

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER R5-2014-0139

WASTE DISCHARGE REQUIREMENTS
FOR
MERCED COUNTY REGIONAL WASTE MANAGEMENT AUTHORITY
HIGHWAY 59 SOLID WASTE LANDFILL
CLASS III LANDFILL
OPERATION, CONSTRUCTION, POST-CLOSURE MAINTENANCE,
AND CORRECTIVE ACTION
MERCED COUNTY

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

1. The Merced County Regional Waste Management Authority (hereinafter Discharger) owns and operates the Highway 59 Solid Waste Landfill (Facility) about six miles north of the City of Merced in Sections 23 and 24, T6S, R13E, MDB&M, as shown in Attachment A, which is incorporated herein and made part of this Order by reference. The Facility is a municipal solid waste (MSW) landfill regulated under authority given in Water Code section 13000 et seq.; California Code of Regulations, title 27 ("Title 27"), section 20005 et seq.; and 40 Code of Federal Regulations section 258 (a.k.a, "Subtitle D") in accordance with State Water Resources Control Board (State Water Board) Resolution 93-62.
2. The Facility is on a 609-acre property at 7040 N. State Highway 59, Merced. The Facility contains four closed unlined Class III waste management units (Phases 1 to 4) covering a total of approximately 89 acres, one single-composite lined Class III unit (Phase 5) covering 25 acres, one single-composite lined Class III unit (Phase 6) covering 140 acres, two Class II surface impoundments, and three storm water retention basins. The existing and future permitted landfill area is shown in Attachment B, which is incorporated herein and made part of this Order by reference. The Facility is comprised of Assessor's Parcel Numbers (APN) 052-150-004, 052-070-006, 052-150-006, 052-160-033, and 052-160-035.
3. On 24 December 2012 the Discharger submitted an Amended Report of Waste Discharge in the form of a Corrective Action Plan (CAP). The information in the CAP has been used in revising these waste discharge requirements (WDRs). The CAP contains the applicable information required in Title 27.
4. On 26 January 2006, the Central Valley Water Board adopted WDRs Order R5-2006-0022 in which the landfill waste management units at the Facility were classified as Class III units for the discharge of municipal solid waste. This Order continues to classify the landfill units as Class III units in accordance with Title 27.

5. The existing and future waste management units (WMU) authorized by this Order are described as follows:

<u>Unit</u>	<u>Area</u>	<u>Liner/LCRS¹ Components²</u>	<u>Unit Classification & Status</u>
Phases 1-4	89 acres total	Unlined	Class III WMUs, closed
Phase 5 Modules 5A-5C	25 acres total	Single-composite lined	Class III WMUs, inactive
Phase 6 Module 6A Modules 6B-6F	140 acres total	Single-composite lined Single-composite lined	Class III WMU, active Class III WMU, future
Surface Impoundment #1 (for Phase 5)	1.2 acres	Single-composite lined	Class II, active
Surface Impoundment #2 (for Phase 6)	2.6 acres	Double-lined	Class II, active

¹ LCRS – Leachate collection and removal system

² All liner systems are composite liner systems unless otherwise noted

6. On-site facilities at the Highway 59 Solid Waste Landfill include: a scale house and scale, an office, equipment and maintenance building, truck wheel wash, household hazardous waste collection center, waste oil tank, above ground diesel storage tank, agricultural oil collection facility, composting area, construction debris area, materials recovery facility (MRF), a landfill gas extraction system, and a landfill gas flare.
7. On 9 October 1991, the United States Environmental Protection Agency (USEPA) promulgated federal MSW regulations under the Resource Conservation and Recovery Act (RCRA), Subtitle D. These regulations are under 40 Code of Federal Regulations section 258, and are hereafter referred to as either “Subtitle D” in reference to the RCRA federal law that required the regulations or “40 C.F.R. section 258.XX”. These regulations apply to all California Class II and Class III landfills that accept MSW. State Water Board Resolution 93-62 requires the Central Valley Water Board to implement in WDRs for MSW landfills the applicable provisions of the federal MSW regulations that are necessary

to protect water quality, and in particular the containment provisions and the provisions that are either more stringent or that do not exist in Title 27.

8. This Order implements the applicable regulations for discharges of solid waste to land through Prohibitions, Specifications, Provisions, and monitoring and reporting requirements. Prohibitions, Specifications, and Provisions are listed in Sections A through I of these WDRs below, and in the Standard Provisions and Reporting Requirements for Waste Discharge Requirements For Nonhazardous Solid Waste Discharges Regulated by Subtitle D and/or Title 27 (SPRRs), dated January 2012, which are attached hereto and made part of this Order by reference. Monitoring and reporting requirements are included in the Monitoring and Reporting Program (MRP) No. R5-2014-0139 and in the SPRRs. In general, requirements that are either in regulation or otherwise apply to all MSW landfills are considered to be “standard” and are therefore in the SPRRs. Any site-specific changes to a requirement in the SPRRs are included in the applicable section (A through I) of these WDRs, and the requirement in the WDRs supersedes the requirement in the SPRRs.
9. Title 27 contains regulatory standards for discharges of solid waste promulgated by the State Water Board and the California Department of Resources Recovery and Recycling (CalRecycle). In certain instances, this Order cites CalRecycle regulatory sections. Title 27, section 20012 allows the Central Valley Water Board to cite CalRecycle regulations from Title 27 where necessary to protect water quality provided it does not duplicate or conflict with actions taken by the Local Enforcement Agency in charge of implementing CalRecycle’s regulations.

WASTE CLASSIFICATION AND UNIT CLASSIFICATION

10. The Discharger proposes to continue to discharge nonhazardous solid waste, including municipal solid waste and treated wood waste, to lined Class III landfill units at the Facility. These classified wastes may be discharged only in accordance with Title 27, Resolution 93-62, and Subtitle D as required by this Order.
11. The Discharger proposes to continue to discharge treated wood waste in the composite-lined units at the landfill. California Code of Regulations, title 22 (Title 22), section 67386.4 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. §136 et seq.). 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).

12. Title 22, section 67386.11, allows treated wood waste to be discharged to a composite-lined portion of a MSW landfill that is regulated by WDRs issued pursuant to the 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 Title 22, section 67386.10, or disposed to land except in compliance with Title 22, 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 landfill for a release and if a verified release is detected from the unit where treated wood is discharged, 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.
13. Title 27, section 20690, allows the use of alternative daily cover (ADC) at MSW landfills upon approval by the Local Enforcement Agency (LEA) and concurrence from CalRecycle. Title 27, section 20705, provides the Water Board's regulations for all daily and intermediate cover, including that it shall minimize the percolation of liquids through waste and that the cover shall consist of materials that meet the landfill unit classification (Class II or Class III). The regulations also require that, for non-composite lined portions of the landfill, any contaminants in the daily or intermediate cover are mobilized only at concentrations that would not adversely affect beneficial uses of waters of the state in the event of a release. For composite-lined portions of the landfill, the regulations require that constituents and breakdown products in the cover material are listed in the water quality protection standard.

14. The Discharger uses the following materials for ADC: tarps, green waste, and shredded tires. The use of shredded tires shall conform to the requirements of Title 27, section 20690(b)(10). The Discharger has demonstrated that these materials will minimize percolation of liquids through waste, that they meet the unit classification where they will be discharged, and that the constituents and breakdown products are included in the water quality protection standard.
15. Landfills propose new ADC materials regularly in order to preserve landfill air space and to beneficially reuse waste materials. Title 27, section 20686, includes regulations for beneficial reuse, including use of ADC. Approval of ADC is primarily handled by the LEA and CalRecycle under Title 27, section 20690. This Order allows any ADC proposed for use at the Facility after the adoption of this Order to be approved by Central Valley Water Board staff provided the Discharger has demonstrated it meets the requirements in Title 27, section 20705. The approved ADC materials should then be listed in the Facility's WDRs during the next regular update or revision with information about the Discharger's demonstration. This Order also includes a requirement that ADC only be used in internal areas of the landfill unless the Discharger demonstrates that runoff from the particular ADC is not a threat to surface water quality. The demonstration can take sedimentation basins into account.
16. The Discharger proposes to return leachate and landfill gas condensate to the composite-lined landfill units from which they came. Title 27, section 20340(g), requires that leachate be returned to the unit from which it came or be discharged in a manner approved by the regional board. This section of Title 27 also references State Water Board Resolution 93-62 regarding liquids restrictions in 40 C.F.R. section 258.28 for MSW landfills. 40 C.F.R. section 258.28 states that liquid waste may not be placed in MSW landfill units unless the waste is leachate or gas condensate derived from the landfill unit and it is designed with a composite liner and an LCRS. Therefore, leachate and landfill gas condensate from composite lined units with an LCRS may be returned to the unit from which they came. This Order includes requirements for returning leachate and landfill gas condensate back to composite-lined units such that the liquid waste is not exposed to surface water runoff, will not cause instability of the landfill, and will not seep from the edges of the units.
17. The Facility has two Class II surface impoundments for the management and collection of leachate. The first Class II surface impoundment (SI-1) is located at the southeast corner of the Phase 5 landfill area, and stores leachate from that unit. The design for SI-1 in ascending order is as follows: two-feet of compacted soil compacted to a minimum hydraulic conductivity of 1×10^{-6} cm/sec; geocomposite drainage net; and an 80-mil HDPE geomembrane. The second Class II surface impoundment (SI-2) is located at the southeast corner of Phase 6, and stores leachate from that unit. The design for SI-2 in ascending order is as follows: 12-inch thick low permeability layer with a hydraulic conductivity of less than or equal 1×10^{-6} cm/sec; secondary GCL with a hydraulic conductivity of less than or equal to 5×10^{-9} cm/sec; secondary 60-mil thick HDPE double-sided textured geomembrane; geocomposite leak detection layer; primary GCL with a

hydraulic conductivity of less than or equal to 5×10^{-9} cm/sec; and primary 60-mil thick HDPE single-sided textured geomembrane with textured side down.

18. A pan lysimeter is installed beneath the entire liner of surface impoundment SI-1. In addition, two suction lysimeters are installed beneath two opposing slopes of the surface impoundment. However, since they are no longer functional and are not necessary to satisfy unsaturated zone monitoring of SI-1, they are no longer included in vadose zone monitoring network. The pan lysimeter will serve as vadose zone monitoring for SI-1.

