oil, creosote, kerosene, heating oils, heavy fuel oils, lubricating oils, waxes, and some asphalt and pitch. The test can also detect some volatile organics such as benzene, toluene, ethylbenzene, or

xylene, but these constituents are often lost during testing due to their boiling points. The permit writer completed an RPD on this parameter and found no RP, but monitoring is required. Oils and greases of different densities will possibly form sheen or unsightly bottom deposits dependent on the petroleum type. To protect the general criteria, it is the responsibility of the facility to visually observe the discharge and receiving waters for sheen or bottom deposits pursuant to 10 CSR 20-7.015(4).

<u>pH</u>

6.5 to 9.0 SU – instantaneous grab sample; monitoring frequency increased to weekly based on site activities. Water quality limits [10 CSR 20-7.031(5)(E)] are applicable to these outfalls and continued from previous permit. Technology limits are not applied per 10 CSR 20-7.015(9)(I) as the technology limits are less stringent. 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. The facility reported from 7.28 to 8.22 SU at outfall #001 and from 7.13 to 10.5 SU at outfall #002 in the last permit term. This parameter has RP per RPD based on the activities occurring on site and the effluent limit exceedances at outfall #002.

Total Suspended Solids (TSS)

Monthly monitoring with a daily maximum limit of 45 mg/L, 30 mg/L monthly average. The previous permit's limits were 45 mg/L daily maximum and 30 mg/L monthly average. TSS is not impaired in the receiving stream therefore facially, the backsliding exception under CWA §303(d)(4)(B) is permissible. However, because an antidegradation review was not completed for this parameter on this outfall, backsliding is not allowed.

METALS:

Arsenic, Total Recoverable

Previous permit limits were monitoring only; the facility reported from 1 to 8.22 μ g/L at outfall #001, and from 1 to 2.4 μ g/L at outfall #002 in the last permit term. Historically, the facility was not utilizing sufficiently sensitive methods (25 μ g/L minimum detection value) but given that the water quality standards have changed from 20 μ g/L chronic in-stream to 340 μ g/L acute instream and 150 μ g/L chronic in-stream in 2019, the high-level non-detections are negated. This parameter has no numeric RP; see fact sheet Part III, REASONABLE POTENTIAL. Limits will not be established for this parameter at this time. Monthly monitoring reduced to quarterly. Certain historic mining and mineral practices utilized arsenic therefore this parameter will be kept for monitoring.

Cadmium, Total Recoverable

Previous final permit limits were 0.5 μ g/L daily maximum, 0.2 μ g/L monthly average; the facility reported non-detects from 0.2 to 2 μ g/L at outfall #001, and from 0.2 to 1.5 μ g/L at outfall #002 in the last permit term. This parameter has RP; see fact sheet Part III, REASONABLE POTENTIAL for a table of parameters. The facility was not consistently utilizing the most sensitive analytical method for this parameter; therefore, it is inconclusive if the facility was in compliance with the final permit limits implemented February 2021. Detection limits prior to final permit limit implementation changed from 2 to 1 μ g/L in February 2020, and from 1 to 0.2 μ g/L in January 2021. Additional data was collected during the drafting of this permit. Several exceedances occurred at outfall #002, and a few at outfall #001. It is difficult to determine continued compliance with any permit condition when sufficiently sensitive analytical methods are not used. All analytical methods used must have a detection limit and reporting limit below the established effluent limits. These permit limits are higher than the last permit's limits therefore the revised limits were assessed for backsliding. Antibacksliding regulations allow backsliding in the case of new information in the form of discharge monitoring reports and for new WQS, in this case a revised method to calculate hardness as part of the WQS. Cadmium is not impaired in the receiving stream therefore facially, the backsliding exception under CWA §303(d)(4)(B) is permissible. However, because an antidegradation review was not completed for this parameter on this outfall, backsliding is not allowed. While not wholly applicable, 40 CFR 440 was reviewed for mines with cadmium limits. The daily maximum ELG limit is 100 μ g/L; the monthly average is 50 μ g/L. The WQBEL is more protective therefore will be applied.

Cobalt, Total Recoverable

Previous final permit limits were $1103 \mu g/L$ daily maximum, $693 \mu g/L$ monthly average; these limits are continued until the end of the SOC where the final limits will be implemented. The facility cannot meet the new limits at this time. The previous permit limits are based on protection for irrigation, livestock watering, and wildlife protections. These new limits are for protection of aquatic life. See the memorandum in Part III COBALT LIMITS AND STANDARDS for the information used to develop the acute and chronic criteria. While not wholly applicable to outfalls #001 and #002, 40 CFR 440 was reviewed for mines with cobalt limits. None were found. The WQBEL is more protective therefore will be applied.

Acute Toxicity Threshold: 220 $\mu g/L$; Chronic Toxicity Threshold: 24 $\mu g/L$

Daily Maximum: MDL = Acute Toxicity Threshold = $220 \ \mu g/L$

Monthly Average: AML = Chronic Toxicity Threshold = $24 \mu g/L$

Copper, Total Recoverable

Previous permit limits were 15.3 μ g/L daily maximum, 5.6 μ g/L monthly average; the facility reported from 3 to 53.5 μ g/L at outfall #001, and from 6.2 to 963 μ g/L at outfall #002 in the last permit term. This parameter has RP at both outfalls; see fact sheet Part III, REASONABLE POTENTIAL. Recalculated permit limits are higher than the last permit's limits therefore the revised limits were assessed for backsliding. Antibacksliding regulations allow backsliding in the case of new information in the form of discharge monitoring reports and for new WQS, in this case a revised method to calculate hardness as part of the WQS. Copper is not impaired in the receiving stream therefore facially, the backsliding exception under CWA §303(d)(4)(B) is permissible. However, because an antidegradation review was not completed for this parameter on this outfall, backsliding is not allowed. This parameter is a main parameter of concern at the site, therefore weekly sampling is encouraged to meet monthly averages. 40 CFR 440 was reviewed. The daily maximum ELG TBEL is 300 μ g/L; the monthly average is 150 μ g/L. The WQBEL is more protective therefore will be applied.

Cyanide, Total

The previous permit was monitoring only. The application alleges that cyanide is not present but the facility reported data of up to 112 μ g/L; however, given that this value appears to be a detection, and there are other detections at outfall #001 (8.76 to 49.7 μ g/L), the permit will contain limits for cyanide for outfall #001. There were no detections at outfall #002. The facility is not able to meet the new limits therefore an SOC is afforded; see fact sheet Part III SCHEDULE OF COMPLIANCE. Only outfall #001 has WQBEL final limits. 40 CFR 440 was reviewed for mines with cyanide limits. None were found. The WQBEL is more protective therefore will be applied.

Acute AQL: 22 ug/L Chronic AQL: 5.2 ug/L LTAa: WLAa * LTAa multiplier = 22 * 0.321 = 7.064 [CV: 0.6, 99th %ile] LTAc: WLAc * LTAc multiplier = 5.2 * 0.527 = 2.743 [CV: 0.6, 99th %ile] use most protective LTA: 2.743 Daily Maximum: MDL = LTA * MDL multiplier = 2.743 * 3.114 = 8.5 ug/L [CV: 0.6, 99th %ile] Monthly Average: AML = LTA * AML multiplier = 2.743 * 1.552 = 4.3 ug/L [CV: 0.6, 95th %ile, n=4]

Post PN Note: an ML is only established on numeric limits below 5 μ g/L therefore "(ML)" was removed from outfall #002 Table A-2. The facility must continue to use an effective and appropriate analytical method to detect CN in wastewater; see sufficiently sensitive methods in Standard Conditions Part I.

Lead, Total Recoverable

Previous permit limits were 6.5 μ g/L daily maximum, 2.2 μ g/L monthly average; the facility reported from 1 to 41.9 μ g/L at outfall #001, and from 1.8 to 94.7 μ g/L at outfall #002 in the last permit term. This parameter has RP at both outfalls; see fact sheet Part III, REASONABLE POTENTIAL. Recalculated permit limits are higher than the last permit's limits therefore the revised limits were assessed for backsliding. Antibacksliding regulations allow backsliding in the case of new information in the form of discharge monitoring reports and for new WQS, in this case a revised method to calculate hardness as part of the WQS. Lead is not impaired in the receiving stream therefore facially, the backsliding exception under CWA §303(d)(4)(B) is permissible. However, because an antidegradation review was not completed for this parameter on this outfall, backsliding is not allowed. This parameter is a main parameter of concern at the site, therefore weekly sampling is encouraged to meet monthly averages. The daily maximum ELG TBEL is 600 μ g/L; the monthly average is 300 μ g/L. The WQBEL is more protective therefore will be applied.

Nickel, Total Recoverable

Previous permit limits were 80.9 μ g/L daily maximum, 49.9 μ g/L monthly average; the facility reported from non-detect to 235 μ g/L at outfall #001, and from 1220 to 3050 μ g/L at outfall #002 in the last permit term. This parameter has RP; see fact sheet Part III, REASONABLE POTENTIAL. It was determined in a meeting on December 16, 2022 that Saline Creek in its entirety is impaired for nickel therefore backsliding is not allowed. This parameter is a main parameter of concern at the site, therefore weekly sampling is encouraged to meet monthly averages. Outfall #001 and #002 will not be afforded backsliding because Tollar Branch meets with Saline Creek downstream. 40 CFR 440 was reviewed for nickel TBEL limits; the category with nickel limits are mercury ores. The daily maximum ELG TBEL is 200 μ g/L; the monthly average is 100 μ g/L. The WQBEL is more protective therefore will be applied.

Zinc, Total Recoverable

Previous permit limits were 130.2 μ g/L daily maximum, 87.0 μ g/L monthly average; the facility reported from non-detect to 55 μ g/L at outfall #001, and from 24.7 to 95.8 μ g/L at outfall #002 in the last permit term. This parameter has RP at outfall #002, but not at outfall #001. Given the mining activities and ongoing land disturbance of contaminated soils at this facility, limits will continue to be implemented for both outfalls. See fact sheet Part III, REASONABLE POTENTIAL. Zinc is not impaired in the receiving stream therefore facially, the backsliding exception under CWA §303(d)(4)(B) is permissible. However, because an antidegradation review was not completed for this parameter on this outfall, backsliding is not allowed. The daily maximum ELG TBEL is 1000 μ g/L; the monthly average is 500 μ g/L. The WQBEL is more protective therefore will be applied.

OTHER:

Chloride

The facility reported from non-detect to 9 mg/L in the last permit term. Monitoring continued to determine chloride plus sulfate below. There is no RP for chloride individually at both outfalls.

<u>Sulfate</u>

Monitoring required to determine chloride plus sulfate below. The facility shall sample and independently report the analytical value of sulfate. The facility reported from 10 to 1600 mg/Lin the last permit term. The streams the facility discharges into do not have drinking water uses, therefore a sulfate limit is not allowed; permit limits must be tied to the water quality standard use.

Chloride Plus Sulfate

The facility reported from 10 to 1609 mg/L in the last permit term. The previous effluent limitations were 1000 mg/L daily maximum and monthly average. The limits will be maintained going forward per 10 CSR 20-7.031(5)(L).

Whole Effluent Toxicity (WET) Test, Acute

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 WOS 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. 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 for the effluent are sufficient to attain and maintain applicable numeric and narrative water quality standards.

The permit writer has determined this facility has reasonable potential to cause toxicity in the receiving stream. The facility reported from non-detect to 1.4 TUa in the last permit term. These discharges have reasonable potential.

Where no mixing is allowed the acute criterion of 0.3 TUa must be met at the end of the pipe. However, when using an LC_{50} as the test endpoint, the acute toxicity test has an upper sensitivity level of 100% effluent, or 100/>100 = <1.0 TUa. If less than 50% of the test organisms die at 100% effluent, the true LC_{50} value for the effluent cannot be measured, effectively acting as a detection limit. Therefore, when the allowable effluent concentration is 100% an ML of 1.0 TUa will apply. 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.

PERMITTED FEATURES #006, AND #009 – NO-DISCHARGE WASTEWATER STRUCTURES

PARAMETERS	Unit	Daily Minimum	Monthly Average	PREVIOUS PERMIT LIMITS	Minimum Sampling Frequency	Minimum Reporting Frequency	SAMPLE TYPE
PHYSICAL							
Freeboard	FEET	2.0	*	REVISED	ONCE WEEK	MONTHLY	MEASUREMENT

OPERATIONAL MONITORING TABLE:

Freeboard

There is a 2 foot minimum freeboard level pursuant to 10 CSR 20-8.200(4)(A)3 for wastewater holding structure(s)s. Weekly monitoring of the freeboard in the wastewater holding structures is required to ensure proper operational controls; new for features #006 and #009. The previous permit was monthly monitoring, but operations at the site indicate more frequent monitoring is warranted. The facility may consider monitoring the level even more often because of wastewater overflows and discharges which have occurred in the past. These permitted features were determined to be no-discharge. As such, an antidegradation review was not conducted and discharge authorization has not been granted. To ensure the wastewater holding structure(s) remains no-discharge, comply with all BMPs listed, monitor freeboard/liquid levels, and report highest reading monthly. Permits only authorize discharges after the facility has documented compliance with state and federal Clean Water laws and regulations, including antidegradation and construction requirements. Freeboard is the distance between the top of the liquid level and the bottom of the discharge pipe or canal. Freeboard must be measured to the nearest inch, and is reported in tenths of feet.

On March 25, 2024 the facility indicated that permitted feature #005 was removed therefore it is removed from permitting requirements.

Technology Assessment

There is no more water quality protective technology than not discharging therefore the technology chosen for these basins is nodischarge.

OUTFALL #008 - STORMWATER ONLY

See also antidegradation discussion for new outfall #008 (Appendix A).

