

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

CLOSURE MONITORING AND REPORTING PROGRAM NO.
FOR
MERIDIAN BEARTRACK COMPANY
MERIDIAN GOLD COMPANY
AND FELIX MINING COMPANY
ROYAL MOUNTAIN KING MINE
CALAVERAS COUNTY

Pursuant to Section 13267 of the California Water Code, the Discharger shall comply with this Monitoring and Reporting Program, and with the companion Standard Provisions and Reporting Requirements, as ordered by Waste Discharge Requirements Order No. _____. Failure to comply with this Program, or with the Standard Provisions and Reporting Requirements dated September 2003, constitutes noncompliance with the WDRs and with the Water Code, which can result in the imposition of civil monetary liability. The Discharger shall not implement any changes to this MRP unless a revised MRP is issued by the Executive Officer.

Monitoring data indicate that mining activities have resulted in continued impacts to groundwater and surface water quality. Concentrations of ammonia, chloride, nitrate, selenium, sulfate, and total dissolved solids (TDS) have been detected in groundwater and surface water at the site, which exceed pre-mining background concentrations or water quality objectives. Previous WDRs required the Discharger to develop evaluation and corrective action programs to mitigate these impacts.

The Discharger shall maintain water quality monitoring systems that are appropriate for detection monitoring, flow monitoring, and corrective action that comply with the provisions of Title 27, California Code of Regulations, Division 2, Subdivision 1 (Title 27), Subchapter 3, Article 1.

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 will be **REJECTED** and the Discharger shall 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. All peaks shall be reported, including those which cannot be quantified and/or specifically identified. Field and laboratory tests shall be reported in the quarterly monitoring reports. The results of any monitoring done more frequently than required at the locations specified herein shall be reported to the Regional Water Board.

B. REQUIRED MONITORING REPORTS AND SUBMITTAL DATES

1. Quarterly Groundwater, Vadose Zone and Leachate Monitoring Reports

All Quarterly monitoring reports shall include all water quality data and observation 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 Sections D. III through IX of this Monitoring and Reporting Program, Standard Provisions and Reporting Requirements (2003), and Waste Discharge Requirements shall be reported.

2. Annual Monitoring Summary Report

The Discharger shall submit an Annual Monitoring Summary Report to the Regional Water Board covering the previous monitoring year. The annual report shall contain the information specified in Standard Provisions and Reporting Requirements (2003), Section VIII.B. of the *“Reports to be Filed with the Board.”*

The annual report shall be a comprehensive document assessing groundwater and surface water quality compliance with waste discharge requirements and the pre-mining water quality protection standard over the previous year. Trend analysis graphical plots and statistical comparisons to pre-mining concentration limits shall be included in the annual report for naturally occurring detectable constituents of concern. Proposed updated pre-mining background or baseline concentrations for naturally occurring detectable constituents of concern shall be included in the annual report. The annual report shall also include an isoconcentration map for TDS in groundwater and an evaluation of ground water flow directions including contour maps and/or flow nets of water level data from the past year. Pre-mining groundwater and surface water concentration limits are presented in Table 2.

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 Section XII.S. of Standard Provisions and Reporting Requirements (2003).

4. Response to a Release

If the Discharger determines that there is new significant statistical evidence of a release (i.e. the initial statistical comparison or non-statistical comparison indicates, for any Constituent of

Concern or Monitoring Parameter, that a release is tentatively identified), the Discharger shall immediately notify the Regional Water 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 (2003).

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 Section C.1. of 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

Quarterly Groundwater, Unsaturated Zone and Leachate Monitoring Reports

Reporting Type	Sampling Frequency and Data Reported	Reporting Period	Report Date Due
Quarterly	Daily, Weekly, Monthly and Quarterly	1 January – 31 March	30 April
		1 April – 30 June	31 July
		1 July – 30 September	31 October
		1 October – 31 December	31 January

Annual Monitoring Summary Report	31 January
Facility Monitoring Report	15 November
Response to a Release	as necessary
Water Quality Protection Standard Report	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.

