

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. R5-2012-0011

WASTE DISCHARGE REQUIREMENTS
FOR
COUNTY OF KERN
FOR
OPERATION AND CONSTRUCTION
SHAFTER-WASCO SANITARY LANDFILL
KERN COUNTY

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

1. The County of Kern (hereafter Discharger) owns and operates a municipal solid waste landfill about seven miles west of the City of Shafter, in Section 8, T28S, R24E, MDB&M, as shown in Attachment A, which is incorporated herein and made part of this Order by reference.
2. The 357-acre waste management facility contains one existing waste management unit (Unit) covering approximately 91 acres. The Unit consists of three contiguous modules: one 48-acre unlined module (Module One), one 22-acre composite-lined module (Module Two), and one 18-acre composite-lined module (Module Three), as 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) 088-100-08, 088-100-38, and 088-100-40.
3. On 18 October 2002, the Central Valley Water Board adopted Order No. R5-2002-0179, which classified the Unit as a Class III landfill as defined in Title 27, CCR Section 20005, et seq. (Title 27).
4. Waste Discharge Requirements (WDRs) need to be revised to provide for construction of new waste management cells with an engineered alternative composite liner system, acceptance of treated wood waste, and to initiate a corrective action plan.

SITE DESCRIPTION

5. The measured hydraulic conductivity of the native soils underlying the Unit ranges between 2.4×10^{-3} and 1.8×10^{-5} centimeters per second (cm/sec).
6. A Class III landfill must be designed to withstand the maximum probable earthquake (MPE). The MPE is calculated using historic seismic activity within 100 kilometers of the Unit. The closest Holocene fault is the Edison Fault located approximately 18 kilometers to the east. The MPE for the Edison Fault has a magnitude of 6.7. The San Andreas

Fault is located about 42 kilometers to the southwest of the Unit and has a MPE of magnitude 8.25. The MPE for the San Andreas Fault would generate the highest peak horizontal ground acceleration at 0.38g.

7. The waste management facility is located in the southern portion of the San Joaquin Valley geomorphic province. The San Joaquin Valley is a structural trough in which several thousands of feet of sediments have been deposited. The sources of the sediments are the Sierra Nevada to the east and the Coast Ranges to the west. The predominant soils beneath the waste management facility are the Milham sandy-loam; which is a deep, well-drained soil developed on alluvial fans, plains, and low terraces. Milham sandy-loam is typically 35 to 60 per cent sand.
8. Land within 1,000 feet of the facility is used for irrigated agriculture.
9. The facility receives an approximate average of six inches of precipitation per year based on data from the State of California, Department of Water Resources Bulletin No. 195; as reported in the Joint Technical Document. The mean pan evaporation is 73.4 inches per year as measured at the United States Department of Agriculture Cotton Experiment Station in Shafter.
10. The 100-year, 24-hour precipitation event is estimated to be less than 2 inches, based on the rainfall Isohyetal Map of the Kern County Hydrology Manual.
11. The waste management facility is not within a 100-year flood plain based on the Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Map, Community-Panel Number 700-2075.
12. There are seven municipal, domestic, industrial, or agricultural groundwater supply wells known to be within one mile of the site. No surface springs, seeps or perennial surface flows are located within the boundaries of or adjacent to the landfill.

WASTE CLASSIFICATION AND UNIT CLASSIFICATION

13. The Discharger disposes of municipal and industrial solid wastes, which are classified as "nonhazardous solid waste" or "inert waste" suitable for discharge to a Class III landfill as defined in Section 20164 of Title 27. Nonhazardous solid waste includes municipal solid wastes, as referred to in Title 40 Code of Federal Regulations, Part 258.2.
14. The site characteristics where the Unit is located (see Finding No. 5) do not meet the siting criteria for a Class III landfill contained in §20260(a) and (b)(1) of Title 27. As such, the site is not suitable for operating new Units or lateral expansions of existing Units for the discharge and containment of wastes described in Finding No. 13, without the construction of additional waste containment features in accordance with §20260(b)(2) of Title 27 and State Water Resources Control Board Resolution No. 93-62.

15. The Discharger proposes to discharge/continue to discharge treated wood waste in the composite-lined units at the landfill. Title 22, CCR defines “treated wood” to mean wood that has been treated with a chemical preservative for purposes of protecting the wood against attacks from insects, microorganisms, fungi, and other environmental conditions that can lead to decay of the wood, and the chemical preservative is registered pursuant to the Federal Insecticide, Fungicide, and Rodenticide Act (7 U.S.C. Sec. 136 and following) (FIFRA). This may include but is not limited to waste wood that has been treated with chromated copper arsenate (CCA), pentachlorophenol, creosote, acid copper chromate (ACC), ammoniacal copper arsenate (ACA), ammoniacal copper zinc arsenate (ACZA), or chromated zinc chloride (CZC).
16. Title 22 Section 67386.11 allows treated wood waste to be disposed in a composite-lined portion of a Municipal Solid Waste landfill that is regulated by WDRs issued pursuant to the California Water Code provided that the landfill owner/operator:
 - a. Comply with the prohibitions in Title 22 Section 67386.3, which are:
 - i. Treated wood waste shall not be burned, scavenged, commingled with other waste prior to disposal, stored in contact with the ground, recycled without treatment (except as in iii, below), treated except in compliance with Section 67386.10, or disposed to land except in compliance with Section 67386.11.
 - ii. Any label or mark that identifies the wood and treated wood waste shall not be removed, defaced, or destroyed.
 - iii. Treated wood waste may be recycled only by reuse when all of the following apply:
 - (1) Reuse is on-site.
 - (2) Reuse is consistent with FIFRA approved use of the preservative.
 - (3) Prior to reuse, treated wood waste is handled in compliance with Title 22, Division 4.5, Chapter 34.
 - b. Ensure treated wood waste is managed at the landfill according to Title 22, Division 4.5, Chapter 34 prior to disposal.
 - c. Monitor the composite-lined portions of the landfill for a release and, if a verified release is detected from the portion of the Unit where treated wood is disposed, the disposal of treated wood will be terminated at the Unit with the verified release until corrective action ceases the release.
 - d. Handle treated wood waste in a manner consistent with the applicable sections of the California Occupational Safety and Health Act of 1973.

SURFACE WATER AND GROUNDWATER CONDITIONS

17. The *Water Quality Control Plan for the Tulare Lake Basin*, Second Edition, revised January 2004 (hereafter Basin Plan), designates beneficial uses, establishes narrative and numerical water quality objectives, contains implementation plans and policies for protecting all waters of the Basin, and incorporates, by reference, plans and policies of the State Water Board.
18. Surface drainage is toward Jerry Slough in the Semitropic Hydrologic Area (558.70) of the Tulare Lake Basin.
19. The landfill is on the floor of the southern San Joaquin Valley. The designated beneficial uses of Valley Floor Waters, 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.
20. The facility is in the Kern County Basin Hydrologic Unit, Detailed Analysis Unit (DAU) 255. The designated beneficial uses of the groundwater, as specified in the Basin Plan for DAU 255, are municipal and domestic water supply, agricultural supply, industrial service supply, and wildlife habitat.
21. The first encountered groundwater, occurring in a perched water-bearing zone, is about 60 to 74 feet below the native ground surface. Groundwater elevations in the perched water-bearing zone range from approximately 227 to 236 feet mean sea level (MSL). The groundwater in the perched water-bearing zone is unconfined. Depth to groundwater in the perched water-bearing zone fluctuates seasonally as much as three feet. Additionally, perched groundwater elevations have decreased as much as 10 feet in the last seven years.
22. Monitoring data indicates background groundwater quality in the perched water-bearing zone has a specific electrical conductivity (EC) ranging between 1,270 and 2,560 micromhos/cm, with total dissolved solids (TDS) ranging between 840 and 1,800 milligrams per liter (mg/l).
23. The direction of groundwater flow in the perched water-bearing zone was consistently toward the northeast, until 2005. Since then, the flow direction has shifted to the east. The average groundwater gradient is approximately 0.002 feet per foot. The average groundwater velocity is 18 feet per year.
24. Underlying the perched water-bearing zone is the regional unconfined aquifer. Only one monitoring well (SW1-06) is completed in the regional unconfined aquifer. Depth to

groundwater in the regional unconfined aquifer has been measured from 252 to 299 feet below native ground surface. Groundwater elevations have ranged from approximately 44 feet above MSL to three feet below MSL. Because only one well has been completed into the regional unconfined aquifer, the site-specific direction of groundwater flow and gradient are unknown. According to studies conducted by the Discharger's consultant, the direction of groundwater flow in the regional unconfined aquifer is toward the northwest.

DETECTION MONITORING PROGRAM

25. The existing groundwater detection monitoring system consists of 21 monitoring wells. Monitoring wells SW1-02, SW1-03, SW1-11, SW1-12, SW1-16, SW1-20, SW2-01, and SW2-02 are used to collect background water quality data in the perched water-bearing zone. Monitoring wells SW1-01, SW1-04, SW1-07, SW1-08, SW1-09, SW1-10, SW1-13, SW1-14, SW1-18, SW1-19, SW1-21, SW1-22, and SW1-23 are used to collect water quality data in the perched water-bearing zone downgradient of the Unit. Monitoring well SW1-06 is used to monitor the regional unconfined aquifer north of the Unit.
26. Section 20415(d) of Title 27 requires the Discharger to establish an unsaturated zone monitoring system for the Unit that is capable of collecting soil moisture samples.
27. Module One was constructed prior to the adoption of requirements for unsaturated zone monitoring and it is infeasible to retrofit Module One with an unsaturated monitoring zone system.
28. The unsaturated zone monitoring system for Modules Two and Three consists of three pan lysimeters, one under each leachate collection and removal system (LCRS) sump. Soil moisture has not been detected in the unsaturated zone monitoring system for Modules Two and Three.
29. This Order requires an unsaturated zone monitoring system consisting of a pan lysimeter constructed beneath the LCRS of any future expansion of the Unit.
30. The existing detection monitoring program for groundwater at this Unit satisfies the requirements contained in Title 27.
31. Volatile organic compounds (VOCs) are often detected in a release from a landfill, and are the primary waste constituents detected in groundwater beneath a municipal solid waste landfill. Since 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.
32. Title 27 CCR Sections 20415(e)(8) and (9) provide for the non-statistical evaluation of monitoring data that will provide the best assurance of the earliest possible detection of a

release from a Unit in accordance with Title 27 CCR Section 20415(b)(1)(B)2.-4. However, Title 27 CCR does not specify a specific method for non-statistical evaluation of monitoring data.

