

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. R5-2014-0006

WASTE DISCHARGE REQUIREMENTS
FOR
FORWARD INC. AND REPUBLIC SERVICES INC.
FORWARD LANDFILL
CLASS II
OPERATION, CLOSURE
AND CORRECTIVE ACTION
SAN JOAQUIN COUNTY

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

1. Forward Inc. a subsidiary of Republic Services Inc. (hereinafter referred to jointly as "Discharger") owns and operates the Forward Landfill (facility) about seven miles southeast of Stockton in Sections 3 and 10, T1S, R7E and Section 34, T1N, R7E, MDB&M, as shown in Attachment A, which is incorporated herein and made part of this Order by reference. The facility is a municipal solid waste (MSW) landfill regulated under authority given in Water Code section 13000 et seq.; California Code of Regulations, title 27 ("Title 27"), section 20005 et seq.; and 40 Code of Federal Regulations section 258 (a.k.a., "Subtitle D") in accordance with State Water Resources Control Board (State Water Board) Resolution 93-62.
2. The facility is at 9999 South Austin Road, Manteca. The original Forward Landfill operated on 157 acres since 1973 and in 2000 the Discharger purchased the adjacent Austin Road Sanitary Landfill on 410 acres for a total of 567 acres. The current permitted footprint is approximately 388 acres, of which the current constructed WMU area is 288 acres. The remainder is used for other activities such as soil borrow or storage. Existing landfill units consist of unlined landfills covering 15 acres and lined landfills covering 273 acres. The existing permitted landfill area is shown in Attachment B, which is incorporated herein and made part of this Order by reference. The facility is comprised of Assessor's Parcel Numbers (APN) 181-150-07, 181-150-08, 181-150-09, 181-150-10, 201-060-01, 201-060-02, 201-060-03, 201-060-04 and 201-070-01.
3. This Order does not allow any municipal solid waste (MSW), designated or nonhazardous solid waste to be discharged to any area other than the Permitted Landfill Area (approximately 388 acres). The exception to the above is cannery waste may be discharged to the Cannery Waste Land Application Area shown on Attachment B.
4. On 1 July 2011, the Discharger submitted an amended Report of Waste Discharge (ROWD) as part of the Joint Technical Document (JTD) for the landfill. Staff requested additional information on 1 August 2011 and the final submittal revision to the ROWD/JTD was submitted on 1 June 2012. The information in the ROWD/JTD has been

used in revising these waste discharge requirements (WDRs). The ROWD contains the applicable information required in Title 27. The ROWD/JTD and supporting documents contain information related to this revision of the WDRs including the following:

- a. Modify LCRS base grades east of WMU FU-06;
 - b. Approve the ET alternative final cover design for subsequent phases of closure construction based on the performance of the alternative final cover demonstration;
 - c. Update inorganic concentration limits;
 - d. Update monitoring parameters and network;
 - e. Revise soil pore gas monitoring requirements to include field screening techniques and collect gas samples only when methane exceeds 5 percent;
 - f. Land application of cannery waste; and
 - g. New requirements for an existing composting operation.
5. On 14 March 2003, the Central Valley Water Board issued Order No. R5-2003-0049 in which the landfill waste management units at the facility were classified as a Class II or Class III units for the discharge of municipal solid waste and designated waste. This Order continues to classify the landfill units as Class II or Class III units in accordance with Title 27.
6. The existing and future landfill units authorized by this Order are described as follows:

<u>Unit</u>	<u>Area (acres)</u>	<u>Liner/LCRS¹ Components²</u>	<u>Unit Classification & Status</u>
A	8.0	Four trenches with a compacted clay liner and dendritic LCRS. Designated and hazardous waste.	Class I, Closed in 1989.
B-North	2.8	Unlined – construction debris and inert waste.	Class III, Inactive since 1986.
B	12.1	Unlined – nonhazardous solid waste.	Class III, Inactive
D-87	2.5	Two feet CCL base with a dendritic LCRS.	Class III, Inactive overlain by later units.
D-88N, -88S	4.6, 1.5	Four feet CCL base, with a dendritic LCRS	Class II, Inactive overlain by later units.

<u>Unit</u>	<u>Area (acres)</u>	<u>Liner/LCRS¹ Components²</u>	<u>Unit Classification & Status</u>
D-89	3.5	Four feet CCL base with blanket LCRS	Class II, Inactive overlain by later units.
D-93	4.6	Single Composite Liner – two feet CCL, 60-mil HDPE and blanket LCRS	Class II, Inactive overlain by later units.
D-94	2.5	Single Composite Liner GCL, 60 mil HDPE and blanket LCRS	Class II, Inactive overlain by later units.
D-95 thru -02	47.5	Single Composite Liner – two feet CCL, 60-mil HDPE and blanket LCRS.	Class II, Inactive.
E	6	Two feet CCL with blanket LCRS. Coal ash only.	Class II, Closed in 1999.
F North, F West	1	Leachate surface impoundments – double liner composed of GCL, 60 mil HDPE, geonet, 60-mil HDPE.	Class II, Active
F South		Proposed leachate surface impoundment – double liner composed of GCL, 60-mil HDPE, geonet, 60-mil HDPE.	Class II, Proposed – to be constructed when needed.
G North G South	78,1	Area for land treatment of petroleum contaminated soils, includes soil storage and clay lined sludge drying areas.	Class II, Inactive.
Austin Road Unit 1	123.9	Unlined municipal solid waste landfill.	Class III, Interim closure in 2002
FU-03, 04, 05, 06, 08, 10 & -13		Single composite liners – two feet CCL, 60-mil HDPE, blanket LCRS.	Class II, Active
Compost Facility	7.6	Compacted native soils	Un-classified, Active
Future FU units		Single composite liners – two feet CCL, 60-mil HDPE, blanket LCRS. The area between old Forward Landfill and the Austin Road Unit.	Permitted, to be constructed as needed.
Future H units		Single composite liners – two feet CCL, 60-mil HDPE, blanket LCRS. South of South Branch Littlejohns Ck. now occupied by the resource recovery facility and the Compost Facility	Permitted, to be constructed as needed.

¹ LCRS – Leachate collection and removal system

² All liner systems are composite liner systems unless otherwise noted

7. On-site facilities at the Forward Landfill include: an office, a scale house, maintenance areas, an active landfill gas extraction system, a landfill gas-to-energy plant, a landfill gas flare, a materials recovery facility, and a groundwater remediation system.
8. On 9 October 1991, the United States Environmental Protection Agency (USEPA) promulgated federal MSW regulations under the Resource Conservation and Recovery Act (RCRA), Subtitle D. These regulations are under 40 Code of Federal Regulations section 258, and are hereafter referred to as either "Subtitle D" in reference to the RCRA federal law that required the regulations or "40 C.F.R. section 258.XX". These regulations apply to all California Class II and Class III landfills that accept MSW. State Water Board Resolution 93-62 requires the Central Valley Water Board to implement in WDRs for MSW landfills the applicable provisions of the federal MSW regulations that are necessary to protect water quality, and in particular the containment provisions and the provisions that are either more stringent or that do not exist in Title 27.
9. This Order implements the applicable regulations for discharges of solid waste to land through Prohibitions, Specifications, Provisions, and monitoring and reporting requirements. Prohibitions, Specifications, and Provisions are listed in Sections A through H of these WDRs below, and in the Standard Provisions and Reporting Requirements (SPRRs) dated January 2012 which are part of this Order. Monitoring and reporting requirements are included in the Monitoring and Reporting Program (MRP) No. R5-2014-0006 and in the SPRRs. In general, requirements that are either in regulation or otherwise apply to all MSW landfills are considered to be "standard" and are therefore in the SPRRs. Any site-specific changes to a requirement in the SPRRs are included in the applicable section (A through H) of these WDRs, and the requirement in the WDRs supersedes the requirement in the SPRRs.
10. Title 27 contains regulatory standards for discharges of solid waste promulgated by the State Water Board and the California Department of Resources Recovery and Recycling (CalRecycle). In certain instances, this Order cites CalRecycle regulatory sections. Title 27, section 20012 allows the Central Valley Water Board to cite CalRecycle regulations from Title 27 where necessary to protect water quality provided it does not duplicate or conflict with actions taken by the Local Enforcement Agency in charge of implementing CalRecycle's regulations.

WASTE CLASSIFICATION AND UNIT CLASSIFICATION

11. The Discharger proposes to continue to discharge nonhazardous solid waste, including municipal solid waste, commercial waste, construction and demolition waste, asbestos, and dewatered sewage sludge to lined Class III landfill units and lined Class II landfill units at the facility. These classified wastes may be discharged only in accordance with Title 27, Resolution 93-62, and Subtitle D as required by this Order.
12. The Discharger also proposes to continue to discharge designated waste to Class II landfill units including industrial waste, coal and wood ash, contaminated soils, salty wastes, and

auto shredder waste. These classified wastes may be discharged only in accordance with Title 27, Resolution 93-62, and Subtitle D as required by this Order.

13. Water Code section 13173 defines "Designated Waste" as either of the following:

- a. Hazardous waste that has been granted a variance from hazardous waste management requirements pursuant to Health and Safety Code section 25143.
- b. Nonhazardous waste that consists of, or contains, pollutants that, under ambient environmental conditions at a waste management unit, could be released in concentrations exceeding applicable water quality objectives or that could reasonably be expected to affect beneficial uses of the waters of the state as contained in the appropriate state water quality control plan.

Designated waste can be discharged only at Class I waste management units, or at Class II waste management units which comply with Title 27 and have been approved by the regional board for containment of the particular kind of waste to be discharged.

14. The Discharger proposes to continue to discharge wastes containing greater than one percent (>1%) friable asbestos to the landfill units. These wastes are classified as 'hazardous' under California Code of Regulations, title 22 (Title 22). However, these wastes do not pose a threat to groundwater quality and California Health and Safety Code, section 25143.7 permits their disposal in any landfill that has WDRs that specifically permit the discharge, provided that the wastes are handled and disposed of in accordance with applicable statutes and regulations.

15. DTSC has granted shredder waste a variance, for the purposes of disposal, from hazardous waste management requirements pursuant to California Code of Regulations (CCR) Title 22. Shredder waste is any non-recyclable wastes which results from the shredding of automobile bodies (from which batteries, mufflers, and exhaust pipes have been removed), household appliances, and sheet metal.

16. The Discharger proposes to discharge shredder waste to units with single composite liners.

17. The Discharger proposes to discharge cannery rinsate muds, dewatered sewage and water treatment sludges to units with single composite liners. If disposed directly into the landfill, sludge is mixed with refuse so that the mixed sludge will not exceed the moisture holding capacity of the refuse. Rinsate muds and sludges containing excess moisture may be air-dried on a bermed, compacted clay pad. When dry, the rinsate mud, sludge and underlying soil impacted by contact with the sludge are disposed in the WMU.

18. The Discharger accepts soils contaminated with less than hazardous levels of petroleum hydrocarbons. These soils are either treated in the land treatment unit, or discharged to Class II landfill units. The Discharger has demonstrated that soil contaminated with less than hazardous levels of petroleum hydrocarbons can be transformed to a 'nonhazardous solid waste' in the treatment unit.

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

21. Title 27, section 20690 allows the use of alternative daily cover (ADC) at MSW landfills upon approval by the Local Enforcement Agency (LEA) and concurrence from CalRecycle. Title 27, section 20705 provides the Water Board's regulations for all daily and intermediate cover including that it shall minimize the percolation of liquids through waste and that the cover shall consist of materials that meet the landfill unit classification (Class II or Class III). The regulations also require that for non-composite lined portions of the landfill, that any contaminants in the daily or intermediate cover are mobilized only at concentrations that would not adversely affect beneficial uses of waters of the state in the event of a release. For composite-lined portions of the landfill, the regulations require that constituents and breakdown products in the cover material are listed in the water quality protection standard.
22. The Discharger uses the following materials for ADC: synthetic fabric tarps; processed green material; shredded tires; ash and cement kiln dust; construction and demolition wastes; contaminated soils; compostable materials (off-spec, delivered by generator); and processed and treated auto shredder residue. ADC materials were previously approved by the LEA. The Discharger has demonstrated that these materials meet the unit classification where they will be discharged, and that the constituents and breakdown products are included in the water quality protection standard. Materials approved for wet season use have been demonstrated to minimize percolation of liquids through waste.
23. Landfills may propose new ADC materials in order to preserve landfill air space and to beneficially reuse waste materials. Title 27, section 20686 includes regulations for beneficial reuse, including use of ADC. Approval of ADC is primarily handled by the LEA and CalRecycle under Title 27, section 20690. This Order allows any ADC proposed for use at the facility after the adoption of this Order to be approved by Central Valley Water Board staff provided the Discharger has demonstrated it meets the requirements in Title 27, section 20705. The approved ADC materials should then be listed in the facility's WDRs during the next regular update or revision with information about the Discharger's demonstration. This Order also includes a requirement that ADC only be used in internal areas of the landfill unless the Discharger demonstrates that runoff from the particular ADC is not a threat to surface water quality. The demonstration can take sedimentation basins into account.
24. The Discharger proposes to discharge leachate and landfill gas condensate to the composite-lined landfill units which are similar in classification and characteristics to those units from which leachate was extracted. Title 27, section 20340(g) requires that leachate be returned to the unit from which it came or be discharged in a manner approved by the regional board. Leachate can be discharged to a different unit only if:
 - a. the receiving unit has an LCRS, contains wastes which are similar in classification and characteristics to those in the unit(s) from which the leachate was extracted, and has at least the same classification as the unit from which leachate was extracted;
 - b. the discharge to a different unit is approved by the Central Valley Water Board; and

- c. the leachate shall not exceed the moisture holding capacity of the receiving unit.

This section of Title 27 also references State Water Board Resolution 93-62 regarding liquids restrictions in 40 C.F.R. section 258.28 for MSW landfills. 40 C.F.R. section 258.28 states that liquid waste may not be placed in MSW landfill units unless the waste is leachate or gas condensate derived from the landfill unit and it is designed with a composite liner and an LCRS. Therefore, leachate and landfill gas condensate from composite lined units with an LCRS may be discharged to composite lined units with similar classification. Forward has multiple composite lined units constructed with the same general design and with the same classification. This Order includes requirements for returning leachate and landfill gas condensate back to composite-lined units such that it is not exposed to surface water runoff, will not cause instability of the landfill, and will not seep from the edges of the units.

SURFACE IMPOUNDMENTS

25 Liquid wastes will be discharged to one of two existing (F-North and F-West) and one proposed Class II surface impoundments. If leachate production exceeds impoundment capacity at any impoundment, excess leachate will either be contained in temporary on-site, above ground tanks or will be transported to the City of Stockton's wastewater plant for off-site disposal. No liquids generated offsite will be discharged to the impoundments without prior approval of the Central Valley Water Board. Discharges to Class II surface impoundments included the following:

- a. Leachate from the landfill units and surface impoundments;
- b. Landfill gas condensate from the LFG extraction system;
- c. Impacted storm water runoff from the landfill and associated facilities;
- d. Cannery rinse water; and/or
- e. Other liquid wastes that are compatible with the liner system and approved by Board staff.

All Class II surface impoundments LCRSs are tested annually.

26. Facility Specification C.7 requires that the Discharger operates the Class II impoundments so that on October 15 of each year a freeboard of at least 4.73 feet and 5.51 feet exists in F-North and F-West, respectively. This corresponds to two feet plus the calculated rise in liquid level associated with an average annual storm season. Facility Specification C.8 of these WDRs requires that the Discharger manage liquid levels in the impoundment in accordance with a Board staff-approved operations plan under Title 27.

COMPOST FACILITY WASTE

25. The Discharger proposes to continue to treat some decomposable organic waste in the Compost Facility. Material accepted for treatment at the compost Facility includes green

waste, food waste (including garbage as defined in CCR Title 14 Section 17225.30), food processing residue, biosolids, mixed solid waste, manure, mixed paper, ash, grit/grease, holding tank pumpings, cannery rinse water and agricultural waste. Green material, food processing residue, food waste, sewage sludge, mixed solid waste and manure are as defined in CCR Title 14 (Chapter 3.1, Article 1, Section 17852). Compost may be marketed offsite as a product or utilized on-site as a soil amendment or alternative cover (ADC).

