

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES
MISSOURI CLEAN WATER COMMISSION



CONSTRUCTION PERMIT

The Missouri Department of Natural Resources hereby issues a permit to:

Mr. Marty Thomas
Vice President of Operations
Missouri Cobalt
1530 South Second Street
St. Louis, MO 63104

for the construction of (described facilities):

See attached.

Permit Conditions:

See attached.

Construction of such proposed facilities shall be in accordance with the provisions of the Missouri Clean Water Law, Chapter 644, RSMo, and regulation promulgated thereunder, or this permit may be revoked by the Department of Natural Resources (Department).

As the Department does not examine structural features of design or the efficiency of mechanical equipment, the issuance of this permit does not include approval of these features.

A representative of the Department may inspect the work covered by this permit during construction. Issuance of a permit to operate by the Department will be contingent on the work substantially adhering to the approved plans and specifications.

This permit applies only to the construction of water pollution control components; it does not apply to other environmentally regulated areas.

August 28, 2019
Effective Date

Edward B. Galbraith
Edward B. Galbraith, Director, Division of Environmental Quality

August 27, 2021
Expiration Date

Chris Wieberg
Chris Wieberg, Director, Water Protection Program

CONSTRUCTION PERMIT

I. CONSTRUCTION DESCRIPTION

The facility proposed to construct an earthen basin to recycle process wastewater from a small scale (100 tons/day) tailings processing plant for re-use water in the plant. The basin will be built to enable solids settling as part of this recycling process.

This project will also include general site work appropriate to the scope and purpose of the project and all necessary appurtenances to make a complete and usable wastewater treatment facility.

II. COST ANALYSIS FOR COMPLIANCE

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

The Department is not required to complete a cost analysis for compliance because the facility is not a combined or separate sanitary sewer system for a publically-owned treatment works.

III. CONSTRUCTION PERMIT CONDITIONS

The permittee is authorized to construct subject to the following conditions:

1. This construction permit does not authorize discharge.
2. All construction shall be consistent with plans and specifications signed and sealed by the Environmental Operations, Inc. and as described in this permit.
3. The Department must be contacted in writing prior to making any changes to the plans and specifications that would directly or indirectly have an impact on the capacity, flow, system layout, or reliability of the proposed wastewater treatment facilities or any design parameter that is addressed by 10 CSR 20-8, in accordance with 10 CSR 20-8.110(11).
4. State and federal law does not permit bypassing of raw wastewater, therefore steps must be taken to ensure that raw wastewater does not discharge during construction. If a sanitary sewer overflow or bypass occurs, report the appropriate information to the Department’s Southeast Regional Office per 10 CSR 20-7.015(9)(G).

5. The wastewater treatment facility shall be located at least fifty feet (50') from any dwelling or establishment. Lagoons-200 ft to residence and 50 ft to property line, Open RMFs- 200 ft to residence, Other discharging-50 ft to residence per 10 CSR 20-8.140(C)(2)
6. The wastewater treatment facility shall be located above the twenty-five (25)-year flood level.
7. The wastewater facility structures, electrical equipment, and mechanical equipment shall be protected from physical damage by not less than the one hundred- (100-) year flood elevation per 10 CSR 20-8.140(2)(B). The minimum distance between wastewater treatment facilities and all potable water sources shall be at least three hundred feet (300') per 10 CSR 20-8.140(2)(C)1.
8. In addition to the requirements for a construction permit, 10 CSR 20-6.200 requires land disturbance activities of 1 acre or more to obtain a Missouri state operating permit to discharge stormwater. The permit requires best management practices sufficient to control runoff and sedimentation to protect waters of the state. Land disturbance permits will only be obtained by means of the Department's ePermitting system available online at dnr.mo.gov/env/wpp/epermit/help.htm. See dnr.mo.gov/env/wpp/stormwater/sw-land-disturb-permits.htm for more information.
9. A United States (U.S.) Army Corps of Engineers (COE) permit (404) and a Water Quality Certification (401) issued by the Department or permit waiver may be required for the activities described in this permit. This permit is not valid until these requirements are satisfied. If construction activity will disturb any land below the ordinary high water mark of jurisdictional waters of the U.S. then a 404/401 will be required. Since the COE makes determinations on what is jurisdictional, you must contact the COE to determine permitting requirements. You may call the Department's Water Protection Program at 573-751-1300 for more information. See dnr.mo.gov/env/wpp/401/ for more information.
10. All construction must adhere to applicable 10 CSR 20-8 (Chapter 8) requirements listed below.
 - Flood protection shall apply to new construction and to existing facilities undergoing major modification. The wastewater facility structures, electrical equipment, and mechanical equipment shall be protected from physical damage by not less than the one hundred- (100-) year flood elevation. 10 CSR 20-8.140 (2) (B)
 - Unless another distance is determined by the Missouri Geological Survey or by the department's Public Drinking Water Branch, the minimum distance between wastewater treatment facilities and all potable water sources shall be at least three hundred feet (300'). 10 CSR 20-8.140 (2) (C) 1.
 - No treatment unit with a capacity of twenty-two thousand five hundred gallons per day (22,500 gpd) or less shall be located closer than the minimum distance of 200' to a neighboring residence and 50' to property line for lagoons. See 10 CSR 20-2.010(68) for the definition of a residence. 10 CSR 20-8.140 (2) (C) 2