33. The Central Valley Water Board may specify a non-statistical data analysis method pursuant to Title 27 CCR Section 20080(a)(1). Section 13360(a)(1) of the California Water Code allows the 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.
34. In order to provide the best assurance of the earliest possible detection of a release of non-naturally occurring waste constituents from a Unit, this Order specifies a non-statistical method for the evaluation of monitoring data.
35. The specified non-statistical method for evaluation of monitoring data provides two criteria (or triggers) for making the determination that there has been a release of non-naturally occurring waste constituents from a Unit. The presence of two non-naturally occurring waste constituents above their respective method detection limit (MDL), or one non-naturally occurring waste constituent detected above its practical quantitation limit (PQL), indicates that a release of waste from a Unit has occurred. Following an indication of a release, verification testing will be conducted to determine whether there has been a release from the Unit, or there is a source of the detected constituents other than the landfill, or the detection was a false detection. Although the detection of one non-naturally occurring waste constituent above its MDL is sufficient to provide for the earliest possible detection of a release, the detection of two non-naturally occurring waste constituents above the MDL as a trigger is appropriate due to the higher risk of false-positive analytical results and the corresponding increase in sampling and analytical expenses from the use of one non-naturally occurring waste constituent above its MDL as a trigger.

GROUNDWATER DEGRADATION AND CORRECTIVE ACTION

36. Organic compounds that are not naturally occurring have been detected in groundwater along the point of compliance since 1992. The six most frequently detected VOCs at concentrations greater than the laboratory Practical Quantitation Limit are: dichlorodifluoromethane (Freon 12); 1,1-dichloroethane; 1,2-dichloropropane (1,2-DCP); tetrachloroethene (PCE); trichloroethene (TCE); and trichlorofluoromethane (Freon 11). PCE has been consistently detected in monitoring wells SW1-04 at concentrations exceeding the primary Maximum Contaminant Level of 5 micrograms per liter for drinking water, established by the State of California, Department of Health Services, at the point of compliance.

37. A Water Quality Protection Standard has been established for the Unit. The concentration limits for the constituents of concern are listed on Table V of Monitoring and Reporting Program No. R5-2012-0011.
38. The Discharger completed an Evaluation Monitoring Program for the release of waste constituents to the groundwater. The nature of the release was demonstrated to be volatile organic compounds that originated from landfill gas. The extent of the release is a plume approximately 1,800 feet wide, 4,000 feet long, and 80 feet deep. The plume extends from the Unit approximately 1,800 feet beyond the boundary of the waste management facility to the east.
39. The release consists of Freon 12; 1,1-dichloroethane; 1,2-DCP; PCE; TCE; and Freon 11 from the migration of landfill gas to the groundwater.
40. The Discharger completed an Engineering Feasibility Study in accordance with Section 20425(c) of Title 27. The Engineering Feasibility Study concluded that the most technically and economically feasible corrective action alternative is monitored natural attenuation in conjunction with landfill gas extraction.
41. Monitoring and Reporting Program No. R5-2012-0011 requires the Discharger to monitor the release of waste constituents and the progress of corrective action in accordance with a Corrective Action Plan approved by the Executive Officer.

CONSTRUCTION AND ENGINEERED ALTERNATIVE

42. On 17 June 1993, the State Water Resources Control Board adopted Resolution No. 93-62 implementing a State Policy for the construction, monitoring, and operation of municipal solid waste landfills that is consistent with the federal municipal solid waste regulations promulgated under Title 40, Code of Federal Regulations, Part 258 (Subtitle D).
43. Resolution No. 93-62 requires the construction of a specified composite liner system at new municipal solid waste landfills, or expansion areas of existing municipal solid waste landfills, that receive wastes after 9 October 1993.
44. Resolution No. 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 No. 93-62 requires that the engineered alternative liner systems be of a composite design similar to the prescriptive standard.
45. Section 20080(b) of Title 27 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 Sections 20080(c)(1) or (2) of Title 27, 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 Section 20080(b) of Title 27, 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 Section 20080(b)(2) of Title 27.

46. Section 13360(a)(1) of the California Water Code 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.
47. The Discharger proposes to construct a waste containment system which will be designed, constructed, and operated to prevent degradation of waters of the state during disposal operations, closure, and the post-closure maintenance period in accordance with the criteria set forth in Title 27 for a Class III waste management unit.
48. The proposed engineered alternative waste containment system consists of, from the bottom up:
 - a. Twelve-inch thick prepared subgrade for the bottom liner;
 - b. Prepared subgrade for the side slopes;
 - c. 30-mil thick high-density polyethylene (HDPE) geomembrane;
 - d. Geosynthetic clay liner (GCL);
 - e. 60-mil thick HDPE geomembrane;
 - f. 12-inch granular leachate drainage layer; and
 - g. three-foot soil operations layer.
49. Side slope liners are proposed to be constructed of the same materials and in the same sequence and manner as the bottom liner system, with the exception of the subgrade. It will be prepared in an appropriate manner using accepted engineering and construction methods so as to provide a surface that is smooth and free of rocks, sticks, and other debris that could damage or otherwise limit the performance of the geosynthetic clay layer and/or geomembrane, and certified in accordance with this Order and the approved Construction Quality Assurance (CQA) Plan.

50. The thickness and the construction criteria of the prepared subgrade for the bottom liner and the thickness of the operations layer were specified to address the following concerns:

- The barrier portion of the proposed liner design (the two geomembranes and the GCL) would be less than 0.5 inches thick. The thickness of the proposed liner design makes it vulnerable to damage during construction and during the placement of wastes.
- The vadose zone does not offer substantial protection for the groundwater. The bottom of the proposed expansion will be approximately 25 feet above the highest anticipated groundwater elevation.
- Groundwater is degraded from the existing unlined portion of the landfill.

51. The Discharger demonstrated that the proposed liner system will meet the performance goal contained in Section 20310 of Title 27. The demonstration utilized a computer model to predict the performance of the proposed liner design and the fate and transport of a release of waste constituents from the lined portion of the Unit.

52. Construction will proceed only after all applicable construction quality assurance plans have been approved by the Executive Officer.

CEQA AND OTHER CONSIDERATIONS

53. The Kern County Board of Supervisors certified the final environmental impact report for the facility on 29 September 2009. The Kern County Clerk filed a Notice of Determination on 12 October 2009 in accordance with the California Environmental Quality Act (Public Resources Code Section 21000 et seq.) and CEQA guidelines (14 CCR 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.

54. The final environmental impact report states that the potential significant impacts identified in the geology and soils section (related to exposure of people or structures to adverse effects resulting from seismic shaking) and the hydrology and water quality section (related to violation of water quality standards) would be reduced to less than significant by mitigation. The final environmental impact report includes mitigation measures related to geology, hydrology, and water quality.

55. The Central Valley Water Board, acting as a CEQA-responsible agency in compliance with CCR, Title 14, Section 15096, Subdivision (g)(2), evaluated the significant and potentially significant impacts to geology and water quality identified in the final

environmental impact report. The mitigation measures include requirements for landfill construction to be designed and built to withstand the maximum probable earthquake and to comply with the WDRs to mitigate the existing groundwater impact and any future groundwater impact. The Central Valley Water Board finds that these mitigation measures for significant and potentially significant geology and water quality impacts in the final environmental impact report, supplemented with the provisions in this Order, are adequate to reduce the impacts to less than significant levels.

56. This order implements:

- a. *The Water Quality Control Plan for the Tulare Lake Basin, Second Edition;*
- b. The prescriptive standards and performance goals of Chapters 1 through 7, Subdivision 1, Division 2, Title 27, of the California Code of Regulations, effective 18 July 1997, and subsequent revisions;
- c. State Water Resources Control Board Resolution No. 93-62, *Policy for Regulation of Discharges of Municipal Solid Waste*, adopted 17 June 1993, and revised on 21 July 2005.

57. This Order is consistent with the prescriptive standards and performance criteria of RCRA Subtitle D, Part 258.

58. Section 13267(b) of California Water Code provides that: *In conducting an investigation specified in subdivision (a), the regional board may require that any person who has discharged, discharges, or is suspected of 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 regional 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.*

59. The technical reports required by this Order and attached Monitoring and Reporting Program No. R5-2012-0011 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.

60. 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 as permitted is consistent with the antidegradation provisions of State Water Resources Control Board Resolution No. 68-16.

PROCEDURAL REQUIREMENTS

61. 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.
62. The Central Valley Water Board, in a public meeting, heard and considered all comments pertaining to the discharge.
63. Any person affected by this action of the Central Valley Water Board may petition the State Water Resources Control Board to review the action in accordance with Sections 2050 through 2068, Title 23, California Code of Regulations. The petition must be received by the State Water Resources Control Board, Office of Chief Counsel, P.O. Box 100, Sacramento, California 95812, within 30 days of the date of issuance of this Order. Copies of the laws and regulations applicable to the filing of a petition are available on the Internet at http://www.waterboards.ca.gov/laws_regulations/index.shtml and will be provided on request.