26. Title 27 regulates waste classifications and waste management unit classifications designed to provide protection to beneficial uses of waters of the state for projects involving the discharge of solid waste to land for treatment, storage or disposal at landfills, surface impoundments, waste piles and land treatment units. Under this scheme, a composting operation that does not involve the processing of hazardous constituents may either be exempt from regulation under Title 27 or be a Class II waste pile for the treatment and storage of solid waste.
27. The feedstock and some additives for composting are classified as nonhazardous solid waste and some may be designated waste as defined in Title 27, depending on various factors including site-specific conditions and the types and volumes of feedstock and additives. Composting operations are regulated under Title 27 regulations at sites where groundwater could be impacted by compost leachate from the compost pads or the runoff retention basin. However, based on site specific factors including site location, fine grained soils and depth to groundwater, the threat to beneficial uses of surface water or groundwater posed by this operation is not commensurate with the stringent monitoring, siting, construction and design standards applicable to a Class II waste pile under Title 27 so long as it meets and continues to meet the requirements of this Order. The requirements of this Order include a runoff retention basin that can accommodate runoff from a 25-year, 24-hour storm event; installation of a synthetic liner in the retention basin; and construction and maintenance of low conductivity (minimum 1×10^{-5} cm/sec) composting and storage pads to minimize downward infiltration. The attached MRP requires quarterly monitoring of the retention basin liquid and of the leachate from active compost areas. The Regional Water Board may revise this Order with more stringent requirements if monitoring indicates the threat to waste quality is greater than expected.
28. Title 27, section 20200(a)-(a)(1) states that: *"[For wastes that cannot be discharged directly or indirectly to waters of the state, the waste classification system under Title 27] shall provide the basis for determining which wastes may be discharged at each class of Unit. Waste classifications are based on an assessment of the potential risk of water quality degradation associated with each category of waste."*
29. Title 27 section 20200(a)(1) allows the Regional Water Board to make a finding that: *"...a particular waste constituent or combination of constituents presents a lower risk of water quality degradation than indicated by classification according to this article."* Based on the Discharger submittals and on the lower risk to water quality cited in Finding 28 of this Order, the Regional Water Board finds, pursuant to Title 27 section 20200(a)(1), that the operation

is not subject to Title 27 regulations so long as the operation continues to meet the composting related requirements of this Order.

CANNERY WASTE

30. The Discharger proposes to land apply cannery waste on 75 acres north of the former Austin Road Landfill unit (Attachment B). The waste is composed of two materials: cannery residual material including whole fruits, vines, leaves, pomace, culls, peels and seeds; and cannery rinsate including rinse water and mud. The waste may contain trace amounts of cleansers and sanitizers used in the canning process. Cannery waste is nonhazardous decomposable waste that when land applied as a soil amendment under appropriate BMPs may be exempt from the containment provisions of title 27. Title 27 Section 20090(f) states in part: "Soil Amendments – Use of nonhazardous decomposable waste as a soil amendment pursuant to applicable best management practices, provided that RWQCBs may issue waste discharge or reclamation requirements for such use." The discharge is seasonal from late-June to early-November. Excess cannery residual material may be treated in the compost facility; excess cannery rinse water may be discharged to a Class II surface impoundment.

SITE DESCRIPTION

31. Forward Landfill is situated in the eastern San Joaquin Valley on relatively flat terrain with pre-landfill surface elevations ranging from 30 to 40 feet above mean sea level (MSL). The existing Solid Waste Facility Permit allows landfilling to a maximum elevation of 210 feet MSL. The North Fork of South Littlejohns Creek forms the north and west boundaries of the Austin Road unit and drains the north half of the combined landfill area. The South Fork of South Littlejohns Creek separates the old Forward units and the composting/materials recycling area and drains the south half of the combined landfill area.

32. Land uses within one mile of the facility include agriculture, industrial and residential. The Stockton Metropolitan Airport is approximately one mile to the west, the Northern California Youth Correction Center is approximately 1,900 feet to the north, and the BNSF Intermodal Facility is approximately one mile to the northeast. There are three residences within one half mile of the landfill.

33. There are 35 domestic, industrial, or agricultural groundwater supply wells within one mile of the facility.

34. The site is underlain by lenticular deposits of clay, silt and sand with minor gravel of the Pleistocene Victor Formation. The closest fault, the Tracy-Stockton Fault Zone is approximately 6.5 miles to the northwest.

35. The measured hydraulic conductivity of the uppermost aquifer underlying the landfill units ranges between 2×10^{-2} and 2×10^{-3} centimeters per second (cm/s).

36. Based on a site-specific seismic analysis, the controlling maximum credible earthquake (MCE) for the site is a moment of magnitude 6.4 event along the Great Valley Fault at a closest rupture distance of 21 miles (34 kilometers) from the site. It is estimated that a MCE event would produce a peak ground acceleration of 0.13 g at the site.
37. The facility receives an average of 13.31 to 14.35 inches of precipitation per year as measured at the site. The mean pan evaporation is 78.43 inches per year as measured at the Oakdale Woodward Dam Station.
38. The 1,000-year, 24-hour precipitation event for the facility is estimated to be 4.11 inches, based on California Department of Water Resources' bulletin 195 entitled *Rainfall Depth-Duration-Frequency for California*, revised November 1982, updated August 1986.
39. The waste management facility is not within a 100-year flood plain based on the US Dept. of Housing and Urban Development, National Flood Insurance Rate Map, October 2009.
40. Storm water sedimentation basins are located west of the landfill as shown on Attachment B. The basins detain storm water for sedimentation control during the rainy season and are normally dry during the summer months. Storm water from the sedimentation basins is typically evaporated but may be discharged to North or South Forks of South Littlejohns Creek.

SURFACE WATER AND GROUNDWATER CONDITIONS

41. The *Water Quality Control Plan for Sacramento and San Joaquin River Basins, Fourth Edition* (hereafter Basin Plan), designates beneficial uses, establishes water quality objectives, and contains implementation plans and policies for all waters of the Basin.
42. Surface water drainage from the northern half of the site is to the North Fork of South Littlejohns Creek; drainage from the southern half flows to the South Fork of South Littlejohns Creek thence to Littlejohns Creek in the Duck-Littlejohns Hydrologic Area (31.40) of the San Joaquin River Basin.
43. The designated beneficial uses of Littlejohns Creek as specified in the Basin Plan, are municipal and domestic supply; agricultural supply; water contact recreation; non-contact water recreation; commercial and sport fishing; warm fresh water habitat; cold freshwater habitat; wildlife habitat; preservation of biological habitats of special significance; migration of aquatic organisms; and spawning, reproduction, and/or early development.
44. The first encountered groundwater ranges from about 60 feet to 80 feet below the native ground surface. Groundwater elevations range from about -14 feet to -30 feet below the mean sea level (BMSL). The depth to groundwater fluctuates seasonally as much as 10 feet. Groundwater is unconfined.

45. In 2007, the Discharger submitted a detailed re-evaluation of historic groundwater levels for the area east of WMU FU-06. The report demonstrated that proposed LCRS base grades in the area east of WMU FU-06 are at least five feet above the historic high groundwater level.
46. Monitoring data indicate background groundwater quality for first encountered groundwater has electrical conductivity (EC) ranging between 900 and 1100 micromhos/cm, with total dissolved solids (TDS) ranging between 600 and 800 milligrams per liter (mg/L).
47. The direction of groundwater flow is generally toward the north-northeast. The estimated average groundwater gradient is approximately 0.002 feet per foot. The estimated average groundwater velocity is 195 feet per year.
48. The designated beneficial uses of the groundwater, as specified in the Basin Plan, are domestic and municipal water supply, agricultural supply, industrial service supply, and industrial process supply.

GROUNDWATER AND UNSATURATED ZONE MONITORING

49. The existing groundwater monitoring network consists of two units, the Forward Unit with a detection program and the Austin Road Unit with a detection program, a corrective action program and an ongoing evaluation program. The groundwater monitoring network is summarized in the following:

<u>Unit</u>	<u>Status</u>	<u>Wells</u>
Forward	Background	MW-22, MW-23R, MW-24
	Detection	MW-1A, -2A, -3A, -10, -13A, -14A, -15, -16, -17, -18, -19, & -21
	Domestic	DW-9690
Austin Road Shallow Zone	Background	AMW-2
	Detection	AMW-5R & -12
	Corrective Action	AMW-1, -4, -10, -11, -13, -14, -18, -19, -21S, -22S, -24SR, -29S, -30-S, -31S & -32S
Austin Road Deep Zone	Detection	AMW-6 & -7
	Corrective/ Evaluation	AMW-13B, -18B, -19BR, -21, -22, -24R, -25, -26R, -28, -29, -30, -31, & -32
	Domestic	7898-A, 8106-A

50. Any additional groundwater wells installed as part of an investigation or for any other reason shall be sampled quarterly for the parameters and constituents listed in Table I of the MRP until they are either abandoned with concurrence of Water Board staff or they are

incorporated into a regular monitoring program as part of a revised MRP. The Discharger's detection monitoring program for groundwater at the landfill satisfies the requirements contained in Title 27.

51. The existing unsaturated zone monitoring system for the landfill consists of:

<u>Unit Monitored</u>	<u>Type</u>	<u>Monitoring Points</u>
F – North	Suction	E-1, E-2, W-1, W-2
F – West	Suction	LY-Pond-N, LY-Pond-S
Background	Suction	LY-BG-1
Forward	Suction	LY-A, LY-E1A, LY-E1B, LY-E2A, LY-E2B, D93A, D93B
Austin Road	Suction	FU-03, FU-04W, FU-04E, FU-05, FU-06
Forward	Pan	D-01S, D-01N, D-02
Austin Road	Pan	FU-03, FU-04W, FU-04E, FU-05, FU-06

Landfill units built after 2001 are constructed with pan lysimeters below the landfill sump as a final check of the integrity of the base liner. New landfill units at Austin Road have a suction lysimeter in addition to the pan lysimeter. In recent years, lysimeters at new units have not been sampled on a regular basis. This Order requires quarterly monitoring of all currently existing and any future lysimeters if liquid is present.

52. Volatile organic compounds (VOCs) are often detected in a release from a MSW landfill and are often associated with releases of landfill gas rather than leachate. Since volatile organic compounds are not naturally occurring and thus have no background value, they are not amenable to the statistical analysis procedures contained in Title 27 for the determination of a release of wastes from a landfill unit. Title 27, sections 20415(e)(8) and (9) allows the use of a non-statistical evaluation of monitoring data that will provide the best assurance of the earliest possible detection of a release from a landfill unit in accordance with Title 27, sections 20415(b)(1)(B)2.-4. However, Title 27 does not specify a specific method for non-statistical evaluation of monitoring data.

53. The Central Valley Water Board may specify a non-statistical data analysis method pursuant to Title 27, section 20080(a)(1). Water Code section 13360(a)(1) allows the Central Valley Water Board to specify requirements to protect groundwater or surface waters from leakage from a solid waste site, which includes a method to provide the best assurance of determining the earliest possible detection of a release.

54. In order to provide the best assurance of the earliest possible detection of a release of non-naturally occurring waste constituents from a landfill unit, the SPRRs specify a non-statistical method for the evaluation of monitoring data for non-naturally occurring compounds. The specified non-statistical method for evaluation of monitoring data provides two criteria (or triggers) for making the determination that there has been a release of non-naturally occurring waste constituents from a landfill unit. The presence of two non-naturally occurring

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

55. For a naturally occurring constituent of concern, the Title 27 requires concentration limits for each constituent of concern be determined as follows:

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

56. The Discharger submitted an October 2011 Concentration Limit Update (CLU) report proposing statistical data analysis methods to calculate new or revised concentration limits for each monitored constituent in accordance with Title 27. The CLU report proposed to use intrawell data analysis to calculate tolerance limits for the monitored constituents. The CLU and approved data evaluation methods are included in MRP No. R5-2014-0006.

GROUNDWATER DEGRADATION AND CORRECTIVE ACTION

57. Groundwater down-gradient of the old Austin Road Unit is impacted with dichloroethane, dichloroethylene, tetrachloroethylene, and trichloroethylene. VOC impacts were detected in 1989 and by 1991 evaluation monitoring determined that chlorinated hydrocarbon impacts extended as far as 1,000 feet down-gradient of the landfill. A corrective action plan was approved for implementation in August 1991. The plan consisted of a load checking program; extraction and treatment of impacted groundwater from two wells; and continued monitoring of the effectiveness of corrective action.

58. In 1998 corrective action monitoring determined that the initial corrective actions had failed to contain groundwater contamination or remediate groundwater impacts. In April 1999, the City of Stockton (previous discharger) submitted a Draft Engineering Feasibility Study (EFS) for an improved corrective action plan. Staff determined that the Draft EFS was inadequate and requested changes. On 3 September 2000, ownership of Austin Road landfill was transferred to Forward Inc. The new Owner submitted a revised EFS on 11 June 2001 and revised in response to comments on 30 August 2001; a Time Schedule for Corrective Action was issued 13 December 2001; and the Discharger submitted an Evaluation Procedures for Proposed Corrective Action on 26 February 2002. The resulting corrective action plan, includes the following activities:

- a. Enhance landfill gas control system to prevent further release of VOCs from the landfill;
 - b. Continued groundwater extraction and treatment with existing extraction wells;
 - c. Implementation of a groundwater artificial recharge system using treated water;
 - d. Additional groundwater monitoring wells to monitor the effectiveness of the corrective action and determination of the need for modifications; and
 - e. Install an interim cover on Austin Road Landfill Unit 1.
59. The groundwater extraction system consists of five groundwater extraction wells at the downgradient boundary of the Austin Road Unit. VOCs are removed with an air stripper and the treated water is discharged to a recharge basin to recharge the shallow aquifer. Operation and monitoring of the groundwater extraction system is regulated by Order R5-2003-0080.
60. In 2008, chlorinated solvents including tetrachloroethylene and trichloroethylene were detected in water supply wells at the California Youth Authority (CYA) facility, approximately 1900 feet north of the Austin Road Unit. On 8 December 2008, the Executive Officer issued Cleanup and Abatement Order (CAO) R5-2008-0714 requiring among other things a plan to supply drinking water to the CYA, a source control plan, upgrade the existing groundwater treatment system, investigate the nature and extent of the release, submit an engineering feasibility study, and implement corrective actions. Compliance with the CAO is ongoing, the Discharger extended the municipal water supply to CYA and is currently working on the nature and extent investigation. Any corrective actions resulting from the CAO will be addressed in a future Order.

LINER PERFORMANCE DEMONSTRATION

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

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

62. On 21 February 2002, the Discharger submitted “Leachate Attenuation Analyses Prescriptive Clay Liner, Forward Landfill” and on 21 March staff provided comments for that document. On 10 July 2002 the discharger submitted “Performance Demonstration for a Single Composite Liner”, and on 14 August 2002 staff provided comments for that document. On

25 September 2002 the discharger submitted a revised performance demonstration and on 24 October 2002 staff responded indicating concurrence with the revised demonstration. The proposed liner system consists of a single composite base liner from bottom to top composed of: a prepared subgrade, two feet of compacted clay, 60-mil HDPE, one-foot gravel drainage layer, filter fabric, one-foot operations layer, and a first waste layer composed of selected waste. Side-slope liners to be composed of: a prepared subgrade, two-feet of compacted clay or GCL, 60-mil HDPE, geocomposite drainage net, and one-foot operations layer. Forward will install a double composite liner under landfill sumps, conduct an electric leak test over the sump, conduct CQA inspections during placement of the operations layer and first lift of refuse, conduct an electric leak test over the entire base liner after installation of the operations layer; and use selected material in the operations layer. The report demonstrated that the proposed liner system would effectively prevent the migration of wastes from the unit.

CONSTRUCTION AND ENGINEERED ALTERNATIVE

63. On 17 June 1993, the State Water Board adopted Resolution 93-62 implementing a State Policy for the construction, monitoring, and operation of municipal solid waste landfills that is consistent with the federal municipal solid waste regulations promulgated under 40 Code of Federal Regulations section 258 (a.k.a., Subtitle D). Resolution 93-62 requires the construction of a specified composite liner system at new municipal solid waste landfills, or expansion areas of existing municipal solid waste landfills, that receive wastes after 9 October 1993. Resolution 93-62 also allows the Central Valley Water Board to consider the approval of engineered alternatives to the prescriptive standard. Section III.A.b. of Resolution 93-62 requires that the engineered alternative liner systems be of a composite design similar to the prescriptive standard.
64. Title 27, section 20080(b) allows the Central Valley Water Board to consider the approval of an engineered alternative to the prescriptive standard. In order to approve an engineered alternative in accordance with Title 27, sections 20080(c)(1) and (2), the Discharger must demonstrate that the prescriptive design is unreasonably and unnecessarily burdensome and will cost substantially more than an alternative which will meet the criteria contained in Title 27, section 20080(b), or would be impractical and would not promote attainment of applicable performance standards. The Discharger must also demonstrate that the proposed engineered alternative liner system is consistent with the performance goal addressed by the particular prescriptive standard, and provides protection against water quality impairment equivalent to the prescriptive standard in accordance with Title 27, section 20080(b)(2).
65. Water Code section 13360(a)(1) allows the Central Valley Water Board to specify the design, type of construction, and/or particular manner in which compliance must be met in waste discharge requirements or orders for the discharge of waste at solid waste disposal facilities.
66. The Discharger proposes a liner system which will be designed, constructed, and operated in accordance with the criteria set forth in Title 27, and the provisions in State Water Board Resolution 93-62 for municipal solid wastes.

