

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. R5-2004-0041

WASTE DISCHARGE REQUIREMENTS
FOR
COUNTY OF PLACER DEPARTMENT OF FACILITY SERVICES
LOOMIS LANDFILL
CLASS III LANDFILL
POST-CLOSURE MAINTENANCE
AND CORRECTIVE ACTION
PLACER COUNTY

The California Regional Water Quality Control Board, Central Valley Region (hereafter Board) finds that:

1. The Placer County Department of Facility Services (hereafter referred to as “Discharger”) owns and operates the Loomis Landfill, a closed unlined Class III landfill on Ong Place near the intersection of King Road and Penryn Road, approximately one mile east of Loomis. The 29.5 acre site is in the northeast 1/4 of Section 10, T11N, R7E, MDB&M, corresponding to Assessor Parcel Number 043-080-029, as shown in Attachments A and B, which are incorporated herein and made part of this Order.
2. The facility includes a single 20-acre unlined landfill, associated access roads, drainage facilities, gas collection facilities, a gas flare station, a drain sump for extraction of leachate and impacted groundwater, and a former borrow area, as shown in Attachment C: Facility Map, which is incorporated herein and made a part of this Order.
3. The landfill operated from 1959 to 1979, accepting household, commercial and industrial refuse. The operator was Auburn Disposal Company (under contract with Placer County) from 1959 to 1975 and Auburn Placer Disposal Services from 1975 to 1979. The landfill stopped accepting all but inert wastes in 1979 and was closed in 1986 (see Finding 21).
4. The landfill was previously regulated under Waste Discharge Requirements (WDRs) Order No. 94-079, which was issued prior to landfill closure and no longer adequately describes the facility. These revised WDRs describe the closed landfill and prescribe requirements for post-closure maintenance and corrective action monitoring.
5. Effective 18 July 1997, the water quality regulations for Class II and Class III disposal facilities formerly contained in Chapter 15, Title 23, California Code of Regulations (CCR), and the solid waste regulations formerly in Title 14, CCR, were consolidated into Chapters 1 through 7, Subdivision 1, Division 2, Title 27, CCR (Title 27). These WDRs reference Title 27 regulations.

6. On 9 October 1991, the United States Environmental Protection Agency (USEPA) promulgated regulations (Title 40, Code of Federal Regulations, Parts 257 and 258, "federal municipal solid waste (MSW) regulations" or "Subtitle D") that apply, in California, to Dischargers who own or operate Class II or Class III landfill units at which MSW is discharged. The Loomis landfill is not subject to federal Subtitle D regulations because it ceased accepting wastes before 9 October 1991.

WASTES AND UNIT CLASSIFICATION

7. The landfill is an existing, inactive reclassified Class III waste management unit under Section 20080(g) of Title 27 because it ceased accepting wastes prior to 27 November 1984.
8. The landfill accepted wastes defined as "inert" and "nonhazardous" under Sections 20230 and 20220 of Title 27, respectively. The waste stream consisted of primarily household refuse (60 to 70 percent) and smaller amounts of commercial and industrial refuse (15 to 20 percent each). The landfill also accepted inert construction debris after it ceased accepting refuse wastes in 1979.
9. Approximately 333,000 in place cubic yards (200,000 tons) of waste were disposed of at the landfill. Disposal was by the area fill method. It is unknown whether additional waste may have been discharged to the landfill in trenches, although existing gas well boring logs do not show waste deeper than the original prepared surface grade. The base elevation of wastes ranges from about 365 to 380 feet MSL in the southwest and northwest corners of the landfill, while the lowest known elevation of waste in the interior of the landfill is about 369 feet MSL, based on logging information from gas wells. The highest elevation of wastes is about 390 feet MSL in the northeastern part of the landfill. The maximum known depth of waste is about 16 feet.

SITE DESCRIPTION

10. The landfill is in the Sierra foothills in an area known as the Loomis Basin. The topography in the area surrounding the site is low rolling foothill terrain with elevations ranging from about 370 to 470 feet MSL.
11. Land within 1000 feet of the landfill consists of a regional park adjacent to the property on the north, large agricultural parcels to the south, and five-acre residential lots on the east and west.
12. The facility is not within a 100-year floodplain, however surrounding areas to the north and west within 50 feet of the landfill are located within a 100-year floodplain.

13. The site receives an average of 26 inches per year of precipitation as determined from Rainfall Depth Duration Frequency data provided by the State Department of Water Resources for the Loomis Station. The 100-year, 24-hour precipitation event for this station is 4.6 inches.
14. The site is underlain by weathered granitic rocks consisting of quartz diorite (Penryn Diorite), recent alluvium and unconsolidated terrace deposits. Soils primarily consist of sandy loam, silty sand and sandy gravel. Soil thickness is between 15 and 60 inches.
15. The nearest known fault is about 6 miles east of the landfill in the Bear Mountain/Melones fault zone. No determination of maximum probable earthquake has been made.
16. The site is in the Lower American Hydrologic Sub-Area, Coon-American Hydrologic Area of the Valley-American Hydrologic Unit in the Sacramento Hydrologic Basin Planning Area (as depicted on the interagency hydrologic maps prepared by the Department of Water Resources in August 1986).
17. Surface drainage flows to natural swales that drain to Secret Ravine approximately two hundred feet northwest of the site (see Attachment B: Area Map). Secret Ravine flows southwest into Antelope Creek, tributary to Dry Creek, thence the Natomas East Main Drain, and the Sacramento River.
18. The beneficial uses of Dry Creek are agricultural and industrial supply, ground water recharge, aesthetic enjoyment, fresh water replenishment, and preservation and enhancement of fish, wildlife, and other aquatic resources.

WASTE MANAGEMENT UNIT DESIGN

19. The landfill is unlined and does not have a leachate collection and recovery system (LCRS). A french drain plumbed to a collection sump was installed along a portion of the southwestern perimeter of the landfill sometime after the landfill became inactive in 1979 (but prior to landfill closure in 1986). The exact length and location of the french drain was not documented but it is estimated that it is about six feet deep and extends approximately 50 feet west of the sump to a point near MW-2A and approximately 250 feet east of the sump to a point near MW-2.
20. The drain sump includes a dedicated, automatic pump which pumps collected liquid via a pipeline over the landfill cover to storage tanks on the northwest side of the site. There are six storage tanks each with a capacity of about 1,800 gallons. The tanks are serviced by pump trucks, which dispose of the wastewater offsite in a sanitary sewer manhole (see Finding 35 and Attachment C).

LANDFILL CLOSURE

1986 Closure

21. From 1984 to 1986 the landfill was covered in phases with a one-foot layer of compacted clay soil imported from the Western Regional Landfill. The clay was placed over an existing two-foot foundation layer consisting of decomposed granite (dg) soil constructed by the former operator (Auburn Placer Disposal Services) upon cessation of operations in 1979. No vegetative cover layer was constructed in the 1986 closure. Field permeability tests of the cover subsequently conducted in 1991 using an air entry permeameter indicated that it had an average permeability of about 8.4×10^{-6} cm/sec.

1998 Cover Repairs/Improvements

22. Previous WDR Order No. 94-079 required that the Discharger develop and implement an Engineering Feasibility Study/Corrective Action Program and a Final Closure/Postclosure Maintenance Plan to address groundwater impacts (see Findings 33 and 34) and the need to reduce infiltration into the landfill. The Discharger subsequently submitted an October 1994 *Corrective Action and Final Closure/PostClosure Maintenance Plan* (CAP/FCP) which proposed repairs and improvements to the landfill cover, as follows:
 - a. Scarification and re-compaction of the existing soil cover (upper six inches only)
 - b. Repair of damaged areas, including erosion gullies, cracks, and deep-rooted vegetation.
 - c. Re-grading for drainage
 - d. Placement of a one-foot vegetative cover layer and hydroseeding
 - e. Installation of precipitation and drainage facilities
 - f. Installation of landfill gas (LFG) extraction and collection facilities

The plan also proposed post-closure maintenance and corrective action monitoring of the landfill and improvement of access roads and other facilities at the site.

