

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. R5-2019-0044

WASTE DISCHARGE REQUIREMENTS
FOR
L AND D LANDFILL L.P.
FRUITRIDGE ROAD LAND CO.
L AND D LANDFILL
CLASS III LANDFILLS
OPERATION, CLOSURE, POST-CLOSURE MAINTENANCE,
MONITORING, AND CORRECTIVE ACTION
SACRAMENTO COUNTY

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

1. L and D Landfill L.P. owns and operates the L and D Landfill (Facility) located in Sacramento (approximately six miles southeast of downtown) in Sacramento County, Section 24, T8S, R5E and Section 24, T8N, R6E, MDB&M. The land on which the Facility is located is owned by the Fruitridge Road Land Co. See Attachment A: Location Map.
2. L and D Landfill L.P., as owner and operator of the Facility, and Fruitridge Road Land Co., as owner of the land on which the Facility is located (collectively, Dischargers), are responsible for compliance with this Order.
3. This Order encompasses the operation, closure/postclosure maintenance, and corrective action of the following waste management units (WMUs) at the Facility:

Units	Modules	Classification		Area (acres)	Status	Primary Wastes
		Title 27	Subtitle D			
Landfill 1	West Pit	Class III ^{1,2}	Existing MSWLF	43	Active	C&D, Commercial, Limited MSW
	East Pit			49		
Landfill 2	M1 – M7	Class III ³	New MSWLF	64	Active	

1. Landfill unlined and does not have a leachate collection and recovery system (LCRS).
2. Classification based on adequacy of siting factors per Title 27, section 20260.
3. Landfill constructed with Title 27/Subtitle D liner system and blanket LCRS.

Landfill 1 (LF-1) operated from October 1976 to 1995 reaching an interim grade of about 30 feet above mean sea level (MSL), about 15 feet below street grade.^{1,2} In 1996, waste disposal operations shifted to LF-2 constructed immediately north of LF-1, and LF-1 was then used as an operations soil stockpile area to support development of LF-2. In 2016, waste discharges to LF-1 resumed and since then LF-1 and LF-2 have been operated concurrently in accordance with the fill plan under previous WDRs.

4. The following documents are attached to this Order and hereby incorporated into and made a part of this Order by reference:
 - a. Attachment A – Location Map
 - b. Attachment B – Site Map
 - c. Attachment C – Groundwater Monitoring & Extraction
 - d. Attachment D – Gas Monitoring & Controls
 - e. Attachment E – LCRS Design
 - f. Attachment F – Landfill Liner Design
 - g. Attachment G – Final Cover Design
 - h. Attachment H – Closure Phases & Grading
 - i. Information Sheet (including Attachment I, Supply Well Survey Map)
 - j. Standard Provisions and Reporting Requirements, December 2015 Edition (SPRRs)

Also attached and incorporated as part of this Order is the separately issued Monitoring and Reporting Program R5-2019-0044 (MRP), which sets forth the approved Water Quality Protection Standard (WQPS). (See Title 27, § 20390 et seq.) Compliance with the operative MRP (including subsequent amendments) is required under this Order.

5. On-site facilities at the L and D Landfill include the landfill units, a runoff infiltration pond, a lined storm water pond, an active landfill gas extraction system, a landfill gas flare, an air stripper for treatment of impacted groundwater, a construction and demolition (C&D) recycling facility, a green waste transfer station, and a curbside recyclable transfer station.
6. The Dischargers submitted a June 2018 Joint Technical Document (JTD) describing various changes at the site since adoption of previous WDRs Order R5-2012-0107 in 2012, including the following:

1. The west pit of LF-1 operated from 1976 to the mid-1980s and the east pit from the mid-1980s to 1995.
2. Based on elevation of adjacent Fruitridge Road (45 feet MSL).

- a. A revised fill plan for vertical expansion of the landfill to a maximum final cover elevation of 140 feet MSL, 43 feet above the maximum elevation (97 feet MSL) approved under previous WDRs. The project would increase the estimated life of the landfill by up to eight years.
- b. A revised preliminary closure/partial final closure/and post closure maintenance plan (PC/PFC/PMP) for phased closure of LF-1 and LF-2 with a common final cover with the last closure phase completed in 2031.
- c. Updated facility maps and attachments showing site improvements implemented since 2012.

These revised WDRs prescribe Title 27 and/or Subtitle D requirements, as applicable to the facility based on information in the JTD and project files.

7. California landfills that accepted municipal solid waste (MSW) and operated on or after 9 October 1991 are subject to federal MSW regulations promulgated under the Resource Conservation Recovery Act (RCRA), 42 U.S.C. section 6901 et seq. Typically referred to as "Subtitle D" regulations, these MSW regulations are now codified as 40 C.F.R. Part 258, and implemented in part through the provisions California Code of Regulations, title 27 (Title 27).

WASTE / UNIT CLASSIFICATIONS

LF-1

8. Previous WDRs classified unlined LF-1 as a Class III landfill unit under Title 27 regulations based on its equivalent Class II-2 designation under former Subchapter 15 regulations. The latter was based on an evaluation of siting factors (e.g., low permeability native soil underlying the unit).³ See Title 27, section 20260. These WDRs maintain LF-1's Class III classification consistent with previous WDRs. LF-1 is also an existing unit because it operated prior to the effective date of Chapter 15 regulations (27 November 1984).
9. LF-1 primarily accepts construction and demolition (C&D) wastes and commercial wastes corresponding to "nonhazardous" or "inert" wastes under Title 27, sections 20220 and 20230, respectively. Such wastes include concrete, wood, scrap metal, dirt, asphalt, plastic, non-friable asbestos, tree branches and stumps, shredded tires, and miscellaneous decomposable materials from commercial sources (e.g., green waste, furniture; carpeting; cardboard, and paper). A small percentage (e.g., five percent) of LF-1's waste stream may have constituted municipal solid waste (i.e., waste originated from household sources). With the exception of green waste, which may be diverted from the unit beginning in 2020, the Dischargers propose to continue to discharge similar amounts and types of wastes to LF-1 until it reaches final waste grades.

³. For the purposes of this finding, previous WDRs included Orders R5-2012-010, R5-2002-0082, 96-177, 92-215 and 83-120.

Notwithstanding the Dischargers proposal, given that LF-1 is unlined, these WDRs prohibit the further discharge of municipal solid wastes (MSW) to LF-1, but allow the discharge of MSW to LF-2. See Findings 3, 12 and Discharge Prohibition A.5.

10. These WDRs classify LF-1 as an existing MSW landfill under Subtitle D regulations given that it likely accepted a small percentage of MSW and that LF-1 operated after the effective date of Subtitle D regulations (9 October 1991).

LF-2

11. Previous WDRs classified LF-2 as a new, Class III landfill unit based on the fact that it operated after the effective date of Chapter 15 regulations (27 November 1984) and was constructed with a liner system meeting Class III standards under Title 27. This Order continues to classify LF-2 as a new Class III landfill unit under Title 27.
12. LF-2 accepts the same types of wastes as LF-1 (i.e., C&D and commercial wastes), but also accepts limited types and amounts of waste from household sources (e.g., self-haul wastes and curb-side green waste).⁴ From an operational standpoint, LF-2 is a C&D waste landfill that co-disposes of non-putrescible MSW.⁵ The maximum amount of MSW discharged to LF-2 is typically less than 20 percent, divided equally between commercial and household sources.

These WDRs classify LF-2 as a new MSW landfill unit under Subtitle D, given that it accepts MSW from household sources and was constructed after 9 October 1993 with a Subtitle D-compliant containment system. These WDRs limit the discharge of decomposable MSW to LF-2 to a maximum of 20 percent consistent with its current operations. See Discharge Specification A.1.

13. Wastes are also discharged to the landfill units as alternative daily cover (ADC) material, as approved by the Local Enforcement Agency (LEA) and CalRecycle. Wastes currently used as ADC include imported recycled soil; inert C&D wastes, shredded tires, materials recovery facility (MRF) unders; processed green waste and water treatment plant sediments. These WDRs require that the Dischargers submit for Water Board staff approval a plan documenting the various types of interim (i.e., daily, ADC, and intermediate) cover material used and approved for use at the landfill (or proposed for use at each landfill), placement methods, seasonal application, and other information consistent with the requirements of these WDRs. See Finding 65 and Discharge Specification A.1.

4. Section D.1 of the JTD states: "The Facility classifies waste received in 9 categories: demolition and construction debris; paper; concrete, dirt and asphalt (CDA); green waste; wood; tires; plastic; non-friable asbestos; and miscellaneous. Approximately 10% of accepted waste is classified as miscellaneous. This classification includes such things as furniture, carpeting, and similar non-putrescible material from commercial refuse collectors, building contractors, and others with acceptable loads. Since mid-1999, the landfill has accepted small mixed loads from noncommercial customers using pick-up trucks, passenger vans, and light trailers. Currently, this material represents about 90% of the miscellaneous category."

5. Previous WDRs described LF-2 as a Subtitle D lateral expansion of LF-1 based on the assumption that LF-1 was an existing MSW landfill.

14. Portions of the Facility's solid waste stream are also diverted from the landfill and processed for recycling at the onsite MRF. Under new regulations, all green waste will be required to be diverted from the landfill by 2020.
15. Wastes discharged to the landfill units also generate landfill leachate. The composition and volume of leachate generated at LF-1 is unknown given that it is unlined and does not have an LCRS sump. Given the fact that LF-1 was inactive for many years with several feet of soil cover and the lack of leachate impacts to groundwater indicated by the monitoring data, it appears leachate flows from LF-1 have been relatively low compared to LF-2.
16. Annual sampling of leachate collected in LF-2's LCRS sump since 2009 indicates the following constituents and concentrations:

<u>Constituent</u>	<u>Avg. Concentration</u>
<i>General Minerals</i>	<i>mg/L</i>
Bicarbonate Alkalinity	1,533
Chloride	501
Specific Conductance	4,277
Total Dissolved Solids	2,581
<i>VOCs</i>	<i>µg/L</i>
Acetone	22
BTEX ¹	0.43
Methyl tert-butyl ether (MTBE)	25.5
Naphthalene	2.5
tert-Butyl alcohol (TBA)	393

1. Benzene, Toluene, Ethyl Benzene, and Xylenes

Trace concentrations of other VOCs (e.g., 1,1 dichloroethane (DCA) and cis-1,2 dichloroethylene (DCE)) were also sporadically detected in LF-2 leachate. In 2017, the leachate flow rate to the sump averaged 201,500 gallons per month. MRP Section A.3 requires that the Dischargers monitor leachate monthly for flow rate and other field parameters and annually for landfill constituents of concern (COCs).

SITE DESCRIPTION

17. The 177-acre site is located at 8635 Fruitridge Road between Florin Perkins Road and South Watt Avenue about 2.5 miles south of Highway 50. The entire site consists of a single parcel, APN 061-0180-050. The geographic coordinates are Latitude 38.527° north, Longitude -121.470° west. See Attachment A.
18. The site is in the Sacramento Valley alluvial plain about ten miles west of the Sierra Nevada foothills and eight miles east of the Sacramento River. Topographic relief in the area is relatively flat with a natural grade of about seven feet per thousand feet to the west toward the Sacramento River. Surface elevations range from about 50 feet MSL immediately east and south of the site (e.g., Fruitridge Road) to 43 feet MSL immediately north and west of the site (e.g., Florin Perkins Road).

19. Land uses within a one-mile radius of the site include industrial, residential, commercial and transportation. Industrial uses include landfills onsite and to the north; industrial park warehouses to the northwest and south; and gravel/aggregate operations to the northeast. Commercial uses include retail and warehouse outlets along nearby streets. Residential uses include housing and apartments approximately 0.6 miles northeast of the landfill and planned residential development of quarry pit land north of the site (e.g., Aspen I property). See Attachment A: Location Map.
20. The 100-year, 24-hour precipitation event for the site is about 4.65 inches based on the *Rainfall Depth Duration Frequency Data* provided on the Department of Water Resources (DWR)'s Flood Management Division website for the Branch Center Station approximately 2.5 miles northeast of the site. The facility receives an average of 18.5 inches of precipitation per year as measured at this station. The mean pan evaporation rate is about 50 inches per year (6.3 inches per month during the dry season (1 May through 31 October) and 2.0 inches per month during the wet season (1 November through 30 April)) based on historical data collected at DWR's Fair Oaks California Irrigation Management Information System (CIMIS) Station about 11.5 miles northeast of the site.
21. The Facility is not located within a 100-year floodplain.⁶
22. A February 2019 review of Department of Water Resources (DWR) online records identified 13 groundwater supply wells within a one-mile radius of the site, including two municipal supply wells, 13 domestic supply wells, three agricultural/irrigation supply wells, three industrial supply wells, and four supply wells of unknown use. Most of the wells were located side gradient, east of the site. The review also indicated a cluster of domestic supply wells beyond the one-mile radius about 1.5 miles southwest of the landfill. See Attachment I of the Information Sheet attached to this Order.
23. The site is underlain by the Victor Formation, a Pleistocene-age, alluvial plain on the eastern side of the Sacramento Valley formed by stream channel deposits from the Sierra Nevada mountains. Victor Formation deposits typically grade laterally and vertically (i.e., from sand and gravel to silts and clays) ranging up to about 125 feet total thickness. Limited available data indicate domestic and agricultural supply well yields up to 1,900 gallons per minute (gpm) in the Victor Formation.
24. Native soils beneath in the area generally consist of fine-grained sand, silt, and clay loam soil underlain by a gravelly cobble zone extending from about 25 feet to 50 feet bgs.⁷ In historically mined areas (including pits subsequently landfilled), the soil column has been reduced by excavation activities and/or altered by backfilling with overburden soil. The permeability of native overburden soils is estimated to range from about 1×10^{-5} centimeters per second (cm/sec) to 1×10^{-7} cm/sec.

6. Based on applicable Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Map (Community-Panel No. 060262, Map No. 06067C0215H) last revised on 16 May 2013. See <https://msc.fema.gov/portal>.

7. Surface soils at the site generally consist of Xerarents-San Joaquin Complex loam soil. See April 1993 U.S. Department of Agriculture, Natural Resources Conservation Service, Soil Survey of Sacramento County (CA067).

25. There are no known Holocene faults in the landfill area. The nearest historically active fault to the site is the Foothills Fault System about 32 miles northeast of the site. In 1975, an earthquake registering 5.8 on the Richter scale occurred along the Cleveland Hills Fault (Foothills Fault System) near Oroville. Other historically active faults located within a 100-mile radius of the site are summarized in the Information Sheet attached to this Order.
26. The PC/PFC/PMP in the JTD included a 1996 seismic hazard assessment as part of the slope stability analysis required under Title 27 for development and closure of the landfill. Given various updates to United States Geological Survey (USGS) fault maps and earthquake data over the years since 1996, these WDRs require that the Dischargers update the seismic hazard assessment for the site and submit a revised slope stability report. See Closure and Postclosure Specification E.1.a.
27. A Near Field Maximum Probable Earthquake of 7.0 magnitude (M) was computed for the site using a probabilistic approach.^{8,9} The corresponding peak horizontal ground acceleration was 0.171g.

UNSATURATED ZONE

28. In areas excavated by gravel mining/landfilling, the unsaturated zone generally consists of low permeability backfill soil and/or hardpan and is less than ten feet thick. Beyond these areas, it is generally at least 45 feet thick and consists of the cobble layer overlain by overburden soil. The thickness of the unsaturated zone is minimal in areas of minimal separation between landfill wastes and groundwater (e.g., LCRS sump at LF-2).
29. In 1990 methane was detected in soil gas above 5 percent by volume at several locations along the site perimeter in violation of Title 27, section 20921(2). In response, the Dischargers installed a perimeter methane monitoring system at the site in the early 1990s. This system has been improved over time and since 2010 has consisted of 20 gas monitoring wells (A through M-1 and N through U) installed along the site perimeter in accordance with Title 27, section 20925. Fifteen of these wells (F through M-1 and N through U) are onsite and five (A through E) are offsite wells. All wells are triple completion (i.e., 3 probes per well), except for gas wells G through K and N, which are single completion wells. The triple completion gas monitoring wells are screened in upper, intermediate, and lower sections of the unsaturated zone opposite landfill waste. The single completion wells (all along Fruitridge Road, south of the west and east pits) are screened in the unmined gravel/cobble layer outside of the landfill unit, a preferential migration pathway for landfill gas (LFG). See MRP, section A.2.b.
30. No pan lysimeters or soil pore liquid monitoring devices were installed beneath LF-1 when the West Pit was constructed in the 1970s and the East Pit was constructed in the early 1980s. Given that both pits at LF-1 are unlined and rely on underlying low

8. USGS Unified Earthquake Hazard Tool (Dynamic: Coterminous US 2014 v4.1.1) used in analysis. See <https://earthquake.usgs.gov/hazards/interactive>. Model assumed a 475-year return period (10% chance in 50 years) and a mean shear wave velocity (V_{s30}) of 360 m/s in the upper 30 meters (98.4 feet) of soil.

9. One fault zone included in the model (i.e., relevant in probabilistic analysis), the San Andreas (Peninsula), was outside of the 100 km search radius required under Title 27.

permeability soil extending to the water table for waste containment, retrofitting LF-1 with lysimeters is not technically or economically feasible. The groundwater monitoring system therefore provides the earliest detection of a release from the unit. See Title 27, section 20415(d)(5).

31. A pan lysimeter (LYS-1) was installed at the base of the capillary break beneath LF-2's LCRS sump when it was constructed in 1997 to monitor the unsaturated zone beneath the sump for leakage from the sump. The device consists of a 20-foot wide strip of 60 mil high density polyethylene (HDPE) liner aligned with the overlying LCRS header pipe throughout its length. At the sump, the pan is covered with 12 inches of washed pea gravel. A length of 3-inch perforated HDPE pipe is installed in the pea gravel beneath the sump and connected to a 2-inch inner diameter (ID) riser to monitor the pan and recover any detected liquid.

SURFACE WATER AND GROUNDWATER CONDITIONS

32. The *Water Quality Control Plan for the Sacramento River Basin and San Joaquin River Basin (Basin Plan)* designates beneficial uses, establishes water quality objectives (WQOs), and contains implementation plans and policies for all waters of the Sacramento and San Joaquin River Basins (Basin).
33. Surface drainage from the site is directed via perimeter ditch to an onsite infiltration pond in the northeast corner of the site.¹⁰ There is therefore no discharge to surface water from the site. Run-on from an adjacent property north of the site is also directed to the infiltration pond under an agreement with the property owner. See Attachment B: Site Map.
34. Local surface drainage outside of the facility is to Morrison Creek about one-half mile south of the landfill. Morrison Creek is a seasonal tributary to the Sacramento River. According to the *Basin Plan*, designated beneficial uses of the nearest surface water (Morrison Creek) include: municipal and domestic supply (MUN); agricultural supply (AGR); industrial service supply (PRO); water contact recreation (REC-1); non-water contact recreation (REC-2); warm freshwater habitat (WARM); cold freshwater habitat (COLD); wildlife habitat (WILD); migration of aquatic organisms (MIGR); and spawning, reproduction and/or early development (SPAWN).¹¹
35. Per the *Basin Plan*, designated beneficial uses of groundwater at the Facility include municipal and domestic supply (MUN); agricultural supply (AGR); industrial service supply (IND); and industrial process supply (PRO).

¹⁰. The infiltration pond was designed based on the Title 27-required 100-year, 24-hour storm event. The pond design also accounts for discharges from the onsite groundwater treatment system, flows from a 100-year wet season, and losses due to evaporation, infiltration, and onsite usage (i.e., dust control).

¹¹. Beneficial uses determined by application of "tributary rule" to Sacramento River. Navigation (NAV) beneficial use of Sacramento River determined not to apply to Morrison Creek by application of this rule.

36. The local groundwater gradient is about 2.2 feet per 1,000 feet (0.0022) to the southwest. The average groundwater velocity is about 250 feet per year. The capillary fringe is estimated to be about two feet based on soil type.
37. There are two aquifers immediately underlying the site, referred to as the “upper” and “lower” aquifers, respectively. The upper aquifer begins about 61 feet bgs (~16 feet MSL) in the central part of the site and is unconfined. It averages about 30 feet thick and generally consists of fine-grained alluvial sediments (e.g., silt and fine sand) that become more permeable (i.e., sand) with depth. Hydraulic transmissivities of the upper aquifer area are estimated to range from about 320 square feet per day (ft²/day) to 2,950 ft²/day.¹² A 15 to 20-foot layer of low permeability clay or siltstone separates the upper aquifer from the lower aquifer. The lower aquifer begins about 78 feet bgs (~33 feet MSL) and averages about 10 feet thick and is confined (or semi-confined). The groundwater monitoring points (i.e., wells and piezometers) for the upper and lower aquifers are identified in Finding 40.
38. Groundwater flow in the upper aquifer is affected by the infiltration pond in the northeast corner of the site, and by groundwater pumping (for corrective action purposes) along the southern perimeter of the site. The infiltration pond causes shallow groundwater mounding beneath the pond area during the wet season that alters the natural groundwater flow gradient, resulting in gradient reversals and radial flow in the area of the mound. The mound gradually dissipates in the dry season when infiltration from the pond is minimal. Groundwater elevations in the pond area consequently range from about -8 feet MSL during the wet season to about -16 feet MSL during the dry season. Groundwater elevations along the downgradient perimeter of the site where groundwater is pumped typically range from about -19 feet MSL (i.e., MW-23) to -29 feet MSL (i.e., MW-21), depending on the extraction well.

