

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

REVISED MONITORING AND REPORTING PROGRAM NO. 98-208

FOR
IT CORPORATION MONTEZUMA HILLS FACILITY
CLASS II SURFACE IMPOUNDMENT
AND CLOSED CLASS I LANDFILLS
SOLANO COUNTY

The Discharger shall maintain water quality monitoring systems that are appropriate for detection and corrective action monitoring and that comply with the provisions of Title 27, California Code of Regulations (CCR), Division 2, Subdivision 1, Chapter 3, Subchapter 3, and CCR Title 23, Division 3, Chapter 15.

Compliance with this revised Monitoring and Reporting Program, and with the companion Standard Provisions and Reporting Requirements, is ordered by Waste Discharge Requirements (WDRs) Order No. 98-208. 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. REPORTING

The Discharger shall report monitoring data and information as required in this revised 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 semi-annual monitoring reports. Semi-Annual monitoring reports shall be submitted to the Board by 15 March and 15 September. The report submitted 15 September shall constitute the semi-annual report including data collected between the previous January 1 and June 30. The report submitted 15 March shall constitute the semi-annual report including data collected between July 1 and December 31 of the previous calendar year. The report submitted 15 March shall also constitute the annual report for the previous calendar year summarizing data collected over the entire calendar year.

The results of any monitoring done more frequently than required at the locations specified herein shall be reported to the Board. An annual report shall be submitted to the Board which contains tabular summaries of the monitoring data obtained during the previous twelve months. Data from monitoring parameters completed for semi-annual and annual sampling events 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.

B. REQUIRED MONITORING REPORTS

1. Detection/Corrective Action Monitoring Report

The facility is currently under Detection/Corrective Action Monitoring. The Discharger shall submit reports of the results of Detection/Corrective Action Monitoring in accordance with the schedules specified in this revised Monitoring and Reporting Program.

2. Annual Monitoring Summary Report

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.

3. Constituents-of-Concern (COC) 5 Year Report

In the absence of a *new* release being indicated, the Discharger shall monitor all Constituents of Concern for all groundwater monitoring points every fifth year, beginning with calendar year 2002 (the first COC Reporting Period shall be 15 March 2003) with subsequent COC monitoring efforts being carried out every fifth year thereafter alternately in the Summer (Reporting period ends 15 September) and Winter (Reporting Period ends 15 March). The COC Report may be combined with a Detection Monitoring Report or an Annual Summary Report having a Reporting Period that ends at the same time.

Standard Observations

Each monitoring 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 semi-annual period in which the facility was inspected. A copy of the annual testing of the LCRS for the WMUs shall also be submitted in the annual monitoring report.

C. MONITORING

If the Discharger, through a detection monitoring program, or the 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 Board or acknowledge the 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 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. 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.

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 Board at the next reporting period.

Wastewater contained in the Class II surface impoundment shall be sampled in accordance with the groundwater monitoring program listed in Table 1 of this MRP, with the exception of VOCs. The semi-annual samples shall be collected in March and September.

Both leachate collection and removal systems (LCRSs) in the surface impoundment shall be operated to function without clogging during the post-closure maintenance period. The systems shall be tested at least annually to demonstrate proper operation. The results of the tests shall be compared with earlier tests made under comparable conditions. The testing data and discussion of results shall be included in the first facility monitoring report submitted by the Discharger following the LCRS test date.

The LCRS sumps shall be inspected monthly for the presence of liquid. If liquid is detected, the Discharger shall determine the depth of liquid and the leachate generation rate as required by WDRs Specifications 16 and 17. The calculated daily volume of leachate recovered from each LCRS sump shall be recorded and included in the semi-annual report to the Board.

Remaining surface impoundment capacity (acre-feet) and freeboard (feet and tenths) shall be recorded monthly and included in the semi-annual report to the Board. Liquids from each LCRS shall be sampled in accordance with the groundwater monitoring program listed in Table 1 of this MRP, with the exception of VOCs.

Groundwater Monitoring

Monitoring wells at the site are divided into two groups based on the depth of the screened interval in the well. Shallow wells are those which are completed above the lower clay layer and are generally 30 feet or less in depth. Deep 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.

Prior to construction of additional ground water monitoring wells or piezometers, plans and specifications shall be submitted to Board staff for review and approval. All new monitoring wells or piezometers shall be drilled and logged under the supervision of a registered geologist.