IT IS HEREBY ORDERED, pursuant to Sections 13263, 13267, and 13304 of the California Water Code, that Order No. R5-2002-0179 is rescinded and that the County of Kern, 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 Title 23, California Code of Regulations, Section 2510 et seq., and 'designated waste' is as defined in Title 27.
2. The discharge of wastes outside of a Unit or portions of a Unit specifically designed for their containment is prohibited.
3. The discharge of waste to a closed Unit is prohibited.
4. The discharge of waste constituents to the unsaturated zone or to groundwater is prohibited.
5. The discharge of solid or liquid waste or leachate to surface waters, surface water drainage courses, or groundwater is prohibited.

B. DISCHARGE SPECIFICATIONS

1. The discharge shall not cause the release of pollutants, or waste constituents in a manner which could cause a condition of nuisance, degradation, contamination, or pollution of groundwater to occur, as indicated by the most appropriate statistical or nonstatistical data analysis method and retest method listed in this Order, the Monitoring and Reporting Program, or the Standard Provisions and Reporting Requirements.
2. The discharge of solid waste, liquid waste, leachate, or waste constituents shall neither cause nor contribute to any degradation, contamination, pollution, or nuisance to surface waters, ponded water, or surface water drainage courses.
3. The discharge shall not cause any increase in the concentration of waste constituents in soil-pore gas, soil-pore liquid, soil, or other geologic materials outside of the Unit if such waste constituents could migrate to waters of the State — in either the liquid or the gaseous phase — and cause a condition of nuisance, degradation, contamination, or pollution.
4. The waste discharged to the initial three feet of all new waste management units or any expansion of the existing waste management unit, as measured from the top of the operations layer of the liner system, shall consist only of “packer waste”, excluding waste that would pose a danger of physical damage to the liner system.
5. The Discharger shall discharge treated wood wastes only to the portions of the Units equipped with a composite liner system and a leachate collection and removal system. If a verified release is detected from the portions of the Unit where treated wood is discharged, the disposal of treated wood shall be terminated at the Unit with the verified release until corrective action ceases the release.
6. The Discharger shall manage treated wood waste in accordance with California Health and Safety Code Sections 25143.1.5 and 250150.7 and shall comply with all prohibitions listed in Title 22 Section 67386.3.
7. The Discharger shall, in a timely manner, remove and relocate any wastes discharged at this facility in violation of this Order.

C. FACILITY SPECIFICATIONS

1. The Discharger shall immediately notify the Central Valley Water Board of any flooding, unpermitted discharge of waste off-site, equipment failure, slope failure, or other change in site conditions which could impair the integrity of waste, or leachate containment facilities, or precipitation and drainage control structures.

2. Water used for facility maintenance shall be limited to the minimum amount necessary for dust control and construction.
3. The Discharger shall maintain in good working order any facility, control system, or monitoring device installed to achieve compliance with the waste discharge requirements.
4. Methane and other landfill gases shall be adequately vented, removed from the Unit, or otherwise controlled to prevent the danger of adverse health effects, nuisance conditions, degradation, or the impairment of the beneficial uses of surface water or groundwater due to migration through the unsaturated zone.
5. Surface drainage within the waste management facility shall either be contained on-site or be discharged in accordance with applicable storm water regulations.
6. The Discharger shall maintain a Storm Water Pollution Prevention Plan and Monitoring Program and Reporting Requirements in accordance with State Water Resources Control Board Order No. 97-03-DWQ, or retain all storm water on-site, until closure of the landfill is complete and approved.
7. Annually, prior to the anticipated rainy season, any necessary erosion control measures shall be implemented, and any necessary construction, maintenance, or repairs of precipitation and drainage control facilities shall be completed to prevent erosion or flooding of the site.

D. CONSTRUCTION SPECIFICATIONS

1. The Discharger shall submit for Executive Officer review and approval either prior to, or concurrent with, submission of the Construction Quality Assurance Plan as per Construction Specification D.2.a., a Design Report for the construction of new Units and expansions of existing Units that includes detailed plans, specifications, and descriptions for the liner components and LCRS components. The Design Report shall incorporate design rationale, with supporting calculations, for all components of the proposed containment system, and shall describe design details that allow for annual integrity testing of the LCRS to demonstrate whether the LCRS was designed and is operating to function without clogging, pursuant to Section 20340(d) of Title 27.
2. The Discharger shall submit for Executive Officer review and approval **prior to** construction, design plans and specifications for new Units and expansions of existing Units, that include the following:
 - a. A Construction Quality Assurance Plan meeting the requirements of Section 20324 of Title 27; and

- b. A geotechnical evaluation of the area soils, evaluating their use as the base layer;
and
 - c. An unsaturated zone monitoring system, which is demonstrated to remain effective throughout the active life, closure, and post-closure maintenance periods of the Unit, which shall be installed beneath the composite liner system in accordance with Section 20415(d) of Title 27.
3. The liner systems of all new Units and lateral expansion areas of existing Units shall be constructed in accordance with one of the following engineered alternative composite liner designs:
- a. The bottom liner shall be comprised, in ascending order, of the following:
 - 1) A twelve-inch thick engineered soil foundation layer that shall be constructed of select fine-grained soil materials which shall be compacted in lifts of six inches or less to 90% of maximum dry density and at 0% to 4% wet of optimum moisture content, in accordance with the approved construction quality assurance plan, and shall be either:
 - a) Compacted to attain a hydraulic conductivity of 1×10^{-5} cm/sec or less; or
 - b) Meet the following gradation criteria:
 1. A maximum size of 3/8-inch;
 2. At least 30% of the material, by dry weight, passing the No. 200 U.S. Standard sieve; and
 3. A gradation series (i.e., well-graded) that is amenable to compaction.
 - 2) A minimum 30-mil thick flexible membrane of HDPE, which may be part of the GCL.
 - 3) A GCL that shall exhibit appropriate strength characteristics (hydrated) to accommodate stresses associated with specific landfill design parameters, with particular attention to interface, long-term creep shear, and bearing capacity.
 - 4) A 60-mil thick synthetic flexible membrane of HDPE.
 - 5) A minimum 12-inch thick drainage layer composed of granular material with a minimum hydraulic conductivity of 1×10^{-3} cm/s.
 - 6) A filter geotextile.

- 7) A three-foot thick soil operations layer constructed of appropriate material to allow drainage of leachate to and through the LCRS and provide a working surface protective of the LCRS.
- b. The side slope liner shall be comprised, in ascending order, of the following:
- 1) A prepared subgrade that meets the criteria contained in Construction Specification D.5, below.
 - 2) A minimum 30-mil thick flexible membrane of HDPE, which may be part of the GCL.
 - 3) A GCL that shall exhibit appropriate strength characteristics to accommodate stresses associated with specific landfill design parameters, with particular attention to interface, long-term creep shear, and bearing capacity.
 - 4) A 60-mil thick synthetic flexible membrane of HDPE.
 - 5) A geocomposite drainage layer.
 - 6) A three-foot thick soil operations layer constructed of appropriate material to allow drainage of leachate to and through the LCRS and provide a working surface protective of the LCRS.
4. 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.
 5. The subgrade for the bottom and the side slopes of the Unit shall be prepared in an appropriate manner using accepted engineering and construction methods so as to provide a smooth surface that is free from rocks, sticks, or other debris that could damage or otherwise limit the performance of the GCL.
 6. The LCRS shall be designed and operated so that there is no buildup of hydraulic head on the base or sideslope liners.
 7. Construction shall proceed only after all applicable construction quality assurance plans have been approved by the Executive Officer.

8. A third party independent of both the Discharger and the construction contractor shall perform all of the construction quality assurance monitoring and testing during the construction of a liner system.
9. The CQA program shall be supervised by a registered civil engineer or certified engineering geologist who shall be designated the CQA officer. The CQA officer and personnel performing monitoring and testing shall be independent of the construction contractor.
10. After the operations layer is installed, the liner system shall be tested for the presence of defects. All detected defects shall be repaired before waste is discharged to the unit. The location and nature of each detected defect shall be noted in the construction report.
11. Following the completion of construction of any portion of a Unit, and prior to discharge to the newly constructed Unit, the final documentation required in Section 20324(d)(1)(C) of Title 27 shall be submitted to the Executive Officer for review and approval. The report shall be certified by a registered civil engineer or a certified engineering geologist. It shall contain sufficient information and test results to verify that construction was in accordance with the design plans and specifications, and with the prescriptive standards and performance goals of Title 27.
12. If monitoring reveals substantial or progressive increases of leachate generation above the design leachate flow volume of a Unit or portion of the Unit, such that the depth of fluid on any portion of the LCRS (excluding the leachate removal pump sump) exceeds 30 cm, the Discharger shall immediately notify the Central Valley Water Board in writing within seven days. The notification shall include a timetable for remedial or corrective action necessary to achieve compliance with the leachate depth limitation.
13. Closure shall not proceed in the absence of closure waste discharge requirements.

E. DETECTION MONITORING SPECIFICATIONS

1. 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, repair, or abandonment of monitoring devices. At the beginning of each sampling period, in accordance with Section B. Reporting of Monitoring and Reporting Program No. R5-2012-0011, a schedule shall be submitted listing anticipated sampling dates for that reporting period.
2. The Discharger shall comply with the Water Quality Protection Standard (as defined in Section 20390 of Title 27), which is specified in Monitoring and Reporting Program No. R5-2012-0011 and the Standard Provisions and Reporting Requirements, dated April 2000.

