

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2008-\_\_\_\_\_

FOR  
IT ENVIRONMENTAL LIQUIDATING TRUST  
MONTEZUMA HILLS FACILITY  
OPERATION OF CLASS II SURFACE IMPOUNDMENT  
AND POST-CLOSURE MAINTENANCE OF CLASS I LANDFILLS  
SOLANO COUNTY

The Discharger shall comply with this revised Monitoring and Reporting Program, and with the companion Standard Provisions and Reporting Requirements, as ordered by Waste Discharge Requirements (WDRs) Order No. R5-2008-\_\_\_\_\_. Failure to comply with this Program, or with the Standard Provisions and Reporting Requirements, constitutes non-compliance with the WDRs and with the Water Code, which can result in the imposition of civil monetary liability.

**A. 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 (2003). 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, surface water monitoring points, unsaturated zone monitoring devices, and leachate monitoring points shall be sampled and analyzed for monitoring parameters and constituents of concern as indicated and listed in the tables of this MRP.

The Discharger may, upon approval, 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.

If the Discharger, through a detection monitoring program, or the Regional Water Board finds that there is an additional measurably significant increase in indicator parameters or waste constituents over the water quality protection standards at or beyond the Points of Compliance, the Discharger shall notify the Regional Water Board or acknowledge the Regional Water Board's finding in writing within seven days, and shall immediately resample for the constituent(s) or parameter(s) at the point where the standard was exceeded. Within 90 days, the Discharger shall submit to the Regional Water Board the results of the resampling and either:

- a. a report demonstrating that the water quality protection standard was not, in fact, exceeded; or

- b. a plan to address the increase such that the constituents will achieve compliance with the water quality protection standard (in the event that the exceedance is caused by the spread of the existing release already under corrective action); or
- c. an amended Report of Waste Discharge for the establishment of an evaluation monitoring program, per Section 20415 and 20425 of Title 27, or Section 2550.7 and 2550.9 of Title 23, as appropriate, which is designed to evaluate changes in water quality due to the release from the WMUs (in the event that the exceedance is caused by a new release from a WMU).

## 1. **Groundwater Monitoring**

The Discharger shall operate and maintain a groundwater monitoring system that complies with the applicable provisions of §20415 of Title 27 in accordance with a Monitoring Program approved by the Executive Officer. The Discharger shall collect, preserve, and transport groundwater samples in accordance with the approved Sample Collection and Analysis Plan.

The Discharger shall determine the groundwater flow rate and direction in the upper water-bearing unit and in the lower water-bearing unit monitored pursuant to this Monitoring and Reporting Program at least quarterly, and report the results annually, including the times of highest and lowest elevations of the water levels in the wells. Quarterly water level measurements shall be taken from each monitoring well, piezometers, and groundwater recovery well, and any wells installed after the adoption of this MRP. This includes all monitoring wells and piezometers listed in Table 2 and 3.

Monitoring wells at the site are divided into two groups based on the depth of the screened interval in the well. Upper water-bearing unit wells are those which are completed above the lower clay layer and are generally 30 feet or less in depth. Lower water-bearing unit wells penetrate the lower clay layer and are generally 50 feet or more in depth. Wells to be monitored during the post-closure period are listed in Table 2 and shown on Attachment B. Upper water-bearing unit wells shall be sampled during the second and fourth quarters of each year. Lower water bearing unit wells, additional wells, and background wells shall be sampled during the second quarter of each year.

Prior to sampling, each monitoring well shall be adequately developed to exclude sediment and adequately purged to provide samples that are representative of water in the saturated zone. Groundwater elevations shall be measured and the wells shall be purged of at least three well volumes until temperature, pH, and electrical conductivity have stabilized. Depth to groundwater shall be measured to the nearest 0.01 feet. Samples shall be collected from monitoring wells identified in Table 2 and analyzed for the monitoring parameters in accordance with the methods and frequency specified in the following table (Table 1):