23. The additional closure work under the 1994 CAP/FCP was initiated in 1996 and completed in 1998, as approved by Board staff. Approximately 16,000 cubic yards of imported Lincoln clay soil was used to repair the damaged areas of the cover. Both the repaired areas and upper six inches of existing cover were compacted to a maximum permeability of 1×10^{-6} cm/sec.

Final Cover Slopes

24. The crest area is in the northeastern corner of the landfill at an elevation of about 414 feet MSL. From the crest the landfill cover deck slopes at a 3 percent grade to the southwest, south, west, and northwest. The steepest side slopes, along the southern and eastern perimeter of the landfill, range from 4H:1V to 5H:1V. The perimeter elevation of the cover ranges from 380 feet MSL along the northwestern side of the landfill to 395 feet MSL along the northeastern side of the landfill.

25. A Section 21750(f)(5) technical report demonstrating the stability of the cover slopes is not required and was not prepared for this facility because none of the cover slopes are steeper than 3H:1V (or contain a geosynthetic component) and the Discharger closed the units prior to July 18, 1997. See Sections 21090(a) and 20310(g).

Drainage

26. Sheet flow runoff from the landfill is captured in unlined drains in the landfill cover along the interior access road of the landfill and along the landfill perimeter. The interior drains connect to drop inlets spaced along the access road which direct flows via culverts under the road to over-side drains. The over-side drains drain to the perimeter ditches. The perimeter ditches also directly drain sheet flows from areas of the landfill cover exterior to the access road. The perimeter ditch on the southern side of the site drains offsite via a natural swale to an unnamed creek southwest of the landfill. The perimeter ditch on the northern side of the landfill discharges via a natural swale to Secret Ravine about 400 feet north of the site.

Landfill Gas Extraction System

27. The 1994 CAP/FCP also proposed landfill gas extraction as a corrective action measure to help prevent the migration of VOCs into groundwater. LFG extraction and collection facilities installed at the facility included 22 LFG extraction wells, piping, condensate traps, and a flare station (see Attachment C). The facility operates an average of four hours per day during the wet season but has on occasion operated up to 24 hours a day depending on methane concentrations in the gas detected in the gas at the flare station. At least 20 percent methane in the LFG is generally required to operate the flare station without risking pulling excessive amounts of oxygen into the gas extraction wells.

GROUNDWATER

28. The uppermost aquifer occurs in the weathered bedrock beneath the site. Groundwater elevations vary seasonally about five feet. The average depth to groundwater is about 9 feet bgs in the wet season and 14 feet bgs in the dry season.
29. Groundwater elevations during the wet season range from about 365 feet MSL down gradient to about 385 feet MSL upgradient. Seasonal high groundwater enters into the french drain and drain sump and comes into contact with landfill wastes in the southwestern portion of the landfill (see Finding 35).
30. The direction of ground water flow is influenced by the topography, fractures and variations in the degree of weathering of the underlying bedrock. Groundwater flow is generally westerly but is diverted to the northwest and southwest around low permeability bedrock in the area of MW-9. The primary gradient, prevalent over most of the northern part of the site, ranges from about 0.021 to 0.026 ft/ft to the northwest. The secondary

gradient, prevalent over the southern half and the northeast corner of the site, ranges from about 0.013 to 0.018 ft/ft to the southwest. The results of draw-down testing of well MW-7A along the northwestern perimeter of the site indicate that the shallow aquifer has a hydraulic conductivity of approximately 1.3×10^{-3} cm/sec.

31. The beneficial uses of the ground water are domestic, municipal, agricultural, and industrial supply.

Groundwater Monitoring

32. There are currently 14 onsite monitoring wells (MWs-1, 2, 3, 5, and 6; MWs-1A – 9A) and two offsite monitoring wells (OWs-1 and 2). The Discharger is also monitoring four offsite private wells (B, HH, HD-1, and HD-2) within 1,500 feet west (down gradient) of the landfill on a voluntary basis.
33. A 1989 SWAT investigation conducted after landfill closure revealed the presence of VOCs down gradient of the landfill, including aromatic and non-aromatic, chlorinated VOCs. Since 1989, VOCs have declined to trace levels in some down gradient wells (i.e. MW-3A) but not in others (i.e. MW-2A and MW-4A). VOCs detected at the site during the Fourth Quarter 2003 included 1,4-Dichlorobenzene (1.4 µg/L) and Chlorobenzene (1.9 µg/L) in MW-2A along the southwestern site perimeter, and 1,1-Dichloroethane (1.5 µg/L) in MW-4A along the northwestern site perimeter. Drinking water standards (California Primary MCL) for these VOCs are 5.0 µg/L, 70 µg/L, and 5.0 µg/L, respectively. Infrequent, sporadic concentrations of Vinyl Chloride (up to 3 µg/L) and trace concentrations of aromatic and non-aromatic VOCs have also been historically detected in wells at the site. Similar VOC concentrations have been sporadically detected in the drain sump liquid.
34. Elevated concentrations of general minerals have also been detected in drain sump liquid and groundwater as follows:

<u>Constituent</u>	<u>Typical Concentration, mg/L</u>		
	<u>Upgradient¹</u>	<u>Down Gradient²</u>	<u>Drain Sump</u>
Bicarbonate	150	1,200	1,200
Chloride	85	350	250
Sulfate	85	350	40 ³
TDS	400	2,000	1,700

1. Based on historical monitoring data from well MW-1A.
 2. Based on historical monitoring data from well MW-2A.
 3. Sulfate concentration in sump liquid not elevated.

Lower but still elevated concentrations of general minerals have been detected in side gradient wells at the site.

35. Groundwater elevation data indicates that seasonal high groundwater comes into contact with landfills wastes in the southwestern part of the landfill and enters the unlined drain sump. Water chemistry analysis also indicates similarities in sump liquid and groundwater chemistry, especially during the wet season. The CAP/FCP therefore proposed that the sump continue to be pumped to remove both leachate and any infiltrated, impacted groundwater. Since 1998 when the cover improvements were implemented, the average volume of liquid removed from the unlined drain sump has declined from about 240,000 gallons per year to about 80,000 gallons per year. Cover infiltration calculations indicate an approximate leachate generation rate of 58,000 gallons per year for the 20-acre landfill. The amount of this leachate that is collected in the french drain is unknown.
36. No VOCs have been historically detected in any of the private wells except for low to trace concentrations of Chloroform (a Trihalomethane) in well B (see Attachment B). This VOC has not been confirmed in any onsite wells.
37. The 2003 Fourth Quarter and Annual Monitoring Report describes, pursuant to Section 20415(e)(7) of Title 27, the data analysis methods used for background monitoring to determine concentration limits and corrective action monitoring to monitor for any new release or a change in the nature or extent of the existing release. The data analysis methods are summarized as follows:

<u>COC Group</u>	<u>Data Analysis Method</u>	<u>Trigger</u>	<u>Needed for Confirmation¹</u>
VOCs & other organics	Nonstatistical	1 ≥ PQL or 2 ≥ MDL ^{1,2}	Same monitoring parameters or COC(s) triggered in at least 1 of 2 retest samples
Inorganic COCs, < 10% in background	Nonstatistical	1 ≥ PQL ^{1,2}	
Inorganic COCs, ≥ 10% in background	Statistical (Tolerance Interval)	1 > Concentration Limit	
Trend analysis: Monitoring Parameters COCs	Shewhart X-bar Control Charts Time series plots	At least 4 historical detections >PQL for each COC ³	Not applicable

1. Retest and notification not required for tentatively indicated exceedances previously confirmed at a given monitoring point as a result of seasonality, lateral fluctuations in the groundwater plume or landfill gas migration (these exceedances will be taken as confirmed).
2. "1" and "2" in listed trigger criteria refer to number of monitoring parameters or COCs.
3. Trigger for performing trend analysis (not a trigger for an indication of a release).

COST ESTIMATES AND FINANCIAL ASSURANCES

38. The Discharger is not required to demonstrate financial assurances for post-closure maintenance to the California Integrated Waste Management Board since the landfill ceased operations prior to January 1, 1988, per Section 22210(b) of Title 27. The Discharger is also not required to demonstrate financial assurances for corrective action to the California Integrated Waste Management Board, since pursuant to Section 22220(b), the landfill ceased operations prior to July 1, 1991.

