

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
COLORADO RIVER BASIN REGION**

ORDER R7-2019-0013

**WASTE DISCHARGE REQUIREMENTS
FOR
COUNTY OF SAN BERNARDINO, SOLID WASTE MANAGEMENT DIVISION
OWNER/OPERATOR
LANDERS SANITARY LANDFILL
CLASS III LANDFILL, CLASS II SURFACE IMPOUNDMENT,
AND CORRECTIVE ACTION
San Bernardino County**

The California Regional Water Quality Control Board, Colorado River Basin Region (Regional Water Board) finds that:

1. The County of San Bernardino, Department of Public Works, Solid Waste Management Division (Discharger) owns and operates Landers Sanitary Landfill (Facility), located at 59200 Winters Road, Landers, California 92285. The Facility consists of several different waste management units,¹ including an active, Class III municipal solid waste (MSW) landfill and an active, Class II surface impoundment with two cells.
2. These Waste Discharge Requirements (WDRs) regulating the Facility are issued pursuant to several different state and federal laws and regulations, including but not limited to: California Code of Regulations, title 27, section 20005 et seq.; 40 Code of Federal Regulations parts 257 and 258 (a.k.a., "Subtitle D"); and State Water Resources Control Board (State Water Board) Resolution 93-62, Policy for Regulation of Discharges of *Municipal Solid Waste*.
3. The Facility was previously regulated under WDRs Order R7-2009-0063. Under that order, the permitted disposal area for the active landfill (LF-2A, defined in Finding 9) was 42 acres with a design capacity of 3,083,500 cubic yards. As of August 2016, a total of 2,835,400 cubic yards in LF-2A were used. In a past Joint Technical Document (JTD) from 2011, the Discharger identified the anticipated closure date for LF-2A as 2018, though LF-2A has not closed as of the date of this Order.
4. On October 26, 2016, the Discharger submitted a document entitled *Expansion Project - Solid Waste Facility Permit Revision Application Package and Joint Technical Document, Landers Sanitary Landfill (Facility No. 36-AA-0057), County of San Bernardino*. The document contains a new JTD reflecting a proposed lateral expansion of the landfill (referred to as LF-2B) northwest of LF-2A, and a new Preliminary Closure/Postclosure Maintenance Plan. The JTD indicates that the proposed disposal area would increase to 92 acres (a 48-acre lateral expansion), with a total design capacity of 13,983,500 cubic yards and an estimated closure in the year 2072. The lateral expansion area would be lined, while the existing landfill is unlined.

¹ "Waste management unit" is as defined in California Code of Regulations, title 27, section 20164. Unless otherwise specified, all terms have the meaning specified in California Code of Regulations, title 27, division 2, subdivision 1, chapter 2, article 1.

5. In May 2017, the Discharger submitted a document entitled *Design Report – Landers Sanitary Landfill Phase 1A Groundwater Protection System Composite Liner Project*, prepared by SWT Engineering. This document contains details for the initial phase (Phase 1A) of the proposed landfill expansion. Regional Water Board staff and the Discharger exchanged a series of comment-and-response letters as part of the design evaluation process, as follows:

<u>Regional Board Comment Letters</u>	<u>Discharger Responses</u>
August 3, 2017	August 23, 2017
October 5, 2017	October 18, 2017
December 14, 2017	April 11, 2018
January 4, 2018	April 11, 2018
May 24, 2018	August 6, 2018

On September 11, 2018, Regional Water Board accepted the Discharger’s responses and modifications to the plans as adequate.

6. This Order updates the WDRs to permit construction of the initial Phase 1A portion of the proposed expansion area.² This Order and the accompanying Monitoring and Reporting Program (MRP) also require modifications to and evaluations of the prior monitoring systems. They further require the Discharger to take additional steps under the existing corrective action program.
7. This Order supersedes Order R7-2009-0063, except for enforcement purposes.

Overview of Facility and Waste Management Units

8. The Facility sits on approximately 638 acres in San Bernardino County, approximately seven miles north of Highway 62 and four miles east of Highway 247, in the southeast quarter of Section 20, southwest quarter of Section 21, northwest quarter of Section 28, and northeast quarter of Section 29, Township 2 North, Range 6 East, San Bernardino Baseline and Meridian, as shown on **Attachment A**.
9. The existing and future waste management units authorized by this Order are identified below and shown on **Attachment B**:

<u>Unit Name (General Description)</u>	<u>Area</u>	<u>Liner/LCRS¹ Components²</u>	<u>Unit Classification and Status</u>
LF-1 (Closed Landfill)	2 acres	Unlined without LCRS. ³	Class III, inactive. Cover predates current regulatory authority, but cover is in compliance with requirements for intermediate cover.
LF-2A (Existing Active)	42 acres	Unlined without LCRS. ³	Class III, active.

² The Discharger will need to apply for revised WDRs for other expansion areas to LF-2B; this Order only covers the initial Phase 1A portion.

<u>Unit Name (General Description)</u>	<u>Area</u>	<u>Liner/LCRS¹ Components²</u>	<u>Unit Classification and Status</u>
Landfill Area)			
LF-2B (Proposed Expansion of Landfill LF-2A to the Northwest)	48 acres	Composite liner with LCRS (see Findings 18 and 19 for details).	Class III, proposed.
IMP-1 (8 Closed Septage Disposal Ponds)	3.7 acres	Unlined without LCRS. ³ No cover because it was clean-closed.	Inactive. Clean closed at surface in 1998.
IMP-2 (2 Active Septage Disposal Ponds and Associated Landfarm Area)	3 acres (11.8 million gallons)	Composite liner with LCRS (see Finding 13.b for details).	Class II, active.

¹ LCRS – Leachate collection and removal system

² All liner systems are composite liner systems unless otherwise noted.

³ Waste management unit constructed prior to November 27, 1984.

10. The Facility first became subject to WDRs under Order 72-034 in 1972. The WDRs have been updated and superseded as follows:

<u>Date</u>	<u>Order Number</u>
May 18, 1983	83-037
May 12, 1988	88-071
June 26, 1991	91-028
September 15, 1993	93-071
January 8, 1998	98-003
June 26, 2002	R7-2002-0127
October 9, 2002	R7-2002-0206
September 17, 2009	R7-2009-0063

11. The U.S. Department of the Interior, Bureau of Land Management operated the Facility until November 3, 2000, when ownership was transferred to the County of San Bernardino.

Current Facility and Waste Classification

12. Inactive WMUs

- a. LF-1: This inactive landfill was used as a burn site from 1965 to 1972 and as a refuse disposal site from 1972 to 1974. It is unlined and stopped receiving waste in 1974. LF-1 became inactive prior to the effective dates of both title 27 and Subtitle D and is therefore not subject to the cover requirements contained in those regulations.

- b. IMP-1: This inactive WMU consisted of eight unlined septage ponds that were constructed on 3.7 acres in 1965 and were permitted to receive the following types of wastes: (1) septic tank pumpings; (2) chemical toilet wastes; (3) pumpings from grease traps; (4) pumpings from garage and service station oil traps; and (5) crankcase oil. These unlined ponds ceased operating in November 1995 and were clean closed at the surface in 1998.

13. Active WMUs

- a. LF-2A: This Class III, MSW landfill started accepting waste in 1965 and is permitted to receive up to 1,000 tons per day (tpd) of nonhazardous solid waste, including the following types of wastes: (1) household wastes (2) commercial solid wastes (3) construction and demolition wastes, (4) agricultural solid wastes, and (5) dewatered septic sludge. Because the waste management unit was constructed before November 27, 1984, it is an “existing” unit under California Code of Regulations, title 27, section 20080(d).
 - i. The area-fill method is currently used for waste disposal operations at LF-2A. Refuse is spread upward in layers approximately two feet thick by a landfill compactor. The working face of the landfill is typically 10 to 15 feet high and 100 feet wide. Refuse placed during the working day is covered with soil (daily cover), which is then compacted to form a minimum six-inch cover. The cover materials are from an on-site borrow source. Processed green waste, wood waste, inert waste, dried septic sludge, and geosynthetic fabrics and tarps are used as alternative daily cover.
 - ii. The active soil borrow area is located northwest of LF-2A. A former borrow area is located south of LF-2A. The active and former borrow areas are currently used as stormwater retention basins. The LF-2B lateral expansion is proposed to be constructed in the current northwestern borrow area.
- b. IMP-2: This portion of the Facility consists of two lined, Class II surface impoundments that were originally constructed in 1995. In 2009, the Discharger increased the volume capacity of the surface impoundments by raising the perimeter berms five feet and constructing a 1.2 acre drying area (Landfarm) adjacent to the surface impoundments. The modified impoundments have a maximum capacity of approximately 11.8 million gallons and are currently permitted to receive “designated waste” (defined in Water Code section 13173) of the following types: (1) septic tank pumpings; and (2) chemical toilet wastes. The surface impoundments may receive up to 200 tpd of septage.
 - i. The surface impoundments and Landfarm are underlain by a composite liner consisting of two 60-mil high-density polyethylene (HDPE) liners separated by a leachate collection and removal system (LCRS) composed of gravel with an imbedded drainage pipe. The LCRS collects liquids that penetrate the upper liner and drains them through the drainage pipe to two LCRS sumps (one for each impoundment cell) located on the north side of the impoundments. The LCRS sumps consist of 3-foot diameter vertical PVC pipes that extend to a depth of about 30 feet. The LCRS drainage pipes connect to the LCRS sumps about three feet above the bottom of the LCRS sumps. The holding capacity of each sump between the drainage pipe and the base of the sump is about 160 gallons. A manhole at the surface allows access to the LCRS sump.

- ii. The Landfarm provides an area for the aeration, treatment, and drying of septic sludge that is removed from the adjacent septic disposal ponds. Solid materials are dredged from the ponds and placed in the adjacent Landfarm area. The Landfarm liner is connected to the septage pond liner and slopes toward the surface impoundments so that liquid wastes drain directly back into the surface impoundments.
 - iii. Only septic sludge that is removed from the surface impoundments is placed in or treated at the Landfarm. Treatment of the septic sludge in the Landfarm is necessary to remove volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs) from the sludge prior to landfill disposal.
14. The Discharger has a load-checking program for identifying and removing hazardous and prohibited wastes from the municipal waste stream coming to the Facility. Specific components of the program include the following:
 - i. Customer notification by signs, notices, and verbal inquiries,
 - ii. Surveillance through visual inspection of waste loads and questioning customers by entrance station personnel, and
 - iii. Waste inspection conducted on randomly-selected loads at the working face.
15. Hazardous materials found at the Facility are stored in a hazardous materials storage shed and removed within 90 days by a hazardous waste hauler licensed by the State of California.

Facility Changes and Waste Management Unit Design

16. The Discharger proposes to construct a new lined landfill area (LF-2B) as a northwestward expansion of LF-2A, within the area currently used as a borrow source. The Discharger proposes to build the expansion area in phases, with the first phase (Phase 1A) located in the southeastern corner to the expansion area, immediately adjacent to the northwest corner of LF-2A. The location of Phase 1A is depicted in **Attachment C**.
17. The borrow area for LF-2 will expand northwestward over time, and subsequent phases of the expansion area will be constructed in the excavations created by the borrow activities. At final buildout, LF-2A and LF-2B will be a contiguous landfill (LF-2), with no liner under the original portion (LF-2A) and a California Code of Regulations, title 27-complaint liner under the expansion area (LF-2B).
18. The Discharger proposes to use an “engineered alternative” liner design rather than a prescriptive design from title 27 of the California Code of Regulations. Engineered alternatives are allowed by section 20080 of title 27 if the Discharger demonstrates that the prescriptive standard is not feasible, and an engineered alternative can meet the performance goals and water quality goals of the prescriptive liner. The Discharger indicated the clay required for the prescriptive design is not readily available in the vicinity of the Facility, and the proposed engineered alternative will be as protective of groundwater quality as the prescriptive standard. The Discharger adequately demonstrated that construction of a prescriptive standard liner under title 27 would be unreasonably and unnecessarily burdensome when compared to the proposed engineered alternative design.

