

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO.
MONITORING AND REPORTING PROGRAM
COUNTY OF PLACER DEPARTMENT OF FACILITY SERVICES
MEADOW VISTA LANDFILL
CLASS III LANDFILL
POST-CLOSURE MAINTENANCE AND CORRECTIVE ACTION
PLACER COUNTY

This monitoring and reporting program (MRP) incorporates requirements for corrective action monitoring and maintenance of the landfill. This MRP is issued pursuant to California Water Code Section 13267. Compliance with this MRP is ordered by Waste Discharge Requirements (WDRs) Order No. _____. The Discharger shall not implement any changes to this MRP unless a revised MRP is issued by the Executive Officer.

Pursuant to 27 CCR Section 20080(d)(1), the Discharger shall maintain water quality monitoring systems for background and corrective action monitoring.

A. SUMMARY OF REPORTING & MONITORING FREQUENCIES

Table A

<i>Section</i>	<i>Reporting:</i>	<i>Frequency</i>
B.	Periodic Reports:	
	1. Semiannual Report	Semiannually
	2. Annual Monitoring Summary Report	Annually
	3. Constituents of Concern Report	Every 5 years
C.	Water Quality Protection Standard Report	Update as necessary
	<i>Monitoring:</i>	
D.	1. Leachate Seeps	
	a. Wet Season	Monthly
	b. Dry Season	Quarterly
	2. Leachate Collection Sump	See Section D.2
E.	1. Groundwater Elevation	Quarterly
	2. Background and Corrective Action	
	a. Field Parameters, VOCs, general minerals and dissolved iron	Semiannually
	b. Major Anions and Cations	Annually
	c. Dissolved Inorganics	Every two years
	3. Constituents of Concern	Every five years
F.	Facility Monitoring:	
	1. Standard Observations	
	A. Wet Season (October 1 – April 30)	Monthly
	B. Dry Season (May 1 – September 30)	Quarterly
	2. Maintenance Inspections	Quarterly
	3. After Significant Storm Events	Within 7 Days After Event
	4. Site Winterization	Annually
G.	Surface Water Monitoring:	If spring activity in toe area.

B. REPORTING

1. Semiannual Reports

The Discharger shall report monitoring data and information as required in this Monitoring and Reporting Program and as required under Order No. ____ and the August 1997 Standard Provisions and Reporting Requirements (SPRR). Reports shall be submitted **semiannually**. Each semiannual monitoring report shall include the following information:

- a. A compliance evaluation summary for the monitoring period as specified in the SPRR (Requirement 2, *Reports to be Filed with the Board, REPORTING REQUIREMENTS*).
- b. A tabular summary of well information from the installation logs, including well name, top-of-casing elevation, total depth, depths/elevations of screened interval, aquifer or zone (i.e. uppermost), and soil type(s) over the screened interval.
- c. The results of groundwater elevation monitoring.
- d. Tabular summaries of corrective action monitoring data for the monitoring period for each waste management unit, showing sampling date, well, constituents, concentrations, units, and concentration limits. The table shall also clearly show whether new monitoring data exceedances occurred during the monitoring period (i.e. highlight exceedances).
- e. Tables of historical monitoring data, as available, for each waste management unit, showing well, sampling dates, constituents, concentrations, units, and concentration limits. The data shall be presented so as to clearly show historical concentrations at each well.
- f. Plots, graphical summaries and a narrative discussion of the results of correction action monitoring, as specified in Section E.3.a herein.
- g. Field and laboratory tests sheets.
- h. An electronic copy of historical analytical data for at least the previous five years, as available, in a digital format necessary for statistical analysis (e.g., Excel format).

2. Annual Monitoring Summary Report

An Annual Monitoring Summary Report (Annual Report) shall also be prepared and submitted in accordance with this section of the MRP and the SPRR (Requirement 4, *Reports to be Filed with the Board, REPORTING REQUIREMENTS*). The report shall summarize monitoring results for the prior year and include a discussion of compliance with the WDRs and the Water Quality Protection Standard. The report may be included in the Second Semiannual Report for each year, but shall also include the following:

- a. Tabular and graphical summaries of the results of the prior year, including, but not necessarily limited to, representative time series plots and contaminant contour maps.
- b. A summary of the results of trend analysis performed on each constituent of the release during the prior year.
- c. A summary of the results of water chemistry analysis of water quality data collected during the prior year.
- d. A summary of comparisons of contaminant contour maps of representative constituents/parameters with those of prior years to track changes in plume and/or groundwater geochemical conditions since initiation of corrective action.
- e. A copy of the Sampling and Analysis Plan per WDR Monitoring Specification E.5 and the SPRR (Requirement 1, *Provisions for Monitoring*).

