

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. R5-2015-0051

WASTE DISCHARGE REQUIREMENTS
FOR
CITY OF SACRAMENTO UTILITIES DEPARTMENT
SYLVIA DELLAR SURVIVOR'S TRUST
DELLAR LANDFILL
UNCLASSIFIED LANDFILL
CLOSURE, POSTCLOSURE MAINTENANCE,
AND CORRECTIVE ACTION MONITORING
SACRAMENTO COUNTY

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

1. The Sylvia Dellar Survivor's Trust (property owner) and the City of Sacramento Utilities Department (former operator), hereinafter jointly referred to as Discharger, owns and maintains the Dellar Landfill, a partially-closed, municipal solid waste (MSW) landfill about 1½ miles northeast of downtown Sacramento, as shown in Attachment A: Location Map (incorporated by reference under Finding 2 below). The facility is regulated under the California Water Code, section 13000 et seq. and the California Code of Regulations, title 27, section 20005 et seq. (Title 27). The facility is not subject to federal Subtitle D regulations (40 C.F.R. 258) (a.k.a., "Subtitle D"), or State Water Resources Control Board (State Water Board) Resolution 93-62, because it did not accept wastes after 9 October 1991, the effective date of Subtitle D [see 40 C.F.R. 258.1(c)],
2. The following documents are attached to this Order and hereby incorporated into and made a part of this Order by reference:
 - a. Attachment A – Location Map
 - b. Attachment B – Site Map
 - c. Attachment C – Facility Map
 - d. Information Sheet
 - e. November 2013 Standard Provisions and Reporting Requirements For Industrial Facilities (SPRRs)

The attachment maps show the location of items described in the WDR findings (e.g., Dellar Landfill, adjacent 28th Street Landfill and unclassified fill area, gas and groundwater monitoring wells) while the Information Sheet provides additional or supplementary landfill information. The SPRRs contain non-site specific requirements common to pre-Subtitle D landfills referenced, as applicable, under various WDR specifications and provisions of this order. See Finding 11.

3. The facility is located at 2401 A Street immediately south of the American River and north of the termini of 24th and 25th Streets in Sacramento. The 29-acre site consists of the following six parcels of land: APNs 001-0160-008, 001-0160-009, 001-0160-013,

001-0160-038, 001-0160-039, and 003-0032-013. The property is in Section 31, T9N, R5E, MDB&M and its geographic coordinates are Latitude 38.587° north, Longitude - 121.470° west. See Attachment A.

4. The landfill is a “closed, abandoned, or inactive” (CAI) unit under Title 27 regulations and has not been previously regulated by WDRs. In a 13 June 2013 letter, Central Valley Water Board staff notified the Discharger that the landfill was subject to Title 27 corrective action provisions and requested that the Discharger submit an application for waste discharge requirements (WDRs) and Report of Waste Discharge (RWD), including Joint Technical Document (JTD) Index. On 30 December 2013, the Discharger submitted the RWD and JTD Index, including or referencing the following information:
 - a. A project history and waste disposal information;
 - b. Groundwater monitoring data;
 - c. A Partial Final Closure and Postclosure Maintenance Plan;
 - d. A Partial Closure Certification Report; and
 - e. A description of landfill controls and monitoring systems.

A completed application form was received on 3 July 2014. Additional information related to the landfill was received in January 2015. See Findings 34 (gas monitoring) and 82 (closure of levee corridor area). This WDR Order includes findings, regulatory references, and requirements appropriate for the closed landfill based on the RWD and a review of the project files.

5. The landfill is one of several properties within a 130-acre fill area west of 28th Street historically operated by the City of Sacramento, or used for public dumping, prior to start-up of the 28th Street Landfill (east of 28th Street) in the early 1970s. The 28th Street Landfill is regulated under separate WDRs Order No. R5-2004-0039 and has been closed since 1997. The operational history of the historical fill area is summarized in the Information Sheet attached to this Order.
6. The Dellar landfill operated from July 1957 to December 1963, accepting primarily household wastes from the City of Sacramento service area. The City of Sacramento operated the landfill during its entire active period under written agreements with the property owners at that time (R. Cannon and A. Lucas). After cessation of waste disposal operations in 1963, the site was left with about one foot of uncompacted soil cover, but was not capped and graded. The City then moved its waste disposal operations to other parcels in the historical fill area.
7. Over the years following cessation of operations, the landfill underwent substantial differential settlement, resulting in pot hole-like depressions and hummocky conditions over most of the landfill cover surface. The landfill also had a history of subsurface fires. Site inspections conducted by Central Valley Water Board staff from 1992 to 2010 documented these and related deficiencies at the site, such as exposed waste, storm water ponding, and infiltration into landfill wastes. Groundwater degradation has also

been detected down gradient of the site (see Finding 42).

8. In 2008, the Executive Officer issued a Cleanup and Abatement Order requiring that the Discharger submit a Final Closure and Postclosure Maintenance Plan to close the landfill as a corrective action measure to address the above issues. The Discharger subsequently installed final cover on most of the landfill footprint in accordance with a 2011 partial Final Closure and Postclosure Maintenance Plan (FC/PCMP) approved by Central Valley Water Board staff. See Findings 68 and 72. These WDRs require that the Discharger submit a revised FC/PCMP to complete closure of the remaining areas of the landfill as a corrective action measure.
9. Landfill-related facilities at the site include the landfill unit (23.9 acres), detention basins and other storm water controls, containment berms, groundwater monitoring wells and access roads. Other onsite facilities include an active radio transmission tower; power poles; a river levee, and a perimeter fence. The landfill monitoring wells are actually part of the monitoring system for the closed 28th Street Landfill east of the site, but are also used to monitor the Dellar Landfill. The radio transmission tower is not associated with the landfill and is in a separate fenced area. See Attachment B and Attachment C.
10. Due to the age of the former landfill operation, the landfill was constructed without a base liner or leachate collection and recovery system (LCRS).
11. 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 J of these WDRs below, and in the *Standard Provisions and Reporting Requirements for Waste Discharge Requirements for Industrial Facilities (SPRRs)*, dated November 2013, which is part of this Order. Monitoring and reporting requirements are included in the Monitoring and Reporting Program (MRP) No. R5-2015-0051 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 J) of these WDRs, and the requirement in the WDRs supersedes the requirement in the SPRRs.
12. 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 (LEA) in charge of implementing CalRecycle's regulations.

WASTE AND UNIT CLASSIFICATIONS

13. The landfill accepted primarily household and commercial refuse (e.g., garbage, rubbish, yard trimmings, and street cleaning wastes) classified as nonhazardous, municipal solid wastes (MSW) under Title 27 regulations. See Appendix A, December 2004 *Site Summary Report, 28th Street Landfill (Dellar Properties)*, prepared by Alisto Engineering Group.
14. Average landfill disposal rates and total in-place tonnage are unknown due to a lack of historical records, but have been estimated based on various assumptions. See Information Sheet.
15. The landfill is an existing, unclassified landfill under Title 27 regulations because it predates Title 27 standards; has not been previously classified under WDRs; and, based on review of the unit's design (See Finding 56), cannot be retrofitted to meet Title 27 standards per section 20080(e). Title 27 prescriptive standards for waste containment therefore do not generally apply to the facility.

SITE DESCRIPTION

16. The site is immediately south of the American River and adjoining levee about two miles upstream of the confluence with the Sacramento River. Topographic relief in the area is generally flat, except in developed areas (e.g., landfills, levees, freeway, railroad crossings), with natural grades less than 2% toward the west. Surface elevations in the area generally range from 25 to 40 feet above mean sea level (MSL).
17. The site is bounded by the American River and adjoining levee to the north; historical fill to the east (Bell Marine and the closed 28th Street Landfill); A Street (an unimproved road) and historical fill to the south (Cannon and Scollan parcels), and vacant land owned by the California Almond Growers Exchange to the west. In addition to historical fill operations, land uses in the area include residential (e.g., New Era Park); recreational (e.g., American River corridor, City parks); industrial (e.g., warehouses, concrete aggregate yard, food processing), transportation (Business 80 freeway) and open space. A new residential development (McKinley Village) has also been proposed for a 44-acre tract of land southeast of the landfill. See Attachment B.
18. Native vegetation in the area includes annual grasses, forbs, shrubs (e.g., elderberry), and scattered trees such as cottonwood and oak. More dense and varied vegetation occurs where there is more water, such as riparian foliage within the American River corridor and vegetation in developed/landscaped areas (e.g., Sutter's Landing Park, adjacent residential neighborhoods).
19. A January 2014 Department of Water Resources (DWR) well survey identified at least 12 supply wells within a one-mile radius of the site, including 3 domestic wells (to the southwest, west, and east, respectively); 5 industrial wells (3 to the west and 2 to the southwest); 1 irrigation well (one-half mile to the southeast); and 2 wells designated as

“other use” about one mile to the southwest. Well depths ranged from about 30 to 300 feet bgs. Water yields for these wells ranged from 200 to 1,150 gallons per minute (gpm). The closest domestic well was approximately 4,000 feet east of the site.

20. The landfill footprint is within the 100-year flood plain of the American River, but within an area protected from a 100-year flood by levee based on the Federal Emergency Management Agency (FEMA) Flood Insurance Rate last revised in August 2012 (Community-Panel No. 180, Map No. 06067C0180H). Both halves of the site are designated on the FEMA map as within “Zone X”, for which no base line (i.e., 100-year) flood elevations are specified.^{1,2}
21. The 100-year, 24-hour precipitation event for the site area is about 3.87 inches based on historical Rainfall Depth Duration Frequency data for the Sacramento PO Station about ½ mile southwest of the site. The site receives an average of about 18.5 inches per year of precipitation. The mean annual Pan A evaporation at the site is about 51 inches per year based on monthly average historical data from DWR’s CIMIS Weather Station 155 (Bryte) about 3½ miles west of the site along the Sacramento River. Mean monthly evaporation is estimated to exceed mean monthly precipitation in all months of the year, except January and December.³ Net average annual evaporation at the site is estimated to be about 32.5 inches.

Geology

22. The Sacramento Valley area is in the Great Valley alluvial plain, a 22,500 square mile area comprising California’s Central Valley. The area is bounded by the Cascade Mountain Range to the west, the Sierra Nevada to the east, the Tehachapi Mountains to the south, and the Klamath Mountains to the north. Continental deposits in the Lower Sacramento Valley consist of alluvial, flood plain, and delta sediments generated by erosion and/or glaciation processes in the Sierra Nevada and Coast Range Mountains. Deposited over geologic time by the Sacramento and San Joaquin Rivers and their tributaries, such sediments are estimated to be up to 9,000 feet thick in some areas. Underlying the continental deposits are up to 25,000 feet of ancient marine deposits. The oldest sediments in the Great Valley date back to the Jurassic Period.

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1. “Zone X” includes areas within the 500-year flood plain (0.2% annual chance of flooding) and areas within 100-year flood plain (1.0% annual chance of flooding) that include areas with expected average flood depths less than one foot; areas with a contributing drainage area of less than 1 square mile; and/or areas protected from the base flood by levee.
 2. The 2012 FIRM map actually shows most of the eastern half of the site is shown as outside of the 100-year flood zone, but the entire area corresponds to the landfill within the 500-year flood zone.
 3. Based on comparison of monthly evapotranspiration data from the CIMIS (Bryte) weather station with monthly precipitation data from the Sacramento PO weather station 3 miles to the east of the Bryte station.

23. The Sacramento area is generally underlain by the following sedimentary formations:

<u>Formation</u>	<u>Age</u>	<u>Depth Range, bgs</u>	<u>Description</u>
Modesto/ Riverbank	Mid-to-late Pleistocene	0 to 125	Stream channel and flood basin deposits (e.g., cobble, gravel, coarse sand interspersed with silt, clay, and fine sand)
Laguna	Pliocene and early Pleistocene	125 – 375	Alluvium (e.g., silt, sand and clay interspersed with gravel lenses)
Mehrten	Miocene	>375	Alternating sequences of andesitic (dark-colored) alluvium confined by volcanic deposits (e.g., tuff-breccia)

24. Soil in the project area generally consists of flood plain deposits and alluvial material deposited prior to construction of river levees. Some of the sediment is material washed down from historical gold mining activities conducted upstream in the American River corridor. Surface soil in the area has been mapped as Columbia sandy loam, a moderately-permeable alluvial soil found in narrow, low-lying flood plains along rivers and streams.⁴ Slopes in such areas typically range from 0% to 2%. The upper five feet typically consists of yellowish-brown, sandy loam underlain by stratified layers of yellowish-brown sandy loam, silty loam, and/or sand. Clay layers may be present in surface soil in some areas. Well boring logs from the project and nearby areas are consistent with the regional geological model and Soil Conservation Service descriptions, indicating that the area is underlain by alluvial deposits, including, but not limited to silty or clayey sand, sandy or silty clay, and/or sandy or clayey silt.

25. The nearest quaternary faults to the site are in the Foothills Fault System to the east and the Great Valley Fault Zone to the west, as follows:

a. Foothills Fault System

- i. Rescue and Maidu East faults about 35 miles to the northeast just east of Folsom Lake;
- ii. Deadman and Dewitt Faults about 38 miles to the northeast near Auburn;
- iii. Spenceville Fault about 40 miles to the northeast east of Wheatland;
- iv. Lone Fault about 42 miles to the southeast near Lone;
- v. Swain Ravine Fault about 56 miles to the north-northeast half way between Yuba City and Grass Valley; and
- vi. Cleveland Hills Fault about 73 miles to the north near Oroville.

4. See April 1993 report *Soil Survey of Sacramento County, California*, Soil Conservation Service, U.S. Department of Agriculture; Page 34.

- b. Great Valley Thrust Zone
 - i. Fault Segment 3 --Dunnigan Hills Fault about 28 miles to northwest near Dunnigan; and
 - ii. Fault Segment 4 -- Vaca Fault about 39 miles to the southeast in Vacaville.
26. The closest known active fault systems to the site are the Great Valley Thrust Zone, Fault Segment 4 and the northern reach of the Foothills Fault System. The Great Valley Thrust Zone is a submerged fault system that trends north-south along the eastern foothills of the Coast Range. In 1892, an earthquake registering 6.5 on the Richter scale occurred in Winters and Vacaville along the Vaca Fault in this fault zone. The Foothills Fault System trends NW-SE along the western foothills of the Sierra Nevada Mountains. In 1975, an earthquake registering 5.8 on the Richter scale occurred along the Cleveland Hills Fault (Foothills Fault System) near Oroville. There are no known Holocene faults within 1,000 feet of the facility.
27. The maximum probable earthquake (MPE) for the site is estimated to be about 6.5 on the Richter scale based on the 1892 Vacaville/Winters quake noted above. A maximum magnitude earthquake of 6.6 and a peak horizontal ground acceleration of 0.194 g were computed for the site based on an areally-distributed hazard in the Foothills Fault System.⁵

SURFACE WATER CONDITIONS

28. Natural drainage toward the American River is blocked by the American River levee, which was constructed in the early 1900s in response to a series of historical floods that inundated the City. See Information Sheet. Since construction of the levee system and other City infrastructure projects of that era, most engineered runoff from the area has been directed to the City's combined sewer system, which currently conveys commingled sewage and storm water flows to the Sacramento County Regional Sanitation District's Regional Wastewater Treatment Plant. Runoff not directed to the combined sewer system either infiltrates into the ground or dissipates through evaporation. The final cover constructed over the majority of the landfill footprint in 2012 directs storm water runoff to two onsite detention basins from which it is periodically pumped into the City's combined sewer system to minimize standing water. See Finding 75.

Some runoff from the northern perimeter of the 28th Street Landfill facility east of the site is discharged into the American River corridor under a General Industrial Storm Water Permit. Runoff within the American River corridor, including the north side of the levee, discharges to the American River. There are no other known permitted or unpermitted surface water discharges to the American River from the project area.

5. Maximum magnitude earthquake derived from probabilistic seismic hazard (PSH) de-aggregation analysis assuming an earthquake in the Foothills Fault System with a 475-year return period (10% chance in 50 years).

29. The *Water Quality Control Plan for Sacramento and San Joaquin River Basins, Fourth Edition*, designates beneficial uses, establishes water quality objectives, and contains implementation plans and policies for all waters of the Basin.
30. The designated beneficial uses of the American River stated in the Basin Plan are municipal and domestic supply; agricultural supply; industrial service supply; hydropower generation; water contact recreation; non-contact water recreation; warm freshwater habitat; cold freshwater habitat; migration of aquatic organisms; spawning, reproduction and/or early development; and wildlife habitat.

UNSATURATED ZONE CONDITIONS

31. No lysimeters or other soil pore water devices were installed or required prior to construction of the landfill, which predated current monitoring standards under Title 27. The Discharger has also adequately demonstrated that it would be infeasible and impractical to retrofit the landfill with lysimeters given that the footprint has already been established and that the landfill is unlined. As such, a leachate release to the unsaturated zone from the landfill can only be inferred from detected groundwater impacts beneath the site. A landfill gas (LFG) release to the unsaturated zone may, however, be detected by installation of gas probes.
32. The landfill predated Title 27 requirements for LFG monitoring and no LFG or soil gas monitoring probes have ever been installed in waste at the site. Until recently, the nearest soil gas monitoring wells to the site were eight perimeter compliance wells (DMPs 1 through 8) for the 28th Street Landfill historically installed along the southern side of the Union Pacific Railroad tracks southeast of the site. Historical monitoring results for the closest of these wells (DMPs 1 through 4) indicated only low to non-detect concentrations of LFG constituents, however. See Attachment B.
33. A recent investigation by the Discharger in response to an LEA directive indicated that several of the perimeter compliance wells at the 28th Street Landfill, including those proximate to the Dellar Property noted above, were damaged, improperly screened, and/or otherwise did not meet Title 27 gas well completion standards. At the request of the LEA and CalRecycle, the City subsequently developed a work plan to replace the old perimeter gas monitoring system with Title 27-compliant, multi-tier gas monitoring wells. As of December 2014, 19 new gas monitoring wells had been installed along the perimeter of the 28th Street Landfill site, including one (S-5) along the eastern perimeter of the Dellar landfill (about 200 feet north of groundwater monitoring well C-13) and the other (S-4) about 450 feet south of the southeast corner of the Dellar Landfill near old gas well DMP-1. See Attachment B.
34. MSW landfills commonly generate LFG during the waste decomposition process that can impact or threaten groundwater quality if not controlled. While limited investigations of the Dellar Property conducted to date (e.g., bar hole punch sampling conducted by CalRecycle in 2003) have not detected significant amounts of LFG, logging of wastes

excavated during 2012 closure activities revealed the presence of significant amounts of un-decomposed organic material remaining in the landfill (e.g., wood, newspapers, cardboard). Further, recent sampling of the new perimeter gas wells for the 28th Street Landfill has indicated methane concentrations ranging from 38% by volume up to 52% by volume in the probes of gas well S-5.

To better assess whether the Dellar Landfill may be generating significant amounts of LFG and the possible need for LFG controls, these WDRs require that the Discharger submit a work plan for the installation of LFG monitoring probes in landfill waste. See Corrective Action Specification D.5. Once installed, the probes are required to be monitored in accordance with the MRP for at least one year. After completion of the one-year in situ gas investigation, LFG monitoring may be discontinued if it is determined that the landfill is not generating LFG. However, if the in situ gas investigation determines that the landfill is generating gas in concentrations that could threaten water quality, these WDRs require that the Discharger submit and implement a corrective action work plan for the implementation of LFG controls and soil gas monitoring probes at the site, as necessary, to mitigate the source, and define the extent of impacts. See Corrective Action Specification D.6 and Provision J.7.f.

35. As noted in Finding 55, waste was discharged below the water table on the west half of the site such that there is no separation from high groundwater in those areas. The areas of the landfill footprint and portions of the landfill waste column that are in contact with groundwater at some time during a year are unknown.

