

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
CENTRAL VALLEY REGION

ORDER NO. R5-2016-0053

WASTE DISCHARGE REQUIREMENTS  
FOR  
ANDERSON LANDFILL, INC.  
ANDERSON LANDFILL  
CLASS III MUNICIPAL SOLID WASTE LANDFILL AND CLASS II SURFACE  
IMPOUNDMENTS  
OPERATION AND PARTIAL CLOSURE  
SHASTA COUNTY

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

1. Anderson Landfill, Inc., (hereinafter Discharger) a wholly owned subsidiary of USA Waste of California, Inc., owns and operates the Anderson Landfill (facility) about 3.5 miles southwest of Anderson, in Section 31, T30N, R4W, MDB&M, as shown in Attachment A, which is incorporated herein and made part of this Order by reference. The facility is a Class III 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 following documents are attached to this Order and hereby incorporated into and made a part of this order by reference:
  - a. Attachment A – Site Location Map
  - b. Attachment B – Site Map
  - c. Information Sheet
  - d. December 2015 Standard Provisions and Reporting Requirements
3. The facility is on a 246-acre property at 18703 Cambridge Road, Anderson. The existing and future landfill area is approximately 130-acres of which approximately 78 acres have been constructed. Existing landfill units, consist of three unlined units covering 53 acres and three existing compositely lined Units covering approximately 39 acres, as shown in Attachment B, which is incorporated herein and made part of this Order. The facility also includes two existing surface impoundments covering 7 acres. The facility is comprised of Assessor Parcel Nos. 207-170-008, 207-170-009, 207-170-011, 207-170-012, 207-170-013, 207-170-014, 207-170-015, 207-170-016, 207-170 -042, and 270-390-009.

4. Planned or future features at the facility include:
  - a. Composite liner for remaining areas of Class III land disposal unit, 4C,
  - b. a new compositely-lined Class III land disposal unit, Unit 5,
  - c. a new sediment detention pond, SED-5,
  - d. an additional monitoring well MW-12, and,
  - e. construction and implementation of a recycling facility and recycling program.
5. On 14 July 2015, the Discharger submitted a revised Joint Technical Document (JTD) for the landfill. The information in the JTD has been used in updating these waste discharge requirements (WDRs). The JTD contains the applicable information required in Title 27. The JTD and supporting documents contain information related to this update of the WDRs including:
  - a. Using bottom ash from forest-source, wood-fired cogeneration facilities as an alternative daily cover.
  - b. A new engineered alternative liner design for future liner construction.
  - c. Allowance of maximum permitted elevation increase to 769.5 ft MSL within an approximate 12-acre area of Unit 1.
  - d. Future adjustment of the Unit 5 eastern boundary to add approximately 6 acres, for a total permitted landfill footprint of 130 acres.
  - e. Partial final closure of Unit 1, Unit 2B and Unit 2Ba.
  - f. Final closure of South Canyon Unit and North of Cambridge Road Unit.
  - g. Plan for filling, final grading and final closure of the Unit 1 northwest corner.
6. On 5 August 2005, the Central Valley Water Board issued Order No. R5-2005-0118 in which the landfill waste management units at the facility were classified as Class III landfills for the discharge of municipal solid waste and the surface impoundments at the facility were classified as Class II units. This Order continues to classify the landfill units as Class III units and the surface impoundments as Class II units in accordance with Title 27. The North of Cambridge Road Unit remains unclassified.
7. The existing and future land disposal units authorized by this Order are described as follows:

<b>Unit</b>	<b>Area<sup>6</sup></b>	<b>Liner/LCRS<sup>1</sup> Components<sup>2</sup></b>	<b>Unit Classification &amp; Status</b>
Unit 1	39.7 acres	Unlined	Class III, partial final closed
Unit 2A	4.7 acres	Unlined	Class III, inactive
Unit 2B	6.8 acres	Unlined	Class III, partial final closed, overlain by Unit 2Ba
North of Cambridge Road Unit	2 acres	Unlined	Unclassified, closed
Unit 2Ba	5.8 acres	<ul style="list-style-type: none"> <li>• 1-ft thick foundation layer,</li> <li>• 1-ft thick low-permeability soil with a hydraulic conductivity of <math>1 \times 10^{-6}</math> cm/sec<sup>3</sup> or less,</li> <li>• geosynthetic clay liner,</li> <li>• 60-mil single-sided textured HDPE<sup>4</sup> geomembrane,</li> <li>• 1-ft thick blanket granular layer with minimum hydraulic conductivity of 0.3 cm/sec and 6 inch diameter HDPE perforated collection piping,</li> <li>• 8 oz/sy<sup>5</sup> non-woven geotextile filter layer, and,</li> <li>• 1-ft thick operations layer.</li> </ul>	Class III, partial final closed
South Canyon	7 acres	<ul style="list-style-type: none"> <li>• 2-ft thick foundation layer,</li> <li>• geosynthetic clay liner,</li> <li>• 60-mil single-sided textured HDPE geomembrane,</li> <li>• 6 inch diameter HDPE perforated collection piping wrapped with gravel with minimum hydraulic conductivity of 0.3 cm/sec and 8 oz/sy non-woven geotextile filter layer, and,</li> <li>• 1-ft thick select operations layer with a minimum hydraulic conductivity of 0.01 cm/sec</li> </ul>	Class III, closed
Units 4A,4B,4C, 4C Extension	26.5 acres	<ul style="list-style-type: none"> <li>• 1-ft thick low permeability soil with hydraulic conductivity of <math>1 \times 10^{-6}</math> cm/sec or less,</li> <li>• geosynthetic clay liner,</li> <li>• 60-mil single-sided textured</li> </ul>	Class III, active

<b><u>Unit</u></b>	<b><u>Area<sup>6</sup></u></b>	<b><u>Liner/LCRS<sup>1</sup> Components<sup>2</sup></u></b>	<b><u>Unit Classification &amp; Status</u></b>
		<p>HDPE geomembrane (double-sided textured in 4C extension),</p> <ul style="list-style-type: none"> <li>• 1-ft thick blanket granular layer with minimum hydraulic conductivity of 0.3 cm/sec (floor only) and 6 inch diameter HDPE perforated collection piping,</li> <li>• 8 oz/sy non-woven geotextile filter layer, and,</li> <li>• 1-ft thick operations layer (or select operations layer on slopes)</li> </ul>	
Remainder of Unit 4	11.2 acres	<ul style="list-style-type: none"> <li>• Prepared subgrade,</li> <li>• geosynthetic clay liner,</li> <li>• 80-mil double-sided textured HDPE geomembrane, and</li> <li>• 1.5-foot thick select operations layer</li> </ul>	Class III, future
Unit 5	43.7 acres	<ul style="list-style-type: none"> <li>• Prepared subgrade,</li> <li>• geosynthetic clay liner,</li> <li>• 80-mil double-sided textured HDPE geomembrane,</li> <li>• 1-ft thick blanket granular layer with minimum hydraulic conductivity of 0.3 cm/sec and 6 inch diameter HDPE perforated collection piping (floor only),</li> <li>• 8 oz/sy non-woven geotextile filter layer (floor only), and,</li> <li>• 1.5-ft thick operations layer (select operations layer on slope)</li> </ul>	Class III, future
ELP	4.2 acres	<ul style="list-style-type: none"> <li>• 1-ft low-permeability soil with a hydraulic conductivity of <math>1 \times 10^{-6}</math> cm/sec or less,</li> <li>• secondary 60-mil double side textured HDPE geomembrane,</li> <li>• double sided geocomposite (leak detection layer),</li> <li>• geosynthetic clay liner, and,</li> <li>• primary 60-mil single side textured HDPE geomembrane</li> </ul>	Class II Surface Impoundment, active

<b>Unit</b>	<b>Area<sup>6</sup></b>	<b>Liner/LCRS<sup>1</sup> Components<sup>2</sup></b>	<b>Unit Classification &amp; Status</b>
LSI-2	3.2	<ul style="list-style-type: none"> <li>• 1-ft low-permeability soil with a hydraulic conductivity of <math>1 \times 10^{-6}</math> cm/sec or less,</li> <li>• secondary 60-mil double side textured HDPE geomembrane,</li> <li>• double sided geocomposite (leak detection layer),</li> <li>• geosynthetic clay liner,</li> <li>• primary 60-mil single side textured HDPE geomembrane, and,</li> <li>• sacrificial 40-mil HDPE geomembrane on side slopes</li> </ul>	Class II Surface Impoundment, active

<sup>1</sup> LCRS – Leachate collection and removal system

<sup>2</sup> All liner systems are composite liner systems unless otherwise noted

<sup>3</sup> cm/sec – Centimeter per second

<sup>4</sup> HDPE- High Density Polyethylene

<sup>5</sup> oz/sy – ounces per square yard

<sup>6</sup> Areas include overlaps (e.g., Unit 2Ba overlies Unit 2B). Therefore the sum of all unit areas is greater than the actual total plan footprint of the landfill (i.e., 130 acres).

8. On-site facilities at the Anderson Landfill include: an active landfill gas extraction system, a landfill gas flare, scales and scalehouse, public drop-off and recycling sorting area, administrative/maintenance building, diesel fuel shed and hazardous materials storage area. The Discharger has obtained approval from Shasta County Planning Division to implement a recycling operation at the Anderson Landfill. Approximately 20 to 25 tons per day of materials are anticipated to be recycled during the landfill operating hours. This recycling facility will be implemented at an unknown date in the future.
9. On 9 October 1991, the United States Environmental Protection Agency (USEPA) promulgated federal MSW regulations under the Resource Conservation and Recovery Act (RCRA), Subtitle D. These regulations are under 40 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.
10. This Order implements the applicable regulations for discharges of solid waste to land through Prohibitions, Specifications, Provisions, and monitoring and reporting requirements. Prohibitions, Specifications, and Provisions are listed in Sections A through H of these WDRs below, and in the Standard Provisions and Reporting Requirements

(SPRRs) dated December 2015 which are part of this Order. Monitoring and reporting requirements are included in the Monitoring and Reporting Program (MRP) No. R5-2016-0053 and in the SPRRs. In general, requirements that are either in regulation or otherwise apply to all MSW landfills are considered to be “standard” and are therefore in the SPRRs. Any site-specific changes to a requirement in the SPRRs are included in the applicable section (A through H) of these WDRs, and the requirement in the WDRs supersedes the requirement in the SPRRs.

11. Title 27 contains regulatory standards for discharges of solid waste promulgated by the State Water Board and the California Department of Resources Recovery and Recycling (CalRecycle). In certain instances, this Order cites CalRecycle regulatory sections. Title 27, section 20012 allows the Central Valley Water Board to cite CalRecycle regulations from Title 27 where necessary to protect water quality provided it does not duplicate or conflict with actions taken by the Local Enforcement Agency in charge of implementing CalRecycle’s regulations.

### **WASTE CLASSIFICATION AND UNIT CLASSIFICATION**

12. The Discharger proposes to continue to discharge nonhazardous solid waste, including municipal solid waste, friable asbestos, fly ash, wood ash, treated medical waste, petroleum and other contaminated soils, construction and demolition waste, material recycling facility fines, treated auto shredder waste, and shredded tires, to lined Class III landfill units (Units 4 and 5) and unlined Class III landfill units (Units 1 and 2A) at the facility. Leachate will continue to be discharged to the two Class II surface impoundments (ELP and LSI-2). These classified wastes may be discharged only in accordance with Title 27, Resolution 93-62, and Subtitle D as required by this Order.
13. The Discharger also accepts primary and secondary sewage sludge from local wastewater treatment plants and sludge from local septage ponds. Such wastes can be accepted at Class III landfills providing the conditions described in Title 27, Section 20220(c) are met. Sludge is characterized to assure it is nonhazardous prior to disposal in compositely lined Units with leachate collection and removal systems (LCRS). The Discharger accepts sewage sludge for disposal provided it meets acceptance criteria outlined in Appendix F of the July 2015 *Joint Technical Document*.
14. Active unlined landfill units at the facility are “existing units” under Title 27 that were permitted before 27 November 1984 and may continue to accept waste in the “Existing Footprint” until ready for closure unless waste receipts do not meet the timeframes and amounts in Title 27, section 21110, or they are required to close sooner to address environmental impacts or other regulatory concerns. The “Existing Footprint” as defined in Title 27, section 20164 is the area that was covered by waste as of the date that the landfill unit became subject to Subtitle D. The Existing Footprint for the active unlined areas of the landfill is shown on Attachment B.

15. The Discharger proposes to continue to discharge wastes containing greater than one percent (>1%) friable asbestos to Unit 2A. These wastes are classified as 'hazardous' under California Code of Regulations, title 22 (Title 22). However, these wastes do not pose a threat to groundwater quality and California Health and Safety Code, section 25143.7 permits their disposal in any landfill that has WDRs that specifically permit the discharge, provided that the wastes are handled and disposed of in accordance with applicable statutes and regulations.
16. The Discharger proposes to continue to discharge treated wood waste in the composite-lined units at the landfill. Title 22 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 (FIFRA; 7 U.S.C. Sec. 136 and following). 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).
17. 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, or 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.
18. 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, that 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.
19. The Discharger uses the following materials for ADC: geosynthetic fabric or panel products, sludge and sludge-derived materials, processed construction and demolition materials, nonhazardous petroleum-contaminated soil, shredded tires, wood ash, fly ash and bottom ash. In July 2015, the Discharger completed a demonstration project for the approval of bottom ash as an ADC. The Discharger has demonstrated that these materials will minimize percolation of liquids through waste, that the materials meet the unit classification where they will be discharged, and that the constituents and breakdown products are included in the water quality protection standard.
20. 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.
21. Leachate accumulating in the leachate collection sump of the South Canyon Unit is pumped to intermediate storage tanks and hauled to the Class II surface impoundments. Leachate accumulating in the leachate collection sump of Unit 2Ba, is routed to the leachate collection sump of Unit 4, and then pumped to the Class II surface



impoundments. Leachate accumulating in the leachate collection sump of Unit 4 is pumped directly to the Class II surface impoundments. Leachate and/or landfill gas condensate may be returned only to the South Canyon Unit, Unit 2Ba, Unit 4 and future composite lined modules.