19. The liner design for the bottom of the Phase 1A cell is described as follows (top to bottom):

- Waste placement zone
- Minimum 24-inch protective soil layer
- Separator geotextile layer
- LCRS composed of 9 inches of ¾-inch gravel
- Cushion geotextile layer
- 60-mil HDPE geomembrane liner
- Geotextile-backed geosynthetic clay liner (GCL) (in lieu of the two-foot thick compacted clay liner)
- 40-mil thick HDPE geomembrane liner to encapsulate the GCL
- Screened and compacted sub-layer composed of one inch minus onsite material (soil)
- Prepared subgrade

20. The liner for the side slopes of the Phase 1A cell is described as follows (top to bottom):

- Waste placement zone
- Minimum 24-inch protective soil layer
- Cushion geotextile layer
- 60-mil HDPE geomembrane liner
- Geotextile-backed GCL
- 40-mil-thick HDPE geomembrane to encapsulate the GCL
- Prepared subgrade

21. The LCRS is designed to handle at least 200% of the anticipated maximum leachate flow rate and will consist of a 9-inch thick gravel layer with 4- and 6-inch diameter HDPE drainage pipes leading to a leachate collection sump. Leachate that accumulates in the sump will be used for dust control on the cell it was obtained from.

22. Other notable changes to the Facility proposed by the Discharger include the following:

- a. A landfill gas collection system will be installed in 2019 at LF-2A to remove landfill gas constituents, which should reduce VOC impacts on groundwater.
- b. A new downgradient monitoring well to be located northeast of the expansion area was proposed in a response-to-comments letter dated October 17, 2018. The purpose of this well is to replace wells L-3, L-10 and L-14 (which were in the expansion area footprint and have been intentionally plugged and abandoned) and L-11 (which is dry).

Geologic Setting

23. The Facility lies east of the San Bernardino Mountains and north of the Little San Bernardino Mountains, in the west-central portion of the Mojave Desert geomorphic province of California, near the apex of a large alluvial fan that extends approximately 21 miles eastward from the San Bernardino Mountains to the Twentynine Palms United States Marine Corps Air Ground Combat Center. This alluvial fan complex is about 18 miles wide.

24. The Facility straddles a set of small unnamed hills composed of crystalline bedrock that protrudes out of the alluvial fan. Onsite elevations range from approximately 3,200 to 3,600

feet above mean sea level. Bedrock beneath the Facility is primarily Mesozoic gneissic metamorphosed sediments and intrusive biotite quartz monzonite. The bedrock is fractured and displays preferential weathering along the fracture surfaces. Small valleys between the bedrock highs are infilled with alluvium to a maximum thickness of about 100 feet.

25. Three groundwater basins are adjacent to the Facility: (1) the Ames Valley Groundwater Basin to the northwest, (2) the Deadman Valley Groundwater Basin on the east, and (3) the Copper Mountain Valley Groundwater Basin on the southeast. The Ames Valley Groundwater Basin is separated from the other basins by the Reche groundwater barrier. The Reche barrier is coincident with a series of northwest-trending regional faults that pass through the northeastern third of the Facility. The Reche barrier is an effective barrier to groundwater flow, with elevation differences of several hundred feet on opposite sides of the barrier.
26. Land adjacent to the Facility is zoned as rural living and rural conservation.

Faulting and Landfill Siting

27. The Facility is located in an area that is seismically active. Numerous active or potentially active faults occur within 30 miles of the Facility. A major fault zone identified beneath the Facility parallels the northwest-striking faults that transect much of the Mojave Desert Region and is referred to locally as the Nason-Dixon fault. Several fault studies have been completed at the Facility. One fault trace has been identified as potentially active during the Holocene, but the majority of the faults observed at the Facility are older than Holocene.³
28. California Code of Regulations, title 27, section 20250(d) prohibits construction of Class III landfills on top of active faults, defined as having moved during the Holocene (i.e., last 11,000 years). Class II WMUs *“shall have a 200-foot setback from any known Holocene fault. Other units (that are subject to this section) can be located within 200 feet of a known Holocene fault, provided the [Regional Water Board] finds that the Unit’s containment structures are capable of withstanding ground accelerations associated with the maximum credible earthquake.”*
29. A detailed fault study was conducted within the footprint of the Phase 1A expansion area and found one fault trace approximately 12,000 to 20,000 years old with multiple episodes of movement. The age of the most recent movement is pre-Holocene,⁴ and therefore does not preclude construction of the Phase 1A expansion area. Detailed fault investigations have not been performed in future proposed expansion areas and will need to be completed before later expansion areas can be approved.
30. A detailed evaluation was performed regarding ground accelerations anticipated for a maximum credible earthquake along the extension of the Nason-Dixon fault, assuming an onsite seismic source (the most conservative assumption). That study found that displacement of the liner system by seismically induced settlement would be within accepted

³ EMCON, 1997, *Characterization of Faulting, Landers Sanitary Landfill, San Bernardino County*, Project 20174-608.002, dated January 20, 1997.

⁴ GeoLogic Associates, 2009, *Fault Investigation, Landers Sanitary Landfill, San Bernardino County, California*, Project No. 08-0081, dated November 13, 2009.

tolerance limits.⁵ Therefore, the proposed Phase 1A expansion is not precluded by faulting.

Corrective Action Program

31. The Discharger submitted a Solid Waste Assessment Test (SWAT) report on July 5, 1989.⁶ As part of the SWAT investigation, the Discharger constructed five groundwater monitoring wells at the Facility. Wells L-1 and L-8 were considered upgradient and well L-3 was considered downgradient of LF-2A. Well L-6 was considered upgradient and well L-7 was considered downgradient of LF-1. Groundwater samples collected from downgradient monitoring well L-3 during the SWAT investigation indicated the presence of the following compounds:

<u>Parameter</u>	<u>Result (ug/L)</u>
1,1-Dichloroethane	0.6
Dichlorofluoromethane	2.4
Trichlorofluoromethane	3.6
Tetrachloroethene	0.6

32. Enforcement actions in the form of Cleanup and Abatement Orders (CAOs) and a Water Code section 13267 order have been issued for this Facility, as follows:

<u>Date</u>	<u>Order Number</u>
December 6, 1991	91-062
March 27, 1998	98-056
August 4, 2000	R7-2000-0107
July 12, 2005	13276 Order

33. CAO 91-062 directed the Discharger to: (1) investigate the vertical and lateral extent of VOCs in the groundwater, and (2) develop remedial plans to prevent further contamination and cleanup existing contamination in the groundwater.
34. In May 1996, the Discharger submitted a report by Earth Tech⁷ to address the investigation requirement of CAO 91-062. The investigation included a geophysical survey, two soil gas surveys, installation of six new monitoring wells, chemical testing of the new and existing monitoring wells, and evaluation of the data to develop a conceptual model of the Facility. This investigation found that the geology under the Facility was compartmentalized by several pre-Holocene faults, and that groundwater flow under the Facility was complex.
35. In August 1996, the Discharger submitted a report by EMCON⁸ that evaluated the vertical and lateral extent of groundwater contamination associated with IMP-1. This investigation

⁵ San Bernardino County Department of Public Works, 2018, *Response to Comment Letter #5, Review of the Proposed Landers Sanitary Landfill Phase 1A Design Report, Order R7-2009-0063, County of San Bernardino*, dated August 6, 2018.

⁶ IT Corporation, 1989, *Final Report, Solid Waste Assessment Test (SWAT), Landers Sanitary Landfill, Report for County of San Bernardino Public Works Group, Solid Waste Management Department, Project No. 240275*, June 1989.

⁷ Earth Tech, 1996, *Landers Sanitary Landfill Evaluation Monitoring Program Investigation*, May 24, 1996.

⁸ EMCON, 1996, *Phase I Investigation of Old Septage Disposal Area, Landers Sanitary Landfill, San Bernardino County*, Project No. 20174-608.001, dated August 29, 1996.

concluded that elevated nitrate, chloride, and total dissolved solids (TDS) concentrations in wells L-6, L-7, L-9, L-15 and L-16 are likely associated with infiltration of septic wastes disposed at IMP-1. The lateral extent of the affected groundwater was not fully identified.

36. CAO 98-056 directed the Discharger to: “(a) fully delineate the vertical and lateral extent of the releases to soil and groundwater, and (b) characterize the site hydrology such that an assessment of contamination pathways can be made.” CAO 98-056 required the submittal of an Engineering Feasibility Study for Corrective Action Plan (CAP), implementation of the CAP by January 15, 2000, and directed that “cleanup efforts shall continue until such time as the Regional [Water] Board[']s Executive Officer (EO) considers the site to be remediated to the fullest possible extent, based on the available technology.”
37. In April 1999, the Discharger submitted a report by EMCON⁹ that characterized the geology and hydrogeology of the Facility, including the now-proposed landfill expansion area, and characterized the nature and extent of releases from the landfill and impoundments. The scope of work included mapping of surficial geology, installation of new monitoring wells, surveys of offsite wells within 3 miles of the Facility, tests of the aquifer’s hydraulic properties, and chemical testing of soil gas and groundwater. This report confirmed that groundwater flow under the Facility was complex. Of note, this report presented a somewhat different interpretation of the flow pathways than the 1996 Earth Tech report.
38. On March 16, 2000, the Discharger submitted a report by R. T. Franklin & Associates¹⁰ that summarized a series of assessments and reports prepared in response to CAO 98-056. The report stated that two releases had been identified, one beneath IMP-1 (which was clean-closed at the surface in 1998) and another release associated with landfill gas migration of VOCs from LF-2A. These are described below:
 - a. The release from IMP-1 created an elevated mound of groundwater, resulting in groundwater flow pathways that radiate outward from IMP-1 in all directions. Constituents of concern (COCs) include chlorobenzenes (associated with chemical toilet waste), chloride, nitrate, and TDS. The groundwater mound and elevated TDS and nitrate concentrations indicated the effects were due to infiltration of waste liquids from IMP-1. Based on the interpreted groundwater flow direction to the northeast, and the lack of nitrates and TDS at elevated concentrations in wells northeast of IMP-1, the report considered the lateral extent of this release to have been defined. Corrective action measures for this area included clean-closure of the surface of IMP-1 in 1998, and “intrinsic remediation” of nitrates and TDS. Attenuation modeling predicted nitrate and TDS concentrations would approach background concentrations in 5 to 15 years (between 2003 and 2013) after clean-closure of the IMP-1 source area. Pump-and-treat remedial options were considered infeasible.
 - b. The release associated with landfill gas was not associated with a groundwater mound, was not associated with elevated TDS or nitrate, and contained compounds indicative of landfill gas (VOCs, carbon dioxide (CO₂), and methane). VOCs exceeded the Maximum Contaminant Levels (MCLs)¹¹ for drinking water at only one well (L-3). Therefore, the

⁹ EMCON, 1999, *Hydrogeologic and Geologic Characterization for the Proposed Landfill Expansion, Landers Sanitary Landfill, County of San Bernardino, California*, dated April 1999, Project 20174-608.003

¹⁰ R. T. Franklin & Associates, 2000, *Response to CAO 98-056, Landers Sanitary Landfill, San Bernardino County, California*, dated April 12, 2000.