GROUNDWATER CONDITIONS

36. The uppermost aquifer beneath the site occurs in Modesto/Riverbank alluvium at an average elevation of about 6 feet MSL +/- 3 feet of seasonal variation. The depth to groundwater at the site ranges from about 18 to 24 feet below ground surface (bgs), depending on location and water table elevation. Groundwater elevations at the Dellar Property are strongly influenced by water levels in the American River, which vary seasonally up to about 10 feet (i.e., 0 to 10 feet MSL) depending on a variety of factors (e.g., rainfall, snow melt, dam releases).
37. The groundwater flow direction also varies seasonally and is locally affected by a bend in the American River near the site, which produces a radial flow in the Dellar Property area. In the wet season, groundwater flow is generally toward the southwest away from the bend in the river, while in the summer, the gradient is either flat or, when there is a flow reversal, flows in a radial fashion toward the river bend to the northeast. The magnitude of the gradient varies from about 0 to 1 ft/1,000 ft depending of the time of year.
38. Background groundwater quality in the uppermost aquifer at the site is quite good due to the influence of the American River. Background concentrations of general minerals in the shallow groundwater include total dissolved solids (TDS) at about 162 mg/L,

electrical conductivity at about 276 mg/L, chloride at about 5 mg/L, sulfate non-detect, and bicarbonate alkalinity at about 116 mg/L. See Finding 42.

39. The beneficial uses of underlying groundwater stated in the Basin Plan are municipal and domestic supply, agricultural supply, industrial service supply, and industrial process supply.
40. The Dellar Property is within the groundwater monitoring well field for the 28th Street Landfill. There are currently seven 28th Street Landfill groundwater monitoring wells completed in the uppermost aquifer relevant to the Dellar Property, including two upgradient/background wells (B-4 and B-15); three down gradient wells (C-14, D-18, D-19, and D-20); and one well subject to gradient reversals (C-13). Wells C-14 and D-18 are located along B Street about 500 feet south of the Dellar Property and contiguously monitor the Dellar Landfill and two small parcels immediately south of the Dellar Property (owned by Cannon Family Trust and Scollan Credit Trust). The latter parcels were historically landfilled about the same time as the Dellar Property. See Attachment B.
41. Title 27, section 20415(b)(1) requires that the Discharger establish a sufficient number of monitoring wells along the landfill Point of Compliance (e.g., downgradient perimeter of unit) for detection and corrective action monitoring purposes. See Monitoring Specification G.9. Currently, there is only one monitoring well (C-13) at the site along the unit perimeter, and it is down gradient of the landfill only during gradient reversals that can occur during the dry season. To comply with Title 27 requirements for Point of Compliance monitoring, these WDRs therefore require that the Discharger submit a work plan for the installation of a Point of Compliance well along the southwestern perimeter of the unit. See Provision J.6.a and Attachment B (shows the approximate location where new Point of Compliance well is needed).
42. The City of Sacramento has been monitoring wells in the Dellar Property area under the WDRs for the 28th Street Landfill since the early 1990s. Historical monitoring data for these wells shows elevated concentrations of general minerals in groundwater down gradient of the landfill, as highlighted in bold in the following summary table:

Constituent	Statistic	Concentration (mg/L, except where noted) ^{1,2}			
		Background	Sidegradient	Downgradient	
		Upper Zone		Lower Zone	
		Well B-4 ³	Well C-13 ³	Well C-14	Well D-18
Alkalinity	2013	150	400	930	380
	20-Yr Avg.	110	390	700	375
	Range	60 - 230	300 - 650	580 - 930	200 - 600

Chloride	2013	4.3	37	120	110
	20-Yr Avg.	5	175	155	180
	Range	4 - 16	20 - 405	40 - 230	40 - 320
Sulfate	2013	0.46	0.42	31	0.93
	20-Yr Avg.	<1	<1	40	<1
	Range	<1 - 4.5	<1 - 3	<1 - 140	<1
TDS	2013	170	460	920	520
	20-Yr Avg.	140	410	900	750
	Range	70 - 275	260 - 850	750 - 1,500	280 - 900
Specific Conductance (mhos/cm)	2013	280	590	1,800	880
	20-Yr Avg.	375	1,600	1,950	1,400
	Range	120 - 700	590 - 2,200	1,400 - 3,100	400 - 2,350
Dissolved Iron	2013	25	18	5.0	1.8
	20-Yr Avg.	35	15	10	<1
	Range	10 - 70	5 - 35	1 - 21	<1 - 15

1. Based on December 1993 through December 2013 semiannual monitoring data.
2. <"x" denotes non-detect where "x" is method detection limit (MDL).
3. Well upgradient, except during periods in dry season when gradient may be flat or reversed.

The highest concentrations of general minerals were detected in well C-14, directly down gradient of the Dellar Landfill and adjacent historically filled (Cannon Family Trust and Scollan Credit Trust) parcels. Lower, but still elevated concentrations of general minerals were detected further down gradient of the landfill in upper zone in wells C-19 and D-20 (not shown above); sidegradient in well C-13; and directly down gradient in lower zone well D-18 (adjacent to C-14). The lowest concentrations of general minerals were detected in the upgradient wells near the American River (B-4 and B-15). The chemistry in the above wells, including the upgradient wells, also appears to be influenced by bicarbonate alkalinity and dissolved iron, which could be artifacts of LFG migration and/or the reducing effects of waste decomposition on the groundwater chemistry.

43. Time series plots of groundwater monitoring data for the down gradient wells generally showed strong-to-moderate declining trends for chloride and TDS, and stable levels or slight declining trends for specific conductance and alkalinity, over the past 20 years. Strong declining trends were noted for chloride in wells C-13, C-14, and D-18 and TDS in well C-14, supporting evidence of an historical release from the landfill. More moderate historical declines for chloride and TDS occurred in the other down gradient wells. No clear trends were noted for sulfate or dissolved iron in any of the wells. Dissolved iron was higher in background well B-4 than in the down gradient wells and had relatively stable historical trends consistent with other wells near the American River associated with the 28th Street Landfill. It is unknown whether the dissolved iron

detected in groundwater at the site is associated with landfill impacts, natural spatial variability of the groundwater, or both.

44. Low to trace concentrations of volatile organic compounds (VOCs) have also been historically detected in wells down gradient (i.e., south and SW) of the Dellar Property, including Chlorobenzene and 1,4-Dichlorobenzene up to 1.4 µg/L and 3.5 µg/L, respectively, in well C-14; Chloroform up to 9.5 µg/L in well D-19; Trichloroethylene up to 1.8 µg/L in well D-20; and various other intermittently-detected VOCs. The historical monitoring results for the site may be summarized as follows:

Constituent	Metric	Concentration (µg/L) ^{1,2,3}			
		Upper Zone			Lower Zone
		South		SW	South
		Well C-14	Well D-19	Well D-20	Well D-18
Benzene	<i>Max 2013⁴</i>	<0.2	<0.2	<0.2	<0.2
	<i>10-Yr Avg.</i>	<0.2	<0.2	<0.2	<0.2
	<i>10-Yr Range</i>	<0.2	<0.2	<0.2	<0.2 – 0.6
Chlorobenzene	<i>Max 2013⁴</i>	1.0	<0.2	<0.2	<0.2
	<i>10-Yr Avg.</i>	0.8	<0.2	<0.2	<0.2
	<i>10-Yr Range</i>	<0.2 – 1.4	<0.2	<0.2	<0.2
Chloroform	<i>Max 2013⁴</i>	<0.2	4.0	<0.2	<0.2
	<i>10-Yr Avg.</i>	<0.2	4.0	<0.2	<0.2
	<i>10-Yr Range</i>	<0.2	<0.2 – 9.5	<0.2	<0.2
1,2-Dichlorobenzene	<i>Max 2013⁴</i>	0.30	<0.2	<0.2	<0.2
	<i>10-Yr Avg.</i>	0.5	<0.2	<0.2	<0.2
	<i>10-Yr Range</i>	<0.2 – 1.0	<0.2	<0.2	<0.2
1,4-Dichlorobenzene	<i>Max 2013⁴</i>	1.9	<0.2	<0.2	<0.2
	<i>10-Yr Avg.</i>	1.7	<0.2	<0.2	<0.2
	<i>10-Yr Range</i>	<0.2 – 3.5	<0.2	<0.2	<0.2 – 2.1
1,2-Dichloroethane	<i>Max 2013⁴</i>	< 0.44	<0.2	0.5	<0.2
	<i>10-Yr Avg.</i>	<0.2	<0.2	<0.2	<0.2
	<i>10-Yr Range</i>	<0.2	<0.2 – 0.3	<0.2 – 0.5	<0.2
Tetrachloroethylene	<i>Max 2013⁴</i>	<0.2	<0.2	<0.2	<0.2
	<i>10-Yr Avg.</i>	<0.2	<0.2	<0.2	<0.2
	<i>10-Yr Range</i>	<0.2	<0.2	<0.2 – 0.2	<0.2
Trichloroethylene	<i>Max 2013⁴</i>	<0.2	<0.2	1.4	<0.2
	<i>10-Yr Avg.</i>	<0.2	<0.2	1.2	<0.2
	<i>10-Yr Range</i>	<0.2	<0.2	<0.2 – 1.8	<0.2

1. Based on December 2003 through December 2013 semiannual monitoring data.
2. <"x" denotes non-detect where "x" is method detection limit (MDL).
3. Concentrations above practical quantitation limit (PQL) highlighted in bold.
4. Highest concentration detected in well during year.

No VOCs have been historically detected in the background wells for the site or in sidegradient well C-13. Time series plots of VOC monitoring data since 1996 do not indicate any clear trends in any of the wells.

45. Given that the Dellar Landfill accepted MSW and is unlined, it appears likely that one or more of the VOCs detected in the monitoring wells directly down gradient of the site (i.e., C-14, D-18, and D-19) came from the Dellar Landfill. The extent to which VOCs detected in other wells in the area (e.g., D-20) may have emanated from the Dellar Property, other unclassified units in the historical fill area, or the 28th Street Landfill, is unknown. Further, no VOC sampling of landfill or soil gas has ever been conducted in these areas, so that there is no direct evidence of LFG migration from the Dellar Property. The City claims that the offsite VOCs impacts detected south (D-19) and southwest (D-20) of the Dellar Property are legacy impacts from one or more industrial facilities formerly located near the area (e.g., vehicle dismantler, dry cleaner, salvage yard), not the Dellar Property. No investigation has ever been conducted to substantiate these claims, however.
46. The RWD indicates that the City of Sacramento will be providing groundwater monitoring data obtained from monitoring required by the 28th Street Landfill WDRs such that separate monitoring of the Dellar Landfill wells will not be necessary. The MRP in these WDRs allows the Discharger to obtain the monitoring data through either direct monitoring under these WDRs or by timely acquisition of data already collected by the City of Sacramento for the relevant monitoring period under the 28 Street Landfill WDRs. See MRP Sections A and D.

WATER QUALITY PROTECTION STANDARD

47. The landfill does not currently have an approved Water Quality Protection Standard (WQPS) Report or list of concentration limits. Further, the WQPS proposed in the RWD is not currently approvable for several reasons. For example, the RWD proposes to use well C-13 as the background well at the site for development of concentration limits. As noted in Finding 40, well C-13 is subject to gradient reversals during the dry season and is down gradient or side gradient of waste during these periods. The well also shows strong evidence of an historical release from the landfill. See Findings 42 and 43. Well C-13 is therefore not an appropriate well for background monitoring. See Standard Monitoring Specification I.26, SPRR. Absent approval of alternative background monitoring locations in the Water Quality Protection Standard Report submitted under Provision J.6.d, the MRP of these WDRs specifies wells B-4 and/or C-15 as background monitoring wells for the site because they are closer to the river and less subject to being degraded by gradient reversals during the dry season.

48. In addition, the site does not currently have a shallow monitoring well along the down gradient perimeter of the landfill (Point of Compliance). Such a well is needed to satisfy the performance standards for detection and corrective action monitoring per Standard Monitoring Specification I.27 and WDR Monitoring Specification G.9. These WDRs therefore require submission of a work plan for the installation of a Point of Compliance well on the southwest perimeter of the landfill. See Provision J.6.a. After development of concentration limits and installation of the new Point of Compliance well under this Order, the WDRs further require that the Discharger submit a WQPS Report for the Dellar Landfill consistent with the requirements of this Order. See Provision J.6.d.

Monitoring Data Analysis Methods

49. Volatile organic compounds (VOCs) are often detected in a release from a MSW landfill and are often associated with releases of LFG 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.
50. 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. 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.
51. 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).

52. Title 27 specifies the prescriptive requirements and performance standards applicable to monitoring data analysis and requires that such methods be implemented as follows:

- a. As specified in the existing MRP under the WDRs; or
- b. In accordance with a technical report (certified by an appropriately registered professional) documenting such methods, submitted to, and approved by, the Central Valley Water Board; or
- c. In accordance with any water quality data analysis software deemed appropriate for such use by either the Central Valley Water Board or SWRCB.

The MRP of these WDRs requires that concentration limits for naturally-occurring constituents be based on an interwell approach absent a satisfactory demonstration that an intrawell approach is justified at the site (e.g., existence of significant spatial variability not attributable to a release from the unit). As proposed in the RWD, the MRP specifies that the method of interwell Tolerance Limits be used to calculate concentration limits for naturally-occurring constituents at the site. For evaluation of corrective action progress (i.e., trends), the monitoring program specifies an intrawell statistical procedure (e.g., Sens Slope Method). See Section C.4., MRP.

53. To demonstrate that corrective action has been completed (i.e., concentrations along Point of Compliance returned to compliance with the water quality protection standard), Monitoring Specification G.11 specifies a four year "proof" period. During this period, the Discharger must demonstrate that all constituents of the release have been reduced to concentration limits for at least eight consecutive semiannual monitoring events.

LANDFILL OPERATIONS

54. Waste filling on the Dellar Property is reported to have consisted of the discharge to deep borrow pits on the east half of the site, trench and fill operations on the west half of the site, and area fill operations over the entire site. Based on the maximum estimated elevation of waste after the landfill was filled in 1963 (about 41 feet MSL) compared to undeveloped grade offsite to the west (30 feet MSL), it is estimated that area fill operations constituted up to 10 feet of the landfill waste column. See June 1987 SWAT Report (*28th Street Landfill Calderon Report*, prepared by the City of Sacramento Department of Public Works), Page 46. It is unknown whether, or to what degree, waste was compacted in these operations. Stockpiled soil excavated from the pits and trenches was used as operational cover soil.

55. Accounting for estimated settlement during the 60 year inactive period prior to closure in 2012, it is likely that the average height of the landfill column was about 25 feet on the western half of the landfill and 45 feet on the eastern half of the landfill when the landfill was abandoned in 1963.⁶ Based on the estimated waste column thickness described in Finding 54, the average depth of waste below natural grade would have been about 15 feet bgs (15 feet MSL) on the western half of the unit and 35 feet bgs (5 feet MSL) on the eastern half of the unit. It is therefore likely that waste was discharged below the high water table in some portions of the site. Such operations could possibly have been conducted during periods of low groundwater (e.g. late dry season) or if the borrow pits were pumped for de-watering purposes.

LANDFILL DESIGN AND CONSTRUCTION

56. As a “closed, abandoned, or inactive” (CAI) unit under Title 27 regulations, the landfill predated current regulatory standards for waste containment and was constructed without a base liner (e.g., compacted clay liner) or LCRS. Further, given that disposal operations consisted primarily of trench fill and disposal to deep borrow pits, it is unlikely that the base of the landfill was engineered (i.e., compacted and graded) prior to initiating waste disposal. The landfill containment system was therefore limited to side wall berms consisting of the American River levee to the north; the A Street Road embankment to the south, and berms constructed on the east and west sides of the site using soil excavated from the trenches and pits. The latter berms were constructed to a height of about 11 feet above surrounding grade.
57. Information on file indicates that the landfill top deck grade would have been relatively flat (e.g., <0.5% grade) with an average top deck elevation of about 41 feet MSL.⁷ The interior slopes of the surrounding containment berms/levees were about 3H:1V. The landfill side slope grades above the top of the containment berms are unknown. Below ground surface, the interior slopes consisted of the walls of the trenches and pits excavated during landfill construction.⁸

6. Results based on 1988 geotechnical investigation to assess the feasibility of extending Richards Avenue through the historical fill area, including the Dellar Property. As part of this investigation, four soil borings were installed along the southern portion of the Dellar Property, including two on the western half and two on the eastern half. Results indicated waste depths up to 22 feet on the western half of the property 62 feet bgs on the eastern half of the property. See 1988 *Geotechnical Investigation, Richards Boulevard Extension*, prepared by Harding Lawson Associates; 1991 *Final Environmental Impact Report, Sutter's Landing Park and Richard's Connector Between 28th Street and the Union Pacific Railroad Tracks*, prepared by STA Planning, Inc. (Page 181).

7. There is no topographic survey information on file dating back to when the landfill was abandoned, however, language in the 1957 operating agreement between the City and the property owner indicates a plan to fill up to the level of an imaginary line drawn from the top of the American River levee to the north (about 43 feet MSL) to the top of the Southern Pacific Railroad track embankment to the south (about 39 feet MSL).

8. Language in the 1957 operating agreement between the City and property owners authorized the City to excavate disposal pits on the property and use the excavated soil to construct side wall levees to buttress

INACTIVE PERIOD

58. Reports on file indicate that upon cessation of landfill operations in 1963, the landfill was left with uncompacted soil cover of varying thickness and that it did not receive an engineered final cover (i.e., was not capped and graded for drainage). It is unknown whether the cover met then-existing regulations (if any) for landfill closure, or whether the landfill was abandoned. In either case, such cover would not have met current regulatory standards under Title 27 regulations.
59. A conceptual closure plan for the Dellar Property was included in an amendment to the Final Closure Plan for the 28th Street Landfill, but never finalized or implemented. The conceptual plan envisioned grading the landfill for drainage and installation of an engineered soil cover on the landfill. See December 1995 *Final Closure Plan Amendment No. 2 City of Sacramento 28th Street Sanitary Landfill*, prepared by Harding Lawson Associates.
60. Central Valley Water Board staff inspections conducted at the Dellar Property between 1992 and 2005 (e.g., 28 September 1992, 16 January 2002, 6 February 2003, 27 May 2004, and 2 June 2005) confirmed historical information on file indicating that the landfill cover was not adequate and that the site had been abandoned. These inspections typically found that the landfill cover surface was hummocky from long term differential settlement, had desiccation cracks, and/or that it did not adequately drain. Several inspections found ponded storm water on the landfill surface and likely storm water infiltration into landfill wastes.
61. A 2003 Phase I Site Assessment conducted by a prospective purchaser of the property also found that the site had been abandoned and was not adequately drained. The report from the study recommended that the landfill be closed as a corrective action measure; a follow-up (Phase II) assessment as to of the nature and extent of any landfill impacts; and LFG testing. See July 2003 *Phase I Environmental Site Assessment Report*, prepared by SCS Engineers. A 2004 site assessment by the property owner made similar findings and recommendations, but asserted that the City was the sole responsible party for the recommended work. See December 2004 *Site Summary Report, 28th Street Landfill (Dellar Properties)*, prepared by Alisto Engineering Group.
62. The landfill also had a history of subsurface fires during its inactive period dating back to the mid-1980s. Such fires may have been attributable to trespass or spontaneous combustion associated with the waste decomposition process. Such conditions may have constituted a nuisance under the Water Code.

wastes and as final cover material. Historical aerial photos and site topographical surveys confirm that the sidewall containment berms were constructed and still exist on the property.

CORRECTIVE ACTION

63. Title 27, section 20080(g) states:

“CAI Units—Persons responsible for discharges at Units which were closed, abandoned, or inactive on or before November 27, 1984 (CAI Units), may be required to develop and implement a detection monitoring program in accordance with Article 1, Subchapter 3, Chapter 3, Subdivision 1 of this division (section 20380 et seq.). If water quality impairment is found, such persons may be required to develop and implement a corrective action program under that article.”