67. On 30 May 2002, the Discharger submitted a Joint Technical Document requesting approval of single composite bottom liner that complies with the prescriptive standard liner requirements and an engineered alternative to the prescriptive standard for the side slope liner requirements for all future modules at the facility. Future landfill modules shall have a single composite bottom liner that consists of, in ascending order: a prepared subgrade; a 24-inch thick, low-permeability soil layer (minimum permeability of 1×10^{-7} cm/sec); a 60-mil high density polyethylene (HDPE) geomembrane; a 12-ounce/square yard cushion geotextile (may be omitted if the LCRS gravel is sub-angular to rounded); a 12-inch LCRS gravel drainage layer; an 8-ounce/square yard separator geotextile; and a 12-inch thick protective cover soil operations layer. The components for the engineered alternative side slope liner of the future landfill modules consists of, in ascending order: a prepared subgrade; a Geosynthetic Clay Liner (GCL) or a 24-inch thick low permeability soil layer (minimum permeability of the soil 1×10^{-7} cm/sec); a 60-mil HDPE geomembrane; a geocomposite drainage net; and a 12-inch thick protective cover soil operations layer.
68. The Discharger's engineered alternative demonstration contends that installation of 24-inches of compacted low permeability soil and gravel drainage material on side slopes will be technically difficult and would cost substantially more than the use of GCL and geocomposite drainage net respectively (the alternative design).
69. The Discharger adequately demonstrated that construction of a Subtitle D prescriptive standard liner would be unreasonably and unnecessarily burdensome when compared to the proposed engineered alternative design. The Discharger demonstrated that the proposed engineered alternative is consistent with the performance goals of the prescriptive standard and affords at least equivalent protection against water quality impairment.
70. The approved leachate collection and removal system (LCRS) consists of a 12-inch gravel layer with six-inch high density polyethylene (HDPE) lateral pipe and headers. The drainage layer has a minimum 2% grade towards the leachate collection pipes and minimum 1% grade along the leachate collection pipes. The leachate collection pipes are placed on approximately 200-foot centers. Calculated peak daily leachate generation is 4,073 gallons/acre or approximately 0.0045 cubic feet per second. Daily peak head on the liner system is calculated to be approximately 1.6 inches. Collected leachate is either recirculated to composite-lined landfill units or discharged to one of the onsite Class II impoundments. Recirculated leachate may be discharged by spraying from a tanker truck or by subsurface injection.
71. A pan lysimeters will be installed beneath the LCRS sump in each new landfill cell/module for the purpose of vadose zone monitoring. The proposed design for the pan lysimeters consists of, in ascending order: a prepared subgrade; a 24-inch thick, low-permeability soil layer (minimum permeability of 1×10^{-7} cm/sec) or a GCL liner; a 60-mil HDPE geomembrane; and a gravel filled pan lysimeter with access pipe. Overlying the pan lysimeter is the primary sump which consists of a GCL liner; a 60-mil HDPE geomembrane; a gravel filled LCRS sump with access pipe; an 8-ounce/square yard separator geotextile; and a 12-inch thick protective cover soil operations layer.

72. The Discharger proposes to install an intermediate liner where new landfill modules/cells are constructed over the existing Class III waste disposal area. The interface liner consists of, in ascending order: one-foot of existing soil cover; one-foot of additional foundation soil; 24-inch low permeability soil (minimum permeability of 1×10^{-7} cm/sec) or GCL liner; 60-mil HDPE geomembrane; geocomposite drainage layer; and one-foot protective cover soil layer.
73. The Discharger proposes the following construction quality assurance protocols for liner construction:
- a. Monitor placement of drainage layer gravel with a dedicated CQA technician;
 - b. a liner leak test over the entire base liner to be performed after installation of the gravel drainage layer and the operations layer; and
 - c. during placement of the first layer of waste in a new unit, site personnel will monitor waste placement and will exclude materials that could threaten the liner.
74. The May 2002 (subsequently revised in 2002, 2003, 2007 and 2008) Joint Technical Document includes a stability analysis for the landfill and liner system pursuant to Title 27, section 21750(f)(5). The Discharger based the seismic slope stability analysis on two potential earthquake events, a Maximum Creditable Earthquake (MCE) of M 7.9 on the San Andreas Fault at distance 70 Miles and an MCE of M 6.7 on the Great Valley Fault at distance 21 miles. The slope stability analysis was completed using the program SLOPE/W. The gross stability of the landfill and liner was assessed using the maximum slope height and slope gradient. The final static factor of safety of 1.5 can be obtained for the proposed final cover configuration and no significant seismic-induced permanent displacement is anticipated for the proposed cover design for the design earthquakes. Discharger's stability analysis includes components to demonstrate the integrity of the landfill foundation, final slopes, and containment systems under both static and dynamic conditions throughout the landfill's life including the closure period and post-closure maintenance period. The stability analysis demonstrates that the structural components will withstand the forces of the MCE without failure of the containment systems or environmental controls.
75. The Discharger proposes to construct new Class II surface impoundments as needed to contain and evaporate leachate from solid waste management units. An engineered alternative to the prescriptive liner requirements of Title 27 is proposed for the Class II Surface Impoundments. The engineered alternative consists of from the top down:
- a. A primary 60-mil-thick High Density Polyethylene (HDPE) geomembrane;
 - b. a geonet drainage layer, as a Leachate Collection and Removal System (LCRS);
 - c. a secondary 60-mil-thick HDPE geomembrane; and
 - d. a GCL in place of the compacted clay liner.
76. This Order approves the Discharger's proposed liner system for future modules as described in Finding 6 and requires that the Discharger submit design plans and construction quality

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

COMPOST FACILITY

77. The Composting Facility is located on 7.6 acre parcel south of the South Fork of South Littlejohns Creek. The facility consists of compacted native soil pad with a minimum one-percent slope to the north. The pad is protected from run-on by berms on the eastern edge and a portion of the south edge of the site. The site is sloped to drain to two ditches designed to contain run-off from the 25-year, 10-minute duration storm. Composting windrows are constructed normal to the slope to allow free drainage and minimize ponding. The surface native soils consist of lean clay to silt and silty clay. This Order requires that the one-foot thick soil layer beneath composting pad areas be tested and if necessary conditioned and compacted to achieve a hydraulic conductivity of 1×10^{-5} cm/sec or less.
78. Leachate, if any, is collected in the two ditches and drains to an unlined storm-water retention basin. The Discharger does not monitor, sample or otherwise control leachate. This Order requires that the retention pond be sized to contain at least a 25-year, 24-hour storm event and that the retention pond be equipped with a synthetic liner.
79. Water collected in the retention basin will either be evaporated, used in the initial mixing of the compost, used for dust control, pumped to the on-site leachate evaporation pond, or transported off-site to a municipal treatment facility.

LAND APPLICATION OF CANNERY WASTES

80. Solid cannery waste will be discharged within the designated land application areas, spread evenly and allowed to dry. Liquid waste (rinsate water) will be delivered in tanker trucks and slowly discharged over the land application area. Small berms will be constructed to maintain dry pathways for tanker trucks. The dried wastes (liquid and solid) will be disked approximately 4 to 6-inches into the ground. Rapid evaporation prevents anaerobic odors and interrupts the life cycle of vectors (flies). Excess cannery rinsate water may be discharged to one of the Class II surface impoundments.
81. Excessive application of decomposable organic waste to land can create objectionable odors, soil conditions that are harmful to crops and degradation of underlying groundwater with nitrogen species and certain metals, as discussed below. Such groundwater degradation can be prevented or minimized through implementation of best management practices (BMPs) which include planting crops to take up plant nutrients and maximizing oxidation of biochemical oxygen demand (BOD) to prevent nuisance conditions.
82. The Discharger is required to implement the following BMPs for cannery waste:
- a. The ground surface will be prepared prior to the application of waste.

- b. Waste will be spread thinly, no more than 3 inches deep, to ensure complete drying within five days.
- c. Waste will be turned twice daily with a cultivating device to facilitate drying.

83. Groundwater degradation with nitrogen species such as ammonia and nitrate can be prevented by minimizing percolation below the root zone of crops and ensuring that the total nitrogen load does not exceed crop needs over the course of a typical year. Where there is sufficient unsaturated soil in the vadose zone, excess nitrogen can be mineralized and denitrified by soil microorganisms.

84. Excess BOD is developed by excessive waste application that depletes oxygen in the vadose zone creating anoxic conditions. At the surface, this can result in nuisance odors and fly-breeding. When insufficient oxygen is present below the ground surface, anaerobic decay of organic matter can create reducing conditions that convert naturally occurring metals from insoluble to a more soluble reduced form. This condition can be exacerbated by acidic soils and excess moisture. If reducing conditions do not reverse as the percolate moves down through the vadose zone, the dissolved metals (primarily iron, manganese and arsenic) can degrade shallow groundwater quality. Many aquifers contain enough dissolved oxygen to reverse the process.

ANTIDegradation ANALYSIS FOR LAND APPLICATION OF CANNERY WASTE

85. State Water Resources Control Board Resolution 68-16 ("Policy with Respect to Maintaining High Quality Waters of the State") (hereafter Resolution 68-16) prohibits degradation of groundwater unless it has been shown that:

- a. The degradation is consistent with the maximum benefit to the people of the state.
- b. The degradation will not unreasonably affect present and anticipated future beneficial uses.
- c. The degradation does not result in water quality less than that prescribed in state and regional policies, including violation of one or more water quality objectives, and
- d. The discharger employs best practicable treatment or control (BPTC) to minimize degradation.

86. Degradation of groundwater by some of the typical waste constituents associated with discharges of decomposable organic waste, such as cannery waste is not consistent with the maximum benefit to the people of the state when there are other viable means of disposal that would have less environmental impact, such as use for livestock feed.

87. Groundwater quality has been monitored at the site since 1988. Based on the data available, it is not possible to determine pre-1968 groundwater quality. Therefore, determination of compliance with Resolution 68-16 for this facility must be based on existing

groundwater quality. Constituents of concern that have the potential to degrade groundwater at the land application area include nitrogen, iron and manganese as discussed below:

- a. For nutrients such as nitrate, the potential for degradation depends not only on the character of the waste, but on loading rates, crop uptake and the ability of the vadose zone below the land application area to provide an environment conducive to nitrification and denitrification to convert the excess nitrogen to nitrate and the nitrate to nitrogen gas before it reaches the water table. This Order requires that the measured total nitrogen concentration in soil not increase on an annual basis (over a waste application/crop growth cycle). Therefore, no degradation is expected to occur and this Order does not allow nitrate degradation of shallow groundwater.
- b. For metals such as iron and manganese, the waste is not expected to contain significant concentrations. However, as noted above, excessive BOD loading rates can deplete oxygen, resulting in anoxic conditions that can solubilize naturally occurring metals in the soil. Based on the depth of shallow groundwater and BMPs that this Order requires, degradation of shallow groundwater with metals due to reducing conditions is not expected to occur and this Order does not allow degradation of groundwater with metals.

88. This Order establishes operational requirements, nutrient loading rate limits and groundwater limitations for the land application area that will not unreasonably threaten present and anticipated beneficial uses or result in groundwater quality that exceeds water quality objectives set forth in the Basin Plan. The discharge does not pose a threat of degradation and the requirements of this Order do not allow any degradation to occur.

89. Title 27 of the California Code of Regulations (hereafter Title 27) contains regulatory requirements for the treatment, storage, processing and disposal of solid waste. However, Title 27 exempts certain activities from its provisions. Cannery waste discharges that comply with this Order are exempt from Title 27 pursuant to provisions that exempt domestic sewage, wastewater and reuse. The exemption referred to in this Order is specifically limited to those cannery wastes described in Finding 31 above. Title 27, section 20090 states in part: ...*"The following activities shall be exempt from the SWRCB-promulgated provisions of this subdivision, so long as the activity meets, and continues to meet, all preconditions listed:"*

"(f) Soil Amendments – Use of nonhazardous decomposable waste as a soil amendment pursuant to applicable best management practices, provided that RWQCBs may issue waste discharge or reclamation requirements for such use."

90. Therefore, the land application of cannery wastes authorized herein is exempt from the requirements of Title 27 because the cannery wastes are a nonhazardous decomposable waste and will be used as a soil amendment using best management practices.

LANDFILL CLOSURE

91. Title 27, section 21090 provides the minimum prescriptive final cover components for landfills consisting of, in ascending order, the following layers:
- a. Two-foot soil foundation layer.
 - b. One-foot soil low flow-hydraulic conductivity layer, less than 1×10^{-6} cm/s or equal to the hydraulic conductivity of any bottom liner system.
 - c. Geomembrane layer (this layer is required for composite-lined landfills for equivalency to bottom liner).
 - d. One-foot soil erosion resistant/vegetative layer.
92. Title 27 allows engineered alternative final covers provided the alternative design will provide a correspondingly low flow-through rate throughout the post-closure maintenance period.
93. The Discharger submitted a December 2008, *Preliminary Closure and Postclosure Maintenance Plan* (Appendix L in the *Joint Technical Document*) for closure and post-closure maintenance of all the unlined and composite-lined landfill units at the facility. The Closure Plan proposes eight-staged closure projects over the life of the Landfill. Final closure dates for the various stages will depend on module fill rates. The first closure Stage consists of most of the top deck, north and west side-slopes of the Austin Road Unit and the east, west and south slide-slopes to a height of 150 feet of the Forward Unit. To date, the first stage areas on the Austin Road Unit have a final cover installed but not yet certified as closed. All of the first stage was tentatively scheduled for completion by December 2014.
94. Due to Forward Landfill changing development plans, the 2008, *Preliminary Closure and Postclosure Maintenance Plan*, is outdated and it is unlikely that the 2008 closure stages can occur as projected. This Order requires submittal of an updated Preliminary Closure and Postclosure Maintenance Plan.
95. The Discharger proposes an ET final cover for closure of the landfill. The proposed final cover consists of a minimum of one-foot of existing interim cover overlain by a minimum of three-feet of selected fine grained soil.
96. From 2006 to 2010, the Discharger completed a demonstration project for an alternative final cover system on the northern slope of the Austin Road Unit. The project involved a three-foot thick soil cover over the existing one-foot thick interim cover. The soils consisted of on-site clayey silt with an as-built minimum hydraulic conductivity of 1×10^{-6} cm/sec. Performance of the demonstration cover was monitored for climate (rainfall, evaporation, solar radiation, relative humidity, barometric pressure, temperature and wind speed) and soil moisture at various depths within the 4-foot thick cover. Lysimeters at the bottom of the cover system measured no breakthrough (no water infiltration through the cover and into the waste) over the four-year test. Soil moisture and heat dissipation sensors installed at various depths within the cover demonstrated overall soil drying trends; upward moisture and soil

suction gradient over most of the year; and a net negative moisture flow (upward movement of moisture and long-term drying of the underlying waste) over the four-year test period.

97. Title 27 section 21090 requires that final cover systems contain a low-hydraulic conductivity layer that exhibits a saturated hydraulic conductivity of less than 1×10^{-6} cm/sec, or equal to the hydraulic conductivity of the bottom liner system or underlying natural geologic materials, whichever is less. The alternative final cover demonstration project showed that in this location and using site soils the water balance/evapotranspiration engineered alternative cover meets or exceeds the performance goals of Title 27.
98. Side slopes for the closed landfill will be sloped at 3H:1V and will include 15-foot wide benches every 50 vertical feet or less as required by Title 27.
99. The Discharger performed a slope stability analysis for the proposed final cover. The Discharger's static and dynamic stability analysis demonstrates that the side slopes of the final cover will be stable in accordance with the requirements of Title 27.
100. Pursuant to Title 27, section 21090(e)(1), this Order requires a survey of the final cover following closure activities for later comparison with iso-settlement surveys required to be conducted every five years.
101. This Order approves the proposed final cover and requires that a final closure and post-closure maintenance plan, design documents, and CQA plan be submitted for review and approval at least 180 days prior to actual closure.

LANDFILL POST-CLOSURE MAINTENANCE

102. The Discharger submitted a December 2008 *Preliminary Closure and Postclosure Maintenance Plan* (Appendix L of the Report of the Joint Technical Document) for closure and post-closure maintenance of the landfill. The plan includes inspection, maintenance, and monitoring of the landfill during the post-closure maintenance period, and a post-closure maintenance cost estimate for the entire facility. Inspection and maintenance will include the condition of the final cover, drainage features, LCRS, groundwater monitoring wells, unsaturated zone monitoring points, landfill gas system, groundwater corrective action system, and site security. The plan will be implemented for a minimum period of 30 years or until the waste no longer poses a threat to environmental quality, whichever is greater.
103. Once every five years during the post-closure maintenance period, aerial photographic maps of the closed landfill area will be made to identify and evaluate landfill settlement. Iso-settlement maps will be prepared to determine the amount of differential settlement occurring over the previous five years. Pursuant to Title 27, section 21090(e)(2), this Order requires iso-settlement maps to be prepared and submitted every five years.
104. The completed final cover will be periodically tested for damage or defects by monitoring surface emissions pursuant to California Code of Regulations, title 17, section 95471(c) and

Title 27, section 21090(a)(4)(A). Defects will be repaired and tested for adequacy based on the closure CQA Plan.