- Facilities shall be readily accessible by authorized personnel from a public right-of-way at all times. 10 CSR 20-8.140 (2) (D)
- The minimum berm width shall be eight feet (8') to permit access of maintenance vehicles. 10 CSR 20-8.200 (4) (A) 2.
- Minimum freeboard shall be two feet (2'). 10 CSR 20-8.200 (4) (A) 3.
- An emergency spillway shall be provided. 10 CSR 20-8.200 (4) (A) 4.
- An emergency spillway must have the ability for a representative sample to be collected if a discharge occurs. 10 CSR 20-8.200 (4) (A) 4. C.
- The lagoon shall be sealed to ensure that seepage loss is as low as possible and has a design permeability not exceeding 1.0×10^{-7} cm/sec. 10 CSR 20-200(4)(C)1.
- The minimum thickness of the compacted clay liner must be twelve inches (12"). 10 CSR 20-200(4)(C)2.
- Unlined corrugated metal pipe shall not be used for influent lines due to corrosion problems. 10 CSR 20-8.200 (4) (D) 1.
- A manhole shall be installed with its invert at least six inches (6") above the maximum operating level of the lagoon, prior to the entrance into the primary cell, and provide sufficient hydraulic head without surcharging the manhole. 10 CSR 20-8.200 (4) (D) 2.
- The influent line(s) shall be located along the bottom of the lagoon so that the top of the pipe is just below the average elevation of the lagoon seal; however, there shall be an adequate seal below the pipe. 10 CSR 20-8.200 (4) (D) 3.

11. Upon completion of construction:

- A. The Missouri Cobalt will become the continuing authority for operation and maintenance of these facilities;
- B. Submit an electronic copy of the as built if the project was not constructed in accordance with previously submitted plans and specifications; and
- C. Submit the enclosed form Statement of Work Completed to the Department in accordance with 10 CSR 20-6.010(5)(N) and request the draft operating permit public noticed between July 26 to August 25, 2019 to be issued.

IV. REVIEW SUMMARY

1. CONSTRUCTION PURPOSE

The Madison Mine property is an inactive mine located near Fredericktown and is the subject of an Administrative Settlement Agreement and Order on Consent for Removal Actions under the oversight of EPA Region 7. A small scale (100 tons/day) tailings processing plant is proposed to reclaim metals from these tailings areas. Process wastewater will be recycled for re-use in the plant. A recycling basin is needed to enable solids settling out of the wastewater as part of the recycling process.

2. FACILITY DESCRIPTION

This is an industrial mining facility, SIC # 1031 & 1629; Inactive metals mine site, formerly engaged in lead and cobalt mining. This site only authorizes stormwater runoff from the inactive site, seep discharges, and land application of pumped groundwater to old tailings areas. This site doesn't authorize discharge of wastewater from ongoing mining activities, mine dewatering, milling, refining, wastewater from reprocessing of mine tailing, or discharge from land application areas.

The Former Madison Mine WWTF is located at 1050 County Road 263, Fredericktown City, in Madison County, Missouri. The facility has a design average flow of 132,480 gpd.

3. COMPLIANCE PARAMETERS

Small scale (100 tons/day) tailings processing plant to reclaim metals from tailings areas. Process wastewater will be recycled for re-use in the plant. Processing wastewater will consist of the tailings slurry and will contain low levels of metals and residual chemicals from the froth floating process. These chemicals decompose quickly in sunlight and are expected to dissipate in the recycling basin. The pH of wastewater within the basin is expected to be in the range of 7.0 – 7.5. Treatment of the proposed construction: settling, land applied, no discharge.