GROUNDWATER MONITORING

39. Groundwater monitoring at the site (including concurrent background, detection, and corrective action monitoring) is conducted in both the upper and lower aquifers. LF-1 is primarily in corrective action monitoring and LF-2 is primarily in detection monitoring.
40. There are currently 29 groundwater monitoring wells at the site, including 24 monitoring wells screened in the upper aquifer (MWs-2A, 4, 5, 7, 10, 12, 13, 15S, 16S; 18 through 24; 29, 30R, 31R, 32S; and 33 through 36) and five monitoring wells screened in the lower aquifer (MWs- 8, 9, 11, 14 and 17). Four of the upper aquifer monitoring wells (MWs-2A, 4, 7, and 10) are used only as piezometers; eight (MWs-18 through 24 and 33) are also used for groundwater extraction, and six (MWs-15S, 16S, 32S, 34, 35, 36) are offsite wells downgradient (south/southwest) of the landfill. See MRP Section A.1.
41. Groundwater detection monitoring at the site for general minerals and other inorganic constituents that can be evaluated statistically (e.g., dissolved metals naturally occurring in background) is conducted using an interwell approach (i.e., by comparing down-gradient sample results with concentration limits derived from statistical evaluation of

¹². Flow tests conducted on the shallow wells installed along the southern perimeter of the site (MWs 18 through 23).

historical upgradient data) in accordance with Title 27 regulations, while groundwater detection monitoring for organic constituents not natural present in background (e.g., VOCs) is generally conducted using a non-statistical, intrawell approach (i.e., by comparing of sample results from a given monitoring well with the method detection limit for that organic constituent). See MRP, Section I.

42. Title 27 regulations require that detection monitoring of the units be conducted separately (including separate background monitoring points), absent a demonstration that the units are contiguous and that the proposed shared groundwater detection monitoring system for the units will enable the earliest possible detection and measurement of a release from each Unit. See Title 27, sections 20405(b) and 20415(d)(3). Previous WDRs authorized shared monitoring of both landfill units based on a finding that the units were contiguous but did not require the requisite demonstration that shared monitoring of the units would comply with Title 27 performance standards for detection of a release. Further, given that there are currently two groundwater monitoring wells between units LF-1 and LF-2 (MWs-30R and 31R) that could be used as background monitoring wells for LF-1 and detection monitoring wells for LF-2, it may be feasible to separately monitor the units even though they are contiguous.

These WDRs therefore require that, beginning **1 July 2020**, the Dischargers monitor each unit separately, absent Executive Officer approval of the requisite demonstration(s) under applicable sections of Title 27 included in the updated WQPS Report required under this Order. See Finding 44, Monitoring Specifications G.3 and G.4, MRP Section A.1, and Attachment C: Groundwater Monitoring & Extraction System.

43. Title 27 specifies the prescriptive requirements and performance standards applicable to monitoring data analysis and requires that such methods be implemented as follows:
- a. As specified in the existing MRP under the WDRs; or
 - b. In accordance with a technical report (certified by an appropriately registered professional) documenting such methods, submitted to, and approved by, the Central Valley Water Board; or
 - c. In accordance with any water quality data analysis software deemed appropriate for such use by either the Central Valley Water Board or SWRCB.

See Title 27, section 20415, subparagraphs (e)(7) and (e)(10).

44. Title 27, section 20390 requires that the Central Valley Water Board establish a WQPS in the WDRs for each unit, including COCs, Concentration Limits, Point of Compliance, and Monitoring Points. The WQPS for the landfill was last updated in 2012 and incorporated into previous WDRs.¹³ These WDRs require that the Dischargers submit an updated WQPS report to reflect changes at the site since 2012 and requirements of these WDRs, including MRP No. R5-2019-0044. For example, the WQPS needs to be

¹³. See 27 February 2012 *Revised Water Quality Protection Standard Report, L and D Landfill*, prepared by SCS Engineers.

modified to reflect requirements for separate, detection monitoring of the units (or include the requisite demonstration for shared monitoring) and the issue of groundwater mounding from the infiltration basin, which can alter the direction of groundwater flows beneath the site. See Monitoring Specification G.4 and Time Schedule I.F.

GROUNDWATER IMPACTS AND CORRECTIVE ACTION

45. A 1988 Solid Waste Assessment Test (SWAT) investigation (found that the upper aquifer at the site had been impacted by VOCs from LF-1. Most of the VOCs detected were chlorinated VOCs. Follow-up verification monitoring showed total VOCs up to 80 µg/L in shallow groundwater along the downgradient perimeter of the landfill, including trichloroethylene (TCE) up to 10 µg/L, tetrachloroethylene (PCE) up to 5 µg/L, 1,1-DCA up to 10 µg/L, 1,2-DCE up to 55 µg/L, and vinyl chloride up to 8 µg/L.
46. As of the Second Semester 2018 monitoring event, monitoring wells MW-30R and MW-31R were impacted with low to trace concentrations of VOCs, including benzene up to 0.3 µg/L, 1,4-Dichlorobenzene up to 0.7 µg/L, cis-1,2-Dichloroethene up to 2.0 µg/L, methyl-tert-butyl ether up to 0.3 µg/L, and vinyl chloride up to 0.6 µg/L. The source of the VOCs in these wells is currently unknown but could be from landfill gas migration from the unlined landfill that is immediately downgradient from these wells.
47. Elevated concentrations of inorganic constituents (TDS, chloride, and sulfate) were detected downgradient of the west pit area of the landfill prior to corrective action activities. More recent data indicate the concentrations of these inorganic constituents are similar to background groundwater concentrations.

Groundwater Extraction and Treatment

48. In 1993, the Dischargers installed a groundwater extraction and treatment system (GETS or system) to contain the VOC plume and remove VOCs from the groundwater. The system originally consisted of four shallow groundwater extraction wells (MW-2A, 4, 7 and 10) and a 16 gpm air stripper tower. Treated groundwater from the air stripper was routed via concrete-lined ditch to the infiltration pond in the northeastern corner of the site where it was commingled with impounded non-contact storm water runoff and other discharges described in Finding 33.
49. Since 1993, the Dischargers have implemented various repairs and improvements to the GETS, as requested by Central Valley Water Board staff and/or required under previous WDRs, to address various issues (e.g., inadequate groundwater treatment, insufficient plume capture, degradation/clogging of the system over time, need for system optimization). These measures are summarized below.
 - a. During 1999 through 2000, the Dischargers installed seven new groundwater extraction wells (MW-18 through MW-24) in the shallow aquifer along the down gradient perimeter of LF-1. Four of these new wells (MW-20, 22, 23, and 24) were replacement extraction wells for MW-2a, 4, 7 and 10, which were not sufficiently screened in the shallow aquifer to sustain higher flow rates needed to capture the VOC plume. A higher capacity air stripper (99 gpm) was also installed to handle higher extraction rates.

- b. In 2003, the Dischargers developed an Operation and Maintenance (O&M) Plan for the GETS.
- c. By 2011 (notwithstanding a significant decline in total VOCs detected along the downgradient perimeter of LF-1 to about 14 ug/L), chlorinated VOCs had been detected in off-site wells MW-16 (e.g., 1.2 ug/L TCE) and MW-32 (e.g., 1.4 ug/L PCE) downgradient of LF-1 and the total extraction rate of the GETS had declined to about 64 gpm, indicating impacted groundwater may have been escaping capture by the GETS. In 2012, the Dischargers overhauled the GETS per the 2003 O&M plan, increasing total extraction rates to about 90 gpm.¹⁴ O&M measures included extraction well redevelopment, well pump replacement; and removal of deposits in system piping. The results were documented in a June 2012 report submitted to the Water Board. The report also included recommendations for revision of the 2003 O&M plan (required under the 2012 WDRs).¹⁵

Additional information on the chronology of corrective action measures implemented at the site can be found in previous WDRs for the relevant period.

50. Corrective action monitoring data collected at the site since 2010 showed the presence of low to trace concentrations of MTBE and several chlorinated VOCs in upper aquifer wells located along the downgradient perimeter of LF-1, as summarized below.

LF-1 – Upper Zone, Downgradient Perimeter – VOCs

<u>VOC Constituent¹</u>	<u>Max Concentration (ug/L)</u>			<u>Onsite Well(s)³</u>
	<u>2010</u>	<u>2015</u>	<u>2018</u>	
Chlorobenzene	0.6	0.1 ²	0.1 ²	2A,22,23
1,1-DCA	1.6	1.1	0.4 ²	2A,18-22,33
cis-1,2-DCE	2.3	2.3	1.0	2A,18-23,33
MTBE	0.6	0.9	1.3	4,18,19,22,23
PCE	0.5	0.3 ²	ND	18-21
TCE	0.3 ²	0.2 ²	0.1 ²	18-21
Trichlorofluoromethane (TCFM)	0.3 ²	0.4 ²	0.2 ²	19,20

1. VOCs detected only at low trace concentrations (e.g., < 0.3 ug/L) excluded from table.

2. Trace concentration (i.e., below PQL).

3. Monitoring wells in which VOC historically detected since 2010.

All VOCs showed declining concentrations since 2010, except for MTBE, which rose slightly. Only two VOCs, MTBE and cis-1,2-DCE, were detected above trace concentrations. None of the VOCs detected in 2018 exceeded water quality objectives.

14. Capture zone analysis of the GETS (using the MODFLOW program) conducted in 2012 confirmed that the shallow groundwater plume could be adequately captured at total extraction rates between 80 and 90 gpm.

15. Maintenance recommended whenever total extraction rate falls below 80 gpm and/or individual well rates fall below the following specified minimums: MW-18 (13.7 gpm), MW-19 (13.5 gpm), MW-20 (13.3 gpm), MW-21 (7.7 gpm), MW-22 (13.4 gpm), MW-23 (7.2 gpm) and MW-24 (7.4 gpm).

51. Groundwater monitoring data collected from offsite corrective action monitoring wells generally showed the same chlorinated VOCs as those detected above, except MTBE was not detected in any of the offsite wells. Also, most of the VOCs detected in the offsite wells in 2015 were above trace levels, precluding confirmation of any long-term declining trend. The results are summarized below.

LF-1 – Upper Zone, Downgradient, Offsite - VOCs				
VOC Constituent ¹	Max Concentration (µg/L)			Offsite Well(s) ³
	2010	2015	2018	
Chloroform	0.1 ²	0.1 ²	0.7	15S,16S,32S,32,35
1,1-DCA	4.1	4.8	1.0	16,32S,32,35
cis-1,2-DCE	0.7	1.5	0.3	16,32S,32,35
Dichlorodifluoromethane (DCFM)	ND	4.3	0.2	16,32,35
PCE	0.9	3.3	ND	16S,16,32S,32,35
TCE	0.9	1.8	0.1 ²	16,32S,32,35
TCFM	3.0	4.7	0.2 ²	16,32,35

1. Maximum VOC concentration detected during time period in any well (rounded to nearest 10th).
2. Trace concentration (i.e., below PQL).
3. Monitoring wells in which VOC historically detected since 2010.

All VOCs in the offsite wells were detected at concentrations below water quality objectives in 2018 and, with the exception of chloroform, showed declining concentrations.

52. On 24 May 2018, Central Valley Water Board Compliance and Enforcement (C&E) Unit staff issued a Continuing Notice of Violation (NOV) to the Dischargers regarding ongoing compliance issues at the landfill in the following areas:¹⁶

- VOC impacts to upper and lower zone groundwater, both onsite and offsite;
- Indications based on piezometric data that the capture radii of the extraction wells are too small to prevent offsite flow of impacted groundwater;
- Lack of separation between wastes and groundwater at LF-1 based on LFG extraction well boring logs;
- Effluent monitoring data indicating the air stripper was not reliably removing VOCs from the influent;
- The discharge of impacted treatment system effluent to the infiltration pond; and
- The failure to maintain LFG at non-detect levels along the northern (VOCs) and southern (methane) perimeters of LF-1.

The Continuing NOV requested that the Dischargers submit the following items by specified due dates:

¹⁶ See 24 May 2018 Water Board letter *Continuing Notice of Violation for Inadequate Corrective Action Measures, Release of Volatile Organic Compounds to Groundwater and Release of Landfill Gas into the Vadose Zone, Review of Second Semi-Annual and Annual 2017 Monitoring Report, L&D Landfill, Sacramento County*

- a. By 1 July 2018, a Work Plan that includes the following:
 - i. A plan to optimize LFG extraction in LF-1, including installation of additional gas extraction wells, as necessary and activating extraction wells EW-1 through EW-8 and EW-9 through EW-29;
 - ii. An Evaluation Monitoring Program (EMP) investigation to define the lateral and vertical extent of contamination in both the vadose zone and groundwater north of the West Pit. The EMP was required to include a plan for the installation of sentinel wells in the Warehouse Way area based on the EMP results; and
 - iii. An EMP investigation to define the lateral and vertical extent of contamination south of LF-1 in both the shallow and deep zones and, based on the results, a plan for installation of sentinel wells in the upper and lower aquifers based on the EMP results.
 - b. By 15 August 2018, a report evaluating the performance of the GETS, including a demonstration that the GETS can drawdown groundwater sufficiently for adequate separation from landfill wastes (i.e., -26.25 feet MSL).¹⁷ The report was specifically required to include:
 - i. Groundwater elevation maps based on monitoring data from existing LF-1 piezometers; and, if the GETS cannot provide sufficient drawdown,
 - ii. A water balance to determine flow rates required for sufficient drawdown and associated improvements needed for the GETS (e.g., higher rates, more extraction wells, higher capacity treatment system).
53. In response to the 24 May 2018 Continuing NOV, the Dischargers submitted the 15 August 2018 technical report *Work Plan and Response to the May 2018 Notice of Violation Letter*, prepared by SCS Engineers. The report included, but was not limited to, the following:
- a. A discussion questioning the reliability of existing boring log data at LF-1 and a proposal for a new boring log investigation to characterize and confirm the maximum depth of wastes at LF-1;
 - b. An EMP to investigate the nature and extent of impacts north and south of LF-1 per the NOV using an iterative approach, including a soil vapor survey north of LF-1 (West Pit Area) and the installation and sampling of additional groundwater monitoring wells south of LF-1; and

¹⁷. The letter specified a minimum compliance elevation of -26.25 feet MSL based on the minimum elevation of waste indicated by LF-1 gas well logs and required five feet of separation.

- c. A plan to replace existing piezometers along the southern perimeter of LF-1 with new piezometers appropriately screened to monitor the effectiveness of the extraction wells.
54. In a 3 January 2019 letter, Water Board C&E Unit staff provided comments on various aspects of the work plans submitted in the technical report described in Finding 53, including, but not limited to:
- a. The need for groundwater sampling north of the West Pit area;
 - b. The need to install offsite EMP wells closer to (e.g., within 100 feet of) the southern perimeter of the West Pit area and then step out from there, as warranted, based on sampling results;
 - c. The need to incorporate existing LF-1 piezometers (e.g., MWs-2A, 4, 6/7 and 10) in groundwater elevation measurements/maps for groundwater separation and GETS evaluation purposes; and
 - d. The need for installation of additional borings (to at least -25 feet MSL) in the LF-1 area as part of the proposed LF-1 well boring investigation to characterize and assess the depth of wastes at LF-1. (Several of the existing gas boring logs for LF-1 indicated waste deeper than that reported in the JTD and 1988 SWAT investigation (i.e., -15 feet MSL).

The letter requested that the Dischargers submit revised workplans addressing the above comments and a report of results of the LF-1 well boring investigation (Item d above) by specified dates.

55. To address the technical issues noted in Findings 52 through 54, these WDRs require that the Dischargers submit various work plans for C&E unit staff review by specified due dates, including a revised work plan for the EMP investigation north of the West Pit Area; a revised work plan for the EMP investigation south of LF-1 (including piezometer installation work plan and evaluation task per Finding 53.c that addresses C&E unit staff's concerns in 54.c); and an amended work plan addressing Water Board C&E Unit staff's comments on the well boring investigation of LF-1. See Monitoring Specification G.6 and Facility Specification C.4.

Reports documenting the results of the implementation of above work plans are also required to be submitted. See Monitoring Specification G.7 and Facility Specification C.5. See also Time Schedule I.

Landfill Gas Controls

56. In the early 1990s, in response to the methane exceedances detected along the perimeter of LF-1 (see Finding 28), the Dischargers installed a perimeter methane migration control system consisting of 29 single-completion gas extraction wells (EW-1 to EW-28 and EW-5A). The wells were installed in a counterclockwise order around LF-1, spaced at approximately 200-foot intervals, starting in the northeast corner of the West Pit area. The wells were placed where there were occupied buildings on adjacent

parcels. The wells were screened in waste opposite the cobble layer to a maximum depth of about 10 feet below the base of the cobble layer. Typical gas extraction rates were about 31 standard cubic feet per minute (SCFM) per well powered by an 800 SCFM blower in the southwest corner of the site and a 100 SCFM blower north of the west pit.

57. An in-fill LFG extraction system was also installed in 2005 (Phase 1) and 2007 (Phase 2) that extracts LFG from LF-1 and LF-2's gravel LCRS layer. This system includes 10 single-completion wells screened in landfill waste; 14 double-completion wells screened in landfill waste and the uppermost portion of the underlying unsaturated zone; and four LCRS laterals in LF-2 to which vacuum is applied. Phase 1 activities conducted in 2014 added four additional leachate laterals and three cover vents, Phase 5/6a activities in 2018 added five leachate laterals and three cover vents, and Probe M remediation work in 2019 added two single completion wells in waste and one leachate header. The system is connected to a 2,000 cubic foot per minute (cfm) blower and a landfill gas flare operating under local air district permit. (A previously employed 1,000 cfm blower and 2,000-pound carbon adsorption unit remain onsite as a backup for the flare.) The system is operated to maximize the collection of LFG from the existing extraction wells. Since the installation of this system and previous LFG perimeter controls, concentrations of methane detected along the site perimeter have been reduced to non-detect levels.
58. The perimeter gas extraction system was connected to the infill gas extraction system when it was completed in 2007 but was subsequently used intermittently as needed based on LFG concentrations. In 2018, the Dischargers re-activated all the extraction wells to address the VOC exceedances noted in Finding 52.
59. Condensate from the LFG extraction system is knocked out in sumps along the collection lines and routed to the GETS air stripper to remove VOCs. It is then routed to the infiltration pond as described in Finding 68. See Attachment D: Gas Controls.
60. The Dischargers' 5 August 2018 technical report (described in Finding 53) also included a work plan for evaluation of the effectiveness of the LFG extraction system and recommendations for improvements, including the installation of additional gas extraction wells. These WDRs require that the Dischargers submit by **31 July 2019** an amendment to (or revision of) this work plan for C&E unit staff approval addressing the need to control LFG in the boundary area between LF-1 and LF-2 so as to prevent/minimize the migration of LFG from lined unit LF-2 to unlined unit LF-1. A report documenting the implementation of approved improvements to the LFG control system per the approved work plan shall be submitted by **31 December 2019**. See Facility Specification C.13 and Time Schedule I.C.a)i and I.C.c)ii.

Groundwater Separation

61. Title 27, section 20240(c) requires that existing landfill units be operated to maintain at least five feet of separation between the lowest elevation of landfill wastes and highest anticipated elevation of groundwater. (Exemptions from this prescriptive standard may be approved upon a showing of infeasibility provided adequate separation is maintained per Title 27, sections 20080(b) and 20260(a). See Facility Specification C.2. Previous

WDRs estimated the minimum separation at LF-1 to be about seven feet based on a 1996 ROWD and 1989 SWAT report submitted by the Discharger. The lowest elevation of wastes at LF-1 was estimated to be -15 feet MSL (East Pit area) and the highest anticipated groundwater elevation was about -22 feet MSL. These estimates may no longer be valid given the various changes at the site since 1996, including the following:

- a. Monitoring data indicating a possible rise in the water table since 1996;
- b. Mounding from the infiltration pond;
- c. Drawdown from groundwater extraction activities;
- d. Gas well boring log information indicating waste may be deeper than estimated in some areas of LF-1. See Finding 52.