FINANCIAL ASSURANCES

105. Title 27, sections 21820 and 22206 require a cost estimate for landfill closure. The cost estimate must be equal to the cost of closing the landfill at the point in its active life when the extent and manner of operation would make closure the most expensive. When closing units in phases, the estimate may account for closing only the maximum area or unit of a landfill open at any time. The Discharger's 2008 revised *Preliminary Closure and Post Closure Maintenance Plan* includes a cost estimate for landfill closure. The lump sum estimate is for the cost to close largest future area needing closure at any one time. The total amount of the closure cost estimate in 2008 dollars is \$12,571,034. This Order requires that the Discharger maintain financial assurance with the California Department of Resources Recycling and Recovery (CalRecycle) in at least the amount of the closure cost estimate. As of 2012, the balance of the closure fund was \$13,407,553.
106. Title 27, sections 21840 and 22211 requires a cost estimate for landfill post-closure maintenance. The Discharger's December 2008 revised *Preliminary Closure and Post Closure Maintenance Plan* includes a cost estimate for landfill post-closure maintenance. The amount of the cost estimate for post-closure maintenance in 2008 dollars is \$12,740,328. This Order requires that the Discharger maintain financial assurance with CalRecycle in at least the amount of the post-closure maintenance cost estimate adjusted annually for inflation. As of 2012, the balance of the post-closure maintenance fund was \$13,588,125.
107. Title 27, section 22221 requires a cost estimate for corrective action of all known or reasonably foreseeable releases. The Discharger submitted a 1992 cost estimate of \$143,473 for corrective action of all known or reasonably foreseeable releases. As of 2012, the balance of the corrective action fund was \$187,046. This amount seems unrealistically low and this Order requires that the Discharger re-evaluate the corrective action cost estimate and maintain financial assurance with the CalRecycle in at least the amount of the re-evaluated cost estimate adjusted annually for inflation.

CEQA AND OTHER CONSIDERATIONS

108. On 24 September 2013, the San Joaquin County Planning Commission certified the Final Environmental Impact Report (EIR) (SCH#2008052024) for the Forward Landfill Expansion Project, which included analysis of (a) the discharge of cannery waste by land application and the discharge of cannery rinseate at the compost facility; and (b) revised base grades east of WMU FU-06. Because the landfill expansion project is inconsistent with the County Airport Land Use Plan and the San Joaquin County Board of Supervisors did not override that land use plan, the landfill expansion project was not approved and therefore a Notice of Determination for CEQA was not filed. The discharge of cannery waste at Forward Landfill and revision of the base grades east of FU-06 do not require additional discretionary permits

from the County or the Local enforcement Agency, other than those permits already issued. The Central Valley Water Board considered the Final EIR and incorporated mitigation measures from the Final EIR into these waste discharge requirements designed to prevent potentially significant impacts to design facilities and to water quality.

109. The Central Valley Water Board finds that this Order incorporates mitigation measures identified in the EIR that will reduce any potential environmental impacts of the discharge of cannery waste at the Forward Landfill to less than significant. Mitigation measures for land application of cannery waste include: (1) daily documentation of cannery waste received and locations of disposal; (2) BMPs for cannery waste, waste shall be spread no more than three inches deep and waste to be turned twice daily; (3) 50-foot setback between land application areas and water bodies and minimum 1,000 foot setback from domestic water wells; (4) regular monitoring of soil and waste; (5) weekly total nitrogen applied per acre shall be calculated and a crop sufficient to uptake 100% of nitrogen planted and harvested; (6) daily inspections of the land application areas during the discharge season for soil saturation, ponding, runoff, accumulated organic solids, odors and vectors; and (7) rinseate may be discharged to the compost facility only after the Discharge demonstrates that the discharge does not cause nuisance odors or attract vectors.
110. This Order implements:
- a. *The Water Quality Control Plan for the Sacramento River and San Joaquin River Basins, Fourth Edition;*
 - b. The prescriptive standards and performance goals of California Code of Regulations, title 27, section 20005 et seq., effective 18 July 1997, and subsequent revisions;
 - c. State Water Board Resolution 93-62, *Policy for Regulation of Discharges of Municipal Solid Waste*, adopted 17 June 1993, and revised on 21 July 2005.
 - d. The applicable provisions of Title 40 C.F.R. section 258 "Subtitle D" federal regulations as required by State Water Board Resolution 93-62.
111. Based on the threat and complexity of the discharge, the facility is determined to be classified 1A as defined below:
- a. Category 1 threat to water quality, defined as, "Those discharges of waste that could cause the long-term loss of a designated beneficial use of the receiving water. Examples of long-term loss of a beneficial use include the loss of drinking water supply, the closure of an area used for water contact recreation, or the posting of an area used for spawning or growth of aquatic resources, including shellfish and migratory fish."
 - b. Category A complexity, defined as, "Any discharge or toxic wastes; any small volume discharge containing toxic waste; any facility having numerous discharge points and groundwater monitoring; or any Class 1 waste management unit."

112. Water Code section 13267(b) provides that: "In conducting an investigation specified in subdivision (a), the Regional Board may require that any person who has discharged, discharges, or is suspected of having discharge or discharging, or who proposed to discharge within its region, or any citizen or domiciliary, or political agency or entity of this state who had discharged, discharges, or is suspected of having discharged or discharging, or who proposed to discharge waste outside of its region that could affect the quality of the waters of the state within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the board requires. The burden, including costs of these reports, shall bear a reasonable relationship to the need for the reports and the benefits to be obtained from the reports.
113. The technical reports required by this Order and the attached "Monitoring and Reporting Program No. R5-2014-0006" are necessary to assure compliance with these waste discharge requirements. The Discharger owns and operates the facility that discharges the waste subject to this Order.

PROCEDURAL REQUIREMENTS

114. All local agencies with jurisdiction to regulate land use, solid waste disposal, air pollution, and to protect public health have approved the use of this site for the discharges of waste to land stated herein.
115. The Central Valley Water Board notified the Discharger and interested agencies and persons of its intent to prescribe waste discharge requirements for this discharge, and has provided them with an opportunity for a public hearing and an opportunity to submit their written views and recommendations.
116. The Central Valley Water Board, in a public meeting, heard and considered all comments pertaining to the discharge.
117. Any person aggrieved by this action of the Central Valley Water Board may petition the State Water Board to review the action in accordance with Water Code section 13320 and California Code of Regulations, title 23, sections 2050 and following. The State Water Board must receive the petition by 5:00 p.m., 30 days after the date that this Order becomes final, except that if the thirtieth day following the date that this Order becomes final falls on a Saturday, Sunday, or state holiday, the petition must be received by the State Water Board by 5:00 p.m. on the next business day. Copies of the law and regulations applicable to filing petitions may be found on the Internet at:

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

or will be provided upon request.

IT IS HEREBY ORDERED, pursuant to California Water Code sections 13263 and 13267, that Order No. R5-2003-0049 is rescinded except for purposes of enforcement, and that Forward Inc. and Republic Services Inc., its agents, successors, and assigns, in order to

meet the provisions of Division 7 of the California Water Code and the regulations adopted thereunder, shall comply with the following:

A. PROHIBITIONS

1. The discharge of 'hazardous waste' is prohibited. For the purposes of this Order, the term 'hazardous waste' is as defined in California Code of Regulations, Title 23, section 2510 et seq.
2. The Discharger shall comply with all Standard Prohibitions listed in Section C of the Standard Provisions and Reporting Requirements (SPRRs) dated January 2012 which are attached hereto and made part of this Order by reference.

B. DISCHARGE SPECIFICATIONS

1. The Discharger shall only discharge the wastes listed or allowed under the Waste Classification and Unit Classification, the Compost Facility Waste and the Cannery Waste sections in the Findings of this Order.
2. The Discharger shall discharge treated wood wastes only to landfill units equipped with a composite liner system and a leachate collection and removal system (i.e., Modules FU-03, 04, 05, 06, 08, 10 and future modules listed in Finding 6 of this Order). If a verified release is detected from the waste management unit where treated wood is disposed, the disposal of treated wood shall be terminated at the unit with the verified release until corrective action ceases the release.
3. The Discharger shall manage treated wood waste in accordance with California Health and Safety Code sections 25143.1.5 and 250150.7 and shall comply with all prohibitions listed in Title 22, section 67386.3.
4. The Discharger may discharge leachate and landfill gas condensate from a composite lined unit with an LCRS to a composite-lined unit with similar classification. This discharge shall be managed such that it is not exposed to surface water runoff, will not cause instability of the landfill, and will not seep from the edges of the units.
5. The Discharger shall treat only compostable waste at the Compost Facility. When treatment is complete, compost must be removed from the Compost Facility and may be sold off-site as a product or used on site as alternative daily cover within composite lined WMUs.
6. The Discharger shall discharge only Cannery Wastes as described in Findings 30, and 80 through 84 of this Order at the land application area shown on Attachment B. Extraneous material shall be removed from applied cannery waste.
7. The Discharger shall daily record cannery waste loads received, locations of disposal and any unusual occurrences.

8. The Discharger shall implement the following BMPs for cannery waste:
 - a. The ground surface shall be prepared prior to the application of waste.
 - b. Waste shall be spread thinly, no more than 3 inches deep, to ensure complete drying within five days.
 - c. Waste shall be turned twice daily with a cultivating device to facilitate drying.
9. The Discharger shall monitor the cannery waste application area as required in MRP No. R5-2014-0006.
10. The Discharger shall record average total nitrogen content and total wet weight for wastes and calculate the total mass of nitrogen applied in pounds per acre on a weekly basis. Cannery Waste application shall be managed so that nitrogen is evenly applied across the application area and no one area becomes a nitrogen hot-spot. At the end of the waste application season, the total mass of nitrogen applied per acre shall be calculated and a crop shall be planted, grown and harvested that will remove 100% of the total mass of nitrogen applied over the season. Failure to remove by cropping 100% of the total mass of nitrogen applied is a violation of this Order. The annual total nitrogen load shall not exceed 300 pounds per acre, unless a site specific loading rate is established by a Nutrient Management Plan approved by the Executive Officer.
11. Discharge of cannery wastes to the land application area shall not cause groundwater to:
 - a. Contain waste constituents in concentrations statistically greater than background quality;
 - b. Exhibit a pH of less than 6.5 or greater than 8.4 pH units; or
 - c. Contain taste or odor-producing constituents, toxic substances, or any other constituents in concentrations that cause nuisance or adversely affect beneficial uses.
12. Discharge of cannery wastes to the land application area, the compost facility or the surface impoundments shall not degrade groundwater above background conditions or cause nuisance conditions as defined by the California Water Code Section 13050(m).
13. Cannery rinsate may be discharged to the compost facility if the Discharger demonstrates to the satisfaction of Water Board staff that cannery rinsate does not cause nuisance odors or attract vectors, and the Executive Officer approves the discharge in writing.

14. Cannery rinsate mud discharged for air drying on a clay pad constructed over a lined WMU shall be dried and moved to an active WMU within five days.
15. The Discharger shall operate the Groundwater Treatment Facility in compliance with Waste Discharge Requirements Order No. R5-2003-0080 or any subsequent Orders adopted by the Central Valley Water Board.
16. The Discharger may not use any material as alternative daily cover (ADC) that is not listed as approved ADC in the Findings of these WDRs unless and until the Discharger has demonstrated it meets the requirements in Title 27, section 20705, and the Discharger has received approval that it may begin using the material as ADC.
17. The Discharger shall use approved ADC only in internal areas of the landfill that do not drain outside of the limits of the contiguous landfill units unless the Discharger demonstrates that runoff from the particular ADC is not a threat to surface water quality and the demonstration has been approved. This demonstration may take removal of sediment or suspended solids into account for landfills where surface water drains to a sedimentation basin.
18. The Discharger shall, in a timely manner, remove and relocate any wastes discharged at this facility in violation of this Order. If the Discharger is unable to remove and relocate the waste, the Discharger shall submit a report to the Central Valley Water Board explaining how the discharge occurred, why the waste cannot be removed, and any updates to the waste acceptance program necessary to prevent re-occurrence. If the waste is a hazardous waste, the Discharger shall immediately notify the Department of Toxic Substances Control.
19. The Discharger shall comply with all Standard Discharge Specifications listed in Section D of the SPRRs dated January 2012 which are attached hereto and made part of this Order by reference.

C. FACILITY SPECIFICATIONS

1. The Discharger shall comply with all Standard Facility Specifications listed in Section E of the SPRRs dated January 2012 which are part of this Order.
2. Soil in the upper one foot of the composting pad and compost storage pad areas shall be tested and if necessary conditioned and compacted to achieve 1×10^{-5} cm/sec vertical hydraulic conductivity.
3. The composting pad and compost storage pad areas shall be maintained to minimize the downward percolation of applied, produced, and precipitated wasters by a combination of the following factors:
 - a. The depth, composition and degree of compaction of the pad;

- b. Judicious use of applied water to control dust and facilitate continued compaction of the pad areas;
 - c. Shifting the location of the compost and storage piles, at least annually, to facilitate and maintain compaction;
 - d. Limiting applied water to minimize production and drainage of leachate;
 - e. Assuring that no compost pile, feedstock pile, or additive pile produces free drainage (i.e., releases leachate); and
 - f. Other effective measures proposed by the Discharger.
4. Compost Facility run-on and run-off controls:
- a. Compost Facility shall implement storm water BMPs so that run-off water does not adversely affect the beneficial uses of any downstream water body;
 - b. The Discharger shall monitor leachate and water in the retention basin as required by MRP R5-2014-0006'
 - c. The retention basin shall be equipped with a synthetic liner, shall maintain a minimum two feet of freeboard and shall be designed and operated to minimize the downward percolation of constituents;
 - d. The Compost and Compost storage pads shall be designed, constructed and maintained to prevent to the greatest extent possible, ponding, infiltration, inundation, erosion, slope failure, and washout;
 - e. The pad or pads shall have a minimum one percent slope;
 - f. The Discharger shall maintain an effective run-on control system and for the composting area a run-off control system designed to withstand the maximum peak flow from a 25-year, 10-minute storm; and
 - g. The retention basin shall be designed to accommodate all runoff and direct precipitation from a 25-year, 24-hour storm and maintain two feet of freeboard.
5. The Discharger shall maintain a 50-foot setback between land application areas and all natural occurring water bodies.
6. Land application areas shall be at least 1,000 feet from a domestic water supply well.
7. Staging or storage of food processing residuals on the ground in any area not equipped the means to prevent leachate infiltration is prohibited.

8. Irrigation tail water or storm water runoff from the land application area shall not enter any surface water drainage course or storm water drainage system.
9. Water in Surface Impoundments shall contain at least 1.0 mg/L Dissolved Oxygen.
10. The minimum freeboard on October 15 of each year shall be 4.73 feet for WMU F-North and 5.51 feet for WMU F-West.
11. The Discharger shall develop and implement an approved operations and maintenance plan for the Class II surface impoundments at the site as required under Title 27 regulations. At a minimum, the plan shall address:
 - a. expected flows and liquids balance calculations;
 - b. expected waste types and commingling;
 - c. contingency plans in the event of facility breakdown or failure;
 - d. seasonality issues;
 - e. inspection and maintenance programs;
 - f. and other information relevant to impoundment operations and maintenance that could potentially affect water quality.
12. Solids that accumulate in the Class II surface impoundment if any shall be periodically removed to maintain minimum freeboard requirements. Prior to removal of these solids, sufficient samples shall be taken for their characterization and classification pursuant to Article 2, Subchapter 2, Chapter 3, Division 2 of Title 27. The rationale for the sampling protocol used, the results of this sampling, and a rationale for classification of the solids shall be submitted to Central Valley Water Board staff for review before the discharge of the solids.

D. CONSTRUCTION SPECIFICATIONS

1. The Discharger shall construct the base liner and side slope liner of new Class II/Class III landfill units as described in Finding 6 of this Order in accordance with the following approved prescriptive base liner and the approved engineered alternative side slope liner design:
 - a. A composite **base liner system** that is comprised, in ascending order, of the following:
 - 1) Prepared subgrade of graded and compacted, fine grained native soil;
 - 2) a 24-inch thick, low permeability soil layer (minimum permeability of 1×10^{-7} cm/sec);

- 3) a 60-mil HDPE geomembrane, overlain by a 12-ounce/sq. yard cushion geotextile (may be omitted if LCRS gravel is sub-angular to rounded);
 - 4) a 12-inch LCRS gravel drainage layer overlain by an 8-ounce/Sq. yard separator geotextile; and
 - 5) a 12-inch thick protective soil operations layer.
- b. An engineered alternative composite **side slope liner system** that is comprised, in ascending order, of the following:
- 1) Prepared subgrade of graded and compacted, fine grained native soil;
 - 2) a (GCL) or 24-inch thick low permeability soil layer (minimum permeability 1×10^{-7} cm/sec;)
 - 3) a 60-mil HDPE liner (single sided textured, textured side down);
 - 4) a geocomposite drainage net; and
 - 5) a 12-inch thick protective soil operations layer.
2. An Intermediate Liner System shall be constructed over the south slope of the existing Class III Waste Management Cell at Austin Road Landfill. The Intermediate Liner system will be constructed on top of the existing interim cover and will separate the existing Class III waste in Austin Road Landfill from new Class III waste. The Intermediate Liner System shall be comprised, in ascending order, of the following:
- 1) One-foot of existing refuse cover soil;
 - 2) one-foot of additional foundation soil;
 - 3) a 24-inch thick low permeability soil layer (minimum permeability of 1×10^{-7} cm/sec) or GCL liner;
 - 4) a 60-mil HDPE geomembrane (textured);
 - 5) drainage geocomposite; and
 - 6) a 12-inch thick protective soil operations layer.
3. The Discharger shall construct the liner of any new Class II surface impoundment units as described in Finding 6 of this Order in accordance with the following approved prescriptive liner:
- 1) Prepared subgrade of graded and compacted, native soil;

- 2) a Geosynthetic Clay layer;
 - 3) a 60-mil HDPE geomembrane;
 - 4) a geonet LCRS layer; and
 - 5) a 60-mil HDPE geomembrane.
4. The Discharger shall not proceed with construction until the construction plans, specifications, and all applicable construction quality assurance plans have been approved.
 5. The Discharger may propose changes to the liner system design prior to construction, provided that approved components are not eliminated, the engineering properties of the components are not substantially reduced, and the proposed liner system results in the protection of water quality equal to or greater than the design prescribed by Title 27 and this Order. The proposed changes may be made following approval by the Executive Officer. Substantive changes to the design require reevaluation as an engineered alternative and approval by the Central Valley Water Board in revised WDRs.
 6. The Discharger shall comply with all Standard Construction Specifications listed in Section F of the SPRRs dated January 2012 which are attached hereto and made part of this Order by reference.
 7. The Discharger shall comply with all Storm Water Provisions listed in Section L of the SPRRs dated January 2012 which are attached hereto and made part of this Order by reference.