¹¹ Primary MCLs for VOCs are found in California Code of Regulations, title 22, section 64444.

VOC impacts were considered to be limited to the area of well L-3. For VOCs, the recommendation was to continue the soil gas evaluation program through 2000 and issue a report with more complete recommendations by March 31, 2001.

39. CAO R7-2000-0107 was issued on August 4, 2000, and directed the Discharger to:

- a. Submit a proposed CAP by March 31, 2001 to remediate the impact of chloride, nitrate, and TDS in the groundwater, and implement the CAP by June 30, 2001.
- b. Complete the soil gas evaluation program and submit a supplemental report by March 31, 2001, complete an Engineering Feasibility Study (EFS) regarding corrective action to address landfill gas by June 30, 2001, submit a proposed CAP for landfill gas by August 31, 2001, and by January 31, 2002, implement the CAP to remediate all soil and groundwater pollution.

CAO R7-2000-0107 directed, "Cleanup efforts shall continue until such time as the Regional [Water] Board's Executive Officer considers the WMF to be remediated to the fullest possible extent, based on the available technology."

40. On April 12, 2002, the Discharger submitted an EFS¹² pursuant to the requirements of CAO R7-2000-0107. This EFS evaluated nine technologies: six addressing only VOCs, two addressing only inorganics (chloride, nitrate, and TDS associated with IMP-1), and one that addressed both VOC and inorganics. The EFS included discussion of groundwater movement, contaminant attenuation rates, and the distance to potential receptors of concern. The technologies were ranked based on: (1) effectiveness, (2) constructability, (3) costs, and (4) serviceability. The EFS concluded that "intrinsic remediation" was the preferred alternative based on (1) the remoteness of the site's location, (2) the slow groundwater flow rate, (3) the rapid anticipated rate of natural degradation of the pollutant compounds, and (4) the high capital and operating costs of other alternatives. The EFS predicted:

- a. The groundwater mound under IMP-1 would dissipate in about 6 years (approximately 2007),
- b. Inorganic concentrations under IMP-1 would decline to background concentration by 2013, and
- c. VOC concentrations would decline to below federal MCLs¹³ within 1,500 feet of LF-2A, and decline to below detectible levels within 2,500 feet of LF-2A.

41. The EFS also proposed adopting a Concentration Limit Greater than Background (CLGB) for VOCs equivalent to the federal MCLs at the boundary of the Facility property. California Code of Regulations, title 27, section 20400(c) allows establishment of a CLGB only if the Regional Water Board finds: (A) it is technologically or economically infeasible to achieve the background value for a constituent, and (B) the constituent will not pose a substantial present or potential hazard to human health or the environment as long as the CLGB is not exceeded. In making this determination, Regional Water Boards must consider potential

¹² GeoLogic Associates, 2001, *Engineering Feasibility Study for Corrective Action, Landers Sanitary Landfill, San Bernardino County*, dated April 12, 2001.

¹³ Federal MCLs are found at 40 C.F.R. part 141.

adverse effects on surface water and groundwater quality and beneficial uses. CLGBs must not exceed the concentrations that the Discharger demonstrates are technologically or economically achievable, and cannot be set higher than other established regulatory limits (such as the MCL).¹⁴ Information regarding the proposed establishment of CLGB must be considered in a public hearing and incorporated into the WDRs. CLGBs were not incorporated into prior WDRs for the Facility.

42. On July 12, 2005, the Regional Water Board issued a Water Code section 13267 order as a follow-up to the EFS, requiring the submittal of a technical report by October 12, 2005, to “verify that intrinsic remediation is indeed taking place and COCs are not migrating offsite,” in accordance with the predictions of the EFS. The issues to be addressed included:
 - a. Delineating the presumed preferential flow path along the fault line that traverses the Facility; and
 - b. Potential locations for “sentry” monitoring wells.
43. On September 13, 2005, a workplan¹⁵ for installing additional monitoring wells was submitted by the Discharger for review and approval. The workplan proposed installing two new monitoring wells located northeast (L-21) and southeast (L-22) of LF-2A. Well L-22 was proposed to be installed in the alignment of the fault zone that bisects the Facility. The wells were installed in 2011 and added to the monitoring network.
44. On September 17, 2009, WDRs Order R7-2009-0063 was adopted and permitted the modification of IMP-2 and creation of the Landfarm area, as discussed above. This order did not discuss or adopt CLGB.
45. On November 5, 2009, the Discharger submitted a Septage Management Plan (SMP) for the Landers Sanitary Landfill, and a revised SMP on December 28, 2009.¹⁶ The revised SMP includes monthly visual inspections of IMP-2 and its LCRS sumps but does not require the visual observations to be described in the quarterly monitoring report, or for the liquid in the sumps to be pumped out.
46. On December 20, 2018, Regional Water Board staff inspected IMP-2 to observe the methods used to detect leakage at IMP-2. Water was observed to be present in each of the LCRS sumps, with 6.56 feet in the eastern sump and 19.07 feet in the western sump. The Discharger indicated that pumping out the sumps was not part of standard operating procedure, and it is not known how long the water has been in the sumps. Water samples were obtained from each sump and analyzed for VOCs, SVOCs, metals, TDS, nitrate, chloride, and sulfate. VOCs and SVOCs were not detected and metals were detected at low concentrations. The most significant analytical results are summarized as follows (all concentrations in mg/L):

¹⁴ Notably, use of the federal MCLs as CLGBs for VOCs would be inappropriate, because some of those limits are less stringent than the state MCLs for VOCs.

¹⁵ GeoLogic Associates, 2005, *Workplan for Monitoring Well Installation, Landers Sanitary Landfill, San Bernardino County, California*, dated September 2005.

¹⁶ GeoLogic Associates, 2009, *Landers Septage Management Plan, Landers Sanitary Landfill, San Bernardino County, California, Colorado River Basin Region*, dated December 2009.

	<u>East Sump</u>	<u>West Sump</u>
Nitrate as N	310	2.4
TDS	5,700	1,400
Chloride	1,500	430
Sulfate	350	110

47. On February 15, 2019, the MRP for WDRs Order R7-2009-0063 was revised to upgrade the monitoring requirement at IMP-2, including weekly monitoring of the depth of the liquid in each LCRS sump, removal of the accumulated liquid if it exceeds 1 foot in depth, calculation of the rate at which the liquid accumulates (in gallons per day), and required responses if the accumulation rate exceeds an Allowable Leakage Rate (ALR) of 13 gallons per day per sump.
48. On April 24, 2019, the Discharger submitted monitoring data regarding LCRS for IMP-2. The west LCRS sump was dry for five consecutive measurements over a span of the two months. A leakage rate ranging between 7.55 and 30.39 gallons per day was calculated for the east LCRS sump over five measurements, with four of the measurements exceeding the ARL of 13 gallons per day. The Discharger has indicated that the apparent leak in the eastern impoundment will be evaluated.

Groundwater Monitoring Systems and Results

49. Sixteen groundwater monitoring wells (L-1, L-6, L-7, L-8, L-9, L-11, L-12, L-13, L-15, L-16, L-17, L-18, L-19, L-20, L-21 and L-22) are currently used to monitor for releases at the Facility.¹⁷ Some of the wells are usually dry. Wells L-17, L-18 and L-19 are upgradient of the Facility. The remainder of the wells are downgradient or potentially downgradient of one or more WMUs.
50. Monitoring activities indicate the hydrogeology of the Facility is complex, discussed below:
- a. Groundwater occurs within fractured bedrock. Some of the fractures are likely associated with faulting, while others may just be cracks in the rock (referred to as "joints"). The orientation and size of the fractures is not known and may vary widely across the Facility. The ability for fluids to move through the fractures can be reduced or prevented by subsequent cementation. Cementation associated with ancient hydrothermal springs has been observed in association with some of the faulting. Consequently, groundwater flow rates and directions may vary over short distances.
 - b. Groundwater elevations were recently measured to range from about 2860 to 2875 feet above mean sea level (amsl) immediately west of the Reche groundwater barrier and about 2640 to 2665 feet amsl immediately east of the Reche groundwater barrier, a difference of about 210 to 240 feet. Groundwater under the Facility flows generally from west to east, but several groups of wells do not appear to be hydrologically connected. Specifically:
 - i. Groundwater levels in L-9 are much higher than the surrounding area and are not declining, suggesting this well is hydrologically isolated from the surrounding area. Well L-9 was installed adjacent to IMP-1, which was the source of recharge to well

¹⁷ SWT Engineering, *Joint Technical Document, Landers Sanitary Landfill Expansion Project (36-AA-0057)*, October 2016, Volume 1, section 2.10.

L-9 (based on the high nitrate and TDS concentrations detected). Removal of IMP-1 should have resulted in water levels declining in L-9 to levels similar to the surrounding wells, but the water level at L-9 appears to have stabilized more than one hundred feet above groundwater elevations in the surrounding wells. This lack of decline is contrary to what was predicted by the 2002 EFS report. The groundwater gradient at L-9 sloped outward from L-9 in a radial pattern based on observations in wells L-15 and L-16 before those wells went dry. Monitoring wells northwest of L-9 no longer extend all the way to groundwater, and therefore the groundwater gradient and chemical concentrations in that direction are not known.

- ii. Groundwater levels in L-3 and L-10 increased by several hundred feet when the surface area around those wells began to be used as stormwater detention basins. The water levels in those wells declined very slowly, and none of the wells around L-3 or L-10 were influenced by the increased water levels in L-3 or L-10. This indicates: (A) L-3 and L-10 are not hydrologically connected to other wells in the area; (B) vertical infiltration rates of stormwater from the infiltration basins is affecting these wells at a rate that is higher than the lateral flow rates will allow to dissipate, possibly due to disruption of the surrounding rock during well installation; and (C) horizontal flow rates in the vicinity of L-3 and L-10 are extremely low.
- iii. Significant changes in groundwater levels have not been observed in wells L-1 or L-22, even though these wells are located immediately adjacent to the southern stormwater basin. This suggests that stormwater infiltration in this area does not readily affect groundwater.
- iv. Large differences in groundwater elevations exist between wells on either side of the Reche groundwater barrier. This suggests that the area downgradient of the Reche groundwater barrier drains faster than groundwater can cross the Reche groundwater barrier.

Based on this information, wells L-17, L-18, and L-19 are upgradient monitoring wells. All other wells are downgradient of one or more WMUs at the facility.

51. Wells associated with specific WMUs are summarized as follows:

- a. Wells L-6 and L-7 are in close proximity to or downgradient of LF-1.
- b. Wells L-1, L-8, L-13, L-20, L-21, and L-22 are in close proximity to or downgradient of LF-2A.
- c. Wells L-9, L-15 (dry), and L-16 (dry) are in close proximity to IMP-1, and wells L-1, L-6, and L-7 are downgradient of IMP-1.
- d. It is unclear whether L-22 is downgradient or cross-gradient of IMP-2. Recent groundwater elevations nearest IMP-2 suggest the groundwater gradient in that area slopes to the south or southeast, in which case no monitoring wells are down-gradient of IMP-2.