As noted in Finding 53.a, the Dischargers recently submitted a work plan for a boring log investigation to verify the maximum depth of wastes at LF-1, including East and West Pit areas. These WDRs require that the Dischargers not allow the groundwater elevation beneath LF-1 to rise above -20 feet MSL or the compliance elevation based on the results of this boring log investigation when completed, whichever is lower. See Facility Specification C.2. The WDRs also allow the Dischargers to submit a technical proposal for less than the prescriptive five feet of separation if the Dischargers are able to demonstrate to the satisfaction of the Executive Officer that maintaining at least five feet of separation is not feasible per Title 27, section 20080(c) and that the proposed minimum separation meets Title 27 performance standards (i.e., is adequate per Title 27, section 20240). See Facility Specification C.3.

62. Portions of LF-2 (Modules 1 and 2) have less than the required five feet of separation between wastes and highest anticipated groundwater. Previous WDRs Order 96-177 authorized an engineered alternative design for groundwater separation that required the installation of a capillary break layer in these areas, as follows:

- a. The least amount of separation occurs in the LCRS sump area, where the base of the LCRS sump is -19.25 feet MSL, and the highest anticipated groundwater elevation was estimated to be -20.75 feet MSL (excluding capillary fringe). The base of the capillary break layer under the sump was installed at -20.75 feet MSL, allowing for a minimum of one and one-half feet of separation between wastes (leachate) and the highest anticipated groundwater.
- b. In the area immediately surrounding the sump, the lowest elevation of solid wastes is at -16.75 feet MSL, the LCRS is at -17.25 feet MSL, and the base of the capillary break is at -18.25 feet MSL. This design allows for a minimum of one foot of separation between the LCRS and high groundwater, including the capillary fringe.

No capillary break was constructed under the remaining LF-2 modules (3 through 7), where previous WDRs required there be at least five feet of separation between the LCRS and high groundwater. These WDRs require that the maximum groundwater elevation in the LF-2 sump area be maintained consistent with these approved

engineered alternative designs absent an approved demonstration of an alternative minimum separation under Facility Specification C.7.

LANDFILL OPERATIONS

63. Waste disposal operations are conducted by the area fill method. At the active disposal face, the waste is deposited into a cell approximately 100 feet long by 100 feet wide by five feet deep and is spread and compacted with one of the compactors. Hard-to-handle wastes such as large shredded tires are deposited at the bottom of a lift. Waste is inspected for unauthorized or hazardous wastes as it is spread. Diversionary berms are constructed in the wet season to divert storm water away from the working face. ADC materials are stockpiled near the working face.
64. Title 27, section 20680 generally requires that disposed solid waste be covered with a minimum of six inches of compacted earthen material at the end of each operating day to control vectors, fires, odors, blowing litter, and scavenging. Section 20690 allows for the use of ADC materials with requisite demonstrations upon approval by the LEA and concurrence from CalRecycle.¹⁸ Section 20705 requires that the Dischargers demonstrate to the satisfaction of the Water Board that the proposed ADC materials will minimize percolation of liquids through waste and are consistent with the classification of the WMUs to which they are to be applied. The approved ADC material constituents and breakdown products are also required to be included as part of the WQPS set forth in the MRP.
65. Previous WDRs allowed the following ADC materials approved by the LEA and CalRecycle for use at the landfill: imported recycled soils, construction and demolition inert wastes, shredded tires, material recycling facility unders, processed green material, geosynthetic fabric, water treatment plant sludge, compost materials and sediment/dredge spoils. Leachate monitoring data from LF-2 indicates, however, that the interim cover materials employed at LF-2 (including ADC) may be allowing excessive storm water infiltration into the landfill, generating leachate.

This Order requires that the Dischargers submit an Interim Cover O&M Plan for the landfill consistent with the requirements of this Order and Title 27, section 20705 for review and approval by Water Board staff. At a minimum, the plan is required to document of the types of ADC proposed for use at each landfill unit; any site-specific demonstrations; regulatory approvals for each type of ADC; amounts used and handling procedures; and other relevant operations information. The Interim Cover O&M Plan is also required to address measures (e.g., cover placement and waste management practices) to minimize the potential for lateral migration of leachate between units in the boundary area between LF-1 and LF-2. Any proposal for the use of new ADC materials may be submitted for Water Board staff approval in the form of a revision or amendment to the Interim Cover O&M Plan. See Discharge Specification B.3.

¹⁸. Landfills use ADC to preserve landfill air space and to beneficially reuse waste materials per Title 27, section 20686.

Liquids Management

66. Subtitle D (40 C.F.R. § 258.28) provides that bulk (i.e., non-containerized) liquid waste may not be placed in MSW landfill units unless the waste is leachate or gas condensate being returned to that unit and the unit was constructed with a Subtitle D composite liner and LCRS or equivalent. These WDRs prohibit the discharge of bulk liquids, including leachate and LFG condensate to the landfill units at the site, except for the dry season use of leachate for dust control as described in Finding 67 below.
67. During the dry season, the Dischargers use leachate for dust control in the interior portions of LF-2. During the wet season (i.e., 1 November through 30 April), the Dischargers stores the leachate in onsite tanks that are periodically pumped and hauled by tanker truck for offsite disposal at the Sacramento Regional Wastewater Treatment Plant or one of its receiving facilities. This Order limits the discharge of leachate for dust control to the interior surfaces of LF-2 cover during the dry season. See Discharge Specification B.9.
68. Treated groundwater from the GETS, treated LFG condensate, and storm water from onsite and offsite are routed to a 3.5-acre infiltration pond in the northeast corner of the Facility. Some water from the pond is used for dust control at the landfill during the dry season. As noted in Finding 38, the infiltration pond is causing seasonal groundwater mounding that may be impairing the groundwater monitoring system at the site. These WDRs therefore require that the Dischargers conduct two feasibility studies, including one to evaluate alternatives for liquids management at the site and/or offsite disposal and the other the feasibility of pond removal, reconstruction or reconfiguration. The goals of the studies are to identify liquids disposal methods that do not rely solely on onsite infiltration to groundwater as a disposal mechanism. Each feasibility study report is required to be submitted by **31 May 2020** and the associated workplans to implement the study's recommendations by **30 November 2020**. All construction work under the studies is required to be completed by **31 October 2022** (absent approval of an extension). See Facility Specification C.12 and Time Schedule I.

CONSTRUCTION AND ENGINEERED ALTERNATIVE

69. LF-1 was constructed in two former gravel quarry pits (West Pit area and East Pit) excavated through the cobble layer into underlying hardpan as described in Finding 24. The two modules were backfilled with several feet of low permeability native soil, which was compacted prior to initiating waste disposal operations. Both modules are considered unlined in that they rely primarily on underlying natural geologic materials for Class III-level containment of wastes. See Attachment F: Landfill Unit Design.
70. LF-2 was constructed with seven compositely lined MSW modules from 1997 (M-1) through 2007 (M-7). Each module was constructed with an engineered alternative design to the Title 27/Subtitle D prescriptive standard composite liner for an MSW landfill. The engineered alternative design, approved under WDRs Order 96-177, included the substitution of geosynthetic clay liner (GCL) for two feet of compacted clay. An additional layer of 60-mil HDPE geomembrane was also constructed beneath the LCRS sump and leachate collection main for each module to provide additional groundwater protection. Previous WDRs (Order R5-2002-0082) subsequently required

an increase in the thickness of the shredded tire operations layer and an additional layer of GCL beneath the liner system. This design was constructed in LF-2, Modules 5-7. See Attachment F: Landfill Unit Design.

71. In designing LF-2, the Dischargers estimated that the highest anticipated groundwater elevation (including capillary fringe) could come within less than five feet of the bottom of the liner system in certain areas, primarily in the area of Modules 1 and 2, including the LCRS sump at Module 2. LF-2 Modules 1 and 2 were therefore constructed with an approved groundwater separation engineered alternative design consisting of a one-foot gravel capillary break layer beneath each module to prevent capillary rise during periods of high groundwater from contacting the base of the liner system. The thickness of the capillary break was increased to 1.5 feet beneath the LCRS sump for additional groundwater protection.
72. The LCRS for LF-2, Modules 1 through 7 includes perforated leachate collection piping (laterals and header pipe) in a 12-inch layer of gravel. The shredded tire operations layer in these modules provides additional drainage capacity. All modules are sloped at least 0.5 percent to drain to one common LCRS sump in Module 2. The LCRS design maximum flow rate is 115 gpm, and the maximum anticipated daily leachate flow is 46 gpm. The pump in the LCRS sump has a maximum flow rate of 60 gpm. See Attachment E: LCRS Design.
73. Title 27, section 20340(g) requires that leachate be returned to the unit from which it came or be discharged in a manner approved by the Regional Board (i.e., Central Valley Water Board). Subtitle D (40 C.F.R. section 258.28), however, generally prohibits the discharge of bulk or noncontainerized liquids to MSW landfill units (e.g., LF-2), but allows the return of leachate and/or gas condensate to an MSW unit provided that the unit was constructed with a Subtitle D composite liner and LCRS (or their equivalents per 40 CFR 258.40(a)(2)). Other than for dust control (see Finding 74), the Dischargers are not discharging leachate, LFG condensate, or any other bulk/noncontainerized liquids to either LF-1 or LF-2.
74. LF-2 leachate is used for dust control at LF-2 during the dry season (i.e., 1 May through 31 October), and during the wet season (i.e., 1 November through 30 April) is pumped to onsite storage tank(s). The tanks are periodically pumped to tanker truck for offsite disposal at the Sacramento Regional Wastewater Treatment Plant or authorized access point/manhole. No leachate is collected from unlined unit LF-1 because it does not have an LCRS.
75. All surface water drainage from the site is routed to a 3.5-acre, onsite infiltration pond in the northeast corner of the site such that there is no offsite drainage of runoff. The infiltration pond receives storm water runoff flows from the perimeter conveyances and storm water run-on from 30-acres of undeveloped land north of the site per an agreement with the property owner.

LANDFILL CLOSURE

76. A landfill's containment system includes its base liner, and, after closure, its final cover. Title 27, section 20950(a)(2)(A).1 states, in part:

Closure — for landfills ... and surface impoundments closed as landfills, the goal of closure, including but not limited to the installation of a final cover, is to minimize the infiltration of water into the waste, thereby minimizing the production of leachate and gas. For such Units, after closure, the final cover constitutes the Unit's principal waste containment feature....

The Title 27 prescriptive design for a Class III landfill is shown in Attachment G.

77. The Central Valley Water Board is authorized to approve an engineered alternative to Title 27 prescriptive standards (see, e.g., Title 27, § 20330, subd. (c)), provided that the Dischargers demonstrate that compliance with the prescriptive standard would be unreasonably and unnecessarily burdensome in comparison to the proposed alternative. (Title 27, § 20080, subds. (b), (c); State Water Board Resolution 93-62).
78. The JTD included a May 2018 revised Preliminary Closure and Partial Final Closure and Postclosure Maintenance Plan (PC/PFC/PMP) describing plans for vertical expansion of the landfill and installation of a continuous cover over both units (LF-1 and LF-2).¹⁹ The PC/PFC/PMP proposes partial final closure of the landfill in 12 phases, including the two phases completed under previous WDRs. Each of the next 10 phases will be completed upon reaching final waste grades for that phase with estimated completion of the final phase in 2031. Estimated dates for each closure phase are provided in the table below.

Phase	WMU	Area (Acres)	Est. Closure Date
1 ¹	LF-2	9.11	20 April 2015 ¹
2		15.77	31 October 2021
3		15.68	
4		7.05	31 October 2022
5/6a		6.33	2 January 2019 ¹
5/6b		10.61	31 October 2022
7	LF-1	10.14	31 October 2023
8		11.13	
9		24.43	31 October 2024
10		12.85	31 October 2026
11		11.21	31 October 2027
12		22.54	31 October 2031
Total Area:		156.85	

1. Actual dates provided for the two closure phases already completed.

The locations and grading of each closure phase are shown in Attachment H: Closure Phases.

79. Per the PC/PFC/PMP, the Dischargers propose phased closure of LF-1 and LF-2 in accordance with the engineered alternative final cover designs approved under previous

¹⁹. See 3 May 2018 revised Preliminary/Partial Final Closure and Postclosure Maintenance Plan prepared by SCS Engineers.

WDRs (Order R5-2012-0107), as specified in Attachment G. Details as to the demonstrations made for approval of these designs, including analysis supporting vertical expansion to a maximum elevation of 97 feet MSL, are contained in previous WDRs. Additional information supporting the proposed vertical expansion to 140 feet MSL per Finding 6.a was provided in the 2018 JTD.

80. The Dischargers have adequately demonstrated that construction of final cover over LF-1 and LF-2 in accordance with the Title 27 prescriptive standard would be unreasonably and unnecessarily burdensome in comparison to the proposed engineered alternative. The Dischargers have further demonstrated that the proposed engineered alternatives described in Attachment G are consistent with the performance goals of the prescriptive standard, as described above and will afford at least equivalent water quality protection.
81. The proposed final cover slopes specified in Attachment H are within Title 27 limits (i.e., 1¾ horizontal ft. for every 1 ft. of vertical gain) and will include a 15-foot wide bench at minimum for every 50 feet of vertical gain. (See Title 27, § 21090, subd. (a).)
82. As described in Finding 26, the slope stability analysis supporting the proposed vertical expansion needs to be revised to incorporate updated seismic hazard analysis. These WDRs require that the Dischargers submit the updated slope stability analysis (as an amendment or revision to the PC/PFC/PMP) for Water Board staff approval and that the landfill not be developed above the previously approved maximum elevation of 97 feet MSL absent approval of the amended/revised PC/PFC/PMP. The May 2018 revised PC/PFC/PMP, including proposed engineered alternative final cover designs for LF-1 and LF-2 and partial closure timetable, are, however, conditionally approved subject to approval of the required amendment to the plan. See Closure and Postclosure Specification E.1.

LANDFILL POST-CLOSURE MAINTENANCE

83. The PC/PFC/PMP also includes plans for post-closure maintenance of each closed phase for the entire post-closure maintenance period of at least 30 years, and until it is demonstrated that the Facility no longer poses a threat to the public health and safety and the environment. (See Title 27, §§ 20950(a)(1), 21180(a).) These maintenance plans include the landfill cover, leachate collection facilities, landfill gas monitoring and control facilities, groundwater monitoring wells, the GETS, and other landfill facilities.
84. Once every five years during the post-closure maintenance period after closure of all area of the landfill, 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 after all areas of the landfill are closed (see Standard Closure and Postclosure Specification G.22, SPRR and the MRP).

FINANCIAL ASSURANCES

85. The PC/PFC/PMP includes costs estimates for closure, postclosure maintenance, and corrective action of both landfill units at the facility per Title 27 regulations, as follows:

<u>Financial Assurance Requirement¹</u>	<u>Estimated Cost (\$2018)</u>
Unit Closure – T27, sections 21820 & 22206	\$9,263,100
Post-Closure Maintenance – T27 sections 21840 & 22210–22212	\$4,133,790
Corrective Action – T27, sections 20380(b) ² , 22101, 22220, 22221 & 22222 ²	\$1,760,769 ³

1. CalRecycle sections of Title 27, except where footnoted.
2. SWRCB section of Title 27.
3. Amount represents escalation of 10 October 2002 estimate of \$1,339,800.

As footnoted in the above table, the corrective action cost estimates included in the PC/PFC/PMP are from 2002, and therefore not reflective of changes at the site since 2002. These WDRs require that the Dischargers submit an updated PC/PFC/PMP, with updated corrective action cost estimates, for Executive Officer approval. See Closure and Postclosure Specification E.1.b, Financial Assurances Specification F.4, and Time Schedule I.B.

86. Title 27, sections 22101 and 22102 require a non-water release corrective action cost estimate. The Dischargers submitted an 11 May 2012 cost estimate that included a site-specific cost estimate pursuant to Title 27, sections 22101(b)(2) and 22102. The Discharger's site-specific estimate included costs for releases associated with seismic induced slope failure, failure due to excessive precipitation, and fire. The highest of the costs estimates for these events was \$310,560 (\$481,106 in 2018 dollars) or seismic induced slope failure of a section of the steepest portion of the final cover. Title 27, section 22221(b) requires the Dischargers to demonstrate financial responsibility for the greater of the cost estimates for the water release and non-water release corrective action costs. The greater of these is the water release cost estimate in Finding 85, above.
87. This Order requires the Dischargers to maintain financial assurances with CalRecycle based on the currently-approved cost estimates for closure, postclosure maintenance, and corrective action, as annually adjusted for inflation, consistent with applicable Title 27 regulations (e.g., as listed in the table in Finding 85). Actual funding of the mechanism may be reduced as funds are spent on these items per applicable Title 27 regulations. See Financial Assurance Specifications.
88. In an 18 May 2018 letter to the Dischargers, CalRecycle confirmed that the Dischargers currently maintains a Trust Fund Agreement in support of closure, postclosure

maintenance, and corrective action costs and is adequately funded per Title 27 requirements.

OTHER REGULATORY CONSIDERATIONS

89. The following environmental documents relevant to this Order have been prepared in accordance with the California Environmental Quality Act (CEQA) (Pub. Resources Code, § 21000 et seq.); and the CEQA Guidelines (Cal. Code Regs., tit. 14, § 15000 et seq.).
 - a. On 25 April 1996, the City of Sacramento Planning Commission certified a final negative declaration for expansion of the landfill facility to develop LF-2. The negative declaration proposed mitigation measures for potential environmental impacts to water quality and the Central Valley Water Board considered these potential impacts and provided requirements in previous WDRs.
 - b. On 19 July 2012, the Sacramento County Division of Environmental Review and Assessment certified a Negative Declaration for a 12-foot vertical expansion of the landfill to a maximum elevation of 97 feet MSL per previous (2012) WDRs.
 - c. On 14 March 2019, the City of Sacramento Planning Commission certified a Negative Declaration for a further vertical expansion of the landfill to a maximum elevation of 140 feet MSL as authorized under these WDRs.
90. On 13 December 2018, the City of Sacramento (City), as “lead agency” under CEQA, circulated a Negative Declaration in connection with proposed modifications to the Dischargers’ conditional use permit (CUP) that would permit vertical expansion of existing landfill units at the Facility. This Negative Declaration was subsequently adopted by the City when it approved the modifications on 14 March 2019. On 15 March 2019, the City filed a Notice of Determination (NOD) with the Office of Planning and Research (OPR) and Sacramento County Clerk. (See Pub. Resources Code, § 21152, subd. (a).) At the time this Order is adopted, the limitations period for seeking judicial review has lapsed. (See *id.*, § 21167.)
91. The Central Valley Water Board was duly consulted as part of the City’s environmental review process, and the issuance of revised WDRs was actually considered as part of the City’s project. (See Initial Study, p. 5.) Moreover, none of the conditions for preparation of a subsequent Environmental Impact Report (EIR) are present here. (See Cal. Code Regs., tit. 14, § 15162.) Accordingly, the Central Valley Water Board, as a “responsible agency,” is entitled to rely on the City’s Negative Declaration. (*Id.*, § 15131.) No further environmental review is required.
92. This order implements the prescriptive standards and performance goals Title 27; State Water Resources Control Board’s (State Water Board) Resolution 93-62 (*Policy for Regulation of Discharges of Municipal Solid Waste*); and applicable provisions of Subtitle D (i.e., 40 C.F.R. part 258).
93. The State Water Board’s *Statement of Policy with Respect to Maintaining High Quality Waters in California*, Resolution 68-16 (*Antidegradation Policy*) prohibits the Central

Valley Water Board from authorizing degradation of “high quality waters” unless it is shown that such degradation: (1) will be consistent with the maximum benefit to the people of California; (2) will not unreasonably affect beneficial uses, or otherwise result in water quality less than as prescribed in applicable policies; and (3) is minimized through the discharger’s best practicable treatment or control.

94. This Order complies with the *Antidegradation Policy* because the WDRs prescribed herein do not authorize degradation of groundwater, as explained below.

Existing water quality impacts at the Facility are principally the result of LFG, which is associated with historical discharges of small amounts of non-C&D waste. Discharges of waste authorized under this Order, particularly with the restriction of C&D only at LF-1 (see § B.1), are not expected to cause or contribute to LFG generation at LF-1 and LF-2. The Order requires adequate operational controls, including improved LFG extraction and interim cover management to prevent degradation of groundwater from landfill gas and leachate. The WDRs also require appropriate O&M plans and evaluations to address the efficacy of corrective action measures.

95. For the purposes of California Code of Regulations, title 23 (Title 23), section 2200, the Facility has a threat-complexity rating of **2-B**, where:

- a. Threat Category “2” reflects waste discharges that can impair receiving water beneficial uses, cause short-term water quality objective violations, cause secondary drinking water standard violations, and cause nuisances; and
- b. Complexity Category “B” reflects any discharger not included in Category A, with either (1) physical, chemical or biological treatment systems (except for septic systems with subsurface disposal), or (2) any Class II or Class III WMUs.