SITE DESCRIPTION

19. The Facility is in a region of the San Joaquin Valley that is transitional between the agriculturally intensive Valley Floor and the Sierra Nevada foothills. The area is typified by undulating, westerly trending slopes and agricultural uses. Regionally, the topography grades from the Sierra Foothills west to the Valley Floor with runoff draining to the San Joaquin River and then north to the Pacific Ocean via the San Francisco Bay. Storm water is retained on-site in retention basins.
20. Lands north and south of the Facility are orchards. Land to the east, west, and southwest are used for agriculture and grazing.
21. There are five domestic and three agricultural water supply wells located within one mile of the Facility. There is an agricultural supply well at the site that is used to produce water for dust control. A domestic supply well near the existing scale house provides domestic water to the existing structures and a new well to the north will be used to service the expansion area (domestic, dust control and fire suppression for future buildings).
22. The Facility is within the San Joaquin Valley, a large northwest trending asymmetric structural trough that has been filled with as much as six vertical miles of sediment composed of marine and continental rocks and sedimentary deposits. The sediments in the region consist predominantly of continental deposits derived from the Sierra Nevada and a heterogeneous mix of poorly sorted clay, silt, sand and gravel, with some beds of claystone, siltstone, and conglomerate. The local geology of the site, based on observations of soil borings drilled during well installation, were interpreted to be predominantly unconsolidated, poorly sorted, fine-grained arkosic sediments, which correlate to regionally-occurring alluvial deposits.
23. The measured hydraulic conductivity of the native soils underlying the landfill units ranges between 5.5×10^{-4} and 4.5×10^{-4} centimeters per second (cm/s).
24. Based on a site-specific seismic analysis, the controlling maximum probable earthquake (MPE) for the site is a moment of magnitude 7.9 event along the San Andreas fault. The estimated bedrock acceleration is 0.075g.

25. The Facility receives an average of 12 inches of precipitation per year as measured at the Merced Municipal Airport Station. The mean pan evaporation is 69 inches per year as measured at the Merced Municipal Airport Station.
26. The 100-year, 24-hour precipitation event for the Facility is estimated to be 2.85 inches, based on Department of Water Resources' bulletin 195 entitled *Rainfall Depth-Duration-Frequency for California*, revised November 1982, updated August 1986.
27. 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 0225 of 1225, effective August 2, 1995.
28. All storm water is retained on-site in three storm water retention basins. One is located at the southwest corner of the Phase 5 area, a second at the southeast corner of the Phase 1-4 area, and a third at the southeast corner of Phase 6. Control measures were implemented to direct all run-off away from active waste management and operation areas to the storm water retention basins. The retention basins are designed to have sufficient capacity to retain all storm water generated within the Facility boundary and are normally dry during the summer months. Therefore, the previous California General Industrial Storm Water Permit, Order No. 97-DWQ, permittee number 5B24S000444, was terminated 22 March 2013. The retention basins are shown on Attachment B.

SURFACE WATER AND GROUNDWATER CONDITIONS

29. The *Water Quality Control Plan for Sacramento and San Joaquin River Basins, Fourth Edition* (hereafter Basin Plan), designates beneficial uses, establishes water quality objectives, and contains implementation plans and policies for all waters of the Basin.
30. The Facility is in the Merced Hydrologic Area (535.81) of the San Joaquin Valley Floor Hydrologic Unit. There are no surface bodies of water within or adjacent to the landfill.
31. Based upon the most recent groundwater monitoring report (2nd Semiannual and Annual 2013), the first encountered groundwater ranges from about 65 feet to 114 feet below the native ground surface. Groundwater elevations range from about 107.84 feet above MSL to 88.80 above feet MSL. The groundwater is unconfined.
32. Based upon the most recent groundwater monitoring report (2nd Semiannual and Annual 2013), monitoring data indicate background groundwater quality for first encountered groundwater has electrical conductivity (EC) ranging between 250 and 500 micromhos/cm, with total dissolved solids (TDS) ranging between 200 and 300 milligrams per liter (mg/L).
33. The direction of groundwater flow is generally toward the southwest. The direction of groundwater flow varies seasonally and periodically flows toward the south-southwest. The estimated average groundwater gradient is approximately 0.001 feet per foot. The estimated average groundwater velocity is 1.5 to 1.9 feet per year.

34. The designated beneficial uses of the groundwater, as specified in the Basin Plan, are domestic and municipal water supply, agricultural supply, industrial service supply, and industrial process supply.

GROUNDWATER AND UNSATURATED ZONE MONITORING

35. The existing detection groundwater monitoring network for the landfill units consists of two background monitoring wells (MW-4B and MW-8A) and the sixteen downgradient wells MW-9A, MW-10A, MW-11A, MW-12A, MW-15 (dry) (MW-15A proposed), MW-16A, MW-17A, MW-18A, MW-19, MW-20A, MW-21(dry) (MW-21A proposed), MW-22 (dry) (MW-22A proposed), MW-23, MW-30, MW-31, and MW-32. Two additional off-site downgradient monitoring wells (MW-21 will be replaced with MW-21A and MW-22 will be replaced with MW-22A) are part of the evaluation monitoring program. All groundwater monitoring wells are shown on Attachment B. The methane monitoring network consists of seven landfill gas monitoring wells GW-13 through GW-19, as shown on Attachment B. The deepest probe of each gas monitoring well is utilized for the performance of the unsaturated zone monitoring.
36. At the time this Order was adopted, the Discharger's detection monitoring program for groundwater at the landfill satisfied the requirements contained in Title 27.
37. Volatile organic compounds (VOCs) are often detected in a release from a MSW landfill and are often associated with releases of landfill gas rather than leachate. Since volatile organic compounds are not naturally occurring and thus have no background value, they are not amenable to the statistical analysis procedures contained in Title 27 for the determination of a release of wastes from a landfill unit. Title 27, sections 20415(e)(8) and (9), allow for the use of a non-statistical evaluation of monitoring data that will provide the best assurance of the earliest possible detection of a release from a landfill unit in accordance with Title 27, sections 20415(b)(1)(B)2.-4. However, Title 27 does not specify a specific method for non-statistical evaluation of monitoring data.
38. The Central Valley Water Board may specify a non-statistical data analysis method pursuant to Title 27, section 20080(a)(1). Water Code section 13360(a)(1) allows the Central Valley Water Board to specify requirements to protect groundwater or surface waters from leakage from a solid waste site, which includes a method to provide the best assurance of determining the earliest possible detection of a release.
39. In order to provide the best assurance of the earliest possible detection of a release of non-naturally occurring waste constituents from a landfill unit, the SPRRs specify a non-statistical method for the evaluation of monitoring data for non-naturally occurring compounds. The specified non-statistical method for evaluation of monitoring data provides two criteria (or triggers) for making the determination that there has been a release of non-naturally occurring waste constituents from a landfill unit. The presence of two non-naturally occurring waste constituents above their respective method detection limit (MDL), or one non-naturally occurring waste constituent detected above its practical

quantitation limit (PQL) [a.k.a, laboratory reporting limit (RL)], indicates that a release of waste from a Unit has occurred. Following an indication of a release, verification testing must be conducted to determine whether there has been a release from the landfill unit or the detection was a false detection. The detection of two non-naturally occurring waste constituents above the MDL as a trigger is appropriate due to the higher risk of false-positive analytical results and the corresponding increase in sampling and analytical expenses from the use of one non-naturally occurring waste constituent above its MDL as a trigger.

40. For a naturally occurring constituent of concern, the Title 27 requires concentration limits for each constituent of concern be determined as follows:
 - a. By calculation in accordance with a statistical method pursuant to Title 27, section 20415(e)(8); or
 - b. By an alternate statistical method meeting the requirements of Title 27, section 20415(e)(8)(E).
41. The Discharger submitted a March 2000 Water Quality Protection Standard (WQPS) report proposing statistical data analysis methods to calculate concentration limits for each monitored constituent in accordance with Title 27. The WQPS report proposed to use Intrawell data analysis to calculate tolerance limits for the monitored constituents. The WQPS and approved data evaluation methods are included in MRP No. R5-2014-0139.

GROUNDWATER DEGRADATION AND CORRECTIVE ACTION

42. Volatile organic compounds (VOCs) that are not naturally occurring have been detected in groundwater along the point of compliance. The VOCs consistently identified as the primary impact constituents include: tetrachloroethene (PCE), trichlorofluoromethane (Freon 11), and dichlorodifluoromethane (Freon 12).
43. The Discharger submitted the Evaluation Monitoring Program Report in November 2010. The nature of the release was demonstrated to be volatile organic compounds that appear to have migrated from the unlined area (Phases 1 to 4) of the landfill in the form of landfill gas. Inorganic waste constituents did not appear to have been released from the landfill, thus indicating that the release of waste constituents is due to landfill gas migration. Groundwater data from the Facility indicate that VOC impacts to groundwater are limited to the shallow groundwater and primarily limited to wells adjacent to Phases 1 to 4 (MW-2A, MW-11 and MW-12). VOC impacts to groundwater have been observed as far as 1,500 feet southwest of the unlined cells.
44. The Discharger submitted the Engineering Feasibility Study (EFS) and Corrective Action Plan (CAP) in July 2011 and December 2012, respectively. The EFS and CAP concluded that the most technically and economically feasible corrective action alternative was to

install a dual phase (groundwater and soil gas) extraction and treatment system with landfill gas extraction as a source control. This Order requires the Discharger to complete the installation and initiate operation of the corrective action system by a specified date.

CONSTRUCTION AND ENGINEERED ALTERNATIVE

45. On 17 June 1993, the State Water Board adopted Resolution 93-62 implementing a State Policy for the construction, monitoring, and operation of municipal solid waste landfills that is consistent with the federal municipal solid waste regulations promulgated under 40 Code of Federal Regulations section 258 (a.k.a, Subtitle D). Resolution 93-62 requires the construction of a specified composite liner system at new municipal solid waste landfills, or expansion areas of existing municipal solid waste landfills, that receive wastes after 9 October 1993. Resolution 93-62 also allows the Central Valley Water Board to consider the approval of engineered alternatives to the prescriptive standard. Section III.A.b. of Resolution 93-62 requires that the engineered alternative liner systems be of a composite design similar to the prescriptive standard.
46. Title 27, section 20080(b), allows the Central Valley Water Board to consider the approval of an engineered alternative to the prescriptive standard. In order to approve an engineered alternative in accordance with Title 27, sections 20080(c)(1) or (2), the Discharger must demonstrate that the prescriptive design is unreasonably and unnecessarily burdensome and will cost substantially more than an alternative which will meet the criteria contained in Title 27, section 20080(b), or would be impractical and would not promote attainment of applicable performance standards. The Discharger must also demonstrate that the proposed engineered alternative liner system is consistent with the performance goal addressed by the particular prescriptive standard, and provides protection against water quality impairment equivalent to the prescriptive standard in accordance with Title 27, section 20080(b)(2).
47. Water Code section 13360(a)(1) allows the Central Valley Water Board to specify the design, type of construction, and/or particular manner in which compliance must be met in waste discharge requirements or orders for the discharge of waste at solid waste disposal facilities.
48. The Discharger proposes a liner system which will be designed, constructed, and operated in accordance with the criteria set forth in Title 27, and the provisions in State Water Board Resolution 93-62 for municipal solid wastes.
49. The Discharger has adequately demonstrated that construction of a Subtitle D prescriptive standard liner system for Phase 6 would be unreasonably and unnecessarily burdensome when compared to the proposed engineered alternative design. There is no clay source on-site or nearby and the cost of importing clay from off-site or mixing on-site soils with bentonite would cost substantially more than the alternative design. The Discharger has also demonstrated that the proposed engineered alternative is consistent with the

performance goals of the prescriptive standard and affords at least equivalent protection against water quality impairment.

