

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
COLORADO RIVER BASIN REGION**

ORDER NO. 88-41

**WASTE DISCHARGE REQUIREMENTS  
FOR  
CADIZ VALLEY PILOT OPERATION  
LACO MINING AND ENGINEERING  
East of 29 Palms - San Bernardino County**

The California Regional Water Quality Control Board, Colorado River Basin Region, finds that:

1. Laco Mining and Engineering (hereinafter also referred to as the discharger), P.O. Box 72, North Salt Lake City, Utah, 84054, submitted a Report of Waste Discharge, dated July 13, 1987, for the proposed heap leach operation.
2. The discharger proposes to operate a gold-silver recovery facility designed to process a maximum of 10,000 tons of ore within a one-year period. The operation site is to be located in the SE $\frac{1}{4}$  of Section 35, T1N, R15E, SBB&M.
3. The discharger proposes to process and treat the ore in two 48' x 40' underground reinforced concrete reservoirs, to enclose the ore processing facility within a building, and to underline the facility with a synthetic liner.
4. Ore processing would be by batch, and at 100 tons per batch, would involve agglomeration with lime and cement, placement in concrete reservoirs, and leaching with dilute sodium cyanide solution. The ore would be processed in one reservoir at a time. The pregnant solution would be pumped to a carbon tower circuit to recover the gold and silver. The barren solution from the recovery circuit would be pumped onto fresh ore contained in the standby reservoir. Upon completion of leaching in each batch, the processed ore would be rinsed with fresh water and saturated with a chlorine solution to reduce the cyanide concentration to an acceptable level.
5. The Water Quality Control Plan for the Colorado River Basin Region of California was adopted by the Regional Board on November 14, 1984. The Basin Plan delineates the location of the discharge to be in the Cadiz Hydrologic Unit.
6. The beneficial uses of the ground water of the Cadiz Hydrologic Unit are:
  - a. Municipal supply
  - b. Industrial supply
7. According to drilling data on site, the depth to ground water is in excess of 200 feet. The supply water used for the processing and treatment of ore would be hauled by truck from a nearby ranch, a distance of 18 miles.

*Recorded  
11/29/89*

8. The Board has notified the discharger and interested agencies and persons of its intent to prescribe waste discharge requirements for the proposed mining operation.
9. The Board in a public meeting heard and considered all comments pertaining to the proposed mining operation.
10. The Regional Board approved on March 23, 1988, a Mitigative Negative Declaration, SCH# 87080313, for this proposed mining operation in accordance with the California Environmental Quality Act and State Guidelines. The below waste discharge requirements are designed to assure against any significant adverse effects on water quality.

IT IS HEREBY ORDERED, that the discharger shall comply with the following:

A. Discharge Specifications

1. Neither the mining process nor the discharge of wastewater or other wastes shall create a pollution or a nuisance as defined in Division 7 of the California Water Code.
2. The cyanide solution shall be contained only in the processing and treatment system or in leakproof containers.
3. There shall be no wind transport of cyanide solution or ore containing cyanide solution away from the treatment and processing system.
4. The concrete reservoirs shall be adequately sealed prior to initial loading of ore, and shall be resealed as necessary prior to every subsequent loading.
5. The ore processing facility shall be underlain with a synthetic liner of at least 40-mil thickness to contain any spillage or leakage of process solution. Exposed portions of the synthetic liner shall be made of reinforced, weather-resistant material of at least 36-mil thickness. The synthetic liner shall be equipped with a leachate collection and removal system. In lieu of the synthetic liner and leachate collection and removal system, the discharger may install a leakage detection system (vadose zone monitoring) as approved by the Regional Board's Executive Officer.
6. Adequate measures shall be taken to ensure that the synthetic liner will not be punctured for the duration of this activity.
7. There shall be no intentional discharge of process solution outside the containment system without prior approval from the Regional Board's Executive Officer and any unintentional discharge shall be immediately corrected and immediately reported to the Regional Board.
8. All industrial waste materials, used cyanide containers, or other hazardous products shall be properly treated and/or discharged at an appropriate waste management facility.
9. Adequate measures shall be taken to assure that unauthorized persons and wildlife are effectively excluded from the processing area.