52. Two releases to groundwater (from IMP-1 and LF-2A) have been identified at the Facility, as described above in Finding 38. The vertical and lateral extent of the affected groundwater is

being monitored quarterly. The monitoring data from the fourth quarter of 2018 indicates the following:

- a. Elevated nitrate, chloride, and TDS concentrations are present in association with IMP-1. Specifically:
 - i. Nitrate was detected at concentrations above or near the MCL of 10 mg/L¹⁸ in wells L-1 (11 mg/L), L-6 (16 mg/L), L-7 (9.3 mg/L), and L-9 (64 mg/L).
 - ii. Chloride in wells L-1 (160 mg/L), L-6 (160 mg/L), L-7 (110 mg/L) and L-9 (270 mg/L) was elevated compared to background wells L-17 (18 mg/L), L-18 (5.1 mg/L) and L-19 (16 mg/L).
 - iii. TDS was detected at concentration above the “recommended” secondary MCL of 500 mg/L¹⁹ in wells L-1 (800 mg/L), L-6 (690 mg/L), and L-9 (1360 mg/L).

The elevated nitrate, chloride, and TDS concentrations appear to be different aspects of the same plume of groundwater pollution and are attributed to the infiltration of septic tank wastes disposed of at IMP-1. These concentrations are generally stable or increasing over time, contrary to what was predicted in the EFS report.

TDS concentrations are also above the “recommended” secondary MCL in wells L-13 (560 mg/L), L-20 (530 mg/L), and L-21 (580 mg/L) located east of the Reche groundwater barrier, and the “upper” secondary MCL in L-22 (1,100 mg/L) located in the southern portion of the Facility. However, these wells contain 0.1 to 2.8 mg/L nitrate and 11 to 21 mg/L chloride, significantly less than in the wells affected by IMP-1. This suggests that the TDS concentrations in these wells probably represents natural conditions.

Nitrate, chloride, and TDS concentrations increased dramatically in L-1 in 2004. The rapid increase is consistent with a plume of contamination reaching the location of L-1, and suggests that the elevated nitrate, chloride, and TDS concentrations associated with IMP-1 are migrating southeastward and are not diminishing at the rate predicted by the EFS report.

- b. VOCs are present in wells located south, southwest, northeast, and east of LF-2A. The lack of other indications of leachate impacts to groundwater at these wells (such as elevated nitrates) suggests that the VOCs are due to vapor migration. The maximum VOC concentrations detected in 2018 were as follows:

Well	L-1	L-6	L-8	L-9	L-13	L-21	MCL
1,1-Dichloroethane	18	-	-	-	14	3.3	5
1,1-Dichloroethene	-	-	-	-	0.33	-	6
1,2-Dichloropropane	0.82	-	-	-	0.17	-	5
1,4-Dichlorobenzene	0.10J	-	0.08J	-	0.24	0.31	5
Benzene	0.16J	-	-	-	0.46	0.27	1
Chlorobenzene	-	-	-	0.12	-	-	70
Chloroform	1.0	-	-	-	2.1	-	80
Cis-1,2-Dichloroethane	0.21	-	-	-	1.4	0.58	6
Dichlorodifluoromethane	0.99	1.4	2.2	-	3.5	0.94	1000
Methylene Chloride	1.4	-	-	-	19	-	5

¹⁸ The primary MCL for nitrate is found in California Code of Regulations, title 22, section 64431.

¹⁹ The secondary MCL range for TDS is found in California Code of Regulations, title 22, section 64449.

Tetrachloroethene	3.3	0.40J	3.5	-	5.2	3.3	5
Toluene	-	-	-	-	-	0.78	150
Trichloroethene	5.7	0.14J	0.34J	-	2.3	3.6	5
Trichlorofluoromethane	0.47	0.18J	0.41J	-	6.7	0.62	150

All concentrations are in micrograms per liter (ug/L)

- = not detected

J = Estimated value

Bold values exceed the applicable state MCL

Methylene chloride concentrations in L-13 have increased in the last few years, and now exceed the MCL by almost a factor of 4. The VOC 1,1-Dichloroethane has also increased over time.

53. The general chemistry of the groundwater varies significantly across the Facility, which limits the usefulness of well-to-well statistics as a monitoring tool for naturally occurring analytes. Based on differences in the chemical composition, the groundwater can be divided into three zones:
- a. The northern zone includes upgradient wells L-17, L-18, and L-19, and downgradient wells L-13 and L-21. The upgradient wells are outside the radius of influence for any of the WMUs and are considered “background” wells.
 - b. The central zone extends under LF-2A and includes wells L-8, L-20, and L-22. VOCs have been detected in these wells. The sulfate content of these wells is higher than in the northern zone, which could indicate these wells are influenced by LF-2A, except that high sulfate concentrations are not usually indicative of a release from a landfill.
 - c. The southwestern zone includes wells L-1, L-6, L-7, and L-9 and contains high TDS, chloride, and nitrate concentrations associated with the discharge of septic waste at IMP-1. The chemistry of L-9 likely represents pure septic wastewater due to the fact that the groundwater elevation in L-9 is more than a hundred feet higher than the surrounding groundwater table.
54. Stormwater recharge near wells L-3 and L-10 in 2004 increased groundwater elevations and altered the groundwater chemistry in those wells. As part of the proposed landfill expansion, a new stormwater retention basin will be built near wells L-17 and L-18, which are currently background monitoring wells. Future stormwater recharge near L-17 and L-18 may also alter groundwater elevations and chemistries in those wells.
55. Based on historical groundwater elevation data, the locations of well L-9 and former wells L-3 and L-10 are not hydrogeologically connected to other portions of Facility, and groundwater gradients and flow rates should not be calculated using these wells. In addition, wells on opposite sides of the Reche groundwater barrier should not be paired as part of the calculation of groundwater flow rates or directions. Due to this compartmentalization of groundwater, this Order requires the Discharger to calculate groundwater gradients and flow rates using sets of wells that appear to be hydrogeologically connected and prohibits the Discharger from calculating groundwater gradients and flow rates using wells that appear to be hydrogeologically isolated.

56. Due to the compartmentalization of the groundwater and the significant differences in groundwater chemistry in different portions of the Facility, comparing monitoring results using well-to-well statistical methods is not appropriate for large portions of the Facility. This Order requires the Discharger to use intra-wells statistical methods (i.e., changes in concentration through time within one well) for many portions of the site. This Order also requires the Discharger to continue to use background values as concentration limits for each COC, unless the Discharger can demonstrate as part of a reevaluation of the EFS that CLGBs are appropriate, and a change in method is approved by the Regional Water Board's Executive Officer.

Vadose Zone Monitoring Systems and Results

57. Sixteen landfill gas monitoring probes are located around the perimeter of LF-2A and LF-2B, and adjacent to LF-1. Most of these probes are designed to sample at multiple depths. The probes are monitored for the presence of landfill gases. On November 9, 2018, methane was detected in only one probe at a concentration of only 0.1 percent.

58. Eight soil moisture monitoring tubes are currently used to monitor for a release of wastewater from IMP-2. These tubes are like wells except that the casing is solid PVC pipe. These features allow neutron probes to be lowered into the subsurface to check for moisture in the surrounding soil. The neutron probe emits high-energy neutrons from a radioactive source, and a sensor detects low-energy neutrons emitted from surrounding water that interacts with the high-energy neutrons. These features have been monitored since 1997 and were modified extensively in 2009.

59. Moisture content around the monitoring tubes was less than 2 percent in most locations and depths through 2008. After the tubes were extensively modified, moisture content at some locations became highly variable, with concentrations as high as 20 percent at some locations. The highest and most variable concentrations were generally found at depths above the bedrock/alluvium interface. Recent discussions with the Discharger's consultant indicated that a correction factor is applied to the raw neutron-count data using an Excel spreadsheet, and Regional Water Board staff suspect the increased variability in moisture readings may be associated with how the corrections are applied. Regional Water Board staff do not consider the data to be reliable at this time, nor is it clear what moisture readings would be considered an indication of a release. This Order requires the Discharger to evaluate the reliability and precision of the existing moisture monitoring system and propose changes to the moisture monitoring system if the existing system cannot reliably monitor for a release of liquid from IMP-2.

60. Five shallow piezometers (LPW-1, LPW-2, L-11, L-12, and L-15), four of which are shallow wells that are usually dry, are located around the perimeter of LF-2A and the proposed expansion area (LF-2B) to monitor the unsaturated zone.²⁰ A sixth piezometer, L-3A, was formerly located within the footprint of the LF-2B area, but has been intentionally plugged and abandoned in anticipation of the construction of LF-2B. L-11 is also within the footprint of a future expansion area and will also be intentionally plugged and abandoned in the future. LPW-2 is located in the immediate vicinity of monitoring well L-18, has a similar screened interval, and is considered redundant to L-18. The piezometers are used to monitor for the presence of groundwater, are generally dry, and are not sampled. This Order requires monitoring and potentially sampling of piezometers LPW-1, L-12 and L-15.

²⁰ SWT Engineering, *Joint Technical Document, Landers Sanitary Landfill Expansion Project (36-AA-0057)*, October 2016, Volume 1, section 2.10.

61. Soil moisture monitoring systems are not located around LF-1 or IMP-1.
62. Lysimeters are not currently used at the Facility. California Code of Regulations, title 27, section 20415(d) requires monitoring of the unsaturated zone at depths and locations that will ensure the earliest possible detection of a release. This Order requires the Discharger to install a shallow soil moisture sampling system, such as a lysimeter, under the footprint of the proposed landfill expansion. As a first step to meeting this requirement, the Discharger is required to prepare a workplan to evaluate the number, type, location, and depth of shallow soil moisture monitoring features needed to meet the requirements of title 27.

Surface Water and Stormwater

63. Surface waters in the regional vicinity consist primarily of rain and snow runoff from higher elevations to the west. The San Bernardino Mountains act as a rain barrier to storms from the west, diminishing the amount of precipitation that might otherwise occur near the Facility. The Facility itself is built on low hills that form a drainage divide. Surface water in the northern and western portions of the Facility flows to the northwest, and surface water in the southern and eastern portions of the Facility flows to the southeast. Regional surface water does not flow onto the Facility.
64. There are no springs or perennial streams on the Facility property. Therefore, monitoring of surface waters is not performed.
65. The stormwater drainage system for the Facility is designed to minimize erosion and inhibit the potential for surface water run-on into the disposal areas. Engineered drainage channels are designed to contain run-off from at least a 24-hour, 100-year storm event.
66. Federal regulations regarding offsite discharge of stormwater were promulgated by the United States Environmental Protection Agency (USEPA) on November 16, 1990 (40 C.F.R. parts 122, 123, and 124). The regulations require specific categories of facilities that discharge into waters of the United States to obtain National Pollutant Discharge Elimination System (NPDES) permits and to implement Best Conventional Pollutant Technology (BCT) to reduce or eliminate industrial storm water pollution.
67. The State Water Board adopted Order 2014-0057-DWQ (NPDES No. CAS000001), *General Permit for Storm Water Discharges Associated with Industrial Activity* (Industrial General Permit), which became effective on July 1, 2015. The Discharger submitted a Notice of Non-Applicability (NONA) for the Industrial General Permit on April 18, 2016.