50. The Discharger has proposed the construction of an engineered alternative single-composite liner system for Phase 6. The engineered alternative liner proposed by the Discharger for the bottom liner of the future landfill modules consists of, in ascending order: a 12-inch subgrade layer recompact to a hydraulic conductivity not to exceed 1×10^{-6} cm/sec or meeting specific compaction and gradation criteria; a geosynthetic clay liner (GCL) consisting of a 5-mm thick layer of sodium bentonite sandwiched between two geotextiles (bottom geotextile nonwoven); a 60-mil thick synthetic flexible membrane of HDPE; a 12-inch gravel leachate drainage layer; a nonwoven geotextile filter fabric; and a 24-inch thick soil operations layer.
51. The components for the sideslope liners for Phase 6 are to be constructed of the same materials and in the same sequence and manner as the bottom liner system, but without the 12-inch gravel drainage layer and nonwoven geotextile filter fabric. The sideslope subgrade will be prepared in an appropriate manner using accepted engineering and construction methods so as to provide a surface that is smooth and free from 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 Plan.
52. The proposed leachate collection and removal system includes a minimum 12-inch thick drainage layer composed of granular material with a minimum hydraulic conductivity of 0.3 centimeters per second (cm/sec). The design leachate flow volume is 4.4 gallons per minute.
53. The proposed vadose zone monitoring system includes geomembrane-lined pan lysimeters installed beneath the leachate collection and removal system collection pipes and sumps. A pan lysimeter will be installed beneath the liner system for the purpose of vadose zone sampling. The pan lysimeter will consist of: 1) an underlying 60-mil HDPE liner on a prepared subgrade below the leachate sump(s) and a length of the leachate collection and removal system troughs; and 2) perforated or slotted 3-inch diameter HDPE piping encased in drainage gravel.
54. The Discharger's stability analysis includes components to demonstrate the integrity of the landfill foundation, final slopes, and containment systems under both static and dynamic conditions throughout the landfill's life including the closure period and post-closure maintenance period. The stability analysis demonstrates that the structural components of Phase 6 will withstand the forces of the Maximum Probable Earthquake (MPE) without failure of the containment systems or environmental controls.

This Order approves the Discharger's proposed liner system for future modules as described in Finding 5 and requires that the Discharger submit design plans and

construction quality assurance (CQA) plans for each new module or modules for review and approval at least **180 days** prior to construction.

LINER PERFORMANCE DEMONSTRATION

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

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

56. Based on the design and construction features of the engineered alternative liner system and the results of the VLEACH model showing that the engineered alternative liner design would contain the waste discharged to the Unit, the Discharger has demonstrated that the proposed liner system meets the approval criteria set forth in Section 20080(b) of Title 27 for engineered alternative designs. The Discharger, therefore, proposes a liner system which will be designed, constructed, and operated in accordance with the criteria set forth in Title 27, and the provisions in State Water Resources Control Board Resolution 93-62 for municipal solid wastes.

57. To ensure proper installation of the engineered alternative landfill liner system, the Discharger has also agreed to perform an electronic leak detection survey (ELDS) over the entire base of the liner system subsequent to placement of the operations layer on the liner and leachate collection and removal system to detect and repair any liner defects prior to placing waste. In addition to performing the ELDS, the Discharger will place select waste over the operations layer to reduce the potential damage to the base liner during the initial lift of refuse filling operations.

LANDFILL CLOSURE

58. The Discharger completed closure of Phases 1 to 4 with the construction of an engineered alternative (evapotranspirative (ET)) final cover system in 2012. The ET cover design was consistent with the performance goals of the prescriptive standard and affords at least equivalent protection against water impairment. The cover for Phases 1 to 4 consists of the following components, in ascending order: 1) a minimum 24-inch thick foundation layer, the upper 12-inches of which will be compacted during final cover

placement; and 2) a minimum 36-inch thick soil monolithic cover layer with low hydraulic conductivity to act as an evapotranspirative layer, the upper six-inches of which will be amended with compost for erosion resistance and to establish vegetative growth.

LANDFILL POST-CLOSURE MAINTENANCE

59. The Discharger submitted a January 2008 *Partial Closure and Postclosure Maintenance Plan* for closure and post-closure maintenance of Phases 1 to 4. The plan includes inspection, maintenance, and monitoring of the landfill during the post-closure maintenance period, and includes a post-closure maintenance cost estimate for the entire Facility. Inspection and maintenance will include the condition of the final cover, drainage features, LCRS, groundwater monitoring wells, unsaturated zone monitoring points, access roads, landfill gas system, groundwater corrective action system, and site security. The postclosure plan shall be implemented for a minimum period of 30 years, after which the Discharger must demonstrate that the landfill no longer poses a threat to public health and safety or the environment before being released from postclosure obligations.
60. Once every five years during the post-closure maintenance period, aerial photographic maps of the closed landfill area will be made to identify and evaluate landfill settlement. Iso-settlement maps will be prepared to determine the amount of differential settlement occurring over the previous five years. Pursuant to Title 27, section 21090(e)(2), this Order requires iso-settlement maps to be prepared and submitted every five years.
61. The completed final cover will be periodically tested for damage or defects by monitoring surface emissions pursuant to California Code of Regulations, title 17, section 95471(c) and Title 27, section 21090(a)(4)(A). Defects will be repaired and tested for adequacy based on the closure CQA Plan.

FINANCIAL ASSURANCES

62. Title 27, sections 21820 and 22206, require a cost estimate for landfill closure. The cost estimate must be equal to the cost of closing the landfill at the point in its active life when the extent and manner of operation would make closure the most expensive. When closing units in phases, the estimate may account for closing only the maximum area or unit of a landfill open at any time. The Discharger's 2013 *Preliminary Closure and Post Closure Maintenance Plan* includes a cost estimate for landfill closure. The lump sum estimate is for the cost to close largest future area needing closure at any one time. The total amount of the closure cost estimate in 2013 dollars is \$2,958,321. This Order requires that the Discharger maintain financial assurance with the California Department of Resources Recycling and Recovery (CalRecycle) in at least the amount of the closure cost estimate. As of 2014, the balance of the closure fund was \$3,002,696.
63. Title 27, sections 21840 and 22211, requires a cost estimate for landfill post-closure maintenance. The Discharger's 2013 *Preliminary Closure and Post Closure Maintenance Plan* includes a cost estimate for landfill post-closure maintenance. The amount of the

cost estimate for post-closure maintenance in 2013 dollars is \$14,662,800. This Order requires that the Discharger maintain financial assurance with CalRecycle in at least the amount of the post-closure maintenance cost estimate adjusted annually for inflation. As of 2014, the balance of the post-closure maintenance fund was \$14,882,742.

64. Title 27, section 22221, requires a cost estimate for corrective action of all known or reasonably foreseeable releases. The Discharger submitted a 2011 cost estimate of \$888,286 for corrective action of all known or reasonably foreseeable releases. This Order requires that the Discharger maintain financial assurance with the CalRecycle in at least the amount of the cost estimate adjusted annually for inflation. As of 2014, the balance of the corrective action fund was \$935,004.
65. Title 27, section 22100(b), requires owners and operators of disposal facilities that are required to be permitted as solid waste landfills to provide cost estimates for initiating and completing corrective action for known or reasonably foreseeable releases of waste. Title 27, section 22101, requires submittal of a *Water Release Corrective Action Estimate* and a *Non-Water Release Corrective Action Cost Estimate*. The *Water Release Corrective Action Estimate* is for scenarios where there is statistically significant evidence of a release of waste to ground or surface water when comparing point-of-compliance analyte concentrations to background concentrations. The *Non-Water Release Corrective Action Cost Estimate* is for complete replacement of the landfill final cover system, however a site-specific corrective action plan pursuant to Title 27, section 22101(b)(2), may be provided in lieu of the final cover replacement cost estimate. Title 27, section 22221, requires establishment of financial assurances in the amount of an approved *Water Release Corrective Action Estimate* or an approved *Non-Water Release Corrective Action Cost Estimate*, whichever is greater.

CEQA AND OTHER CONSIDERATIONS

66. The Highway 59 Landfill has been operating since 1973. In 1996, Merced County prepared an Environmental Impact Report pursuant to the requirements of the California Environmental Quality Act ("CEQA") (Pub. Resources Code, § 21000 et seq.) to analyze the potentially-significant environmental effects associated with the expansion of the Facility. On 13 August 1996, the Merced County Board of Supervisors certified the final EIR for the Phase 6 expansion. Prescribing these WDRs, which impose regulatory requirements on the existing facility in order to ensure the continued protection of groundwater resources, is exempt from the provisions of CEQA in accordance with California Code of Regulations, title 14, section 15301, which exempts the "operation, repair, maintenance, [and] permitting ... of existing public or private structures, facilities, mechanical equipment, or topographical features" from environmental review.
67. As part of the expansion, the United States Fish and Wildlife Service issued a Biological Opinion pursuant to the federal Endangered Species Act. The Discharger is required under its federal CWA Section 404 permit and the Biological Opinion to preserve, in perpetuity, a 168-acre wetland preserve and mitigation area. In addition, Title 40 of the

Code of Federal Regulations, Part 258.12, (40 C.F.R. § 258.12) requires that certain demonstrations be made to allow the location of a landfill expansion within wetlands. Activities conducted at the Facility will continue to be managed according to the Discharger's Vernal Pool Mitigation, Management and Monitoring Plan, which was developed for the purpose of satisfying these regulatory requirements.

68. This order implements:

- a. *The Water Quality Control Plan for the Sacramento River and San Joaquin River Basins, Fourth Edition;*
- b. The prescriptive standards and performance goals of California Code of Regulations, title 27, section 20005 et seq., effective 18 July 1997, and subsequent revisions;
- c. State Water Board Resolution 93-62, *Policy for Regulation of Discharges of Municipal Solid Waste*, adopted 17 June 1993, and revised on 21 July 2005.
- d. The applicable provisions of Title 40 C.F.R. section 258 "Subtitle D" federal regulations as required by State Water Board Resolution 93-62.

69. Based on the threat and complexity of the discharge, the Facility is determined to be classified 2-B as defined below:

- a. Category 2 threat to water quality, defined as, "Those discharges of waste that could impair the designated beneficial uses of the receiving water, cause short-term violations of water quality objectives, cause secondary drinking water standards to be violated, or cause a nuisance."
- b. Category B complexity, defined as, "Any discharger not included in Category A that has physical, chemical, or biological treatment systems (except for septic systems with subsurface disposal), or any Class 2 or Class 3 waste management units."

70. Water Code section 13267(b) provides that: "In conducting an investigation specified in subdivision (a), the Regional Board may require that any person who has discharged, discharges, or is suspected of having discharge or discharging, or who proposed to discharge within its region, or any citizen or domiciliary, or political agency or entity of this state who had discharged, discharges, or is suspected of having discharged or discharging, or who proposed to discharge waste outside of its region that could affect the quality of the waters of the state within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the board requires. The burden, including costs of these reports, shall bear a reasonable relationship to the need for the reports and the benefits to be obtained from the reports."

71. The technical reports required by this Order and the attached "Monitoring and Reporting Program No. R5-2014-0139" are necessary to assure compliance with these waste discharge requirements.