Reports which do not comply with the above-required format will be **REJECTED** and the Discharger shall be deemed to be in noncompliance with the waste discharge requirements.

The semiannual and annual reports shall be submitted to the Board in accordance with the following schedule for the calendar period in which samples were taken or observations made:

<u>Report</u>	<u>End of Reporting Period</u>	<u>Date Report Due</u>
First Semiannual	30 June	31 July
Second Semiannual	31 December	31 January
Annual Report	31 December	31 January

C. WATER QUALITY PROTECTION STANDARD (Section 20390)

The Water Quality Protection Standard (WQPS) shall consist of all Constituents of Concern, Concentration Limits for each constituent of concern, Monitoring Points, Point of Compliance, and the Compliance Period.

1. Constituents of Concern (Section 20395 of Title 27)

The constituents of concern (COCs) for the landfill, including monitoring parameters, shall be as listed in Tables F and G, which are incorporated herein and made part of this Order by reference. The constituent groups are as follows:

Constituents of Concern	Units	Test Method
Field Parameters:	See Table G	
General Minerals:	See Table G	
Inorganics (dissolved)	µg/L	See Table G
Volatile Organic Compounds	µg/L	USEPA Method 8260B

Constituents of Concern	Units	Test Method
Semi-Volatile Organic Compounds	µg/L	USEPA Method 8270
Organophosphorus Pesticides	µg/L	USEPA Method 8141A
Chlorinated Herbicides	µg/L	USEPA Method 8151
Organochlorine Pesticides	µg/L	USEPA Method 8081A
Polychlorinated Biphenols (PCBs)	µg/L	USEPA Method 8082

2. **Concentration Limits (Section 20400)**

- a. For VOCs and other organic COCs the concentration limit shall be the MDL.
- b. For inorganic monitoring parameters and COCs for which at least 10% of the data from background samples equal or exceed their respective MDL, the concentration limit shall be determined as follows:
 - i. By either the interwell Tolerance Interval or Prediction Interval statistical procedure applied to historical background data, or
 - ii. Using an alternative statistical method approved by the Executive Officer per Monitoring Specification E.18 of the WDRs.
- c. For inorganic monitoring parameters and COCs for which less than 10% of the data from background samples equal or exceed their respective MDL, the concentration limit shall be the PQL.

Statistical concentration limits shall be based on historical background data and updated as necessary to reflect current background conditions. Prior to calculating concentration limits, historical background data shall be screened for trends to ensure that the data used is of a single statistical population (i.e. does not show appreciable variation per Section 20415(e)(10)). If a significant trend is identified that reflects changes in background conditions, data prior to development of the trend shall not be included in updating concentration limits. Otherwise concentration limits shall include prior historical data. Concentration limits shall also take into account any seasonality in the data.

3. **Monitoring Points (Section 20405)**

The monitoring points for groundwater monitoring shall be as identified in Sections E.2 and E.3 herein.

4. **Point of Compliance (Section 20405)**

The point of compliance (POC) for the water standard is a vertical surface located at the hydraulically down gradient limit of the Unit that extends through the uppermost aquifer underlying the Unit. The POC wells for the landfill are MWs-4A, 5A, 7A, and 11S.

5. **Compliance Period (Section 20410)**

The compliance period for each Unit shall be the number of years equal to the active life of the Unit plus the closure period. The compliance period is the minimum period during which the Discharger shall conduct a water quality monitoring program subsequent to a release from the Unit. The compliance period shall begin anew each time the Discharger confirms a new release from the unit.

D. LEACHATE MONITORING

1. **Seeps**

The Discharger shall monitor the landfill (including the landfill toe area) for leachate seeps **monthly** during the wet season and **quarterly** during the dry season as part of standard observations. Any leachate seeps observed during these inspections or at any other time shall be sampled and analyzed for the constituents of concern referenced in Table C herein. Reporting shall be conducted in accordance with the Standard Provisions (*Provision 3, Reports to be Filed with the Board, REPORTING REQUIREMENTS*).

2. **Leachate Collection Sump**

Collected leachate shall be monitored in accordance with Table E.3.B herein, except that volume collected and pumped shall be monitored instead of elevation.

E. GROUNDWATER MONITORING

1. **Groundwater Elevation Monitoring (Section 20415(e)(13))**

The groundwater surface elevation (in feet and hundredths, MSL) in all wells and piezometers shall be measured on a **quarterly** basis. Groundwater elevations taken prior to purging the well and sampling for Monitoring Parameters may be used to fulfill this requirement. Groundwater elevations for all upgradient and down gradient wells for a given groundwater body shall be measured within a period of time short enough to avoid temporal variations in groundwater flow which could preclude accurate determination of groundwater gradient and direction. The results of groundwater elevation monitoring shall be displayed on a water table contour map and/or groundwater flow net for the site and included in each monitoring report. The Discharger shall use the groundwater elevation monitoring data to determine the following:

- a. The groundwater flow velocity
- b. The gradient direction in the upper aquifer, and in any additional zone of saturation monitored pursuant to this MRP
- c. Times of highest and lowest elevations of the water levels in the wells
- d. Estimated separation of groundwater from the lowest point of the unit

The results of these determinations shall be included in the semi-annual reports.