CEQA AND OTHER CONSIDERATIONS

39. This action to revise WDRs for this facility is exempt from the provisions of the California Environmental Quality Act (Public Resources Code Section 21000, et seq.), in accordance with Title 14, CCR, Section 15301.
40. On 23 April 1996, the Placer County Board of Supervisors approved a mitigated negative declaration for closure and post-closure maintenance of the landfill and on 9 May 1996 filed a Notice of Determination with the County of Placer County Clerk in accordance with the California Environmental Quality Act (CEQA, Public Resources Code Section 21000 et seq.) and CEQA guidelines (14 CCR Section 15000 et seq.). The document incorporated the Final Closure and Post-Closure Maintenance Plan for the landfill as approved by Regional Board staff.
41. This order implements:

- a. The Water Quality Control Plan for the Sacramento River and San Joaquin River Basins, Fourth Edition; and
 - b. Chapters 1 through 7, Subdivision 1, Division 2, Title 27, of the California Code of Regulations, effective 18 July 1997, and subsequent revisions.
42. Section 13267(b) of California Water Code provides that: "In conducting an investigation specified in subdivision (a), the Board may require that any person who has discharged, discharges, or is suspected of discharging, or who proposed to discharge within its region, or any citizen or domiciliary, or political agency or entity of this state who had discharged, discharges, or is suspected of discharging, or who proposed to discharge waste outside of its region that could affect the quality of the waters of the state within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the Board requires. The burden, including costs of these reports, shall bear a reasonable relationship to the need for the reports and the benefits to be obtained from the reports." The monitoring and reporting program required by this Order and the attached Monitoring and Reporting Program Order No. R5-2004-0041 are necessary to assure compliance with these waste discharge requirements. The Discharger operates the facility that discharges the waste subject to this Order.

PROCEDURAL REQUIREMENTS

43. All local agencies with jurisdiction to regulate land use, solid waste disposal, air pollution, and to protect public health have approved the use of this site for the discharges of waste to land stated herein.
44. The Regional Board notified the Discharger and interested agencies and persons of its intent to prescribe waste discharge requirements for this discharge, and has provided them with an opportunity for a public hearing and an opportunity to submit their written views and recommendations.
45. The Regional Board, in a public meeting, heard and considered all comments pertaining to the discharge.
46. Any person affected by this action of the Regional Board may petition the State Water Resources Control Board to review the action in accordance with Sections 2050 through 2068, Title 23, California Code of Regulations. The petition must be received by the State Water Resources Control Board, Office of Chief Counsel, P.O. Box 100, Sacramento, California 95812, within 30 days of the date of issuance of this Order. Copies of the laws and regulations applicable to the filing of a petition are available on the Internet at http://www.swrcb.ca.gov/water_laws/index.html and will be provided on request.

IT IS HEREBY ORDERED, pursuant to Sections 13263 and 13267 of the California Water Code, that Order No. 94-079 is rescinded, and that the County of Placer Department of Facility Services, and its agents, successors, and assigns, in order to meet the provisions of Division 7 of the California Water Code and the regulations adopted there under, shall comply with the

following:

A. DISCHARGE PROHIBITIONS

1. The discharge of any additional waste at this site is prohibited.
2. The discharge of solid or liquid waste or leachate to surface waters, surface water drainage courses, or groundwater is prohibited.
3. The discharge of treated or untreated wastewater, pumped leachate, or groundwater to any surface water or any surface water drainage course is prohibited without an NPDES permit authorizing the discharge.
4. Neither the treatment nor the discharge of wastes shall cause a pollution or a nuisance, as defined by the California Water Code, Section 13050.
5. The discharge of wastes shall not cause degradation of any water supply.
6. The discharge shall not cause any increase in the concentration of waste constituents in soil-pore gas, soil-pore liquid, soil, or other geologic materials outside of the Unit if such waste constituents could migrate to waters of the State — in either the liquid or the gaseous phase — and cause a condition of nuisance, degradation, contamination, or pollution.

B. DISCHARGE SPECIFICATIONS

1. The discharge shall remain within the designated disposal area at all times.
2. The Discharger shall, in a timely manner, remove and relocate any wastes discharged at this facility in violation of this Order.
3. Storm water runoff from the facility shall be discharged in accordance with Monitoring and Reporting Program No. R5-2004-0041 and applicable storm water regulations.
4. The depth of fluid in the drain sump shall be kept at or just above the minimum needed to ensure safe pump operation.

C. POST-CLOSURE SPECIFICATIONS

1. All final cover slopes shall be capable of withstanding a maximum probable earthquake.

2. In spite of differential settlement, the final cover shall be graded and maintained to prevent ponding, promote lateral runoff, and prevent soil erosion due to high run-off velocities.
3. Areas with slopes greater than ten percent, surface drainage courses, and areas subject to erosion by wind or water shall be maintained to prevent such erosion.
4. The erosion-resistant layer shall be maintained with native or other vegetation capable of providing effective erosion resistance.

Protection from Storm Events

5. Closed landfill units shall be maintained to promote runoff and to prevent ponding.
6. Precipitation and drainage control systems shall be operated and maintained to convey peak flows from a 100-year, 24-hour storm event.
7. The closed landfills shall be maintained to prevent, to the greatest extent possible, ponding, infiltration, inundation, erosion, slope failure, and washout from a 100-year wet season.
8. Annually, prior to the anticipated rainy season but no later than **31 October**, any necessary erosion control measures shall be implemented and any necessary construction, maintenance, or repairs of precipitation and drainage control facilities shall be completed to prevent storm water flows from:
 - a. Contacting or percolating through wastes,
 - b. Causing erosion or inundation of the landfill cover or other areas of the site, or
 - c. Causing sedimentation and clogging of the storm drains.

D. FACILITY SPECIFICATIONS

1. The Discharger shall immediately notify the Regional Board of any flooding, unpermitted discharge of waste off-site, equipment failure, slope failure, or other change in site conditions that could impair the integrity of waste or leachate containment facilities or precipitation and drainage control structures.
2. The Discharger shall maintain in good working order any facility, control system, or monitoring device installed to achieve compliance with the waste discharge requirements. All storm water controls, including drainage facilities, shall be maintained so that they function effectively during precipitation events.

3. Methane and other landfill gases shall be adequately vented, removed from the Unit, or otherwise controlled to prevent the danger of adverse health effects, nuisance conditions, or the impairment of the beneficial uses of surface water or groundwater due to migration through the unsaturated zone.
4. All wells within 500 feet of the waste management units shall have sanitary seals that meet the requirements of the Placer County Department of Health and Human Services or shall be properly abandoned. A record of the sealing and/or abandonment of such wells shall be sent to the Board and to the State Department of Water Resources.

E. MONITORING SPECIFICATIONS

1. The Discharger shall conduct groundwater and surface water monitoring, as specified in Monitoring and Reporting Program (MRP) No. R5-2004-0041. Groundwater monitoring shall include background monitoring and corrective action monitoring. Background monitoring shall be conducted for the purpose of monitoring water quality upgradient of the landfill and updating concentration limits, as necessary, as part of the Water Quality Protection Standard per Section 20400(a) of Title 27. Corrective action monitoring shall be conducted for the purpose of monitoring the nature and extent of the release (Section 20425(a)(2)), assessing the progress of corrective action measures (Section 20430(d)), and designing any necessary additional corrective action measures (Section 20425(a)(2)).
2. The Discharger shall provide Regional Board staff a minimum of one week notification prior to commencing any field activities related to the installation, repair, or abandonment of monitoring devices, and a minimum 48 hour notification prior to the collection of samples associated with a detection monitoring program, evaluation monitoring program, or corrective action program.
3. The Discharger shall comply with the Water Quality Protection Standard as specified in this Order, Monitoring and Reporting Program No. R5-2004-0041, and the Standard Provisions and Reporting Requirements, dated April 2000.
4. The Water Quality Protection Standard for organic compounds, which are not naturally occurring and not detected in background groundwater samples, shall be taken as the detection limit of the analytical method used (i.e., US-EPA methods 8260 and 8270). The repeated detection of one or more non-naturally occurring organic compounds in samples above the Water Quality Protection Standard from detection monitoring wells is evidence of a release from the Unit.

