

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. R5-2005-0100

WASTE DISCHARGE REQUIREMENTS
FOR
CALAVERAS COUNTY DEPARTMENT OF PUBLIC WORKS
ROCK CREEK MUNICIPAL SOLID WASTE
CLASS II LANDFILL
CLASS II SURFACE IMPOUNDMENT
CALAVERAS COUNTY

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

1. Calaveras County Department of Public Works (hereafter Discharger) owns and operates the Rock Creek Facility (facility), a municipal solid waste landfill about 1 mile east of Milton, in Sections 11 and 14, T2N, R10, MDB&M, as shown in Attachment A, which is attached hereto and made part of this Order by reference.
2. The facility consists of existing lined Class II waste management units (WMUs) covering 61.4 acres and a Class II surface impoundment for leachate collection. The WMUs and surface impoundment are shown in Attachment B, which is attached hereto and made part of this Order by reference. The facility is comprised of Assessor's Parcel Numbers 50-025-15 and 50-029-20.
3. The existing facility WMUs are regulated under Waste Discharge Requirement (WDR) Order No. 5-01-149 in conformance with Title 27 of the California Code of Regulations (CCR) (Title 27). The existing constructed WMUs have been constructed in 3 phases (Phase I-A, I-B and II-A) and are described as follows:

<u>Unit</u>	<u>Liner Description (bottom to top)</u>	<u>Status</u>
Phase I-A	24 inches of compacted clay overlain with a vapor barrier and blanket LCRS	No longer accepting waste, no final cover
Phase I-B	24 inches compacted clay, 60-mil HDPE, one foot thick blanket LCRS	Not currently accepting waste, will bring up to closure grade with waste once Phase II-B is accepting waste
Phase II-A	GCL, 60 mil HDPE and one foot thick blanket LCRS. A secondary composite liner and LCRS are beneath the central portions of the Phase II-A of the LCRS	Existing unit accepting waste

4. The Discharger proposes to expand the WMUs and to construct Phase II-B for the discharge of Class II and III municipal solids waste in an area of 7.3 acres directly south of the existing Phase II-A unit. The existing surface impoundment will remain in the existing location for leachate collection. Future phases are anticipated (Phases III and IV).

SITE DESCRIPTION

5. The site is underlain by an interbedded sedimentary sequence, between 25 to 175 feet thick. The sediments range from unconsolidated gravelly sands and sandy clays to sandstone and claystone.¹ Beneath the sedimentary sequence, a greenstone or greenstone conglomerate has been encountered in several borings at depths of 80 to 170 feet below ground surface. Granitic bedrock has been encountered beneath the greenstone conglomerate at depths of several hundred feet.
6. Hydraulic testing conducted in wells screened across the saturated portion of the sedimentary sequence found hydraulic conductivity to range from 1.2×10^{-4} to 6.7×10^{-6} cm/s.^{2,3} Based on a series of in situ permeability tests conducted in the lower greenstone conglomerate unit, permeability ranges from 1.5×10^{-5} to 9.8×10^{-6} cm/s.⁴
7. Based on a site specific seismic analysis, the controlling maximum credible earthquake (MCE) for the site is a moment magnitude (Mw) 6.5 event along the Foothills Fault System which includes the Bear Mountain Fault, at a closest rupture distance of 12 km (7.5 miles) from the site. It is estimated that a MCE event would produce a PGA of 0.25g at the site with a return period of 6,108 years.
8. Land use within 1,000 feet of the facility is open rangeland used for grazing and ranching.
9. The facility receives an average of 19.42 inches of precipitation per year as measured at the New Hogan Dam between the years of 1959 and 1986. The mean evaporation for this facility is 75 inches per year as measured at the New Hogan Dam between the years 1968 and 1985. Based on these data, average annual net evaporation at the facility is 56 inches.
10. The 1000-year, 24-hour precipitation event is estimated to be 5.45 inches and the 100-year wet season precipitation is 34.6 inches based on Department of Water Resources' bulletin entitled *Rainfall Depth-Duration-Frequency for California*, revised November 1982, updated August 1986.

¹ Geotechnical Research Development. *Rock Creek Landfill, Preliminary Geotechnical/Geohydrological Study*. March 1996.

² Condor Earth Technologies, Inc. June 1992.

³ Herzog Associates. *Report Hydrogeological Evaluation, Rock Creek Landfill Site, Calaveras County, California*. May 1989.

⁴ Herzog Associates, May 1994.

11. The waste management facility is not within a 100-year flood plain based on the Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Map, Community-Panel Number 060633 0250 B.
12. There are more than 15 municipal, domestic, industrial, or agricultural groundwater supply wells within one mile of the site. Four of these are agricultural groundwater supply wells. The Discharger has sampled one off-site spring. There are no residences within 1,000 feet of the facility.
13. An easement for the Stockton East Water District's proposed Farmington Canal Project crosses the Rock Creek Facility at the downstream or southerly end of the project site. The easement passes approximately 400 feet from the southernmost boundary of planned waste placement. The proposed canal would cross over the existing site creek in a flume or other structure, which would physically separate the two streams of water. The beneficial uses of the water conveyed by the proposed canal include agricultural and domestic use. No other easements are recorded.

WASTE AND SITE CLASSIFICATION

14. The Discharger proposes to continue to discharge municipal solid waste, ash, sewage treatment plant sludge, petroleum contaminated soil and miscellaneous contaminated materials in the Class II unit, Phase II-B, as shown on Attachment B. These wastes are classified as inert, nonhazardous solid waste, or designated waste, using the criteria set forth in Title 27 CCR Section 20164. Nonhazardous solid wastes includes municipal solid wastes, as referred to in the Code of Federal Regulations, Title 40, Part 258.2.
15. The site characteristics where Phase II-B will be located (see Finding No. 6) do not meet the siting criteria for a new Class II landfill contained in Title 27 CCR Sections 20250(a) and (b)(1). As such, the site is not suitable for operating new Units or lateral expansions of existing Units for the discharge and containment of Class II wastes as described in Finding No. 14, without the construction of additional waste containment features in accordance with Title 27 CCR Section 20260(b)(2) and State Water Resources Control Board Resolution No. 93-62. These additional waste containment features described in Findings 47 through 52.

SURFACE AND GROUND WATER CONDITIONS

16. The *Water Quality Control Plan for the Sacramento River Basin and the San Joaquin River Basin, Fourth Edition* (hereafter Basin Plan), designates beneficial uses, establishes water quality objectives, and contains implementation plans and policies for all waters of the Basin.

17. Surface drainage flows west towards Rock Creek thence to Littlejohns Creek a tributary to the San Joaquin River in the Duck-Littlejohns Hydrologic Area (531.40) of the San Joaquin River Basin.
18. The designated beneficial uses of the San Joaquin River, as specified in the Basin Plan, are agricultural supply, industrial service and process supply, water contact and non-contact water recreation, warm fresh water habitat, wildlife habitat, preservation of rare, threatened and endangered species, and groundwater recharge.
19. The first significant encountered groundwater is about 30 feet below the native ground surface. Groundwater elevations range from approximately 290 feet MSL to 400 feet MSL. Perched groundwater exists at the facility. Springs are present at the east and west facing slopes in the upper part of the canyon. The depth to groundwater fluctuates seasonally as much as 1.5 feet.
20. Monitoring data indicates background groundwater quality has an electrical conductivity (EC) ranging between 200 and 800 micromhos/cm in U-1 and between 100 and 1,000 micromhos/cm in U-2, with total dissolved solids (TDS) ranging between 100 and 320 mg/l in U-1 and 380 and 550 mg/L in U-2.
21. The direction of groundwater flow is toward the south-southwest. The average groundwater gradient is approximately 0.04 feet per foot. The average groundwater velocity is approximately 2.4×10^{-5} cm/s or 25 feet per year.
22. The designated beneficial uses of the groundwater, as specified in the Basin Plan, are domestic and municipal, agricultural, and industrial supply.

GROUNDWATER MONITORING

23. The existing groundwater monitoring network for Phase I and II consists of “background” monitoring wells, U-1 and U-2, and downgradient monitoring wells D-1, D-3, D-4, D-8, D-9 and HP-3. The existing unsaturated zone monitoring network consists of a background pressure/vacuum lysimeter L-5, two downgradient lysimeters L-1R and L-2R, a pan lysimeter GPL-1 and two subdrain outlet points. The locations of these monitoring points are shown on Attachment B.
24. Monitoring well D-3 lies within the footprint of Phase II-B. This well shall be decommissioned and replaced with D-10, which will be installed downgradient and south of Phase II-B. D-3 shall be decommissioned in accordance with the California Division of Water Resources Bulletin 74-81 *Water Well Standards*.

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25. In addition to the installation of D-10, two additional monitoring wells shall be installed. Monitoring Well D-11 shall be placed along the east edge of the facility adjacent to Phase I-B and Phase II-A. Monitoring Well D-12 shall be placed to the south of D-10 within the footprint of the future Phase III. D-10 will serve as a point of compliance for Phase II-B. The locations of the new wells, D-10, D-11 and D-12, are shown on Attachment B.
26. The Discharger shall install three vadose zone landfill gas probes (GP-IIB-1, GP-IIB-2 and GP-IIB-3) to serve as the unsaturated zone monitoring points. These probes shall be installed beneath the secondary liner of Phase II-B at the locations shown on Attachment B.
27. Pressure/vacuum lysimeters L-5, L-1R and L-2R; pan lysimeters GPL-1; subdrain outlet points SD-1 and SD-2; and landfill gas probes GP-IIB-1, GP-IIB-2 and GP-IIB-3 constitute the points of compliance with respect to soil-pore liquid.
28. The Discharger's monitoring program for groundwater at Phase II-B satisfies the detection monitoring requirements contained in Title 27.
29. Volatile organic compounds (VOCs) are often detected in a release from a landfill, and are the primary waste constituents detected in groundwater beneath a municipal solid waste landfill. Since VOCs are not naturally occurring and thus have no background value, they are not amenable to the statistical analysis procedures contained in Title 27 for the determination of a release of wastes from a Unit.
30. Title 27 CCR Sections 20415(e)(8) and (9) provide for the non-statistical evaluation of monitoring data that will provide the best assurance of the earliest possible detection of a release from a Unit in accordance with Title 27 CCR Section 20415(b)(1)(B)2.-4. However, Title 27 CCR does not specify a specific method for non-statistical evaluation of monitoring data.
31. The Regional Board may specify a non-statistical data analysis method pursuant to Title 27 CCR Section 20080(a)(1). Section 13360(a)(1) of the California Water Code allows the Regional Board to specify requirements to protect underground or surface waters from leakage from a solid waste site, which includes a method to provide the best assurance of determining the earliest possible detection of a release.
32. In order to provide the best assurance of the earliest possible detection of a release of non-naturally occurring waste constituents from a Unit, this Order specifies a non-statistical method for the evaluation of monitoring data.
33. The specified non-statistical method for evaluation of monitoring data provides two criteria (or triggers) for making the determination that there has been a release of non-naturally occurring waste constituents from a Unit. The presence of two non-naturally occurring waste

constituents above their respective method detection limit (MDL), or one non-naturally occurring waste constituent detected above its practical quantitation limit (PQL), indicates that a release of waste from a Unit has occurred. Following an indication of a release, verification testing will be conducted to determine whether there has been a release from the Unit, or there is a source of the detected constituents other than the landfill, or the detection was a false detection. Although the detection of one non-naturally occurring waste constituent above its MDL is sufficient to provide for the earliest possible detection of a release, the detection of two non-naturally occurring waste constituents above the MDL as a trigger is appropriate due to the higher risk of false-positive analytical results and the corresponding increase in sampling and analytical expenses from the use of one non-naturally occurring waste constituent above its MDL as a trigger.