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 from monitoring wells identified in Table 2 shall be analyzed for the parameters and constituents summarized in Table 1 below:

Table 1 - Groundwater Monitoring Program

Monitoring Parameters/Analytes	EPA Analytical Method	Max. Detection Limit (µg/l)*	Monitoring Frequency
Physical			
Depth to Groundwater	---	(to 0.01 ft)	Semi-Annually
Groundwater Gradient	---	---	Semi-Annually
Temperature	Field Meter	°C	Semi-Annually
pH	Field Meter	pH Units	Semi-Annually
Conductivity	Field Meter	1 µmhos/cm	Semi-Annually
Monitoring Parameters:			
Total Dissolved Solids	160.1	1,000	Semi-Annually
Chloride	300	50.0	Semi-Annually
Sulfate	300	50	Semi-Annually
Boron	6010	100	Semi-Annually
Magnesium	6010	50.0	Semi-Annually
Constituents of Concern:			
VOCs	8260	0.1	See Footnote ¹
Alkalinity	310	1,000	Every 5 Years
Arsenic	7060	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)	7199	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	7740	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			

¹ Wells MW-102, 129, 143, 161, 168, 173, and 176 and the groundwater extraction sump shall be monitored for VOCs semi-annually. Any new wells with detected VOCs shall also be monitored semi-annually, until no detectable concentrations are noted for two consecutive years. All other point of compliance wells shall be monitored for VOCs annually. The remaining wells shall be monitored for VOCs every five years, excluding background wells.

Table 2 - Groundwater Monitoring Wells

<i>Upper Point of Compliance Wells</i>	<i>Lower Point of Compliance Wells</i>	
<p><u>Shallow Zone</u> 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><u>Deep Zone</u> MW-100 MW-101 MW-102 MW-106 MW-131 MW-147 MW-153 MW-154 MW-160 MW-161 MW-167 MW-168 MW-138</p>	
<i>Additional Wells Sampled Annually</i>	<i>Background Wells Sampled Semi-Annually</i>	
<p>MW-87 MW-163 MW-175 MW-179 MW-180 MW-181 MW-182 MW-183 MW-184 MW-185 MW-186 MW-187 MW-188 MW-189</p>	<p><u>Shallow Zone</u> MW-140 MW-145</p>	<p><u>Deep Zone</u> MW-141 MW-170</p>

Groundwater Level Monitoring

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

Groundwater level measurements obtained from the wells and/or piezometers listed in Table 3 shall be used to evaluate the effectiveness of the slurry wall and the ground water dewatering system under the waste

consolidation area. The semi-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.

Table 3 -Supplemental Groundwater Level Monitoring Points

(PZ = piezometer, MW = monitoring well)

<i>Slurry Wall Water Level Monitoring Points</i>	
<u>Inside</u>	<u>Outside</u>
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
<i>Recovery Well/Trench Piezometers</i>	
<u>Southeast</u>	<u>West</u>
PZ-196	PZ-193
PZ-197	PZ-194
PZ-198	PZ-195
PZ-199	PZ-202
PZ-201	
<i>Dewatering System Piezometers</i>	
PZ-2	PZ-5
PZ-3	PZ-6
PZ-4	
<i>Additional Piezometers</i>	
	PZ-7
	PZ-8
	PZ-9

Dewatering system

Water samples from the dewatering system collection sump beneath the landfill shall be collected semi-annually and analyzed for the constituents specified under Groundwater Monitoring. The semi-annual samples shall be collected in March and September. 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 semi-annual report to the Board.

Surface Water Monitoring

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

D. WATER QUALITY PROTECTION STANDARD

The Water Quality Protection Standard (Standard) consists of the following elements:

- Constituents of Concern;
- Concentration Limits;
- Monitoring Points;
- Points of Compliance; and
- Compliance Period.

Each of these is described as follows:

1. 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.

2. 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 March 2000 *Groundwater and Surface Water Monitoring 1999 Annual Report*):

- 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 greater than 10 percent and less than 50 percent of the time in background, the Discharger shall use a Test of Proportions as follows:

1. Calculate the proportion of P_u of detected concentrations in background samples:

$$P_u = x/n$$

where x is the number of detects in background samples and n is the number of background samples.

2. Similarly, calculate the proportion of P_d of detected concentrations in compliance or other downgradient well samples:

$$P_d = y/m$$

where y is the number of detects in compliance well samples and m is the number of samples.

3. Calculate the standard error S_D in the difference of the two proportions:

$$S_D = \{[(x + y)/(n + m)] [1-(x + y)/(n + m)] [1/n + 1/m]\}^{1/2}$$

4. Calculate Z from the following statistic:

$$Z = (P_u - P_d)/S_D$$

5. Compare the absolute value of Z to the p^{th} percentile (97.5th from a two-sided) from the standard normal distribution (equal to 1.96 for $Z_{1-\alpha} = 0.05$). If the value of Z exceeds 1.96, then the two proportions are significantly different, and may infer evidence of a release.
- c. For constituents in background that are detected less than 10 percent of the time, the Discharger shall use the highest background concentration that is not an outlier.

3. Monitoring Points

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

4. Points of Compliance

The Points of Compliance are identified in Table 2.

5. Compliance Period

The Compliance period is the number of years equal to the active life of the surface impoundment or landfill plus the closure period. Each time the Water Quality Protection Standard is exceeded (i.e., a release is discovered), the surface impoundment or landfill begins a Compliance Period on the date the 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 or landfill has been in continuous compliance for at least three consecutive years.

If subsequent sampling of background monitoring wells 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 standards.

Revision of this monitoring program, including changes to monitored parameters and/or monitoring frequencies outlined herein, shall 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: _____
GARY M. CARLTON, Executive Officer

28 March 2001
(Date)