3. The Water Quality Protection Standard for organic compounds which are not naturally occurring and not detected in background groundwater samples shall be taken as the detection limit of the analytical method used (i.e., US-EPA methods 8260 and 8270). The repeated detection of one or more non-naturally occurring organic compounds in samples above the Water Quality Protection Standard from detection monitoring wells is evidence of a release from the Unit.
4. The concentrations of the constituents of concern in waters passing the Point of Compliance shall not exceed the concentration limits established pursuant to Monitoring and Reporting Program No. R5-2012-0011.
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 Monitoring and Reporting Program No. R5-2012-0011 and Section 20415(e) of Title 27.
6. The Discharger shall 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; and
 - e. Chain of Custody control.
7. For any given monitored medium, the samples taken from all monitoring points and background monitoring points to satisfy the data analysis requirements for a given reporting period shall all be taken **within a span not to exceed 30 days**, unless a longer time period is approved, and shall be taken in a manner that ensures sample independence to the greatest extent feasible.
8. Specific methods of collection and analysis must be identified. Sample collection, storage, and analysis shall be performed according to the most recent version of USEPA Methods, such as the latest editions, as applicable, of: (1) *Methods for the Analysis of Organics in Water and Wastewater* (USEPA 600 Series), (2) *Test Methods for Evaluating Solid Waste* (SW-846, latest edition), and (3) *Methods for Chemical Analysis of Water and Wastes* (USEPA 600/4-79-020), and in accordance with the approved Sample Collection and Analysis Plan.

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

15. **Unknown chromatographic peaks** shall be reported, along with an estimate of the concentration of the unknown analyte. When unknown peaks are encountered, second column or second method confirmation procedures shall be performed to attempt to identify and more accurately quantify the unknown analyte.
16. The statistical method shall account for data below the PQL with one or more statistical procedures that are protective of human health and the environment. Any PQL validated pursuant to Section 20415(e)(7) of Title 27 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 this Order for routine laboratory operating conditions that are available to the facility. The Discharger's technical report, pursuant to Section 20415(e)(7) of Title 27, shall consider the PQLs listed in Appendix IX to Chapter 14 of Division 4.5 of Title 22, California Code of Regulations, for guidance when specifying limits of precision and accuracy. For any given constituent monitored at a background or downgradient monitoring point, an indication that falls between the MDL and the PQL for that constituent (hereinafter called a "trace" detection) shall be identified and used in appropriate statistical or nonstatistical tests. Nevertheless, for a statistical method that is compatible with the proportion of censored data (trace and ND indications) in the data set, the Discharger can use the laboratory's concentration estimates in the trace range (if available) for statistical analysis, in order to increase the statistical power by decreasing the number of "ties".
17. The Discharger may propose an alternate statistical method [to the methods listed under Section 20415(e)(8)(A-D) of Title 27] in accordance with Section 20415(e)(8)(E) of Title 27, for review and approval by the Executive Officer. Upon receiving written approval from the Executive Officer, alternate statistical procedures may be used for determining the significance of analytical results for common laboratory contaminants (i.e., methylene chloride, acetone, diethylhexyl phthalate, and di-n-octyl phthalate). The 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.
18. The Discharger shall use the following nonstatistical method specified in Detection Monitoring Specification E.19 for all constituents which are not amenable to the statistical tests above (i.e., less than 10% of the data from background samples that equal or exceed their respective MDL). This includes all constituents in the Monitoring Parameters and for all Constituents of Concern (COC) found in groundwater and unsaturated zone (in soil-pore liquid or gas). Each constituent at a monitoring point shall be determined to meet this criterion based on either:
 - a. The results from a single sample for that constituent, taken during that reporting period from that monitoring point; or

- b. If more than one sample has been taken during a reporting period from a monitoring point, the results from the sample which contains the largest number of qualifying constituents shall be used.

Background for water samples shall be represented by the data from all samples taken from applicable background monitoring points during that reporting period (at least one sample from each background monitoring point). The Discharger may propose an alternate statistical method [to the methods listed under 27 Section 20415(e)(8)(A-D)] in accordance with Section 20415(e)(8)(E) of Title 27, for review and approval by the Executive Officer.

19. The nonstatistical method shall be implemented as follows:

- a. For every compliance well, regardless of the monitoring program, the Discharger shall use this data analysis method, jointly, for all monitoring parameters and COCs that are detected in less than 10% of background samples. Any COC that triggers a discrete retest per this method shall be added to the monitoring parameter list.

Triggers — From the monitoring parameters and COC list identify each constituent in the current sample that exceeds either its respective MDL or PQL. The Discharger shall conclude that the exceedance provides a preliminary indication [or, for a retest, provide a measurably significant indication] of a change in the nature or extent of the release, at that well, if either:

- 1) The data contains two or more qualifying monitoring parameters and/or COCs that are detected in less than 10% of background samples that equal or exceed their respective MDLs; or
 - 2) The data contains one qualifying monitoring parameter and/or COC that equals or exceeds its PQL.
- b. Discrete Retest [Title 27, Section 20415(e)(8)(E)]:
 - 1) In the event that the Discharger concludes (pursuant to paragraph 19.a., above) that there is a preliminary indication, 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 indicating compliance well.
 - 2) For any given compliance well retest sample, the Discharger shall include, in the retest analysis, only the laboratory analytical results for those constituents indicated in that well's original test. As soon as the retest data are available, the Discharger shall apply the same test [under 19.a.], to separately analyze each of the two suites of retest data at that compliance well.

- 3) If either (or both) of the retest samples meets either (or both) of the triggers under 19.a., then the Discharger shall conclude that there is a measurably significant increase at that well for the constituent(s) indicated in the validating retest sample(s).

20. If the Executive Officer determines, after reviewing the submitted report that the detected constituent(s) most likely originated from the Unit(s), the Discharger shall **immediately** implement the requirements of Section XI. Response To A Release, C. Release Has Been Verified, contained in the Standard Provisions and Reporting Requirements.

F. CORRECTIVE ACTION SPECIFICATIONS

1. The Discharger shall implement a corrective action program pursuant to Section 20430 of Title 27 to remediate the release of waste constituents from the Unit and to ensure compliance with the WQPS. Corrective action shall be performed in accordance with a corrective action plan approved by the Executive Officer.
2. The Discharger shall operate and maintain a groundwater corrective action monitoring system for the purpose of monitoring the nature and extent of the release and the progress of corrective action. Sample collection and analysis shall coincide with Groundwater Detection Monitoring D.1 of Monitoring and Reporting Program No. R5-2012-0011.
3. Prior to termination of corrective action measures required under Section 20430(c) of Title 27 and this Order, the discharger shall demonstrate, pursuant to Section 20430(f) of Title 27, that the constituents of the release have been reduced to levels below concentration limits throughout the entire zone affected by the release. During this "proof period", the Discharger shall demonstrate that:
 - a. The concentration of each constituent in each sample from each monitoring point remained at or below its concentration limit for at least one year, beginning immediately after the suspension of corrective action measures; and
 - b. The individual sampling events for each monitoring point must have been evenly distributed throughout the proof period and have consisted of at least eight sampling events per year per monitoring point.
4. If either the Discharger or the Executive Officer determines that the corrective action program is not adequate (i.e. does not satisfy the provisions of Section 20430 of Title 27), the Discharger shall, within 90 days of making the determination, or of receiving written notification from the Central Valley Water Board of such determination, submit an amended report of waste discharge (RWD) to make appropriate changes to the program. The amended RWD shall include the following:

- a. A discussion as to why existing corrective action measures have been ineffective or insufficient.
- b. A revised evaluation monitoring plan if necessary to further assess the nature and extent of the release.
- c. A discussion of corrective action needs and options.
- d. Proposed additional corrective action measures, as necessary, for:
 - 1) Source control,
 - 2) Groundwater cleanup, and/or
 - 3) Landfill gas control.
- e. A plan to monitor the progress of corrective action measures consistent with Monitoring and Reporting Program No. R5-2012-0011.
- f. Cost estimates for implementing additional corrective action, including monitoring.
- g. An implementation schedule.

G. 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. The Discharger shall maintain a copy of this Order at the facility and make it available at all times to facility operating personnel, who shall be familiar with its contents, and to regulatory agency personnel.
3. The Discharger shall comply with all applicable provisions of Title 27 and Subtitle D that are not specifically referred to in this Order.
4. The Discharger shall comply with Monitoring and Reporting Program No. R5-2012-0011, which is incorporated into and made part of this Order.
5. The Discharger shall comply with the applicable portions of the *Standard Provisions and Reporting Requirements for Waste Discharge Requirements for Nonhazardous*

Solid Waste Discharges Regulated by Title 27 and/or Subtitle D (Title 27 CCR Section 20005 et seq. and 40 CFR 258 et seq.), dated April 2000, which is hereby incorporated into this Order.

6. 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.”
7. 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.
8. 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 Unit(s) and during subsequent use of the property for other purposes.

9. The fact that it would be necessary to halt or reduce the permitted activity in order to maintain compliance with this Order shall not be regarded as a defense for the Discharger's violations of the Order.
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 Provision G.6. and state that the new owner or operator assumes full responsibility for compliance with this Order. Failure to submit the request shall be considered a discharge without requirements, a violation of the California Water Code. Transfer of this Order shall be approved or disapproved by the Central Valley Water Board.
11. The Discharger shall establish and maintain an approved cost estimate for initiating and completing corrective action for all known or reasonably foreseeable releases from the landfill.
12. The Discharger shall conduct an annual review of the financial assurance for initiating and completing corrective action, and submit a report for Executive Officer review and approval by **30 April of each year**. The assurances of financial responsibility shall provide that funds for corrective action shall be available to the Central Valley Water Board upon the issuance of any order under California Water Code, Division 7, Chapter 5. The Discharger shall adjust the cost annually to account for inflation and any changes in facility design, construction, or operation.
13. The Discharger shall update the preliminary closure and post-closure maintenance plan (PCPCMP) any time there is a change that will increase the amount of the closure and post-closure maintenance cost estimate or as required in Section 21865 of Title 27. The updated PCPCMP shall be submitted to the Central Valley Water Board, the Local Enforcement Agency, and the California Department of Resources Recycling and Recovery. The PCPCMP shall meet the requirements of Section 21769(b) of Title 27, 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 post-closure maintenance plan, and to carry out the first thirty years of post-closure maintenance. A final (or partial final) closure and post-closure maintenance plan shall be submitted prior to closure and closure shall not be conducted in the absence of closure WDRs.