34. The Discharger has established Water Quality Protection Standards (WQPS) for the naturally occurring constituents that are analyzed as required by MRP Order No. R5-01-149. These limits were derived using an intrawell statistical approach as described in MRP Order No. R5-2005-0100. The Discharger has proposed revised concentration limits for D-1, however, further information shall be provided to support the standards and statistical approach, therefore the limit has not been included in the table (see Finding No. 36). The WQPS shall be updated to reflect those constituents that were not monitored for under Order No. R5-01-149. An updated WQPS report is required per this Order.

GROUNDWATER DEGRADATION

35. VOCs have not been detected at or above the detection limit in any existing monitoring well.
36. Monitoring well D-1 has shown increasing trends in inorganic constituent (TDS, chloride, specific conductivity and sulfate) concentrations since approximately 1997. On 16 March 2005, the Discharger submitted the *Evaluation of Detection Monitoring Well D-1 Rock Creek Solid Waste Facility Report*. The Discharger concluded that the increasing trend correlates to the increasing groundwater elevation, possible dissolution of gypsum in previously dry soils and that the groundwater chemistry of D-1 plots along the mixing line trends of upgradient wells U-1 and U-2. MRP Order No. 5-01-149 did not require monitoring of the complete inorganic suite of constituents, therefore current data is not available to support these findings. This Order requires additional geochemistry analysis and once there is at least a year's worth of data, additional analysis will need to be submitted. D-1 will be considered both a detection monitoring and an evaluation monitoring well until further analysis is performed.

LINER PERFORMANCE DEMONSTRATION

37. On 15 September 2000 the Regional Board adopted Resolution No. 5-00-213 *Request For The State Water Resources Control Board To Review The Adequacy Of The Prescriptive Design Requirements For Landfill Waste Containment Systems To Meet The Performance Standards Of Title 27*. The State Board responded, in part, that “a single composite liner system continues to be an adequate minimum standard” however, the Regional Board “should require a more stringent design in a case where it determines that the minimum design will not provide adequate protection to a given body of groundwater.”

In a letter dated 17 April 2001, the Executive Officer notified Owners and Operators of Solid Waste Landfills that “the Board will require a demonstration that any proposed landfill liner system to be constructed after 1 January 2002 will comply with Title 27 performance standards. A thorough evaluation of site-specific factors and cost/benefit analysis of single, double and triple composite liners will likely be necessary.”

38. On 28 January 2005, the Discharger submitted a liner performance standards demonstration letter, *Base Liner Demonstration for Class II, Cell II-B at the Rock Creek Solid Waste Facility, Calaveras County, California*, which included a cost analysis for the proposed waste containment system described in Findings 47-48. The liner proposed by the Discharger includes a primary and secondary base liner system for the floor of Phase II-B and a single composite liner for the side slopes. Per the demonstration letter, a double liner system for the base of Phase II-B would provide protection for waters of the state through full containment of waste. This type of system exceeds the minimum of a single liner system and is also similar to other liner systems approved by the Regional Board.

39. Regional Board staff responded in a letter dated 7 February 2005, supporting the submitted performance demonstration letter. Staff determined that the Discharger’s proposed double liner system design, with a good Construction Quality Assurance program including an electronic leak detection, meets the performance standard for the Class II unit.

CONSTRUCTION AND ENGINEERED ALTERNATIVE

40. On 17 June 1993, the State Water Resources Control Board adopted Resolution No. 93-62 implementing a State Policy for the construction, monitoring, and operation of municipal solid waste landfills that is consistent with the federal municipal solid waste regulations promulgated under Title 40, Code of Federal Regulations, Part 258 (Subtitle D).

41. Resolution No. 93-62 requires the construction of a specified composite liner system at new municipal solid waste landfills, or expansion areas of existing municipal solid waste landfills, that receive wastes after 9 October 1993.

42. Resolution No. 93-62 also allows the Regional Board to consider the approval of engineered alternatives to the prescriptive standard. Section III.A.b. of Resolution No. 93-62 requires that the engineered alternative liner systems be of a composite design similar to the prescriptive standard.
43. Title 27 CCR Section 20080(b) allows the Regional Board to consider the approval of an engineered alternative to the prescriptive standard. In order to approve an engineered alternative in accordance with Title 27 CCR Sections 20080(c)(1) and (2), the Discharger must demonstrate that the prescriptive design is unreasonably and unnecessarily burdensome and will cost substantially more than an alternative which will meet the criteria contained in Title 27 CCR Section 20080(b), or would be impractical and would not promote attainment of applicable performance standards. The Discharger must also demonstrate that the proposed engineered alternative liner system is consistent with the performance goal addressed by the particular prescriptive standard, and provides protection against water quality impairment equivalent to the prescriptive standard in accordance with Title 27 CCR Section 20080(b)(2).
44. Section 13360(a)(1) of the California Water Code allows the Regional Board to specify the design, type of construction, and/or particular manner in which compliance must be met in waste discharge requirements or orders for the discharge of waste at solid waste disposal facilities.
45. The Discharger proposes a liner system which will be designed, constructed, and operated in accordance with the criteria set forth in Title 27, and the provisions in State Water Resources Control Board Resolution No. 93-62 for municipal solid wastes.
46. On 24 February 2005, the Discharger submitted a Report of Waste Discharge requesting approval of an engineered alternative to the prescriptive standard for liner requirements.
47. The engineered alternative proposed by the Discharger for the base liner of Phase II-B consists of a double liner system comprised of, in ascending order: 12-inch thick prepared subgrade (constructed of select fine grain materials which shall be compacted in lifts of six inches or less to 90% of the maximum dry density and at 0% to 4% wet of optimum moisture content, in accordance with the approved construction quality assurance plan, and compacted to attain a hydraulic conductivity of 1×10^{-5} cm/sec or less, or meet gradation criteria of a maximum of 3/8 inch particle size and at least 30% passing #200 sieve), 60-mil HDPE geomembrance, geocomposite drainage layer, GCL, 60-mil HDPE geomembrance, 9-inch thick gravel drainage layer, 8 oz/sy nonwoven geotextile and a 15-inch thick operations layer.

48. The proposed side slope liners for Phase II-B consist of, in ascending order: prepared subgrade (shall provide a surface that is smooth and free from rocks, sticks, and other debris that could damage or otherwise limit the performance of the above lying geosynthetics) 60-mil HDPE geomembrane, 24-inch thick operations layer. The operations layer to be placed on the geomembrane will be less permeable than the waste to allow the migration of moisture along the interface of the waste and operations layer until it reaches the LCRS gravel layer at the base. Because the side slopes will have 2:1 slopes, liquid head is not likely to build up on the side slope operations layer or liner.
49. The Discharger adequately demonstrated that construction of a Subtitle D prescriptive standard liner would be unreasonable and unnecessarily burdensome when compared to the proposed engineered alternative design. The Discharger has demonstrated that the proposed engineered alternative is consistent with the performance goals of the prescriptive standard and affords at least equivalent protection against water quality impairment.
50. The leachate collection and removal system (LCRS) for Phase II-B is composed of a 9-inch thick layer of gravel on the floor overlain by an 8 oz/sy nonwoven geotextile between the gravel and operations soil layer. The gravel drainage layer will be equipped with a series of perforated HDPE pipes that gravity drain to wet wells that will be automatically pumped as liquid reaches predetermined levels. The LCRS drainage layer is sized to accommodate a design flow of 72 gallons per minute, which is based on twice the anticipated peak leachate flow of the combined flows from Phases I and II. The wet wells will collect liquid until a predetermined level is reached and then a float switch will turn on a pump to evacuate the liquid to the surface impoundment. In the event of a pump failure, the leachate will accumulate in the wet well until it reaches the level of the discharge pipe. Once the level reaches the discharge pipe, the leachate will gravity flow to the surface impoundment.
51. The LCRS for Phase II-B will be equipped with additional pipe risers running from the central LCRS collection trench to the east and west toes of slope and up the 2:1 side slopes to the perimeter of Phase II-B. These pipes will be perforated within the LCRS gravel and non-perforated up the 2:1 side slopes. These pipes will assist in conveying leachate to the central collection trench, provide additional access to the primary LCRS for inspection and provide potential points of connection to a future landfill gas collection system.
52. A secondary LCRS composed of a geocomposite drainage layer will be placed over the base of Phase II-B. The secondary layer will convey leachate to a central collection drain below the primary liner system. The collection drain will be equipped with a 3-inch diameter perforated HDPE pipe that will discharge to a separate wet well at the southern perimeter of Phase II-B.