EFFLUENT LIMITATIONS TABLE:

PARAMETERS	Unit	Daily Maximum Limit	Bench- Mark	PREVIOUS PERMIT LIMITS	Minimum Sampling Frequency	Reporting Frequency	SAMPLE TYPE
PHYSICAL							
FLOW	MGD	*	-	NEW	ONCE/QUARTER	QUARTERLY	24 HR. ESTIMATE
CONVENTIONAL							
COD	mg/L	**	120	NEW	ONCE/QUARTER	QUARTERLY	GRAB
OIL & GREASE	mg/L	**	10	NEW	ONCE/QUARTER	QUARTERLY	GRAB
PH [†]	SU	*	-	NEW	ONCE/QUARTER	QUARTERLY	GRAB
TSS	mg/L	**	100	NEW	ONCE/QUARTER	QUARTERLY	GRAB
METALS							
ARSENIC, TR	µg/L	**	340	NEW	ONCE/QUARTER	QUARTERLY	GRAB
CADMIUM, TR	µg/L	**	6.6	NEW	ONCE/QUARTER	QUARTERLY	GRAB
COBALT, TR	µg/L	**	220	NEW	ONCE/QUARTER	QUARTERLY	GRAB
COPPER, TR	µg/L	**	18	NEW	ONCE/QUARTER	QUARTERLY	GRAB
CYANIDE, TOTAL	µg/L	**	22	NEW	ONCE/QUARTER	QUARTERLY	GRAB
LEAD, TR	µg/L	**	86	NEW	ONCE/QUARTER	QUARTERLY	GRAB
NICKEL, TR	µg/L	**	585	NEW	ONCE/QUARTER	QUARTERLY	GRAB
ZINC, TR	µg/L	**	147	NEW	ONCE/QUARTER	QUARTERLY	GRAB

* monitoring and reporting requirement only

** monitoring and reporting with associated benchmark

[†] report the minimum and maximum pH values; pH is not to be averaged

new parameter not established in previous state operating permit

TR total recoverable

DERIVATION AND DISCUSSION OF LIMITS:

PHYSICAL:

Flow

In accordance with [40 CFR Part 122.44(i)(1)(ii)] the volume of effluent discharged from each outfall is needed to ensure compliance with permitted effluent limitations. If the facility is unable to obtain effluent flow, then it is the responsibility of the facility to inform the department, which may require the submittal of an operating permit modification. The facility will report the total flow in millions of gallons per day (MGD), quarterly monitoring required if there is a discharge. This is a new outfall and no stormwater data exists.

CONVENTIONAL:

Chemical Oxygen Demand (COD)

Monitoring with 120 mg/L daily maximum benchmark is included using best professional judgment under 10 CSR 20-6.200(6)(B)2.C. 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 benchmark value falls within the range of values implemented in other permits having similar industrial activities and is achievable through proper BMP controls. Quarterly monitoring required if there is a discharge. This is a new outfall and no stormwater data exists.

Oil & Grease

Monitoring with a daily maximum benchmark of 10 mg/L; included using best professional judgment under 10 CSR 20-6.200(6)(B)2.C. Quarterly monitoring required if there is a discharge. This is a new outfall and no stormwater data exists. Oil and grease is considered a conventional pollutant. Oil and grease is a comprehensive test which measures for gasoline, diesel, crude oil, creosote, kerosene, heating oils, heavy fuel oils, lubricating oils, waxes, and some asphalt and pitch. The test can also detect some volatile organics such as benzene, toluene, ethylbenzene, or xylene, but these constituents are often lost during testing due to their boiling points. It is recommended to perform separate testing for these constituents if they are a known pollutant of concern at the site, i.e. aquatic life toxicity or human health is a concern. Results do not allow for separation of specific pollutants within the test, they are reported, totaled, as "oil and grease". Per 10 CSR 20-7.031 Table A1: *Criteria for Designated Uses*; 10 mg/L is the standard for protection of aquatic life. This standard will also be used to protect the general criteria found at 10 CSR 20-7.031(4). Ten mg/L is the level at which sheen is expected to form on receiving waters. Oils and greases of different densities will possibly form sheen or unsightly bottom deposits at levels which vary from 10 mg/L. To protect the general criteria, it is the responsibility of the facility to visually observe the discharge and receiving waters for sheen or bottom deposits. The benchmark is achievable through proper operational and maintenance of BMPs and falls within the range of values implemented in other permits having similar industrial activities. The benchmark this permit applies does not allow the facility to violate general criteria 10 CSR 20-7.015(4) even if data provided are below the benchmark.

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Quarterly monitoring required if there is a discharge. This is a new outfall and no stormwater data exists. 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)

Monitoring with a daily maximum benchmark of 100 mg/L. There is no numeric water quality standard for TSS; however, sediment discharges can negatively impact aquatic life habitat. TSS is also a valuable indicator parameter. TSS monitoring allows the facility to identify increases in TSS indicating uncontrolled materials leaving the site. Increased suspended solids in runoff can lead to decreased available oxygen for aquatic life and an increase of surface water temperatures in a receiving stream. Suspended solids can also be carriers of toxins, which can adsorb to the suspended particles; therefore, total suspended solids are a valuable indicator parameter for other pollution. The benchmark is achievable through proper operational and maintenance of BMPs and falls within the range of values implemented in other permits having similar industrial activities. Quarterly monitoring required if there is a discharge. This is a new outfall and no stormwater data exists.

METALS:

Metals, Total Recoverable

The metals identified in the table have limits or monitoring at the other outfalls. These metals were chosen to ensure land disturbance activities and stormwater exiting the area are managed appropriately. As no data exists for this new outfall, the benchmarks were selected using best professional judgment. The facility may submit data in the future to revise the benchmarks. These values were selected based on the acute WQS, or permit values; and at 130 mg/L hardness if applicable.

Arsenic, TR	340	μg/L
Cadmium, TR	Acute AQL: e^(1.0166 * ln130 - 3.062490) * (1.136672 - ln130 *0.041838) = 6.15	μg/L
Cobalt, TR	220	μg/L
Copper, TR	Acute AQL: $e^{0.9422} + \ln 130 - 1.700300 + (0.960) = 17.203$	μg/L
Cyanide, Total	22	μg/L
Lead, TR	Acute AQL: e^(1.273 * ln130 - 1.460448) * (1.46203 - ln130 * 0.145712) = 85.792	μg/L
Nickel, TR	Acute AQL: e^(0.8460 * ln130 + 2.255647) * (0.998) = 584.981	μg/L
Zinc, TR	Acute AQL: $e^{(0.8473 * ln130 + 0.884) * 0.98 = 146.652}$	μg/L

OUTFALL #MDW MINE DEWATERING WASTEWATER



ANTIDEGRADATION REVIEW FOR A DISCHARGE TO TRIBUTARY TO SALINE CREEK TEMPORARY ANTIDEGRADATION FOR TEMPORARY (TIME LIMITED) DISCHARGE ALLOWANCE

OUTFALL CHARACTERISTICS

DISCHARGE LOCATION:

FACILITY NAME:	Madison Mine	PERMIT #:	MO-0098752
COUNTY:	Madison	UTM COORDINATES:	X = 740308 ;Y = 4159534
8-DIGIT HUC:	08020202	LEGAL DESCRIPTION:	Landgrant 2073 & 3089 Madison County

TEMPORARY TREATMENT DESCRIPTION:

OUTFALL	DESIGN FLOW (MGD)	TREATMENT TYPE	EFFLUENT TYPE
MDW	4.32 (6.7 cfs)	Temporary Modular: Evoqua CoMag RX33. (see discussion below)	Treated Mine Water (dewatering, subject to ELG)

RECEIVING STREAM TABLE

WATERBODY NAME:

NHD Tributary to Saline Creek

CLASS: NA

OUTFALL	WATERBODY NAME	CLASS	WBID	DESIGNATED USES	DISTANCE TO SEGMENT	12-digit HUC
#MDW	Tributary to Saline Creek			GEN**		08020202-0102 Saline Creek-Little St
	Saline Creek	Р	2859	AQL, GEN, HHP, IRR, LWW, SCR, WBC-B, WWH (ALP)	0.52 mi	Francis River

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

** On 1/21/2022, the Watershed Protection Section determined the NHD line, a delineated tributary to Saline Creek shall have general criteria protections.

EXISTING WATER QUALITY:

The proposed Madison Mine WWTF will discharge treated mine water near the existing Outfall #002, which flows to an unclassified Tributary to Saline Creek (see Appendix B-Proposed Site Map). The proposed discharge is approximately one-half mile from Saline Creek, a Class P stream maintaining year-round flow. Tributary to Saline Creek and Saline Creek are gaining streams. The proposed discharge is only for 2 years.

Goose Creek and Saline Creek, approximately 0.5 mile upstream of the confluence of Tributary to Saline Creek and Saline Creek, were identified by the department in 1998 as impaired stream segments from historic site mining activities. In 1999, the department developed, and EPA approved, the *Goose and Saline Creeks Madison County, Missouri* Total Maximum Daily Load (TMDL). The goal of this TMDL was to restore the aquatic life use from impairment by nickel and cobalt groundwater sources at the site. The Goose and Saline Creeks TMDL listed Outfall #003 as the source of the impairment. The facility removed Outfall #003 by plugging in 2002, and additional stabilization activities have occurred in the upper watershed of these segments. The proposed discharge location, Outfall #MDW, is to the unnamed tributary and is not anticipated to negatively impact the TMDL stream segments.

Saline Creek, from its confluence with Tributary to Saline Creek to its downstream confluence with Little St. Francis River, has been listed as impaired for nickel (in water) on the approved Missouri 2022 303(d) list. The segments of Saline Creek and Goose Creek covered by the 1999 TMDL are located upstream of this segment and currently meeting applicable water quality criteria for metals in water. Due to activity in the watersheds of these segments (i.e. facility outfalls have been removed), the impairment of Saline Creek has now moved to a lower portion of the stream not covered by the TMDL.

As of August 2022, the Tributary to Saline Creek (aka Toller Branch) is an "unclassified" stream and not currently listed as impaired on Missouri's 303(d) List of impaired waters. This segment is also not part of or covered by an approved TMDL. As a result, discharge limitations for any discharge must meet all applicable water quality standards and antidegradation requirements for unclassified streams as well as downstream classified waters.

MIXING CONSIDERATIONS

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

ANTIDEGRADATION TIER DETERMINATION

As the majority of the pollutants of concern are metals and can bioaccumulate, concern was expressed since the 2022 public notice about the requirement in EPA's 2019 approval letter for a Tier 2 analysis for bioaccumulative pollutants. In reviewing the approval letter and the Antidegradation Implementation Procedure, the department reviewed the existing water quality, it shows that there is limited assimilative capacity currently available in the Tributary to Saline Creek, thus the stream is approaching Water Quality Standards and would be considered a Tier 1 evaluation under the Antidegradation Implementation Procedure, thus Madison Mine is required to meet the Water Quality Standards (AIP, page 12).

Table 1- Antidegradation Tier Determination*

Parameter	90th percentile	# of samples	WQS	Is 90th percentile > WQS
Cadmium, TR	2	35	0.974	yes
Cobalt, TR	1811	54	220**	yes
Copper, TR	81.4	51	11.206	yes
Lead, TR	15	51	3.345	yes
Nickel, TR	2827	54	65.127	yes
Zinc, TR	95.8	51	148.734	no

* Data pulled from the RPA on Outfall #002, combined mine seep and stormwater discharge

** Data for cobalt is not a Missouri WQS but is applied per best professional judgment

Waters already containing POCs "at or near" WQS will qualify for Tier 1 protection for those POCs. The water may receive the same pollutants if:

1) the discharge would not cause or contribute to a violation of the WQS;

2) all other conditions of the state permitting requirements are met (i.e. no-discharge options are explored and technology-based requirements (including ELGs) are met)); and

3) the permit is issued reflecting the highest statutory and regulatory requirements. (AIP, page 13)

Tier 1 protection is applied to a waterbody on a pollutant by pollutant basis for pollutants that may cause or contribute to the impairment of a beneficial use or violation of Water Quality Criteria. Under the Antidegradation Implementation Procedure, an antidegradation review for a temporary discharge is considered a Tier 1 Review and must meet Water Quality Standards and/or applicable federal effluent limit guidelines (AIP page 23).

Pollutants of concern are defined as those pollutants "proposed for discharge that affect beneficial use(s) in waters of the state." The pollutants of concern for this project are:

- pH
- Total Suspended Solids,
- Total Cyanide,
- Total Recoverable Cadmium,
- Total Recoverable Cobalt,
- Total Recoverable Copper,
- Total Recoverable Lead,
- Total Recoverable Mercury,
- Total Recoverable Nickel,
- Total Recoverable Zinc,
- Chloride,
- Sulfate, and
- Chloride plus Sulfate.

PROJECT INFORMATION:

PROJECT DESCRIPTION:

Missouri Cobalt, LLC is requesting time-limited approval from the Missouri Department of Natural Resources for a discharge in accordance with the *Missouri Antidegradation Implementation Procedure* and their NPDES permit. The discharge will be done in two phases, and both phases must meet the water quality-based effluent limits established in Appendix A.

- Phase I includes implementing an on-site temporary modular wastewater treatment facility to pump water from the underground mine, treat, and discharge water during the initial dewatering of the existing underground mine workings.
- Phase II includes continued use of the on-site temporary modular WWTF with modifications identified in Phase I to pump, internally store, treat, and discharge water extracted during underground mine development.

During both phases, the mine water will be treated by a modular Evoqua CoMag RX33 treatment system. Based on bench-test treatability studies, the treatment train will be constructed as follows:

- First, the pH of the mine water will be adjusted with sodium hydroxide, followed by the addition of a proprietary polymer.
- The mine water will then enter the CoMag system, which consists of:
 - an equalization tank,
 - a 3-chamber reaction tank, and
 - a clarifier/settler that uses magnetite as a ballast. The magnetite will rapidly settle the floc in the clarifier to remove the metals of concern.
- The settled sludge and magnetite are then separated via a magnetic recovery drum, with the magnetite being recycled back to the treatment process.
- The water then will pass through polishing bag filters and finally the pH will be adjusted using sulfuric acid.
- Sludge that is created as part of the process will be dewatered using a filter press and sent to the existing metals reclamation facility or placed in the permitted tailings impoundment.

If, at the end of treatment cycle, the treated wastewater does not meet the effluent limits established in Appendix A and in the operating permit for the MDW, the facility must redirect off-spec water back to the front of the system for additional treatment.

The CoMag system was selected by Madison Mine for its success in treating mine wastewater at other mines in the state. Following the 2022 public notice, a question was raised on the applicability of the treatment technology used at the Idaho Cobalt Project. In reviewing the Idaho Cobalt factsheet, the facility is significantly smaller than the Madison Mine facility (0.215 MGD vs. 4.32 MGD). Additionally, the Idaho facility is recycling flows and using a dewatering CoMag type system, prior to going to a reverse osmosis system as the facility uses part of their discharge flow for their potable water needs.

PROJECT PROPOSAL:

The initial phase is expected to last 180 days to allow the facility to start dewatering activities and characterization. Phase 2 will begin after completion of Phase 1 and last for the remainder of the temporary discharge period. This Antidegradation Review and the subsequent permit coverage is only for 2 years from operating permit renewal issuance date. At 2 years from issuance date, the facility must cease mine dewatering activity discharges and use of the modular Evoqua CoMag RX33 treatment system.