PROCEDURAL REQUIREMENTS

72. All local agencies with jurisdiction to regulate land use, solid waste disposal, air pollution, and to protect public health have approved the use of this site for the discharges of waste to land stated herein.
73. 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.
74. The Central Valley Water Board, in a public meeting, heard and considered all comments pertaining to the discharge.

IT IS HEREBY ORDERED, pursuant to California Water Code sections 13263 and 13267, that Order No. R5-2006-0022 and Order R5-2010-0111 are rescinded except for purposes of enforcement of violations occurring prior to the Effective Date of this Order, and that Merced County Regional Waste Management Authority, 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 22, section 66261.1 et, seq., and 'designated waste' is as defined in Water Code section 13173.
2. The Discharger shall comply with all Standard Prohibitions listed in Section C of the Standard Provisions and Reporting Requirements (SPRRs) dated January 2012 which are attached hereto and made part of this Order by reference.

B. DISCHARGE SPECIFICATIONS

1. The Discharger shall only discharge the wastes listed or allowed under the Waste Classification and Unit Classification section in the Findings of this Order.
2. The Discharger shall discharge treated wood wastes only to landfill units equipped with a composite liner system and a leachate collection and removal system (i.e., Phase 6). If a verified release is detected from the waste management unit where treated wood is disposed, the disposal of treated wood shall be terminated at the unit with the verified release until corrective action ceases the release.

3. 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.
4. The Discharger may not use any material as alternative daily cover (ADC) that is not listed as approved ADC in the Findings of these WDRs unless and until the Discharger demonstrates it meets the requirements in Title 27, section 20705, and the Discharger has received approval that it may begin using the material as ADC.
5. The Discharger shall use approved ADC only in internal areas of the landfill that do not drain outside of the limits of the contiguous landfill units unless the Discharger demonstrates that runoff from the particular ADC is not a threat to surface water quality and the demonstration has been approved. This demonstration may take removal of sediment or suspended solids into account for landfills where surface water drains to a sedimentation basin.
6. The Discharger shall, in a timely manner, remove and relocate any wastes discharged at this Facility in violation of this Order. If the Discharger is unable to remove and relocate the waste, the Discharger shall submit a report to the Central Valley Water Board explaining how the discharge occurred, why the waste cannot be removed, and any updates to the waste acceptance program necessary to prevent re-occurrence. If the waste is a hazardous waste, the Discharger shall immediately notify the Department of Toxic Substances Control.
7. Leachate and/or landfill gas condensate may be returned only to Modules in Phase 5 and Phase 6 in accordance with Standard Discharge Specifications D.2 through D.4 of the SPRRs.
8. The Discharger shall comply with all Standard Discharge Specifications listed in Section D of the SPRRs dated January 2012.

C. FACILITY SPECIFICATIONS

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

D. CONSTRUCTION SPECIFICATIONS

1. The Discharger shall construct the base liner and side slope liner of new Class III landfill units as described in Finding 5 of this Order in accordance with the following approved engineered alternative liner design:
 - a. An engineered alternative composite **base liner system** that is comprised, in ascending order, of the following:

- 1) A 12-inch subgrade layer recompact to a hydraulic conductivity not to exceed 1×10^{-6} cm/sec or meeting specific compaction and gradation criteria
 - 2) A geosynthetic clay liner (GCL) consisting of a 5-mm thick layer of sodium bentonite sandwiched between two geotextiles (bottom geotextile nonwoven);
 - 3) A 60-mil thick synthetic flexible membrane of HDPE;
 - 4) A 12-inch gravel leachate drainage layer and non-woven geotextile layer;
 - 5) And a 24-inch thick operations layer
- b. **Sideslope liners** for Phase 6 are to be constructed of the same materials and in the same sequence and manner as the bottom base liner system, but without the 12-inch gravel drainage layer and nonwoven geotextile filter fabric.
2. The Discharger shall not proceed with liner construction (other than earth moving and grading in preparation for liner construction) until the construction plans, specifications, and all applicable construction quality assurance plans have been approved.
 3. The Discharger may propose changes to the liner system design prior to construction, provided that approved components are not eliminated, the engineering properties of the components are not substantially reduced, and the proposed liner system results in the protection of water quality equal to or greater than the design prescribed by Title 27 and this Order. The proposed changes may be made following approval by the Executive Officer. Substantive changes to the design require reevaluation as an engineered alternative and approval by the Central Valley Water Board in revised WDRs.
 4. The Discharger shall comply with all Standard Construction Specifications listed in Section F of the SPRRs.
 5. The Discharger shall comply with all Storm Water Provisions listed in Section L of the SPRRs.

E. CLOSURE AND POST-CLOSURE MAINTENANCE SPECIFICATIONS

1. The Discharger shall submit a final or partial final closure and post-closure maintenance plan at least two years prior to proposed closure of any portion of the landfill in accordance with requirements in Section G of the Standard Closure and Post-Closure Specifications in the SPRRs.
2. The Discharger shall obtain revised WDRs prior to closure with any other final cover design than the design or designs approved in this Order.

3. The Discharger shall close the landfill with side slopes at steepness of 3H:1V or less, and top deck areas shall be sloped at three percent or greater.
4. The Discharger shall install an active landfill gas extraction system for the closed landfill unit during landfill closure, and landfill gas shall be extracted from closed landfill units until such time that the landfill gas is no longer a threat to water quality as documented by the Discharger and approved by the Executive Officer.
5. The Discharger shall test the critical interfaces of the final cover in a laboratory to ensure minimum design shear strengths are achieved and include the results in the final documentation report.
6. The Discharger shall ensure that the vegetative/erosion resistant layer receives necessary seed, binder, and nutrients to establish the vegetation proposed in the final closure plan. The Discharger shall install necessary erosion and sedimentation controls to prevent erosion and sediment in runoff from the closed landfill during the period the vegetation is being established.
7. The Discharger shall comply with all Standard Closure and Post-Closure Specifications listed in Section G and all Standard Construction Specifications that are applicable to closure in Section F of the SPRRs.

F. FINANCIAL ASSURANCE SPECIFICATIONS

1. The Discharger shall obtain and maintain assurances of financial responsibility with CalRecycle for closure and post-closure maintenance for the landfill in at least the amounts described in Findings 63 and 64, adjusted for inflation annually. A report regarding financial assurances for closure and post-closure maintenance shall be submitted to the Central Valley Water Board by **1 September of each year**. This may be the same report that is submitted to CalRecycle for this purpose. If CalRecycle determines that either the amount of coverage or the mechanism is inadequate, then within 90 days of notification, the Discharger shall submit an acceptable mechanism to CalRecycle and the Central Valley Water Board for at least the amount of the approved cost estimate.
2. The Discharger shall update the preliminary closure and post-closure maintenance plan (PCPCMP) any time there is a change that will increase the amount of the closure and/or post-closure maintenance cost estimate. The updated PCPCMP shall be submitted to the Central Valley Water Board, the Local Enforcement Agency, and CalRecycle. The PCPCMP shall meet the requirements of Title 27, section 21769(b), and include a lump sum estimate of the cost of carrying out all actions necessary to close each Unit, to prepare detailed design specifications, to develop the final closure and post-closure maintenance plan, and to carry out the first thirty years of post-closure maintenance. Reports regarding financial assurance required in F.1 above shall reflect the updated cost estimate.

3. The Discharger shall obtain and maintain assurances of financial responsibility with CalRecycle for initiating and completing corrective action for all known or reasonably foreseeable releases from the landfill in at least the amount of the annual inflation-adjusted cost estimate described in Finding 65. A report regarding financial assurances for corrective action shall be submitted to the Central Valley Water Board by **1 September of each year**. This may be the same report that is submitted to CalRecycle for this purpose. If CalRecycle determines that either the amount of coverage or the mechanism is inadequate, then within 90 days of notification, the Discharger shall submit an acceptable mechanism to CalRecycle and the Central Valley Water Board for at least the amount of the approved cost estimate.
4. The Discharger shall comply with all Standard Financial Assurance Specifications listed in Section H of the SPRRs.

G. MONITORING SPECIFICATIONS

1. The Discharger shall comply with the detection monitoring program provisions of Title 27 for groundwater and the unsaturated zone in accordance with Monitoring and Reporting Program (MRP) No. R5-2014-0139, and the Standard Monitoring Specifications listed in Section I of the SPRRs.
2. The Discharger shall, for any landfill unit in a corrective action monitoring program, comply with the corrective action monitoring program provisions of Title 27, MRP No. R5-2014-0139, and the Standard Monitoring Specifications listed in Section I of SPRRs.
3. The Discharger shall comply with the Water Quality Protection Standard as specified in this Order, MRP No. R5-2014-0139, and the SPRRs.
4. The concentrations of the constituents of concern in waters passing the Point of Compliance (defined pursuant to Title 27, section 20164 as a vertical surface located at the hydraulically downgradient limit of the landfill unit that extends through the uppermost aquifer underlying the unit) shall not exceed the concentration limits established pursuant to MRP No. R5-2014-0139.
5. For each monitoring event, the Discharger shall determine whether the landfill is in compliance with the Water Quality Protection Standard using procedures specified in MRP No. R5-2014-0139 and the Standard Monitoring Specifications in Section I of the SPRRs.
6. As specified in MRP No. R5-2014-0139, the Discharger shall enter all monitoring data and monitoring reports into the online Geotracker database as required by Division 3 of Title 27 and Chapter 30, Division 3 of Title 23.
7. The Discharger shall comply with all Standard Monitoring Specifications and Response to a Release specifications listed in Sections I and J of the SPRRs.

H. CORRECTIVE ACTION SPECIFICATIONS

1. Prior to **31 December 2014**, 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 an approved corrective action plan.
2. A technical report detailing the work completed during the installation of the groundwater extraction and treatment system must be submitted **within 60 days of completion of the work**.
3. 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. The Discharger shall report the results of corrective action monitoring and an evaluation of the effectiveness of the corrective action system as required by MRP No. R5-2014-0139. The Discharger shall also monitor the influent and effluent of the groundwater extraction and treatment system and report the results as required by MRP No. R5-2014-0139.
4. Corrective action measures may be terminated when the Discharger demonstrates to the satisfaction of the RWQCB that the concentrations of all COCs are reduced to levels below their respective concentration limits throughout the entire zone affected by the release.
5. After suspending the corrective action measures, the Discharger shall demonstrate that the concentration of each constituent in each sample from each monitoring point remained at or below its concentration limit for at least three consecutive years, beginning immediately after the suspension of corrective action measures.
6. If either the Discharger or the Executive Officer determines that groundwater extraction and treatment system 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 Executive Officer of such determination**, submit an amended 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 MRP R5-2014-0139.
- f. Cost estimates for implementing additional corrective action, including monitoring.
- g. An implementation schedule.
7. **Within one year** of Executive Officer approval of the amended ROWD to make appropriate modifications to the CAP or an alternative corrective action method, the Discharger shall implement the modified CAP or an alternative corrective action method to remediate VOCs.
8. **Upon completion of corrective action**, the Discharger shall certify, in writing, that corrective action has been completed in compliance with Title 27 and the WDRs. The certification shall be signed by a California Registered Civil Engineer or Professional Geologist.