53. A subdrain was installed beneath the Phase I-B and Phase II-A landfill along the bottom of the canyon to drain seasonal seeps in the side slopes beneath the base liner system. The invert of the subdrain lies a minimum of five feet below the top of the composite liner system to ensure at least a five-foot separation between wastes and the highest anticipated elevation of groundwater, including the capillary fringe.
54. In December 1999, after construction of the Phase II-A liner, the Discharger discovered water beneath the liner section at the toe of the eastern sideslope in Phase II-A. The Discharger submitted a *Revised Construction Detail for Phase II-A Sideslope Liner Section* dated 9 February 2001 to provide for drainage of this water. The revised construction consisted of the installation of a subdrain along the toe of the eastern sideslope within Phase II-A. This subdrain was constructed similar to that below Phase II-A and designed to maintain at least a five-foot separation between waste and the highest anticipated groundwater. A 60-mil geomembrane was placed between the geocomposite and the GCL. Water entering the geocomposite gravity flows to a sump at the toe of the eastern sideslope. The sump provides for at least five feet of separation between the water in the sump and the waste. The Discharger uses water collected from the sump for dust control within the lined areas of the landfill or discharges it to the existing surface impoundment. This subdrain will be extended as part of the construction of Phase II-B.
55. There are existing springs along the western sideslope of Phase II-B. During the slope excavation of Phase II-B, a final determination of the subdrain design will be submitted to the Regional Board for approval by the Executive Officer. At a minimum, a subdrain similar to that installed along the eastern edge of the facility (as discussed in Finding No. 54) shall be installed.
56. The Discharger shall install three vadose zone landfill gas probes to serve as unsaturated zone monitoring points. These probes, designated GP-IIB-1, GP-IIB-2 and GP-IIB-3, shall be installed beneath the secondary liner of Phase II-B. The probes will consist of a section of perforated HDPE pipe placed within a gravel backfill and geotextile wrap. The perforated pipe will be connected to a non-perforated pipe riser in a trench under the base and to the perimeter of the sideslope liner as the casing sampling point.
57. Construction will proceed only after all applicable construction quality assurance plans have been approved by Executive Officer.
58. The Discharger submitted a slope stability report for Phase II-B, dated April 2005. The slope stability report demonstrates that the structural components of Phase II-B will withstand the forces of the Maximum Credible Earthquake (MCE) without failure of the containment systems or environmental controls.

SURFACE IMPOUNDMENT

59. The initial Class II surface impoundment for Phase I-A and I-B was constructed with a double liner system for containment of landfill leachate. The design of this system consisted of an inner liner, a synthetic drainage layer, and an outer clay liner at least two feet thick. The initial surface impoundment was clean closed in accordance with closure requirements for surface impoundments prescribed by Title 27. All materials were removed.
60. The existing Class II impoundment, constructed during Phase II-A, is immediately south of the Phase II footprint and has a capacity of approximately two million gallons. It is composed of a double liner system with an intervening LCRS. The primary liner consists of 60 mil HDPE geomembrane liner over a drainage layer, geocomposite on the side slopes and a one foot thick gravel layer on the base, over a 60 mil HDPE geomembrane liner over a GCL. The gravel drainage layer is drained by a series of perforated HDPE pipes that gravity drain to a sump in the eastern corner of the impoundment. Access to the sump is provided by a riser pipe. A permanently installed pump evacuates liquid that accumulates in the sump. Leachate is recirculated within the impoundment to enhance evaporation.
61. The surface impoundment is designed to contain water generated during a 1,000-year, 24-hour storm event and to receive leachate generation from the existing cells and Phase II-B while maintaining 2-feet of freeboard.

CEQA AND OTHER CONSIDERATIONS

62. On 6 July 1989, the Calaveras County Planning Commission adopted a final environmental impact report (EIR) on the project, in accordance with the California Environmental Quality Act (Public Resources Code Section 21000, et. Seq.), and the State Guidelines. The project of developing the Rock Creek landfill and surface impoundment, as approved by the Planning Commission, will not have significant impacts on water quality. The Regional Board reviewed the EIR and concurred with the Planning Commission.
63. This order implements:
- a. *The Water Quality Control Plan for the Sacramento River and San Joaquin River Basins, Fourth Edition;*
 - b. The prescriptive standards and performance goals of Chapters 1 through 7, Subdivision 1, Division 2, Title 27, of the California Code of Regulations, effective 18 July 1997, and subsequent revisions;
 - c. The prescriptive standards and performance criteria of RCRA Subtitle D, Part 258; and

d. State Water Resources Control Board Resolution No. 93-62, *Policy for Regulation of Discharges of Municipal Solid Waste*, adopted 17 June 1993.

64. Section 13267(b) of California Water Code provides that: "In conducting an investigation specified in subdivision (a), the Regional 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 No. R5-2005-0100" 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

65. 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.
66. 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.
67. The Regional Board, in a public meeting, heard and considered all comments pertaining to the discharge.
68. 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. 5-01-149 is rescinded, and that Calaveras County, its agents, successors,

and assigns, in order to meet the provisions of Division 7 of the California Water Code and the regulations adopted thereunder, shall comply with the following:

A. PROHIBITIONS

1. The discharge of 'hazardous waste' is prohibited. For the purposes of this Order, the term 'hazardous waste' is as defined in Title 23, California Code of Regulations, Section 2510 et seq.
2. The discharge of wastes outside of a Unit or portions of a Unit specifically designed for their containment is prohibited.
3. The discharge to the facility of liquid or semi-solid waste (i.e. waste containing less than 50 percent of solids), except dewatered sewage, water treatment sludge, or leachate for dust control as provided in Section 20220 of Title 27, is prohibited.
4. The discharge of solid waste containing free liquid or which may contain liquid in excess of the moisture holding capacity as a result of waste management operations, compaction or settlement is prohibited.
5. The discharge of waste from the Class II surface impoundment is prohibited.
6. Except for the Class II surface impoundment, the discharge of waste to ponded water from any source is prohibited.
7. The discharge of waste within 50 feet of surface waters is prohibited.
8. The discharge of waste to a closed Unit is prohibited.
9. The discharge shall not cause the release of pollutants, or waste constituents in a manner which could cause a condition of nuisance, degradation, contamination, or pollution of groundwater to occur, as indicated by the most appropriate statistical or nonstatistical data analysis method and retest method listed in this Order, the Monitoring and Reporting Program, or the Standard Provisions and Reporting Requirements.
10. The discharge of solid or liquid waste or leachate to surface waters, surface water drainage courses, or groundwater is prohibited.
11. 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.

12. The discharge of wastes, which have the potential to reduce or impair the integrity of the containment structures or which, if commingled with other wastes in the unit that could produce violent reaction, heat or pressure, fire or explosion, toxic by-products, or reaction products which in turn:
 - a. Require a higher level of containment other than provided by the unit,
 - b. Are “restricted hazardous wastes”, or
 - c. Impair the integrity of containment structures, is prohibited.

B. DISCHARGE SPECIFICATIONS

1. Inert, nonhazardous, and designated wastes shall be discharged to either (1) that portion of a cell which received wastes (i.e. that active cell within the footprint of the facility), or (2) the Unit equipped with a composite liner containment system which meets the requirements for both liners and leachate collection and removal systems specified under D. Construction Specifications.
2. The discharge shall remain within the designated disposal area at all times.
3. During wet weather conditions, the facility shall be operated and graded to minimize leachate.
4. The discharge of liquid wastes to the surface impoundment is limited to leachate from the landfill units, surface impoundment LCRSs, subdrain beneath the toes of Phase II-A, subdrain for Phase II-B, or leachate contact water from the landfill unit and surface impoundment LCRSs.
5. The surface impoundment shall be operated to maintain a freeboard of two feet at all times.
6. Any direct-line discharge to the surface impoundment shall have fail-safe equipment or operating procedures that include daily inspection and manual control of pumping systems during the wet weather seasons to prevent overfilling.
7. Solids that accumulate in the surface impoundment shall be periodically removed to maintain minimum freeboard requirements and to maintain sufficient capacity for landfill and surface impoundment leachate and the discharge of wastes. Prior to the removal of the solids, sufficient samples shall be taken for their classification pursuant to Title 27. The rationale for the sampling protocol used, the results of this sampling, and a rationale for the classification of the solids shall be submitted to Board staff for review. The solids

may be discharged to the Class II units only if the Board staff determines that the solids are not 'hazardous waste'.

C. FACILITY SPECIFICATIONS

1. The Discharger shall, in a timely manner, remove and relocate any wastes discharged at this facility in violation of this Order.
2. 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 which could impair the integrity of waste or leachate containment facilities or precipitation and drainage control structures.
3. Water used for facility maintenance shall be limited to the minimum amount necessary for dust control, and construction.
4. The Discharger shall maintain in good working order any facility, control system, or monitoring device installed to achieve compliance with the waste discharge requirements.
5. 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.
6. Surface drainage within the waste management facility shall either be contained on-site or be discharged in accordance with applicable storm water regulations.
7. The Discharger shall maintain a *Storm Water Pollution Prevention Plan and Monitoring Program and Reporting Requirements* in accordance with State Water Resources Control Board Order No. 97-03-DWQ, or retain all storm water on-site.
8. A minimum separation of five feet shall be maintained between waste or leachate and the highest anticipated elevation of groundwater including the capillary fringe.
9. All groundwater domestic supply wells within 500 feet of a WMU shall be sealed or abandoned to the satisfaction of the Calaveras County Department of Environmental Health prior to the discharge of waste to the facility. A record of the sealing and/or abandonment of such wells shall be sent to the Regional Board and the State Department of Water Resources.