## SITE DESCRIPTION

22. The facility is located on the south side of an east-west trending ridge, between the ridge top and valley bottom. The ridge top is a remnant of a plateau that has been dissected by gullies and intermittent stream channels. The average slope from the ridge top to the valley bottom ranges from 10 horizontal to 1 vertical (10H:1V) at the northwest end of the landfill to 20H:1V at the center of the landfill, although local drainages have slopes as steep as 2H:1V. The maximum surface elevation is approximately 730 feet MSL on the ridge top. The minimum surface elevation is approximately 580 ft MSL in the valley bottom. No springs have been observed on-site or within one mile of the site. The principal surface water body at the site is an unnamed tributary to Cottonwood Creek, located about three miles southeast of the property boundary. This unnamed stream flows intermittently and only during local rainfall events. Stormwater discharging from the site is predominantly divided into north and south flows. The southern portion of the site drains to the south and east into the Cottonwood Creek watershed. The northern portion drains to the north and east into the Anderson Creek watershed. Cottonwood Creek and Anderson Creek then flow into the Sacramento River seven miles east and six miles northeast of the facility, respectively.
23. Land uses within one mile of the facility include undeveloped grazing land to the north, south and west, rural residential to the east, and a regional septage receiving facility is located about a mile to the northwest of the facility.
24. There are 85 known water wells within one mile of the facility, 45 of which are water supply wells. The Discharger owns 24 of these wells, five of which are water supply wells. Appendix D-4 of the July 2015 JTD contains the well location map and a summary table of the wells identified.
25. The facility is located in the Central Valley Geologic Province of California and southwestern part of the Redding groundwater basin, which is underlain by the Red Bluff and Tehama Formations. The Red Bluff Formation outcrops on the north edge of the facility and ranges from 2 to 40 feet in thickness. The Tehama Formation underlies the majority of the filled areas. It consists of dense silt and clay interbedded with sand and gravel. All groundwater and gas monitoring wells at the facility are completed in the Tehama Formation. Older (and deeper) pre-Tertiary units have not been encountered while drilling at the site. The Tehama Formation is the main source of drinking water in the vicinity of the facility.
26. In-situ, unsaturated hydraulic conductivity of the Tehama Formation at the facility, approximately 20 to 65 feet below ground surface, ranges from approximately  $3 \times 10^{-6}$  to

$7 \times 10^{-5}$  centimeters per second (cm/sec) . Saturated hydraulic conductivity in the deep groundwater zone, as measured in wells MW-2 and MW-3, ranges from  $1.5 \times 10^{-4}$  to  $5 \times 10^{-4}$  cm/sec.

27. A seismic hazard evaluation has been performed to identify the maximum probable earthquake (MPE) and the maximum credible earthquake (MCE) for the facility. Class III landfills must be designed to withstand forces resulting from the MPE and Class II surface impoundments must be designed to withstand forces resulting from the MCE. No evidence of faulting has been observed at the facility. The nearest mapped fault is 7.5 miles east-northeast of the facility but is not active. The nearest potentially active fault (showing Quaternary-age displacement) is the Battle Creek Fault, located 14 miles east of the site. Both a near-field and a far-field event were identified as seismic design events and used for determining the MPE for the facility. The MPE near-field event on the Battle Creek fault is a moment magnitude ( $M_w$ ) 6.0 event with a peak horizontal ground acceleration (PHGA) of 0.24 g. The far-field event used in the MPE determination and Unit design is a  $M_w$  6.5 event on the Hat Creek-McArthur-Mayfield fault system with a PHGA of 0.05 g. A near-field and far-field event were also identified as seismic design events and used in determining the MCE for the facility. The MCE near-field event on the Battle Creek fault is a  $M_w$  6.5 event that generates expected free-field bedrock PHGA of 0.29 g. The MCE far-field event is a  $M_w$  7.0 event on the Hat Creek-McArthur-Mayfield fault system that generates an expected free-field bedrock PHGA of 0.06 g. Slope stability analyses were performed and a static factor of safety greater than or equal to 1.5 was achieved for each critical cross section that was evaluated.
28. The facility receives approximately 30 inches of precipitation per year as measured at the Anderson 9WNW Station. The mean pan evaporation is 79 inches per year as measured at the Anderson 9WNW Station.
29. The 100-year, 24-hour precipitation event for the facility is estimated to be 6.65 inches, based on the National Oceanic and Atmospheric Administration (NOAA) Atlas 14.
30. The 1,000-year, 24-hour precipitation event for the facility is estimated to be 8.72 inches, based on NOAA Atlas 14.
31. The southern part of the property is located within the 100-year flood plain as indicated by Federal Emergency Management Agency (FEMA) Flood Map Nos. 060358-900C and 060358-0895. However, none of the waste containment structures, units, or ancillary facilities are located within the 100-year flood plain.
32. Storm water sedimentation basins are located south of the landfill as shown on Attachment B. The basins detain storm water for sedimentation control during the rainy season and are normally dry during the summer months. The sedimentation basins discharge to an unnamed tributary to Cottonwood Creek.

## **SURFACE WATER AND GROUNDWATER CONDITIONS**

33. 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.
34. Surface water drainage from the site is to an unnamed tributary of Cottonwood Creek thence to Cottonwood Creek.
35. The designated beneficial uses of Cottonwood Creek, as specified in the Basin Plan, are municipal and domestic supply; agricultural supply; water contact recreation; non-contact water recreation; warm fresh water habitat; cold freshwater habitat; cold water migration of aquatic organisms; spawning, reproduction, and/or early development; and wildlife habitat.
36. Two groundwater-bearing zones are known to occur at the site. First encountered groundwater, referred to as the shallow zone, is found from 55 to 70 feet below native ground surface directly north, northwest, and east of Unit 1 and is thought to be perched and not laterally continuous. The shallow groundwater unit is not known to be used for production purposes. Confined, laterally continuous, groundwater, referred to as the deep zone, is encountered from 270 to 300 feet below ground surface (BGS) (approximately 150 to 200 feet below the deepest waste). The deep groundwater zone is regionally used for domestic, industrial and agricultural production. During construction of Units 4 and 5, the Discharger proposes to excavate soil to grades below the perched groundwater zone. If encountered, perched groundwater will be collected in interceptor trenches on the west, north, and east sides of Units 4 and 5 as cell development occurs. The interceptor trench on the west side of Unit 4 adjacent to unlined Unit 1 will drain to a separate collection sump from the rest of the interceptor drain system so that liquids can be tested and managed appropriately.
37. Monitoring data indicate background groundwater quality the shallow groundwater zone has electrical conductivity (EC) ranging between 200 and 370 micromhos/cm, with total dissolved solids (TDS) ranging between 190 and 320 milligrams per liter (mg/L). Monitoring data indicate background groundwater quality for the deep groundwater zone has electrical conductivity (EC) ranging between 200 and 230 micromhos/cm, with total dissolved solids (TDS) ranging between 140 and 170 mg/L.
38. The direction of groundwater flow in the deep groundwater zone is northeast. The average groundwater gradient in the deep zone is approximately 0.03 feet per foot and the average velocity is approximately 0.14 feet per day. Groundwater flow in the shallow (perched) zone is also towards the northeast, except at the northwest corner of the site where a western flow direction is observed. The average groundwater gradient in the shallow zone is approximately 0.02 feet per foot and the average velocity is approximately 0.001 feet per day.

39. 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**

40. The current groundwater monitoring network at Anderson Landfill consists of background monitoring well MW-3 and detection monitoring wells SM-1, MW-4A, MW-8, MW-9, MW-10, MW-11. Monitoring wells MW-3, MW-4A, MW-9, MW-10 and MW-11 are completed in the deep (confined) groundwater zone and monitoring wells SM-1 and MW-8 are completed in the shallow (perched) groundwater zone. Gas monitoring wells GM-6D and GM-9D are utilized in the shallow groundwater monitoring program because they are completed and screened across the shallow (perched) zone and consistently yield sufficient water for sampling purposes. The Discharger proposes to install an additional compliance well (MW-12) once the final cell of Unit 5 is constructed. MW-12 will be installed along the east property boundary south of MW-11.

- a. The monitoring system assessing the deep (confined) groundwater consists of the following:
  - i. Background well is MW-3. MW-3 is 312 feet deep with a screen interval between 292 and 312 feet BGS. MW-3 is located outside of the permitted waste disposal area south of Unit 1.
  - ii. Compliance or down and cross gradient wells include MW-4A, MW-9, MW-10 and MW-11. MW-4A is 362 feet deep with a screen interval between 339 and 362 feet BGS. MW-9 is 358 feet deep with a screened interval between 340 and 350 feet BGS, MW-10 is 360 feet deep with a screened interval between 337 and 357 feet BGS and MW-11 is 365 feet deep with a screened interval between 345 and 365 feet BGS. MW-4A is located just north of the northwest corner of Unit 4. MW-9, MW-10 and MW-11 are located northeast of Units 4 and 5 near the Class II surface impoundment.
  - iii. The Discharger proposes to install an additional compliance well (MW-12) once the final cell of Unit 5 is constructed. MW-12 will be installed along the east property boundary south of MW-11.
- b. The monitoring system assessing the shallow (perched) groundwater consists of the following:
  - i. SM-1, located south of the South Canyon Unit, is 30 feet deep. .
  - ii. MW-8, located directly north of Units 1 and 4 near deep well MW-4A, is 75 feet deep with a screen interval between 62 and 72 feet BGS.
  - iii. GM-6D is 75 feet deep with a screen interval between 68 and 73 feet BGS.

- iv. GM-9D is 73.5 feet deep with a screen interval between 61 and 71 feet BGS.
  - c. Future changes to the groundwater monitoring system may be proposed for Central Valley Water Board Executive Officer review and approval.
41. 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.
42. The existing vadose zone monitoring system consists of pan lysimeters installed at strategic locations beneath or adjacent to existing Units.
- a. Pan lysimeters/leak detection systems exist beneath the LCRS sump in Unit 4 and the leak detection sumps of the Class II surface impoundments. Pan lysimeter VZM-4A was located beneath the temporary LCRS sump in Unit 4A and pan lysimeter VZM-4B was located beneath the temporary LCRS sump in Unit 4B. As construction of Units 4A and 4B progressed, pan lysimeters VZM-4A and VZM-4B were decommissioned, and the respective LCRS sumps were removed. The blanket LCRS and collection pipes in Units 4A and 4B were then connected hydraulically to the LCRS sump in Unit 4C. Pan lysimeter VZM-4C is located beneath the LCRS sump in Unit 4C. Pan lysimeter EPOND-VZM is located beneath the leak detection sump of the Eastern Leachate Pond (ELP). Pan lysimeter WPOND-VZM is located beneath the leak detection sump (WLP-LD) of LSI-2.
  - b. Pan lysimeters/leak detection systems exist beneath the LCRS sump in Unit 4 and the leak detection sumps of the Class II surface impoundments.
43. The Discharger proposes to install new pan lysimeters/leak detection systems below future LCRS sumps in each cell constructed for Unit 5.
44. 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 VOCs are not naturally occurring and thus have no background value, they are not amenable to the statistical analysis procedures contained in Title 27 for the determination of a release of wastes from a landfill unit. Title 27, sections 20415(e)(8) and (9) allows the use of a non-statistical evaluation of monitoring data that will provide the best assurance of the earliest possible detection of a release from a 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.
45. 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.

46. 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 initial determination that there has been a possible 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 there is initial evidence of a release of waste from a Unit has occurred. Following an initial 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 positive. 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.
47. 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).
48. The Discharger submitted an 11 October 2005 Water Quality Protection Standard (WQPS) report proposing statistical data analysis methods to calculate concentration limits for select monitored constituents in accordance with Title 27. The WQPS report proposed to use intrawell data analysis to calculate control limits for the monitored constituents. The WQPS and approved data evaluation methods are included in MRP No. R5-2016-0053.

### **GROUNDWATER CONDITIONS**

49. Sporadic detections of xylenes, toluene, and methylene chloride were observed in suction lysimeters at the site prior to 1995. However, no VOCs have been detected in unsaturated zone monitoring devices since July 1994.
50. No impacts have been confirmed in shallow (perched) groundwater to date.
51. Xylenes, toluene, and methylene chloride were sporadically detected in deep groundwater from wells MW-1 and MW-5 prior to 1996. Previously observed high levels of methylene chloride in well MW-5 were attributed to electrical tape or other foreign substance associated with the first pump that was installed. That pump was pulled in October 1992,

the well blown out with air, and a new pump installed. No organic compounds have been detected in well MW-5 since that time, and no organic compounds have been detected in deep groundwater since 1995. Several VOCs have been detected below MDLs at deep wells MW-4A, MW-9 and MW-11 and shallow well MW-8. However, resamples obtained shortly after the initial detections found no VOCs above MDLs at these monitoring points. Currently, it does not appear that the landfill is imparting organic compounds to deep groundwater.

### **LINER PERFORMANCE DEMONSTRATION**

52. 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.”

53. On 3 June 2005 the Discharger submitted a liner performance demonstration for Units 4 and 5, which demonstrated that the proposed liner system will comply with applicable Title 27 performance standards. The overall performance of the liner system depends on site- and design-specific factors such as site and waste characteristics, the proposed landfill liner and containment system, construction quality assurance, and estimated liner leakage. Liner leakage is considered most important of the factors mentioned above. The Discharger used the Hydrologic Evaluation of Landfill Performance (HELP) model to determine leachate generation, head above the liner system, surface runoff, and leakage through the liner system. The calculated leakage rate through the liner system was used as an input parameter for MULTIMED modeling, which is used to evaluate potential impacts to groundwater from liner defects. Modeling indicated that the hydraulic efficiency of the proposed single composite liner system was 99.9998%. Double and triple composite liner systems were also evaluated, and the hydraulic efficiency of these types of liner systems was calculated to be 100%. The double or triple liner system provided for an increase in liner hydraulic efficiency of only 0.0002%. A cost-benefit analysis was performed to compare single, double, and triple liners. The cost of a double liner system increased the cost by \$58,980 per acre over a single liner system, and a triple liner system increased the cost by \$58,981 per acre more than a double liner system. The liner performance evaluation concluded that the single composite liner system provided adequate protection to groundwater and the additional costs of more than \$58,000 per

acre for an extra composite liner would be significantly burdensome and provide only minimal improvements.

