



Central Valley Regional Water Quality Control Board

28 August 2012

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TRANSMITTAL OF ADOPTED ORDER FOR WOODVILLE MUNICIPAL SOLID WASTE LANDFILL CLASS III LANDFILL CONSTRUCTION, OPERATION, CLOSURE, POSTCLOSURE MAINTENANCE, AND CORRECTION ACTION, TULARE COUNTY

Enclosed is an official copy of Order No. R5-2012-0075, as adopted by the California Regional Water Quality Control Board, Central Valley Region, at its 3 August 2012 meeting.

Within about a week, an official copy of the above Order will be posted on the Central Valley Water Board's website at:

http://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/

If you have any questions, please contact Scott Moore at (559) 445-5170 or at vmoore@waterboards.ca.gov.

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Enclosure: Order No. R5-2012-0075 (Discharger Only)

cc: see next page

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CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. R5-2012-0075

WASTE DISCHARGE REQUIREMENTS
FOR
COUNTY OF TULARE
WOODVILLE MUNICIPAL SOLID WASTE LANDFILL
CLASS III LANDFILL
CONSTRUCTION, OPERATION, CLOSURE, POSTCLOSURE MAINTENANCE,
AND CORRECTIVE ACTION
TULARE COUNTY

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

1. The County of Tulare (hereinafter Discharger) owns and operates the Woodville Municipal Solid Waste Landfill (facility) about 4 miles northwest of Woodville, in Section 35, T20S, R25E, MDB&M, as shown in Attachment A, which is incorporated herein and made part of this Order by reference. The facility is a municipal solid waste (MSW) landfill regulated under authority given in California Water Code section 13000 et seq.; California Code of Regulations, title 27 ("Title 27"), section 20005 et seq.; and 40 Code of Federal Regulations (40 CFR) section 258 (a.k.a, "Subtitle D") in accordance with State Water Resources Control Board Resolution 93-62.
2. The facility is on a 305-acre property at the intersection of Road 152 and Avenue 200, Woodville. The existing and future landfill area is approximately 131.4 acres of which 65 acres have been constructed. Existing landfill units consist of one unlined waste management unit IA (Unit IA) covering 57 acres and one lined waste management unit 1B (Unit IB) covering 8 acres. Expansion waste management unit II (Unit II) will consist of 66.4 acres. The existing and future permitted landfill area is shown in Attachment B, which is incorporated herein and made part of this Order by reference. The facility is comprised of Assessor's Parcel Numbers (APN) 196-040-03 and 196-040-04.
3. On 2 January 2004, the Discharger submitted an amended Report of Waste Discharge (RWD) as part of a Joint Technical Document (JTD) for the landfill. A revised amended RWD was submitted on 26 February 2010. The information in the RWD/JTD has been used in updating these waste discharge requirements (WDRs). The RWD contains the applicable information required in Title 27. The RWD/JTD and supporting documents contain information related to this update of the WDRs including: construction of Unit II with an engineered alternative liner; and the closure of Units IA and IB with an evapotranspiration final cover. Unit II will be contiguous with Units IA and IB.

4. The Discharger proposes to implement closure of Units IA and IB in about 2018 or 2019, with an engineered alternative final cover consisting of a four foot-thick evapotranspiration (ET) final cover that meets or exceeds the performance standard contained in Section Title 27, section 21090(a)-(3).
5. On 14 July 2005, the Central Valley Water Board issued Order R5-2005-0102 in which the waste management units (units) were classified as Class III units for the discharge of non-hazardous waste and municipal solid waste. This Order continues to classify the units as Class III units in accordance with Title 27.
6. On 18 March 1998, the Central Valley Water Board issued Cleanup and Abatement Order No. 98-706 to complete an evaluation monitoring program and establish a corrective action program in accordance with a time schedule in the Order.
7. The existing and future units authorized by this Order are described as follows:

<u>Unit</u>	<u>Area</u>	<u>Liner/LCRS¹ Components²</u>	<u>Unit Classification & Status</u>
IA	57 acres	unlined	Class III, active
IB	8 acres	engineered alternative single composite liner system with an LCRS	Class III, active,
II (cells A-C)	66.4 acres	engineered alternative single composite liner system with an LCRS	Class III, future

¹ LCRS – Leachate collection and removal system

² All liner systems are composite liner systems unless otherwise noted

8. On-site facilities at the Woodville MSW Landfill include: an active landfill gas (LFG) extraction system, a landfill gas-to-energy plant, and an LFG flare. In-situ groundwater remediation is proposed and will consist of four to five injection points (existing groundwater monitoring wells that are not being used) for the injection of 3-D MicroEmulsion HRC into groundwater.
9. On 9 October 1991, the United States Environmental Protection Agency (USEPA) promulgated federal MSW regulations under the Resource Conservation and Recovery Act (RCRA), Subtitle D. These regulations are under 40 CFR section 258, and are hereafter referred to as either “Subtitle D” in reference to the RCRA federal law that required the regulations or “40 CFR section 258.XX”. These regulations apply to all California Class II and Class III landfills that accept MSW. State Water Board

Resolution 93-62 requires the Central Valley Water Board to implement in WDRs for MSW landfills the applicable provisions of the federal MSW regulations that are necessary to protect water quality, and in particular the containment provisions and the provisions that are either more stringent or that do not exist in Title 27.

10. This Order implements the applicable regulations for discharges of solid waste to land through Prohibitions, Specifications, Provisions, and monitoring and reporting requirements. Prohibitions, Specifications, and Provisions are listed in Sections A through H of these WDRs below, and in the Standard Provisions and Reporting Requirements (SPRRs) dated January 2012, which are attached to and made part of this Order. Monitoring and reporting requirements are included in the Monitoring and Reporting Program (MRP) No. R5-2012-0075 and in the SPRRs. In general, requirements that are either in regulation or otherwise apply to all MSW landfills are considered to be “standard” and are therefore in the SPRRs. Any site-specific changes to a requirement in the SPRRs are included in the applicable section (A through H) of these WDRs, and the requirement in the WDRs supersedes the requirement in the SPRRs.
11. Title 27 contains regulatory standards for discharges of solid waste promulgated by the State Water Board and the California Department of Resources Recovery and Recycling (CalRecycle). In certain instances, this Order cites CalRecycle regulatory sections. Title 27, section 20012 allows the Central Valley Water Board to cite CalRecycle regulations from Title 27 where necessary to protect water quality provided it does not duplicate or conflict with actions taken by the Local Enforcement Agency in charge of implementing CalRecycle’s regulations.

WASTE CLASSIFICATION AND UNIT CLASSIFICATION

12. The Discharger proposes to continue to discharge nonhazardous solid waste, including MSW, to Units IA and IB at the facility. These classified wastes may be discharged only in accordance with Title 27, Resolution 93-62, and Subtitle D as required by this Order.
13. Active unlined Unit IA at the facility is an “existing unit” under Title 27 that was permitted before 27 November 1984 and may continue to accept waste within the “Existing Footprint” until ready for closure unless waste receipts do not meet the timeframes and amounts in Title 27, section 21110, or they are required to close sooner to address environmental impacts or other regulatory concerns. The “Existing Footprint” as defined in Title 27, section 20164 is the area that was covered by waste as of the date that Unit IA became subject to Subtitle D. The Existing Footprint for Unit IA is shown on Attachment B.
14. Title 27, section 20690 allows the use of alternative daily cover (ADC) at MSW landfills upon approval by the Local Enforcement Agency (LEA) and concurrence from CalRecycle. Title 27, section 20705 provides the Central Valley Water Board’s regulations for all daily and intermediate cover including that it shall minimize the

percolation of liquids through waste and that the cover shall consist of materials that meet the landfill unit classification (Class II or Class III). The regulations also require that for non-composite lined portions of the landfill, any contaminants in the daily or intermediate cover are mobilized only at concentrations that would not adversely affect beneficial uses of waters of the state in the event of a release. For composite-lined portions of the landfill, the regulations require that constituents and breakdown products in the cover material are listed in the water quality protection standard.

15. Landfills propose new ADC materials regularly in order to preserve landfill air space and to beneficially reuse waste materials. Title 27, section 20686 includes regulations for beneficial reuse, including use of ADC. Approval of ADC is primarily handled by the LEA and CalRecycle under Title 27, section 20690. This Order allows any ADC proposed for use at the facility after the adoption of this Order to be approved by Central Valley Water Board staff provided the Discharger has demonstrated it meets the requirements in Title 27, section 20705. This Order also includes a requirement that ADC only be used in internal areas of the landfill unless the Discharger demonstrates that runoff from the particular ADC is not a threat to surface water quality. The demonstration can take sedimentation basins into account.
16. The Discharger uses the ADC Enviro Landfill Cover, which is a disposable, compostable, and degradable polyethylene film (2-mil) manufactured with a low density resin. Enviro Landfill Cover is manufactured by EPI Environmental Products, Inc. Based on inspections of the Enviro Landfill Cover at the active face, and information provided by EPI Environmental Products, Inc., the Discharger demonstrated that Enviro Landfill Cover is a barrier against moisture and will eliminate contact between occasional heavy rains and the active face slopes. Enviro Landfill Cover was approved by Central Valley Water Board staff in 1997. Once Enviro Landfill Cover is placed over wastes at the active face, the Discharger inspects it daily for punctures, tears, and photodegradation, etc., to ensure that it adequately protects against surface water infiltration into waste. Enviro Landfill Cover is covered with soil or waste at a time rate of every two weeks.
17. The Discharger proposes to return leachate and LFG condensate to the composite-lined landfill units from which they came. Title 27, section 20340(g) requires that leachate be returned to the unit from which it came or be discharged in a manner approved by the regional board. This section of Title 27 also references State Water Board Resolution 93-62 regarding liquids restrictions in 40 C.F.R. section 258.28 for MSW landfills, which states that liquid waste may not be placed in MSW units unless the waste is leachate or LFG condensate derived from the unit and it is designed with a composite liner and an LCRS. Therefore, leachate and LFG condensate from composite lined units with an LCRS may be returned to the unit from which they came. This Order includes requirements for returning leachate and LFG condensate back to composite-lined units such that the liquid waste is not exposed to surface water runoff, will not cause instability of the landfill, and will not seep from the edges of the units.

SITE DESCRIPTION

18. The facility was constructed in a topographically flat region of the San Joaquin Valley. No springs are on-site or within a mile of the facility. There are no streams nearby. The closest water body is the North Branch of the Tule River approximately 1.5 miles southwest of the facility. Surface drainage is toward the Elk Bayou approximately 2.75 miles northwest of the facility.
19. Land uses within 1,000 feet of the facility are agricultural.
20. There are 55 municipal, domestic, industrial, or agricultural groundwater supply wells within one mile of the site (based on data provided in the 2004 JTD). A domestic well (well identification number 20S/25E-35G1) is within 1,000 feet of the southern boundary of the facility.
21. The native ground surface elevation ranges between approximately 310 feet above mean sea level (MSL) at the eastern boundary of the facility and 300 feet above MSL at the western facility boundary. The ground surface slopes approximately 12.5 feet per mile toward the west. Geologically, the facility is located on the westward dipping, eastern limb of the asymmetrical trough of the San Joaquin Valley. Sediments ranging in age from Jurassic to Holocene fill the trough. The site overlies a basement complex of pre-Tertiary age metasediments, plutonics, and ultramafics. Sequentially overlying the basement complex are approximately 1,000 to 3,500 feet of consolidated and unconsolidated Tertiary marine deposits, continental deposits, and unconsolidated Quaternary alluvium. Of significance to the site are the Quaternary age floodplain deposits of Lewis Creek, which consist of moderately permeable, interbedded and laterally discontinuous poorly-sorted gravels, fine-to-medium-grained sands, sandy-silts, silts, and clay.
22. The measured hydraulic conductivity of the native soils underlying the landfill units ranges between 2.1×10^{-2} and 2.2×10^{-4} centimeters per second (cm/s).
23. Based on a site-specific seismic analysis, the controlling maximum probable earthquake (MPE) for the site was determined to be either a 7.9 event on the Parkfield-Cholome segment of the San Andreas Fault, approximately 65 miles west of the facility, or a magnitude 7.4 event on an unnamed fault approximately 53 miles southeast of the facility. It is estimated that an MPE event would produce a peak ground acceleration of 0.05 g.
24. The facility receives an average of 11.34 inches of precipitation per year as measured at the Exeter Station. The mean pan evaporation is 70.7 inches per year as measured at the Tulare Station.
25. The 100-year, 24-hour precipitation event for the facility is estimated to be 3.38 inches, based on observations at the Exeter Station.

26. The 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 0650660825E; Panel 825 of 1375.
27. Storm water sedimentation basins are located southeast and northwest of Units IA and IB as shown on Attachment B. The basins retain storm water for sedimentation control during the rainy season and are normally dry during the summer months. All stormwater runoff is retained on the facility property.

SURFACE WATER AND GROUNDWATER CONDITIONS

28. The *Water Quality Control Plan for the Tulare Lake Basin, Second Edition* (hereafter Basin Plan), designates beneficial uses, establishes water quality objectives, and contains implementation plans and policies for all waters of the Basin.
29. Surface water drainage from the site is toward the Elk Bayou in the Kaweah Delta Hydrologic Area (558.10) of the Tulare Lake Hydrologic Basin. The Elk Bayou is approximately 2.75 miles northwest of the facility. The nearest water body is the North Branch of the Tule River approximately 1.5 miles southwest of the facility.
30. The facility is on the floor of the southern San Joaquin Valley. The designated beneficial uses of surface waters on the valley floor, 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, preservation of rare, threatened and endangered species, and groundwater recharge.
31. The first encountered groundwater ranges from about 136 feet to 97 feet below the native ground surface depending on location and is unconfined. Groundwater elevations range from about 171 feet MSL to 210 feet MSL depending on location. The depth to groundwater fluctuates seasonally as much as 30 feet.
32. Monitoring data indicate background groundwater quality for first encountered groundwater has an electrical conductivity (EC) ranging between 360 and 1,600 micromhos/cm depending on location, with total dissolved solids (TDS) ranging between 320 and 1,100 milligrams per liter (mg/L) depending on location.
33. Groundwater elevation data indicate that a groundwater depression exists beneath the facility. The groundwater gradient on all sides of the facility is generally toward the center of the facility. The estimated average groundwater gradient ranges between approximately 0.002 and 0.008 feet per foot depending on location. The estimated average groundwater velocity is approximately 40 feet per year.
34. The designated beneficial uses of the groundwater, as specified in the Basin Plan, are domestic and municipal water supply, agricultural supply, industrial service supply, and industrial process supply.

GROUNDWATER AND UNSATURATED ZONE MONITORING

35. The existing groundwater monitoring network for the units consists of background groundwater monitoring wells M-11, M-12, M-12B, and M-18, and detection monitoring wells M-1A, M-1B, M-2B, M-3B, M-3C, M-3D, M-5A, M-5B, M-5C, M-6A, M-6B, M-6C, M-8, M-9A, M-9B, M-19A, M-19B, M-19C, M-20, M-20B, M-27, and M-28 (see Attachment B). Other groundwater water monitoring wells that were installed for evaluation monitoring purposes include: M-5D, M-13, M-14A, M-14B, M-15A, M-15B, M-16, M-17, M-25, and M-26. The detection groundwater monitoring wells will additionally be used to monitor the effectiveness of the corrective action program. All background and detection groundwater monitoring wells are screened in the unconfined groundwater zone. There is not a "depth range" designation for the groundwater monitoring wells. A groundwater well designation such as "B", indicates that it was subsequently constructed to a greater depth after an "A" groundwater monitoring well at the same location became dry.
36. The vadose monitoring system consists of soil-pore gas monitoring wells WV-3A-BT, WV-05-BT, and WV-07-BT (see Attachment B) located around the perimeter of Unit IA, and two pan lysimeters beneath the Unit IB LCRS, sumps, and troughs. Additionally, multilevel landfill gas (LFG) wells (G-3, G-4, G-5, and G-7) have been constructed along perimeter of Unit IA, and a single level LFG probe (G-3A) was constructed along the western boundary of Unit IA (see Attachment B).
37. The Discharger's detection monitoring program for groundwater at the landfill satisfies the requirements contained in Title 27.
38. Volatile organic compounds (VOCs) are often detected in a release from a MSW landfill and are often associated with releases of LFG rather than leachate. Since volatile organic compounds 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. Title 27, sections 20415(e)(8) and (9) allows the use of a 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, sections 20415(b)(1)(B)2.-4. However, Title 27 does not specify a specific method for non-statistical evaluation of monitoring data.
39. The Central Valley Water Board may specify a non-statistical data analysis method pursuant to Title 27, section 20080(a)(1). Water Code section 13360(a)(1) allows the Central Valley Water Board to specify requirements to protect groundwater 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.
40. In order to provide the best assurance of the earliest possible detection of a release of non-naturally occurring waste constituents from a unit, the SPRRs specify a non-statistical method for the evaluation of monitoring data for non-naturally occurring compounds. 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) [a.k.a, laboratory reporting limit (RL)], indicates that a release of waste from a unit has occurred. Following an indication of a release, verification testing must be conducted to determine whether there has been a release from the unit or the detection was a false detection. 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.

41. For a naturally occurring constituent of concern, Title 27 requires concentration limits for each constituent of concern be determined as follows:

- a) By calculation in accordance with a statistical method pursuant to Title 27, section 20415(e)(8); or
- b) By an alternate statistical method meeting the requirements of Title 27, section 20415(e)(8)(E).

42. The Discharger submitted Water Quality Protection Standard (WQPS) reports for Tulare County MSW landfills in August 2000 proposing statistical data analysis methods to calculate concentration limits for each monitored constituent in accordance with Title 27. The WQPS reports proposed the use of interwell data analysis to calculate prediction interval limits for the monitored constituents. The WQPS and approved data evaluation methods are included in MRP R5-2012-0075

GROUNDWATER DEGRADATION AND CORRECTIVE ACTION

43. Groundwater detection monitoring data indicate that 1,1-dichloroethane (1,1-DCA), benzene, dichlorodifluoromethane (Freon 12), tetrachloroethylene (PCE), trichlorofluoromethane (Freon 11), 1,1-dichloroethylene (1,1-DCE), cis-1,2-dichloroethene (cis-1,2-DCE), methylene chloride, trichloroethylene (TCE), and vinyl chloride (VC) have been detected at concentrations above the PQL. Bromochloromethane, trans-1, 2-dichloroethylene (trans-1,2-DCE), chloroform, and total xylenes have been detected at concentrations between the PQL and the Method Detection Level (MDL). Chlorodifluoromethane, 2-methylpropane, 1-chloro-1,1-difluoromethane, and Freon 12 have been tentatively identified. Groundwater monitoring wells impacted by VOCs include the M-3, M-6, M-9, and M-5 well clusters, and groundwater monitoring well M-8 (see Attachment B). Benzene, TCE, PCE, and vinyl chloride exceeded their respective Primary Maximum Contaminant Levels. Freon 12, PCE, 1,1-DCA, TCE, 1,1-DCE, cis-1,2-DCE, vinyl chloride, and Freon 11 to a lesser extent, represent the VOCs that are most consistently detected in point of compliance groundwater monitoring wells. Since the First Semiannual Monitoring Period 2007, the lateral and vertical extent of the VOC plume

has decreased as well as the concentrations of the VOCs, which may be attributed in part to active landfill gas extraction.