96. Water Code section 13263, subdivision (b)(1) provides that:

[T]he regional board may require that any person who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge waste within its region ... shall furnish, under penalty of perjury, technical or monitoring program reports which the regional board requires. The burden, including costs, of these reports shall bear a reasonable relationship to the need for the report and the benefits to be obtained from the reports. In requiring those reports, the regional board shall provide the person with a written explanation with regard to the need for the reports and shall identify the evidence that supports requiring that person to provide the reports.

97. The technical reports required under this Order, as well as those required under the separately issued MRP, are necessary to ensure compliance with prescribed WDRs and the provisions of Title 27.

PROCEDURAL REQUIREMENTS

98. All local agencies with regulatory jurisdiction over land-use, solid waste disposal, air pollution and public health protection have approved the use of the Facility's site for the discharge of waste to land as provided for herein.
99. The Dischargers, interested agencies, and interested persons were notified of the Central Valley Water Board's intent to prescribe the WDRs in this Order and provided an opportunity to submit their written views and recommendations at a public hearing. (Wat. Code, § 13167.5; Title 27, § 21730.)
100. The Central Valley Water Board, in a public meeting, heard and considered all comments pertaining to the discharge.

IT IS HEREBY ORDERED that, pursuant to Water Code sections 13263 and 13267, Order R5-2012-0107 is hereby rescinded (except for enforcement purposes); and the Dischargers, their agents, successors, and assigns, in accordance with Water Code division 7 (§ 13000 et seq.), shall comply with the following requirements.

A. Discharge Prohibitions

Except as otherwise expressly directed below, the Dischargers shall comply with all Standard Prohibitions (SPRRs, § C), which are incorporated herein, as well as the following.

1. Discharges of "hazardous waste" (as defined per Title 23, § 2601) to the landfill units at the Facility are strictly prohibited. The Department of Toxic Substances Control shall be immediately notified of any such discharges in violation of this Order.
2. The discharge of "designated waste" (as defined per Wat. Code, § 13173) to the landfill units at the Facility is also strictly prohibited.
3. The discharge of liquid and semi-solid wastes to LF-1 or LF-2 is prohibited, except as specified in Discharge Specification B.9 and B.10.
4. The discharge of the following wastes to LF-1 or LF-2 is specifically prohibited:
 - a. Septage and wastewater treatment plant sludge;
 - b. Putrescible wastes (e.g., garbage, food wastes, agricultural wastes); and
 - c. Treated wood waste.
5. The discharge of MSW to LF-1 is prohibited.
6. The discharge of (new) wastes to LF-1 during the wet season (1 Nov. - 30 April) is generally prohibited. Limited waste disposal operations at LF-1 during dry periods in the wet season may be conducted under the Interim Cover O&M Plan

(required under Discharge Specification B.3.), however, as approved by Water Board staff.

7. Wastes prohibited from direct discharge to a landfill unit under this Order are also prohibited from use as alternative daily or intermediate cover at that landfill unit.

B. Discharge Specifications

Except as otherwise expressly directed below, the Dischargers shall comply with all Standard Discharge Specifications (SPRRs, § D), which are incorporated herein, as well as the following.

1. The discharge of waste to the landfill units at the Facility shall be consistent with the Title 27 classification of each unit.
2. The Dischargers shall promptly remove and relocate all waste discharged at the Facility in violation of this Order. If unable to do so, they shall submit a report to the Central Valley Water Board: explaining how the violative discharge(s) occurred, and why the waste(s) cannot be removed; and proposing waste acceptance program updates to prevent reoccurrences.
3. By **31 October 2019**, the Dischargers shall submit an Interim Cover O&M Plan consistent with the requirements of this Order for Water Board staff approval. At a minimum, the plan shall:
 - a. Describe the types, properties, and thickness of interim (i.e., daily, ADC, and intermediate) cover to be used at LF-1 and LF-2 during the wet season and dry season, as applicable;
 - b. Demonstrate how the proposed interim cover will comply with Title 27, including section 20705 (i.e., minimize storm water infiltration);
 - c. Propose measures to prevent/minimize the lateral migration of leachate from LF-2 to LF-1 in the boundary area between LF-1 and LF-2 (e.g., pick up daily cover before placement of waste, place fill at LF-2 that will promote vertical movement of leachate);
 - d. Address seasonality in waste disposal and interim cover operations consistent with Discharge Prohibition A.6 and Discharge Specification B.5.
 - e. Include all other relevant information and items described in Finding 65.

See Time Schedule I.D.a).

4. Waste disposal operations at LF-1 shall be limited to the dry season (1 May through 31 Oct.) absent approval of wet season operations during dry periods under the approved Interim Cover O&M Plan. See Discharge Prohibition A.1.

5. Prior to the wet season, LF-1 shall be covered with interim (i.e., intermediate) cover, which shall remain undisturbed for the entire wet season absent approval of wet season operations under the Interim Cover O&M Plan required under Discharge Specification B.3. Such cover shall consist of at least two feet of low permeability native cover soil ($k < 1 \times 10^{-5}$ cm/sec), absent approval of alternative interim cover per the Interim Cover O&M Plan required under Discharge Specification A.1.
6. The Dischargers shall not apply ADC materials to areas with drainage beyond contiguous landfill WMUs unless:
 - a. The Dischargers shall demonstrate that resulting runoff will not pose a threat to surface water quality (accounting for sediment and suspended solids removal in a sedimentation basin); and
 - b. The Central Valley Water Board approves of the demonstration in writing.
7. Landfill gas (LFG) condensate and leachate from landfill WMUs shall not be discharged to other WMUs unless approved in writing by the Central Valley Water Board. (See Title 27, § 20340.)
8. The percentage of MSW discharged to LF-2 shall not exceed 20 percent of the landfill unit's annual waste stream.
9. The discharge of bulk liquids to LF-2 shall be limited to LF-2 leachate applied to interior surfaces of LF-2 cover during the dry season for the purposes of dust control, as described in Finding 67.
10. The discharge of semi-solid wastes at the Facility shall be limited to the co-disposal of nonhazardous water treatment plant sludge at LF-2.
11. At the LCRS sump at LF-2, leachate shall not be discharged below -19.25 feet MSL. See Facility Specification C.7.
12. The concentration of VOCs and other non-naturally occurring organic compounds in the air stripper effluent shall be non-detect. The method detection limit for VOC analysis shall not exceed 0.5 ug/L or the lowest detection limit for a VOC using EPA Method 8260B. See MRP Section 8.a for required air stripper effluent monitoring and reporting.
13. The Dischargers shall conduct interim cover operations and manage liquids at the site in accordance with their respective O&M plans, as approved by Water Board staff.
14. The Dischargers shall implement, and update as necessary, a periodic load-checking program to ensure that unauthorized wastes are not discharged to the landfills. A copy of this program shall be kept at the facility office.

C. Facility Specifications

1. The Dischargers shall comply with all Standard Facility Specifications (SPRRs, § E) which are incorporated herein.

Groundwater Separation

2. The maximum elevation of groundwater at LF-1 shall not be allowed to exceed the lower of the following consistent with Finding 61:
 - a. -20 feet MSL; or
 - b. The lowest elevation of wastes determined based on the results of the boring investigation submitted under C.5 (as approved by Water Board C&E Unit staff) minus five feet (or an alternative minimum separation approved per Facility Specification C.3).
3. Proposals for less than minimum five-feet of separation between the lowest elevation of landfill waste and the highest anticipated elevation of groundwater (i.e., prescriptive standard) required under Title 27, section 20240 may be approved by the Executive Officer upon sufficient demonstration by the Dischargers that compliance with the five-foot prescriptive standard is infeasible per Title 27, section 20080(c) and that the proposed lesser minimum separation meets Title 27 performance standards (i.e., is adequate) per Title 27, section 20240.
4. By **31 August 2019**, the Dischargers shall submit an amended work plan addressing Water Board C&E Unit staff's comments on the well boring investigation of wastes at LF-1 per Finding 54.d. The work plan shall provide a rational as to each boring location, as well as the number of borings to be advanced for this investigation. There should be a sufficient number of borings to adequately identify the morphology of the base of waste throughout the facility. The work plan must also describe the specific methods (i.e. drilling methods) that will be used to investigate contact between the waste and the top of the water table. The Dischargers may propose the use of downhole technologies (i.e. borehole cameras) to provide additional evidence for definition of the waste contact elevation. See Time Schedule I.C.b)i.
5. By **30 November 2019**, a report documenting the results of the LF-1 well boring investigation per the approved work plan required under C.4 above. The report shall include the data necessary to support any proposed revision of the -20 feet MSL compliance elevation for groundwater separation submitted for Executive Officer approval per C.3. The report shall include a proposed monitoring network and frequency of monitoring for evaluating compliance with separation requirement in the WDRs. See Time Schedule I.C.b)ii.
6. If the LF-1 boring investigation confirms that there is less than five feet of separation between the base of waste and uppermost groundwater (i.e., the water table), the Dischargers shall, by **31 March 2020**:

- a. Implement or enhance current corrective action measures to create and maintain at least five feet of separation; or
- b. Submit the proposed demonstration under C.3 proposing alternative minimum separation, including an implementation schedule.

See Time Schedule I.C.b)iii

7. Consistent with the engineered alternative designs for groundwater separation approved under previous WDRs, the maximum elevation of groundwater at LF-2, Modules 1 and 2 shall not be allowed to exceed the minimum elevation of the base of their capillary break layers, as follows:
 - a. -20.75 MSL beneath the LCRS sump at Module 2;
 - b. -18.25 feet MSL beneath the remaining areas of Module 2; and
 - c. -18.25 feet MSL beneath Module 1.

Liquids Management

8. The Dischargers shall operate LF-2's LCRS sump pump such that the liquid elevation is maintained below -16.75 feet MSL and shall be in violation of this specification if the liquid elevation is allowed to rise above -16.25 feet MSL (the depth at which liquid on the liner system exceeds 30 centimeters).
9. The infiltration pond shall be designed, constructed, and operated to retain the total volume of precipitation from a wet season with a 100-year return period.
10. Freeboard of at least two feet shall be maintained in the infiltration pond at all times.
11. The infiltration pond, including associated facilities, shall be operated and maintained in accordance with the currently approved Liquids Disposal O&M Plan for the site. See Discharge Specification B.13.
12. By **31 May 2020**, the Dischargers shall submit the following reports for Water Board staff approval:
 - a. A feasibility study for removal, reconstruction or reconfiguration of the onsite infiltration pond. The goal of the study shall be to prevent/minimize groundwater mounding due to infiltration from the pond. See Finding 68 and Time Schedule I.C.c)i.
 - b. A feasibility study of alternatives for liquids management at the site, including the feasibility of offsite disposal of the liquids. The goal of the study shall be to identify liquids disposal methods that do not rely on onsite infiltration to groundwater as a disposal mechanism. See Finding 68 and Time Schedule I.C.c)ii.

By **30 November 2020**, the Dischargers shall submit work plans, including a list of tasks and schedule, to implement the recommendations of the above feasibility studies. See Time Schedule I.C.c)iii. All construction work shall be completed by **31 October 2022**, unless otherwise approved by Water Board C&E staff upon written request by the Discharger. See I.C.c)iv. Construction documents associated with the project work plans shall be submitted in accordance with the Construction Specifications of this Order. See Time Schedule I.A.

Corrective Action O&M

13. By **31 July 2019**, the Dischargers shall submit for C&E unit staff approval a revised/amended LFG Extraction System Improvements work plan as described in Finding 60. A report documenting implementation of improvements to the LFG extraction system per the approved work plan shall be submitted by **31 December 2019**. See Time Schedule I.C.a)i and I.C.a)ii.
14. By **28 February 2020**, the Dischargers shall submit an updated LFG Extraction System O&M plan based on improvements to the system implemented (or underway) as part of (and in response to) the EMP investigations required under Monitoring Specifications G.5 and G.6 and other applicable evaluations under these WDRs. The updated LFG Extraction System O&M plan shall include a description of plans and procedures implemented at the site to maintain the LFG extraction system in good working order and to maximize its effectiveness in controlling LFG. See Time Schedule I.D.b).
15. By **31 March 2020**, the Dischargers shall submit an updated GETS O&M plan based on improvements to the system implemented (or underway) as part of (and in response to) the EMP investigations required under Monitoring Specifications G.5 and G.6 and other applicable evaluations under these WDRs. The updated GETS O&M plan shall include a description of plans and procedures implemented at the site to maintain the GETS in good working order and to maximize its effectiveness in extracting and treating groundwater. See Time Schedule I.D.c).
16. The Dischargers shall inspect, maintain and operate the GETS and LFG extraction system in accordance with the respective O&M plans, as approved by Water Board staff.

D. Construction Specifications

Except as otherwise expressly directed below, the Dischargers shall comply with all Standard Construction Specifications and Standard Storm Water Provisions (SPRRs, §§ D, L), which are incorporated herein, as well as the following.

1. The Dischargers shall not commence final cover construction (other than preparatory earthmoving and grading) until the Central Valley Water Board has approved in writing all necessary construction plans, specifications and construction quality assurance plans related to the new liner(s) or final cover.

2. Earthen materials used in containment structures (i.e., LHC layer of final cover) shall consist of a mixture of clay and other suitable fine-grained soils which have the following characteristics, and which, in combination, can be compacted to attain the required hydraulic conductivity when installed.
 - a. At least 30 percent of the material, by weight, shall pass a No. 200 U.S. Standard sieve.
 - b. The materials shall be fine grained soils with a significant clay content and without organic matter, and which is a clayey sand, clay, sandy or silty clay, or sandy clay under a soil classification system having industry-wide use [e.g., the "SC", "CL", or "CH" soil classes under ASTM Designation: A2487-93 Standard Classification of Soils for Engineering Purposes (Unified Soil Classification System)]. See Title 27, section 20320(d).
3. The materials used for the foundation layer shall have appropriate engineering properties for a foundation layer in accordance with Section 21090(a)(1). The foundation layer shall be engineered to minimize the potential for differential settlement so as not to affect the structural integrity of the final cover.

E. Landfill Closure and Postclosure Maintenance

Except as otherwise directed below, the Dischargers shall comply with all *Standard Closure and Post-Closure Specifications* (SPRRs, § G) and closure-related *Standard Construction Specifications* (SPRRs, § F), as well as the following with respect to closure of landfills at the Facility.

1. By **31 January 2020**, the Dischargers shall submit an updated PC/PFC/PMP consistent with the requirements of this Order for Executive Officer approval, including, but not necessarily limited to, the following:
 - a. A revised landfill slope stability report, including updated seismic hazard analysis, demonstrating the stability of the proposed landfill fill plan and final cover slopes. See Finding 26; and
 - b. Updated corrective action cost estimates per Title 27, section 20380(b). See Finding 85.

See Time Schedule I.B and Section G, SPRRs.

2. The Dischargers shall close the landfill units with the final cover components proposed in its most recently-submitted PC/PFC/PMP, as conditionally approved per Finding 82 and described in Attachment F.
3. The Dischargers shall obtain revised WDRs prior to closure of any landfill with a final cover other than the one(s) approved herein.

4. During or after final cover installation, the Dischargers may perform minor modifications to problematic areas of the final cover, provided that: (a) the barrier layer of the final cover (e.g., geomembrane, GCL and/or compacted clay layer) remains intact; and (b) the Central Valley Water Board approves of such modifications.
5. If the final cover incorporates a geomembrane barrier, all edges of the final cover shall be sealed by connecting to the liner.
6. The Dischargers shall apply sufficient seed, binder and nutrients to the vegetative/erosion-resistant layer to establish the vegetation proposed in the final closure plan. The Dischargers shall also install any necessary erosion and sedimentation controls to protect vegetation while it is being established.
7. Critical interfaces of the final cover shall be laboratory-tested to ensure minimum design shear strength. The results of such testing shall be reported to the Central Valley Water Board as part of the Closure Certification Report.
8. The Dischargers shall maintain an active landfill gas extraction system for the closed landfill units 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 Dischargers and approved by the Executive Officer.

F. Financial Assurances

Except as otherwise directed below, the Dischargers shall comply with all Standard Financial Assurance Provisions (SPRRs, § H), as well as the following.

1. The Dischargers shall maintain assurances of financial responsibility with CalRecycle for the currently-approved estimated costs of landfill closure, postclosure maintenance, and corrective action for each unit, as adjusted annually for inflation, per the applicable sections of Title 27 listed in Finding 85.
2. A report regarding financial assurances, or a copy of the financial assurances report submitted to CalRecycle, shall be submitted to the Central Valley Water Board annually, no later than 1 June.
3. If CalRecycle determines that the Discharger's financial assurances for the facility are inadequate, the Dischargers shall, within 90 days of such determination:
 - a. Obtain a new financial assurance mechanism for the amount specified by CalRecycle; and
 - b. Submit a report documenting such financial assurances to CalRecycle and the Central Valley Water Board.

4. The PCPMP shall include all components required per Title 27, section 21769, subdivision (c), and include a lump sum cost estimate for:
 - a. Completion of all actions required for closure of each Facility WMU;
 - b. Preparation of detailed design specifications;
 - c. Development of a Final Closure and Post-Closure Maintenance Plan (FCPMP); and
 - d. Undertaking at least 30 years of post-closure maintenance.
5. Whenever changed conditions increase the estimated costs of closure, post-closure maintenance, and/or corrective action, Dischargers shall promptly submit an updated PCPMP to the Central Valley Water Board, CalRecycle and the LEA.

G. Monitoring Specifications

Except as otherwise directed below, the Dischargers shall comply with all applicable Standard Monitoring Specifications (SPRRs, § I) and Standard Response to Release Specifications (SPRRs, § J), as well as the following:

1. The Dischargers shall comply with all provisions of the separately issued MRP R5-2019-0044 and any subsequent revisions thereto.
2. The Dischargers shall comply with the Water Quality Protection Standard (WQPS) set forth in the operative MRP (see also Title 27, § 20390); and shall verify the compliance of each WMU with each subsequent monitoring event.
3. For each WMU, the Dischargers shall implement a groundwater, surface water and unsaturated zone detection monitoring program (DMP), including background monitoring, in accordance with Title 27, sections 20385 and 20415.²⁰ See also SPRR, Standard Monitoring Specifications I.1 et seq.
4. In lieu of separate monitoring, the Dischargers may propose a shared detection monitoring system for each unit per Title 27, section 20415(e)(3). Such approval shall require a technical demonstration to the satisfaction of the Executive Officer that the proposed shared monitoring system will enable the earliest possible detection and measurement of a release from the Unit(s).²¹ This demonstration may consider feasibility per Title 27, sections 20080(c & d) and 20380(e) and

²⁰. The unsaturated zone monitoring program at LF-1 may be limited to soil pore gas monitoring, given that the unit is unlined and relies on underlying natural geologic materials for waste containment/attenuation. See Title 27, section 20415(d)(5).

²¹. The Point of Compliance for each contiguous unit shall remain the downgradient perimeter of that unit notwithstanding approval of shared monitoring given that LF-2 did not operate or received its permit to operate and construct prior to 1 July 1991. See Title 27, section 20405(b).

shall be included in the WQPS report (or an amendment thereto) required under the MRP of this Order. See Finding 44 and MRP Sections A.1 and C.1.

5. For each WMU subject to evaluation monitoring, the Dischargers shall implement an evaluation monitoring program (EMP), including evaluation monitoring, in accordance with Title 27, sections 20385 and 20420, and Section I of the SPRRs.
6. By **31 August 2019**, the Dischargers shall submit the following reports/work plans;
 - a. A revised work plan for the EMP investigation north of the West Pit Area; and
 - b. A revised work plan for the EMP investigation south of LF-1, including the following:
 - i) A revised piezometer installation work plan (see Finding 53.c);
 - ii) An evaluation task that addresses C&E unit staff's concerns (see Finding 54.c); and
 - iii) A proposed groundwater modeling to evaluate the effectiveness of the GETS and develop an amended GETS O&M Plan.

The above EMP work plans may (or shall as appropriate) include contingent task descriptions and schedules to enable potential subsequent phases of work, and/or to address offsite property access difficulties. See Finding 55 and Time Schedule I.E.a).

7. The Dischargers shall submit certification reports documenting the results of the EMP investigations required under Monitoring Specification G.6, as follows:
 - a. By **30 November 2019**, the results of the EMP investigation north of the West Pit Area (G.6.a) per Time Schedule I.E.b);
 - b. By **30 November 2019**, the piezometer installation (G.6.b.i) and evaluation task (G.6.b.ii) results for the EMP investigation south of LF-1 per Time Schedule I.E.c); and
 - c. By **31 January 2020**, the groundwater modeling results for the EMP investigation south of LF-1 (G.6.b.iii) per Time Schedule I.E.d).

Time extension(s) of the above due dates may be granted by C&E staff to account for time needed to approve work plan(s) and/or for Dischargers to secure offsite access to conduct work.

8. For each WMU subject to corrective action, the Dischargers shall implement a corrective action program (CAP), including corrective action monitoring, in

accordance with Title 27, sections 20385, 20415 and 20430, and Section I of the SPRRs.