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 Section D. III through IX for the specified monitored medium, excluding the monitoring parameters.

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 calcium, magnesium, sodium, sulfate, bicarbonate, carbonate and chloride.

3. **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.

The established concentration limits for naturally occurring constituents of concern are listed in Table 2.

4. 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.

D. REQUIRED MONITORING PROGRAMS

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 (2003). 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, evaluation and corrective action monitoring program shall constitute the monitoring points for the groundwater Water Quality Protection Standard. All 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 Section D. III through IX. .

Method detection limits and practical quantitation limits shall be reported. All peaks shall be reported, including those, which cannot be quantified and/or specifically identified. Metals shall be analyzed in accordance with the methods listed in Table 1.

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.

I. GENERAL FACILITY MONITORING

General facility monitoring shall be reported on an annual basis with the annual monitoring report and shall include the continuous measurement of precipitation and reporting of monthly precipitation and 24-hour precipitation for the most significant storm events of the period.

II. STANDARD OBSERVATIONS

Each monitoring report shall include a summary and certification of completion of all applicable Standard Observations for receiving waters, and along the perimeter and for

the WMUs. The standard observations shall be performed on a quarterly basis and shall include the following.

1. Receiving Waters:

- a. Discoloration and turbidity: description of color, source, and size of affected area.
- b. Evidence of water uses: presence of water-associated wildlife (lakes, ponds, springs, streams).
- c. Flow rate (springs and streams).
- d. Weather conditions: wind direction and estimated velocity, total precipitation during recent days and on the day of the observation.

2. Along the Perimeter of Waste Management Unit

- a. Evidence of liquid leaving or entering the Unit (i.e., runoff, run-on, seepage, transfers), estimated size of affected area, and flow rate (show affected area on map).
- b. Evidence of erosion.

3. For the Waste Management Unit

- a. Evidence of ponded water at any point on the waste management unit (show affected area on map).
- b. Evidence of erosion.

III. FLOTATION TAILINGS RESERVOIR (FTR) WATER QUALITY MONITORING

Monitoring stations at FTR include the following.

<u>Station</u>	<u>Description</u>	<u>Location</u>
FTRSPINE1&2 ²	Groundwater Spine Drain #1	Outlet pipe into Spine Drain Sump, Spine Collector
FTRSPRING ²	Spring Drain #1	Outlet Pipe into Sump
FTRFOUND ²	Groundwater Extraction	Return Sump
FTRLCRS ²	Leachate	Leachate Outlet Pipe
GWM-01	Groundwater	Upgradient Monitoring Well
GWM-02 ¹	Groundwater	Downgradient Monitoring Well
FPZ1A/1B	Leachate	Tailings Impoundment
FPZ2	Leachate	Tailings Impoundment
FPZ3 – FPZ6	Groundwater	FTR Perimeter Wells

¹ Point of Compliance

² These monitoring stations are only sampled if the respective drains are open and flowing.

The following constituents and monitoring frequencies shall apply to the following FTR monitoring stations: LCRS Spring, Spine, and Foundation drains, FPZ-1A/1B, FPZ-2, FPZ3, FPZ4, FPZ5, FPZ6, GWM-01, and GWM-02. The Discharger shall monitor water flows monthly in the LCRS, Spring, Spine, and Foundation drains if the drains are open and flowing.

<u>Constituents</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Frequency</u>
Pumping or flow rate	gpm	Measured	Monthly
Static Water Level	Feet MSL	Measured (Wells)	Quarterly
Temperature	°C	Measured	Quarterly
pH (field)	number	Measured	Quarterly
EC	µmhos	Grab	Quarterly
Lab pH	number	Grab	Quarterly
TDS	mg/l	Grab	Quarterly
Chloride	mg/l	Grab	Quarterly
Sulfate	mg/l	Grab	Quarterly
Calcium	mg/l	Grab	Quarterly
Sodium	mg/l	Grab	Quarterly
Magnesium	mg/l	Grab	Quarterly
Nitrate	mg/l	Grab	Quarterly
Ammonia ¹	mg/l	Grab	Quarterly
Antimony	mg/l	Grab	Quarterly
Arsenic ²	mg/l	Grab	Quarterly
Carbonate	mg/l	Grab	Quarterly
Bicarbonate	mg/l	Grab	Quarterly
Iron ¹	mg/l	Grab	Quarterly
Manganese ¹	mg/l	Grab	Quarterly
Selenium ²	mg/l	Grab	Quarterly
Nickel ²	mg/l	Grab	Quarterly

¹ Ammonia, iron, and manganese analyses are not required for GWM-02.