D. CONSTRUCTION SPECIFICATIONS

1. The Discharger shall submit for Executive Officer review and approval **prior to** construction of Phase II-B, design plans and specifications that include the following:
 - a. A Construction Quality Assurance Plan meeting the requirements of Title 27 CCR Section 20324; and
 - b. A geotechnical evaluation of the area soils, evaluating their use as the base layer; and
 - c. An unsaturated zone monitoring system, which is demonstrated to remain effective throughout the active life, closure, and postclosure maintenance periods of the Unit, which shall be installed beneath the composite liner system in accordance with Title 27 CCR Section 20415(d).
2. The base liner and side slope liner of Phase II-B, shall be constructed in accordance with one of the following composite liner designs:
 - a. The prescriptive standard design which consists of a lower compacted soil layer that is a minimum of two feet thick with a hydraulic conductivity of 1×10^{-7} cm/sec or less and has a minimum relative compaction of 90%. Immediately above the compacted soil layer, and in direct and uniform contact with the soil layer, shall be a synthetic flexible membrane component that shall be at least 40-mil thick (or at least 60-mil thick if composed of high density polyethylene [HDPE]), which is immediately overlain with a leachate collection and removal system. A soil operations layer shall be placed above the leachate collection and removal system; or
 - b. An engineered alternative double composite base liner system that is comprised, in ascending order, of the following:
 - 1) A twelve inch thick engineered soil foundation layer that shall be constructed of select fine grained soil materials which shall be compacted in lifts of six inches or less to 90% of maximum dry density and at 0% to 4% wet of optimum moisture content, in accordance with the approved construction quality assurance plan, and compacted to attain a hydraulic conductivity or 1×10^{-5} cm/sec or less or meet the following gradation criteria:
 - a) A maximum size of 3/8-inch;
 - b) At least 30% of the material, by dry weight, passing the No. 200 U.S. Standard sieve;

- c) A gradation series (i.e., well-graded) that is amenable to compaction; and
 - 2) A 60-mil thick synthetic flexible membrane of HDPE.
 - 3) A geocomposite drainage layer.
 - 4) A GCL that shall exhibit appropriate strength characteristics (hydrated) to accommodate stresses associated with specific landfill design parameters, with particular attention to interface, long-term creep shear and bearing capacity and have a maximum hydraulic conductivity of 5×10^{-9} cm/sec.
 - 5) A 60-mil thick synthetic flexible membrane of HDPE.
 - 6) A 9-inch thick gravel drainage layer.
 - 7) A 8 ounce per square yard non-woven geotextile filter.
 - 8) A 15 inch thick operations layer.
 - 9) The liner will pass (no leak detection) an electronic leak test after the installation of the operations layer and all leaks will be repaired before any waste is discharged into Phase II-B.
- c. The side slope liner shall be constructed with an engineered alternative composite liner that is comprised in ascending order, of the following:
 - 1) A prepared soil foundation layer that shall be constructed to be a smooth surface and free from rocks, sticks, and other debris that could damage or otherwise limit the performance of the synthetic flexible membrane.
 - 2) A GCL that shall exhibit appropriate strength characteristics (hydrated) to accommodate stresses associated with specific landfill design parameters, with particular attention to interface, long-term creep shear and bearing capacity and have a maximum hydraulic conductivity of 5×10^{-9} cm/sec.
 - 3) A 60-mil thick synthetic flexible membrane HDPE.
3. The Discharger may propose changes to the liner system design prior to construction, provided that approved components are not eliminated, the engineering properties of the components are not substantially reduced, and the proposed liner system results in the protection of water quality equal to or greater than the design prescribed by Title 27 and this Order. The proposed changes may be made following approval by the Executive

Officer. Substantive changes to the design require reevaluation as an engineered alternative and approval by the Regional Board.

4. If the Discharger proposes to construct a liner system in which a GCL is placed on top of a subgrade, the subgrade for the bottom and the side slopes of the Unit shall be prepared in an appropriate manner using accepted engineering and construction methods so as to provide a smooth surface that is free from rocks, sticks, or other debris that could damage or otherwise limit the performance of the GCL.
5. Construction shall proceed only after all applicable construction quality assurance plans have been approved by Executive Officer.
6. Following the completion of construction of a Unit or portion of a Unit, and prior to discharge onto the newly constructed liner system, the final documentation required in Title 27 CCR Section 20324(d)(1)(C) shall be submitted to the Executive Officer for review and approval. The report shall be certified by a registered civil engineer or a certified engineering geologist. It shall contain sufficient information and test results to verify that construction was in accordance with the design plans and specifications, and with the prescriptive standards and performance goals of Title 27.
7. A third party independent of both the Discharger and the construction contractor shall perform all of the construction quality assurance monitoring and testing during the construction of a liner system.
8. If monitoring reveals substantial or progressive increases of leachate generation above the design leachate flow volume of 72 gallons per minute by the Unit or portion of the Unit, such that the depth of fluid on any portion of the LCRS (excluding the leachate removal pump sump) exceeds 30 cm, the Discharger shall immediately notify the Regional Board in writing within seven days. The notification shall include a timetable for remedial or corrective action necessary to achieve compliance with the leachate depth limitation.
9. Closure shall not proceed in the absence of closure waste discharge requirements.
10. All containment systems shall include a LCRS that shall convey all leachate which reaches the liner to an appropriately lined sump or other appropriately lined collected area. The LCRS shall not rely on unlined or clay lined areas for such conveyances.

E. DETECTION MONITORING SPECIFICATIONS

1. The Discharger shall comply with the detection monitoring program provisions of Title 27 for groundwater, surface water, and the unsaturated zone, and in accordance with

Monitoring and Reporting Program No. R5-2005-0100. A detection monitoring program for a new Unit shall be installed, operational, and one year of monitoring data collected prior to the discharge of wastes [Title 27 CCR Section 20415(e)(6)].

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. R5-2005-0100, 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. R5-2005-0100.
6. 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. R5-2005-0100 and Title 27 CCR Section 20415(e).
7. The Discharger shall submit for Executive Officer review and approval a Sample Collection and Analysis Plan. The Sample Collection and Analysis Plan shall at a minimum include:
 - 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;
 - d. Sample quality assurance/quality control (QA/QC) procedures; and

- e. Chain of Custody control.
8. 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.
9. 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.
10. 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.
11. **“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.
12. **MDLs and PQLs** shall be derived by the laboratory for each analytical procedure, according to State of California laboratory accreditation procedures. 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.
13. 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.

14. 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.
15. 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.
16. The statistical method shall account for data below the practical quantitation limit (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 downgradient 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. Background for water samples or soil-pore gas 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). The Discharger may propose an alternate statistical method [to the methods listed under Title 27 CCR Section 20415(e)(8)(A-D)] in accordance with Title 27 CCR Section 20415(e)(8)(E), for review and approval by the Executive Officer.

18. The Discharger may propose an alternate statistical method [to the methods listed under Title 27 CCR Section 20415(e)(8)(A-D)] in accordance with Title 27 CCR Section 20415(e)(8)(E), for review and approval by the Executive Officer. Upon receiving written approval from the Executive Officer, alternate statistical procedures may be used for determining the significance of analytical results for common laboratory contaminants (i.e., methylene chloride, acetone, diethylhexyl phthalate, and di-n-octyl phthalate). Nevertheless, analytical results involving detection of these analytes in any background or downgradient sample shall be reported and flagged for easy reference by Regional Board staff.
19. The Discharger shall use the following non-statistical method for all analytes that are detected in less than 10% of the background samples. The non-statistical method shall be implemented as follows:
 - 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 of a release or a change in the nature or extent of the release, at that monitoring point, if **either**:
 - 1) The data contains two or more analytes that are detected in less than 10% of background samples that equal or exceed their respective MDLs; or
 - 2) The data contains one or more analyte that equals or exceeds its PQL.
 - b. **Discrete Retest** [Title 27 CCR Section 20415(e)(8)(E)]:
 - 1) In the event that the Discharger concludes (pursuant to paragraph 20.a., above) that there is a preliminary indication of a release, then 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.
 - 2) 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 conclude that there is measurably significant evidence of a release if two or more

analytes equal or exceed their respective MDLs or if one or more analyte equals or exceeds its PQL and shall:

- a) **Immediately** notify the Regional Board about any constituent or constituents verified to be present at the monitoring point, and follow up with written notification submitted by certified mail **within seven days** of validation; and
 - b) Comply with ¶21, below if any constituent or constituents were verified to be present.
- 3) 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.
20. If the Discharger determines that there is measurably significant evidence of a release from the Unit at any monitoring point, the Discharger shall **immediately** implement the requirements of **XI. Response To A Release, C. Release Has Been Verified**, contained in the Standard Provisions and Reporting Requirements.

F. REPORTING REQUIREMENTS

1. 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.
2. 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 postclosure 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;

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- 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.
3. 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.
 4. 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:
 - a) Evidence of ponded water at any point on the facility (show affected area on map);
 - b) Evidence of odors - presence or absence, characterization, source, and distance of travel from source; and
 - c) Evidence of erosion and/or of day-lighted refuse.
 - 2) Along the perimeter of the Unit:
 - a) Evidence of liquid leaving or entering the Unit, estimated size of affected area, and flow rate (show affected area on map);
 - b) Evidence of odors - presence or absence, characterization, source, and distance of travel from source; and
 - c) Evidence of erosion and/or of day-lighted refuse.
 - 3) For receiving waters:
 - a) Floating and suspended materials of waste origin - presence or absence, source, and size of affected area;

- b) Discoloration and turbidity - description of color, source, and size of affected area;
 - c) Evidence of odors - presence or absence, characterization, source, and distance of travel from source;
 - d) Evidence of water uses - presence of water-associated wildlife;
 - e) Flow rate; and
 - f) Weather conditions - wind direction and estimated velocity, total precipitation during recent days and on the day of observation.
- g. The quantity and types of wastes discharged and the locations in the Unit where waste has been placed since submittal of the last such report.
5. 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.
6. 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 downgradient 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 previous two six-month reporting periods, 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 [Title 27 CCR Section 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 map showing the area and elevations in which filling has been completed during the previous calendar year and a comparison to final closure design contours.
 - e. A written summary of the monitoring results, indicating any changes made or observed since the previous annual report.
 - f. An evaluation of the effectiveness of the leachate monitoring/control facilities.

G. PROVISIONS

1. The Discharger shall maintain a copy of this Order at the facility 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 all applicable provisions of Title 27 and 40 Code of Federal Regulations Part 258 (Subtitle D) that are not specifically referred to in this Order.
3. The Discharger shall comply with Monitoring and Reporting Program No. R5-2005-0100, which is incorporated into and made part of this Order.
4. The Discharger shall comply with the applicable portions of the Standard Provisions and Reporting Requirements for Waste Discharge Requirements for Nonhazardous Solid Waste Discharges Regulated by Title 27 and/or Subtitle D (Title 27 CCR Section 20005 et seq. and 40 CFR 258 et seq.), dated April 2000, which are hereby incorporated into this Order.

5. 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.”
6. 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.
7. The owner of the waste management facility shall have the continuing responsibility to assure protection of waters of the state from discharged wastes and from gases and leachate generated by discharged waste during the active life, closure, and postclosure

maintenance period of the Unit(s) and during subsequent use of the property for other purposes.

