

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER R5-201X-XXXX

WASTE DISCHARGE REQUIREMENTS
FOR
SAN JOAQUIN COUNTY DEPARTMENT OF PUBLIC WORKS
CORRAL HOLLOW SANITARY LANDFILL
CLASS III MUNICIPAL SOLID WASTE LANDFILL
POST-CLOSURE MAINTENANCE,
AND CORRECTIVE ACTION
SAN JOAQUIN COUNTY

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

1. The San Joaquin County Department of Public Works (hereinafter Discharger) owns and operates the closed Class III Corral Hollow Sanitary Landfill (the "Facility"), which is approximately 5 miles south of the city of Tracy, in Section 18, T3S, R5E, MDB&M, as shown in Attachment A, which is incorporated herein and made part of this Order by reference. The landfill was operated by the City of Tracy from 1946 until 1991. The Discharger has operated the landfill after that time. In 2007, municipal solid waste from the Facility was determined to exist on approximately 0.3 acres of California Department of Transportation (Caltrans) property. The Facility is a municipal solid waste (MSW) landfill regulated under authority given in Water Code section 13000 et seq.; California Code of Regulations, title 27 ("Title 27"), section 20005 et seq.; and 40 Code of Federal Regulations section 258 (hereafter referred to as "Subtitle D") in accordance with State Water Resources Control Board (State Water Board) Resolution 93-62.
2. The closed facility is on a 58-acre property at 31130 Corral Hollow Road, south of the city of Tracy. The landfill was closed in 1996. The closed landfill area at that time consisted of one unlined waste management unit covering approximately 43 acres. In 2005, the Discharger discovered additional municipal waste outside of the original landfill area. In 2007, the Discharger determined that an additional 1.6 acres of municipal solid waste existed outside of the original closed landfill area. Therefore, this Order addresses closure and postclosure maintenance of approximately 44.6 acres of municipal solid waste. The amended landfill area is shown in Attachment B, which is incorporated herein and made part of this Order by reference. The Facility is comprised of Assessor's Parcel Numbers (APN) 253-030-005, 253-030-006, and 253-030-007.
3. On 6 October 2011, the Discharger submitted an amended Report of Waste Discharge (ROWD) as part of the Joint Technical Document (JTD) for the landfill. This document was revised on 26 October 2012. The information in the revised ROWD/JTD has been used in revising these waste discharge requirements (WDRs). The ROWD contains the

applicable information required in Title 27. The ROWD/JTD and supporting documents contain information related to this revision of the WDRs including:

- a. Addendum to the closure and postclosure maintenance plan to include extension of closure cover over approximately 1.6 acres of landfill waste discovered outside of previously covered refuse area. The total closed area will increase from 43 acres to approximately 44.6 acres;
 - b. Expansions of landfill gas collection well network into the closure cover extension project area. The landfill gas collection well network will be expanded from 44 gas extraction wells to 46 gas extraction wells by installing two new extraction wells in the adjacent Caltrans owned property;
 - c. Evaluation and delineation of the extent of groundwater contamination plume originating from landfill. The time schedule for completion of this action will be required under a separate Order; and
 - d. Implementation of corrective action to remediate discharge of waste constituents to receiving waters. The time schedule for completion of this action will be required under a separate Order.
4. On 26 September 1994, the Central Valley Water Board issued Order No. 94-259 classifying the unlined landfill waste management unit at the Facility as a Class III unit for the discharge of municipal solid waste. This Order continues to classify the landfill units as Class III units in accordance with Title 27.
5. The existing landfill unit authorized by this Order is described as follows:

<u>Unit</u>	<u>Area</u>	<u>Liner/LCRS¹</u>	<u>Components²</u>	<u>Unit Classification & Status</u>
#1	43 acres	unlined		Class III, closed
Extension of Unit# 1 ³	1.6 acres	unlined		Class III, closed

¹ LCRS – Leachate collection and removal system

² All liner systems are composite liner systems unless otherwise noted

³ The existing landfill Unit#1 is extended 1.6 acres to address waste discovered outside of original landfill footprint. See Finding# 2 for more information.

6. On-site facilities at the Corral Hollow Sanitary Landfill currently include: a landfill closure cover, shallow and deep aquifer groundwater monitoring networks, an unsaturated

(vadose) zone soil gas sampling network, an active landfill gas extraction system, and a landfill gas flare.

7. On 9 October 1991, the United States Environmental Protection Agency (USEPA) promulgated federal MSW regulations under the Resource Conservation and Recovery Act (RCRA), Subtitle D. These regulations are under 40 Code of Federal Regulations section 258, and are hereafter referred to as either "Subtitle D" in reference to the RCRA federal law that required the regulations or "40 C.F.R. section 258.XX". These regulations apply to all California Class II and Class III landfills that accept MSW. State Water Board Resolution 93-62 requires the Central Valley Water Board to implement in WDRs for MSW landfills the applicable provisions of the federal MSW regulations that are necessary to protect water quality, and in particular the containment provisions and the provisions that are either more stringent or that do not exist in Title 27.
8. This Order implements the applicable regulations for discharges of solid waste to land through Prohibitions, Specifications, Provisions, and monitoring and reporting requirements. Prohibitions, Specifications, and Provisions are listed in Sections A through H of these WDRs below, and in the Standard Provisions and Reporting Requirements (SPRRs) dated January 2012 which are part of this Order. Monitoring and reporting requirements are included in the Monitoring and Reporting Program (MRP) R5-2013-XXXX and in the SPRRs. In general, requirements that are either in regulation or otherwise apply to all MSW landfills are considered to be "standard" and are therefore in the SPRRs. Any site-specific changes to a requirement in the SPRRs are included in the applicable section (A through H) of these WDRs, and the requirement in the WDRs supersedes the requirement in the SPRRs.
9. Title 27 contains regulatory standards for discharges of solid waste promulgated by the State Water Board and the California Department of Resources Recovery and Recycling (CalRecycle). In certain instances, this Order cites CalRecycle regulatory sections. Title 27, section 20012 allows the Central Valley Water Board to cite CalRecycle regulations from Title 27 where necessary to protect water quality provided it does not duplicate or conflict with actions taken by the Local Enforcement Agency in charge of implementing CalRecycle's regulations.