54. On 27 May 2014 the Discharger submitted an *Updated Liner Performance Evaluation* for a new proposed engineered alternative base liner system. The previously approved 3 June 2005 design was used to construct the base liner system for Units 4A, 4B and 4C. During construction of the base liner for Unit 4C Extension, the Discharger exhausted most of its easily accessible on-site clay deposits. The Discharger has identified additional clay deposits at the site, but they occur under significant overburden. Due to the difficulty and cost of mining the clay, the Discharger proposed a new engineered alternative base liner design for future Unit expansions. The new engineered alternative base liner design consists of a(n) (in ascending order):

### **Base Liner Design**

- prepared subgrade of compacted general fill,
- geosynthetic clay liner,
- 80-mil double textured HDPE geomembrane liner,
- 1-foot thick LCRS granular layer (floor only),
- 8-oz/sy geotextile filter fabric (floor only), and,
- 1.5 foot thick operations layer on the floor and a 1.5 foot thick select operations layer on the side slopes.

The Discharger used the HELP model to determine the leakage rate for the proposed liner system. The calculated average annual infiltration rate through the proposed sideslope and floor liner system is 0.052 cubic feet per acre per year (cf/ac/yr) and 0.067 cf/ac/yr, respectively. The calculated average annual leakage rate for the newly proposed liner system is less than the calculated average annual leakage rate of the previous liner system and the Title 27 prescriptive liner system. The proposed liner system was also assessed for puncture resistance. The proposed liner system was found to have superior puncture resistance as compared to the previous liner design. Additionally, a cost analysis was performed to evaluate alternative liner designs utilizing double and triple geomembranes, imported clay and amending available soils with bentonite. The proposed liner system was found to be the least expensive design. Central Valley Water Board staff approved the proposed design on 6 June 2014.

## **CONSTRUCTION AND ENGINEERED ALTERNATIVE**

55. On 17 June 1993, the State Water Board adopted Resolution 93-62 implementing a State Policy for the construction, monitoring, and operation of MSW landfills that is consistent with the federal MSW 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 MSW 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.

56. 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).
57. 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.
58. 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 MSW.
59. On 14 July 2015, the Discharger submitted a Joint Technical Document requesting approval of an engineered alternative to the prescriptive standard for liner requirements for the remainder of Unit 4 and all future landfill modules at the facility. The engineered alternative liner proposed by the Discharger for the bottom liner of the future landfill modules consists of a(n) (in ascending order):

#### **Floor Liner**

- prepared subgrade of compacted general fill,
- geosynthetic clay liner,
- 80-mil double textured HDPE geomembrane liner,
- 1-foot thick LCRS granular layer (floor only),
- 8-oz/sy geotextile filter fabric, and,
- 1.5 foot thick operations layer.

#### **Side Slope Liner**

- prepared subgrade of compacted general fill,
- geosynthetic clay liner,
- 80-mil double textured HDPE geomembrane liner, and,

- 1.5 foot thick select operations layer.

60. During construction of the base liner for Unit 4C, the Discharger exhausted most of its easily accessible on-site clay deposits. The Discharger has identified additional clay deposits at the site, but they occur under significant overburden. Due to the difficulty and cost of mining the onsite clay, importing clay, or amending available on-site soils with bentonite, the Discharger proposed a new engineered alternative base liner design for future Unit expansions. The 27 May 2014 *Updated Liner Performance Evaluation* submitted by the Discharger substantiates that the proposed base liner design is the most cost-effective engineered alternative for the facility.
61. The Discharger adequately demonstrated that construction of a Subtitle D prescriptive standard liner would be unreasonably and unnecessarily burdensome when compared to the proposed engineered alternative design. The Discharger demonstrated that the proposed engineered alternative is consistent with the performance goals of the prescriptive standard and affords at least equivalent protection against water quality impairment.
62. The existing Class II surface impoundments (ELP and LSI-2) have a base liner system consisting of a (in ascending order):
- 1-ft low-permeability soil with a hydraulic conductivity of  $1 \times 10^{-6}$  cm/sec or less,
  - secondary 60-mil double side textured HDPE geomembrane,
  - double sided geocomposite (leak detection layer),
  - geosynthetic clay liner, and,
  - primary 60-mil single side textured HDPE geomembrane.
63. Any new Class II surface impoundment(s) needed for additional storage of leachate will be designed and constructed in accordance with the prescriptive and performance standards of Title 27. Engineered alternative liner designs meeting the performance standards of Title 27 may be proposed for Central Valley Water Board Executive Officer review and approval.
64. All compositely lined units at the facility have LCRSs. Leachate from South Canyon Unit (Unit 1B) collects in a sump at the western edge of the Unit. From there, leachate is pumped into two 12,000-gallon intermediate plastic storage tanks. Leachate is currently trucked from the South Canyon Unit intermediate holding tanks to the Class II surface impoundments on an as needed basis in order to maintain sufficient storage capacity. Leachate from Unit 2Ba collects in a sump at the southeastern corner of the Unit that is connected to the Unit 4 LCRS sump. From there leachate is pumped to the Class II surface impoundments. Additionally, unlined Unit 1 has a toe drain system at the southern portion of the Unit that abuts the South Canyon Unit (Unit 1B). The Discharger monitors the toe drain system for liquids and transports any leachate that the system collects to the Class II surface impoundments.

65. All Units designed for containment of Class II wastes (leachate) have been or will be constructed to contain the 1,000-year, 24-hour storm event in addition to the 100-year wet season while still maintaining two feet of freeboard.
66. Any liquid detected between the primary and secondary liner of the Class II surface impoundment will be characterized to try and determine whether the primary liner is leaking. Liquid collected from between the liners will be returned to the surface impoundment. If it is determined that the primary liner is leaking, then the Discharger will be requested to immediately begin repairs.
67. A LCRS will be installed over the liner system described in Finding 61. The LCRS will consist of perforated HDPE pipes installed along the toes of slopes connected to a central perforated collection pipe that drains towards the LCRS sump at the north of Unit 4C or in Unit 5. Any temporary LCRS sumps will be moved with each phase of construction, until such time it can be connected to the LCRS sump in Unit 4C or future sump in Unit 5. Leachate collected from Unit 2Ba is conveyed to the LCRS for Unit 4, where it flows to the permanent sump. Collected leachate will be pumped from the Unit LCRS sump to the Class II surface impoundments for storage and disposal. Peak daily leachate flow rates for the floor grades and sideslopes of Unit 4 are calculated to be 5,285 cubic feet per day (ft<sup>3</sup>/day) per acre. Unit 2Ba will contribute up to an additional 200 ft<sup>3</sup>/day to the Unit 4 LCRS. The pipe components of the Unit 4 LCRS have been designed to collect twice the peak daily leachate flow rate that was estimated using the HELP Model.
68. The LCRS design for future cells is as follows (in ascending order):

**LCRS Design: Floor**

- Base liner geomembrane
- LCRS collection pipes
- one-foot thick drainage layer consisting of rounded to sub-rounded clean 3/8-inch minus gravel with a hydraulic conductivity of 0.3 cm/sec
- Eight oz/sy geotextile
- 18 inch thick soil operations layer.

**LCRS Design: Side Slopes**

- Side slope geomembrane
- 18 inch thick select operations layer with a minimum hydraulic conductivity of 0.3 cm/sec where needed for drainage. The select operations layer will provide sufficient thickness for protection of the underlying liner system as well as adequate drainage for twice the peak daily anticipated leachate generation.

69. A pan lysimeter will be installed beneath the LCRS sump and a portion of the LCRS piping for each new landfill cell/module for the purpose of unsaturated zone monitoring.

70. The 14 July 2015 Joint Technical Document includes a stability analysis for Units 4 and 5 pursuant to Title 27, section 21750(f)(5). Slope stability analyses were performed for the earthfill embankment and waste fill slopes. Interim conditions were analyzed assuming static conditions only. Final conditions were analyzed for static and seismic conditions. Rapid drawdown analysis was also performed for the eastern berm where storm water will be allowed to pond behind the berm. Critical cross-sections were selected based on their representation of maximum fill height, maximum and minimum excavation depths, and base grade configurations. Two-dimensional slope stability analyses were performed using the software program SLOPE/W. Slope stability was evaluated using the limit equilibrium procedures based on the Spencer method of slices. 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 Units 4 and 5 will withstand the forces of the MPE without failure of the containment systems or environmental controls.
71. This Order approves the Discharger's proposed liner system for future modules as described in Finding 61 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.

### LANDFILL CLOSURE

72. Title 27, section 21090 provides the minimum prescriptive final cover components for landfills consisting of, in ascending order, the following layers:
- a. Two-foot thick soil foundation layer.
  - b. One-foot thick soil low flow-hydraulic conductivity layer, less than  $1 \times 10^{-6}$  cm/s or equal to the hydraulic conductivity of any bottom liner system.
  - c. Geomembrane layer (this layer is required for composite-lined landfills for equivalency to bottom liner).
  - d. One-foot thick soil erosion resistant/vegetative layer.
73. Title 27 allows engineered alternative final covers provided the alternative design will provide a correspondingly low flow-through rate throughout the post-closure maintenance period.
74. The Discharger submitted a 27 August 2015 *Preliminary Closure and Postclosure Maintenance Plan* (PCPCMP) for closure and post-closure maintenance of all the unlined and composite-lined landfill units at the facility. In 2008 the majority of Unit 1 was final closed with the exception on an approximately 3.5 acre area at the northwest corner of Unit 1. A 2008 survey indicated that this area had not reached final grade and approximately 75,000 cubic yards of capacity remained in this area. On 2 January 2014, Central Valley Water Board staff approved a request to extend the final closure of this

area of Unit 1 until 1 November 2024 so that the remaining capacity could be used and the Unit could reach final design grades. Former Unit 2C was clean closed in 2008. The former designated waste trench was clean closed in 2004. The unclassified North of Cambridge Road Unit was final closed in 2007. The western portion of Unit 2BA was partial final closed in 2008. Final filling and closure of the remaining unclosed portion of Unit 2Ba has been deferred until the toe of the Unit 4A waste fill slope is buttressed with Unit 5 waste. The South Canyon Unit was final closed in 2008.

75. The Discharger proposes an engineered alternative final cover for composite-lined landfill Unit 2Ba, South Canyon Unit, Unit 4 and Unit 5, consisting of, in ascending order, the following layers:
  - a. Two-foot thick foundation layer.
  - b. Geosynthetic clay liner.
  - c. 60-mil linear low density polyethylene (LLDPE) AGRU-brand super gripnet geomembrane installed with stud side up
  - d. 8 oz/sy geotextile
  - e. One-foot thick vegetative layer.
76. The Discharger proposes an engineered alternative final cover for unlined landfill units Unit 1, Unit 2B, and the North of Cambridge Road Unit consisting of, in ascending order, the following layers:
  - a. Two-foot thick soil foundation layer.
  - b. 60-mil LLDPE AGRU-brand super gripnet geomembrane installed with stud side up.
  - c. 8 oz/sy geotextile
  - d. One-foot thick soil erosion resistant soil layer, with vegetation.
77. The Discharger's 27 August 2015 PCPCMP included an analysis of the proposed engineered alternative final cover. The PCPCMP performed a comparison of the Title 27 prescriptive liner with the proposed engineered alternative design. The comparison showed that using a 60-mil HDPE geomembrane had a slower infiltration rate than the prescriptive standard of 12 inches of compacted clay, and that using a geosynthetic clay liner had a slower infiltration rate than the prescriptive standard of 12 inches of compacted clay.
78. The Discharger has demonstrated that the engineered alternative final cover meets the performance goals of Title 27 and that it is equivalent to the prescriptive standard.
79. Side slopes for the closed landfill will be sloped at 3H:1V or less and will include 15-foot wide benches every 50 vertical feet as required by Title 27.
80. The Discharger performed a slope stability analysis for the proposed final cover systems. The 14 July 2015 Joint Technical Document includes a 12 June 2015 *Stability Analysis* of the proposed cover systems. The *Stability Analysis* evaluated static, seismic and infinite

slope stability of the proposed final cover system. The Discharger's static and dynamic stability analysis demonstrates that the side slopes of the final cover will be stable in accordance with the requirements of Title 27.

81. Pursuant to Title 27, section 21090(e)(1), this Order requires a survey of the final cover following closure activities for later comparison with iso-settlement surveys required to be conducted every five years.
82. This Order approves the proposed final covers and requires that a final closure and post-closure maintenance plan, design documents, and CQA plan be submitted for review and approval at least 180 days prior to actual closure.

### **LANDFILL POST-CLOSURE MAINTENANCE**

83. The Discharger submitted a 27 August 2015 PCPCMP for closure and post-closure maintenance of Unit 1, Unit 2B, Unit 2Ba, South Canyon Unit, North of Cambridge Road Unit, Unit 4 and Unit 5. 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, and site security. The plan will be implemented for a minimum period of 30 years or until the waste no longer poses a threat to environmental quality, whichever is greater.
84. 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.
85. 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**

86. 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 27 August 2015 PCPCMP 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 2015 dollars is \$9.216 million. 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 2015, the balance of the closure fund was \$9.216 million.