On 13 March 2003, Regional Water Board staff issued a letter to the property owner (Sylvia Dellar Survivor's Trust) noting that the landfill was a CAI under Title 27, section 20080(g) and that monitoring data collected by the City of Sacramento showed evidence of groundwater impacts from the landfill, including VOCs and elevated inorganic constituents. The letter requested that the Discharger submit a Corrective Action Plan (CAP) to address the impacts. A 13 June 2003 due date for submission of the CAP was ultimately extended to 2 September 2003, but the CAP was never received.⁹

64. On 4 June 2008, the Water Board's Executive Officer issued Cleanup and Abatement Order (CAO) No. R5-2008-0705 to the Discharger (Sylvia Dellar Survivor's Trust and City of Sacramento), requiring that the Discharger submit a plan for closure of the landfill as a corrective action measure under Title 27 regulations (i.e., sections 20080(g) and 20430). The CAO required that the Discharger:

- a. Submit a final closure plan for approval by 15 March 2008;
- b. Begin landfill closure construction by 1 June 2012;
- c. Complete closure construction by 30 October 2010; and
- d. Submit a final certification report by 15 December 2010.
- e. Obtain coverage under the Construction Activities General Storm Water Permit prior to initiation of closure activities and submit and implement an erosion control plan for the project.

As described in Finding 79, the Central Valley Water Board ultimately issued an Administrative Civil Liability Order to the Discharger for failing to meet project milestones under the CAO, including various due dates for submission of technical reports and completing closure construction activities.

LANDFILL CLOSURE

65. Prior to initiating landfill closure construction in 2011, the landfill surface elevation averaged about 38 feet above mean sea level (MSL), about 8 feet above natural grade to the southwest. The western side of the landfill had a 10H:1V slope, except along its north end, where it steepened to 4H:1V. The northern side slope was contiguous with

⁹. Records on file indicate that after receiving the Water Board directive, the property owner sued the City seeking a determination that the City be declared primarily responsible for compliance with Water Board orders regarding the landfill and indemnification for claims arising from operation of the landfill.

the interior slope of an old, dry sedimentation pond on the adjacent (California Almond Growers Exchange) property, the bottom of which was about 18 feet MSL.

66. Title 27 does not specify prescriptive closure requirements for an unclassified landfill. However, for CAI units, landfill closure can be required as part of a corrective action program to address water quality impairment associated with a release from the unit. See Title 27, section 20080(g). Additionally, CWC Section 13360(a)(1) allows the Regional 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.
67. On 29 October 2009, the City of Sacramento submitted a Final Closure and Postclosure Maintenance Plan (October 2009 FC/PCMP) for the landfill, including a design report, in response to the CAO. Central Valley Water Board staff subsequently approved the plan on 9 December 2009. The October 2009 FC/PCMP was never implemented, however, due to discovery of Elderberry bushes at the site during a pre-construction biological survey conducted by U.S Fish & Wildlife Service (USFWS) staff. Elderberry bushes are a known habitat for the Elderberry Beetle, a federally protected species. Grading of the landfill top deck under the City's plan would have included removal of the Elderberry bushes and destruction of this habitat. The USFWS subsequently informed the City that the City would need to prepare a full Habitat Conservation Plan (HCP) and obtain USFWS approvals prior to initiating project construction.

2011 Partial FC/PCMP

68. To avoid the need to obtain project approvals from the USFWS, a process that could take several years if a full HCP was needed, the Discharger (property owner) subsequently submitted a 22 July 2011 Closure and Post-Closure Maintenance Plan, Dellar Trust Property, prepared by Kleinfelder West, Inc. (2011 partial FC/PCMP) that included plans to work around the Elderberry bush issue. The changes incorporated into the 2011 partial FC/PCMP are summarized in the Information Sheet. The revised work scope included, but was not limited to, the following activities:
 - a. Site Preparation
 - i. Completion bid documents and selection of a construction contractor;
 - ii. Demolition and clearing;
 - iii. Importation and stockpiling of soil;
 - iv. Improvement of central access road;
 - v. Radio transmission tower and power pole repairs/improvements; and
 - vi. Abandonment of an inactive agricultural well.
 - b. Landfill Closure
 - i. Excavation of two detention basins in landfill footprint;
 - ii. Relocation of excavated wastes;

- iii. Installation of the detention basins and associated facilities (e.g., pump vaults, plumbing, electrical lines, access ramps) for storm water collection and discharge;
 - iv. Grading and placement of final cover;
 - v. Installation of cover swales and other drainage controls; and
 - vi. Establishment of vegetative cover.
- c. Project Schedule
- i. Complete site preparation by September 2011;
 - ii. Complete closure work by September 2012.

69. The 2011 partial FC/PCMP proposed installation of a non-prescriptive, engineered soil cover over the landfill (except for the Elderberry Bush, levee corridor, transmission tower, and detention basin areas) as follows, from top to bottom:

- a. Vegetative cover – Native grass mix;
- b. Engineered soil layer – 2 feet of compacted fill soil;
- c. Foundation layer -- 1 foot of existing cover soil and/or waste.

Approximately 90,000 cubic yards of cover soil, most of which was stockpiled either onsite or at the nearby 28th Street Landfill, would be used in construction of the cover. Additionally, approximately 4,000 cubic yards of lower permeability soil would need to be imported for detention basin construction. Closure of the transmission tower area would include demolishing the tower's existing concrete block base; pouring concrete in the void between the underlying support columns, which are footed in landfill waste; and once set, backfilling over the concrete to surrounding cover grade using compacted soil and other inert material (i.e., broken concrete, and/or aggregate). Additional project specifications were proposed for the lower portion of the eastern detention basin to reduce infiltration into underlying wastes. See Finding 73.d.ii.

Closure of the Elderberry bush areas would be deferred until such time as the Elderberry Beetle is delisted as a federally protected species so that the bushes could be removed. Closure of the levee corridor area was not addressed in the plan, which proposed that the cover terminate a horizontal distance of about 18 feet from the inland edge of the top of the American River levee (about 6 feet beyond the estimated base of the levee).

70. A technical report demonstrating the stability of the final cover slopes was included in the 2011 partial FC/PCMP consistent with Title 27, sections 21090(a)(6) and 21750(f)(5). The evaluation was limited to global analysis given that none of the final cover slopes exceeded 3H:1V and that the landfill is unclassified. East-west cross-sectional models were developed through each detention basin, given these areas of the cover had the steepest slopes (3H:1V) and with saturated conditions would likely have the most critical slopes. Final grading plan and site stratigraphy information were also used in developing the models. Materials parameters used in the analysis were

derived based on general site conditions and a limited number of soil borings installed as part of a 2011 geotechnical investigation of the proposed detention basin areas.

The analysis was conducted using Spencer's Method (GeoStudio 2007 software), which considers both force and moment equilibrium in failure analysis. Static and dynamic (pseudo-static) analysis was conducted on rotational slices through the 3H:1V eastern and western side slopes of each basin. A horizontal acceleration coefficient of 0.082g (equal to the estimated peak ground acceleration (0.204g) divided by 2.5) was used in the pseudo-static analysis. Results of the analysis indicated relatively stable slopes at each basin with estimated minimum static and dynamic safety factors of 1.7 and 1.3 occurring along the eastern slope of western detention basin.

71. After revisions in response to comments, on 7 September 2011, Central Valley Water Board Compliance Unit staff approved the 2011 partial FC/PCMP as an acceptable corrective action under the 2008 CAO. Site preparation work was completed by the end of June 2012 and landfill closure activities began in early July 2012.

2012 Closure Construction

72. The landfill final cover was graded to form a north-south central spine with broadly-sloping east and west flanks extending to the top of the sidewall berms. The flanks were graded to a 3% slope, except in the Elderberry bush (flatter) and detention basin (steeper) areas. Final cover elevations ranged from 47 feet MSL along the landfill spine to 42 feet MSL along the western side of the unit and 40 feet MSL along the northern, southern, and eastern sides of the unit. The southern perimeter of the final cover extended to the A Street embankment (as did underlying waste), while the northern portion perimeter of the landfill cover extended to the southern edge of the NCZ. See Attachment C.
73. Detention basins and associated facilities were also constructed within the landfill unit as part of the landfill's precipitation and drainage controls. The detention basins were generally constructed as follows:
 - a. Dimensions -- 350 feet long, 250 feet wide, and 16 feet deep.
 - b. Elevation Range - 24 feet MSL (base) to 40 feet MSL (rim)
 - c. Grading – 3H:1V interior side slopes.
 - d. Cover Construction
 - i. Western Basin
 - 1) Base and side slopes
 - A. 2 feet thick
 - B. Soil – stockpiled cover soil, 90% relative compaction¹⁰

¹⁰. Low permeability soil not specified for the western detention basin because infiltration into underlying materials less of a concern (underlying wastes removed prior to construction).

- 2) Foundation layer – native soil
 - ii. Eastern Basin
 - 1) Base and lower side slopes
 - A. 4 feet thick
 - B. Soil – clayey sand; low plasticity index ($8 \leq PI \leq 30$); low liquid limit ($LL < 45$); 30% passing #100 sieve.¹¹
 - 2) Upper side slopes (beginning 4 feet above base)
 - A. 2 feet thick
 - B. Soil - stockpiled cover soil, 90% relative compaction
 - 3) Foundation layer – landfill waste
 - e. Erosion Control
 - ii. Western Detention Basin -- Geosynthetic erosion control blanket placed on bottom and adjacent side slope where culvert discharges into the basin
 - iii. Eastern Detention Basin -- Rip rap erosion control apron placed on bottom of basin at culvert discharge point.
 - f. Plumbing –Prefabricated pump vaults, each equipped with two, remotely-activated pumps, were installed in each basin for pumping the basins. Both vaults were plumbed to the City's combined sewer system and wired to the City's SCADA system for operational control.
74. A shallow, rectangular drainage channel was constructed adjoining southern end of each basin to capture sheet flow runoff not flowing directly into the basins. These drainage channels were generally constructed as follows:
- a. Dimensions -- 150 feet long, 7 feet wide at the top, 4 feet wide at the base, and 1.5 feet deep;
 - b. Elevation Range – 30 feet MSL (base) to 42 feet MSL (rim)
 - c. Grading - Base graded 10H:1V toward detention basin, interior side slopes graded to 1H:1V.
 - d. Cover construction
 - i. Base and side slopes
 - 1) 2 feet thick
 - 2) Soil - stockpiled cover soil, 90% relative compaction
 - ii. Foundation layer – landfill waste

¹¹. Soil specifications for the eastern detention basin intended to reduce the potential for infiltration into underlying wastes. Such soil would have a relatively low permeability (e.g., $k < 10^{-4}$ cm/sec), but be more resistant to desiccation cracking than clay soil.

- e. Erosion Control/Access – Entrance to both channels lined with 4-inch layer of compacted Class 3 aggregate to serve as vehicle access road for basin maintenance.
 - f. Plumbing -- Western channel fed by V-shaped cover swale constructed to intercept sheet flow runoff from southern area of landfill.
75. The landfill cover was graded to drain in approximate quadrants, as follows:
- a. Northeast Quadrant (7.9 acres) – Drained by several unlined cover swales plumbed to the eastern detention basin via a drop inlets and culverts.
 - b. Southeast Quadrant (5.3 acres) – Drained by direct flow, and eastern drainage channel discharge into, the eastern detention basin.
 - c. Northwest Quadrant (5.8 acres) – Drained by direct flow, and cover swale discharge into, the western detention basin.
 - d. Southwest Quadrant (4.9 acres) – Drained by western drainage channel flow into the western detention basin.
76. All landfill drainage facilities, including cover swales, drop inlets, overside drains, perimeter ditches, culverts, and the storm water pond were designed to have sufficient capacity to accommodate a 24-hour, 100-year storm event.
77. On 26 October 2012, the Discharger submitted a Closure Certification Report (26 October 2012 *Construction Quality Assurance Report, Dellar Trust Property Closure*, prepared by Kleinfelder) documenting the site preparation and closure activities implemented in 2012 under the 2011 approved partial FC/PCMP. The following modifications to the closure design implemented during project construction:
- a. The final cover elevation was raised one foot to achieve a better balance between cut and fill (i.e., to accommodate the expansion volume of waste excavated during grading and excavation of the detention basins). The elevation of the sedimentation basins was raised two feet for the same reason.
 - b. The northern extent of the final cover was reduced an additional 16.8 feet to avoid the need for an encroachment permit from the American River Flood Control District (ARFCD), a process that could take several months and significantly delay the project.¹² The resulting 35-foot setback from the levee (referred to as the “No Construction Zone”), increased the area within the levee corridor not receiving final cover compared to the 2011 approved partial FC/PCMP. See Information Sheet.
 - c. Various plumbing improvements (e.g., drop inlets, swales) installed along the northeast, northwest, and Elderberry bush areas of the site to ensure these areas

¹². The ARFCD, which has jurisdiction over the levee, expressed concern that extension of the landfill cover to the levee and project construction within the levee corridor area could adversely affect the structural integrity of the levee.

are adequately drained.

- d. Installation of Supervisory Controls and Data Acquisition (SCADA) system controls for operation of detention basin pumps.
78. The total as-built cost of landfill closure, including site preparation, cover, detention basins, and other improvements, was about \$4 million in 2013 dollars. Approximately \$720,000 of the total cost was paid for using CalRecycle grant money awarded to the City for closure of the Dellar property in December 2011.
79. Notwithstanding the closure construction activities completed under the 2011 partial FC/PCMP, on 6 December 2013, the Central Valley Water Board adopted Administrative Civil Liability (ACL) Order No. R5-2013-0154, fining the Discharger \$148,904 for failing to comply with schedules in CAO R5-2008-0705 for submission of technical documents and landfill closure construction. The Sylvia Dellar Survivor's Trust and the City of Sacramento each subsequently paid half of the fine (\$74,442). The Water Board's compliance unit subsequently referred the Dellar Landfill to the Water Board's Title 27 permitting unit to prepare waste discharge requirements for the facility.

Levee Corridor Area

80. On 3 June 2014, Central Valley Water Board staff issued tentative waste discharge requirements (June 2014 tentative WDRs) for the Dellar Landfill, including proposed requirements for closure of the remaining areas of the landfill footprint (i.e., levee corridor and Elderberry Bush areas). The June 2014 tentative WDRs generally required construction of the engineered soil cover design approved under the 2011 partial FC/PCMP (see Finding 69), but allowed the discharger to propose an alternative cover design (including the existing soil cover) if the Discharger could demonstrate its equivalency to the approved cover design.
81. In response to the June 2014 tentative WDRs, the Discharger commented that the existing soil cover in the levee corridor area was adequately protective of water quality and that the proposed requirement for construction of soil cover in that area was unreasonable and should be removed from the WDRs. After discussions with the Discharger, it was agreed that the tentative WDRs would be put on hold to allow the Discharger sufficient time to make a demonstration as to the adequacy of the existing soil cover in the levee area. In a 24 October 2014 letter, Water Board staff informed the Discharger that a field investigation of the levee corridor area would be needed to characterize the nature and extent of the cover soil and waste. The letter requested that the Discharger submit the alternative closure design demonstration results as an addendum to the 2012 Closure Certification Report by 5 December 2014.
82. On 30 January 2015 (consistent with a due date extension approved by Board staff), the Discharger submitted the requested addendum to the 2012 Closure Certification Report. The report indicated that the in-place specifications of existing soil cover in the levee

corridor area (e.g., soil type, compaction, density) were substantially equivalent to the final cover installed on the main part of the landfill and that the underlying waste was inert.¹³ The report recommended that the levee corridor area be considered closed without any additional cover construction. Water Board staff concurred with the report's findings and recommendations, and in a 12 February 2015 letter, acknowledged that the levee corridor area had been closed.

Elderberry Bush Areas

83. Given the above demonstration as to the adequacy of existing cover in the levee corridor area, the only portions of the landfill not yet closed are the Elderberry Bush areas. These areas, most of which are on the eastern half of the site, collectively comprise less than one acre of the landfill footprint. See Attachment C. These WDRs require that the Discharger submit a revised FC/PCMP that includes plans for closing these remaining areas of the landfill. See Closure and Postclosure Specification E.1.b and Provision J.7.a.

POSTCLOSURE MAINTENANCE

84. The approved 2011 partial FC/PCMP did not address post-closure maintenance of the levee corridor and Elderberry Bush areas) nor issues associated with the closure design modifications implemented during project construction in 2012 (e.g., connection of the detention basin pump system to the City's SCADA network). The PCMP also did not include plans for gas and groundwater monitoring based on an assumption that the landfill is not generating significant amounts of LFG and has not caused any significant groundwater impacts.

These WDRs require that the postclosure maintenance and monitoring plan submitted as part of the amended FC/PCMP required under this Order be consistent with the existing as-built cover design, plans for closure of the remainder of the landfill, and postclosure monitoring requirements under these WDRs. See Closure and Postclosure Maintenance Specification E.1.c.i.

FINANCIAL ASSURANCES

85. Title 27 does not require the operator of an unclassified landfill to provide financial assurances for closure, postclosure maintenance, and/or corrective action. See Sections 22205(b), 22210(b), 22207(a), 22220(b) and 22222.

CEQA AND OTHER CONSIDERATIONS

86. The action to adopt WDRs is exempt from the provisions of the California Environmental Quality Act (Public Resources Code Section 21000, et seq.), in accordance with Title

13. Five soil borings were installed at representative locations within the levee corridor area to characterize the existing soil cover and extent and nature of underlying waste. Construction Quality Assurance (CQA) was also conducted to determine in-place specifications. Small pockets of inert debris (glass and metal) were found in two borings closest to the main landfill footprint, while the other borings indicated clean soil.

14, CCR Section 15301 for existing facilities.

87. Water Code Section 13267(b) provides that: "In conducting an investigation specified in subdivision (a), the Central Valley Water Board may require that any person who has discharged, discharges, or is suspected of discharging, or who proposes to discharge waste within its region, or any citizen or domiciliary, or political agency or entity of this state who has discharged, discharges, or is suspected of discharging, or who proposes to discharge waste outside of its region that could affect the quality of the waters of the state within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the Central Valley Water 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."
88. The technical reports and monitoring and reporting program required by this Order 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.
89. This Order implements:
- The Water Quality Control Plan for the Sacramento River and San Joaquin River Basins, Fourth Edition;*
 - Chapters 1 through 7, Subdivision 1, Division 2, Title 27, of the California Code of Regulations, effective 18 July 1997, and subsequent revisions;*
 - The Porter-Cologne Water Quality Control Act, Division 7, California Water Code.*
 - State Water Resources Control Board Resolution No. 68-16, Statement of Policy With Respect to Maintaining High Quality of Waters in California.*
90. Facilities under WDRs are classified for the purposes of determining the annual permit fee and WDR update cycle. These classifications are based on threat to water quality and complexity associated with the discharge. The Dellar Landfill is classified as a "2C" discharge under these WDRs. The following fee criteria were used:

Threat to Water Quality:

Category "2" – Those discharges of waste that could impair the designated beneficial uses of the receiving water, cause short-term violations of water quality objectives, cause secondary drinking water standards to be violated, or cause a nuisance.

Complexity:

Category "C" – Any discharger for which waste discharge requirements have been prescribed pursuant to Section 13263 of the Water Code not included in Category A or Category B as described above. Included are dischargers having no waste treatment systems or that must comply with best management practices, dischargers having passive treatment and disposal systems, or dischargers having waste storage systems with land disposal.