5. The concentrations of the constituents of concern in waters passing the Point of Compliance shall not exceed the concentration limits established pursuant to Monitoring and Reporting Program No. R5-2004-0041. For each monitoring event, the Discharger shall determine whether the landfill is in compliance with the Water Quality Protection Standard using procedures specified in Monitoring and Reporting Program No. R5-2004-0041 and Title 27 CCR Section 20415(e).
6. The Discharger shall have a Sample Collection and Analysis Plan (sampling plan) which includes the following:
 - a. Sample collection procedures describing purging techniques, sampling equipment, and decontamination of sampling equipment;
 - b. Sample preservation information and shipment procedures;
 - c. Sample analytical methods and procedures; Sample quality assurance/quality control (QA/QC) procedures; and
 - d. Chain of Custody control.

The sampling plan shall further comply with Monitoring Specifications E.7 through E.14 herein.

7. For any given monitored medium, the samples taken from all monitoring points and background monitoring points to satisfy the data analysis requirements for a given reporting period shall all be taken within a span not to exceed 30 days, unless the Executive Officer approves a longer time period, and shall be taken in a manner that ensures sample independence to the greatest extent feasible. Specific methods of collection and analysis must be identified. Sample collection, storage, and analysis shall be performed according to the most recent version of USEPA Methods, such as the latest editions, as applicable, of: (1) Methods for the Analysis of Organics in Water and Wastewater (USEPA 600 Series), (2) Test Methods for Evaluating Solid Waste (SW-846, latest edition), and (3) Methods for Chemical Analysis of Water and Wastes (USEPA 600/4-79-020), and in accordance with the approved Sample Collection and Analysis Plan.
8. If methods other than USEPA-approved methods or Standard Methods are used, the exact methodology shall be submitted for review and approval by the Executive Officer prior to use.

9. The methods of analysis and the detection limits used must be appropriate for the expected concentrations. For the monitoring of any constituent or parameter that is found in concentrations which produce more than 90% non-numerical determinations (i.e., "trace" or "ND") in data from background monitoring points for that medium, the analytical method having the lowest method detection limit (MDL) shall be selected from among those methods which would provide valid results in light of any matrix effects or interferences.
10. "Trace" results - results falling between the MDL and the practical quantitation limit (PQL) - shall be reported as such, and shall be accompanied both by the estimated MDL and PQL values for that analytical run.
11. The laboratory for each analytical procedure, according to State of California laboratory accreditation procedures, shall derive MDLs and PQLs. These MDLs and PQLs shall reflect the detection and quantitation capabilities of the specific analytical procedure and equipment used by the lab, rather than simply being quoted from USEPA analytical method manuals. In relatively interference-free water, laboratory-derived MDLs and PQLs are expected to closely agree with published USEPA MDLs and PQLs.
12. If the laboratory suspects that, due to a change in matrix or other effects, the true detection limit or quantitation limit for a particular analytical run differs significantly from the laboratory-derived MDL/PQL values, the results shall be flagged accordingly, along with estimates of the detection limit and quantitation limit actually achieved. The MDL shall always be calculated such that it represents the lowest achievable concentration associated with a 99% reliability of a nonzero result. The PQL shall always be calculated such that it represents the lowest constituent concentration at which a numerical value can be assigned with reasonable certainty that it represents the constituent's actual concentration in the sample. Normally, PQLs should be set equal to the concentration of the lowest standard used to calibrate the analytical procedure.
13. All QA/QC data shall be reported, along with the sample results to which they apply, including the method, equipment, analytical detection and quantitation limits, the percent recovery, an explanation for any recovery that falls outside the QC limits, the results of equipment and method blanks, the results of spiked and surrogate samples, the frequency of quality control analysis, and the name and qualifications of the person(s) performing the analyses. Sample results shall be reported unadjusted for blank results or spike recoveries. In cases where contaminants are detected in QA/QC samples (i.e., field, trip, or lab blanks), the accompanying sample results shall be appropriately flagged.

14. Unknown chromatographic peaks shall be reported, flagged, and tracked for potential comparison to subsequent unknown peaks that may be observed in future sampling events. Identification of unknown chromatographic peaks that recur in subsequent sampling events may be required.
15. Background for water samples shall be represented by the data from all samples taken from applicable background monitoring points during that reporting period (at least one sample from each background monitoring point).
16. The statistical method shall account for data below the PQL with one or more statistical procedures that are protective of human health and the environment. Any PQL validated pursuant to Title 27 CCR Section 20415(e)(7) that is used in the statistical method shall be the lowest concentration (or value) that can be reliably achieved within limits of precision and accuracy specified in the WDRs for routine laboratory operating conditions that are available to the facility. The Discharger's technical report, pursuant to Title 27 CCR Section 20415(e)(7), shall consider the PQLs listed in Appendix IX to Chapter 14 of Division 4.5 of Title 22, CCR, for guidance when specifying limits of precision and accuracy. For any given constituent monitored at a background or down-gradient monitoring point, an indication that falls between the MDL and the PQL for that constituent (hereinafter called a "trace" detection) shall be identified and used in appropriate statistical or nonstatistical tests. Nevertheless, for a statistical method that is compatible with the proportion of censored data (trace and ND indications) in the data set, the Discharger can use the laboratory's concentration estimates in the trace range (if available) for statistical analysis, in order to increase the statistical power by decreasing the number of "ties".
17. For inorganic monitoring parameters and COCs for which at least 10% of the data from background samples equal or exceed their respective MDL, the Discharger shall use the Tolerance Interval statistical method for background and corrective action monitoring, or an alternate statistical method approved by the Executive Officer in accordance with Section 20415(e)(8)(E). Concentration limits shall be updated at least annually. The Discharger shall use the following trigger for these constituents:
 - a. From the constituent of concern or monitoring parameter list, identify each analyte in the current sample that exceeds its PQL. The Discharger shall conclude that the exceedance provides a preliminary indication [or, for a retest, provides measurably significant evidence] of a release (existing or new) at that monitoring point, if the data contains an analyte that exceeds its concentration limit.

Any analyte that triggers a discrete retest per this method shall be added to the monitoring parameter list such that it is monitored during each regular monitoring event.

18. For inorganic monitoring parameters and COCs for which less than 10% of the data from background samples equal or exceed their respective MDL, the Discharger shall use a nonstatistical data analysis method for determining concentration limits and detecting a release. The Discharger shall use the following trigger for these constituents:
- a. From the constituent of concern or monitoring parameter list, identify each analyte in the current sample that exceeds its MDL. The Discharger shall conclude that the exceedance provides a preliminary indication [or, for a retest, provides measurably significant evidence] of a release (existing or new) at that monitoring point, if the data contains an analyte that exceeds its PQL.

Any analyte that triggers a discrete retest per this method shall be added to the monitoring parameter list such that it is monitored during each regular monitoring event.

19. For VOCs and other organic COCs the Discharger shall use a nonstatistical data analysis method for determining concentration limits and detecting a release. The Discharger shall use the following trigger these constituents:
- a. From the constituent of concern or monitoring parameter list, identify each analyte in the current sample that exceeds either its respective MDL or PQL. The Discharger shall conclude that the exceedance provides a preliminary indication [or, for a retest, provides measurably significant evidence] of a release (existing or new) at that monitoring point, if either:
 - 1) The data contains two or more analytes that equal or exceed their respective MDLs; or
 - 2) The data contains one analyte that equals or exceeds its PQL.

Any analyte that triggers a discrete retest per this method shall be added to the monitoring parameter list such that it is monitored during each regular monitoring event.

Discrete Retest

20. If the above statistical or non-statistical trigger procedures used for groundwater monitoring data analysis provide a preliminary indication of a new release or previously undetected constituents of the existing release, the Discharger shall immediately notify Regional Board staff by phone or e-mail and, within 30 days of such indication, shall collect *two* new (retest) samples from the monitoring point where the release is preliminarily indicated.