14. The Discharger shall conduct an annual review of the financial assurance for closure and post-closure maintenance, and submit a report for Executive Officer review and approval by **30 April of each year**. The assurances of financial responsibility shall provide that funds for closure and post-closure maintenance shall be available to the Central Valley Water Board upon the issuance of any order under California Water Code, Division 7, Chapter 5. The Discharger shall adjust the cost annually to account for inflation and any changes in facility design, construction, or operation.
15. The Discharger shall complete the tasks contained in these waste discharge requirements in accordance with the following time schedule:

<u>Task</u>	<u>Compliance Date</u>
A. Construction Plans	
Submit construction and design plans for review and approval. (see Construction Specification D.1)	Prior to construction
B. Construction Report	
Submit a construction report for review and approval upon completion demonstrating construction was in accordance with approved construction plans. (see Construction Specification D.11)	Prior to discharge
C. Financial Assurance Review	
1. Annual Review of Financial Assurance for initiating and completing corrective action (see Provision G.12).	30 April each year
2. Annual Review of Financial Assurance for closure and post-closure maintenance (see Provision G.14).	30 April each year

If, in the opinion of the Executive Officer, the Discharger fails to comply with the provisions of this Order, the Executive Officer may apply to the Attorney General for judicial enforcement or issue a complaint for Administrative Civil Liability.

WASTE DISCHARGE REQUIREMENTS ORDER NO. R5-2012-0011
COUNTY OF KERN
FOR OPERATION AND CONSTRUCTION
SHAFTER-WASCO SANITARY LANDFILL
KERN COUNTY

-26-

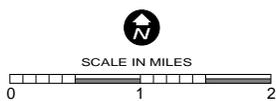
I, PAMELA CREEDON, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on 2 February 2012.

Original signed by:

PAMELA C. CREEDON, Executive Officer

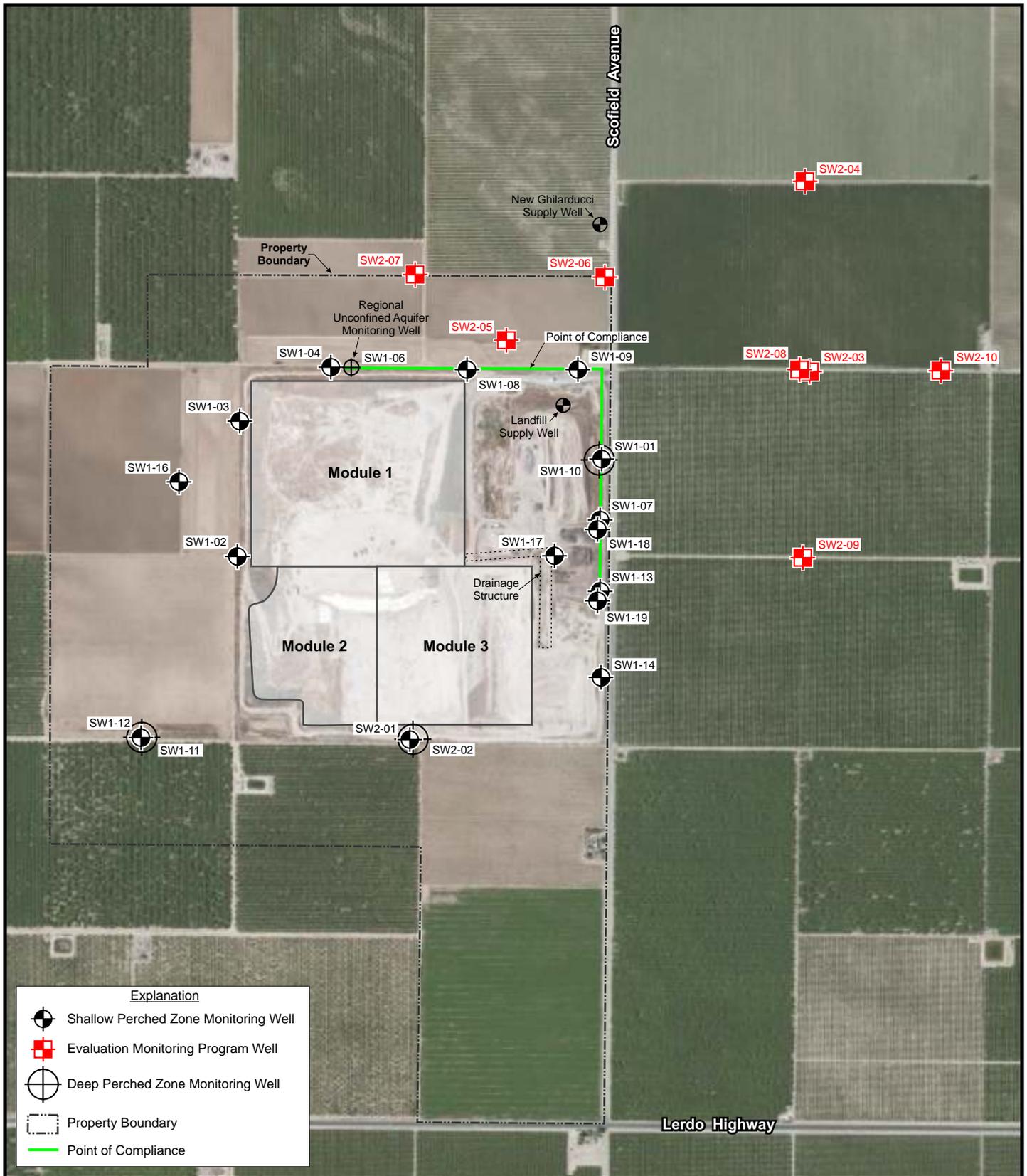


Map Source:
 ESRI's ArcGIS Online premium services
 Section 8, T28S, R24E, MDB&M



LOCATION MAP
 ORDER NO. R5-2012-0011
 WASTE DISCHARGE REQUIREMENTS
 FOR
 COUNTY OF KERN
 FOR
 OPERATION AND CONSTRUCTION
 SHAFTER-WASCO SANITARY LANDFILL
 KERN COUNTY

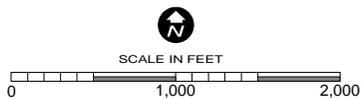
ATTACHMENT A



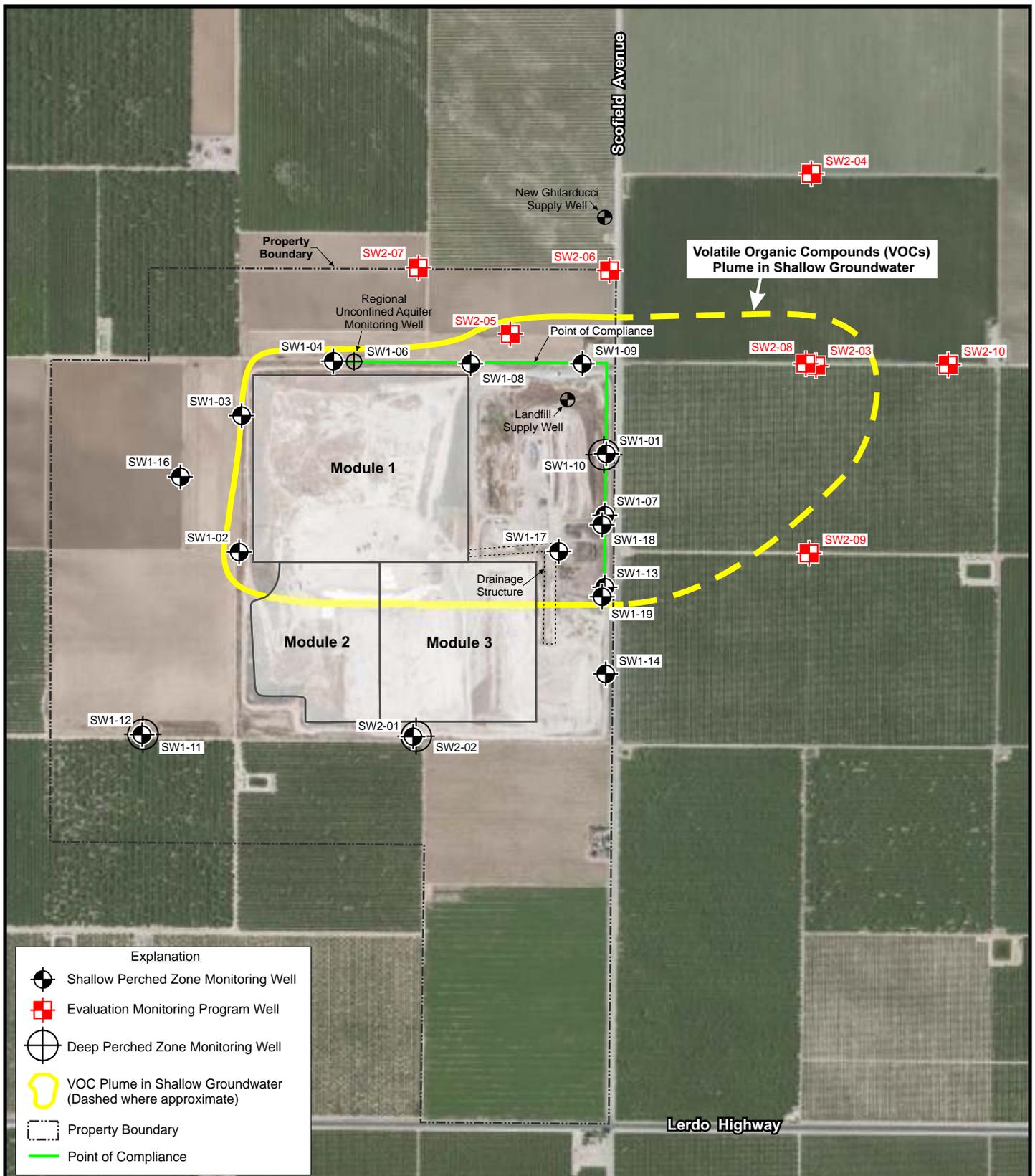
Explanation

- Shallow Perched Zone Monitoring Well
- Evaluation Monitoring Program Well
- Deep Perched Zone Monitoring Well
- Property Boundary
- Point of Compliance