87. Title 27, sections 21840 and 22211 requires a cost estimate for landfill post-closure maintenance. The Discharger's 27 August 2015 PCPCMP includes a cost estimate for landfill post-closure maintenance. The amount of the cost estimate for post-closure maintenance in 2015 dollars is \$3.485 million. 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 2015, the balance of the post-closure maintenance fund was \$3.485 million.
88. Title 27, section 22221 requires a cost estimate for corrective action of all known or reasonably foreseeable releases. The Discharger submitted a 27 August 2015 cost estimate of \$495,430.85 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 2015, the balance of the corrective action fund was \$495,430.85.
89. 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**

90. The Final Environmental Impact Report (EIR 1-89; SCR# 89052316) for the facility was certified on 7 June 1990 by the Shasta County Planning Commission for Use Permit No. 68-89. Use Permit No. 68-89 was later amended with the adoption of a Mitigated Negative Declaration for Use Permit No. 68-89A, which allowed tire shredding. On 12 October 2000, the Shasta County Planning Commission adopted a Mitigated Negative Declaration for new Use Permit No. 00-24, which additionally required increased litter control along site access roads, specifically West Anderson Drive and portions of Gas Point Road, and a ten-year renewal ending in 2010. Amended Use Permit 00-24A was issued to the Discharger on 10 April 2008 allowing the increase of the maximum permitted

elevation from 760 feet MSL to 769.5 feet MSL within a 12 acre area of Unit 1. The Solid Waste Facility Permit revision to increase the height was approved and issued on 23 June 2008. The new Use Permit 10-001 was issued on 12 August 2010 with adoption of a Mitigated Negative Declaration (State Clearinghouse #2010072033) allowing for continued operation of the facility until final capacity is reached. A minor modification to Use Permit UP10-001M was approved on 14 March 2014 for a recycling transfer operation within lined portions of Unit 4. Compliance with this Order, including implementation of the monitoring and reporting program, will mitigate or avoid potential significant impacts to water quality.

91. The action to revise waste discharge requirements for this existing facility is exempt from the provisions of the California Environmental Quality Act (CEQA), Public Resource Code section 21000, et seq., and the CEQA guidelines, in accordance with Title 14, section 15301.
92. 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.
93. Based on the threat and complexity of the discharge, the facility is determined to be classified Category 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."
94. 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 proposes to discharge waste within its region, or any citizen or domiciliary, or political agency or entity of this state who has discharged, discharges, or is suspected of having discharged or



discharging, or who proposes 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.

95. The technical reports required by this Order and the attached "Monitoring and Reporting Program No. R5-2016-0053" are necessary to assure compliance with these waste discharge requirements. The Discharger owns and operates the facility that discharges the waste subject to this Order.
96. Due to the presence of unlined waste disposal units at the site (Unit 1, Unit 2, Unit 2A, and North of Cambridge Road Unit), waste discharged at the site could be discharged to waters of the State as a result of permitted activities at the facility. This discharge will not degrade underlying groundwater at the site due to separation of the waste from the regional groundwater aquifer by over 150 feet of clay-rich, relatively impermeable soil and attenuation of expected waste constituents in the unsaturated clay soil. Compliance with this Order, the attached Standard Provisions and Reporting Requirements, and Monitoring and Reporting Program R5-2016-0053 represent best efforts to control the discharge of waste to waters of the State. Therefore, the site complies with the Anti-Degradation Policy.

### **PROCEDURAL REQUIREMENTS**

97. 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.
98. 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.
99. The Central Valley Water Board, in a public meeting, heard and considered all comments pertaining to the discharge.
100. 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](http://www.waterboards.ca.gov/public_notices/petitions/water_quality)

or will be provided upon request.

IT IS HEREBY ORDERED, pursuant to California Water Code sections 13263 and 13267, that Order No. R5-2005-0118 is rescinded except for purposes of enforcement, and that Anderson Landfill, Inc., its agents, successors, and assigns, in order to meet the provisions of Division 7 of the California Water Code and the regulations adopted thereunder, shall comply with the following:

#### **A. PROHIBITIONS**

1. The discharge of 'hazardous waste' or 'designated waste' is prohibited. For the purposes of this Order, the term 'hazardous waste' is as defined in California Code of Regulations, Title 23, section 2510 et seq., and 'designated waste' is as defined in Title 27.
2. The Discharger shall comply with all Standard Prohibitions listed in Section C of the Standard Provisions and Reporting Requirements (SPRRs) dated December 2015 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., Unit 4 and future modules listed in Finding 7 of this Order). 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 25150.7 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 has demonstrated 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 the South Canyon Unit, Unit 2Ba, Unit 4 and future composite lined modules listed in Finding 7 of this Order 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 December 2015 which are attached hereto and made part of this Order by reference.

### C. FACILITY SPECIFICATIONS

1. Class II surface impoundments shall be operated and maintained to ensure that sufficient freeboard exists to accommodate seasonal precipitation and the design storm listed in Title 27, Table 4.1. Two feet of freeboard or more shall be maintained at all times during the operational life of the landfill and throughout the post-closure maintenance period.
2. The Discharger shall comply with all Standard Facility Specifications listed in Section E of the SPRRs dated December 2015 which are part of this Order.
3. The Discharger shall comply with all applicable Storm Water Provisions listed in Section L of the SPRRs dated December 2015 which are attached hereto and made part of this Order by reference.

### 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 7 of this Order in accordance with the following approved engineered alternative liner design:
  - a. An engineered alternative composite **floor liner system** that is comprised, in ascending order, of the following:
    - 1) Prepared subgrade;

- 2) Geosynthetic clay liner;
  - 3) 80-mil double-side textured HDPE geomembrane;
  - 4) 12-inch thick granular layer with minimum hydraulic conductivity of 0.3 cm/sec;
  - 5) 1.5-foot thick operations layer
- b. An engineered alternative composite **side slope liner system** that is comprised, in ascending order, of the following:
- 1) Prepared subgrade;
  - 2) Geosynthetic clay liner;
  - 3) 80-mil double-side textured HDPE geomembrane;
  - 4) 1.5-foot thick select operations layer with minimum hydraulic conductivity of 0.3 cm/sec where needed for drainage. The select operations layer will provide sufficient thickness for protection of the underlying liner system as well as adequate drainage for twice the peak daily anticipated leachate generation rates.
2. Future Class II surface impoundments installed for the storage of leachate shall be designed and constructed to meet performance standards of Title 27, sections 20310 and 20375 and the Construction Standards listed in Title 27, Table 4.1.
  3. Class II surface impoundment containment systems shall include a composite liner system with (1) an upper synthetic flexible membrane liner component (that's at least 60-mil thick for HDPE) installed in direct and uniform contact with a lower compacted soil component at least two-feet thick with a hydraulic conductivity of  $1 \times 10^{-7}$  cm/sec or less (Prescriptive Standard); or (2) a composite liner system with an engineered alternative design that meets the performance criteria for Class II Units and surface impoundments in accordance with Title 27. Liner systems utilizing an engineered alternative design shall comply with requirements of Title 27, section 20080(c) and (d). For double composite liner systems, a LCRS is required to be installed between the primary and secondary liners.
  4. Class II surface impoundments shall include a pan lysimeter or other type of unsaturated zone monitoring device(s) installed beneath the lowest point of the base liner system to provide the earliest possible detection of a release from the Unit.
  5. 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 CQA plans have been approved.

6. The Discharger may propose changes to the liner system design prior to construction, provided that 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.
7. The Discharger shall comply with all Standard Construction Specifications listed in Section F of the SPRRs dated December 2015 which are attached hereto and made part of this Order by reference.
8. The Discharger shall comply with all Storm Water Provisions listed in Section L of the SPRRs dated December 2015 which are attached hereto and made part of this Order by reference.

#### **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 close landfill units with a final cover as proposed in the 27 August 2015 PCPCMP and as approved by this Order. The components of the approved final cover as proposed in the PCPCMP are listed in Finding 75.
3. The Discharger shall obtain revised WDRs prior to closure with any other final cover design than the design or designs approved in this Order, except when modifications are necessary for problematic areas of the final cover needing repair so long as the barrier layer (e.g., geomembrane, GCL, and/or compacted clay layer) remains intact, and the modifications are approved by Central Valley Water Board staff.
4. 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.
5. 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.
6. The Discharger shall seal the edges of the final cover by connecting the cover geomembrane to the liner geomembrane.

7. 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.
8. 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.
9. 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 dated December 2015 which are attached hereto and made part of this Order by reference.

#### **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 86 and 877, 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 June 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 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 88. A report regarding financial assurances for corrective action shall be submitted to the Central Valley Water Board by **1 June of each year**. This may be the same report that is submitted to CalRecycle for this purpose. If CalRecycle determines that either the amount of coverage or the

mechanism is inadequate, then within 90 days of notification, the Discharger shall submit an acceptable mechanism to CalRecycle and the Central Valley Water Board for at least the amount of the approved cost estimate.

4. The Discharger shall comply with all Standard Financial Assurance Specifications listed in Section H of the SPRRs dated December 2015 which are attached hereto and made part of this Order by reference.

## **G. MONITORING SPECIFICATIONS**

1. The Discharger shall comply with the detection monitoring program provisions of Title 27 for groundwater, surface water, and the unsaturated zone, and in accordance with Monitoring and Reporting Program (MRP) No. R5-2016-0053, and the Standard Monitoring Specifications listed in Section I of the SPRRs dated December 2015 which are attached hereto and made part of this Order by reference.
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. R5-2016-0053, and the Standard Monitoring Specifications listed in Section I of SPRRs dated December 2015 which are attached hereto and made part of this Order by reference.
3. The Discharger shall comply with the Water Quality Protection Standard as specified in this Order, MRP No. R5-2016-0053, and the SPRRs dated December 2015 which are attached hereto and made part of this Order by reference.
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. R5-2016-0053.
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. R5-2016-0053 and the Standard Monitoring Specifications in Section I of the SPRRs dated December 2015 which are attached hereto and made part of this Order by reference.
6. As specified in MRP No. R5-2016-0053, 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 dated December 2015 which are attached hereto and made part of this Order by reference.

## H. PROVISIONS

1. The Discharger shall maintain a copy of this Order at the facility, including the MRP No. R5-2016-0053 and the SPRRs dated December 2015 which are part of this Order, 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. R5-2016-0053, 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, dated December 2015, 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>
<b>A. Construction Plans</b>	
Submit construction and design plans for review and approval. (see all Construction Specifications in Section D, above and Section F of the SPRRs.)	<b>90 days prior to proposed construction</b>
<b>B. Construction Report</b>	
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).	<b>60 days prior to proposed discharge</b>



### **C. Final Closure Plans**

Submit a final or partial final closure and post-closure maintenance plan, design plans, and CQA plan for review and approval (see all Closure and Post-Closure Specifications in Section E, above and Section G of the SPRRs).

**Two years prior to closure**

8. The Discharger shall comply with all General Provisions listed in Section K of the SPRRs dated December 2015 which are part of this Order.

I, PAMELA C. CREEDON, Executive Officer, do hereby certify that this Order with all attachments is a full, true, and correct copy of the Order issued by the California Regional Water Quality Control Board, Central Valley Region, on 24 June 2016.

Original signed by Pamela C. Creedon

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PAMELA C. CREEDON, Executive Officer

GCS

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2016-0053  
FOR  
ANDERSON LANDFILL, INC.  
ANDERSON LANDFILL  
CLASS III MUNICIPAL SOLID WASTE LANDFILL AND CLASS II SURFACE  
IMPOUNDMENTS  
OPERATION AND PARTIAL CLOSURE  
SHASTA COUNTY

This monitoring and reporting program (MRP) is issued pursuant to California Water Code section 13267 and incorporates requirements for groundwater, surface water, and unsaturated zone monitoring and reporting; facility monitoring, maintenance, and reporting; and financial assurances reporting contained in California Code of Regulations, title 27, section 20005, et seq. (hereafter Title 27), Waste Discharge Requirements (WDRs) Order No. R5-2016-0053, and the Standard Provisions and Reporting Requirements (SPRRs) dated December 2015. 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, surface water, 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 11 October 2005 *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, leachate, and surface water monitoring points shall be sampled and analyzed for monitoring parameters and constituents of concern (COCs) as indicated and listed in Tables I through VI.

The Discharger may use alternative analytical test methods, including new USEPA approved methods, provided the methods have method detection limits equal to or lower than the analytical methods specified in this 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	Surface Water Monitoring
A.5	Facility 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>Zone</u>	<u>Units Being Monitored</u>
SM-1	Background	Shallow	Unit 1, Unit 2A, Unit 2B, Unit 2Ba, South Canyon Unit, North of Cambridge Road Unit, Unit 4
MMMW-8	Detection	Shallow	Unit 1, Unit 2A, Unit 2B, Unit 2Ba, South Canyon Unit, Unit 4, North of Cambridge Road Unit
GMGM-6D	Detection	Shallow	Unit 1, Unit 2A, Unit 2B, Unit 2Ba, South Canyon Unit, Unit 4, North of Cambridge Road Unit
GMGM-9D	Detection	Shallow	Unit 1, Unit 2A, North of Cambridge Road Unit

<u>Well</u>	<u>Status</u>	<u>Zone</u>	<u>Units Being Monitored</u>
MW-3	Background	Deep	Unit 1, Unit 2A, Unit 2B, Unit 2Ba, South Canyon Unit, North of Cambridge Road Unit, Unit 4, ELP, LSI-2
MW-4A	Detection	Deep	Unit 1, Unit 2A, Unit 2B, Unit 2Ba, South Canyon Unit, Unit 4
MW-9	Detection	Deep	Unit 1, Unit 2A, Unit 2B, Unit 2Ba, South Canyon Unit, Unit 4, LSI-2
MW-10	Detection	Deep	Unit 1, Unit 2A, Unit 2B, Unit 2Ba, South Canyon Unit, Unit 4, LSI-2, ELP
MW-11	Detection	Deep	Unit 4, LSI-2, ELP
MW-12 (future)	Detection	Deep	Unit 5

Groundwater samples shall be collected from the background wells, detection monitoring wells, and any additional wells added as part of the approved groundwater monitoring system. The collected samples from the background wells and detection monitoring wells 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 VI every five years. Five-year COCs were last monitored in 2012 and shall be monitored again in 2017. The results shall be reported in the Annual Monitoring Report for the year in which the samples were 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>
VZM-4C	Detection	Unit 4
EPOND- VZM	Detection	ELP
WPOND- VZM	Detection	LSI-2

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 VI every five years, beginning again in **2017** (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 11 October 2005 *Water Quality Protection Standard Report*.

## 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>
Unit 1 Toe Drain Sump	Unit 1
South Canyon Unit Sump	South Canyon Unit
Unit 4C Sump	Unit 4

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 **2017**.