10. The entire processing area shall be protected from any run-on, washout, or erosion which could occur as a result of floods having a predicted frequency of once in 100 years.
11. Prior to discharge, the ore tailings shall be detoxified to reduce the concentration of free cyanide and shall be treated as necessary to reduce the concentration of any extractable metals to below hazardous level, as specified under Article 11, Division 4, Title 22 of the California Code of Regulations. The detoxified ore tailings shall meet the requirements for classification as a Group C mining waste as prescribed in Section 2571 of Subchapter 15, Chapter 3, Title 23 of the California Code of Regulations.
12. The discharger shall sample, and analyze the ore tailings for free cyanide and extractable metals to determine proper detoxification and treatment.
13. The procedure for preparing the samples for the analyses of free cyanide in the detoxified ore tailings shall be as set forth in Attachment A.
14. The maximum allowable free cyanide in the detoxified ore tailings shall not exceed 10 mg/l in the filtrate portion of a 5/1 extraction.
15. The maximum allowable concentrations of the water extractable metals in the treated ore tailings shall not be greater than ten times the soluble threshold limit concentration (STLC) values listed under Section 66699, of said Article 11.
16. The ore tailings shall not be placed in perennial, intermittent, or ephemeral stream channels unless provision is made to divert runoff around the waste in a non-erosive manner. The ore tailings shall not be placed where they can be eroded by streamflows or cause accelerated streambank erosion.
17. All sampling, preservation, storage and analyses shall be conducted in accordance with current EPA procedures or in accordance with the then-current edition of Standard Methods for the Examination of Water and Wastewater. All hazardous waste chemical analyses shall be conducted at a laboratory certified by the California Department of Health Services or as approved by the Regional Board's Executive Officer.

#### B. Provisions

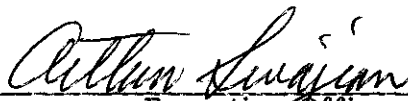
1. At least 60 days<sup>1</sup> prior to commencement of construction, the discharger shall submit to the Regional Board, for review and approval by the Executive Officer, a technical report which includes a hydrology report in accordance with San Bernardino County Flood Control District procedures and a plan detailing the proposed construction of the concrete reservoirs, containment system, liner protection, and flood protection facilities.
  2. At least 10 days prior to commencement of operations, the discharger shall submit to the Regional Board a certificate, signed by a California Registered Civil Engineer, stating that the processing and containment facilities are
1. Unless a lesser period is approved by the Executive Officer.

constructed in accordance with the technical report approved by the Regional Board's Executive Officer to meet the requirements of this Order.

3. At least 5 days prior to placing the synthetic liner over the base material in the processing area, and at least 5 days prior to loading ore into the concrete reservoirs before and after the sealing of said reservoirs, the discharger shall notify the Regional Board to allow sufficient time to schedule a staff evaluation of the construction, sealing, and inspection procedures utilized by the discharger.
4. The discharger shall comply with "Monitoring and Reporting Program No. 88-41", and future revisions thereto, as specified by the Regional Board's Executive Officer. The monitoring reports shall be certified to be true and correct, and signed, under penalty of perjury, by an authorized officer of the company.
5. If conditions warrant, the Regional Board's Executive Officer may require the discharger to construct a vadose zone and groundwater monitoring system, and "Monitoring and Reporting Program No. 88-41" may therefore be revised accordingly.
6. Prior to any modifications of this facility which could result in material change in the quality or quantity of wastes discharged, quantity of ore processed, type of leachant used, or any material change in the location of discharge, the discharger shall report thereon to the Regional Board.
7. As proposed by the discharger and as stated in the findings, the processing and treatment operation shall take place in concrete reservoirs. Any deviation from this proposal shall require the discharger to submit to the Regional Board a report of waste discharge and a technical report describing the new mode of operation.
8. In the event of any change in control of ownership of land or waste disposal facilities owned or controlled by the discharger, the discharger shall:
  - a. Notify this Regional Board of such changes; and
  - b. Transmit a copy of this Order to the succeeding owner or operator, and forward a copy of the transmittal letter to this Regional Board.
9. At least 30 days prior to commencement of operations, the discharger shall submit to the Regional Board written adequate assurance that monies are committed, upon abandonment of facilities, to ensure neutralization of all cyanide, plus cleanup and closure of the processing and tailings disposal sites in a manner that will not adversely effect water quality.
10. The discharger shall process no more than 10,000 tons of ore under this Order.
11. Lack of construction or operational activity on the site for a period of one year after the effective date of this Order shall constitute abandonment for the purpose of requiring any necessary cleanup or closure, and for subsequent rescinding of this Order.

