

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. R5-2008-0144

WASTE DISCHARGE REQUIREMENTS
FOR
STANISLAUS COUNTY DEPARTMENT OF ENVIRONMENTAL RESOURCES
FOR
OPERATION OF
FINK ROAD CLASS II AND CLASS III LANDFILLS
CLASS II SURFACE IMPOUNDMENTS
STANISLAUS COUNTY

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

1. The Stanislaus County Department of Environmental Resources (hereafter Discharger), owns and operates a municipal solid waste landfill about 3.5 miles west of Crows Landing, in Section 30, T6S, R7E, MDB&M, as shown in Attachment A, which is incorporated herein and made part of this Order.
2. The facility consists of one inactive unlined waste management Unit (LF-1) covering 18.3 acres, a lined Class III municipal solid waste Unit (LF-2) with seven cells covering 92.3 acres, and a lined Class II ash monofill Unit (LF-3) with six cells covering 37 acres. The facility includes 1.0-acre (SI-1) and 1.4-acre (SI-2) Class II surface impoundments for leachate from LF-3 and LF-2, respectively. The waste management units are shown in Attachment B, which is incorporated herein and made part of this Order. The facility is comprised of Assessor's Parcel Numbers (APN) 27-17-40.
3. The waste management units (WMUs) at Fink Road are described in the following table:

Unit	Classification	Liner Components (top to bottom)	Status
LF-1	Class III landfill	Unlined and no LCRS	Closed with final cover in 1997
LF-2	Class III landfill (Cell 1)	1 ft. operations layer, nonwoven fabric, 6 in. LCRS drainage layer, non woven fabric, 1 ft. low permeability soil layer ($K_S \leq 1 \times 10^{-6}$ cm/sec)	Operating with interim cover
LF-2	Class III landfill (Cell 2)	15 in. operations layer, nonwoven fabric, 6 in. LCRS drainage layer, 60-mil textural HDPE, 2 ft. low permeability soil layer ($K_S \leq 1 \times 10^{-7}$ cm/sec)	Operating with interim cover

Unit	Classification	Liner Components (top to bottom)	Status
LF-2	Class III landfill (Cell 3)	18 in. operations layer, nonwoven fabric, 6 in. LCRS drainage layer, 60-mil textural HDPE, GCL	Operating with interim cover
LF-2	Class III landfill (Cell 4)	24 in. operations layer, nonwoven fabric, 6 in. LCRS drainage layer, 60-mil textural HDPE, GCL, 12 in. low permeability soil layer ($K_S \leq 1 \times 10^{-6}$ cm/sec)	Operating
LF-3	Class II ash monofill (Cell 1)	12 in. soil operations layer, nonwoven fabric, 8 in. LCRS drainage layer, non woven fabric, 2 ft. low permeability soil layer ($K_S \leq 1 \times 10^{-6}$ cm/sec)	At capacity
LF-3	Class II ash monofill (Cell 2)	15 in. operations layer, nonwoven fabric, 6 in. LCRS drainage layer, 60-mil textural HDPE, 2 ft. low permeability soil layer ($K_S \leq 1 \times 10^{-7}$ cm/sec)	Operating
LF-3	Class II ash monofill (Cell3)	15-inch operations layer, nonwoven fabric, 6 in. LCRS, 60-mil textured HDPE, GCL, geocomposite drainage layer LCRS, 60-mil HDPE, GCL, sub-grade.	Operating
SI-1	Class II surface impoundment	80-mil HDPE, geonet, 80-mil HDPE, GCL	Operating
SI-2	Class II surface impoundment	80-mil HDPE, geonet, 80-mil HDPE, 2 ft. low permeability soil layer ($K_S \leq 1 \times 10^{-6}$ cm/sec)	Operating

4. Covanta Stanislaus, Inc. operates the Covanta plant, a waste-to-energy cogeneration facility at the Fink Road Landfill. The Covanta plant occupies a 16.5-acre area at the southwest corner of the site. The Covanta plant, constructed in 1988, generates electricity from combustion of municipal solid waste. Boiler ash generated as a combustion residue has been discharged to LF-3 since the fall of 1988. The addition of a lime-water mixture to de-acidify contaminated flue gases and the quenching of ashes with water at the Covanta plant results in generation of significant moisture within the boiler ash.
5. The facility was previously regulated under Waste Discharge Requirements (WDRs) Order No. R5-2004-0158 in conformance with Title 27 of the California Code of Regulations. This Order continues to regulate the facility in accordance with Title 27, CCR Section 20005, et seq. (Title 27).
6. 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 (Title 40, Code of Federal Regulations, Part 258), hereafter referred to as "Subtitle D". These regulations apply to all California Class II and Class III landfills which accept MSW.

7. The Discharger submitted a 17 October 2007 request, and a subsequent 21 February 2008 Report of Waste Discharge, for an amendment of the WDRs to discharge treated wood waste in LF-2. This is currently allowed in lined Class III landfills, as described in Section 25150.8 of the Health and Safety Code and Section 67386.11 of Title 22, CCR. This Order revises the WDRs to allow the disposal of treated wood waste in composite-lined Cell 4 of LF-2, and future Cells 5, 6, and 7 of LF-2. In addition, this Order requires that the County perform a Site Investigation into the cause of elevated concentrations of inorganic and organic constituents of concern in groundwater, as described further in later Findings of this Order. Based on the results of the Site Investigation, the County is required to submit a Feasibility Study, and Corrective Action Plan.

SITE DESCRIPTION

8. The site is within dissected alluvial fans at the western margin of the San Joaquin Valley. The elevation at this site ranges from 240 to 350 feet above mean sea level (MSL).
9. The measured hydraulic conductivity of the native soils underlying the LF-2 ranges between 1×10^{-9} and 1×10^{-2} cm/sec.
10. The maximum credible earthquake of moment magnitude (Mw) 6.8 on the Coast Range Central Valley (CRCV) fault at a distance of 10 k would produce a peak acceleration of 0.63 g. The Maximum Probable Earthquake (MPE) of Mw 6.5 also on the CRCV fault would produce a peak acceleration of 0.57 g
11. Land uses within 1,000 feet of the facility are energy generation (the Covanta plant) and agriculture, including grazing, row crops, and orchards.
12. The facility receives an average of 11 inches of precipitation per year as measured at the Newman Station. The mean pan evaporation is 108.12 inches per year as measured at the Los Banos Station.
13. The 100-year, 24-hour precipitation event is estimated to be 3.0 inches, based on the U.S. Department of Commerce, NOAA, Atlas 2.
14. The waste management facility is not within a 100-year flood plain based on the Federal Emergency Management Agency's (FEMA) digital Q3 flood maps.
15. There are 18 domestic, industrial, or agricultural groundwater supply wells within one mile of the site.

WASTE AND SITE CLASSIFICATION

16. The Discharger discharges nonhazardous solid waste, including municipal solid waste to LF-2, which is classified as a Class III waste management unit. These classified wastes may be discharged only in accordance with Title 27, CCR, Resolution No. 93-62, and the Code of Federal Regulations, Title 40, Part 258 as required by this Order.
17. The 92.3-acre LF-2 is used for the disposal of "nonhazardous solid wastes" including municipal solid waste, treated medical waste, and construction debris. These wastes are classified as "nonhazardous solid waste" or "inert waste" using criteria set forth in Title 27. LF-2 began receiving wastes in April 1993.
18. The Discharger discharges wastes containing greater than one percent (>1%) friable asbestos for disposal in LF-2. These wastes are classified as "hazardous" under Title 22 of the CCR. However, because these wastes do not pose a threat to groundwater quality, Section 25143.7 of the Health and Safety Code permits their disposal in any landfill that has WDRs that specifically permit the discharge, provided that the wastes are handled and disposed of in accordance with federal statutes and regulations. Asbestos wastes are handled and discharged in compliance with all applicable regulations.
19. The Discharger proposes to discharge treated wood waste in LF-2. Title 22, CCR defines "Treated wood" to mean wood that has been treated with a chemical preservative for purposes of protecting the wood against attacks from insects, microorganisms, fungi, and other environmental conditions that can lead to decay of the wood and the chemical preservative is registered pursuant to the Federal Insecticide, Fungicide, and Rodenticide Act (7 U.S.C. Sec. 136 and following). Section 67386.11 of Title 22 allows treated wood waste to be disposed in a composite-lined portion of a municipal solid waste landfill that is regulated by WDRs issued pursuant to the California Water Code provided that the landfill:
 - a. Comply with the prohibitions in Section 67386.3 of Title 22, which are:
 - i. Treated wood waste shall not be burned, scavenged, commingled with other waste prior to disposal, stored in contact with the ground, recycled without treatment (except as in iii, below), treated except in compliance with Section 67386.10, or disposed to land except in compliance with Section 67386.11.
 - ii. Any label or mark that identifies the wood and treated wood waste shall not be removed, defaced, or destroyed.

- iii. Treated wood waste may be recycled only by reuse when all of the following apply:
 - (1) Reuse is onsite.
 - (2) Reuse is consistent with FIFRA approved use of the preservative.
 - (3) Prior to reuse, treated wood waste is handled in compliance with Title 22, Division 4.5, Chapter 34 .
 - b. Ensure treated wood waste is managed at the landfill according to Title 22, Division 4.5, Chapter 34 prior to disposal.
 - c. Monitor the landfill for a release and cease discharge of treated wood waste at that portion of the landfill until corrective action results in cessation of the release.
 - d. Handle treated wood waste in a manner consistent with the applicable sections of the California Occupational Safety and Health Act of 1973.
20. The 37-acre LF-3 is used for the disposal of boiler ash from the Covanta plant.
21. The Covanta plant boiler ash contains soluble cadmium and lead measured by the California Waste Extraction Test and total lead concentrations that exceed Soluble Threshold Limit Concentrations and Total Threshold Limit Concentrations (STLC and TTLC) regulatory thresholds, respectively, for toxic and hazardous waste established by the Department of Toxic Substances Control (DTSC) and specified in Title 22, CCR. On 8 February 1990, DTSC approved a request to manage and classify the boiler ash as 'non-hazardous' because of mitigating characteristics. The boiler ash is a 'designated waste' because it has soluble constituents that exceed applicable water quality objectives.
22. The site characteristics where LF-3, the Class II WMU is located do not meet the siting criteria for a new Class II landfill contained in Title 27, Section 20250(a) and (b)(1). As such, the site is not suitable for operating new Units or lateral expansions of existing Units without the construction of additional waste containment features.

OPERATION OF FACILITIES

23. Boiler ash is transported by truck to LF-3. Due to quenching of the ash prior to discharge, the Discharger has implemented a load-checking plan to prevent the discharge of free liquid to LF-3.
24. LF-1 has been filled and closed with a final cover in 1997. LF-2 will reach capacity, at the earliest, by the year 2022. The total capacity of LF-1 and LF-2 is 6,632,000 cubic yards. LF-3 will reach its 2,030,000 cubic yard capacity, at the earliest, by the year 2033.
25. Surface impoundment SI-1 was reconstructed in 1999 to increase the storage capacity from 218,000 to 5 million gallons. During reconstruction the two-foot thick low-permeability layer was replaced with an engineered alternative as described in Finding 66.

SURFACE AND GROUNDWATER CONDITIONS

26. The *Water Quality Control Plan for the Sacramento River Basin and the San Joaquin River Basin, Fourth Edition* (hereafter Basin Plan), designates beneficial uses, establishes water quality objectives, and contains implementation plans and policies for all waters of the Basin.
27. Surface drainage for the northern quarter of the site is to the South Fork of Little Saldo Creek a tributary of the San Joaquin River. The remaining three quarters of the site drains to the east via a closed conduit under Interstate 5 and the California Aqueduct and thence via an open channel to Crow Creek, a tributary of the San Joaquin River. Both drainages are in the Delta-Mendota Canal Hydrologic Unit (541.10) of the San Joaquin River Basin. The designated beneficial uses of these surface waters, as specified in the Basin Plan, are municipal and domestic supply; agricultural supply; industrial process supply; water contact and non-contact water recreation; warm fresh water habitat; migration of aquatic organisms; spawning, reproduction, and/or early development; and wildlife habitat.
28. The first encountered groundwater under most of the site occurs in small perched zones that follow surface topography. Depths to groundwater range from 12 to 85 feet below native ground surface. Individual monitoring well groundwater elevation fluctuates from 15 feet seasonally to little or no seasonal changes. Groundwater elevations range from 200 feet MSL to 265 feet MSL.
29. Monitoring data indicates background groundwater quality has an average total dissolved solids (TDS) content of 391 milligrams per liter (mg/L) at MW-12, and 336 mg/L at MW-17.

30. The direction of groundwater flow is toward the northeast in the northern half of the site and to the east in the southern half of the site. The groundwater gradient ranges from 0.01 to 0.033 feet per foot.
31. The designated beneficial uses of the groundwater, as specified in the Basin Plan, are municipal and domestic supply, agricultural supply, and industrial supply.