8. 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.
9. 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 Provision F.5. 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.
10. The Discharger shall establish cost estimates for initiating and completing corrective action for all known or reasonably foreseeable releases from the landfill, and submit these estimates to the Executive Officer for review and approval.
11. The Discharger shall obtain and maintain assurances of financial responsibility for initiating and completing corrective action for all known or reasonably foreseeable releases from the landfill in an amount approved by the Executive Officer, and shall submit the financial assurance mechanism to the Financial Assurances Section of the California Integrated Waste Management Board.
12. The Discharger is required to maintain financial assurance mechanisms for closure and post-closure maintenance costs as specified in Chapter 6 of Title 27. The Discharger is required to submit the financial assurance mechanism to the Financial Assurances Section of the California Integrated Waste Management Board, which determines if the mechanism meets the requirements of Chapter 6, Title 27, and if the amount of coverage is adequate.
13. The Discharger shall complete the tasks contained in these waste discharge requirements in accordance with the following time schedule:

Task

Compliance Date

A. Construction Plans

Task	Compliance Date
Submit construction and design plans for Executive Officer approval (see Construction Specification D.1)	Prior to Construction
B. Drainage Design	
Once excavation of the western edge of Phase II-B is initiated and the springs are uncovered, a drainage design report shall be submitted for Executive Officer review and approval.	Prior to Drainage Construction
C. Construction Report	
Submit a construction report upon completion demonstrating construction was in accordance with approved construction plans for Executive Officer review and approval. (see Construction Specification D.6).	Prior to Discharge
D. Water Quality Standard Protection Report	
Submit a water quality protection standard report that compares interwell and intrawell concentration limits for each monitored medium at each monitoring point.	1 December 2006

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 24 June 2005.

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2005-0100
FOR
CALAVERAS COUNTY DEPARTMENT OF PUBLIC WORKS
ROCK CREEK MUNICIPAL SOLID WASTE
CLASS II LANDFILL
CLASS II SURFACE IMPOUNDMENT
CALAVERAS COUNTY

Compliance with this Monitoring and Reporting Program, with Title 27, California Code of Regulations, Section 20005, et seq. (hereafter Title 27), and with the *Standard Provisions and Reporting Requirements for Waste Discharge Requirements for Nonhazardous Solid Waste Discharges Regulated by Title 27 and/or Subtitle D (27 CCR §20005 et seq. and 40 CFR 258)*, dated April 2000, is ordered by Waste Discharge Requirements Order No. R5-2005-0100.

A. REQUIRED MONITORING REPORTS

<u>Report</u>	<u>Due</u>
1. Groundwater Monitoring (Section D.1)	See Table I
2. Annual Monitoring Summary Report (Order No. R5-2005-0100, F.6.)	Annually
3. Unsaturated Zone Monitoring (Section D.2)	See Table II
4. Leachate Monitoring (Section D.3)	See Table III
5. Surface Water Monitoring (Section D.4)	See Table IV
6. Facility Monitoring (Section D.5)	As necessary
7. Response to a Release (Standard Provisions and Reporting Requirements)	As necessary

B. REPORTING

The Discharger shall report monitoring data and information as required in this Monitoring and Reporting Program and as required in Order No. R5-2005-0100 and the Standard Provisions and Reporting Requirements. Reports which do not comply with the required format will be **REJECTED** and the Discharger shall be deemed to be in noncompliance with the waste discharge requirements. In reporting the monitoring data required by this program, the Discharger shall arrange the data in tabular form so that the

MONITORING AND REPORTING PROGRAM NO. R5-2005-0100
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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. Data shall also be submitted in a digital format acceptable to the Executive Officer.

Each monitoring report shall include a compliance evaluation summary as specified in F. Reporting Requirements, of Order No.R5-2005-0100.

Field and laboratory tests shall be reported in each monitoring report. Monthly, quarterly, semiannual, and annual monitoring reports shall be submitted to the Board in accordance with the following schedule for the calendar period in which samples were taken or observations made.

<u>Sampling Frequency</u>	<u>Reporting Frequency</u>	<u>Reporting Periods End</u>	<u>Report Date Due</u>
Monthly	Quarterly	Last Day of Month	by Semiannual Schedule
Quarterly	Quarterly	31 March	30 April
		30 June	31 July
		30 September	31 October
		31 December	31 January
Semiannually	Semiannually	30 June	31 July
		31 December	31 January
Annually	Annually	31 December	31 January

The Discharger shall submit an **Annual Monitoring Summary Report** to the Board covering the previous monitoring year. The annual report shall contain the information specified in F. Reporting Requirements, of Order No.R5-2005-0100, and a discussion of compliance with the waste discharge requirements and the Water Quality Protection Standard.

The results of **all monitoring** conducted at the site shall reported to the Board in accordance with the reporting schedule above for the calendar period in which samples were taken or observations made.

C. WATER QUALITY PROTECTION STANDARD AND COMPLIANCE PERIOD

1. Water Quality Protection Standard Report

For each waste management unit (Unit), the Water Quality Protection Standard shall consist of all constituents of concern, the concentration limit for each constituent of concern, the point of compliance, and all water quality monitoring points.

The Water Quality Protection Standard for naturally occurring waste constituents consists of the constituents of concern, the concentration limits, and the point of compliance and all monitoring points. The Executive Officer shall review and approve the Water Quality Protection Standard, or any modification thereto, for each monitored medium.

The report shall:

- a. Identify **all distinct bodies of surface and ground water** that could be affected in the event of a release from a Unit or portion of a Unit. This list shall include at least the uppermost aquifer and any permanent or ephemeral zones of perched groundwater underlying the facility.
- b. Include a map showing the monitoring points and background monitoring points for the surface water monitoring program, groundwater monitoring program, and the unsaturated zone monitoring program. The map shall include the point of compliance in accordance with §20405 of Title 27.
- c. Evaluate the perennial direction(s) of groundwater movement within the uppermost groundwater zone(s).

If subsequent sampling of the background monitoring point(s) indicates significant water quality changes due to either seasonal fluctuations or other reasons unrelated to waste management activities at the site, the Discharger may request modification of the Water Quality Protection Standard.

Provision G.13.D requires the Discharger to submit a Water Quality Protection Standard Report. This report shall include the proposed limit for each monitoring well. For the newly installed wells, D-10, D-11 and D-12, there should be at least 8 sampling events in order to perform a statistic analysis of the data.

As outlined in the Order No. R5-2005-0100, D-1 has shown an increasing trend of the inorganic constituents, TDS, sulfate, specific conductance and chloride. On 16 March 2005, the Discharger submitted the report, *Evaluation of Detection*

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Monitoring Well D-1 Rock Creek Solid Waste Facility. The Discharger concluded that the increasing trend correlates to the increasing groundwater elevation, possible dissolution of gypsum in previously dry soils and that the groundwater chemistry of D-1 plots along the mixing line trends of background wells U-1 and U-2. The Discharger has proposed a new concentration limit for D-1, however, further information will need to be provided to support this standard and statistical approach (interwell analysis), therefore the limit has not been included in the table.

MRP Order No. R5-2005-0100, Groundwater Detection Monitoring Program includes a larger suite of inorganic constituents. This data shall be included to further evaluate D-1 and shall be included in the Water Quality Protection Standard Report. Water Quality Protection Standards have been provided for wells D-3, D-4, D-8, D-9 and HP-3 for a limited amount of constituents and are summarized in Table 1. Water Quality Protection Standards shall be calculated for the new wells (D-10, D-11 and D-12) for the full suite of naturally occurring constituents and for the existing wells where a new constituent will be monitored for and where the standard has not been calculated.

The following table summarizes the limits for D-3, D-4, D-8, D-9 and HP-3. The limits outlined in Table 1 were calculated using intrawell tolerance limits at 95% confidence and 95% coverage.

Table 1

Well	pH (Std units)	SC ¹ (µmhos/cm)	Turbidity (NTU)	Chloride (mg/L)	Nitrate/ Nitrite as N (mg/L)	Sulfate as SO ₄ (mg/L)	TDS ² (mg/L)
D-3	6.3-8.0	420	19	15	5.9	17	218
D-4	5.9-7.3	696	111	11	2.1	232	442
D-8	6.0-7.5	713	50	17	2.2	278	725
D-9	6.1-8.1	270	149	6.3	2.2	20	256
HP-3	6.7-7.5	1048	16	14	2.7	97	700

¹ Specific Conductance

² Total Dissolved Solids

The Water Quality Protection Standard shall be updated to reflect those constituents that were not monitored for under Order No. R5-01-149.

2. Constituents of Concern

The constituents of concern include all the waste constituents, their reaction products, and hazardous constituents that are reasonably expected to be in or derived from waste contained in the Unit. The constituents of concern for all Units at the facility are those listed in Tables I through IV for the specified

monitored medium, and Table VI. The Discharger shall monitor all constituents of concern every five years, or more frequently as required in accordance with a Corrective Action Program. The last five-year COC report was submitted to the Regional Board in February 2002.

a. **Monitoring Parameters**

Monitoring parameters are constituents of concern that are the waste constituents, reaction products, hazardous constituents, and physical parameters that provide a reliable indication of a release from a Unit. The monitoring parameters for all Units are those listed in Tables I through V for the specified monitored medium.

3. Concentration Limits

For a naturally occurring constituent of concern, the concentration limit for each constituent of concern shall be determined as follows:

- a. By calculation in accordance with a statistical method pursuant to §20415 of Title 27; or
- b. By an alternate statistical method acceptable to the Executive Officer in accordance with §20415 of Title 27.

The established concentration limits for naturally occurring constituents of concern are listed in WDR Order No. R5-2005-0100.

4. Points of Compliance

The point of compliance for the water standard at each Unit is a vertical surface located at the hydraulically downgradient limit of the Unit that extends through the uppermost aquifer underlying the Unit. The following are the points of compliance:

Phase I-A:	L-1R, L-2R, HP-3
Phase I-B:	SD-1, SD-2, D-1
Phase II-A:	SD-1, SD-2, LDS-IIA, D-4, D-10
Phase II-B:	GP-IIB-1, GP-IIB-2 and GP-IIB-3, D-10, D-4, D-12
Phase III (future cell):	D-12
Surface Impoundment	GPL-1, D-8, D-9

As outlined in Order No. R5-2005-0100, D-1 will continue to be monitored as a detection and evaluation monitoring well until the Water Quality Protection

Standard Report is provided to the Regional Board.