E. CLOSURE AND POST-CLOSURE MAINTENANCE SPECIFICATIONS

1. The Discharger shall submit a final or partial final closure and post-closure maintenance plan at least two years prior to proposed closure of any portion of the landfill in accordance with requirements in Section G of the Standard Closure and Post-Closure Specifications in the SPRRs.
2. The Discharger shall close landfill units with a final cover as proposed in the 2005, Alternative Final Cover Design Report and as approved by this Order. The components of the approved final cover as proposed in The Final Cover System shall be comprised, in ascending order,
 - 1) Minimum one-foot thick foundation layer (in most cases the existing interim cover) cleared, grubbed and compacted;
 - 2) minimum three-feet thick evapotranspiration layer, with minimum of 70% passing No. 200 sieve; an as-built saturated hydraulic conductivity of less than

1×10^{-6} in the lower two-feet and lightly compacted to support vegetation in the upper one-foot; and

- 3) a robust vegetation cover with a minimum 60% plant coverage after two years and composed of plants selected to survive the Central Valley climate and effectively remove moisture.
3. The Discharger shall obtain revised WDRs prior to closure with any other final cover design than the design or designs approved in this Order.
4. The Discharger shall close the landfill with side slopes at steepness of 3H:1V or less, and top deck areas shall be sloped at three percent or greater.
5. The Discharger shall install an active landfill gas extraction system for the closed landfill unit during landfill closure, and landfill gas shall be extracted from closed landfill units until such time that the landfill gas is no longer a threat to water quality as documented by the Discharger and approved by the Executive Officer.
6. The Discharger shall test the shear strength of the final cover material in a laboratory to ensure minimum design shear strengths are achieved and include the results in the final documentation report.
7. The Discharger shall ensure that the vegetative/erosion resistant layer receives necessary seed, binder, and nutrients to establish the vegetation proposed in the final closure plan. The Discharger shall install necessary erosion and sedimentation controls to prevent erosion and sediment in runoff from the closed landfill during the period the vegetation is being established.
8. The Discharger shall comply with all Standard Closure and Post-Closure Specifications listed in Section G and all Standard Construction Specifications that are applicable to closure in Section F of the SPRRs dated January 2012 which are attached hereto and made part of this Order by reference.

F. FINANCIAL ASSURANCE SPECIFICATIONS

1. The Discharger shall obtain and maintain assurances of financial responsibility with CalRecycle for closure and post-closure maintenance for the landfill in at least the amounts described in Findings 95 and 96, adjusted for inflation annually. A report regarding financial assurances for closure and post-closure maintenance shall be submitted to the Central Valley Water Board by **1 June of each year**. This may be the same report that is submitted to CalRecycle for this purpose. If CalRecycle determines that either the amount of coverage or the mechanism is inadequate, then within 90 days of notification, the Discharger shall submit an acceptable mechanism to CalRecycle and the Central Valley Water Board for at least the amount of the approved cost estimate.

2. The Discharger shall update the preliminary closure and post-closure maintenance plan (PCPCMP) any time there is a change that will increase the amount of the closure and/or post-closure maintenance cost estimate. The updated PCPCMP shall be submitted to the Central Valley Water Board, the Local Enforcement Agency, and CalRecycle. The PCPCMP shall meet the requirements of Title 27, section 21769(b), and include a lump sum estimate of the cost of carrying out all actions necessary to close each Unit, to prepare detailed design specifications, to develop the final closure and post-closure maintenance plan, and to carry out the first thirty years of post-closure maintenance. Reports regarding financial assurance required in F.1 above shall reflect the updated cost estimate.
3. The Discharger shall obtain and maintain assurances of financial responsibility with CalRecycle for initiating and completing corrective action for all known or reasonably foreseeable releases from the landfill in at least the amount of the annual inflation-adjusted cost estimate described in Finding 97. A report regarding financial assurances for corrective action shall be submitted to the Central Valley Water Board by **1 June of each year**. This may be the same report that is submitted to CalRecycle for this purpose. If CalRecycle determines that either the amount of coverage or the mechanism is inadequate, then within 90 days of notification, the Discharger shall submit an acceptable mechanism to CalRecycle and the Central Valley Water Board for at least the amount of the approved cost estimate.
4. The Discharger shall comply with all Standard Financial Assurance Specifications listed in Section H of the SPRRs dated January 2012 which are attached hereto and made part of this Order by reference.

G. MONITORING SPECIFICATIONS

1. The Discharger shall comply with the detection monitoring program provisions of Title 27 for groundwater, surface water, and the unsaturated zone, and in accordance with Monitoring and Reporting Program (MRP) No. R5-2014-0006, and the Standard Monitoring Specifications listed in Section I of the SPRRs dated January 2012 which are attached hereto and made part of this Order by reference.
2. The Discharger shall, for any landfill unit in a corrective action monitoring program, comply with the corrective action monitoring program provisions of Title 27, MRP No. R5-2014-0006, and the Standard Monitoring Specifications listed in Section I of SPRRs dated January 2012 which are attached hereto and made part of this Order by reference.
3. The Discharger shall comply with the Water Quality Protection Standard as specified in this Order, MRP No. R5-2014-0006, and the SPRRs dated January 2012 which are attached hereto and made part of this Order by reference.

4. The concentrations of the constituents of concern in waters passing the Point of Compliance (defined pursuant to Title 27, section 20164 as a vertical surface located at the hydraulically downgradient limit of the landfill unit that extends through the uppermost aquifer underlying the unit) shall not exceed the concentration limits established pursuant to MRP No. R5-2014-0006.
5. For each monitoring event, the Discharger shall determine whether the landfill is in compliance with the Water Quality Protection Standard using procedures specified in MRP No. R5-2014-0006 and the Standard Monitoring Specifications in Section I of the SPRRs dated January 2012 which are attached hereto and made part of this Order by reference.
6. The Discharger shall comply with all Standard Monitoring Specifications and Response to a Release specifications listed in Sections I and J of the SPRRs dated January 2012 which are attached hereto and made part of this Order by reference.

H. PROVISIONS

1. The Discharger shall maintain a copy of this Order at the facility, including the MRP No. R5-2014-0006 and the SPRRs dated January 2012 which are part of this Order, and make it available at all times to facility operating personnel, who shall be familiar with its contents, and to regulatory agency personnel.
2. The Discharger shall comply with all applicable provisions of Title 27 and Subtitle D that are not specifically referred to in this Order.
3. The Discharger shall comply with MRP No. R5-2014-0006, which is incorporated into and made part of this Order by reference.
4. The Discharger shall comply with the applicable portions of the Standard Provisions and Reporting Requirements for Waste Discharge Requirements for Nonhazardous Solid Waste Discharges Regulated by Subtitle D and/or Title 27, dated January 2012, which are attached hereto and made part of this Order by reference.
5. The Discharger shall implement the "Forward Landfill Odor Control Management Plan" revised September 2007 and the "Odor Impact Minimization Plan" dated March 2009.
6. If there is any conflicting or contradictory language between the WDRs, the MRP, or the SPRRs, then language in the WDRs shall supersede either the MRP or the SPRRs, and language in the MRP shall supersede the SPRRs.
7. All reports required by this Order shall be submitted pursuant to Water Code section 13267.
8. The Discharger shall complete the tasks contained in these waste discharge requirements in accordance with the following time schedule:

Task	Compliance Date
A. Construction Plans	
Submit construction and design plans for review and approval. (see all Construction Specifications in Section D, above and Section F of the SPRRs.)	90 days prior to proposed construction
B. Construction Report	
Submit a construction report for review and approval upon completion demonstrating construction was in accordance with approved construction plans (see Standard Construction Specification F.27 in the SPRRs).	60 days prior to proposed discharge
C. Final Closure Plans	
Submit a final or partial final closure and post-closure maintenance plan, design plans, and CQA plan for review and approval (see all Closure and Post-Closure Specifications in Section E, above and Section G of the SPRRs).	Two years prior to closure
D. Unsaturated Zone Monitoring System	
Submit a report that reviews the status of the unsaturated zone monitoring system. The report should document those monitoring points that need repair or replacement, consider the need for additional monitoring points and should establish a time schedule to completely restore the monitoring system.	1 June 2014
E. Closure and Postclosure Maintenance Plan	
Submit a revised Closure and Postclosure Maintenance Plan with closure stages dates. The revised Plan must include revised cost estimates for Closure Financial Assurances.	1 June 2014
F. Update Corrective Financial Assurance Cost Estimate	

Submit an updated and revised cost estimate for initiating and completing corrective actions of all known or reasonably foreseeable releases. The revised cost estimates must consider the future costs to cleanup groundwater north of the Austin Road unit and other potential releases from the expanding landfill footprint.

1 April 2014

G. Cannery Waste Water Quality Protection Standards Report

1 September 2014

Submit Water Quality Protection Standards for the land application area. The Standards report should evaluate the land application area detection monitoring well system and propose changes as needed. These standards and the report shall comply with Title 27 Section 20390 and Monitoring and Reporting Program No, R5-2014-0006.

H. Compost Facility Specification

Submit a report demonstrating that the compost area features meet or exceed the relevant facility specifications.

1 February 2015

I. Surface Impoundments Operations and Maintenance Plan

1 September 2014

Submit a report describing how the Class II surface impoundments will be operated and maintained to ensure continuous compliance with this Order.

9. The Discharger shall comply with all General Provisions listed in Section K of the SPRRs dated January 2012 which are part of this Order.

I, PAMELA C. CREEDON, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on 6 February 2014.

Original signed by

PAMELA C. CREEDON, Executive Officer

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2014-0006
FOR
FORWARD INC. AND REPUBLIC SERVICES INC.
FORWARD LANDFILL
CLASS II
OPERATION, CLOSURE,
AND CORRECTIVE ACTION
SAN JOAQUIN COUNTY

This monitoring and reporting program (MRP) is issued pursuant to California Water Code section 13267 and incorporates requirements for groundwater, surface water, and unsaturated zone monitoring and reporting; facility monitoring, maintenance, and reporting; and financial assurances reporting contained in California Code of Regulations, Title 27, section 20005, et seq. (hereafter Title 27), Waste Discharge Requirements (WDRs) Order No. R5-2014-0006, and the Standard Provisions and Reporting Requirements (SPRRs) dated January 2012. Compliance with this MRP is ordered by the WDRs and the Discharger shall not implement any changes to this MRP unless a revised MRP is issued by the Central Valley Water Board or the Executive Officer.

A. MONITORING

The Discharger shall comply with the detection, evaluation, and corrective action monitoring program provisions of Title 27 for groundwater, surface water, and the unsaturated zone in accordance with Standard Monitoring Specifications in Section I of the SPRRs and the Monitoring Specifications in Section G of the WDRs. All monitoring shall be conducted in accordance with the approved 1994 *Sampling and Analysis Plan*, which includes quality assurance/quality control standards.

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

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

The monitoring program of this MRP includes:

<u>Section</u>	<u>Monitoring Program</u>
A.1	Groundwater Monitoring
A.2	Unsaturated Zone Monitoring
A.3	Leachate Monitoring, Seep Monitoring, and LCRS Testing
A.4	Surface Water Monitoring
A.5	Landfill Gas Monitoring
A.6	Facility Monitoring
A.7	Compost Facility Monitoring
A.8	Cannery Waste Land Application Monitoring
A.9	Surface Impoundment Monitoring
A.10	Corrective Action Monitoring

1. Groundwater Monitoring

The Discharger shall operate and maintain a groundwater monitoring system that complies with the applicable provisions of Title 27, sections 20415 20420, 20425 and 20430. The groundwater monitoring network shall be certified by a California-licensed professional civil engineer or geologist as meeting the requirements of Title 27. The current groundwater detection monitoring system meets the applicable requirements of Title 27. The Discharger shall revise the groundwater detection monitoring system (after review and approval by Central Valley Water Board staff) as needed in response to landfill expansion, response to a release, or for corrective action.

The current groundwater monitoring network shall consist of the following wells. Note that the status of each well may change as additional evaluation or corrective action measures are implemented, and additional wells may be added to the monitoring network.

<u>Unit</u>	<u>Status</u>	<u>Wells</u>
Forward	Background	MW-22, MW-23R, MW-24
	Detection	MW-1A, -2A, -3A, -10, 13A, -14A, -15, -16, -17, -18, -19, & -21
	Domestic	DW-9690
Austin Road Shallow Zone	Background	AMW-2
	Detection and Corrective Action	AMW-5R & -12 AMW-1, -4, -10, -11, -13, -14, -18, -19, -21S, -22S, -24SR, -29S, -30-S, -31S & -32S
Austin Road Deep Zone	Detection	AMW-7 & -6

Corrective and	AMW-13B, -18B, -19BR, -21, -22, -24R, -25,
Evaluation	-26R, -28, -29, -30, -31, & -32
Domestic	7898-A, 8106-A

Groundwater samples shall be collected quarterly from all wells listed in the above table (i.,e background wells, detection monitoring wells, evaluation monitoring wells, corrective action monitoring wells, domestic wells) and any additional wells added as part of the approved groundwater monitoring network. The collected samples shall be analyzed for the parameters and constituents listed in Table I in accordance with the specified methods and frequencies.

In addition to the approved groundwater monitoring system, Cleanup and Abatement Order R5-2008-0714 (CAO) also mandates the evaluation of the extent of groundwater impacted by the release from the Austin Road unit. Additional wells may be installed or wells may be abandoned as the evaluation program progresses under the CAO or subsequent enforcement action. Any additional wells installed as part of an evaluation into the extent of impacted groundwater, or any private wells identified as being threatened by the release from the Austin Road Unit, shall be sampled quarterly for the parameters and constituents listed in Table I until they are either abandoned with concurrence of Water Board staff or they are incorporated into a regular monitoring program as part of a revised MRP.

The Discharger shall collect, preserve, and transport groundwater samples in accordance with the approved Sample Collection and Analysis Plan.

Once per quarter, the Discharger shall measure the groundwater elevation in each well, determine groundwater flow direction, and estimate groundwater flow rates (vertically and horizontally) in the uppermost aquifer and in any zones of perched water and in any additional portions of the zone of saturation monitored.

Samples collected for the COC monitoring specified in Table I shall be collected and analyzed in accordance with the methods listed in Table VIII every five years. Five-year COCs shall be monitored again in **2018**. The results shall be reported in the Annual Monitoring Report for the year in which the samples were collected.

2. Unsaturated Zone Monitoring

The Discharger shall operate and maintain an unsaturated zone detection monitoring system that complies with the applicable provisions of Title 27, sections 20415 20420, 20425 and 20430. The current unsaturated zone detection monitoring system does not meet the applicable requirements of Title 27. The system is inadequate from general lack of maintenance. WDR Order R5-2014-0006 includes a time schedule for a status review, general maintenance and repair/replacement of damaged or missing monitoring points.

In addition, the Discharger shall install unsaturated zone monitoring devices (after review and approval by Central Valley Water Board staff) each time the landfill constructs a new cell or module.

The current unsaturated zone monitoring network shall consist of:

<u>Unit Monitored</u>	<u>Type</u>	<u>Monitoring Points</u>
F - North	Suction	E-1, E-2, W-1, W-2
F - West	Suction	LY-Pond-N, LY-Pond-S
Background	Suction	LY-BG-1
Forward	Suction	LY-A, LY-E1A, LY-E1B, LY-E2A, LY-E2B, D93A, D93B,
Austin Road	Suction	FU-03, FU-04W, FU-04E, FU-05, FU-06
Forward	Pan	D-01S, D-01N, D-02
Austin Road	Pan	FU-03, FU-04W, FU-04E, FU-05, FU-06

Any new unsaturated zone monitoring point shall be added to the monitoring network and shall be monitored at the same frequency as existing monitoring points. Unsaturated zone samples shall be collected from the monitoring network listed above and shall be analyzed for the parameters and constituents listed in Table II in accordance with the specified methods and frequencies (however, pan lysimeters need only be sampled when liquid is present). Pan lysimeters shall be inspected for the presence of liquid **quarterly**. If liquid is detected in a previously dry pan lysimeter, the Discharger shall verbally notify Central Valley Water Board staff within **seven days** and shall immediately sample and test the liquid for Field and Monitoring Parameters listed in Table II. Samples collected for the 5-year COC analyses specified in Table II shall be collected and analyzed in accordance with the methods listed in Table VI every five years, beginning again in **2018** (does not include soil-pore gas).