WASTE CLASSIFICATION

10. The Facility began operations as a solid waste disposal site in the 1950's. The landfill was operated by the City of Tracy from 1946 until 1991. The Discharger began operating the landfill in 1991 as a Class III landfill. The Discharger ceased accepting waste in 1995 and formal closure was completed in 1996.
11. On 26 September 1994, the Central Valley Water Board issued Order No. 94-259 classifying the landfill waste management unit at the Facility as a Class III unit for the discharge of municipal solid waste. The additional 1.6 acre refuse area that was

identified in 2007 was determined to contain municipal solid waste and is considered an extension of the unlined WMU. This Order continues to classify extended landfill unit as a Class III unit in accordance with Title 27.

SITE DESCRIPTION

12. The Corral Hollow Sanitary Landfill is a closed, Class III, municipal solid waste landfill in San Joaquin County. The landfill was operated by the City of Tracy from 1946 until 1991. Since 1991 it has been operated and maintained by San Joaquin County Department of Public Works. Municipal solid waste at the Facility resides on San Joaquin County and Caltrans property. The landfill is on the alluvial fan at the mouth of Corral Hollow Creek at the base of the eastern side of the Coast Range. The nearest surface water is Corral Hollow Creek, which is adjacent to the southeastern boundary of the landfill.
13. Land uses within one mile of the Facility include transportation (interstate freeway) to the north, grazing to the south, agriculture and low density housing, and transportation (interstate freeway) to the east, and grazing to the west. A recent groundwater well survey conducted by the County indicated that there is one active public (Well# 21), two active industrial (Well# 22 and #25), and one active irrigation (Well# 12) supply wells within one mile of the Facility as shown in Attachment C.
14. Past drilling and geologic investigations at the site suggest that the landfill is underlain by recent alluvium, Quaternary stream terrace deposits, and relatively unconsolidated sedimentary rock of the Plio-Pleistocene age Turlock Formation. Lithologies within these three units are similar, and include assemblages of clays, silts, sands, and gravels. The Corcoran Clay member of the Corcoran Formation (also referred to as the Turlock Formation) has been identified in exploratory boreholes drilled around the northern third of the landfill. The Corcoran Formation is characterized as moderately to high plastic clays, and mixtures of clays with silts, sands, and gravels.
15. Based on a site-specific seismic analysis, the controlling maximum probable earthquake (MPE) for the site is a moment of magnitude 6.9 event along the Coast Range Central Valley fault, segment 7 (GV7) at a closest rupture distance of 1.2 kilometers from the site. It is estimated that a MPE event would produce a peak ground acceleration of 0.56 g at the site with a return period of 100 years.
16. The Facility receives an average of 12.03 inches of precipitation per year and the mean pan evaporation is 97.48 inches per year as measured at the Tracy Pumping Plant Station.
17. The 100-year, 24-hour precipitation event for the Facility is estimated to be 3.53 inches, based on the National Oceanic and Atmospheric Administration (NOAA 2012) Atlas 14, Volume 6, Version 2 for nearby Tracy Airport.

18. The waste management facility is not within a 100-year flood plain based on the Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Map (FIRM), Community-Panel Number 06077C0740F effective 16 October 2009. The Discharger submitted a letter dated 2 November 2012 certifying that the Facility complies with Subtitle D requirements.
19. Storm water sedimentation basins are located northwest and southeast of the landfill as shown on Attachment B. The basins detain storm water for sedimentation control during the rainy season and are normally dry during the summer months. The southeast sedimentation basin during overflow conditions can discharge to Corral Hollow Creek. The Facility is permitted (WDID# 5S39I005575) to discharge storm water to surface waters under a separate WDRs 97-03-DWQ Order, *Waste Discharge Requirements for Discharges of Storm Water Associated with Industrial Activities* (NPDES General Permit CAS000001).

SURFACE WATER AND GROUNDWATER CONDITIONS

20. The *Water Quality Control Plan for Sacramento and San Joaquin River Basins, Fourth Edition* (hereafter Basin Plan), designates beneficial uses, establishes water quality objectives, and contains implementation plans and policies for all waters of the basin.
21. Surface water drainage from the site is to a retention pond or to other lower elevation features on site. Overflow from these features, if it were to occur, discharges to Corral Hollow Creek, a tributary of the San Joaquin River. Corral Hollow Creek is an intermittent stream that flows toward the San Joaquin River. However, the flow ceases during summer months into the alluvium south of Tracy.
22. The designated beneficial uses of the San Joaquin River, as specified in the Basin Plan, are municipal and domestic supply; agricultural supply; industrial service supply; industrial process supply; and water contact recreation.
23. The first encountered groundwater ranges from about 12 feet to 65 feet below the native ground surface. This shallow perched aquifer is found beneath the northeast and east side of the landfill property. This aquifer is not found west of the landfill. Groundwater elevations range from about 228 feet MSL to 237 feet MSL.
24. Monitoring data indicate upgradient groundwater quality for first encountered groundwater has electrical conductivity (EC) ranging between 360 and 1730 micromhos/cm, with total dissolved solids (TDS) ranging between 64 and 811 milligrams per liter (mg/L).
25. The direction of shallow perched groundwater flow varies due to groundwater mounding at groundwater monitoring well SB-1. However, there are indications of shallow groundwater flowing northeasterly from the Facility due to groundwater elevation monitoring in wells MW-9A through MW-11A located offsite. The estimated average

groundwater gradient is approximately 0.04 feet per foot. The estimated average groundwater velocity is 11.16 feet per year.