44. Statistical analysis of inorganic waste constituents initially determined that bicarbonate calcium, carbonate, electrical conductivity (EC), iron, magnesium, nitrate, potassium, sulfate, and total dissolved solids (TDS) exceeded their respective background concentrations in groundwater. Further statistical analysis determined that only bicarbonate concentrations showed disparity between background and downgradient groundwater monitoring wells.
45. Vadose zone detection monitoring data indicate that 1,1-DCA, TCE, trans-1,2-DCE, benzene, 1,2,4-trichlorobenzene, 1,2-dichloropropane, ethylbenzene, acrolein, vinyl chloride, methyl bromide, PCE, toluene, trichlorofluoromethane, dichlorodifluoromethane, methylene chloride, acetone, chloroform, and xylenes have been detected on one or more occasions in soil pore gas samples. Of the aforementioned organic compounds, 1,1-DCA, PCE, benzene, dichlorodifluoromethane, trichlorofluoromethane, and 1,2,4-trichlorobenzene, have been more routinely detected. The concentrations of the aforementioned organic compounds typically range between the MDL and the PQL (trace levels). However, PCE, benzene, dichlorodifluoromethane, trichlorofluoromethane, methylene chloride, TCE, xylenes, and toluene are occasionally detected above their respective PQLs.
46. An evaluation monitoring program was completed in January 2008. Groundwater monitoring wells M-13, M-14A&B, M-15A&B, M-16, M-17, M-18, M-19, M-20, M-25, and M-26 were used in delineating the lateral extent of the VOC and bicarbonate plumes. In addition, well point/SimulProbe borings SB-1 through SB-8 were used for the collection of groundwater samples to help delineate the lateral extent of the VOC and bicarbonate plume. Groundwater monitoring well M-5D was constructed to delineate the vertical extent of the VOC and bicarbonate plumes. The VOC plume was determined to extend a distance of three to five hundred feet on each side of the northern, northeastern, and western boundaries of Units IA and IB. The vertical extent of the VOC plume was determined to be at a depth of approximately 253 feet bgs in the vicinity of groundwater monitoring well M-5D. The bicarbonate plume coincides with the lateral extent of the VOC plume. The vertical extent of the bicarbonate plume is approximately 185 feet deep along the western and northern boundaries of Units IA and IB and coincides with the vertical extent of the VOC plume.
47. An engineering feasibility study for a corrective action program was submitted on 31 July 2007 proposing enhanced bioremediation and natural attenuation to remediate VOCs in groundwater, but was determined to be inadequate. A final revised engineering feasibility study for a corrective action program was submitted on 2 May 2009. The revised engineering feasibility study for a corrective action program proposed enhanced bioremediation of the VOC plume in groundwater by the injection of Regeneration's 3-D MicroEmulsion Hydrogen Release Compound (HRC) into groundwater. The 3-D MicroEmulsion HRC product releases hydrogen into groundwater, which can increase the

mass and activity of indigenous microorganisms that perform reductive dechlorination of VOCs. The 3-D MicroEmulsion HRC product is proposed to be injected at four injection points (dry monitoring wells M-5B, M-6B, M-8, M-9A, and possibly M-3B) that are separated by lateral distances of 490 to 865 feet, to produce a uniform distribution of 3-D MicroEmulsion HRC within groundwater. The maximum effective radii of 3-D MicroEmulsion HRC is expected to be 500 to 1,000 feet after five years. The predominance of the VOC plume is expected to be remediated by 3-D MicroEmulsion HRC. The proposed injection points were selected because the bottoms of their well screens are within a few feet, or less, of the existing groundwater table, and the wells will not be used for groundwater monitoring. The proposed injection points are near existing groundwater monitoring wells (M-2B, M-3C, M-19B, M-27, and M-28) which are proposed to be used for evaluating the effectiveness of bioremediation soon after injection. Other groundwater monitoring wells located further from the injection points, including groundwater monitoring wells M-28 and M-14B, are proposed to be used for evaluating the long-term effectiveness 3-D MicroEmulsion HRC bioremediation. The longevity of 3-D MicroEmulsion HRC ranges between three to five years.

48. Daughter products expected to be generated from 3-D MicroEmulsion HRC injections are lactic acid and fatty acids, from which lactic acid and anaerobic bacteria generate metabolic acids. Metabolic acids are expected to be generated in concentrations of generally less than 1 mg/l. The longevity of metabolic acids in groundwater is projected to range between three and five years. Daughter products generated from the bioremediation of VOCs are expected to be TCE from PCE, 1,1-DCE from TCE, and VC from 1,1-DCE. The total daughter product generation from PCE will be less than the total VOC concentrations since the total daughter product concentration cannot exceed the total VOC constituent concentrations. Based on the 2011 second semiannual monitoring report, the highest VOC concentrations in groundwater beneath the facility consisted of: PCE at 6.8 µg/l; TCE at 4.5 µg/l; 1,1-DCE at 1.4 µg/l; and 1,1-DCA at 7.2 µg/l. Vinyl chloride was not detected in any groundwater sample during that period. The greatest concentrations of VOCs (between 5 µg/l and 7 µg/l) that have been currently detected at the facility exist along the northern boundary of Units IA and IB.
49. The Discharger proposes to evaluate the effectiveness of 3-D MicroEmulsion HRC in remediating VOCs in groundwater one to two years following its initial injection. Regensis' Bio-Dechlor INOCULUM (a microbial consortium) will be injected to bioaugment the bioremediation process if it is determined after one to two years that the dechlorination of VOCs stalls at the 1,1-DCE and vinyl chloride levels.
50. Staff approved the Discharger's proposed engineering feasibility study for a corrective action program on 1 February 2012 based on: 1) the concentration levels of VOCs in groundwater beneath the facility are not significant; 2) the generation of daughter products would be significantly low and daughter product longevity would be relatively short (possibly 5 years); 3) the facility exists over a groundwater depression and groundwater flow on all sides of the facility is toward the facility; 4) the nearest receptors are at least 2,700 feet from the facility and are hydraulically upgradient; and 5) 3-D

MicroEmulsion HRC has been successful as a VOC bioremediation method at another landfill within the State.

LINER PERFORMANCE DEMONSTRATION

51. On 15 September 2000 the Central Valley Water Board adopted Resolution 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 Water Board responded, in part, that “a single composite liner system continues to be an adequate minimum standard” however, the Central Valley Water 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.”
52. 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.”
53. On 7 July 2008, the Discharger submitted a liner performance demonstration report for expansion into Unit II. In a 31 October 2008 letter, Central Valley Water Board staff determined that the liner demonstration report adequately demonstrated that the proposed single composite base liner system meets the performance standard contained in Title 27, section 20310(c). The VLEACH model was used to determine the potential for groundwater degradation from a defect in the liner system. The VLEACH model is a one-dimensional finite-difference model that evaluates contaminant transport through the unsaturated zone.

CONSTRUCTION AND ENGINEERED ALTERNATIVE

54. On 17 June 1993, the State Water Board adopted Resolution 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 40 CFR section 258 (a.k.a, Subtitle D). Resolution 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. Resolution 93-62 also allows the Central Valley Water Board to consider the approval of engineered alternatives to the prescriptive standard. Section III.A.b. of Resolution 93-62 requires that the engineered alternative liner systems be of a composite design similar to the prescriptive standard.
55. Title 27, section 20080(b) allows the Central Valley Water 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, 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, 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, section 20080(b)(2).

56. Water Code section 13360(a)(1) allows the Central Valley Water 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.

57. 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 Board Resolution 93-62 for municipal solid wastes.

The Discharger's 26 February 2010 RWD proposed an engineered alternative to the prescriptive standard for liner requirements for Unit II. The engineered alternative liner proposed by the Discharger for the base liner of Unit II consists of, in ascending order:

- a compacted 1-foot thick engineered subgrade;
- a reinforced geosynthetic clay liner (GCL);
- a 60-mil high density polyethylene (HDPE) geomembrane;
- a geocomposite drainage layer comprising a blanket LCRS; and
- a two-foot thick operations layer.

The components for the side slope liner of Unit II consists of, in ascending order:

- a prepared subgrade;
- a reinforced GCL;
- a 60-mil HDPE geomembrane, textured side down; and
- a two-foot thick operations layer.

The two-foot thick side slope operations layer with a sandy material providing a minimum hydraulic conductivity of 1×10^{-3} cm/sec is adequate to transmit leachate to the LCRS of the composite liner system.

Portions of the wastes to be placed in Unit II will overlies unlined areas of Unit IA. These areas are limited to the transition slope of existing waste fill along the southern boundary of Unit IA, common with the northern edge of Unit II. A Unit IA/Unit II separation liner system will be placed in the transition area between Unit IA and Unit II and will consist of the following components in ascending order:

- a two-foot thick prepared foundation layer of soils

- a geocomposite drainage layer
- a 60-mil linear low density polyethylene (LLDPE) geomembrane, textured on both sides
- a two-foot thick operations soil layer.

An LFG pressure release system will be installed within the Unit IA/Unit II separation liner system to enable LFG pressure relief and extraction.

58. The Discharger demonstrated that there is no clay source on-site or nearby and the cost of importing clay from off-site or mixing on-site soils with bentonite would be substantially greater than the alternative design.
59. The Discharger adequately demonstrated that construction of a Subtitle D prescriptive standard liner would be unreasonably and unnecessarily burdensome when compared to the proposed engineered alternative design. The Discharger demonstrated that the proposed engineered alternative is consistent with the performance goals of Title 27, section 20310(c) and affords at least equivalent protection against water quality impairment.
60. The proposed LCRS for Unit II consists of a blanket geosynthetic geocomposite drainage layer placed over the HDPE geomembrane layer. Perforated HDPE collection piping surrounded by gravel and wrapped in a geotextile filter fabric will be placed down the center of each of three contiguous areas (cells A, B, and C) of Unit II. The perforated HDPE pipes will gravity drain to individual sumps (A, B, and C) located at the southern end of cells A, B, and C of Unit II. Each sump will be fitted with an automated submersible pump housed within an HDPE side-slope riser. Based on Hydrologic Evaluation of Landfill Performance (HELP) modeling for the proposed liner system within Unit II, the maximum leachate head will be less than 1 inch. The maximum daily generation rate of leachate was determined by HELP modeling to be approximately 346 gallons of leachate per day per acre. The Discharger states that the proposed LCRS will be designed, constructed, maintained, and operated to collect twice the maximum anticipated daily volume of leachate from Unit II in accordance with Title 27, section 20340(b). Leachate collected from the sumps will be pumped to storage tanks fitted with a secondary containment system. Leachate in the storage tanks will be either: 1) used for dust control via spraying; 2) reintroduced to lined portions of the landfill; and/or 3) conveyed to a publicly owned waste water treatment facility.
61. Geomembrane-lined pan lysimeters are proposed to be installed beneath the LCRS main pipes and sumps A, B, and C at Unit II to monitor saturated flow in the vadose zone. The pan lysimeters will be accessed via HDPE risers located near each sump. The existing vadose monitoring system for Units IA and IB is described in Finding No. 36.
62. The 26 February 2010 revised amended RWD includes a stability analysis for Unit II and final cover system pursuant to Title 27, section 21750(f)(5). Static and seismic

slope stability was analyzed for interim and permanent slopes of the liner system. The most probable earthquake was determined to be either a 7.9 event on the Parkfield-Cholome segment of the San Andreas Fault or a 7.4 event on an unnamed fault 85 kilometers east of the facility. Each of these events would result in a peak horizontal ground acceleration of 0.051g at the Units IA, IB, and Unit II. The results of the analyses indicate that the liners for Units IB and II and the final cover for all three Units would be statically and seismically stable without failure of the containment systems throughout the landfill's life including the closure period and postclosure maintenance period provided that a friction angle of ten degrees or greater is achieved during shear strength testing of liner materials.

63. This Order approves the Discharger's proposed liner system for future cells as described in Finding 7 and requires that the Discharger submit design plans and construction quality assurance (CQA) plans for each new cell or cells of an expansion Unit for review and approval at least 90 days prior to construction.

LANDFILL CLOSURE

64. Title 27, section 21090 provides the minimum prescriptive final cover components for landfills consisting of, in ascending order, the following layers:

- Two-foot soil foundation layer.
- One-foot soil low flow-hydraulic conductivity layer, less than 1×10^{-6} cm/s or equal to the hydraulic conductivity of any bottom liner system.
- Geomembrane layer (this layer is required for composite-lined landfills for equivalency to bottom liner).
- One-foot soil erosion resistant/vegetative layer.

65. Title 27 allows engineered alternative final covers provided the alternative design will provide a correspondingly low flow-through rate throughout the postclosure maintenance period.

66. The Discharger submitted a 26 February 2010 *Final Closure and Postclosure Maintenance Plan* (as part of the JTD) for closure and postclosure maintenance of unlined Unit IA, composite-lined Unit IB, and future composite-lined Unit II at the facility. Addendums to the final closure and postclosure maintenance plan containing additional information were subsequently submitted. Staff determined that the final closure and postclosure maintenance plan complied with the provisions of Section 21090 of Title 27, California Code of Regulations, Section 20005, et seq., and was approved on 16 June 2010. According to the Discharger, closure of Units IA and IB will begin in 2018 or 2019 after final grades are achieved. It is anticipated that the Unit II will be closed no later than 2045.

67. The Discharger proposes to construct a water balance/evapotranspiration final cover (ET final cover) for closure of Units IA, IB, and II that consists of four feet of on-site soils. The UNSAT-H computer program, which solves a one-dimensional form of the Richard's

Equation for transient flow through an unsaturated porous medium, was used to evaluate percolation rates from the bottom of a four-foot thick ET final cover. Parameters inputted into the UNSAT-H computer program included: geometry data (profile consisting of one or more layers); hydraulic parameters (saturated hydraulic conductivity and SWCC parameters); vegetation parameters (leaf area index, growing season, percent bare area, rooting depth, and root length density); and meteorological data. The results of UNSAT-H modeling predicted a percolation rate of 1.5 mm/year from the bottom of the proposed ET final cover.

68. A pan lysimeter will be constructed based on designs and installation procedures developed by Alternative Cover Assessment Program (ACAP), beneath the ET final cover at a location where storm water percolation will be at a maximum and runoff at a minimum (top deck). The pan lysimeter will be used to monitor the performance of the ET final cover.
69. The Discharger has demonstrated that the engineered alternative final cover meets the performance goals of Title 27 and that it is equivalent to the prescriptive standard.
70. Side slopes for the closed landfill will be sloped at 3H:1V and will include 15-foot wide benches every 50 vertical feet as required by Title 27.
71. The Discharger performed a slope stability analysis for the proposed final cover (see Finding 62). The Discharger's static and dynamic stability analysis demonstrates that the side slopes of the final cover will be stable in accordance with the requirements of Title 27.
72. Pursuant to Title 27, section 21090(e)(1), this Order requires a survey of the final cover following closure activities for later comparison with iso-settlement surveys required to be conducted every five years.
73. This Order approves the proposed final cover and requires that a final closure and post-closure maintenance plan, design documents, and CQA plan be submitted for review and approval at least 180 days prior to actual closure.

LANDFILL POSTCLOSURE MAINTENANCE

74. The Discharger submitted a 26 February 2010 *Final Closure and Postclosure Maintenance Plan* for closure and postclosure maintenance of Units IA, IB, and II as part of the JTD. The plan includes inspection, maintenance, and monitoring of the landfill during the post-closure maintenance period, and includes a postclosure maintenance cost estimate for the entire facility. Inspection and maintenance will include the condition of the final cover, drainage features, LCRS, groundwater monitoring wells, unsaturated zone monitoring points, access roads, LFG system, and site security. The plan will be implemented for a minimum period of 30 years or until the waste no longer poses a threat to environmental quality, whichever is greater.

75. Once every five years during the postclosure maintenance period, aerial photographic maps of the closed landfill area will be made to identify and evaluate landfill settlement. Iso-settlement maps will be prepared to determine the amount of differential settlement occurring over the previous five years. Pursuant to Title 27, section 21090(e)(2), this Order requires iso-settlement maps to be prepared and submitted every five years.
76. The completed final cover will be periodically tested for damage or defects by monitoring surface emissions pursuant to California Code of Regulations, title 17, section 95471(c) and Title 27, section 21090(a)(4)(A). Defects will be repaired and tested for adequacy based on the closure CQA Plan.

FINANCIAL ASSURANCES

77. Title 27, sections 21820 and 22206 require a cost estimate for landfill closure. The cost estimate must be equal to the cost of closing the landfill at the point in its active life when the extent and manner of operation would make closure the most expensive. When closing units in phases, the estimate may account for closing only the maximum area or unit of a landfill open at any time. The lump sum estimate is for the cost to close the largest future area needing closure at any one time. The total amount of the closure cost estimate of Units IA, IB, and II in 2011 dollars is \$7,556,190. This Order requires that the Discharger maintain financial assurance with the California Department of Resources Recycling and Recovery (CalRecycle) in at least the amount of the closure cost estimate. As of 2011, the balance of the closure fund was \$ 3,867,020.
78. Title 27, sections 21840 and 22211 requires a cost estimate for landfill postclosure maintenance. The Discharger's 26 February 2010 *Final Closure and Postclosure Maintenance Plan* includes a cost estimate for landfill postclosure maintenance. The amount of the cost estimate for Units IA, IB, and II for postclosure maintenance in 2011 dollars is \$6,490,207. This Order requires that the Discharger maintain financial assurance with CalRecycle in at least the amount of the postclosure maintenance cost estimate adjusted annually for inflation. As of 2011, the balance of the postclosure maintenance fund was \$1,186,640.
79. Title 27, section 22221 requires a cost estimate for corrective action of all known or reasonably foreseeable releases. The Discharger submitted a 2011 cost estimate of \$714,570 for corrective action of all known or reasonably foreseeable releases. This Order requires that the Discharger maintain financial assurance with the CalRecycle in at least the amount of the cost estimate adjusted annually for inflation. As of 2011, the balance of the corrective action fund was \$714,570.

CEQA AND OTHER CONSIDERATIONS

80. On 24 December 1996, the Tulare County Public Works Department (Lead Agency) certified the final environmental impact report for the facility. A Notice of Determination was filed on 24 September 1996 in accordance with the California Environmental Quality Act (Public Resources Code section 21000 et seq.) and CEQA guidelines (Title 14,

section 15000 et seq.). The Central Valley Water Board considered the environmental impact report and incorporated mitigation measures from the environmental impact report into these waste discharge requirements designed to prevent potentially significant impacts to design facilities and to water quality.

81. Releases from Unit IA have degraded groundwater. This Order requires the Discharger to implement corrective action in accordance with Title 27 section 20430 to remediate the releases and conduct corrective action monitoring to determine whether the proposed corrective action program is effective in reducing VOC concentrations in groundwater. If it is determined that the proposed corrective action program, including possible bioaugmentation with Regenesys' Bio-Dechlor INOCULUM (see Finding 48), are not effective in remediating the VOC plume in groundwater after corrective action has been conducted for four years, the Discharger will be required to submit an amended engineering feasibility study for corrective action that proposes modifications to the proposed corrective action method or alternative remedial measures to remediate the VOC plume.
82. The proposed expansion unit does not meet the siting criteria for a Class III landfill creating the potential for the proposed expansion unit to impact groundwater. This Order requires the Discharger to implement mitigation measures (e.g., engineered alternative liner including an LCRS, that meet or exceed the performance goals of Title 27 and is equivalent to the prescriptive standard, drainage control facilities, landfill gas collection system, groundwater, landfill gas, and vadose zone monitoring, etc.) to minimize impacts to groundwater.

The closure of Units IA, IB, and II, has the potential to impact groundwater if the proposed final cover system is not appropriately constructed and maintained. This Order requires the Discharger to implement mitigation measures (e.g., construct an engineered alternative final cover that meets or exceeds the performance goals of Title 27 and is equivalent to the prescriptive standard, final cover erosion control, drainage control facilities, monitor the performance of the ET final cover, and postclosure maintenance of the final cover system throughout the postclosure maintenance period, etc.) to minimize impacts to groundwater.

83. This Order implements:

1. *Water Quality Control Plan for the Tulare Lake Basin, Second Edition*;
2. The prescriptive standards and performance goals of California Code of Regulations, title 27, section 20005 et seq., effective 18 July 1997, and subsequent revisions;
3. State Water Board Resolution 93-62, *Policy for Regulation of Discharges of Municipal Solid Waste*, adopted 17 June 1993, and revised on 21 July 2005; and
4. The applicable provisions of Title 40 C.F.R. section 258 "Subtitle D" federal regulations as required by State Water Board Resolution 93-62.

84. Based on the threat and complexity of the discharge, the facility is determined to be classified 1B as defined below:
1. Category 1 threat to water quality, defined as, "Those discharges of waste that could cause the long-term loss of a designated beneficial use of the receiving water. Examples of long-term loss of a beneficial use include the loss of drinking water supply, the closure of an area used for water contact recreation, or the posting of an area used for spawning or growth of aquatic resources, including shellfish and migratory fish."
 2. Category B complexity, defined as, "Any discharger not included in Category A that has physical, chemical, or biological treatment systems (except for septic systems with subsurface disposal), or any Class 2 or Class 3 waste management units."
85. Water Code section 13267(b) 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 having discharged or 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 having discharged or 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."
86. The technical reports required by this Order and the attached "Monitoring and Reporting Program R5-2012-0075" are necessary to assure compliance with these waste discharge requirements. The Discharger owns and operates the facility that discharges the waste subject to this Order.

PROCEDURAL REQUIREMENTS

87. 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.
88. The Central Valley Water 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.
89. The Central Valley Water Board, in a public meeting, heard and considered all comments pertaining to the discharge.