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

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

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

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

The current LCRS leachate sump monitoring points are:

<u>Mon Pt.</u>	<u>Unit Where Sump is Located</u>
T1	WMU A
T2	WMU A
T3	WMU A
T4	WMU A
D-87	WMU D-87
D-88 A/B	WMU D-88
D-93/94	WMU D-93/94
D-01 N/S	WMU D-01
D-02	WMU D-02
FU-03	WMU FU-03
FU-04	WMU FU-04
FU-05	WMU FU-05
FU-06	WMU FU-06
FU-10	WMU FU-10
F-North	F-North
F-West	F-West

All LCRS sumps shall be inspected monthly for the presence of leachate, and total flow and flow rate shall be recorded in accordance with the frequencies listed in Table III. If leachate is detected in a previously dry sump, the Discharger shall verbally notify Central Valley Water Board staff within **seven days** and shall immediately sample and test the leachate in the sump for Field and Monitoring Parameters listed in Table III. Leachate in the LCRS sumps shall be sampled for all parameters and constituents in accordance with the frequencies listed in Table III when liquid is present. All LCRS sump samples shall be analyzed for the 5-year COCs specified in Table III every five years, beginning again in **2018**.

Seep Monitoring: Leachate that seeps to the surface from a landfill unit shall be sampled and analyzed for the Field and Monitoring Parameters listed in Table III upon detection. The quantity of leachate shall be estimated and

reported as Leachate Flow Rate (in gallons/day). Reporting for leachate seeps shall be conducted as required in Section B.3 of this MRP, below.

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

4. **Surface Water Monitoring**

The Discharger shall operate a surface water detection monitoring system for any landfill facility where runoff from landfill areas flows or could flow to waters of the United States. The monitoring system shall comply with the applicable provisions of Title 27, sections 20415 and 20420. At the Forward Landfill, runoff from landfill areas flows to sedimentation basins that periodically discharge to the north and south forks of Littlejohns Creek. The current surface water detection monitoring system meets the applicable requirements of Title 27.

The current surface water monitoring points for the landfill are:

<u>Mon Pt.</u>	<u>Unit</u>	<u>Location</u>
FSW-2	Forward	S. Fork Littlejohns below Austin Road
FSW-1	Forward	S. Fork Littlejohns below leachate pond
ASW-1	Austin	N. Fork Littlejohns below Austin Road
ASW-2	Austin	N. Fork Littlejohns NW of gas to energy plant

For surface water detection monitoring, a sample shall be collected quarterly if water is present, at each monitoring point location and analyzed for the monitoring parameters and constituents in accordance with the methods and frequency specified in Table IV. All surface water monitoring samples shall be collected and analyzed for the 5-year COCs specified in Table IV every five years, beginning again in **2018**. The Discharger shall collect, preserve and transport samples in accordance with the quality assurance/quality control standards contained in the approved Sample Collection and Analysis Plan. If water is not present during the quarterly monitoring event, the Discharger shall so state in the monitoring report.

5. **Landfill Gas Monitoring**

The Discharger shall operate and maintain a landfill gas monitoring system that complies with the applicable provisions of §20415, §20420 and §20430 of Title 27 in accordance with approved Detection, Evaluation and Corrective Action Monitoring Programs, where appropriate. The monitoring system shall be certified by a California-licensed professional civil engineer or geologist as meeting the requirements of Title 27.

Landfill gas monitoring points shall be field tested for the presence of methane quarterly. Gas samples shall be collected from any monitoring point containing 5 or more percent methane and analyzed for the parameters specified in Table VI. The Discharger shall collect, preserve and transport samples in accordance with the quality assurance/quality control standards contained in the approved Sample Collection and Analysis Plan.

In the event of a shutdown of the landfill gas extraction system, the Discharger shall notify Board staff via e-mail, fax, or telephone within 24 hours of knowledge and shall provide weekly status updates. This requirement excludes shutdown events where the landfill gas system restarts itself or when the system is restarted manually within 24 hours. All shutdowns, regardless of the type of restart, shall be summarized in the quarterly reports.

Landfill gas monitoring reports shall be included with the quarterly reports and shall include an evaluation of potential impacts of landfill gas on the unsaturated zone beneath and adjacent to the landfill and compliance with the Water Quality Protection Standard.

Monitoring shall be conducted at all active gas monitoring probes and extraction wells. Additional landfill gas probes and wells installed subsequent to adoption of this MRP shall be added to the monitoring program specified herein.

6. Facility Monitoring

a. Annual Facility Inspection

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

b. Major Storm Events

The Discharger shall inspect all precipitation, diversion, and drainage facilities and all landfill side slopes for damage **within 7 days** following major storm events capable of causing damage or significant erosion. The Discharger shall take photos of any problems areas before and after repairs. Necessary repairs shall be completed **within 30 days** of the

inspection. Notification and reporting requirements for major storm events shall be conducted as required in Section B.5 of this MRP.

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

For closed landfill units, the Discharger shall conduct a five-year iso-settlement survey and produce an iso-settlement map accurately depicting the estimated total change in elevation of each portion of the final cover's low-hydraulic-conductivity layer. For each portion of the landfill, this map shall show the total lowering of the surface elevation of the final cover, relative to the baseline topographic map [Title 27, section 21090(e)(1 & 2)]. Reporting shall be in accordance with Section B.6 of this MRP. The next iso-settlement survey shall be conducted in 2017.

d. Standard Observations

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

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

The Standard Observations shall include:

1) For the landfill units:

- a) Evidence of ponded water at any point on the landfill outside of any contact storm water/leachate diversions structures on the active face (show affected area on map); and
- b) Evidence of erosion and/or of day-lighted refuse.

2) Along the perimeter of the landfill units:

- a) Evidence of leachate seeps, estimated size of affected area, and flow rate (show affected area on map); and
- b) Evidence of erosion and/or of day-lighted refuse.

3) For receiving waters:

- a) Floating and suspended materials of waste origin - presence or absence, source, and size of affected area; and
- b) Discoloration and turbidity - description of color, source, and size of affected area.

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

7. Compost Facility Monitoring

The Discharger shall monitor the Compost Facility quarterly. Samples of retention basin liquid, leachate (when present) from compost stockpile areas and leachate from active compost windrows shall be collected and analyzed for the monitoring parameters listed in Table III. The volume of incoming material for composting and the volume of compost produced shall be recorded monthly and reported in the Annual Report.

8. Cannery Waste Land Application Area Monitoring

The Discharger shall collect representative soil samples from the land application areas at the beginning and end of each cannery season; and daily wet weight and weekly composite waste samples from each cannery waste source. Less frequent composite sampling may be permitted on approval by the Executive Officer based on the results from the initial season of monitoring and on the Cannery Waste Water Quality Protection Standards Report (due 1 September 2014). The soil and composite waste samples shall be analyzed for biochemical oxygen demand (BOD), total dissolved solids, and total nitrogen. In addition, the weekly total mass of nitrogen applied per acre shall be calculated and reported in the Quarterly Reports. At the end of the cannery season, the total mass of nitrogen per acre must be determined and a crop that will uptake 100% of the nitrogen must be planted, grown and harvested before the next cannery season. An annual land application monitoring summary shall be reported in the Annual Report. In addition, the following monitoring shall be conducted:

Land application areas shall be inspected prior to discharge of putrescible cannery solids and non-putrescible rinsate/wastewater, and observations from those inspections shall be summarized for inclusion in the quarterly monitoring reports. The following items shall be noted in daily pre-application inspections:

- i. Evidence of erosion;
- ii. Berm condition;
- iii. Condition of flow control structure/valve (if any);

- iv. Proper use of valves (i.e., check that all affected valves are closed or open, as required);
- v. Soil saturation;
- vi. Ponding;
- vii. Potential runoff to off-site areas;
- viii. Potential and actual discharge to surface water;
- ix. Accumulation of organic solids;
- x. Soil clogging;
- xi. Odors that have the potential to be objectionable at or beyond the property boundary; and
- xii. Vectors (Insects, rodents).

Temperature, wind direction and approximate speed, and other relevant field conditions shall be also be observed and recorded. The notations shall also document any corrective actions taken based on documented observations. A **brief summary** of observations documented and corrective actions taken during each month shall be submitted quarterly.

The Discharger shall operate and maintain a groundwater detection monitoring system for the cannery waste land application area. The Discharger shall revise the groundwater detection monitoring system (after review and approval by Central Valley Water Board staff) as needed. The existing groundwater monitoring network consists of the following:

<u>Status</u>	<u>Wells</u>
Background	AMW-1, AMW-7
Detection	AMW-13, AMW-10

These wells are already part of the approved Groundwater Monitoring System, are sampled quarterly and analyzed for the parameters and constituents listed in Table I. Total nitrogen, iron, manganese and arsenic concentrations from these wells shall be reported separately and compared with the land application area Water Quality Protection Standard in the normal Quarterly Monitoring Reports.

9. Surface Impoundment Monitoring

The surface impoundments F-North and F-West, shall be monitored monthly for the parameters in Table V and the results shall be reported quarterly. Surface impoundment sumps shall be inspected monthly for the presence of liquid. If liquid is detected, a sample shall be analyzed for the parameters in Table III and reported quarterly.

10. Corrective Action Monitoring

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

The current groundwater extraction well network is listed below. Additional extraction wells may be installed, and if so, they shall be monitored in the same manner as the wells listed below.

<u>Extraction Well</u>	<u>Zone</u>	<u>Modules Being Addressed</u>
EW-1	Shallow	Austin Road Unit
EW-2	Shallow	Austin Road Unit
EW-3	Shallow	Austin Road Unit
EW-3R	Shallow	Austin Road Unit
EW-4	Shallow	Austin Road Unit

The Discharger shall monitor the performance of corrective actions and shall include in each quarterly report the following:

- a. record the total hours of operation of all remediation systems/per day (estimated for holidays and weekends);
- b. the exact time of any system failure and restart;
- c. a description of any repairs;
- d. an evaluation of the performance of the extraction points (both landfill gas and groundwater);
- e. the volume of water discharged from the system;
- f. the mass of contaminants removed by the gas extraction system and the groundwater extraction system; and
- g. the location of discharge of the treated water.

A copy of any notifications shall be included in the facility operating record. A summary of the corrective action performance data shall be a part of the quarterly report.

B. REPORTING

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

Reporting Schedule

<u>Section</u>	<u>Report</u>	<u>End of Reporting Period</u>	<u>Due Date</u>
B.1	Quarterly Monitoring Report	31 March, 30 June, 30 September, 31 December	1 May, 1 August, 1 November, 1 February
B.2	Annual Monitoring Report	31 December	1 February
B.3	Seep Reporting	Continuous	Immediately & 7 Days
B.4	Annual Facility Inspection Report	31 October	15 November
B.5	Annual Corrective Action Evaluation Report	30 June	1 August
B.6	Major Storm Event Reporting	Continuous	7 days from damage discovery
B.7	Survey and Iso-Settlement Map for Closed Landfills	Every Five Years	At Closure Completion and Every Five Years
B.8	Financial Assurances Report	31 December	1 June

Reporting Requirements

The Discharger shall submit monitoring reports **quarterly** with the data and information as required in this Monitoring and Reporting Program and as required in WDRs Order No. R5-2014-0006 and the Standard Provisions and Reporting Requirements (particularly Section I: "Standard Monitoring Specifications" and Section J: "Response to a Release"). In reporting the monitoring data required by this program, the Discharger shall arrange the data in tabular form so that the date, the constituents, the concentrations, and the units are readily discernible. The data shall be summarized in such a manner so as to illustrate clearly the compliance with waste discharge requirements or the lack thereof. Data shall also be submitted in a digital format, such as a computer disk.

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

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

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

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

Required Reports

- 1) **Quarterly Monitoring Report:** Monitoring reports shall be submitted quarterly and are due on **1 May, 1 August, 1 November** and **1 February**. Each quarterly monitoring report shall contain at least the following:
 - a) For each groundwater monitoring point addressed by the report, a description of:
 - 1) The time of water level measurement;
 - 2) The type of pump - or other device - used for purging and the elevation of the pump intake relative to the elevation of the screened interval;
 - 3) The method of purging used to stabilize water in the well bore before the sample is taken including the pumping rate; the equipment and methods used to monitor field pH, temperature, and conductivity during purging; results of pH, temperature, conductivity, and turbidity testing; and the method of disposing of the purge water;
 - 4) The type of pump - or other device - used for sampling, if different than the pump or device used for purging; and
 - 5) A statement that the sampling procedure was conducted in accordance with the approved Sample Collection and Analysis Plan.

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

- m) Results of the corrective action monitoring.
- n) A description of the measures undertaken to implement the "Forward Landfill Odor Control Management Plan" (revised September 2007) and the "Odor Impact Minimization Plan" (dated March 2009).

2) **Annual Monitoring Report:** The Discharger shall submit an Annual Monitoring Report to the Central Valley Water Board by **1 February** covering the reporting period of the previous monitoring year. If desired, the Annual Monitoring Report may be combined with the fourth quarter report, but if so, shall clearly state that it is both a quarterly and annual monitoring report in its title. Each Annual Monitoring Report shall contain the following information:

- a) All monitoring parameters, if detected, shall be graphed to show historical trends at each monitoring point and background monitoring point, for all samples taken within at least the previous five calendar years. If a 5-year COC event was performed, the detected parameters shall be graphically presented if they were also detected during any previous COC event. Each such graph shall plot the concentration of one or more constituents for the period of record for a given monitoring point or background monitoring point, at a scale appropriate to show trends or variations in water quality. The graphs shall plot each datum, rather than plotting mean values. Graphical analysis of monitoring data may be used to provide significant evidence of a release.
- b) An evaluation of the monitoring parameters with regards to the cation/anion balance, and a graphical presentation using a Stiff diagram, a Piper graph, or a Schoeller plot.
- c) All historical monitoring data for which there are detectable results, including data for the previous year, shall be submitted in tabular form in a digital file format such as a computer disk. The Central Valley Water Board regards the submittal of data in hard copy and in digital format as "...the form necessary for..." statistical analysis [Title 27, section 20420(h)], that facilitates periodic review by the Central Valley Water Board.
- d) Hydrographs of each well showing the elevation of groundwater with respect to the elevations of the top and bottom of the screened interval and the elevation of the pump intake. Hydrographs of each well shall be prepared quarterly and submitted annually.
- e) A comprehensive discussion of the compliance record, and the result of any corrective actions taken or planned which may be needed to bring the Discharger into full compliance with the waste discharge requirements.
- f) A map showing the area and elevations in which filling has been completed during the previous calendar year and a comparison to final closure design

contours, and include a projection of the year in which each discrete landfill module will be filled.

- g) A written summary of the monitoring results, indicating any changes made or observed since the previous Annual Monitoring Report.
 - h) The results of the annual testing of leachate collection and removal systems required under Standard Facility Specification E.14 of the SPRRs.
 - i) Updated concentration limits for each monitoring parameter at each monitoring well based on the new data set.
 - j) A comprehensive discussion of any Corrective Action Program required by this MRP under Section A.6.
- 3) **Seep Reporting:** The Discharger shall report by telephone any seepage from the disposal area **immediately** after it is discovered. A written report shall be filed with the Central Valley Water Board **within seven days**, containing at least the following information:
- a) A map showing the location(s) of seepage;
 - b) An estimate of the flow rate;
 - c) A description of the nature of the discharge (e.g., all pertinent observations and analyses);
 - d) Verification that samples have been submitted for analyses of the Field Parameters and Monitoring Parameters listed in Table III of this MRP, and an estimated date that the results will be submitted to the Central Valley Water Board; and
 - e) Corrective measures underway or proposed, and corresponding time schedule.
- 4) **Annual Facility Inspection Reporting:** By **15 November** of each year, the Discharger shall submit a report describing the results of the inspection and the repair measures implemented, preparations for winter, and include photographs of any problem areas and the repairs. Refer to Section A.5.a of this MRP, above.
- 5) **Annual Corrective Action Evaluation Report:** By 31 July each year, the Discharger shall submit an Annual Corrective Action Evaluation Report that includes at least the following:
- a. A comparison of the site-wide Total VOC (TVOC) mass from the past four quarters to the TVOC mass threshold limit;
 - b. a screening of the site-wide TVOC mass from the previous four quarters;

- c. a comparison of the individual well TVOC concentrations from the previous four quarters to their respective threshold limits;
 - d. a comparison of the groundwater monitoring results from over time for each COC, for each well;
 - e. quarterly groundwater potentiometric surface maps from the previous year, incorporating data from the DMP, CAP and EMP monitoring wells;
 - f. a discussion of the landfill cover, including any performance issues from the previous year;
 - g. a summary and discussion of the previous year's monitoring data from the entire gas monitoring system and extraction network and;
 - h. a discussion of overall corrective action progress, including any proposed enhancements to the program.
- 6) **Major Storm Event Reporting:** Following major storm events capable of causing damage or significant erosion, the Discharger **immediately** shall notify Central Valley Water Board staff of any damage or significant erosion upon discovery and report subsequent repairs within **14 days** of completion of the repairs, including photographs of the problem and the repairs. Refer to Section A.5.b of this MRP, above.
- 7) **Survey and Iso-Settlement Map for Closed Landfills:** The Discharger shall conduct a survey and submit an iso-settlement map for each closed area of the landfill every five years pursuant to Title 27, section 21090(e). Refer to Section A.5.c of this MRP, above. The next report is due by **1 February 2018**.
- 8) **Financial Assurances Report:** By **1 June** of each year, the Discharger shall submit a copy of the annual financial assurances report due to CalRecycle that updates the financial assurances for closure, post-closure maintenance, and corrective action. Refer to Financial Assurances Specifications F.1 through F.3 of the WDRs.