The WDR update cycle for 2C discharges is 10 years from the date of adoption of the WDRs, or, if granted a continuance by the Executive Officer, from the continuance date. The WDR fee schedule may be found on the Central Valley Water Board's website at:

http://www.waterboards.ca.gov/resources/fees/docs/fy14_15_fee_schedule_wdr.pdf

PROCEDURAL REQUIREMENTS

91. The Regional 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.
92. The Regional Board, in a public meeting, heard and considered all comments pertaining to the discharge.
93. 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 title 23, CCR, sections 2050 et seq. The State Water Board must receive the petition by 5:00 p.m., 30 days after the date of the Order, except that if the thirtieth day following the date of this Order 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 Sections 13263 and 13267 of the California Water Code, that the City of Sacramento Department of Utilities and Sylvia Dellar Survivor's Trust, their 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. DISCHARGE PROHIBITIONS

1. The discharge of non-inert waste to the landfill unit, including wastes defined as "hazardous", "designated" or "nonhazardous", as defined under Title 27, is prohibited.
2. The discharge of new or additional waste to the landfill unit, or any portion thereof, is prohibited, except for the following:
 - a. Solid wastes being relocated within the landfill unit to establish the final cover grade prior to closure of the unit or a portion thereof;
 - b. The beneficial reuse of inert materials in landfill cover construction or repair

- (e.g., foundation layer, side slope buttresses, berms) consistent with Discharge Specifications B.2.a and B.2.b;
- c. The stockpiling of inert materials for beneficial reuse as described in Discharge Prohibition A.2.b;
 - d. The beneficial reuse of inert liquids consistent with Discharge Specification B.2.c; and
 - e. The temporary storage of storm water collected in onsite detention basins consistent with the approved Operations and Maintenance (O&M) plan for the facility required under Storm Water Specification I.5.
3. Except for storm water as noted above, the discharge of solid or liquid wastes (e.g., MSW, litter, and construction and demolition debris) to either of the two onsite detention basins is prohibited.
 4. Any lateral or vertical expansion of the existing landfill footprint is prohibited.
 5. The discharge of waste within 100 feet of surface waters is prohibited.
 6. The discharge of solid or liquid wastes, or waste constituents, to the unsaturated zone and/or groundwater is prohibited.
 7. The discharge of solid or liquid wastes (e.g., MSW, leachate, groundwater, storm water) to surface water, or to any surface water drainage courses, is prohibited absent an NPDES permit authorizing the discharge.
 8. The landfill shall not cause pollution or nuisance or the degradation of any water supply. See Terms and Conditions B.1 and Standard Discharge Specification D.5, SPRR.
 9. The Discharger shall comply with all Standard Prohibitions applicable to a closed/inactive, unlined MSW landfill listed in Section C of the SPRRs.

B. DISCHARGE SPECIFICATIONS

1. The discharge shall remain within the designated disposal area (i.e., landfill unit) at all times. Any solid waste from the landfill found outside of the landfill unit, either onsite or offsite, shall be removed and disposed of at an authorized offsite facility.
2. The discharge/beneficial reuse of inert wastes within the unit under Discharge Prohibition A.2 shall be subject to the following restrictions:
 - a. Inert wastes used in construction or repair of landfill final cover shall meet project specifications contained in the approved construction documents described in, or submitted under, this Order and be applied consistent with the

revised FC/PCMP submitted under this Order. See Construction Specifications F.6 and F.12.

- b. Only clean soil (i.e., soil not containing any waste) may be used in the construction/repair of the vegetative cover layer, engineered soil layer, sideslope buttresses/berms, detention basin walls, and cover drains.
 - c. Inert liquids (i.e., groundwater, surface water, or storm water) may be applied to landfill cover for construction or maintenance purposes (e.g., dust control, limited irrigation of vegetative cover) consistent with Title 27, section 21090(a)(5)(B).
3. The Discharger shall comply with all Standard Discharge Specifications applicable to an inactive, unlined MSW landfill listed in Section D of the SPRRs.

C. FACILITY SPECIFICATIONS

1. The Discharger shall maintain a copy of this Order at the facility or designated field office (Solid Waste Office, City of Sacramento 28th Street Corporation Yard) and make it available at all times to facility operating personnel, who shall be familiar with its contents, and to regulatory agency personnel.
2. Pursuant to Title 27, section 21760(b), the Discharger shall develop and implement approved Operations and Maintenance (O&M) plans for all landfill control systems that could affect water quality, including, but not necessarily limited to, storm water (see Storm Water Specification I.5) and, if necessary based on the results of the investigation conducted under Corrective Action Specification D.5.
3. The Discharger shall comply with all Standard Facility Specifications applicable to a closed/inactive, unlined MSW landfill listed in Section E of the SPRRs.

D. CORRECTIVE ACTION SPECIFICATIONS

1. The Discharger shall implement landfill closure as a corrective action at the site as necessary to achieve the following goals:
 - a. Remediate the existing release to groundwater from the landfill;
 - b. Return to compliance with the Water Quality Protection Standard; and
 - c. Prevent future groundwater impacts and/or degradation associated with a release from the landfill.

See Title 27, sections 20080(g) and 20430(c).

2. The Corrective Action Plan for the landfill shall include the revised FC/PCMP submitted under Closure and Postclosure Specification E.1, and any subsequent amendments or revisions thereto, as approved by the Executive Officer.

3. Any engineered alternative final cover design proposal submitted under Construction Specification F.4 less stringent than the approved design under Construction Specification F.3 shall include the following demonstration:
 - a. That construction of the approved design under Construction Specification F.3 is not feasible based on the criteria set forth in Title 27, section 20080(c);
 - b. That the proposed engineered alternative design meets the performance standards for landfill closure as a corrective action listed in Corrective Action Specification D.1;
 - c. That the wastes underlying the proposed area are inert by their nature or otherwise not a threat to groundwater water quality; and
 - d. Evidence that the proposed design complies with any outstanding enforcement order for the site issued by the Central Valley Water Board or its Executive Officer and the requirements of other agencies with jurisdiction over the project.
4. Methane and other landfill gases, if present at levels of regulatory concern, shall be adequately vented, removed from the Unit, or otherwise controlled to prevent the danger of adverse health effects, nuisance conditions, or the impairment of the beneficial uses of surface water or groundwater due to migration through the unsaturated zone.
5. By **15 July 2015**, the Discharger shall submit a work plan for the installation of in-situ gas monitoring probes within the landfill unit to investigate whether the landfill is generating LFG and the possible need for LFG controls. A sufficient number of probes (temporary or permanent) shall be installed at representative locations and depths to make this determination. Monitoring of the probes shall be conducted for **at least one year** in accordance with the schedule in the MRP under this Order. See Provision J.7.a.
6. If the results of the in situ gas investigation required under Corrective Action Specification D.5 indicate the presence of LFG that could impact or threaten groundwater at the site, the Discharger shall submit a corrective action work plan to address LFG issues at the site for Water Board staff approval. The work plan shall include the following elements:
 - a. A plan for installation of soil gas corrective action monitoring probes to define the extent of LFG migration;
 - b. A design report for the installation of LFG controls (passive or active), as warranted to remediate the gas release; and
 - c. A plan to monitor the effectiveness of the LFG controls as a corrective action measure.

Implementation of the above work plan shall be in accordance with the schedule provided in Provision J.7.

7. Installation, repairs, or modifications to LFG control systems, whether passive or active, shall be conducted so as not to damage landfill cover or expose landfill waste to the elements.

E. CLOSURE AND POSTCLOSURE SPECIFICATIONS

1. By **15 January 2016**, the Discharger shall submit revised Final Closure and Postclosure Maintenance Plan (FC/PCMP) for the landfill that describes/addresses the following items:
 - a. Existing Closed Areas
 - i. Modifications to the closure design implemented during 2012 project construction (see Finding 77);
 - ii. References to as-built documents/certification reports;
 - iii. The approved cover performance demonstration for the levee corridor area (see Finding 82);
 - b. Areas Not Yet Closed
 - i. A plan and schedule for closing the Elderberry Bush areas of the landfill, including, but not necessarily limited to:
 - (1) A proposed final cover design;
 - (2) A corrective action performance demonstration under Corrective Action Specification D.3 for any engineered alternative cover design less stringent than that specified in Construction Specification F.3; and
 - (3) A list of tasks and project schedule consistent with Provision J.8.
 - c. Landfill Postclosure Maintenance and Monitoring
 - i. An amended postclosure maintenance and monitoring plan for the partially-closed landfill (see E.1.a above) consistent with the monitoring schedules in the MRP; and
 - ii. An O&M plan for the detention basin and associated facilities per Storm Water Specification I.5.
2. The Discharger shall close the remaining areas of the landfill (i.e., Elderberry bush areas) in accordance with the revised FC/PCMP submitted above, as approved by the Executive Officer, and other requirements of this Order.
3. The final cover grade shall not be less than one percent in any area.
4. Final cover slopes shall not be steeper than a horizontal to vertical ratio of three to

one consistent with the revised FC/PCMP.

5. 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, section 20365(f)].
6. All landfill precipitation and drainage control systems shall be designed, constructed, operated and maintained to:
 - a. Convey peak flows from a 100-year, 24-hour storm event; and
 - b. Accommodate the anticipated volume of precipitation and peak flows from surface runoff under 100-year, 24-hour event conditions.
7. The landfill closure units shall be designed, constructed, and maintained to prevent inundation or washout due to floods with a 100-year return period [Title 27, section 20250(c)].
8. The landfill cover shall be designed, constructed, and maintained to limit, to the greatest extent possible, ponding, infiltration, inundation, erosion, slope failure, and washout under the precipitation conditions for the unit [Title 27, section 20365(a)].
9. With the exception of storm water discharged to the onsite detention basins and connecting channels, the ponding of any liquid on the final cover of the landfill unit is prohibited.
10. Following closure of the MSW landfill unit, 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 section 20515(a)(4) and section 21170].
11. 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, section 20950(a)(1)].
12. 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, section 21090(a)(4)(B)].
13. 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, section 21090(a)(4)(C)].

14. 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, maintain the monitoring systems, prevent erosion and related damage of the final cover due to drainage, and protect and maintain surveyed monuments [Title 27, section 21090(c)].
15. By **15 November 2017**, and every 5 years thereafter, the Discharger shall complete an aerial topographic survey of the landfill unit and immediate surrounding areas. The data so obtained shall be used to produce a topographic map of the site at a scale and contour interval sufficient to depict the as-closed topography of the Unit, and to allow the early identification of any differential settlement. [Title 27 section 21090(e)(1)]. A copy of the updated topographic map produced from each survey, and (beginning with the second survey after closure) an iso-settlement map depicting the estimated total change in elevation of the final cover's engineered soil layer shall be submitted as specified in the MRP of this Order. [Title 27, section 21090(e)(2)] See MRP, Section B.6.
16. Postclosure land uses at the site under this Order shall be limited to open space; landfill postclosure maintenance and monitoring; operation and maintenance of the unmanned radio transmission tower; and use of the river levee corridor by authorized persons under applicable laws and regulations. Any proposed change in postclosure use at the site shall comply with Title 27, section 21190, and must be approved by the Central Valley Water Board through revised WDRs.
17. The Discharger shall comply with all Standard Closure and Post-Closure Specifications applicable to a closed/inactive, unlined MSW landfill listed in Section G of the SPRRs. [Note: Standard Closure and Post-Closure Specifications specifically referring to a "Class II Unit" shall not apply to this facility.]

F. CONSTRUCTION SPECIFICATIONS

1. Construction activities conducted within the landfill area or affecting landfill facilities shall be limited to completing landfill closure, conducting necessary postclosure maintenance and repairs, or be related to an authorized postclosure use under this Order and Title 27 regulations.
2. For the purposes of this Order, provisions of Title 27 and the SPRR pertaining to containment structures, features, or systems; or to WMU design or construction, shall include landfill final cover unless otherwise indicated by the provision.

3. Except as provided in Construction Specification F.4, final cover over all portions of the landfill unit shall be constructed, maintained, and repaired in accordance with the following cover design, from top to bottom:
 - a. Vegetative cover – Native grass mix.
 - b. Engineered soil layer - Two feet of compacted fill soil
 - c. Foundation layer -- One foot of existing cover soil and/or inert waste.
4. The final cover design for portions of the landfill unit not yet closed (i.e., Elderberry Bush areas) shall, at a minimum, consist of either the approved design described in Construction Specification F.3 above, or an engineered alternative design meeting Title 27 corrective action goals demonstrated under Corrective Action Specification D.3 and included in the approved revised FC/PCMP submitted under Closure and Postclosure Specification E.1.b.
5. The materials used for the foundation layer shall have appropriate engineering properties for a foundation layer in accordance with Section 21090(a)(1). The foundation layer shall be engineered to minimize the potential for differential settlement so as not to affect the structural integrity of the final cover.
6. With the exception of the onsite detention basins and associated drainage channels described in Findings 73 and 74, the foundation and engineered soil layers of the final cover shall be constructed, maintained, and repaired in accordance with the following specifications or as otherwise specified in the revised FC/PCMP, as approved:
 - a. Foundation Layer
 - 1) Materials - stockpiled fill soil, existing cover soil, and/or underlying waste
 - 2) Particle Size – none
 - 3) Compaction -- 90% of maximum dry density
 - b. Engineered Soil Layer
 - 1) Materials – stockpiled fill soil
 - 2) Particle Size – none
 - 3) Compaction -- 90% of maximum dry density

The foundation and engineered soil layers for the detention basins shall be constructed, maintained, and repaired in accordance with the specifications listed in Findings 73 and 74.
7. The soil used in the vegetative cover layer shall support growth of the vegetative cover to the extent necessary to prevent erosion.
8. The Discharger shall ensure that the vegetative cover layer receives necessary seed, binder, and nutrients to establish the vegetation proposed in the Final Closure

- Plan. The Discharger shall install necessary erosion and sedimentation controls to prevent erosion and sediment in runoff from the closed landfill during the period the vegetation is being established.
9. The vegetative cover layer shall be planted with native or other suitable vegetation so as to provide effective erosion resistance. Vegetative cover shall be:
 - a. Resistant to foreseeable adverse environmental factors (*e.g., climate, disease, and pests*);
 - b. Tolerant of the vegetative layer's soil conditions;
 - c. Germinate rapidly and have a high percentage of surface coverage;
 - d. Sufficiently persistent and self-propagating to prevent surface erosion; and
 - e. Compatible and harmonize with the proposed postclosure land use.
 10. Final grading plans for closure of the landfill unit shall be prepared and approved by a registered civil engineer or certified engineering geologist [Title 27, section 21090(b)(1)(C)].
 11. The Discharger may propose changes to the landfill cover design before or after construction, provided that approved components are not eliminated, the engineering properties of the components are not substantially reduced, and the proposed cover system results in the protection of water quality equal to or greater than the design prescribed by this Order. The proposed changes may be made following approval by the Executive Officer. Substantive changes to the design may need to be approved by the Regional Board.
 12. At least 60 days prior to initiation of any closure construction activities under the revised FC/PCMP, as approved, the Discharger shall submit for review and approval all applicable plans and reports, including, but not necessarily limited to, the following:
 - a. Any proposed design modifications pertaining to closure of the unit under Construction Specification F.11.
 - b. A construction design report, including project specifications, drawings, grading and design plans; and
 - c. A Construction Quality Assurance (CQA) Plan which satisfies the requirements of Section 20324 of Title 27 as it applies to the construction of the erosion-resistant and foundation layers.Closure construction shall proceed only after the above (and any other applicable) reports have been approved by Executive Officer.
 13. A third party independent of both the Discharger and the construction contractor shall perform all of the construction quality assurance monitoring and testing during

closure construction of the landfill.

14. After completion of closure construction, the Discharger shall submit final documentation to the Executive Officer for review and approval in accordance with Section 20324(d)(1)(C) of Title 27. The report shall be certified by a registered civil engineer or a certified engineering geologist and shall contain sufficient information and test results to verify that construction was in accordance with the approved project plans and specifications, including the design report, CQA report, and Final Closure and Post-Closure Maintenance Plan. The Discharger shall also certify that closed landfill units shall be maintained in accordance with an approved postclosure maintenance plan [Title 27, section 21710(c)(6)].
15. Notwithstanding the 180-day timeline specified in Title 27, section 21880(c) for submission of closure certification reports, the Discharger shall submit these reports to the Central Valley Water Board within 60 days of completion of closure construction per Provision J.7.f. of this Order. The closure documents shall include a final CQA report and any other documents necessary to support the certification [Title 27, section 21880].
16. The Discharger shall comply with all Standard Construction Specifications applicable to a closed/inactive, unlined MSW landfill listed in Section F of the SPRRs. [Note: Standard Construction Specifications specifically referring to a "Class II Unit" shall not apply to this facility.]

G. MONITORING SPECIFICATIONS

1. The Discharger shall comply with the detection and corrective action monitoring program provisions of Title 27 for groundwater, surface water, and the unsaturated zone, and in accordance with the MRP and SPRRs.

Water Quality Protection Standard

2. The Discharger shall comply with the Water Quality Protection Standard as specified in this Order, including the MRP and the November 2013 SPRR incorporated by reference in Finding 2.e.
3. 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 the MRP.
4. For each monitoring event, the Discharger shall determine whether the landfill is in compliance with the Water Quality Protection Standard using procedures specified in the MRP and the Standard Monitoring Specifications in Section I of the SPRRs.

Background Monitoring

5. The Discharger shall implement background monitoring for the unit consistent with Title 27, section 20415, including, but not necessarily limited to, subsections 20415 (b), (e)(6), and (e)(10).
6. Alternate Background Locations — The ground water monitoring system may include Background Monitoring Points that are not hydraulically upgradient of the Unit if the Discharger demonstrates to the satisfaction of the Central Valley Water Board that sampling at other Background Monitoring Points will provide samples that are representative of the background quality of ground water or are more representative than those provided by the upgradient Background Monitoring Points. See Title 27, section 20415(b)(2). The Executive Officer may approve of such proposals.

Detection Monitoring

7. Detection monitoring data analysis methods, including those used for analysis of background data, shall be in accordance with Title 27, Section 20415(e)(7) through (e)(10) and the SPRR Standard Monitoring Specifications I.37 through I.45.

Corrective Action

8. Corrective action monitoring shall be conducted for the purposes of monitoring the effectiveness of corrective action measures in returning to the Water Quality Protection Standard.
9. The Corrective Action monitoring program shall include a sufficient number of Monitoring Points installed at appropriate locations and depths to yield ground water samples from the uppermost aquifer that represent the quality of ground water passing the Point of Compliance and at other locations in the uppermost aquifer to provide the data needed to evaluate the effectiveness of the corrective action program. See Title 27, section 20415(b)(1)(D).
10. Corrective action monitoring shall include one or more of the following data analysis methods, as appropriate:
 - a. Statistical and nonstatistical data analysis methods used to quantify release;
 - b. Evaluation of trends associated with release
 - i. Statistical methods (e.g., least squares fit, Sens slope)
 - ii. Graphical methods (i.e., time series plots, comparison of concentration contour maps). and
 - c. Water quality chemistry analysis
11. Prior to termination of corrective action measures required under Section 20430(c), the discharger shall demonstrate, pursuant to Section 20430(f), that the constituents of the release have been reduced to levels below concentration limits throughout the entire zone affected by the release. During this “proof period”, the Discharger shall,

for each monitoring event, demonstrate that

- a. The concentration of each constituent at each monitoring point remained at or below its concentration limit for at least four years, beginning immediately after the suspension of active corrective action measures;
- b. The individual sampling events for each monitoring point were evenly distributed throughout the proof period and consisted of at least two semiannual sampling events per year per monitoring point; and
- c. At the end of the proof period, a single data analysis method (statistical or nonstatistical, as appropriate) was used for each monitoring parameter at each monitoring point to determine whether that parameter has been reduced to levels at or below concentration limits at that monitoring point.

The Discharger shall notify the Board and obtain Executive Officer approval prior to (1) suspending active corrective action measures prior to making the above demonstration; and (2) terminating active corrective action measures after making the above demonstration.¹⁴

12. Any proposal for concentration limits greater than background (CLGBs) shall be accompanied by the requisite demonstration under Section 20400(c) (i.e., that it is technologically or economically infeasible to achieve the background value for that constituent and that the constituent will not pose a substantial present or potential hazard to human health or the environment). Approval of CLGBs shall require approval of revised WDRs by the Regional Water Board.
13. The Discharger shall comply with all Standard Monitoring and Response to Release specifications applicable to a closed/inactive, unlined MSW landfill listed in Sections I and J of the SPRRs. [Note: Standard Monitoring Specifications specifically referring to a "Class II Unit" shall not apply to this facility.]