² An appropriate Atomic Absorption (AA) method shall be used for analysis of this constituent.

IV. LEACHED CONCENTRATES RESIDUE AREA (LCRF) AND PROCESS WATER RETENTION POND (PWP) WATER QUALITY MONITORING

Monitoring stations at the LCRF and the PWP include the following.

<u>Station</u>	<u>Description</u>	<u>Location</u>
LCRFLCRS	Leachate	Outlet Pipe to PWP
LCRFSPD ¹	Ground Water Spine Drain	Outlet Pipe to PWP
PWPLCRS	Leachate	PWP Return Sump
PWSPD ¹	Groundwater Spine Drain	PWP Return Sump
GWM-3	Groundwater	Upgradient Monitoring Well
GWM-4 ¹	Groundwater	Downgradient Monitoring Well
GWM-5 ¹	Groundwater	Downgradient Monitoring Well
GWM-6 ¹	Groundwater	Downgradient Monitoring Well
GWM-15 ¹	Groundwater	Downgradient Monitoring Well
GWM-24 ¹	Groundwater	Downgradient Monitoring Well
GWM-25 ¹	Groundwater	Downgradient Monitoring Well

¹ Points of Compliance

The following constituents shall apply to all the LCRF and PWP water quality monitoring stations listed above, except for GWM-3, which shall be monitored quarterly for static water level only and semi-annual monitoring for the parameters below. The semi-annual analysis shall be conducted in January and July.

<u>Constituents</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Frequency</u>
Pumping or flow rate	gpm	Measured	Quarterly
Static Water Level	Feet MSL	Measured (Wells)	Quarterly
Temperature	°C	Measured	Quarterly
pH (field)	number	Measured	Quarterly
EC	µmhos	Grab	Quarterly
Lab pH	number	Grab	Quarterly
TDS	mg/l	Grab	Quarterly
Chloride	mg/l	Grab	Semi-annual
Sulfate	mg/l	Grab	Semi-annual
Sodium	mg/l	Grab	Semi-annual
Calcium	mg/l	Grab	Semi-annual
Magnesium	mg/l	Grab	Semi-annual
Nitrate	mg/l	Grab	Quarterly

<u>Constituents</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Frequency</u>
Free (WAD) Cyanide ¹	mg/l	Grab	Semi-annual
Total Cyanide ²	mg/l	Grab	Semi-annual
Carbonate	mg/l	Grab	Semi-annual
Bicarbonate	mg/l	Grab	Semi-annual
Antimony	mg/l	Grab	Quarterly
Arsenic ³	mg/l	Grab	Quarterly
Chromium (Total) ²	mg/l	Grab	Quarterly
Copper ²	mg/l	Grab	Quarterly
Manganese	mg/l	Grab	Quarterly
Nickel ³	mg/l	Grab	Semi-annual
Selenium ³	mg/l	Grab	Quarterly
Zinc ²	mg/l	Grab	Semi-annual

¹ Monitoring wells GWM-4, -6, -15 shall not be monitored for WAD cyanide

² Monitoring wells GWM-4, -6, -15, and -25 shall not be monitored for chromium, copper, zinc, or total cyanide.

³ An appropriate Atomic Absorption (AA) method shall be used for analysis of this constituent.

V. GROUND WATER MONITORING FOR OVERBURDEN DISPOSAL SITES, LOW GRADE ORE STOCKPILES AND SKYROCKET PIT

Overburden and low-grade ore were placed in the Flotations Tailings Reservoir (FTR), Gold Knoll, and West overburden disposal sites (ODSs). Skyrocket Pit is receiving Group B liquid mine waste. Groundwater in these areas is currently monitored at the following locations.