- a. For any given retest sample, the Discharger shall include, in the retest analysis, only the laboratory analytical results for those analytes detected in the original sample. As soon as the retest data are available, the Discharger shall apply the same tests [i.e. 17.a for statistical constituents, 18.a or 19.a for non-statistical constituents], to separately analyze each of the two suites of retest data at the monitoring point where the release is preliminarily indicated.
- b. If either (or both) of the retest samples trips the applicable trigger above (17.a, 18.a or 19.a), then the Discharger shall conclude that there is measurably significant evidence of a release at that monitoring point for the analyte(s) indicated in the validating retest sample(s) and shall:
 - 1) Immediately notify the Regional Board about the constituent verified to be present at the monitoring point, and follow up with written notification submitted by certified mail within seven days of validation; and
 - 2) Comply with 21, below.

Constituents that have been previously confirmed as part of the release at a given monitoring point, including regularly detected monitoring parameters/COCs and monitoring parameters/COCs that are sporadically detected (e.g. as a result of seasonal or lateral fluctuations in the plume or landfill gas), shall be considered confirmed without notification and retest. Exceedances that the Discharger otherwise demonstrates (per Section 20420(k)(7) of Title 27) are the result of sample corruption, laboratory interferences, error, natural variation in the groundwater or other cause not associated with a release from the unit shall not trigger notification of a tentative release, and shall not trigger a retest unless a retest is necessary to make the demonstration.

21. If the Discharger determines that there is measurably significant evidence of a new release from the Unit at any monitoring point, the Discharger shall **immediately** implement the requirements of **Response To A Release**, contained in the Standard Provisions and Reporting Requirements.
22. The data analysis methods for corrective action monitoring shall also include trend analysis (i.e. control charts, Mann-Kendall) and an evaluation of the water chemistry by appropriate methods (i.e. Schoeller plots, ion balance, Stiff diagram etc) to monitor the effectiveness of corrective action measures in accordance with Section D.3.C of the MRP. The trigger requirement for performing trend analysis shall be as specified in Finding 37.

F. REPORTING REQUIREMENTS

1. The Discharger shall comply with the reporting requirements specified in this Order, in Monitoring and Reporting Program Order No. R5-2004-0041 and in the Standard Provisions and Reporting Requirements dated April 2000.

2. In the event the Discharger does not comply or will be unable to comply with any prohibition or limitation of this Order for any reason, the Discharger shall notify the appropriate Regional Board office by telephone as soon as it or its agents have knowledge of such noncompliance or potential for noncompliance, and shall confirm this notification in writing within two weeks. The written notification shall state the nature, time, and cause of noncompliance, and shall describe the measures being taken to prevent recurrences and shall include a timetable for corrective actions.
3. The Discharger shall retain records of all monitoring information, including all calibration and maintenance records, all original strip chart recordings of continuous monitoring instrumentation, copies of all reports required by this Order, and records of all data used to complete the application for this Order. Records shall be maintained throughout the life of the facility including the post-closure period. Such legible records shall show the following for each sample:
 - a. Sample identification and the monitoring point or background monitoring point from which it was taken, along with the identity of the individual who obtained the sample;
 - b. Date, time, and manner of sampling;
 - c. Date and time that analyses were started and completed, and the name of the personnel and laboratory performing each analysis;
 - d. Complete procedure used, including method of preserving the sample, and the identity and volumes of reagents used;
 - e. Calculation of results; and
 - f. Results of analyses, and the MDL and PQL for each analysis.
4. A transmittal letter explaining the essential points shall accompany each report. At a minimum, the transmittal letter shall identify any violations found since the last report was submitted, and if the violations were corrected. If no violations have occurred since the last submittal, this shall be stated in the transmittal letter. The transmittal letter shall also state that a discussion of any violations found since the last report was submitted, and a description of the actions taken or planned for correcting those violations, including any references to previously submitted time schedules, is contained in the accompanying report.
5. Each monitoring report shall include a compliance evaluation summary. The summary shall contain at least:
 - a. For each monitoring point and background monitoring point addressed by the report, a description of:
 - 1) The time of water level measurement;

- 2) The type of pump - or other device - used for purging and the elevation of the pump intake relative to the elevation of the screened interval;
 - 3) The method of purging (the pumping rate; the equipment and methods used to monitor field pH, temperature, and conductivity during purging; the calibration of the field equipment; results of the pH, temperature, conductivity, and turbidity testing; and the method of disposing of the purge water) to remove all portions of the water that was in the well bore while the sample was being taken;
 - 4) The type of pump - or other device - used for sampling, if different than the pump or device used for purging; and
 - 5) A statement that the sampling procedure was conducted in accordance with the approved Sampling and Analysis Plan.
- b. A map or aerial photograph showing the locations of observation stations, monitoring points, and background monitoring points.
 - c. For each groundwater body, a description and graphical presentation of the gradient and direction of groundwater flow under/around the Unit, and the groundwater flow rate, based upon water level elevations taken prior to the collection of the water quality data submitted in the report.
 - d. Laboratory statements of results of all analyses evaluating compliance with requirements.
 - e. An evaluation of the effectiveness of the leachate monitoring and control facilities, and of the run-off/run-on control facilities.
 - f. A summary and certification of completion of all **Standard Observations** for the Unit(s), for the perimeter of the Unit, and for the receiving waters. The Standard Observations shall include:
 - 1) For the Unit:
 - i Evidence of ponded water at any point on the facility (show affected area on map);
 - ii Evidence of odors - presence or absence, characterization, source, and distance of travel from source; and
 - iii Evidence of erosion and/or of day-lighted refuse.
 - 2) Along the perimeter of the Unit:
 - i Evidence of liquid leaving or entering the Unit, estimated size of affected area, and flow rate (show affected area on map);
 - ii Evidence of odors - presence or absence, characterization, source, and distance of travel from source; and

- iii Evidence of erosion and/or of day-lighted refuse.
- 3) For receiving waters:
- i Floating and suspended materials of waste origin - presence or absence, source, and size of affected area;
 - ii Discoloration and turbidity - description of color, source, and size of affected area;
 - iii Evidence of odors - presence or absence, characterization, source, and distance of travel from source;
 - iv Evidence of water uses - presence of water-associated wildlife;
 - v Flow rate; and
 - vi Weather conditions - wind direction and estimated velocity, total precipitation during recent days and on the day of observation.
6. The Discharger shall report by telephone any seepage from the disposal area immediately after it is discovered. A written report shall be filed with the Regional Board within seven days, containing at least the following information:
- a. A map showing the location(s) of seepage;
 - b. An estimate of the flow rate;
 - c. A description of the nature of the discharge (e.g., all pertinent observations and analyses);
 - d. Verification that samples have been submitted for analyses of the Constituents of Concern and Monitoring Parameters, and an estimated date that the results will be submitted to the Regional Board; and
 - e. Corrective measures underway or proposed, and corresponding time schedule.
7. The Discharger shall submit an Annual Monitoring Summary Report to the Regional Board covering the reporting period of the previous monitoring year. This report shall contain:
- a. All monitoring parameters and constituents of concern shall be graphed so as to show historical trends at each monitoring point and background monitoring point, for all samples taken within at least the previous five calendar years. Each such graph shall plot the concentration of one or more constituents for the period of record for a given monitoring point or background monitoring point, at a scale appropriate to show trends or variations in water quality. The graphs shall plot each datum, rather than plotting mean values. For any given constituent or parameter, the scale for background plots shall be the same as that used to plot down gradient data. Graphical analysis of monitoring data may be used to provide significant evidence of a release.