I. PROVISIONS

1. The Discharger shall maintain a copy of this Order at the Facility, including the MRP No. R5-2014-0139 and the SPRRs, and make it available at all times to Facility operating personnel, who shall be familiar with its contents, and to regulatory agency personnel.
2. The Discharger shall comply with all applicable provisions of Title 27 and Subtitle D that are not specifically referred to in this Order.
3. The Discharger shall comply with MRP No. R5-2014-0139, which is incorporated into and made part of this Order by reference.
4. The Discharger shall comply with the applicable portions of the Standard Provisions and Reporting Requirements for Waste Discharge Requirements for Nonhazardous Solid Waste Discharges Regulated by Subtitle D and/or Title 27 (SPRRs), dated January 2012, which are attached hereto and made part of this Order by reference.
5. If there is any conflicting or contradictory language between the WDRs, the MRP, or the SPRRs, then language in the WDRs shall supersede either the MRP or the SPRRs, and language in the MRP shall supersede the SPRRs.

6. All reports required by this Order shall be submitted pursuant to Water Code section 13267.
7. The Discharger shall complete the tasks contained in these waste discharge requirements in accordance with the following time schedule:

<u>Task</u>	<u>Compliance Date</u>
A. Construction Plans for Phase 6 Modules	
Submit construction and design plans for review and approval. (see all Construction Specifications in Section D, above and Section F of the SPRRs.)	180 days prior to proposed Construction
B. Construction Report	
Submit a construction report for review and approval upon completion demonstrating construction was in accordance with approved construction plans (see Standard Construction Specification F.27 in the SPRRs).	60 days prior to proposed discharge
C. Corrective Action	
1. Complete installation and initiate operation of the corrective action system (see Corrective Action Specification, Section H.1)	31 December 2014
2. Submit a technical report detailing the work completed during the installation of the groundwater extraction and treatment system (see Corrective Action Specification, Section H.2)	Within 60 days of completion of the work
3. Submit an amended ROWD for Executive Officer approval, to make appropriate modifications to the CAP or propose alternative correction action methods to remediate VOCs, if at any time it is determined by either the Discharger or the Executive Officer, that the groundwater extraction and treatment system is unsuccessful. (see Corrective Action Specification H.6)	Within 90 days of making a determination or of receiving written notification from the Executive Officer of such a determination

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|---|--|
| 4. Implement the modified CAP or an alternative correction method action to remediate VOCs in groundwater.
(see Corrective Action Specification H. 7) | Within one year of Executive Officer approval of the amended ROWD to make appropriate modifications to the CAP or propose an alternative corrective action method |
| 5. Certify, in writing, that corrective action has been completed in compliance with Title 27 and the WDRs.
(see Corrective Action Specification H. 8) | Upon completion of corrective action |

D. Financial Assurance Review

- | | |
|---|------------------------------|
| 1. Annual Review of Financial Assurance for closure and post-closure maintenance.
(see Financial Assurance Specification F.1 & F.2) | 1 September each year |
| 2. Annual Review of Financial Assurance for initiating and completing corrective action.
(see Financial Assurance Specification F.3) | 1 September each year |
8. The Discharger shall comply with all General Provisions listed in Section K of the SPRRs.

If, in the opinion of the Executive Officer, the Discharger fails to comply with the provisions of this Order, the Executive Officer may refer this matter to the Attorney General for judicial enforcement, may issue a complaint for administrative civil liability, or may take other enforcement actions. Failure to comply with this Order may result in the assessment of Administrative Civil Liability of up to \$10,000 per violation, per day, depending on the violation, pursuant to the Water Code, including sections 13268, 13350 and 13385. The Central Valley Water Board reserves its right to take any enforcement actions authorized by law.

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

by 5:00 p.m. on the next business day. Copies of the law and regulations applicable to filing petitions may be found on the Internet at:

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

or will be provided upon request.

I, PAMELA C. CREEDON, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on 10 October 2014.

Original signed by:

PAMELA C. CREEDON, Executive Officer

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2014-0139
FOR
MERCED COUNTY REGIONAL WASTE MANAGEMENT AUTHORITY
HIGHWAY 59 SOLID WASTE LANDFILL
CLASS III LANDFILL
OPERATION, CONSTRUCTION, POST-CLOSURE MAINTENANCE,
AND CORRECTIVE ACTION
MERCED COUNTY

This monitoring and reporting program (MRP) is issued pursuant to California Water Code section 13267 and incorporates requirements for groundwater, unsaturated zone monitoring and reporting; facility monitoring, maintenance, and reporting; and financial assurances reporting contained in California Code of Regulations, title 27, section 20005, et seq. (hereafter Title 27), Waste Discharge Requirements (WDRs) Order No. R5-2014-0139, and the Standard Provisions and Reporting Requirements For Nonhazardous Solid Waste Discharges Regulated by Subtitle D and/or Title 27 (SPRRs) dated January 2012. Compliance with this MRP is ordered by the WDRs and the Discharger shall not implement any changes to this MRP unless a revised MRP is issued by the Central Valley Water Board or the Executive Officer.

A. MONITORING

The Discharger shall comply with the detection monitoring program provisions of Title 27 for groundwater and the unsaturated zone in accordance with Standard Monitoring Specifications in Section I of the SPRRs and the Monitoring Specifications in Section G of the WDRs. All monitoring shall be conducted in accordance with the approved *Sample Collection and Analysis Plan*, which includes quality assurance/quality control standards.

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

The Discharger may use alternative analytical test methods, including new USEPA approved methods, provided the methods have method detection limits equal to or lower than the analytical methods specified in this Monitoring and Reporting Program, and are identified in the approved *Sample Collection and Analysis Plan*.

The monitoring program of this MRP includes:

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

1. **Groundwater Monitoring**

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

The current groundwater monitoring network shall consist of the following:

<u>Well</u>	<u>Status</u>	<u>Units Being Monitored</u>
MW-4B	Background	Phase 1-5
MW-8A	Background	Phase 6
MW-9A	Detection	Phase 1-5
MW-10A	Detection	Phase 1-5
MW-11A	Detection	Phase 1-5
MW-12A	Detection	Phase 1-5
MW-15 (dry)	Evaluation/Corrective Action	Phase 1-5
MW-15A(proposed)	Evaluation/Corrective Action	Phase 1-5
MW-16A	Evaluation/Corrective Action	Phase 1-5
MW-17A	Evaluation/Corrective Action	Phase 1-5
MW-18A	Evaluation/Corrective Action	Phase 1-5
MW-19	Detection/Intermediate Aquifer	Phase 1-5
MW-20A	Detection	Surface Impoundment #1
MW-21 (dry)	Evaluation/Corrective Action	Phase 1-5
MW-21A(proposed)	Evaluation/Corrective Action	Phase 1-5
MW-22 (dry)	Evaluation/Corrective Action	Phase 1-5
MW-22A(proposed)	Evaluation/Corrective Action	Phase 1-5
MW-23	Detection	Phase 6
MW-30	Detection	Phase 6
MW-31	Detection	Phase 6
MW-32	Detection	Surface Impoundment #2

Groundwater samples shall be collected from the background wells, detection monitoring wells, evaluation/corrective action monitoring wells, and any additional wells added as part of the approved groundwater monitoring system. The collected samples shall be analyzed for the parameters and constituents listed in Table I in accordance with the specified methods and frequencies. The Discharger shall collect, preserve, and transport groundwater samples in accordance with the approved Sample Collection and Analysis Plan.

Once per quarter, the Discharger shall measure the groundwater elevation in each well, determine groundwater flow direction, and estimate groundwater flow rates in the uppermost aquifer and in any zones of perched water and in any additional portions of the zone of saturation monitored. The results shall be reported semiannually, including the times of expected highest and lowest elevations of the water levels in the wells, pursuant to Title 27, section 20415(e)(15).

Samples collected for the COC monitoring specified in Table I shall be collected and analyzed in accordance with the methods listed in Table V every five years. Five-year COCs were last monitored in 2011 and shall be monitored again in **2016**. The results shall be reported in the Annual Monitoring Report for the year in which the samples are collected.

2. Unsaturated Zone Monitoring

The Discharger shall operate and maintain an unsaturated zone detection monitoring system that complies with the applicable provisions of Title 27, sections 20415 and 20420. The current unsaturated zone detection monitoring system meets the applicable requirements of Title 27. The Discharger shall install unsaturated zone monitoring devices (after review and approval by Central Valley Water Board staff) each time the landfill constructs a new cell or module.

The current unsaturated zone monitoring network shall consist of:

<u>Mon Pt.</u>	<u>Status</u>	<u>Units Being Monitored</u>
PL-1	Detection	Surface Impoundment #1
PL-4	Detection	Phase 5
PL-6A	Detection	Phase 6A
GW-13 thru GW-19	Detection, Soil-Pore Gas	Phase 1-4

The deepest probe of each of each gas monitoring well (GW-13 through GW-19) is utilized for the performance of the unsaturated zone. These gas monitoring wells have been monitored semi-annually since 1998.

Unsaturated zone samples shall be collected from the monitoring network listed above and shall be analyzed for the parameters and constituents listed in Table II in accordance with the specified methods and frequencies (pan lysimeters need only be sampled when liquid is present). Pan lysimeters shall be inspected for the presence of liquid **monthly**. If liquid is detected in a previously dry pan lysimeter, the Discharger shall verbally notify Central Valley Water Board staff within **seven days** and shall immediately sample and test the liquid for Field and Monitoring Parameters listed in Table II. Samples collected for the 5-year COC analyses specified in Table II shall be collected and analyzed in accordance with the methods listed in Table V every five years, beginning again in **2016** (does not include soil-pore gas).

The Discharger shall collect, preserve, and transport samples in accordance with the quality assurance/quality control standards contained in the approved Sample Collection and Analysis Plan.

Monitoring results for the unsaturated zone shall be included in monitoring reports and shall include an evaluation of potential impacts of the facility on the unsaturated zone and compliance with the Water Quality Protection Standard.

3. Leachate Monitoring, Seep Monitoring, and Annual LCRS Testing

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

The current LCRS leachate sump monitoring points are:

<u>Mon Pt.</u>	<u>Unit Where Sump is Located</u>
LCRS Phase 5	Phase 5
LCRS Phase 6	Phase 6

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

All LCRS sump samples shall be analyzed for the 5-year COCs specified in Table III every five years, beginning again in **2016**.