12. The discharger shall immediately inform the Executive Officer of any spillage beyond any of the containment facilities or elsewhere at the site, and of storm damage to any of the containment facilities along with a proposal to correct same.
13. Within 4 months from the date of adoption of this Order, the discharger shall submit a closure plan for approval by the Regional Board's Executive Officer.

I, Arthur Swajian, Executive Officer, do hereby certify the foregoing is a full, true and correct copy of an Order adopted by the California Regional Water Quality Control Board, Colorado River Basin Region, on March 23, 1988.

  
\_\_\_\_\_  
Executive Officer

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
COLORADO RIVER BASIN REGION

ATTACHMENT A

SAMPLE PREPARATION PROCEDURE  
FOR  
IONIC CYANIDE  
also known as free cyanide

Description: Ionic cyanide and most weak complexes are soluble in distilled water. The strong complexes of ions, although normally soluble, are bound too tightly to the particle surface and are not solubilized. Considering this, it would therefore be adequate to leach the sample with distilled water in a single pass, flow-through manner. The leachate is collected, alkalized for preservation, and made up to a definite volume. This leachate sample is then analyzed via "Standard Methods" 412 C or E. Method 412 D may not be used.

Apparatus:

- 1) Large glass funnel, the stem throat plugged with glass wool;
- or
- 2) Large glass funnel with glass fiber filter paper: Whatman GF/C, 934-AH, or equivalent.
- 3) Balance capable of weighing to nearest 0.01 g.
- 4) 500 ml volumetric flasks.
- 5) Other items necessary to perform cyanide analysis as described above.

Reagents:

- 1) 2.5 NaOH (100 g NaOH/l)
- 2) Other reagents necessary to perform cyanide analysis as described above.

Procedure:

Weigh out, to the nearest 0.01 g, 100g of sample as received. Place sample in a glass funnel with filter paper or plugged with glass wool. Add 50.00 ml of 2.50 N NaOH to 500 ml volumetric flask and place it so as to catch the filtrate from the funnel. Pour 50 ml of distilled (or deionized) water onto the solid sample and allow to percolate through. When liquid level is even with the top of the solids, add an additional 50 ml of water. Repeat the addition of water until a total 400 ml H<sub>2</sub>O has been used. Make up volume in volumetric flask to mark with distilled water. The resulting filtrate is now ready for analysis.

The titrimetric (412C) and the ion selective probe (412E) require no further preparation. The sample is then read directly by either titrimetric (412C) or the ion selective probe (412E) and the results reported in mg/l free cyanide.

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
COLORADO RIVER BASIN REGION**

MONITORING AND REPORTING PROGRAM NO. 88-41  
FOR  
CADIZ VALLEY PILOT OPERATION  
LACO MINING & ENGINEERING  
East of 29 Palms - San Bernardino County

Mine Site: Portion of the SE $\frac{1}{4}$  of Section 35, T1N, R15E, SBB&M

MONITORING

Monitoring and Reporting No. 1

The discharger shall submit to the Regional Board monthly reports containing the following information:

- a. The current status of mining operations - whether the operation is active or inactive.
- b. An estimate of the total amount of ore (tons) that has been processed to date.
- c. The result of analysis for free cyanide from each batch of ore processed.

Monitoring and Reporting No. 2

- a. Immediate reporting of any accidental spillage or release of waste material, including immediate corrective measures being taken to limit detrimental effects to water quality.
- b. Report of completion of cleanup of accidental releases shall be submitted to the Regional Board in writing within one week following completion of work.
- c. Upon request from this Regional Board's Executive Officer, the discharger shall furnish special technical and/or monitoring reports on the treatment and discharge of wastes.



Reporting

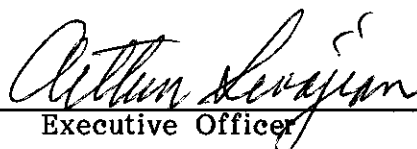
The above monitoring program shall be implemented immediately upon adoption of this Order.

Monthly reports shall be submitted to the Regional Board by the 15th day of the following month. Reports for Item 2a. (above) shall be forwarded immediately and if at all possible shall be preceded by phone communication to the Regional Board's office, phone no. (619) 346-7491. Copies of the reports submitted to the Board pursuant to this Monitoring and Reporting Program shall be maintained at the operations site for a period of one year, and shall be made available to staff of the Regional Board upon request.