- b. Unless otherwise exempted by the Executive Officer, all monitoring analytical data obtained during the reporting periods for the year shall be submitted in tabular form as well as in a digital file format acceptable to the Executive Officer. The Regional Board regards the submittal of data in hard copy and in digital format as "...the form necessary for..." statistical analysis [§20420(h)], in that this facilitates periodic review by the Regional Board.
 - c. A comprehensive discussion of the compliance record, and the result of any corrective actions taken or planned which may be needed to bring the Discharger into full compliance with the waste discharge requirements.
 - d. A written summary of the monitoring results, indicating any changes made or observed since the previous annual report.
 - e. An evaluation of the effectiveness of the leachate monitoring/control facilities.
8. The Discharger shall notify the Regional Board in writing of any proposed change in ownership or responsibility for construction or operation of the landfill. To assume ownership or operation under this Order, the succeeding owner or operator must apply in writing to the Regional Board requesting transfer of the Order within 14 days of assuming ownership or operation of this facility. The request must contain the requesting entity's full legal name, the State of incorporation if a corporation, the name and address and telephone number of the persons responsible for contact with the Regional Board, and a statement. The statement shall comply with the signatory requirements contained in Reporting Requirement F.9 and state that the new owner or operator assumes full responsibility for compliance with this Order. Failure to submit the request shall be considered a discharge without requirements, a violation of the California Water Code. Transfer of this Order shall be approved or disapproved by the Regional Board.
9. All reports and transmittal letters shall be signed by persons identified below:
 - a. For a corporation: by a principal executive officer of at least the level of senior vice-president.
 - b. For a partnership or sole proprietorship: by a general partner or the proprietor.
 - c. For a municipality, state, federal or other public agency: by either a principal executive officer or ranking elected or appointed official.
 - d. A duly authorized representative of a person designated in a, b or c above if;
 - 1) The authorization is made in writing by a person described in a, b, or c of this provision;

- 2) The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a Unit, superintendent, or position of equivalent responsibility. (A duly authorized representative may thus be either a named individual or any individual occupying a named position); and
 - 3) The written authorization is submitted to the Regional Board.
- e. Any person signing a document under this Section shall make the following certification:

“I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.”

G. PROVISIONS

1. The Discharger shall maintain a copy of this Order and make it available at all times to facility operating personnel, who shall be familiar with its contents, and to regulatory agency personnel.
2. The Discharger shall comply with the Monitoring and Reporting Program No. R5-2004-0041, which is attached to and made part of this order. A violation of the MRP is a violation of these waste discharge requirements.
3. The Discharger shall comply with the *Standard Provisions and Reporting Requirements* (Standard Provisions), dated April 2000, which are hereby incorporated into this Order. The Standard Provisions contain important provisions and requirements with which the Discharger must comply. A violation of any of the Standard Provisions and Reporting Requirements is a violation of these waste discharge requirements.
4. The Discharger or persons employed by the Discharger shall comply with all notice and reporting requirements of the State Department of Water Resources with regard to construction, alteration, destruction, or abandonment of all monitoring wells used for compliance with this Order or with Monitoring and Reporting Program No. R5-2004-0041, as required by Section 13750 through 13755 of the California Water Code.
5. The Discharger shall immediately notify the Regional Board of any flooding, equipment failure, slope failure, or other change in site conditions that could impair

the integrity of waste containment facilities or of precipitation and drainage control structures.

6. The Discharger shall maintain waste containment facilities, the landfill final cover, precipitation and drainage controls, monitoring wells, and shall continue to monitor ground water and surface waters per Monitoring and Reporting Program No. R5-2004-0041 throughout the post-closure maintenance period.
7. The post-closure maintenance period shall continue until the Regional Board verifies that remaining waste in the landfill will not threaten water quality.
8. The owners of the waste management facility shall have the continuing responsibility to assure protection of usable waters from discharged wastes and from gases and leachate generated by discharged wastes during the closure and post-closure maintenance period of the landfill and during subsequent use of the property for other purposes.
9. The Discharger shall submit semiannual corrective action progress reports in accordance with MRP No. R5-2004-0041 and Section 20430 of Title 27. Each progress report shall address the following issues:
 - a. The source of the impact.
 - b. The nature and extent of the release.
 - c. Whether the size of the plume and concentrations of constituents within have increased, decreased or have not changed.
 - d. The effectiveness of landfill closure as a corrective action.
 - e. The effectiveness of leachate/impacted groundwater extraction for source control
 - f. The need for additional corrective action measures and/or monitoring wells.

The reports shall include plans for the installation any additional monitoring wells necessary to define the extent of the release and/or monitor the progress of corrective action.

10. If the Discharger or Regional Board determines that the corrective action program is not adequate (i.e. does not satisfy the provisions of Section 20430), the Discharger shall, within 90 days of making the determination, or of receiving written notification from the Regional Board of such determination, submit an amended report of waste discharge (RWD) to make appropriate changes to the program. The amended RWD shall include the following:
 - a. A discussion as to why existing corrective action measures have been ineffective or insufficient.

- b. A revised monitoring plan if necessary to further assess the nature and extent of the release
 - c. A discussion of corrective action needs and options.
 - d. Proposed additional corrective action measures, as necessary, for:
 - 1) Source control,
 - 2) Adequate separation from groundwater,
 - 3) Groundwater cleanup, and/or
 - 4) Landfill gas control
 - e. A plan to monitor the progress of corrective action measures consistent with the MRP
 - f. Cost estimates for implementing additional corrective action, including monitoring
 - g. An implementation schedule.
11. The Discharger shall take all reasonable steps to minimize any adverse impact to the waters of the State resulting from noncompliance with this Order. Such steps shall include accelerated or additional monitoring as necessary to determine the nature, extent, and impact of the noncompliance.
12. The fact that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with this Order shall not be regarded as a defense for the Discharger's violations of the Order.
13. The Discharger shall also notify the Regional Board of any proposed land use or closure plan changes. This notification shall be given 90 days prior to the effective date of the change and shall be accompanied by an amended Report of Waste Discharge and any technical documents that are needed to demonstrate continued compliance with these waste discharge requirements.
14. The Regional Board will review this Order periodically and will revise these requirements when necessary.

I, THOMAS R. PINKOS, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on 19 March 2004.

THOMAS R. PINKOS, Executive Officer

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2004-0041
FOR
COUNTY OF PLACER DEPARTMENT OF FACILITY SERVICES
LOOMIS LANDFILL
CLASS III LANDFILL
POST-CLOSURE MAINTENANCE
AND CORRECTIVE ACTION
PLACER COUNTY

The 20-acre, unlined landfill operated from 1959 to 1979, accepting household, commercial and industrial refuse. The landfill ceased accepting all but inert wastes in 1979 and was closed in 1986. A 1989 SWAT investigation revealed the presence of VOCs down gradient of the landfill, including aromatic and non-aromatic, chlorinated VOCs. Since 1989, VOCs have declined to trace levels in some down gradient wells (i.e. MW-3A) but not in others (i.e. MW-2A and MW-4A). VOCs detected at the site during the Fourth Quarter 2003 included 1,4-Dichlorobenzene (1.4 µg/L) and Chlorobenzene (1.9 µg/L) in MW-2A along the southwestern site perimeter, and 1,1-Dichloroethane (1.5 µg/L) in MW-4A along the northwestern site perimeter. Drinking water standards (California Primary MCL) for these VOCs are 5.0 µg/L, 70 µg/L, and 5.0 µg/L, respectively. Infrequent, sporadic concentrations of Vinyl Chloride (up to 3 µg/L) and trace concentrations of aromatic and non-aromatic have also been historically detected in wells at the site. Similar VOC concentrations have been sporadically detected in the drain sump liquid.

The Discharger shall maintain water quality monitoring systems that are appropriate for background, detection (surface water only), 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.

Compliance with this Monitoring and Reporting Program, with Title 27 CCR, Section 20005, et seq. (hereafter Title 27), and with the *Standard Provisions and Reporting Requirements for Title 27 (27 CCR 20005, et seq.) and Part 258 (40 CFR 258)*, dated April 2000, is ordered by Waste Discharge Requirements (WDRs) Order No. R5-2004-0041. Failure to comply with this Program, or with the Standard Provisions and Reporting Requirements, constitutes non-compliance with the WDRs and with the California Water Code, which can result in the imposition of civil monetary liability.