GROUNDWATER MONITORING

32. The groundwater monitoring system consists of 13 monitoring wells, which monitor the three landfills and two surface impoundments. The unsaturated monitoring system consists of the following: LF-2 has two functional lysimeters under Cell 1, two lysimeters under Cell 2, and pan lysimeters under Cell 3 and Cell 4; LF-3 has 11 functional lysimeters under Cell 1 and three under Cell 2; and SI-2 has three lysimeters. The unsaturated zone is not monitored under LF-1 because it predates the unsaturated zone monitoring requirement and under SI-1 due to close proximity to groundwater. At LF-3 cell 3, the unsaturated zone is not monitored.
33. The Discharger's detection monitoring program for groundwater satisfies the requirements contained in Title 27.
34. Volatile organic compounds (VOCs) are often detected in a release from a landfill, and are the primary waste constituents detected in groundwater beneath a municipal solid waste landfill. 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 Unit.
35. Title 27 CCR Sections 20415(e)(8) and (9) provide for the non-statistical evaluation of monitoring data that will provide the best assurance of the earliest possible detection of a release from a Unit in accordance with Title 27 CCR Section 20415(b)(1)(B)(2)-(4). However, Title 27 CCR does not specify a specific method for non-statistical evaluation of monitoring data.
36. The Regional Water Board may specify a non-statistical data analysis method pursuant to Title 27 CCR Section 20080(a)(1). Section 13360(a)(1) of the California Water Code allows the Regional Water Board to specify requirements to protect underground 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.
37. In order to provide the best assurance of the earliest possible detection of a release of non-naturally occurring waste constituents from a Unit, this Order specifies a non-statistical method for the evaluation of monitoring data.

38. 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 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), indicates that a release of waste from a Unit has occurred. Following an indication of a release, verification testing will be conducted to determine whether there has been a release from the Unit, or there is a source of the detected constituents other than the landfill, or the detection was a false detection. Although the detection of one non-naturally occurring waste constituent above its MDL is sufficient to provide for the earliest possible detection of a release, 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.
39. The Discharger submitted a 10 July 2008 revised *Water Quality Protection Standard Report*. As required, the report proposed concentration limits for constituents of concern in groundwater. The report proposed intrawell concentration limits where each detection monitoring well serves as its own background well. Regional Water Board staff is reviewing the report. .

GROUNDWATER DEGRADATION AND CORRECTIVE ACTION

40. There has been a release of wastes from unlined LF-1 to groundwater as indicated by concentrations of various inorganics and volatile organic compounds (VOCs) in MW-9, which exceed background groundwater constituent concentrations and water quality objectives. Several VOCs have been detected in MW-9 since 1991. These VOCs include 1,1-dichloroethane, benzene, chlorobenzene, cis-1,2-dichloroethene, methylene chloride, tetrachloroethene, trichloroethene, 1,1-dichloroethene, 1,4-dichlorobenzene, trichlorofluormethane, and vinyl chloride. During 2000, methylene chloride and vinyl chloride in MW-9 exceeded maximum contaminant levels for drinking water. Maximum concentrations of methylene chloride and vinyl chloride detected in MW-9 during 2000 were 11 and 0.70 µg/l, respectively.
41. The Discharger has implemented the two phases of corrective action for VOCs and inorganic constituents detected in groundwater downgradient of LF-1. The first phase included construction of a final cap over LF-1, which was completed in 1997. The second phase, including installation of a landfill gas collection system, was completed in 2002. Corrective action monitoring is ongoing to assess the performance of the corrective actions.

42. The Discharger did not install a pan lysimeter or other unsaturated monitoring system at LF-3 Cell 3. Title 27 §20415(d)(1)-(d)(5) and Waste Discharge Requirements Order No. R5-2004-0158 require unsaturated zone monitoring for each waste management unit. This includes unsaturated zone monitoring at the LF- 3 Cell 3 waste management unit.
43. There has also been a release of wastes from LF-3. LF-3 was placed in evaluation monitoring during 1997 due, in part, to elevated levels of inorganic constituents in downgradient compliance well MW-16. The cause of the release was determined to be leachate that was backing up in LF-3. During 1998, the Discharger reconfigured the leachate piping so that leachate would drain properly. The leachate impoundment SI-1 was also reconstructed and made larger, partially in response to a release from that unit. Additional monitoring wells MW-20, 21, and 22 were also installed around LF-3 to provide better groundwater monitoring.
44. The Discharger submitted an Engineering Feasibility Study (EFS) for the LF-3 release in 1999. The Discharger implemented corrective actions discussed in the EFS with the exception of placing a moisture sensor in the ash due to interference from metals present in the ash.
45. During 2003, the Discharger was required to conduct further investigations into the cause of increasing TDS, sulfate, chloride, and nitrate concentrations in MW-16 and also at MW-17. The results of the investigation were submitted in a January 2004 report and June 2004 addendum. Results of the investigation concluded that the source of increasing inorganic constituents in MW-16 is leachate from LF-3, Cells 1 and 2, which have clay-only liners. However, the reports concluded that the cause of increasing inorganic constituents in MW-17 was from another source. This conclusion is being reevaluated because of continuing increase and/or sporadic dips and rises of inorganics in MW-17, MW-20, and MW-21, and the detection of methyl-tertiary butyl ether (MTBE) in MW-17 and MW-21. The Discharger also concluded MW-16 should remain in the corrective action monitoring program due to continuing increases in some inorganic constituents. MTBE was first reported at MW-17 in the third quarter of 2006, was confirmed during a study in December 2006, and has been detected most recently in March 2007 during the semi-annual sampling/analysis for VOCs. In the March 2007 sampling event, MTBE was detected in trace concentrations at both MW-17 and MW-21. The table below provides a summary of historical and current inorganic concentrations at MW-17, MW-20, and MW-21. As shown on the table, at MW-17 the sulfate concentrations increased starting in November 1999, peaked between May 2005 and April 2006, and steadily declined between March and September 2007. At MW-21, upon installation in April 2002, the sulfate concentration was 542 mg/L; between April 2002 and October 2003 the concentrations steadily decreased to 241 mg/L; between January 2004 and June 2007, the concentrations varied between 261 and 300 mg/L; in September 2007,

sulfate dipped to 32 mg/L. Upon installation of MW-22 in May 2002, the sulfate concentration was 50 mg/L; the sulfate concentration has steadily increased to 242 mg/L in September 2007. Concentrations of chloride and TDS at these wells have followed a similar trend.

Well Number	Constituent	Earliest or Lowest Historical Concentration (Date)	Current or Peak Concentration (date)
MW-17	Sulfate	61 mg/L (Feb 1989)	290 mg/L (April 2006)
MW-21	Sulfate	542 mg/L (April 2002)	32 mg/L (Sept 2007)
MW-22	Sulfate	50 mg/L (May 2002)	240 mg/L (Sept 2007)
MW-17	Chloride	22.5 mg/L (Jan 1990)	124 mg/L (Oct 2004)
MW-21	Chloride	190 mg/L (April 2002)	70 mg/L (Sept 2007)
MW-22	Chloride	55 (July 2002)	76 (Dec 2007)
MW-17	TDS	453 mg/L (Mar 1989)	920 mg/L (Jan 2006)
MW--21	TDS	1,410 mg/L (April 2002)	390 mg/L (Sept 2007)

46. In a 14 June 2006 letter, the Discharger stated that a seep observed during construction of LF-3 Cell 3 may be related to the inorganic impacts observed in MW-17 and MW-21. The seep is located on the western sidewall of LF-3 Cell 3. Further, the Discharger stated that the seep, the enrichment of sulfate at MW-17, and the corresponding enrichment of sulfate in the LF-3 Cell 3 secondary sump may all be related. Later, in a 5 October 2007 letter, the Discharger stated that the area southwest of MW-17 appears to be a groundwater recharge area based on drainage patterns, land use, and the presence of a year-round wet area used to water livestock. Moreover, the Discharger also stated that recharge from the wet area may be the cause of inorganic concentration increases in MW-17, and that the livestock watering area may be a possible deposition area for atmospheric MTBE.
47. Because of the increased concentrations of sulfate, chloride, and TDS at MW-17, MW-20, and MW-21, these WDRs require that the Discharger investigate groundwater to the southwest of LF-3 to determine the lateral and vertical extent of the inorganic degradation, and to determine if there is an offsite source. In addition, the livestock watering hole shall be analyzed for the presence of MTBE and elevated levels of inorganic constituents. Based on the results of the site investigation, these WDRs also require a feasibility study and corrective action plan if the landfill is determined to be the source of the elevated inorganic constituents and/or the MTBE.

LINER PERFORMANCE DEMONSTRATION

48. On 15 September 2000 the Regional Water Board adopted Resolution No. 5-00-213 *Request For The State Water Resources Control Board To Review The Adequacy Of The Prescriptive Design Requirements For Landfill Waste Containment Systems To Meet The Performance Standards Of Title 27*. The State Board responded, in part, that “a single composite liner system continues to be an adequate minimum standard” however, the Regional Water Board “should require a more stringent design in a case where it determines that the minimum design will not provide adequate protection to a given body of groundwater.”
49. In a letter dated 17 April 2001, the Executive Officer notified Owners and Operators of Solid Waste Landfills that “the Board will require a demonstration that any proposed landfill liner system to be constructed after 1 January 2002 will comply with Title 27 performance standards. A thorough evaluation of site-specific factors and cost/benefit analysis of single, double and triple composite liners will likely be necessary.”
50. The Discharger previously submitted a performance demonstration for discharge of Class II waste at LF-3. The Board approved a double composite liner design for use in all future Class II units in WDRs Order No. 5-01-207.
51. On 27 April 2004, the Discharger submitted the *Proposed Base Liner Design and Demonstration Summary for LF-2, Cell No. 4*, on 14 June the *Response to California Regional Water Quality Control Board Regarding the Base Liner Design and Demonstration Summary* and on 8 July the *Response to California Regional Water Quality Control Board Verbal Comments Regarding the Base Liner Design and Demonstration Summary*. This report with addendums was submitted as the Discharger’s demonstration that the proposed liner for LF-2, Cell 4 and all future LF-2 cells will meet the performance standard specified in Title 27 for a Class III WMU. The demonstration modeled impacts to groundwater using a leakage rate of 0.2 gallons per acre-day and leachate concentrations equal to the maximum concentrations (for VOCs double the maximum concentration) measured in leachate from the Class III cells. Model results found expected VOC concentrations in groundwater below detection limits and increases in salt concentrations less than the natural variability in background groundwater.
52. The *performance* standard for Class III units in Title 27 Section 20310(c) is “*Class III landfills shall have containment structures which are capable of preventing degradation of waters of the state...*”. Staff determined that the Discharger’s proposed liner design, with improvements to liner construction methods (electronic leak detection) and provision for early removal of landfill gas meets the performance standard for Class III units.

CONSTRUCTION AND ENGINEERED ALTERNATIVE

53. On 17 June 1993, the State Water Resources Control Board adopted Resolution No. 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 Title 40, Code of Federal Regulations, Part 258 (Subtitle D).
54. Resolution No. 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.
55. Resolution No. 93-62 also allows the Regional Water Board to consider the approval of engineered alternatives to the prescriptive standard. Section III.A.b. of Resolution No. 93-62 requires that the engineered alternative liner systems be of a composite design similar to the prescriptive standard.
56. Title 27 CCR Section 20080(b) allows the Regional 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 CCR 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 CCR 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 systems are 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 CCR Section 20080(b)(2).
57. Section 13360(a)(1) of the California Water Code allows the Regional 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.
58. The Discharger proposes a liner system which will be designed, constructed, and operated in accordance with the criteria set forth in Title 27, and the provisions in State Water Resources Control Board Resolution No. 93-62 for municipal solid wastes.
59. On 30 January 2001, the Discharger submitted a Report of Waste Discharge requesting approval of an engineered alternative to prescriptive standard for liner requirements.

60. The engineered alternative proposed by the Discharger for the base liner of all future Class III landfill units consists of, in ascending order: a prepared sub-grade; a minimum 1-foot thick, compacted soil liner with a hydraulic conductivity of 10^{-6} cm/sec or less; a Geosynthetic Clay liner (GCL) with a hydraulic conductivity of 5×10^{-9} cm/sec or less; and a minimum 60-mil thick HDPE geomembrane.
61. The Discharger proposes the side slope liners to be constructed of, in ascending order: a prepared sub-grade, a GCL with hydraulic conductivity of 5×10^{-9} cm/sec or less, and a minimum 60-mil thick HDPE geomembrane. The sub-grade will be prepared in an appropriate manner using accepted engineering and construction methods so as to provide a surface that is smooth and free from rocks, sticks, and other debris that could damage or otherwise limit the performance of the geosynthetic clay layer and/or geomembrane, and certified in accordance with this Order and the approved CQA Plan.
62. The Discharger proposes an LCRS for the base liner which consists of six-inches of clean gravel with a hydraulic conductivity of 0.01 cm/sec or greater. The Discharger proposes a side slope LCRS which consists of 24 inches of on-site sandy soils with less than 15% silt and clay and with a hydraulic conductivity of 1×10^{-3} cm/sec or greater.
63. The Discharger proposes an unsaturated zone monitoring system which consists of a pan lysimeter beneath the primary collection trench along the length of the WMU cell and under the primary collection sump. The pan lysimeter consists of from top to bottom the following: a geocomposite drainage system composed of a geonet between two non-woven geotextiles; three-inch diameter slotted HDPE pipe in the gravel filled trench; HDPE geomembrane under the primary collection sump and in the two foot wide by one foot deep gravel filled trench; a GCL; and a prepared sub-grade.
64. The Discharger was not required to repeat the demonstration 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 80080(b), or would be impractical and would not promote attainment of applicable performance standards since this demonstration has been made for other landfills and there are no significant differences in the characteristics of already approved liners and the engineered alternative liner proposed for the Fink Road Landfill.
65. The Board previously adopted WDRs Order No. 5-01-207 which approved a double composite liner design for all future Class II solid waste units. The base liner of all future Class II units will consist of a double composite liner that is separated and overlain by an LCRS. A vadose zone monitoring system, such as a pan lysimeter, must also be installed.