Should the facility begin mining operations, or intend to continue the mine dewatering, the facility must submit a new Antidegradation Request along with an operating permit modification request incorporating the Antidegradation review results a minimum of 180 days before this discharge authorization expires. If this is not completed, permit coverage of the mine dewatering discharge will end after two years. Any further discharges of mine dewatering past this date will be considered violations of the facility's operating permit.

During the discharge period, the facility will be required to meet the Water Quality-Based Effluent limits established in Appendix A and implemented in the permit. The pollutants of concern for this project are: pH, Total Suspended Solids, Total Recoverable Cadmium, Total Recoverable Cobalt, Total Recoverable Copper, Total Cyanide, Total Recoverable Lead, Total Recoverable Mercury, Total Recoverable Nickel, Total Recoverable Zinc, Chloride, Sulfate, and Chloride plus Sulfate. See Appendix A for the Derivation and Discussion of Effluent limits.

While the modular CoMag system will have the ability to discharge up to 4.32 MGD, it will take some time for the facility to reach that level of treatment and discharge. Effluent limits in Appendix A were calculated based on the facility discharging at 4.32 MGD (6.7 cfs) with no mixing allowed. Due to limited assimilated capacity, effluent limits will be based on meeting water quality standards at point of discharge. The initial phase of mine dewatering will focus on determining flow rates and concentrations to achieve effective treatment through the system. In the second phase, the facility will construct a surge basin that will hold water pulled from the mine prior to treatment. The installation of the surge basin will provide site and equipment protection, but will also determine if the surge basin, but will submit design plans to demonstrate that it meets the department's design requirements in 10 CSR 20-8. The surge basin is only expected to hold a maximum of 2 weeks of mine water to be treated. Mine dewatering is not considered "process"

wastewater under the federal Effluent Limit Guidelines (ELG) for this facility (40 CFR 440). A construction permit (CP) is not required for this basin as 644.051 RSMo indicates that a CP for earthen basins is only required for industrial "process" wastewater.

PROJECT DISCUSSION:

Currently, Outfall #002 receives continuous water from the mine seep and stormwater runoff from the site, and A, B, C, and E tailings piles as part of the Early Removal Action. The metallurgical pond, and A, B, C, and E tailings piles have all been capped in 2023.

Based on previous pumping studies at the site, it is likely that pumping and withdrawal of water from the mine will eliminate the Outfall #002 seep discharge, perhaps as soon as after pumping begins. Metals discharging from the seep have not been treated and are potentially contributing to the higher metal concentrations observed in the Tributary to Saline Creek. The proposed mine dewatering will treat the current mine seep water prior to discharge. Stormwater that had been entering the mine over time will be reduced with the maintenance dewatering activities after the initial pump down occurs. Additionally, the mine dewatering basin prior to the CoMag system will capture some surface stormwater from the site and treat it with the dewatering activities. The benefit of stopping the mine seep and reducing stormwater as part of the mine dewatering activities with the installation of the proposed CoMag system is that the stormwater and temporary wastewater discharges will be separated with distinct sampling points. The mine dewatering discharge into the Tributary to Saline Creek (Toller Branch) will be required to meet water quality-based effluent limits (see Appendix A). This action will leave the intermittent stormwater runoff from the facility's activities as the only other discharge to the Tributary to Saline Creek. The facility is subject to having a Stormwater Pollution Prevention Plan (SWPPP) with appropriate best management practices installed to help prevent stormwater from carrying sediment and metals into the receiving stream.

From the previous pump studies on the mine seep in 2018 and 2019, the concentration of the pollutants of concern currently discharging are listed below, along with the concentrations the facility will be required to meet with the installation of treatment. There will be a significant reduction in the concentrations of metals into the Tributary to Saline Creek.

Parameter	Units	Mine Seep and stormwater	After CoMag treatment	% change in
		from pump tests [£]	(monthly average) €	concentration
Cadmium, TR	μg/L	2.0	0.80	-60%
Cobalt, TR	μg/L	1880	24	-98%
Lead, TR	μg/L	15	3.64	-76%
Mercury, TR	μg/L	2.0	0.63	-69%
Nickel, TR	μg/L	2910	53.33	-98%
Zinc, TR	μg/L	101	74.74	-26%

Table 2: Change in Metals Concentrations

Parameter	Units	Mine Seep and stormwater from pump tests [£]	After CoMag treatment (monthly average) €	% change in load
Cadmium, TR	lbs/day	0.042	0.029	-31%
Cobalt, TR	lbs/day	39.22	0.865	-97%
Lead, TR	lbs/day	0.313	0.131	-58%
Mercury, TR	lbs/day	0.042	0.022	-48%
Nickel, TR	lbs/day	60.71	1.92	-97%
Zinc, TR	lbs/day	2.12	2.69	+27%

£: (Mine Seep pump test concentration in mg/L*8.345 conversion factor*2.5 MGD)

€ (CoMag concentration in mg/L *8.345 conversion factor*4.32 MGD)

See Part III, COBALT LIMITS for a discussion regarding cobalt limit derivation.

The proposed discharge is located approximately one-half mile from Saline Creek. Relocating the discharge to receive the potential mixing zone allowances would require a large pipe, additional site disturbances, and the possibility of easements to install the pipe. The facility may consider and evaluate this option for future activities, but for now ease of construction of the modular system, location of a mine opening, and existing site infrastructure favor the proposed temporary discharge to the Tributary to Saline Creek.

PROJECT IMPACTS TO RECEIVING STREAM:

The discharge will increase flows in the stream, but that flow will be treated and must meet Water Quality-Based Effluent Limits (see Appendix A for the Derivation and Discussion of Effluent limits). While mine dewatering will occur continuously, initial mine dewatering from #MDW will have higher flows. Once mine dewatering is complete, maintenance dewatering will be based on the groundwater formation flow. These flows have the potential to change seasonally, but will likely be significantly less than the design flow of the CoMag system.

The stream characteristics should improve from what is being currently discharged due to the proposed treatment of the mine water, SWPPP requirements on the stormwater runoff from the tailings areas, the 2023 capping with the Early Removal Action in the Tailings Areas, and the removal of the MET Pond. The Tributary to Saline Creek has general criteria protections currently in place that must be protected with future discharges.

If the facility was to consider land application of the wastewater from the mine dewatering, at 4.32 MGD, a storage basin with a minimum storage of 324 MG would be required to meet the storage requirements of 75 days, per 10 CSR 20-8.200(6)(C)1.A. Additionally the facility would need a minimum of 1,500 acres to land apply the wastewater on. Without the CoMag or similar treatment prior to land application, plant growth would be inhibited by heavy metal concentrations in the wastewater. Thus, for a combination of reasons, land application is not practicable for the site.

In calculating load to the Tributary to Saline Creek, the installation of the CoMag system will result in an approximately 96% reduction in nickel load and 97% reduction in cobalt load to the stream, even with the increased flows from the CoMag treatment system from mine dewatering. Overall, there will be a significant reduction in the concentrations of metals into the Tributary to Saline Creek. Nickel is the main pollutant of concern with respect to the impairment of Saline Creek, therefore a reduction in the loading and concentration to the tributary will provide an improvement. An evaluation of alternatives required as part of the Antidegradation Implementation Procedure for significant degradation is not required, even though there is proposed increase in flow, because the discharge is temporary. The temporary discharge will be required to meet Water Quality Based Effluent Limits, which will be a reduction in concentration (AIP pg. 15), plus a reduction in load for all metal parameters except zinc. Zinc will have a slight increase in load, however the stream has the assimilative capacity to handle the increased load, as there will still be a reduction in zinc concentrations.

The antidegradation review is temporary. The new discharge will be subject to a new Antidegradation Review and Operating Permit modification before permanent installation. The new Antidegradation Review and Operating Permit modification will reflect the water quality standards and stream listings at that time.

ASSIMILATIVE CAPACITY CALCULATIONS:

On March 13, 2024, the EPA commented, per the December 20, 2023, "Request for Information Letter;" The MoDNR's response includes an example facility assimilative capacity calculation for zinc. The EPA received additional assimilative capacity calculations on December 14, 2023, and looks forward to further analysis and discussion of them. Please include the calculations for zinc.

Historic design flow for outfall #002 was 2.5 MGD. However, this is not a treatment design but instead a value supplied with the 2018 application. The "design flow" for both outfalls #001 and #002 is an estimate of flow. Both outfalls discharges are highly dependent on precipitation, groundwater flow, and drought conditions. While the EPA only asked for the zinc calculations in March 2024, the entirety of the calculations are found below for transparency.

Assimilative capacity calculations were based on the Qs being 0 cfs before the discharge, and then the Qd1 = 2.5 MGD. As the stream is an effluent dominated stream, the assimilative capacity calculation is dependent on the discharge and can vary, but has been permitted at 2.5 MGD since 2019. With the proposed expansion, the new stream flow has the potential to be greater than 6.8 MGD (2.5 MGD for outfall #002 + 4.32 MGD for the proposed Outfall #MDW).

Assimilative Capacity:	$FAC = \left[\left(C_c * \left(Q_s + Q_{d1} \right) \right) \right] * CF$
Existing Load:	$EL = (C * Q_{d1}) * CF$
Proposed (New) Load:	$NL = (Q_{d2} * C_d * CF)$
% Assimilative Capacity:	% assimilative capacity = $\frac{EL}{FAC} * 100 \text{ or } \frac{NL}{FAC} * 100$

Table 4: Overall combined new load and assimilative capacity of MDW (4.32 MGD) and outfall 002 (2.5 MGD)

Parameter	MDW load (lbs/day) £	Outfall 002 load (lbs/day) €	Total Load (lbs/day)	% Assimilative Capacity	
Cadmium	0.029	0.004	0.033	60%	
Cobalt	0.865	0.50	1.366	14%	
Copper	0.322	0.117	0.439	66%	
Lead	0.130	0.046	0.176	69%	
Nickel	1.927	1.044	2.971	80%	
Zinc	2.701	1.820	4.522	53%	

£: (MDW load in mg/L*8.345 conversion factor*4.32 MGD)

€ (Outfall #002 load in mg/L *8.345 conversion factor*2.5 MGD)

PROJECT IMPACTS TO COMMUNITY:

The City of Fredericktown provides potable water to the site; however, the city's wastewater treatment plant only has the capacity of 850,000 gpd and does not have the capacity to treat the flows from the mining operations or the temporary dewatering flows. Additionally, the discharge from the mine activities is significantly different from the domestic wastewater the community receives and the Fredericktown wastewater treatment system is not set-up to treat high levels of metals.

A benefit from dewatering the mine is that miners and surveyors can enter the mine to start mining activities. This mine historically produced lead, nickel, and cobalt ore. Nickel and cobalt ore are used extensively in electronics and cellular devices. The economic arm of Missouri Mining Investments is pursuing opportunities for using the concentrate currently produced from the re-mining tailings with their remediation activities. The company hopes that starting mine operations will increase their opportunities. Restarting a mine can provide economic opportunities to the community in terms of taxes and jobs; however, it can also put a demand on resources. It is expected that in the future the site will create approximately 200 jobs for the Fredericktown-area.

PROJECT REQUIREMENTS:

Missouri Cobalt, LLC will provide the department with a summary of the performance of the CoMag system after the first two months. This report will include a general discussion of when pumping initiated, any observations during startup, the flow volumes recorded, a summary of the effluent concentrations, a discussion of any compliance issues, and any other information relevant to the temporary discharge. The facility is required to meet the Water Quality-Based Effluent Limits established in Appendix A.

Missouri Cobalt, LLC will submit design plans for the proposed surge basin as part of phase 2 of the temporary discharge allowance. The design plans are to demonstrate compliance with the department's 10 CSR 20-8 requirements.

Missouri Cobalt, LLC will provide a second report at the end of the first phase (180 days) which will address the same issues as the first report. The second report may also include a recommendation to amend the monitoring schedule or to eliminate monitoring for certain pollutants.

A final report addressing the same topics will be provided at the end of phase two. After two years, the Mine Water Discharge outfall will be discontinued. Missouri Cobalt, LLC can apply for a new Antidegradation Review with an operating permit modification for a permanent discharge from mining activities. If Missouri Cobalt, LLC wants to pursue that option, the Antidegradation Review request must include a summary of plant performance, which evaluates further treatment alternatives according to the Antidegradation Implementation Methods document. The department will review and issue a Water Quality Antidegradation Review for a permanent discharge using this information.

FUTURE PROJECT CONSIDERATIONS:

This site has been dynamic and in a state of constant evolution, with changing operations, different remediation activities, and prepping for mine processing. The facility will need to submit another Antidegradation Request should they decide to continue mine operations, establish new or different process streams, or increase processing.

If the proposed discharge is to a stream that is listed as impaired, or has a total maximum daily load developed, those water quality considerations will be incorporated into the Antidegradation Reviews and future operating permit actions.

If the facility wants to evaluate a Dissolved Metals Translator Study for future outfalls and operations on site, Missouri Cobalt, LLC will need to work with the department's Watershed Protection Section to develop a Quality Assurance Project Plan and collect samples from the effluent and receiving stream(s). However, a dissolved metals translator is only applicable for the activities and actions covered through the study. Changing operations will require a new evaluation.

NEW SOURCE REQUIREMENTS:

The facility's mine dewatering operations are subject to the new source standards in 40 CFR 440. Nickel Ore Mining at 40 CFR 440 Subpart G does not include new source standards. 40 CFR 440 Subpart J, the Copper, Lead, Zinc Ore subcategory does include new source standards under 40 CFR 440.104 for copper, lead, zinc, mercury, cadmium, pH, and TSS. The water quality-based effluent limits in the antidegradation review are more protective than the effluent limit guideline standards in all cases except for TSS where there are no WQS. Additionally, neither nickel nor cobalt are identified in the effluent limit guideline, but are subject to the water quality-based limits as part of the antidegradation review.

The facility's mine dewatering operations are also required to meet the requirements of 40 CFR 122.21(k) for new sources, see Appendix C for the discussion of those requirements.

NEW STORMWATER OUTFALL #008:

The facility is proposing to add a new stormwater outfall, Outfall #008. The outfall is part of permanent operations and is not part of this Antidegradation Review. However, since it is a new stormwater discharge it is included in the discussion as a new outfall. As a major industrial facility, subject to stormwater requirements per 10 CSR 20-6.200 and 40 CFR 122.26(b)(14)(ix), the facility is required to have a detailed Stormwater Pollution Prevention Plan (SWPPP). The facility shall select, install, use, operate, and maintain the Best Management Practices (BMPs) prescribed in the SWPPP in accordance with the concepts and methods described in: *Developing Your Stormwater Pollution Prevention Plan, A Guide for Industrial Operators*, (EPA 833-B-09-002 March 2021) https://www.epa.gov/sites/production/files/2021-03/documents/swppp_guide_industrial_2021_030121.pdf The department does not review the SWPPP, as the SWPPP is a living document with ongoing evaluation of BMPs as the site

continues to change with the industrial activities. The SWPPP must be kept up to date and be available upon request for inspection.