IT IS HEREBY ORDERED, pursuant to California Water Code sections 13263 and 13267, that Orders R5-2005-0102 and 98-706 are rescinded except for purposes of enforcement, and that the County of Tulare, 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' or 'designated waste' is prohibited. For the purposes of this Order, the term 'hazardous waste' is as defined in California Code of Regulations, Title 23, section 2510 et seq., and 'designated waste' is as defined in Title 27.
2. The Discharger shall comply with all Standard Prohibitions listed in Section C of the Standard Provisions and Reporting Requirements (SPRRs) dated January 2012 which are attached hereto and made part of this Order by reference.

B. DISCHARGE SPECIFICATIONS

1. The Discharger shall only discharge the wastes listed or allowed under the Waste Classification and Unit Classification section in the Findings of this Order.
2. The Discharger may not use any material as alternative daily cover (ADC) that is not listed as approved ADC in the Findings of these WDRs unless and until the Discharger has demonstrated it meets the requirements in Title 27, section 20705, and the Discharger has received approval from the Executive Officer that it may begin using the material as ADC.
3. The Discharger shall use approved ADC only in internal areas of the landfill that do not drain outside of the limits of the contiguous units unless the Discharger demonstrates that runoff from the particular ADC is not a threat to surface water quality and the demonstration has been approved by the Executive Officer. This demonstration may take removal of sediment or suspended solids into account for landfills where surface water drains to a sedimentation basin.
4. The Discharger shall, in a timely manner, remove and relocate any wastes discharged at this facility in violation of this Order. If the Discharger is unable to remove and relocate the waste, the Discharger shall submit a report to the Central Valley Water Board explaining how the discharge occurred, why the waste cannot be removed, and any updates to the waste acceptance program necessary to prevent re-occurrence. If the waste is a hazardous waste, the Discharger shall immediately notify the Department of Toxic Substances Control.
5. Leachate and/or landfill gas condensate may be returned only to cell IB of Unit I and Unit II, and future composite lined cells listed in Finding 7 of this Order in accordance with Standard Discharge Specifications D.2 through D.4 of the SPRRs.

6. The Discharger shall comply with all Standard Discharge Specifications listed in Section D of the SPRRs dated January 2012.

C. FACILITY SPECIFICATIONS

1. The Discharger shall comply with all Standard Facility Specifications listed in Section E of the SPRRs dated January 2012.

D. CONSTRUCTION SPECIFICATIONS

1. The Discharger shall construct the base liner and side slope liner of new Class III units as described in Finding 57 of this Order in accordance with the following approved engineered alternative liner design:
 - a. An engineered alternative composite base liner system that is comprised, in ascending order, of the following:
 1. a compacted 1-foot thick engineered subgrade;
 2. a reinforced GCL;
 3. a 60-mil HDPE geomembrane;
 4. a geocomposite drainage layer comprising a blanket LCRS; and
 5. a two-foot thick operations layer.
 - b. An engineered alternative composite side slope liner system that is comprised, in ascending order, of the following:
 1. a prepared subgrade;
 2. a reinforced GCL;
 3. a 60-mil HDPE geomembrane, textured side down; and
 4. a two-foot thick operations layer.
2. **At least 90 days prior to construction**, the Discharger shall submit construction and design plans, specifications, and construction quality assurance plans for each new cell of an expansion Unit. The Discharger shall not proceed with construction until the construction and design plans, specifications, and construction quality assurance plans have been approved by the Executive Officer.
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 Central Valley Water Board in revised WDRs.

4. The Discharger shall comply with all Standard Construction Specifications listed in Section F of the SPRRs dated January 2012.
5. The Discharger shall comply with all Storm Water Provisions listed in Section L of the SPRRs dated January 2012.

E. CLOSURE AND POSTCLOSURE MAINTENANCE SPECIFICATIONS

1. The Discharger shall close Units IA and IB and in the future, Unit II, with a final cover as proposed in the 26 February 2010 Final Closure and Postclosure Maintenance Plan and as approved by this Order. The final cover as proposed in the Final Closure and Postclosure Maintenance Plan is a four-foot thick ET final cover as described in Finding 67.
2. A pan lysimeter shall be constructed based on designs and installation procedures developed by Alternative Cover Assessment Program (ACAP), beneath the ET final cover at a location where storm water percolation will be at a maximum and runoff at a minimum (top deck).
3. The Discharger shall close the landfill with side slopes at a steepness of 3H:1V or less, and top deck areas shall be sloped at three percent or greater.
4. The Discharger shall maintain the active landfill gas extraction system for Units IA and IB during closure and install an active landfill gas extraction system for Unit II prior to or during landfill closure, and landfill gas shall be extracted from the closed units until such time that the landfill gas is no longer a threat to water quality as documented by the Discharger and approved by the Executive Officer.
5. The Discharger shall ensure that the vegetation on the ET final cover receives necessary seed, binder, and nutrients to establish the vegetation proposed in the final closure plan. The Discharger shall install necessary erosion and sedimentation controls to prevent erosion and sediment in runoff from the closed units during the period the vegetation is being established.
6. The Discharger shall comply with all Standard Closure and Postclosure Specifications listed in Section G and all Standard Construction Specifications that are applicable to closure in Section F of the SPRRs dated January 2012.
7. **By 1 October 2017**, the Discharger shall submit a time schedule for Executive Officer approval that specifies the dates for final closure implementation and completion of

closure activities of Units IA and IB. The approved dates for Unit IA and IB final closure implementation and completion shall be made a part of this Order.

F. CORRECTIVE ACTION PROGRAM SPECIFICATIONS

1. **By 31 December 2012**, the Discharger shall implement the proposed corrective action measures (see Finding No. 47).
2. The Discharger shall collect groundwater samples from the corrective action monitoring points on a semiannual basis and submit the analytical data and a discussion of the effectiveness in the semiannual monitoring reports. The groundwater samples shall be analyzed for VOCs, bicarbonate, and 3-D Microemulsion HRC daughter products specified in Monitoring and Reporting Program R5-2012-0075 (MRP R5-2012-0075).
3. **By 28 September 2014**, the Discharger shall submit an evaluation report on the efficacy of 3-D Microemulsion HRC and whether bioaugmentation utilizing Regensis' Bio-Dechlor INOCULUM, in remediating the VOC plume and daughter products, will be utilized. If bioaugmentation is utilized, an evaluation report on the efficacy of bioaugmentation in the remediation of VOCs needs to be submitted **by 28 September 2016**.
4. **By 28 December 2016**, the Discharger shall submit an amended engineering feasibility study for corrective action for Executive Officer approval if it is determined that 3-D Microemulsion HRC remediation and bioaugmentation are unsuccessful in remediating the VOC plume and daughter products. The amended engineering feasibility study for corrective action needs to propose modifications to the existing corrective action program or alternative corrective action measures to remediate the VOC plume.
5. **Within six months** of approval of the modifications to the proposed corrective action program or an alternative corrective action program (see Corrective Action Program Specification F.3), the Discharger shall implement the modified corrective action program or alternative correction action program.

G. FINANCIAL ASSURANCE SPECIFICATIONS

1. The Discharger shall obtain and maintain assurances of financial responsibility with CalRecycle for closure and postclosure maintenance for the landfill in at least the amounts described in Findings 77 and 78, adjusted for inflation annually. A report regarding financial assurances for closure and postclosure maintenance shall be submitted to the Central Valley Water Board by **1 September of each year**. This may be the same report that is submitted to CalRecycle for this purpose. If CalRecycle determines that either the amount of coverage or the mechanism is inadequate, then within 90 days of notification, the Discharger shall submit an acceptable mechanism to

CalRecycle and the Central Valley Water Board for at least the amount of the approved cost estimate.

2. The Discharger shall update the final closure and postclosure maintenance plan any time there is a change that will increase the amount of the closure and/or postclosure maintenance cost estimate. The updated final closure and postclosure maintenance plan shall be submitted to the Central Valley Water Board, the Local Enforcement Agency, and CalRecycle. The final closure and postclosure maintenance plan shall meet the requirements of Title 27, section 21769(b), and include a lump sum estimate of the cost of carrying out all actions necessary to close each Unit, to prepare detailed design specifications, to develop the final closure and postclosure maintenance plan, and to carry out the first thirty years of postclosure maintenance. Reports regarding financial assurance required in G.1 above shall reflect the updated cost estimate.
3. The Discharger shall obtain and maintain assurances of financial responsibility with CalRecycle for initiating and completing corrective action for all known or reasonably foreseeable releases from the landfill in at least the amount of the annual inflation-adjusted cost estimate described in Finding 79. A report regarding financial assurances for corrective action shall be submitted to the Central Valley Water Board by **1 September of each year**. This may be the same report that is submitted to CalRecycle for this purpose. If CalRecycle determines that either the amount of coverage or the mechanism is inadequate, then within 90 days of notification, the Discharger shall submit an acceptable mechanism to CalRecycle and the Central Valley Water Board for at least the amount of the approved cost estimate.
4. The Discharger shall comply with all Standard Financial Assurance Specifications listed in Section H of the SPRRs dated January 2012.

H. 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 MRP R5-2012-0075, and the Standard Monitoring Specifications listed in Section I of the SPRRs dated January 2012.
2. The Discharger shall, for any unit in a corrective action monitoring program, comply with the corrective action monitoring program provisions of Title 27, MRP R5-2012-0075, and the Standard Monitoring Specifications listed in Section I of SPRRs dated January 2012.
3. The Discharger shall comply with the Water Quality Protection Standard as specified in this Order, MRP R5-2012-0075, and the SPRRs dated January 2012.
4. The concentrations of the constituents of concern in waters passing the Point of Compliance (defined pursuant to Title 27, section 20164 as a vertical surface located at the hydraulically downgradient limit of the unit that extends through the uppermost

aquifer underlying the unit) shall not exceed the concentration limits established pursuant to MRP R5-2012-0075.

5. For each monitoring event, the Discharger shall determine whether the landfill is in compliance with the Water Quality Protection Standard using procedures specified in MRP R5-2012-0075 and the Standard Monitoring Specifications in Section I of the SPRRs dated January 2012.
6. The Discharger shall comply with all Standard Monitoring Specifications and Response to a Release specifications listed in Sections I and J of the SPRRs dated January 2012.

I. PROVISIONS

1. The Discharger shall maintain a copy of this Order at the facility, including the MRP R5-2012-0075 and the SPRRs dated January 2012 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 Subtitle D that are not specifically referred to in this Order.
3. The Discharger shall comply with MRP R5-2012-0075.
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 Subtitle D and/or Title 27, dated January 2012.
5. If there is any conflicting or contradictory language between the WDRs, the MRP, or the SPRRs, then language in the WDRs shall supersede either the MRP or the SPRRs, and language in the MRP shall supersede the SPRRs.
6. All reports required by this Order shall be submitted pursuant to Water Code section 13267.
7. The Discharger shall complete the tasks contained in these WDRs in accordance with the following time schedule:

Task

Compliance Date

A. Construction Plans for Expansion

Submit construction and design plans, and CQA plans for approval by the Executive Officer for each cell of expansion Unit II (see all Construction Specifications in Section D.2, above and Section F of the SPRRs.)

90 days prior to proposed construction

B. Construction Report for Expansion

Submit a construction report for review and approval upon completion demonstrating construction of Unit II was in accordance with approved construction plans (see Standard Construction Specification F.27 in the SPRRs).

60 days prior to proposed discharge

C. Time Schedule for Final Closure

The Discharger shall submit a time schedule for Executive Officer approval, that specifies the dates for final closure implementation and completion of closure activities of Units IA and IB. (Closure and Postclosure Maintenance Specification E.7).

By 1 October 2017

D. Construction Plans for Final Closure

Submit final closure construction and design plans for review and approval for closure of Units IA and IB (see all Construction Specifications in Section D, above and Section F of the SPRRs).

180 days prior to proposed construction

E. Construction Report for Final Closure

Submit a construction report for review and approval upon completion of final closure demonstrating construction was in accordance with approved construction plans (see Standard Construction Specification F.27 in the SPRRs).

60 days prior to proposed discharge

F. Corrective Action Program

1. Implement corrective action program. (see Corrective Action Program Specifications F.2)
2. Submit an evaluation report on the efficacy of 3-D MicroEmulsion HRC, including the possible need for bioaugmentation. (see Corrective Action Program Specifications F.3)
3. Submit an evaluation report on the on the efficacy of bioaugmentation if bioaugmentation is

By 31 December 2012

By 28 September 2014

By 28 September 2016

utilized in the remediation of VOCs. (see Corrective Action Program Specification F.3)

4. Submit an amended engineering feasibility study for corrective action if it is determined that 3-D MicroEmulsion HRC and bioaugmentation are not successful in remediating the VOC plume. The amended engineering feasibility study for corrective action needs to propose modifications to the existing corrective action measures or alternative corrective action measures. (see Corrective Action Program Specifications F.4) **By 28 December 2016**

5. Implement a modified or alternative corrective action program (see Corrective Action Program Specifications F.5) **Within six months of Executive Officer approval of the amended engineering feasibility study for corrective action in F.3 above**

G. Annual Review of Financial Assurances

1. Landfill Closure and Postclosure Maintenance (see Provision Financial Assurance Specification G.1) **By 1 September each year**

2. Initiating and Completing Corrective Action (see Financial Assurance Specification G.3) **By 1 September each year**

8. The Discharger shall comply with all General Provisions listed in Section K of the SPRRs dated January 2012.

Any person aggrieved by this action of the Central Valley Water Board may petition the State Water Board to review the action in accordance with Water Code section 13320 and California Code of Regulations, title 23, sections 2050 and following. The State Water Board must receive the petition by 5:00 p.m., 30 days after the date that this Order becomes final, except that if the thirtieth day following the date that this Order becomes final falls on a Saturday, Sunday, or state holiday, the petition must be received by the State Water Board by 5:00 p.m. on the next business day. Copies of the law and regulations applicable to filing petitions may be found on the Internet at:

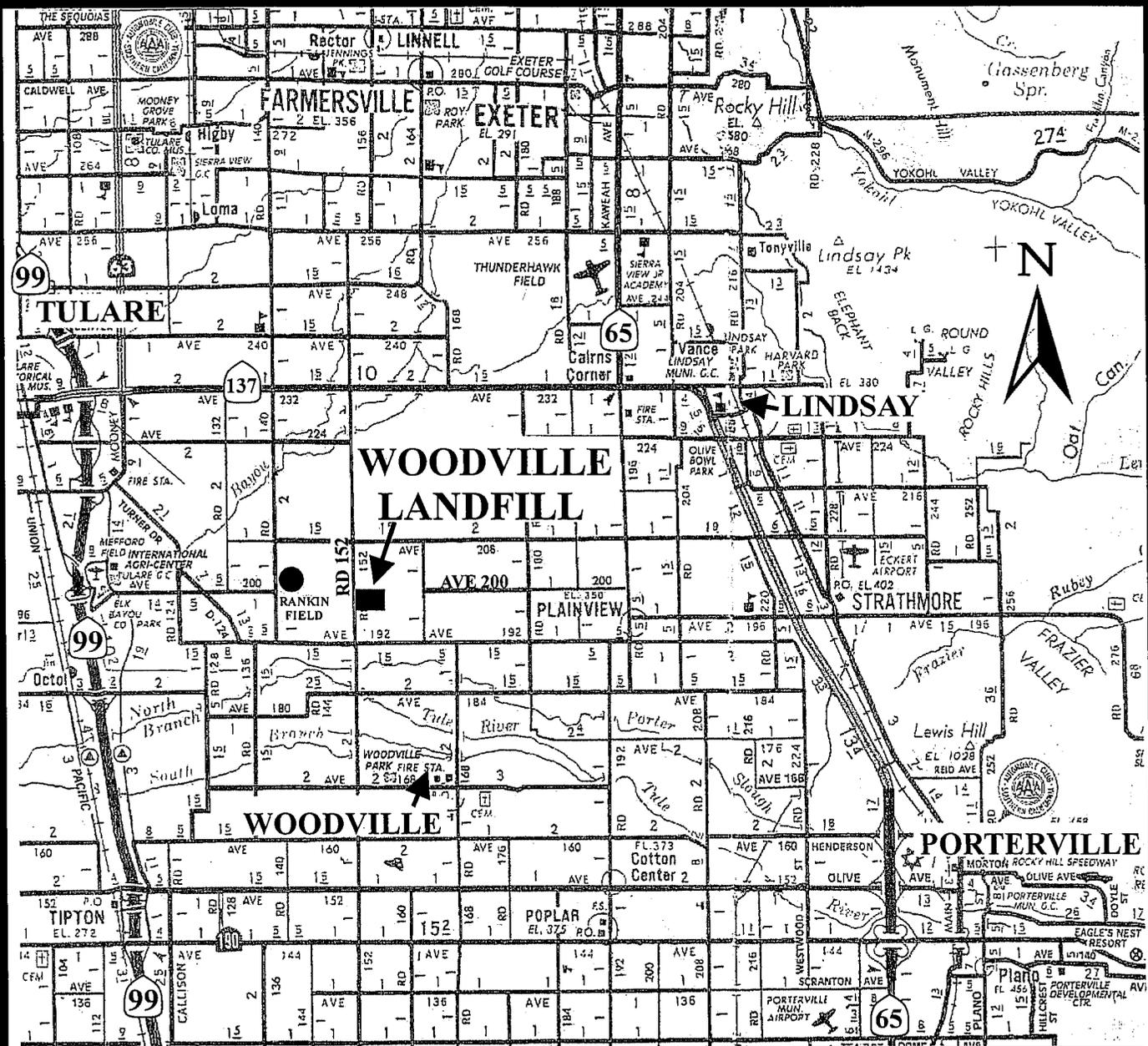
http://www.waterboards.ca.gov/public_notices/petitions/water_quality

or will be provided upon request.

I, PAMELA C. CREEDON, 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 3 August 2012.

Original signed by

PAMELA C. CREEDON, Executive Officer

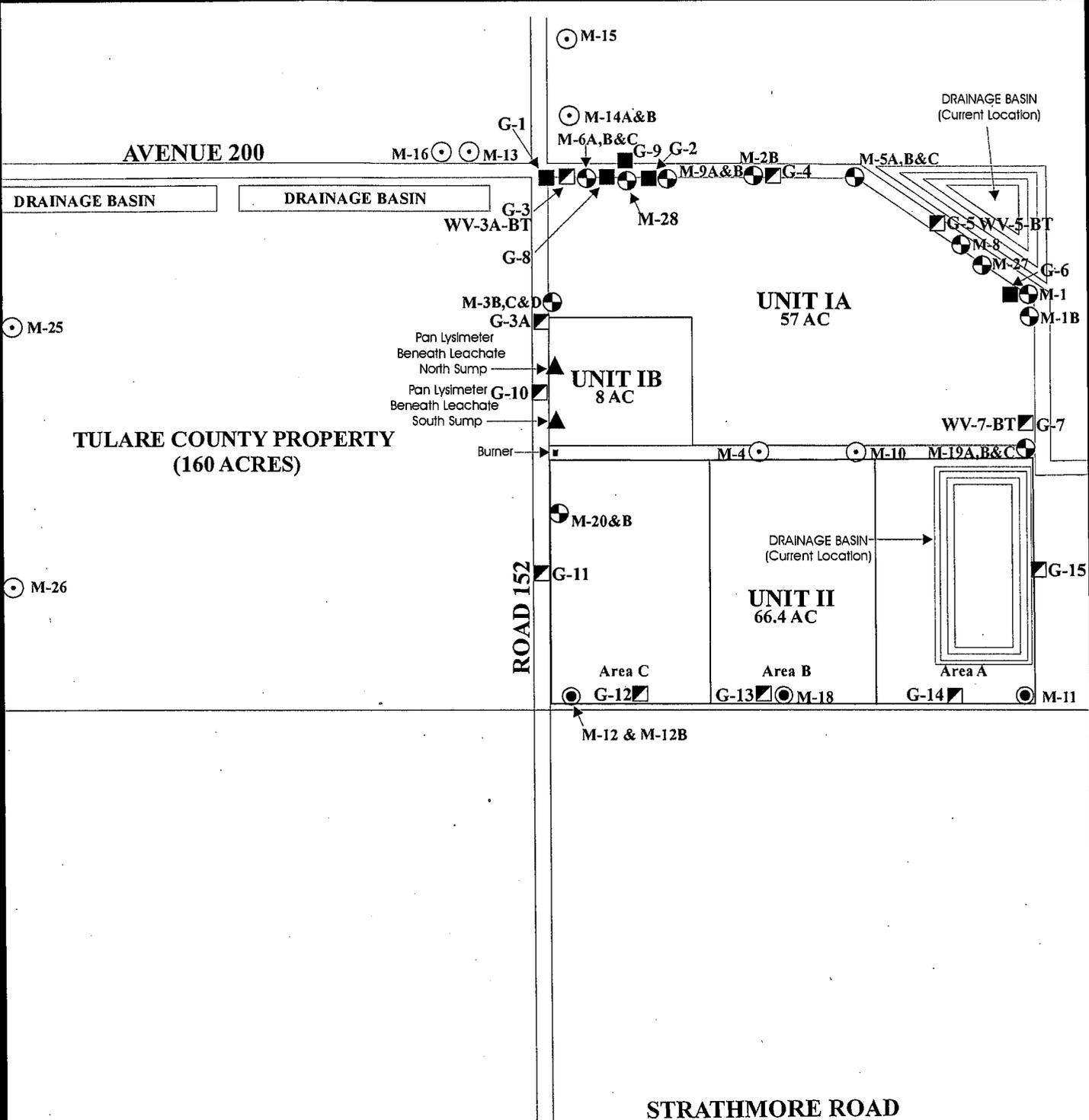


ATTACHMENT A

ORDER NO. R5-2012-0075

WASTE DISCHARGE REQUIREMENTS
 FOR
 COUNTY OF TULARE
 WOODVILLE MUNICIPAL SOLID WASTE LANDFILL
 CLASS III LANDFILL
 CONSTRUCTION, OPERATION, CLOSURE,
 POSTCLOSURE MAINTENANCE, AND CORRECTIVE ACTION
 TULARE COUNTY

LOCATION MAP



LEGEND

- Detection Monitoring Well
 - Background Monitoring Well
 - Other Monitoring Well (Piezometric or Evaluation)
 - Unsaturated Zone Lysimeters
 - LFG Monitoring Well
 - LFG/Unsaturated Zone Monitoring Well
- W N E
 S
Not To Scale

ATTACHMENT B

ORDER NO. R5-2012-0075

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TULARE COUNTY

SITE PLAN

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2012-0075
FOR
COUNTY OF TULARE
WOODVILLE MUNICIPAL SOLID WASTE LANDFILL
CLASS III LANDFILL
CONSTRUCTION, OPERATION, CLOSURE, POSTCLOSURE MAINTENANCE,
AND CORRECTIVE ACTION
TULARE COUNTY

This monitoring and reporting program (MRP) is issued pursuant to California Water Code section 13267 and incorporates requirements for groundwater, surface water, and unsaturated zone monitoring and reporting; facility monitoring, maintenance, and reporting; and financial assurances reporting contained in California Code of Regulations, Title 27, section 20005, et seq. (hereafter Title 27), Waste Discharge Requirements Order R5-2012-0075 (WDRs), and the Standard Provisions and Reporting Requirements (SPRRs) dated January 2012. Compliance with this MRP is ordered by the WDRs and the Discharger shall not implement any changes to this MRP unless a revised MRP is issued by the Central Valley Water Board or the Executive Officer.