SUMMARY OF MONITORING & REPORTING FREQUENCIES

Section	Reporting	Frequency
A.	Semiannual Report	Semiannually
	Annual Summary Report	Annually
	Constituents of Concern Report	Every 5 years
B.	Water Quality Protection Standard Report	Update as necessary

Section	Monitoring	Frequency
C.	Drain Sump Liquid	Semiannually
D.	Groundwater Monitoring:	
	1. Elevation	Quarterly
	2. Background & Corrective Action Monitoring	Semiannually
	3. Constituents of Concern	Every 5 years
E.	Surface Water Monitoring (Secret Ravine)	Semiannually
F.	Facility Monitoring:	
	1. Standard Observations	Monthly
	2. Maintenance Inspections	Per Postclosure Maintenance Plan ¹
	3. After Storm Events	Within 7 Days After Storm
	4. Site Winterization	Annual

1. Drain sump operation monitored every two weeks during wet season.

A. REPORTING

1. Semiannual Reports

The Discharger shall report monitoring data and information as required in this Monitoring and Reporting Program and as required under WDR Order No. R5-2004-0041 and the Standard Provisions and Reporting Requirements (April 2000). Reports shall be submitted **semiannually**. Each semiannual monitoring report shall include the following information:

- a. A compliance evaluation summary for the monitoring period.
- 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 each unit showing sampling dates, well, constituents, concentrations, and concentration limits. The table shall also clearly show whether new monitoring data exceedances occurred during the monitoring period (i.e. highlight or check exceedances).
- e. Plots, graphical summaries and a narrative discussion of the results of correction action monitoring, indicating constituent trends and any changes in the nature or extent of the plume, as specified in Section D.3 herein.
- f. Contaminant contour maps of representative corrective action monitoring data, showing the estimated extent of the contaminant plume.
- g. Tables of historical monitoring data for each unit showing well, sampling dates, constituents, concentrations, and concentration limits. The data shall be presented

- so as to clearly show historical concentrations at each well.
- h. Field and laboratory tests sheets.
 - i. An electronic copy of the data in a digital format acceptable to the Executive Officer.

The monitoring reports shall include an evaluation as to the effectiveness of corrective action per Section D.3.c herein. At least one semiannual monitoring report each year shall include a copy of the Sample Collection and Analysis Plan required under WDR Monitoring Specification E.6.

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 Reporting Requirement F.7 of the WDRs. 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 shall contain both tabular and graphical summaries, including time series plots of historical monitoring data (including the prior year's data) for each monitoring parameter/COC. For corrective action monitoring data, the report shall also include the following:

- a. A summary of the results of trend analysis performed on each constituent of the release during the prior year
- b. A summary of the results of water chemistry analysis of water quality data collected during the prior year, including illustrative graphs and plots (i.e. Stiff diagrams, Trilinear plots, etc).
- c. Contaminant contour maps for representative constituents (i.e. total VOCs, TDS, Chloride) constructed as part of semiannual reporting during the prior year and a discussion as to whether the size of the plume and concentrations within have increased, decreased, or remained the same since the previous monitoring year.

The Annual Report may be included in the Second Semiannual Report for each year.

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:

Report	End of Reporting Period	Date Report Due
First Semiannual	30 June	31 July
Second Semiannual	31 December	31 January

Annual Report

31 December

31 January

B. 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 shall be as listed in Attachment E and summarized in the following table:

Constituents of Concern	Table B¹	
	Units	Test Method
Field Parameters:	See Attachment E	
General Minerals:	See Attachment E	
Inorganics (dissolved)	µg/L	See Attachment E
Volatile Organic Compounds (VOCs)	µg/L	USEPA Method 8260B
Semi-VOCs	µg/L	USEPA Method 8270
Organochlorine Pesticides	µg/L	USEPA Method 8081A
Polychlorinated Biphenols (PCBs)	µg/L	USEPA Method 8082
Organophosphorus Pesticides	µg/L	USEPA Method 8141A
Chlorinated Herbicides	µg/L	USEPA Method 8151A

1. Monitored every five years per Section D.3.b herein.

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) Using the Tolerance Limit statistical procedure applied to historical background data, updated at least annually; or
 - ii) Using an alternative statistical method approved by the Executive Officer per Monitoring Specification E.17 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.

3. Monitoring Points (Section 20405)

The monitoring points for groundwater and surface water monitoring respectively shall be as listed in Table D and Section E herein.

4. Point of Compliance (Section 20405)

The Point of Compliance for the water standard is a vertical surface located at the hydraulically down gradient limit of each Unit that extends through the uppermost aquifer underlying the Unit. The Point of Compliance wells for the landfill are:

- Northern Perimeter – MW 4A
- Western Perimeter - MWs 3A and 9A
- Southern Perimeter – MWs 2A and 8A

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.

C. LEACHATE AND DRAIN SUMP MONITORING

1. Leachate Seeps

The Discharger shall also monitor the landfill **monthly** for leachate seeps 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 B herein. Seep reporting shall be conducted in accordance with Reporting Requirement F.6 of the WDRs. The quantity of leachate shall be estimated and reported as Leachate Flow Rate (in gallons per day).

2. Drain Sump Liquid

Drain sump liquid field parameters shall be monitored in accordance with Table C below:

Table C		
<u>Parameter</u>	<u>Units</u>	<u>Frequency</u>
Presence or absence	---	Monthly
Volume pumped	Gallons	Monthly

Table C results shall be recorded in the field logs. Sump liquid shall also be sampled and analyzed in accordance with Table D (liquid elevation measurement not required), including five-year COC analysis. Monitoring data analysis shall include chemistry analysis by appropriate methods (i.e. ion balance, piper diagram, stiff diagram, Schoeller plot).

The results of the above monitoring and analysis shall be included in the semiannual monitoring reports.

D. GROUNDWATER MONITORING

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

The groundwater surface elevation in all wells and piezometers shall be measured on a **quarterly** basis per Table D. 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. Separation of groundwater from the lowest point of the unit

The results of these determinations shall be included in the semiannual reports.

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

The Discharger shall conduct background monitoring 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.

- a. Monitoring Locations: MWs-5A and 6A and any future wells installed for background monitoring.
- b. Monitoring Schedule: Background groundwater samples shall be collected and analyzed in accordance with Table D.
- c. Monitoring data analysis shall include developing/updating concentration limits for statistical monitoring parameters and COCs, as necessary.

3. Corrective Action Monitoring (Sections 20425 and 20430)

The Discharger shall conduct corrective action monitoring for the purpose of monitoring the release to groundwater and the progress of corrective action. A sufficient number of samples shall be taken from all 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 and Analysis Plan required under Monitoring Specification E.6 of the WDRs.

- a. Monitoring Locations: MWs 1A, 2A, 3A, 4A, 5A, 6A, 8A, 9A, OW-2 and any future wells installed for corrective action monitoring.
- b. Monitoring Schedule: Groundwater samples shall be collected and analyzed in accordance with the following schedule:

Table D
Groundwater Monitoring Schedule

Parameter	Units	Frequency	Approach	
			Nature/Extent	Trends
Field Parameters				
Elevation	Feet MSL	Quarterly	---	---
pH	pH units	Semiannually	---	---
Specific Conductance	µMhos/cm	Semiannually	---	---
Temperature	°C	Semiannually	---	---
Turbidity	NTU	Semiannually	---	---
Monitoring Parameters (Attachment D)				
VOCs	µg/L	Semiannually	Intrawell	Intrawell
Chloride	mg/L	Semiannually	Interwell	Intrawell
Bicarbonate Alkalinity	mg/L	Semiannually	Interwell	Intrawell
Sulfate	mg/L	Semiannually	Interwell	Intrawell
TDS	mg/L	Semiannually	Interwell	Intrawell
Chemical Oxygen Demand (COD)	mg/L	Semiannually	Interwell	Intrawell
Major Anions	mg/L	Annually	Interwell	Intrawell
Major Cations	mg/L	Annually	Interwell	Intrawell
Inorganics (dissolved)	µg/L	Annually	Interwell	Intrawell
Constituents of Concern (Attachment E)		Every 5 years	Intrawell	Intrawell

Five-year COC monitoring shall be conducted by 15 November 2006 and at least every five years thereafter. COC monitoring may be limited to point of compliance wells.

- c. Monitoring data analysis shall include the following:
 - i. Nature and Extent of Release

- Interwell comparisons with the background concentration limit to identify any new release or previously undetected constituents of the existing release (retest required for these constituents)
- Interwell/intrawell monitoring of previously-detected constituents to monitor fluctuations in the plume (tentatively indicated constituents taken as confirmed, no notification or retest required).
- Water chemistry analysis by appropriate methods (i.e. ion balance, Piper diagram, Stiff diagram, Schoeller plot).
- Preparation of contaminant contour maps for representative constituents of the release.
- i. Effectiveness of Corrective Action
 - Short-term analysis of indicator constituent trends (i.e. by Shewhart X-bar control charts) to ensure that corrective action systems (i.e. leachate and LFG extraction) are being operated effectively.
 - Time series plots for representative constituents of release (Annual Report requires for all monitoring parameters and COCs).
 - Long term trend analysis for representative constituents using appropriate statistical and/or graphical methods (i.e., Mann-Kendall analysis, control charts, time series plots).
 - Comparison of contaminant contour maps for representative constituents of the release showing historical changes in plume size and concentrations.