The SWPPP shall identify reasonable and effective BMPs while accounting for environmental impacts of varying control methods. The SWPPP must include a discussion of why no discharge and no exposure are not feasible options on the site. Within the SWPPP, the BMPs selected must be the most reasonable and effective management strategy for the site, while ensuring the highest statutory and regulatory requirements are achieved and the highest quality water attainable for the facility is discharged. At a minimum, the BMPs must ensure that the following benchmarks are not exceeded. If there is a failure of a BMP, the facility must evaluate a better BMP for use. The minimum BMPS for Outfall #008 are:

- (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) Ensure adequate provisions are provided to prevent surface water intrusion into the wastewater storage wastewater holding structure(s)s and to divert stormwater runoff around the wastewater storage wastewater holding structure(s).
- (e) Provide sediment and erosion control sufficient to prevent or minimize sediment loss off of the property, and to protect embankments from erosion.

Table 5. Outrain #000 Deneminarks					
Parameter	Units	Benchmark Monthly Average			
Flow	MGD	*			
Chemical Oxygen Demand	mg/L	120			
Oil and Grease	mg/L	10			
pH	SU	-			
Total Suspended Solids	mg/L	100			
Arsenic, TR	μg/L	340			
Cadmium, TR	μg/L	6.6			
Cobalt, TR	μg/L	220			
Copper, TR	μg/L	18			
Cyanide, Total	μg/L	22			
Lead, TR	μg/L	86			
Nickel, TR	μg/L	585			
Zinc, TR	μg/L	147			

Table 5: Outfall #008 Benchmarks

Stormwater runoff is based on frequency and intensity of precipitation and site conditions. BMPs are very site specific and dependent on the activities occurring onsite, the topography of the site, site size, county ordinances, the precipitation events, and wind direction. For potential BMPs for the site, the facility could utilize:

- National Menu of Best Management Practices for Stormwater
- Protecting Water Quality Field Guide
- EPA's Sector G: Metal Mining Fact Sheet Series
- Minnesota Pollution Control Agency's Industrial Stormwater BMP Guidebook
- Nevada Best Management Practices Handbook, Chapter 9 is related to mines
- Idaho Catalog of Storm Water Best Management Practices
- Best Management Practices for Mining in Idaho

PROJECT DETERMINATION:

According to *Missouri Antidegradation Implementation Procedure*, the MDW discharge is required to protect water quality standards and to meet the Water Quality-Based Effluent Limits for pollutants of concern.

A general review of the literature provided shows that the proposed CoMag system is capable and should provide good metals removal. A similar process has been used in other mines in the state with success in meeting water quality based effluent limits.

The new stormwater outfall, #008, is required to meet the minimum BMPs and the BMPs selected must be the most reasonable and effective management strategy for the site, while ensuring the highest statutory and regulatory requirements are achieved and the highest quality water attainable for the facility is discharged.

The effluent limits provided in this review are protective of beneficial uses and attain the highest statutory and regulatory requirements. The department has determined that the submittal is sufficient and meets the requirements of the AIP. This determination may be revisited upon receipt of the scheduled reports.

Revised: Leasue Meyers, EI Date: May 10, 2023 Reviewed: Cindy LePage, PE

APPENDIX A- DERIVATION & DISCUSSION OF TIME LIMITED EFFLUENT LIMITS

Antidegradation Review begins above.

EFFLUENT LIMITATIONS TABLE FOR MINE DEWATERING:

PARAMETERS	Unit	DAILY MAX	Monthly Avg.	MINIMUM SAMPLING Frequency	Reporting Frequency	SAMPLE TYPE
Physical						
FLOW	MGD	*	*	SEE PERMIT	MONTHLY	24 Hr. Tot
CONVENTIONAL						
PH [†]	SU	6.5 то 9.0	-	SEE PERMIT	MONTHLY	GRAB
TOTAL SUSPENDED SOLIDS (TSS)	mg/L	30	20	SEE PERMIT	MONTHLY	GRAB
METALS						
CADMIUM, TR	μg/L	1.6	0.8	SEE PERMIT	MONTHLY	GRAB
COBALT, TR	µg/L	220	24	SEE PERMIT	MONTHLY	GRAB
COPPER, TR	µg/L	17.9	8.9	SEE PERMIT	MONTHLY	GRAB
CYANIDE, TOTAL $\stackrel{\downarrow}{\cdot}$	µg/L	8.5	4.3	SEE PERMIT	MONTHLY	GRAB
LEAD, TR	μg/L	7.3	3.6	SEE PERMIT	MONTHLY	GRAB
Mercury, Total	µg/L	1.3	0.6	SEE PERMIT	MONTHLY	GRAB
NICKEL, TR	μg/L	107	53.3	SEE PERMIT	MONTHLY	GRAB
ZINC, TR	µg/L	150	74.7	SEE PERMIT	MONTHLY	GRAB
Other						
Chloride	mg/L	*	*	ONE/MONTH	MONTHLY	GRAB
SULFATE	mg/L	*	*	ONE/MONTH	MONTHLY	GRAB
Chloride plus Sulfate	mg/L	*	*	ONE/MONTH	MONTHLY	GRAB
WET TEST – CHRONIC	TUc	1.6	-	ONE/QUARTER	QUARTERLY	GRAB

monitoring and reporting requirement only
 report the minimum and maximum pH valu

report the minimum and maximum pH values; pH is not to be averaged

A method detection limit is established for cyanide; see operating permit.

TR total recoverable

PARAMETERS

PHYSICAL

Flow

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

CONVENTIONAL

pН

6.5 to 9.0 SU – instantaneous grab sample. Water quality limits [10 CSR 20-7.031(5)(E)] are applicable to this discharge. Technology limits are not applied per 10 CSR 20-7.015(9)(I) as the technology limits are less stringent. pH is a fundamental water quality indicator. Additionally, metals leachability 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)

30 mg/L daily maximum, 20 mg/L monthly average per 40 CFR 440.104 for mine dewatering wastewater. There are no numeric water quality standards for TSS; however, sediment discharges can negatively impact aquatic life habitat. Because there are no numeric WQBEL, the TBEL will be used.

METALS

Mine dewatering parameters from 40 CFR 440.104(a) for New Sources (NSPS), in part, and utilizing best professional judgment. The department pulled the hardness data specific to the ecological drainage unit from a variety of collectors and the median hardness is 130 mg/L.

Cadmium, Total Recoverable

Mine dewatering limits: Acute AQL: $e^{(1.0166 * ln130 - 3.062490) * (1.136672 - ln130 *0.041838) = 6.15 \mu g/L}$ [at hardness 130] Chronic AQL: $e^{(0.7977 * ln130 - 3.909) * (1.101672 - ln130*0.041938) = 0.875 \mu g/L}$ TR Conversion: AQL/Translator = 6.15 / 0.933 = 6.592 TR Conversion: AQL/Translator = 0.875 / 0.898 = 0.974 Acute WLA: Ce = ((6.684 cfsDF + 0 cfsZID) * 6.592 - (0 cfsZID * 0 background)) / 6.684 cfsDF = 6.592 Chronic WLA: Ce = ((6.684 cfsDF + 0 cfsMZ) * 0.974 - (0 cfsMZ * 0 background)) / 6.684 cfsDF = 0.974 LTAa: WLAa * LTAa multiplier = 6.592 * 0.321 = 2.117 [CV: 0.6, 99th %ile] LTAc: WLAc * LTAc multiplier = 0.974 * 0.527 = 0.514 [CV: 0.6, 99th %ile] use most protective LTA: 0.514 Daily Maximum: MDL = LTA * MDL multiplier = 0.514 * 3.114 = 1.6 µg/L [CV: 0.6, 99th %ile] Monthly Average: AML = LTA * AML multiplier = 0.514 * 1.552 = 0.8 µg/L [CV: 0.6, 95th %ile, n=4]

40 CFR 440 was reviewed. The daily maximum ELG TBEL is $300 \mu g/L$; the monthly average is $150 \mu g/L$. The WQBEL is more protective therefore will be applied.

Cobalt, Total Recoverable

Mine dewatering limits based on acute and chronic toxicity threshold, see Antidegradation Review PROJECT DISCUSSION and Part III COBALT LIMITS for additional information.

Acute Toxicity Threshold: 220 $\mu g/L$

Chronic Toxicity Threshold: 24 $\mu g/L$

Daily Maximum: MDL = Acute Toxicity Threshold = $220 \mu g/L$ Monthly Average: AML = Chronic Toxicity Threshold = $24 \mu g/L$

40 CFR 440 was reviewed for mines with cobalt limits; none were found. Therefore the effluent limits above are the most protective. Technology was considered when deriving this limit.

Copper, Total Recoverable

Mine dewatering limits: Acute AQL: $e^{(1.0166 * ln130 - 3.062490) * (1.136672 - ln130 *0.041838) = 17.203 \mu g/L} [at hardness 130]$ Chronic AQL: $e^{(0.7977 * ln130 - 3.909) * (1.101672 - ln130*0.041938) = 11.206 \mu g/L}$ TR Conversion: AQL/Translator = 17.203 / 0.96 = 17.92 TR Conversion: AQL/Translator = 11.206 / 0.96 = 11.673 Acute WLA: Ce = ((6.684 cfsDF + 0 cfsZID) * 17.92 - (0 cfsZID * 0 background)) / 6.684 cfsDF = 17.92 Chronic WLA: Ce = ((6.684 cfsDF + 0 cfsZID) * 11.673 - (0 cfsMZ * 0 background)) / 6.684 cfsDF = 11.673 LTAa: WLAa * LTAa multiplier = 17.92 * 0.321 = 5.754 [CV: 0.6, 99th %ile] LTAc: WLAc * LTAc multiplier = 11.673 * 0.527 = 6.157 [CV: 0.6, 99th %ile] use most protective LTA: 5.754 Daily Maximum: MDL = LTA * MDL multiplier = 5.754 * 3.114 = **17.9 µg/L** [CV: 0.6, 99th %ile] Monthly Average: AML = LTA * AML multiplier = 5.754 * 1.552 = **8.9 µg/L** [CV: 0.6, 95th %ile, n=4]

Limits at 40 CFR 440 J are 300 μ g/L daily maximum and 150 μ g/L monthly average; therefore the calculated WQBEL above will be used because it is more stringent.

Cyanide, Total

Mine dewatering wastewater. A method detection limit is established at 5 µg/L for this parameter. Acute AQL: 22 ug/L Chronic AQL: 5.2 ug/L Acute WLA: Ce = ((6.7 cfsDF + 0 cfsZID) * 22 – (0 cfsZID * 0 background)) / 6.7 cfsDF = 22 Chronic WLA: Ce = ((6.7 cfsDF + 0 cfsMZ) * 5.2 – (0 cfsMZ * 0 background)) / 6.7 cfsDF = 5.2 LTAa: WLAa * LTAa multiplier = 22 * 0.321 = 7.064 [CV: 0.6, 99th %ile] LTAc: WLAc * LTAc multiplier = 5.2 * 0.527 = 2.743 [CV: 0.6, 99th %ile] use most protective LTA: 2.743 Daily Maximum: MDL = LTA * MDL multiplier = 2.743 * 3.114 = **8.5 ug/L** [CV: 0.6, 99th %ile] Monthly Average: AML = LTA * AML multiplier = 2.743 * 1.552 = **4.3 ug/L** [CV: 0.6, 95th %ile, n=4] 40 CFR 440 was reviewed for mines with cyanide limits. None were found. The WQBEL is more protective therefore will be applied.

Lead, Total Recoverable

Mine dewatering limits: Acute AQL: $e^{(1.0166 * ln130 - 3.062490) * (1.136672 - ln130 *0.041838) = 85.792 \mu g/L} [at hardness 130]$ Chronic AQL: $e^{(0.7977 * ln130 - 3.909) * (1.101672 - ln130*0.041938) = 3.345 \mu g/L}$ TR Conversion: AQL/Translator = 85.792 / 0.753 = 113.969 TR Conversion: AQL/Translator = 3.345 / 0.753 = 4.444 Acute WLA: Ce = ((6.684 cfsDF + 0 cfsZID) * 113.969 - (0 cfsZID * 0 background)) / 6.684 cfsDF = 113.969 Chronic WLA: Ce = ((6.684 cfsDF + 0 cfsZID) * 4.444 - (0 cfsMZ * 0 background)) / 6.684 cfsDF = 4.444 LTAa: WLAa * LTAa multiplier = 113.969 * 0.321 = 36.593 [CV: 0.6, 99th %ile] LTAc: WLAc * LTAc multiplier = 4.444 * 0.527 = 2.344 [CV: 0.6, 99th %ile] use most protective LTA: 2.344 Daily Maximum: MDL = LTA * MDL multiplier = 2.344 * 3.114 = **7.3 µg/L** [CV: 0.6, 99th %ile] Monthly Average: AML = LTA * AML multiplier = 2.344 * 1.552 = **3.6 µg/L** [CV: 0.6, 95th %ile, n=4]

The daily maximum ELG TBEL is 600 μ g/L; the monthly average is 300 μ g/L. The WQBEL is more protective therefore will be applied.

Mercury, Total

For mine dewatering under 40 CFR 440.102(a): Acute AQL: $1.4 \mu g/L$ Chronic AQL: $0.77 \mu g/L$ TR Conversion: AQL/Translator = 1.4 / 0.85 = 1.647TR Conversion: AQL/Translator = 0.77 / 1 = 0.77Acute WLA: Ce = ((6.7 cfsDF + 0 cfsZID) * 1.647 - (0 cfsZID * 0 background)) / 6.7 cfsDF = <math>1.647Chronic WLA: Ce = ((6.7 cfsDF + 0 cfsZID) * 0.77 - (0 cfsMZ * 0 background)) / 6.7 cfsDF = 0.77LTAa: WLAa * LTAa multiplier = 1.647 * 0.321 = 0.529 [CV: 0.6, 99th %ile] LTAc: WLAc * LTAc multiplier = 0.77 * 0.527 = 0.406 [CV: 0.6, 99th %ile] use most protective LTA: 0.406Daily Maximum: MDL = LTA * MDL multiplier = $0.406 * 3.114 = 1.3 \mu g/L$ [CV: 0.6, 99th %ile] Monthly Average: AML = LTA * AML multiplier = $0.406 * 1.552 = 0.6 \mu g/L$ [CV: 0.6, 95th %ile, n=4]

The daily maximum ELG TBEL is $2 \mu g/L$; the monthly average is $1 \mu g/L$. The WQBEL is more protective therefore will be applied.