A. MONITORING

The Discharger shall comply with the detection monitoring program provisions of Title 27 for groundwater and the unsaturated zone in accordance with Standard Monitoring Specifications in Section I of the SPRRs and the Monitoring Specifications in Section G of the WDRs. All monitoring shall be conducted in accordance with the approved May 1997 detection monitoring program.

All compliance monitoring wells established for the detection monitoring program shall constitute the monitoring points for the groundwater Water Quality Protection Standard. All detection monitoring program groundwater monitoring wells, unsaturated zone monitoring devices, leachate monitoring points shall be sampled and analyzed for monitoring parameters and constituents of concern (COCs) as indicated and listed in Tables I through VI.

The Discharger may 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 MRP, are approved by the Executive Officer, and are incorporated into the Sample Collection and Analysis Plan.

The monitoring program of this MRP includes:

<u>Section</u>	<u>Monitoring Program</u>
A.1	Groundwater Monitoring
A.2	Unsaturated Zone Monitoring
A.3	Leachate Monitoring, Seep Monitoring, and leachate collection and removal system (LCRS) Testing
A.4	Facility Monitoring
A.5	Corrective Action Monitoring

1. **Groundwater Monitoring**

The Discharger shall operate and maintain a groundwater detection monitoring system that complies with the applicable provisions of Title 27, sections 20415 and 20420. The detection monitoring system shall be certified by a California-licensed professional civil engineer or geologist as meeting the requirements of Title 27. The current groundwater detection monitoring system meets the applicable requirements of Title 27. The Discharger shall revise the groundwater detection monitoring system (after review and approval by Central Valley Water Board staff) as needed each time a new landfill cell is constructed.

The current groundwater monitoring network shall consist of the following:

<u>Well #s</u>	<u>Status</u>	<u>Units Being Monitored</u>
M-11, M-12, M-12B, M-18	Background	Units IA, IB, II
M-1A, M-1B, M2B,M-3B, M-3C, M-3D, M-5A, M-5B, M-5C, M-6A, M-6B, M-6C,M-8, M-9A, M-9B, M-19A, M-19B, M-19 C,M-20,M-20B, M-27, M-28	Detection	Units IA, IB, II
M-5D, M-13 M-14A, M-14B, M-15A, M-15B, M-16, M-17, M-25, M-26	Other	Units IA, IB, II
M-2B, M-3C, M-9B, M-14B, M-19B, M-27, M-28	Corrective Action	Unit IA

Groundwater samples shall be collected from the background wells, detection monitoring wells, corrective action monitoring wells, and any additional wells added as part of the approved groundwater monitoring system. The collected samples shall be analyzed for the parameters and constituents listed in Table I

in accordance with the specified methods and frequencies. The Discharger shall collect, preserve, and transport groundwater samples in accordance with the approved Sample Collection and Analysis Plan.

Once per quarter, the Discharger shall measure the groundwater elevation in each well, determine groundwater flow direction, and estimate groundwater flow rates in the uppermost aquifer and in any zones of perched water and in any additional portions of the zone of saturation monitored, including the times of expected highest and lowest elevations of the water levels in the wells, pursuant to Title 27, section 20415(e)(15). The results shall be reported semiannually. A groundwater contour map and tabular data shall be submitted showing the elevation of groundwater within the unconfined groundwater zone, with respect to the elevations of the top and bottom of the screened interval and the elevation of the pump intake. The groundwater contour map and tabular data shall be prepared quarterly and submitted semiannually.

Samples collected for the constituents of concern (COC) monitoring 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 Title 27, sections 20415 and 20420. The current unsaturated zone detection monitoring system meets the applicable requirements of Title 27. The Discharger shall install unsaturated zone monitoring devices (after review and approval by Central Valley Water Board staff) each time the landfill constructs a new cell.

The current unsaturated zone monitoring network shall consist of:

<u>Mon Pt.</u>	<u>Status</u>	<u>Units Being Monitored</u>
Lys #'s WV-3A-BT, WV-5-BT, WV-7-BT	Detection, Soil-Pore Gas	IA and IB
Pan Lys	Detection	Beneath Unit 1B LCRS sumps
Pan Lys A, B, and C	Detection	Beneath Unit II Cells A, B, and C LCRS sumps
LFG #'s G-3, G-3A, G-4, G-5, G-7	Detection, Soil-Pore Gas	Units IA perimeter

Unsaturated zone samples shall be collected from the monitoring network listed above and shall be analyzed for the parameters and constituents listed in Table II in accordance with the specified methods and frequencies (pan lysimeters need only be sampled when liquid is present). Pan lysimeters shall be inspected for the presence of liquid **monthly**. If liquid is detected in a previously dry pan lysimeter, the Discharger shall verbally notify Central Valley Water Board staff within **seven days** and shall immediately sample and test the liquid for Field and Monitoring Parameters listed in Table II. Samples for the 5-year COC analyses specified in Table II shall be collected and analyzed in accordance with the methods listed in Table VI every five years.

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.

Monitoring results for the unsaturated zone shall be included in monitoring reports 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, Seep Monitoring, and Annual LCRS Testing

Leachate Monitoring: The Discharger shall operate and maintain LCRS sumps, conduct monitoring of any detected leachate seeps, and conduct annual testing of each LCRS in accordance with Title 27 and this monitoring program.

The current LCRS leachate sump monitoring points are:

<u>Mon Pt.</u>	<u>Unit Where Sump is Located</u>
North Sump	Unit IB
South Sump	Unit IB
Sump A	Cell A, Unit II
Sump B	Cell B, Unit II
Sump C	Cell C, Unit II

All LCRS sumps shall be inspected monthly for the presence of leachate, and flow shall be recorded in accordance with Table III. If leachate is detected in a previously dry sump, the Discharger shall verbally notify Central Valley Water Board staff within **seven days** and shall immediately sample and test the leachate for Field and Monitoring Parameters listed in Table III. Leachate in the LCRS sump shall then be sampled for all parameters and constituents in accordance with the frequencies listed in Table III whenever liquid is present. All LCRS sump samples shall be analyzed for the 5-year COCs specified in Table III every five years.

Seep Monitoring: Leachate that seeps to the surface from a waste management unit (Unit) shall be sampled and analyzed for the Field and Monitoring Parameters listed in Table III upon detection. The quantity of leachate shall be estimated and reported as Leachate Flow Rate (in gallons/day). Reporting for leachate seeps shall be conducted as required in Section B.3 of this MRP, below.

Annual LCRS Testing: All LCRSs shall be tested annually pursuant to Title 27, section 20340(d) to demonstrate proper operation. The results of these tests shall be reported to the Central Valley Water Board in the Annual Monitoring Report and shall include comparisons with earlier tests made under comparable conditions.

4. Facility Monitoring

a. Annual 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 repair and maintenance needed for drainage control systems, cover systems, and groundwater monitoring wells; and shall assess preparedness for winter conditions (including but not limited to erosion and sedimentation control). The Discharger shall take photos of any problems areas before and after repairs. Any necessary construction, maintenance, or repairs shall be completed by **31 October**. Annual facility inspection reporting shall be submitted as required in Section B.4 of this MRP.

b. Major Storm Events

The Discharger shall inspect all precipitation, diversion, and drainage facilities and all landfill side slopes for damage **within 7 days** following major storm events capable of causing damage or significant erosion. The Discharger shall take photos of any problems areas before and after repairs. Necessary repairs shall be completed **within 30 days** of the inspection. Notification and reporting requirements for major storm events shall be conducted as required in Section B.5 of this MRP.

c. Five-Year Iso-Settlement Survey for Closed Units

For closed Units, the Discharger shall conduct a five-year iso-settlement survey and produce an iso-settlement map accurately depicting the estimated total change in elevation of each portion of the final cover's low-hydraulic-conductivity layer. For each portion of the landfill, this map shall show the total lowering of the surface elevation of the final cover,

relative to the baseline topographic map [Title 27, section 21090(e)(1 & 2)]. Reporting shall be in accordance with Section B.6 of this MRP.

d. **Standard Observations**

The Discharger shall conduct Standard Observations at the landfill in accordance with this section of the MRP. Standard observations shall be conducted in accordance with the following schedule:

<u>Landfill Unit Type</u>	<u>Frequency</u>	<u>Season</u>
Active	Semimonthly	Wet: 1 October to 30 April
Active	Monthly	Dry: 1 May to 30 September
Inactive/Closed	Monthly	Wet: 1 October to 30 April
Inactive/Closed	Quarterly	Dry: 1 May to 30 September

The Standard Observations shall include:

- 1) For the Units:
 - a) Evidence of ponded water at any point on the unit outside of any contact storm water/leachate diversions structures on the active face (show affected area on map); and
 - b) Evidence of erosion and/or of day-lighted refuse.
- 2) Along the perimeter of the units:
 - a) Evidence of leachate seeps, estimated size of affected area, and flow rate (show affected area on map); and
 - b) Evidence of erosion and/or of day-lighted refuse.

Results of Standard Observations shall be submitted in the semiannual monitoring reports required in Section B.1 of this MRP.

5. Corrective Action Monitoring

The Discharger shall conduct corrective action monitoring to demonstrate the effectiveness of corrective action in accordance with Title 27, section 20430 and this MRP. Groundwater monitoring wells that are in a corrective action monitoring program shall be monitored in accordance with the groundwater monitoring requirements in part A.1 of this MRP, except as modified in this part of the MRP for any additional constituents or modified monitored frequencies.

The Discharger shall monitor the following corrective action monitoring wells as required in part A.1 and Table I of this MRP for the following additional constituents:

<u>Well</u>	<u>Zone</u>	<u>Additional Constituents</u>	<u>Sampling Frequency</u>
M-2B,	unconfined	Metabolic Acids	Quarterly
M-3C,		Fatty Acids	Quarterly
M-9B,		pH	Quarterly
M-14B,		Oxygen Reduction	Quarterly
M-19B,		Potential	
M-27, and		Temperature	Quarterly
M-28		Dissolved Iron	Quarterly
		Total Iron	Quarterly
		Manganese	Quarterly

Quarterly monitoring of the additional constituents included as a part of corrective action monitoring, shall be submitted semiannually in accordance with the semiannual monitoring report schedule in B.1 of B. Reporting

B. REPORTING

The Discharger shall submit the following reports in accordance with the required schedule:

Reporting Schedule

<u>Section</u>	<u>Report</u>	<u>End of Reporting Period</u>	<u>Due Date</u>
B.1	Quarterly Monitoring	31 March, 30 June, 30 September, 31 December	31 August, 28 February
B.2	Semiannual Monitoring Report	30 June, 31 December	31 August, 28 February
B.3	Annual Monitoring Report	31 December	28 February
B.4	Seep Reporting	Continuous	Within 7 Days (see B.3)
B.5	Annual Facility Inspection Report	31 October	15 November
B.6	Major Storm Event Reporting	Continuous	7 days from damage discovery
B.7	Survey and Iso-Settlement Map for Closed Landfills	Every Five Years	At Closure Completion and Every Five Years
B.8	Financial Assurances Report	31 December	1 September each year

Reporting Requirements

The Discharger shall submit monitoring reports **semiannually** with the data and information as required in this MRP and as required in the WDRs and the Standard Provisions and Reporting Requirements (particularly Section I: "Standard Monitoring Specifications" and Section J: "Response to a Release"). In reporting the monitoring data required by this program, the Discharger shall arrange the data in tabular form so that the date, the constituents, the concentrations, and the units are readily discernible. The data shall be summarized in such a manner so as to illustrate clearly the compliance with waste discharge requirements or the lack thereof. Data shall also be submitted in a digital format, such as a computer disk.

Field and laboratory tests shall be reported in each monitoring report. Semiannual and annual monitoring reports shall be submitted to the Central Valley Water Board in accordance with the above schedule for the calendar period in which samples were taken or observations made. In addition, the Discharger shall enter all monitoring data and monitoring reports into the online Geotracker database as required by Division 3 of Title 27.

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

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 records shall be legible and shall show the following for each sample:

- a) Sample identification and the monitoring point or background monitoring point from which it was taken, along with the identity of the individual who obtained the sample;
- b) Date, time, and manner of sampling;
- c) Date and time that analyses were started and completed, and the name of the personnel and laboratory performing each analysis;
- d) Complete procedure used, including method of preserving the sample, and the identity and volumes of reagents used;
- e) Calculation of results; and
- f) Results of analyses, and the MDL and PQL for each analysis. All peaks shall be reported.

Required Reports

1. **Semiannual Monitoring Report:** Monitoring reports shall be submitted semiannually and are due on **31 August** and **28 February**. Each semiannual monitoring report shall contain at least the following:
 - a) For each groundwater 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 used to stabilize water in the well bore before the sample is taken including the pumping rate; the equipment and methods used to monitor field pH, temperature, and conductivity during purging; results of pH, temperature, conductivity, and turbidity testing; and the method of disposing of the purge water;
 - 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 Sample Collection and Analysis Plan.
 - b) A map or aerial photograph showing the locations of observation stations, monitoring points, and background monitoring points.
 - c) The estimated quarterly groundwater flow rate and direction in the uppermost aquifer, in any zones of perched water, and in any additional zone of saturation monitored based upon water level elevations taken prior to the collection of the water quality data submitted in the report [Title 27, section 20415(e)(15)].
 - d) Cumulative tabulated monitoring data for all monitoring points and constituents for groundwater, unsaturated zone, leachate, and surface water. Concentrations below the laboratory reporting limit shall not be reported as "ND" unless the reporting limit is also given in the table. Otherwise they shall be reported "<" the reporting limit (e.g., <0.10). Units shall be as required in Tables I through IV unless specific justification is given to report in other units. Refer to the SPRRs Section I "Standard Monitoring Specifications" for requirements regarding MDLs and PQLs.
 - e) Laboratory statements of results of all analyses evaluating compliance with requirements.
 - f) An evaluation of the concentration of each monitoring parameter (or 5-year COC when five year COC sampling is conducted) as compared to the current concentration limits, and the results of any required verification testing for constituents exceeding a concentration limit. Report any actions taken under

Section J: Response to a Release for verified exceedences of a concentration limit.

- g) An evaluation of the effectiveness of the leachate monitoring and control facilities, and of the run-off/run-on control facilities. Include a summary of any instances where leachate depth on an MSW landfill liner system exceeded 30 cm (excluding the leachate sump), and information about the required notification and corrective action in Standard Facility Specification E.13 of the SPRRs.
 - h) A summary of all Standard Observations for the reporting period required in Section A.4.d of this MRP.
 - i) A summary of inspection, leak search, and repair of final covers on any closed units in accordance with an approved final postclosure maintenance plan as required by Standard Closure and Postclosure Maintenance Specifications G.26 through G.29 of the SPRRs.
 - j) A written summary of the analytical results for the constituents in Table 1 and including the quarterly monitoring results for the additional constituents listed in 5. Corrective Action Monitoring, for an evaluation of the effectiveness of the corrective action program.
2. **Annual Monitoring Report:** The Discharger shall submit an Annual Monitoring Report to the Central Valley Water Board by **28 February** covering the reporting period of the previous monitoring year. If desired, the Annual Monitoring Report may be combined with the second semiannual report, but if so, shall clearly state that it is both a semiannual and annual monitoring report in its title. Each Annual Monitoring Report shall contain the following information:
- a) All monitoring parameters shall be graphed to show historical trends at each monitoring point and background monitoring point, for all samples taken within at least the previous five calendar years. If a 5-year COC event was performed, then these parameters shall also be graphically presented. 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. Graphical analysis of monitoring data may be used to provide significant evidence of a release.
 - b) An evaluation of the monitoring parameters with regards to the cation/anion balance, and a graphical presentation using a Stiff diagram, a Piper graph, or a Schoeller plot.
 - c) All historical monitoring data for which there are detectable results, including data for the previous year, shall be submitted in tabular form in a digital file format such as a computer disk. The Central Valley Water Board regards the submittal of data in hard copy and in digital format as "...the form necessary

for..." statistical analysis [Title 27, section 20420(h)], that facilitates periodic review by the Central Valley Water Board.

- d) Hydrographs of each well 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.
 - e) 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 WDRs.
 - f) 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, and include a projection of the year in which each discrete landfill cell will be filled.
 - g) A written summary of the monitoring results, indicating any changes made or observed since the previous Annual Monitoring Report.
 - h) The results of the annual testing of leachate collection and removal systems required under Standard Facility Specification E.14 of the SPRRs.
 - i) Updated concentration limits for each monitoring parameter at each monitoring well based on the new data set.
 - j) A comprehensive discussion of any corrective action program required by this MRP under Section A.5.
3. **Seep Reporting:** 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 Central Valley Water 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 Field Parameters and Monitoring Parameters listed in Table III of this MRP, and an estimated date that the results will be submitted to the Central Valley Water Board; and
 - e) Corrective measures underway or proposed, and corresponding time schedule.

4. **Annual Facility Inspection Reporting:** By **15 November** of each year, the Discharger shall submit a report describing the results of the inspection and the repair measures implemented, preparations for winter, and include photographs of any problem areas and the repairs. Refer to Section A.4.a of this MRP, above.
5. **Major Storm Event Reporting:** Following major storm events capable of causing damage or significant erosion, the Discharger **immediately** shall notify Central Valley Water Board staff of any damage or significant erosion upon discovery and report subsequent repairs within **14 days** of completion of the repairs, including photographs of the problem and the repairs. Refer to Section A.4.b of this MRP, above.
6. **Survey and Iso-Settlement Map for Closed Landfills:** The Discharger shall conduct a survey and submit an iso-settlement map for each closed area of the landfill every five years pursuant to Title 27, section 21090(e). Refer to Section A.4.c of this MRP, above.
7. **Financial Assurances Report:** By **1 September** of each year, the Discharger shall submit a copy of the annual financial assurances report due to CalRecycle that updates the financial assurances for closure, postclosure maintenance, and corrective action. Refer to Financial Assurances Specifications G.1 through G.3 of the WDRs.