Leachate Collection and Removal Systems and Results

68. An LCRS is located under IMP-2 and the adjacent Landfarm area. Historically, the IMP-2 LCRS was observed weekly, but monitoring the depth of fluid and removing the fluid were not required. As discussed above in Finding 46, on December 20, 2018, Regional Water Board staff visited the Facility to observe the methods used to monitor the moisture tubes and the LCRS at IMP-2. Fluid was observed to be present in each LCRS sump, with 6.56 feet in the eastern sump and 19.07 feet in the western sump. Water samples obtained from each sump contained elevated concentrations of TDS, chloride, and sulfate, and the eastern sump contained elevated nitrate. The leakage rate through the upper liner could not be evaluated because the sumps had not been pumped out. The MRP was modified to require weekly measurements of the depth of water in each LCRS, removed as needed, calculation

of the rate of accumulation, comparison of the accumulation rate to an allowable leakage rate (ARL), and reporting of this data in the quarterly monitoring report. As described in Finding 48, recent monitoring indicates the eastern impoundment may have a leak.

69. An LCRS will be installed under the proposed landfill expansion area (LF-2B). This Order requires routine monitoring of the LF-2B LCRS once wastes begin to be placed in LF-2B.

Status of Corrective Action Program

70. As described in Finding 40, an EFS conducted in 2002 recommended adopting “intrinsic remediation” as the corrective action for the two releases at the Facility.
- a. Regarding the release of nitrates, chloride, and TDS from IMP-1, the EFS predicted that the groundwater mound under L-9 would dissipate by approximately 2007, and inorganic concentrations would decline to background by 2013. Neither of these occurred.
 - b. Regarding the release of VOCs from LF-2A, the EFS predicted that VOCs would degrade to concentrations below the federal MCL within 1,500 feet of LF-2A and decline to below detectable limits within 2,500 feet of LF-2A. No wells are located in a position to evaluate the accuracy of these predictions, and some VOC concentrations in the existing wells have increased.

This Order requires the Discharger to re-perform an EFS.

71. A landfill gas collection system is proposed to be installed in LF-2A in 2019 to remove landfill gases from the landfill. This system should reduce VOC impacts to groundwater.

Additions and Changes to the Monitoring Program

72. This Order requires the Discharger to submit a workplan to evaluate the number and location of new monitoring wells that need to be installed to bring the Facility into compliance with California Code of Regulations, title 27 requirements. A new groundwater monitoring well northeast of the proposed expansion area was proposed by the Discharger on October 18, 2017²¹ to replace compliance wells L-3, L-10, and L-14 (which were recently plugged and abandoned because they were within the footprint of the proposed LF-2B Phase 1A expansion area); one or more additional groundwater monitoring wells appear to be needed downgradient of IMP-2, based on the apparent southerly groundwater gradient in that area; and no monitoring wells extend to groundwater northwest of L-9, preventing evaluation of the northwestward extent of nitrate, chloride, and TDS pollution previously observed to be radiating outward from IMP-1.
73. This Order requires a more robust monitoring procedure for the LCRS at IMP-2 than has previously been required.
74. This Order requires routine monitoring of the LCRS to be installed under LF-2B, once waste is discharged at LF-2B.

²¹ San Bernardino County Department of Public Works, Solid Waste Management Division, *Landers Sanitary Landfill Phase 1A Design Report, Board Order R7-2009-0063 Response to Regional Water Quality Control Board Comments*, dated October 18, 2017, comment 4 on page 3.

75. This Order requires installation of a shallow unsaturated (vadose) zone monitoring system at the proposed LF-2B, in compliance with California Code of Regulations, title 27, section 40215. This Order requires the Discharger to prepare a workplan to evaluate the type, number, location, and depth of monitoring features needed to comply with title 27.
76. This Order requires groundwater flow directions and gradients to be based on proscribed pairings of wells, in recognition of the compartmentalization of groundwater under the Facility (see Finding 50).
77. This Order requires the Discharger to submit a workplan to evaluate whether the moisture monitoring tubes at IMP-2 are capable of reliably detecting a release of moisture from IMP-2, and to propose changes to the vadose zone monitoring system if the reliability and precision of the existing system is not adequate.
78. This Order requires the Discharger to submit a workplan to re-perform an EFS based on data collected since the 2002 EFS report was completed, including evaluating the fate and transport of pollutants detected in the groundwater under the Facility, and evaluating remedial alternatives.

Basin Plan, Beneficial Uses, and Related Regulatory Considerations

79. The Water Quality Control Plan for the Colorado River Basin (Basin Plan), which was adopted on November 17, 1993 and amended on March 7, 2017, designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed through the plan. Pursuant to Water Code section 13263, subdivision (a), WDRs must implement the Basin Plan and take into consideration the beneficial uses to be protected, the water quality objectives reasonably required for that purpose, other waste discharges, the need to prevent nuisance, and the provisions of Water Code section 13241.
80. The Facility is located in the Emerson Hydrologic Unit. The Basin Plan designates the beneficial uses of groundwater in the Emerson Hydrologic Unit as:
 - a. Municipal supply (MUN), and
 - b. Agricultural supply (AGR).
81. This Order establishes WDRs pursuant to division 7, chapter 41, article 4 of the Water Code for discharges that are not subject to regulation under Clean Water Act section 402 (33 U.S.C. § 1342).
82. These WDRs implement numeric and narrative water quality objectives for groundwater established by the Basin Plan. The numeric objectives for groundwater designated for municipal and domestic supply (MUN) include the Maximum Contaminant Levels (MCLs) and bacteriological limits specified in California Code of Regulations, title 22, section 64421 et seq. The Basin Plan states that groundwater for use as domestic or municipal water supply (MUN) must not contain taste- or odor-producing substances in concentrations that adversely affect beneficial uses as a result of human activity.

83. It is the policy of the State of California that every human being has the right to safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitary purposes. This Order promotes that policy by requiring discharges to meet maximum contaminant levels designed to protect human health and ensure that water is safe for domestic use.
84. These WDRs also implement state regulations applicable to the discharge of solid waste to land found in California Code of Regulations, title 27, division 2, subdivision 1, commencing with section 20005 (“Consolidated Regulations for Treatment, Storage, Processing or Disposal of Solid Waste”). These regulations contain classification criteria for wastes and for disposal sites, and prescribe minimum standards for the siting, design, construction, monitoring, and closure of waste management units.
85. This Order further implements the applicable federal regulations for discharges of solid waste to land. On October 9, 1991, USEPA promulgated federal municipal solid waste (MSW) regulations under the Resource Conservation and Recovery Act (RCRA), Subtitle D, codified at 40 Code of Federal Regulations parts 257 and 258. State Water Board Resolution 93-62 (as amended on July 21, 2005) requires that the regional water boards implement the applicable provisions of the federal MSW regulations in WDRs, particularly the provisions that are either more stringent than or that do not exist in title 27 of the California Code of Regulations.
86. The Regional Water Board has considered State Water Board Resolution 68-16, entitled *Statement of Policy with Respect to Maintaining High Quality Waters in California* (Resolution 68-16) in adopting this Order. Resolution 68-16 prohibits the Regional Water Board from authorizing discharges that will result in the degradation of high quality waters, unless it is demonstrated that any change in water quality will (a) be consistent with maximum benefit to the people of the state, (b) not unreasonably affect beneficial uses, and (c) not result in water quality less than that prescribed in state and regional policies (e.g., the violation of one or more water quality objectives). The discharger must also employ best practicable treatment or control (BPTC) to minimize the degradation of high quality waters.
87. The Order complies with Resolution 68-16 by requiring the Discharger to design, construct, and maintain waste containment systems that prevent discharges of waste and waste constituents to waters of the state. The new Phase 1A expansion area is designed to fully contain the wastes placed into it; therefore, no degradation of the underlying groundwater is expected to occur. To the extent that groundwater monitoring results indicate two releases—one beneath IMP-1 (which was clean-closed at the surface in 1998) and another release associated with landfill gas migration of VOCs from LF-2—have impaired beneficial uses of groundwater, the Discharger is participating in the corrective action program to investigate and remediate contamination consistent with Resolution 68-16.
88. Water Code section 13267 authorizes the Regional Water Board to require technical and monitoring reports. The monitoring and reporting requirements in Monitoring and Reporting Program (MRP) R7-2019-0013 are necessary to determine compliance with this Order. The State Water Board’s electronic database, GeoTracker Information Systems, facilitates the submittal and review of monitoring and reporting documents. The burden, including costs, of the MRP bears a reasonable relationship to the need for that information and the benefits to be obtained from that information.

89. Pursuant to Water Code section 13263, subdivision (g), the discharge of waste is a privilege, not a right, and adoption of this Order does not create a vested right to continue the discharge.

Financial Assurances

90. The State Water Board-promulgated provisions of title 27 of the California Code of Regulations require maintenance of appropriate financial assurance mechanisms to cover all expenses related to the following:

- a. Closure Activities (Cal. Code Regs., tit. 27, § 22207) – in at least the amount of the current closure cost estimate;
- b. Post-closure Maintenance (Cal. Code Regs., tit. 27, § 22212) – in at least the amount of the current post-closure cost estimate; and
- c. Corrective Action (Cal. Code Regs., tit. 27, § 22222) – for initiating and completing corrective action for all known or reasonably foreseeable corrective action.

91. A Pledge of Revenue Agreement is the financial assurance mechanism used by the Discharger for closure, post-closure maintenance, and corrective action costs.

92. Appendix H of the JTD from 2016 included a statement regarding costs for closure, post-closure, and corrective action. In addition, an updated financial assurance document was submitted by the Discharger in August 2017²² that focused only on corrective action costs. The relevant costs listed in those documents are summarized as follows:

- a. Closure Costs \$7,097,832
- b. Post-closure Costs \$3,811,480
- c. Corrective Action \$579,030

93. The corrective action cost estimate assumed that “intrinsic remediation” proposed by the 2002 EFS was the only remedial action reasonably foreseeable, and future costs would be limited to installing and operating additional vapor extraction wells into the body of the landfill (in addition to vapor extraction wells already proposed to be installed in the landfill as part of routine operation). No costs were included for responding to potential leaks at IMP-2 or other remedial activities for nitrate, chloride, and TDS released from IMP-1. Regional Water Board staff believe the proposed financial assurance values for corrective action are inadequate because they do not include corrective action costs for responding to leaks from the impoundments. This Order requires the Discharger to reevaluate the corrective action costs assuming (A) leakage is detected in the liner at IMP-2 and (B) remediation of groundwater contamination associated with IMP-1. The updated costs are required to be included in the next update to the financial assurance instruments.

CEQA and Public Participation

²² GeoLogic Associates, *Financial Assurance Update for Known or Reasonably Foreseeable Release, Landers Sanitary Landfill, WDID No. 7A3603304121*, dated August 2017, Project No. 2016.0155.