Nickel, Total Recoverable

Mine dewatering limits: Acute AQL: $e^{(1.0166 * ln130 - 3.062490) * (1.136672 - ln130 *0.041838) = 584.981 \mu g/L}$ [at hardness 130] Chronic AQL: $e^{(0.7977 * ln130 - 3.909) * (1.101672 - ln130*0.041938) = 64.931 \mu g/L}$ TR Conversion: AQL/Translator = 584.981 / 0.998 = 586.153 TR Conversion: AQL/Translator = 64.931 / 0.997 = 65.127 Acute WLA: Ce = ((6.684 cfsDF + 0 cfsZID) * 586.153 - (0 cfsZID * 0 background)) / 6.684 cfsDF = 586.153 Chronic WLA: Ce = ((6.684 cfsDF + 0 cfsZID) * 65.127 - (0 cfsMZ * 0 background)) / 6.684 cfsDF = 65.127 LTAa: WLAa * LTAa multiplier = 586.153 * 0.321 = 188.204 [CV: 0.6, 99th %ile] LTAc: WLAc * LTAc multiplier = 65.127 * 0.527 = 34.35 [CV: 0.6, 99th %ile] use most protective LTA: 34.35 Daily Maximum: MDL = LTA * MDL multiplier = 34.35 * 3.114 = **107 µg/L** [CV: 0.6, 95th %ile, n=4]

40 CFR 440 was reviewed for nickel TBEL limits; the category with nickel limits are mercury ores. The daily maximum ELG TBEL is 200 μ g/L; the monthly average is 100 μ g/L. The WQBEL is more protective therefore will be applied.

Zinc, Total Recoverable

Mine dewatering limits: Acute AQL: $e^{(1.0166 * ln130 - 3.062490) * (1.136672 - ln130 * 0.041838) = 146.652 \mu g/L}$ [at hardness 130] Chronic AQL: $e^{(0.7977 * ln130 - 3.909) * (1.101672 - ln130*0.041938) = 146.652 \mu g/L}$ TR Conversion: AQL/Translator = 146.652 / 0.978 = 149.95 TR Conversion: AQL/Translator = 146.652 / 0.986 = 148.734 Acute WLA: Ce = ((6.684 cfsDF + 0 cfsZID) * 149.95 - (0 cfsZID * 0 background)) / 6.684 cfsDF = 149.95 Chronic WLA: Ce = ((6.684 cfsDF + 0 cfsMZ) * 148.734 – (0 cfsMZ * 0 background)) / 6.684 cfsDF = 148.734 LTAa: WLAa * LTAa multiplier = 149.95 * 0.321 = 48.147 [CV: 0.6, 99th %ile] LTAc: WLAc * LTAc multiplier = 148.734 * 0.527 = 78.447 [CV: 0.6, 99th %ile] use most protective LTA: 48.147 Daily Maximum: MDL = LTA * MDL multiplier = 48.147 * 3.114 = **150 µg/L** [CV: 0.6, 99th %ile] Monthly Average: AML = LTA * AML multiplier = 48.147 * 1.552 = **74.7 µg/L** [CV: 0.6, 95th %ile, n=4]

The daily maximum ELG TBEL is 1000 μ g/L; the monthly average is 500 μ g/L. The WQBEL is more protective therefore will be applied.

OTHER

Chloride, Sulfate, and Chloride plus Sulfate

Once per month monitoring required. The facility shall determine the actual values of chloride and sulfate and sum the values. The facility will report all three values monthly. There are no TBELs for these parameters.

Whole Effluent Toxicity (WET) Test, Acute

The public notice included a limit for an acute wet test. However, this was determined to inadequately protect for long term toxicity; the mine dewatering wastewater was originally described as possibly being interment, was later determined it is a constant flow.

Other permits with mine dewatering have quarterly WET tests. [Brushy Creek Mine MO-0001848; Buick Mine MO-0002003; Sweetwater Mine MO-0001881; Viburnum MO-0000086; West Fork MO-0100218] The facility asked for quarterly monitoring to be automatically reduced to annually after a stated time frame. However, other mines in the state continue to have quarterly WET testing even after years of operations. Quarterly WET testing is necessary to ensure that the treatment system operates optimally. The current system for MDW is a co-mag system, but it is not permanent. Other mines have demonstrated, through years of quarterly testing that the system functions optimally and is stable. Until a permanent system is installed, WET testing will be quarterly. At other sites, it has been noted that excess treatment chemicals in the Co Mag type systems have caused aquatic life mortality in a WET test, even though effluent parameters were in compliance with the numeric metals limits. A demonstration from the facility will be necessary to reduce WET testing, and a permit action (modification or renewal) will also be required.

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. This is a new discharge with metals identified as toxic in the effluent. The acute WQS is 0.3 TUa. 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. See the permit for the dilution series.

Acute AQL: 0.3 TUa Chronic Assumption: 1 TUc The AEC is (6.684 CFSdf / (0 CFSzid + 6.684 CFSdf)) = 100%Acute WLA: Ce = ((6.684 CFSdf + 0 CFSzid) * 0.3 - (0 CFSzid * 0 background)) / 6.684 CFSdf] * ACR of 10 = 3Chronic WLA: Ce = ((6.684 CFSdf + 0 CFSmz) * 1 - (0 CFSmz * 0 background)) / 6.684 CFSdf = 1LTAa,c: WLAa * LTAa multiplier = 3 * 0.321 = 0.963 [CV: 0.6, 99th %ile] LTAc: WLAc * LTAc multiplier = 1 * 0.527 = 0.527 [CV: 0.6, 99th %ile] use most protective LTA: 0.527Daily Maximum: MDL = LTA * MDL multiplier = 0.527 * 3.114 = 1.6 TUc [CV: 0.6, 99th %ile]

APPENDIX B- PROPOSED SITE MAP



Madison Mine Fact Sheet Page 49 of 52

APPENDIX C: NEW SOURCE DISCHARGE REQUIREMENTS

The facility meets the new source requirements under 40 CFR 440.104. As such, the facility is subject to 40 CFR 122.21(k) requirements for new sources of mining. Below is a brief summary of the regulation and how the facility is proposing to meet the requirements, as part of this temporary project. If the discharge is to continue, the Antidegradation for the final location and the Operating Permit modification must fulfill the requirements of 40 CFR 122.21(k).

- (1) Expected Outfall location:
 - i. UTM Coordinates: X = 740308 ;Y = 4159534
 - ii. Latitude/Longitude Coordinates: 37.5515; -90.279674
 - iii. The receiving stream is Unnamed Tributary to Saline Creek
- (2) Discharge dates: Discharge is allowed to start upon issuance of the operating permit renewal, approximately April 2024 and at this time is only authorized for 2 years.
- (3) Flow, sources of pollution, & treatment technologies
 - i. The wastewater will be mine dewatering water from the existing mine. The mine dewatering flows will be separate from other process flows and stormwater flows at the site. The proposed treatment plant is an Evoqua modular CoMag system, with flow equalization basin. The CoMag system will have the capability to treat flows up to 4.32 MGD, but it will take time for flows to be maximized through the system as the facility is using the temporary discharge to optimize treatment. Any solids precipitated out of the treatment system will be further processed or disposed of onsite.
 - ii. Line Drawing
 - 1. Phase 1 Process Flow Diagram



2. Phase 2 Process Flow Diagram



iii. The flows are authorized for a period of 2 years. The flows will not be intermittent or seasonal. The discharge will be treated wastewater from mine dewatering operations, discharging daily when the site is in operation. The treatment plant will have the ability to treat up to 4.32 MGD. The facility is required to obtain a permit modification to continue dewatering after the two year date. This modification will require a PN comment period.

- (4) The ELG for mine dewatering is not based on production.
- (5) The effluent characteristics were determined during the 2018-2019 mine pumping tests. The expected pollutants of concern were identified in the Antidegradation Request, along with the expected final effluent concentrations after treatment, which are water quality based effluent limits.
- (6) The department waived the inapplicable parameters from 40 CFR 122.21(k)(5)(i) through (v). This is an industrial discharge where metals are primary constituents of concern. The department is requiring a report for the subsequent permit modification; this will include these parameters. The report will be submitted for the permit modification prior to continuing the discharge allowance at #MDW.
- (7) The CoMag system uses magnetite to ballast conventional chemical floc, enhancing settling rates and increasing the performance of wastewater and water treatment operations. The high-density, magnetite ballasted floc flows into a modified compact high rate clarifier. The clarifier includes baffle plates to direct flow for optimal settling, and a sludge rake collects sludge in a sump. In Missouri, similar systems are used with the lead mines and mills.
 - i. https://www.evoqua.com/en/evoqua/products--services/clarifiers--separators/ballasted-clarifiers/comag-system/

ANTIDEGRADATION REVIEW COMPLETED BY:

LEASUE MEYERS, EI MISSOURI DEPARTMENT OF NATURAL RESOURCES WATER PROTECTION PROGRAM, ENGINEERING SECTION (573) 751-7906 leasue.meyers@dnr.mo.gov

End Antidegradation Review

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 #1:

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. <u>https://dnr.mo.gov/water/what-were-doing/public-notices</u> The department must issue public notice of a pending operating permit. The public comment period is the length of time not less than 30 days following the date of the public notice 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 first Public Notice period for this operating permit started August 5, 2022 and ended September 5, 2022.

The EPA commented on this permit multiple times. In a letter dated June 9, 2023, the EPA formally commented on hardness, #MDW cobalt limits, backsliding, antidegradation, and technology requirements. The department responded with changes, and a narrative regarding each of these comments; these comments and responses are found throughout the document.

PUBLIC NOTICE #2:

The EPA indicated the first draft did not meet all the requirements of the Clean Water Act. This redraft is meant to address the changes the EPA deemed necessary. See comments and responses in the respective sections throughout the draft.

✓ The second Public Notice period for this operating period started August 11, 2023 and ended September 11, 2023.

Typographical Changes:

- Entire document:
 - o Changed 2023 to 2024 (and other dates) in relevant places.
 - Changed "Department" to "department" where appropriate throughout to be current with new department practices for capitalization.
 - Fixed "(s)" to appropriate pluralization throughout.
 - o Changed from future tense to past tense of narrative where actions had been completed.
 - Edited statutory citations for permit shield and appeals; as revised statutes, published 2023, revised the numbering. The content of the citations did not change.
 - Table A-1 included effluent limits for TSS at 100 mg/L, however, the fact sheet text and table were correct; the facility must adhere to 45 mg/L daily maximum and 30 mg/L monthly average as is continued from the previous permit. Backsliding is not permissible because an antidegradation review was not completed. Additionally, Part B of the permit did not identify TSS as having an SOC therefore 45 mg/L and 30 mg/L are the correct limits.

Clarification of Permit Conditions:

- Permit:
 - Clarified that only basin #006 is for processing wastewater; and basin #009 is only for mine dewatering wastewater. This
 information was included in the respective construction permits and antidegradation review, but not explicitly defined in the
 prior permit.
 - Clarified special condition #5 by adding that dewatering bags may only be used with basin #006.
 - Final cobalt limits were changed on outfalls #001 and #002
 - Cobalt limits were changed to more protective values since the permit PN at outfall #MDW.
- Fact Sheet:
 - The facility map was updated to the February 2024 imagery.
 - Edited narrative under COBALT LIMITS section and cobalt discussion in the antidegradation review. Significant revisions
 occurred for cobalt during the comment period for this permit.
 - o Added section: ASSIMILATIVE CAPACITY CALCULATIONS
 - Added EPA's comments and departmental responses throughout.

Substantive Changes since PN:

Removed allowance for land application and dust suppression. The facility did not supply a current analysis of the wastewater which was to be used for land application or dust suppression. Neither were soil samples submitted for land application areas. With the absence of this data, the application was deemed incomplete for land application and dust suppression pursuant to 40 CFR 122.21(e)(1). A narrative was added in the fact sheet Part III LAND APPLICATION why this allowance was removed. Significant changes have occurred to the site in the last 6 months since PN; namely establishment of vegetation on the site which would necessitate a thorough analysis of the wastewater to prevent phytotoxicity pursuant to 10 CSR 20-6.015 whereas prior to remediation, there was no vegetation. Allowance for dust suppression was also removed as there is no recent wastewater analysis to evaluate for appropriate dust suppression conditions.

Additional Requested Changes:

On March 25, 2024, the facility indicated that basin #1 was closed. The February 2024 imagery and inspection reports confirm this. Basin #1 (permitted feature #005) was removed from permitting requirements.

On March 25, 2024, the facility indicated they planned to pump groundwater into basin #2 (permitted feature #006). The department notes that groundwater was to be used as makeup water for the milling process. Basin #2 is a process water basin and had a construction permit. The basin is constructed to ensure that contaminants from the milling process, and by extension, groundwater or from mine dewatering, will be contained in the basin. As such, the department has clearly authorized this action in the facility description in the permit. This action is beneficial because the outfall #002 seep will stop based on historical information (2018 pump testing).

Cobalt limits were updated to reflect additional information gathered since the last PN; see Part III Cobalt Limits for a thorough discussion of cobalt.

DATE OF FACT SHEET: JUNE 11, 2024

COMPLETED BY:

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

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

Part I – General Conditions

Section A - Sampling, Monitoring, and Recording

1. Sampling Requirements.

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

2. Monitoring Requirements.

a.

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

6. Illegal Activities.

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

Section B - Reporting Requirements

1. Planned Changes.

- The permittee shall give notice to the Department as soon as possible of any planned physical alterations or additions to the permitted facility when:
 - i. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in 40 CFR 122.29(b); or
 - ii. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in the permit, nor to notification requirements under 40 CFR 122.42;
 - iii. The alteration or addition results in a significant change in the permittee's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan;
 - iv. Any facility expansions, production increases, or process modifications which will result in a new or substantially different discharge or sludge characteristics must be reported to the Department 60 days before the facility or process modification begins. Notification may be accomplished by application for a new permit. If the discharge does not violate effluent limitations specified in the permit, the facility is to submit a notice to the Department of the changed discharge at least 30 days before such changes. The Department may require a construction permit and/or permit modification as a result of the proposed changes at the facility.