26. A deep aquifer exists from about 300 feet to 350 feet below the native ground surface. Groundwater elevations range from about -39 feet MSL to -57 feet MSL.
27. Monitoring data indicate upgradient groundwater quality in the deep aquifer groundwater has EC ranging between 316 and 1624 micromhos/cm, with TDS ranging between 951 and 1100 mg/L.
28. The direction of deep aquifer groundwater flow is generally toward the northeast. The estimated average groundwater gradient is approximately 0.005 feet per foot. The estimated average groundwater velocity is 1.39 feet per year.
29. The designated beneficial uses of the groundwater, as specified in the Basin Plan, are domestic and municipal water supply, agricultural supply, and industrial supply.

GROUNDWATER AND UNSATURATED ZONE MONITORING

30. The existing groundwater monitoring system includes seven wells screened in the shallow, perched aquifer on the eastern side of the landfill. These wells are identified as SB-1, MW-4, MW-5, MW-8, MW-9A, MW-10A, and MW-11A. MW-9A through MW-11A were installed in 2012 as evaluation monitoring wells to determine the extent of off-property shallow groundwater impacts. Three deep aquifer wells were also screened below 250 feet bgs, MW-1, MW-2, and MW-3. However, groundwater has not been present in these wells since 1990. In 2003 two replacement deep aquifer wells MW-6 and MW-7 were installed at 385 and 330 feet bgs respectively. Currently, the Discharger's detection monitoring program for shallow and deep groundwater monitoring at the landfill meets the requirements contained in Title 27. However, the monitoring system may require additional wells as more groundwater evidence of impacts is developed. Attachment B shows the locations of the groundwater monitoring wells.
31. Volatile organic compounds (VOCs) are often detected in a release from a MSW landfill and are often associated with releases of landfill gas rather than leachate. Since volatile organic compounds are not naturally occurring and thus have no background value, they are not amenable to the statistical analysis procedures contained in Title 27 for the determination of a release of wastes from a landfill unit. Title 27, sections 20415(e)(8) and (9) allows the use of a non-statistical evaluation of monitoring data that will provide the best assurance of the earliest possible detection of a release from a landfill unit in accordance with Title 27, sections 20415(b)(1)(B)2-4. However, Title 27 does not specify a specific method for non-statistical evaluation of monitoring data.
32. 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.

33. 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.
34. 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).
35. The Discharger submitted a Water Quality Protection Standard (WQPS) report on 29 December 1993 proposing statistical data analysis methods to calculate concentration limits for each monitored constituent in accordance with Title 27. The WQPS report proposed to use intrawell data analysis to calculate tolerance limits for the monitored constituents. The WQPS and approved data evaluation methods are included in MRP R5-201X-XXXX.
36. The existing unsaturated zone monitoring consists of seven landfill gas monitoring wells GW-1 through GW-7, located along the perimeter of the landfill. Each gas monitoring well is monitored through one of three probes installed at shallow, middle, and deep elevations for fixed gases quarterly. Gas samples are collected from one probe at each well and analyzed for volatile organic compounds (VOCs) semiannually. VOCs are regularly detected in landfill gas (LFG) samples collected and are partitioning into groundwater beneath the site. All shallow groundwater wells have been affected by LFG emanating from the WMU.

GROUNDWATER CONDITIONS (OR DEGRADATION AND CORRECTIVE ACTION)

37. In the fourth quarter of 1991, VOCs (Trichlorofluoromethane and Tetrachloroethene) were first detected in groundwater samples collected from MW-5 (shallow aquifer), and were confirmed in February 1992. In 1995, a corrective action plan (CAP) was implemented which included the closure and final cover construction for the landfill.
38. In 1996, closure was complete, including the installation of LFG monitoring wells. Monitoring of these wells indicated combustible gas above the regulatory limit of 5%.
39. The fourth quarter 2000 monitoring results showed the concentration of PCE was 5.56 µg/l, while the concentration of vinyl chloride was 0.576 µg/l. Other VOCs detected in the fourth quarter of 2000 include trichlorofluoromethane, dichlorodifluoromethane, acetone, benzene, chloroform, 1,1-dichloroethane, cis-1,2-dichloroethylene, 1,2-dichloropropane, methylene chloride, trichloroethylene, methyl tert-butyl ether (MTBE), and o-xylene. Other constituents noted to have an increasing trend at monitoring well MW-5 were electrical conductivity, total dissolved solids, and chloride.
40. An evaluation of concentrations of VOC compounds in landfill gas at the Corral Hollow Sanitary Landfill indicated that the impact to groundwater may be the result of diffusion of VOCs from the gaseous phase to shallow groundwater (The IT Group, July 2000).
41. In 2001, a LFG collection system was installed as a corrective action (source removal) to prevent further VOC impacts, as well as to prevent offsite migration of LFG. Effectiveness of a LFG system is indicated by the absence of landfill gas at the perimeter monitoring wells and prevention of further VOC impacts.
42. In 2003 deep-aquifer monitoring wells MW-6 and MW-7 were installed to replace MW-1, MW-2, and MW-3 since deep groundwater levels dropped and these three wells went dry. Also, an investigation of off-site contamination and the effect on water quality parameters in MW-4 was initiated due to an increasing trend in Nitrate as Nitrogen and a decreasing trend in pH.
43. In late 2003 the drainage ditch adjacent to the eastern access road was improved to reduce ponding and minimize infiltration along the ditch.
44. In September 2005, the County investigated to determine if refuse was present below the drainage ditch, the access road, and east of the road at the eastern edge of the landfill. Refuse was found below the ditch and the final closure cover was found not to extend to the ditch.
45. In early 2006, improving trends in water quality at MW-4 were noted, apparently beginning in late 2004. The County believes that this is the result of improvements completed in late 2003 to the drainage ditch along the east side of the landfill that eliminated ponding.