2. Background Monitoring (Section 20415(b)(1)(A))

The Discharger shall install and operate a sufficient number of Background Monitoring Points at appropriate locations and depths to yield ground water samples from the uppermost aquifer that represent the quality of ground water that has not been affected by a release from the units per Section 20415(b)(1)(A) of Title 27. Background monitoring data analysis shall include developing/updating concentration limits for statistical monitoring parameters and COCs, as necessary.

Background groundwater monitoring points shall include the following wells:

<u>Well</u>	<u>Distance from Landfill (feet)</u>	<u>Orientation from Landfill</u>	<u>Flow Direction at Well</u>
GM-1	250	To NE	West, SW
GM-8	175	To east	South, SE
MW-9	500	To north	NW ¹

1. Since offsite well MW-9 is not hydraulically upgradient of the landfill, it may be abandoned if monitoring of wells GM-1 and 8 under this Order indicates either (or both) of these wells are more representative of background conditions for the site and that representative concentration limits for all monitoring parameters and COCs can be developed from these wells.

Background groundwater monitoring points shall also include any future wells installed upgradient of the landfill for background monitoring. The monitoring schedule shall be as specified in Table E.3B.

3. Corrective Action Monitoring (Sections 20425 and 20430)

The Discharger shall install and operate a groundwater corrective action monitoring system for the purpose of monitoring the nature and extent of the release and the progress of corrective action. A sufficient number of samples shall be taken from all Monitoring Points and Background Monitoring Points to satisfy the data analysis requirements for a given Reporting Period, and shall be taken in a manner that ensures sample independence to the greatest extent feasible. Collection and analysis of samples shall be in accordance with procedures set forth in the Sampling Collection and Analysis Plan per Monitoring Specification E.5 of the WDRs.

The corrective action monitoring points at this facility shall include onsite wells MWs-4A, 5A, 7A, 10, 11S, and 11D; offsite wells MWs-2 and 3; and any future wells installed along the point of compliance, down gradient, and/or side gradient of the unit to monitor the nature and extent of the release and/or progress of corrective action. Groundwater samples shall be collected and analyzed in accordance with the following schedule:

Table E.3B
Corrective Action Monitoring Schedule

<u>Parameter</u>	<u>Units</u>	<u>Frequency</u>	<u>Data Analysis</u>	
Field Parameters			<u>Nature/Extent</u>	<u>Trends</u>
Elevation	Feet MSL	Quarterly	---	---
Specific Conductance	µMhos/cm	Semiannually	---	---
pH	pH units	Semiannually	---	---
Redox potential	millivolts	Semiannually	---	---
Temperature	°C	Semiannually	---	---
Turbidity	NTU	Semiannually	---	---
Monitoring Parameters (Table F)				
VOCs	µg/L	Semiannually	Intrawell	Intrawell
General Minerals:				
Chloride	mg/L	Semiannually	Interwell	Intrawell
Sulfate	mg/L	Semiannually	Interwell	Intrawell
TDS	mg/L	Semiannually	Interwell	Intrawell
Total Alkalinity	mg/L	Semiannually	Interwell	Intrawell
Total Hardness	mg/L	Semiannually	Interwell	Intrawell
Chemical Oxygen Demand (COD)	mg/L	Semiannually	Interwell	Intrawell
Dissolved Iron	mg/L	Semiannually	Interwell	Intrawell
Major Anions	mg/L	Annually	Interwell	Intrawell
Major Cations	mg/L	Annually	Interwell	Intrawell
Dissolved Inorganics	µg/L	Every 2 years	Interwell/Intrawell	Intrawell
Constituents of Concern (Table C and Table G)		Every 5 years	Interwell/Intrawell	Intrawell

COC monitoring under this Order shall be conducted by **15 December 2007** and at least every five years thereafter. Any COC that is confirmed by retest (i.e. per WDR Monitoring Specification E.21) to be a constituent of a release shall be added to the monitoring parameter list per Table 3B herein and Table F. In such cases, the Discharger shall also follow the Response to Release requirements of the WDRs (Monitoring Specification E.22) and 1997 Standard Provisions, as necessary.