**Table 1 - Groundwater Monitoring Program**

<b>Monitoring Parameters/Analytes</b>	<b>EPA Analytical Method</b>	<b>Max. Detection Limit (µg/l)*</b>	<b>Monitoring Frequency</b>
<b>Physical</b>			
Depth to Groundwater	---	(to 0.01 ft)	Quarterly
Groundwater Gradient	---	---	Quarterly
Temperature	Field Meter	°C	Semi-Annual/Annual <sup>1</sup>
pH	Field Meter	pH Units	Semi-Annual/Annual <sup>1</sup>
Conductivity	Field Meter	1 µmhos/cm	Semi-Annual/Annual <sup>1</sup>
<b>Monitoring Parameters:</b>			
Total Dissolved Solids	160.1	1,000	Semi-Annual/Annual <sup>1</sup>
Chloride	300	500	Semi-Annual/Annual <sup>1</sup>
Sulfate	300	500	Semi-Annual/Annual <sup>1</sup>
Boron	6010	100	Semi-Annual/Annual <sup>1</sup>
Magnesium	6010	50.0	Semi-Annual/Annual <sup>1</sup>
<b>Constituents of Concern:</b>			
VOCs	8260	0.1	See Footnote <sup>2</sup>
Alkalinity	310	1,000	Every 5 Years
Arsenic	6010	1.0	Every 5 Years
Barium	6010	5.0	Every 5 Years
Calcium	6010	50.0	Every 5 Years
Chromium (Total)	6010	2.1	Every 5 Years
Chromium (Hexavalent)	218.6	0.5	Every 5 Years
Copper	6010	2.5	Every 5 Years
Iron	6010	50.0	Every 5 Years
Lead	6010	1.0	Every 5 Years
Manganese	6010	1.0	Every 5 Years
Mercury	7470	0.1	Every 5 Years
Nickel	6010	2.0	Every 5 Years
Potassium	6010	100	Every 5 Years
Selenium	6010	1.0	Every 5 Years
Sodium	6010	200	Every 5 Years
Vanadium	6010	2.0	Every 5 Years
Zinc	6010	5.0	Every 5 Years
* For non-detectable results			

<sup>1</sup> All Upper Point of Compliance Wells shall be monitored semi-annually for Physical and Monitoring Parameters (refer to Table 2 for list of these wells). All other wells to be sampled annually (see Table 2).

<sup>2</sup> Wells MW-143, 154, 168, and 173 and the groundwater extraction sump shall be monitored for VOCs annually. Any new wells with detected VOCs shall also be monitored annually, until no detectable concentrations are noted for two consecutive years. All other wells shall be monitored for VOCs every 5 years.

**Table 2 - Groundwater Monitoring Wells**

<b><i>Upper Point of Compliance Wells Sampled Semi-Annually</i></b>	<b><i>Lower Point of Compliance Wells Sampled Annually</i></b>
<p style="text-align: center;"><b><u>Shallow Zone</u></b>            MW-40            MW-70            MW-108            MW-109            MW-129            MW-135            MW-143            MW-152            MW-171            MW-172            MW-173            MW-174            MW-176            MW-190</p>	<p style="text-align: center;"><b><u>Deep Zone</u></b>            MW-100            MW-101            MW-102            MW-106            MW-131            MW-138            MW-147            MW-153            MW-154            MW-160            MW-161            MW-167            MW-168</p>
<b><i>Additional Wells Sampled Annually</i></b>	<b><i>Background Wells Sampled Annually</i></b>
<p>MW-87 Upper            MW-163 Lower            MW-175 Lower            MW-179 Upper            MW-180 Upper            MW-181 Upper            MW-182 Upper            MW-183 Upper            MW-184 Upper            MW-185 Lower            MW-186 Upper            MW-187 Upper            MW-188 Upper            MW-189 Upper</p>	<p style="text-align: center;"><b><u>Shallow Zone</u></b>      <b><u>Deep Zone</u></b>            MW-140              MW-141            MW-145              MW-170</p>

**Table 3 -Supplemental Groundwater Level Monitoring Points**

(PZ = piezometer, MW = monitoring well)

<b><i>Slurry Wall Water Level Monitoring Points</i></b>	
<b><u>Inside</u></b>	<b><u>Outside</u></b>
PZ-171	MW-171
PZ-172	MW-172
MW-130	MW-129
PZ-173/173A	MW-173
PZ-203	PZ-204
PZ-40	MW-40/PZ-40A
MW-136	MW-135
MW-144	MW-143
PZ-176	MW-176
MW-62	MW-190
<b><i>Recovery Well/Trench Piezometers</i></b>	
<b><u>Southeast</u></b>	<b><u>West</u></b>
PZ-196	PZ-193
PZ-197	PZ-194
PZ-198	PZ-195
PZ-199	PZ-202
PZ-201	
<b><i>Dewatering System Piezometers</i></b>	
PZ-2	PZ-5
PZ-3	PZ-6
PZ-4	
<b><i>Additional Piezometers</i></b>	
PZ-7	
PZ-8	
PZ-9	

**2. Class II Surface Impoundment Monitoring**

All visible portions of synthetic liners shall be inspected monthly until all free liquid is removed from the surface impoundment as part of closure. If, during the active life of the impoundment, the wastes are removed and the impoundment is cleaned down to the liner, an inspection shall be made of the bottom of the liner prior to refilling of the impoundment. Inspection results or observations shall be forwarded to the Regional Water Board at the next reporting period.