Class II Surface Impoundments

66. The Discharger reconstructed surface impoundment SI-1 using an approved engineered alternative to the prescriptive liner requirements of Title 27. The engineered alternative for SI-1 consists of, in ascending order: a GCL; an 80-mil HDPE geomembrane secondary liner; an HDPE geonet; and an 80-mil HDPE geomembrane primary liner. The engineered alternative liner system was approved in previously adopted WDRs Order No. 98-184.
67. The Discharger constructed a subdrain system beneath the base of SI-1 to alleviate future potential liner uplift if the current upward historical trend in groundwater elevations continues. This subdrain system consists of, from top to bottom, a one-foot thick gravel drainage layer and an 8 ounce-per-square foot geotextile. Groundwater collected in the subdrain flows by gravity to a sump and is removed via a riser pipe. This Order requires groundwater removed from the sump to be discharged to surface impoundment SI-1. The Discharger is also required to monitor the subdrain system in accordance with the requirements of unsaturated zone monitoring. The Discharger shall sample any water collected from the subdrain system for the unsaturated zone monitoring constituents specified in Table V of the Monitoring and Reporting Program No. R5-2008-0144.

CERTIFICATION

68. Stanislaus County has indicated that a California-registered civil engineer or certified engineering geologist will certify that WMUs at this facility meet the prescriptive standards and performance goals of Title 27.

FINANCIAL ASSURANCES

69. On 4 June 2004, the Discharger submitted a preliminary closure and post-closure maintenance plan (PCPCMP) for the landfill. The PCPCMP includes a lump sum estimate of the cost of carrying out all actions necessary to close each Unit, to prepare detailed design specifications, to develop the final closure and post-closure maintenance plan, and to carry out the first thirty years of post-closure maintenance. The total amount of the combined closure cost estimates for LF-2, LF-3, SI-1, and SI-2 is \$9,659,000, and the amount of the combined post-closure maintenance cost estimates for these units is \$8,260,006. The Regional Water Board hereby approves these cost estimates.
70. On 29 May 2003, the Discharger submitted a cost estimate for corrective action of all known or reasonably foreseeable releases as required by Title 27 Section 22221. On 14 August 2003, Regional Water Board staff issued a letter approving corrective action financial assurance in the amount of \$1,011,000. This Order

requires that the Discharger maintain financial assurance for corrective action with the CIWMB in at least the amount of this cost estimate.

71. Title 27 CCR Sections 21780(c)(3) and (d)(1) [sections promulgated by the CIWMB] require the Discharger to submit the final closure and post-closure maintenance plan, or for the closure of discrete units, the partial final closure and post-closure maintenance plan, at least two years prior to the anticipated date of closure. This Order requires that the Discharger obtain WDRs from the Regional Water Board with closure and post-closure maintenance requirements prior to closure.

CEQA AND OTHER CONSIDERATIONS

72. On 17 October 2006, the Stanislaus County Board of Supervisors adopted a Mitigated Negative Declaration for operational changes at the Fink Road Landfill, including the acceptance of treated wood waste.
73. The action to revise waste discharge requirements for this existing facility is exempt from the provisions of the California Environmental Quality Act (CEQA), Public Resource Code Section 21000, et seq., and the CEQA guidelines, in accordance with Title 14 CCR, Section 15301.
74. 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 Chapters 1 through 7, Subdivision 1, Division 2, Title 27, of the California Code of Regulations, effective 18 July 1997, and subsequent revisions;
 - c. The prescriptive standards and performance criteria of RCRA Subtitle D, Part 258; and
 - d. State Water Resources Control Board Resolution No. 93-62, *Policy for Regulation of Discharges of Municipal Solid Waste*, adopted 17 June 1993, and revised on 21 July 2005.
75. Section 13267(b) of California Water Code provides that: "In conducting an investigation specified in subdivision (a), the Regional Water Board may require that any person who has discharged, discharges, or is suspected of having discharged or discharging, or who proposed to discharge within its region, or any citizen or domiciliary, or political agency or entity of this state who had discharged, discharges, or is suspected of having discharged or discharging, or who proposed to discharge waste outside of its region that could affect the quality of the waters of

the state within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the board requires. The burden, including costs of these reports, shall bear a reasonable relationship to the need for the reports and the benefits to be obtained from the reports.

76. The technical reports required by this Order and the attached "Monitoring and Reporting Program No. R5-2008-0144" 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

77. 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.
78. The Regional 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.
79. The Regional Water Board, in a public meeting, heard and considered all comments pertaining to the discharge.
80. Any person affected by this action of the Regional Water Board may petition the State Water Resources Control Board to review the action in accordance with Sections 2050 through 2068, Title 23, California Code of Regulations. The petition must be received by the State Water Resources Control Board, Office of Chief Counsel, P.O. Box 100, Sacramento, California 95812, within 30 days of the date of issuance of this Order. Copies of the laws and regulations applicable to the filing of a petition are available on the Internet at http://www.waterboards.ca.gov/water_laws/ and will be provided on request.

IT IS HEREBY ORDERED, pursuant to Sections 13263 and 13267 of the California Water Code, that Order No. R5-2004-0158 is rescinded and that the Stanislaus County Department of Environmental Resources, its agents, successors, and assigns, in order to meet the provisions of Division 7 of the California Water Code and the regulations adopted thereunder, shall comply with the following:

A. PROHIBITIONS

1. The discharge of 'hazardous waste' at this site is prohibited, except for waste that is hazardous due only to its friable asbestos content. The discharge of 'designated waste' at this site is prohibited, except for the discharge of boiler ash

from the Covanta plant and the discharge of leachate from the LCRS of LF-3 and LF-2 to SI-1 and SI-2, respectively. For the purposes of this Order, the term 'hazardous waste' is as defined in Title 23, California Code of Regulations, Section 2510 et seq., and 'designated waste' is as defined in Title 27.

2. The discharge of boiler ash from the Covanta plant is limited to LF-3, a separate monofill unit which is designed and operated to isolate this waste from other wastes which could produce acidic leachate.
3. The discharge of semi-solid waste (i.e., waste containing less than 50% solids) or liquid waste to the landfill units LF-1, LF-2, and LF-3 is prohibited.
4. The discharge of solid waste containing free liquid or which may contain liquid in excess of the moisture holding capacity as result of waste management operations, compaction, or settlement is prohibited.
5. The discharge of wastes outside of a Unit or portions of a Unit specifically designed for their containment is prohibited.
6. The discharge of waste to a closed Unit is prohibited.
7. The discharge of waste constituents to the unsaturated zone or to groundwater is prohibited.
8. The discharge of solid or liquid waste or leachate to surface waters, surface water drainage courses, or groundwater is prohibited.
9. The discharge of waste from surface impoundments is prohibited other than allowed under Prohibition No. 1.
10. The discharge of waste to ponded water from any source is prohibited.
11. The discharge of waste within 50 feet of surface waters is prohibited.
12. 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 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,
 - b. Are 'restricted hazardous wastes', or
 - c. Impair the integrity of containment structures, is prohibited.

B. DISCHARGE SPECIFICATIONS

1. Municipal solid waste shall be discharged to LF-2, a unit equipped with a single composite liner containment system which meets the requirements for both liners and leachate collection and removal systems specified in these WDRs for a Class III landfill.
2. Non-hazardous boiler ash from the Covanta plant shall be discharged to LF-3, a unit equipped with a double composite liner containment system which meets the requirements for both liners and leachate collection and removal systems specified in these WDRs for a Class II landfill.
3. The discharge shall remain within the designated disposal area at all times.
4. The handling and disposal of friable asbestos-containing wastes at this site shall be in accordance with all applicable federal and state laws and regulations.
5. "Treated wood" wastes may be discharged, but only to an area equipped with a composite liner and leachate collection and removal system, as described in Construction Specification F.3, and only if the wastes are handled in accordance with Section 67386.11 of Title 22 as described in Finding No. 19 of this Order. "Treated wood" means wood that has been treated with a chemical preservative for purposes of protecting the wood against attacks from insects, microorganisms, fungi, and other environmental conditions that can lead to decay of the wood and the chemical preservative is registered pursuant to the Federal Insecticide, Fungicide, and Rodenticide Act (7 U.S.C. Sec. 136 and following). This may include but is not limited to waste wood that has been treated with chromated copper arsenate (CCA), pentachlorophenol, creosote, acid copper chromate (ACC), ammoniacal copper arsenate (ACA), ammoniacal copper zinc arsenate (ACZA), or chromated zinc chloride (CZC).
6. Treated wood must be managed to ensure consistency with Section 67386.11 of Title 22. If a verified release is detected from the waste management unit where treated wood is disposed, the disposal of treated wood shall be terminated at the unit with the verified release until corrective action ceases the release.
7. Discharge Specifications B.5 and B.6, above, apply only to treated wood waste that is a hazardous waste solely due to the presence of a preservative in the wood, and is not subject to regulation as a hazardous waste under the federal act.
8. Treated wood waste shall only be discharged to LF-2, Cell 4 and future composite lined cells of LF-2 (Cells 5, 6, and 7) once they are constructed.

9. Treated wood waste shall not be discharged to landfill cells that are leaking. Treated wood waste shall not be discharged cease to any landfill cell after confirmation of a release from that cell to either the unsaturated zone or groundwater until corrective action results in cessation of the release.
10. The discharge of liquid waste to SI-1 shall be limited to leachate from LF-3's LCRS, SI-1's LCRS, and groundwater from the SI-1 subdrain system only.
11. The discharge of liquid waste to SI-2 shall be limited to leachate from LF-2's LCRS, SI-2's LCRS, and landfill gas condensate only.
12. The Discharger must submit laboratory analyses of any liquid detected in the sub-drain system as required in the attached Monitoring and Reporting Program No. R5-2008-0144 as part of unsaturated zone monitoring.

C. FACILITY SPECIFICATIONS

1. The Discharger shall, in a timely manner, remove and relocate any wastes discharged at this facility in violation of this Order. If the Discharger is unable to remove and relocate the waste, the Discharger shall submit a report to the Regional Water Board explaining how the discharge occurred, why the waste cannot be removed, and any updates to the waste acceptance program necessary to prevent re-occurrence.
2. The Discharger shall immediately notify the Regional Water Board of any flooding, unpermitted discharge of waste off-site, equipment failure, slope failure, or other change in site conditions which could impair the integrity of waste or leachate containment facilities or precipitation and drainage control structures.
3. Water used for facility maintenance shall be limited to the minimum amount necessary for dust control, and construction.
4. The Discharger shall maintain in good working order any facility, control system, or monitoring device installed to achieve compliance with the waste discharge requirements.
5. Methane and other landfill gases shall be adequately vented, removed from the Unit, or otherwise controlled to prevent the danger of adverse health effects, nuisance conditions, degradation, or the impairment of the beneficial uses of surface water or groundwater due to migration through the unsaturated zone.
6. Surface drainage within the waste management facility shall either be contained on-site or be discharged in accordance with applicable storm water regulations.

7. The Discharger shall maintain a *Storm Water Pollution Prevention Plan and Monitoring Program and Reporting Requirements* in accordance with State Water Resources Control Board Order No. 97-03-DWQ, or retain all storm water on-site.
8. A minimum separation of ten feet shall be maintained between wastes or leachate and the highest anticipated elevation of underlying groundwater including the capillary fringe.
9. All groundwater domestic supply wells within 500 feet of a WMU shall be sealed or abandoned to the satisfaction of the Stanislaus County Department of Environmental Resources prior to the discharge of waste to the unit. A record of the sealing and/or abandonment of such wells shall be sent to the Board.

D. LANDFILL SPECIFICATIONS

1. Municipal solid waste shall be discharged to either (1) that portion of a cell which received wastes (i.e. that active portion of the cell which is within the boundaries of the existing footprint), or (2) to an area equipped with a containment system which meets the additional requirements for both liners and leachate collection systems in Construction Specification No. F.3.
2. Boiler ash from the Covanta plant shall be discharged only to Class II LF-3.
3. During the rainy season, the landfill shall be operated and graded to minimize leachate.
4. Landfill leachate shall be discharged to a Class II surface impoundment or a community sewerage treatment facility.
5. Leachate generated by a landfill unit LCRS shall not exceed 85% of the design capacity of the LCRS or the sump pump. If leachate generation exceeds this value and/or if the depth of fluid in the LCRS sump exceeds the minimum needed for pump operation, then the Discharger shall immediately cease the discharge of sludge and other high-moisture wastes to the landfill unit and shall notify the Board in writing within seven days. Notification shall include a timetable for a corrective action necessary to reduce leachate production.

E. SURFACE IMPOUNDMENT SPECIFICATIONS

1. Surface impoundments SI-1 and SI-2 shall be operated to maintain a minimum freeboard of two feet at all times, plus an amount equal to a 1,000-year, 24-hour storm event.
2. Any direct-line discharge to a surface impoundment shall have fail-safe equipment or operating procedures that include daily inspection and manual control of pumping systems during the rainy season to prevent overflowing.
3. Leachate removed from a surface impoundment LCRS shall be discharged to the impoundment from which it originated, except as noted in Discharge Specifications B.10 and B.11.
4. Solids that accumulate in any surface impoundments shall be periodically removed to maintain minimum freeboard requirements and to maintain sufficient capacity for landfill and surface impoundment leachate and for the discharge of wastes. Prior to removal of these solids, sufficient samples shall be taken for their characterization and classification pursuant to Title 27. The rationale for the sampling protocol used, the results of this sampling, and a rationale for classification of the solids shall be submitted to Regional Water Board staff for review. The solids may be discharged to the Class III landfill units only if Regional Water Board staff determines that the solids qualify for classification as 'inert waste'.

F. CONSTRUCTION SPECIFICATIONS

1. The Discharger shall submit to Regional Water Board staff for review and approval **prior to** construction, design plans and specifications for new Units and expansions of existing Units, that include the following:
 - a. A Construction Quality Assurance Plan meeting the requirements of Title 27 CCR Section 20324; and
 - b. A geotechnical evaluation of the area soils, evaluating their use as the base layer;
 - c. A revised water quality monitoring plan; and
 - d. An unsaturated zone monitoring system, which is demonstrated to remain effective throughout the active life, closure, and postclosure maintenance periods of the Unit, which shall be installed beneath the composite liner system in accordance with Title 27 CCR Section 20415(d).
 - e. An Operation Plan meeting the requirements of Title 27 Section 21760(b).