9. Constituents of concern (COC) in water passing through each WMU's Point of Compliance shall not exceed concentration limits specified in the operative MRP. The Point of Compliance is a vertical plane situated at the hydraulically downgradient limit of each WMU, extending through the uppermost underlying aquifer. (See Title 27, §§ 20164, 20405.)
10. The Dischargers shall continuously operate the GETS and the LFG extraction system for corrective action of releases of VOCs to groundwater from LF-1 until groundwater throughout the zone affected by the release is returned to background conditions (constituents achieve their respective concentration limits) pursuant to Title 27, section 20430, and the Dischargers demonstrates completion of the corrective action program pursuant to Title 27, section 20430(g) to the satisfaction of the Executive Officer. See also Facility Specifications C.14 and C.15.

H. General Provisions

Except as otherwise expressly directed below, the Dischargers shall comply with the Standard General Provisions (SPRRs, § K), as well as the following.

1. Notwithstanding Section G.1, the provisions of this Order shall supersede any contrary provision in MRP R5-2019-0044 and revisions thereto.
2. The Dischargers shall comply with all applicable provisions of Title 27 and Code of Federal Regulations, title 40, part 258, including those not specifically referenced in this Order.
3. Measures implemented as part of a Corrective Action Program (e.g., landfill gas or groundwater extraction) shall not be terminated without express written approval by the Executive Officer. Central Valley Water Board staff shall be notified of all extraction system shutdowns lasting longer than 72 hours. For the purposes of this provision, "terminated" does not include:
 - a. Extraction system shutdowns of less than 72 hours (e.g., routine maintenance); and
 - b. Planned periods of extraction system nonoperation, if previously approved in writing by Central Valley Water Board staff.
4. The Dischargers shall ensure that operating personnel are familiar with this Order (including all attachments and SPRRs) and the operative MRP, both of which shall be kept onsite and made available at all times to operating personnel and regulatory agency personnel.
5. All reports and monitoring data shall be submitted online in an appropriately-formatted file via the State Water Board's **GeoTracker**

Database, at <http://geotracker.waterboards.ca.gov>. (Title 23, §§ 3892(d), 3893.) Additional information regarding electronic submittals is accessible through the “Information” tab on the GeoTracker homepage. After uploading a document via GeoTracker, the submitting party shall notify Central Valley Water Board staff via email at centralvalleysacramento@waterboards.ca.gov, including the following information body of the email:

Attention:	Title 27 Compliance & Enforcement Unit <i>or</i> Title 27 Permitting Unit
Report Title:	[title of submitted report]
Discharger:	L and D Landfill Limited Partnership <i>or</i> Fruitridge Road Land Company
Facility:	L and D Landfill
County:	Sacramento
CIWQS ID:	235670

6. All reports and workplans that involve planning, investigation, evaluation, or design, or other work requiring interpretation and proper application of engineering or geological sciences, shall:
 - a. Be prepared by, or under the direction of, professionals registered to practice in California pursuant to Business and Professions Code sections 6735, 7835 and 7835.1; and
 - b. Bear the signature(s) and seal(s) of the responsible registered professional(s) described above.

I. Time Schedule

The Dischargers shall complete all tasks according to the time schedule set forth below.

<u>Task</u>		<u>Compliance Date</u>
A.	Construction	
a)	Submit construction and design plans, including quality assurance (CQA) plan for review and approval.	90 days prior to proposed construction date
b)	Submit a construction report for review and approval upon completion demonstrating construction in accordance with approved construction plans.	Within 60 days of completing construction

B.	Closure Plans	
a)	Submit for approval an updated PC/PFC/PMP (including updated slope stability analysis and corrective action cost estimates) per Closure and Postclosure Specification E.1.	31 January 2020
C.	FACILITY	
a)	LFG Extraction System:	
i.	Submit for approval a revised/amended LFG Extraction System Improvements work plan per Facility Specification C.13.	31 July 2019
ii.	Submit for approval report documenting LFG Extraction System Improvements per the above work plan and Facility Specification C.13.	31 December 2019
b)	LF-1 Boring Log Investigation:	
i.	Submit for approval amended work plan for boring log investigation of LF-1 waste per Facility Specification C.4.	31 August 2019
ii.	Submit for approval results of approved LF-1 boring log investigation per Facility Specification C.5	30 November 2019
iii.	Implement measures to achieve/maintain at least five feet of groundwater separation or submit demonstration of proposed alternative minimum separation per Facility Specification C.6.	31 March 2020
c)	Liquids Management:	
i.	Submit for approval Feasibility Study to remove, re-construct, or reconfigure onsite infiltration basin per Facility Specification C.12.a.	31 May 2020
ii.	Submit for approval Feasibility Study for alternate liquids disposal per Facility Specification C.12.b.	31 May 2020
iii.	Submit for approval work plans to implement above feasibility studies per Facility Specification C.12.	30 November 2020

iv.	Complete construction work under approved work plans submitted under I.C.c)iii above, unless extension approved per Discharge Specification C.12.	31 October 2022 (or as otherwise approved by Water Board staff)
D.	OPERATIONS	
a)	Submit for approval Interim Cover O&M Plan per Discharge Specification B.3.	31 October 2019
b)	Submit for approval updated LFG Extraction System O&M Plan per Facility Specification C.14.	28 February 2020
c)	Submit for approval updated GETS O&M Plan per Facility Specification C.15.	31 March 2020
E.	EVALUATION MONITORING	
a)	Submit for approval amended EMP work plans per Monitoring Specification G.6.	31 August 2019
b)	Submit for approval certification report documenting the results of the EMP investigation north of the West Pit Area per Monitoring Specification G.7.a	30 November 2019
c)	Submit for approval certification report(s) documenting the piezometer installation and evaluation task results for the EMP investigation south of LF-1 per Monitoring Specification G.7.b.	30 November 2019
d)	Submit for approval certification report documenting the groundwater modelling results for the EMP investigation south of LF-1 per Monitoring Specification G.7.c.	31 January 2020
F.	DETECTION MONITORING	
	Submit for approval revised Water Quality Protection Standard Report per Finding 44 and MRP Section C.1.	31 December 2019

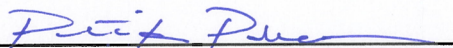
Persons aggrieved by this Central Valley Water Board action may petition the State Water Board for administrative review in accordance with Water Code section 13320, and California Code of Regulations, title 23, section 2050 et seq. To be timely, a petition must be received by the State Water Board no later than 5 pm on 30th day after the date that this Order becomes final. However, if the 30th day falls on a Saturday, Sunday or state holiday, the petition must be received by the State Water Board by 5 pm on the next business day. Copies of the law and regulations applicable to filing petitions are available online (at the address below) and will be provided upon request.

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

WASTE DISCHARGE REQUIREMENTS ORDER NO. R5-2019-0044
L AND D LANDFILL L.P.
FRUITRIDGE ROAD LAND CO.
L AND D LANDFILL
SACRAMENTO COUNTY

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I, PATRICK PULUPA, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on 6 June 2019.


PATRICK PULUPA, Executive Officer

Order Attachments

JDM

GLOSSARY OF COMMON ABBREVIATIONS, ACRONYMS & TERMS

ADC	Alternative Daily Cover
<i>Antidegradation Policy</i>	<i>Statement of Policy with Respect to Maintaining High Quality Waters in California</i> , State Water Board Resolution 68-16
bgs.....	Below Ground Surface
BPTC	Best Practicable Treatment and Control
C&D	Construction and Demotion Materials
CalRecycle.....	California Department of Resources Recovery and Recycling
CAP	Corrective Action Program
CAMP	Corrective Action Monitoring Program
CEQA	California Environmental Quality Act
CEQA Guidelines.....	California Code of Regulations, Title 14, section 15000 et seq.
C.F.R.	Code of Federal Regulations
COCs.....	Constituents of Concern
C-Soil.....	Contaminated Soil
CQA.....	Construction Quality Assurance
DEIR	Draft Environmental Impact Report
DMP	Detection Monitoring Program
DTSC.....	California Department of Toxic Substances Control
DWR	California Department of Water Resources
EC.....	Electrical Conductivity
EIR.....	Environmental Impact Report
EMP.....	Evaluation Monitoring Plan
FCPMP	<u>Final</u> Closure and Post-Closure Maintenance Plan
FEIR	Final Environmental Impact Report
FEMA.....	Federal Emergency Management Agency
GCL	Geocomposite Liner
HDPE.....	High-Density Polyethylene
JTD	Joint Technical Document
LCRS	Leachate Collection and Removal System
LEA.....	Local Enforcement Agency
LFG.....	Landfill Gas Condensate
MCE.....	Maximum Credible Earthquake
MDB&M	Mount Diablo Base and Meridian
MDL	Method Detection Limit
µg/L.....	Micrograms per Liter
mg/L.....	Milligrams per Liter
MPE.....	Maximum Probable Earthquake
MSL	Mean Sea Level
MRP.....	Monitoring and Reporting Program
MSW.....	Municipal Solid Waste
MSWLF.....	Municipal Solid Waste Landfill
MW	Monitoring Well
PCPMP	<u>Preliminary</u> Closure and Post-Closure Maintenance Plan
SPRRs.....	Standard Provisions and Reporting Requirements
Subtitle D	USEPA-promulgated MSW regulations under RCRA (see 40 C.F.R. part 258)

RCRAResource Conservation and Recovery Act
ROWDReport of Waste Discharge
TDSTotal Dissolved Solids
Title 22.....California Code of Regulations, Title 22
Title 23.....California Code of Regulations, Title 23
Title 27.....California Code of Regulations, Title 27
USEPAUnited States Environmental Protection Agency
VOCsVolatile Organic Compounds
WDRsWaste Discharge Requirements
WMU.....Waste Management Unit
WQPS.....Water Quality Protection Standard

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM R5-2019-0044
FOR
L AND D LANDFILL L.P.
FRUITRIDGE ROAD LAND CO.
L AND D LANDFILL
CLASS III LANDFILLS
SACRAMENTO 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. R5-2019-0044, and the Standard Provisions and Reporting Requirements, December 2015 Edition (SPRRs). 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, evaluation, and corrective action 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 currently-approved Sample Collection and Analysis Plan and Water Quality Protection Standard (WQPS) Report.

All compliance monitoring wells established for the detection monitoring program shall constitute the monitoring points for the groundwater WQPS. Except where otherwise specified herein, all 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
A.6	Standard Observations
A.7	Solid Waste Monitoring
A.8	Corrective Action Monitoring

1. Groundwater Monitoring

The Discharger shall operate and maintain groundwater detection and corrective action monitoring systems that comply with the applicable provisions of Title 27, sections 20415 through 20430. These groundwater monitoring systems shall be certified by a California-licensed professional civil engineer or geologist as meeting the requirements of Title 27. LF-1 is in corrective action monitoring and LF-2 is in detection monitoring. This groundwater monitoring system meets the applicable requirements of Title 27, except where noted (or footnoted) that a monitoring well is needed per the monitoring specifications of the WDRs.

a. Monitoring Points (See Attachment B: Site Map)

Beginning **1 July 2020**, and continuing thereafter, each landfill unit at the site shall be separately monitored as follows per WDR Monitoring Specification G3, absent approval of a shared monitoring system for each unit per Monitoring Specification G.4.

i. Landfill 1 (LF-1) – Separate Monitoring

<u>Table A.1.a.i</u>			
<u>Zone</u>	<u>Program</u>	<u>Wells</u>	<u>Location</u>
Upper	Background & Corrective Action ¹	MWs-30R & 31R	Upgradient
	Detection & Corrective Action	MWs-18 through 24 and 33 ²	Downgradient Perimeter
	Corrective Action/Evaluation Monitoring	MWs-15S, 16S, 32S, 34, 35 and 36	Downgradient Offsite
Lower	Background	--- ³	Upgradient
	Detection & Corrective Action	MWs- 8, 9, and 11	Downgradient Perimeter
	Corrective Action/Evaluation Monitoring	MW-17	Downgradient Offsite

1. Corrective action monitoring conducted for VOC release from LF-1.

2. Wells also used for groundwater extraction.

3. Background monitoring well needed at this location or approved demonstration for shared monitoring per WDR Monitoring Specifications G.3 and G.4 and Table A.1.b.

ii. Landfill 2 (LF-2) – Separate Monitoring

<u>Table A.1.a.ii</u>			
<u>Zone</u>	<u>Program</u>	<u>Wells</u>	<u>Location</u>
Upper	Background	MWs-12, 13 & 29	Upgradient
	Detection	MWs-30R & 31R ^{1,2}	Downgradient Perimeter ³
Lower	Background	MW-14	Upgradient
	Detection & Corrective Action	--- ⁴	Downgradient Perimeter

1. Wells also used for background and corrective action monitoring of LF-1.
2. Detection monitoring may alternatively be conducted per LF-1 if shared monitoring approved per WDR Monitoring Specification G.4. See Table A.1.b.
3. Additional detection monitoring well needed along southwestern perimeter of unit upgradient of LF-1 per WDR Monitoring Specification G.3.
4. Detection monitoring well needed at this location or approved demonstration for shared monitoring per WDR Monitoring Specification G.4 and Table A.1.b. (Required well may be the same as that installed per Table A.1.a.i. Footnote 3).

b. LF-1 and LF-2 – Shared Monitoring

In lieu of separate monitoring per A.1.a.i and A.1.a.ii above, the Dischargers may monitor both units contiguously with a shared monitoring system, provided the required demonstration is made to the satisfaction of the Executive Officer per WDR Monitoring Specification G.4. Such program shall include the following or an approved variant thereof.

<u>Table A.1.b</u>			
<u>Zone</u>	<u>Program</u>	<u>Wells</u>	<u>Location</u>
Upper	Background	MWs-12, 13 and 29	Upgradient of LF-2
	Corrective Action	MWs-30R & 31R ¹	Between LF-1 & LF-2 ³
	Detection & Corrective Action	MWs-18 through 24 and 33 ² ;	Downgradient Perimeter of LF-1
	Corrective Action/ Evaluation Monitoring	MWs-15S, 16S, 32S, 34, 35 and 36	Downgradient of LF-1 Offsite
	Background	MW-14	Upgradient of LF-2
Lower	Detection & Corrective Action	MWs- 8, 9, and 11 and 17	Downgradient Perimeter of LF-1
	Corrective Action/ Evaluation Monitoring	MW-17	Downgradient of LF-1 Offsite

1. Wells used for corrective action monitoring of LF-1.
2. Wells also used for groundwater extraction.
3. LF-2 detection monitoring well needed along southwestern perimeter of LF-2 upgradient of LF-1 per Table A.1.a.ii. Footnote 3, notwithstanding approval of shared monitoring system.

- c. Other wells at the site (e.g., MWs-3, 6, 7, 10, 25, 26, and 28) are required to monitored only as piezometers, as described below. Any monitoring wells or piezometers installed after the adoption of this Order shall become part of the monitoring well network, or piezometer network, respectively, and are subject to the requirements of this Order.

- d. Monitoring Schedule & Procedure

Once per quarter, the Discharger shall measure the groundwater elevation in each well/piezometer, 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).

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

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 **2017** and shall be monitored again in **2022**. 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.

- a. Soil Pore Water

- i. Monitoring Points

The unsaturated zone soil pore water monitoring network shall consist of:

WMU	Module(s)	Program	Lysimeter
LF-1	West Pit Area	Detection & Corrective Action	--- ¹
	East Pit Area		--- ¹
LF-2	1 through 7	Detection	LYS-1

1. Installation of lysimeter at these locations not required due to infeasibility. See WDR Finding 30.

ii. Monitoring Schedule & Procedure

Unsaturated zone samples shall be collected from pan lysimeter LYS-1 and shall be analyzed for the parameters and constituents listed in Table II in accordance with the specified methods and frequencies (the pan lysimeter need only be sampled when liquid is present). The LYS-1 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 with the first semiannual monitoring period under this Order in which recoverable liquid is detected, if it is detected.

b. Soil Gas/LFG

i. Monitoring Points

<u>Unit(s)</u>	<u>Well(s)</u>	<u>Location</u>	<u>Completion</u>	<u>Screen¹</u>
LF-1 & LF-2	A through E	Offsite	Triple	Shallow, Intermediate & Deep
	F, L, M-1, N-1 & O through U ²	Onsite Perimeter		
	G through K & N		Single	Cobble Layer

1. Screen depths relative to landfill waste column.

2. Perimeter methane migration monitoring wells required by Local Enforcement Agency (LEA)

ii. Monitoring Schedule & Procedure

Soil-pore gas samples shall be collected from the monitoring network listed above and analyzed in accordance with the following schedule.

Parameters	Units	Monitoring Frequency	Reporting Frequency
<i>Field Parameters¹</i>			
Methane	%	Semiannually	Semiannually
Carbon Dioxide	%	Semiannually	Semiannually
Organic Vapors	ppmv	Semiannually	Semiannually
<i>Monitoring Parameters</i>			
Volatile Organic Compounds (VOCs) ^{2,3}	µg/cm ³	Semiannually	Semiannually

1. Field gas monitoring shall be conducted using appropriate field meter(s).

2. VOC sampling shall be required in all probes in which methane detected above 1% by volume and/or total organic vapors detected above 1 ppmv during monitoring event.

3. VOC analysis shall be conducted using USEPA Method TO-15.

The Discharger shall collect, preserve, and transport samples in accordance with the quality assurance/quality control standards contained in the approved Sample Collection and Analysis Plan. Monitoring results for the unsaturated zone shall be included in monitoring reports and shall include an evaluation of potential impacts of the facility on the unsaturated zone and compliance with the Water Quality Protection Standard.

The above unsaturated zone monitoring system meets the applicable requirements of Title 27.

3. LCRS Monitoring, Leachate Seeps, and LCRS Testing

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.

a. Monitoring Points

i. LCRS

WMU	Module(s)	Program	Monitoring Point(s)
LF-1	West Pit Area	Facility	--- ¹
	East Pit Area		--- ¹
LF-2	1 through 7		LS-1 ^{2,3}

1. LF-1 not constructed with liner and LCRS.
2. LF-2 LCRS sump located at Module 2.
3. Sump facility includes automatic pump triggered by liquid level in sump.

b. Monitoring Schedule & Procedure

LF-2's LCRS sump 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 **2019**.

c. Leachate Seeps

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.

d. Annual LCRS Testing

The LCRS 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 monitoring system to monitor each surface water body that could be affected by a release from the landfill units per Title 27, section 20415(c).

a. Monitoring Points

WMUs	Module(s)	Monitoring Program	Monitoring Point(s)
LF-1 & LF-2	West Pit Area, East Pit Area, & Modules 1 through 7	Background	--- ¹
		Detection	Infiltration Basin ²
			Any future discharge to Morrison Creek ³

1. Representative background monitoring point needed at appropriate location upstream of both units.
2. This monitoring point may be eliminated when/if basin no longer used for infiltration purposes.
3. This monitoring point required for any discharge from Facility draining to Morrison Creek.

b. Monitoring Schedule & Procedure

The Discharger shall measure the freeboard level in the infiltration pond at least monthly. For surface water detection monitoring, a sample shall be collected from a representative location within the infiltration pond and analyzed for the monitoring parameters and constituents in accordance with the methods and frequency specified in Table IV. All surface water monitoring samples shall be collected and analyzed for the five-year COCs specified in Table IV every five years, beginning in **2022**.

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 problem 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 problem 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 Topographic Surveys

i. Active Units

For active units, the Discharger shall provide copies of topographic maps obtained from five-year aerial topographic surveys conducted under Title 27, section 21570(f) (10) for active landfill units/modules.

ii. Closed Units

After closure of the entire landfill facility (last phase of closure is completed), the Discharger shall conduct an initial survey and then conduct iso-settlement surveys every five years thereafter. Five-year surveys shall be used to produce an iso-settlement map accurately depicting the estimated total change in elevation of each portion of the final cover's low-hydraulic-conductivity layer. For each portion of the landfill, this map shall show the total lowering of the surface elevation of the final cover, relative to the baseline topographic map [Title 27, section 21090(e)(1 & 2)]. Reporting shall be in accordance with Section B.6 of this MRP. Based on the current estimated closure schedule, the initial postclosure topographic survey would be conducted in **2031** and the first iso-settlement survey would be conducted in **2036**.

6. 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:

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

1. Includes partially closed areas of active landfill unit.

The Standard Observations shall include:

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

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

7. Solid Waste Monitoring

The Discharger shall conduct solid waste monitoring as follows:

<u>Parameter</u>	<u>Units</u>	<u>Reporting Frequency</u>
Solid Waste		
Source(s) of material discharged	---	Semi-annually
Results of Load Checking Program ¹	---	Semi-annually
Quantity discharged	cubic yards or tons	Semi-annually
Type of material discharged ²	---	Semi-annually
Percent MSW	Percent	Semi-annually
Minimum discharge elevation	Feet above MSL	Semi-annually
Capacity of landfill/module remaining	Percent	Annually
Alternate Daily Cover (ADC)		
Quantity discharged	cubic yards or tons	Semi-annually
Type of material discharged ^{2,3}	---	Semi-annually
Percent MSW	Percent	Semi-annually

1. The WDRs require that the discharger maintain an updated load checking program.
2. Description shall include Title 27 waste classification (i.e. nonhazardous, inert), estimated moisture content; and whether decomposable or non-decomposable.
3. Description shall also indicate the type of ADC discharged per approved Interim Cover O&M Plan.