C. WATER QUALITY PROTECTION STANDARD AND COMPLIANCE PERIOD

1. Water Quality Protection Standard Report

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

The Water Quality Protection Standard for naturally occurring waste constituents consists of the COCs, the concentration limits, and the point of compliance and all monitoring points. Any proposed changes to the Water

Quality Protection Standard other than annual update of the concentration limits shall be submitted in a report for review and approval.

The report shall:

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

The Water Quality Protection Standard shall be certified by a California-registered civil engineer or geologist as meeting the requirements of Title 27. If subsequent sampling of the background monitoring point(s) indicates significant water quality changes due to either seasonal fluctuations or other reasons unrelated to waste management activities at the site, the Discharger may request modification of the Water Quality Protection Standard.

The Discharger proposed the methods for calculating concentration limits in the 2011 *Concentration Limit Update Report*. Groundwater limits are calculated using intra-well tolerance limits and surface water limits are based on inter-station tolerance limits. All tolerance limits are based on a Type I error rate of alpha – 0.01 and a coverage of 95%.

The Water Quality Protection Standard shall be updated every two years beginning in 2014 for each monitoring well using new and historical monitoring data.

2. Monitoring Parameters

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

3. Constituents of Concern (COCs)

The COCs include a larger group of waste constituents, their reaction products, and hazardous constituents that are reasonably expected to be in or derived from waste contained in the waste management unit, and are required to be monitored every five years [Title 27, sections 20395 and 20420(g)]. The COCs for all waste management units at the facility are those listed in Tables I through IV for the specified monitored medium, and Table VI. The Discharger shall monitor all COCs every five years, or more frequently as required in accordance with a Corrective Action Program. The last 5-year COC report was submitted to the Central Valley Water Board in the 2008, *Third Quarter Monitoring Report* and 5-year COCs are due to be monitored again in the 2013 *First Quarter Monitoring Report*.

4. Concentration Limits

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

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

The methods for calculating concentration limits were included in the 2011 *Concentration Limit Update Report*. The approved method for groundwater wells uses intra-well tolerance limits and the method for surface water samples uses inter-station tolerance limits. All tolerance limits are calculated at 95% confidence and a Type I error rate of alpha – 0.01 is proposed for surface water samples.

The most recent concentration limits for select parameters as reported in the 2011 *Concentration Limit Update Report* were as follows:

GROUNDWATER CONCENTRATION LIMITS

Well	pH	TDS (mg/L)	Arsenic (mg/L)	Barium (mg/L)	Bicarb. (mg/L)	Calcium (mg/L)	Chloride (mg/L)	VOCs (ppb)
Wells North of Austin Road Unit Shallow Zone Detection and Corrective Action Wells Concentration Limits								
AMW-2	6.43 – 8.17	1160	0.006	0.29	544	154	454	ND
AMW-12	6.27-8.73	929.9	0.007	0.32	428	115	72	ND
Wells North of Austin Road Unit Deep Zone Detection and Corrective Action Wells Concentration Limits								
AMW-5R	6.33 – 8.42	993	0.014	0.38	611	162	130	ND
AMW-7	6.12-9.61	435	0.006	0.236	271	54	48	ND
Old Forward Wells								
MW-1	6.18-8.168	1320	0.007	0.2503	876	200.4	281.4	ND
MW-2	6.29-7.84	1222	0.0055	0.5427	820	160	110	ND
MW-3	6.421-8.369	1056	0.0041	0.2728	671.9	136.8	159.1	ND
MW-10	6.347-8.45	500.3	0.0072	0.23	330	67.3	46.45	ND
MW-13	5.776-7.688	1168	0.0058	0.7098	1100	203.1	73.03	ND
MW-14	5.851-7.619	1356	0.008	0.3139	1264	219.2	168.4	ND
MW-15	6.508-8.503	849.5	0.0056	0.3233	591.3	118.3	173.4	ND
MW-16	5.963-7.689	1108	0.0057	0.7062	1040	179	52.54	ND
MW-17	6.141-8.887	876.2	0.0084	1.001	480	190	159.2	ND
MW-18	6.333-8.542	741	0.0068	0.2277	397	109.1	135.8	ND
MW-19	6.137-8.605	658.7	0.0066	0.234	360	200	220	ND
MW-21	6.235-7.997	850	0.0059	0.477	1073	172.9	75.7	ND
MW-22	4.082-8.167	803.6	0.006	0.274	380	101.5	42.37	ND
MW-23R	6.5-7.52	1156	0.0062	0.093	604.4	153.7	160	ND
MW-24	5.479-9.161	1000	0.0057	0.2348	370	148.6	82.1	ND

GROUNDWATER CONCENTRATION LIMITS (continued)

Well	Chromium, Hexavalent, (mg/L)	Magnesium (mg/L)	Nitrate (mg/L)	Potassium, (mg/L)	Sodium, (mg/L)	Strontium, (mg/L)	Sulfate (mg/L)
Wells North of Austin Road Unit Shallow Zone Detection and Corrective Action Wells Concentration Limits							
AMW-2	0.0057	67.22	57.29	11.1	89.25	1.449	146.6
AMW-12	0.0134	53.24	21.54	5.04	54.11	1.159	93.2
Wells North of Austin Road Unit Deep Zone Detection and Corrective Action Wells Concentration Limits							
AMW-5R	0.007	62	31	9.879	112.3	1.788	95.2
AMW-7	0.008	26.49	6.81	10	30.87	0.733	38.5
Old Forward Wells							
MW-1	0.0117	88.5	15.91	9.912	121.6	1.793	191.9
MW-2	0.009	108.8	9.164	8.818	84.66	2.663	65.11
MW-3	0.0095	70.54	14.47	9.52	100	1.602	78.04
MW-10	0.0057	33.74	5.751	7.012	39.76	0.7393	
MW-13	0.007842	105.1	21.25	9.514	39.76	2.508	58.5

MW-14	0.0063	106.4	3.156	10.69	107.2	2.359	66.12
MW-15	0.006295	60.69	9.047	9.478	75.56	1.361	56
MW-16	0.00848	90.43	35.32	9.527	72.82	2.037	54.86
MW-17	0.007857	53.8	20.09	9.524	56.99	1.7	115.1
MW-18	0.00814	49.75	10.47	8.452	45.18	1.2	79.56
MW-19	0.00539	45.05	9.218	7.689	50.71	1.07	101.2
MW-21	0.005	86.37	0.6285	8.962	65.02	1.915	38.18
MW-22	0.0057	50.22	19.66	6.743	53.38	1.113	143
MW-23R	0.0082	64.2	33.98	5.295	99	1.603	137.7
MW-24	0.007	64.01	61.26	7.58	70	1.539	201.6

SURFACE WATER CONCENTRATION LIMITS

Location	pH	TDS (mg/L)	Bicarb. (mg/L)	Calcium (mg/L)	Carbonate (mg/L)	Chloride (mg/L)	Magnesium (mg/L)
Austin Unit	5.618-9.937	251.7	105	22.92	11	25.71	18.87
Forward Unit	3.842-12.06	1160	416.9	60	33	69.87	30

SURFACE WATER CONCENTRATION LIMITS (continued)

Location	Nitrate (mg/L)	TPH, Oil and Grease (ug/L)	Potassium Dissolved (mg/L)	Sodium, Dissolved (mg/L)	Sulfate (mg/L)	VOCs (ppb)
Austin Unit	2.45	5.6	3.803	20.31	22	ND
Forward Unit	18	5	8.197	60.6	86.39	ND

5. Retesting Procedures for Confirming Evidence of a Release

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

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

6. Point of Compliance

The point of compliance for the water standard at each waste management unit is a vertical surface located at the hydraulically downgradient limit of the Unit

that extends through the uppermost aquifer underlying the unit. The following are monitoring locations at the point of compliance:

<u>Cell or Module</u>	<u>Point of Compliance Monitoring Wells</u>
Old Forward Units	MW-1, -2, -3, -10, -13, -14, -15, -16, -17, -18, -19, -21.
Austin Road Unit	AMW- 1, -4, -6, -7

7. Compliance Period

The compliance period for each waste management unit shall be the number of years equal to the active life of the unit plus the closure period. The compliance period is the minimum period during which the Discharger shall conduct a water quality monitoring program subsequent to a release from the waste management unit. The compliance period shall begin anew each time the Discharger initiates an evaluation monitoring program [Title 27, section 20410].

8. Monitoring Points

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

D. TRANSMITTAL LETTER FOR ALL REPORTS

A transmittal letter explaining the essential points shall accompany each report. At a minimum, the transmittal letter shall identify any violations found since the last report was submitted, and if the violations were corrected. If no violations have occurred since the last submittal, this shall be stated in the transmittal letter. The transmittal letter shall also state that a discussion of any violations found since the last report was submitted, and a description of the actions taken or planned for correcting those violations, including any references to previously submitted time schedules, is contained in the accompanying report. The transmittal letter shall contain a statement by the discharger, or the discharger's authorized agent, under penalty of perjury, that to the best of the signer's knowledge the report is true, accurate, and complete.

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

Ordered by: _____
PAMELA C. CREEDON, Executive Officer

14 February 2014

(Date)

TABLE I
GROUNDWATER MONITORING PROGRAM

<u>Parameter</u>	<u>Units</u>	<u>Sampling Frequency</u>	<u>Reporting Frequency</u>
Field Parameters			
Groundwater Elevation	Ft. & 100ths, M.S.L.	Quarterly	Quarterly
Temperature	°F	Quarterly	Quarterly
Electrical Conductivity	umhos/cm	Quarterly	Quarterly
pH	pH units	Quarterly	Quarterly
Turbidity	Turbidity units	Quarterly	Quarterly
Monitoring Parameters			
Total Dissolved Solids (TDS)	mg/L ¹	Quarterly	Quarterly
Chloride	mg/L	Quarterly	Quarterly
Carbonate	mg/L	Quarterly	Quarterly
Bicarbonate	mg/L	Quarterly	Quarterly
Nitrate - Nitrogen	mg/L	Quarterly	Quarterly
Sulfate	mg/L	Quarterly	Quarterly
Calcium	mg/L	Quarterly	Quarterly
Magnesium	mg/L	Quarterly	Quarterly
Potassium	mg/L	Quarterly	Quarterly
Sodium	mg/L	Quarterly	Quarterly
Strontium	mg/L	Quarterly	Quarterly
Volatile Organic Compounds (USEPA Method 8260B, short list, see Table V)	ug/L ²	Quarterly	Quarterly
5-Year Constituents of Concern (see Table VIII)			
Chemical Oxygen Demand	mg/L	5-years	First Quarter 2013
Total Organic Carbon	mg/L	5 years	and alternating
Inorganics (dissolved)	ug/L	5 years	between 1 st and
Volatile Organic Compounds (USEPA Method 8260B, extended list)	ug/L	5 years	3 rd quarters
Semi-Volatile Organic Compounds (USEPA Method 8270D)	ug/L	5 years	every 5 years
Chlorophenoxy Herbicides (USEPA Method 8151A)	ug/L	5 years	thereafter
Organophosphorus Compounds (USEPA Method 8141B)	ug/L	5 years	“ ”

¹ Milligrams per liter

² Micrograms per liter

TABLE II
UNSATURATED ZONE DETECTION MONITORING PROGRAM

PAN LYSIMETERS² (or other vadose zone monitoring device)

<u>Parameter</u>	<u>Units</u>	<u>Sampling Frequency</u>	<u>Reporting Frequency</u>
Field Parameters			
Electrical Conductivity	umhos/cm	Quarterly	Quarterly
pH	pH units	Quarterly	Quarterly
Volume of liquid removed	gallons	Monthly	Quarterly
Monitoring Parameters			
Total Dissolved Solids (TDS)	mg/L	Quarterly	Quarterly
Chloride	mg/L	Quarterly	Quarterly
Carbonate	mg/L	Quarterly	Quarterly
Bicarbonate	mg/L	Quarterly	Quarterly
Nitrate - Nitrogen	mg/L	Quarterly	Quarterly
Sulfate	mg/L	Quarterly	Quarterly
Calcium	mg/L	Quarterly	Quarterly
Magnesium	mg/L	Quarterly	Quarterly
Potassium	mg/L	Quarterly	Quarterly
Sodium	mg/L	Quarterly	Quarterly
Volatile Organic Compounds (USEPA Method 8260B, short list, see Table V)	ug/L	Quarterly	Quarterly
5-Year Constituents of Concern (see Table VIII)			
Total Organic Carbon	mg/L	5 years	First quarter 2013 and alternating between 1 st and 3 rd quarters every 5 years thereafter
Inorganics (dissolved)	ug/L	5 years	
Volatile Organic Compounds (USEPA Method 8260B, extended list)	ug/L	5 years	
Semi-Volatile Organic Compounds (USEPA Method 8270D)	ug/L	5 years	“ “
Chlorophenoxy Herbicides (USEPA Method 8151A)	ug/L	5 years	“ “
Organophosphorus Compounds (USEPA Method 8141B)	ug/L	5 years	“ “

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

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

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

<u>Parameter</u>	<u>Units</u>	<u>Sampling Frequency</u>	<u>Reporting Frequency</u>
Field Parameters			
Total Flow	Gallons	Monthly	Quarterly
Flow Rate	Gallons/Day	Monthly	Quarterly
Electrical Conductivity	umhos/cm	Quarterly	Quarterly
pH	pH units	Quarterly	Quarterly
Monitoring Parameters			
Total Dissolved Solids (TDS)	mg/L	Annually	Annually
Chloride	mg/L	Annually	Annually
Carbonate	mg/L	Annually	Annually
Bicarbonate	mg/L	Annually	Annually
Nitrate - Nitrogen	mg/L	Annually	Annually
Sulfate	mg/L	Annually	Annually
Calcium	mg/L	Annually	Annually
Magnesium	mg/L	Annually	Annually
Potassium	mg/L	Annually	Annually
Sodium	mg/L	Annually	Annually
Volatile Organic Compounds (USEPA Method 8260B, short list, see Table V)	ug/L	Annually	Annually
5-Year Constituents of Concern (see Table VIII)			
Total Organic Carbon	mg/L	5 years	First Quarter 2013
Inorganics (dissolved)	ug/L	5 years	and alternating
Volatile Organic Compounds (USEPA Method 8260B, extended list)	ug/L	5 years	between 1 st and 3 rd
Semi-Volatile Organic Compounds	ug/L	5 years	quarters every 5
			years thereafter
(USEPA Method 8270D)			
Chlorophenoxy Herbicides (USEPA Method 8151A)	ug/L	5 years	" "
Organophosphorus Compounds (USEPA Method 8141B)	ug/L	5 years	" "
LCRS Testing ³	---	Annually	Annually

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

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

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

TABLE IV
SURFACE WATER DETECTION MONITORING PROGRAM

<u>Parameter</u>	<u>Units</u>	<u>Sampling Frequency</u> ¹	<u>Reporting Frequency</u>
Field Parameters			
Electrical Conductivity	umhos/cm	Quarterly	Quarterly
pH	pH units	Quarterly	Quarterly
Turbidity	Turbidity units	Quarterly	Quarterly
Temperature	°F	Quarterly	Quarterly
Flow to Waters of U.S.	Yes or No	Quarterly	Quarterly
Monitoring Parameters			
Total Suspended Solids (TSS)	mg/L	Quarterly	Quarterly
Total Dissolved Solids (TDS)	mg/L	Quarterly	Quarterly
Carbonate	mg/L	Quarterly	Quarterly
Bicarbonate	mg/L	Quarterly	Quarterly
Chloride	mg/L	Quarterly	Quarterly
Nitrate - Nitrogen	mg/L	Quarterly	Quarterly
Sulfate	mg/L	Quarterly	Quarterly
Calcium	mg/L	Quarterly	Quarterly
Magnesium	mg/L	Quarterly	Quarterly
Potassium	mg/L	Quarterly	Quarterly
Sodium	mg/L	Quarterly	Quarterly
TPH – Oil and Grease	mg/L	Quarterly	Quarterly
Volatile Organic Compounds (USEPA Method 8260B, short list, see Table V)	ug/L	Quarterly	Quarterly
5-Year Constituents of Concern (see Table VIII)			
Total Organic Carbon	mg/L	5 years	First Quarter 2013
Inorganics (dissolved)	ug/L	5 years	and alternating
Volatile Organic Compounds (USEPA Method 8260B, extended list)	ug/L	5 years	between 1 st and 3 rd
Semi-Volatile Organic Compounds	ug/L	5 years	quarters, every 5
			years thereafter
(USEPA Method 8270D)			
Chlorophenoxy Herbicides (USEPA Method 8151A)	ug/L	5 years	“ ”
Organophosphorus Compounds (USEPA Method 8141B)	ug/L	5 years	“ ”

¹ Quarterly surface water monitoring is required when there is water present at the designated surface water monitoring point any time during the Quarter. Reporting shall include whether there was flow from the facility to waters of the U.S. when the samples were collected.