#### **Leak Detection System Monitoring:**

**The Class II surface impoundments (ELP and LSI-2) leak detection system sumps shall be inspected for the presence of leachate monthly with the results reported in each semiannual monitoring report required in Section B.1 of this MRP.** Any liquid detected in the Class II surface impoundment leak detection system sumps shall be sampled immediately for the Field Parameters, Monitoring Parameters, and COCs listed in Table III. The Discharger shall also immediately notify Central Valley Water Board staff that leachate has been detected in a previously dry leak detection system sump, and then follow up with written notification within seven days of the detection. The notification shall indicate that samples have been collected. Results of the sampling shall be reported in the semiannual monitoring report for the respective period in which the samples were collected and the Annual Monitoring Report for the same year, as required in Sections B.1 and B.2 of this MRP.

If additional leak detection systems are installed during construction of new Units, then the LDSs shall be inspected weekly for the presence of liquids. Upon detection of liquid in a previously dry LDS, the Discharger shall collect a sample and analyze for all Field Parameters, Monitoring Parameters, and COCs listed in Table III and immediately notify Central Valley Water Board staff of the detection.

**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. Surface Water Monitoring

The Discharger shall operate a surface water detection monitoring system for any landfill facility where runoff from landfill areas flows or could flow to waters of the United States. The monitoring system shall comply with the applicable provisions of Title 27, sections 20415 and 20420. At the Anderson Landfill, runoff from landfill areas flows to sedimentation basins that periodically discharge to an unnamed tributary of Cottonwood Creek. Waters that receive storm water discharges from the Anderson Landfill shall be monitored in accordance with Anderson Landfill's Storm Water Pollution Prevention Plan and the NPDES Industrial General Storm Water Permit (WDID No. 5R45I005373).

For all monitoring points and background monitoring points assigned to surface water detection monitoring, samples shall be collected and analyzed for the monitoring parameters in accordance with the methods and frequencies specified in Table IV. The storm water monitoring points and monitoring frequency are described in Anderson Landfill's Stormwater Pollution Prevention Plan and the NPDES Industrial General Storm Water Permit (WDID No. 5R45I005373). All monitoring parameters shall be graphed and tabulated so as to show historical trends at each sample location.

Existing sediment detention ponds are located directly below and south of the South Canyon Unit (SED-1), and to the east of Unit 4A (SED-4A). An additional sediment detention pond (SED-5) will be constructed east of Unit 5 during construction of Unit 5. Storm water from the site is or will be directed to these ponds prior to discharging off site to the south. Sediment detention ponds SED-1 and SED-4 shall be monitored monthly for freeboard, fluid depth, flow rate (if applicable), and the Standard Observations described in Reporting Requirements Section B.4.g.3 of Monitoring and Reporting Program No. R5-2016-0053. Water quality testing of the liquids in the ponds shall be conducted semiannually. The collected samples shall be analyzed for the listed constituents in accordance with the methods and frequencies specified in Table IV. Future sedimentation pond SED-5 shall be monitored as described above once it is constructed. The current surface water detection monitoring system meets the applicable requirements of Title 27.

## 5. 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)]. The isosettlement survey shall be conducted immediately following closure of each unit and every five years thereafter. Reporting shall be in accordance with Section B.6 of this MRP. 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 diversion 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.

## 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	<b>1 August, 1 February</b>
B.2	Annual Monitoring Report	31 December	<b>1 February</b>
B.3	Seep Reporting	Continuous	<b>Immediately &amp; 7 Days</b>
B.4	Annual Facility Inspection Report	31 October	<b>15 November</b>
B.5	Major Storm Event Reporting	Continuous	<b>7 days from damage discovery</b>

<u>Section</u>	<u>Report</u>	<u>End of Reporting Period</u>	<u>Due Date</u>
B.6	Survey and Iso-Settlement Map for Closed Landfills	Every Five Years	<b>At Closure Completion and Every Five Years</b>
B.7	Financial Assurances Report	31 December	<b>1 June</b>

### Reporting Requirements

The Discharger shall submit monitoring reports **semiannually** with the data and information as required in this MRP and as required in WDRs Order No. R5-2016-0053 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. 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, leachate, and surface water. Concentrations below the laboratory reporting limit shall not be reported as "ND" unless the reporting limit is also given in the table. Otherwise they shall be reported "<" the reporting limit (e.g., <0.10). Units shall be as required in Tables I through IV unless specific justification is given to report in other units. Refer to the SPRRs Section I "Standard Monitoring Specifications" for requirements regarding MDLs and PQLs.

- e) Laboratory statements of results of all analyses evaluating compliance with requirements.
  - f) An evaluation of the concentration of each monitoring parameter (or 5-year COC when five year COC sampling is conducted) as compared to the current concentration limits, and the results of any required verification testing for constituents exceeding a concentration limit . Report any actions taken under Section J: Response to a Release for verified 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.5.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 above MSL. In addition the elevations of the top and bottom of the screened interval and the elevation of the pump intake shall be tabulated for each well. 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. This update will occur every two years, per the approved 11 October 2005 *Water Quality Protection Standard Report*.
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.5.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.5.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.5.c of this MRP, above. The next report is due by 1 July 2017.
7. **Financial Assurances Report:** By **1 June** 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.3 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 COC, the verification retesting procedure to confirm measurably significant evidence of a release, the point of compliance, and all water quality monitoring points for each monitored medium.

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

The report shall:

- a. Identify **all distinct bodies of surface and ground water** that could be affected in the event of a release from a 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.

The Discharger proposed the methods for calculating concentration limits in the 11 October 2005 *Water Quality Protection Standard Report*. The limits are calculated using intrawell data analysis to calculate control limits for the monitored constituents.

In accordance with the approved 11 October 2005 *Water Quality Protection Standard Report*, the Water Quality Protection Standard shall be updated every two years for each monitoring well using new and historical monitoring data.

## **2. Monitoring Parameters**

Monitoring parameters are a select group of constituents that are monitored during each monitoring event that are the waste constituents, reaction products, hazardous constituents, and physical parameters that provide a reliable indication of a release from a waste management unit. The monitoring parameters for all waste management units are those listed in Tables I through V 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 IV for the specified monitored medium, and Table VI. The Discharger shall monitor all COCs every five years, or more frequently as required in accordance with a Corrective Action Program. The last 5-year COC report was submitted to the Central Valley Water Board in the 2012 *Annual Monitoring Report*, and 5-year COCs are due to be monitored again in **2017**.

### **4. Concentration Limits**

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

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

The methods for calculating concentration limits are included in the 11 October 2005 *Water Quality Protection Standard Report*. The approved method uses intrawell data analysis to calculate control limits for the monitored constituents. The limits and selected parameters are updated every two years in accordance with the approved 11 October *Water Quality Protection Standard Report*.

### **5. Retesting Procedures for Confirming Evidence of a Release**

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

- c. 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.
- d. 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. The following are monitoring locations at the point of compliance:

<u>Cell or Module</u>	<u>Point of Compliance Monitoring Wells</u>
Unit 1	MW-8, GM-6D, GM-9D, MW-4A, MW-9, MW-10
Unit 2A	MW-8, GM-6D, GM-9D, MW-4A, MW-9, MW-10
Unit 2Ba	<i>MW-8, GM-6D, MW-4A, MW-9, MW-10</i>
South Canyon Unit	MW-8, GM-6D, MW-4A, MW-9, MW-10
North of Cambridge Road Unit	MW-8, GM-6D, GM-9D
Unit 4	MW-8, GM-6D, MW-4A, MW-9, MW-10, MW-11
Unit 5 (future)	MW-12 (planned)
ELP	MW-10, MW-11
LSI-2	MW-9, MW-10, MW-11

## 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.

Original signed by Pamela C. Creedon

Ordered by: \_\_\_\_\_  
PAMELA C. CREEDON, Executive

Officer

06/24/2016

\_\_\_\_\_  
(Date)

GCS

**TABLE I**  
**GROUNDWATER DETECTION MONITORING PROGRAM**

<u>Parameter</u>	<u>Units</u>	<u>Sampling Frequency</u>	<u>Reporting Frequency</u>
<b>Field Parameters</b>			
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
<b>Monitoring Parameters</b>			
Total Dissolved Solids (TDS)	mg/L <sup>1</sup>	Semiannual	Semiannual
Chloride	mg/L	Semiannual	Semiannual
Carbonate	mg/L	Semiannual	Semiannual
Bicarbonate	mg/L	Semiannual	Semiannual
Nitrate - Nitrogen	mg/L	Semiannual	Semiannual
Sulfate	mg/L	Semiannual	Semiannual
Calcium	mg/L	Semiannual	Semiannual
Magnesium	mg/L	Semiannual	Semiannual
Potassium	mg/L	Semiannual	Semiannual
Sodium	mg/L	Semiannual	Semiannual
Volatile Organic Compounds (USEPA Method 8260B, short list, see Table V)	ug/L <sup>2</sup>	Semiannual	Semiannual
<b>5-Year Constituents of Concern (see Table VI)</b>			
Total Organic Carbon	mg/L	5 years	1 <sup>st</sup> Half 2017
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	" "

<sup>1</sup> Milligrams per liter

<sup>2</sup> Micrograms per liter

**TABLE II**  
**UNSATURATED ZONE DETECTION MONITORING PROGRAM**

**SOIL-PORE GAS<sup>1</sup>**

<u>Parameter</u>	<u>Units</u>	<u>Sampling Frequency</u>	<u>Reporting Frequency</u>
<b>Monitoring Parameters</b>			
Methane	%	Semiannual	Semiannual

**PAN LYSIMETERS<sup>2</sup> (or other vadose zone monitoring device)**

<u>Parameter</u>	<u>Units</u>	<u>Sampling Frequency</u>	<u>Reporting Frequency</u>
<b>Field Parameters</b>			
Electrical Conductivity	umhos/cm	Semiannual	Semiannual
pH	pH units	Semiannual	Semiannual
Volume of liquid removed	gallons	Monthly	Semiannual

**Monitoring Parameters**

Total Dissolved Solids (TDS)	mg/L	Semiannual	Semiannual
Chloride	mg/L	Semiannual	Semiannual
Carbonate	mg/L	Semiannual	Semiannual
Bicarbonate	mg/L	Semiannual	Semiannual
Nitrate - Nitrogen	mg/L	Semiannual	Semiannual
Sulfate	mg/L	Semiannual	Semiannual
Calcium	mg/L	Semiannual	Semiannual
Magnesium	mg/L	Semiannual	Semiannual
Potassium	mg/L	Semiannual	Semiannual
Sodium	mg/L	Semiannual	Semiannual
Volatile Organic Compounds (USEPA Method 8260B, short list, see Table V)	ug/L	Semiannual	Semiannual

**5-Year Constituents of Concern (see Table VI)**

Total Organic Carbon	mg/L	5 years	1 <sup>st</sup> Half 2017
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	" "

<sup>1</sup> Soil-pore gas samples collected from landfill gas probes are only subject to the methane sampling (not the other parameters listed for pan lysimeters).

<sup>2</sup> 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 <sup>1</sup>, CLASS II SURFACE IMPOUNDMENT LDS INSPECTIONS,  
 SEEP MONITORING <sup>2</sup>, AND LCRS TESTING <sup>3</sup>**

<u>Parameter</u>	<u>Units</u>	<u>Sampling Frequency</u>	<u>Reporting Frequency</u>
<b>Field Parameters</b>			
Total Flow	Gallons	Monthly	Semiannual
Flow Rate	Gallons/Day	Monthly	Semiannual
Electrical Conductivity	umhos/cm	Quarterly	Semiannual
pH	pH units	Quarterly	Semiannual
<b>Monitoring Parameters</b>			
Total Dissolved Solids (TDS)	mg/L	Annually	Annually
Chloride	mg/L	Annually	Annually
Carbonate	mg/L	Annually	Annually
Bicarbonate	mg/L	Annually	Annually
Nitrate - Nitrogen	mg/L	Annually	Annually
Sulfate	mg/L	Annually	Annually
Calcium	mg/L	Annually	Annually
Magnesium	mg/L	Annually	Annually
Potassium	mg/L	Annually	Annually
Sodium	mg/L	Annually	Annually
Volatile Organic Compounds (USEPA Method 8260B, short list, see Table V)	ug/L	Annually	Annually
<b>5-Year Constituents of Concern (see Table VI)</b>			
Total Organic Carbon	mg/L	5 years	1 <sup>st</sup> Half 2017
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	" "
<b>Class II Surface Impoundments LDS Inspections</b>		Weekly	Semiannually
<b>LCRS Testing <sup>3</sup></b>	---	Annually	Annually

<sup>1</sup> 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.

<sup>2</sup> 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

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

**TABLE IV**  
**SURFACE WATER DETECTION MONITORING PROGRAM**

<u>Parameter</u>	<u>Units</u>	<u>Sampling Frequency</u> <sup>1</sup>	<u>Reporting Frequency</u>
<b>Field Parameters</b>			
Electrical Conductivity	umhos/cm	Semiannual	Semiannual
pH	pH units	Semiannual	Semiannual
Turbidity	Turbidity units	Semiannual	Semiannual
Flow to Waters of U.S.	Yes or No	Semiannual	Semiannual
<b>Monitoring Parameters</b>			
Total Dissolved Solids (TDS)	mg/L	Semiannual	Semiannual
Carbonate	mg/L	Semiannual	Semiannual
Bicarbonate	mg/L	Semiannual	Semiannual
Chloride	mg/L	Semiannual	Semiannual
Nitrate - Nitrogen	mg/L	Semiannual	Semiannual
Sulfate	mg/L	Semiannual	Semiannual
Calcium	mg/L	Semiannual	Semiannual
Magnesium	mg/L	Semiannual	Semiannual
Potassium	mg/L	Semiannual	Semiannual
Sodium	mg/L	Semiannual	Semiannual
Volatile Organic Compounds (USEPA Method 8260B, short list, see Table V)	ug/L	Semiannual	Semiannual
<b>5-Year Constituents of Concern (see Table VI)</b>			
Total Organic Carbon	mg/L	5 years	1 <sup>st</sup> Half 2017
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	" "

<sup>1</sup> Semiannual surface water monitoring is required twice per year when there is water present at the designated surface water monitoring point any time during the reporting period (1 January to 30 June or 1 July to 31 December). Reporting shall include whether there was flow from the facility to waters of the U.S. when the samples were collected.