C. WATER QUALITY PROTECTION STANDARD AND COMPLIANCE PERIOD

1. Water Quality Protection Standard Report

For each unit, the Water Quality Protection Standard shall consist of all COCs, the concentration limit for each COC, the verification retesting procedure to confirm measurably significant evidence of a release, the point of compliance, and all water quality monitoring points for each monitored medium.

The Water Quality Protection Standard for naturally occurring waste constituents consists of the COCs, the concentration limits, and the point of compliance and all monitoring points. Any proposed changes to the Water Quality Protection Standard other than annual update of the concentration limits shall be submitted in a report for review and approval.

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 Title 27, section 20405.
- c. Evaluate the perennial direction(s) of groundwater movement within the uppermost groundwater zone(s).
- d. Include a proposed statistical method for calculating concentration limits for monitoring parameters and COCs that are detected in 10% or greater of the background data (naturally-occurring constituents) using a statistical procedure from Title 27, section 20415(e)(8)(A-D)] or section 20415(e)(8)(E).
- e. Include a retesting procedure to confirm or deny measurably significant evidence of a release pursuant to Title 27, section 20415(e)(8)(E) and section 20420(j)(1-3).

The Water Quality Protection Standard shall be certified by a California-registered civil engineer or geologist as meeting the requirements of Title 27. 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.

The Discharger proposed the methods for calculating concentration limits in the August 2000 *Water Quality Protection Standard Report*. Pursuant to Title 27 CCR Section 20415(e)(10)(B), for each naturally occurring inorganic COC, the concentration limit (applicable suite of background data) for that constituent shall be redetermined each semiannual monitoring period according to the following "moving window" formula, and the Discharger shall use the resulting concentration limit to apply the parametric Interwell Upper Prediction Limit analysis method featured in the SanitasTM for Groundwater statistical software package, unless the software indicates that a different method (e.g., the nonparametric version of the same method) is more appropriate. SanitasTM Batch Mode is performed on the entire monitoring well network for all constituents. Constituents that indicate an exceedence under Batch Mode are further analyzed under SanitasTM Interactive Mode to verify or refute whether the prediction limit established for the constituent was appropriate for the background data set. For each reporting period subsequent to the initial reporting period, the Discharger shall create the new concentration limit, for that constituent, by taking the prior reporting period's background data, adding the newest datum, for that constituent, from background monitoring wells and removing the oldest datum. Monitoring wells M-11, M-12, M-12B, and M-18 are currently being used for the collection of background data.

The Water Quality Protection Standard shall be updated annually for each monitoring well using new and historical monitoring data.

2. Monitoring Parameters

Monitoring parameters are a select group of constituents that are monitored during each monitoring event 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. Constituents of Concern

The COCs include a larger group of waste constituents, their reaction products, and hazardous constituents that are reasonably expected to be in or derived from waste contained in the unit, and are required to be monitored every five years [Title 27, sections 20395 and 20420(g)]. The COCs 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 COCs every five years, or more frequently as required in accordance with a corrective action program.

4. Concentration Limits

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

- a. By calculation in accordance with a statistical method pursuant to Title 27, section 20415(e)(8); or
- b. By an alternate statistical method meeting the requirements of Title 27, section 20415(e)(8)(E).

5. Retesting Procedures for Confirming Evidence of a Release

If monitoring results indicate measurably significant evidence of a release, as described in Standard Monitoring Specification I.45 of the SPRRs, then:

- a. For analytes that are detected in less than 10% of the background samples (such as non-naturally occurring constituents), the Discharger shall use the non-statistical retesting procedure required in Standard Monitoring Specification I.46 of the SPRRs.
- b. For analytes that are detected in 10% or greater of the background samples (naturally occurring constituents), the Discharger shall use one of

the statistical retesting procedure as required in Standard Monitoring Specification I.47 of the SPRRs.

6. Point 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 monitoring locations at the point of compliance are listed under 1. Groundwater Monitoring (above).

7. 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 [Title 27, section 20410].

8. Monitoring Points

A monitoring point is a well, device, or location specified in the WDRs at which monitoring is conducted and at which the Water Quality Protection Standard applies. The monitoring points for each monitored medium are listed in Section A of this MRP.

D. TRANSMITTAL LETTER FOR ALL REPORTS

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 whether 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. The transmittal letter shall contain a statement by the discharger, or the discharger's authorized agent, under penalty of perjury, that to the best of the signer's knowledge the report is true, accurate, and complete.

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

Ordered by: _____ Original signed by _____
PAMELA C. CREEDON, Executive Officer

(Date)

TABLE I
GROUNDWATER DETECTION MONITORING PROGRAM

<u>Parameter</u>	<u>Units</u>	<u>Sampling Frequency</u>	<u>Reporting Frequency</u>
Field Parameters			
Groundwater Elevation	Ft. & 100ths, M.S.L.	Quarterly	Semiannual
Temperature	°F	Semiannual	Semiannual
Electrical Conductivity	umhos/cm	Semiannual	Semiannual
pH	pH units	Semiannual	Semiannual
Turbidity	Turbidity units	Semiannual	Semiannual
Monitoring Parameters			
Total Dissolved Solids (TDS)	mg/L ¹	Semiannual	Semiannual
Chloride	mg/L	Semiannual	Semiannual
Carbonate	mg/L	Semiannual	Semiannual
Bicarbonate	mg/L	Semiannual	Semiannual
Nitrate - Nitrogen	mg/L	Semiannual	Semiannual
Sulfate	mg/L	Semiannual	Semiannual
Calcium	mg/L	Semiannual	Semiannual
Magnesium	mg/L	Semiannual	Semiannual
Potassium	mg/L	Semiannual	Semiannual
Sodium	mg/L	Semiannual	Semiannual
Volatile Organic Compounds (USEPA Method 8260B, short list, see Table V)	ug/L ²	Semiannual	Semiannual
5-Year Constituents of Concern (see Table VI)			
Total Organic Carbon	mg/L	5 years	5 years
Inorganics (dissolved)	ug/L	5 years	5 years
Volatile Organic Compounds (USEPA Method 8260B, extended list)	ug/L	5 years	5 years
Semi-Volatile Organic Compounds (USEPA Method 8270D)	ug/L	5 years	5 years
Chlorophenoxy Herbicides (USEPA Method 8151A)	ug/L	5 years	5 years
Organophosphorus Compounds (USEPA Method 8141B)	ug/L	5 years	5 years

¹ Milligrams per liter

² Micrograms per liter

TABLE II
UNSATURATED ZONE DETECTION MONITORING PROGRAM

SOIL-PORE GAS¹

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

PAN LYSIMETERS² (or other vadose zone monitoring device)

<u>Parameter</u>	<u>Units</u>	<u>Sampling Frequency</u>	<u>Reporting Frequency</u>
Field Parameters			
Electrical Conductivity	umhos/cm	Semiannual	Semiannual
pH	pH units	Semiannual	Semiannual
Volume of liquid removed	gallons	Monthly	Semiannual
Monitoring Parameters			
Total Dissolved Solids (TDS)	mg/L	Semiannual	Semiannual
Chloride	mg/L	Semiannual	Semiannual
Carbonate	mg/L	Semiannual	Semiannual
Bicarbonate	mg/L	Semiannual	Semiannual
Nitrate - Nitrogen	mg/L	Semiannual	Semiannual
Sulfate	mg/L	Semiannual	Semiannual
Calcium	mg/L	Semiannual	Semiannual
Magnesium	mg/L	Semiannual	Semiannual
Potassium	mg/L	Semiannual	Semiannual
Sodium	mg/L	Semiannual	Semiannual
Volatile Organic Compounds (USEPA Method 8260B, short list, see Table V)	ug/L	Semiannual	Semiannual

5-Year Constituents of Concern (see Table VI)

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

1. Soil-pore gas samples collected from landfill gas probes are only subject to the VOC (USEPA Method TO-14) and methane sampling (not the other parameters listed for pan lysimeters).
2. Pan lysimeters shall be inspected for the presence of liquid **monthly**. If liquid is detected in a previously dry pan lysimeter, the Discharger shall verbally notify Central Valley Water Board staff within **seven days** and shall immediately sample and test the liquid for Field and Monitoring Parameters listed in Table II.

TABLE III
LEACHATE MONITORING ¹, SEEP MONITORING ², AND LCRS TESTING ³

<u>Parameter</u>	<u>Units</u>	<u>Sampling Frequency</u>	<u>Reporting Frequency</u>
Field Parameters			
Total Flow	Gallons	Monthly	Semiannual
Flow Rate	Gallons/Day	Monthly	Semiannual
Electrical Conductivity	umhos/cm	Quarterly	Semiannual
pH	pH units	Quarterly	Semiannual
Monitoring Parameters			
Total Dissolved Solids (TDS)	mg/L	Annually	Annually
Chloride	mg/L	Annually	Annually
Carbonate	mg/L	Annually	Annually
Bicarbonate	mg/L	Annually	Annually
Nitrate - Nitrogen	mg/L	Annually	Annually
Sulfate	mg/L	Annually	Annually
Calcium	mg/L	Annually	Annually
Magnesium	mg/L	Annually	Annually
Potassium	mg/L	Annually	Annually
Sodium	mg/L	Annually	Annually
Volatile Organic Compounds (USEPA Method 8260B, short list, see Table V)	ug/L	Annually	Annually
5-Year Constituents of Concern (see Table VI)			
Total Organic Carbon	mg/L	5 years	5 years
Inorganics (dissolved)	ug/L	5 years	5 years
Volatile Organic Compounds (USEPA Method 8260B, extended list)	ug/L	5 years	
Semi-Volatile Organic Compounds (USEPA Method 8270D)	ug/L	5 years	5 years
Chlorophenoxy Herbicides (USEPA Method 8151A)	ug/L	5 years	5 years
Organophosphorus Compounds (USEPA Method 8141B)	ug/L	5 years	5 years
LCRS Testing ³	---	Annually	Annually

¹ If leachate is detected in a previously dry sump, the Discharger shall verbally notify Central Valley Water Board staff within **seven days** and shall immediately sample and test the leachate for Field and Monitoring Parameters listed in Table III. Leachate in the LCRS sump shall then be sampled for all parameters and constituents in accordance with the frequencies listed in Table III whenever liquid is present.

² Leachate seeps shall be sampled and analyzed for the Field and Monitoring Parameters in this table upon detection. The quantity of leachate shall be estimated and reported in gallons/day. Also, refer to Section B.3

³ The Discharger shall test each LCRS annually pursuant to Title 27, section 20340(d) to demonstrate proper operation. The results of the tests shall be compared with earlier tests made under comparable conditions.

TABLE IV

Surface Water Monitoring was omitted as it is not applicable at this facility.

TABLE V

MONITORING PARAMETERS FOR DETECTION MONITORING

Surrogates for Metallic Constituents:

pH
Total Dissolved Solids
Electrical Conductivity
Chloride
Sulfate
Nitrate nitrogen

Volatile Organic Compounds, short list:

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)

TABLE V
MONITORING PARAMETERS FOR DETECTION MONITORING

Continued

Hexachlorobutadiene
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
5-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS

<u>Inorganics (dissolved):</u>	<u>USEPA Method</u>
Aluminum	200.8
Antimony	200.8
Barium	200.8
Beryllium	200.8
Cadmium	200.8
Chromium	200.8
Cobalt	200.8
Copper	200.8
Silver	200.8
Tin	200.8
Vanadium	200.8
Zinc	200.8
Iron	200.8
Manganese	200.8
Arsenic	200.8
Lead	200.8
Mercury	245.1
Nickel	200.8
Selenium	200.8
Thallium	200.8
Cyanide	SM ¹ 4500-CN
Sulfide	SM 4500-CN

1. **Standard Methods**

Volatile Organic Compounds, extended list:

USEPA Method 8260B

- 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)
- 1,2-Dibromo-3-chloropropane (DBCP)
- 1,2-Dibromoethane (Ethylene dibromide; EDB)
- o-Dichlorobenzene (1,2-Dichlorobenzene)

TABLE VI

5-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS

Continued

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, I-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
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
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)

TABLE VI

5-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS

Continued

Trichlorofluoromethane (CFC- 11)
1,2,3-Trichloropropane
Vinyl acetate
Vinyl chloride (Chloroethene)
Xylene (total)

Semi-Volatile Organic Compounds:

USEPA Method 8270D - 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
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

TABLE VI

5-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS

Continued

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
Hexachloroethane
Hexachloropropene
Indeno(1,2,3-c,d)pyrene
Isodrin
Isophorone
Isosafrole
Kepone
Methapyrilene
Methoxychlor
3-Methylcholanthrene

TABLE VI

5-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS

Continued

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
0,0,0-Triethyl phosphorothioate
sym-Trinitrobenzene

TABLE VI

5-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS

Continued

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 8141B

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

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

STANDARD PROVISIONS AND REPORTING REQUIREMENTS
FOR
WASTE DISCHARGE REQUIREMENTS
FOR
NONHAZARDOUS SOLID WASTE DISCHARGES
REGULATED BY SUBTITLE D AND/OR TITLE 27
(40 C.F.R. section 258 and Title 27, § 20005 et seq.)

JANUARY 2012

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A. APPLICABILITY

1. These Standard Provisions and Reporting Requirements (SPRRs) are applicable to nonhazardous solid waste disposal sites that are regulated by the Central Valley Regional Water Quality Control Board (hereafter, Central Valley Water Board) pursuant to the provisions of California Code of Regulations, title 27 ("Title 27"), section 20005 et seq., and municipal solid waste (MSW) landfills that are subject to the Federal Subtitle D regulations contained in 40 Code of Federal Regulations section 258 (hereafter, "Subtitle D" or "40 C.F.R. § 258.XX") in accordance with State Water Resources Control Board (State Water Board) Resolution 93-62. The Subtitle D regulations are only applicable to MSW landfills and therefore any requirements in these SPRRs that are referenced as coming from Subtitle D are not applicable to non-MSW waste management units such as Class II surface impoundments, Class II waste piles, and non-MSW landfill units. All Subtitle D requirements in these SPRRs are referenced with "[40 C.F.R. § 258.XX]" after the requirement.
2. "Order," as used throughout this document, means the Waste Discharge Requirements (WDRs) to which these SPRRs are incorporated.
3. The requirements prescribed herein do not authorize the commission of any act causing injury to the property of another, and do not protect the Discharger from liabilities under federal, state, or local laws. This Order does not convey any property rights or exclusive privileges.
4. The provisions of this Order are severable. If any provision of this Order is held invalid, the remainder of this Order shall not be affected.
5. If there is any conflicting or contradictory language between the WDRs, the Monitoring and Reporting Program (MRP), or the SPRRs, then language in the WDRs shall govern over either the MRP or the SPRRs, and language in the MRP shall govern over the SPRRs.
6. If there is a site-specific need to change a requirement in these SPRRs for a particular landfill facility, the altered requirement shall be placed in the appropriate section of the WDRs and will supersede the corresponding SPRRs requirement. These SPRRs are standard and cannot be changed as part of the permit writing process or in response to comments, but they will be periodically updated on an as-needed basis.
7. Unless otherwise stated, all terms are as defined in Water Code section 13050 and in Title 27, section 20164.

B. TERMS AND CONDITIONS

1. Failure to comply with any waste discharge requirement, monitoring and reporting requirement, or Standard Provisions and Reporting Requirement, or

other order or prohibition issued, reissued, or amended by the Central Valley Water Board or the State Water Board, or intentionally or negligently discharging waste, or causing or permitting waste to be deposited where it is discharged into the waters of the state and creates a condition of pollution or nuisance, is a violation of this Order and the Water Code, which can result in the imposition of civil monetary liability [Wat. Code, § 13350(a)]

2. After notice and opportunity for a hearing, this Order may be terminated or modified for cause, including, but not limited to [Wat. Code, § 13381]:
 - a. Violation of any term or condition contained in this Order;
 - b. Obtaining this Order by misrepresentation, or failure to disclose fully all relevant facts;
 - c. A change in any condition that results in either a temporary or permanent need to reduce or eliminate the authorized discharge; or
 - d. A material change in the character, location, or volume of discharge.
3. Before initiating a new discharge or making a material change in the character, location, or volume of an existing discharge, the Discharger shall file a new report of waste discharge (ROWD), or other appropriate joint technical document (JTD), with the Central Valley Water Board [Wat. Code, § 13260(c) and § 13264(a)]. A material change includes, but is not limited to, the following:
 - a. An increase in area or depth to be used for solid waste disposal beyond that specified in waste discharge requirements;
 - b. A significant change in disposal method, location, or volume (e.g., change from land disposal to land treatment);
 - c. A change in the type of waste being accepted for disposal; or
 - d. A change to previously-approved liner systems or final cover systems that would eliminate components or reduce the engineering properties of components.
4. Representatives of the Central Valley Water Board may inspect the facilities to ascertain compliance with the waste discharge requirements. The inspection shall be made with the consent of the owner or possessor of the facilities or, if the consent is refused, with a duly issued warrant. However, in the event of an emergency affecting the public health or safety, an inspection may be made without consent or the issuance of a warrant [Wat. Code, §13267(c)].

5. The Central Valley Water Board will review this Order periodically and will revise these waste discharge requirements when necessary [Wat. Code, § 13263(e) and Title 27, § 21720(b)].
6. Except for material determined to be confidential in accordance with California law and regulations, all reports prepared in accordance with terms of this Order shall be available for public inspection at the offices of the Central Valley Water Board [Wat. Code, § 13267(b)]. Data on waste discharges, water quality, geology, and hydrogeology shall not be considered confidential.
7. A discharge of waste into the waters of the state is a privilege, not a right. No discharge of waste into waters of the state, whether or not the discharge is made pursuant to waste discharge requirements, shall create a vested right to continue the discharge [Wat. Code, § 13263(g)].
8. Technical and monitoring reports specified in this Order are requested pursuant to the Water Code [§13267(b)]. Failure to furnish the reports by the specified deadlines or falsifying information in the reports, are misdemeanors that may be liable civilly in accordance with §13268(b) of the Water Code [Wat. Code, §13268(a)].

C. STANDARD PROHIBITIONS

1. The discharge of liquid or semi-solid waste (waste containing less than 50 percent solids) is prohibited, except for the following when proposed in the ROWD/JTD and approved by this Order:
 - a. Dewatered sewage or water treatment sludge as described in Title 27, section 20220(c) provided it is discharged above a composite liner with a leachate collection and removal system (LCRS) [Title 27, § 20200(d)(3)].
 - b. Leachate and/or landfill gas condensate that is returned to the composite-lined waste management unit (with an LCRS) from which it came [Title 27, § 20340(g) and 40 C.F.R. § 258.28].
2. The discharge of wastes which have the potential to reduce or impair the integrity of containment structures or which, if commingled with other wastes in the waste management unit, 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 than provided by the unit; or
 - b. are 'restricted wastes'; or
 - c. impair the integrity of containment structures;is prohibited [Title 27, § 20200(b)].

3. The discharge of wastes outside of a waste management unit or portions of a unit specifically designed for their containment 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 to a closed landfill unit is prohibited.
6. The discharge of waste constituents to the unsaturated zone or to groundwater is prohibited.
7. The discharge of solid or liquid waste or leachate to surface waters, surface water drainage courses, or groundwater is prohibited.

D. STANDARD DISCHARGE SPECIFICATIONS

1. The Discharger is responsible for accurate characterization of wastes, including a determination of whether or not wastes will be compatible with containment features and other wastes at the waste management unit and whether or not the wastes are required to be managed as a hazardous waste [Title 27, § 20200(c)] or designated waste [Title 27, § 20210].
2. Leachate and landfill gas condensate collected from a waste management unit shall be discharged to the unit from which it came, or discharged to an appropriate waste management unit in accordance with Title 27 and in a manner consistent with the waste classification of the liquid [Title 27, § 20200(d) and § 20340(g)].
3. The discharge of leachate or landfill gas condensate is restricted to those portions of a waste management unit that has a composite liner system and LCRS meeting the Federal Subtitle D requirements [40 C.F.R. § 258.28].
4. Leachate and condensate returned to a composite-lined landfill unit (when approved by this Order) shall be discharged and managed such that it does not cause instability of the waste, does not cause leachate seeps, does not generate additional landfill gas that is not extracted from the landfill by an active landfill gas extraction system, does not cause contaminants to enter surface water runoff, and does not cause leachate volumes to exceed the maximum capacity of the LCRS.
5. Any discharge of waste outside the portion of the landfill that was already covered with waste as of the landfill unit's respective Federal Deadline constitutes a "lateral expansion" and requires the installation of an approved composite liner system and LCRS [40 C.F.R. § 258.40(b)].