Mail reports to:

California Regional Water Quality Control Board  
Colorado River Basin Region  
73-271 Highway 111, Suite 21  
Palm Desert, CA 92260

ORDERED BY:

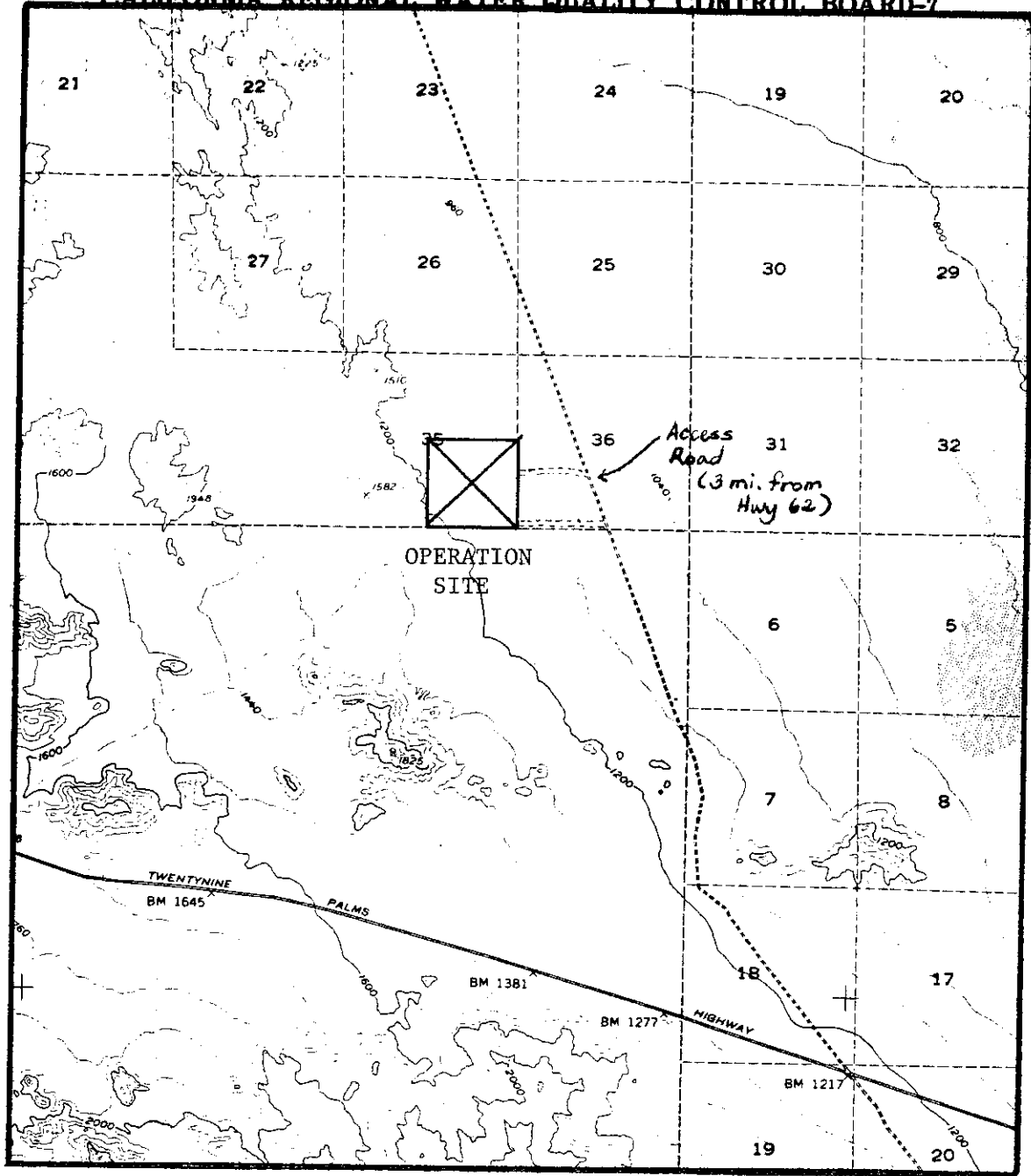
  
Executive Officer

March 23, 1988

Date



CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD-7



SITE MAP NO. 2

CADIZ VALLEY PILOT OPERATION  
LACO MINING & ENGINEERING  
East of 29 Palms - San Bernardino County  
Location: SE $\frac{1}{4}$  of Section 35, T1N, R15E, SBB&M  
USGS Cadiz Valley 15 min. Topographic Map