46. In February 2006, CalRecycle (previously named the CIWMB) required additional investigation of the closure cap and refuse on the eastern edge of the landfill footprint.
47. In March 2006, the County formally submitted the results of the investigation and a proposed plan to upgrade and extend the closure cap adjacent to the access road to the Local Enforcement Agency (LEA) and CalRecycle.
48. In October 2006, the County proposed a Phase 2 investigation of the extent of closure cap, incorporating comments from the LEA and CalRecycle.
49. In December 2006, Central Valley Water Board staff sent a Notice of Violation for VOCs in groundwater at monitoring well MW-5 (present since 1991), and directed the County to perform evaluation monitoring.
50. In mid-January 2007, the County submitted a revised Phase 2 plan to further define the edge of closure cap and the extent of refuse along the eastern edge of the landfill, addressing the comments from CalRecycle and Central Valley Water Board staff.
51. In late January 2007, the County submitted a proposal to do remedial action along the eastern edge of the landfill footprint in response to the Notice of Violation received in December 2006. On 9 March 2007, Central Valley Water Board staff issued a second violation letter for the VOCs present in groundwater since 1991 at monitoring well MW-5.
52. In March 2007, the County submitted an Evaluation Monitoring Program (EMP) work plan in response to the directive by Central Valley Water Board staff to further assess the nature and extent of potential offsite migration of landfill gas in the vadose zone, and VOCs and chloride in the shallow aquifer. The EMP included the installation of two permanent groundwater monitoring wells, and groundwater and vadose zone soil gas sampling at nine temporary borings in the shallow aquifer outside County property.
53. In a letter dated 11 April 2007 Board staff approved the EMP. However, the County requested a stay to the EMP in lieu of additional corrective action. The County stated that LFG was the cause of the continued groundwater impacts and that additional extraction wells installed adjacent to the northeastern property boundary would likely remediate the impacts. Central Valley Water Board staff approved the stay to the EMP.
54. On 16 August 2007, in conjunction with Caltrans, the County performed a cursory investigation of the Caltrans property adjacent to the landfill. Refuse was found that was consistent with normal household refuse placed during normal landfill operations.
55. On 17 August 2007, the County fully delineated the extent of refuse within County and Caltrans property. The County estimated the area of uncovered refuse at approximately 1.3 acres of County property and 0.6 acres of Caltrans property.

56. In a letter dated 27 August 2007, CalRecycle staff directed the County and Caltrans to cover the refuse in both the Caltrans and County property according to Title 27 in a common construction project. Central Valley Water Board staff reaffirmed this directive.
57. In November 2007, an EMP was conducted, consisting of exploring for the presence of shallow aquifer groundwater along the northern and southern boundaries of the landfill. The purpose of this EMP was to extend the shallow aquifer monitoring program to the west to determine the extent of the impacts (if any) in that direction. Several boreholes were drilled along the boundary west of monitoring well MW-5 on the north and MW-4 on the south. The investigation encountered a shallow groundwater aquifer approximately 400 feet west of MW-5, and monitoring well MW-8 was installed at that location. No shallow aquifer groundwater was detected further west than MW-8. On the southern boundary of the landfill, the exploration borings did not encounter the shallow groundwater aquifer to the west of MW-4 and therefore no new shallow monitoring well was installed on that side of the landfill.
58. On 14 January 2008, VOCs were detected in monitoring well MW-8. The compounds and concentrations detected indicate that the source of ground water contamination emanates from an area near MW-5, most likely from LFG not captured by the existing LFG system, which includes the area without a final cover. The County proposed to install three additional LFG wells in the in the area presently without a final cover.
59. In early 2008 the Discharger submitted a Conceptual Closure Design, showing closure with GCL under a vegetative layer for Discharger property only. On January 30, 2008, Board Staff issued a letter to the Discharger and to Caltrans reaffirming that the both Discharger and Caltrans areas should be closed in a single project. On April 1, 2008, the Discharger submitted an addendum to the Closure and Postclosure Maintenance Plans. The addendum only addressed closure and postclosure on Discharger property. The Discharger restated readiness to close over Discharger property as a separate project.
60. On 10 April 2008, a new subsurface perimeter LFG migration monitoring well (GW-1A) was installed to replace well GW-1. Replacement was required because the deepest probe of the original GW-1 was found submerged, thereby preventing monitoring of offsite migration at that probe. Well GW-1A's installation allows multi-depth monitoring with a shallow, intermediate, and deep probe.
61. In the Third Quarterly Report of 2008, the increase in alkalinity in MW-4 and MW-5 above the established concentration limits was reported. However, in the third quarter 2010, this condition was seen only at monitoring well SB-1.
62. In December 2008, five new LFG extraction wells were installed. The additional wells were placed to control LFG impacts to groundwater near MW-5. The vacuum at these wells was set at -0.1 in. water column (w.c.). Vacuum applied to these wells has been gradually increased. Since October 2009, the vacuum on the wells has been set to -0.3 in. w.c. The concentration of methane from the gas monitoring wells remains below 2%.

Continuing to collect low-methane gas from these wells reduces the methane content of the LFG reaching the flare station, inhibiting the ability of the flare to maintain proper temperature.