H. REPORTING REQUIREMENTS

1. The Discharger or persons employed by the Discharger shall comply with all notice and reporting requirements of the State Department of Water Resources with regard to construction, alteration, destruction, or abandonment of all monitoring wells used for compliance with this Order, including MRP No. R5-2015-0051, as required by Water Code sections 13750 through 13755.

14. If groundwater monitoring data for the site indicates that active corrective action measures will not likely be necessary to successfully complete corrective action (e.g., passive measures sufficient or release constituents attenuating naturally), and Board staff is in agreement, the requirement for suspension of such active corrective action measures shall be inapplicable and these notification and approval requirements considered waived by the Board. In such case, the Discharger may request that the proof period be deemed to have commenced in or after the first consecutive monitoring period in which concentrations of the constituents in groundwater were reduced to non-detect or background levels).

2. **Within 90 days** of adoption of this Order, the Discharger shall establish and maintain an account with the SWRCB's GeoTracker geographic information system data base, including a full declaration of the names and locations of all waste management units and Field Points (the GeoTracker name for monitoring points), plus a declaration of all COCs, and shall begin uploading word-searchable pdf copies of all monitoring program reports and associated laboratory sheets (the latter in GeoTracker's proprietary format) required under these WDRs. The Discharger shall also upload any additional monitoring program reports or report features required by the Executive Officer beginning with the Reporting Period following notification to submit such additional reports/report-features.
3. The Discharger shall comply with all the notification and reporting requirements applicable to a partially closed, unclassified/unlined MSW landfill contained in the SPRRs, including those in Sections I (Monitoring Specifications), J (Response to Release), and K (General Provisions).

I. STORM WATER SPECIFICATIONS

1. Annually, prior to the anticipated rainy season, but no later than 31 October, any necessary erosion control measures shall be implemented and any necessary construction, maintenance, or repairs of precipitation and drainage control facilities shall be completed to prevent storm water flows from:
 - a. Contacting or percolating through wastes;
 - b. Causing erosion or inundation of the landfill cover or other areas of site;
 - c. Causing sedimentation and clogging of the storm drains; and/or
 - d. Discharging sediment loads to surface waters.
2. Discharges to the onsite sedimentation basins shall be limited to non-contact storm water.
3. A freeboard of at least two (2.0) feet shall be maintained in the storm water detention basins at all times.
4. The Discharger shall maintain coverage under the NPDES General Storm Water Permit for Industrial Activities and maintain a Storm Water Pollution Prevention Plan and monitoring and reporting program under that permit.
5. The storm water facilities O&M plan (required under Facility Specification C.2) shall address the storm water detention basins and related facilities at the site (e.g., pump vaults, pipelines, SCADA controls) consistent with these WDRs, Title 27, section 21760(b), and applicable storm water regulations.¹⁵

15. At a minimum, the plan shall describe landfill drainage areas, expected storm water flows, liquid levels and water balance; detention times; pump operations and schedules; inspection and maintenance programs; contingency plans in the event of facility breakdown or failure; seasonality issues; and coordination of discharges to the City's combined sewer system.

6. The Discharger shall comply with all the Standard Storm Water Provisions applicable to a closed/inactive, unlined MSW landfill contained in Section L of the SPRRs. [Note: Standard Storm Water Specifications specifically referring to a "Class II Unit" shall not apply to this facility.]

J. PROVISIONS

1. The Discharger shall maintain a copy of this Order at the facility, including the MRP No. R5-2015-0051 and the SPRRs dated November 2013 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. Pursuant to Water Code section 13267, the Discharger shall comply with MRP No. R5-2015-0051, which is attached to and made part of this Order. A violation of the MRP is a violation of these waste discharge requirements.
3. The Discharger shall comply with the applicable portions of the November 2013 SPRR incorporated by reference in Finding 2.e.
4. 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.
5. The Discharger shall comply with all applicable provisions of Title 27 and Subtitle D that are not specifically referred to in this Order.
6. Pursuant to Section 13267 of the California Water Code, the Discharger shall submit the following reports relevant to groundwater monitoring and compliance with the Water Quality Protection Standard under Title 27:

Report		Due Date
a.	A work plan for installation of a Point of Compliance monitoring well along the southwestern perimeter of the landfill prepared consistent with monitoring well installation work plan guidelines attached to this Order. See Information Sheet, Attachment 2.	15 September 2015
b.	A proposed Sample Collection and Analysis Plan per Standard Monitoring Specification I.7, SPRR.	15 October 2015
c.	A well installation report for the monitoring well installed under the above work plan, as approved, prepared consistent with monitoring well installation report guidelines attached to this Order. See Information Sheet, Attachment 2.	15 December 2015

d.	A Water Quality Protection Standard Report, including updated monitoring data analysis methods per MRP Section C.1.	31 January 2017
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All of the reports required above shall be prepared by a California-registered civil engineer or certified engineering geologist.

7. Pursuant to Section 13267 of the California Water Code, the Discharger shall submit the following reports relevant to LFG monitoring and the possible need for implementation of LFG controls at the site as a corrective action measure:

Report		Due Date
a.	A work plan for an LFG investigation, including installation and sampling of in situ monitoring probes, per Corrective Action Specification D.5.	15 July 2015
b.	Status report(s) on implementation of the above LFG investigation and any subsequent corrective action measures per Corrective Action Specification D.6.	Quarterly beginning 15 August 2015
c.	A certification report documenting installation of the LFG monitoring probes installed under the above work plan, as approved.	15 October 2015
d.	Gas probe sampling results	Semiannually per MRP
e.	A report of the results of the LFG investigation, including the need for LFG controls and soil gas corrective action monitoring wells to define the extent of LFG impacts.	15 December 2016
f.	A corrective action work plan to address LFG issues at the site, as necessary, per Corrective Action Specification D.6 (i.e., installation of LFG controls, associated monitoring systems, and soil gas corrective action monitoring wells).	15 May 2017
g.	A certification report documenting implementation of the above corrective action work plan to address LFG issues, as approved.	15 May 2018
h.	An amendment to the revised FC/PCMP submitted under Provision J.8.a reflecting the implementation of any necessary LFG controls and monitoring systems installed under J.7.f above, including monitoring schedules consistent with the MRP of this Order.	15 September 2018

All of the reports required above shall be prepared by a California-registered civil engineer or certified engineering geologist.

8. Pursuant to Section 13267 of the California Water Code, the Discharger shall submit the following technical reports relevant to completing closure of the landfill:

	Report	Due Date
a.	A revised FC/PCMP addressing Elderberry Bush areas per Closure and Postclosure Maintenance Specification E.1.	15 January 2016
b.	Closure Status Report for Elderberry Bush areas (e.g., delisting; permitting/approvals; project schedule; site preparation and construction progress).	Quarterly beginning 15 February 2016
c.	Closure construction plans per Construction Specification F.12.	Within 30 days of VELB delisting
d.	Report showing initiation of project construction	Within 90 days of approval of construction plans
e.	Report showing completion of project construction	Within 120 days of initiation of project construction
f.	Closure Certification Report addendum documenting closure of Elderberry Bush areas.	Within 60 days of completion of project construction

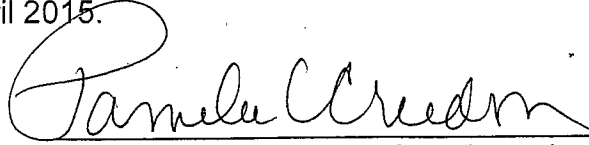
All of the reports required above shall be prepared by a California-registered civil engineer or certified engineering geologist.

9. All technical reports required herein that involve planning, investigation, evaluation, or design, or other work requiring interpretation and proper application of engineering or geologic sciences, shall be prepared by or under the direction of persons registered to practice in California pursuant to California Business and Professions Code sections 6735, 7835, and 7835.1. As required by these laws, completed technical reports must bear the signature(s) and seal(s) of the registered professional(s) in a manner such that all work can be clearly attributed to the professional responsible for the work.
10. The Central Valley Water Board will review this Order periodically and may revise requirements when necessary.
11. This Order shall take effect upon the date of adoption.

WASTE DISCHARGE REQUIREMENTS ORDER NO. R5-2015-0051
CITY OF SACRAMENTO UTILITIES DEPARTMENT
SYLVIA DELLAR SURVIVOR'S TRUST
DELLAR LANDFILL
SACRAMENTO COUNTY

-43-

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 17 April 2015.

A handwritten signature in cursive script that reads "Pamela Creedon". The signature is written in black ink and is positioned above a horizontal line.

PAMELA C. CREEDON, Executive Officer

JDM/WMH

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2015-0051
FOR
CITY OF SACRAMENTO UTILITIES DEPARTMENT
SYLVIA DELLAR SURVIVOR'S TRUST
DELLAR LANDFILL
UNCLASSIFIED LANDFILL
CLOSURE, POSTCLOSURE MAINTENANCE,
AND CORRECTIVE ACTION MONITORING
SACRAMENTO COUNTY

This monitoring and reporting program (MRP) is issued pursuant to California Water Code section 13267 and incorporates requirements for groundwater, surface water, and unsaturated zone monitoring and reporting; facility monitoring, maintenance, and reporting contained in California Code of Regulations, title 27, section 20005, et seq. (hereafter Title 27), Waste Discharge Requirements (WDRs) Order No. R5-2015-0051, and the *Standard Provisions and Reporting Requirements for Waste Discharge Requirements for Industrial Facilities* (SPRRs), dated November 2013. 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 and corrective action monitoring program provisions of Title 27 for groundwater, surface water, and the unsaturated zone in accordance with Standard Monitoring and Response to Release specifications in Sections I and J of the SPRRs and the Monitoring Specifications in Section G of the WDRs. All monitoring shall be conducted in accordance with an approved Sample Collection and Analysis Plan, which includes quality assurance/quality control standards. 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.

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 Seep Monitoring
A.4	Surface Water Monitoring
A.5	Facility Monitoring
A.6	Additional Corrective Action Monitoring

In lieu of conducting separate sampling under this Order, the Discharger may, for a given monitoring parameter, monitoring point, and monitoring event, use the results of sampling conducted by the City of Sacramento under the 28th Street Landfill WDRs,

to the extent that monitoring required under this MRP would be duplicative of monitoring already required under WDRs for the 28th Street Landfill, and monitoring reports are submitted under the timeline of this Order.¹ In such cases, the transmittal letter to the Monitoring Report shall include appropriate notation as to the source of the sample data used in the report. Any long term arrangements with the City for providing such sample data each monitoring period shall be described in the approved Sample Collection and Analysis Plan submitted under WDR Provision J.6.b and referenced in the transmittal letter for each monitoring report. The transmittal letter certification statement shall state that data provided by the City was collected in compliance with this Order. See Section D herein.

1. Groundwater Monitoring

The Discharger shall operate and maintain groundwater detection and corrective action monitoring systems that comply with the applicable provisions of Title 27, sections 20415 through 20430. These groundwater monitoring systems shall be certified by a California-licensed professional civil engineer or geologist as meeting the requirements of Title 27.

a. Monitoring Points¹

The groundwater monitoring network for the Dellar Landfill shall consist of the following existing 28th Street Landfill monitoring wells:

Table A.1.a: Groundwater Monitoring Points			
<u>Program</u>	<u>Well</u>	<u>Zone</u>	<u>Location</u>
Background	B-4 ¹	Upper	2,000 feet to east-NE
	C-15 ¹		Unit perimeter - NW
Corrective Action	C-13 ²	Upper	Unit perimeter - east
	D-18 ³	Lower	500 feet to south
	C-14 ³	Upper	500 feet to south
	D-19		1,200 feet to south
	D-20		1,000 feet to west-SW

1. One or both of these wells shall be used for development of concentration limits absent Water Board staff approval of alternative locations consistent with Title 27 regulations proposed in the Water Quality Protection Standard Report submitted under WDR Provision J.6.f.
2. Well subject to gradient reversals during dry season.
3. These wells contiguously monitor Dellar Landfill and Cannon Family Trust/Scollan Credit Trust parcels.

1. If the City of Sacramento does not provide monitoring data to the Discharger for the wells in Table A.1.a in accordance with the reporting timelines herein, and does not allow the Discharger access to these wells for monitoring under this Order, then the Discharger shall submit a work plan for installation of a separate groundwater monitoring system for the Dellar Landfill consistent with Title 27 and the requirements of this Order.

The groundwater monitoring network for the Dellar Landfill shall also include any future wells installed by the Discharger under these WDRs, or by the City of Sacramento under WDRs for the 28th Street Landfill, including, but not necessarily limited to, the new Point of Compliance well installed under WDR Provision J.6.a.

b. Monitoring Schedule

Monitoring at each unit shall include field parameter testing and groundwater sampling. Groundwater samples shall be collected and analyzed in accordance with the following schedule using the applicable test methods for each constituent listed in Table C attached to this Order.

Table A.1.b Groundwater Monitoring Schedule			
<u>Parameters</u>	<u>Units</u>	<u>Monitoring Frequency</u>	<u>Reporting Frequency</u>
<u>Field Parameters</u>			
Groundwater Elevation	Feet & 100ths, M.S.L.	Quarterly	Semiannually
Temperature	oF	Semiannually	Semiannually
Specific Conductance	umhos/cm	Semiannually	Semiannually
pH	pH units	Semiannually	Semiannually
Turbidity	NTU	Semiannually	Semiannually
Oxidation-Reduction Potential	mV	Semiannually	Semiannually
<u>Monitoring Parameters</u>			
Bicarbonate Alkalinity	mg/L	Semiannually	Semiannually
Chloride	mg/L	Semiannually	Semiannually
Nitrate as N	mg/L	Semiannually	Semiannually
Sulfate	mg/L	Semiannually	Semiannually
Total Dissolved Solids	mg/L	Semiannually	Semiannually
Dissolved Iron	ug/L	Semiannually	Semiannually
Volatile Organic Compounds (VOCs)	ug/L	Semiannually	Semiannually
Constituents of Concern (See Table C below)	---	Every 5 years	Every 5 years

The Discharger shall measure the groundwater elevation in each well semiannually, determine groundwater flow direction, and estimate groundwater flow rates in the uppermost aquifer and in any zones of perched water and in any additional portions of the zone of saturation monitored. The results shall be reported semiannually, including the times of expected

highest and lowest elevations of the water levels in the wells, pursuant to Title 27, section 20415(e)(15). Groundwater samples shall be collected at least semiannually in all wells, including any future wells added as part of the approved groundwater monitoring system.

The Discharger shall collect, preserve, and transport groundwater samples in accordance with the Sample Collection and Analysis Plan submitted under WDR Provision J.6.b, as approved by Central Valley Water Board staff. The results of monitoring (including acquired data) for quarterly field parameters, semiannual monitoring parameters, and 5-year COCs, shall be reported in the monitoring report for the semiannual period in which the samples were collected.

Background, detection, and corrective action monitoring data analysis shall be conducted consistent with the statistical and non-statistical data analysis methods described in Section C.1, as updated in the Water Quality Protection Standard Report submitted under WDR Provision J.6.d, as approved by the Executive Officer.

2. Unsaturated Zone Monitoring

As described in WDR Finding 54, the landfill was constructed without a liner or LCRS prior to adoption of current regulatory standards under Title 27 and former Chapter 15 regulations. No soil pore water monitoring devices (e.g., lysimeters) were therefore required to be installed at the landfill unit prior to development to detect a release and none were installed. The unsaturated zone monitoring program is therefore limited to soil pore gas monitoring.

a. Monitoring Points

The soil gas detection monitoring network shall consist of all existing and future gas probes/wells installed in soil outside of the landfill unit, including, but not necessarily limited to, the following:

- i. All soil gas probes installed under Corrective Action Specification D.6.a, as necessary, to define the extent of LFG migration if indicated based on the results of the in situ gas investigation work plan required of this Order. See also WDR Provision J.7.f.;
- ii. All 28th Street Landfill perimeter gas monitoring wells/probes relevant to monitoring potential LFG migration from (e.g., within 500 feet of) the Dellar Landfill, including, but not necessarily limited to, gas wells S-4 and S-5; and
- iii. All soil gas wells installed to monitor any other historical fill area(s) west of 28th Street relevant to monitoring potential LFG migration from (e.g., within 500 feet of) the Dellar Landfill.

b. Monitoring Schedule

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

Table A.2.b Soil Gas Monitoring Schedule			
<u>Parameters</u>	<u>Units</u>	<u>Monitoring Frequency</u>	<u>Reporting Frequency</u>
<u>Field Parameters</u> ¹			
Methane	%	Semiannually	Semiannually
Carbon Dioxide	%	Semiannually	Semiannually
Organic Vapors	ppm	Semiannually	Semiannually
<u>Monitoring Parameters</u>			
VOCs ^{2,3}	µg/cm ³	Semiannually	Semiannually

1. Field gas monitoring shall be conducted using appropriate field meter(s)
2. VOC sampling shall be limited to probes showing total organic vapors > 50 ppbv. VOC sampling at any given location may be limited to the well probe(s) with the highest meter readings during a given monitoring event.
3. VOC analysis shall be conducted using USEPA Method TO-15.

Soil gas monitoring wells that are determined by laboratory sampling to be unimpacted (i.e., all LFG constituents below laboratory detection limits) shall be considered detection monitoring wells and all soil gas monitoring wells that are determined by laboratory sampling to be impacted (i.e., one or more LFG constituents above laboratory detection limits) shall be considered corrective action monitoring wells.

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 submitted under WDR Provision J.6.b. Monitoring results for the unsaturated zone shall be included in the monitoring reports submitted under this Order and shall include an evaluation of potential impacts of the facility on the unsaturated zone and compliance with the Water Quality Protection Standard.

c. Termination of Monitoring

Soil gas monitoring required under this section may be discontinued if the Discharger is able to successfully demonstrate under Section A.6.a.iii that the landfill is not (or is no longer) generating significant amounts of LFG that could impact the unsaturated zone or groundwater beneath the site, and the Executive Officer approves the termination in writing.

3. Leachate Seep Monitoring

The Discharger shall monitor all areas of the landfill (e.g., top deck, side slopes,

toe areas, and levee corridor) for leachate seeps, including as part of Facility Monitoring under Section A.5 herein. Any observed leachate seepage from the landfill unit shall be sampled upon detection and analyzed in accordance with the following schedule using the applicable test methods for each constituent listed in Table C attached to this Order. Reporting for leachate seeps shall be conducted as required in Section B.3 of this MRP.

Table A.3 Leachate Seep Monitoring Schedule			
<u>Parameters</u>	<u>Units</u>	<u>Monitoring Frequency</u>	<u>Reporting Frequency</u>
<u>Field Parameters</u>			
Presence of leachate/liquid	observation	Each occurrence	Within 7 days
Flow Rate	gallons/day	Each occurrence	Within 7 days
Electrical Conductivity	umhos/cm	Each occurrence	Within 7 days
pH	pH units	Each occurrence	Within 7 days
<u>Monitoring Parameters</u>			
Bicarbonate Alkalinity	mg/L	Each occurrence	Within 7 days
Chloride	mg/L	Each occurrence	Within 7 days
Nitrate as N	mg/L	Each occurrence	Within 7 days
Sulfate	mg/L	Each occurrence	Within 7 days
TDS	mg/L	Each occurrence	Within 7 days
VOCs	ug/L	Each occurrence	Within 7 days
Dissolved Inorganics	ug/L	Each occurrence	Within 7 days
<u>Constituents of Concern</u> ¹		Each occurrence	Within 7 days
(See Table C below)			

1. COC sampling requirement may be waived by Water Board staff in writing upon satisfactory demonstration by Discharger that leachate seepage from that location has been previously characterized for COCs and that corrective measures have been (or are being) implemented to prevent future recurrence.