5. Compliance Period

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 initiates an evaluation monitoring program.

6. Monitoring Points

A monitoring point is a well, device, or location specified in the waste discharge requirements, which monitoring is conducted and at which the water quality protection standard applies. The monitoring points for detection monitoring shall be the following (plus other monitoring points as :

Surface Water:	RO-1
Groundwater:	U-1, U-2, HP-3, D-1, D-4, D-8, D-9, D-10, D-11, D-12 (and other monitoring wells when constructed)
Vadose Zone:	L-1R, L-2R, L-5, GPL-1, SD-1, SD-2, GP-IIB-1, GP-IIB-2 and GP-IIB-3 (and other lysimeters when constructed)
Leachate:	Outfall, Pond, Sump, each secondary LCRS beneath Phase II-A and Phase II-B

D. MONITORING

The Discharger shall comply with the detection monitoring program provisions of Title 27 for groundwater, surface water, and the unsaturated zone, in accordance with Detection Monitoring Specification E.2 and E.4 of Waste Discharge Requirements, Order No.R5-2005-0100. All monitoring shall be conducted in accordance with a Sample Collection and Analysis Plan, which includes quality assurance/quality control standards, that is acceptable to the Executive Officer.

All point of compliance monitoring wells established for the detection monitoring program shall constitute the monitoring points for the groundwater Water Quality

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Protection Standard. All detection monitoring program groundwater monitoring wells, unsaturated zone monitoring devices, leachate, and surface water monitoring points shall be sampled and analyzed for monitoring parameters and constituents of concern as indicated and listed in Tables I through IV.

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

The Discharger may, with the approval of the Executive Officer, use alternative analytical test methods, including new USEPA approved methods, provided the methods have method detection limits equal to or lower than the analytical methods specified in this Monitoring and Reporting Program.

1. Groundwater

The Discharger shall operate and maintain a groundwater detection monitoring system that complies with the applicable provisions of §20415 and §20420 of Title 27 in accordance with a Detection Monitoring Program approved by the Executive Officer. The Discharger shall collect, preserve, and transport groundwater samples in accordance with the approved Sample Collection and Analysis Plan.

The Discharger shall determine the groundwater flow rate and direction in the uppermost aquifer and in any zones of perched water and in any additional zone of saturation monitored pursuant to this Monitoring and Reporting Program, and report the results semiannually, including the times of highest and lowest elevations of the water levels in the wells.

Hydrographs of each well shall be submitted showing the elevation of groundwater with respect to the elevations of the top and bottom of the screened interval and the elevation of the pump intake. Hydrographs of each well shall be prepared quarterly and submitted annually.

Groundwater samples shall be collected from the point-of-compliance wells, background wells, and any additional wells added as part of the approved groundwater monitoring system. Samples shall be collected and analyzed for the monitoring parameters in accordance with the methods and frequency specified in Table I.

The groundwater monitoring network shall consist of the following:

<u>Well</u>	<u>Status</u>	<u>Function</u>
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U-1	Background	
U-2	Background	
HP-3	Detection	Phase I-A
D-1	Detection/Evaluation	Phase I-A, Phase I-B, Phase II-A
D-4	Detection	Phase I-B, Phase II-A, Phase II-B
D-8	Detection	SI, Phase II-A, Phase II-B
D-9	Detection	SI, Phase I-B, Phase II-A, Phase II-B
D-10	Detection	Phase II-A, Phase II-B
D-11	Background	
D-12	Background/Detection	Phase II-A, Phase II-B, future Phase III

The monitoring parameters shall also be evaluated each reporting period with regards to the cation/anion balance, and the results shall be graphically presented using a Stiff diagram, a Piper graph, or a Schueller plot. Samples for the constituents of concern specified in Table I shall be collected and analyzed in accordance with the methods listed in Table VI every five years.

2. Unsaturated Zone Monitoring

The Discharger shall operate and maintain an unsaturated zone detection monitoring system that complies with the applicable provisions of §20415 and §20420 of Title 27 in accordance with a detection monitoring plan approved by the Executive Officer. The Discharger shall collect, preserve, and transport samples in accordance with the quality assurance/quality control standards contained in the approved Sample Collection and Analysis Plan.

Unsaturated zone samples shall be collected from the monitoring devices and background monitoring devices of the approved unsaturated zone monitoring system. The collected samples shall be analyzed for the listed constituents in accordance with the methods and frequency specified in Table II. All monitoring parameters shall be graphed so as to show historical trends at each monitoring point. Samples for the constituents of concern specified in Table II shall be collected and analyzed in accordance with the methods listed in Table VI every five years.

The unsaturated zone monitoring network shall consist of background suction lysimeter L-5 and downgradient monitoring lysimeters L-1R and L-2R (suction lysimeters), GPL-1 (pan lysimeter located beneath sump of surface

impoundment), SD-1 (subdrain located beneath Phase II-A), SD-2 (subdrain located beneath east sideslope of Phase II-A and will be extended beneath Phase II-B) and GP-IIB-1, GP-IIB-2 and GP-IIB-3 (gas probes to be installed beneath Phase II-B secondary liner). A monitoring point (unnamed) for the proposed subdrain to be constructed along the western slope of the landfill shall also be monitored.

The pan lysimeter, GPL-1, shall be checked monthly for liquid and monitoring shall also include the total volume of liquid removed from the system. Unsaturated zone monitoring reports shall be included with the corresponding semiannual groundwater monitoring and shall include an evaluation of potential impacts of the facility on the unsaturated zone and compliance with the Water Quality Protection Standard.

3. Leachate Monitoring

All Unit leachate collection and removal system sumps shall be inspected monthly for leachate generation. Upon detection of leachate in a previously dry leachate collection and removal system, leachate shall be sampled **immediately** and analyzed for the constituents listed in Table III. Leachate shall then be sampled and analyzed annually during the fourth quarter thereafter, with a retest during the following second quarter if constituents are detected that have not been previously detected.

Leachate samples shall be collected and analyzed for the listed constituents in accordance with the methods and frequency specified in Table III. The constituents of concern list shall include all constituents listed in Table VI. The quantity of leachate pumped from each sump shall be measured and reported monthly as Leachate Flow Rate (in gallons). Samples shall be collected from the primary and secondary LCRS (Phase II-A and Phase II-B), the LCRS at the point of discharge to the surface impoundment (outfall), surface impoundment (pond) and the surface impoundment sump.

Leachate that seeps to the surface from the Unit shall be sampled and analyzed for the constituents listed in Table III upon detection. The quantity of leachate shall be *estimated* and reported as Leachate Flow Rate (in gallons/day).

All LCRSs shall be tested annually to demonstrate operation in conformance with waste discharge requirements. The results of these tests shall be reported to the Regional Board and shall include comparisons with earlier tests made under comparable conditions. All visible portions of synthetic liners shall be inspected on a quarterly basis and their condition reported to the Board on a quarterly basis.

4. Surface Water Monitoring

The Discharger shall install and operate a surface water detection monitoring system where appropriate that complies with the applicable provisions of §20415 and §20420 of Title 27 and has been approved by the Executive Officer.

For surface water detection monitoring, a sample shall be collected at the facility boundary from RO-1 and analyzed for the monitoring parameters in accordance with the methods and frequency specified in Table IV. All surface water monitoring samples shall be collected and analyzed for the constituents of concern specified in Table IV every five years. All monitoring parameters shall be graphed so as to show historical trends at each sample location.

5. Facility Monitoring

a. Facility Inspection

Annually, prior to the anticipated rainy season, but no later than **30 September**, the Discharger shall conduct an inspection of the facility. The inspection shall assess damage to the drainage control system, groundwater monitoring equipment (including wells, etc.), and shall include the Standard Observations contained in section F.4.f. of Order No.R5-2005-0100. Any necessary construction, maintenance, or repairs shall be completed by **31 October**. By **15 November** of each year, the Discharger shall submit an annual report describing the results of the inspection and the repair measures implemented, including photographs of the problem and the repairs.

b. Storm Events

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

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

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Ordered by: _____
THOMAS R. PINKOS, Executive Officer

_____ 24 June 2005
(Date)

MMW: 7/5/2005/1/2005

|

TABLE I
GROUNDWATER DETECTION MONITORING PROGRAM

<u>Parameter</u>	<u>Units</u>	<u>Frequency</u>
Field Parameters		
Groundwater Elevation	Ft. & hundredths, M.S.L.	Quarterly
Temperature	°C	Semiannual
Electrical Conductivity	µmhos/cm	Semiannual
pH	pH units	Semiannual
Turbidity	Turbidity units	Semiannual
Monitoring Parameters		
Total Dissolved Solids (TDS)	mg/L	Semiannual
Chloride	mg/L	Semiannual
Carbonate	mg/L	Semiannual
Bicarbonate	mg/L	Semiannual
Nitrate - Nitrogen	mg/L	Semiannual
Sulfate	mg/L	Semiannual
Calcium	mg/L	Semiannual
Magnesium	mg/L	Semiannual
Potassium	mg/L	Semiannual
Sodium	mg/L	Semiannual
Volatile Organic Compounds (USEPA Method 8260, see Table V)	µg/L	Semiannual
Constituents of Concern (see Table VI)		
Total Organic Carbon	mg/L	5 years
Inorganics (dissolved)	mg/L	5 years
Volatile Organic Compounds (USEPA Method 8260B, extended list)	µg/L	5 years
Semi-Volatile Organic Compounds (USEPA Method 8270C)	µg/L	5 years
Chlorophenoxy Herbicides (USEPA Method 8151A)	µg/L	5 years
Organophosphorus Compounds (USEPA Method 8141A)	µg/L	5 years

TABLE II
UNSATURATED ZONE DETECTION MONITORING PROGRAM

SOIL-PORE GAS

<u>Parameter</u>	<u>Units</u>	<u>Frequency</u>
Monitoring Parameters		
Volatile Organic Compounds (USEPA Method TO-14)	µg/cm ³	Annual
Methane	%	Semiannual

PAN LYSIMETERS (or other vadose zone monitoring device)