63. On 22 February 2011, a meeting was held at Central Valley Water Board offices attended by the County, and the Central Valley Water Board. An impending Order pursuant to Water Code section 13267 was discussed. The County and Caltrans received a draft of this Order on or about 17 June 2011.
64. In a letter dated 28 June 2011, the County stated it had reached agreement with CalTrans to participate in a single project to extend the closure cover over the refuse on both properties.
65. On 7 July 2011, the County and Caltrans both received a Water Code section 13267 Order to submit plans to extend the closure cap over the over the areas of refuse identified outside of the landfill footprint. The Order also required the County to submit an Evaluation Monitoring Program work plan to characterize the nature and extent of shallow groundwater impacted from a release of the WMUs. The work plan required a minimum of three groundwater monitoring wells.
66. On 30 August 2011, the County and Caltrans signed a Memorandum of Understanding agreeing to allow the County access to Caltrans property to install groundwater monitoring wells required in the Order, and that the extension closure cap would be installed over both properties in a single project.
67. On 10 October 2011, the County drilled three temporary borings offsite to assess the extent of the release from the WMUs as required by the Order. VOCs were detected in the grab groundwater samples collected from the three temporary wells, and according to the approved work plan, the County initiated step out borings to define the VOC plume. The three initial temporary borings were abandoned per San Joaquin County guidelines.
68. During February 2012, the County advanced three step-out borings to fulfill the requirements of the EMP. Three borings were constructed as permanent groundwater monitoring wells MW-9A through MW-11A. Groundwater samples were collected and analyzed for VOCs. Sampling results indicated that several VOCs were detected at low concentrations in all three step-out wells.
69. In a letter dated 26 September 2012, Board staff issued a Notice of Violation requesting that the County provide a work plan to conduct additional off site investigation to define the VOC plume northeast of the site, to conduct a water supply well search within a 1-mile radius of the site, and to propose the installation of a minimum of two soil gas probes along the northern site boundary to monitor migrating landfill gas.
70. In a letter dated 29 October 2012 the County submitted a work plan proposing to conduct a water supply well search and install two soil gas probes. The letter also confirmed a

meeting between the County and Board staff on 17 October 2012 discussing the 26 September NOV and staff's request for further off-site investigation. The County insisted that additional work in the northeast direction to further define the plume would not affect the approach to corrective action. Regional Board staff agreed that the Discharger could proceed to evaluate corrective action without further defining the extent of the plume. A complete EMP Report or Engineering Feasibility Study (EFS) to evaluate corrective action measures has not been submitted and is required under the 13267 Order.

LANDFILL GAS EXTRACTION SYSTEM

71. Forty-four landfill gas extraction wells have been installed vertically to approximately five feet above the base of the refuse. The extracted landfill gas is routed to a blower/flare facility located at the southern end of the landfill. Additional gas extraction wells will be installed based on the effectiveness of the corrective action proposed by the Discharger to remediate off-property discharges of contaminants of concern.
72. Gas condensate sumps are installed along low points of the piping and gas condensate is collected into one holding tank located near the blower/flare station. Accumulation of liquid within the holding tank triggers a pump that routes the condensate liquid to the flare for evaporation.

CONSTRUCTION AND ENGINEERED ALTERNATIVE

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

75. Water Code section 13360(a)(1) allows the Central Valley Water Board to specify the design, type of construction, and/or particular manner in which compliance must be met in waste discharge requirements or orders for the discharge of waste at solid waste disposal facilities.
76. The unsaturated zone monitoring system consists of 7 soil gas wells GW-1 thru GW-7 installed in the vadose zone. The wells are monitored for combustible gas quarterly and one probe in each well is sampled for VOCs semiannually.
77. The 26 October 2012 ROWD includes a stability analysis for final cover extension pursuant to Title 27, section 21750(f)(5). The Discharger performed a slope stability analysis for the proposed final cover extension. The slope stability analysis determined that for an earthquake of magnitude 6.5 to 7.5 and peak ground acceleration in rock of 0.56g the maximum expected displacement in the cover is approximately 10.1 inches. RCRA Subtitle D (258) provides a maximum allowable permanent displacement of 6 to 12 inches. The Discharger's stability analysis includes components to demonstrate the integrity of the landfill final cover extension under both static and dynamic conditions throughout the landfill's closure period and post-closure maintenance period. The stability analysis demonstrates that the structural components of landfill cover extension will withstand the forces of the Maximum Probable Earthquake (MPE) without failure of the landfill cover extension.

LANDFILL CLOSURE

78. Title 27, section 21090 provides the minimum prescriptive final cover components for landfills consisting of, in ascending order, the following layers:
- a. Two-foot soil foundation layer.
 - b. One-foot soil low flow-hydraulic conductivity layer, less than 1×10^{-6} cm/s or equal to the hydraulic conductivity of any bottom liner system.
 - c. Geomembrane layer (this layer is required for composite-lined landfills for equivalency to bottom liner).
 - d. One-foot soil erosion resistant/vegetative layer.
79. Title 27 allows engineered alternative final covers provided the alternative design will provide a correspondingly low flow-through rate throughout the post-closure maintenance period.
80. The Discharger submitted a 26 October 2012 Addendum to the *Closure and Postclosure Maintenance Plan* for closure of waste discovered outside the previously closed landfill footprint and post-closure maintenance of all landfill units at the Facility.
81. During the fall of 1995, the county constructed a final cover over 43 acres of the unlined WMU in compliance with WDR Order No. 94-259. The final cover is as prescribed in Title 27 and consists of a foundation layer of soil that varies from 2-feet to 6-feet thick. A low-

permeability soil layer that is a minimum of 1-foot thick overlies the foundation layer. The low-permeability soil is an engineered mixture of selected soil and red clay. The uppermost layer is a nominal 1-foot thick vegetative layer of compacted soil that was hyroseeded after preparation.