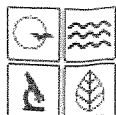
4. REVIEW of MAJOR TREATMENT DESIGN CRITERIA

The recycling lagoon will be constructed and sealed with the clay rich soils at the basin site. The basin will have 3:1 sloping walls. The basin will be constructed of earth with a clay liner compacted with a moisture content between 2% below and 4% above the optimum water content and compacted to at least 95% maximum dry density. The liner will be a minimum of 12-inches thick. Permeability of the liner material is 9.9×10^{-9} cm/sec. The depth from the top of the berms to the lagoon floor will be 10 ft, 2 ft will serve as sludge and clay liner depth, and 2 ft of freeboard plus 1 feet above emergency spillway provides an operating depth of 6 ft. The basin is non-aerated and has a surface area of 1.23 acres and a wastewater volume of 2,170,894 gallons. This provides approximately 16.3 days at the 1 in 10-year rainfall minus evaporation for the proposed storage period. The berm width will be 15 ft.

5. OPERATING PERMIT

Operating permit MO-0098752 will require a modification to reflect the construction activities. The modified draft operating permit of the Former Madison Mine WWTF, MO-0098752, was successfully public noticed from July 26, 2019 to August 25, 2019 with no comments received. Submit the Statement of Work Completed to the Department in accordance with 10 CSR 20-6.010(5)(N) and request the operating permit modification to be issued.

Lei Hou, PE
Engineering Section
lei.hou@dnr.mo.gov



MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER PROTECTION PROGRAM

APPLICATION FOR CONSTRUCTION PERMIT
WASTEWATER TREATMENT FACILITY

RECEIVED

JUN 21 2019

Water Protection Program

FOR DEPARTMENT USE ONLY

APP NO.

1837871

CP NO.

CP0002087

LEE RECEIVED

\$1000.00

CHECK NO.

20000815

DATE RECEIVED

6-21-19

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APPLICATION OVERVIEW

The Application for Construction Permit – Wastewater Treatment Facility form has been developed in a modular format and consists of Part A and B. **All applicants must complete Part A.** Part B should be completed for applicants who currently land-apply wastewater or propose land application for wastewater treatment. **Please read the accompanying instructions before completing this form. Submittal of an incomplete application may result in the application being returned.**

PART A – BASIC INFORMATION

1.0 APPLICATION INFORMATION (Note – If any of the questions in this section are answered NO, this application may be considered incomplete and returned.)

- 1.1 Is this a Federal/State funded project? ☐ YES ☒ N/A Funding Agency: _____ Project #: _____
- 1.2 Has the Missouri Department of Natural Resources approved the proposed project's antidegradation review?
☐ YES Date of Approval: _____ ☒ N/A
- 1.3 Has the department approved the proposed project's facility plan*?
☒ YES Date of Approval: 6/17/19 ☐ NO (If No, complete No. 1.4.)
- 1.4 [Complete only if answered No on No. 1.3.] Is a copy of the facility plan* for wastewater treatment facilities included with this application?
☐ YES ☐ NO ☐ Exempt because _____
- 1.5 Is a copy of the appropriate plans* and specifications* included with this application?
☒ YES Denote which form is submitted: ☒ Hard copy ☒ Electronic copy (See instructions.) ☐ NO
- 1.6 Is a summary of design* included with this application? ☒ YES ☐ NO
- 1.7 Has the appropriate operating permit application (A, B, or B2) been submitted to the department?
☒ YES Date of submittal: 5/22/19
☐ Enclosed is the appropriate operating permit application and fee submittal. Denote which form: ☐ A ☐ B ☐ B2
☐ N/A: However, In the event the department believes that my operating permit requires revision to permit limitation such as changing equivalent to secondary limits to secondary limits or adding total residual chlorine limits, please share a draft copy prior to public notice? ☐ YES ☐ NO
- 1.8 Is the facility currently under enforcement with the department or the Environmental Protection Agency? ☐ YES ☒ NO
- 1.9 Is the appropriate fee or JetPay confirmation included with this application? ☒ YES ☐ NO
See Section 7.0

* Must be affixed with a Missouri registered professional engineer's seal, signature and date.

2.0 PROJECT INFORMATION

2.1 NAME OF PROJECT

Missouri Cobalt Tailings Processing Plant Recycle Basin

2.2 ESTIMATED PROJECT CONSTRUCTION COST

\$ 35,000

2.3 PROJECT DESCRIPTION

A tailings process water discharge settling/recycle basin will be used to remove solids from the tailings discharge stream prior to recycle back to the processing plant for re-use.