8. Additional Corrective Action Monitoring

The Discharger shall conduct corrective action monitoring to demonstrate the effectiveness of the Corrective Action Program (CAP) in accordance with Title 27, section 20430 and this MRP.

a. Groundwater Extraction and Treatment System

The Discharger shall operate and maintain the groundwater extraction and treatment system (GETS) in accordance with the most recently approved GETS O&M Plan to remove VOCs from the groundwater and prevent migration of the plume. The Discharger shall record and monitor the following for the GETS:

- i. Hours of operation for the treatment system and any periods of non-operation for each extraction well.
- ii. Volume of groundwater extracted and average weekly flow rate for each extraction well.
- iii. Volume of groundwater extracted and average weekly flow rate for the groundwater treatment system.
- iv. The results of quarterly monitoring of the influent and effluent of the air stripper treatment system for VOCs by EPA Method 8260B.
- v. The results of quarterly and semiannual inspection and maintenance of the GETS per the GETS O&M Plan.
- vi. A description of the maintenance work conducted on each well and the treatment system during the monitoring period.

b. Landfill Gas Extraction System

The Discharger shall operate and maintain both the landfill gas (LFG) extraction systems, including infill and perimeter branches, to remove LFG from the landfill units and prevent migration into underlying water bearing media (unsaturated and groundwater).

i. Monitoring Points

- 1) Perimeter System Header
- 2) Infill System Header
- 3) Inlet to Gas Flare

ii. Monitoring Schedule & Procedure

Gas samples shall be collected from the above monitoring network and analyzed in accordance with the following schedule using the applicable test methods.

<u>Parameter</u>	<u>Units</u>	<u>Sampling Frequency</u>	<u>Reporting Frequency</u>
<i>Field Parameters^{1,2}</i>			
Flow rate ²	cu ft/min	Monthly	Semiannually
Vacuum	psi	Monthly	Semiannually
Temperature	oF	Quarterly	Semiannually
Methane	%	Quarterly	Semiannually
Carbon dioxide	%	Quarterly	Semiannually
Oxygen	%	Quarterly	Semiannually
Organic Vapors	ppmv	Quarterly	Semiannually
<i>Monitoring Parameter²</i>			
VOCs (USEPA Method TO-15) ³	µg/cm ³	Semiannually	Semiannually
Total VOCs removed	lbs/yr	Semiannually	Semiannually
Cumulative VOCs removed	lbs	Annually	Annually

1. Field monitoring shall be conducted using appropriate measuring device for each parameter,
2. LFG shall be metered and sampled at an appropriate location along the LFG header pipe and at the gas flare.
3. VOC monitoring may be limited to gas sampling of the inlet to the LF-1 gas flare.

The Discharger shall also record and monitor the following for the LFG extraction system.

- Hours of operation and percentage of time operating since the last monitoring period for each system;
- Average flow rate for the system since the last monitoring period for each system; and
- Highest, lowest, and average methane and carbon dioxide concentrations since the last monitoring period for each system.
- Field parameters for all infill gas monitoring wells

The Discharger shall report all recorded data and conduct a comprehensive evaluation of the effectiveness of the CAP in the Annual Monitoring Report required in Section B.2.j) 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	1 August, 1 February
B.2	Annual Monitoring Report	31 December	1 February
B.3	Seep Reporting	Continuous	Immediately & 7 Days
B.4	Annual Facility Inspection Report	31 October	15 November
B.5	Major Storm Event Reporting	Continuous	7 days from damage discovery
B.6	Survey and Iso-Settlement Map for Closed Landfills	Every Five Years	At Closure Completion and Every Five Years
B.7	Financial Assurances Report	31 December	1 June

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. R5-2019-0044 and the SPRR (particularly Section I: "Standard Monitoring Specifications" and Section J: "Response to a Release"). In reporting the monitoring data required by this program, the Discharger shall arrange the data in tabular form so that the date, the constituents, the concentrations, and the units are readily discernible. The data shall be summarized in such a manner so as to illustrate clearly the compliance with waste discharge requirements or the lack thereof. Data shall also be submitted in a digital format, such as a computer disk.

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

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

The Discharger shall retain records of all monitoring information, including all calibration and maintenance records, all original strip chart recordings of continuous monitoring instrumentation, copies of all reports required by this Order, and records of all data used to complete the application for this Order. Records shall be maintained

throughout the life of the facility including the post-closure period. Such records shall be legible and shall show the following for each sample:

- 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;
- Date, time, and manner of sampling;
- Date and time that analyses were started and completed, and the name of the personnel and laboratory performing each analysis;
- Complete procedure used, including method of preserving the sample, and the identity and volumes of reagents used;
- Calculation of results; and
- Results of analyses, and the method detection limit (MDL) and practical quantitation limit (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) Quarterly groundwater elevation contour maps based on required groundwater elevation measurements for the monitoring period); and 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. Surface water reporting shall include the monthly freeboard measurements in the infiltration pond required in Section A.4 of this MRP.
- e) Laboratory statements of results of all analyses evaluating compliance with requirements.
- f) An evaluation of the concentration of each monitoring parameter (or five-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.
- 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.6 of this MRP.
- i) A summary of the solid waste monitoring program from Section A.7 of this MRP.
- j) The results of the corrective action monitoring from Section A.7 of this MRP including a discussion about the performance, inspection, and maintenance of the groundwater extraction and treatment system and results of the influent and effluent monitoring. The discussion shall include a comparison of the effluent concentration of VOCs with the effluent limits in the discharge specifications in

section B of the WDRs, including any exceedances and actions taken to prevent recurrence of any exceedances.

- k) 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 five-year COC event was performed, these parameters shall also be graphically presented. Each such graph shall plot the concentration of one or more constituents for the period of record for a given monitoring point or background monitoring point, at a scale appropriate to show trends or variations in water quality. The graphs shall plot each datum, rather than plotting mean values. Graphical analysis of monitoring data may be used to provide significant evidence of a release.
- b) An evaluation of the monitoring parameters with regards to the cation/anion balance, and a graphical presentation using a Stiff diagram, a Piper graph, or a Schoeller plot.
- c) All historical monitoring data for which there are detectable results, including data for the previous year, shall be submitted in tabular form in a digital file format such as a computer disk. The Central Valley Water Board regards the submittal of data in hard copy and in digital format as "...the form necessary for..." statistical analysis [Title 27, section 20420(h)], that facilitates periodic review by the Central Valley Water Board.
- d) Hydrographs of each well showing the elevation of groundwater with respect to the elevations of the top and bottom of the screened interval and the elevation of the pump intake. Hydrographs of each well shall be prepared quarterly and submitted annually.
- e) A comprehensive discussion of the compliance record, and the result of any corrective actions taken or planned which may be needed to bring the Discharger into full compliance with the waste discharge requirements.
- f) A map showing the area and elevations in which filling has been completed during the previous calendar year and a comparison to final closure design

contours, and include a projection of the year in which each discrete landfill module will be filled and the percent capacity remaining in each landfill or module from Section A.7 of this MRP.

- g) A written summary of the monitoring results, indicating any changes made or observed since the previous Annual Monitoring Report.
 - h) The results of the annual testing of leachate collection and removal systems required under Standard Facility Specification E.14 of the SPRRs.
 - i) Updated concentration limits for each monitoring parameter at each monitoring well based on the new data set.
 - j) A comprehensive discussion of the CAP required by this MRP under Section A.8, including the following:
 - i. Cumulative tabulated data for the corrective action system including extracted volumes and flow rates for each groundwater extraction well; hours of operation and average flow rate for the GETS and LFG extraction systems; high, low and average methane concentration for each LFG extraction system; methane concentrations for each LFG extraction well and probe; and the monitoring data for the influent and effluent for the groundwater treatment system.
 - ii. Trend analysis for VOCs and any inorganic constituents detected above the concentration limits in each corrective action well.
 - iii. Whether the groundwater extraction system is containing and preventing further migration of the VOC plume.
 - iv. Whether any portion of the VOC plume has spread since the previous monitoring period.
 - v. Any adjustments made to the pumping rates or any proposals to add additional extraction wells.
 - vi. Whether any monitoring wells have been impacted by any new VOCs.
 - vii. Whether the concentration of any VOCs, including total VOCs, has increased, decreased, or remained constant.
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 Landfill:** The Discharger shall conduct a survey and submit an iso-settlement map for the closed landfill every five years pursuant to Title 27, section 21090(e) in accordance with Section A.5.c of this MRP, above.
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 of the WDRs.

C. WATER QUALITY PROTECTION STANDARD AND COMPLIANCE PERIOD

1. Water Quality Protection Standard (WQPS) Report

For each waste management unit, the WQPS 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 report shall:

- a. Identify all distinct bodies of surface and ground water that could be (or have been) affected by a release from a WMU or portion of a unit. This list shall include the uppermost aquifer, other aquifers that could potentially be (or have been) affected by a release, 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 (or reference a separately-submitted technical report) proposing statistical methods for calculating concentration limits for monitoring parameters and constituents of concern that are detected in 10% or greater of the background data (e.g., 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 WQPS 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 propose modification of the WQPS. The WQPS shall be updated annually in the Annual Monitoring Report using new and historical monitoring data.

The WQPS Report was last revised in 2012 (27 February 2012 *Revised Water Quality Protection Standard Report*) and incorporated into previous WDRs. These WDRs require that, by **31 December 2019**, the Dischargers submit a revised WQPS Report to reflect the requirements of this Order, including, but not limited to, the need for separate detection monitoring of units absent the requisite demonstration for shared monitoring per WDR Monitoring Specification G.4 and Table A.1.b above. Such demonstration shall be included in the WQPS or an amendment thereto if (and when) shared detection monitoring is proposed. See WDR Finding 44 and Time Schedule F.1. The WQPS Report may include proposed changes or updates to the MRP, and a schedule and details associated with any proposed changes/updates.

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 WMU. The monitoring parameters for all WMUs 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 WMU and are required to be monitored every five years [Title 27, sections 20395 and 20420(g)]. The COCs for all WMUs 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 2017 *Annual Monitoring Report*, and 5-year COCs are due to be monitored again in **2022**.

4. Concentration Limits

Proposed concentration limits for all water bearing media (i.e., surface water, unsaturated zone, and groundwater) shall be included in the revised WQPS Report required under WDR Provision I.F.

For a naturally occurring constituent of concern, the concentration limit for each constituent of concern shall be determined by calculation in accordance with a statistical method pursuant to Title 27, section 20415(e)(8); or by an alternate statistical method meeting the requirements of Title 27, section 20415(e)(8)(E).

a. Detection Monitoring

- i. Non-Naturally Occurring COCs - The concentration limits for non-naturally-occurring constituents of concern, including organic compounds (e.g., VOCs and dissolved metals not detectable in background), shall be the laboratory detection limit.
- ii. Naturally Occurring COCs - The Discharger shall use interwell statistics for naturally-occurring constituents. Background data sets shall be developed for both the upper and lower aquifers beneath each unit. Each unit shall be separately monitored absent a demonstration under Title 27 that separate monitoring of the units is not feasible. The data analysis method for calculating concentration limits for naturally-occurring COCs under this Order shall be the interwell Tolerance Limit Method, or as otherwise proposed in the currently-approved WQPS Report or separate technical report reference therein. Concentration limits for naturally occurring COCs shall be updated annually and included in the Annual Monitoring Report submitted under Section B.2 i) of this MRP.

b. Corrective Action Monitoring

For wells in the corrective action program, the concentration limits represent cleanup levels to achieve background concentrations. The concentration limits for corrective action monitoring shall generally be the same as those for detection monitoring absent approval of a proposal for concentration limits greater than background (CLGBs) under Title 27 Section 20400(c) and revision of the WDRs. Time series plots and/or an intrawell statistical procedure (e.g., Mann-Kendall test) shall be used for trend analysis to monitor corrective action progress.

The monitoring data analysis methods currently used by the Dischargers for calculating concentration limits per the most recent revised WQPS Report (2012) are summarized in the Information Sheet attached to this Order. Updated concentration limits calculated using these methods, as of 2018, are as follows.

Parameter	Current Concentration Limit	Basis
pH	6.60-8.01	Parametric Tolerance Limit
Electrical Conductivity	1,219 µmhos/cm	Parametric Tolerance Limit
Total Dissolved Solids	800 mg/L	Non-Parametric Tolerance Limit
Chloride	33 mg/L	Non-Parametric Tolerance Limit
Nitrate as N	17 mg/L	Non-Parametric Tolerance Limit
Bicarbonate	750 mg/L	Non-Parametric Tolerance Limit
Sulfate	120 mg/L	Non-Parametric Tolerance Limit
Calcium	157 m/L	Non-Parametric Tolerance Limit
Magnesium	73 mg/L	Non-Parametric Tolerance Limit
Sodium	35 mg/L	Non-Parametric Tolerance Limit
Potassium	5.5 mg/L	Non-Parametric Tolerance Limit
Carbonate	4.1 mg/L (PQL)	Highest of PQL and Max Concentration
Aluminum	1,900 µg/L	Highest of PQL and Max Concentration
Antimony	100 µg/L	Highest of PQL and Max Concentration
Arsenic	48 µg/L	Highest of PQL and Max Concentration
Barium	259 µg/L	Highest of PQL and Max Concentration
Beryllium	230µg/L	Highest of PQL and Max Concentration
Cadmium	10 µg/L	PQL
Chromium	10 µg/L	PQL
Cobalt	50 µg/L	PQL
Copper	10 µg/L	PQL
Cyanide	7 µg/L	Highest of PQL and Max Concentration
Iron	50 µg/L	Highest of PQL and Max Concentration
Lead	1.0µg/L	Highest of PQL and Max Concentration
Manganese	44 µg/L	Highest of PQL and Max Concentration
Mercury	0.20 µg/L	PQL
Nickel	4.2 µg/L	PQL
Selenium	2.0 µg/L	Highest of PQL and Max Concentration
Silver	10 µg/L	PQL

5. Retesting Procedures for Confirming Evidence of a Release

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

- a. For analytes that are detected in less than 10% of the background samples (such as non-naturally occurring constituents), the Discharger shall use the non-statistical retesting procedure required in Standard Monitoring Specification I.46 of the SPRRs.
- b. For analytes that are detected in 10% or greater of the background samples (naturally occurring constituents), the Discharger shall use one of the statistical retesting procedures as required in Standard Monitoring Specification I.47 of the SPRRs.

6. Point of Compliance

The point of compliance for the WQPS at each WMU 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>
LF-1	MW-2A, 4, 5, 18, 19, 20, 21, 22, 23, 24 for the upper water-bearing zone
LF-1	MW-8, 9, and 11 for lower water-bearing zone
LF-2	MW-30R and MW-31R

The Point of Compliance shall also include any additional monitoring wells installed along the downgradient perimeter of either unit in either zone, such as footnoted in Tables A.1.a.i and A.1.a.ii.

7. Compliance Period

The compliance period for each WMU 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 WMU. 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.

I, PATRICK PULUPA, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on 6 June 2019.



PATRICK PULUPA, Executive Officer

TABLE I
GROUNDWATER DETECTION MONITORING PROGRAM

<u>Parameter</u>	<u>Units</u>	<u>Sampling Frequency</u>	<u>Reporting Frequency</u>
Field Parameters			
Groundwater Elevation	Ft. & 100ths, M.S.L.	Quarterly	Semiannual
Temperature	°F	Semiannual	Semiannual
Electrical Conductivity	umhos/cm	Semiannual	Semiannual
pH	pH units	Semiannual	Semiannual
Turbidity	Turbidity units	Semiannual ¹	Semiannual
Monitoring Parameters			
Total Dissolved Solids (TDS)	mg/L ¹	Semiannual	Semiannual
Chloride	mg/L	Semiannual	Semiannual
Carbonate	mg/L	Semiannual	Semiannual
Bicarbonate	mg/L	Semiannual	Semiannual
Nitrate - Nitrogen	mg/L	Semiannual	Semiannual
Sulfate	mg/L	Semiannual	Semiannual
Calcium	mg/L	Semiannual	Semiannual
Magnesium	mg/L	Semiannual	Semiannual
Potassium	mg/L	Semiannual	Semiannual
Sodium	mg/L	Semiannual	Semiannual
Volatile Organic Compounds (USEPA Method 8260B, short list, see Table V)	µg/L ²	Semiannual	Semiannual
Five-Year Constituents of Concern (see Table VI)			
Total Organic Carbon	mg/L	5 years	1 February 2023
Inorganics (dissolved)	µg/L	5 years	and every 5 years
Volatile Organic Compounds (USEPA Method 8260B, extended list)	µg/L	5 years	thereafter
Semi-Volatile Organic Compounds (USEPA Method 8270D)	µg/L	5 years	" "
Chlorophenoxy Herbicides (USEPA Method 8151A)	µg/L	5 years	" "
Organophosphorus Compounds (USEPA Method 8141B)	µg/L	5 years	" "

² Milligrams per liter

³ Micrograms per liter

TABLE II
UNSATURATED ZONE DETECTION MONITORING PROGRAM

Pan Lysimeter LYS-1¹

<u>Parameter</u>	<u>Units</u>	<u>Sampling Frequency</u>	<u>Reporting Frequency</u>
Field Parameters			
Electrical Conductivity	umhos/cm	Semiannual	Semiannual
pH	pH units	Semiannual	Semiannual
Volume of liquid removed	gallons	Monthly	Semiannual
Monitoring Parameters			
Total Dissolved Solids (TDS)	mg/L	Semiannual	Semiannual
Chloride	mg/L	Semiannual	Semiannual
Carbonate	mg/L	Semiannual	Semiannual
Bicarbonate	mg/L	Semiannual	Semiannual
Nitrate - Nitrogen	mg/L	Semiannual	Semiannual
Sulfate	mg/L	Semiannual	Semiannual
Calcium	mg/L	Semiannual	Semiannual
Magnesium	mg/L	Semiannual	Semiannual
Potassium	mg/L	Semiannual	Semiannual
Sodium	mg/L	Semiannual	Semiannual
Volatile Organic Compounds (USEPA Method 8260B, short list, see Table V)	ug/L	Semiannual	Semiannual
Five-Year Constituents of Concern (see Table VI)			
Total Organic Carbon	mg/L	5 years	1 February 2023
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 8270D)	ug/L	5 years	" "
Chlorophenoxy Herbicides (USEPA Method 8151A)	ug/L	5 years	" "
Organophosphorus Compounds (USEPA Method 8141B)	ug/L	5 years	" "

¹ Pan lysimeter LYS-1 shall be inspected for the presence of liquid **monthly**. If liquid is detected in a previously dry pan lysimeter, the Discharger shall verbally notify Central Valley Water Board staff within **seven days** and shall immediately sample and test the liquid for Field and Monitoring Parameters listed in Table II.

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

<u>Parameter</u>	<u>Units</u>	<u>Sampling Frequency</u>	<u>Reporting Frequency</u>
Field Parameters			
Liquid Elevation in Sump ¹	Feet and Hundredths	Weekly	Semiannual
Total Flow	Gallons	Monthly	Semiannual
Flow Rate	Gallons/Day	Monthly	Semiannual
Electrical Conductivity	umhos/cm	Quarterly	Semiannual
pH	pH units	Quarterly	Semiannual
Monitoring Parameters			
Total Dissolved Solids (TDS)	mg/L	Annually	Annually
Chloride	mg/L	Annually	Annually
Carbonate	mg/L	Annually	Annually
Bicarbonate	mg/L	Annually	Annually
Nitrate - Nitrogen	mg/L	Annually	Annually
Sulfate	mg/L	Annually	Annually
Calcium	mg/L	Annually	Annually
Magnesium	mg/L	Annually	Annually
Potassium	mg/L	Annually	Annually
Sodium	mg/L	Annually	Annually
Volatile Organic Compounds (USEPA Method 8260B, short list, see Table V)	ug/L	Annually	Annually
5-Year Constituents of Concern (see Table VI)			
Total Organic Carbon	mg/L	5 years	1 February 2023
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 8270D)	ug/L	5 years	" "
Chlorophenoxy Herbicides (USEPA Method 8151A)	ug/L	5 years	" "
Organophosphorus Compounds (USEPA Method 8141B)	ug/L	5 years	" "
LCRS Testing ³	---	Annually	Annually

¹. Sump equipped with automatic pump triggered by liquid level in sump. Liquid levels in LF-2's LCRS sump shall be measured at least weekly. Leachate in the LCRS sump shall then be sampled for all parameters and constituents in accordance with the frequencies listed in Table III whenever liquid is present.