Map Source:
 ESRI's ArcGIS Online premium services
 Section 8, T28S, R24E, MDB&M



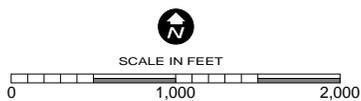
SITE MAP
 ORDER NO. R5-2012-0011
 WASTE DISCHARGE REQUIREMENTS
 FOR
 COUNTY OF KERN
 FOR
 OPERATION AND CONSTRUCTION
 SHAFTER-WASCO SANITARY LANDFILL
 KERN COUNTY



Explanation

- Shallow Perched Zone Monitoring Well
- Evaluation Monitoring Program Well
- Deep Perched Zone Monitoring Well
- VOC Plume in Shallow Groundwater (Dashed where approximate)
- Property Boundary
- Point of Compliance

Map Source:
 ESRI's ArcGIS Online premium services
 Section 8, T28S, R24E, MDB&M



VOLATILE ORGANIC COMPOUNDS IN GROUNDWATER

ORDER NO. R5-2012-0011
 WASTE DISCHARGE REQUIREMENTS
 FOR
 COUNTY OF KERN
 FOR
 OPERATION AND CONSTRUCTION
 SHAFTER-WASCO SANITARY LANDFILL
 KERN COUNTY

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2012-0011
FOR
COUNTY OF KERN
FOR
OPERATION AND CONSTRUCTION
SHAFTER-WASCO SANITARY LANDFILL
KERN COUNTY

The County of Kern (hereafter Discharger) shall comply with this Monitoring and Reporting Program, with Title 27, California Code of Regulations, Section 20005, et seq. (hereafter Title 27), and with the *Standard Provisions and Reporting Requirements for Waste Discharge Requirements for Nonhazardous Solid Waste Discharges Regulated by Title 27 and/or Subtitle D (27 CCR §20005 et seq. and 40 CFR 258)*, dated April 2000, as ordered by Waste Discharge Requirements Order No. R5-2012-0011

A. REQUIRED MONITORING REPORTS

<u>Report</u>	<u>Due</u>
1. Groundwater Monitoring (Section D.1)	See Table I
2. Corrective Action Monitoring (Section D.2)	With Groundwater Monitoring Table I
3. Unsaturated Zone Monitoring (Section D.3)	See Table II
4. Leachate Monitoring (Section D.4)	See Table III
5. Facility Monitoring (Section D.5)	As necessary
6. Annual Monitoring Summary Report (Section E.5)	Annually
7. Response to a Release (Standard Provisions and Reporting Requirements)	As necessary

B. REPORTING

The Discharger shall report monitoring data and information as required in this Monitoring and Reporting Program and as required in Order R5-2012-0011 and the Standard Provisions and Reporting Requirements. Reports which do not comply with the required format will be **REJECTED** and the Discharger shall be deemed to be in noncompliance with the waste discharge requirements. In reporting the monitoring data required by this program, the Discharger shall arrange the data in tabular form so

that the date, the constituents, the concentrations, and the units are readily discernible. The data shall be summarized in such a manner so as to illustrate clearly the compliance with waste discharge requirements or the lack thereof. Data shall also be submitted in a digital format acceptable to the Executive Officer. Each monitoring report shall include a compliance evaluation summary as specified in E. Reporting Requirements, below.

Report Due Dates

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

<u>Sampling Frequency</u>	<u>Reporting Frequency</u>	<u>Reporting Periods End</u>	<u>Report Date Due</u>
Monthly	Quarterly	Last Day of Month	by Semiannual Schedule
Quarterly	Quarterly	31 March	31 August
		30 June	31 August
		30 September	28 February
		31 December	28 February
Semiannually	Semiannually	30 June	31 August
		31 December	28 February
Annually	Annually	31 December	30 April
5-Year	Every 5 years	31 December	30 April

The Discharger shall submit an **Annual Monitoring Summary Report** to the Central Valley Water Board covering the previous monitoring year. The annual report shall contain the information specified in Section E.5 Reporting Requirements, below, and a discussion of compliance with the waste discharge requirements and the Water Quality Protection Standard.

The results of **all monitoring** conducted at the site shall 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.

C. WATER QUALITY PROTECTION STANDARD AND COMPLIANCE PERIOD

1. Water Quality Protection Standard

For each waste management unit (Unit), the Water Quality Protection Standard shall consist of all constituents of concern, the concentration limit for each constituent of concern, the point of compliance, and all water quality monitoring points for each monitored medium. The Water Quality Protection Standard, or any modification thereto, 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 §20405 of Title 27.
- c. Evaluate the perennial direction(s) of groundwater movement within the uppermost groundwater zone(s).

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.

2. Constituents of Concern

The constituents of concern include all the waste constituents, their reaction products, and hazardous constituents that are reasonably expected to be in or derived from waste contained in the Unit. The constituents of concern for all Units at the facility are those listed in Tables I through IV for the specified monitored medium, and Table VI. The Discharger shall monitor all constituents of concern every five years.

3. Monitoring Parameters

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

4. Concentration Limits

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

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

5. 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.

6. 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.

D. MONITORING

The Discharger shall comply with the detection monitoring program provisions of Title 27 for groundwater and the unsaturated zone, in accordance with Detection Monitoring Specification E.2 and E.4 of Waste Discharge Requirements, Order No. R5-2012-0011. All monitoring shall be conducted in accordance with a Sample Collection and Analysis Plan, which includes quality assurance/quality control standards, that is acceptable to the Executive Officer.

All 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, and leachate shall be sampled and analyzed for monitoring parameters and constituents of concern as specified in Tables I through III.

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

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

1. Groundwater

The Discharger shall operate and maintain a groundwater detection monitoring system that complies with the applicable provisions of §20415 and §20420 of Title 27 in accordance with a Detection Monitoring Program approved by the Executive Officer. The detection monitoring system shall be certified by a California-licensed professional civil engineer or geologist as meeting the requirements of Title 27. The Discharger shall collect, preserve, and transport groundwater samples in accordance with the approved Sample Collection and Analysis Plan.

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

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

Groundwater samples shall be collected from the monitoring wells that are part of the approved groundwater monitoring system. Samples shall be collected and analyzed for the monitoring parameters in accordance with the methods and frequency specified in Table I.

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

2. Corrective Action

The Discharger shall operate and maintain a groundwater corrective action monitoring system for the purpose of monitoring the nature and extent of the release and the progress of corrective action. Sample collection and analysis shall coincide with Groundwater Detection Monitoring D.1.

Corrective Action monitoring data analysis shall include the following:

- a. Nature and Extent
 - 1) Comparisons with concentration limit to identify any new or previously undetected constituents at a monitoring point.
- b. Effectiveness of Corrective Action
 - 1) Preparation of time series plots for representative waste constituents.
 - 2) Trend analysis for each waste constituent.
 - 3) The need for additional corrective action measures and/or monitoring wells.

The results of the above analysis, including a narrative discussion, shall be included in each semiannual report and summarized in the Annual Report, as specified under reporting Section B above. The semiannual monitoring reports shall also include a discussion of the progress of corrective action toward returning to compliance with the Water Quality Protection Standard, as specified in Section 20430(h) of Title 27.

3. Unsaturated Zone Monitoring

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

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

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

4. Leachate Monitoring

All leachate collection and removal system sumps shall be inspected monthly for leachate generation. Upon detection of leachate in a previously dry leachate collection and removal system, leachate shall be sampled **within two days** and analyzed for the constituents listed in Table III. Leachate shall also be sampled and analyzed annually during the fourth quarter thereafter, with a retest during the following second quarter if constituents are detected that have not been previously detected. Leachate samples shall be collected and analyzed for the listed constituents in accordance with the methods and frequency specified in Table III. The constituents of concern list shall include all constituents listed in Table V. The quantity of leachate pumped from each sump shall be measured and reported monthly as Leachate Flow Rate (in gallons).

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

5. Facility Monitoring

a. Facility Inspection

Annually, prior to the anticipated rainy season, but no later than **30 September**, the Discharger shall conduct an inspection of the facility. The inspection shall assess damage to the drainage control system, groundwater monitoring equipment (including wells, etc.), and shall include the Standard Observations contained in Section E.3.f., below.

Any necessary construction, maintenance, or repairs shall be completed by **31 October**. By **15 November** of each year, the Discharger shall submit an annual report describing the results of the inspection and the repair measures implemented, including photographs of the problem and the repairs.

b. **Storm Events**

The Discharger shall inspect all precipitation, diversion, and drainage facilities for damage **within 7 days** following *major storm events* (i.e., a storm that causes continuous runoff for at least one hour). Necessary repairs shall be completed **within 30 days** of the inspection. The Discharger shall report any flooding, unpermitted discharge of waste off-site, equipment failure, slope failure, or other change in site conditions that could impair the integrity of waste containment facilities and subsequent repairs within 45 days of completion of the repairs, including photographs of the problem and the repairs. Minor damage and subsequent repairs shall be reported in the next self-monitoring report.

E. REPORTING REQUIREMENTS

1. 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 Order No. R5-2012-0011, and records of all data used to complete the application for Order No. R5-2012-0011. Records shall be maintained throughout the life of the facility including the postclosure period.