**TABLE V**  
**MONITORING PARAMETERS FOR DETECTION MONITORING**

**Surrogates for Metallic Constituents:**

pH  
Total Dissolved Solids  
Electrical Conductivity  
Chloride  
Sulfate  
Nitrate nitrogen

**Volatile Organic Compounds, short list:**

**USEPA Method 8260B**

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



**TABLE V**  
**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 VI**  
**5-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS**

<b><u>Inorganics (dissolved):</u></b>	<b><u>USEPA Method</u></b>
Aluminum	6010/200.7
Antimony	7041/6020/200.8
Barium	6010/200.7
Beryllium	6010/200.7
Cadmium	7131A/6020/200.8
Chromium	6010/200.7
Cobalt	6010/200.7
Copper	6010/200.7
Silver	6010/200.7
Tin	6010/200.7
Vanadium	6010/200.7
Zinc	6010/200.7
Iron	6010/200.7
Manganese	6010/200.7
Arsenic	7062/6020/200.8
Lead	7421/6020/200.8
Mercury	7470A/245.1
Nickel	7521/6020/200.8
Selenium	7742/6020/200.8
Thallium	7841/6020/200.8
Cyanide	9010C/4500CN
Sulfide	9030B/4500S2

**Volatile Organic Compounds, extended list:**

**USEPA Method 8260B**

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

**TABLE VI**  
**5-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS**

**Continued**

m-Dichlorobenzene (1,3-Dichlorobenzene)  
p-Dichlorobenzene (1,4-Dichlorobenzene)  
trans- 1,4-Dichloro-2-butene  
Dichlorodifluoromethane (CFC 12)  
1,1 -Dichloroethane (Ethylidene chloride)  
1,2-Dichloroethane (Ethylene dichloride)  
1,1 -Dichloroethylene (1, 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 VI

### 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 VI**

**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-Dimehtylphenol (m-Xylenol)  
Dimethyl phthalate  
m-Dinitrobenzene  
4,6-Dinitro-o-cresol (4,6-Dinitro-2-methylphenol)  
2,4-Dinitrophenol  
2,4-Dinitrotoluene  
2,6-Dinitrotoluene  
Di-n-octyl phthalate  
Diphenylamine  
Endosulfan I  
Endosulfan II  
Endosulfan sulfate  
Endrin  
Endrin aldehyde  
Ethyl methanesulfonate  
Famphur  
Fluoranthene  
Fluorene  
Heptachlor  
Heptachlor epoxide  
Hexachlorobenzene  
Hexachlorocyclopentadiene  
Hexachloroethane  
Hexachloropropene  
Indeno(1,2,3-c,d)pyrene  
Isodrin  
Isophorone  
Isosafrole  
Kepone  
Methapyrilene  
Methoxychlor  
3-Methylcholanthrene

## TABLE VI

### 5-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS

#### Continued

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

**TABLE VI**

**5-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS**

**Continued**

**Chlorophenoxy Herbicides:**

**USEPA Method 8151A**

2,4-D (2,4-Dichlorophenoxyacetic acid)

Dinoseb (DNBP; 2-sec-Butyl-4,6-dinitrophenol)

Silvex (2,4,5-Trichlorophenoxypropionic acid; 2,4,5-TP)

2,4,5-T (2,4,5-Trichlorophenoxyacetic acid)

**Organophosphorus Compounds:**

**USEPA Method 8141B**

Atrazine

Chlorpyrifos

0,0-Diethyl 0-2-pyrazinyl phosphorothioate (Thionazin)

Diazinon

Dimethoate

Disulfoton

Methyl parathion (Parathion methyl)

Parathion ethyl

Phorate

Simazine

## INFORMATION SHEET

ORDER NO. R5-2016-0053  
ANDERSON LANDFILL, INC.  
ANDERSON LANDFILL  
CLASS III MUNICIPAL SOLID WASTE LANDFILL AND CLASS II SURFACE  
IMPOUNDMENTS  
OPERATION AND PARTIAL CLOSURE  
SHASTA COUNTY

Anderson Landfill, Inc. (ALI), hereafter Discharger, owns and operates a Class III landfill and Class II surface impoundments approximately 3.5 miles southwest of the City of Anderson in Shasta County. The total permitted area of the site is 246 acres. Waste disposal is allowed on 130 acres. Currently the site consists of three unlined units covering approximately 53 acres, three compositely lined units covering approximately 39 acres, and two surface impoundments covering approximately 7 acres. An additional lined disposal unit is planned.

Unlined Unit 1 covering 39.7 acres has received municipal solid waste (MSW) and wood waste in the past, and is near capacity. It is scheduled for final closure in 2024. Unlined Units 2A and 2B, cover 4.7 acres and 6.8 acres, respectively. Units 2A and 2B have been used for disposal of various inorganic wastes including asbestos, cogeneration ash, and byproducts of titanium dioxide manufacturing. Unit 2B was final closed in 2008. Another approximately two acre unlined, unclassified unit located across Cambridge Road (North of Cambridge Road Unit) was used for disposal of petroleum contaminated wastes and wood wastes. This Unit was final closed in 2007.

The first lined Unit, 5.8 acre Unit 2Ba, was constructed in 2002 over existing inorganic wastes in Unit 2B. The liner for this Unit consists of, in ascending order, a one foot thick low permeability layer with a hydraulic conductivity of  $1 \times 10^{-6}$  cm/sec, a geocomposite clay liner, and a 60-mil high density polyethylene (HDPE) geomembrane. A leachate collection and removal system (LCRS) is constructed over the liner system. In 2004, the Discharger constructed the 7.0 acre South Canyon Unit, wholly within the permitted footprint of Unit 1. Wastes at the southern toe of unlined Unit 1 were excavated and relocated to the upper north portions of Unit 1 to make room for the new lined Unit. The liner system for South Canyon Unit is similar to the liner system in Unit 2Ba. Unit 2Ba and South Canyon Unit received MSW exclusively. Unit 2Ba and the South Canyon Unit were final closed in 2008. Unit 4 began construction in 2005, with construction of sub-unit 4A. The liner system for Unit 4 sub-units 4A and 4B are similar to the liner systems used in Unit 2Ba and the South Canyon Unit. After completion and filling of Unit 4A, Unit 4B was constructed and filled. The Discharger recently constructed the base-liner system for subunit 4C and 4C Extension and is presently filling this unit. After construction of subunit 4C and 4C Extension, the discharger proposed a new engineered alternative liner system, as they had exhausted all available clay material reserves on site during the construction of the previous units. The new engineered alternative liner system consists of, in ascending order, prepared subgrade, a geosynthetic



clay liner, an 80-mil double-sided textured HDPE geomembrane, a 1-ft thick blanket granular layer with minimum hydraulic conductivity of 0.3 cm/sec and 6 inch diameter HDPE perforated collection piping (floor only), an 8 oz/sy non-woven geotextile filter layer (floor only) and a 1.5-ft thick operations layer on the floor and 1.5-ft select operations layer on sideslopes. This engineered alternative liner system was approved by the Central Valley Water Board in 2014. One additional planned unit is proposed for the facility, Unit 5. Unit 5 will use the same engineered alternative liner system as sub-unit 4C.

Leachate that collects in the LCRSs of the lined Units has historically been stored in above ground storage tanks and used for dust control over the lined Units during periods of dry weather. The Discharger constructed two Class II surface impoundments for storage and evaporation of leachate. A leachate conveyance pipe has been installed to transmit leachate directly from the LCRS sump of Unit 4 to the Class II surface impoundments. Leachate collected in the Unit 2Ba LCRS is directly connected to the main leachate conveyance pipe in Unit 4 for direct discharge to the Class II surface impoundments. Leachate generated in South Canyon Unit is stored in above ground tanks and eventually trucked to the Class II surface impoundments by the Discharger.

Precipitation that falls on the site is handled in one of two ways. Undiverted precipitation that contacts waste is collected on-site and conveyed to the Class II surface impoundments. All other precipitation is diverted away from waste areas and off-site by means of conveyance structures and holding ponds. This precipitation, also known as storm water, eventually enters an unnamed tributary to Cottonwood Creek to the south and another unnamed tributary to Anderson Creek to the north. Both Cottonwood Creek and Anderson Creek are tributaries of the Sacramento River. ALI is under a statewide general permit for discharge of industrial storm water (No. 2014-0057-DWQ/NPDES CAS000001). Day-to-day management of storm water is done in accordance with an approved Storm Water Pollution Prevention Plan, last updated in September 2015.

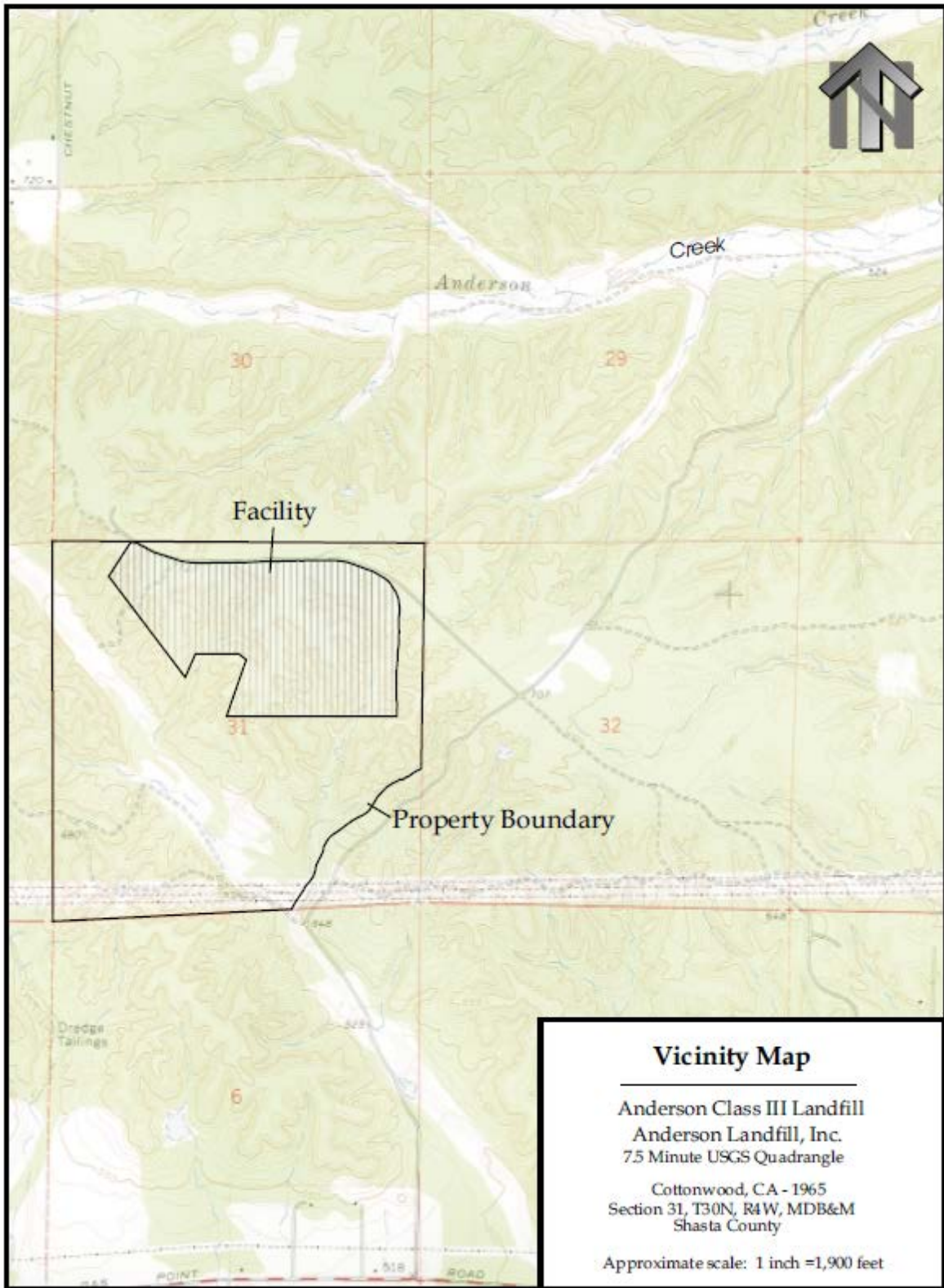
The site is in the southwestern part of the Redding groundwater basin and is underlain by the Red Bluff and Tehama Formations. The Red Bluff Formation outcrops on the north edge of the site and ranges from 2 to 40 feet in thickness. The Tehama Formation underlies the majority of the filled areas. It consists of dense silt and clay interbedded with sand and gravel. Older (and deeper) pre-Tertiary units have not been encountered while drilling at the site.