2. The liner of LF-3, Cell 3 and all new LF-3 cells shall be constructed as an engineered alternative with the following composite liner design:
 - a. An engineered alternative composite base liner system that is comprised of two composite liners separated by an LCRS. This double composite liner system shall also be overlain by a second LCRS and a 15-inch operations layer.
 - b. An engineered alternative composite side slope liner system that is comprised, in ascending order, of the following: A GCL (maximum hydraulic conductivity 5×10^{-9} cm/sec); a 60-mil high density HDPE geomembrane; a LCRS/operations layer composed of 24 inches of on-site sandy soils with a hydraulic conductivity of 1×10^{-3} cm/sec or greater and less than 15% silt and clay size particles.
3. The bottom liner of all new LF-2, Class III Units and lateral expansion areas of existing Class III Units shall be constructed in accordance with one of the following composite liner designs:
 - a. The prescriptive standard design which consists of a lower compacted soil layer that is a minimum of two feet thick with a hydraulic conductivity of 1×10^{-7} cm/sec or less and has a minimum relative compaction of 90%. Immediately above the compacted soil layer, and in direct and uniform contact with the soil layer, shall be a synthetic flexible membrane component that shall be at least 40-mil thick (or at least 60-mil thick if composed of high density polyethylene [HDPE]), which is immediately overlain with a leachate collection and removal system. A minimum 24 inch thick soil operations layer shall be placed above the leachate collection and removal system or;
 - b. An engineered alternative composite liner system that is composed in ascending order, of the following:
 - 1) A twelve-inch thick engineered soil foundation layer that shall be constructed of select fine-grained soil materials which shall be compacted in lifts of six inches or less to 90% of maximum dry density and at 0% to 4% wet of optimum moisture content, in accordance with the approved construction quality assurance plan, and compacted to attain a hydraulic conductivity of 1×10^{-6} cm/sec or less.
 - 2) A nonwoven bottom geotextile, which may be part of the geosynthetic clay layer (GCL).
 - 3) A GCL that shall exhibit appropriate strength characteristics (hydrated) to accommodate stresses associated with specific landfill design parameters,

with particular attention to interface, long-term creep shear, and bearing capacity.

- 4) A 60-mil thick synthetic flexible membrane of HDPE.
 - 5) A 6-inch gravel LCRS drainage layer,
 - 6) A soil operations layer no less than 24 inches thick,
 - 7) The liner will pass (no leak detected) an electronic leak test after installation of the operations layer and all leaks detected will be repaired before any waste is discharged to the unit.
4. All future LF-2 Class III units shall be constructed with an engineered alternative composite side slope liner that is comprised, in ascending order, of the following: A GCL (maximum hydraulic conductivity 5×10^{-9} cm/sec); a 60-mil high density HDPE geomembrane; a LCRS/operations layer composed of 24 inches of on-site sandy soils with a hydraulic conductivity of 1×10^{-3} cm/sec or greater and less than 15% silt and clay size particles.
 5. The Discharger may propose changes to the liner system design prior to construction, provided that approved components are not eliminated, the engineering properties of the components are not substantially reduced, and the proposed liner system results in the protection of water quality equal to or greater than the design prescribed by Title 27 and this Order. The proposed changes may be made following approval by the Executive Officer. Substantive changes to the design require reevaluation as an engineered alternative and approval by the Regional Water Board.
 6. Liner system in which a GCL is placed on top of a subgrade, the subgrade for the bottom and the side slopes of the Unit shall be prepared in an appropriate manner using accepted engineering and construction methods 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.
 7. An electronic leak detection test shall be conducted at all future LF-2 and LF-3 base liner systems after installation of the operations layer, and any leaks found shall be repaired.
 8. Construction shall proceed only after all applicable construction quality assurance plans have been approved.
 9. Following the completion of construction of a Unit or portion of a Unit, and prior to discharge onto the newly constructed liner system, the final documentation required in Title 27 CCR Section 20324(d)(1)(C) shall be submitted for review

and approval. The report shall be certified by a registered civil engineer or a certified engineering geologist. It shall contain sufficient information and test results to verify that construction was in accordance with the design plans and specifications, and with the prescriptive standards and performance goals of Title 27.

10. A third party independent of both the Discharger and the construction contractor shall perform all of the construction quality assurance monitoring and testing during the construction of a liner system.
11. If monitoring reveals substantial or progressive increases of leachate generation above the design leachate flow volume by the Unit or portion of the Unit, such that the depth of fluid on any portion of the LCRS (excluding the leachate removal pump sump) exceeds 30 cm, the Discharger shall immediately notify the Regional Water Board in writing within seven days. The notification shall include a timetable for remedial or corrective action necessary to achieve compliance with the leachate depth limitation.
12. Closure shall not proceed in the absence of closure waste discharge requirements.
13. All containment systems shall include a leachate collection and removal system (LCRS) which shall convey all leachate which reaches the liner to an appropriately lined sump or other appropriately lined collection area. The LCRS shall not rely upon unlined or clay-lined areas for such conveyance.
14. LCRSs shall be designed, constructed, and maintained to collect twice the anticipated daily volume of leachate generated by the WMU and to prevent the buildup of hydraulic head on the underlying liner at any time. The depth of fluid in any LCRS sump shall be kept at the minimum needed to ensure efficient pump operation.

G. DETECTION MONITORING SPECIFICATIONS

1. The Discharger shall submit for review and approval a groundwater detection monitoring program demonstrating compliance with Title 27 for any Unit expansion.
2. The Discharger shall comply with the detection monitoring program provisions of Title 27 for groundwater, surface water, and the unsaturated zone, and in accordance with Monitoring and Reporting Program No. R5-2008-0144. A detection monitoring program for a new Unit shall be installed, operational, and one year of monitoring data collected prior to the discharge of wastes [Title 27 CCR Section 20415(e)(6)].

3. The Discharger shall provide Regional Water Board staff a minimum of **one week** notification prior to commencing any field activities related to the installation, repair, or abandonment of monitoring devices, and a minimum 48 hour notification prior to the collection of samples associated with a detection monitoring program, evaluation monitoring program, or corrective action program.
4. The Discharger shall comply with the Water Quality Protection Standard as specified in this Order, Monitoring and Reporting Program No. R5-2008-0144, and the Standard Provisions and Reporting Requirements, dated April 2000.
5. 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 (i.e., US-EPA methods 8260 and 8270). The repeated detection of one or more non-naturally occurring organic compounds in samples above the Water Quality Protection Standard from detection monitoring wells is evidence of a release from the Unit.
6. The concentrations of the constituents of concern in waters passing the Point of Compliance shall not exceed the concentration limits established pursuant to Monitoring and Reporting Program No. R5-2008-0144.
7. For each monitoring event, the Discharger shall determine whether the landfill is in compliance with the Water Quality Protection Standard using procedures specified in Monitoring and Reporting Program No. R5-2008-0144 and Title 27 CCR Section 20415(e).
8. The Discharger shall establish and maintain a 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; and
 - e. Chain of Custody control.
9. 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. 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.

10. If methods other than USEPA-approved methods or Standard Methods are used, the exact methodology shall be submitted to Regional Water Board staff for review and approval prior to use.
11. 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 method detection limit (MDL) shall be selected from among those methods which would provide valid results in light of any matrix effects or interferences.
12. **"Trace" results** - results falling between the MDL and the practical quantitation limit (PQL) - shall be reported as such, and shall be accompanied both by the estimated MDL and PQL values for that analytical run.
13. **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.
14. 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 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.

15. 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 qualifications of the person(s) performing the analyses. 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.
16. 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.
17. 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 CCR 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 for routine laboratory operating conditions that are available to the facility. The Discharger's technical report, pursuant to Title 27 CCR Section 20415(e)(7), shall consider the PQLs listed in Appendix IX to Chapter 14 of Division 4.5 of Title 22, CCR, for guidance when specifying limits of precision and accuracy. For any given constituent monitored at a background or downgradient monitoring point, an indication that falls between the MDL and the PQL for that constituent (hereinafter called a "trace" detection) shall be identified and used in appropriate statistical or nonstatistical 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".
18. Background for water samples or soil-pore gas samples shall be represented by the data from all samples taken from applicable background monitoring points during that reporting period (at least one sample from each background monitoring point). The Discharger may propose an alternate statistical method [to the methods listed under Title 27 CCR Section 20415(e)(8)(A-D)] in accordance with Title 27 CCR Section 20415(e)(8)(E), for review and approval.
19. The Discharger may propose an alternate statistical method [to the methods listed under Title 27 CCR Section 20415(e)(8)(A-D)] in accordance with Title 27 CCR Section 20415(e)(8)(E), for review and approval. Upon receiving written

approval, 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). Nevertheless, analytical results involving detection of these analytes in any background or downgradient sample shall be reported and flagged for easy reference by Regional Water Board staff.

20. 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. From the constituent of concern or monitoring parameter list, identify each analyte in the **current** sample that exceeds either its respective MDL or PQL. 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 are detected in less than 10% of background samples 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 CCR Section 20415(e)(8)(E)]:
 - 1) In the event that the Discharger concludes (pursuant to paragraph 20.a., above) that there is a preliminary indication of a release, then the Discharger shall immediately notify Regional 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.
 - 2) For any given retest sample, the Discharger shall include, in the retest analysis, **only the laboratory analytical results for those analytes detected in the original sample**. As soon as the retest data are available, the Discharger shall conclude that there is measurably significant evidence of a release if two or more analytes equal or exceed their respective MDLs or if one or more analyte equals or exceeds its PQL and shall:
 - a) **Immediately** notify the Regional Water Board about any constituent or constituents verified to be present at the monitoring point, and follow up with written notification submitted by certified mail **within seven days** of validation; and

- b) Comply with ¶21, below if any constituent or constituents were verified to be present.
 - 3) Any analyte that triggers a discrete retest per this method shall be added to the monitoring parameter list such that it is monitored during each regular monitoring event.
21. If the Discharger determines that there is measurably significant evidence of a release from the Unit at any monitoring point, the Discharger shall **immediately** implement the requirements of **XI. Response To A Release, C. Release Has Been Verified**, contained in the Standard Provisions and Reporting Requirements.

H. PROVISIONS

1. The Discharger shall maintain a copy of this Order at the facility 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 40 Code of Federal Regulations Part 258 (Subtitle D) that are not specifically referred to in this Order.
3. The Discharger shall comply with Monitoring and Reporting Program No. R5-2008-0144, which is incorporated into and made part of this Order.
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 Title 27 and/or Subtitle D (Title 27 CCR Section 20005 et seq. and 40 CFR 258 et seq.), dated April 2000, which are hereby incorporated into this Order.
5. 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 Regional 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.
6. 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 Regional 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.”
7. 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.
8. The owner of the waste management facility shall have the continuing responsibility to assure protection of waters of the state from discharged wastes and from gases and leachate generated by discharged waste during the active life, closure, and postclosure maintenance period of the Unit(s) and during subsequent use of the property for other purposes.
9. 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 the Order.

10. To assume ownership or operation under this Order, the succeeding owner or operator must apply in writing to the Regional 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 Regional Water Board, and a statement. The statement shall comply with the signatory requirements contained in Provision H.6. 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 California Water Code. Transfer of this Order shall be approved or disapproved by the Regional Water Board.
11. The Discharger shall maintain assurances of financial responsibility for initiating and completing corrective action for all known or reasonably foreseeable releases from the landfill with the California Integrated Waste Management Board (CIWMB) in the amount of the approved cost estimate described in Finding No. 70 of this Order. If the CIWMB determines that either the amount of coverage or the mechanism is inadequate, the Discharger shall submit a demonstration of acceptable financial assurance to the CIMWB within no more than 90 days of notification.
12. The Discharger shall maintain assurances of financial responsibility for closure and post-closure maintenance costs in the amount of the cost estimates in the approved preliminary or final closure and post-closure maintenance plan, as applicable. If the CIWMB determines that either the amount of coverage or the mechanism is inadequate, the Discharger shall submit a demonstration of acceptable financial assurance to the CIMWB within no more than 90 days of notification.
13. The Discharger shall update the preliminary closure and post-closure maintenance plan (PCPCMP) any time there is a change that will significantly affect the amount of the closure and post-closure maintenance cost estimate. The updated PCPCMP shall be submitted to the Regional Water Board, the Local Enforcement Agency, and the CIWMB. The PCPCMP shall meet the requirements of Title 27 CCR Section 21769(b), and include a lump sum estimate of the cost of carrying out all actions necessary to close each Unit, to prepare detailed design specifications, to develop the final closure and post-closure maintenance plan, and to carry out the first thirty years of post-closure maintenance. A final (or partial final) closure and post-closure maintenance plan shall be submitted prior to closure and closure shall not be conducted in the absence of closure WDRs.