4. Surface Water Monitoring

The Discharger shall operate a surface water detection monitoring system to detect (measurably significant evidence of) a release from the landfill; any resulting impacts or threat to surface and/or groundwater; and to monitor the effectiveness of landfill precipitation and drainage controls. Surface water monitoring is specifically required where runoff from waste management unit 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.

a. American River

As noted in WDR Finding 27, natural drainage to the American River is blocked by the American River levee. With the exception of the north side of the levee, which is beyond the landfill footprint, there is therefore no site

drainage to the American River. Surface water monitoring at the site may therefore be limited to storm water monitoring.

b. Storm Water

The Discharger shall monitor all ponded and/or flowing storm water at the site, including any ponding that occurs in areas of the site that have not yet closed (i.e., Elderberry Bush areas), any other portions of the facility not draining to the onsite detention basins, and storm water collected in the onsite detention basins.

i. Monitoring Points

Table A.4.b.i Storm Water Monitoring Points ¹		
<u>Monitoring Point</u>	<u>Program</u>	<u>Location</u>
SW-1	Background	Top of levee or landfill crest area
SW-2	Detection	Levee area
SW-3 ²	Detection	Elderberry Bush area ²
SW-4	Detection	Eastern Detention Basin
SW-5	Detection	Western Detention Basin

1. All storm water sampling shall be conducted during the same monitoring event.
2. Sampling at this monitoring point may be discontinued after closure of area monitored..

See Attachment B: Site Map for approximate sampling locations.

ii. Monitoring Schedule

Storm water samples shall be collected at each of the above monitoring points when there is ponded water and/or flow in the swales and analyzed in accordance with the following schedule using the applicable test methods for each constituent listed in Table C attached to this Order.

Table A.4.b.ii Storm Water Monitoring Schedule			
<u>Parameters</u>	<u>Units</u>	<u>Monitoring Frequency</u>	<u>Reporting Frequency</u>
<u>Field Parameters</u>			
Temperature	°F	Semiannually	Semiannually
Electrical Conductivity	umhos/cm	Semiannually	Semiannually
pH	pH units	Semiannually	Semiannually
Turbidity	NTU	Semiannually	Semiannually

<u>Monitoring Parameters</u>			
TDS	mg/L	Annually	Annually
Chloride	mg/L	Annually	Annually
Sulfate	mg/L	Annually	Annually
Nitrate as N	mg/L	Annually	Annually
VOCS ¹	ug/L	Annually	Annually
<u>Constituents of Concern</u> ^{1,2} (See Table C below)		Every 5 years	Every 5 years

1. Sampling for these parameters/constituents may be limited to the two onsite detention basins.
2. 5-year COC sampling required on only one detention basin each 5-year event, alternating between basins each event.

The above monitoring system meets Title 27 requirements for surface water detection monitoring.

5. Facility Monitoring

a. Annual Facility Inspection

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

b. Major Storm Events

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

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

By **15 November 2017**, and at least every 5 years thereafter (i.e., after the first survey conducted under this Order), the Discharger shall conduct a topographic survey of the landfill and adjacent areas in accordance with Title 27, section 21090(e) and Closure and Postclosure Specification E.15 of the WDRs. Reporting shall be in accordance with MRP Section B.6.

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 monthly during the wet season (1 October to 30 April) and quarterly during the dry season (1 May to 30 September). The Standard Observations shall include:

- i. For the landfill units:
 1. 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
 2. Evidence of erosion and/or of day-lighted refuse.
- ii. Along the perimeter of the landfill units:
 1. Evidence of leachate seeps, estimated size of affected area, and flow rate (show affected area on map); and
 2. Evidence of erosion and/or of day-lighted refuse.
- iii. For receiving waters:
 1. Floating and suspended materials of waste origin - presence or absence, source, and size of affected area; and
 2. Discoloration and turbidity - description of color, source, and size of affected area.

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

Facility Monitoring shall also include continuous leachate seep monitoring under Section A.3.

6. Additional Corrective Action Monitoring – Landfill Gas

Landfill gas corrective action monitoring shall be conducted as follows,

- a. Monitoring Points
 - i. All in situ probes installed within the landfill footprint as part of the landfill gas investigation required under Corrective Action Specification D.5.
 - ii. Monitoring Schedule

Table A.6.a.ii Landfill Gas Probe Monitoring Schedule			
<u>Parameters</u>	<u>Units</u>	<u>Monitoring Frequency</u> ¹	<u>Reporting Frequency</u>
<u>Field Parameters</u> ²			
Methane	%	Monthly	Semiannually
Carbon Dioxide	%	Monthly	Semiannually
Organic Vapors	ppm	Monthly	Semiannually
<u>Monitoring Parameters</u>			
VOCs ³	µg/cm ³	Quarterly	Semiannually

1. LFG monitoring may be reduced to the frequencies specified in Table A.6.b.ii after completion of the one-year LFG investigation required under WDR Corrective Action Specification D.5 and Board staff approval of the report of results required under WDR Provision J.7.e.
2. Field gas monitoring shall be conducted using appropriate field meter(s)/measuring devices.
3. VOC sampling shall be limited to vents showing methane ≥ 40% and/or total organic vapors > 50 ppbv. VOC sampling shall be conducted during the same monitoring event at which the elevated gas was detected. VOC analysis shall be conducted using USEPA Method TO-15.

iii. Termination of Monitoring

Monitoring of one or more of the above in situ gas probes may be discontinued if one of the following criteria is satisfied:

- (a) The results of the above landfill gas investigation indicate that landfill is not generating significant amounts of landfill gas (i.e., that could degrade water bearing media beneath the site) such that landfill gas controls and gas monitoring systems are not needed; or
- (b) Landfill gas controls have been installed at the site and are being monitored under A.6.b below such that monitoring of the subject in situ probe(s) is no longer necessary.

The above demonstration shall be submitted as part of the amendment to the revised FC/PCMP submitted under WDR Provision J.7.h. Landfill gas probe monitoring may be discontinued only upon written approval by the Executive Officer. Any probes for which a discontinuation of monitoring is approved shall be properly abandoned in accordance with the FC/PCMP and interested agency approvals.

b. Gas Vents

i. Monitoring Points

LFG shall be monitored at the point(s) of extraction in any LFG controls installed as a corrective action measure per Corrective Action Specification D.6.b. Where landfill gas vents are installed, each vent shall be monitored/sampled. Where active LFG controls are installed, field monitoring/sampling may be conducted at each extraction well or at a

representative location along the LFG extraction header pipe.

ii. Monitoring Schedule

Table A.6.b.ii LFG Monitoring Schedule			
<u>Parameter</u>	<u>Units</u>	<u>Sampling Frequency</u>	<u>Reporting Frequency</u>
<u>Field Parameters</u> ¹			
Air flow rate	cu ft/min	Semiannually	Semiannually
Vacuum /pressure ²	psi	Semiannually	Semiannually
Temperature	oF	Semiannually	Semiannually
Carbon dioxide	%	Semiannually	Semiannually
Hydrogen sulfide	ppmv	Semiannually	Semiannually
Methane	%	Semiannually	Semiannually
Organic Vapors	ppbv	Semiannually	Semiannually
<u>Monitoring Parameter</u>			
VOCs (USEPA Method TO-15) ³	µg/cm	Annually	Annually
Total VOCs removed per year ⁴	lbs/yr	Annually	Annually
Cumulative VOCs removed ⁴	lbs	Annually	Annually

1. Field gas monitoring shall be conducted using appropriate field meter(s)/measuring devices.
2. Where vents are installed, vent pressure shall be measured with the wind turbine gate valve open and closed.
3. VOC sampling may be limited to monitoring points showing methane ≥ 40% and/or total organic vapors > 50 ppbv. VOC sampling shall be conducted during the same monitoring event in which the elevated gas was detected. VOC samples do not need to be collected more than once per year at each monitoring point.
4. Calculated or estimated, as feasible.

B. REPORTING

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

Reporting Schedule			
<u>Section</u>	<u>Report</u>	<u>End of Reporting Period</u>	<u>Due Date</u>
B.1	Semiannual Monitoring Report	30 June & 31 December	1 August, 1 February
B.2	Annual Monitoring Report	31 December	1 February

Reporting Schedule			
<u>Section</u>	<u>Report</u>	<u>End of Reporting Period</u>	<u>Due Date</u>
B.3	Seep Reporting	Continuous	Immediately & Within 7 Days
B.4	Annual Facility Inspection Report	31 October	15 November
B.5	Major Storm Event Reporting	Continuous	Immediately & 14 days from damage repair
B.6	Survey and Iso-Settlement Map for Closed Landfills	Every 5 Years	15 December 2017 & every 5 years thereafter

Reporting Requirements

The Discharger shall submit monitoring reports **semiannually** with the data and information as required in this Monitoring and Reporting Program and as required in WDRs Order No. R5-2015-0051 and the SPRR, particularly the monitoring and response to release provisions (i.e., WDR Section G and SPRR Sections I and J). In reporting the monitoring data required by this program, the Discharger shall arrange the data in tabular form so that the date, the constituents, the concentrations, and the units are readily discernible. The data shall be summarized in such a manner so as to illustrate clearly the compliance with waste discharge requirements or the lack thereof. Data shall also be submitted in a digital format, such as a computer disk.

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

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

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

- Sample identification and the monitoring point or background monitoring point

from which it was taken, along with the identity of the individual who obtained the sample;

- Date, time, and manner of sampling;
- Date and time that analyses were started and completed, and the name of the personnel and laboratory performing each analysis;
- Complete procedure used, including method of preserving the sample, and the identity and volumes of reagents used;
- Calculation of results; and
- Results of analyses, and the MDL and PQL for each analysis. All peaks shall be reported.

Required Reports

1. Semiannual Monitoring Report

Monitoring reports shall be submitted semiannually and are due on **1 August** and **1 February**. Each semiannual monitoring report shall contain at least the following:

- a. For each groundwater monitoring point addressed by the report, a description of:
 - i. The time of water level measurement;
 - ii. 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;
 - iii. 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;
 - iv. The type of pump - or other device - used for sampling, if different than the pump or device used for purging; and
 - v. A statement that the sampling procedure was conducted in accordance with the approved Sample Collection and Analysis Plan.
- b. A map or aerial photograph showing the locations of observation stations, monitoring points, and background monitoring points.
- c. The estimated quarterly groundwater flow rate and direction in the uppermost aquifer, in any zones of perched water, and in any additional zone of saturation monitored based upon water level elevations taken prior to the collection of the water quality data submitted in the report [Title 27, section 20415(e)(15)].
- d. Cumulative tabulated monitoring data for all monitoring points and

constituents for groundwater, unsaturated zone, leachate, and surface water. Concentrations below the laboratory reporting limit shall not be reported as "ND" unless the reporting limit is also given in the table. Otherwise they shall be reported "<" the reporting limit (e.g., <0.10). Units shall be as required in Tables I through IV unless specific justification is given to report in other units. Refer to the SPRRs Section I "Standard Monitoring Specifications" for requirements regarding MDLs and PQLs.

- e. Laboratory statements of results of all analyses evaluating compliance with requirements.
- f. An evaluation of the concentration of each monitoring parameter (or 5-year COC when five year COC sampling is conducted) as compared to the current concentration limits, and the results of any required verification testing for constituents exceeding a concentration limit. Report any actions taken under Section J: Response to a Release for verified exceedances of a concentration limit for wells/constituents not already in corrective action monitoring.
- g. An evaluation of the effectiveness of run-off/run-on control facilities.
- h. The results of Facility Monitoring, including, but not limited to, a summary of all Standard Observations for the reporting period required in Section A.5.d of this MRP.
- i. A discussion as to the effectiveness of corrective action per Title 27, section 20430(h). Each progress report shall address the following issues:
 - i. The source of the impact.
 - ii. The nature and extent of the release.
 - iii. Whether concentrations of constituents in compliance point monitoring wells have increased, decreased or have not changed.
 - iv. The ongoing effectiveness of landfill closure as a corrective action.
 - v. The ongoing effectiveness of LFG extraction as a corrective action.
 - vi. The need for additional or improved corrective action measures and/or monitoring wells.

The discussion shall include or reference plans for the installation of any additional monitoring wells necessary to define the extent of the release and/or monitor the progress of corrective action. See also Reporting Requirement B.7 below.

2. **Annual Monitoring Report**

The Discharger shall submit an Annual Monitoring Report to the Central Valley Water Board by **1 February** covering the reporting period of the previous monitoring year. If desired, the Annual Monitoring Report may be combined with the second semiannual report, but if so, shall clearly state that it is both a semi-

annual and annual monitoring report in its title. Each Annual Monitoring Report shall contain the following information:

- a. All monitoring parameters shall be graphed to show historical trends at each monitoring point and background monitoring point, for all samples taken within at least the previous five calendar years. If a 5-year COC event was performed, than these parameters shall also be graphically presented. Each such graph shall plot the concentration of one or more constituents for the period of record for a given monitoring point or background monitoring point, at a scale appropriate to show trends or variations in water quality. The graphs shall plot each datum, rather than plotting mean values. Graphical analysis of monitoring data may be used to provide significant evidence of a release.
 - b. An evaluation of the monitoring parameters with regards to the cation/anion balance, and a graphical presentation using a Stiff diagram, a Piper graph, or a Schoeller plot.
 - c. All historical monitoring data for which there are detectable results, including data for the previous year, shall be submitted in tabular form in a digital file format such as a computer disk. The Central Valley Water Board regards the submittal of data in hard copy and in digital format as "...the form necessary for..." statistical analysis [Title 27, section 20420(h)], that facilitates periodic review by the Central Valley Water Board.
 - d. Hydrographs of each well showing the elevation of groundwater with respect to the elevations of the top and bottom of the screened interval and the elevation of the pump intake. Hydrographs of each well shall be prepared quarterly and submitted annually.
 - e. A comprehensive discussion of the compliance record, and the result of any corrective actions taken or planned which may be needed to bring the Discharger into full compliance with the waste discharge requirements.
 - f. A written summary of the monitoring results, indicating any changes made or observed since the previous Annual Monitoring Report.
 - g. Updated concentration limits for each monitoring parameter at each monitoring well based on the new data set.
 - h. A comprehensive discussion of the Corrective Action Program.
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 A.3 of this MRP, and an estimated date that the results will be submitted to the Central Valley Water Board; and
 - e. Corrective measures underway or proposed, and corresponding time schedule.
4. **Annual Facility Inspection Reporting**
- By **15 November** of each year, the Discharger shall submit a report describing the results of the inspection and the repair measures implemented, preparations for winter, and include photographs of any problem areas and the repairs. Refer to Section A.5.a of this MRP, above.
5. **Major Storm Event Reporting**
- Following major storm events capable of causing damage or significant erosion, the Discharger **immediately** shall notify Central Valley Water Board staff of any damage or significant erosion upon discovery and report subsequent repairs within **14 days** of completion of the repairs, including photographs of the problem and the repairs. Refer to Section A.5.b of this MRP, above.
6. **Survey and Iso-Settlement Map for Closed Landfills**
- By **15 December 2017** and **every five years** thereafter, the Discharger shall submit the results of the post-closure topographic survey completed under MRP Section A.5.c, including topographic survey and (beginning with the second postclosure topographic survey) iso-settlement maps prepared pursuant to Title 27, section 21090(e) and Closure and Postclosure Specification E.16 of the WDRs.
7. **Amended Report of Waste Discharge**
- If either the Discharger or Central Valley Water Board staff determines that the corrective action program does not satisfy Title 27 corrective action goals, as specified in WDR Corrective Action Specification D.1, the Discharger shall, within 90 days of making such determination, or within 90 days of receiving written notice of such determination from Central Valley Water Board staff, submit an amended Report of Waste Discharge to make appropriate changes to the Corrective Action Program.

C. WATER QUALITY PROTECTION STANDARD

The Water Quality Protection Standard for the landfill unit shall consist of all Constituents of Concern (COCs), Concentration Limits, the Point of Compliance, and all Monitoring Points consistent with this Order and Title 27, Section 20390.

1. Water Quality Protection Standard Report

By **31 January 2017**, the Discharger shall submit a Water Quality Protection Standard Report describing the Water Quality Protection Standard for the landfill unit consistent with the Findings and Requirements of this Order. See WDR Provision J.6.d. At a minimum, the report shall include the following information:

- 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. 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. Proposed data analysis methods for calculating concentration limits for monitoring parameters and constituents of concern detected in 10% or greater of the background data (naturally-occurring constituents) per Title 27, section 20415(e)(8)(A-D)] or section 20415(e)(8)(E).
- e. 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).

Once approved, the concentration limits of the Water Quality Protection Standard shall be annually updated to reflect current background monitoring data using the approved data analysis methods. Any subsequent 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 Water Quality Protection Standard shall be certified by a California-registered civil engineer or geologist as meeting the requirements of Title 27.

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 A.1.b (groundwater), A.2.b (soil pore gas), A.3 (leachate), A.4.b.ii (surface/storm water), and A.6 (landfill gas).

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 at least every five years [Title 27, sections 20395 and 20420(g)]. The COCs for all waste management units at the facility are those referenced in Tables A.1.b (groundwater), A.4.b.ii (surface/storm water), and Table C (attached). The Discharger shall monitor all COCs every 5 years (or more frequently if required in a Corrective Action Program). The first 5-year COC monitoring event under this Order shall be conducted by **15 November 2016** and the results reported in the Second Half and Annual 2016 monitoring report due by **31 January 2017**.

4. **Concentration Limits**

As noted in WDR Finding 45, the Discharger does not yet have an approved list of concentration limits for monitoring. The proposed concentration limits for monitoring for all media (e.g., surface water and groundwater) shall therefore be included in the Water Quality Protection Standard Report required under WDR Provision J.6.d.

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).

Detection Monitoring - The concentration limits for non-naturally-occurring constituents of concern (e.g., VOCs) shall be non-detect. The concentration limits for naturally-occurring COCs (e.g., inorganics) shall be determined based on an interwell monitoring procedure using upgradient monitoring data, unless the Discharger is able to demonstrate to the satisfaction of the Executive Officer that an intrawell approach is more representative of background conditions at the site due to the presence of significant spatial variability in the groundwater geochemistry not attributable to a release from the unit. The data analysis method for calculating concentration limits for naturally-occurring COCs under this Order shall be the interwell Tolerance Limit Method, or as otherwise proposed under the Water Quality Protection Standard Report required under WDR Provision J.6.d and approved by Board staff.

Corrective Action Monitoring -- The concentration limits for corrective action monitoring shall be the same as those for detection monitoring absent approval of a proposal for concentration limits greater than background (CLGBs) under Title 27 Section 20400(c) and revision of the WDRs. An intrawell statistical procedure (e.g., the Sens Slope Method) shall be used for trend analysis to monitor corrective action progress. Concentration limits for naturally occurring COCs shall be updated annually and included in the Annual Report submitted under this MRP. See Section B.2.h.

5. 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. There is currently one Point of Compliance well at the site, well C-13, and it is down gradient of the landfill only during dry season gradient reversals. An additional Point of Compliance well is therefore required to be installed under WDR Provision J.6 to meet Title 27 requirements for Point of Compliance monitoring.

6. 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].

7. Monitoring Points

A monitoring point is a well, device, or location specified in the waste discharge requirements at 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.

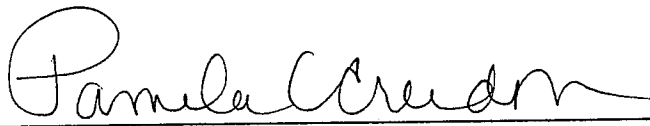
D. TRANSMITTAL LETTER FOR ALL REPORTS

A transmittal letter explaining the essential points shall accompany each report. The transmittal letter shall, at a minimum, include the following:

1. Appropriate notation as to the source of the sample data used in the report, identifying which results, if any, were provided by the City of Sacramento from 28th Street Landfill monitoring and which results, if any, were obtained from separate monitoring under this MRP. Any long term arrangements with the City for providing such sample data each monitoring period shall be appropriately referenced (e.g., location in Sample Collection and Analysis Plan).
2. A certification that the monitoring data provided by the City from 28th Street Landfill monitoring was collected in compliance with the approved Sample Collection and Analysis Plan submitted under this Order.

