

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

REVISED MONITORING AND REPORTING PROGRAM NO. 5-01-150
FOR
CARSON HILL ROCK PRODUCTS
SUTTON ENTERPRISE
CARSON HILL GOLD MINING CORPORATION
WESTERN MINING CORPORATION (USA)
CALAVERAS COUNTY

Compliance with this Monitoring and Reporting Program, and with the companion Standard Provisions and Reporting Requirements, is ordered by Waste Discharge Requirements Order No. 5-01-150. Failure to comply with this Program, or with the Standard Provisions and Reporting Requirements dated August 1997, constitutes noncompliance with the WDRs and with the Water Code, which can result in the imposition of civil monetary liability.

A. REPORTING

The Discharger shall report monitoring data and information as required in this Monitoring and Reporting Program and as required in the Standard Provisions and Reporting Requirements. Reports which do not comply with the required format may be **REJECTED** and the Discharger may be deemed to be in noncompliance with the WDRs. In reporting the monitoring data required by this program, the Discharger shall arrange the data in tabular form so that the date, the constituents, the concentrations, and the units are readily discernible. The data shall be summarized in such a manner so as to illustrate clearly the compliance with waste discharge requirements or the lack thereof. Historical and current monitoring data shall be graphed at least once annually. Graphs for the same constituent shall be plotted at the same scale to facilitate visual comparison of monitoring data. A short discussion of the monitoring results, including notations of any water quality violations shall precede the tabular summaries. Data shall also be submitted in a digital format acceptable to the Executive Officer.

Method detection limits and practical quantitation limits shall be reported. Field and laboratory tests shall be reported in the semi-annual monitoring reports. The results of any monitoring done more frequently than required at the locations specified herein shall be reported to the Board.

B. REQUIRED MONITORING REPORTS AND SUBMITTAL DATES

1. Semiannual Groundwater and Leachate Monitoring Reports

All Semiannual monitoring reports shall include all water quality data and observations collected during the reporting period and submitted per the **Reporting Due Dates** in Section B.6. of this Monitoring and Reporting Program. At a minimum the sampling and data collection in **Table 1** of this Monitoring and Reporting Program, Standard Provisions and Reporting Requirements, and Waste Discharge Requirements shall be reported.

2. Annual Monitoring Summary Report

The Discharger shall submit an Annual Monitoring Summary Report to the Board covering the previous monitoring year. The annual report shall contain the information specified in Standard Provisions and Reporting Requirements of the “*Reports to be Filed with the Board.*”

3. Facility Monitoring Report

Annually, prior to the anticipated rainy season, but no later than **30 September**, the Discharger shall conduct an inspection of the facility. The inspection shall assess damage to the drainage control system, groundwater monitoring equipment (including wells, etc.), and shall include the Standard Observations contained in Standard Provisions and Reporting Requirements.

4. Response to a Release

If the Discharger determines that there is significant statistical evidence of a new release (i.e. the initial statistical comparison or non-statistical comparison indicates, for any Constituent of Concern or Monitoring Parameter, that a further release from the facility is tentatively identified), the Discharger shall immediately notify the Board verbally as to the Monitoring Point(s) and constituent(s) or parameter(s) involved, shall provide written notification by certified mail within seven days of such determination and implement Response to Release section of the Standard Provisions and Reporting Requirements.

5. Water Quality Protection Standard Report

Any proposed changes in a statistical method or concentration limits for a constituent of concern or monitoring parameter a Water Quality Protection Standard Report shall be submitted and include the information required in this Monitoring Reporting Program. Any changes to Water Quality Protection Standards shall be approved by the Executive Officer in a Revised Monitoring and Reporting Program.

6. Submittal Dates

Reporting Type	Sampling Frequency and Data Reported	Reporting Period	Report Date Due
Semiannual Monitoring Reports	Semiannually	1 January – 30 June 1 July – 31 December	31 July 31 January
Annual Monitoring Summary Report	Annual	1 January -31 December	31 January
Facility Monitoring Report	Annual	Status at 30 September	15 November
Response to a Release	As necessary		Immediate verbal report; written report within 7 days
Water Quality Protection Standard Report	As necessary		As necessary

C. WATER QUALITY PROTECTION STANDARD AND COMPLIANCE PERIOD

1. Water Quality Protection Standard Report

For each waste management unit (Unit), the Water Quality Protection Standard shall consist of all constituents of concern, the concentration limit for each constituent of concern, the point of compliance, and all water quality monitoring points.

The Water Quality Protection Standard for naturally occurring waste constituents consists of the constituents of concern, the concentration limits, and the point of compliance and all monitoring points. The Executive Officer shall review and approve the Water Quality Protection Standard, or any modification thereto, for each monitored medium.