<u>Parameter</u>	<u>Units</u>	<u>Frequency</u>
Field Parameters		
Electrical Conductivity	µmhos/cm	Semiannual
pH	pH units	Semiannual
Monitoring Parameters		
Total Dissolved Solids (TDS)	mg/L	Semiannual
Chloride	mg/L	Semiannual
Carbonate	mg/L	Semiannual
Bicarbonate	mg/L	Semiannual
Nitrate - Nitrogen	mg/L	Semiannual
Sulfate	mg/L	Semiannual
Calcium	mg/L	Semiannual
Magnesium	mg/L	Semiannual
Potassium	mg/L	Semiannual
Sodium	mg/L	Semiannual
Volatile Organic Compounds (USEPA Method 8260B, see Table V)	µg/L	Semiannual

Constituents of Concern (see Table VI)

Total Organic Carbon	mg/L	5 years
Inorganics (dissolved)	mg/L	5 years
Volatile Organic Compounds (USEPA Method 8260B, extended list)	µg/L	5 years
Semi-Volatile Organic Compounds (USEPA Method 8270C)	µg/L	5 years
Chlorophenoxy Herbicides (USEPA Method 8151A)	µg/L	5 years
Organophosphorus Compounds (USEPA Method 8141A)	µg/L	5 years

TABLE III
LEACHATE DETECTION MONITORING PROGRAM

<u>Parameter</u>	<u>Units</u>	<u>Frequency</u>
Field Parameters		
Total Flow	Gallons	Monthly
Flow Rate	Gallons/Day	Monthly
Electrical Conductivity	µmhos/cm	Monthly
pH	pH units	Monthly
Monitoring Parameters		
Total Dissolved Solids (TDS)	mg/L	Annually
Chloride	mg/L	Annually
Carbonate	mg/L	Annually
Bicarbonate	mg/L	Annually
Nitrate - Nitrogen	mg/L	Annually
Sulfate	mg/L	Annually
Calcium	mg/L	Annually
Magnesium	mg/L	Annually
Potassium	mg/L	Annually
Sodium	mg/L	Annually
Volatile Organic Compounds (USEPA Method 8260B, see Table V)	µg/L	Annually
Constituents of Concern (see Table VI)		
Total Organic Carbon	mg/L	5 years
Inorganics (dissolved)	mg/L	5 years
Volatile Organic Compounds (USEPA Method 8260B, extended list)	µg/L	5 years
Semi-Volatile Organic Compounds (USEPA Method 8270C)	µg/L	5 years
Chlorophenoxy Herbicides (USEPA Method 8151A)	µg/L	5 years
Organophosphorus Compounds (USEPA Method 8141A)	µg/L	5 years

TABLE IV
SURFACE WATER DETECTION MONITORING PROGRAM

<u>Parameter</u>	<u>Units</u>	<u>Frequency</u>
Field Parameters		
Temperature	°C	Semiannual
Electrical Conductivity	µmhos/cm	Semiannual
pH	pH units	Semiannual
Turbidity	Turbidity units	Semiannual
Monitoring Parameters		
Total Dissolved Solids (TDS)	mg/L	Semiannual
Carbonate	mg/L	Semiannual
Bicarbonate	mg/L	Semiannual
Chloride	mg/L	Semiannual
Nitrate - Nitrogen	mg/L	Semiannual
Sulfate	mg/L	Semiannual
Calcium	mg/L	Semiannual
Magnesium	mg/L	Semiannual
Potassium	mg/L	Semiannual
Sodium	mg/L	Semiannual
Volatile Organic Compounds (USEPA Method 8260B, see Table V)	µg/L	Semiannual
Constituents of Concern (see Table VI)		
Total Organic Carbon	mg/L	5 years
Inorganics (dissolved)	mg/L	5 years
Volatile Organic Compounds (USEPA Method 8260B, extended list)	µg/L	5 years
Semi-Volatile Organic Compounds (USEPA Method 8270C)	µg/L	5 years
Chlorophenoxy Herbicides (USEPA Method 8151A)	µg/L	5 years
Organophosphorus Compounds (USEPA Method 8141A)	µg/L	5 years

TABLE V

MONITORING PARAMETERS FOR DETECTION MONITORING

Surrogates for Metallic Constituents:

pH
Total Dissolved Solids
Electrical Conductivity
Chloride
Sulfate
Nitrate nitrogen

Constituents included in VOC:

USEPA Method 8260B

Acetone
Acrylonitrile
Benzene
Bromochloromethane
Bromodichloromethane
Bromoform (Tribromomethane)
Carbon disulfide
Carbon tetrachloride
Chlorobenzene
Chloroethane (Ethyl chloride)
Chloroform (Trichloromethane)
Dibromochloromethane (Chlorodibromomethane)
1,2-Dibromo-3-chloropropane (DBCP)
1,2-Dibromoethane (Ethylene dibromide; EDB)
o-Dichlorobenzene (1,2-Dichlorobenzene)
m-Dichlorobenzene (1,3-Dichlorobenzene)
p-Dichlorobenzene (1,4-Dichlorobenzene)
trans-1,4-Dichloro-2-butene
Dichlorodifluoromethane (CFC-12)
1,1-Dichloroethane (Ethylidene chloride)
1,2-Dichloroethane (Ethylene dichloride)
1,1 -Dichloroethylene (1,1 -Dichloroethene; Vinylidene chloride)
cis- 1,2-Dichloroethylene (cis- 1,2-Dichloroethene)
trans-1,2-Dichloroethylene (trans-1,2-Dichloroethene)
1,2-Dichloropropane (Propylene dichloride)
cis- 1,3-Dichloropropene
trans- 1,3-Dichloropropene
Di-isopropylether (DIPE)
Ethanol
Ethyltertiary butyl ether
Ethylbenzene
2-Hexanone (Methyl butyl ketone)

Hexachlorobutadiene

TABLE V

MONITORING PARAMETERS FOR DETECTION MONITORING

Continued

Hexachloroethane
Methyl bromide (Bromomethene)
Methyl chloride (Chloromethane)
Methylene bromide (Dibromomethane)
Methylene chloride (Dichloromethane)
Methyl ethyl ketone (MEK: 2-Butanone)
Methyl iodide (Iodomethane)
Methyl t-butyl ether
4-Methyl-2-pentanone (Methyl isobutylketone)
Naphthalene
Styrene
Tertiary amyl methyl ether
Tertiary butyl alcohol
1,1,1,2-Tetrachloroethane
1,1,2,2-Tetrachloroethane
Tetrachloroethylene (Tetrachloroethene; Perchloroethylene)
Toluene
1,2,4-Trichlorobenzene
1,1,1-Trichloroethane (Methylchloroform)
1,1,2-Trichloroethane
Trichloroethylene (Trichloroethene)
Trichlorofluoromethane (CFC- 11)
1,2,3-Trichloropropane
Vinyl acetate
Vinyl chloride
Xylenes

TABLE VI
CONSTITUENTS OF CONCERN & APPROVED USEPA ANALYTICAL METHODS

<u>Inorganics (dissolved):</u>	<u>USEPA Method</u>
Aluminum	6010
Antimony	7041
Barium	6010
Beryllium	6010
Cadmium	7131A
Chromium	6010
Cobalt	6010
Copper	6010
Silver	6010
Tin	6010
Vanadium	6010
Zinc	6010
Iron	6010
Manganese	6010
Arsenic	7062
Lead	7421
Mercury	7470A
Nickel	7521
Selenium	7742
Thallium	7841
Cyanide	9010B
Sulfide	9030B

Volatile Organic Compounds:

USEPA Method 8260

Acetone
Acetonitrile (Methyl cyanide)
Acrolein
Acrylonitrile
Allyl chloride (3-Chloropropene)
Benzene
Bromochloromethane (Chlorobromomethane)
Bromodichloromethane (Dibromochloromethane)
Bromoform (Tribromomethane)
Carbon disulfide
Carbon tetrachloride
Chlorobenzene
Chloroethane (Ethyl chloride)
Chloroform (Trichloromethane)
Chloroprene
Dibromochloromethane (Chlorodibromomethane)

TABLE VI

CONSTITUENTS OF CONCERN & APPROVED USEPA ANALYTICAL METHODS

Continued

1,2-Dibromo-3-chloropropane (DBCP)
1,2-Dibromoethane (Ethylene dibromide; EDB)
o-Dichlorobenzene (1,2-Dichlorobenzene)
m-Dichlorobenzene (1,3-Dichlorobenzene)
p-Dichlorobenzene (1,4-Dichlorobenzene)
trans- 1,4-Dichloro-2-butene
Dichlorodifluoromethane (CFC 12)
1,1 -Dichloroethane (Ethylidene chloride)
1,2-Dichloroethane (Ethylene dichloride)
1,1 -Dichloroethylene (1, 1-Dichloroethene; Vinylidene chloride)
cis- 1,2-Dichloroethylene (cis- 1,2-Dichloroethene)
trans- 1,2-Dichloroethylene (trans- 1,2-Dichloroethene)
1,2-Dichloropropane (Propylene dichloride)
1,3-Dichloropropane (Trimethylene dichloride)
2,2-Dichloropropane (Isopropylidene chloride)
1,1 -Dichloropropene
cis- 1,3-Dichloropropene
trans- 1,3-Dichloropropene
Di-isopropylether (DIPE)
Ethanol
Ethyltertiary butyl ether
Ethylbenzene
Ethyl methacrylate
Hexachlorobutadiene
Hexachloroethane
2-Hexanone (Methyl butyl ketone)
Isobutyl alcohol
Methacrylonitrile
Methyl bromide (Bromomethane)
Methyl chloride (Chloromethane)
Methyl ethyl ketone (MEK; 2-Butanone)
Methyl iodide (Iodomethane)
Methyl t-butyl ether
Methyl methacrylate
4-Methyl-2-pentanone (Methyl isobutyl ketone)
Methylene bromide (Dibromomethane)
Methylene chloride (Dichloromethane)
Naphthalene
Propionitrile (Ethyl cyanide)
Styrene
Tertiary amyl methyl ether
Tertiary butyl alcohol
1,1,1,2-Tetrachloroethane