3. Identification of 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.
4. 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 Order.

Ordered by: 
PAMELA C. CREEDON, Executive Officer

17 April 2015

JDM/WMH

TABLE C
CONSTITUENTS OF CONCERN
& APPROVED USEPA ANALYTICAL METHODS

General Minerals

	USEPA Method
Bicarbonate	2320B
Calcium	200.7/600
Carbonate	2320B
Chloride	300
Magnesium	200.7/600
Nitrate – Nitrogen	300
Potassium	200.7/600
Sodium	200.7/600
Sulfate	300
Total Dissolved Solids	2540C

Volatile Organic Compounds:

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)
 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
1,1,1,2,2-Tetrachloroethane
Tetrachloroethylene (Tetrachloroethene; Perchloroethylene; PCE)
Toluene
1,2,4-Trichlorobenzene
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)

Inorganics (dissolved):

USEPA Method

Aluminum	6010
Antimony	7041
Barium	6010
Beryllium	6010
Cadmium	7131A
Chromium	6010
Cobalt	6010
Copper	6010
Silver	6010
Tin	6010
Vanadium	6010
Zinc	6010
Iron	6010
Manganese	6010
Arsenic	7062
Lead	7421
Mercury	7470A
Nickel	7521
Selenium	7742
Thallium	7841
Cyanide	9010C
Sulfide	9030B

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 (Benanthracene)
Benzo[b]fluoranthene
Benzo[k]fluoranthene
Benzo[g,h,i]perylene
Benzo[a]pyrene
Benzyl alcohol
Bis(2-ethylhexyl) phthalate
alpha-BHC
beta-BHC
delta-BHC
gamma-BHC (Lindane)
Bis(2-chloroethoxy)methane
Bis(2-chloroethyl) ether (Dichloroethyl ether)
Bis(2-chloro-1-methylethyl) ether (Bis(2-chloroisopropyl) ether; DCIP)
4-Bromophenyl phenyl ether
Butyl benzyl phthalate (Benzyl butyl phthalate)
Chlordane

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

Isosafrole
Kepone
Methapyrilene
Methoxychlor
3-Methylcholanthrene
Methyl methanesulfonate
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

Chlorophenoxy Herbicides:

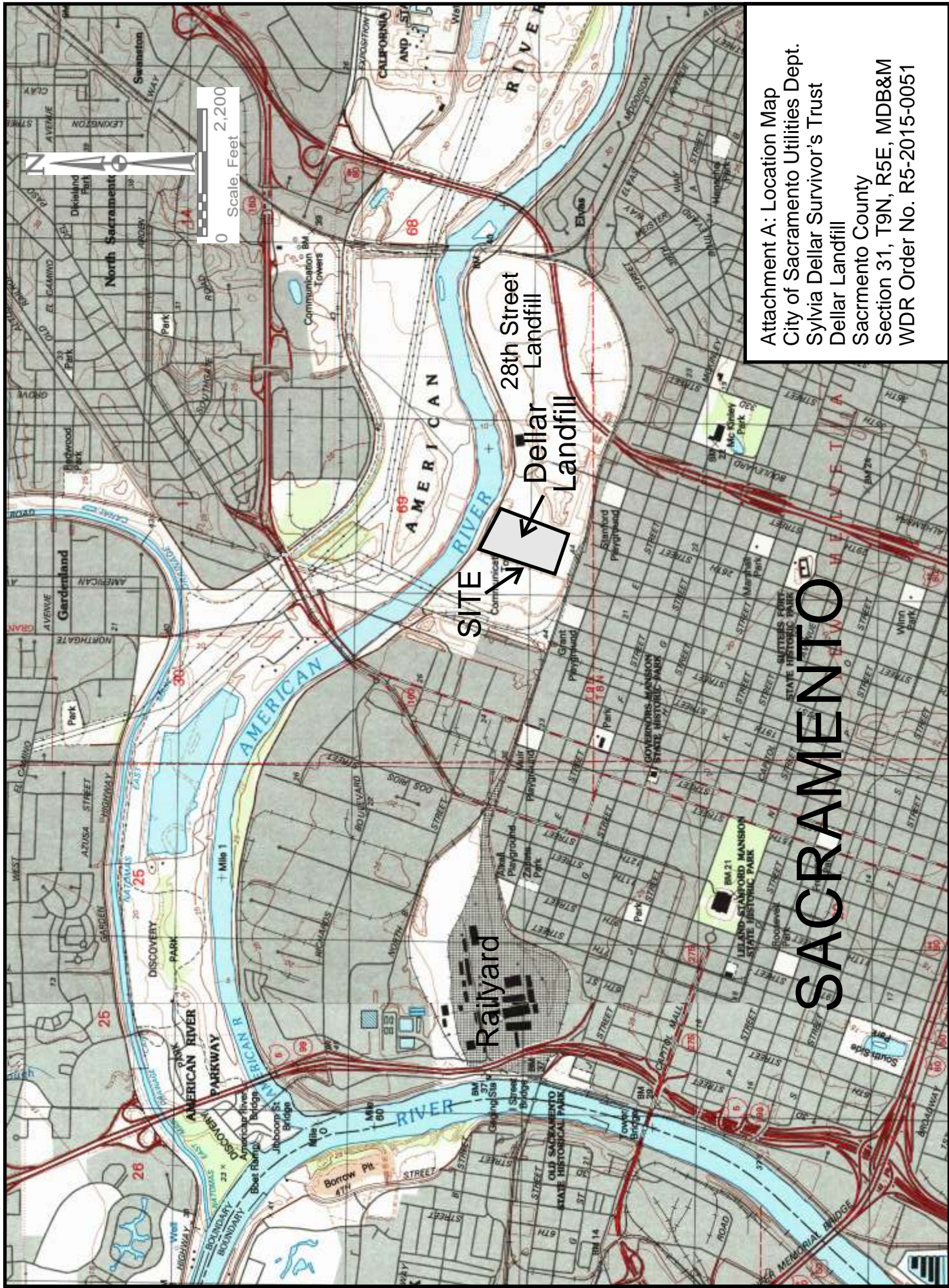
USEPA Method 8151A

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

Organophosphorus Compounds:

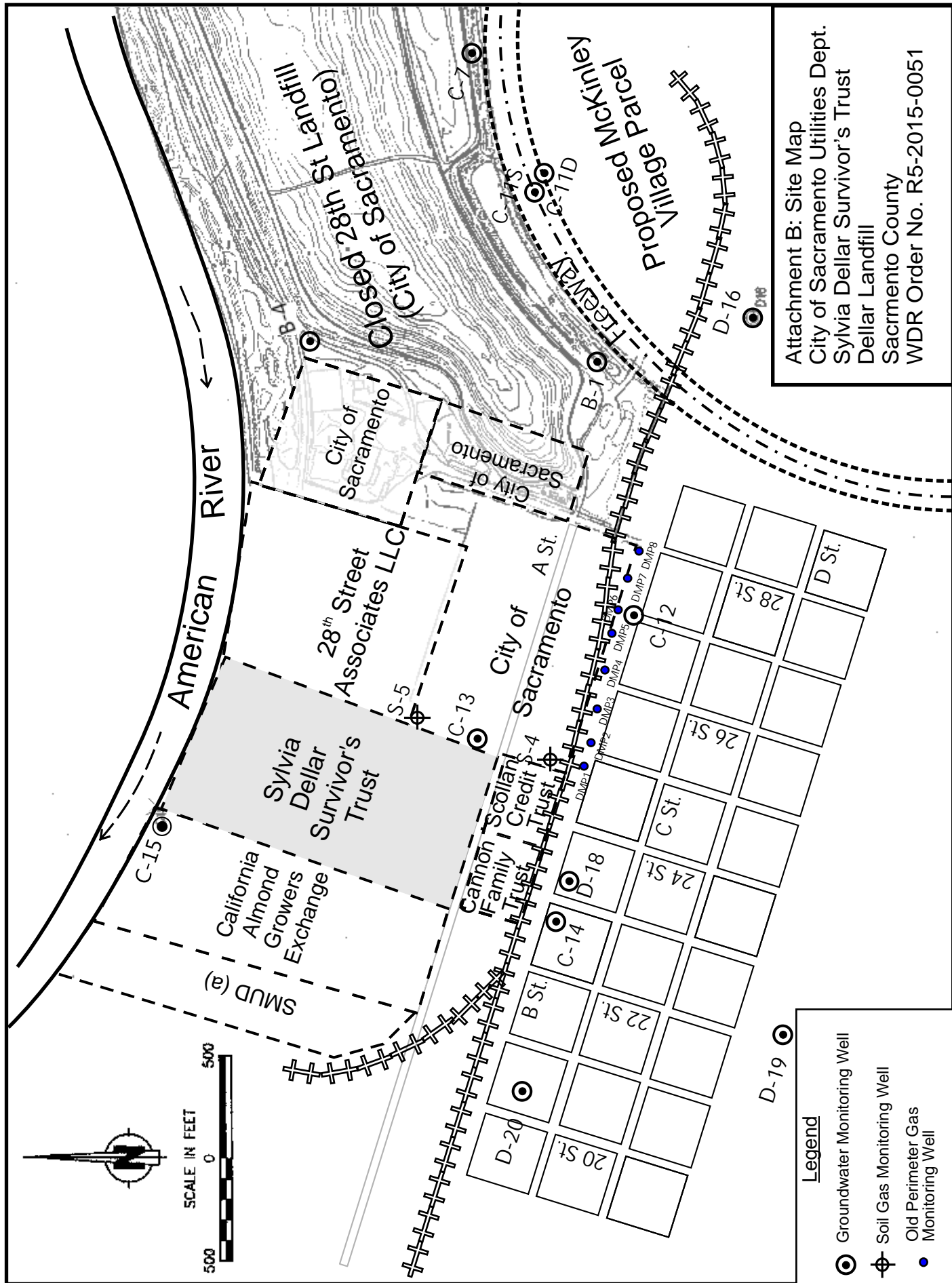
USEPA Method 8141B

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



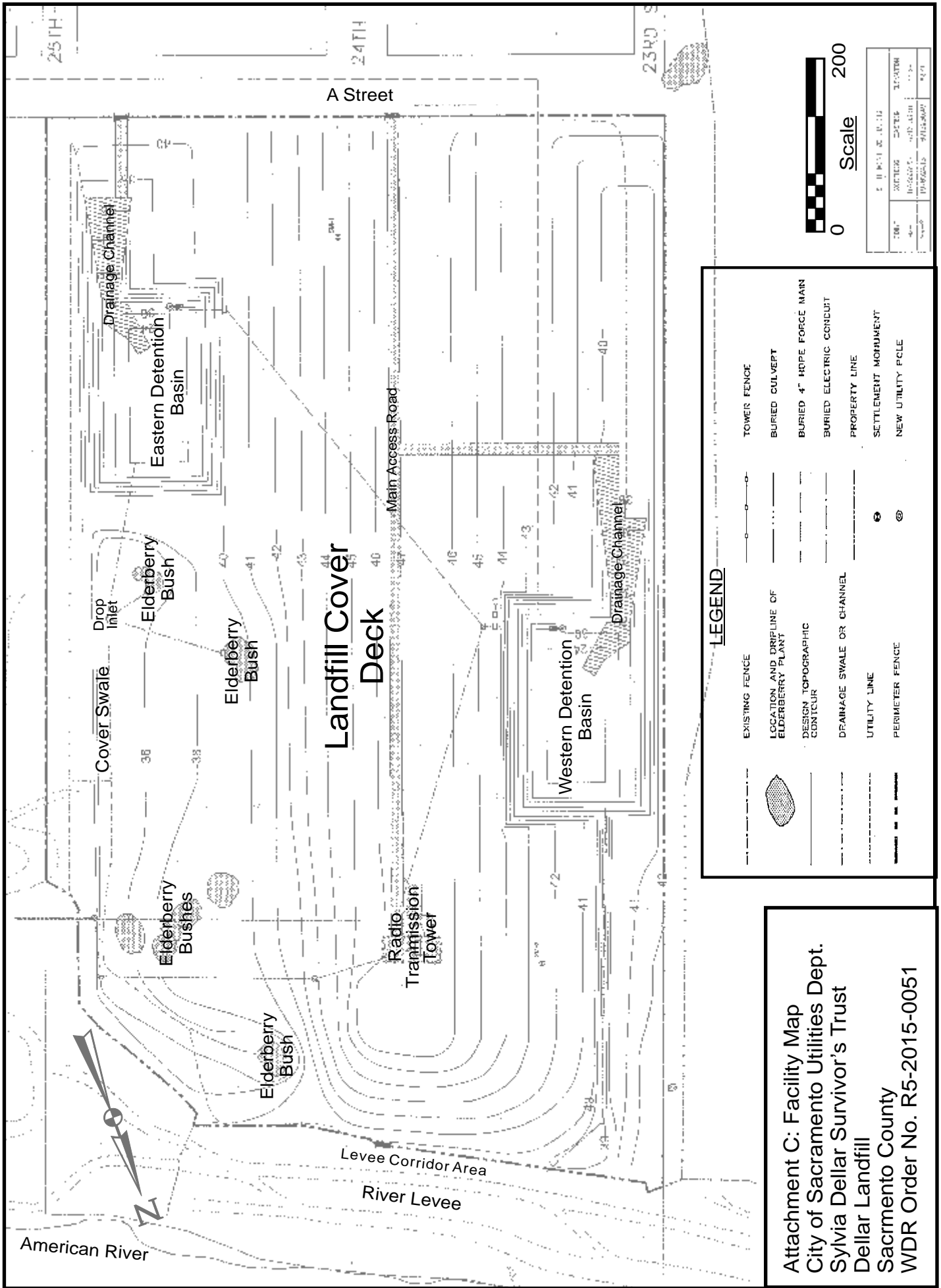
Attachment A: Location Map
 City of Sacramento Utilities Dept.
 Sylvia Dellar Survivor's Trust
 Dellar Landfill
 Sacramento County
 Section 31, T9N, R5E, MDB&M
 WDR Order No. R5-2015-0051

SACRAMENTO



- Legend**
- Groundwater Monitoring Well
 - ⊕ Soil Gas Monitoring Well
 - Old Perimeter Gas Monitoring Well

Attachment B: Site Map
 City of Sacramento Utilities Dept.
 Sylvia Dellar Survivor's Trust
 Dellar Landfill
 Sacramento County
 WDR Order No. R5-2015-0051



LEGEND

	EXISTING FENCE		TOWER FENCE
	LOCATION AND DELINE OF ELDERBERRY PLANT		BURIED CULVERT
	DESIGN TOPOGRAPHIC CONTOUR		BURIED 4" HOPE FORCE MAIN
	DRAINAGE SWALE OR CHANNEL		BURIED ELECTRIC CONDUIT
	UTILITY LINE		PROPERTY LINE
	PERIMETER FENCE		SETTLEMENT MONUMENT
			NEW UTILITY POLE

Attachment C: Facility Map
 City of Sacramento Utilities Dept.
 Sylvia Dellar Survivor's Trust
 Dellar Landfill
 Sacramento County
 WDR Order No. R5-2015-0051

INFORMATION SHEET

ORDER NO. R5-2015-2051
CITY OF SACRAMENTO UTILITIES DEPARTMENT
SYLVIA DELLAR SURVIVOR'S TRUST
DELLAR LANDFILL
SACRAMENTO COUNTY

Background Information

The Dellar Landfill is a partially-closed, unlined landfill on A Street about 1½ mile northeast of downtown Sacramento. The 23.9 acre landfill is on a 29-acre site owned by the Sylvia Dellar Survivor's Trust. The landfill is one of several parcels in a 130-acre area west of 28th Street historically used by the City of Sacramento and/or public for landfilling. See WDR Attachment B: Site Map and Attachment 2 of this Information Sheet.¹ The landfill operated from 1957 through 1963, accepting primarily household wastes from the City of Sacramento area. The City operated the landfill during its entire active period. Onsite facilities include the landfill, two storm water detention basins and associated controls, perimeter containment berms, the American River levee, groundwater monitoring wells, and access roads. The site also includes an active, unmanned radio transmission tower used by a local radio station, power poles, and a perimeter fence.

Site Description

The landfill was sited immediately south of the American River about two miles upstream of the confluence with the Sacramento River. Although in the American River flood plain, the site is protected from a 100-year flood event by the adjoining American River levee. Topographic relief in the area is generally flat with surface elevations ranging from about 25 to 40 feet above mean sea level (MSL). Soil in the project area generally consists of flood plain deposits and alluvial material deposited prior to construction of river levees.² Some of the sediment is material washed down from historical gold mining activities conducted upstream in the American River corridor. The depth to groundwater at the site ranges from about 18 to 24 feet below ground surface (bgs), depending on location and water table elevation. In the wet season, groundwater flow is generally toward the southwest away from the river, while in the summer, the gradient is either flat or reverses.

Landfill Design & Operations

Construction of the landfill predated Title 27 and Subtitle D regulations such that the landfill

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1. See also June 1991 *Revised Final Closure and Post-Closure Maintenance Plan Amendment, 28th Street Landfill* and June 1987 *28th Street Landfill Calderon Report* (i.e., SWAT Report), both prepared by the City of Sacramento Department of Public Works.
 2. After major flood events in 1850 and 1862, the American River was straightened to its current course and many of the western city streets raised by as much as 10 feet. Great floods in 1907 and 1909 spurred the design of a comprehensive Sacramento Flood Control System including levees on the lower American River protecting Sacramento. The first major upgrade to the original system occurred in the 1950's with the construction of Folsom Dam and extension of the levees upstream to their present terminal. Folsom and the new levee system saved Sacramento from flooding in 1955. Additional and ongoing improvement projects were undertaken after flooding was narrowly averted in 1986.

is unlined and has no leachate collection and recovery system (LCRS). The side slopes of the landfill are supported by soil berms constructed to a height of about 11 feet above surrounding grade on the west and east sides of the unit, the American River levee to the north, and the A Street Road embankment to the south. Waste disposal operations consisted of trench fill, discharge to deep borrow pits, and area fill. Landfill disposal rates and in-place tonnage are unknown due to a lack of historical records, but may be estimated as follows:

<u>Pit</u>	<u>Area</u> (acres)	<u>Avg. Fill</u> <u>Thickness</u>	<u>Waste In Place</u>		<u>Disposal Rate</u> ²	
			<u>Volume</u>	<u>Tonnage</u> ¹	<u>Tons/day</u>	<u>Cu Yd/D</u> ³
		Feet	KCu Yd	KTons		
East Half	13.2	45	767	384	309	1,550
West Half	12.5	25	403	182		
Overall	25.7	35.2	1,170	566		

1. Estimates assume waste-to-cover-soil ratio of about 4:1 and an in-place waste density of about 0,5 tons per cu yd,
2. Rate estimate based on 365-day year and 5-year operating period.
3. Rate prior to waste compaction assuming compaction ratio of 2.5:1.

Inactive Period

Reports on file indicate that upon cessation of landfill operations in 1963, the landfill was left with uncompacted soil cover of varying thickness rather than an engineered (i.e., compacted and graded) final cover required under current regulations. Subsequent Central Valley Water Board staff inspections conducted since 1992 confirmed that the landfill cover was not adequate and indicated that the site had been abandoned.