<u>Station</u>	<u>Location</u>
GWM-30 ¹	FTR ODS
PZ-4	Skyrocket Pit
GWM-35A/B	East-southeast of Littlejohns Creek Diversion
GWM-36A/B	Northeast of Skyrocket Pit
GWM-37A	Southeast of Skyrocket Pit
GWM-11 ¹	Gold Knoll ODS
GWM-12 ¹	Southeast of Skyrocket Pit
GWM-21 ¹	Gold Knoll ODS
GWM-26 ¹	Gold Knoll ODS
GWM-31	Gold Knoll ODS
GWM-33	Gold Knoll ODS
GWM-34	Gold Knoll ODS
PZ-1	Gold Knoll ODS
GWM-09 ¹	West ODS/Base of Skyrocket Pit Dam
GWM-10 ¹	West ODS
GWM-16 ¹	West ODS
GWM-19 ¹	West ODS

<u>Station</u>	<u>Location</u>
GWM-20 ¹	West ODS
GWM-32	West ODS

¹ Points of Compliance

Sampling shall continue at all the above locations with the following constituents and frequency:

- Groundwater samples from GWM-10, -11, -12, -16, -21, -26, -30, -31, -32, -33, -34, and PZ-1 shall be analyzed for the constituents and at the frequency shown under Section IV above excluding for cyanide, chromium, copper, and zinc.
- Groundwater monitoring wells GWM-9, -19, and -20 shall be monitored quarterly for the constituents listed under Section IV above excluding for cyanide, chromium, and zinc.
- Groundwater samples from GWM-09, -10, -19, -20, and -31 shall also be analyzed quarterly for ammonia.
- Groundwater samples from GWM-31, -33, -34, and PZ-1 do not need to be analyzed for manganese.
- Monitoring well PZ-4, GWM-35A/B, GWM-36A/B, and GWM-37 were installed to monitor water levels immediately east, northeast, and southeast of Skyrocket Pit. Groundwater samples from these wells shall be analyzed quarterly for the constituents in Section IV above excluding cyanide, chromium, copper, and zinc.
- Monitoring wells GK-1, GK-2, and GK-3 were installed to monitor groundwater levels within the former Gold Knoll pit. These wells shall be monitored quarterly for groundwater levels and semi-annually for the COCs listed in Section IV above.

VI. SURFACE WATER MONITORING

Flow data from all surface water flow gauging stations within or adjacent to the facility site shall be reported to the Regional Water Board on a quarterly basis. Surface water monitoring shall be performed at the following stations:

<u>Station</u>	<u>Location</u>
FL-1	Downstream of SWM-10
SWM-1	Littlejohns Creek – upstream of FTR storm water runoff channel
SWM-2 ¹	Littlejohns Creek - downstream
SWM-3	Littlejohns Creek - downstream
SWM-6 ¹	Littlejohns Creek – upstream of diversion ditch
SWM-8 ¹	Unnamed drainage to Clover Creek
SWM-9 ¹	Gold Knoll Creek – downstream – Guage Station #1
SWM-10 ¹	Littlejohns Creek Diversion – Guage Station #5
SWM-12	Love Pond – downstream spot flow monitoring location
SWM-13	Littlejohns Creek Diversion – downstream of pond outflow
SWM-14	Unnamed creek above pond
SWM-15	Littlejohns Creek Diversion – Guage Station #3

<u>Station</u>	<u>Location</u>
SWM-16	Littlejohns Creek Diversion – Guage Station #6
SWM-17	Base of Skyrocket Lake Dam
TSWM-1	Littlejohns Creek downstream – Guage Station #2
TSWM-02	Edge of facility property, downstream of SWM-08
Stockpond	Stockwater Pond southeast of Gold Knoll ODS
Love Pond Spring	Base of FTR-ODS – upstream of Littlejohns Creek Diversion

¹ Points of Compliance

These surface water monitoring stations shall be analyzed quarterly for the constituents listed under Section IV above, excluding weak acid dissociable (WAD) cyanide, total cyanide, chromium, copper, and zinc. In addition, the following constituents shall be analyzed at the indicated frequencies for all surface water stations.