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

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

4. Facility Monitoring

a. Annual Facility Inspection

Annually, prior to the anticipated rainy season, but no later than **30 September**, the Discharger shall conduct an inspection of the facility. The inspection shall assess repair and maintenance needed for drainage control systems, cover systems, and groundwater monitoring wells; and shall assess preparedness for winter conditions (including but not limited to erosion and sedimentation control). The Discharger shall take photos of any problems areas before and after repairs. Any necessary construction, maintenance, or repairs shall be completed by **31 October**. Annual facility inspection reporting shall be submitted as required in Section B.4 of this MRP.

b. Major Storm Events

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

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

For closed landfill units, the Discharger shall conduct a five-year iso-settlement survey and produce an iso-settlement map accurately depicting the estimated total change in elevation of each portion of the

final cover's low-hydraulic-conductivity layer. For each portion of the landfill, this map shall show the total lowering of the surface elevation of the final cover, relative to the baseline topographic map [Title 27, section 21090(e)(1 & 2)]. Reporting shall be in accordance with Section B.6 of this MRP. Final closure of Phases 1 to 4 was completed in 2012, which included a survey of the final cover. Therefore, the next iso-settlement survey shall be conducted in **2017**.

d. **Standard Observations**

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

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

The Standard Observations shall include:

- 1) For the landfill units:
 - a) Evidence of ponded water at any point on the landfill outside of any contact storm water/leachate diversions structures on the active face (show affected area on map); and
 - b) Evidence of erosion and/or of day-lighted refuse.
- 2) Along the perimeter of the landfill units:
 - a) Evidence of leachate seeps, estimated size of affected area, and flow rate (show affected area on map); and
 - b) Evidence of erosion and/or of day-lighted refuse.
- 3) For receiving waters:
 - a) Floating and suspended materials of waste origin - presence or absence, source, and size of affected area; and
 - b) Discoloration and turbidity - description of color, source, and size of affected area.

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

5. Corrective Action Monitoring

The Discharger shall conduct corrective action monitoring to demonstrate the effectiveness of corrective action in accordance with Title 27, section 20430 and this MRP. Groundwater monitoring wells and unsaturated zone monitoring points that are in a corrective action monitoring program shall be monitored in accordance with the groundwater and unsaturated zone monitoring requirements in parts A.1 and A.2 of this MRP.

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 points.

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 below. 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.

The Discharger shall monitor the influent and effluent to the groundwater extraction and treatment system on a monthly basis to monitor the total VOC concentrations. The monthly analytical results of influent and effluent shall be submitted in the semiannual monitoring reports. The rate and volume of extracted groundwater shall be monitored on a monthly basis and be submitted in the semiannual monitoring reports. Upon determination that the groundwater extraction and treatment system is adequately removing VOCs from groundwater and with approval from Central Valley Water Board staff, the sampling frequency of the influent and effluent may be reduced to quarterly and the results submitted in the semiannual monitoring reports.

B. REPORTING

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

Reporting Schedule

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

Reporting Requirements

The Discharger shall submit monitoring reports **semiannually** with the data and information as required in this Monitoring and Reporting Program and as required in WDRs Order No. R5-2014-0139 and the Standard Provisions and Reporting Requirements (particularly Section I: "Standard Monitoring Specifications" and Section J: "Response to a Release"). In reporting the monitoring data required by this program, the Discharger shall arrange the data in tabular form so that the date, the constituents, the concentrations, and the units are readily discernible. The data shall be summarized in such a manner so as to illustrate clearly the compliance with waste discharge requirements or the lack thereof. Data shall also be submitted in a digital format, such as a computer disk.

Field and laboratory tests shall be reported in each monitoring report. Semiannual and annual monitoring reports shall be submitted to the Central Valley Water Board in accordance with the above schedule for the calendar period in which samples were taken or observations made. In addition, the Discharger shall enter all monitoring data and monitoring reports into the online Geotracker database as required by Division 3 of Title 27 and Chapter 30, Division 3 of Title 23.

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

The Discharger shall retain records of all monitoring information, including all calibration and maintenance records, all original strip chart recordings of continuous monitoring instrumentation, copies of all reports required by this Order, and records of all data used to complete the application for this Order. Records shall be maintained throughout the life of the facility including the post-closure period. Such records shall be legible and shall show the following for each sample:

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

Required Reports

1. **Semiannual Monitoring Report:** Monitoring reports shall be submitted semiannually and are due on **1 August** and **1 February**. Each semiannual monitoring report shall contain at least the following:
 - a) For each groundwater monitoring point addressed by the report, a description of:
 - 1) The time of water level measurement;
 - 2) The type of pump - or other device - used for purging and the elevation of the pump intake relative to the elevation of the screened interval;
 - 3) The method of purging used to stabilize water in the well bore before the sample is taken including the pumping rate; the equipment and methods used to monitor field pH, temperature, and conductivity during purging; results of pH, temperature, conductivity, and turbidity testing; and the method of disposing of the purge water;

- 4) The type of pump - or other device - used for sampling, if different than the pump or device used for purging; and
 - 5) A statement that the sampling procedure was conducted in accordance with the approved Sample Collection and Analysis Plan.
- b) A map or aerial photograph showing the locations of observation stations, monitoring points, and background monitoring points.
 - c) The estimated quarterly groundwater flow rate and direction in the uppermost aquifer, in any zones of perched water, and in any additional zone of saturation monitored based upon water level elevations taken prior to the collection of the water quality data submitted in the report [Title 27, section 20415(e)(15)].
 - d) Cumulative tabulated monitoring data for all monitoring points and constituents for groundwater, unsaturated zone, and leachate. Concentrations below the laboratory reporting limit shall not be reported as "ND" unless the reporting limit is also given in the table. Otherwise they shall be reported "<" the reporting limit (e.g., <0.10). Units shall be as required in Tables I through III unless specific justification is given to report in other units. Refer to the SPRRs Section I "Standard Monitoring Specifications" for requirements regarding MDLs and PQLs.
 - e) Laboratory statements of results of all analyses evaluating compliance with requirements.
 - f) An evaluation of the concentration of each monitoring parameter (or 5-year COC when five year COC sampling is conducted) as compared to the current concentration limits, and the results of any required verification testing for constituents exceeding a concentration limit. Report any actions taken under Section J: Response to a Release for verified exceedances of a concentration limit for wells/constituents not already in corrective action monitoring.
 - g) An evaluation of the effectiveness of the leachate monitoring and control facilities, and of the run-off/run-on control facilities. Include a summary of any instances where leachate depth on an MSW landfill liner system exceeded 30 cm (excluding the leachate sump), and information about the required notification and corrective action in Standard Facility Specification E.13 of the SPRRs.
 - h) A summary of all Standard Observations for the reporting period required in Section A.4.d of this MRP.
 - i) A summary of inspection, leak search, and repair of final covers on any closed landfill units in accordance with an approved final post-closure maintenance plan as required by Standard Closure and Post-Closure Maintenance Specifications G.26 through G.29 of the SPRRs.

2. **Annual Monitoring Report:** The Discharger shall submit an Annual Monitoring Report to the Central Valley Water Board by **1 February** covering the reporting period of the previous monitoring year. If desired, the Annual Monitoring Report may be combined with the second semiannual report, but if so, shall clearly state that it is both a semi-annual and annual monitoring report in its title. Each Annual Monitoring Report shall contain the following information:
- a) All monitoring parameters shall be graphed to show historical trends at each monitoring point and background monitoring point, for all samples taken within at least the previous five calendar years. If a 5-year COC event was performed, then these parameters shall also be graphically presented. Each such graph shall plot the concentration of one or more constituents for the period of record for a given monitoring point or background monitoring point, at a scale appropriate to show trends or variations in water quality. The graphs shall plot each datum, rather than plotting mean values. Graphical analysis of monitoring data may be used to provide significant evidence of a release.
 - b) An evaluation of the monitoring parameters with regards to the cation/anion balance, and a graphical presentation using a Stiff diagram, a Piper graph, or a Schoeller plot.
 - c) All historical monitoring data for which there are detectable results, including data for the previous year, shall be submitted in tabular form in a digital file format such as a computer disk. The Central Valley Water Board regards the submittal of data in hard copy and in digital format as "...the form necessary for..." statistical analysis [Title 27, section 20420(h)], that facilitates periodic review by the Central Valley Water Board.
 - d) Hydrographs of each well showing the elevation of groundwater with respect to the elevations of the top and bottom of the screened interval and the elevation of the pump intake. Hydrographs of each well shall be prepared quarterly and submitted annually.
 - e) A comprehensive discussion of the compliance record, and the result of any corrective actions taken or planned which may be needed to bring the Discharger into full compliance with the waste discharge requirements.
 - f) A map showing the area and elevations in which filling has been completed during the previous calendar year and a comparison to final closure design contours, and include a projection of the year in which each discrete landfill module will be filled.
 - g) A written summary of the monitoring results, indicating any changes made or observed since the previous Annual Monitoring Report.
 - h) The results of the annual testing of leachate collection and removal systems required under Standard Facility Specification E.14 of the SPRRs.

- i) Updated concentration limits for each monitoring parameter at each monitoring well based on the new data set.
 - j) A comprehensive discussion of any Corrective Action Program required by this MRP under Section A.5.
3. **Seep Reporting:** The Discharger shall report by telephone any seepage from the disposal area **immediately** after it is discovered. A written report shall be filed with the Central Valley Water Board **within seven days**, containing at least the following information:
 - a) A map showing the location(s) of seepage;
 - b) An estimate of the flow rate;
 - c) A description of the nature of the discharge (e.g., all pertinent observations and analyses);
 - d) Verification that samples have been submitted for analyses of the Field Parameters and Monitoring Parameters listed in Table III of this MRP, and an estimated date that the results will be submitted to the Central Valley Water Board; and
 - e) Corrective measures underway or proposed, and corresponding time schedule.
4. **Annual Facility Inspection Reporting:** By **15 November** of each year, the Discharger shall submit a report describing the results of the inspection and the repair measures implemented, preparations for winter, and include photographs of any problem areas and the repairs. Refer to Section A.4.a of this MRP, above.
5. **Major Storm Event Reporting:** Following major storm events capable of causing damage or significant erosion, the Discharger **immediately** shall notify Central Valley Water Board staff of any damage or significant erosion upon discovery and report subsequent repairs within **14 days** of completion of the repairs, including photographs of the problem and the repairs. Refer to Section A.4.b of this MRP, above.
6. **Survey and Iso-Settlement Map for Closed Landfills:** The Discharger shall conduct a survey and submit an iso-settlement map for each closed area of the landfill every five years pursuant to Title 27, section 21090(e). Refer to Section A.4.c of this MRP, above. The next report is due by 2017.
7. **Financial Assurances Report:** By **1 September** of each year, the Discharger shall submit a copy of the annual financial assurances report due to CalRecycle that updates the financial assurances for closure, post-closure maintenance, and corrective action. Refer to Financial Assurances Specifications F.1 through F.4 of the WDRs.

C. WATER QUALITY PROTECTION STANDARD AND COMPLIANCE PERIOD

1. Water Quality Protection Standard Report

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

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

The report shall:

- a. Identify **all distinct bodies of surface and ground water** that could be affected in the event of a release from a waste management unit or portion of a unit. This list shall include at least the uppermost aquifer and any permanent or ephemeral zones of perched groundwater underlying the facility.
- b. Include a map showing the monitoring points and background monitoring points for the surface water monitoring program, groundwater monitoring program, and the unsaturated zone monitoring program. The map shall include the point of compliance in accordance with Title 27, section 20405.
- c. Evaluate the perennial direction(s) of groundwater movement within the uppermost groundwater zone(s).
- d. Include a proposed statistical method for calculating concentration limits for monitoring parameters and constituents of concern that are detected in 10% or greater of the background data (naturally-occurring constituents) using a statistical procedure from Title 27, section 20415(e)(8)(A-D)] or section 20415(e)(8)(E).
- e. Include a retesting procedure to confirm or deny measurably significant evidence of a release pursuant to Title 27, section 20415(e)(8)(E) and section 20420(j)(1-3).