Such legible records shall show the following for each sample:

- a. Sample identification and the monitoring point or background monitoring point from which it was taken, along with the identity of the individual who obtained the sample;
- b. Date, time, and manner of sampling;
- 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.

2. A transmittal letter explaining the essential points shall accompany each report. At a minimum, the transmittal letter shall identify any violations found since the last report was submitted, and if the violations were corrected. If no violations have occurred since the last submittal, this shall be stated in the transmittal letter. The transmittal letter shall also state that a discussion of any violations found since the last report was submitted, and a description of the actions taken or planned for correcting those violations, including any references to previously submitted time schedules, is contained in the accompanying report.
3. Each monitoring report shall include a compliance evaluation summary. At a minimum, the summary shall contain:
 - a. For each monitoring point and background monitoring point addressed by the report, a description of:
 - 1) The time of water level measurement;
 - 2) The type of pump - or other device - used for purging and the elevation of the pump intake relative to the elevation of the screened interval;
 - 3) The method of purging (the pumping rate; the equipment and methods used to monitor field pH, temperature, and conductivity during purging; the calibration of the field equipment; results of the pH, temperature, conductivity, and turbidity testing; and the method of disposing of the purge water) to ensure that monitoring results provide a reliable indication of water quality;
 - 4) The type of pump - or other device - used for sampling, if different than the pump or device used for purging; and
 - 5) A statement that the sampling procedure was conducted in accordance with the approved Sampling and Analysis Plan.
 - b. A map or aerial photograph showing the locations of observation stations, monitoring points, and background monitoring points.
 - c. For each groundwater body, a description and graphical presentation of the gradient and direction of groundwater flow under/around the Unit, and the groundwater flow rate, based upon water level elevations taken prior to the collection of the water quality data submitted in the report.
 - d. Laboratory statements of results of all analyses evaluating compliance with requirements.
 - e. An evaluation of the effectiveness of the leachate monitoring and control facilities, and of the run-off/run-on control facilities.

- f. A summary and certification of completion of all **Standard Observations** for the Unit(s), for the perimeter of the Unit, and for the receiving waters. Standard observations for ACTIVE landfill units shall be conducted **weekly** during the wet season (1 October to 30 April) and **monthly** during the dry season (1 May to 30 September). Standard observations for INACTIVE or CLOSED landfill units shall be conducted **monthly** during the wet season (1 October to 30 April) and **quarterly** during the dry season (1 May to 30 September). The Standard Observations shall include:
- 1) For the Unit:
 - a) Evidence of ponded water at any point on the facility (show affected area on map); and
 - b) Evidence of erosion and/or of day-lighted refuse.
 - 2) Along the perimeter of the Unit:
 - a) Evidence of liquid leaving or entering the Unit, estimated size of affected area, and flow rate (show affected area on map); and
 - b) Evidence of erosion and/or of day-lighted refuse.
4. 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 Monitoring Parameters and Constituents of Concern 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.
5. The Discharger shall submit an **Annual Monitoring Summary Report** covering the reporting period of the previous monitoring year. This report shall contain:

- a. All monitoring parameters and constituents of concern shall be graphed so as to show historical trends at each monitoring point and background monitoring point, for all samples taken within at least the previous five calendar years. Each such graph shall plot the concentration of one or more constituents for the period of record for a given monitoring point or background monitoring point, at a scale appropriate to show trends or variations in water quality. The graphs shall plot each datum, rather than plotting mean values. For any given constituent or parameter, the scale for background plots shall be the same as that used to plot downgradient data. Graphical analysis of monitoring data may be used to provide significant evidence of a release.
- b. All monitoring data for the previous year shall be submitted in tabular form as well as in a digital file format. The Central Valley Water Board regards the submittal of data in hard copy and in digital format as "...the form necessary for..." statistical analysis [Section 20420(h) of Title 27], in that this facilitates periodic review by the Central Valley Water Board.
- c. A comprehensive discussion of the compliance record, and the result of any corrective actions taken or planned which may be needed to bring the Discharger into full compliance with the waste discharge requirements.
- d. A written summary of the monitoring results, indicating any changes made or observed since the previous annual report.
- e. An evaluation of the effectiveness of the leachate monitoring/control facilities including the results of the annual testing of leachate collection and removal systems required under VIII.P of the Standard Provisions and Reporting Requirements.

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

Original signed by:

Ordered by: _____
PAMELA C. CREEDON, Executive Officer

2 February 2012

(Date)

TABLE I
GROUNDWATER DETECTION MONITORING PROGRAM

<u>Parameter</u>	<u>Units</u>	<u>Frequency</u>
Field Parameters		
Groundwater Elevation	Ft. & hundredths, M.S.L. ⁽¹⁾	Quarterly
Temperature	oC ⁽²⁾	Semiannual
Electrical Conductivity	µmhos/cm ⁽³⁾	Semiannual
pH	pH units	Semiannual
Turbidity	Turbidity units ⁽⁴⁾	Semiannual
Monitoring Parameters		
Total Dissolved Solids (TDS)	mg/L ⁽⁵⁾	Semiannual
Chloride	mg/L	Semiannual
Carbonate	mg/L	Semiannual
Bicarbonate	mg/L	Semiannual
Nitrate - Nitrogen	mg/L	Semiannual
Sulfate	mg/L	Semiannual
Calcium	mg/L	Semiannual
Magnesium	mg/L	Semiannual
Potassium	mg/L	Semiannual
Sodium	mg/L	Semiannual
Volatile Organic Compounds (USEPA Method 8260, see Table IV)	µg/L ⁽⁶⁾	Semiannual
Constituents of Concern (see Table V)		
Total Organic Carbon	mg/L	Every 5 years
Inorganics (dissolved)	mg/L	Every 5 years
Volatile Organic Compounds (USEPA Method 8260, extended list)	µg/L	Every 5 years
Semi-Volatile Organic Compounds (USEPA Method 8270)	µg/L	Every 5 years
Organochlorine Pesticides (USEPA Method 8081)	µg/L	Every 5 years
Polychlorinated Biphenyls (USEPA Method 8082)	µg/L	Every 5 years
Chlorophenoxy Herbicides (USEPA Method 8151)	µg/L	Every 5 years
Organophosphorus Compounds (USEPA Method 8141)	µg/L	Every 5 years

(1). Feet and hundredths of a foot above mean sea level.

(2). Degree Celsius.

(3). Micromhos per centimeter.

(4). Nephelometric turbidity units.

(5). Milligrams per liter.

(6). Micrograms per liter.

TABLE II
PAN LYSIMETERS, SUCTION LYSIMETERS AND OTHER VADOSE ZONE
MONITORING DEVICES

<u>Parameter</u>	<u>Units</u>	<u>Frequency</u>
Field Parameters		
Electrical Conductivity	µmhos/cm ⁽¹⁾	Semiannual
pH	pH units	Semiannual
Monitoring Parameters		
Total Dissolved Solids (TDS)	mg/L ⁽²⁾	Semiannual
Chloride	mg/L	Semiannual
Carbonate	mg/L	Semiannual
Bicarbonate	mg/L	Semiannual
Nitrate – Nitrogen	mg/L	Semiannual
Sulfate	mg/L	Semiannual
Calcium	mg/L	Semiannual
Magnesium	mg/L	Semiannual
Potassium	mg/L	Semiannual
Sodium	mg/L	Semiannual
Volatile Organic Compounds (USEPA Method 8260, see Table IV)	µg/L ⁽³⁾	Semiannual
Constituents of Concern (see Table V)		
Total Organic Carbon	mg/L	Every 5 years
Inorganics (dissolved)	mg/L	Every 5 years
Volatile Organic Compounds (USEPA Method 8260, extended list)	µg/L	Every 5 years
Semi-Volatile Organic Compounds (USEPA Method 8270)	µg/L	Every 5 years
Organochlorine Pesticides (USEPA Method 8081)	µg/L	Every 5 years
Polychlorinated Biphenyls (USEPA Method 8082)	µg/L	Every 5 years
Chlorophenoxy Herbicides (USEPA Method 8151)	µg/L	Every 5 years
Organophosphorus Compounds (USEPA Method 8141)	µg/L	Every 5 years

(1). Micromhos per centimeter.

(2). Milligrams per liter.

(3). Micrograms per liter.

TABLE III
LEACHATE DETECTION MONITORING PROGRAM

<u>Parameter</u>	<u>Units</u>	<u>Frequency</u>
Field Parameters		
Total Flow	Gallons	Monthly
Flow Rate	Gallons/Day	Monthly
Electrical Conductivity	µmhos/cm ⁽¹⁾	Annually
pH	pH units	Annually
Monitoring Parameters		
Total Dissolved Solids (TDS)	mg/L ⁽²⁾	Annually
Chloride	mg/L	Annually
Carbonate	mg/L	Annually
Bicarbonate	mg/L	Annually
Nitrate - Nitrogen	mg/L	Annually
Sulfate	mg/L	Annually
Calcium	mg/L	Annually
Magnesium	mg/L	Annually
Potassium	mg/L	Annually
Sodium	mg/L	Annually
Volatile Organic Compounds (USEPA Method 8260, see Table IV)	µg/L ⁽³⁾	Annually
Constituents of Concern (see Table V)		
Total Organic Carbon	mg/L	Every 5 years
Inorganics (dissolved)	mg/L	Every 5 years
Volatile Organic Compounds (USEPA Method 8260, extended list)	µg/L	Every 5 years
Semi-Volatile Organic Compounds (USEPA Method 8270)	µg/L	Every 5 years
Organochlorine Pesticides (USEPA Method 8081)	µg/L	Every 5 years
Polychlorinated Biphenyls (USEPA Method 8082)	µg/L	Every 5 years
Chlorophenoxy Herbicides (USEPA Method 8151)	µg/L	Every 5 years
Organophosphorus Compounds (USEPA Method 8141)	µg/L	Every 5 years

(1). Micromhos per centimeter.