TABLE VI

CONSTITUENTS OF CONCERN & APPROVED USEPA ANALYTICAL METHODS

Continued

1,1,2,2-Tetrachloroethane
Tetrachloroethylene (Tetrachloroethene; Perchloroethylene; PCE)
Toluene
1,2,4-Trichlorobenzene
1,1,1 -Trichloroethane, Methylchloroform
1,1,2-Trichloroethane
Trichloroethylene (Trichloroethene; TCE)
Trichlorofluoromethane (CFC- 11)
1,2,3-Trichloropropane
Vinyl acetate
Vinyl chloride (Chloroethene)
Xylene (total)

Semi-Volatile Organic Compounds:

USEPA Method 8270 - base, neutral, & acid extractables

Acenaphthene
Acenaphthylene
Acetophenone
2-Acetylaminofluorene (2-AAF)
Aldrin
4-Aminobiphenyl
Anthracene
Benzo[a]anthracene (Benzanthracene)
Benzo[b]fluoranthene
Benzo[k]fluoranthene
Benzo[g,h,i]perylene
Benzo[a]pyrene
Benzyl alcohol
Bis(2-ethylhexyl) phthalate
alpha-BHC
beta-BHC
delta-BHC
gamma-BHC (Lindane)
Bis(2-chloroethoxy)methane
Bis(2-chloroethyl) ether (Dichloroethyl ether)
Bis(2-chloro-1-methylethyl) ether (Bis(2-chloroisopropyl) ether; DCIP)
4-Bromophenyl phenyl ether
Butyl benzyl phthalate (Benzyl butyl phthalate)
Chlordane
p-Chloroaniline
Chlorobenzilate
p-Chloro-m-cresol (4-Chloro-3-methylphenol)
2-Chloronaphthalene

TABLE VI

CONSTITUENTS OF CONCERN & APPROVED USEPA ANALYTICAL METHODS

Continued

2-Chlorophenol
4-Chlorophenyl phenyl ether
Chrysene
o-Cresol (2-methylphenol)
m-Cresol (3-methylphenol)
p-Cresol (4-methylphenol)
4,4'-DDD
4,4'-DDE
4,4'-DDT
Diallate
Dibenz[a,h]anthracene
Dibenzofuran
Di-n-butyl phthalate
3,3'-Dichlorobenzidine
2,4-Dichlorophenol
2,6-Dichlorophenol
Dieldrin
Diethyl phthalate
p-(Dimethylamino)azobenzene
7,12-Dimethylbenz[a]anthracene
3,3'-Dimethylbenzidine
2,4-Dimethylphenol (m-Xylenol)
Dimethyl phthalate
m-Dinitrobenzene
4,6-Dinitro-o-cresol (4,6-Dinitro-2-methylphenol)
2,4-Dinitrophenol
2,4-Dinitrotoluene
2,6-Dinitrotoluene
Di-n-octyl phthalate
Diphenylamine
Endosulfan I
Endosulfan II
Endosulfan sulfate
Endrin
Endrin aldehyde
Ethyl methanesulfonate
Famphur
Fluoranthene
Fluorene
Heptachlor
Heptachlor epoxide
Hexachlorobenzene
Hexachlorocyclopentadiene
Hexachloropropene

TABLE VI

CONSTITUENTS OF CONCERN & APPROVED USEPA ANALYTICAL METHODS

Continued

Indeno(1,2,3-c,d)pyrene
Isodrin
Isophorone
Isosafrole
Kepone
Methapyrilene
Methoxychlor
3-Methylcholanthrene
Methyl methanesulfonate
2-Methylnaphthalene
1,4-Naphthoquinone
1-Naphthylamine
2-Naphthylamine
o-Nitroaniline (2-Nitroaniline)
m-Nitroaniline (3-Nitroaniline)
p-Nitroaniline (4-Nitroaniline)
Nitrobenzene
o-Nitrophenol (2-Nitrophenol)
p-Nitrophenol (4-Nitrophenol)
N-Nitrosodi-n-butylamine (Di-n-butylnitrosamine)
N-Nitrosodiethylamine (Diethylnitrosamine)
N-Nitrosodimethylamine (Dimethylnitrosamine)
N-Nitrosodiphenylamine (Diphenylnitrosamine)
N-Nitrosodipropylamine (N-Nitroso-N-dipropylamine; Di-n-propylnitrosamine)
N-Nitrosomethylethylamine (Methylethylnitrosamine)
N-Nitrosopiperidine
N-Nitrosopyrrolidine
5-Nitro-o-toluidine
Pentachlorobenzene
Pentachloronitrobenzene (PCNB)
Pentachlorophenol
Phenacetin
Phenanthrene
Phenol
p-Phenylenediamine
Polychlorinated biphenyls (PCBs; Aroclors)
Pronamide
Pyrene
Safrole
1,2,4,5-Tetrachlorobenzene
2,3,4,6-Tetrachlorophenol
o-Toluidine
Toxaphene
2,4,5-Trichlorophenol

TABLE VI

CONSTITUENTS OF CONCERN & APPROVED USEPA ANALYTICAL METHODS

Continued

0,0,0-Triethyl phosphorothioate
sym-Trinitrobenzene

Chlorophenoxy Herbicides:

USEPA Method 8151A

2,4-D (2,4-Dichlorophenoxyacetic acid)
Dinoseb (DNBP; 2-sec-Butyl-4,6-dinitrophenol)
Silvex (2,4,5-Trichlorophenoxypropionic acid; 2,4,5-TP)
2,4,5-T (2,4,5-Trichlorophenoxyacetic acid)

Organophosphorus Compounds:

USEPA Method 8141A

Atrazine
Chlorpyrifos
0,0-Diethyl 0-2-pyrazinyl phosphorothioate (Thionazin)
Diazinon
Dimethoate
Disulfoton
Ethion
Methyl parathion (Parathion methyl)
Parathion
Phorate
Simazine

INFORMATION SHEET

CALAVERAS COUNTY DEPARTMENT OF PUBLIC WORKS
ROCK CREEK MUNICIPAL SOLID WASTE
CLASS II LANDFILL
CLASS II SURFACE IMPOUNDMENT
CALAVERAS COUNTY

The 200-acre facility is 2/3 of a mile east of Milton in Calaveras County. The facility consists of a Class II landfill, which is being constructed in four phases. Each phase will include a surface impoundment for leachate storage and evaporative disposal. Phase 1-A, consisting of a 6.1-acre Class II landfill and a 2.4 million gallon surface impoundment, was constructed in 1990 and began receiving wastes in October 1990. Phase 1-B was constructed in 1994 and began accepting wastes in October 1994. Waste Discharge Requirements (WDRs) Order No. 97-199 reflects the expansion of the Class II landfill as Phase II-A, the clean closure of the Class II surface impoundment, and the design and construction of a new Class II surface impoundment. Order No. 97-199 was subsequently rescinded with the adoption of Order No. 5-01-149, which was adopted to reflect the design changes in the Phase II-A landfill to correct problems associated with water discovered beneath the liner along the eastern sideslope.

This revision reflects the expansion of the facility with the construction of a new cell. This cell, Phase II-B, will accept Class II and III municipal solid waste on 7.3 acres directly south of the existing Phase II-A.

The facility accepts municipal solid waste, ash, sewage treatment sludge, petroleum contaminated soil, and miscellaneous materials. These wastes are classified as "nonhazardous solid waste" or "designated waste", using the criteria set forth in Title 27.

The Stockton East Water District's (SEWD) proposed Farmington Canal Project crosses the Rock Creek Facility at the downstream, southerly end of the project site. The canal would pass approximately 400 feet from the southernmost extremity of the ultimate placement of waste and would cross over the existing site creek in a flume or other structure, which would physically separate the two streams of water. The beneficial uses of the water conveyed by the proposed canal include agricultural and domestic use.

The Calaveras County Board of Supervisors passed Resolution No. 88-484 on 14 November 1988 approving a settlement agreement between the Discharger and SEWD. The settlement agreement specifies the Discharger and the District perform specific actions to prevent impacts on the proposed Farmington Canal Project.

The facility receives a yearly average rainfall of 19.42 inches as measured at the New Hogan Dam. The mean annual evaporation for this facility is 7.5 inches as measured at the New Hogan Dam.

The predominate geologic formation at this site is the Tertiary Aged Valley Springs Formation, which consists of boulder sized gravels, sands, silts, and clays. The soils immediately underlying the WMUs are light brown to gray silty sand and a red brown sandy silty clay.

INFORMATION SHEET
CALAVERAS COUNTY DEPARTMENT OF PUBLIC WORKS
FOR OPERATION
ROCK CREEK MUNICIPAL SOLID WASTE LANDFILL
CALAVERAS COUNTY

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Phase 1-A was lined with a minimum thickness of 24 inches of compacted clay with a permeability of 1×10^{-6} cm/sec. The compacted clay was overlain with a vapor barrier and blanket LCRS. Leachate from the Phase 1-A LCRS gravity drains to the Class II surface impoundment. Phase 1-B was lined with a composite liner system consisting of compacted clay of minimum thickness 24 inches with a maximum permeability of 1×10^{-7} cm/sec. A 60-mil HDPE liner overlies the clay liner. The composite liner was overlain by a one foot thick blanket LCRS.

For the Phase II-A expansion, the Discharger petitioned the Board to allow the use of the geosynthetic clay liner (GCL) material in the composite liner system as an engineered alternative to the prescriptive standard (2-foot compacted clay with a maximum permeability of 1×10^{-7} cm/s). The Discharger's petition demonstrated that the proposed design would provide equivalent protection and that application of the prescriptive standard was unnecessarily burdensome.

The engineered alternative proposed by the Discharger for the base liner of Phase II-B consists of a double liner system comprised of, in ascending order: 12-inch thick prepared subgrade (constructed of select fine grain materials which shall be compacted in lifts of six inches or less to 90% of the maximum dry density and at 0% to 4% wet of optimum moisture content, in accordance with the approved construction quality assurance plan, and compacted to attain a hydraulic conductivity of 1×10^{-5} cm/sec or less, or meet gradation criteria of a maximum of 3/8 inch particle size and at least 30% passing #200 sieve), 60-mil HDPE geomembrane, geocomposite drainage layer, GCL, 60-mil HDPE geomembrane, 9-inch thick gravel drainage layer, 8 oz/sy nonwoven geotextile and a 15-inch thick operations layer.

Site drainage is to Rock Creek which flows into Littlejohns Creek, a tributary of the San Joaquin River.

MMW: 7/5/2005