2.4 SLUDGE HANDLING, USE AND DISPOSAL DESCRIPTION

Solids in the tailings stream will readily drop out of solution and accumulate on the influent side of the basin. The sludge layer will be allowed to build up until one foot freeboard remains, at which point the pond will be closed and capped as part of the site remediation.

2.5 DESIGN INFORMATION

A. Current population: N/A; Design population: N/A


B. Actual Flow: _____ gpd; Design Average Flow: 0.1M gpd;

Actual Peak Daily Flow: _____ gpd; Design Maximum Daily Flow: 0.1 M gpd; Design Wet Weather Event: _____

2.6 ADDITIONAL INFORMATION

A. Is a topographic map attached? ☒ YES ☐ NO

B. Is a process flow diagram attached? ☒ YES ☐ NO

3.0 WASTEWATER TREATMENT FACILITY				
NAME N/A - this is a no-discharge facility.		TELEPHONE NUMBER WITH AREA CODE		E-MAIL ADDRESS
ADDRESS (PHYSICAL)	CITY	STATE	ZIP CODE	COUNTY
Wastewater Treatment Facility: Mo- (Outfall Of)				
3.1 Legal Description: _____ 1/4, _____ 1/4, _____ 1/4, Sec. _____, T _____, R _____ (Use additional pages if construction of more than one outfall is proposed.)				
3.2 UTM Coordinates Easting (X): _____ Northing (Y): _____ For Universal Transverse Mercator (UTM), Zone 15 North referenced to North American Datum 1983 (NAD83)				
3.3 Name of receiving streams: <u>N/A</u> - No discharge system				
4.0 PROJECT OWNER				
NAME Missouri Cobalt		TELEPHONE NUMBER WITH AREA CODE 314-413-3647		E-MAIL ADDRESS mthomas@mocobalt.com
ADDRESS 1530 South Second Street	CITY St. Louis	STATE MO	ZIP CODE 63104	
5.0 CONTINUING AUTHORITY: A continuing authority is a company, business, entity or person(s) that will be operating the facility and/or ensuring compliance with the permit requirements.				
NAME Missouri Cobalt		TELEPHONE NUMBER WITH AREA CODE 314-413-3647		E-MAIL ADDRESS mthomas@mocobalt.com
ADDRESS 1530 South Second Street	CITY St. Louis	STATE MO	ZIP CODE 63104	
5.1 A letter from the continuing authority, if different than the owner, is included with this application. <input type="checkbox"/> YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> N/A				
5.2 COMPLETE THE FOLLOWING IF THE CONTINUING AUTHORITY IS A MISSOURI PUBLIC SERVICE COMMISSION REGULATED ENTITY.				
A. Is a copy of the certificate of convenience and necessity included with this application? <input type="checkbox"/> YES <input type="checkbox"/> NO				
5.3 COMPLETE THE FOLLOWING IF THE CONTINUING AUTHORITY IS A PROPERTY OWNERS ASSOCIATION.				
A. Is a copy of the as-filed restrictions and covenants included with this application? <input type="checkbox"/> YES <input type="checkbox"/> NO				
B. Is a copy of the as-filed warranty deed, quitclaim deed or other legal instrument which transfers ownership of the land for the wastewater treatment facility to the association included with this application? <input type="checkbox"/> YES <input type="checkbox"/> NO				
C. Is a copy of the as-filed legal instrument (typically the plat) that provides the association with valid easements for all sewers included with this application? <input type="checkbox"/> YES <input type="checkbox"/> NO				
D. Is a copy of the Missouri Secretary of State's nonprofit corporation certificate included with this application? <input type="checkbox"/> YES <input type="checkbox"/> NO				
6.0 ENGINEER				
ENGINEER NAME / COMPANY NAME Mary M. Juan/Environmental Operations, Inc.		TELEPHONE NUMBER WITH AREA CODE 314-480-4601		E-MAIL ADDRESS maryj@environmentalops.com
ADDRESS 1530 South Second Street	CITY St. Louis	STATE MO	ZIP CODE 63104	
7.0 APPLICATION FEE				
<input type="checkbox"/> CHECK NUMBER <input checked="" type="checkbox"/> JETPAY CONFIRMATION NUMBER 20009815				
8.0 PROJECT OWNER: 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.				
PROJECT OWNER SIGNATURE 				
PRINTED NAME Marty Thomas			DATE 6-18-2019	
TITLE OR CORPORATE POSITION Vice President of Operations		TELEPHONE NUMBER WITH AREA CODE 314-413-3647		E-MAIL ADDRESS mthomas@mocobalt.com
Mail completed copy to: MISSOURI DEPARTMENT OF NATURAL RESOURCES WATER PROTECTION PROGRAM P.O. BOX 176 JEFFERSON CITY, MO 65102-0176				
END OF PART A.				
REFER TO THE APPLICATION OVERVIEW TO DETERMINE WHETHER PART B NEEDS TO BE COMPLETE.				