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

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

TABLE IV
SURFACE WATER DETECTION MONITORING PROGRAM

<u>Parameter</u>	<u>Units</u>	<u>Sampling Frequency</u> ¹	<u>Reporting Frequency</u>
Field Parameters			
Freeboard in Infiltration Pond	Feet and tenths	Monthly	Semiannual
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
Monitoring Parameters			
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
Five-Year Constituents of Concern (see Table VI)			
Total Organic Carbon	mg/L	5 years	1 February 2023
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 8270D)	ug/L	5 years	" "
Chlorophenoxy Herbicides (USEPA Method 8151A)	ug/L	5 years	" "
Organophosphorus Compounds (USEPA Method 8141B)	ug/L	5 years	" "

¹ 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 (Bromomethene)
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
FIVE-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS

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

Volatile Organic Compounds, extended list:

USEPA Method 8260B

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

TABLE VI
FIVE-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
FIVE-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 8270D - base, neutral, & acid extractables

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

TABLE VI
FIVE-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS
Continued

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

TABLE VI
FIVE-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS
Continued

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-butyl nitrosamine)
N-Nitrosodiethylamine (Diethyl nitrosamine)
N-Nitrosodimethylamine (Dimethyl nitrosamine)
N-Nitrosodiphenylamine (Diphenyl nitrosamine)
N-Nitrosodipropylamine (N-Nitroso-N-dipropylamine; Di-n-propyl nitrosamine)
N-Nitrosomethylethylamine (Methylethyl nitrosamine)
N-Nitrosopiperidine
N-Nitrosopyrrolidine
5-Nitro-o-toluidine
Pentachlorobenzene
Pentachloronitrobenzene (PCNB)
Pentachlorophenol
Phenacetin
Phenanthrene
Phenol
p-Phenylenediamine
Polychlorinated biphenyls (PCBs; Aroclors)
Pronamide
Pyrene
Safrole
1,2,4,5-Tetrachlorobenzene
2,3,4,6-Tetrachlorophenol
o-Toluidine
Toxaphene
2,4,5-Trichlorophenol
0,0,0-Triethyl phosphorothioate
sym-Trinitrobenzene

TABLE VI
FIVE-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS
Continued

Chlorophenoxy Herbicides:

USEPA Method 8151A

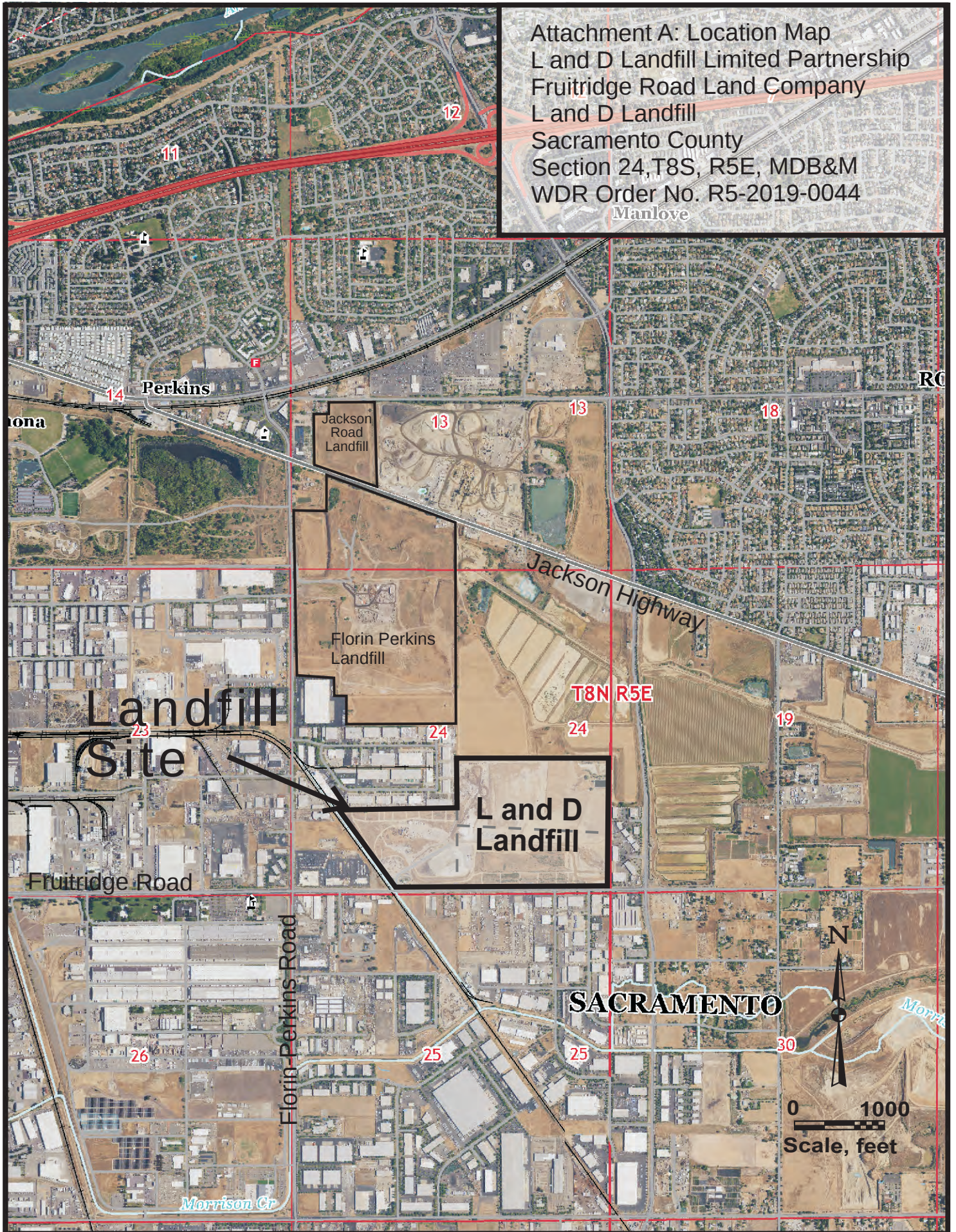
2,4-D (2,4-Dichlorophenoxyacetic acid)
Dinoseb (DNBP; 2-sec-Butyl-4,6-dinitrophenol)
Silvex (2,4,5-Trichlorophenoxypropionic acid; 2,4,5-TP)
2,4,5-T (2,4,5-Trichlorophenoxyacetic acid)

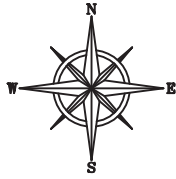
Organophosphorus Compounds:

USEPA Method 8141B

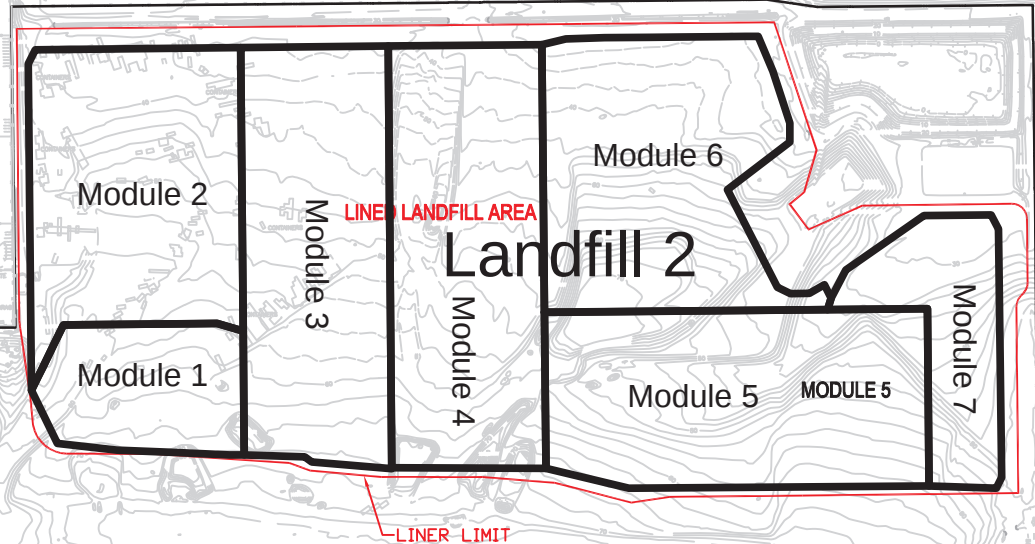
Atrazine
Chlorpyrifos
0,0-Diethyl 0-2-pyrazinyl phosphorothioate (Thionazin)
Diazinon
Dimethoate
Disulfoton
Methyl parathion (Parathion methyl)
Parathion
Phorate
Simazine

Attachment A: Location Map
L and D Landfill Limited Partnership
Fruitridge Road Land Company
L and D Landfill
Sacramento County
Section 24,T8S, R5E, MDB&M
WDR Order No. R5-2019-0044
Manlove





0 Scale, Ft. 1,000

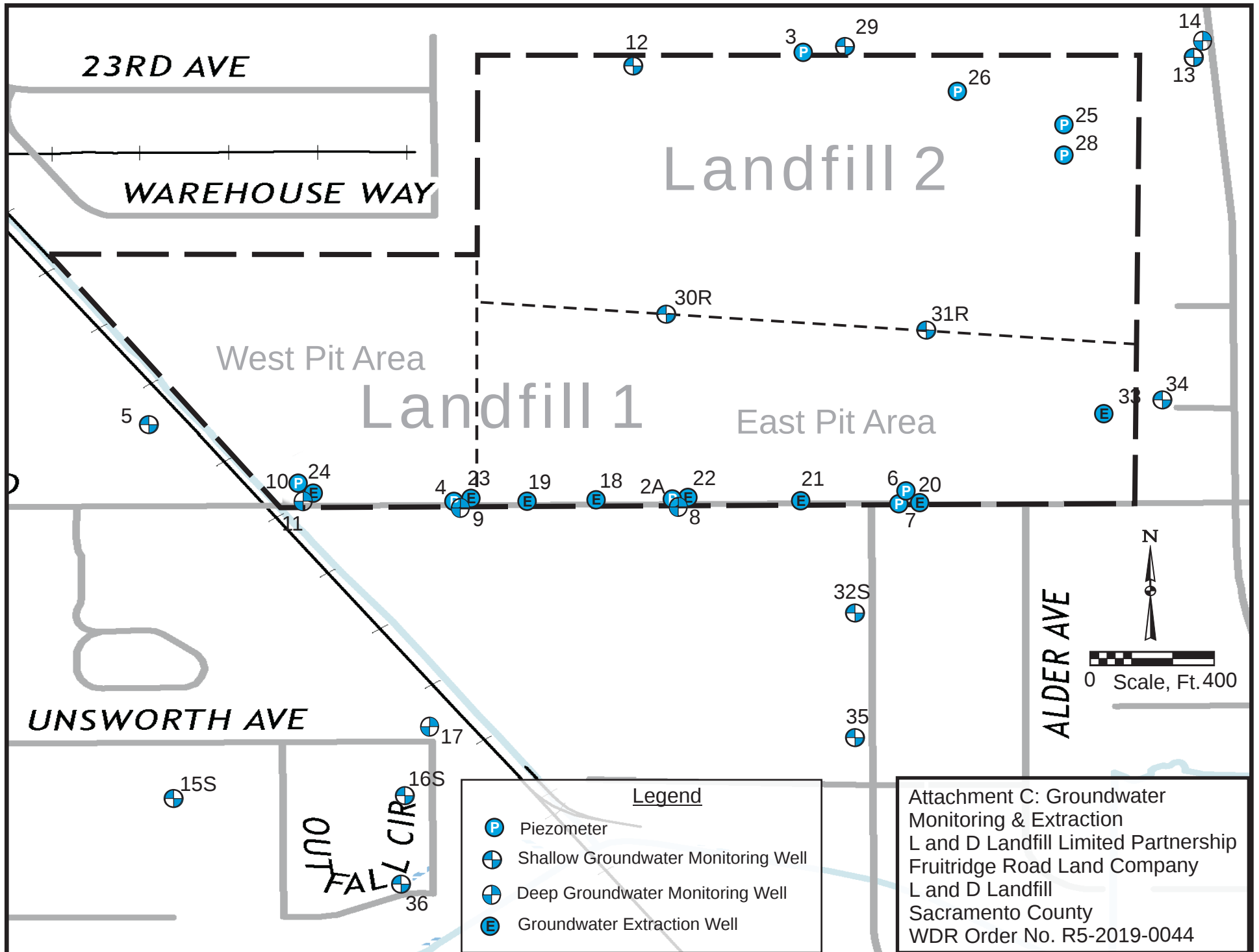


West Pit Area

Landfill 1

East Pit Area

Attachment B: Site Map
L and D Landfill Limited Partnership
Fruitridge Road Land Company
L and D Landfill
Sacramento County
WDR Order No. R5-2019-0044



Attachment C: Groundwater Monitoring & Extraction
L and D Landfill Limited Partnership
Fruitridge Road Land Company
L and D Landfill
Sacramento County
WDR Order No. R5-2019-0044

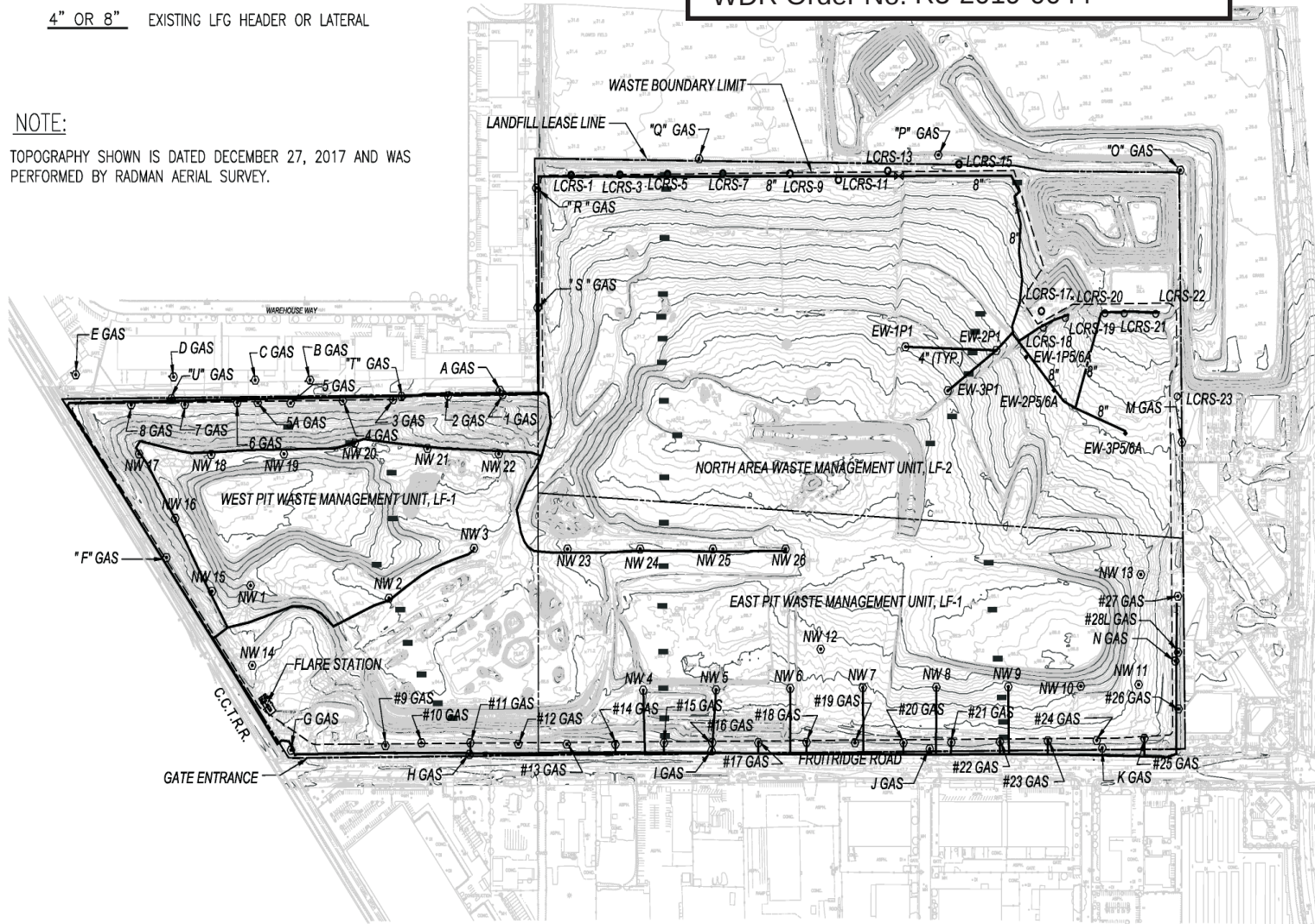
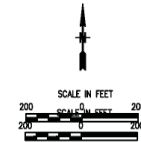
LEGEND:

- APPROXIMATE PROPERTY LEASE BOUNDARY
- APPROXIMATE WASTE BOUNDARY
- A GAS ⊙ EXISTING LFG PROBES
- NW/LW GAS ⊙ EXISTING LFG EXTRACTION WELLS
- LCRS-1 ⊙ EXISTING LCRS RISER
- 4" OR 8" EXISTING LFG HEADER OR LATERAL

NOTE:

TOPOGRAPHY SHOWN IS DATED DECEMBER 27, 2017 AND WAS PERFORMED BY RADMAN AERIAL SURVEY.

Attachment D: Gas Monitoring & Controls L and D Landfill Limited Partnership Fruitridge Road Land Company L and D Landfill Sacramento County WDR Order No. R5-2019-0044



NO.	REVISION	DATE	SHEET TITLE	PROJECT TITLE	L AND D LANDFILL LIMITED PARTNERSHIP SACRAMENTO, CALIFORNIA	DATE	SCALE	FIGURE NO.
1			LANDFILL GAS CONTROL SYSTEM	L AND D LANDFILL	SACRAMENTO, CALIFORNIA	8-29-18	AS SHOWN	12

SCS ENGINEERS		ENVIRONMENTAL CONSULTANTS		DATE: 8-29-18	
1117 J STREET, SUITE 100		SACRAMENTO, CA 95827		SCALE: AS SHOWN	
TEL: (916) 381-1297 FAX: (916) 381-1298		PROJECT NO. 07204054.02		FIGURE NO.	
DRAWN BY: ATY		CHECKED BY: ATY		DATE: 8-29-18	

Attachment E: LCRS Design
 L and D Landfill Limited Partnership
 Fruitridge Road Land Company
 L and D Landfill
 Sacramento County
 WDR Order No. R5-2019-0044

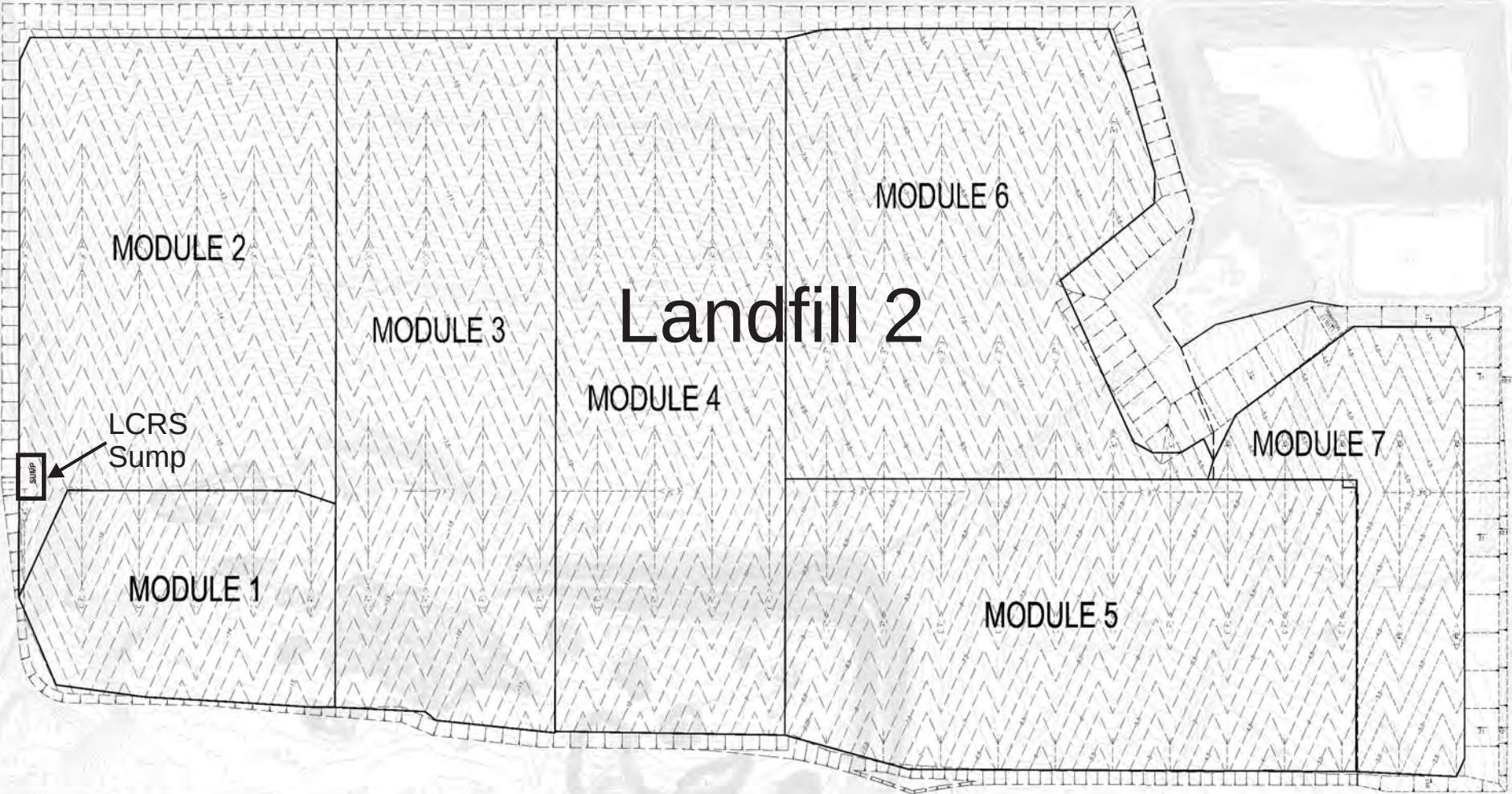


NOTES:
 RADWAY ADRA. SURVEY PLANN
 DECEMBER 22, 2018.