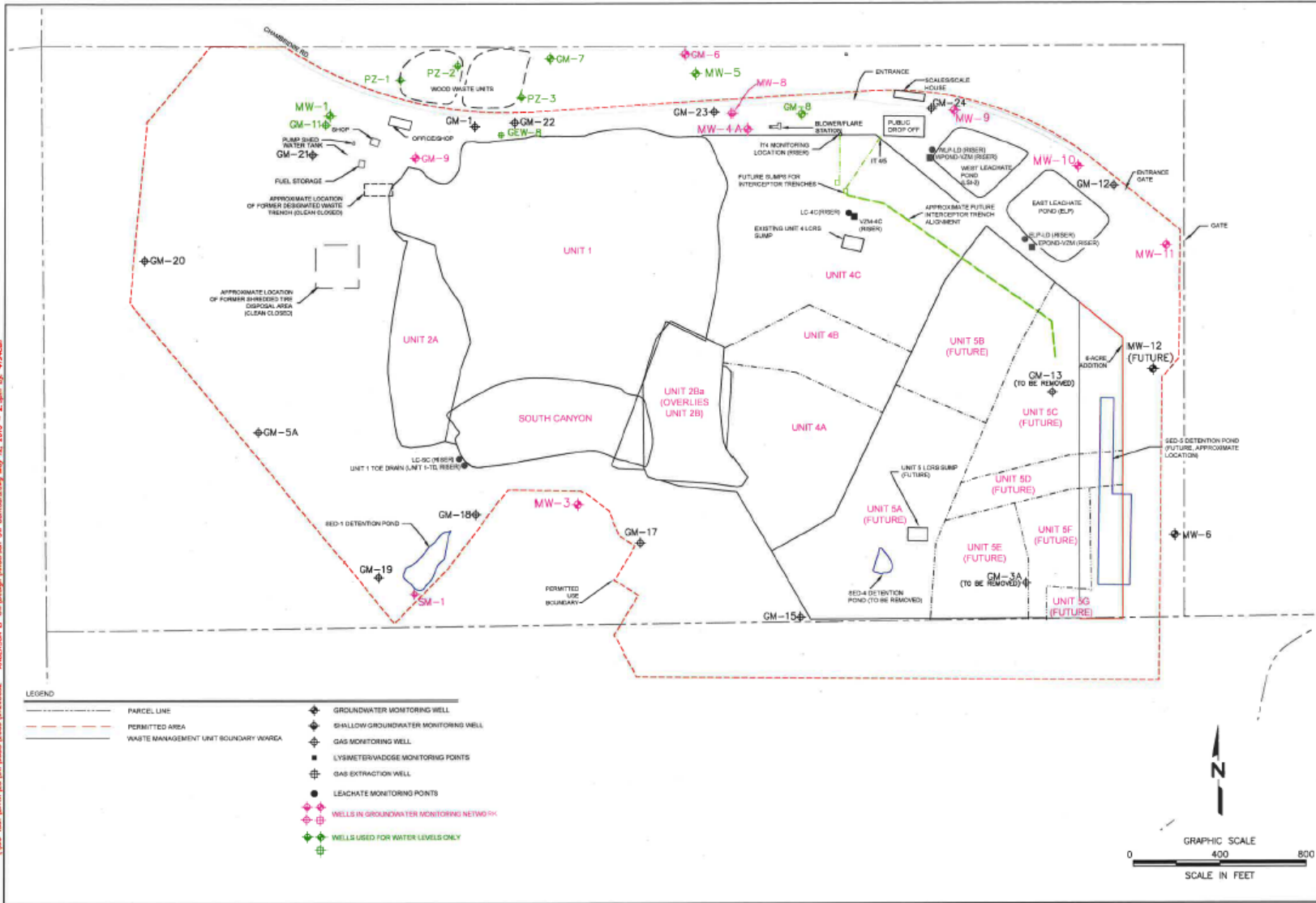
Two water bearing zones are known to occur at the site. First groundwater is found from 55 to 70 feet below the ground surface and is thought to be perched and not laterally continuous. The first groundwater zone known to be laterally continuous is encountered from 270 to 300 feet below the ground surface and is confined. The quality of confined groundwater is good, has a total dissolved solids content of about 150 mg/L, and is used regionally as a groundwater production zone. Confined groundwater flows to the northeast. The shallow perched groundwater flows northeast also, with a northwest flow direction observed near the northwest corner of the facility.

Shallow and deep groundwater is sampled through a system of seven groundwater monitoring wells screened in the shallow and confined water-bearing zones and two gas monitoring wells that are screened across the shallow water bearing formation. An additional monitoring well will be installed for Unit 5. Water quality in both the shallow and deeper water bearing zones is monitored semiannually under a detection monitoring program.

An unsaturated zone detection monitoring system is also in place at the landfill. The unsaturated zone monitoring system consists of pan lysimeters beneath LCRS sumps in Unit 4, and the Class II surface impoundments. Additional pan lysimeters will be installed beneath the future LCRS sump in Unit 5. Additional facilities that are or will be monitored at the site include the Class II surface impoundments leak detection systems and the Unit 1 leachate toe drain system. A landfill gas perimeter extraction system is also in place at the site to control gas migration. An infill gas extraction system has been installed as units close, with the first phase occurring during closure of Units 1, 2Ba, and the South Canyon Unit in 2007.

This Order revises existing Waste Discharge Requirements Order No. R5-2005-0118 to incorporate the construction design of the remainder of Unit 4 and the entirety of Unit 5, approve the use of bottom ash as an alternative daily cover, allow an increased maximum permitted elevation to 769.5 ft MSL within an approximate 12-acre area of Unit 1, extend the final closure date of Unit 1 until 2024, allow an approximate 200-ft shift of the Unit 5 eastern boundary to add approximately 6 acres, and provide for final closure of the South Canyon Unit, Unit 2B, Unit 2Ba, and the North of Cambridge Road Unit.

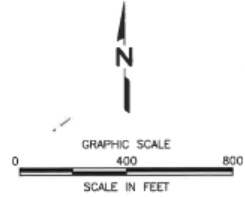




DATE	3-MAY
REVISION	
NO.	1
PROJECT TITLE	FACILITY MAP
PROJECT TITLE	ANDERSON LAUNDRIE INC. ANDERSON, CALIFORNIA
CUSTOMER	<b>WM</b> WASTE MANAGEMENT
DATE	MAY 2015
SCALE	1 inch = 400 feet
DRAWING NO.	<b>2</b>

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CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
CENTRAL VALLEY REGION

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

December 2015

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## **A. APPLICABILITY**

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

## **B. TERMS AND CONDITIONS**

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

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

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

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

### **C. STANDARD PROHIBITIONS**

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



3. The discharge of wastes outside of a waste management unit or portions of a unit specifically designed for their containment is prohibited.
4. The discharge of solid waste containing free liquid or which may contain liquid in excess of the moisture holding capacity as a result of waste management operations, compaction or settlement is prohibited.
5. The discharge of waste to a closed landfill unit is prohibited.
6. The discharge of waste constituents to the unsaturated zone or to groundwater is prohibited.
7. The discharge of solid or liquid waste or leachate to surface waters, surface water drainage courses, or groundwater is prohibited.

**D. STANDARD DISCHARGE SPECIFICATIONS**

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

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

#### **E. STANDARD FACILITY SPECIFICATIONS**

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

10. The Discharger shall lock all groundwater monitoring wells with a lock on the well cap or monitoring well box. All monitoring devices shall be clearly labeled with their designation including all monitoring wells, LCRS risers, and lysimeter risers and shall be easily accessible for required monitoring by authorized personnel. Each monitoring device shall be clearly visible and be protected from damage by equipment or vehicles.
11. The Discharger shall ensure that methane and other landfill gases are adequately vented, removed from landfill units, or otherwise controlled to prevent the danger of adverse health effects, nuisance conditions, degradation, or the impairment of the beneficial uses of surface water or groundwater due to migration through the unsaturated zone.
12. The Discharger shall maintain the depth of the fluid in the sump of each landfill unit at the minimum needed for efficient pump operation (the depth at which the pump turns on given the pump intake height and maximum pump cycle frequency).
13. The depth of fluid on the landfill liner shall not exceed **30 centimeters** (cm) [40 C.F.R. § 258.40(a)(2)]. This regulation is interpreted by the Central Valley Water Board to exclude the leachate sump. The Discharger shall **immediately** notify the Central Valley Water Board staff by telephone, and follow up in writing within **seven** days if monitoring reveals that the depth of fluid on any portion of the liner (excluding the sump) exceeds 30 cm (approximately 12 inches). The written notification shall include a timetable for remedial or corrective action necessary to achieve compliance with the leachate depth limitation.
14. Each LCRS shall be tested at least annually to demonstrate proper operation. The results of the tests shall be compared with earlier tests made under comparable conditions [Title 27, § 20340(d)].
15. The Discharger shall maintain a *Storm Water Pollution Prevention Plan and Monitoring Program and Reporting Requirements* in accordance with State Water Board Order No. 2014-0057-DWQ (Industrial General Permit) or most recent general industrial storm water permit), or retain all storm water on-site.
16. Internal site drainage from surface or subsurface sources shall not contact or percolate through wastes.
17. New MSW landfill units or lateral expansions of existing units shall not be sited in a "wetland" [as defined in 40 C.F.R. § 232.29(r)] unless there is no practical alternative; steps have been taken to assure no net loss of wetland; the landfill unit will not degrade the wetland; the unit will not jeopardize threatened or endangered species or produce adverse modification of a critical habitat or violate any requirement of the Marine Protection, Research, and Sanctuaries Act of 1972 [40 C.F.R. § 258.12].

## **F. STANDARD CONSTRUCTION SPECIFICATIONS**

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

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

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

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

#### **G. STANDARD CLOSURE AND POST-CLOSURE SPECIFICATIONS**

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

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



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

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

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

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

#### **H. STANDARD FINANCIAL ASSURANCE PROVISIONS**

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

#### **I. STANDARD MONITORING SPECIFICATIONS**

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

2. All monitoring systems shall be designed and certified by a registered geologist or a registered civil engineer [Title 27, § 20415(e)(1)].
3. All monitoring wells shall be cased and constructed in a manner that maintains the integrity of the monitoring well bore hole and prevents the bore hole from acting as a conduit for contaminant transport [Title 27, § 20415(b)(4)(A)].
4. All sample chemical analyses of any material shall be performed by a laboratory certified by the California Department of Health Services [Wat. Code, § 13176(a)].
5. A Detection Monitoring Program for a new landfill facility shall be installed, operational, and one year of monitoring data collected from background monitoring points prior to the discharge of wastes [Title 27, § 20415(e)(6)].
6. Background for water samples or soil-pore gas samples shall be represented by the data from all samples taken from applicable background monitoring points during that reporting period (at least one sample from each background monitoring point).
7. The Discharger shall submit for approval, establish, and maintain an approved Sample Collection and Analysis Plan. The Sample Collection and Analysis Plan shall at a minimum include:
  - a. Sample collection procedures describing purging techniques, sampling equipment, and decontamination of sampling equipment;
  - b. Sample preservation information and shipment procedures;
  - c. Sample analytical methods and procedures;
  - d. Sample quality assurance/quality control (QA/QC) procedures;
  - e. Chain of Custody control; and
  - f. Sample analysis information including sample preparation techniques to avoid matrix interferences, method detection limits (MDLs), practical quantitation limits (PQLs) and reporting limits (RLs), and procedures for reporting trace results between the MDL and PQL.

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

8. For any given monitored medium, the samples taken from all monitoring points and background monitoring points to satisfy the data analysis requirements for a given reporting period shall all be taken **within a span not to exceed 30 days**, unless a longer time period is approved, and shall be taken in a manner that ensures

sample independence to the greatest extent feasible. Specific methods of collection and analysis must be identified. Sample collection, storage, and analysis shall be performed according to the most recent version of USEPA Methods, such as the latest editions, as applicable, of: (1) Methods for the Analysis of Organics in Water and Wastewater (USEPA 600 Series), (2) Test Methods for Evaluating Solid Waste (SW-846, latest edition), and (3) Methods for Chemical Analysis of Water and Wastes (USEPA 600/4-79-020), and in accordance with the approved Sample Collection and Analysis Plan. Appropriate sample preparation techniques shall be used to minimize matrix interferences.

9. If methods other than USEPA-approved methods or Standard Methods are used, or there is a proposed alternant USEPA method than the one listed in the MRP, the proposed methodology shall be submitted for review and approval prior to use, including information showing its equivalence to the required method.
10. The **methods of analysis and the detection limits** used must be appropriate for the expected concentrations. For the monitoring of any constituent or parameter that is found in concentrations which produce more than 90% non-numerical determinations (i.e., "trace" or "ND") in data from background monitoring points for that medium, the analytical method having the lowest MDL shall be selected from among those methods which would provide valid results in light of any matrix effects or interferences.
11. The laboratory reporting limit (RL) for all reported monitoring data shall be set no greater than the practical quantitation limit (PQL).
12. **"Trace" results** - results falling between the MDL and the PQL - shall be reported as such, and shall be accompanied both by the estimated MDL and PQL values for that analytical run.
13. Laboratory data shall not be altered or revised by the Discharger. If the Discharger observes potential lab errors, it shall identify the issue in the monitoring report and shall describe steps that will be taken to prevent similar errors in the future.
14. **MDLs and PQLs** shall be derived by the laboratory for each analytical procedure, according to State of California laboratory accreditation procedures. These MDLs and PQLs shall reflect the detection and quantitation capabilities of the specific analytical procedure and equipment used by the lab, rather than simply being quoted from USEPA analytical method manuals. In relatively interference-free water, laboratory-derived MDLs and PQLs are expected to closely agree with published USEPA MDLs and PQLs. MDLs and PQLs shall be reported.