6. Wastes shall be discharged only into waste management units specifically designed for their containment and/or treatment, as described in this Order.
7. The discharge shall remain within the designated disposal area at all times.
8. The discharge of waste shall not cause a nuisance condition [Wat. Code, § 13050(m)].

E. STANDARD FACILITY SPECIFICATIONS

1. All waste management units shall be designed, constructed, and operated to ensure that wastes, including leachate, will be a minimum of 5 feet above the highest anticipated elevation of underlying groundwater [Title 27, § 20240(c)], including the capillary fringe.
2. Surface and subsurface drainage from outside of a waste management unit shall be diverted from the unit [Title 27, § 20365(e)].
3. Interim cover is daily and intermediate cover [Title 27, § 20750(a)]. Interim cover over wastes discharged to a landfill shall be designed and constructed to minimize percolation of liquids through the wastes [Title 27, § 20705(b)].
4. Intermediate cover consisting of compacted earthen material of at least twelve (12) inches shall be placed on all surfaces of the fill where no additional solid waste will be deposited within **180 days** [Title 27, § 20700(a)].
5. During wet weather conditions, the facility shall be operated and graded to minimize leachate generation.
6. The Discharger shall **immediately** notify the Central Valley Water Board staff of any slope failure occurring at a waste management unit. Any failure which threatens the integrity of containment features or the waste management unit shall be promptly corrected in accordance with an approved method [Title 27, § 21710(c)(2)].
7. The Discharger shall **immediately** notify Central Valley Water Board staff of any flooding, unpermitted discharge of waste off-site or outside of waste management units, equipment failure, or other change in site conditions which could impair the integrity of waste or leachate containment facilities or precipitation and drainage control structures.
8. The Discharger shall limit water used for facility maintenance within landfill areas to the minimum amount necessary for dust control and construction.
9. The Discharger shall maintain in good working order any facility, control system, or monitoring device installed to achieve compliance with the waste discharge requirements.

10. The Discharger shall lock all groundwater monitoring wells with a lock on the well cap or monitoring well box. All monitoring devices shall be clearly labeled with their designation including all monitoring wells, LCRS risers, and lysimeter risers and shall be easily accessible for required monitoring by authorized personnel. Each monitoring device shall be clearly visible and be protected from damage by equipment or vehicles.
11. The Discharger shall ensure that methane and other landfill gases are adequately vented, removed from landfill units, or otherwise controlled to prevent the danger of adverse health effects, nuisance conditions, degradation, or the impairment of the beneficial uses of surface water or groundwater due to migration through the unsaturated zone.
12. The Discharger shall maintain the depth of the fluid in the sump of each landfill unit at the minimum needed for efficient pump operation (the depth at which the pump turns on given the pump intake height and maximum pump cycle frequency).
13. The depth of fluid on the landfill liner shall not exceed **30 centimeters** (cm) [40 C.F.R. § 258.40(a)(2)]. This regulation is interpreted by the Central Valley Water Board to exclude the leachate sump. The Discharger shall **immediately** notify the Central Valley Water Board staff by telephone, and follow up in writing within **seven** days if monitoring reveals that the depth of fluid on any portion of the liner (excluding the sump) exceeds 30 cm (approximately 12 inches). The written notification shall include a timetable for remedial or corrective action necessary to achieve compliance with the leachate depth limitation.
14. Each LCRS shall be tested at least annually to demonstrate proper operation. The results of the tests shall be compared with earlier tests made under comparable conditions [Title 27, § 20340(d)].
15. The Discharger shall maintain a *Storm Water Pollution Prevention Plan and Monitoring Program and Reporting Requirements* in accordance with State Water Board Order No. 97-03-DWQ (or most recent general industrial storm water permit), or retain all storm water on-site.
16. Internal site drainage from surface or subsurface sources shall not contact or percolate through wastes.
17. New MSW landfill units or lateral expansions of existing units shall not be sited in a "wetland" [as defined in 40 C.F.R. § 232.29(r)] unless there is no practical alternative; steps have been taken to assure no net loss of wetland; the landfill unit will not degrade the wetland; the unit will not jeopardize threatened or endangered species or produce adverse modification of a critical habitat or violate any requirement of the Marine Protection, Research, and Sanctuaries Act of 1972 [40 C.F.R. § 258.12].

F. STANDARD CONSTRUCTION SPECIFICATIONS

1. The Discharger shall submit for review and approval at least **90 days** prior to proposed construction, design plans and specifications for new landfill modules that include the following:
 - a. Detailed construction drawings showing all required liner system components, the LCRS, leachate sump, unsaturated zone monitoring system, any proposed landfill gas monitoring and extraction points, and access to the LCRS for required annual testing.
 - b. A Construction Quality Assurance (CQA) Plan prepared by a California-registered civil engineer or certified engineering geologist, and that meets the requirements of Title 27, section 20324.
 - c. A geotechnical evaluation of the area soils, evaluating their use as the base layer or reference to the location of this information in the ROWD/JTD [Title 27, § 21750(f)(4)].
 - d. Information about the seismic design of the proposed new module (or reference to the location of this information in the ROWD/JTD) in accordance with Title 27, section 20370.
 - e. A revised water quality monitoring plan for groundwater detection monitoring (or information showing the existing plan is adequate) in accordance with Title 27, section 20415.
 - f. An Operation Plan (or reference to the location of this information in the ROWD/JTD) meeting the requirements of Title 27, section 21760(b).
2. All containment structures shall be designed by, and construction shall be supervised by, a California registered civil engineer or a certified engineering geologist, and shall be certified by that individual as meeting the prescriptive standards, or approved engineered alternative design, in accordance with this Order prior to waste discharge.
3. The Discharger shall not proceed with construction until the construction plans, specifications, and all applicable construction quality assurance plans have been approved. Waste management units shall receive a final inspection and approval of the construction by Central Valley Water Board staff before use of the unit commences [Title 27, § 20310(e)].
4. Any report, or any amendment or revision of a report, that proposes a design or design change that might affect a waste management unit's containment features or monitoring systems shall be approved by a California registered civil engineer or a certified engineering geologist [Title 27, § 21710(d)].

5. Materials used in containment structures shall have appropriate chemical and physical properties to ensure that such structures do not fail to contain waste because of pressure gradients, physical contact with waste or leachate, chemical reactions with soil or rock, climatic conditions, the stress of installation, or because of the stress of daily operations [Title 27, § 20320(a)].
6. Waste management units and their respective containment structures shall be designed and constructed to limit, to the greatest extent possible, ponding, infiltration, inundation, erosion, slope failure, washout, and overtopping [Title 27, § 20365(a)].
7. The Discharger shall design storm water conveyance systems for Class III units for a 100-year, 24-hour storm event, and shall design storm water conveyance systems for Class II units for a 1,000-year, 24-hour storm event [Title 27, § 21750(e)(3)].
8. All Class III landfill units shall be designed to withstand the maximum probable earthquake and Class II waste management units shall be designed to withstand maximum credible earthquake without damage to the foundation or to the structures that control leachate, or surface drainage, or erosion, or gas [Title 27, § 20370(a)].
9. The Discharger shall perform stability analyses that include components to demonstrate the integrity of the landfill foundation, final slopes, and containment systems under both static and dynamic conditions throughout the landfill's life including the closure period and post-closure maintenance period [Title 27, § 21750(f)(5)].
10. New waste management units and expansions of existing units shall not be located on a known Holocene fault [Title 27, § 20260(d)].
11. Liners shall be designed and constructed to contain the fluid, including landfill gas, waste, and leachate [Title 27, § 20330(a)].
12. Hydraulic conductivities shall be determined primarily by appropriate field test methods in accordance with accepted civil engineering practice. The results of laboratory tests with both water and leachate, and field tests with water, shall be compared to evaluate how the field permeabilities will be affected by leachate. It is acceptable for the Discharger to use appropriate compaction tests in conjunction with laboratory hydraulic conductivity tests to determine field permeabilities as long as a reasonable number of field hydraulic conductivity tests are also conducted [Title 27, § 20320(c)].
13. Hydraulic conductivities specified for containment structures other than the final cover shall be relative to the fluids (leachate) to be contained. Hydraulic conductivities for the final cover shall be relative to water [Title 27, § 20320(b)].

14. A test pad for each barrier layer and final cover shall be constructed in a manner duplicating the field construction. Test pad construction methods, with the designated equipment, shall be used to determine if the specified density/moisture-content/hydraulic conductivity relationships determined in the laboratory can be achieved in the field with the compaction equipment to be used and at the specified lift thickness [Title 27, § 20324(g)(1)(A)].
15. Performance requirements for geosynthetic membranes shall include, but are not limited to, a need to limit infiltration of water, to the greatest extent possible; a need to control landfill gas emissions; mechanical compatibility with stresses caused by equipment traffic, and for final covers the result of differential settlement over time and durability throughout the post-closure maintenance period [Title 27, § 20324(i)(1)].
16. The Discharger shall ensure proper preparation of the subgrade for any liner system that includes a GCL 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.
17. The Discharger shall propose an electronic leak location survey of the top liner for any new landfill module in the construction quality assurance plan unless the Discharger demonstrates that a leak location survey is not needed.
18. Leachate collection and removal systems are required for Class II landfills and surface impoundments, MSW landfills, and for Class III landfills which have a liner or which accept sewage or water treatment sludge [Title 27, § 20340(a)].
19. All new landfill units or lateral expansions of existing units that require a LCRS shall have a blanket-type LCRS that covers the bottom of the unit and extends as far up the sides as possible. The LCRS shall be of sufficient strength and thickness to prevent collapse under the pressures exerted by overlying wastes, waste cover materials, and by any equipment used at the unit [Title 27, § 20340(e)].
20. The LCRS shall be designed, constructed, maintained, and operated to collect and remove twice the maximum anticipated daily volume of leachate from the waste management unit [Title 27, § 20340(b)].
21. Leachate collection and removal systems shall be designed and operated to function without clogging through the scheduled closure of the landfill unit and during the post-closure maintenance period.
22. The LCRS shall be designed to maintain the depth of fluid over any portion of the LCRS of no greater than 30 cm [40 C.F.R. § 258.40(a)(2)], excluding the leachate sump. The leachate sump, leachate removal pump, and pump controls shall be designed and set to maintain a fluid depth no greater than the minimum needed for efficient pump operation [Title 27, § 20340(c)].

23. All construction of liner systems and final cover systems shall be performed in accordance with a Construction Quality Assurance Plan certified by a registered civil engineer or a certified engineering geologist [Title 27, § 20323].
24. The Construction Quality Assurance program shall be supervised by a registered civil engineer or a certified engineering geologist who shall be designated the CQA officer [Title 27, § 20324(b)(2)].
25. The Discharger shall ensure that a third party independent of both the Discharger and the construction contractor performs all of the construction quality assurance monitoring and testing during the construction of a liner system.
26. The Discharger shall notify Central Valley Water Board staff at least **14 days** prior to commencing field construction activities including construction of a new lined cell or module, construction of a final cover, or any other construction that requires Central Valley Water Board staff approval under this Order.
27. The Discharger shall submit for review and approval at least **60 days** prior to proposed discharge, final documentation required in Title 27 Section 20324(d)(1)(C) following the completion of construction of a new lined landfill module. The report shall be certified by a registered civil engineer or a certified engineering geologist and include a statement that the liner system was constructed in accordance with the approved design plans and specifications, the CQA Plan, the requirements of the WDRs, and that it meets the performance goals of Title 27. The report shall contain sufficient information and test results to verify that construction was in accordance with the design plans and specifications, the construction quality assurance plan, and the performance goals of Title 27.
28. The Discharger shall not discharge waste onto a newly constructed liner system until the final documentation report has been reviewed and an acceptance letter has been received.
29. Prior to placement of waste in a new landfill unit, the Discharger shall monitor any pan lysimeter for the unit that has received enough rainfall to flood the LCRS sump. If liquid is detected in the pan lysimeter, the Discharger shall verify that the liquid is not from a leak in the primary liner system before waste can be accepted to the new module.

G. STANDARD CLOSURE AND POST-CLOSURE SPECIFICATIONS

1. The Discharger shall submit a final or partial final closure and post-closure maintenance plan at least **two years** prior to the anticipated date of closure [Title 27, § 21780(d)(1)].

2. The Discharger shall notify the Central Valley Water Board in writing that a landfill unit or portion of a unit is to be closed either at the same time that the California Department of Resources Recycling and Recovery (CalRecycle) is notified or **180 days** prior to beginning any final closure activities, whichever is sooner [Title 27, § 21710(c)(5)(A)]. The notice shall include a statement that all closure activities will conform to the most recently approved final or partial final closure plan and that the plan provides for site closure in compliance with all applicable federal and state regulations [Title 27, § 21710(c)(5)(C)].
3. Initiation of closure activities shall begin within **30 days** of final waste receipt, or within **one year** of receipt of most recent waste if additional capacity remains [40 C.F.R. § 258.60(f)].
4. Closure activities shall be completed within **180 days** of the beginning of closure activities unless an extension is granted by the Executive Officer [40 C.F.R. § 258.60(g)].
5. The Discharger shall carry out both mandatory closure and normal closure of a waste management unit or a portion of a unit in accordance with a closure and post-closure maintenance plan approved by the Central Valley Water Board [Title 27, § 20950(a)(1)] through the issuance of closure waste discharge requirements.
6. The Discharger shall notify the Central Valley Water Board that a preliminary closure and post-closure maintenance plan has been prepared and placed in the operating record by the date of initial receipt of waste at any new MSW landfill unit or lateral expansion of any existing unit [40 C.F.R. § 258.60(d)]. This notification shall be included in the cover letter transmitting the preliminary closure and post-closure maintenance plan.
7. In addition to the applicable provisions of Title 27, the preliminary closure and/or the post-closure maintenance plans for MSW landfill units shall include the following:
 - a. A description of the steps necessary to close all MSW landfill units at any point during their active life in accordance with the cover design requirements [40 C.F.R. § 258.60(c)];
 - b. An estimate of the largest area of the landfill unit(s) ever requiring a final cover at any time during the active life of the unit(s) [40 C.F.R. § 258.60(c)(2)];
 - c. An estimate of the maximum inventory of wastes ever on-site over the active life of the waste management facility [40 C.F.R. § 258.60(c)(3)]; and
 - d. A schedule for completing all activities necessary to satisfy the closure criteria in 40 C.F.R. section 258.60 [40 C.F.R. § 258.60(c)(4)].

8. The final closure and post-closure maintenance plan for the waste management unit shall include at least the following: an itemized cost analysis, closure schedule, any proposed final treatment procedures, map, changes to the unit description presented in the most recent ROWD, federal requirements for a MSW facility, land use of the closed unit, and a construction quality assurance plan [Title 27, § 21769(c) & (d)].
9. Closure of each waste management unit shall be under the direct supervision of a registered civil engineer or certified engineering geologist [Title 27, § 20950(b)].
10. The final cover of closed landfills shall be designed, graded, and maintained to prevent ponding and soil erosion due to high run-off velocities [Title 27, § 21090(b)(1)(A)].
11. The final grading design shall be designed and approved by a registered civil engineer or certified engineering geologist [Title 27, § 21090(b)(1)(C)].
12. All final cover designs shall include a minimum 1-foot thick erosion resistant layer [Title 27, § 21090(a)(3)(A)].
13. The Discharger shall close the landfill with minimum 15-foot wide benches every 50 vertical feet [Title 27, § 21090(a)].
14. Final cover slopes shall not be steeper than a horizontal to vertical ratio of one and three quarters to one and designs having any slopes steeper than a horizontal to vertical ratio of three to one, or having a geosynthetic component, shall have these aspects of their design specifically supported in the slope stability report required in Title 27, section 21750(f)(5) [Title 27, § 21090(a)].
15. For any portions of the final cover installed after July 18, 1997, for which the Central Valley Water Board has not approved a slope and foundation stability report on or before that date, the Discharger shall meet the requirements of Title 27, section 21750(f)(5) [Title 27, § 21090(a)(6)].
16. Areas with slopes greater than ten percent, surface drainage courses, and areas subject to erosion by wind or water shall be designed and constructed to prevent such erosion [Title 27, § 21090(b)(2)].
17. The Discharger shall design storm water conveyance systems for closed Class III units for a 100-year, 24-hour storm event, and shall design storm water conveyance systems for closed Class II units for a 1,000-year, 24-hour storm event [Title 27, § 21750(e)(3)].
18. Closed landfill units shall be provided with at least two permanent surveying monuments, installed by a licensed land surveyor or by a registered civil engineer, from which the location and elevation of all wastes, containment

structures, and monitoring facilities can be determined throughout the post-closure maintenance period [Title 27, § 20950(d)].

19. Following closure of any MSW landfill units, the Discharger shall notify the Executive Officer that the deed to the landfill facility property, or some other instrument that is normally examined during a title search, has been recorded and a copy placed in the operating record. The notation on the deed shall in perpetuity notify any potential purchaser of the property that the land has been used as a landfill facility and that use of the land is restricted to the planned use described in the post-closure maintenance plan [Title 27, § 20515(a)(4) and §21170, and 40 C.F.R. § 258.60(i)].
20. Construction or repair of the final cover system's low-hydraulic conductivity layer is to be carried out in accordance with an approved construction quality assurance plan [Title 27, § 21090(b)(1)(E)].
21. The Discharger shall incorporate into the closure and post-closure maintenance plan a cover-integrity monitoring and maintenance program which includes at least the following: a periodic leak search, periodic identification of other problem areas, prompt cover repair, and vegetation maintenance [Title 27, § 21090(a)(4)].
22. The Discharger shall complete a final cover survey upon completion of closure activities for that portion of the landfill. The final cover surveys shall include an initial survey and map [Title 27, § 21090(e)(1). Every **five years**, the Discharger shall conduct a survey of the closed landfill cover and submit an iso-settlement map accurately depicting the estimated total change in elevation of each portion of the final cover's low-hydraulic-conductivity layer [Title 27, § 21090(e)(2)].
23. Within **30 days** of completion of all closure activities, the Discharger shall certify that all closure activities were performed in accordance with the most recently approved final closure plan and CQA Plan, and in accordance with all applicable regulations. The Discharger shall also certify that closed landfill units shall be maintained in accordance with and approved post-closure maintenance plan [Title 27, § 21710(c)(6)].
24. Within **180 days** of completion of closure construction activities, the Discharger shall submit final documentation of closure, including the Certification of Closure. The closure documents shall include a final construction quality assurance report and any other documents necessary to support the certification [Title 27, § 21880].
25. The post-closure maintenance period shall continue until the Central Valley Water Board determines that wastes remaining in the landfill unit(s) no longer pose a threat to water quality [Title 27, § 20950(a)(1)].

26. The Discharger shall conduct a periodic leak search to monitor of the integrity of the final cover in accordance with the schedule in the approved final post-closure maintenance plan [Title 27, § 21090(a)(4)(A)].
27. The Discharger shall periodically inspect and identify problems with the final cover including areas that require replanting, erosion, areas lacking free drainage, areas damaged by equipment operations, and localized areas identified in the required five-year iso-settlement survey [Title 27, § 21090(a)(4)(B)].
28. The Discharger shall repair the cover promptly in accordance with a cover repair plan to be included in the final post-closure maintenance plan [Title 27, § 21090(a)(4)(C)].
29. Throughout the post-closure maintenance period, the Discharger shall maintain the structural integrity and effectiveness of all containment structures, maintain the final cover as necessary to correct the effects of settlement and other adverse factors, continue to operate the LCRS as long as leachate is generated and detected, maintain the monitoring systems, prevent erosion and related damage of the final cover due to drainage, and protect and maintain surveyed monuments [Title 27, § 21090(c)].
30. Post-closure maintenance shall be conducted for a minimum period of **30 years** or until the waste no longer poses a threat to environmental quality, whichever is greater [Title 27, § 21180(a) and Title 27, § 21900(a)].

H. STANDARD FINANCIAL ASSURANCE PROVISIONS

1. The Discharger shall establish an irrevocable fund for closure and post-closure maintenance to ensure closure and post-closure maintenance of each classified unit in accordance with an approved closure and post-closure maintenance plan [Title 27, § 20950(f) and § 22207(a)].
2. The Discharger shall obtain and maintain assurances of financial responsibility for initiating and completing corrective action for all known and reasonably foreseeable releases from the waste management unit [Title 27, §20380(b), § 22221, and § 22222].

I. STANDARD MONITORING SPECIFICATIONS

1. The water quality monitoring program shall include appropriate and consistent sampling and analytical procedures and methods designed to ensure that monitoring results provide a reliable indication of water quality at all monitoring points and background monitoring points [Title 27, § 20415(e)(4) and 40 C.F.R. § 258.53(b)].