14. The Discharger shall investigate groundwater to the southwest of LF-3 to determine the source of the elevated inorganic constituents. If the landfill is determined to be the source, the Discharger shall determine the lateral and vertical extent of the inorganic degradation. The Discharger shall investigate the source of the previous detections of MTBE at MW-17 and MW-21, including sampling the livestock watering area and sampling any new groundwater monitoring wells associated with this site investigation. The Discharger shall sample the perched zone located on the western sidewall of LF-3 Cell 3 for inorganics and MTBE. Based on the results of the investigations, the Discharger shall submit a Site Investigation Report with an analysis of the data and determination of the source and extent of the groundwater degradation. If the Discharger and/or Regional Board staff determine that the landfill is the source of the degradation, the Discharger shall prepare and submit an Engineering Feasibility Study, and a Corrective Action Plan. Under Section 13267(b) of the Water Code, the technical reports described in this Order are required to determine if MTBE is from an off-site source and to determine the nature and extent of the chloride, sulfate, and TDS plume as evidenced by the elevated concentrations at MW-17, MW-20, and MW-21.
15. The Discharger shall complete the tasks contained in Provision No. 14 of this Order in accordance with the following time schedule:

A. Site Investigation Work Plan at LF-3 Cell 3, MW-17, MW-20, and MW-21

By **30 October 2008**, the Discharger shall submit a site investigation work plan to determine if MTBE and the increased/sporadic concentrations of chloride, sulfate, and TDS at MW-17, MW-20, and 21 are from the landfill or from an off-site source. The plan shall include, but not be limited to, the following:

- Information required in Attachment C, *Items to be Included in a Site Investigation Work Plan*;
- Sampling and analysis for MTBE and inorganics at the perched zone located on the western sidewall of LF- 3 Cell 3;
- Installation of a new well that shall be located to the southwest of MW-17 and southeast of MW-21, and the determination of the local groundwater gradient in relation to the well;
- Installation of a new well east of and immediately adjacent to the Covanta plant, and the determination of the local groundwater gradient inn relation to the well;
- Sampling and analysis for MTBE and inorganics of any groundwater monitoring well installed as part of this site investigation;

- Sampling and analysis for MTBE in groundwater and surface water including the following:
 - Four consecutive quarters of MTBE sampling and analysis of any new groundwater monitoring well installed as part of this investigation;
 - MTBE sampling and analysis at the off-site livestock watering area;
 - Four consecutive quarters of sampling and analysis of MTBE in groundwater from MW-17, MW-20, and MW-21.

B. Site Investigation Report

By **29 May 2009**, the Discharger shall submit a Site Investigation Report that shall present an evaluation of the results of the Site Investigation of the perched zone, local groundwater gradients at any new wells, MTBE in surface water and groundwater, and elevated inorganics at MW-17, MW-20, and MW-21. The contents of the Site Investigation shall include, but not be limited to, the following:

- Information in Attachment D, *Items to be Included in a Site Investigation Report*.
- Tabulated and electronic (Excel spreadsheet) analytical results of all sampled media, including any new groundwater monitoring wells, the perched zone, and surface water at the livestock watering area. The electron Excel spreadsheet must be in a format acceptable to the Executive Officer.
- Determination if the elevated/sporadic concentrations of chloride, sulfate, and TDS at MW-17, MW-20, and 21 are from an off-site source or not.
- Determination if the perched zone located on the western sidewall of LF-3 Cell 3 is the source of elevated/sporadic inorganics at MW-17, MW-20, and MW-21.
- Determination if the perched zone located on the western sidewall of LF-3 Cell 3 is the source of MTBE detected at MW-17 and MW-21.
- Two consecutive quarters (starting with the third quarter of 2008) of MTBE sampling/analytical results from MW-17, MW-20, MW-21, and any new wells associated with the site investigation.
- Determination if the source of MTBE is the livestock watering area of not.
- If the landfill is determined to be the source of elevated /sporadic inorganics at MW-17, MW-20, and MW-21, a plan for determination of the lateral and vertical extent of degradation.
- Local groundwater gradients in relation to any new installed well.

C. Addendum to Site Investigation Report

By **31 December 2009**, the Discharger shall submit an Addendum to the Site Investigation Report that shall include all four consecutive quarters of MTBE sampling; the analysis of any new wells installed as part of the site investigation, and at MW-17, MW-20, and MW-21; and the results of the investigation of the lateral and vertical extent of groundwater degradation if the landfill was determined to be the source by the Discharger or by Regional Water Board staff. The report shall include the following:

- Tabulated data of all results and an electronic Excel spreadsheet with all the analytical results.
- The electronic Excel spreadsheet shall be in a format acceptable to the Executive Officer.
- A discussion of analytical results, conclusions, and recommendations.
- A determination if an off-site source is the cause of MTBE in MW-17, MW-20, and MW-21.
- Results of the investigation of the lateral and vertical extent of groundwater degradation if the landfill was determined to be the source.

D. Feasibility Study and Corrective Action Plan

Upon review of the Site Investigation Report and the Addendum, the Discharger shall prepare and submit an Engineering Feasibility Study and Corrective Action Plan if either the Discharger or Regional Water Board staff determined that the landfill is the source of groundwater degradation. If required, the Discharger shall submit the Engineering Feasibility Study and Corrective Action Plan by **30 April 2010** that shall include the following information:

- The information in Attachment E, *Items to Be Included in the Feasibility Study and Remedial Options Evaluation Report*
- The information in Attachment F, *Items to be Included in a Cleanup Plan*.

16. Construction Plans

Prior to construction, the Discharger shall submit construction and design plans for review and approval. (see Construction Specification F.1).

17. Construction Report

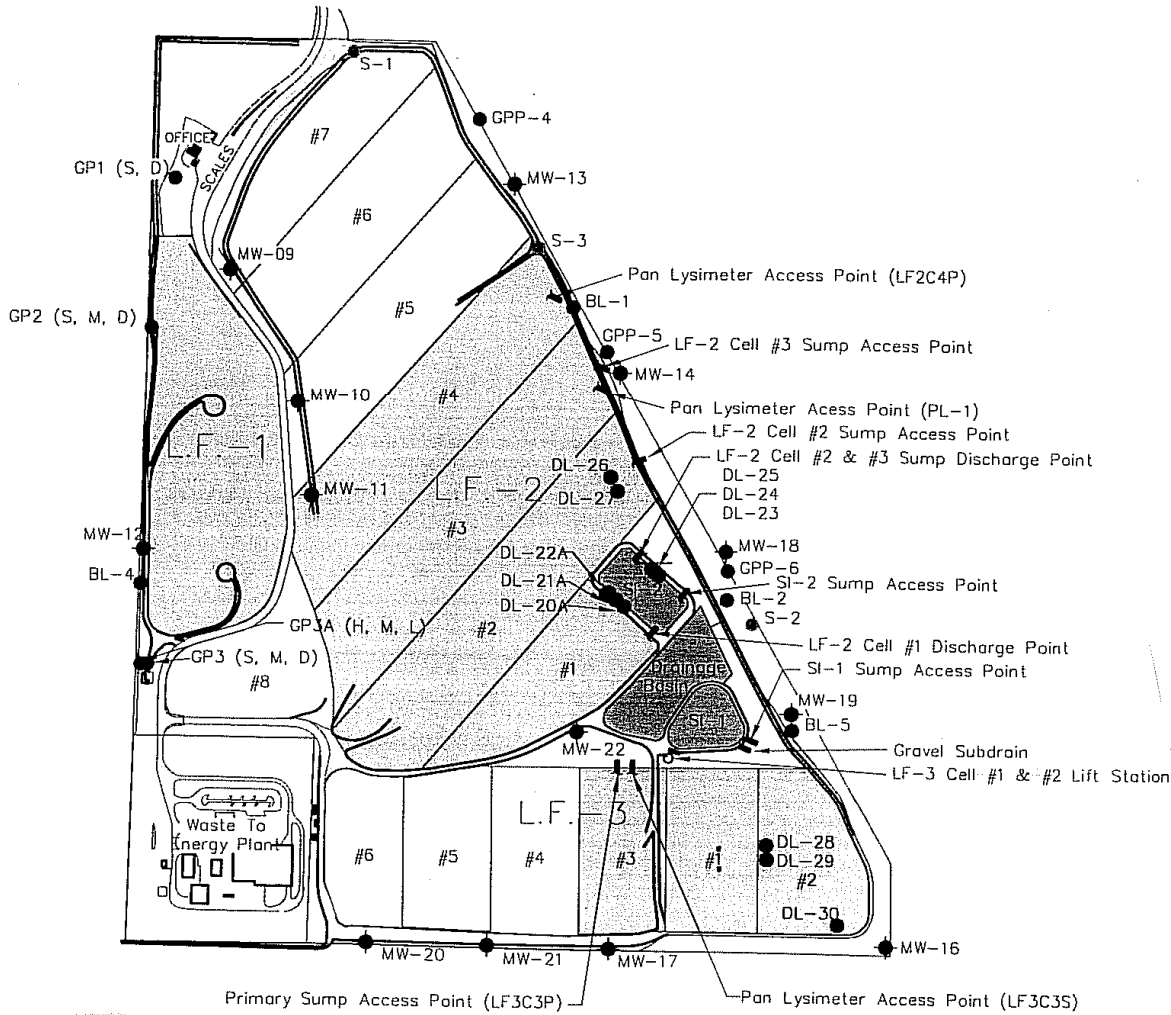
Prior to discharge, the Discharger shall submit a construction report upon completion, demonstrating construction was in accordance with approved

construction plans for Executive Officer review and approval. (see Construction Specification F.9).

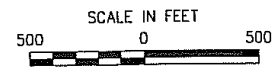
I, PAMELA C. CREEDON, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on 11 September 2008.

PAMELA C. CREEDON, Executive Officer

WLB: 9/11/2008

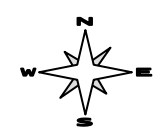


LEGEND	
● MW-18	Monitoring Well Location
● BL-4	Approximate Background Lysimeter Location
● DL-9	Approximate Detection Lysimeter Location
⊙ DL-9	Approximate Non-functional Detection Lysimeter Location
● S-2	Approximate Surface/Runoff Sampling Location
● LFG	Approximate Landfill Gas Sample Point
L.F. - 2	Waste Management Unit (WMU) Boundary
#6	Proposed WMU Cell with Cell Number
SI-1	Surface Impoundment; SI-1 & SI-2, AKA the Leachate Basin
#2	Filled Cells or Cells in Use



Drawing Reference:
SCS Engineers, Third
Quarter 2007 Report,
Figure 1-2

SITE MAP
FINK ROAD CLASS II AND CLASS III LANDFILLS
CLASS II SURFACE IMPOUNDMENTS
STANISLAUS COUNTY



ATTACHMENT C
ORDER NO. R5-2008-0144
FINK ROAD LANDFILL
ITEMS TO BE INCLUDED IN A SITE INVESTIGATION WORK PLAN

The outline below is a minimum requirement for items to be included and discussed in the text of all site investigation work plans submitted to the Regional Water Quality Control Board. All work plans must be stamped and signed by a registered geologist, certified engineering geologist, or civil engineer registered or certified by the State of California. Other pertinent information specific to each individual investigation also shall be included. The Discharger's certification statement shall be included with each report and plan.

I. BACKGROUND

A. *Site History*

- State all operations conducted at the site.
- Identify present and historic chemical usage and handling procedures.
- List all chemical spills and their disposition.
- Identify all past and present above ground and under ground tank locations.
- Identify tank capacities and other specifications as necessary.
- Identify tank contents, past and present.
- Identify locations of maintenance shops, chemicals used in the shops, method of chemical storage and disposal.
- Identify past and present land uses and future as applicable.

B. *Topographic map of site vicinity showing:*

- All natural and man-made drainage features including ditches and surface impoundments, and the drainages destination;
- Utilities and storm drain system;
- Location of existing monitoring wells, including those installed by other parties;
- Location of above ground and underground storage tanks, other waste-handling facilities, and/or spill site;
- Location of a major body of water relative to the site;
- Location of any nearby private, municipal, or irrigation wells; and
- Other major physical and man-made features.

C. *Geology/Hydrogeology*

- Include proposal for logging of boreholes and characterizing site geology.
- Include proposals for identifying unconfined or confined aquifers and contaminant flowpaths.
- Include proposals for installing additional wells when initial well locations contain contaminants.

ITEMS TO BE INCLUDED IN A SITE INVESTIGATION WORK PLAN

II. PREVIOUS SITE INVESTIGATIONS

- Provide a detailed description of any previous site investigation conducted to determine if there is any soil or ground water contamination.
- Include laboratory analytical results of all soil and water samples analyzed, and water level and floating product measurements.

III. FIELD INVESTIGATION

A. *General*

- Monitoring well locations and rationale
- Survey details
- Equipment decontamination procedures
- Health and safety plan

B. *Drilling Details*

- Describe drilling and logging methods

C. *Monitoring Well Design*

- Casing diameter
- Borehole diameter
- Depth of surface seal
- Well construction materials
- Diagram of well construction
- Type of well cap
- Size of perforations and rationale
- Grain size of sand pack and rationale
- Thickness and position of bentonite seal and sand pack
- Depth of well, length and position of perforated interval

D. *Well Development*

- Method of development to be used
- Method of determining when development is complete
- Method of development water disposal

E. *Soil Sampling*

- Cuttings disposal method
- Analyses to be run and methods
- Sample collection and preservation method
- Intervals at which soil samples are to be collected
- Number of soil samples to be analyzed and rationale
- Location of soil samples and rationale
- QA/QC procedures

ITEMS TO BE INCLUDED IN A SITE INVESTIGATION WORK PLAN

F. *Well Sampling*

- Minimum time after development before sampling (48 hours)
- Well purging method and amount of purge water
- Sample collection and preservation method
- QA/QC procedures

G. *Water Level Measurement*

- Elevation reference point at each monitoring well shall be within 0.01 foot.
- Ground surface elevation at each monitoring well shall be within 0.1 foot. Method and time of water level measurement shall be specified.

IV. QA/QC PROCEDURES

- Specify number of field blanks and duplicates.

V. TIME SCHEDULE FOR PROPOSED WORK

- The work plan shall include a time schedule for implementation and completion of work.
- Work plan shall include completion schedule for installation of additional wells if initial wells have contamination.