The report shall:

- a. Identify **all distinct bodies of surface and groundwater** that could be affected in the event of a release from a Unit or portion of a Unit. This list shall include at least the uppermost aquifer and any permanent or ephemeral zones of perched groundwater underlying the facility.
- b. Include a map showing the monitoring points and background monitoring points for the surface water monitoring program, groundwater monitoring program, and the unsaturated zone monitoring program. The map shall include the point of

compliance in accordance with §20405 of Title 27.

- c. Evaluate the perennial direction(s) of groundwater movement within the uppermost groundwater zone(s).

If subsequent sampling of the background monitoring point(s) indicates significant water quality changes due to either seasonal fluctuations or other reasons unrelated to waste management activities at the site, the Discharger may request modification of the Water Quality Protection Standard.

Table 2, included at the end of the MRP, includes the established WQPS submitted in the 23 June 1992 report titled “*Carson Hill Gold Mine, Revised Post-Closure Water Quality Detection Monitoring Program*,” as prepared by Adrian Brown Consultants, Inc., on behalf of WMC. The average upgradient concentrations plus 2.327 times the standard deviation was used to calculate the concentration limit for each analyte. Because of the natural variation in groundwater quality at the site, there are “exceptions” for some COCs, which are identified in Table 2. In particular, note the exceptions for sulfate, arsenic, and selenium. Intrawell analysis was used with data from background/upgradient monitoring wells M-4 and M-5 (with exceptions). Surface water concentration limits were determined in the same manner. Background/upgradient monitoring points for surface water include C-1 and R-1. In this regard, nitrate showed natural variations between the two background sampling points. When the concentration of a given constituent was reported to be less than detect, the concentration of that constituent was assumed to be equal to the reported detection limit. In order to limit the impact of the varying detection limits on calculation of the standard deviation of each constituent, where more than one detection limit has been used, the detection limits are averaged and a uniform detection limit was used to determine the average concentration and standard deviation for each constituent of concern.

2. Constituents of Concern

The constituents of concern include all the waste constituents, their reaction products, and hazardous constituents that are reasonably expected to be in or derived from waste contained in the Unit. The constituents of concern for all Units at the facility are those listed in **Table 1**. The Discharger shall monitor all constituents of concern every six months, or more frequently as required in accordance with a Corrective Action Program.

3. Monitoring Parameters

Monitoring parameters are constituents of concern that are the waste constituents, reaction products, hazardous constituents, and physical parameters that provide a reliable indication of a release from a Unit. The monitoring parameters for all Units are those listed in **Table 1** for the specified monitored medium. The Discharger shall monitor all monitoring parameters every six months, or more frequently as required in accordance with a Corrective Action Program.

4. Concentration Limits

For a naturally occurring constituent of concern, the concentration limit for each constituent of concern shall be determined as follows:

- a. By calculation in accordance with a statistical method pursuant to §20415 of Title 27; or
- b. By an alternate statistical method acceptable to the Executive Officer in accordance with §20415 of Title 27.

For non-naturally occurring constituents of concern, the concentration limit for each constituent of concern shall be set equal to the California Maximum Concentration Limit (MCL) for that constituent.

5. Point of Compliance

The point of compliance for the water standard at each Unit is a vertical surface located at the hydraulically downgradient limit of the Unit that extends through the uppermost aquifer underlying the Unit. In this case, the water-bearing zone is fractured bedrock.

D. MONITORING

The Discharger shall comply with the monitoring program provisions of Title 27 for groundwater, surface water, and the unsaturated zone, in accordance with Monitoring Specifications in Standard Provisions and Reporting Requirements. All monitoring shall be conducted in accordance with a Sample Collection and Analysis Plan, which includes quality assurance/quality control standards, that is acceptable to the Executive Officer.

All point of compliance monitoring wells established for the detection monitoring program shall constitute the monitoring points for the groundwater Water Quality Protection Standard. All detection monitoring program groundwater monitoring wells, unsaturated zone monitoring devices, leachate, and surface water monitoring points shall be sampled and analyzed for

monitoring parameters and constituents of concern as indicated and listed in **Table 1**.

Method detection limits and practical quantitation limits shall be reported. Metals shall be analyzed in accordance with the methods listed in the Sampling and Analysis Plan.

The Discharger may, with the approval of the Executive Officer, use alternative analytical test methods, including new USEPA approved methods, provided the methods have method detection limits equal to or lower than the analytical methods specified in this Monitoring and Reporting Program.