Monitoring data analysis shall include the following:

a. Background Data

Updating concentration limits for statistical monitoring parameters and COCs, as necessary.

b. Nature and Extent of Release

i. Comparisons with concentration limit to identify any new or previously

undetected constituents at a monitoring point.

- ii. Water chemistry analysis by ion balance and an appropriate graphical method, such as Piper diagram, Trilinear plot, or Stiff diagram
 - iii. Preparation of contaminant contour maps for representative constituents/parameters (e.g., specific conductance, TDS, COD, Redox potential).
- c. Effectiveness of Corrective Action
- i. Preparation of time series plots for each constituent for which there are three or more data points (including non-detect values).
 - ii. Trend analysis for each constituent for which there are four or more data points above the practical quantitation limit (PQL), using appropriate statistical and graphical methods (e.g., Mann-Kendall, Sen's Slope).
 - iii. Comparison of contaminant contour maps for representative constituents/parameters with those of prior years to track changes in plume concentrations and/or groundwater geochemical conditions.
 - iv. The ongoing effectiveness of the landfill cover, landfill gas controls and precipitation and drainage controls as corrective action measures.
 - v. The need for additional corrective action measures and/or monitoring wells.

The results of the above analysis, including a narrative discussion, shall be included in each semiannual report and summarized in the Annual Report, as specified under reporting Section B above. The semiannual monitoring reports shall also include a discussion of the progress of corrective action toward returning to compliance with the Water Quality Protection Standard, as specified in Section 20430(h) of Title 27.

F. FACILITY MONITORING

1. Standard Observations

Standard Observations shall be performed **monthly** during the wet season (October 1 to April 30) and **quarterly** during the dry season (May 1 to September 30) and shall include those elements identified in Definition 24 of the Standard Provisions. Each monitoring report shall include a summary and certification of completion of all Standard Observations in accordance with the Standard Provisions (*Provision 2h, Reports to be Filed with the Board, REPORTING REQUIREMENTS*). Field logs of standard observations shall also be included in the report.

2. Regular Maintenance Inspections

Landfill facilities (i.e. monitoring wells) shall be inspected **quarterly** to identify the

need for maintenance and repairs. Necessary repairs shall be completed within 30 days of each inspection. Field logs of these inspections and documentation of the repairs shall be included in each semiannual monitoring report.

3. After Storm Events

Within seven days following each significant storm event (i.e. one which produces 1.5 inches or more of precipitation within a 24-hour period, as measured at the Auburn Station), the Discharger shall inspect the landfill cover and precipitation and drainage facilities for damage. Areas of erosion or sedimentation observed during the inspection(s) shall be flagged and repaired within seven days of identification. If repairs cannot be completed within the seven-day time frame, the Discharger shall notify the Regional Board of such and provide a schedule for completing necessary repairs. Findings and repairs implemented as a result of these inspections shall be included in each semiannual monitoring report. If no inspection was conducted because there was no significant storm event during the semiannual period, the report shall state such fact.

4. Site Winterization

Annually, prior to the anticipated rainy season, but no later than **30 September**, the Discharger shall conduct an inspection of the facility for the purpose of winterizing the site. The inspection shall identify any damage to the landfill cover, grade, precipitation and drainage controls, access roads and other landfill facilities. Any necessary construction, maintenance, or repairs to these facilities shall be completed by **31 October**. The Discharger shall document the results of the winterization inspection and any repair measures implemented in the Annual Report.

Documentation of the results of the above inspections and any repairs implemented shall include field observations, the location of any damage observed (i.e. on a site map), photographs of the damage, and a description of any repairs implemented, including post-repair photographs.

G. SURFACE WATER MONITORING (Section 20415(c))

The Discharger shall conduct surface water monitoring as necessary during periods of spring activity (as indicated by standard observations in landfill toe area) to monitor potential surface water impacts from the landfill due to hydraulic communication with impacted groundwater. The monitoring locations shall be as follows (Attachment B: Site Map):

<u>Monitoring Point</u>	<u>Location</u>	<u>Drain</u>
SW-5	Western side of landfill	Outfall to western drain
SW-1	Downstream of landfill toe	Natural drain at landfill toe

Surface water sampling shall be conducted at least semiannually during such periods for the field and monitoring parameters specified in Table E.3.B (except for elevation). Five-year COC monitoring shall not be required for surface water. If monitoring data analysis (see Monitoring Specifications E.18 through E.20) indicates that there has been a release to surface water from the landfill, the Discharger shall propose additional monitoring locations to delineate the extent of the impact and design corrective measures, as necessary, in accordance with Sections 20425 and 20430 of Title 27.

The Discharger shall implement the above monitoring program on the effective date of this Program. 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 C. CREEDON, Executive Officer

(Date)

Attachments
JDM