<u>Constituents</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Frequency</u>
Pumping or flow rate	gpm	Field estimate	Monthly
Dissolved Oxygen	mg/l	Field Measured	Monthly
Temperature	°C	Measured	Monthly
pH (field)	number	Measured	Monthly
EC	µmhos	Grab	Monthly

<u>Constituents</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Frequency</u>
TDS	mg/l	Grab	Monthly
Oil & Grease	mg/l	Grab	Monthly
Suspended Solids	mg/l	Grab	Monthly

VII. SKYROCKET PIT AND NORTH PIT WATER QUALITY MONITORING

Samples shall be collected from the pool surface of the Skyrocket and North pits at the following frequency:

<u>Constituents</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Frequency</u>
Static Water Level	Feet MSL	Measured	Weekly
pH (field)	number	Measured	Quarterly
Temperature	°C	Grab	Quarterly
EC	µmhos	Grab	Quarterly
Lab pH	number	Grab	Quarterly
TDS	mg/l	Grab	Quarterly
Chloride	mg/l	Grab	Quarterly
Sulfate	mg/l	Grab	Quarterly
Sodium	mg/l	Grab	Quarterly

<u>Constituents</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Frequency</u>
Magnesium	mg/l	Grab	Quarterly
Calcium	mg/l	Grab	Quarterly
Nitrate	mg/l	Grab	Quarterly
Carbonate	mg/l	Grab	Quarterly
Bicarbonate	mg/l	Grab	Quarterly
Arsenic ¹	mg/l	Grab	Quarterly
Iron	mg/l	Grab	Quarterly
Manganese	mg/l	Grab	Quarterly
Nickel ¹	mg/l	Grab	Quarterly
Selenium ¹	mg/l	Grab	Quarterly

¹ An appropriate Atomic Absorption (AA) method shall be used for analysis of this constituent.

VIII. ODS SEEPAGE

Seepage from the West and Gold Knoll ODSs at the locations listed below shall be monitored quarterly for the constituents listed above in Section IV excluding copper, chromium, and zinc.

<u>Station</u>	<u>Location</u>
GK Seep	Southwest side of Gold Knoll ODS
West ODS 1	Northwest of northern portion of West ODS
West ODS 2	West side of northern portion of West ODS
West ODS 3	Southwest side of northern portion of West ODS
West ODS 4	Northwest side of southern portion of West ODS
West ODS 5	Southeast of southern portion of West ODS

IX. FLOTATION TAILINGS RESERVOIR (FTR) TO SKYROCKET PIT WATER QUALITY TRANSFER MONITORING

In accordance with WDRs No. _____, leachate collected from the FTR LCRS shall be discharged to Skyrocket Pit Lake or handled in some other manner consistent with Title 27, Section 20340 (g). If the Discharger chooses to discharge leachate to Skyrocket Pit Lake then wastewater will be transferred directly from the FTR LCRS pump. The sampling station location will be the outlet pipe from the FTR to the Skyrocket Pit.

The following constituents shall apply to the Flotation Tailings Reservoir transfer water to Skyrocket Pit water quality monitoring station:

<u>Constituents</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Frequency</u>
Pumping or flow rate	gpm	Measured	Daily
pH (field)	number	Measured	Monthly
Temperature	°C	Grab	Monthly
EC	µmhos	Grab	Monthly
TDS	mg/l	Grab	Monthly
WAD Cyanide (Including Free Cyanide)	mg/l	Grab	Monthly
Sulfate	mg/l	Grab	Monthly
Sodium	mg/l	Grab	Monthly
Calcium	mg/l	Grab	Monthly
Magnesium	mg/l	Grab	Monthly
Bicarbonate	mg/l	Grab	Monthly
Chloride	mg/l	Grab	Monthly
Arsenic ¹	mg/l	Grab	Monthly
Chromium (Total)	mg/l	Grab	Monthly
Copper ¹	mg/l	Grab	Monthly
Nickel ¹	mg/l	Grab	Monthly
Selenium ¹	mg/l	Grab	Monthly

¹ An appropriate Atomic Absorption (AA) method shall be used for analysis of this constituent.