15. If the laboratory suspects that, due to a change in matrix or other effects, the true detection limit or quantitation limit for a particular analytical run differs significantly from the laboratory-derived MDL/PQL values, the results shall be flagged in the laboratory report accordingly, along with estimates of the detection limit and quantitation limit actually achieved. The **MDL shall always be calculated such that it represents the lowest achievable concentration associated with a 99% reliability of a nonzero result.** The PQL shall always be calculated such that it represents the lowest constituent concentration at which a numerical value can be assigned with reasonable certainty that it represents the constituent's actual concentration in the sample. Normally, PQLs should be set equal to the concentration of the lowest standard used to calibrate the analytical procedure.
16. All **QA/QC data** shall be reported, along with the sample results to which they apply, including the method, equipment, analytical detection and quantitation limits, the percent recovery, an explanation for any recovery that falls outside the QC limits, the results of equipment and method blanks, the results of spiked and surrogate samples, the frequency of quality control analysis, and the name and signature of a responsible person from the laboratory. **Sample results shall be reported unadjusted for blank results or spike recoveries.** In cases where contaminants are detected in QA/QC samples (i.e., field, trip, or lab blanks), the accompanying sample results shall be appropriately flagged, but the analytical results shall not be adjusted.
17. Unknown chromatographic peaks shall be reported, flagged, and tracked for potential comparison to subsequent unknown peaks that may be observed in future sampling events. Identification of unknown chromatographic peaks that recur in subsequent sampling events may be required.
18. The sampling interval of each monitoring well shall be appropriately screened and fitted with an appropriate filter pack to enable collection of representative groundwater samples [Title 27, § 20415(b)(4)(B)]. Groundwater samples shall not be field-filtered prior to laboratory analysis [40 C.F.R. § 258.53(b)]. Groundwater samples needing filtering (e.g., samples to be analyzed for dissolved metals) shall be filtered by the laboratory prior to analysis.
19. Groundwater elevations shall be measured in each well immediately prior to purging, each time groundwater is sampled. The owner or operator shall determine the rate and direction of groundwater flow each time groundwater is sampled. Groundwater elevations in wells which monitor the same waste management area shall be measured within a period of time short enough to avoid temporal variations in groundwater flow which could preclude accurate determination of groundwater flow rate and direction [40 C.F.R. § 258.53(d)].
20. Monitoring wells, piezometers, and other measurement, sampling, and analytical devices must be operated and maintained so that they perform to design specifications throughout the life of the monitoring program

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

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

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

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



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

40. For statistical analysis of data, the Discharger shall use one of the methods described in Title 27, section 20415(e)(8)(A)-(E). A non-statistical data analysis method can be used if the method can achieve the goal of the particular monitoring program at least as well as the most appropriate statistical method [Title 27, § 20415(e)(8)]. The Discharger shall use a statistical or nonstatistical data analysis method that complies with Title 27, section 20415(e)(7, 8, 9, and 10), to compare the concentration of each constituent of concern or monitoring parameter with its respective background concentration to determine whether there has been a measurably significant evidence of a release from the waste management unit. For any given monitoring point at which a given constituent has already exhibited a measurably significant indication of a release at that monitoring point, the Discharger may propose to monitor the constituent, at that well, using a concentration-versus-time plot.
41. The Discharger may propose an alternate statistical method [to the methods listed under Title 27, section 20415(e)(8)(A-D)] in accordance with Title 27, section 20415(e)(8)(E), for review and approval.
42. The statistical method shall account for data below the practical quantitation limit (PQL) with one or more statistical procedures that are protective of human health and the environment. Any PQL validated pursuant to Title 27, section 20415(e)(7) that is used in the statistical method shall be **the lowest concentration (or value) that can be reliably achieved** within limits of precision and accuracy specified in the WDRs or an approved Sample Collection and Analysis Plan for routine laboratory operating conditions that are available to the facility. The Discharger’s technical report (Sample Collection and Analysis Plan and/or Water Quality Protection Standard Report), pursuant to Title 27, section 20415(e)(7), shall consider the PQLs listed in Appendix IX to Chapter 14 of Division 4.5 of Title 22, CCR, for guidance when specifying limits of precision and accuracy. For any given constituent monitored at a background or downgradient monitoring point, an indication that falls between the MDL and the PQL for that constituent (hereinafter called a “trace” detection) shall be identified and used in appropriate statistical or non-statistical tests. Nevertheless, for a statistical method that is compatible with the proportion of censored data (trace and ND indications) in the data set, the Discharger can use the laboratory’s concentration estimates in the trace range (if available) for statistical analysis, in order to increase the statistical power by decreasing the number of “ties”.
43. The water quality protection standard for organic compounds which are not naturally occurring and not detected in background groundwater samples shall be taken as the detection limit of the analytical method used (e.g., USEPA methods 8260 and 8270).

44. Alternate statistical procedures may be used for determining the significance of analytical results for common laboratory contaminants (i.e., methylene chloride, acetone, diethylhexyl phthalate, and di-n-octyl phthalate) if part of an approved water quality protection standard. Nevertheless, analytical results involving detection of these analytes in any background or downgradient sample shall be reported and flagged for easy reference by Central Valley Water Board staff.
45. **Confirmation of Measurably Significant Evidence of a Release.** Whenever a constituent is detected at a detection monitoring point at a concentration that exceeds the concentration limit from the water quality protection standard, the Discharger shall conduct verification sampling to confirm if the exceedance is due to a release or if it is a false-positive (unless previous monitoring has already confirmed a release for that constituent at that monitoring point). An exceedance of the concentration limit from the water quality protection standard is considered measurably significant evidence of a release that must be either confirmed or denied. There are two separate verification testing procedures:
- a. Standard Monitoring Specification I.46 provides the procedure for analytes that are detected in less than 10% of the background samples such as non-naturally occurring constituents like volatile organic compounds; and
  - b. Standard Monitoring Specification I.47 provides the procedure for analytes that are detected in 10% or greater of the background samples such as naturally occurring constituents like chloride.
46. **Verification Procedure for Analytes Detected in Less than 10% of Background Samples.** The Discharger shall use the following non-statistical method for all analytes that are detected in less than 10% of the background samples. The non-statistical method shall be implemented as follows:
- a. **Initial Determination of Measurably Significant Evidence of a Release.** Identify each analyte in the **current** detection monitoring point sample that exceeds either its respective MDL or PQL, and for which a release has not been previously confirmed. The Discharger shall conclude that the exceedance provides a preliminary indication of a release or a change in the nature or extent of the release, at that monitoring point, if **either**:
    - 1) The data contains two or more analytes that equal or exceed their respective MDLs; or
    - 2) The data contains one or more analyte that equals or exceeds its PQL.

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

- 1) In the event that the Discharger or Central Valley Water Board staff concludes (pursuant to paragraph I.46.a., above) that there is a preliminary indication of a release, then the Discharger shall **immediately** notify Central Valley Water Board staff by phone or e-mail and, within **30 days** of such indication, shall collect two new (retest) samples from the monitoring point where the release is preliminarily indicated and analyze them for the constituents that caused the need for the retest.
- 2) **Confirmation of a Release.** As soon as the retest data are available, the Discharger shall conclude that measurably significant evidence of a release is confirmed if (not including the original sample) two or more analytes equal or exceed their respective MDLs or if one or more analyte equals or exceeds its PQL. The Discharger shall then:
  - a) **Immediately** verbally notify the Central Valley Water Board whether or not the retest confirmed measurably significant evidence of a release for the analyte at the monitoring point, and follow up with written notification submitted by certified mail **within seven days** of the verbal notification; and
  - b) Carry out the requirements of Section J, **RESPONSE TO A RELEASE** if a release has been confirmed.
  - c) Add any five-year analyte that is confirmed per this method to the monitoring parameter list such that it is monitored during each regular monitoring event.

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

- a. **Initial Determination of Measurably Significant Evidence of a Release.** The Discharger shall compare the value reported by the laboratory for each analyte to the statistically-derived concentration limit from the most recent report (Annual Monitoring Report or Water Quality Protection Standard Report) that uses the approved statistical procedure. If the value exceeds the concentration limit for that constituent, the Discharger shall conclude that there is measurably significant evidence of a release [Title 27, § 20420(i)].

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

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

48. **Physical Evidence of a Release.** If the Discharger determines that there is a significant **physical** evidence of a release, the Discharger shall immediately verbally notify Central Valley Water Board staff and provide written notification **by**

**certified mail within 7 days** of such determination, and within **90 days** shall submit an amended report of waste discharge to establish an Evaluation Monitoring Program [Title 27, § 20385(a)(3) and § 20420(l)(1) & (2)].

**J. RESPONSE TO A RELEASE**

1. Measurably Significant Evidence of a Release Has Been Confirmed. If the Discharger has confirmed that there is measurably significant evidence of a release from a waste management unit pursuant to Standard Monitoring Specification I.46 or I.47, then the Discharger shall:
  - a. **Immediately** sample all monitoring points in the affected medium at that waste management unit and determine the concentration of all monitoring parameters and constituents of concern for comparison with established concentration limits. Because this constituent of concern scan does not involve statistical testing, the Discharger will need to collect and analyze only a single water sample from each monitoring point in the affected medium [Title 27, § 20420(k)(1)].
  - b. **Within 14 days** of confirming measurably significant evidence of a release, the Discharger shall (for releases from MSW landfill units) notify all persons who own the land or reside on the land that directly overlies any portion of the plume of contamination if contaminants have migrated off-site if indicated by sampling of detection monitoring wells [40 C.F.R. § 258.55(g)(1)(iii)].
  - c. **Within 90 days** of confirming measurably significant evidence of a release, the Discharger shall submit an amended report of waste discharge to establish an Evaluation Monitoring Program meeting the requirements of Title 27, sections 20420(k)(5)(A-D), including but not limited to the results of sampling pursuant to paragraph J.1.a, above. The Evaluation Monitoring Program shall be designed for the collection and analysis of all data necessary to assess the nature and extent of the release and to determine the spatial distribution and concentration of each constituent throughout the zone affected by the release [Title 27, § 20420(k)(5) and § 20425(b)]. For releases from MSW landfill units, the Evaluation Monitoring Program shall also include any additional proposals necessary to comply with 40 C.F.R. § 258.55, particularly the additional monitoring well required by 40 C.F.R. § 258.55(g)(1)(ii).
  - d. **Within 180 days** of confirming measurably significant evidence of a release, the Discharger shall submit to the Central Valley Water Board an initial engineering feasibility study for a Corrective Action Program necessary to meet the requirements of Title 27, section 20430. At a minimum, the initial engineering feasibility study shall contain a detailed description of the corrective action measures that could be taken to achieve background concentrations for all constituents of concern [Title 27, § 20420(k)(6)].

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

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

## **K. GENERAL PROVISIONS**

1. In the event the Discharger does not comply or will be unable to comply with any prohibition or limitation of this Order for any reason, the Discharger shall notify the appropriate Central Valley Water Board office by telephone **as soon as** it or its agents have knowledge of such noncompliance or potential for noncompliance, and shall confirm this notification in writing **within two weeks**. The written notification shall state the nature, time, and cause of noncompliance, and shall describe the measures being taken to prevent recurrences and shall include a timetable for corrective actions.
2. All reports and transmittal letters shall be signed by persons identified below:
  - a. For a corporation: by a principal executive officer of at least the level of senior vice-president.
  - b. For a partnership or sole proprietorship: by a general partner or the proprietor.
  - c. For a municipality, state, federal or other public agency: by either a principal executive officer or ranking elected or appointed official.
  - d. A duly authorized representative of a person designated in a, b or c above if:
    - 1) The authorization is made in writing by a person described in a, b, or c of this provision;
    - 2) The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a Unit, superintendent, or position of equivalent responsibility (a duly authorized representative may thus be either a named individual or any individual occupying a named position); and
    - 3) The written authorization is submitted to the Central Valley Water Board.

- e. Any person signing a document under this Section shall make the following certification:

“I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.”

3. The Discharger shall take all reasonable steps to minimize any adverse impact to the waters of the State resulting from noncompliance with this Order. Such steps shall include accelerated or additional monitoring as necessary to determine the nature, extent, and impact of the noncompliance.
4. The owner of the waste management facility shall have the continuing responsibility to assure protection of waters of the state from discharged wastes and from gases and leachate generated by discharged waste during the active life, closure, and post-closure maintenance period of the waste management units and during subsequent use of the property for other purposes.
5. The fact that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with this Order shall not be regarded as a defense for the Discharger's violations of this Order.
6. The Discharger shall notify the Central Valley Water Board of a material change in; the types, quantity, or concentrations of wastes discharged; site operations and features; or proposed closure procedures, including changes in cost estimates. This notification shall be given a reasonable time before the changes are made or become effective. No changes shall be made without Central Valley Water Board approval following authorization for closure pursuant to the site Notification of Closure [Title 27, § 21710(a)(4)].
7. The Discharger shall maintain legible records of the volume and type of each waste discharged at each waste management unit or portion of a unit, and the manner and location of discharge. Such records shall be maintained by the Discharger until the beginning of the post-closure maintenance period. These records shall be on forms approved by the State Water Board or Central Valley Water Board and shall be maintained at the waste management facility until the beginning of the post-closure maintenance period. These records shall be available for review by representatives of the State Water Board or Central Valley Water Board at any time during normal business hours. At the beginning of the post-closure maintenance period, copies of these records shall be sent to the Central Valley Water Board [Title 27, § 21720(f)].
8. In the event of any change in landowner or the operator of the waste management facility, the Discharger shall notify the succeeding owner or operator in writing of



the existence of this Order. A copy of that notification shall be sent to the Central Valley Water Board.

9. In the event of any change of ownership or responsibility for construction, operation, closure, or post-closure maintenance of the waste discharge facilities described in this Order, the Discharger shall notify the Central Valley Water Board prior to the effective date of the change and shall include a statement by the new Discharger that construction, operation, closure, or post-closure maintenance will be in compliance with this Order and any revisions thereof [Title 27, § 21710(c)(1)].
10. To assume ownership or operation under this Order, the succeeding owner or operator must apply in writing to the Central Valley Water Board requesting transfer of the Order within **14 days** of assuming ownership or operation of this facility. The request must contain the requesting entity's full legal name, the State of incorporation if a corporation, the name and address and telephone number of the persons responsible for contact with the Central Valley Water Board, and a statement. The statement shall comply with the signatory requirements contained in General Provision K.2 and state that the new owner or operator assumes full responsibility for compliance with this Order. Failure to submit the request shall be considered a discharge without requirements, a violation of the Water Code. Transfer of this Order shall be approved or disapproved by the Central Valley Water Board.

#### **L. STORM WATER PROVISIONS**

1. New and existing Class III landfills shall be designed, constructed, operated, and maintained to prevent inundation or washout due to floods with a 100-year return period [Title 27, § 20260(c)].
2. New and existing Class II landfills shall be designed, constructed, operated, and maintained to prevent inundation or washout due to floods with a 100-year return period [Title 27, § 20250(c)].
3. The Discharger shall design storm water conveyance systems for Class III units for a 100-year, 24-hour storm event, and shall design storm water conveyance systems for Class II units for a 1,000-year, 24-hour storm event [Title 27, § 21750(e)(3)].
4. MSW landfills located in a 100-year floodplain shall demonstrate that the landfill unit will not restrict the flow of the 100-year flood, reduce the temporary water storage capacity of the floodplain, or result in washout of solid waste so as to pose a hazard to human health or the environment [40 C.F.R. § 258.11(a)].
5. Waste management units and their respective containment structures shall be designed and constructed to limit, to the greatest extent possible, ponding, infiltration, inundation, erosion, slope failure, washout, and overtopping under the precipitation conditions for the unit [Title 27, § 20365(a)].

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

9. Surface and subsurface drainage from outside of a waste management unit shall be diverted from the unit [Title 27, § 20365(e)].
10. Cover materials shall be graded to divert precipitation from the waste management unit, to prevent ponding of surface water over wastes, and to resist erosion as a result of precipitation [Title 27, § 20365(f)].
11. Any drainage layer in the final cover shall be designed and constructed to intersect with the final drainage system for the waste management unit in a manner promoting free drainage from all portions of the drainage layer [Title 27, §20365(f)].