PART B – LAND APPLICATION ONLY

(Submit only if the proposed construction project includes land application of wastewater.)

8.0 FACILITY INFORMATION

8.1 Type of wastewater to be irrigated: ☐ Domestic ☐ State/National Park ☐ Seasonal business
☐ Municipal ☐ Municipal with a pretreatment program or significant industrial users
☒ Other (explain) Excess water from process water recycling basin generated from precipitation.

8.2 Months when the business or enterprise will operate or generate wastewater:

☒ 12 months per year ☐ Part of the year (list months): _____

8.3 This system is designed for:

☒ No-discharge.
☐ Partial irrigation when feasible and discharge rest of time.
☐ Irrigation during recreational season, April – October, and discharge during November – March.
☐ Other (explain) _____.

9.0 STORAGE BASINS

9.1 Number of storage basins: 1 (Use additional pages if greater than three basins.)

9.2 Type of basins: ☐ Steel ☐ Concrete ☐ Fiberglass ☒ Earthen ☐ Earthen with membrane liner

9.3 Storage basin dimensions at inside top of berm (feet). Report freeboard as feet from top of berm to emergency spillway or overflow pipe.

Basin #1: Length <u>295</u>	Width <u>275</u>	Depth <u>10</u>	Freeboard <u>1</u>	Depth <u>1</u>	Safety <u>1</u>	% Slope <u>50</u>
Basin #2: Length _____	Width _____	Depth _____	Freeboard _____	Depth _____	Safety _____	% Slope _____
Basin #3: Length _____	Width _____	Depth _____	Freeboard _____	Depth _____	Safety _____	% Slope _____

9.4 Storage Basin operating levels (report as feet below emergency overflow level).

Basin #1: Maximum operating water level <u>8</u> ft	Minimum operating water level <u>2</u> ft
Basin #2: Maximum operating water level _____ ft	Minimum operating water level _____ ft
Basin #3: Maximum operating water level _____ ft	Minimum operating water level _____ ft

9.5 Design depth of sludge in storage basins.

Basin #1: 8 ft Basin #2: _____ ft Basin #3: _____ ft

9.6 Existing sludge depth, if the basins are currently in operation.

Basin #1: N/A ft Basin #2: _____ ft Basin #3: _____ ft

9.7 Total design sludge storage: _____ dry tons and 13,838 cubic feet

10.0 LAND APPLICATION SYSTEM

10.1 Number of irrigation sites Several Total Acres 100 Maximum % field slopes _____
Location: _____ ¼, _____ ¼, _____ ¼, _____ Sec. _____ T _____ R _____ County _____ Acres
Location: _____ ¼, _____ ¼, _____ ¼, _____ Sec. _____ T _____ R _____ County _____ Acres
Location: _____ ¼, _____ ¼, _____ ¼, _____ Sec. _____ T _____ R _____ County _____ Acres
(Use additional pages if greater than three irrigation sites.)

10.2 Type of vegetation: ☐ Grass hay ☐ Pasture ☐ Timber ☐ Row crops

☒ Other (describe) Grass

10.3 Wastewater flow (dry weather) gallons per day: Average annual _____ Seasonal _____ Off-season _____

10.4 Land application rate (design flow including 1-in-10 year storm water flows):

Design: <u>0.75</u> inches/year	_____ inches/hour	_____ inches/day	<u>0.08</u> inches/week
Actual: <u>0.5</u> inches/year	_____ inches/hour	_____ inches/day	<u>0.016</u> inches/week