2. All monitoring systems shall be designed and certified by a registered geologist or a registered civil engineer [Title 27, § 20415(e)(1)].
3. All monitoring wells shall be cased and constructed in a manner that maintains the integrity of the monitoring well bore hole and prevents the bore hole from acting as a conduit for contaminant transport [Title 27, § 20415(b)(4)(A)].
4. All sample chemical analyses of any material shall be performed by a laboratory certified by the California Department of Health Services [Wat. Code, § 13176(a)].
5. A Detection Monitoring Program for a new landfill facility shall be installed, operational, and one year of monitoring data collected from background monitoring points prior to the discharge of wastes [Title 27, § 20415(e)(6)].
6. 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).
7. The Discharger shall submit for approval, establish, and maintain an approved 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;
 - e. Chain of Custody control; and
 - f. Sample analysis information including sample preparation techniques to avoid matrix interferences, method detection limits (MDLs), practical quantitation limits (PQLs) and reporting limits (RLs), and procedures for reporting trace results between the MDL and PQL.

If required by the Executive Officer, the Discharger shall modify the Sample Collection and Analysis Plan to conform with this Order.

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 a longer time period is approved, 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. Appropriate sample preparation techniques shall be used to minimize matrix interferences.

9. If methods other than USEPA-approved methods or Standard Methods are used, or there is a proposed alternant USEPA method than the one listed in the MRP, the proposed methodology shall be submitted for review and approval prior to use, including information showing its equivalence to the required method.
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 MDL shall be selected from among those methods which would provide valid results in light of any matrix effects or interferences.
11. The laboratory reporting limit (RL) for all reported monitoring data shall be set no greater than the practical quantitation limit (PQL).
12. **"Trace" results** - results falling between the MDL and the PQL - shall be reported as such, and shall be accompanied both by the estimated MDL and PQL values for that analytical run.
13. Laboratory data shall not be altered or revised by the Discharger. If the Discharger observes potential lab errors, it shall identify the issue in the monitoring report and shall describe steps that will be taken to prevent similar errors in the future.
14. **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. MDLs and PQLs shall be reported.

15. 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 in the laboratory report 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.
16. 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 signature of a responsible person from the laboratory. **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, but the analytical results shall not be adjusted.
17. 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.
18. The sampling interval of each monitoring well shall be appropriately screened and fitted with an appropriate filter pack to enable collection of representative groundwater samples [Title 27, § 20415(b)(4)(B)]. Groundwater samples shall not be field-filtered prior to laboratory analysis [40 C.F.R. § 258.53(b)]. Groundwater samples needing filtering (e.g., samples to be analyzed for dissolved metals) shall be filtered by the laboratory prior to analysis.
19. Groundwater elevations shall be measured in each well immediately prior to purging, each time groundwater is sampled. The owner or operator shall determine the rate and direction of groundwater flow each time groundwater is sampled. Groundwater elevations in wells which monitor the same waste management area shall be measured within a period of time short enough to avoid temporal variations in groundwater flow which could preclude accurate determination of groundwater flow rate and direction [40 C.F.R. § 258.53(d)].
20. Monitoring wells, piezometers, and other measurement, sampling, and analytical devices must be operated and maintained so that they perform to

design specifications throughout the life of the monitoring program [40 C.F.R. § 258.51(c)(2)]. Monitoring devices that cannot be operated and maintained to perform to design specifications shall be replaced after review and approval of a report (i.e., work plan) for the proposed replacement devices.

21. All borings are to be logged during drilling under the direct supervision of a registered geologist or registered civil engineer with expertise in stratigraphic well logging [Title 27, § 20415(e)(2)].
22. Soils are to be described according to the Unified Soil Classification System [Title 27, § 20415(e)(2)(A)]. Rock is to be described in a manner appropriate for the purpose of the investigation [Title 27, § 20415(e)(2)(B)].
23. The Discharger shall submit a work plan for review and approval at least **60 days** prior to installation or abandonment of groundwater monitoring wells.
24. The Discharger shall provide Central Valley Water Board staff a minimum of **one week** notification prior to commencing any field activities related to the installation or abandonment of monitoring devices.
25. The water quality protection standard shall consist of the constituents of concern (COC), concentration limits, and the point of compliance. The water quality protection standard shall apply during the active life of the waste management unit, closure period, post-closure maintenance period, and any compliance period under Title 27, section 20410 [Title 27, § 20390].
26. The point of compliance at which the water quality protection standard applies is a vertical surface located at the hydraulically downgradient limit of the waste management unit that extends through the uppermost aquifer underlying the unit [Title 27, § 20405].
27. The compliance period is the minimum period of time during which the Discharger shall conduct a water quality monitoring program and is the number of years equal to the active life of the waste management unit plus the closure period [Title 27, § 20410(a)].
28. The groundwater monitoring system shall include a sufficient number of monitoring points, installed at appropriate locations, to yield groundwater samples from the uppermost aquifer that represent the quality of groundwater that has not been affected by a release from the waste management unit [Title 27, § 20415(b)(1)(A)].
29. The Detection Monitoring Program shall include a sufficient number of monitoring points, installed at appropriate locations and depths to yield groundwater samples from the uppermost aquifer that represent the quality of

groundwater passing the point of compliance to allow the detection of a release from the waste management unit [Title 27, § 20415(b)(1)(B)1.].

30. Additional monitoring points shall be added as necessary to provide the best assurance of the **earliest possible detection** of a release from the waste management unit [Title 27, § 20415(b)(1)(B)2.].
31. The Detection Monitoring Program shall also include a sufficient number of monitoring points installed at appropriate depths and locations to yield groundwater samples from other aquifers or perched zones not already monitored to provide the **earliest possible detection** of a release from the waste management unit [Title 27, § 20415(b)(1)(B)3. and 4., and §20420(b)].
32. A surface water monitoring system shall be established to monitor each surface water body that could be affected by a release from the waste management unit [Title 27, § 20415(c)].
33. An unsaturated zone monitoring system shall be established for each waste management unit [Title 27, § 20415(d)].
34. The Discharger shall notify Central Valley Water Board staff within **seven days** if fluid is detected in a previously dry LCRS, unsaturated zone monitoring system, or if a progressive increase is detected in the volume of fluid in a LCRS [Title 27, § 21710(c)(3)].
35. Driller's logs for all monitoring wells shall to be submitted to the Central Valley Water Board and the Department of Water Resources [Wat. Code, § 13751 and Title 27, § 20415(b)(3)].
36. Groundwater elevation, temperature, electrical conductivity, turbidity, and pH are to be accurately measured at each well each time groundwater is sampled [Title 27, § 21415(e)(13)].
37. The groundwater flow rate and direction in the uppermost aquifer and in any zones of perched water and in any additional portions of the zone of saturation being monitored shall be determined at least quarterly [Title 27, § 20415(e)(15)].
38. The Discharger shall graph all analytical data from each monitoring point and background monitoring point and shall submit the graphs to the Central Valley Water Board annually [Title 27, § 20415(e)(14)].
39. For each waste management unit, the Discharger shall collect all data necessary for selecting appropriate data analysis methods for establishing background values for each constituent of concern and for each monitoring parameter [Title 27, § 20420(c)]. The Discharger shall propose a data analysis method that includes a detailed description of the criteria to be used for

determining “measurably significant” (as defined in Title 27, section 20164) evidence of a release from the waste management unit and determining compliance with the water quality protection standard [Title 27, § 20415(e)(6) and (7)].

40. For statistical analysis of data, the Discharger shall use one of the methods described in Title 27, section 20415(e)(8)(A)-(E). A non-statistical data analysis method can be used if the method can achieve the goal of the particular monitoring program at least as well as the most appropriate statistical method [Title 27, § 20415(e)(8)]. The Discharger shall use a statistical or nonstatistical data analysis method that complies with Title 27, section 20415(e)(7, 8, 9, and 10), to compare the concentration of each constituent of concern or monitoring parameter with its respective background concentration to determine whether there has been a measurably significant evidence of a release from the waste management unit. For any given monitoring point at which a given constituent has already exhibited a measurably significant indication of a release at that monitoring point, the Discharger may propose to monitor the constituent, at that well, using a concentration-versus-time plot.
41. The Discharger may propose an alternate statistical method [to the methods listed under Title 27, section 20415(e)(8)(A-D)] in accordance with Title 27, section 20415(e)(8)(E), for review and approval.
42. 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, 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 or an approved Sample Collection and Analysis Plan for routine laboratory operating conditions that are available to the facility. The Discharger’s technical report (Sample Collection and Analysis Plan and/or Water Quality Protection Standard Report), pursuant to Title 27, 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 non-statistical 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”.
43. 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 (e.g., USEPA methods 8260 and 8270).

44. 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) if part of an approved water quality protection standard. Nevertheless, analytical results involving detection of these analytes in any background or downgradient sample shall be reported and flagged for easy reference by Central Valley Water Board staff.
45. **Confirmation of Measurably Significant Evidence of a Release.** Whenever a constituent is detected at a detection monitoring point at a concentration that exceeds the concentration limit from the water quality protection standard, the Discharger shall conduct verification sampling to confirm if the exceedance is due to a release or if it is a false-positive (unless previous monitoring has already confirmed a release for that constituent at that monitoring point). An exceedance of the concentration limit from the water quality protection standard is considered measurably significant evidence of a release that must be either confirmed or denied. There are two separate verification testing procedures:
- a. Standard Monitoring Specification I.46 provides the procedure for analytes that are detected in less than 10% of the background samples such as non-naturally occurring constituents like volatile organic compounds; and
 - b. Standard Monitoring Specification I.47 provides the procedure for analytes that are detected in 10% or greater of the background samples such as naturally occurring constituents like chloride.
46. **Verification Procedure for Analytes Detected in Less than 10% of Background Samples.** 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. **Initial Determination of Measurably Significant Evidence of a Release.** Identify each analyte in the **current** detection monitoring point sample that exceeds either its respective MDL or PQL, and for which a release has not been previously confirmed. 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 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, § 20415(e)(8)(E) and § 20420(j)(1-3)]:

- 1) In the event that the Discharger or Central Valley Water Board staff concludes (pursuant to paragraph I.46.a., above) that there is a preliminary indication of a release, then the Discharger shall **immediately** notify Central Valley Water 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 and analyze them for the constituents that caused the need for the retest.
- 2) **Confirmation of a Release.** As soon as the retest data are available, the Discharger shall conclude that measurably significant evidence of a release is confirmed if (not including the original sample) two or more analytes equal or exceed their respective MDLs or if one or more analyte equals or exceeds its PQL. The Discharger shall then:
 - a) **Immediately** verbally notify the Central Valley Water Board whether or not the retest confirmed measurably significant evidence of a release for the analyte at the monitoring point, and follow up with written notification submitted by certified mail **within seven days** of the verbal notification; and
 - b) Carry out the requirements of Section J, **RESPONSE TO A RELEASE** if a release has been confirmed.
 - c) Add any five-year analyte that is confirmed per this method to the monitoring parameter list such that it is monitored during each regular monitoring event.

47. **Verification Procedure for Analytes Detected in 10% or Greater of the Background Samples.** The Discharger shall use either a statistical or non-statistical method pursuant to Title 27, section 20415(e)(8)(E) for all analytes that are detected in 10% or greater of the background samples. The Discharger shall use one of the statistical methods required in Title 27, section 20415(e)(8)(E) unless another method has been proposed by the Discharger in a Water Quality Protection Standard Report (or equivalent report) and approved by the Central Valley Water Board in a Monitoring and Reporting Program pursuant to Title 27, section 20415(e)(8)(A-D)] or section 20415(e)(8)(E). The method shall be implemented as follows:

- a. **Initial Determination of Measurably Significant Evidence of a Release.** The Discharger shall compare the value reported by the laboratory for each analyte to the statistically-derived concentration limit from the most recent report (Annual Monitoring Report or Water Quality Protection Standard Report) that uses the approved statistical procedure. If the value exceeds

the concentration limit for that constituent, the Discharger shall conclude that there is measurably significant evidence of a release [Title 27, § 20420(i)].

b. **Retest Method** [Title 27, § 20415(e)(8)(E) and § 20420(j)(1-3)].

- 1) In the event that the Discharger or Central Valley Water Board staff concludes (pursuant to paragraph I.47.a., above) that there is a preliminary indication of a release, then the Discharger shall **immediately** notify Central Valley Water Board staff by phone or e-mail and, within **30 days** [Title 27, § 20415(e)(3)] of such indication, the Discharger shall implement a verification procedure/retest option, in accordance with Title 27, sections 20415(e)(8)(E) and 20420(j)(2). The verification procedure shall include either a single “composite” retest (i.e., a statistical analysis that augments and reanalyzes the data from the monitoring point that indicated a release) or shall consist of at least two “discrete” retests (i.e., statistical analyses each of which analyzes only newly-acquired data from the monitoring point that indicated a release) [Title 27, § 20415(e)(8)(E)]. The Discharger may use an alternate method previously approved by the Central Valley Water Board and included in the Monitoring and Reporting Program. The verification procedure shall comply with the requirements of Title 27, section 20415(e)(8)(E) in addition to the performance standards of Title 27, section 20415(e)(9). The retest samples shall be collected from the monitoring point where the release is preliminarily indicated and shall be analyzed for the constituents that caused the need for the retest. For any indicated monitoring parameter or constituent of concern, if the retest results of one or more of the retest data suites confirm the original indication, the Discharger shall conclude that measurably significant evidence of a release has been confirmed.
- 2) **Confirmation of a Release.** As soon as the retest data are available, the Discharger shall evaluate the results pursuant to paragraph I.47.b.1, above and shall:
 - a) **Immediately** verbally notify the Central Valley Water Board whether or not the retest confirmed measurably significant evidence of a release for the analyte at the monitoring point, and follow up with written notification submitted by certified mail **within seven days** of the verbal notification; and
 - b) Carry out the requirements of Section J, **RESPONSE TO A RELEASE** if a release has been confirmed.
 - c) Add any five-year analyte that is confirmed per this method to the monitoring parameter list such that it is monitored during each regular monitoring event.

48. Physical Evidence of a Release. If the Discharger determines that there is a significant **physical** evidence of a release, the Discharger shall immediately verbally notify Central Valley Water Board staff and provide written notification **by certified mail within 7 days** of such determination, and within **90 days** shall submit an amended report of waste discharge to establish an Evaluation Monitoring Program [Title 27, § 20385(a)(3) and § 20420(l)(1) & (2)].

J. RESPONSE TO A RELEASE

1. Measurably Significant Evidence of a Release Has Been Confirmed. If the Discharger has confirmed that there is measurably significant evidence of a release from a waste management unit pursuant to Standard Monitoring Specification I.46 or I.47, then the Discharger shall:

- a. **Immediately** sample all monitoring points in the affected medium at that waste management unit and determine the concentration of all monitoring parameters and constituents of concern for comparison with established concentration limits. Because this constituent of concern scan does not involve statistical testing, the Discharger will need to collect and analyze only a single water sample from each monitoring point in the affected medium [Title 27, § 20420(k)(1)].
- b. **Within 14 days** of confirming measurably significant evidence of a release, the Discharger shall (for releases from MSW landfill units) notify all persons who own the land or reside on the land that directly overlies any portion of the plume of contamination if contaminants have migrated off-site if indicated by sampling of detection monitoring wells [40 C.F.R. § 258.55(g)(1)(iii)].
- c. **Within 90 days** of confirming measurably significant evidence of a release, the Discharger shall submit an amended report of waste discharge to establish an Evaluation Monitoring Program meeting the requirements of Title 27, sections 20420(k)(5)(A-D), including but not limited to the results of sampling pursuant to paragraph J.1.a, above. The Evaluation Monitoring Program shall be designed for the collection and analysis of all data necessary to assess the nature and extent of the release and to determine the spatial distribution and concentration of each constituent throughout the zone affected by the release [Title 27, § 20420(k)(5) and § 20425(b)]. For releases from MSW landfill units, the Evaluation Monitoring Program shall also include any additional proposals necessary to comply with 40 C.F.R. § 258.55, particularly the additional monitoring well required by 40 C.F.R. § 258.55(g)(1)(ii).
- d. **Within 180 days** of confirming measurably significant evidence of a release, the Discharger shall submit to the Central Valley Water Board an initial engineering feasibility study for a Corrective Action Program

necessary to meet the requirements of Title 27, section 20430. At a minimum, the initial engineering feasibility study shall contain a detailed description of the corrective action measures that could be taken to achieve background concentrations for all constituents of concern [Title 27, § 20420(k)(6)].

- e. If the Discharger confirms that there is measurably significant evidence of a release from the waste management unit at any monitoring point, the Discharger may attempt to demonstrate that a source other than the waste management unit caused the evidence of a release or that the evidence is an artifact caused by an error in sampling, analysis, or statistical evaluation or by natural variation in groundwater, surface water, or the unsaturated zone. The Discharger may make a demonstration pursuant to Title 27, section 20420(k)(7) in addition to or in lieu of submitting both an amended report of waste discharge or an engineering feasibility study; however, the Discharger is not relieved of the requirements and due dates of Title 27, sections 20420(k)(6) & (7) unless Central Valley Water Board staff agree that the demonstration successfully shows that a source other than the waste management unit caused the evidence of a release or that the evidence resulted from error in sampling, analysis, or statistical evaluation or from natural variation in groundwater, surface water, or the unsaturated zone. In order to make this demonstration, the Discharger shall notify the Central Valley Water Board by certified mail of the intent to make the demonstration **within seven days** of determining measurably significant evidence of a release, and shall submit a report **within 90 days** of determining measurably significant evidence of a release [Title 27, § 20420(k)(7)].
- f. **Within 90 days** of the date that the Evaluation Monitoring Program from paragraph J.1.c is approved (the date is it established), the Discharger shall complete and submit the following:
 - i) **Results and Assessment for the Evaluation Monitoring Program.** A report with the results and assessment based on the approved Evaluation Monitoring Program [Title 27, § 20425(b)].
 - ii) **Updated Engineering Feasibility Study.** An updated engineering feasibility study for corrective action based on the data collected to delineate the release and data from the ongoing monitoring program required under Title 27, section 20425(e) [Title 27, § 20425(c)].
 - iii) **Amended ROWD for a Corrective Action Program.** An amended report of waste discharge to establish a Corrective Action Program meeting the requirements of Title 27, section 20430 based on the data collected to delineate the release and based on the updated engineering feasibility study [Title 27, § 20425(d)].

- g. The Discharger shall (for releases from MSW landfill units) discuss the results of the updated engineering feasibility study, prior to the final selection of a remedy, in a public meeting with interested and affected parties [40 C.F.R. § 258.56(d)].

K. GENERAL PROVISIONS

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 Central Valley Water 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. 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 Central Valley Water 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.”

3. 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.
4. 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 post-closure maintenance period of the waste management units and during subsequent use of the property for other purposes.
5. 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 this Order.
6. The Discharger shall notify the Central Valley Water Board of a material change in; the types, quantity, or concentrations of wastes discharged; site operations and features; or proposed closure procedures, including changes in cost estimates. This notification shall be given a reasonable time before the changes are made or become effective. No changes shall be made without Central Valley Water Board approval following authorization for closure pursuant to the site Notification of Closure [Title 27, § 21710(a)(4)].
7. The Discharger shall maintain legible records of the volume and type of each waste discharged at each waste management unit or portion of a unit, and the manner and location of discharge. Such records shall be maintained by the Discharger until the beginning of the post-closure maintenance period. These records shall be on forms approved by the State Water Board or Central Valley Water Board and shall be maintained at the waste management facility until the beginning of the post-closure maintenance period. These records shall be available for review by representatives of the State Water Board or Central Valley Water Board at any time during normal business hours. At the beginning of the post-closure maintenance period, copies of these records shall be sent to the Central Valley Water Board [Title 27, § 21720(f)].

8. In the event of any change in landowner or the operator of the waste management facility, the Discharger shall notify the succeeding owner or operator in writing of the existence of this Order. A copy of that notification shall be sent to the Central Valley Water Board.
9. In the event of any change of ownership or responsibility for construction, operation, closure, or post-closure maintenance of the waste discharge facilities described in this Order, the Discharger shall notify the Central Valley Water Board prior to the effective date of the change and shall include a statement by the new Discharger that construction, operation, closure, or post-closure maintenance will be in compliance with this Order and any revisions thereof [Title 27, § 21710(c)(1)].
10. To assume ownership or operation under this Order, the succeeding owner or operator must apply in writing to the Central Valley Water 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 Central Valley Water Board, and a statement. The statement shall comply with the signatory requirements contained in General Provision K.2 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 Water Code. Transfer of this Order shall be approved or disapproved by the Central Valley Water Board.