82. The Discharger proposes an engineered alternative final cover for approximately 1.6 acres of the closure cover extension consisting of, in ascending order, the following layers:
 - a. Two-foot soil foundation layer.
 - b. A 60 mil double-sided textured LLDPE geomembrane.
 - c. A 200 mil geocomposite drainage net (HDPE core with non-woven polyester or polypropylene geotextile on either side.
 - d. Two-foot vegetative erosion control soil layer.
83. The Discharger has demonstrated that the engineered alternative final cover meets the performance goals of Title 27 and that it is equivalent to the prescriptive standard.
84. Side slopes for the closed landfill will be sloped at maximum 3H:1V and will include 15-foot wide benches every 50 vertical feet as required by Title 27.
85. Title 27 section 21090(a) requires that a slope stability analysis be performed for any final cover having a geosynthetic component. The Discharger performed a slope stability analysis for the proposed final cover extension. The Discharger's static and dynamic stability analysis demonstrates that the side slopes of the final cover will be stable in accordance with the requirements of Title 27.
86. Pursuant to Title 27, section 21090(e)(1), this Order requires a survey of the final cover following closure activities for later comparison with iso-settlement surveys required to be conducted every five years.
87. This Order approves the proposed final cover extension and accepts the final closure and post-closure maintenance plan, design documents, and CQA plan associated with the closure of the waste discovered outside the original closure area.

LANDFILL POST-CLOSURE MAINTENANCE

88. The Discharger submitted a 26 October 2012 Addendum to the *Closure and Postclosure Maintenance Plan* for closure and post-closure maintenance of all landfill units. The plan includes inspection, maintenance, and monitoring of the landfill during the post-closure maintenance period, and includes a post-closure maintenance cost estimate for the entire Facility. Inspection and maintenance will include the condition of the final cover, drainage features, LCRS, groundwater monitoring wells, unsaturated zone monitoring points, access roads, landfill gas system, groundwater corrective action system, and site security.

The plan will be implemented for a minimum period of 30 years or until the waste no longer poses a threat to environmental quality, whichever is greater.

89. Once every five years during the post-closure maintenance period, aerial photographic maps of the closed landfill area will be made to identify and evaluate landfill settlement. Iso-settlement maps will be prepared to determine the amount of differential settlement occurring over the previous five years. Pursuant to Title 27, section 21090(e)(2), this Order requires iso-settlement maps to be prepared and submitted every five years.
90. The completed final cover will be periodically tested for damage or defects by monitoring surface emissions pursuant to California Code of Regulations, title 17, section 95471(c) and Title 27, section 21090(a)(4)(A). Defects will be repaired and tested for adequacy based on the closure CQA Plan.

FINANCIAL ASSURANCES

91. Title 27, sections 21820 and 22206 require a cost estimate for landfill closure. The cost estimate must be equal to the cost of closing the landfill at the point in its active life when the extent and manner of operation would make closure the most expensive. When closing units in phases, the estimate may account for closing only the maximum area or unit of a landfill open at any time. The Discharger's 26 October 2012 *Closure and Post Closure Maintenance Plan* includes a cost estimate for landfill closure. The lump sum estimate is for the cost to close largest future area needing closure at any one time. The total amount of the closure cost estimate in 2012 dollars is \$0.76 million. This Order requires that the Discharger maintain financial assurance with the California Department of Resources Recycling and Recovery (CalRecycle) in at least the amount of the closure cost estimate. As of 2012, the Discharger continues to use a dedicated Pledge of Revenues as financial assurances in lieu of maintaining a balance in a closure fund. Title 27, sections 21840 and 22211 requires a cost estimate for landfill post-closure maintenance. The Discharger's 26 October 2012 *Closure and Post Closure Maintenance Plan* includes a cost estimate for landfill post-closure maintenance. The amount of the cost estimate for post-closure maintenance in 2012 dollars is \$3.1 million. This Order requires that the Discharger maintain financial assurance with CalRecycle in at least the amount of the post-closure maintenance cost estimate adjusted annually for inflation. As of 2012, Discharger continues to use a dedicated Pledge of Revenues as financial assurances in lieu of maintaining a balance in a post-closure maintenance fund.
92. Title 27, section 22221 requires a cost estimate for corrective action of all known or reasonably foreseeable releases. The Discharger submitted a 23 May 2012 cost estimate of \$902,360 for corrective action of all known or reasonably foreseeable releases. This Order requires that the Discharger maintain financial assurance with the CalRecycle in at least the amount of the cost estimate adjusted annually for inflation. As of 2012, Discharger continues to use a dedicated Pledge of Revenues as financial assurances in lieu of maintaining a balance in a corrective action fund.

CEQA AND OTHER CONSIDERATIONS

93. The action to revise waste discharge requirements for this existing facility is exempt from the provisions of the California Environmental Quality Act (Pub. Resources Code, § 21000 et seq.) ("CEQA") in accordance with California Code of Regulations, title 14, section 15301.

94. This Order implements:

- a. *The Water Quality Control Plan for the Sacramento River and San Joaquin River Basins, Fourth Edition;*
- b. The prescriptive standards and performance goals of California Code of Regulations, title 27, section 20005 et seq., effective 18 July 1997, and subsequent revisions;
- c. State Water Board Resolution 93-62, *Policy for Regulation of Discharges of Municipal Solid Waste*, adopted 17 June 1993, and revised on 21 July 2005.
- d. The applicable provisions of Title 40 C.F.R. section 258 "Subtitle D" federal regulations as required by State Water Board Resolution 93-62.