2. Non-compliance Reporting.

a. The permittee shall report any noncompliance which may endanger health or the environment. Relevant information shall be provided orally or via the current electronic method approved by the Department, within 24 hours from the time the permittee becomes aware of the circumstances, and shall be reported to the appropriate Regional Office during normal business hours or the Environmental Emergency Response hotline at 573-634-2436 outside of normal business hours. A written submission shall also be provided within five (5) business days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.



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

- b. The following shall be included as information which must be reported within 24 hours under this paragraph.
 - i. Any unanticipated bypass which exceeds any effluent limitation in the permit.
 - ii. Any upset which exceeds any effluent limitation in the permit.
 - Violation of a maximum daily discharge limitation for any of the pollutants listed by the Department in the permit required to be reported within 24 hours.
- c. The Department may waive the written report on a case-by-case basis for reports under paragraph 2. b. of this section if the oral report has been received within 24 hours.
- 3. Anticipated Noncompliance. The permittee shall give advance notice to the Department of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements. The notice shall be submitted to the Department 60 days prior to such changes or activity.
- 4. Compliance Schedules. Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of the permit shall be submitted no later than 14 days following each schedule date. The report shall provide an explanation for the instance of noncompliance and a proposed schedule or anticipated date, for achieving compliance with the compliance schedule requirement.
- 5. **Other Noncompliance.** The permittee shall report all instances of noncompliance not reported under paragraphs 2, 3, and 6 of this section, at the time monitoring reports are submitted. The reports shall contain the information listed in paragraph 2. a. of this section.
- 6. **Other Information**. Where the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Department, it shall promptly submit such facts or information.

7. Discharge Monitoring Reports.

- a. Monitoring results shall be reported at the intervals specified in the permit.
- b. Monitoring results must be reported to the Department via the current method approved by the Department, unless the permittee has been granted a waiver from using the method. If the permittee has been granted a waiver, the permittee must use forms provided by the Department.
- c. Monitoring results shall be reported to the Department no later than the 28^{th} day of the month following the end of the reporting period.

Section C - Bypass/Upset Requirements

1. Definitions.

- a. *Bypass*: the intentional diversion of waste streams from any portion of a treatment facility, except in the case of blending.
- b. Severe Property Damage: substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.
- c. *Upset:* an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

2. Bypass Requirements.

a. Bypass not exceeding limitations. The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of paragraphs 2. b. and 2. c. of this section.

- b. Notice.
 - i. Anticipated bypass. If the permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least 10 days before the date of the bypass.
 - ii. Unanticipated bypass. The permittee shall submit notice of an unanticipated bypass as required in Section B – Reporting Requirements, paragraph 5 (24-hour notice).
- c. Prohibition of bypass.
 - i. Bypass is prohibited, and the Department may take enforcement action against a permittee for bypass, unless:
 - 1. Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;
 - 2. There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and
 - 3. The permittee submitted notices as required under paragraph 2. b. of this section.
 - ii. The Department may approve an anticipated bypass, after considering its adverse effects, if the Department determines that it will meet the three (3) conditions listed above in paragraph 2. c. i. of this section.

3. Upset Requirements.

- a. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of paragraph 3. b. of this section are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.
- b. Conditions necessary for a demonstration of upset. A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:
 - i. An upset occurred and that the permittee can identify the cause(s) of the upset;
 - ii. The permitted facility was at the time being properly operated; and
 - iii. The permittee submitted notice of the upset as required in Section B

 Reporting Requirements, paragraph 2. b. ii. (24-hour notice).
 iv. The permittee complied with any remedial measures required under
 - iv. The permittee complied with any remedial measures required under Section D – Administrative Requirements, paragraph 4.
- c. Burden of proof. In any enforcement proceeding, the permittee seeking to establish the occurrence of an upset has the burden of proof.

Section D - Administrative Requirements

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


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

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

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

2. Duty to Reapply.

- a. If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and obtain a new permit.
- b. A permittee with a currently effective site-specific permit shall submit an application for renewal at least 180 days before the expiration date of the existing permit, unless permission for a later date has been granted by the Department. (The Department shall not grant permission

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

- c. A permittees with currently effective general permit shall submit an application for renewal at least 30 days before the existing permit expires, unless the permittee has been notified by the Department that an earlier application must be made. The Department may grant permission for a later submission date. (The Department shall not grant permission for applications to be submitted later than the expiration date of the existing permit.)
- 3. **Need to Halt or Reduce Activity Not a Defense.** It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.
- 4. **Duty to Mitigate.** The permittee shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.
- 5. Proper Operation and Maintenance. The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems which are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit.

6. Permit Actions.

- a. Subject to compliance with statutory requirements of the Law and Regulations and applicable Court Order, this permit may be modified, suspended, or revoked in whole or in part during its term for cause including, but not limited to, the following:
 - i. Violations of any terms or conditions of this permit or the law;ii. Having obtained this permit by misrepresentation or failure to
 - disclose fully any relevant facts; iii. A change in any circumstances or conditions that requires either a
 - temporary or permanent reduction or elimination of the authorized discharge; or
 - iv. Any reason set forth in the Law or Regulations.
- b. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition.

7. Permit Transfer.

- a. Subject to 10 CSR 20-6.010, an operating permit may be transferred upon submission to the Department of an application to transfer signed by the existing owner and the new owner, unless prohibited by the terms of the permit. Until such time the permit is officially transferred, the original permittee remains responsible for complying with the terms and conditions of the existing permit.
- b. The Department may require modification or revocation and reissuance of the permit to change the name of the permittee and incorporate such other requirements as may be necessary under the Missouri Clean Water Law or the Federal Clean Water Act.
- c. The Department, within 30 days of receipt of the application, shall notify the new permittee of its intent to revoke or reissue or transfer the permit.
- 8. **Toxic Pollutants.** The permittee shall comply with effluent standards or prohibitions established under section 307(a) of the Federal Clean Water Act for toxic pollutants and with standards for sewage sludge use or disposal established under section 405(d) of the Federal Clean Water Act within the time provided in the regulations that establish these standards or prohibitions or standards for sewage sludge use or disposal, even if the permit has not yet been modified to incorporate the requirement.
- 9. **Property Rights.** This permit does not convey any property rights of any sort, or any exclusive privilege.



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

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

12. Closure of Treatment Facilities.

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

13. Signatory Requirement.

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

rec'd 3/31/21 AP 37089

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	E-MAIL ADDRESS maryj@environmentalops	3.com				
7. DOWNSTREAM LANDOWNER(S) Attach additional sheets as necessary.	7. DOWNSTREAM LAN	DOWNER(S) Attach additional sheets as	s necessary.			
NAME Cobalt VIIIage, Fredericktown - see attached Figure A-1 "Adioining Properties" and Figure A-2 "Receiving Waters"	NAME Cobalt Village. Fredericki	town - see attached Figure A-1 "Adioinin	Properties" and Figure A-2 "Rec	eivina Wat	ers"	
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MO 780-1478 (02-19) MO 63645	MO 780-1478 (02-19)		Fredericktown		ON	63645

8. ADDITIONAL FACILITY INFORMATION	
8.1 Legal Description of Outfalls. (Attach additional sheets if necessa For Universal Transverse Mercator (UTM), use Zone 15 North referenced to North	ary.) th American Datum 1983 (NAD83)
001 <u>1/4</u> <u>1/4</u> Sec T UTM Coordinates Easting (X): <u>740253</u> Northing (Y): <u>415847</u>	R Madison County
002¼¼ Sec T UTM Coordinates Easting (X): <u>740254</u> Northing (Y): <u>415955</u>	_ R Madison County
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004¼¼ Sec T UTM Coordinates Easting (X): Northing (Y):	_ R County
8.2 Primary Standard Industrial Classification (SIC) and Facility North America Primary SIC 1031 and NAICS 212230	an Industrial Classification System (NAICS) Codes. SIC 1629 and NAICS 237990
9. ADDITIONAL FORMS AND MAPS NECESSARY TO COMPLETE THIS APP	
A. Is this permit for a manufacturing, commercial, mining, solid/nazardous with the second se	
B. Is the facility considered a "Primary Industry" under EPA guidelines (40 fif yes, complete Forms C and D.	CFR Part 122, Appendix A): YES 🗹 NO 📑
C. is wastewater land applied? If yes, complete Form I.	
D. Are sludge, blosolids, ash, or residuals generated, treated, stored, or lar If yes, complete Form R.	nd applied? YES 🗹 NO 🗌
E. Have you received or applied for any permit or construction approval une environmental regulatory authority? If yes, please include a list of all permits or approvals for this facility. Set	der the CWA or any other YES 🗹 NO 🗌 se Attachments sheet.
F. Do you use cooling water in your operations at this facility? If yes, please indicate the source of the water:	
G. Attach a map showing all outfalls and the receiving stream at 1" = 2,000	" scale, See attached Figures A-2 and A-3
10. ELECTRONIC DISCHARGE MONITORING REPORT (ODMR) SUBMISSION	I SYSTEM
Per 40 CFR Part 127 National Pollutant Discharge Elimination System (NPDES) and monitoring shall be submitted by the permittee via an electronic system to en consistent set of data. One of the following must be checked in order for this visit http://dnr.mo.gov/env/wpp/edmr.htm to access the Facility Participation Pack	Electronic Reporting Rule, reporting of effluent limits sure timely, complete, accurate, and nationally application to be considered complete. Please age. documentation to participate in the eDMR system. he eDMR system and/or you are currently using the
eDMR system.	See instructions for further Information regarding
Walvers.	
11, FEG9 Remail feas may be paid by effecting a check, or called by and it card or official	Abuntuals the Lationary statement for the Lifet and stated
to access JetPay and make an online payment: https://magic.collectorsolutions.co	nrough the Jetray system. Use the UKL provided om/magic-ul/payments/mo-natural-resources/
12. CERTIFICATION	
I certify under penalty of law that this document and all attachments were prepare with a system designed to assure that qualified personnel properly gather and eve inquiry of the person or persons who manage the system, or those persons direct information submitted is, to the best of my knowledge and belief, true, accurate, a penalties for submitting false information, including the possibility of fine and impr	ed under my direction or supervision in accordance aluate the information submitted. Based on my ity responsible for gathering the information, the and complete. I am aware that there are significant risonment for knowing violations.
NAME AND OFFICIAL TITLE (TYPE OR HRINT) Stacy W. Hastie, Executive Chairman	TELEPHONE NUMBER WITH AREA CODE (314) 241-0900
AIG780.1474.02.95	Maran 30, 202

NPDES Operating Permit Renewal Application (Non-domestic)

Permit No. MO-0098752, Missouri Mining Investments, LLC Madison Mine, Fredericktown, MO

ATTACHMENTS

Attachment to Form A

Section 9.E	List of Construction Permits and Permit App	lications
CP 0002087 -	Tailings Process Water Settling Basin 1	Effective August 28, 2019
CP 0002202 -	Tailings Process Water Settling Basin 2 and Modification of Recycle Basin #1	Effective February 17, 2021

Attachments to Form C

- 1. Section 1.3 List of raw materials, final products, and waste materials
 - Raw Materials Excavated surface tailings from on-site historical mining operations, consisting of crushed rock, water, and soils. Excavated tailings are stored in tailings piles adjacent to the froth flotation (tailings processing) plant.
 - Final Products Dried tailings concentrate.
 - Waste Materials Re-processed tailings, gangue. These are returned to the on-site historical tailings areas.

2. Section 1.3 Description of Warehouse Property Operations

The Warehouse property is a 5.9 acre parcel of land located on E. Marvin Road, just north of the main entrance to the Madison Mine site. This parcel was formerly leased by MMI and is used for equipment and parts storage, small equipment maintenance inside the Shop building (mainly fabrication and pump re-builds), and mobile refueler parking when not in use. MOCO plans to add several buildings to this parcel, which will house the following activities: pilot test plant, QA/QC laboratory, office space, and additional warehouse space. In addition, MOCO plans to install a 500-gallon gasoline tank near the gated entrance off E. Marvin Road for vehicle fueling. Refer to Figure C-5, *Warehouse Property Map*.

There are no processes that generate wastewater on the Warehouse Property, and no point source discharges. Storm water runoff discharges via sheet flow to surrounding ditches, and due to the location of this property, the storm water discharge is not captured in either of the permitted/monitored discharge points (Outfalls 001 and 002). In lieu of adding a new outfall

to the site permit, MOCO requests that the following best management practices (BMPs) be utilized to minimize storm water impacts:

Fueling BMPs

- Fueling hoses with check valves used to prevent hose drainage after filling.
- Drip pans used where leaks or spills of fuel can occur.
- Spills and leaks cleaned up immediately using dry cleanup methods only.
- Monthly inspections conducted on fuel storage tanks as per the facility SPCC plan.
- Personnel training on fueling procedures; "topping off" of fuel tanks discouraged.
- Jersey barriers placed around fuel tanks/pumps to prevent collisions from vehicles.

Vehicle/Equipment Staging/Parking

- Drip pans placed under all vehicles and equipment waiting for maintenance.
- Staging/storage areas inspected regularly to check drip pans and catch any other problems.
- Only dry cleanup methods used.
- Employees trained on procedures for storage and inspection items.

Maintenance Activities in Shop

- There are no floor drains in the Shop.
- Any fluids drained prior to equipment/vessel disposal.
- Used fluids promptly transferred to the proper container; drip pans and containers emptied and cleaned on a regular basis.
- All significant materials stored under cover.

Storage of Obsolete Equipment

- Where possible, unused equipment disposed of properly or moved indoors.
- Outdoor storage confined to designated areas outside of drainage pathways and away from surface waters.
- All fluids drained prior to equipment storage.

3. Section 3.0 Sampling Data Timeframe – Maximum and Long Term Values

- Values for the following parameters were obtained from grab samples at each outfall, collected on January 25, 2021: conductivity, ammonia (as N), chemical oxygen demand, alkalinity, biological oxygen demand, total organic carbon, iron, magnesium, and manganese.
- Values for the remaining parameters were obtained from the January 25, 2021 sample results and from the facility monthly outfall monitoring results for January through December 2020 (as reported in the monthly facility eDMRs).

4. Section 4.1 BMPs - Storm Water Detention Basins

Currently storm water discharges through two existing detention basins prior to exiting the site at Outfalls 001 and 002: the D Tailings Lake (Outfall 001) and the Met Pond (Outfall 002). The Site is the subject of a CERCLA Consent Order (CERCLA-07-2018-0296) and is undergoing an Early Removal Action under the oversight of USEPA Region 7. As part of the Early Removal Action, the D Tailings Lake and Met Pond will be taken out of service and remediated, and replaced with new detention basins. These detention basins are currently under construction and are planned to be put into service within the year; therefore, the information on the new basins is provided in this permit application.