X. Land Application of Captured ODS Seepage and Springs

- During periods of discharge to the land application areas, the Discharger shall monitor the quantity and quality of the discharge. The Discharger shall establish one or more permanent monitoring stations within the wastewater conveyance system as needed to ensure that all samples are representative of the actual discharge to the fields. At a minimum, the Discharger shall monitor the effluent wastewater as follows:

Constituent/ Parameter	Units	Sample Type	Sampling Frequency	Reporting Frequency
Flow to each field	gallons	Measurement	Daily	Monthly
pH	pH units	Grab	Weekly	Monthly
Total dissolved solids	mg/L	Grab	Monthly	Quarterly

2. Daily Pre-Application Inspections

The Discharger shall inspect the land application areas at least **once daily** prior to and during irrigation events, and observations from those inspections shall be documented for inclusion in the quarterly monitoring reports. The following items shall be documented for each check or field to be irrigated on that day:

- a. Evidence of erosion;
- b. Containment system condition;
- c. Condition of each standpipe and flow control valve (if applicable);
- d. Proper use of valves;
- e. Soil saturation;
- f. Ponding;
- g. Tailwater collection system and potential runoff to off-site areas;
- h. Potential and actual discharge to surface water;
- i. Odors that have the potential to be objectionable at or beyond the property boundary; and
- j. Insects.

Temperature; wind direction and relative strength; and other relevant field conditions shall also be observed and recorded. The notations shall also document any corrective actions taken based on observations made. A copy of entries made in the log during each month shall be submitted as part of the Quarterly Monitoring Report. If no irrigation with wastewater takes place during a given month, then the monthly monitoring report shall so state.

3. Routine monitoring

The Discharger shall perform the following routine monitoring and loading calculations during all months when land application occurs, and shall present the data in the Monthly and Annual Monitoring Reports.

Constituent	Units	Type of Sample	Sampling Frequency	Reporting Frequency
Precipitation	0.1 in.	Rain Gauge ¹	Daily	Monthly, Annually
Irrigation fields and checks receiving wastewater	--	Observation	Daily	Monthly, Annually
Hydraulic loading rate				
ODS Seepage and Spring Water	in.	Calculated ²	Daily	Quarterly
Total dissolved solids loading rate	lb/ac/mo	Calculated ²	Monthly	Quarterly

¹ Data obtained from the nearest National Weather Service rain gauge is acceptable.

² Rate shall be calculated for each irrigation check.

XI. Facility Monitoring

a. Facility Inspection

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 section F.4.f. of Standard Provisions and Reporting Requirements and D.II. of this MRP. Any necessary construction, maintenance, or repairs shall be completed by **31 October**. By **15 November** of each year, the Discharger shall submit an annual report describing the results of the inspection and the repair measures implemented, including photographs of the problem and the repairs.

b. Storm Events

The Discharger shall inspect all precipitation, diversion, and drainage facilities for damage **within 7 days** following *major storm events*. Necessary repairs shall be completed **within 30 days** of the inspection. The Discharger shall report any damage and subsequent repairs within 45 days of completion of the repairs, including photographs of the problem and the repairs.

The Discharger shall implement the above monitoring program on the effective date of this Order. The transmittal letter accompanying monitoring reports submitted under this Order shall, as required under the Standard Provisions (*Provision 5, General Requirements, REPORTING REQUIREMENTS*), contain a statement by the discharger, or the discharger's authorized agent, under penalty of perjury, that to the best of the signer's knowledge the report is true, accurate and complete.

Ordered by _____
PAMELA CREEDON, Executive Officer

(date)

Table 1 – Metals Analysis

<u>Inorganics (dissolved):</u>	<u>USEPA Method</u>
Chromium	7196A
Copper	6020
Vanadium	6020
Zinc	6020
Iron	6020
Manganese	6020
Arsenic	7062
Nickel	6020
Selenium	7742
Cyanide	9010B

Table 2 – Water Quality Protection Standards

Intrawell standards based on pre- and early mining concentrations.