95. Based on the threat and complexity of the discharge, the Facility is determined to be classified 2-B as defined below:

- a. Category 2 threat to water quality, defined as, "*Those discharges of waste that could impair the designated beneficial uses of the receiving water, cause short-term violations of water quality objectives, cause secondary drinking water standards to be violated, or cause a nuisance.*"
- b. Category B complexity, defined as, "*Any discharger not included in Category A that has physical, chemical, or biological treatment systems (except for septic systems with subsurface disposal), or any Class 2 or Class 3 waste management units.*"

96. Water Code section 13267(b) provides that:

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

97. The technical reports required by this Order and the attached Monitoring and Reporting Program R5-201X-XXXX are necessary to assure compliance with these waste discharge

requirements. The Discharger owns and operates the Facility that discharges the waste subject to this Order.

PROCEDURAL REQUIREMENTS

98. All local agencies with jurisdiction to regulate land use, solid waste disposal, air pollution, and to protect public health have approved the use of this site for the discharges of waste to land stated herein.
99. The Central Valley Water Board notified the Discharger and interested agencies and persons of its intent to prescribe waste discharge requirements for this discharge, and has provided them with an opportunity for a public hearing and an opportunity to submit their written views and recommendations.
100. The Central Valley Water Board, in a public meeting, heard and considered all comments pertaining to the discharge.

IT IS HEREBY ORDERED, pursuant to Water Code sections 13263 and 13267, that WDRs Order 5-01-176 is rescinded except for purposes of enforcement, and that San Joaquin County Department of Public Works, its agents, successors, and assigns, in order to meet the provisions of Division 7 of the Water Code and the regulations adopted thereunder, shall comply with the following:

A. PROHIBITIONS

1. The discharge of "*hazardous waste*" or "*designated waste*" is prohibited. For the purposes of this Order, the term "*hazardous wastes*," is as defined in California Code of Regulations, title 22, section 66261.1 *et seq.*, and "*designated waste*" is as defined in Title 27.
2. The Discharger shall comply with all Standard Prohibitions listed in Section C of the Standard Provisions and Reporting Requirements (SPRRs) dated January 2012 which are attached hereto and made part of this Order by reference.

B. DISCHARGE SPECIFICATIONS

1. The Discharger shall not accept any new waste at this landfill facility.
2. The Discharger shall comply with all Standard Discharge Specifications listed in Section D of the SPRRs dated January 2012 which are attached hereto and made part of this Order by reference.

C. FACILITY SPECIFICATIONS

1. The Discharger shall comply with all Standard Facility Specifications listed in Section E of the SPRRs dated January 2012 which are part of this Order.

D. CONSTRUCTION SPECIFICATIONS

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

E. CLOSURE AND POST-CLOSURE MAINTENANCE SPECIFICATIONS

1. The Discharger shall submit a final or partial final closure and post-closure maintenance plan sixty days before the completion of the closure construction of the extension cover in accordance with requirements in Section G of the Standard Closure and Post-Closure Specifications in the SPRRs.
2. The Discharger shall close all uncovered landfill waste with a final cover as proposed in the 26 October 2012 Addendum to the Closure and Postclosure Maintenance Plan (PCPCMP) and as approved by this Order. The components of the approved final cover as proposed in the PCPCMP are listed in Finding 82.
3. The Discharger shall obtain revised WDRs prior to closure with any other final cover design than the design or designs approved in this Order.
4. The Discharger shall close the landfill with side slopes at steepness of 3H:1V or less, and top deck areas shall be sloped at three percent or greater.
5. The Discharger shall install an active landfill gas extraction system for the closed landfill area during landfill closure, and landfill gas shall be extracted from closed landfill area until such time that the landfill gas is no longer a threat to water quality as documented by the Discharger and approved by the Executive Officer.

6. The Discharger shall extend the final cover beyond the extent of the waste and seal the edges of the final cover such that the final cover adequately prevents surface and subsurface flowing liquids from contacting waste confined in the landfill units.
7. The Discharger shall test the critical interfaces of the final cover in a laboratory to ensure minimum design shear strengths are achieved and include the results in the final documentation report.
8. The Discharger shall ensure that the vegetative/erosion resistant layer receives necessary seed, binder, and nutrients to establish the vegetation proposed in the final closure plan. The Discharger shall install necessary erosion and sedimentation controls to prevent erosion and sediment in runoff from the closed landfill during the period the vegetation is being established.
9. The Discharger shall comply with all Standard Closure and Post-Closure Specifications listed in Section G and all Standard Construction Specifications that are applicable to closure in Section F of the SPRRs dated January 2012 which are attached hereto and made part of this Order by reference.

F. FINANCIAL ASSURANCE SPECIFICATIONS

1. The Discharger shall obtain and maintain assurances of financial responsibility with CalRecycle for closure and post-closure maintenance for the landfill in at least the amounts described in Findings 91 and 92, adjusted for inflation annually. A report regarding financial assurances for closure and post-closure maintenance shall be submitted to the Central Valley Water Board by **1 June of each year**. This may be the same report that is submitted to CalRecycle for this purpose. If CalRecycle determines that either the amount of coverage or the mechanism is inadequate, then within 90 days of notification, the Discharger shall submit an acceptable mechanism to CalRecycle and the Central Valley Water Board for at least the amount of the approved cost estimate.
2. The Discharger shall update the closure and post-closure maintenance plan (PCPCMP) any time there is a change that will increase the amount of the closure and/or post-closure maintenance cost estimate. The updated PCPCMP shall be submitted to the Central Valley Water Board, the Local Enforcement Agency, and CalRecycle. The PCPCMP shall meet the requirements of Title 27, section 21769(b), and include a lump sum estimate of the cost of carrying out all actions necessary to prepare detailed design specifications, to develop the final closure and post-closure maintenance plan, and to carry out the first thirty years of post-closure maintenance. Reports regarding financial assurance required in F.1 above shall reflect the updated cost estimate.
3. The Discharger shall obtain and maintain assurances of financial responsibility with CalRecycle for initiating and completing corrective action for all known or reasonably