VICINITY MAP
 KLE

Landfill 2



The information contained herein is the property of Morton & Pitalo, Inc. and is not to be distributed or used for any other project without the written consent of Morton & Pitalo, Inc.

SCALE:	BENCH MARK
HORIZ. 1" = 80'	
VERT. 1" = N/A	

COMPUTED	
DESIGNED	MP
DRAWN	MP
PROJ. ENGR.	SP



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 CIVIL ENGINEERING • LAND PLANNING • LAND SURVEYING
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IMPROVEMENT PLANS FOR
L and D Landfill - 8635 Fruitridge Road
LF-2 BOTTOM GRADES

Sacramento, California

DATE	JANUARY 16, 2019
SHEET	1
OF	1

Attachment F: Liner Design
L and D Landfill Limited Partnership
Fruitridge Road Land Company
L and D Landfill
WDR Order R5-2019-0044

Landfill 1			
Module	Area	Base Liner	Excavation Sideslopes
West Pit	43 acres	Unlined – constructed on compacted native backfill soil	Unlined
East Pit	49 acres		

Landfill 2			
Module 1	4.1 acres	One-foot operations layer (shredded tires)	One-foot operations layer (shredded tires)
		Geotextile Filter Layer	Geotextile Filter Layer
		12-inches LCRS gravel	12-inches LCRS gravel
		60-mil HDPE geomembrane	80-mil HDPE geomembrane
		Geosynthetic clay liner (GCL)	Geosynthetic clay liner (GCL)
		Foundation layer	Foundation layer
Module 2	10.6 acres	Same as Module 1	Same as Module 1
Module 3	10.2 acres	Same as Module 1	Same as Module 1
Module 4	10.9 acres	Same as Module 1	Same as Module 1
Module 5	11.0 acres	Two-foot operations layer (shredded tires),	Two-foot operations layer (shredded tires),
		Geotextile Filter Layer	Geotextile Filter Layer
		12-inches LCRS gravel	12-inches LCRS gravel
		60-mil HDPE geomembrane	80-mil HDPE geomembrane
		Geosynthetic clay liner (GCL)	Geosynthetic clay liner (GCL)
		12-inches Soil	12-inches Soil
		Geosynthetic clay liner (GCL)	Geosynthetic clay liner (GCL)
		Foundation layer	Foundation layer
Module 6	11.8 acres	Same as Module 5	Same Module 5
Module 7	5.7 acres	Same as Module 5	Same Module 5

¹ All liner systems are composite liner systems unless otherwise noted

² LCRS – Leachate collection and removal system. All LF-2 modules drain to one common sump that is located at the southwest corner of LF-2, Module 2.

1. Title 27 Prescriptive Final Cover Design

<u>Component</u>	<u>Top Deck</u>	<u>Side Slopes</u>
Erosion Resistant Layer	≥ 1 feet vegetative cover soil	
Barrier Layer ¹ (for base liner equivalency)	Geomembrane ($k \leq 1 \times 10^{-7}$ cm/sec)	
Low Hydraulic Conductivity (LHC) Layer	≥ 1 -foot compacted clay soil ($k \leq 1 \times 10^{-6}$ cm/sec) ^{1,2,3}	
Foundation Layer	≥ 2 feet soil and/or appropriate waste materials ^{3,4}	

1. Required only for compositely-lined landfill units to prevent "bathtub" effect.
2. The permeability of the LHC layer shall not exceed that of the underlying clay soil liner or natural geologic materials, as applicable.
3. Minimum compaction of 90% of maximum dry density.
4. See WDR Construction Specification D.2.
5. See WDR Construction Specification D.3.

2. Landfill 1 - Engineered Alternative Final Cover Design¹

<u>Component</u>	<u>Top Deck</u>	<u>Side Slopes</u>
Erosion Resistant Layer	≥ 1 feet vegetative cover soil	
Drainage Layer	Geocomposite (only on 4H:1V slopes)	
LHC Layer	40 mil LDPE Geomembrane ($k \leq 1 \times 10^{-7}$ cm/sec)	
Foundation Layer	≥ 2 feet soil and/or appropriate waste materials ^{2,3}	

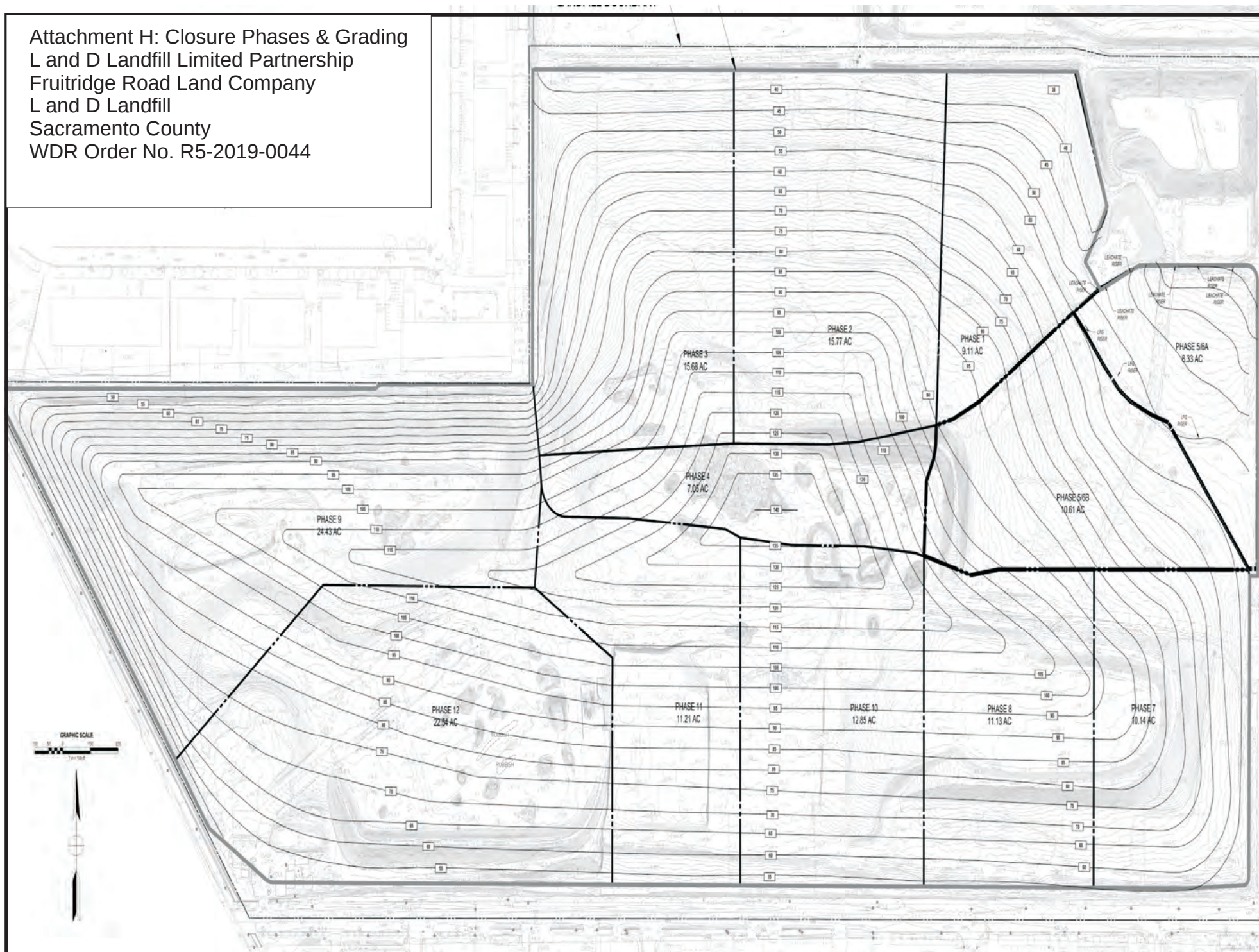
1. Design approved in previous WDR Order R5-2012-0107
2. Minimum compaction of 90% of maximum dry density.
3. See WDR Construction Specification D.3.

3. Landfill 2 - Engineered Alternative Final Cover Design¹

<u>Component</u>	<u>Top Deck</u>	<u>Side Slopes</u>
Erosion Resistant Layer	≥ 1 feet vegetative cover soil ²	
Drainage Layer	Geocomposite (only on 4H:1V slopes)	
Barrier Layer	40 mil LDPE Geomembrane ($k \leq 1 \times 10^{-7}$ cm/sec)	
LHC Layer	Geosynthetic Clay Liner (GCL) ^{1,2}	
Foundation Layer	≥ 2 feet soil and/or appropriate waste materials ^{3,4}	

1. Design approved in previous WDR Order R5-2012-0107.
2. Phases 1,2,3 and 5 designs specify two feet of vegetative coversoil..
3. GCL shall exhibit appropriate strength characteristics (hydrated) to accommodate stresses associated with specific landfill design parameters, with particular attention to interface, long-term creep, shear, and bearing capacity.
4. Minimum compaction of 90% of maximum dry density.
5. See WDR Construction Specification D.7.

Attachment H: Closure Phases & Grading
L and D Landfill Limited Partnership
Fruitridge Road Land Company
L and D Landfill
Sacramento County
WDR Order No. R5-2019-0044



INFORMATION SHEET

ORDER NO. R5-2019-0044
L AND D LANDFILL L.P.
FRUITRIDGE ROAD LAND CO.
L AND D LANDFILL
CLASS III LANDFILLS
OPERATION, CLOSURE, POST-CLOSURE MAINTENANCE,
MONITORING, AND CORRECTIVE ACTION
SACRAMENTO COUNTY

The L and D Landfill is a 177-acre landfill facility located at 8635 Fruitridge Road in Sacramento. The facility has been in operation since the late 1970s accepting primarily construction and demolition (C&D), commercial wastes, and small amounts of non-putrescible municipal solid wastes (MSW). The facility includes two landfill units referred to as Landfill 1 (LF-1) and Landfill 2 (LF-2), both developed in former gravel quarry pits. LF-1 is a 92-acre, unlined landfill unit constructed prior to 1984 on compacted low permeability native soil and LF-2 is a 64-acre Subtitle D compositely-lined unit constructed in 1996. The total area of both units is about 147 acres. Both landfill units are Class III waste management units under Title 27 regulations and MSW landfills under Subtitle D regulations.

Land uses within 1,000 feet of the facility include industrial and commercial buildings to the north, south, east, and west, and farming to north and east. On-site facilities include: the landfill areas, a runoff infiltration pond, a lined storm water pond in west pit landfill area, an active landfill gas extraction system, a landfill gas flare, an air stripper for treatment of impacted groundwater, a construction and demolition recycling facility, a green waste transfer station, and a curbside recyclable transfer station.

Storm water runoff from the landfill is routed to the infiltration pond. Local surface drainage is toward Morrison Creek about one-half mile south of the landfill. Morrison Creek is a seasonal tributary to the Sacramento River.

A 1988 Solid Waste Assessment Test investigation found that the upper aquifer at the site had been impacted by volatile organic compounds (VOCs) from LF-1. Most of the VOCs detected were chlorinated VOCs. Follow-up verification monitoring showed total VOCs up to 80 µg/L in shallow groundwater along the downgradient perimeter of the landfill. In 1993, the Dischargers installed a groundwater extraction and treatment system to contain the VOC plume and remove VOCs from the groundwater. All VOCs show declining concentrations since 2010, except for MTBE, which rose slightly. Only two VOCs, MTBE and cis-1,2-dichloroethene, were detected above trace concentrations in 2018, and none of the VOCs detected in 2018 exceeded water quality objectives.

Elevated concentrations of inorganic constituents (TDS, chloride, and sulfate) were detected downgradient of the west pit area of the landfill prior to corrective action activities. More recent data indicate the concentrations of these inorganic constituents are similar to background groundwater concentrations.

In June 2018, the Discharger submitted a Joint Technical Document (JTD), including a

proposal for vertical expansion of the landfill above previously approved limits (97 feet MSL) and a revised Preliminary Closure and Partial Final Closure and Postclosure Maintenance Plan (PC/PFC/PMP) proposing installation of a continuous cover over both units (LF-1 and LF-2).^{1,2} The PC/PFC/PMP proposes partial final closure of the landfill in twelve phases, including the two phases completed under previous WDRs. Each of the next 10 phases would be completed upon reaching final waste grades for that phase with estimated completion of the final closure phase in 2031. Estimated dates for each closure phase are provided in the table in WDR Finding 78.

These revised WDRs conditionally approve of the Dischargers plans for vertical expansion, but limit the types of waste that can be discharged to the landfill units consistent with their operation history as primarily C&D waste landfills and classifications under Title 27/Subtitle D. LF-1, for example, as an unlined landfill is not allowed to accept MSW. See WDR Discharge Prohibition A.5. LF-2 is allowed to accept up to 20 percent decomposable MSW in its waste stream consistent with historical operations. See WDR Discharge Specification B.8. The WDRs also limit operation of LF-1 to the dry season absent approval of limited wet season operations under an Interim Cover Operations and Maintenance (O&M) Plan required under the WDRs. The purpose of the Interim Cover O&M Plan is to ensure that all landfill cover operations at the site (i.e., daily, ADC and intermediate) meet Title performance standards for limiting storm water infiltration so as to minimize leachate formation that could migrate to groundwater. See WDR Discharge Specifications B.3 and B.4.

Updated O&M plans are also required for the groundwater extraction and treatment system (GETS) and landfill gas extraction system to ensure they are operated and maintained, as required under the WDRs. See Facility Specifications C.14 and C.15. Various other workplans and reports are required as a continuation of evaluation monitoring required by the Water Board's Compliance and Enforcement Unit, including north of the West Pit area of LF-1 and offsite to the south of LF-1. See WDR Monitoring Specifications G.6 and G.7. A boring log investigation to confirm the depth of waste and assess the adequacy of minimum groundwater separation at LF-1 is also required. See WDR Facility Specification C.4. Feasibility studies and work plans for retrofitting/removing the onsite infiltration basin and evaluating alternatives for liquids disposal at the site are also required with the goal of eliminating/minimizing infiltration from the basin, which appears to be causing groundwater mounding at the site. See WDR Facility Specification C.12.

Updated PC/PFC/PMP

The WDRs also require that the Discharger submit an updated PC/PFC/PMP, including updated seismic hazardous/slope stability analysis. See WDR Landfill Closure and

-
1. See 3 May 2018 revised Preliminary/Partial Final Closure and Postclosure Maintenance Plan prepared by SCS Engineers.
 2. On 14 March 2019, the City of Sacramento Planning Commission, as lead permitting agency under CEQA regulations, certified a Negative Declaration approving the proposed vertical expansion project.

Postclosure Specification E.1.a.

The updated PC/PCF/PCMP is also required to include updated corrective action cost estimates. See Landfill Closure and Postclosure Specification E.1.b.

Updated WQPS Report

The WDRs also require that the Discharger submit an updated Water Quality Protection Standard (WQPS) Report that reflects requirements of the revised WDRs, including plans for separate monitoring of LF1 and LF-2 (or a demonstration that separate monitoring of the units is not feasible and shared monitoring meets Title 27 performance standards for detection monitoring) and other issues. See WDR Finding 44 and Time Schedule I.F.

JDM

WDR ORDER R5-2019-0044

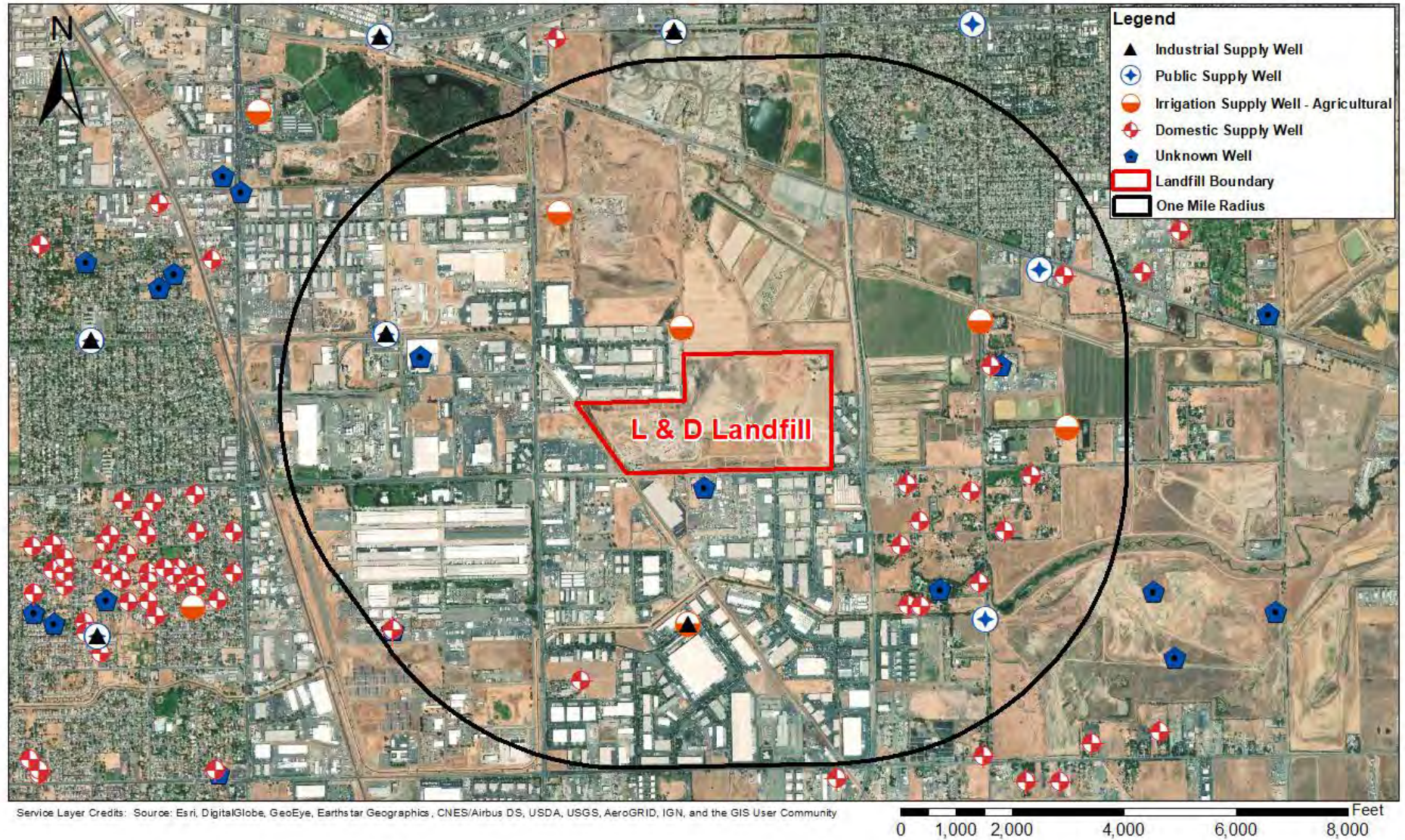
L AND D LANDFILL

L AND D LANDFILL LIMITED PARTNERSHIP

FRUITRIDGE ROAD LAND COMPANY

SACRAMENTO COUNTY

INFORMATION SHEET, ATTACHMENT I
SUPPLY WELLS WITHIN ONE-MILE
RADIUS OF LANDFILL



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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F. STANDARD CONSTRUCTION SPECIFICATIONS	8
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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)].