94. The Discharger is the lead agency under the California Environmental Quality Act (CEQA) (Pub. Resources Code § 21000 et seq.) for the Landers Sanitary Landfill Expansion Project (Project).
95. On September 9, 2015, the Discharger filed a Notice of Completion (NOP) of an Environmental Impact Report (EIR) (State Clearinghouse No. 2014041106) with State Clearinghouse. The EIR (dated September 2015, Lilburn Corporation) was circulated for a 45-day public review and comment period beginning September 9, 2015 and ending on October 26, 2015. The Discharger prepared and certified a Final EIR (dated February 2016, Lilburn Corporation) and filed a Notice of Determination (NOD) on March 22, 2016. A copy of the Final EIR is included in Appendix I of the 2016 JTD.
96. The Regional Water Board is a responsible agency under CEQA, and in making its determinations and findings, must presume that the Discharger's certified environmental document comports with the requirements of CEQA and is valid. (Cal. Code Regs., tit. 14, § 15231.) The Regional Water Board has reviewed and considered the environmental document and finds that it addresses the Project's water resource impacts. (Cal. Code Regs., tit. 14, § 15096(f).) The environmental document includes the mitigation monitoring and reporting program (MMRP) developed by the Discharger for all mitigation measures that have been adopted for the Project to reduce potential significant impacts. (Pub. Resources Code, § 21081.6(a)(1); Cal. Code Regs., tit. 14, § 15091(d).)
97. The Regional Water Board has determined that the Project, when implemented in accordance with the MMRP and the conditions in this Order, will not result in any significant adverse water quality or supply impacts. (Cal. Code Regs., tit. 14, § 15096(h).)
98. The Regional Water Board has notified the Discharger and all known interested agencies and persons of its intent to update WDRs for the Facility and has provided them with an opportunity for a public meeting and an opportunity to submit comments.
99. The Regional Water Board, in a public meeting, heard and considered all comments pertaining to this discharge.

IT IS HEREBY ORDERED , that Order R7-2009-0063 is rescinded upon adoption of this Order, except for enforcement purposes, and in order to meet the provisions contained in division 7 of the Water Code and regulations adopted thereunder, the Discharger shall comply with the following:

A. Discharge Prohibitions

1. The discharge of "hazardous" waste, as defined in California Code of Regulations, title 27, section 20164, is prohibited.
2. The discharge of "designated" waste, as defined in Water Code section 13173 and California Code of Regulations, title 27, section 20164, is prohibited, except to IMP-2 (i.e., the active, Class II surface impoundment).
3. The disposal of incompatible wastes or wastes that, when mixed or commingled with other wastes, may create heat, pressure, fire, explosion, toxic by-products, or other chemical reactions that: (1) impair the integrity of the containment structures, or (2) generate products

requiring a higher level of containment than provided by the waste management unit into which the wastes are placed, is prohibited.

4. The discharge of liquid or semi-solid waste (i.e., waste containing less than 50 percent solids) to the active landfill LF-2 is prohibited, except:
 - a. Dewatered sewage or water treatment sludge may be discharged to LF-2B (which will have an LCRS) as described in California Code of Regulations, title 27, section 20220(c).
 - b. Leachate and/or landfill gas condensate may be returned to LF-2B (which will have an LCRS), or to another waste management unit that meets the requirements of California Code of Regulations, title 27, section 20340(g).
5. The discharge of septic waste or grease trappings containing Total Petroleum Hydrocarbons (TPH) is prohibited.
6. The discharge of any sludge other than that which is generated by the Class II surface impoundments IMP-2 and treated at the Landfarm is prohibited.
7. Residual solids of sludge treated at the Landfarm and disposed of in the landfill shall not contain hazardous concentrations of VOCs, SVOCs, or metals, as determined using the methods described in the most recent approved version of the Septage Management Plan.
8. The discharge of waste to the unsaturated/vadose zone or to groundwater is prohibited.
9. The discharge of waste to surface water and surface water drainage courses is prohibited.
10. The discharge of waste to land not owned or controlled by the Discharger, or to areas outside waste management units LF-2 or IMP-2, is prohibited.
11. The storage, treatment, or disposal of wastes at the Facility shall not cause contamination, pollution, or nuisance as defined in Water Code section 13050, subdivisions (k), (l), and (m).

B. General Facility Specifications

1. The Discharger shall comply with all applicable provisions of title 27 (Cal. Code Regs., tit. 27, § 20005 et seq.) and the implementing regulations of RCRA Subtitle D (40 C.F.R. parts 257 and 258), even if not specifically referenced in this Order.
2. Wastes shall be discharged only into waste management units specifically designed for their containment and/or treatment, as described in this Order.
3. The Discharger is responsible for accurate characterization of wastes, including determinations of whether wastes will be compatible with containment features and other wastes at the waste management unit, and whether the wastes are required to be managed as a “hazardous” waste or “designated” waste.
4. The Discharger shall not cause the concentration of any Constituent of Concern (including Monitoring Parameters), as shown in the MRP and incorporated herein by reference, to exceed its representative concentration limit in any monitoring medium. The concentration

limit for each constituent will be set in accordance with the MRP. Data analysis shall be performed in accordance with the MRP.

5. All waste management units shall be operated to ensure that wastes, including leachate, will be a minimum of 5 feet above the highest anticipated elevation of underlying groundwater, including the capillary fringe.
6. The Discharger shall promptly notify the Regional Water Board of any slope failure occurring at a waste management unit. The Discharger shall promptly correct any failure which threatens the integrity of containment features or the unit in accordance with the method approved by the Regional Water Board's Executive Officer.
7. 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 California Code of Regulations, title 27, sections 20200(d) and 20340(g), and in a manner consistent with the waste classification of the liquid.
8. Water used for Facility maintenance shall be limited to the amount reasonably necessary for dust control, compaction, fire control, and the establishment and maintenance of vegetation.
9. The Discharger shall comply with an approved load checking program in compliance with California Code of Regulations, title 27, section 20870 and the Facility's Solid Waste Facility Permit (SWFP) issued by the California Department of Resources Recycling and Recovery (CalRecycle).
10. The Discharger shall maintain legible records on the volume and type of each waste discharged at each waste management unit at the Facility. These records shall be available for review by representatives of the Regional 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 Regional Water Board.
11. The Discharger shall maintain visible monuments identifying the boundary limits of the entire Facility. Public contact with MSW and/or leachate shall be prevented through fences, signs, and other appropriate alternatives.

C. General LCRS Specifications

1. The LCRS for each waste management unit shall be designed, constructed, maintained, and operated to collect and remove twice the maximum anticipated daily volume of leachate from the waste management unit.
2. Leachate generation by an LCRS for a waste management unit shall not exceed 85% of the design capacity of (a) the LCRS, or (b) the sump pump. If leachate generation exceeds this value and/or if the depth of the fluid in an LCRS exceeds the minimum needed for safe pump operation, then the Discharger shall immediately notify the Regional Water Board in writing within seven (7) days. Notification shall include a timetable for a remedial action to repair the containment structures or other action necessary to reduce leachate production.
3. Each LCRS shall be operated to function without clogging through the scheduled closure of the applicable waste management unit and during the post-closure maintenance period.

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.

4. The Discharger shall notify the Regional Water Board within seven (7) days if fluid is detected in a previously-dry LCRS or unsaturated zone monitoring system, or if a progressive increase is detected in the volume of fluid in an LCRS which exceeds the previously-observed range of volumes for that location, or exceeds the Action Leakage Rate (ALR) specified in the MRP.

D. Stormwater Specifications

1. The Facility shall be designed, operated, and maintained to prevent inundation, washout, or erosion of wastes or covering material, which could occur as a result of floods having a predicted frequency of once in 100 years.
2. Surface and subsurface drainage from outside of a waste management unit shall be diverted from the unit.
3. Surface drainage from tributary areas, and internal site drainage from surface or subsurface sources, shall not contact or percolate through the wastes discharged at the Facility.
4. The exterior surfaces of the disposal area, including the intermediate and final landfill covers, shall be graded and maintained 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.
5. Diversion and drainage facilities shall be designed, constructed, and maintained to:
 - 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 through the use of energy dissipators where required to decrease the velocity of runoff, slope protection, and other erosion control measures where needed to prevent 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.
 - 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.
6. 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.

E. Landfill (LF-2A and LF-2B) Specifications

1. Methane, carbon dioxide, and other landfill gases shall be adequately vented, removed from each waste management unit at the Facility, or otherwise controlled to prevent adverse health effects, explosions, underground fires, nuisance conditions, groundwater degradation, or impairment of the beneficial uses of surface or groundwater due to gas migration through the unsaturated/vadose zone.
2. The Discharger shall provide interim cover to the discharged waste as follows:
 - a. Daily cover – a minimum of six (6) inches of compacted soil, or alternative material, placed over the exposed waste at least once in every 24 hours. However, MSW should be compacted into the working face of the landfill as soon as practicable.
 - b. Intermediate cover – a minimum of twelve (12) inches of compacted soil, or equivalent, placed over waste areas that are inactive for more than 180 days. Existing daily cover may be used as part of the intermediate cover.
3. The intermediate and daily covers for the waste management unit shall:
 - a. Control disease vectors pursuant to 40 C.F.R. section 258.22;
 - b. Minimize infiltration (i.e., percolation of liquids through the wastes) into the waste management unit;
 - c. Control erosion and convey run-off to the stormwater management system at manageable, non-scouring flow rates; and
 - d. Minimize the potential for windblown litter and particulates.
4. Any alternative materials used for daily or intermediate cover that have a different characteristic or thickness than the requirements of Sections E.2 and E.3 of this Order shall be approved by the Regional Water Board Executive Officer prior to use. The Discharger shall demonstrate that the alternative material and thickness will not present a threat to the environment or water quality.

5. The Discharger shall not perform activities that would damage the landfill cover under existing conditions. For example, vehicles shall not be driven on the cover during muddy conditions, since this may create ruts or other depressions that collect and hold stormwater and violate post-closure maintenance requirements. The Discharger shall post signs visible to the vehicle drivers indicating driving is not allowed on cover for the waste management unit.
6. To further minimize potential pollution to surface waters by windblown litter and particulates from the Facility, the Discharger shall implement a litter collection and disposal program to manage windblown litter discharged on-site and to adjacent off-site areas. This program shall include provisions to inspect and remove litter from site fencing following high wind events. A standard of "zero" escape of litter from the permitted Facility shall be established through the use of control systems, and collection of escaped litter from the working face.
7. The Discharger shall maintain and operate an LCRS for LF-2B.
8. Leachate and landfill gas condensate collected from LF-2A shall be discharged to the Class II surface impoundments IMP-2, the lined landfill expansion LF-2B, or to an off-site disposal facility.
9. 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.
10. The depth of fluid on the landfill liner for LF-2B shall not exceed 30 centimeters (cm), as provided by 40 C.F.R. § 258.40(a)(2). This regulation is interpreted by the Regional Water Board to exclude the leachate sump. The Discharger shall immediately notify the Regional Water Board staff by telephone, and follow up in writing within seven (7) 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.

F. Surface Impoundment (IMP-2) Specifications

1. The Discharger shall maintain sufficient freeboard in surface impoundments to accommodate seasonal precipitation and to contain a 1,000 year 24-hour storm event, but in no case no less than two (2) feet of freeboard (measured vertically).
2. Discharge to IMP-2 shall be limited to the following wastes: chemical toilet waste, septic tank waste, liquids removed from an impoundment LCRS or landfill LCRS, and groundwater obtained from the onsite wells.
3. Residual solids of treated sludge transported to the landfill for disposal shall be greater than or equal to 50 percent solids by weight, except as provided in Section A.4. Residual solids that have dried sufficiently in the Landfarm shall be tested in accordance with the Septage Management Plan prior to disposal in the landfill.