foreseeable releases from the landfill in at least the amount of the annual inflation-adjusted cost estimate described in Finding 91. A report regarding financial assurances for corrective action shall be submitted to the Central Valley Water Board by **1 June of each year**. This may be the same report that is submitted to CalRecycle for this purpose. If CalRecycle determines that either the amount of coverage or the mechanism is inadequate, then within 90 days of notification, the Discharger shall submit an acceptable mechanism to CalRecycle and the Central Valley Water Board for at least the amount of the approved cost estimate.

4. The Discharger shall comply with all Standard Financial Assurance Specifications listed in Section H of the SPRRs dated January 2012 which are attached hereto and made part of this Order by reference.

G. MONITORING SPECIFICATIONS

1. The Discharger shall comply with the detection monitoring program provisions of Title 27 for groundwater, surface water, and the unsaturated zone, and in accordance with MRP R5-201X-XXXX, and the Standard Monitoring Specifications listed in Section I of the SPRRs dated January 2012 which are attached hereto and made part of this Order by reference.
2. The Discharger shall, for any landfill unit in a corrective action monitoring program, comply with the corrective action monitoring program provisions of Title 27, MRP R5-201X-XXXX, and the Standard Monitoring Specifications listed in Section I of SPRRs dated January 2012 which are attached hereto and made part of this Order by reference.
3. The Discharger shall comply with the Water Quality Protection Standard as specified in this Order, MRP R5-201X-XXXX, and the SPRRs dated January 2012 which are attached hereto and made part of this Order by reference.
4. The concentrations of the constituents of concern in waters passing the Point of Compliance (defined pursuant to Title 27, section 20164 as a vertical surface located at the hydraulically downgradient limit of the landfill unit that extends through the uppermost aquifer underlying the unit) shall not exceed the concentration limits established pursuant to MRP R5-201X-XXXX.
5. For each monitoring event, the Discharger shall determine whether the landfill is in compliance with the Water Quality Protection Standard using procedures specified in MRP R5-201X-XXXX and the Standard Monitoring Specifications in Section I of the SPRRs dated January 2012 which are attached hereto and made part of this Order by reference.
6. The Discharger shall perform corrective action monitoring for delineation of the extent of the groundwater contamination plume originating from the landfill. Implementation

of corrective action to remediate discharge of waste constituents from plume contamination and a time schedule for completion of the corrective action will be required under a separate Order.

7. The Discharger shall comply with all Standard Monitoring Specifications and Response to a Release specifications listed in Sections I and J of the SPRRs dated January 2012 which are attached hereto and made part of this Order by reference.

H. PROVISIONS

1. The Discharger shall maintain a copy of this Order at the Facility, including the MRP R5-201X-XXXX and the SPRRs dated January 2012 which are part of this Order, and make it available at all times to facility operating personnel, who shall be familiar with its contents, and to regulatory agency personnel.
2. The Discharger shall comply with all applicable provisions of Title 27 and Subtitle D that are not specifically referred to in this Order.
3. The Discharger shall comply with MRP R5-201X-XXXX, which is incorporated into and made part of this Order by reference.
4. The Discharger shall comply with the applicable portions of the *Standard Provisions and Reporting Requirements for Waste Discharge Requirements for Nonhazardous Solid Waste Discharges Regulated by Subtitle D and/or Title 27*, dated January 2012, which are attached hereto and made part of this Order by reference.
5. If there is any conflicting or contradictory language between the WDRs, the MRP, or the SPRRs, then language in the WDRs shall supersede either the MRP or the SPRRs, and language in the MRP shall supersede the SPRRs.
6. All reports required by this Order shall be submitted pursuant to Water Code section 13267.
7. The Discharger shall complete the tasks contained in these waste discharge requirements in accordance with the following time schedule:

Task

Compliance Date

A. Installation of landfill cover extension

The Discharger shall complete installation of landfill cover extension, associated ground water monitoring wells, gas extraction wells, gas probes, and related equipment and appurtenances and perform final CQA as described in Addendum to the Final Closure Plan dated 26 October 2012

1 September 2013

B. Final CQA documentation

The Discharger shall submit a Final CQA Documentation Report containing all reports submitted concerning the placement of the cover extension containment system. This report shall include at an minimum all documentation required under Title 27 §20324(d)(1), and shall show that the landfill cover extension was constructed as required by this Order.

1 November 2013

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

If, in the opinion of the Executive Officer, the Discharger fails to comply with the provisions of this Order, the Executive Officer may refer this matter to the Attorney General for judicial enforcement, may issue a complaint for administrative civil liability, or may take other enforcement actions. Failure to comply with this Order may result in the assessment of Administrative Civil Liability of up to \$10,000 per violation, per day, depending on the violation, pursuant to the Water Code, including sections 13268, 13350 and 13385. The Central Valley Water Board reserves its right to take any enforcement actions authorized by law.

Any person aggrieved by this action of the Central Valley Water Board may petition the State Water Board to review the action in accordance with Water Code section 13320 and California Code of Regulations, title 23, sections 2050 and following. The State Water Board must receive the petition by 5:00 p.m., 30 days after the date of this 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.

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 _____.

PAMELA C. CREEDON, Executive Officer

vkj