The Water Quality Protection Standard shall be certified by a California-registered civil engineer or geologist as meeting the requirements of Title 27. If subsequent sampling of the background monitoring point(s) indicates significant

water quality changes due to either seasonal fluctuations or other reasons unrelated to waste management activities at the site, the Discharger may request modification of the Water Quality Protection Standard.

2. Monitoring Parameters

Monitoring parameters are a select group of constituents that are monitored during each monitoring event that are the waste constituents, reaction products, hazardous constituents, and physical parameters that provide a reliable indication of a release from a waste management unit. The monitoring parameters for all waste management units are those listed in Tables I through IV for the specified monitored medium.

3. Constituents of Concern (COCs)

The COCs include a larger group of waste constituents, their reaction products, and hazardous constituents that are reasonably expected to be in or derived from waste contained in the waste management unit, and are required to be monitored every five years [Title 27, sections 20395 and 20420(g)]. The COCs for all waste management units at the facility are those listed in Tables I through III for the specified monitored medium, and Table V. The Discharger shall monitor all COCs every five years, or more frequently as required in accordance with a Corrective Action Program. The last 5-year COC report was submitted to the Central Valley Water Board in the 2011 *Annual Monitoring Report*, and 5-year COCs are due to be monitored again in **2016**.

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 Title 27, section 20415(e)(8); or
- b. By an alternate statistical method meeting the requirements of Title 27, section 20415(e)(8)(E).

5. Retesting Procedures for Confirming Evidence of a Release

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

- a. For analytes that are detected in less than 10% of the background samples (such as non-naturally occurring constituents), the Discharger shall use the

non-statistical retesting procedure required in Standard Monitoring Specification I.46 of the SPRRs.

- b. For analytes that are detected in 10% or greater of the background samples (naturally occurring constituents), the Discharger shall use one of the statistical retesting procedure as required in Standard Monitoring Specification I.47 of the SPRRs.

6. Point of Compliance

The point of compliance for the water standard at each waste management unit is a vertical surface located at the hydraulically downgradient limit of the Unit that extends through the uppermost aquifer underlying the unit.

7. Compliance Period

The compliance period for each waste management 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 waste management unit. The compliance period shall begin anew each time the Discharger initiates an evaluation monitoring program [Title 27, section 20410].

8. Monitoring Points

A monitoring point is a well, device, or location specified in the waste discharge requirements, which monitoring is conducted and at which the water quality protection standard applies. The monitoring points for each monitored medium are listed in Section A of this MRP.

D. TRANSMITTAL LETTER FOR ALL REPORTS

A transmittal letter explaining the essential points shall accompany each report. At a minimum, the transmittal letter shall identify any violations found since the last report was submitted, and 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. The transmittal letter shall contain a statement by the discharger, or the discharger's authorized agent, under penalty of perjury, that to the best of the signer's knowledge the report is true, accurate, and complete.

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

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

10 October 2014

(Date)

TABLE I
GROUNDWATER DETECTION MONITORING PROGRAM

<u>Parameter</u>	<u>Units</u>	<u>Sampling Frequency</u>	<u>Reporting Frequency</u>
Field Parameters			
Groundwater Elevation	Ft. & 100ths, M.S.L.	Quarterly	Semiannual
Temperature	°F	Semiannual	Semiannual
Electrical Conductivity	umhos/cm	Semiannual	Semiannual
pH	pH units	Semiannual	Semiannual
Turbidity	Turbidity units	Semiannual	Semiannual
Monitoring Parameters			
Total Dissolved Solids (TDS)	mg/L ¹	Semiannual	Semiannual
Chloride	mg/L	Semiannual	Semiannual
Carbonate	mg/L	Semiannual	Semiannual
Bicarbonate	mg/L	Semiannual	Semiannual
Nitrate - Nitrogen	mg/L	Semiannual	Semiannual
Sulfate	mg/L	Semiannual	Semiannual
Calcium	mg/L	Semiannual	Semiannual
Magnesium	mg/L	Semiannual	Semiannual
Potassium	mg/L	Semiannual	Semiannual
Sodium	mg/L	Semiannual	Semiannual
Volatile Organic Compounds (USEPA Method 8260B, short list, see Table IV)	ug/L ²	Semiannual	Semiannual
5-Year Constituents of Concern (see Table V)			
Total Organic Carbon	mg/L	5 years	2016
Inorganics (dissolved)	ug/L	5 years	and every 5 years
Volatile Organic Compounds (USEPA Method 8260B, extended list)	ug/L	5 years	thereafter
Semi-Volatile Organic Compounds (USEPA Method 8270C or D)	ug/L	5 years	" "
Chlorophenoxy Herbicides (USEPA Method 8151A)	ug/L	5 years	" "
Organophosphorus Compounds (USEPA Method 8141B)	ug/L	5 years	" "

¹ Milligrams per liter

² Micrograms per liter

TABLE II
UNSATURATED ZONE DETECTION MONITORING PROGRAM

SOIL-PORE GAS¹

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

PAN LYSIMETERS² (or other vadose zone monitoring device)

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

5-Year Constituents of Concern (see Table V)

Total Organic Carbon	mg/L	5 years	2016
Inorganics (dissolved)	ug/L	5 years	and every 5 years
Volatile Organic Compounds (USEPA Method 8260B, extended list)	ug/L	5 years	thereafter
Semi-Volatile Organic Compounds (USEPA Method 8270C or D)	ug/L	5 years	" "
Chlorophenoxy Herbicides (USEPA Method 8151A)	ug/L	5 years	" "
Organophosphorus Compounds (USEPA Method 8141B)	ug/L	5 years	" "

¹ Soil-pore gas samples collected from landfill gas probes are only subject to the VOC (USEPA Method TO-14) and methane sampling (not the other parameters listed for pan lysimeters).

² Pan lysimeters shall be inspected for the presence of liquid **monthly**. If liquid is detected in a previously dry pan lysimeter, the Discharger shall verbally notify Central Valley Water Board staff within **seven days** and shall immediately sample and test the liquid for Field and Monitoring Parameters listed in Table II.

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

<u>Parameter</u>	<u>Units</u>	<u>Sampling Frequency</u>	<u>Reporting Frequency</u>
Field Parameters			
Total Flow	Gallons	Monthly	Semiannual
Flow Rate	Gallons/Day	Monthly	Semiannual
Electrical Conductivity	umhos/cm	Quarterly	Semiannual
pH	pH units	Quarterly	Semiannual
Monitoring Parameters			
Total Dissolved Solids (TDS)	mg/L	Annually	Annually
Chloride	mg/L	Annually	Annually
Carbonate	mg/L	Annually	Annually
Bicarbonate	mg/L	Annually	Annually
Nitrate - Nitrogen	mg/L	Annually	Annually
Sulfate	mg/L	Annually	Annually
Calcium	mg/L	Annually	Annually
Magnesium	mg/L	Annually	Annually
Potassium	mg/L	Annually	Annually
Sodium	mg/L	Annually	Annually
Volatile Organic Compounds (USEPA Method 8260B, short list, see Table IV)	ug/L	Annually	Annually
5-Year Constituents of Concern (see Table V)			
Total Organic Carbon	mg/L	5 years	2016
Inorganics (dissolved)	ug/L	5 years	and every 5 years
Volatile Organic Compounds (USEPA Method 8260B, extended list)	ug/L	5 years	thereafter
Semi-Volatile Organic Compounds (USEPA Method 8270C or D)	ug/L	5 years	" "
Chlorophenoxy Herbicides (USEPA Method 8151A)	ug/L	5 years	" "
Organophosphorus Compounds (USEPA Method 8141B)	ug/L	5 years	" "
LCRS Testing ³	---	Annually	Annually

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

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

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

TABLE IV

MONITORING PARAMETERS FOR DETECTION MONITORING

Surrogates for Metallic Constituents:

pH
Total Dissolved Solids
Electrical Conductivity
Chloride
Sulfate
Nitrate nitrogen

Volatile Organic Compounds, short list:

USEPA Method 8260B

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

TABLE IV
MONITORING PARAMETERS FOR DETECTION MONITORING

Continued

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
5-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS

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

Volatile Organic Compounds, extended list:

USEPA Method 8260B

Acetone
Acetonitrile (Methyl cyanide)
Acrolein
Acrylonitrile
Allyl chloride (3-Chloropropene)
Benzene
Bromochloromethane (Chlorobromomethane)
Bromodichloromethane (Dibromochloromethane)
Bromoform (Tribromomethane)
Carbon disulfide
Carbon tetrachloride
Chlorobenzene
Chloroethane (Ethyl chloride)
Chloroform (Trichloromethane)
Chloroprene
Dibromochloromethane (Chlorodibromomethane)
1,2-Dibromo-3-chloropropane (DBCP)
1,2-Dibromoethane (Ethylene dibromide; EDB)
o-Dichlorobenzene (1,2-Dichlorobenzene)

TABLE V

5-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS

Continued

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

TABLE V

5-YEAR COCs & 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 8270C or D - base, neutral, & acid extractables

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

TABLE V

5-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS

Continued

4,4'-DDD
4,4'-DDE
4,4'-DDT
Diallate
Dibenz[a,h]anthracene
Dibenzofuran
Di-n-butyl phthalate
3,3'-Dichlorobenzidine
2,4-Dichlorophenol
2,6-Dichlorophenol
Dieldrin
Diethyl phthalate
p-(Dimethylamino)azobenzene
7,12-Dimethylbenz[a]anthracene
3,3'-Dimethylbenzidine
2,4-Dimethylphenol (m-Xylenol)
Dimethyl phthalate
m-Dinitrobenzene
4,6-Dinitro-o-cresol (4,6-Dinitro-2-methylphenol)
2,4-Dinitrophenol
2,4-Dinitrotoluene
2,6-Dinitrotoluene
Di-n-octyl phthalate
Diphenylamine
Endosulfan I
Endosulfan II
Endosulfan sulfate
Endrin
Endrin aldehyde
Ethyl methanesulfonate
Famphur
Fluoranthene
Fluorene
Heptachlor
Heptachlor epoxide
Hexachlorobenzene
Hexachlorocyclopentadiene
Hexachloroethane
Hexachloropropene
Indeno(1,2,3-c,d)pyrene
Isodrin
Isophorone
Isosafrole
Kepone
Methapyrilene
Methoxychlor
3-Methylcholanthrene