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

GENERAL INFORMATION (PLEASE SEE INSTRUCTIONS) 1.0 NAME OF FACILITY Madison Mine 1.1 THIS FACILITY IS OPERATING UNDER MISSOURI STATE OPERATING PERMIT (MSOP) NUMBER: MO-0098752 1.2 IS THIS A NEW FACILITY? PROVIDE CONSTRUCTION PERMIT (CP) NUMBER IF APPLICABLE. N/A 1.3 Describe the nature of the business, in detail. Identify the goods and services provided by the business. Include descriptions of all raw, intermediate, final products, byproducts, or waste products used in the production or manufacturing process, stored outdoors, loaded or transferred and any other pertinent information for potential sources of wastewater or stormwater discharges. Current facility operations consist of processing of historical on-site surface tailings using a froth flotation process. Tailings are excavated and transported to the processing plant via trucks. The froth flotation process equipment is located under cover inside the processing building. Froth flotation is used to separate the minerals from the gangue (unused material surrounding the metallic ore) and concentrate the minerals. The maximum design throughput of the plant is 300 tons/day. Concentrate from the froth flotation plant is shipped off-site for further processing building. Froth flotation processing building are day and 364 days per year. A hydrometallurgical processing plant is planned for construction adjacent to the froth flotation plant and will be to recover metals from the ore concentrate (cobalt, nickel, copper and other metals). It is anticipated that the hydromet plant will start operation by mid to late 2021. A parcel of land adjacent to E. Marvin Rd. was purchased in 2020 (Warehouse property). Diesel fuel and gasoline are used to fuel on-site vehicles and equipment, and are stored in two (2) aboveground storage tanks. There are no underground storage tanks (USTs) or buried piping at the Facility. Refer to Attachments sheet for listings of raw/waste materials, final products, and description of Warehouse property operations. FLOWS, TYPE, AND FREQUENCY 2.0 Attach a line drawing showing the water flow through the facility. Indicate sources of intake water, operations contributing w astewater to the effluent, and treatment units labeled to correspond to the more detailed descriptions in item B. Construct a wat er balance on the line drawing by showing average and maximum flows between intakes, operations, treatment units, evaporation, public sewers, and outfalls. If a water balance cannot by determined (e.g., for certain mining activities), provide a pl ctorial description of the nature and amount of any sources of water and any collection or treatment measures. See Figure C-1 2.1 For each outfall (1) below, provide: (2) a description of all operations contributing wastewater to the effluent, including process wastewater, sanitary wastewater, cooling water, stormwater runoff, and any other process or non-process wastewater, (3) the average flow and maximum flow (put max in parentheses) contributed by each operation and the sum of those operations, (4) the treatment received by the wastewater, and (5) the treatment type code. Continue on additional sheets if necessary. 3. AVERAGE FLOW AND 2. OPERATION(S) CONTRIBUTING FLOW: 5. TREATMENT CODES FROM TABLE A 1. OUTFALL INCLUDE ALL PROCESSES AND SUB PROCESSES AT EACH (MAXIMUM FLOW), INCLUDE UNITS. 4. TREATMENT DESCRIPTION NO. OUTFALL 001 Groundwater seenage and storm water D 500 /4 405 MOD Comilan **A** 11

001	crossiantition occpuge and sterni water	0.000 (1.400) MGD	Certinig	1-0
002	Groundwater seepage and storm water	0.153 (0.330) MGD	Settling	1-U
	Attach	additional pages if necessa	ary.	

	Yes (complete the	following table)		No (go to s	ection 2.3)				
			3. FRE	QUENCY		4.	FLOW		
	2 OPERATION(S) CON				A. FLOW RA	NTE (in mgd)	(specify w	ith units)	C. DURATIO
NUMBER			A. DAYS PER WEEK (apecily average)	B. MONTHS PER YEAR (specify average)	1. MAXIMUM DAILY	2. Long Term Average	4. LÔNG TERM DAILY	3. NAXIMUM Average	(in daya)
			_						
3 PRO	DUCTION		_				-l		
	Yes (complete C.) answered "yes" to B, d in the terms and ur (3) B. QUANTITY PER DAY	No.	o (go to seci representin applicable ef RE	tion 2.5) ng an actua fluent guide	l measureme allne and ind D. OPERATION	ent of your icate the a a, product, a	maximum lev ffected outfall: IATERIAL, ETC. (4	el of produc s. specify)	ction,
IMPRC A. An up aff or	DVEMENTS e you required by an grading, or operation fect the discharges d enforcement orders, a (complete the follow	y federal, state, n of wastewater escribed in this a enforcement co ving table)	or local auth treatment ec application? mpliance sc	nority to me quipment or This inclu chedule lett	et any imple r practices or des, but is n ers, stipulatio 2.6)	omentation r any other ot limited t ons, court	schedule for f environmenta o, permit cond orders, and gr	the construct al programs litions, adm rant or loan	ction, which may Inistrative conditions.
1. IDENTIF	ICATION OF CONDITION,	2. AFFECTED		1 RDIEE	DESCRIPTION OF	PROJECT		4. FINAL CO	NPLIANCE DATE
AG	REEMENT, ETC.	OUTFALLS		a, ptrict,		-nvesu i		A. REQUIRED	B. PROJECTE
	07-2018-0296	001 & 002	Madison C	ounty Mine	s Operable I	Unit 2 Ren	noval	Sept 2023	Sept 2023

2.5 SLUDGE MANAGEMENT

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

Tallings that settle in the two tallings ponds are/will be managed initially as processed historical tailings under the terms of the Early Removal Action by dredging and placing in the adjacent "D" historical tailings area. Once the "D" tailings area is capped (estimated capping date 4th quarter 2021), settled tailings will be allowed to accumulate in the tailings ponds until the pond minimum wastewater storage capacity is reached. At this point the ponds will be closed and capped as per the MMWM Closure Plan. The current tailings settling rate is estimated at 292 tons/day.

DATA COLLECTION AND REPORTING REQUIREMENTS FOR APPLICANTS

3.0 EFFLUENT (AND INTAKE) CHARACTERISTICS (SEE INSTRUCTIONS)

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

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

1. POLLUTANT	2. SOURCE	3. OUTFALL(S)	4. ANALYTICAL RESULTS (INCLUDE UNITS)
N/A			

3.1 Whole Effluent Toxicity Testing

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

Z Yes (go to 3.1 B)

No (go to 3.2)

3.1 B

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

Test duration: Acute, all tests. Test results below. Primary toxicant-nickel, secondary toxicant-copper (ERM Outfall 002 TIE, 2007) Outfall 001, 2019 & 2020. Organisms tested - Ceriodaphnia dubla & Pimephales promelas. Results: TUa < 1.0 for both each year. Outfall 002, 2019. Same organisms as 001. Results: Ceriodaphnia TUa = 3.23. Pimephales TUa <1.0 Outfall 002, 2020. Same organisms as 001. Results: Ceriodaphnia TUa = 1.41. Pimephales TUa <1.0

3.2 CONTRACT ANALYSIS INFORMATION

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

Z Yes (list the name, address, telephone number, and pollutants analyzed by each laboratory or firm.)

A. LAB NAME	B. ADDRESS	C. TELEPHONE (area code and number)	D. POLLUTANTS ANALYZED (list or group)
Teklab, Inc.	5445 Horseshoe Lake Rd, Collinsville, IL 62234	618-344-1004	Metals, sulfate, chloride, TSS, cyanide, pH
Pace Analytical Services, Inc.	9608 Loiret Blvd. Lenexa, KS 66219	913-559-5665	WET Testing, Outfalls 001 and 002

4.0 STORMWATER

4.1

Do you have industrial stormwater discharges from the site? If so, attach a site map outlining drainage areas served by each outfail. Indicate the following attributes within each drainage area: pavement or other impervious surfaces; buildings; outdoor storage areas; material loading and unloading areas; outdoor industrial activities; structural stormwater control measures; hazardous waste treatment, storage, and disposal units; and wells or springs in the area.

OUTPALL NUMBER	TOTAL AREA DRAINED (PROVIDE UNITS)	TYPES OF SURFACES (VEGETATED, STONE , PAVED, ETC)	SEST MANAGEMENT PRACTICES EMPLOYED; INCLUDE STRUCTURAL EMPS AND TREATMENT DESIGN FLOW FOR EMPS DESCRIBE HOW FLOW IS MEASURED
001	317 acres	Vegetated with gravel roads	Refer to Figures I-1, C-3 and C-4
002	505 acres	Mainly vegetated with	Refer to Figures I-1, C-2, C-3 and C-4
		gravel roads and impervious	Design flows were calculated using hydrology modeling software
		surfaces in processing plant	
		area (see attached Fig. C-1)	

4.2 STORMWATER FLOWS

Provide the date of sampling with the flows, and how the flows were estimated. Monthly flow estimation using Q=AV (Flow = channel cross-sectional area x flow velocity) with velocity measurement using the float method.

SIGNATORY REQUIREMENTS

5.0 CERTIFICATION

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

NAME AND OFFICIAL TITLE (TYPE OR PRINT)	TELEPHONE NUMBER WITH AREA CODE
Stacy W. Haste Executive Chairman	(314) 241-0900
SIGNATURE (SEE INSTRUCTIONS)	DATE SIGNED
1 h. that	March 30, 2021
' D'	

SEE INSTRUCTIONS; PLEASE PRINT OR TYPE. You may report some or all of this information on separate sheet (use similar format) instead of completing these pages.

FORM C TABLE 1 FOR 3.0 - ITEMS A AND B

EFFLUENT (AND INTAK	(E) CHAR	ACTER	STICS	THIS OUTF	ALL IS: Storm wa	ter and ground	water seepage d	ischarges		OUTFALL NO. 00	-
3.0 PART A - You must	provide th	stiusen er	of at least one a	malysis for even	y pollutant in Part /	A. Complete on	e table for each (xutfall or propose	d outfall. Se	e instructions.	
				0	2. VALUE					3. UNITS (sp	odiy fi biank)
1. POLLUTANT		A. MAXIMUR	I DALY VALUE	ä	INTER AND DO DAY VALUE	8	C. LONG TERM AV	ERAÇE VALUES	NO OF	A CONCEM	
	(I) CONCE	INTRATION	(Z) INVES	(I) CONCEN	TRATTON (2)	(1)	CONCENTRATION	(Z) MASS	VINTYSES	TRATTON	8. MA93
A. Biochemical Oxygen Demend, 5-day (BODs)	<10								-	mg/L	lb/day
B. Chemical Oxygen Demand (COD)	<50								-	тgЛ	lb/day
C. Total Organic Carbon (TOC)	4.3		30						-	mg/L	lb/day
D. Total Suspended Sofids (TSS)	100		473			15		71	13	mg/L	lb/day
E. Ammonia as N	0.84		3.9				-		F	mg/L	lb/day
F. Flow	VAUE 1	.465		ANLUE	-		E 0.5680		12	ME ONS OF GA	LIONS PER DAY
G. Temperature (winter)	VALUE			VALUE			E ambient				
H. Temperature (summer)	ANLUE			ANLUE		ALLU	e ambient			-	h
H H	MINIMUM 7.	43		MAXIMUM 8.(60	WE	AGE 7.74		13	STANDARD	(NS) SLINN
 B.O. PART B – Mark "X" in Column 2A for any pollut parameters not listed her 	n column lant, you n re in Part	2A for ea must prov 3.0 C.	ch pollutant you ide the results fo	know or have re or at least one ar	ason to believe is nalysis for the poll	present. Mark * utant. Complete	X" in column 2B one table for ea	for each pollutan ch outfall (intake)	t you belleve). Provide res	to be absent. ults for additio	lf you mark nal
	2. MAR	-X- X				3. VALUES			11.	4	8118
AND CAS NUMBER		æ	A. NAXMUM	DALYVALUE	B. MAXIMUM 3	0 DAY VALUES	C. LONG TERM	I AVERAGE VALUES		A COMPET	
(Favelede)	Processin	ABOENT	CONCENTRATION	NASS	CONCENTRATION	NASS	CONCENTRATION	ILASS	VIAL YES	TRATION	B. MASS
Subpart 1 – Conventions	al and Non	h-Conven	tional Pollutants								
A. Alkalinity (CaCOa)	×		NENNAUM 38	180	MINIMUM		MINIMUM		-	mg/L	ľb/day
B. Bromide (24959-67-9)		×						-			
C. Chloride (16867-00-6)	×		9	28			4.39	20.74	13	mg/L	lb/day
D. Chlorine, Total Residual		×									
E. Color		×									
F. Conductivity	×		1320						Ŧ	pmhos/cm	
F. Cyanida, Amenable to Chlorinstion		×									

MO 780-1514 (02-19) Paga 5 of 13

	2 MA	RK -X-				S. VALUES				4	E
AND CAS NUMBER		e		Y VALUE	B. MAXMUM	30 DAY VALUE	C. LONG TERM A	VERAGE VALUE		A CONCELL	
(a creation)	PRESERT	ABORT	CONCENTRATION	NASS	CONCERTRATION	RA38	CONCENTRATION	SSVI	MALYSES	TRATTON	B. WASS
Subpart 1 – Conventior	val and No	n-Conven	ntional Pollutants (Co	ntinued)							
G. E coll		×									
H. Fluoride (16384-48-8)		×									
I. Nitrate plue Nitrate (as N)		×									
J. Kjeldahi, Total (as N)		×									
K. Nitrogen, Total Organic (as N)		×									
L. Oil and Greese		×									
M. Phenols, Total		×									
N. Phosphorus (as P), Total (7723-14-0)		×									
O. Sulfate (as SO ⁴) (14808-79-8)	×		861 400	72			468	2216	13	mg/L	lb/day
P. Suilide (as S)		×									
Q. Sulfite (as SO ³) (14265-45-3)		×									
R. Surfactants		×									
S. Trihalomethanes, Total		×									
Subpart 2 – Metals											
1M. Aluminum, Total Recoverable (7429-90-5)		×									
2M. Antimony, Total Recoverable (7440-36-9)		×									
3M. Arsenic, Total Recoverable (7440-38-2)		×									
4M. Berium, Total Recoverabl (7440-39-3)		×									
5M. Berylium, Total Recoverable (7440-41-7)		×									
6M. Boron, Total Recoverable (7440-42-8)		×									
7M. Cadmium, Total Recoverable (7440-43-9)	×		<0.001				<0.001		13	mg/L	
8M. Chromium III Total Recoverable (16065-83-1)		×									
9M. Chromlum VI, Dissolved (18540-29-9)		×									
10M. Cobelt, Total Recoverable (7440-48-4)	×		0.226 1.0	69			0.0745	0.3523	13	mg/L	lb/day