E. POST CLOSURE MONITORING PROGRAM

Groundwater monitoring wells shall be M-1, M-2, M-4, M-5, M-7, M-16, and M-17. **Waste Management Unit** sampling wells in WMU-1, WMU-2, and WMU-3 shall be monitored. **Surface water** monitoring points shall be New Melones Reservoir downstream station R-2, Carson Creek downstream station C-2, and a sufficient number of on-site stations to demonstrate compliance with the applicable water quality control plan. Internal site surface monitoring stations shall be marked in the field and shall be located at potential areas of ponding or persistent base flow within intermittent or ephemeral drainages downstream from heap leach units. **Leachate** from the spine drains SD-1 and SD-2 shall be monitored as part of this program. Spine drains SD-1 and SD-2 are located under WMU#1 and WMU#2, respectively. These drains were constructed along the axis of the valley and beneath the clay liner of the leach pads to collect seepage through the liner and upwelling groundwater from beneath the units. The discharger proposes to collect and return the spine drain fluids as irrigation wastewater on WMU#3 in conjunction with the current practice of spray irrigating leachate from WMU#1, WMU#2, and WMU#3.

The groundwater surface elevation (in feet and hundredths, MSL) in all wells shall be measured each time a well is sampled.

GROUNDWATER, LEACHATE AND SURFACE WATER

The following constituents of concern and monitoring parameters shall be analyzed for monitoring point grab samples at the indicated frequencies and methods:

Table 1.

Constituent/Parameter	Unit	Sampling Frequency	USEPA Method
Constituents of Concern			
Total Dissolved Solids	mg/L	Semiannually	2540C

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 ROCK QUARRY AND POST CLOSURE OF GOLD MINING ACTIVITIES
 CALAVERAS COUNTY

Constituent/Parameter	Unit	Sampling Frequency	USEPA Method
Total Cyanide	mg/L	Semiannually	9010B
Sulfate	mg/L	Semiannually	300.0
Nitrate (as NO ₃)	mg/L	Semiannually	300.0
pH (field)	pH units	Semiannually	150.1
Arsenic	mg/L	Semiannually	6020
Cadmium	mg/L	Semiannually	6020
Total Chromium	mg/L	Semiannually	6020
Copper	mg/L	Semiannually	6020
Nickel	mg/L	Semiannually	6020
Selenium	mg/L	Semiannually	6020
Monitoring Parameters			
Turbidity	Turbidity units	Semiannually	2130B
Groundwater Elevation	Ft. in hundredths (M.S.L.)	Semiannually	Weighted measuring tape
Flow Rate Surface water	gpm	First flush & Semiannually When irrigating	--
WMU leachate	gpm		
Total Flow WMU leachate	gallons	When irrigating	--
Temperature	°C	Semiannually	
Total Suspended Solids	mg/l	Semiannually	2540D
Electrical Conductivity (field)	µmhos/cm	Semiannually	2510
Free (WAD) Cyanide ¹	mg/l	Semiannually	See footnote
Chloride	mg/l	Semiannually	300.0
Iron	mg/l	Semiannually	6010
Manganese	mg/l	Semiannually	6010
Calcium	mg/l	Semiannually	6010
Magnesium	mg/l	Semiannually	6010
Sodium	mg/l	Semiannually	6010
Potassium	mg/l	Semiannually	6010
Total Alkalinity (as CaCO ₃)	mg/l	Semiannually	2310B

Constituent/Parameter	Unit	Sampling Frequency	USEPA Method
Total Hardness (as CaCO ₃)	mg/l	Semiannually	2340B

¹ Weak Acid Dissociable (WAD) cyanide shall be analyzed using Standard Test Method C of ASTM D 2036-89. Method Detection Limits (MDLs) shall be reported and shall be below or as close as practicable to applicable water quality objectives.

F. SAMPLING AND ANALYSIS PLAN

A Sampling and Analysis Plan (SAP) shall be maintained for all water quality monitoring activities. The SAP shall include specific methods for surface water and groundwater monitoring quality assurance/quality control (QA/QC) including sample collection, handling, chain of custody control, analytical procedures, and laboratory QC. A copy of the SAP shall be included in the semiannual monitoring reports.

The Discharger shall implement the above monitoring program on the effective date of this Order.

Ordered by original signed
THOMAS R. PINKOS, Executive Officer

5 May 2004
(date)

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Table 2. Water Quality Protection Standards

Based on Background Sampling Points

Constituent/ Parameter	Groundwater (mg/L)	Surface Water (mg/L)	
		C-02	R-02
Total Dissolved Solids	491	256	59
Total Cyanide	0.2	0.2	0.2
Sulfate	159/350*	54	12
Nitrate	7.5	4.0	3.0
pH (lab)	6.0-8.4 pH units	6.8-8.4 pH units	6.8-8.4 pH units
Arsenic	0.01/0.018**	0.01	0.01
Cadmium	0.01	0.005	0.005
Total Chromium	0.005	0.01	0.01
Copper	0.1	0.1	0.1
Nickel	0.025	0.01	0.01
Selenium	0.011/0.018***	0.005	0.005

* Except for M-1 and M-7 where sulfate is 350 mg/L

** Except for M-2 where arsenic is 0.018 mg/L

*** Except for M-1 where selenium is 0.018 mg/L