4. An operation plan shall be submitted to the Regional Water Board that describes operational wastewater levels and waste input quantities permitted each month based on anticipated precipitation and on past precipitation conditions for the year.
5. Any direct-line discharge to surface impoundments shall have fail-safe equipment or operating procedures to prevent overflowing. Discharges shall be stopped in the event of any containment system failure which causes a threat to water quality.
6. All visible portions of synthetic liners shall be inspected weekly until all free liquid is removed from the surface impoundment as part of closure. If during the active life of the impoundment, the wastes are removed and the bottom of the impoundment is cleaned down to the liner, an inspection shall be made of the bottom of the liner prior to refilling of the impoundment.
7. LCRS maintenance and repair plans shall be submitted to the Regional Water Board in advance of any work. Surface impoundment repair plans and liner Construction Quality Assurance (CQA) Plans shall be developed and stamped by a licensed professional experienced in this type of work.

G. Construction Specifications for LF-2B

1. Phase 1A of the landfill expansion shall be constructed as described in the JTD and Design Report, as amended in accordance with the comment letters cited in Finding 5.
2. **One month** prior to the start of construction on the Phase 1A expansion area, the Discharger shall notify the Regional Water Board of the anticipated date on which construction will begin.
3. If changes to the accepted design are necessary, the Discharger shall notify Regional Water Board staff of the issues and proposed solutions, and obtain approval from Regional Water Board staff prior to implementing those changes. All changes shall be documented in writing.
4. Construction shall be performed in accordance with a Construction Quality Assurance Plan that complies with California Code of Regulations, title 27, section 20324 and is prepared by a registered civil engineer or certified engineering geologist.
5. The Construction Quality Assurance program, including all relevant aspects of construction quality control, shall provide evidence that materials and procedures utilized in the placement of the any containment feature at a waste management unit will be tested and monitored to assure the structure is constructed in accordance with the design specifications approved by the Regional Water Board.
6. **CQA Final Report.** Within **90 days** of the completion of Phase 1A, the Discharger shall submit a final Construction Quality Assurance (CQA) report documenting the construction process and containing the quality assurance documentation described in the JTD and Design Report and required by section 20324(d) of title 27 of the California Code of Regulations.
7. The discharge of waste into the Phase 1A landfill expansion area is prohibited until Regional Water Board staff have conducted a final inspection of the completed waste management

unit and the Regional Water Board's Executive Officer has issued a letter approving use of the Phase 1A expansion area.

8. The Discharger shall notify the Regional Water Board that an updated preliminary closure and post-closure maintenance plan that incorporates LF-2B has been prepared by the date of initial receipt of waste in LF-2B. (40 C.F.R. § 258.60.) This notification shall be included in the cover letter transmitting the preliminary closure and post-closure maintenance plan.

H. Corrective Action Specifications

1. For all waste management units in a corrective action program to address a release from the unit, the Discharger shall implement all corrective measures necessary to remediate the release and to ensure that the Discharger achieves compliance with the Water Quality Protection Standard (as defined in the MRP) adopted for that unit. To show cleanup of all water-bearing media affected by the release, the Discharger shall complete the demonstration required under California Code of Regulations, title 27, section 20430(g).
2. The cessation of any corrective action measure (e.g. landfill gas, leachate, and groundwater extraction) is prohibited without written approval from the Regional Water Board's Executive Officer. If routine maintenance or a breakdown results in cessation of corrective action for greater than 24 hours, the Discharger shall notify Regional Water Board staff.
3. **Corrective Action EFS Workplan.** Within **90 days** of the adoption of this Order, the Discharger shall submit to the Regional Water Board for review and approval a workplan and time schedule for re-performing an Engineering Feasibility Study (Revised EFS) to evaluate the fate and transport of the pollutants detected in groundwater under the Facility using up-to-date data. The Revised EFS shall evaluate remedial alternatives for both groundwater releases identified in Finding 38. If "intrinsic remediation" continues to be the preferred alternative, the Revised EFS report shall contain: (1) predictions regarding the rate at which concentrations will decline; (2) data analysis methods for monitoring the rate of decline; and (3) thresholds for further action should that time frame be exceeded.
4. Following an earthquake that generates significant ground shaking (Modified Mercalli Intensity Scale V or greater) at or near the Facility, the Discharger shall submit a detailed post-earthquake inspection and corrective action plan. The plan shall address damage to and corrective measures for: containment structures; leachate control and stormwater management systems; wells and equipment to monitor groundwater and landfill gas; and any other system/structure potentially impacted by static and seismic deformations of the waste management unit. The Discharger shall notify the Regional Water Board Executive Officer immediately, but no later than 24-hours, of damage to the Facility due to an earthquake, and provide a post-earthquake inspection report within fifteen (15) working days.

I. Monitoring Specifications

1. The Discharger shall implement MRP R7-2019-0013 and any revisions thereto to detect at the earliest opportunity unauthorized discharges of waste constituents from the Facility, or any impairment of beneficial uses that result from discharges of waste to the Facility. The Discharger shall report the results of all onsite monitoring in accordance with MRP R7-2019-0013 and revisions thereto.

2. The Discharger shall conduct a water quality monitoring and response program in accordance with MRP R7-2019-0013 and any future amendments thereto, including:
 - a. Detection Monitoring. The Discharger shall institute a detection monitoring program pursuant to California Code of Regulations, title 27, section 20420.
 - b. Evaluation Monitoring. The Discharger shall institute an evaluation monitoring program under California Code of Regulations, title 27, section 20425:
 - i. Whenever there is “measurably significant” (as defined in section 20164) evidence of a release from waste management unit under the detection monitoring program; or
 - ii. Whenever there is significant physical evidence of a release from the waste management unit. Significant physical evidence of a release includes unexplained volumetric changes in surface impoundments, unexplained stress in biological communities, unexplained changes in soil characteristics, visible signs of leachate migration, and unexplained water table mounding beneath or adjacent to the unit and any other change to the environment that could reasonably be expected to be the result of a release from the unit.
 - c. Corrective Action Monitoring. The Discharger shall institute a corrective action program under California Code of Regulations, title 27, 20430 when the Regional Water Board determines that the assessment of the nature and extent of the release and the design of a corrective action program have been satisfactorily completed.
3. **Sample Collection and Analysis Plan**. Within **90 days** of the adoption of these WDRs, the Discharger shall submit to the Regional Water Board for review and approval a comprehensive Sample Collection and Analysis Plan (SCAP) that shall describe in detail the methods to be used to perform all monitoring activities for all onsite features, including:
 - 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.

Once the SCAP is approved, the Discharger may request changes to the approved SCAP, as needed, but shall use the procedures described in the approved SCAP until such changes are authorized by the Regional Water Board’s Executive Officer.

4. Due to the compartmentalization of groundwater, calculation of groundwater flow rates and directions shall be performed using the following well groupings, unless otherwise approved by the Regional Water Board's Executive Officer:
 - a. Wells L-8, L-17, L-18 and L-19 shall be used for the Northern Zone. Within that zone, the locations of former wells L-3 and L-10 shall be depicted as an area with no groundwater flow.
 - b. Wells L-13, L-20 and L-21 shall be used for the area northeast of the Reche groundwater barrier.
 - c. Wells L-1, L-6, L-7 and L-22 shall be used for the Southern Zone.

Well L-9 shall not be used to calculate gradients or flow rates. New wells drilled in each area shall be added to the groundwater gradient evaluation in the area where they are installed unless subsequent data indicates the new wells are not hydrogeologically connected to other wells in that area.

Groundwater flow rates shall be based on the hydraulic conductivities and porosity values obtained from onsite testing within each area of the Facility, not from site-wide averages or generic values based on rock types.

5. **Groundwater Monitoring Wells Workplan.** Within **120 days** of the adoption of this Order, the Discharger shall submit to the Regional Water Board for review and approval a workplan that describes how many new wells are needed to properly monitor groundwater at the Facility in compliance with California Code of Regulations, title 27, section 20415, and propose a time schedule, location(s), and methods of installation for the new monitoring well(s). At least one of these wells shall be located to provide the earliest possible detection of a release from IMP-2. Wells may also be needed northwest of L-9, based on the radial flow of groundwater away from L-9.
6. **IMP-2 Moisture Monitoring Workplan.** Within **90 days** of the adoption of this Order, the Discharger shall submit to the Regional Water Board for review and approval a workplan and time schedule to evaluate the reliability and precision of the moisture monitoring features around IMP-2, and propose changes, as needed, to provide a reliable means of detecting a release from IMP-2 at the earliest opportunity.
7. **Unsaturated Zone Monitoring Workplan.** Within **90 days** of the adoption of this Order, the Discharger shall submit to the Regional Water Board for review and approval a workplan for installing an unsaturated/vadose zone monitoring systems under LF-2B that meets the requirements of California Code Regulations, title 27, section 20415. The unsaturated/vadose zone monitoring system shall be installed under the proposed expansion area prior to construction of Phase 1A.

J. Financial Assurance Specifications

1. The Discharger shall obtain and maintain adequate assurances of financial responsibility for closure, post-closure maintenance, and corrective action for all known and reasonably foreseeable releases from a waste management unit at the Facility in accordance with California Code of Regulations, title 27, sections 20380(b) and 20950 and subchapter 2 ("Financial Assurance Requirements") of division 2, subdivision 1, chapter 6 of title 27.

2. The Discharger shall demonstrate to CalRecycle and report to the Regional Water Board that it has established acceptable financial assurance mechanisms described in subchapter 3 (“Allowable Mechanisms”) of California Code of Regulations, title 27, division 2, subdivision 1, chapter 6 in at least the amount of the cost estimates for closure, post-closure maintenance, and corrective action approved by the Regional Water Board’s Executive Officer.
3. **Yearly Financial Assurances Report.** The Discharger shall submit, by **June 1 of each year**, a report calculating the increase in the cost estimates for closure, post-closure maintenance, and corrective action due to the inflation factor (specified in Cal. Code Regs., tit. 27, § 22236) for the previous calendar year.
4. Documents supporting the amount and active status of the required financial assurance mechanisms shall be included in the Facility’s JTD and revisions. Annual cost estimates and inflation factors shall be submitted to the Regional Water Board as an addendum to the JTD.
5. The Discharger shall reevaluate its corrective action costs estimate to include the following: (A) provision for potential leakage detected in the liner at IMP-2 and (B) remediation of groundwater contamination associated with IMP-1. The updated costs estimate is required to be included in the next update to the financial assurance instruments.

K. Closure and Post-Closure Specifications

1. The Discharger shall notify the Regional Water Board in writing of the final closure or partial final closure of a waste management units as follows:
 - a. Landfill Units. For landfill waste management units, notice shall be given either: (1) at the same time that CalRecycle is notified under California Code of Regulations, title 27, section 21110, or (2) 180 days prior to beginning any final closure activities, whichever is sooner.
 - b. Non-Landfill Units. For non-landfill waste management units (including Class II surface impoundments), notice shall be given at least 180 days prior to beginning any final closure activities.
 - c. Affirmation. 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.
2. The Discharger shall carry out closure of a waste management unit or a portion of a unit only in accordance with a closure and post-closure maintenance plan approved by the Regional Water Board (Cal. Code Regs., tit. 27, §§ 20950(a)(1), 21769(d)) through the issuance of closure waste discharge requirements.