ATTACHMENT D
ORDER NO. R5-2008-0144
FINK ROAD LANDFILL
ITEMS TO BE INCLUDED IN A SITE INVESTIGATION REPORT

The outline below is a minimum requirement for items to be included and discussed in the text of all site investigation reports submitted to the Regional Water Quality Control Board. Other supporting data to be included in the report, either within the text of the report or in appendices, are *italicized* at the end of each section. All reports must be stamped and signed by a registered geologist, certified engineering geologist, or civil engineer registered or certified by the State of California. The Discharger's certification statement shall be included with each report and plan. Other pertinent information specific to this investigation shall also be included.

I. INTRODUCTION

Summary of past investigations

Purpose of the recent investigation, including the determination of vertical and horizontal extent of contamination

Scope of the recent investigation

Time period in which the recent investigation was carried out

II. SUMMARY

Number of wells drilled

Results of soil and water analyses

Ground water flow direction and gradient

Possible source determination

Vertical and horizontal extent of contamination

III. FIELD INVESTIGATION

Well Construction

Number and depth of wells drilled

Date(s) wells drilled

Description of drilling and construction

Approximate locations relative to facility site(s)

Supporting Data:

A well construction diagram for each well shall be included in the report which shows the following details:

Total depth drilled

Depth of open hole (same as total depth drilled if no caving occurs)

Footage of hole collapsed

Length of slotted casing installed

Depth of bottom of casing

Depth to top of sand pack

Thickness of sand pack

Depth to top of bentonite seal

Thickness of bentonite seal

Thickness of concrete grout

Boring diameter

ITEMS TO BE INCLUDED IN A SITE INVESTIGATION REPORT

Casing diameter
Casing material
Size of perforations
Number of bags of sand
Well elevation at top of casing
Depth to ground water
Date of water level measurement
Monitoring well number
Date drilled
Location

Well Development

Date(s) of development of each well
Method of development
Volume of water purged from well
How well development completion was determined
Method of effluent disposal

Supporting Data:

Field notes from well development shall be included in report.

Water Sampling

Date(s) of sampling
How well was purged
How many well volumes purged
Levels of temperature, EC, and pH at stabilization
Sample collection, handling, and preservation methods
Sample identification
Analytical methods used

Soil Sampling

Date(s) of sampling
Sample collection, handling, and preservation method
Sample identification
Analytical methods used

IV. FINDINGS OF THE INVESTIGATION

Lithology

Types of sediments encountered
Presence, location, and lateral continuity of any significant sand, silt, or clay layers
Any visual signs of contamination

Supporting Data:

Well logs geologic cross-sections shall be included in the report.

Analytical Results of Soil and Ground Water Sampling

ITEMS TO BE INCLUDED IN A SITE INVESTIGATION REPORT

Analytical results of each monitoring well shall be summarized in tabular format.

Supporting Data:

*Signed laboratory analytical reports with MDLs, PQLs, and QA/QC reports
Chain-of-custody forms*

Water Levels

Static water levels measured when well drilled
Date(s) of water level measurements
Water levels determined prior to sampling

Supporting Data:

Dates of water level measurement, depths to ground water, and ground water elevations shall be tabulated and included in the report.

Ground Water Gradient and Flow Direction

Ground water gradient and flow direction determined by the investigation shall be discussed and compared to the regional gradient and flow direction.

Supporting Data:

A ground water contour map, drawn to scale, shall be provided which shows each well, its ground water elevation, and lines of equal ground water elevation. Ground water gradient and flow direction shall be shown on the map. The calculation of the gradient shall be included. Vertical and horizontal extent of groundwater contamination shall be shown on a map, including iso-concentration lines.

V. RESULTS OF QA/QC

QA/QC procedures
QC sample identification
Field blank analyses
Comparison of duplicate sample results

VI. CONCLUSIONS AND RECOMMENDATIONS

Evaluate the vertical and horizontal extent of contamination;
In tabular format and discussions, compare analytical result background levels and appropriate water quality objectives;
Identify any suspected source of contamination;
Recommend any further investigative needs based on data gaps; interim remedial measures; and public participation

ATTACHMENT E
ORDER NO. R5-2008-0144
FINK ROAD LANDFILL
ITEMS TO BE INCLUDED IN THE
FEASIBILITY STUDY/REMEDIAL OPTIONS EVALUATION REPORT

The outline below is a minimum requirement for the contents and items to be included and discussed in the text of all feasibility studies/remedial options evaluation reports submitted to the Regional Water Quality Control Board. Reports shall be stamped and signed by a registered geologist, certified engineering geologist, or civil engineer registered or certified by the State of California. The Discharger's certification statement shall be included with each report and plan.

I. Purpose of Feasibility Study/Remedial Options Evaluation

II. Background

- A. Description of Facility
- B. Site History
 - 1. Years of Operation
 - 2. Chemical Use
 - 3. Chemical Releases (Potential and Documented)
- C. Geology
 - 1. Regional
 - 2. Local, soil type, lithology, lateral extent of lithologic units
- D. Hydrogeology
 - 1. Aquifers, Aquitards, Perched Aquifers
 - 2. Groundwater flow rates, directions, recharge, discharge
 - 3. Groundwater Use
 - 4. Extraction and injection wells affect on groundwater flow
- E. Surface Water
 - 1. Losing or gaining streams, ponds etc.
 - 2. Hydraulic connection with aquifers
- F. Local Land Use
- G. Previous Investigation and Remedial Actions

II. Nature and Extent of Contamination

- A. Contaminants in Soils
 - 1. Types and Concentrations
 - 2. Lateral and Vertical Extent
- B. Pollutants in Groundwater
 - 1. Constituents, concentrations, and water quality goals
 - 2. Lateral and Vertical Extent (including Perched Zones) of contamination

**ITEMS TO BE INCLUDED IN THE
FEASIBILITY STUDY/REMEDIAL OPTIONS EVALUATION REPORT**

III. Contaminant Fate and Transport

A. Contaminant Properties

1. Mobility
2. Toxicity
3. Half-life
4. Chemical and biological degradation
5. References for above information

B. Contaminant Transport based on Soil and Aquifer Properties

IV. Remedial Action Objectives

V. Description of Remedial Action Alternatives – at a minimum, 3 alternatives must be considered

- A. Alternative that meets background levels
- B. Alternative that meets water quality objectives
- C. Alternative that meets levels between background and water quality objectives

VI. Evaluation of Remedial Action Alternatives

- A. Overall Protectiveness of Human Health and the Environment
- B. Compliance with Laws and Regulations
- C. Long Term Effectiveness and Permanence
- D. Reduction of Toxicity, Mobility, and Volume
- E. Short Term Effectiveness
- F. Implementability
- G. Cost
- F. State and Community Acceptance

VII. Potential Impacts of Remedial Actions

VIII. Estimated Project Schedule for Each Alternative

IX. Preferred Alternative

ATTACHMENT F
ORDER NO. R5-2008-0144
FINK ROAD LANDFILL
ITEMS TO BE INCLUDED IN A CLEANUP PLAN

The outline below is a minimum requirement for items to be included and discussed in the text of all cleanup plans submitted to the Regional Water Quality Control Board. All reports must be signed and stamped by a registered geologist, certified engineering geologist, or civil engineer registered or certified by the State of California. Other pertinent information specific to each individual investigation also shall be included.

I. INTRODUCTION

A. Site Assessment and characteristics

1. Site Background
2. Site description and location
3. Site history
4. Historic and current operations conducted at the site correlated to site contamination
5. Existing and planned use of the site
6. Present and historic chemical usage and handling procedures
7. Site geology and hydrogeology
8. Condition of surface and/or subsurface soil
9. All previous investigations with reference to relevant documents

B. Nature and Extent of Soil and Groundwater Contamination

1. Constituents and concentrations, including background concentrations
2. Lateral and vertical extent of contamination
3. Site maps to show above, including locations of any groundwater monitoring wells relative to soil and groundwater contamination
4. Site map showing topography
5. Site map showing groundwater gradient, direction, and iso-contour lines
6. Site map showing iso-concentration lines and vertical and horizontal extent of contamination
7. Tabulated analytical data and approved water quality and soil cleanup goals

II. SUMMARY OF SELECTED REMEDIATION ALTERNATIVE

1. Discussion of selected remedial alternative
2. Discussion of implementation of remedial alternative
3. Summary of field activities
4. Summary of bench-scale testing
5. Summary of aquifer testing
6. Remedial investigation results
7. Summary of remedial goals
8. Compliance with Federal and State regulations, if applicable

III. TREATMENT SYSTEM DESIGN AND IMPLEMENTATION

1. Conceptual Model/Remedial Design
2. Overview

ITEMS TO BE INCLUDED IN A CLEANUP PLAN

3. Block-flow and piping and instrumentation diagrams, including influent and effluent flowrates and concentrations
4. Equipment selection and operation, including make/model and manufacturer
5. System schematics (layout, instrumentation, and controls)
6. Treatment unit processes
7. Construction activities and utility requirements
8. Operation, maintenance and performance monitoring
9. Start-up sampling and performance monitoring
10. Sampling and analysis plan to demonstrate system effectiveness, performance optimization, and long-term operation with respect to achieving cleanup goals
11. Potential for off-site migration
12. Emission and discharge controls
13. Handling and disposal procedures
14. Quality assurance/quality control plan

IV. CLOSURE AND POST-CLOSURE MONITORING

1. Cleanup Strategy
2. Field sampling plan for closure and post-closure monitoring
3. Long-term operation and maintenance of remedial action measures

V. TIME SCHEDULE FOR IMPLEMENTATION AND REPORTING

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2008-0144
FOR
STANISLAUS COUNTY DEPARTMENT OF ENVIRONMENTAL RESOURCES
FOR
OPERATION OF
FINK ROAD CLASS II AND CLASS III LANDFILLS
STANISLAUS COUNTY

The Discharger shall comply with this Monitoring and Reporting Program, with Title 27, California Code of Regulations, Section 20005, et seq. (hereafter Title 27), and with the *Standard Provisions and Reporting Requirements for Waste Discharge Requirements for Nonhazardous Solid Waste Discharges Regulated by Title 27 and/or Subtitle D (27 CCR §20005 et seq. and 40 CFR 258)*, dated April 2000, as ordered by Waste Discharge Requirements Order No. R5-2008-0144.

A. REQUIRED MONITORING REPORTS

<u>Report</u>	<u>Due</u>
1. Groundwater Monitoring (Section D.1)	See Table I
2. Annual Monitoring Summary Report (Section H.5)	Annually
3. Unsaturated Zone Monitoring (Section D.2)	See Table II
4. Leachate Monitoring (Section D.3)	See Table III
5. Surface Water Monitoring (Section D.4)	See Table IV
6. Facility Monitoring (Section D.5)	As necessary
7. Response to a Release (Standard Provisions and Reporting Requirements)	As necessary

B. REPORTING

The Discharger shall submit quarterly monitoring reports with the data and information required in this Monitoring and Reporting Program and as required in Order No. R5-2008-0144 and the Standard Provisions and Reporting Requirements. Reports which do not comply with the required format will be **REJECTED** and the Discharger shall be deemed to be in noncompliance with the waste discharge requirements. 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 acceptable to the Executive Officer.

Each monitoring report shall include a compliance evaluation summary as specified in Section H. Reporting Requirements, below.

Field and laboratory tests shall be reported in each monitoring report. Monthly, quarterly, semiannual, and annual monitoring reports shall be submitted to the Board in accordance with the following schedule for the calendar period in which samples were taken or observations made.

<u>Sampling Frequency</u>	<u>Reporting Frequency</u>	<u>Reporting Periods End</u>	<u>Report Date Due</u>
Monthly	Quarterly	Last Day of Month	by Quarterly Schedule
Quarterly	Quarterly	31 March	30 April
		30 June	31 July
		30 September	31 October
		31 December	31 January
Semiannually	Semiannually	30 June	31 July
		31 December	31 January
Annually	Annually	31 December	31 January
5-Year	Every 5 years	31 December	31 January

The Discharger shall submit an **Annual Monitoring Summary Report** to the Board covering the previous monitoring year. The annual report shall contain the information specified in Section H. Reporting Requirements, below, and a discussion of compliance with the waste discharge requirements and the Water Quality Protection Standard.

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

C. WATER QUALITY PROTECTION STANDARD AND COMPLIANCE PERIOD

1. Water Quality Protection Standard Report

For each waste management unit (Unit), the Water Quality Protection Standard shall consist of all constituents of concern, the concentration limit for each constituent of concern, the point of compliance, and all water quality monitoring points for each monitored medium.

The Water Quality Protection Standard for naturally occurring waste constituents consists of the constituents of concern, the concentration limits, and the point of compliance and all monitoring points. The Water Quality Protection Standard, or any modification thereto, shall be submitted in a report for review and approval.

The report shall:

- a. Identify **all distinct bodies of surface and ground water** that could be affected in the event of a release from a Unit or portion of a Unit. This list shall include at least the uppermost aquifer and any permanent or ephemeral zones of perched groundwater underlying the facility.
- b. Include a map showing the monitoring points and background monitoring points for the surface water monitoring program, groundwater monitoring program, and the unsaturated zone monitoring program. The map shall include the point of compliance in accordance with §20405 of Title 27.
- c. Evaluate the perennial direction(s) of groundwater movement within the uppermost groundwater zone(s).

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

2. Constituents of Concern

The constituents of concern include all the waste constituents, their reaction products, and hazardous constituents that are reasonably expected to be in or derived from waste contained in the Unit. The constituents of concern for all Units at the facility are those listed in Tables I through IV for the specified

monitored medium, and Table VI. The Discharger shall monitor all constituents of concern every five years, or more frequently as required in accordance with a Corrective Action Program.

a. **Monitoring Parameters**

Monitoring parameters are constituents of concern that are the waste constituents, reaction products, hazardous constituents, and physical parameters that provide a reliable indication of a release from a Unit. The monitoring parameters for all Units are those listed in Tables I through V for the specified monitored medium.