Groundwater

The Dellar Property is within the groundwater monitoring well field for the 28th Street Landfill and does not have a separate groundwater monitoring system. There are currently seven 28th Street Landfill groundwater monitoring wells completed in the uppermost aquifer proximate to the Dellar Property. Historical monitoring data for the down gradient wells shows low to trace concentrations of volatile organic compounds (VOCs) in some of these wells, including Chlorobenzene (1.4 µg/L), 1,4-Dichlorobenzene (3.5 µg/L), Chloroform (9.5 µg/L), Trichloroethylene (1.8 µg/L), and other intermittently-detected VOCs. Time series plots of VOC monitoring data since 1996 do not indicate any clear trends in any of the wells. The monitoring data also shows elevated concentrations of general minerals in groundwater down gradient of the landfill, including alkalinity up to 930 mg/L, chloride up to 405 mg/L, sulfate up to 40 mg/L, TDS up to 1,500 mg/L, specific conductance up to 3,100 mhos/cm, and dissolved iron up to 70 mg/L. Time series plots for these wells generally show strong-to-moderate declining trends for chloride and TDS, and stable levels or slight declining trends for specific conductance and alkalinity, over the past

20 years. One VOC and several of the general minerals exceeded water quality limits, as follows:

Constituent	WQ Objective	2013 Maximum Concentration (mg/L, except where noted)		
		<i>WQ Limit</i>	<i>Background</i>	<i>Downgradient</i>
Chloroform, µg/L	Chemical Constituents	1.0 ¹	<0.2	4.0
Chloride		106 ²	4.3	170
Specific Conductance, mhos/cm		700 ²	280	1,800
	Taste & Odor	900 ³		
TDS	Chemical Constituents	450 ²	170	920
		500 ^{3,4}		
Dissolved Iron	Taste & Odor	0.3 ^{3,4}	25	18

1. California Public Health Goal.
2. Agricultural Goal
3. California Secondary Maximum Contaminant Level (MCL)
4. Federal Secondary MCL.

Corrective Action/Closure

On 4 June 2008, the Water Board's Executive Officer issued Cleanup and Abatement Order (CAO) No. R5-2008-0705 to the Discharger, requiring that the Discharger submit a plan for closure of the landfill as a corrective action measure under Title 27, section 20430. The City subsequently submitted an October 2009 Final Closure and Postclosure Maintenance Plan (FC/PCMP), which was subsequently approved by Board staff. The October 2009 FC/PCMP was, however, never implemented due to discovery of Elderberry bushes at the site, a known habitat for the Elderberry beetle, a federally protected species. Closure of the Elderberry Bush areas under the FC/PCMP would have required removal of the bushes, which would have required preparation of a full Habitat Conservation Plan (HCP) and obtaining project approvals from the U.S. Fish and Wildlife Service, a process that could take several years.

To expedite the project, the Discharger (Sylvia Dellar Survivor's Trust) subsequently submitted a 22 July 2011 partial FC/PCMP with plans to work around the Elderberry bush areas. On 26 October 2012, the Discharger submitted a Closure Certification Report documenting closure activities implemented under the 2011 partial FC/PCMP, including, but not limited to, installation of a non-prescriptive, engineered soil cover and the installation of two detention basins for storm water control. and exceptions to the plan implemented during project construction. On 30 January 2015, the Discharger submitted an addendum to the 2012 Closure Certification Report demonstrating that existing soil cover in the levee corridor area was adequately protective of groundwater for final closure

purposes and that no further closure work was required in that area. Water Board staff concurred with the addendum report's findings and in a 12 February 2015 letter, acknowledged that the levee corridor area had been closed and that the only portion of the landfill not yet closed was the fractional acreage where there were Elderberry Bushes.

Waste Discharge Requirements

These WDRs prescribe requirements for completing closure of the landfill and implementing landfill postclosure maintenance and corrective action monitoring. The WDR findings summarize the landfill design and operational history; groundwater monitoring results collected over the past 10 to 20 years; the status of the Water Quality Protection Standard for the site under Title 27 regulations; closure activities implemented under the 2011 FC/PCMP; and other relevant information. The requirements in the WDRs include, but are not limited to, the following:

- New Monitoring Well – A Point of Compliance well is needed down gradient of the landfill to meet Title 27 performance standards for monitoring. WDR Provision J.6.b therefore requires submission of work plan for installation of a Point of Compliance monitoring well along the southwestern perimeter of the landfill.
- Completion of Closure
 - Closure and Postclosure Specification E.1 requires that the Discharger submit a revised FC/PCMP with plans for closing the remainder of the landfill (i.e., Elderberry Bush areas) consistent with the construction and design requirements of the WDRs and the closure schedules specified in Provision J.8.
 - Construction Specification F.4 requires that, at a minimum, the final cover design for portions of the landfill unit not yet closed consist of either the approved engineered soil cover design constructed on the main part of the landfill, or an engineered alternative design meeting Title 27 corrective action goals demonstrated under Corrective Action Specification D.3 and included in the approved revised FC/PCMP submitted under Closure and Postclosure Specification E.1.b.
- Landfill Gas – WDR Provision J.7 requires submission of a work plan for an LFG investigation, including installation and sampling of in situ monitoring probes, per Corrective Action Specification D.5. If indicated by the LFG investigation, the Discharger is required to submit a corrective action work plan to address LFG issues at the site and install any necessary LFG controls (active or passive) in accordance with the approved work plan. The MRP requires monitoring of any LFG controls and monitoring systems installed. See Section A.6, MRP.
- Water Quality Protection Standard -- A Water Quality Protection Standard Report reflecting installation and monitoring of the Point of Compliance well and background monitoring at well B-4 and/or C-15 (or alternative proposed locations consistent with Title 27 regulations) is required to be submitted under WDR Provision J.6.d.
- Topographic Survey -- An updated topographic site survey is required to be performed

by **15 December 2017**, and every 5 years thereafter, per WDR Closure and Postclosure Specification E.15. See also MRP Section B.6.

- Geotracker -- The WDRs require that the Discharger establish and maintain an account with the SWRCB's Geotracker data base within 90 days of adoption of this Order.

Monitoring and Reporting Program

The monitoring and reporting program (MRP) in the WDRs requires both groundwater and surface water monitoring. Semiannual soil gas monitoring is required for any gas probes installed to define the extent of landfill gas migration under the revised FC/PCMP submitted under this Order. If, based on the results of the landfill gas investigation conducted under Corrective Action Specification D.5, the Discharger is able to demonstrate to the satisfaction of Central Valley Water Board staff that the landfill is not generating significant amounts of landfill gas that could degrade groundwater quality beneath the site, soil gas monitoring is not required. Monitoring of the in situ probes installed as part of the landfill gas investigation may also be discontinued upon such demonstration to the satisfaction of Board staff.

Monitoring frequencies are generally semiannually for field and monitoring parameters, and every five years for landfill Constituents of Concern. The monitoring parameters generally consist of volatile organic compounds (VOCs), general minerals, and dissolved iron. Other dissolved metals have not been included in semiannual monitoring because they have not been confirmed as part of the release from the unit. MRP Section A authorizes the Discharger to use the results of sampling conducted by the City under the 28th Street Landfill WDRs in lieu of separate sampling under this Order to the extent that the latter monitoring would be duplicative.

Areas of the site north of the American River levee are drained by the American River, which flows into the Sacramento River. The remainder of the site is generally drained by the City of Sacramento's Combined Sewer System. (JDM)

Attachment 1
Information Sheet
Historical Fill Area Operations Summary

	<u>Current Property Owner</u>	<u>Area (acres)</u>	<u>Active Period</u>
a.	Sacramento Municipal Utility District (SMUD)	10	1940-49
b.	California Almond Growers Exchange	21	1940-49
c.	Sylvia Dellar Survivor's Trust	29	1959-63
d.	Cannon Family Trust et al.	2	Pre-1961
e.	Scollan Credit Trust et al.	2	Pre-1961
f.	Bell Marine	18	1963-68
g.	City of Sacramento	16	Pre-1960
h.	City of Sacramento	23	Pre-1971
i.	City of Sacramento	9	Pre-1971
	Total Historical Fill Area:	130 acres	

Attachment 2
Information Sheet

Monitoring Well Installation Work Plan
And Monitoring Well Installation Report Requirements
March 2012

SECTION 1 - Monitoring Well Installation Workplan

A. General Information:

1. Purpose of well installation and sampling/analysis project
2. Site location map
3. Copies of County Well Construction Permits (to be submitted after workplan review)
4. New monitoring well locations and rationale
5. Equipment decontamination procedures
6. Health and safety plan
7. Topographic map showing any existing wells, proposed wells, waste handling facilities, utilities, and other major physical and man-made features.

B. Drilling Details:

1. Drill rig and contractor
2. Sampling intervals and logging methods.

C. Monitoring Well Design—Graphic and Descriptive:

1. Casing diameter and centralizer spacing (if needed)
2. Borehole diameter
3. Depth of surface seal
4. Well construction materials
5. Diagram of proposed well construction details
6. Type of well cap, bottom cap either screw on or secured with stainless steel screws
7. Size of perforations and rationale
8. Grain size of sand pack and rationale
9. Thickness and position of bentonite seal and sand pack
10. Depth of well, length and position of perforated interval.

D. Well Development:

1. Method development
2. Method of determining when development is complete
3. Parameters to be monitored during development
4. Development water storage and disposal.

E. Well Survey Coordinates, horizontal and vertical:

1. Name of the Licensed Land Surveyor or Registered Civil Engineer
2. Well features to be surveyed (i.e. top of casing, horizontal and vertical coordinates)
3. Horizontal (within 0.1 foot) and vertical accuracy (vertical must be at least 0.01-foot).

F. Water Level Measurement:

1. The elevation reference point at each monitoring well must be within 0.01-foot
2. Ground surface elevation at each monitoring well must be within 0.01-foot
3. Method and time of water level measurement must be specified.

Attachment 2
Information Sheet (Con't)

Monitoring Well Installation Work Plan
And Monitoring Well Installation Report Requirements

- G. Proposed time-schedule with dates for proposed work.
 - H. Plan signed and stamped by California Licensed engineer or geologist.
-

SECTION 2 - Monitoring Well Installation and Groundwater Analytical Report

A. Well Construction Details—Graphical, Tabular, and Descriptive:

- 1. Quantity and depth of wells drilled
- 2. Date(s) wells drilled and completed
- 3. Description of drilling and construction
- 4. Updated comprehensive site map with facility site features including monitoring wells, sample locations and identification numbers, storage ponds, landfills, investigation areas, groundwater gradient and iso-contour lines, buildings, tanks, and etc.
- 5. A well construction diagram for each well with the following details:
 - a. Well number, date started, date completed, geologist's name
 - b. Total depth drilled
 - c. Drilling Contractor and driller name and address
 - d. Depth of open hole (same as total depth drilled if no caving occurs)
 - e. Method and materials of grouting excess borehole
 - f. Footage of hole collapsed
 - g. Length of slotted casing installed
 - h. Depth of bottom of casing
 - i. Depth to top of sand pack
 - j. Thickness of sand pack
 - k. Depth to top of bentonite seal
 - l. Thickness of bentonite seal
 - m. Thickness of concrete grout
 - n. Boring diameter
 - o. Casing diameter
 - p. Casing material
 - q. Size of perforations
 - r. Well elevation at top of casing
 - s. Stabilized depth to groundwater
 - t. Date of water level measurement
 - u. Monitoring well number
 - v. Date drilled
 - w. Location

B. Well Development:

- 1. Date(s) of development of each well
- 2. Method of development
- 3. Volume of water purged from well
- 4. How well development completion was determined

Attachment 2
Information Sheet (Con't)

Monitoring Well Installation Work Plan
And Monitoring Well Installation Report Requirements

5. Method of effluent disposal
6. Field notes from well development should be included in report.

C. Well Survey:

1. Coordinate system, epochs, bench marks, horizontal controls, accuracy, and precision
2. Survey results of casing elevation with the cap removed (vertical to 1/100th foot)
3. California Registered Civil Engineer or Licensed Surveyor's report, field notes, and stamp/signature in an appendix
4. Description of the measuring points (i.e. ground surface, top of casing, etc.)
5. Tabulated survey data with well numbers and horizontal and vertical coordinates.

D. Groundwater Field Sampling

1. Tabulated groundwater elevations and wells
2. Graphical presentation of groundwater gradient and iso-contour lines.
3. Tabulated field and analytical data with sample location identification numbers, water quality goals, field/analytical results, and highlighted data that is outside water quality goals

E. Laboratory Analytical Results

All analytical reports prepared for the Discharger's facility must contain, at a minimum, the information within this section.

1. Tabulated field and analytical data with sample location identification numbers, water quality goals, field/analytical results, and highlighted data that is outside water quality goals
2. Appendix with laboratory reports, COCs, and laboratory signatures on reports.
3. Laboratory reports showing results, reporting units, MDLs, PQLs, "trace" results, flagged results, matrix effects, and QA/QC results.
4. Site map(s) showing iso-concentration lines for Constituents of Concern
5. Piper Diagrams and Stiff Plots comparing upgradient and downgradient water quality parameters.
6. Discussion of results including, but not limited to, discussion of violations, exceedances, if all field and monitoring parameters were sampled and analyzed, description of groundwater flow direction, comparison of analysis and field sampling results to background and water quality goals, list of potential constituents of concern at each sampling location, and other relevant discussions.
7. Certification statement signed by an authorized representative. Report signed and stamped by California

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

STANDARD PROVISIONS AND REPORTING REQUIREMENTS
FOR
WASTE DISCHARGE REQUIREMENTS
FOR
INDUSTRIAL FACILITIES REGULATED BY TITLE 27
(Title 27, § 20005 et seq.)

NOVEMBER 2013

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A. APPLICABILITY

1. These Standard Provisions and Reporting Requirements (SPRRs) are applicable to Class II surface impoundments, waste piles, and land treatment units 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.
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 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 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)].
2. The discharge of wastes outside of a waste management unit or portions of a unit specifically designed for their containment is prohibited.
3. The discharge of waste to a closed waste management unit is prohibited.
4. The discharge of waste constituents to the unsaturated zone or to groundwater is prohibited, except within the treatment zone at a land treatment unit.
5. 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 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. Wastes shall be discharged only into waste management units specifically designed for their containment and/or treatment, as described in this Order.
4. The discharge shall remain within the designated disposal area at all times.
5. 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. 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)].
4. 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.
5. The Discharger shall maintain in good working order any facility, control system, or monitoring device installed to achieve compliance with the waste discharge requirements.
6. 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.
7. The Discharger shall maintain the depth of the fluid in the sump of each waste management 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).

8. 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)].
9. 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.

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 Class II waste management units that include the following:
 - a. Detailed construction drawings showing all required liner system components, the LCRS, leachate sump, unsaturated zone monitoring system, 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 waste management unit (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, sections 21760(b) and 20375(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 II units for a 1,000-year, 24-hour storm event [Title 27, § 21750(e)(3)].
8. All 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 [Title 27, § 20370(a)].
9. The Discharger shall perform stability analyses that include components to demonstrate the integrity of the waste management unit foundation, final slopes, and containment systems under both static and dynamic conditions throughout the life of the unit [Title 27, § 21750(f)(5)].
10. New Class II Units, other than LTUs and expansions of existing Class II units, shall have a 200 foot setback from any known Holocene fault. [Title 27, § 20250(d)].
11. Liners shall be designed and constructed to contain the fluid, including 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 any 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. 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.
16. The Discharger shall propose an electronic leak location survey of the top liner for any new waste management unit in the construction quality assurance plan unless the Discharger demonstrates that a leak location survey is not needed.
17. Leachate collection and removal systems are required for Class II surface impoundments [Title 27, § 20340(a)].
18. 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)].
19. Leachate collection and removal systems shall be designed and operated to function without clogging through the life of the waste management unit.
20. 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)].
21. 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].
22. 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)].
23. 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.

24. The Discharger shall notify Central Valley Water Board staff at least **14 days** prior to commencing field construction activities including construction of a new Class II waste management unit, construction of a final cover (for units closed as a landfill), or any other construction that requires Central Valley Water Board staff approval under this Order.
25. 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 Class II waste management unit. 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.
26. 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.

G. STANDARD CLOSURE AND POST-CLOSURE SPECIFICATIONS

1. 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, future land use, and a construction quality assurance plan [Title 27, § 21769(c) & (d)].
2. 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)].
3. The final cover of waste management units closed as a landfill shall be designed, graded, and maintained to prevent ponding and soil erosion due to high run-off velocities [Title 27, § 21090(b)(1)(A)].
4. The final grading design shall be designed and approved by a registered civil engineer or certified engineering geologist [Title 27, § 21090(b)(1)(C)].
5. All final cover designs shall include a minimum 1-foot thick erosion resistant vegetative layer or a mechanically erosion-resistant layer [Title 27, § 21090(a)(3)(A)(1 & 2)].

6. 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)].
7. The Discharger shall design storm water conveyance systems for Class II units that are closed as a landfill for a 1,000-year, 24-hour storm event [Title 27, § 21750(e)(3)].
8. Construction or repair of a 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)].
9. 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 units that are closed as a landfill shall be maintained in accordance with an approved post-closure maintenance plan [Title 27, § 21710(c)(6)].
10. The post-closure maintenance period for units closed as a landfill 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)].
11. The Discharger shall periodically inspect and identify problems with the final cover including areas that require replanting, erosion, areas lacking free drainage, and any areas damaged by equipment operations [Title 27, § 21090(a)(4)(B)].
12. The Discharger shall repair any 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)].

H. STANDARD FINANCIAL ASSURANCE PROVISIONS

1. The Discharger shall establish an irrevocable fund (or provide other means) for closure to ensure closure of each Class II unit in accordance with an approved closure 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) 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)].

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 Class II waste management unit 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 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)].
19. 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)].
20. 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)].

21. The Discharger shall submit a work plan for review and approval at least **60 days** prior to installation or abandonment of groundwater monitoring wells.
22. 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.
23. 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].
24. 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].
25. 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)].
26. 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)].
27. 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.].
28. 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.].
29. 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)].

30. 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)].
31. An unsaturated zone monitoring system shall be established for each waste management unit [Title 27, § 20415(d)].
32. 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)].
33. 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)].
34. Groundwater elevation, temperature, electrical conductivity, turbidity, and pH are to be accurately measured at each well each time groundwater is sampled [Title 27, § 20415(e)(13)].
35. 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)].
36. 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)].
37. 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)].
38. 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.

39. 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.
40. 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, Article 19 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".
41. 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).
42. 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.
43. **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.44 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.45 provides the procedure for analytes that are detected in 10% or greater of the background samples such as naturally occurring constituents like chloride.

44. 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.44.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.

45. 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 1.45.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)(8)(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.45.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.

46. **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.44 or I.45, 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 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)].
 - c. **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)].
 - d. 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)].

- e. **Within 90 days** of the date that the Evaluation Monitoring Program from paragraph J.1.b 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)].

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 leachate generated by discharged waste during the active life, closure, and any 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. The Discharger shall design storm water conveyance systems for Class II units for a 1,000-year, 24-hour storm event [Title 27, § 21750(e)(3)].
2. 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)].
3. Precipitation on Class II 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)].
4. 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 through the use of energy dissipators where required to decrease the velocity of runoff, slope protection, and other erosion control measures where needed to prevent erosion.
 - d. Control and intercept run-on, in order to isolate uncontaminated surface waters from water that might have come into contact with waste.
 - e. Take into account:
 - i) For closed waste management units and for closed portions of units, the expected final contours of the closed unit, including its planned drainage pattern.
 - ii) For operating portions of waste management units other than surface impoundments, the unit's drainage pattern at any given time.
 - iii) The possible effects of the waste management unit's drainage pattern on and by the regional watershed.
 - iv) The design capacity of drainage systems of downstream and adjacent properties by providing for the gradual release of retained water downstream in a manner which does not exceed the expected

peak flow rate at the point of discharge if there were no waste management facility.

- f. Preserve the system's function. The Discharger shall periodically remove accumulated sediment from the sedimentation or detention basins as needed to preserve the design capacity of the system.
5. 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)].
6. Surface and subsurface drainage from outside of a waste management unit shall be diverted from the unit [Title 27, § 20365(e)].
7. 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)].
8. Any drainage layer in a 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)].