Greenstone Wells			
Sample Point	Constituent	Upper Concentration Limit	Lower Concentration Limit
GWM-02	Arsenic	0.0179	
	Chloride	38	
	Nickel	0.056	
	Nitrate	4.9	
	pH (lab)	8.23	6.75
	Selenium	0.0107	
	Sulfate	31.7	
	TDS	495	
GWM-04	Arsenic	0.0179	
	Chloride	13.3	
	Nickel	0.056	
	Nitrate	3.64	
	pH (lab)	8.33	6.78
	Selenium	0.011	
	Sulfate	43.9	
	TDS	463	
GWM-11	Arsenic	0.0183	
	Chloride	10.1	
	Nitrate	5.32	
	pH (lab)	8.17	6.91
	Selenium	0.011	
	Sulfate	13.4	
	TDS	306	

Sample Point	Constituent	Upper Concentration Limit	Lower Concentration Limit
GWM-15	Arsenic	0.0186	
	Chloride	90.1	
	Nickel	0.0567	
	Nitrate	4.15	
	pH (lab)	9.66	4.62
	Selenium	0.0113	
	Sulfate	119	
	TDS	689	
GWM-26	Arsenic	0.0189	
	Chloride	11.4	
	Nickel	0.0572	
	Nitrate	2.43	
	pH (lab)	7.87	7.13
	Selenium	0.0115	
	Sulfate	15	
	TDS	396	
GWM-30	Arsenic	0.0182	
	Chloride	37.7	
	Nickel	0.056	
	Nitrate	5.54	
	pH (lab)	8.29	6.86
	Selenium	0.0109	
	Sulfate	30.4	
	TDS	514	

Phyllite Wells

Sample Point	Constituent	Upper Concentration Limit	Lower Concentration Limit
GWM-10	Ammonia	6.65	
	Arsenic	0.0182	
	Chloride	3859	
	Nickel	0.057	
	Nitrate	3.83	
	pH (lab)	7.96	7.07
	Selenium	0.0164	
	Sulfate	3734	
	TDS	11630	
GWM-19	Ammonia	0.556	
	Arsenic	0.0182	
	Chloride	418	
	Copper	0.0377	
	Nickel	0.056	

	Nitrate	3.83	
	pH (lab)	7.81	6.86
	Selenium	0.0109	
	Sulfate	427	
	TDS	2078	
GWM-20			
	Ammonia	12.7	
	Arsenic	0.0249	
	Chloride	6409	
	Copper	0.0377	
	Nickel	0.056	
	Nitrate	14.3	
	pH (lab)	7.94	6.61
	Selenium	0.0109	
	Sulfate	4916	
	TDS	17660	

Other Wells			
Sample Point	Constituent	Upper Concentration Limit	Lower Concentration Limit
GWM-06	Arsenic	0.018	
GWM-06	Chloride	34.1	
GWM-06	Nickel	0.056	
GWM-06	Nitrate	21.8	
GWM-06	pH (lab)	8.26	6.38
GWM-06	Selenium	0.011	
GWM-06	Sulfate	144	
GWM-06	TDS	898	
GWM-16			
GWM-16	Arsenic	0.052	
GWM-16	Chloride	20.9	
GWM-16	Nickel	0.0564	
GWM-16	Nitrate	4.01	
GWM-16	pH (lab)	8.47	5.96
GWM-16	Selenium	0.011	
GWM-16	Sulfate	82.6	
GWM-16	TDS	1106	
GWM-25			
GWM-25	Arsenic	0.0189	
GWM-25	Chloride	10.8	
GWM-25	Nickel	0.0572	
GWM-25	Nitrate	4.37	
GWM-25	pH (lab)	8.22	6.58
GWM-25	Selenium	0.0115	
GWM-25	Sulfate	165	
GWM-25	TDS	2368	