3. Concentration Limits

Current concentration limits are interwell limits based on data from a background monitoring well. On 10 July 2008, the Discharger submitted a revised Water Quality Protection Standard Report that proposes new Concentration Limits based on intrawell statistics and Shewart-CUSUM control charts. Regional Water Board staff is in the process of reviewing the Water Quality Protection Standard Report. The WDRs require that the data set or data sets used in the Water Quality Protection Standard Report represent unimpacted groundwater conditions.

4. Current Water Quality Protection Standards

The existing concentration limits for naturally occurring constituents of concern are as follows:

<u>Constituent</u>	<u>Concentration Limit</u>	<u>units</u>
TDS	374	mg/L
Sulfate	12	mg/L
Nitrate as N	11	mg/L
Chloride	28	mg/L

New concentration limits may be adopted when an acceptable Water Quality Protection Standard Report is submitted.

5. Point of Compliance

The point of compliance for the water standard at each Unit is a vertical surface located at the hydraulically downgradient limit of the Unit that extends through the uppermost aquifer underlying the Unit. The following are the points of compliance:

- LF-1: MW-9, -10, and -11.
- LF-2, Cell 1: DL-20A, -21A, and -22A; MW-18, and -19.
- LF-2, Cell 2: DL-26, and -27; MW-14, and -18.
- LF-2, Cell 3: Pan lysimeter beneath Cell 3; MW-14, and -18.
- LF-3, Cell 1: DL-1 through DL-13 inclusive, and MW-16.
- LF-3, Cell 2: DL-28, -29, and -30; MW-16.
- LF-3, Cell 3: Pan lysimeter beneath Cell 3; MW-16, and -19.
- SI-1: Subdrain system beneath SI-1; and MW-19.
- SI-2: DL-23, -24. and -25; and MW-18.

The points of compliance for future LF-2 and LF-3 Cells will be the cell pan lysimeter and downgradient monitor wells.

6. 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 detection monitoring shall be the following:

- Surface Water: S-1 and S-2
- Ground Water MW-10, -11, -12, -13, -14, -16, -17, -18, and -19 (and other monitoring wells when constructed).
- Unsaturated Zone BL-1, -2, -3, -4, -5; DL-1 through -33 inclusive; the pan lysimeters beneath LF-2, Cell 3 and LF-3, Cell 3; and the subdrain beneath SI-1 (and other lysimeters when constructed).

The monitoring points for corrective action monitoring shall be the following:

- Ground Water MW-09, -17, -18, -19, -20, -21 and -22

7. Compliance Period

The compliance period for each 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 Unit. The compliance period shall begin anew each time the Discharger initiates an evaluation

monitoring program. If the Discharger's Corrective Action Program (CAP) has not achieved compliance with the Standard by the scheduled end of the Compliance Period, the Compliance Period is automatically extended until the facility has been in continuous compliance for at least three consecutive years.

D. MONITORING

The Discharger shall comply with the detection monitoring program provisions of Title 27 for groundwater, surface water, and the unsaturated zone, in accordance with Detection Monitoring Specification G.2 and G.4 of Waste Discharge Requirements, Order No. R5-2008-0144. All monitoring shall be conducted in accordance with a Sample Collection and Analysis Plan, which includes quality assurance/quality control standards, that shall be submitted for review and approval.

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

Method detection limits and practical quantitation limits shall be reported. All peaks shall be reported, including those which cannot be quantified and/or specifically identified. Metals shall be analyzed in accordance with the methods listed in Table VI.

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

1. Groundwater

The Discharger shall operate and maintain a groundwater detection monitoring system that complies with the applicable provisions of §20415 and §20420 of Title 27 in accordance with an approved Detection Monitoring Program. The detection monitoring system shall be certified by a California-licensed professional civil engineer or geologist as meeting the requirements of Title 27. The Discharger shall collect, preserve, and transport groundwater samples in accordance with the approved Sample Collection and Analysis Plan.

The Discharger shall determine the groundwater flow rate and direction in the uppermost aquifer and in any zones of perched water and in any additional zone of saturation monitored pursuant to this Monitoring and Reporting Program, and report the results semiannually, including the times of highest and lowest elevations of the water levels in the wells.

Hydrographs of each well shall be submitted 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.

Groundwater samples shall be collected from the detection wells, corrective action wells, background wells, and any additional wells added as part of the approved groundwater monitoring system. Samples shall be collected and analyzed for the monitoring parameters in accordance with the methods and frequency specified in Table I.

The groundwater monitoring network shall consist of:

<u>Well</u>	<u>Status</u>	<u>Function</u>
MW-9	Corrective Action	LF-1
MW-10	Detection	LF-1
MW-11	Detection	LF-1
MW-12	Background	LF-1 & LF-2
MW-13	Detection	LF-2 Cells 5 & 6
MW-14	Detection	LF-2 Cells 3 & 4
MW-16	Corrective Action	LF-3 Cells 1 & 2
MW-17	Corrective Action	LF-3 Cells 1 & 2
MW-18	Correction Action	LF-2 Cells 1 & 2
MW-19	Corrective Action	SI-1
MW-20	Corrective Action	Up-gradient sources
MW-21	Corrective Action	Up-gradient sources
MW-22	Corrective Action	LF-2

Downgradient monitoring wells shall constitute the “points of compliance; with respect to groundwater. Additional monitoring wells may be required as the landfill expands. Locations of these wells are shown on Attachment B.

The monitoring parameters shall also be evaluated each reporting period with regards to the cation/anion balance, and the results shall be graphically presented using a Stiff diagram, a Piper graph, or a Schueller plot. Samples for the constituents of concern specified in Table I shall be collected and analyzed in accordance with the methods listed in Table VI every five years.

2. Unsaturated Zone Monitoring

The Discharger shall operate and maintain an unsaturated zone detection monitoring system that complies with the applicable provisions of §20415 and

§20420 of Title 27 in accordance with an approved Detection Monitoring Program. 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.

Unsaturated zone samples shall be collected from the monitoring devices and background monitoring devices of the approved unsaturated zone monitoring system. The collected samples shall be analyzed for the listed constituents in accordance with the methods and frequency specified in Table II. All monitoring parameters shall be graphed so as to show historical trends at each monitoring point. Samples for the constituents of concern specified in Table II shall be collected and analyzed in accordance with the methods listed in Table VI every five years.

The unsaturated zone monitoring network shall consist of 'background' monitoring devices BL-1, -2, -3, -4, and -5. Downgradient monitoring devices DL-1 through DL-29, the pan lysimeters beneath LF-2, Cells 3 and 4; LF-3 Cell 3; and the subdrain beneath SI-1 shall constitute the "points of compliance" with respect to soil-pore liquid. Unsaturated zone monitoring devices shall be checked monthly for fluid and monitoring shall include the volume of fluid recovered. All future waste management units shall also have unsaturated zone monitoring which meets the requirements of this Section.

The pan lysimeters shall be checked monthly for liquid and monitoring shall also include the total volume of liquid removed from the system. Unsaturated zone monitoring reports shall be included with the corresponding semiannual groundwater monitoring and shall include an evaluation of potential impacts of the facility on the unsaturated zone and compliance with the Water Quality Protection Standard.

3. Leachate & Seep Monitoring

All Unit leachate collection and removal system sumps shall be inspected monthly for leachate generation. Upon detection of leachate in a previously dry leachate collection and removal system, leachate shall be sampled **immediately** and analyzed for the constituents listed in Table III. Leachate shall then be sampled and analyzed annually during the fourth quarter thereafter, with a retest during the following second quarter if constituents are detected that have not been previously detected. Leachate samples shall be collected and analyzed for the listed constituents in accordance with the methods and frequency specified in Table III. The constituents of concern list shall include all constituents listed in Table VI. The quantity of leachate pumped from each sump shall be measured and reported monthly as Leachate Flow Rate (in gallons).

Leachate which seeps to the surface from the Unit shall be sampled and analyzed for the Monitoring Parameters and Constituents of Concern listed in Table III upon detection. The quantity of leachate shall be *estimated* and reported as Leachate Flow Rate (in gallons/day). Also refer to Section H.4, below.

All LCRSs shall be tested annually to demonstrate operation in conformance with waste discharge requirements. The results of these tests shall be reported to the Board and shall include comparison with earlier tests made under comparable conditions. All visible portions of synthetic liners shall be inspected on a quarterly basis and their condition reported quarterly to the Board.

The Discharger shall monitor leachate discharged to the Class II surface impoundments (SI-1 and SI-2) and LCRS sumps on a daily basis and report to the Board the parameters and frequencies in Table III. Separate grab samples shall be collected from the LCRS outfall pipes of LF-3 (Cells 1 and 2 combined, Cell 3); LF-2, (Cells 1, 2, and 3); all new cells and from the SI-1 and SI-2 LCRS sumps. These samples shall be analyzed for the parameters and constituents and at the frequencies indicated in Table III below. Leachate monitoring shall be incorporated into all future expansions at the landfill.

4. Surface Water Monitoring

The Discharger shall install and operate a surface water detection monitoring system where appropriate that complies with the applicable provisions of §20415 and §20420 of Title 27 in accordance with an approved Detection Monitoring Program.

Surface water flows from on and around WMUs shall be monitored during significant storm events and sampled where they leave the facility boundary at locations S-1 and S-2 as shown in Attachment B. For all surface water monitoring points samples shall be collected and analyzed for the monitoring parameters in accordance with the methods and frequency specified in Table IV. All surface water monitoring samples shall be collected and analyzed for the constituents of concern specified in Table IV every five years. All monitoring parameters shall be graphed so as to show historical trends at each sample location.

Surface water monitoring reports shall be submitted with the corresponding quarterly groundwater monitoring and shall include evaluation of potential impacts of the facility on surface water quality and compliance with the Water Quality Protection Standard.

5. Facility Monitoring

a. 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 damage to the drainage control system, groundwater monitoring equipment (including wells, etc.), and shall include the Standard Observations contained in section H.3.f., below. Any necessary construction, maintenance, or repairs shall be completed by **31 October**. By **15 November** of each year, the Discharger shall submit an annual report describing the results of the inspection and the repair measures implemented, including photographs of the problem and the repairs.

b. Storm Events

The Discharger shall inspect all precipitation, diversion, and drainage facilities for damage **within 7 days** following *major storm events*. Necessary repairs shall be completed **within 30 days** of the inspection. The Discharger shall report any damage and subsequent repairs within 45 days of completion of the repairs, including photographs of the problem and the repairs.

6. Corrective Action Monitoring

The Discharger shall collect and analyze all data necessary to assess the success of corrective actions. This assessment shall include a determination of the spatial distribution and concentration of each COC throughout the zone affected by the release. In conjunction with the assessment the Discharger shall monitor groundwater, surface water, and the unsaturated zone to evaluate changes in water quality resulting from the corrective action. Based on the data collected the corrective action may be revised, or discontinued.

For each monitored medium, all Monitoring Points assigned to corrective action monitoring, and all Background Monitoring points shall be monitored once each calendar quarter for the monitoring Parameters listed in this Program.

For any given monitored medium, a sufficient number of samples shall be taken from all Monitoring Points and Background Monitoring Points to satisfy the data analysis requirements for a given Reporting Period, and shall be taken in a manner that ensures sample independence to the greatest extent feasible.

Groundwater sampling shall also include an accurate determination of the groundwater surface elevation and field parameters (pH, temperature, electrical conductivity, turbidity) for that Monitoring Point or Background Monitoring Point. Groundwater elevations taken prior to purging the well and sampling for Monitoring Parameters shall be used to fulfill the groundwater gradient/direction analyses required. For each monitored groundwater body, the Discharger shall measure the water level in each well and determine groundwater gradient and direction at least quarterly, including the times of expected highest and lowest elevations of the water level for the respective groundwater body. Groundwater elevations for all background and downgradient wells for a given groundwater body shall be measured within a period of time short enough to avoid temporal variations in groundwater flow which could preclude accurate determination of groundwater gradient and direction. This information shall be included in the quarterly monitoring reports.

Statistical or non-statistical analysis should be performed as soon as the monitoring data are available.

The Discharger is conducting corrective action monitoring for corrective actions initiated in response to releases from LF-1; from SI-1 and -2; and from LF-3 Cells 1 & 2. At LF-1, VOCs were released to groundwater via escaping landfill gases. As corrective action, the County completed source control measures including installation of a final landfill cover and a landfill gas extraction system. Corrective action monitoring is ongoing at LFG-1S, -1D, -2S, -2M, -2D, -3S, -3M, -3D, and MW-9 to evaluate the effectiveness of these source control measures as a corrective action.

At SI-1 and -2, VOCs and several inorganic constituents were detected in lysimeters and in groundwater at MW-15 (this well is now abandoned). In response to the releases the County implemented source control measures including reconstruction of SI-1 in 1999, reconstruction of the leachate drainage system from LF-3 in 1998, adjustment the SI-2 LCRS sump to prevent more than six inches of fluid collecting in the sump. Corrective action monitoring is ongoing at DL-20A, -21A, -22A, -23, -24, -25, MW-18, and -19 to evaluate the effectiveness of these source control measures as a corrective action.

At LF-3 Cells 1 & 2 several inorganic constituents were detected in lysimeters and in groundwater at MW-16. The County has completed source control measures for releases from LF-3. These source control measures include reconstruction of the leachate drainage system from LF-3 in 1998. Corrective action monitoring is ongoing at DL-28, -29, -30, MW-16, -17, -20, -21, and -22 to evaluate the effectiveness of the source control measures as corrective action and to evaluate possible upgradient sources of inorganic constituents.