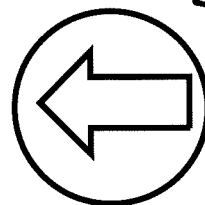
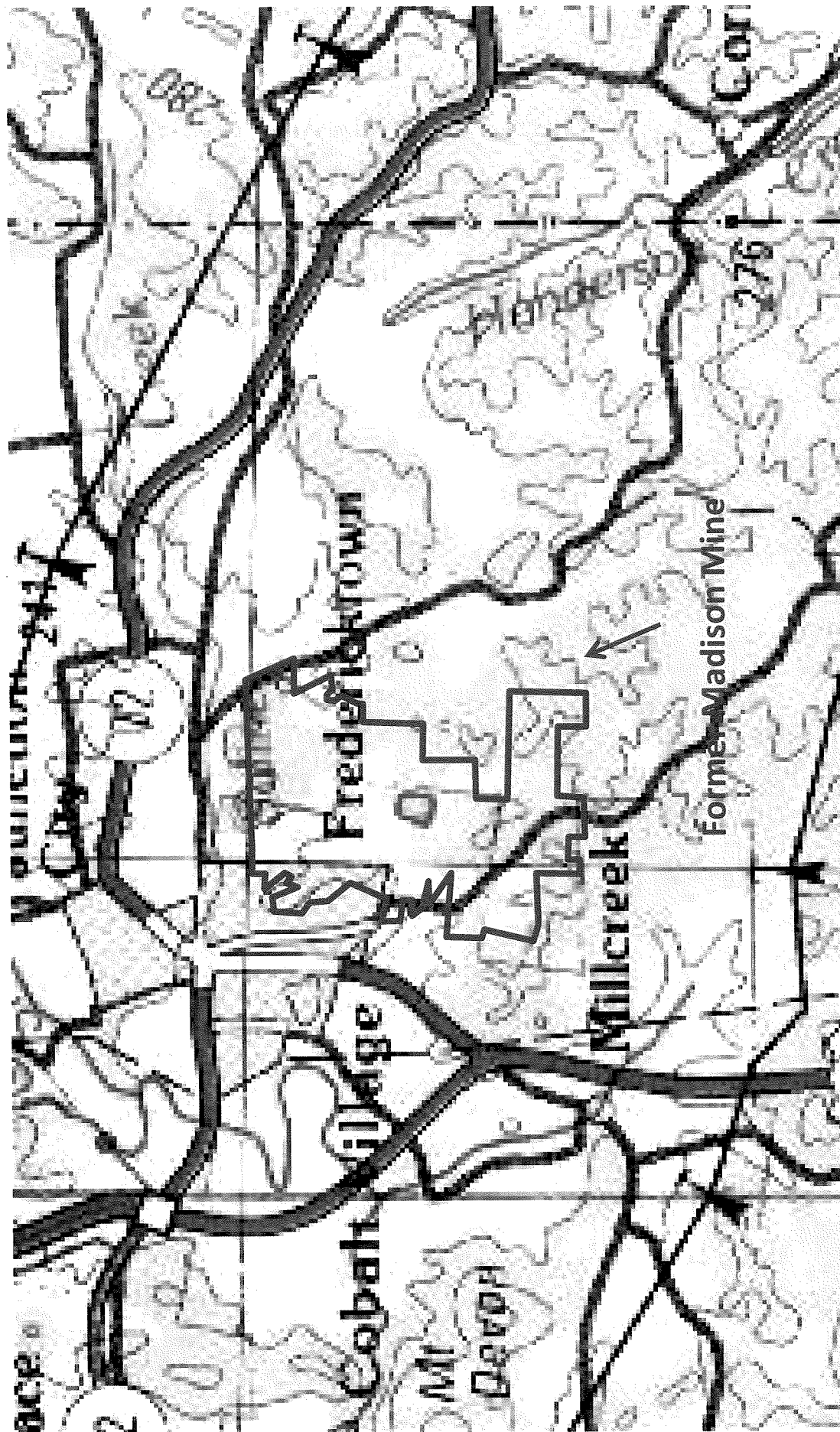
10.5 Total irrigation per year (gallons): Design: 1,360,000 gal Actual: 2,040,000 gal

10.6 Actual months used for irrigation (check all that apply):

☐ Jan ☒ Feb ☐ Mar ☐ Apr ☒ May ☒ Jun ☒ Jul ☒ Aug ☒ Sep ☒ Oct ☒ Nov ☐ Dec

10.7 Land application rate is based on:

☒ Hydraulic Loading ☐ Other (describe) _____
☐ Nutrient Management Plan (N&P) If N&P is selected, is the plan included? ☐ YES ☐ NO



North

USGS 7.5-Minute Topographic Quadrangle Map
Rolla, MO, 1990
Contour Interval: 100 Feet

Facility Topographic Map

Missouri Cobalt
Former Madison Mine
Fredericktown, Missouri