

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. R5-2012-XXXX

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-XXXX 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-XXXX.

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 Regenesys' 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 overlie 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-feet 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 Regensis' 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 discharge 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-XXXX" 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-XXXX (MRP R5-2012-XXXX).
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-XXXX, 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-XXXX, 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-XXXX, 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-XXXX.

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-XXXX 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-XXXX 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-XXXX.
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 _____.

PAMELA C. CREEDON, Executive Officer