MO 780-1514 (02-19) Page 6 of 13

	2 MA	-X- YR				3. VALUES				4	
1. POLLUTANT											
AND CAS MUMBER (if evaluable)	A BELEVED PREGENT	BILEVED ABOUT	A. MAXIMUM CONCENTRATION		B. BACKBURN		C. LONG TERM / CONCENTRATION	WERAGE VALUE	D. NO. OF ANALYBES	A. CONCEN- TRATION	B. MASS
Subpart 2 - Metals (Cor	(tinued)										
11M. Copper, Total Recoverable (7440-50-8)	×		0.0909	0.4299			0.0110	0.0521	13	mg/L	lb/day
12M. Iron, Total Recoverable (7439-89-8)	×		19.7	93					-	mg/L	lb/day
13M. Lead, Total Recoverable (7439-92-1)	×		0.13	0.6148			0.0142	0.0670	13	mg/L	lb/day
14M. Magnesium, Total Recoverable (7439-85-4)	×		47.3	223.7					-	mg/L	lb/day
15M. Mangareee, Total Recoverable (7439-88-5)	×		1.18	5.58					-	mg/L	lb/day
16M. Mercury, Total Recoverable (7439-97-6)		×									
(22967926) (22967926)		×									
18M. Motybdenum, Total Recoverable (7439-98-7)		×									
19M. Nickel, Total Recoverable (7440-02-0)	×		0.233	1.102			0.0718	0.3398	13	тgЛ	lb/day
20M. Selenium, Total Recoverable (7782-49-2)		×									
21M. Silver, Total Recoverable (7440-22-4)		×									
22M. Thaillum, Total Recoverable (7440-28-0)		×									
23M. Tin, Total Recoverable (7440-31-5)		×									
24M. Titanium, Total Recoverable (7440-32-6)		×);		
25M. Zinc, Total Recoverable (7440-66-6)	×		0.0476	0.2251			0.0170	0.0804	13	mg/L	lb/day
Subpart 3 - Radioactivit	>										
1R. Alpha Total		×									
2R. Beta Total		×									
3R. Redium Total		×									
4R. Radium 226 plus 228 Total		×									

SEE INSTRUCTIONS; PLEASE PRINT OR TYPE. You may report some or all of this information on separate sheet (use similar format) instead of completing these pages.

FORM C TABLE 1 FOR 3.0 - ITEMS A AND B

EFFLUENT (AND INTAK	(E) CHARACTE	RISTICS	THIS OUTF.	ALL IS: Storm	water and groun	d water seepage d	ischarges		OUTFALL NO. 0(2
3.0 PART A - You must	provide the resu	Its of at least on	a analysis for ever	y pollutant in P	art A. Complete o	one table for each c	outfall or propose	d outfall. See	e instructions.	
				2 VA	1056				3. LINUTS (9	ecfy if blank)
1. POLLUTANT	A. MAG	NUM DALY VALUE	đ	V AND NUMBER OF A	ALUES	C. LONG TERM AVI	ERAGE VALUES	5	-	
	(1) CONCENTRATIO	NASANI (S)	(1) CONCEN	ITRATION	SSVII (z)	(1) CONCENTRATION	SSVII (Z)	VINITARES	TRATION	B. MASS
A. Blochemical Oxygen Demand, 5-day (BODs)	<10							*	mg/L	
B. Chemical Oxygen Demand (COD)	<50							-	mg/L	
C. Total Organic Carbon (TOC)	1.8	2.3						-	mg/L	lb/day
D. Total Suspended Solids (TSS)	450	573			.4	2	54	13	mg/L	lb/day
E. Ammonia as N	2.63	3.30						-	mg/L	lb/day
F. How	VALUE 0.3296		VALUE		×.	LUE 0.1529		12	MILIONS OF G	ALLONS PER DAY
G. Temperature (winder)	VALUE		AALUE		*	ue ambient				
H. Temperature (summer)	VALUE		ANLUE		*	ure ambient			0	L
L pH	MNMUN 7.21		MANDHAUM 1C	0.5	A	ERAGE 7.85		13	STANDARD	(INITS (SU)
3.0 PART B – Mark "X" i Column 2A for any pollul parameters not listed hei	n column 2A for ant, you must pr re in Part 3.0 C.	each poliutant y ovide the results	ou know or have n for at least one a	eason to beliew nalysis for the p	e is present. Mari collutant. Comple	k "X" in column 2B te one table for each	for each pollutani ch outfall (intake)	t you believe . Provide res	to be absent. ults for addition	lf you mark Inal
	2. MARK "X"				3. VALLES				4.0	\$LIN
AND CAS NUMBER	A. BEL EVED	A. MAXIM	M DALY VALUE	B. MAXON	UNE 30 DAY VALUES	C. LONG TERM	AVERAGE VALUES		COMPSH	
(8008484)		CONCENTRATION	NA53	CONCENTRATIC	N MASS	CONCENTRATION	SSAM	ANALYSES	MOTIAT	B. KA\$6
Subpart 1 - Conventiona	I and Non-Conv	entional Pollutan	tts							
A. Alkelinity (CaCOs)	×	MINIMUM 131	167	Minimu		MNNUM		F	тgл	lb/day
B. Bromide (24959-67-9)	×		-							
C. Chloride (16887-00-6)	×	7.0	8.91			5.92	7.54	13	mg/L	lb/day
D. Chlorine, Total Residual	×									
E. Color										
F. Conductivity	×	1130						-	µmhos/cm	
F. Cyanide, Amenable to Chlorinetton	×									

MO 780-1514 (02-19) Page 5 of 13

	2	VRK "X"				3. VALUES				4	SLA
1. POLLUTANT AND CAS NUMBER		ei	A. MAXMUN DA	TYVILLE	B. MAXMAUM 3	BAYY VALUE	C. LONG TERM /	WERAGE VALUE	2	- Country	
(ACTENDATE N)	PRESET	ABOENT	CONCENTRATION	ILASS	CONCENTRATION	SSVI	CONCERTRATION	SVI	Sasy Links	TRATION	B. MASS
Subpart 1 - Conventior	al and Nc	n-Conver	ntional Pollutants (C	Continued)							
G. E. coli		×									
H. Fluoride (16984-48-8)		×									
I. Nituate plus Nitrate (as N)		×									
J. Kjełdahi, Total (as N)		×									
K. Nitrogen, Total Organic (as N)		×									
L Oil and Greese		×									
M. Phenols, Total		×									
N. Phosphorus (as P), Total (7723-14-0)		×									
O. Sulitata (as SO ⁴) (14808-79-8)	×		6 6//	92			669	891	13	mg/L	lb/day
P. Suffide (as S)		×									
Q. Sulfite (as SO ³) (14265-45-3)		×									
R. Surfactants		×									
S. Triftaicmethanes, Total		×									
Subpart 2 – Metals									•	-	
1M. Aluminum, Total Recoverable (7429-90-5)		×									
2M. Antimony, Total Recoverable (7440-36-9)		×									
3M. Arsenic, Total Recoverable (7440-38-2)		×									
4M. Barlum, Total Recoverabl (7440-39-3)	¢	×									
5M. Beryflum, Total Recoverable (7440-41-7)		×									
6M. Boron, Total Recoverable (7440-42-8)		×									
7M. Cadmkun, Tolal Recoverable (7440-43-9)	×		<0.001				<0.001		13	mg/L	
8M. Chromhum III Totel Recoverable (16065-83-1)		×									
9M. Chromium VI, Dissolved (18540-29-9)		×									
10M. Cobalt, Total Recoverable (7440-48-4)	×		1.82 2	32			1.52	1.94	13	mg/L	ľb/day

MO 780-1514 (02-19)

Page 6 of 13

	2 M	RK "X"				3. VALUES				4	NT'S
1. POLLUTANT AND CAS NUMBER		•		DALY VALUE	R. MAYBURN S		C. LONG TERM	AVERAGE VALUE			
(if available)	A BELEVED PRESENT	BELEVED	CONCENTRATION	INASS	CONCENTRATION	SQAM	CONCENTRATION	SUN	D. NO. OF ANALYSES	A. CONCEN- TRATION	B. MASS
Subpart 2 - Metals (Cor	tinued)										
11M. Copper, Total Recoverable (7440-50-8)	×		0.5102	0.6497			0.0772	0.0984	13	mg/L	lb/day
12M. iron, Total Recoverable (7439-89-6)	×		3.56	4.53					-	mg/L	lb/day
13M. Lead, Total Recoverable (7439-82-1)	×		0.0658	0.0838			0.0112	0.0142	13	mg/L	lb/day
14M. Magnesium, Total Recoverable (7439-85-4)	×		74.2	94.5					+	mg/L	lb/day
15M. Manganese, Total Recoverable (7439-86-5)	×		4.10	5.22					-	mg/L	lb/day
16M. Mercury, Total Recoverable (7439-97-6)		×									
17M. Methylmercury (22967926)		×									
18M. Molybdenum, Total Recoverable (7439-96-7)		×									
19M. Nickel, Total Recoverable (7440-02-0)	×		2.95	3.76			2.44	3.11	13	mg/L	lb/day
20M. Selenium, Total Recoverable (7782-49-2)		×									
211M. Silver, Total Recoverable (7440-22-4)		×									
22M. Theiltum, Total Recoverable (7440-28-0)		×									
23M. Tin, Total Recoverable (7440-31-5)		×									
24M. Titanium, Total Recoverable (7440-32-6)		×									
25M. Zinc, Total Recoverable (7440-86-8)	×		0.1168	0.1487			0.0798	0.1016	13	mg/L	Ib/day
Subpart 3 - Radioactivit	×							(th			
1R. Alpha Total		×									
2R. Beta Total		×									
3R. Redium Total		×									
4R. Radium 226 pius 228 Total		×									

MO 780-1514 (02-19) Page 7 of 13

Form C - Section 2.0 Figure C-1 - LINE DRAWING



Application for Nondomestic NPDES Operating Permit Permit Renewal – Permit No. MO-0098752 Madison Mine, Fredericktown, MO







Warehouse Property

Illustration based on Google Earth Imageny dated 11.9.2015. This figure should only be used for general illustrative purposes and should not be used for any other purpose beyond the context of the report/letter.





North



MISSOURI DEPARTMENT OF NATURAL RESOURCES WATER PROTECTION PROGRAM FORM I -- PERMIT APPLICATION FOR OPERATION OF WASTEWATER IRRIGATION SYSTEMS

FOR AGENCY USE ONLY PERMIT NUMBER MO -DATE RECEIVED

INSTRUCTIONS: The following forms must be submitted with	Form I: FORM B or B2 for domestic wastewater. FORM A for industrial wastewater.
1. FACILITY INFORMATION	
1.1 Facility Name Madison Mine	1.2 Permit Number MO- 0098752
 1.3 Type of wastewater to be irrigated: Domestic Municipal with Pretreatment Program or Significant Indust SIC Codes (list all that apply, in order of importance) 1031,10 	Municipal State/National Park Seasonal business rial Users Other (explain) Mining WW
1.4 Months when the business or enterprise will operate or gene Image: Image	rate wastewater:
 1.5 This system is designed for: I No-discharge Partial irrigation when feasible and one of the system of the	lischarge rest of time. Iischarge during November – March.
1.6 List the Facility outfalls which will be applicable to the irrigation Outfall Numbers: 001,002	n system.
2. STORAGE BASINS	
2.1 Number of storage basins: 2 Type of basin: Steel Concrete Earthen with membrane liner	Fiberglass Z Earthen
3. LAND APPLICATION SYSTEM	
3.1 Number of irrigation sites 6 Total Acres Location: ½, ½, ½,	200 7E Madison County200Acres
Location: <u> </u>	CountyAcres
3.2 Attach a site map showing topography, storage basins, irrigat other pertinent features. See Figure I-1	tion sites, property boundary, streams, wells, roads, dwellings, and
3.3 Type of vegetation: Grass hay Pasture	Timber Row crops I Other (describe) Grass cap
3.4 Wastewater flow (dry weather) gallons/day: Average annual: Varies Seasonal	Off-season
780-1886 (08-14)	

3. LAND APPLICATIO	N SYSTEM (continu	ed)			
3.5 Land Application	rate per acre (design	flow including 1 in 10 ye	ar stormwater flows):	
Design:	inches/year	Inches/hour	inches/d	ay	inches/week
Actual:	Inches/year	inches/hour	inches/d	ay <u>3.0</u>	inches/week
Total Irrigation pe	ər year (gallons):	Design	Actu	al	
Actual months us	ed for Irrigation (chec 2 Mar 2 Apr 2	k all that apply): 2 May 🛛 Jun 🖉 Jul	🛛 Aug 🔽 Sep	🗹 Oct 🔽 Nov	Dec
3.6 Land Application Dutrient Man Vutrient Man Vutrient Man Voter (descrive)	Rate is based on: agement Plan (N&P) ading be)				2
3.7 Equipment type: Equipment Flow	Sprinklers Capacity: C	Gated pipe 🛛 Cent	er pivot	ng gun 🔲 Other peration per year	r (describe)
 3.8 Public Use Area of Public Access Site is Fenced Other (description distant) 3.9 Separation distant) 	a. Public access sha Restriction: I Wast be): Ce (in feet) from the c	Il not be allowed to publi water disinfection prior	c use area irrigation	sites when applic Site is not for public nearby down grad	eation is occurring. Method lic use
900 Property bo	flowing stream undary Dwe	Losing Stream 'lings Water su	Intermittent (wi oply well Oi	et weather) strean ther (describe)	n Lake or pond
3.10 The facility must Date of O&M Pla	develop and retain an n: 04/01/2021	Operation and Mainten	ance (O&M) Plan fo	r the irrig ation sys	təm.
4. CERTIFICATION					
I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attachments and that based on my inquiry of those individuals immediately responsible for obtaining this information, I believe that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine or imprisonment.					
OWNER OR AUTHORIZED REPR	ESENTATIVE		OFFICIAL TITLE		
Stacy W. Hastie			Executive Cha	airman	
EMAIL ADDRESS	@ mocopall	. Com	(314) 241-090	BER WITH AREA CODE	
SIGNATURE 780-1686 (08-14)	2.7	N		DATE SIGNED	130,2021
V					



Note:

Illustration based on Google Earth Imagery dated 11.9.2015. This figure should only be used for general Illustrative purposes and should not be used for any other purpose beyond the context of the report/letter.

Legend



Figure I-1 Site Map

Former Madison Mine Fredricktown, Missouri