Wastewater contained in the Class II surface impoundment shall be sampled annually in accordance with the groundwater monitoring program listed in Table 1 of this MRP, with the exception of VOCs. Remaining surface impoundment capacity (acre-feet) and freeboard (feet and tenths) shall be recorded monthly and included in the annual report to the Regional Water Board.

**3. LCRS/Leachate Monitoring and Annual LCRS Test**

The leachate collection and removal systems (LCRS) sumps shall be inspected monthly for leachate generation. Upon detection of leachate in a previously dry LCRS, the Dischargers shall immediately sample the leachate and shall continue to sample and report the leachate results at the frequencies listed in Table 1 of this MRP, with the exception of VOCs.

All LCRS shall be tested annually to demonstrate operation in conformance with waste discharge requirements. The results of these tests shall be reported to the Regional Water Board and shall include comparison with earlier test made under comparable conditions.

**4. Dewatering System Monitoring**

Water samples from the dewatering system collection sump beneath the landfill shall be collected annually and analyzed for the constituents specified under Groundwater Monitoring. The collection sump shall be inspected monthly for proper operation. All sources and total monthly volumes of water discharged to the Class II surface impoundment shall be recorded and included in the annual report to the Regional Water Board.

**5. Surface Water Monitoring**

Surface water monitoring shall be conducted in accordance with the facility Storm Water Pollution Prevention Plan.

**6. 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 any damage to the drainage control system, the groundwater monitoring equipment (including wells, *etc.*), the surface impoundment liner system, and shall include the Standard Observations contained in Section XII.S of the Standard Provisions and Reporting Requirements. The inspection shall also verify that the Class II surface

impoundment has sufficient capacity for the 100-year wet season. 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 (greater than one inch in 24 hours). 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.

**B. REPORTING**

The Discharger shall report all required monitoring data and information, and results of all required facility inspections **annually** 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 non-compliance 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. A short discussion of the monitoring results, including notations of any water quality violations, shall precede the tabular summaries.

Field and laboratory tests shall be reported in the annual monitoring reports. The Annual Monitoring Summary Reports shall be submitted to the Regional Water Board by **15 September** and shall summarize data collected over the previous four quarters.

The results of any monitoring done more frequently than required at the locations specified herein shall be reported to the Regional Water Board. Data shall be graphed for the period of record so as to show historical trends at each well. VOCs may be graphed as total VOCs. The report shall include a discussion of the progress toward re-establishment of compliance with waste discharge requirements and water quality protection standard.

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 annual 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.

As required by the California Business and Professions Code Sections 6735, 7835, and 7835.1, all Groundwater Monitoring Reports shall be prepared under the direct supervision of a Registered Engineer or Professional Geologist and signed/stamped by the registered professional.

### **Required Monitoring Reports**

#### **1. Annual Monitoring Summary Report**

By **15 September** of each year, the Discharger shall submit the Annual Monitoring Summary Report as specified in the Standard Provisions and Reporting Requirements. The progress of the corrective action program shall be analyzed and described in the Annual Monitoring Summary Report. 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*", including, but not limited to the requirement to plot the concentration of select constituents graphically for at least the past five years.

The Annual Monitoring Summary Report shall include groundwater surface elevation (in feet and hundredths, Mean Sea Level) for all monitoring wells and piezometers listed in Tables 2 and 3 and shall be used to determine the velocity and direction(s) of ground water flow. This information shall be displayed on a water table contour map with ground water flow directions for the second quarter of the reporting year. The report shall include east-west and north-south oriented cross sections through the facility boundary to display piezometric contours and vertical flow direction(s).

The Annual Monitoring Summary Report shall include groundwater level measurements obtained from the wells and/or piezometers listed in Table 3 which shall be used to evaluate the effectiveness of the slurry wall and the ground water dewatering system under the waste consolidation area. The annual report shall contain a discussion of the slurry wall performance and shall discuss the effectiveness of the dewatering system in maintaining separation of waste and the upper water-bearing zone.

The Annual Monitoring Summary Report shall include a summary and certification of completion of all Standard Observations for the waste management units (WMUs), for the perimeter of the landfills, and for the receiving waters. The standard observations shall be performed on a monthly basis and shall include those elements as defined in the Standard Provisions and Reporting Requirements. The monitoring reports shall also include copies of the Discharger's inspection reports for the previous 12-month period. A copy of the annual testing of the LCRS for the WMUs shall also be submitted in the annual monitoring report.