The results of the above analysis, including a narrative discussion, shall be included in each semiannual monitoring report and summarized in the Annual Monitoring Summary Report, as specified under Reporting A.2, above. The semiannual monitoring reports shall also include a discussion of the progress and effectiveness of corrective action toward returning to compliance with the Water Quality Protection Standard, as specified in Section 20430(h) of Title 27. These reports shall include an evaluation of the performance and effectiveness of the landfill cover, LFG extraction system and drain sump pumping as corrective action measures.

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

Surface water shall be monitored at representative upstream and down stream locations in Secret Ravine for the purpose of monitoring any potential impacts resulting from hydraulic communication with groundwater.

- a. Monitoring Locations: SR-A and SR-B, as shown in Attachment B: Area Map.
- b. Monitoring Schedule: As specified in Table D, except elevation, VOC and five-year COC monitoring not required.

F. FACILITY MONITORING

1. Standard Observations

Standard Observations shall be performed **monthly** and shall include those elements identified in Reporting Requirement F.5.f of the WDRs. Each semiannual monitoring report shall include a summary and certification of completion of all Standard Observations. Field logs of standard observations shall also be included in each semiannual report.

2. Regular Maintenance Inspections

The drain sump shall be inspected at least **every two weeks** during the wet season for proper sump pump operation and any repairs or adjustments implemented within seven days. Monitoring of other landfill facilities shall be conducted in accordance with a currently approved Postclosure Maintenance Plan. The results of these inspections and any facility repairs implemented 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 2.0 inches or more of precipitation within a 24-hour period), 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 to 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 due by **31 January** of each year.

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.

If the results of monitoring under Sections C through F above indicate that there is significant evidence (i.e. measurable or physical) of a release from the unit to surface water, the Discharger shall implement the applicable notification, verification, and reporting provisions of the Standard Provisions (see Section *XI Response To A Release*).

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

Ordered by: _____
THOMAS R. PINKOS, Executive Officer

_____ 19 March 2004
(Date)

Attachments
JDM:

INFORMATION SHEET

WDR ORDER NO. R5-2004-0041
PLACER COUNTY DEPARTMENT OF FACILITY SERVICES
LOOMIS SANITARY LANDFILL
PLACER COUNTY

Disposal History

The Loomis landfill operated from 1959 to 1979, accepting primarily household refuse and smaller amounts (i.e. 15 to 20 percent each) of commercial and industrial refuse. Approximately 333,000 in place cubic yards (200,000 tons) of waste were disposed of at the landfill. Disposal was by the area fill method. The landfill ceased accepting all but inert wastes in 1979 and was closed with a clay cover in 1986. No vegetative cover layer was installed in 1986. The base elevation of wastes ranges from about 365 to 380 feet MSL in the southwest and northwest corners of the landfill, while the lowest known elevation of waste in the interior of the landfill is about 369 feet MSL, based on logging information from gas wells. The highest elevation of wastes is about 390 feet MSL in the northeastern part of the landfill. The maximum known depth of waste is about 16 feet.

Unit Classification

The landfill is an unlined, Class III unit under Title 27. The landfill is also an existing, inactive unit under Section 20080(g) because it ceased accepting wastes prior to 27 November 1984.

Geology

The site is underlain by weathered granitic rocks consisting of quartz diorite (Penryn Diorite), recent alluvium and unconsolidated terrace deposits. Soils primarily consist of sandy loam, silty sand and sandy gravel. Soil thickness is between 15 and 60 inches.

Groundwater

The uppermost aquifer occurs in the weathered bedrock beneath the site at average depths ranging from 9 feet bgs in the wet season to 14 feet bgs in the dry season. Groundwater elevations during the wet season range from about 365 feet MSL down gradient to about 385 feet MSL upgradient. Groundwater flow is generally westerly but is diverted to the northwest and southwest around low permeability bedrock in the area of MW-9. The primary gradient, prevalent over most of the northern part of the site, ranges from about 0.021 to 0.026 ft/ft to the northwest. The secondary gradient, prevalent over the southern half and the northeast corner of the site, ranges from about 0.013 to 0.018 ft/ft to the southwest. The results of draw down testing of well MW-7A along the northwestern perimeter of the site indicate a shallow aquifer hydraulic conductivity of approximately 1.3×10^{-3} cm/sec.

A 1989 SWAT investigation conducted after landfill closure revealed the presence of VOCs down gradient of the landfill, including aromatic and non-aromatic, chlorinated VOCs. Since 1989, VOCs have declined to trace levels in some down gradient wells (i.e. MW-3A) but not in others (i.e. MW-2A and MW-4A). VOCs detected at the site during the Fourth Quarter 2003 included 1,4-Dichlorobenzene (1.4 µg/L) and Chlorobenzene (1.9 µg/L) in MW-2A along the

southwestern site perimeter, and 1,1-Dichloroethane (1.5 µg/L) in MW-4A along the northwestern site perimeter. Drinking water standards (California Primary MCL) for these VOCs are 5.0 µg/L, 70 µg/L, and 5.0 µg/L, respectively. Infrequent, sporadic concentrations of Vinyl Chloride (up to 3 µg/L) and trace concentrations of aromatic and non-aromatic VOCs have also been historically detected in wells at the site. Similar VOC concentrations have been sporadically detected in the drain sump liquid. Elevated concentrations of general minerals, including Bicarbonate (1,200 mg/L), Chloride (350 mg/L), Sulfate (350 mg/L) and Total Dissolved Solids (TDS, 2,000 mg/L) have also been detected in the groundwater at the site.

Drain Sump

A french drain plumbed to a collection sump was installed along a portion of the southwestern perimeter of the landfill sometime after the landfill became inactive in 1979 (but prior to landfill closure in 1986). The exact length and location of the drain was not documented but it is estimated that it is about six feet deep and extends approximately 50 feet west of the sump to a point near MW-2A and approximately 250 feet east of the sump to a point near MW-2. The sump includes a dedicated, automatic pump which pumps collected liquid via a pipeline over the landfill cover to storage tanks on the northwest side of the site. There are six storage tanks each with a capacity of about 1,800 gallons. The tanks are serviced by pump trucks, which dispose of the wastewater offsite in a sanitary sewer manhole. Groundwater elevation data indicates that seasonal high groundwater comes into contact with landfills wastes in the southwestern part of the landfill where it enters the unlined sump.

Corrective Action

Previous WDR Order No. 94-079 required that the Discharger develop and implement an Engineering Feasibility Study/Corrective Action Program and a Final Closure/Postclosure Maintenance Plan to address groundwater impacts and the need to reduce infiltration into the landfill. The Discharger subsequently submitted an October 1994 *Corrective Action and Final Closure/PostClosure Maintenance Plan* (CAP/FCP) which proposed:

- a. Scarification and re-compaction of the existing soil cover (upper six inches only);
- b. Repair of damaged areas of cover, including erosion gullies, cracks, and deep-rooted vegetation;
- c. Re-grading the cover for drainage;
- d. Placement of a one-foot vegetative cover layer over the cover and hydroseeding;
- e. Installation of precipitation and drainage facilities; and
- f. Installation of landfill gas (LFG) extraction and collection facilities.

The cover improvements, drainage facilities and LFG extraction system were completed in 1998. The 1994 CAP/FCP also proposed that the drain sump continue to be pumped to remove both leachate and any impacted, infiltrated groundwater. Since 1998 the average volume of liquid removed from the sump has declined from about 240,000 to 80,000 gallons per year. Since the

wet seasons since 1998 have generally been drier, however, further monitoring of the sump will be necessary to determine whether the cover improvements have been effective in reducing the amount of leachate generated in the landfill.