L. Standard Provisions

1. **Noncompliance.** The Discharger shall comply with all of the terms, requirements, and conditions of this Order and Monitoring and Reporting Program R7-2019-0013. Noncompliance is a violation of the Porter-Cologne Water Quality Control Act (Water Code, § 13000 et seq.) and grounds for: (1) an enforcement action; (2) termination, revocation and

reissuance, or modification of these waste discharge requirements; or (3) denial of an Order renewal application.

2. **Enforcement.** The Regional Water Board reserves the right to take any enforcement action authorized by law. Accordingly, failure to timely comply with any provisions of this Order may subject the Discharger to enforcement action. Such actions include, but are not limited to, the assessment of administrative civil liability pursuant to Water Code sections 13323, 13268, and 13350, a Time Schedule Order (TSO) issued pursuant to Water Code section 13308, or referral to the California Attorney General for recovery of judicial civil liability.
3. **Proper Operation and Maintenance.** The Discharger shall at all times properly operate and maintain all systems and components of collection, treatment, and control, installed or used by the Discharger to achieve compliance with this Order. Proper operation and maintenance includes, but is not limited to, effective performance, adequate process controls, and appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities/systems when necessary to achieve compliance with this Order. All systems in service or reserved shall be inspected and maintained on a regular basis. Records of inspections and maintenance shall be retained, and made available to the Regional Water Board on request.
4. **Reporting of Noncompliance.** The Discharger shall report any noncompliance that may endanger human health or the environment. Information shall be provided orally to the Regional Water Board office and the Office of Emergency Services within twenty-four (24) hours of when the Discharger becomes aware of the incident. If noncompliance occurs outside of business hours, Discharger shall leave a message on the Regional Water Board's office voicemail. A written report shall also be provided within five (5) business days of the time the Discharger becomes aware of the incident. The written report shall contain a description of the noncompliance and its cause, the period of noncompliance, the anticipated time to achieve full compliance, and the steps taken or planned, to reduce, eliminate, and prevent recurrence of the noncompliance. All other forms of noncompliance shall be reported with the Discharger's next scheduled self-monitoring reports, or earlier if requested by the Executive Officer or required by this Order.
5. **Duty to Mitigate.** The Discharger shall take all reasonable steps to minimize or prevent any discharge in violation of this Order that has a reasonable likelihood of adversely affecting human health or the environment.
6. **Material Changes.** Before initiating a new discharge or making a material change in the character, location, or volume of an existing discharge, the Discharger shall report all pertinent information in writing to the Regional Water Board, and if required by the Regional Water Board, obtain revised requirements before any modifications are implemented. 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.
7. **Familiarity with Order.** The Discharger shall ensure that all site-operating personnel are familiar with the content of this Order, and shall maintain a copy of this Order at the site.
8. **Inspection and Entry.** The Discharger shall allow the Regional Water Board, or an authorized representative, upon presentation of credentials and other documents as may be required by law, to:
 - a. Enter the premises regulated by this Order, or the place where records are kept under the conditions of this Order;
 - b. Have access to and copy, at reasonable times, records kept under the conditions of this Order;
 - c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Order; and
 - d. Sample or monitor at reasonable times, for the purpose of assuring compliance with this Order or as otherwise authorized by the Water Code, any substances or parameters at this location.
9. **Change in Ownership.** This Order is not transferable to any person without written approval by the Regional Water Board's Executive Officer. Prior to any change in ownership of this operation, the Discharger shall notify the Regional Water Board's Executive Officer in writing at least 30 days in advance. The notice must include a written transfer agreement between the existing owner and the new owner. At a minimum, the transfer agreement must contain a specific date for transfer of responsibility for compliance with this Order and an acknowledgment that the new owner or operator is liable for compliance with this Order from the date of transfer. The Regional Water Board may require modification or revocation and reissuance of this Order to change the name of the Discharger and incorporate other requirements as may be necessary under the Water Code.
10. **Monitoring Wells.** The Discharger shall comply with all notice and reporting requirements of the California Department of Water Resources and with any well-permitting requirements imposed by a local agency regarding the construction, alteration, destruction, maintenance, or abandonment of any monitoring wells used for compliance with this Order and the accompanying MRP, as required under Water Code sections 13750 and 13755 and local agency requirements.
11. **Format of Technical Reports.** The Discharger shall furnish, under penalty of perjury, technical monitoring program reports, and such reports shall be submitted in accordance with chapter 30, division 3, title 23 of the California Code of Regulations, as groundwater raw data uploads electronically over the internet into the State Water Board's GeoTracker database, found at: <https://geotracker.waterboards.ca.gov/>. Documents that are normally mailed by the Discharger, such as regulatory documents, narrative technical monitoring program reports, materials, data, and correspondence, to the Regional Water Board shall also be uploaded into GeoTracker in the appropriate Microsoft Office software application, such as Word or Excel, or as a Portable Document Format (PDF) file. Large documents are to be split into manageable file sizes appropriately labelled and uploaded into GeoTracker.

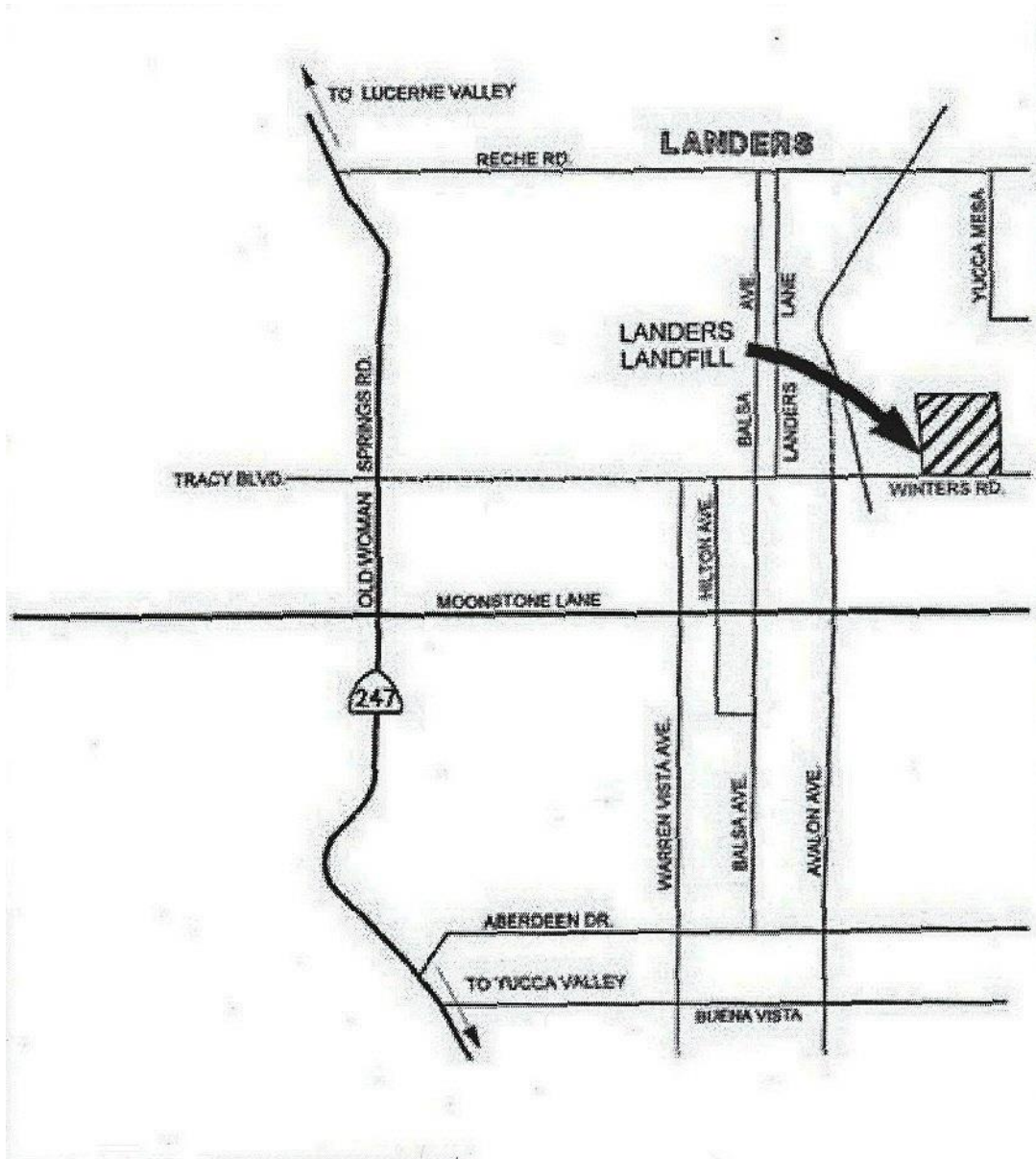
The Facility is assigned GeoTracker Global Identification No. L10003011090 and California Integrated Water Quality System (CIWQS) WDID No. 7A360304121.

12. **Qualified Professionals.** In accordance with Business and Professions Code sections 6735, 7835, and 7835.1, engineering and geologic evaluations and judgments shall be performed by or under the direction of California registered professionals (i.e., civil engineer, engineering geologist, geologist, etc.) competent and proficient in the fields pertinent to the required activities. All technical reports required under this Order that contain workplans, that describe the conduct of investigations and studies, or that contain technical conclusions and recommendations concerning engineering and geology shall be prepared by or under the direction of appropriately qualified professional(s), even if not explicitly stated. Each technical report submitted by the Discharger shall contain a statement of qualifications of the responsible licensed professional(s) as well as the professional's signature and/or stamp of the seal. Additionally, all field activities are to be conducted under the direct supervision of one or more of these professionals.
13. **Certification Under Penalty of Perjury.** All technical reports required in conjunction with this Order shall include a statement by the Discharger, or an authorized representative of the Discharger, certifying under penalty of perjury under the laws of the State of California, that the reports were prepared under his or her supervision in accordance with a system designed to ensure that qualified personnel properly gather and evaluated the information submitted, and that based on his or her inquiry of the person or persons who manage the system, the information submitted is, to the best of his or her knowledge and belief, true, complete, and accurate.
14. **Violation of Law.** This Order does not authorize violation of any federal, state, or local laws or regulations.
15. **Property Rights.** This Order does not convey property rights of any sort, or exclusive privileges, nor does it authorize injury to private property or invasion of personal rights, or infringement of federal, state, or local laws or regulations.
16. **Modification, Revocation, Termination.** This Order may be modified, revoked and reissued, or terminated for cause. The filing of a request by the Discharger for an Order modification, rescission, or reissuance, or the Discharger's notification of planned changes or anticipated noncompliance, does not stay any Order condition. Causes for modification include, but are not limited to, the violation of any term or condition contained in this Order, a material change in the character, location, or volume of discharge, or the adoption of new regulations by the State Water Board, Regional Water Board (including revisions to the Basin Plan), or federal government.
17. **Severability.** The provisions of this Order are severable. If any provision of this Order is found invalid, the remainder of these requirements shall not be affected.

I, Paula Rasmussen, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Colorado River Basin Region, on June 13, 2019.

Original signed by

Paula Rasmussen
Executive Officer



Attachment A
Landers Sanitary Landfill – Site Location Map
County of San Bernardino, Solid Waste Management Division
Order R7-2019-0013

Attachment B

Landers Sanitary Landfill – Facility Layout
County of San Bernardino, Solid Waste Management Division
Order R7-2019-0013

Attachment C
Landers Sanitary Landfill – Location of Phase 1A Expansion Area
County of San Bernardino, Solid Waste Management Division
Order R7-2019-0013