TABLE V
SURFACE IMPOUNDMENT MONITORING PROGRAM

<u>Parameter</u>	<u>Units</u>	<u>Sampling Frequency</u> ¹	<u>Reporting Frequency</u>
Field Parameters			
Freeboard	0.1 foot	weekly	Quarterly
Leachate Volume	gallons	weekly	Quarterly
Dissolved Oxygen	mg/L	weekly	Quarterly
LCRS Testing	----	Annually	Annually

**TABLE VI
 LANDFILL GAS (LFG) MONITORING PROGRAM**

<u>Parameter</u>	<u>Units</u>	<u>Frequency</u>
LFG Plant Field Parameters		
Atmospheric Temperature	°F	Monthly
Atmospheric Pressure	PSIG	Monthly
Temperature into LFG Plant	°F	Monthly
Pressure into the LFG plant	mm of Hg vacuum	Monthly
Totalized flow and flow rate into the LFG Plant	Cubic feet & CFM	Monthly
Total halogenated VOCs into the LFG Plant	µg/cm ³	Monthly ¹
LFG Plant Influent Monitoring Parameters		
Volatile Organic Compounds (USEPA Method TO-15) ¹	µg/cm ³	Semiannually
Methane	%	Semiannually
Field and Monitoring Parameters for all LFG Extraction Wells and Monitoring Probes		
Weather Conditions		Monthly
Atmospheric Temperature	°F	Monthly
Atmospheric Pressure	mm of Hg	Monthly
Gas Temperature at each well		Monthly
Before adjustment	°F	Monthly
After adjustment	°F	Monthly
Gas Pressure at each well		
Initial static pressure in wellhead	inches H ₂ O	Monthly
Adjusted static pressure in wellhead	inches H ₂ O	Monthly
Gas concentrations at each well		
Methane	% by volume	Monthly
Carbon Dioxide	% by volume	Monthly
Oxygen	% by volume	Monthly
Remainder gas	% by volume	Monthly
Monitoring Parameters for LFG Extraction Wells		
Volatile Organic Compounds (USEPA Method TO-15) ¹	µg/cm ³	Semiannually

¹ The Discharger shall measure total halogenated VOCs using field instrument with appropriate lamp.

TABLE VII

MONITORING PARAMETERS FOR DETECTION MONITORING

Surrogates for Metallic Constituents:

pH
Total Dissolved Solids
Electrical Conductivity
Chloride
Sulfate
Nitrate nitrogen

Volatile Organic Compounds, short list:

USEPA Method 8260B

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

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

TABLE VIII
5-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS

<u>Inorganics (dissolved):</u>	<u>USEPA Method</u>
Aluminum	6010
Antimony	7041
Barium	6010
Beryllium	6010
Cadmium	7131A
Chromium, Hexavalent	7196
Chromium	6010
Cobalt	6010
Copper	6010
Silver	6010
Tin	6010
Vanadium	6010
Zinc	6010
Iron	6010
Manganese	6010
Arsenic	7062
Lead	7421
Mercury	7470A
Nickel	7521
Selenium	7742
Thallium	7841
Cyanide	9010C
Sulfide	9030B

Volatile Organic Compounds, extended list:

USEPA Method 8260B

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

TABLE VIII

5-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS

Continued

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

TABLE VIII

5-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS

Continued

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

Semi-Volatile Organic Compounds:

USEPA Method 8270D - base, neutral, & acid extractables

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

TABLE VIII

5-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS

Continued

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

TABLE VIII

5-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS

Continued

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

TABLE VIII

5-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS

Continued

Chlorophenoxy Herbicides:

USEPA Method 8151A

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

Organophosphorus Compounds:

USEPA Method 8141B

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

INFORMATION SHEET

ORDER NO. R5-2014-0006

WASTE DISCHARGE REQUIREMENTS
FORWARD INC. AND REPUBLIC SERVICES INC.
FORWARD LANDFILL
OPERATION, CLOSURE AND CORRECTIVE ACTION
SAN JOAQUIN COUNTY

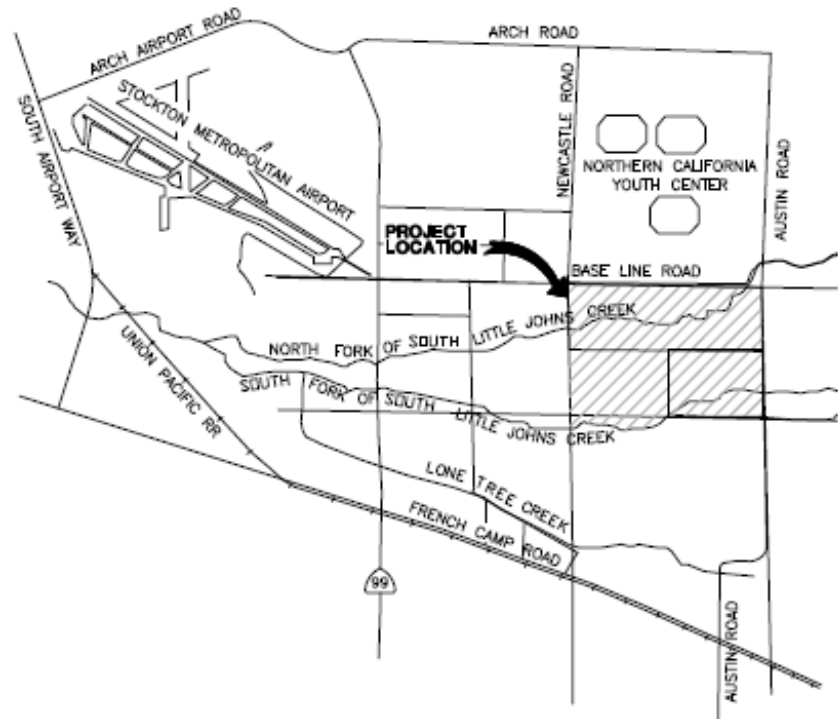
Republic Services Inc. as Forward Inc. owns and operates Forward Landfill, consisting of both Class II and Class III landfill units on 388 acres near Manteca. The Discharger requested revised Waste Discharge Requirements to address revised LCRS base grades, approval of an alternative final cover design, updates to inorganic concentration limits and other monitoring parameters, the monitoring network, revised soil pore gas monitoring requirements, new requirements for land application of cannery waste and new requirements for a composting operation.

Other issues addressed in this revised Waste Discharge Requirements include a request for a revised corrective actions Financial Assurances estimate, and a request for a revised Closure and Postclosure Maintenance Plan with revised dates for closure stages.

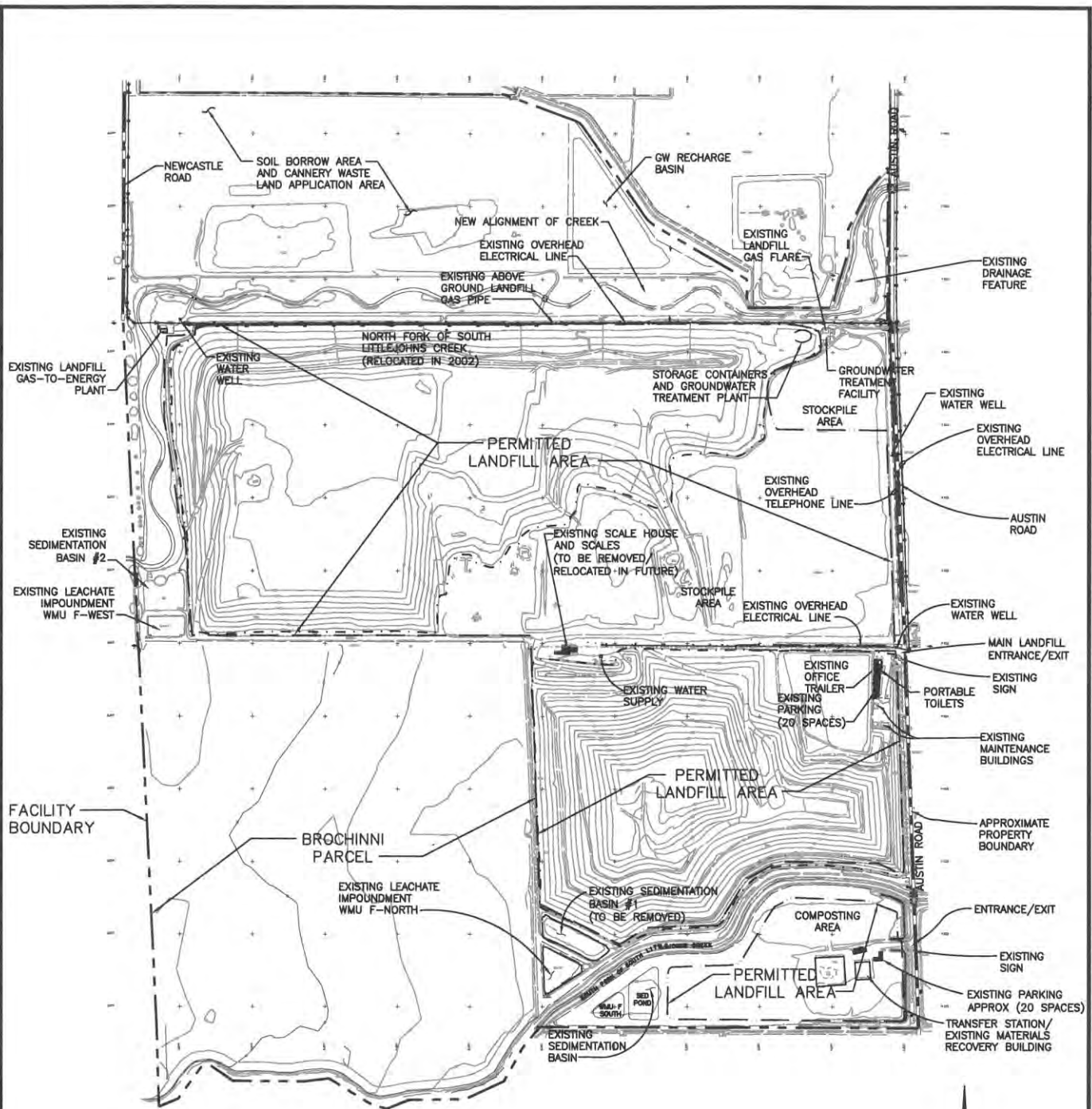
RDA: 18 October 2013



VICINITY MAP



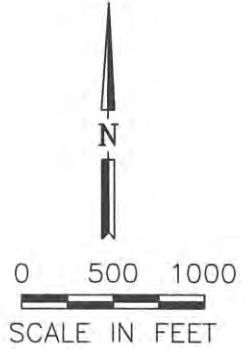
ATTACHMENT A
FORWARD LANDFILL
LOCATION MAP



**ATTACHMENT B
FORWARD LANDFILL
SITE PLAN**

LEGEND

- — — — — PROPERTY LINE
- - - - - EXISTING REFUSE LIMIT (AS OF 2/16/07)
- — — — — PERMITTED REFUSE LIMIT



CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

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

JANUARY 2012

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A. APPLICABILITY

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

B. TERMS AND CONDITIONS

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

- other order or prohibition issued, reissued, or amended by the Central Valley Water Board or the State Water Board, or intentionally or negligently discharging waste, or causing or permitting waste to be deposited where it is discharged into the waters of the state and creates a condition of pollution or nuisance, is a violation of this Order and the Water Code, which can result in the imposition of civil monetary liability [Wat. Code, § 13350(a)]
2. After notice and opportunity for a hearing, this Order may be terminated or modified for cause, including, but not limited to [Wat. Code, § 13381]:
 - a. Violation of any term or condition contained in this Order;
 - b. Obtaining this Order by misrepresentation, or failure to disclose fully all relevant facts;
 - c. A change in any condition that results in either a temporary or permanent need to reduce or eliminate the authorized discharge; or
 - d. A material change in the character, location, or volume of discharge.
 3. Before initiating a new discharge or making a material change in the character, location, or volume of an existing discharge, the Discharger shall file a new report of waste discharge (ROWD), or other appropriate joint technical document (JTD), with the Central Valley Water Board [Wat. Code, § 13260(c) and § 13264(a)]. A material change includes, but is not limited to, the following:
 - a. An increase in area or depth to be used for solid waste disposal beyond that specified in waste discharge requirements;
 - b. A significant change in disposal method, location, or volume (e.g., change from land disposal to land treatment);
 - c. A change in the type of waste being accepted for disposal; or
 - d. A change to previously-approved liner systems or final cover systems that would eliminate components or reduce the engineering properties of components.
 4. Representatives of the Central Valley Water Board may inspect the facilities to ascertain compliance with the waste discharge requirements. The inspection shall be made with the consent of the owner or possessor of the facilities or, if the consent is refused, with a duly issued warrant. However, in the event of an emergency affecting the public health or safety, an inspection may be made without consent or the issuance of a warrant [Wat. Code, §13267(c)].

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

C. STANDARD PROHIBITIONS

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

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

D. STANDARD DISCHARGE SPECIFICATIONS

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

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

E. STANDARD FACILITY SPECIFICATIONS

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

10. The Discharger shall lock all groundwater monitoring wells with a lock on the well cap or monitoring well box. All monitoring devices shall be clearly labeled with their designation including all monitoring wells, LCRS risers, and lysimeter risers and shall be easily accessible for required monitoring by authorized personnel. Each monitoring device shall be clearly visible and be protected from damage by equipment or vehicles.
11. The Discharger shall ensure that methane and other landfill gases are adequately vented, removed from landfill units, or otherwise controlled to prevent the danger of adverse health effects, nuisance conditions, degradation, or the impairment of the beneficial uses of surface water or groundwater due to migration through the unsaturated zone.
12. The Discharger shall maintain the depth of the fluid in the sump of each landfill unit at the minimum needed for efficient pump operation (the depth at which the pump turns on given the pump intake height and maximum pump cycle frequency).
13. The depth of fluid on the landfill liner shall not exceed **30 centimeters** (cm) [40 C.F.R. § 258.40(a)(2)]. This regulation is interpreted by the Central Valley Water Board to exclude the leachate sump. The Discharger shall **immediately** notify the Central Valley Water Board staff by telephone, and follow up in writing within **seven** days if monitoring reveals that the depth of fluid on any portion of the liner (excluding the sump) exceeds 30 cm (approximately 12 inches). The written notification shall include a timetable for remedial or corrective action necessary to achieve compliance with the leachate depth limitation.
14. Each LCRS shall be tested at least annually to demonstrate proper operation. The results of the tests shall be compared with earlier tests made under comparable conditions [Title 27, § 20340(d)].
15. The Discharger shall maintain a *Storm Water Pollution Prevention Plan and Monitoring Program and Reporting Requirements* in accordance with State Water Board Order No. 97-03-DWQ (or most recent general industrial storm water permit), or retain all storm water on-site.
16. Internal site drainage from surface or subsurface sources shall not contact or percolate through wastes.
17. New MSW landfill units or lateral expansions of existing units shall not be sited in a "wetland" [as defined in 40 C.F.R. § 232.29(r)] unless there is no practical alternative; steps have been taken to assure no net loss of wetland; the landfill unit will not degrade the wetland; the unit will not jeopardize threatened or endangered species or produce adverse modification of a critical habitat or violate any requirement of the Marine Protection, Research, and Sanctuaries Act of 1972 [40 C.F.R. § 258.12].

F. STANDARD CONSTRUCTION SPECIFICATIONS

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

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

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

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

G. STANDARD CLOSURE AND POST-CLOSURE SPECIFICATIONS

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

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

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

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

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

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

H. STANDARD FINANCIAL ASSURANCE PROVISIONS

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

I. STANDARD MONITORING SPECIFICATIONS

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

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

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

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

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

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

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

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

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

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

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

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

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

be taken as the detection limit of the analytical method used (e.g., USEPA methods 8260 and 8270).

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

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

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

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

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

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

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

48. **Physical Evidence of a Release.** If the Discharger determines that there is a significant **physical** evidence of a release, the Discharger shall immediately

verbally notify Central Valley Water Board staff and provide written notification **by certified mail within 7 days** of such determination, and within **90 days** shall submit an amended report of waste discharge to establish an Evaluation Monitoring Program [Title 27, § 20385(a)(3) and § 20420(l)(1) & (2)].

J. RESPONSE TO A RELEASE

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

description of the corrective action measures that could be taken to achieve background concentrations for all constituents of concern [Title 27, § 20420(k)(6)].

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

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

K. GENERAL PROVISIONS

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

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

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

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

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

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

L. STORM WATER PROVISIONS

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

infiltration, inundation, erosion, slope failure, washout, and overtopping under the precipitation conditions for the unit [Title 27, § 20365(a)].

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

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