L. STORM WATER PROVISIONS

1. New and existing Class III landfills shall be designed, constructed, operated, and maintained to prevent inundation or washout due to floods with a 100-year return period [Title 27, § 20260(c)].
2. New and existing Class II landfills shall be designed, constructed, operated, and maintained to prevent inundation or washout due to floods with a 100-year return period [Title 27, § 20250(c)].
3. The Discharger shall design storm water conveyance systems for Class III units for a 100-year, 24-hour storm event, and shall design storm water conveyance systems for Class II units for a 1,000-year, 24-hour storm event [Title 27, § 21750(e)(3)].
4. MSW landfills located in a 100-year floodplain shall demonstrate that the landfill unit will not restrict the flow of the 100-year flood, reduce the temporary water storage capacity of the floodplain, or result in washout of solid waste so as to pose a hazard to human health or the environment [40 C.F.R. § 258.11(a)].

5. Waste management units and their respective containment structures shall be designed and constructed to limit, to the greatest extent possible, ponding, infiltration, inundation, erosion, slope failure, washout, and overtopping under the precipitation conditions for the unit [Title 27, § 20365(a)].
6. Precipitation on landfills or waste piles which is not diverted by covers or drainage control systems shall be collected and managed through the LCRS, which shall be designed and constructed to accommodate the precipitation conditions for each class unit [Title 27, § 20365(b)].
7. Diversion and drainage facilities shall be designed, constructed, and maintained to [Title 27, § 20365(c)]:
 - a. accommodate the anticipated volume of precipitation and peak flows from surface runoff and under the precipitation conditions for the waste management unit:
 - b. effectively divert sheet flow runoff laterally, via the shortest distance, into the drainage and collection facilities;
 - c. prevent surface erosion;
 - d. control and intercept run-on, in order to isolate uncontaminated surface waters from water that might have come into contact with waste;
 - e. take into account:
 - i) for closed waste management units and for closed portions of units, the expected final contours of the closed unit, including its planned drainage pattern;
 - ii) for operating portions of waste management units other than surface impoundments, the unit's drainage pattern at any given time;
 - iii) the possible effects of the waste management unit's drainage pattern on and by the regional watershed;
 - iv) the design capacity of drainage systems of downstream and adjacent properties by providing for the gradual release of retained water downstream in a manner which does not exceed the expected peak flow rate at the point of discharge if there were no waste management facility; and
 - f. preserve the system's function. The Discharger shall periodically remove accumulated sediment from the sedimentation or detention basins as needed to preserve the design capacity of the system.

8. Collection and holding facilities associated with precipitation and drainage control systems shall be emptied immediately following each storm or otherwise managed to maintain the design capacity of the system [Title 27, § 20365(d)].
9. Surface and subsurface drainage from outside of a waste management unit shall be diverted from the unit [Title 27, § 20365(e)].
10. Cover materials shall be graded to divert precipitation from the waste management unit, to prevent ponding of surface water over wastes, and to resist erosion as a result of precipitation [Title 27, § 20365(f)].
11. Any drainage layer in the final cover shall be designed and constructed to intersect with the final drainage system for the waste management unit in a manner promoting free drainage from all portions of the drainage layer [Title 27, §20365(f)].

INFORMATION SHEET

ORDER NO. R5-2012-0075
COUNTY OF TULARE
WOODVILLE MUNICIPAL SOLID WASTE LANDFILL
CLASS III LANDFILL
CONSTRUCTION, OPERATION, CLOSURE, POSTCLOSURE MAINTENANCE,
AND CORRECTIVE ACTION
TULARE COUNTY

The County of Tulare (hereafter Discharger) owns and operates a municipal solid waste landfill (facility) about four miles northwest of Woodville in Tulare County.

The California Regional Water Quality Control Board (Central Valley Water Board) adopted Waste Discharge Requirements (WDRs) Order No. R5-2005-0121 on 18 October 2005, which classified waste management units IA and IB (Units IA and IB) as a Class III landfill as defined in Title 27, California Code of Regulations, section 20005 et seq. (hereafter Title 27), that accepts or accepted municipal solid waste. The proposed Order revises the existing WDRs to provide for construction of an expansion unit (Unit II) with an engineered alternative composite liner system, closure of Units IA, IB, and II with an engineered alternative final cover, postclosure maintenance, and to implement a corrective action program.

The 305-acre facility contains two existing, contiguous waste management units (units). Unit IA is unlined and covers 57 acres and Unit IB is constructed with an engineered alternative composite liner covering eight acres. The Discharger proposes to construct the 66.4-acre Unit II south of and contiguous with, Units IA and IB. Unit II will be classified as a Class III landfill in accordance with Title 27.

The facility is located on the westward dipping, eastern limb of the asymmetrical trough of the San Joaquin Valley. Sediments ranging in age from Jurassic to Holocene fill the trough. The site overlies a basement complex of pre-Tertiary age metasediments, plutonics, and ultramafics. Sequentially overlying the basement complex are approximately 1,000 to 3,500 feet of consolidated and unconsolidated Tertiary marine deposits, continental deposits, and unconsolidated Quaternary alluvium. Of significance to the site are the Quaternary age floodplain deposits of Lewis Creek, which consist of moderately permeable, interbedded, and laterally discontinuous poorly-sorted gravels, fine-to-medium-grained sands, sandy-silts, silts, and clay.

The first encountered groundwater ranges from about 97 feet to 136 feet below the native ground surface (bgs) depending on location and is unconfined. Groundwater elevations range from about 171 feet above mean sea level (MSL) to 210 feet MSL depending on location. The depth to groundwater fluctuates seasonally as much as 30 feet. Groundwater elevation data indicate that a groundwater depression exists beneath the facility. The groundwater gradient on all sides of the facility is generally toward the center of the facility.

The existing groundwater monitoring network for the units consists of four background groundwater monitoring wells and 24 detection groundwater monitoring wells. The detection groundwater monitoring wells will additionally be used to monitor the effectiveness of the corrective action program. All background and detection groundwater monitoring wells are screened in the unconfined groundwater zone.

A vadose monitoring system has been installed at the facility and consists of soil-pore gas monitoring wells located around the perimeter of Units IA and IB, and two pan lysimeters installed beneath the Unit IB leachate collection and removal system (LCRS) sumps and troughs. Additionally, multilevel landfill gas (LFG) probes have been constructed along the perimeter of Unit IA, and a single level LFG probe was constructed along the western boundary of Unit IA.

Organic compounds that are not naturally occurring have been detected in the unconfined groundwater zone along the western, northern, and northeastern points of compliance. The most frequently detected volatile organic compounds (VOCs) at concentrations above the laboratory Practical Quantitation Limit are dichlorodifluoromethane (Freon 12), tetrachloroethylene (PCE), 1,1-dichloroethane (1,1-DCA), trichloroethylene (TCE), 1,1-dichloroethylene (1,1-DCE), cis-1,2-dichloroethene (1,2-DCE), vinyl chloride, and trichlorofluoromethane (Freon 11).

Statistical analysis of inorganic waste constituents determined that bicarbonate exceeds its respective background concentration in groundwater.

Cleanup and Abatement Order 98-706 requires the Discharger to complete an evaluation monitoring program and establish a corrective action program in accordance with a time schedule. An evaluation monitoring program was completed in January 2008. The VOC plume was determined to extend a distance of three to five hundred feet on each side of the northern, northeastern, and western boundaries of Units IA and IB. The vertical extent of the VOC plume was determined to be a depth of approximately 253 feet bgs in the vicinity of groundwater monitoring well M-5D. The bicarbonate plume coincides with the lateral extent of the VOC plume. The vertical extent of the bicarbonate plume is approximately 185 feet deep along the western and northern boundaries of Units IA and IB and coincides with the vertical extent of the VOC plume.

A revised final engineering feasibility study for a corrective action program was submitted on 2 May 2009. The engineering feasibility study for a corrective action program proposed enhanced bioremediation of the VOC plume in groundwater by the injection of Regensis' 3-D MicroEmulsion Hydrogen Release Compound (HRC) into groundwater. The Discharger's proposed engineering feasibility study for a corrective action program was approved on 1 February 2012.

Title 27, section 20080(b) allows the Central Valley Water Board to consider the approval of an engineered alternative to the prescriptive standard liner design. In order to approve an engineered alternative in accordance with Title 27, sections 20080(c)(1) or (2), the Discharger was required to 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, section 20080(b) or would be impractical and would not promote attainment of applicable performance standards.

The Discharger adequately demonstrated that construction of a Subtitle D prescriptive standard liner would be unreasonably and unnecessarily burdensome when compared to the proposed engineered alternative design and would cost substantially more than the alternative design.

The Discharger demonstrated that the proposed engineered alternative is consistent with the performance goals of Title 27, section 20310(c), and affords at least equivalent protection against water quality impairment.

The engineered alternative base liner system for Unit II consists of the following in ascending order: 1) a compacted one-foot thick engineered subgrade; 2) a reinforced geosynthetic clay liner (GCL); 3) a 60-mil high density polyethylene (HDPE) geomembrane; 4) a geocomposite drainage layer comprising a blanket LCRS; and 5) a two-foot thick operations layer. The components of the side slope liner for Unit II consist of the following in ascending order: 1) a prepared subgrade; 2) a reinforced GCL; 3) a 60-mil HDPE geomembrane, textured side down; and 4) a two-foot thick operations layer.

A separation liner system will be placed in the transition area between Unit IA and Unit II and consists of the following components in ascending order: 1) a two-foot thick prepared foundation layer of soils; 2) a geocomposite drainage layer; 3) a 60-mil linear low density polyethylene (LLDPE) geomembrane, textured on both sides; and 4) a two-foot thick operations soil layer.

The Discharger submitted a *Final Closure and Postclosure Maintenance Plan* (as part of a JTD) for closure and postclosure maintenance of unlined Unit IA, composite-lined Unit IB, and future composite-lined Unit II at the facility on 26 February 2010. The Discharger demonstrated that the proposed water balance/evaporation final cover (ET final cover) meets the performance goals of Title 27. Staff determined that the final closure and postclosure maintenance plan complied with the provisions of Title 27, section 21090 and was approved on 16 June 2010.

The proposed engineered alternative final cover for Units IA, IB, and Unit II (future) consists of an ET final cover consisting of four feet of on-site soils. A pan lysimeter will be placed beneath the ET final cover at a location where storm water percolation will be at a maximum and runoff at a minimum (top deck). The pan lysimeter will be used to monitor the performance of the ET final cover.

The Tulare County Public Works Department (Lead Agency) certified the final environmental impact report for the facility on 24 December 1996. A Notice of Determination was filed on 24 September 1996 in accordance with the California Environmental Quality Act (Public Resources Code section 21000 et seq.) and CEQA guidelines (Title 14, section 15000 et seq.). The Central Valley Water Board considered the environmental impact report and incorporated mitigation measures from the environmental impact report into these WDRs designed to prevent potentially significant impacts to design facilities and to water quality.

This order requires full containment of wastes and does not permit degradation of surface water or groundwater. Further, antidegradation analysis is therefore not needed. The discharge is consistent with the antidegradation provisions of State Water Resources Control Board Resolution 68-16.

**Regional Water Quality Control Board
Central Valley Region
Board Meeting – 1/2/3 August 2012**

**Response to Written Comments for County of Tulare
Woodville Municipal Solid Waste Landfill
Tulare County
Tentative Waste Discharge Requirements**

At a public hearing scheduled for 1/2/3 August 2012, the Central Valley Regional Water Quality Control Board (Central Valley Water Board) will consider adopting waste discharge requirements that revise the existing waste discharge requirements to provide for construction of an expansion waste management unit with an engineered alternative composite liner system, closure and postclosure maintenance, and to initiate a corrective action program. This document contains responses to substantive comments received from interested parties regarding the proposed Order circulated on 16 May 2012. Written comments from interested parties were required by public notice to be submitted to the Central Valley Water Board by noon on 16 June 2012 to receive full consideration. Comments were received by the due date from:

1. County of Tulare

The substantive comments are summarized below, followed by Central Valley Water Board staff responses.

COUNTY OF TULARE

COMMENT: The Discharger requested that the cost estimate amount to close Units IA, IB, and II in Finding No. 76 of the Tentative waste discharge requirements (WDRs) be revised from \$16,802,010 to \$7,556,190 since the \$16,802,010 amount was based on a more costly previous final cover design than the evapotranspiration final cover design currently included in the Tentative WDRs. Additionally, the Discharger requested that the 2011 balance of the closure fund be revised \$3,867,020.

RESPONSE: The cost of constructing an evapotranspiration final cover over Units IA, IB, and II in lieu of the previously proposed engineering alternative final cover will significantly reduce the cost of closure. Therefore, the cost estimate amount of \$7,556,190 appears adequate. The proposed 2011 closure fund balance of \$3,867,020 is based on the closure of Units IA and IB in 2019. The anticipated final closure of Unit II, which has not yet been built, will be in 2045, allowing for the time necessary to increase the balance of the closure fund to \$7,556,190. Finding No. 76 of the Tentative WDRs has been revised as requested.

COMMENT: The Discharger noted that the cost estimate amount for postclosure maintenance of Units IA, IB, and II in Finding No. 77 of the Tentative WDRs should be revised from \$1,186,640 to \$6,490,207 since the \$1,186,640 amount was based on a previous postclosure maintenance plan and not the postclosure maintenance plan currently reflected in the Tentative WDRs.

RESPONSE: Finding No. 77 of the Tentative WDRs has been revised.

COMMENT: The Discharger requested that the 28 September 2012 date for implementing corrective action in Corrective Action Program Specification F.1 of the Tentative WDRs be revised to from 28 September 2012 to 31 December 2012 since more than 60 days would be needed to consult with the Hydrogen Release Compound (HRC) manufacturer, procure the delivery of HRC, and schedule staff/equipment to apply HRC to groundwater.

RESPONSE: Corrective Action Program Specification F.1 of the Tentative WDRs has been revised as requested. Additionally, Provision F.7.1 of the Tentative WDRs has been revised to reflect the date of 31 December 2012 for implementing corrective action.

COMMENT: The Discharger requested that the information required under Reporting B.1 – B.3 of the Tentative monitoring and reporting program (MRP) be submitted exclusively in a digital format.

RESPONSE: The requested revision was not made since the Central Valley Water Board is currently not in a position to handle such information exclusively in a digital format. Therefore, the submission of the information in Reporting B.1– B.3 of the Tentative MRP in paper and digital formats will continue to be required. Raw laboratory data to support the information required by Reporting B.1– B.3 of the Tentative MRP may be submitted solely in a digital format.

COMMENT: The Discharger asks whether the requirement for well hydrographs under Required Reports 2.d of the Tentative MRP replaces the requirement for groundwater contour maps that were submitted in semiannual self-monitoring reports.

RESPONSE: The intent of Required Reports 2.d was not to replace the requirement for contour maps. Groundwater contour maps are necessary to evaluate groundwater flow directions and gradients within and adjacent to the facility boundaries and will continue to be required in semiannual self-monitoring reports. The Groundwater Monitoring section of the Tentative MRP has been revised to require that groundwater contour maps be included in semiannual self-monitoring reports.

COMMENT: The Discharger contends that Items B.2.e and B.2.j under Annual Monitoring Report of the Tentative MRP seem to accomplish the same goal and asks how they are different?

RESPONSE: Items B.2.e and B.2.j under Annual Monitoring Report of the Tentative MRP have not been changed. Item B.2.e requires a comprehensive discussion of any corrective action measures (e.g. cover erosion repair, drainage system repair, monitoring well repair or replacement, cover grading, etc.) necessary for the entire facility to maintain compliance with the WDRs. The discussion required by Item B.2.j is specific to the groundwater corrective action program.

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION
1685 E Street, Fresno, California 93706

PUBLIC HEARING
concerning

**WASTE DISCHARGE REQUIREMENTS
COUNTY OF TULARE
FOR
WOODVILLE MUNICIPAL SOLID WASTE LANDFILL
CLASS III LANDFILL
CONSTRUCTION, OPERATION, CLOSURE, POSTCLOSURE MAINTENANCE, AND
CORRECTIVE ACTION
TULARE COUNTY**

The County of Tulare (hereinafter Discharger) owns and operates the Woodville Municipal Solid Waste Landfill (facility) about four miles northwest of Woodville. The facility is currently regulated by Waste Discharge Requirements Order R5-2005-0102. The existing and future landfill area is approximately 305-acres. The existing landfill contains an unlined waste management unit (Unit) covering 57 acres (Unit IA) and a composite-lined Unit covering eight acres (Unit IB). The proposed order revises Order R5-2005-0102 to provide for changes in the monitoring and reporting program, allow for future expansion, allow for closure and postclosure maintenance, and implement corrective action.

A public hearing concerning this matter will be held during the Central Valley Regional Water Quality Control Board (Central Valley Water Board) meeting, which is scheduled for:

DATE: August 1, 2, and 3, 2012
TIME: 9:00 a.m.
PLACE: Regional Water Quality Control Board, Central Valley Region
11020 Sun Center Drive #200
Rancho Cordova, CA 95670-6114

The designated parties for this hearing are as follows:

- County of Tulare

Designated parties, but not interested persons, will have these rights: to call and examine witnesses; to cross-examine opposing witnesses; to impeach any witness; and to rebut the evidence against him or her. Central Valley Water Board staff will prepare the administrative record, and may present evidence, make an oral presentation, and cross-examine opposing witnesses.

Interested persons may not cross examine witnesses, and will not be subject to cross examination. Interested persons may submit evidence (e.g., photographs, eye-witness testimony, monitoring data) if the evidence is submitted in accordance with the deadlines for

submitting evidence described below. Interested persons who present evidence may be subject to cross-examination. Interested persons may request status as a designated party for purposes of this hearing by submitting such request in writing to the Central Valley Water Board no later than **26 June 2012**. The request must explain the basis for status as a designated party and in particular how the person is affected by the discharge.

The tentative Waste Discharge Requirements were issued on 24 May 2012. Persons wishing to comment on this item must submit testimony, evidence, if any, and/or comments in writing to the Central Valley Water Board no later than by noon on **26 June 2012**. Written materials submitted after noon on the above date will not be accepted and will not be incorporated into the administrative record absent a ruling by the Central Valley Water Board Chair. A party requesting to submit late materials must demonstrate good cause for the late submission, and the Central Valley Water Board Chair must find that the late submission would not prejudice the Central Valley Water Board or any designated party.

All designated parties and interested persons may speak at the Central Valley Water Board meeting, and are expected to orally summarize their written submittals. Oral testimony and cross examination will be limited in time by the Central Valley Water Board Chair. Both designated parties and interested persons may be asked to respond to clarifying questions from Central Valley Water Board members, counsel staff or others, at the discretion of the Central Valley Water Board.

Anyone having questions on tentative waste discharge requirements should contact Scott Moore at (559) 445-5170. Interested parties may download the proposed Order and related documents from the Central Valley Water Board's Internet website at http://www.waterboards.ca.gov/centralvalley/board_decisions/tentative_orders/. Copies of these documents can also be obtained by contacting or visiting the office of the Central Valley Water Board at 1685 E Street, Fresno, California, 93706, weekdays between 8:00 a.m. and 5:00 p.m. by appointment.

The final meeting agenda will be available at http://www.waterboards.ca.gov/board_info/agendas/ at least ten days before the meeting. The agenda will provide the dates the Central Valley Water Board meeting will be held, indicate the anticipated order of agenda items, and may include staff revisions to the proposed order(s).

The procedures governing Central Valley Water Board meetings may be found at Title 23, California Code of Regulations, Section 647 et seq. and are available upon request. Hearings before the Central Valley Water Board are not conducted pursuant to Government Code section 11500 et seq. The procedures may be obtained by accessing http://www.waterboards.ca.gov/laws_regulations/. Information on meeting and hearing procedures is also available on the Central Valley Water Board's website at http://www.waterboards.ca.gov/centralvalley/board_info/meetings/mtgprocd.shtml or by contacting any one of the Central Valley Water Board's offices. Questions regarding such procedures should be directed to Ms. Kiran Lanfranchi-Rizzardi at (916) 464-4839.

NOTICE OF PUBLIC HEARING
WOODVILLE MUNICIPAL SOLID WASTE LANDFILL
TULARE COUNTY

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The hearing facilities will be accessible to persons with disabilities. Individuals requiring special accommodations are requested to contact Ms. Kiran Lanfranchi-Rizzardi at (916) 464-4839 at least 5 working days prior to the meeting. TTY users may contact the California Relay Service at 1-800-735-2929 or voice line at 1-800-735-2922.

Please bring the above information to the attention of anyone you know who would be interested in this matter.

Original signed by:

CLAY L. RODGERS, Assistant Executive Officer

5/24/2012