TABLE V

5-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS

Continued

Methyl methanesulfonate
2-Methylnaphthalene
1,4-Naphthoquinone
1-Naphthylamine
2-Naphthylamine
o-Nitroaniline (2-Nitroaniline)
m-Nitroaniline (3-Nitroaniline)
p-Nitroaniline (4-Nitroaniline)
Nitrobenzene
o-Nitrophenol (2-Nitrophenol)
p-Nitrophenol (4-Nitrophenol)
N-Nitrosodi-n-butylamine (Di-n-butylnitrosamine)
N-Nitrosodiethylamine (Diethylnitrosamine)
N-Nitrosodimethylamine (Dimethylnitrosamine)
N-Nitrosodiphenylamine (Diphenylnitrosamine)
N-Nitrosodipropylamine (N-Nitroso-N-dipropylamine; Di-n-propylnitrosamine)
N-Nitrosomethylethylamine (Methylethylnitrosamine)
N-Nitrosopiperidine
N-Nitrosopyrrolidine
5-Nitro-o-toluidine
Pentachlorobenzene
Pentachloronitrobenzene (PCNB)
Pentachlorophenol
Phenacetin
Phenanthrene
Phenol
p-Phenylenediamine
Polychlorinated biphenyls (PCBs; Aroclors)
Pronamide
Pyrene
Safrole
1,2,4,5-Tetrachlorobenzene
2,3,4,6-Tetrachlorophenol
o-Toluidine
Toxaphene
2,4,5-Trichlorophenol
0,0,0-Triethyl phosphorothioate
sym-Trinitrobenzene

TABLE V

5-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS

Continued

Chlorophenoxy Herbicides:

USEPA Method 8151A

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

Organophosphorus Compounds:

USEPA Method 8141B

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

INFORMATION SHEET

ORDER R5-2014-0139
MERCED COUNTY REGIONAL WASTE MANAGEMENT AUTHORITY
FOR OPERATION, CONSTRUCTION, POST-CLOSURE MAINTENANCE
AND CORRECTIVE ACTION
HIGHWAY 59 SOLID WASTE LANDFILL
MERCED COUNTY

The Merced County Regional Waste Management Authority (hereinafter Discharger) owns and operates the Highway 59 Solid Waste Landfill (facility) about six miles north of the City of Merced. The facility contains four closed unlined Class III waste management units (Phases 1 through 4) covering a total of approximately 89 acres, one single-composite lined Class III unit (Phase 5, Modules 5A-5C, inactive) covering a total of 25 acres, one single-composite lined Class III unit (Phase 6, Module 6A, active and Modules 6B-6F, future) covering a total of 140 acres, two Class II surface impoundments, and three storm water retention basins. The facility is currently regulated by Waste Discharge Requirements Orders R5-2006-0022, providing for construction and operation, and R5-2010-0111, providing for closure and post-closure maintenance of Phases 1 through 4.

The waste management facility is located within the San Joaquin Valley, a large northwest trending asymmetric structural trough that has been filled with as much as six vertical miles of sediment composed of marine and continental rocks and sedimentary deposits. The sediments in the region consist predominantly of continental deposits derived from the Sierra Nevada and a heterogeneous mix of poorly sorted clay, silt, sand and gravel, with some beds of claystone, siltstone, and conglomerate. The local geology of the site, based on observations of soil borings drilled during well installation, were interpreted to be predominantly unconsolidated, poorly sorted, fine-grained arkosic sediments, which correlate to regionally-occurring alluvial deposits.

The Highway 59 Landfill has been operating since 1973. In 1996, Merced County prepared an Environmental Impact Report pursuant to the requirements of the California Environmental Quality Act ("CEQA")(Pub. Resources Code, § 21000 et seq.) to analyze the potentially-significant environmental effects associated with the expansion of the Facility. On 13 August 1996, the Merced County Board of Supervisors certified the final EIR for the Phase 6 expansion. Prescribing these WDRs, which impose regulatory requirements on the existing facility in order to ensure the continued protection of groundwater resources, is exempt from the provisions of CEQA in accordance with California Code of Regulations, title 14, section 15301, which exempts the "operation, repair, maintenance, [and] permitting ... of existing public or private structures, facilities, mechanical equipment, or topographical features" from environmental review.

As part of the expansion, the United States Fish and Wildlife Service issued a Biological Opinion pursuant to the federal Endangered Species Act. The Discharger is required under its federal CWA Section 404 permit and the Biological Opinion to preserve, in perpetuity, a 168-acre wetland preserve and mitigation area. In addition, Title 40 of the Code of Federal Regulations, Part 258.12, (40 C.F.R. § 258.12) requires that certain demonstrations be made to allow the location of a landfill expansion within wetlands. Activities conducted at the Facility will continue to be managed according to the Discharger's Vernal Pool Mitigation, Management and Monitoring Plan, which was developed for the purpose of satisfying these regulatory requirements.

Based upon the most recent groundwater monitoring report (2nd Semiannual and Annual 2013), the first encountered groundwater ranges from about 65 feet to 114 feet below the native

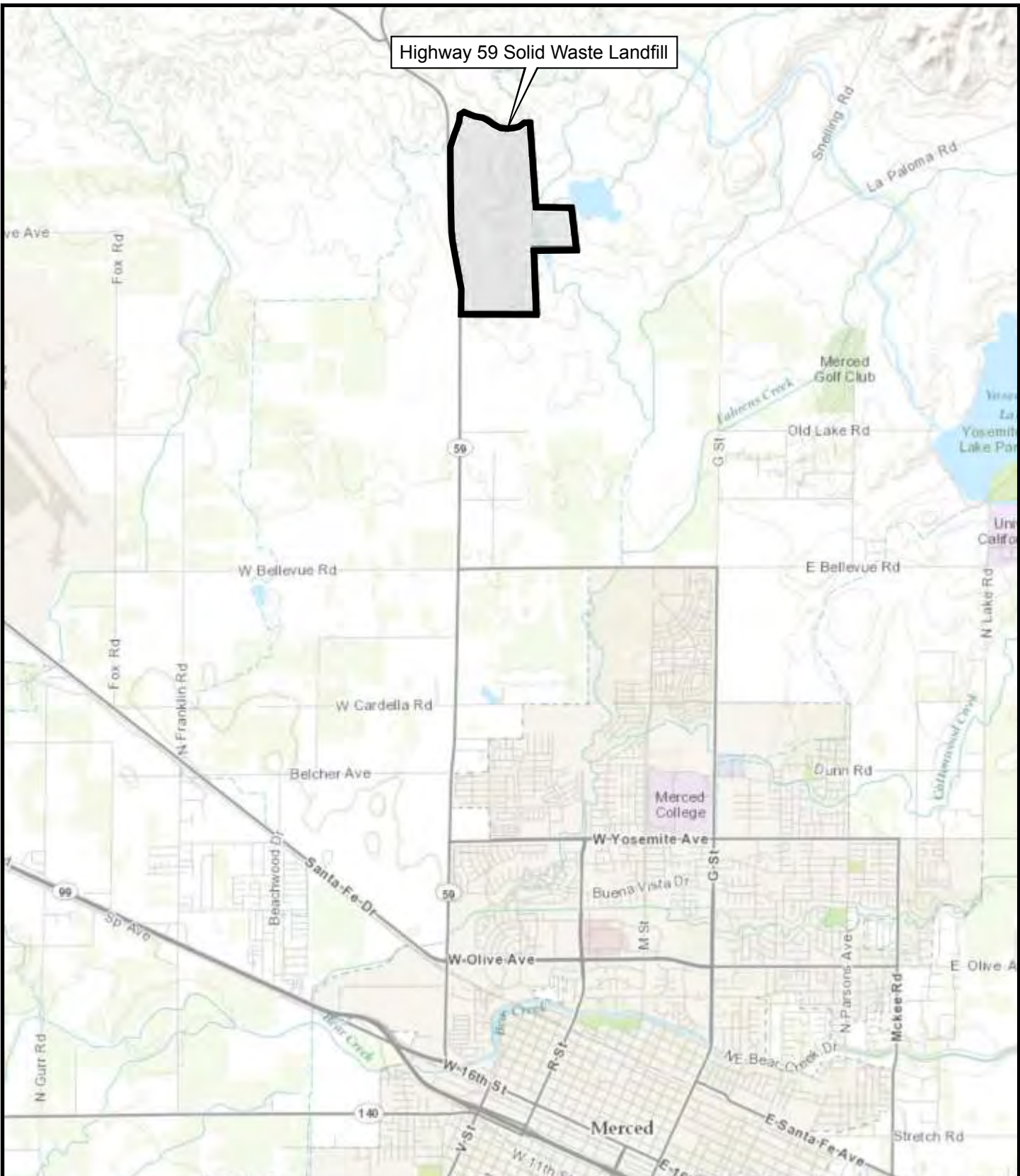
ground surface. Groundwater elevations range from about 107.84 feet to 88.80 feet above MSL. The groundwater is unconfined. Background groundwater quality for first encountered groundwater has electrical conductivity (EC) ranging between 250 and 500 micromhos/cm, with total dissolved solids (TDS) ranging between 200 and 300 milligrams per liter (mg/L). The direction of groundwater flow is generally toward the southwest. The direction of groundwater flow varies seasonally and periodically flows toward the south-southwest. The estimated average groundwater gradient is approximately 0.001 feet per foot. The estimated average groundwater velocity is 1.5 to 1.9 feet per year.

Volatile organic compounds (VOCs) that are not naturally occurring have been detected in groundwater along the point of compliance. The VOCs consistently identified as the primary impact constituents include: tetrachloroethene (PCE), trichlorofluoromethane (Freon 11), and dichlorodifluoromethane (Freon 12).

The Discharger submitted the Evaluation Monitoring Program Report in November 2010. The nature of the release was demonstrated to be volatile organic compounds that appear to have migrated from the unlined modules (Phases 1 through 4) of the landfill in the form of landfill gas. Inorganic waste constituents did not appear to have been released from the landfill, thus indicating that the release of waste constituents is due to landfill gas migration. Groundwater data from the facility indicate that VOC impacts to groundwater are limited to the shallow groundwater and primarily limited to wells adjacent to Phases 1 through 4 (MW-2A, MW-11 and MW-12). VOC impacts to groundwater have been observed as far as 1,500 feet southwest of the unlined modules.

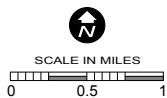
The Discharger submitted the Engineering Feasibility Study (EFS) and Corrective Action Plan (CAP) in July 2011 and December 2012, respectively. The EFS and CAP concluded that the most technically and economically feasible corrective action alternative was to install a dual phase (groundwater and soil gas) extraction and treatment system with landfill gas extraction as a source control. Extracted soil gas will be directed to the existing landfill gas flare for destruction. Extracted groundwater will be remediated through a granular activated carbon (GAC) treatment system. Treated effluent from the GAC system is proposed to be discharged to an on-site storm water retention basin(s) or Class II surface impoundment(s).

The tentative revised Order provides for operation, construction, post-closure maintenance and implementation of corrective action, and requires the Discharger to implement the corrective action plan and the remediation system to be fully operating by a specified date.



Highway 59 Solid Waste Landfill

Map Source:
Esri ArcGIS Online Services



LOCATION MAP

ORDER NO. R5-2014-0139

MERCED COUNTY REGIONAL WASTE MANAGEMENT AUTHORITY

HIGHWAY 59 SOLID WASTE LANDFILL

CLASS III LANDFILL

OPERATION, CONSTRUCTION, POST-CLOSURE MAINTENANCE,

AND CORRECTIVE ACTION

MERCED COUNTY

ATTACHMENT A