## 2. **Constituents of Concern (COC) 5-Year Report**

The Dischargers shall submit reports of the results of groundwater monitoring for the Constituents of Concern every five years, or more frequently if required. The COC Report may be combined with the Annual Monitoring Summary Report or an Annual Summary Report having a Reporting Period that ends at the same time. The next COC Report is due on 15 September 2012.

## 3. **Response to a Release**

If the Discharger determines that there is either 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) or physical evidence of a release, 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 the "Response to Release" section of the Standard Provisions and Reporting Requirements (2003).

## 4. **Facility Monitoring Report**

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, as required in Section A.6.a of this MRP, above.

# C. **WATER QUALITY PROTECTION STANDARD AND COMPLIANCE PERIOD**

## 1. **Water Quality Protection Standard**

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. Any modifications to the Water Quality Protection Standard shall be submitted for review and approval.

The Water Quality Protection Standard 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 groundwater 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 'COC list' (list of Constituents of Concern required under Title 27 CCR 20390 and/or Title 23 CCR 2550.3) shall include all constituents listed in the groundwater monitoring program (Table 1). The Discharger shall monitor all COCs every five years, or more frequently as required under the corrective action monitoring program.

## 3. Concentration Limits

Concentration limits shall be calculated from background groundwater data on an annual basis. For detection monitoring, the concentration limits shall be used to determine whether there is an indication of a release detected at a detection monitoring well. For corrective action monitoring, the concentration limits shall be used as a clean-up goals.

The Discharger shall calculate concentration limits for inorganic constituents based on background groundwater data. The Discharger shall calculate concentration limits for organic constituents based on the laboratory detection limit for that constituent. The Discharger shall calculate concentration limits for inorganic constituents using the following methods (as proposed in the May 2007 *Sampling and Analysis Plan*):

- a. For constituents in background that are detected greater than 50 percent of the time in background, the Discharger shall use a non-parametric Upper Confidence Limit (UCL) as follows:
  1. Rank all data from smallest to largest concentration, tying non-detects at the bottom.
  2. Calculate the upper rank value  $u$  with the formula:

$$u = p(n + 1) - Z^{1-\alpha}[np(1-p)]^{1/2}$$

where  $p$  is the proportion of data that must fall within  $Z_{1-\alpha}$  quantile, and  $n$  is the total number of observations. Use  $p = 0.95$ , with the corresponding value of  $Z_{1-\alpha} = 1.645$  (this value is to be obtained from data tables for the normal curve).

3. If the calculated rank  $u$  is not an integer then linearly interpolate between the concentration of adjacent ranks to find the UCL. Otherwise, the UCL is simply that with the rank of  $u$ .
- b. For constituents in background that are detected less than 50 percent of the time in background, the Discharger shall use the highest background concentration that is not an outlier.

The Discharger shall calculate concentration limits for organic constituents based on background groundwater data. Since the organic constituents listed in the MRP do not occur naturally in background groundwater, the concentration limits for organic constituents shall be the laboratory Practical Quantitation Limit.

#### **4. Monitoring Points**

Monitoring Points (including background) for groundwater are identified in Table 2.

#### **5. Point of Compliance**

The Point of Compliance for the Concentration Limits 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. The Points of Compliance wells are identified in Table 2.

#### **6. Compliance Period**

The Compliance period is the number of years equal to the active life of the facility plus the closure period. Each time the Water Quality Protection Standard is exceeded (i.e., a release is discovered), the surface impoundment begins a Compliance Period on the date the Regional Water Board directs the Dischargers to begin an Evaluation Monitoring Program. If the Discharger's Corrective Action Program (CAP) has not achieved compliance with the Standard by the scheduled end of the Compliance Period, the Compliance Period is automatically extended until the surface impoundment has been in continuous compliance for at least one year as required by Title 27 Section 20430(g).

A letter transmitting the self-monitoring reports shall accompany each report. Such a letter shall include a discussion of requirement violations found during the reporting period, and actions taken

or planned for correcting noted violations, such as operation or facility modifications. If the discharger has previously submitted a report describing corrective actions and/or a time schedule for implementing the corrective actions, reference to the previous correspondence will be satisfactory. The transmittal letter shall 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.

Revision of this monitoring program, including changes to monitored parameters and/or monitoring frequencies outlined herein, will be considered pending submission of specific justification and rationale.

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

Ordered by: \_\_\_\_\_  
PAMELA C. CREEDON, Executive Officer

\_\_\_\_\_  
(Date)

WLB