(2). Milligrams per liter.

(3). Micrograms per liter.

TABLE IV
MONITORING PARAMETERS FOR DETECTION MONITORING

Surrogates for Metallic Constituents:

pH
Total Dissolved Solids
Electrical Conductivity
Chloride
Sulfate
Nitrate nitrogen

Constituents included in VOC:

USEPA Method 8260

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 IV
MONITORING PARAMETERS FOR DETECTION MONITORING

Continued

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

TABLE V
CONSTITUENTS OF CONCERN & APPROVED USEPA ANALYTICAL METHODS

<u>Inorganics (dissolved):</u>	<u>USEPA Method</u>
Aluminum	6010
Antimony	6010
Barium	6010
Beryllium	6010
Cadmium	6010
Chromium	6010
Cobalt	6010
Copper	6010
Silver	6010
Tin	200.8
Vanadium	6010
Zinc	6010
Iron	6010
Manganese	6010
Arsenic	200.8
Lead	200.8
Mercury	7470
Nickel	6010
Selenium	200.8
Thallium	200.8
Cyanide	9010
Sulfide	376.2

Volatile Organic Compounds:

USEPA Method 8260

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

TABLE V

CONSTITUENTS OF CONCERN & APPROVED USEPA ANALYTICAL METHODS

Continued

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

TABLE V

CONSTITUENTS OF CONCERN & APPROVED USEPA ANALYTICAL METHODS

Continued

1,1,1 -Trichloroethane, Methylchloroform
1,1,2-Trichloroethane
Trichloroethylene (Trichloroethene; TCE)
Trichlorofluoromethane (CFC- 11)
1,2,3-Trichloropropane
Vinyl acetate
Vinyl chloride (Chloroethene)
Xylene (total)

Semi-Volatile Organic Compounds:

USEPA Method 8270 - base, neutral, & acid extractables

Acenaphthene
Acenaphthylene
Acetophenone
2-Acetylaminofluorene (2-AAF)
Aldrin
4-Aminobiphenyl
Anthracene
Benzo[a]anthracene (Benzanthracene)
Benzo[b]fluoranthene
Benzo[k]fluoranthene
Benzo[g,h,i]perylene
Benzo[a]pyrene
Benzyl alcohol
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

TABLE V

CONSTITUENTS OF CONCERN & APPROVED USEPA ANALYTICAL METHODS

Continued

o-Cresol (2-methylphenol)
m-Cresol (3-methylphenol)
p-Cresol (4-methylphenol)
4,4'-DDD
4,4'-DDE
4,4'-DDT
Diallate
Dibenz[a,h]anthracene
Dibenzofuran
Di-n-butyl phthalate
o-Dichlorobenzene (1,2-Dichlorobenzene)
m-Dichlorobenzene (1,3-Dichlorobenzene)
p-Dichlorobenzene (1,4-Dichlorobenzene)
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
Hexachlorobutadiene
Hexachlorocyclopentadiene
Hexachloroethane

TABLE V

CONSTITUENTS OF CONCERN & APPROVED USEPA ANALYTICAL METHODS

Continued

Hexachloropropene
Indeno(1,2,3-c,d)pyrene
Isophorone
Isosafrole
Kepone
Methapyrilene
Methoxychlor
3-Methylcholanthrene
Methyl methanesulfonate
2-Methylnaphthalene
Naphthalene
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

TABLE V

CONSTITUENTS OF CONCERN & APPROVED USEPA ANALYTICAL METHODS

Continued

1,2,4-Trichlorobenzene
2,4,5-Trichlorophenol
2,4,6-Trichlorophenol
0,0,0-Triethyl phosphorothioate
sym-Trinitrobenzene

Chlorophenoxy Herbicides:

USEPA Method 8151

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 8141

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

INFORMATION SHEET

WASTE DISCHARGE REQUIREMENTS ORDER NO. R5-2012-0011
FOR COUNTY OF KERN
FOR OPERATION AND CONSTRUCTION
SHAFTER-WASCO SANITARY LANDFILL
KERN COUNTY

The County of Kern (hereafter Discharger) owns and operates a municipal solid waste landfill about seven miles west of the City of Shafter. The landfill is just north of Lerdo Highway and just west of Scofield Avenue.

The California Regional Water Quality Control Board (Central Valley Water Board) adopted Waste Discharge Requirements (WDRs) Order No. R5-2002-0179 on 18 October 2002, which classified the waste management unit (Unit) as a Class III landfill as defined in Title 27, California Code of Regulations, Section 20005 et seq. (hereafter Title 27). The proposed Order revises the existing WDRs to provide for construction of new waste management cells with an engineered alternative composite liner system, acceptance of treated wood waste, and to implement a corrective action plan.

The 250-acre waste management facility contains one existing Unit covering approximately 90 acres. The Unit consists of three modules: one 48-acre unlined module (Module One), one 22-acre module (Module Two) with an engineered alternative liner that utilizes a geosynthetic clay liner (GCL), and an 18-acre module (Module Three) with an engineered alternative liner that utilizes an encapsulated GCL.

The waste management facility is located in the southern portion of the San Joaquin Valley geomorphic province. The San Joaquin Valley is a structural trough in which several thousands of feet of sediments have been deposited. The sources of the sediments are the Sierra Nevada to the east and the Coast Ranges to the west. The predominant soils beneath the waste management facility are the Milham sandy-loam; which is a deep, well-drained soil developed on alluvial fans, plains, and low terraces. Milham sandy-loam is typically 35 to 60 per cent sand.

The first encountered groundwater, occurring in a perched water-bearing zone, is about 60 to 74 feet below the native ground surface. Groundwater elevations in the perched water-bearing zone range from approximately 227 to 236 feet mean sea level (MSL). Underlying the perched water-bearing zone is the regional unconfined aquifer. Depth to groundwater in the regional unconfined aquifer has been measured from 252 to 299 feet below native ground surface. Groundwater elevations have ranged from approximately 44 feet above MSL to three feet below MSL.

The existing groundwater detection monitoring system consists of 16 monitoring wells. In addition, pan lysimeters have been installed beneath the leachate collection and removal system (LCRS) sumps of the composite-lined modules to monitor the vadose zone beneath the landfill.

Organic compounds that are not naturally occurring have been detected in groundwater along the point of compliance since 1992. The six most frequently detected volatile organic compounds (VOCs) at concentrations greater than the laboratory Practical Quantitation Limit are: dichlorodifluoromethane (Freon 12); 1,1-dichloroethane; 1,2-dichloropropane (1,2-DCP); tetrachloroethene (PCE); trichloroethene (TCE); and trichlorofluoromethane (Freon 11). PCE has been consistently detected in monitoring well SW1-04 at concentrations exceeding the primary Maximum Contaminant Level of 5 micrograms per liter for drinking water, established by the State of California, Department of Health Services, at the point of compliance.

The Discharger completed an Evaluation Monitoring Program for the release of waste constituents to the groundwater. The nature of the release was demonstrated to be volatile organic compounds that originated from landfill gas and consists of Freon 12; 1,1-dichloroethane; 1,2-DCP; PCE; TCE; and Freon 11. The extent of the release is a plume approximately 1,800 feet wide, 4,000 feet long, and 80 feet deep. The plume extends from the Unit approximately 1,800 feet beyond the boundary of the waste management facility to the east.

The Discharger completed an Engineering Feasibility Study in accordance with Section 20425(c) of Title 27. The Engineering Feasibility Study concluded that the most technically and economically feasible corrective action alternative is monitored natural attenuation in conjunction with landfill gas extraction.

Section 20080(b) of Title 27 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 Sections 20080(c)(1) or (2) of Title 27, 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 Section 20080(b) of Title 27, or would be impractical and would not promote attainment of applicable performance standards.

The Discharger demonstrated 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 Section 20080(b)(2) of Title 27.

The proposed waste containment system consists of, from the bottom up: a prepared subgrade for both bottom and side slopes; 30-mil thick high-density polyethylene (HDPE) geomembrane over the subgrade; a geosynthetic clay liner; a 60-mil HDPE geomembrane; a 12-inch granular leachate drainage layer; and a 36-inch soil operations layer and working surface.

The Kern County Board of Supervisors certified the final environmental impact report for the facility on 29 September 2009. The Kern County Clerk filed a Notice of Determination on 12 October 2009 in accordance with the California Environmental Quality Act (Public Resources Code Section 21000 et seq.) and CEQA guidelines (14 CCR Section 15000 et seq.). Central Valley Water Board staff considered the environmental impact report and incorporated mitigation measures from the environmental impact report into the 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 Resource Control Board Resolution No. 68-16.

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

PUBLIC HEARING
concerning

**WASTE DISCHARGE REQUIREMENTS
FOR
COUNTY OF KERN
FOR
OPERATION AND CONSTRUCTION
SHAFTER-WASCO SANITARY LANDFILL
KERN COUNTY**

The County of Kern owns and operates a municipal solid waste landfill approximately seven miles west of the City of Shafter. The facility is currently regulated by Waste Discharge Requirements Order R5-2002-0179. The waste management facility contains one 90-acre waste management unit comprised of the following: 1) a 48-acre unlined waste management module; 2) a 22-acre composite-lined waste management module adjacent to the southern edge of the unlined unit; and 3) an 18-acre composite-lined waste management module adjacent to the eastern edge of the previously described module. This order revises the existing Waste Discharge Requirements to provide for construction of new waste management modules with an engineered alternative composite liner system, acceptance of treated wood waste, and to implement a corrective action plan.

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: February 2/ 3, 2012
TIME: 9:00 a.m.
PLACE: California 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 Kern

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 **30 December 2011**. 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 30 November 2011. 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 **30 December 2011**. 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 Ron Holcomb at (559) 445-6050. 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.

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 five 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

11/30/2011