7. Nonhazardous Solid Waste Monitoring

The Discharger shall monitor all wastes discharged to the Class III landfill waste management units (WMUs) on a monthly basis and report to the Board as follows:

<u>Parameter</u>	<u>Units</u>	<u>Report Frequency</u>
Quantity discharged	Cubic yards	Quarterly
Type of material discharged	–	Quarterly
Source of material	–	Quarterly
Minimum elevation of discharge	Feet (MSL)	Quarterly
Remaining Capacity of Cell	%	Annually

8. Designated Solid Waste Monitoring

All designated solid waste ash (boiler ash) generated from the Ogden Martin Systems of Stanislaus, Incorporated (OMSS), (formerly Stanislaus Waste Energy Company), discharged to LF-3 shall be monitored on a daily basis and reported to the Board as follows:

<u>Parameter</u>	<u>Units</u>	<u>Report Frequency</u>
Quantity discharged	Tons & yds ³	Quarterly
Minimum elevation of discharge	Feet (MSL)	Quarterly
Remaining capacity of Cell	%	Annually

The ash monitoring program shall include appropriate sampling protocol, quality assurance/quality control (QA/QC), and statistical evaluation. Ash monitoring shall include, at a minimum, the parameters and constituents analyzed and reported at the frequencies specified in Table V.

9. Designated Solid Waste Moisture Content Monitoring

A combustion ash moisture monitoring plan for the OMSS facility boiler ash was developed and implemented in order to exclude wastes containing free liquid and free moisture potentially generated from compaction due to the landfilling process. The summer load checking procedure shall be followed between **1 May** and **1 October** of each year and the winter load checking procedure shall be followed between **1 October** and **1 May** of each year pursuant to the Combustion Ash Moisture Monitoring Plan effective **1 May 1991**. The ash

moisture content shall not exceed **18 percent**. Moisture content analyses shall be in accordance with ASTM D2216.

A technical report shall be submitted by **15 January** on an annual basis summarizing the testing results and sampling and analysis methods. These reports may be submitted with annual monitoring reports and should include an evaluation of the effectiveness of the previous year's monitoring and compliance program.

H. REPORTING REQUIREMENTS

1. 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 postclosure period.

Such legible records shall show the following for each sample:

- a. Sample identification and the monitoring point or background monitoring point from which it was taken, along with the identity of the individual who obtained the sample;
 - b. Date, time, and manner of sampling;
 - c. Date and time that analyses were started and completed, and the name of the personnel and laboratory performing each analysis;
 - d. Complete procedure used, including method of preserving the sample, and the identity and volumes of reagents used;
 - e. Calculation of results; and
 - f. Results of analyses, and the MDL and PQL for each analysis.
2. A transmittal letter explaining the essential points shall accompany each report. At a minimum, the transmittal letter shall identify any violations found since the last report was submitted, and if the violations were corrected. If no violations have occurred since the last submittal, this shall be stated in the transmittal letter. The transmittal letter shall also state that a discussion of any violations found since the last report was submitted, and a description of the actions taken or planned for correcting those violations, including any references to previously submitted time schedules, is contained in the accompanying report.

3. Each monitoring report shall include a compliance evaluation summary. The summary shall contain at least:
 - a. For each monitoring point and background monitoring point addressed by the report, a description of:
 - 1) The time of water level measurement;
 - 2) The type of pump - or other device - used for purging and the elevation of the pump intake relative to the elevation of the screened interval;
 - 3) The method of purging (the pumping rate; the equipment and methods used to monitor field pH, temperature, and conductivity during purging; the calibration of the field equipment; results of the pH, temperature, conductivity, and turbidity testing; and the method of disposing of the purge water) to remove all portions of the water that was in the well bore while the sample was being taken;
 - 4) The type of pump - or other device - used for sampling, if different than the pump or device used for purging; and
 - 5) A statement that the sampling procedure was conducted in accordance with the approved Sampling and Analysis Plan.
 - b. A map or aerial photograph showing the locations of observation stations, monitoring points, and background monitoring points.
 - c. For each groundwater body, a description and graphical presentation of the gradient and direction of groundwater flow under/around the Unit, and the groundwater flow rate, based upon water level elevations taken prior to the collection of the water quality data submitted in the report.
 - d. Laboratory statements of results of all analyses evaluating compliance with requirements.
 - e. An evaluation of the effectiveness of the leachate monitoring and control facilities, and of the run-off/run-on control facilities.
 - f. A summary and certification of completion of all **Standard Observations** for the Unit(s), for the perimeter of the Unit, and for the receiving waters. Standard observations for ACTIVE landfill units shall be conducted **weekly** during the wet season (1 October to 30 April) and **monthly** during the dry season (1 May to 30 September). Standard observations for INACTIVE or CLOSED landfill units shall be conducted **monthly** during the wet season (1 October to 30 April) and **quarterly** during the dry season (1 May to 30 September). Standard The Standard Observations shall include:

- 1) For the Unit:
 - a) Evidence of ponded water at any point on the facility (show affected area on map);
 - b) Evidence of odors - presence or absence, characterization, source, and distance of travel from source; and
 - c) Evidence of erosion and/or of day-lighted refuse.
- 2) Along the perimeter of the Unit:
 - a) Evidence of liquid leaving or entering the Unit, estimated size of affected area, and flow rate (show affected area on map);
 - b) Evidence of odors - presence or absence, characterization, source, and distance of travel from source; and
 - c) Evidence of erosion and/or of day-lighted refuse.
- 3) For receiving waters:
 - a) Floating and suspended materials of waste origin - presence or absence, source, and size of affected area;
 - b) Discoloration and turbidity - description of color, source, and size of affected area;
 - c) Evidence of odors - presence or absence, characterization, source, and distance of travel from source;
 - d) Evidence of water uses - presence of water-associated wildlife;
 - e) Flow rate;
 - f) Weather conditions - wind direction and estimated velocity, total precipitation during recent days and on the day of observation; and
 - g) The quantity and types of wastes discharged and the locations in the Unit where waste has been placed since submittal of the last such report.
4. 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 Regional 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 analysis of the Constituents of Concern and Monitoring Parameters, and an estimated date that the results will be submitted to the Regional Water Board; and
 - e. Corrective measures underway or proposed, and corresponding time schedule.
5. The Discharger shall submit an **Annual Monitoring Summary Report** to the Regional Water Board covering the reporting period of the previous monitoring year. This report shall contain:
- a. All monitoring parameters and constituents of concern shall be graphed so as to show historical trends at each monitoring point and background monitoring point, for all samples taken within at least the previous five calendar years. 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. For any given constituent or parameter, the scale for background plots shall be the same as that used to plot downgradient data. Graphical analysis of monitoring data may be used to provide significant evidence of a release.
 - b. Unless otherwise exempted, all monitoring analytical data obtained during the previous two six-month reporting periods, shall be submitted in tabular form as well as in a digital file format. The Regional Water Board regards the submittal of data in hard copy and in digital format as "...the form necessary for..." statistical analysis [Title 27 CCR Section 20420(h)], in that this facilitates periodic review by the Regional Water Board.
 - c. 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.
 - d. A map showing the area and elevations in which filling has been completed during the previous calendar year and a comparison to final closure design contours.
 - e. A written summary of the monitoring results, indicating any changes made or observed since the previous annual report.
 - f. An evaluation of the effectiveness of the leachate monitoring/control facilities including the results of the annual testing of leachate collection and removal

systems required under VIII.P of the Standard Provisions and Reporting Requirements.

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

Ordered by: _____
PAMELA C. CREEDON, Executive Officer

_____ 11 September 2008
(Date)

WLB: 9/11/2008

TABLE I

GROUNDWATER DETECTION MONITORING PROGRAM

<u>Parameter</u>	<u>Units</u>	<u>Frequency</u>
Field Parameters		
Groundwater Elevation	Ft. & hundredths, M.S.L.	Quarterly
Temperature	°C	Quarterly
Electrical Conductivity	µmhos/cm	Quarterly
pH	pH units	Quarterly
Turbidity	Turbidity units	Quarterly
Monitoring Parameters		
Total Dissolved Solids (TDS)	mg/L	Quarterly
Chloride	mg/L	Quarterly
Carbonate	mg/L	Quarterly
Bicarbonate	mg/L	Quarterly
Nitrate - Nitrogen	mg/L	Quarterly
Sulfate	mg/L	Quarterly
Calcium	mg/L	Quarterly
Magnesium	mg/L	Quarterly
Potassium	mg/L	Quarterly
Sodium	mg/L	Quarterly
Volatile Organic Compounds (USEPA Method 8260, see Table V)	µg/L	Semiannual
Constituents of Concern (see Table VI)		
Total Organic Carbon	mg/L	5 years
Inorganics (dissolved)	mg/L	5 years
Volatile Organic Compounds (USEPA Method 8260B, extended list)	µg/L	5 years
Semi-Volatile Organic Compounds (USEPA Method 8270C)	µg/L	5 years
Chlorophenoxy Herbicides (USEPA Method 8151A)	µg/L	5 years
Organophosphorus Compounds (USEPA Method 8141A)	µg/L	5 years

TABLE II
UNSATURATED ZONE DETECTION MONITORING PROGRAM

PAN LYSIMETERS (or other unsaturated zone monitoring device)

<u>Parameter</u>	<u>Units</u>	<u>Frequency</u>
Field Parameters		
Electrical Conductivity	µmhos/cm	Quarterly
pH	pH units	Quarterly
Total volume of liquid removed	gallons	monthly
Monitoring Parameters		
Total Dissolved Solids (TDS)	mg/L	Quarterly
Chloride	mg/L	Quarterly
Carbonate	mg/L	Quarterly
Bicarbonate	mg/L	Quarterly
Nitrate - Nitrogen	mg/L	Quarterly
Sulfate	mg/L	Quarterly
Calcium	mg/L	Quarterly
Magnesium	mg/L	Quarterly
Potassium	mg/L	Quarterly
Sodium	mg/L	Quarterly
Volatile Organic Compounds (USEPA Method 8260B, see Table V)	µg/L	Quarterly
Constituents of Concern (see Table VI)		
Total Organic Carbon	mg/L	5 years
Inorganics (dissolved)	mg/L	5 years
Volatile Organic Compounds (USEPA Method 8260B, extended list)	µg/L	5 years
Semi-Volatile Organic Compounds (USEPA Method 8270C)	µg/L	5 years
Chlorophenoxy Herbicides (USEPA Method 8151A)	µg/L	5 years
Organophosphorus Compounds (USEPA Method 8141A)	µg/L	5 years

TABLE III
LEACHATE DETECTION MONITORING PROGRAM

<u>Parameter</u>	<u>Units</u>	<u>Frequency</u>
Field Parameters		
Total Flow from each individual sump*	Gallons	Monthly
Flow Rate from each individual sump*	Gallons/Day	Monthly
Electrical Conductivity	µmhos/cm	Monthly
pH	pH units	Monthly
Depth of leachate above each pump	feet and inches	weekly
Monitoring Parameters		
Total Dissolved Solids (TDS)	mg/L	Quarterly
Chloride	mg/L	Quarterly
Carbonate	mg/L	Quarterly
Bicarbonate	mg/L	Quarterly
Nitrate - Nitrogen	mg/L	Quarterly
Sulfate	mg/L	Quarterly
Calcium	mg/L	Quarterly
Magnesium	mg/L	Quarterly
Potassium	mg/L	Quarterly
Sodium	mg/L	Quarterly
Volatile Organic Compounds (USEPA Method 8260B, see Table V)	µg/L	Semi-annually
Constituents of Concern (see Table VI)		
Total Organic Carbon	mg/L	5 years
Inorganics (dissolved)	mg/L	5 years
Volatile Organic Compounds (USEPA Method 8260B, extended list)	µg/L	5 years
Semi-Volatile Organic Compounds (USEPA Method 8270C)	µg/L	5 years
Chlorophenoxy Herbicides (USEPA Method 8151A)	µg/L	5 years
Organophosphorus Compounds (USEPA Method 8141A)	µg/L	5 years

* For LF-3 Cell 3, the Discharger must separately record the total flow and the flow rate from (1) the primary and (2) the secondary sump

TABLE IV
SURFACE WATER DETECTION MONITORING PROGRAM

<u>Parameter</u>	<u>Units</u>	<u>Frequency</u>
Field Parameters		
Temperature	°C	Quarterly
Electrical Conductivity	µmhos/cm	Quarterly
pH	pH units	Quarterly
Turbidity	NTUs	Quarterly
Monitoring Parameters		
Total Dissolved Solids (TDS)	mg/L	Quarterly
Carbonate	mg/L	Quarterly
Bicarbonate	mg/L	Quarterly
Chloride	mg/L	Quarterly
Nitrate - Nitrogen	mg/L	Quarterly
Sulfate	mg/L	Quarterly
Calcium	mg/L	Quarterly
Magnesium	mg/L	Quarterly
Potassium	mg/L	Quarterly
Sodium	mg/L	Quarterly
Volatile Organic Compounds (USEPA Method 8260B, see Table V)	µg/L	Semiannual
Constituents of Concern (see Table VI)		
Total Organic Carbon	mg/L	5 years
Inorganics (dissolved)	mg/L	5 years
Volatile Organic Compounds (USEPA Method 8260B, extended list)	µg/L	5 years
Semi-Volatile Organic Compounds (USEPA Method 8270C)	µg/L	5 years
Chlorophenoxy Herbicides (USEPA Method 8151A)	µg/L	5 years
Organophosphorus Compounds (USEPA Method 8141A)	µg/L	5 years

TABLE V – ASH MONITORING PROGRAM

<u>Parameter/Constituent</u> ¹	<u>Sampling/Testing Frequency</u>	<u>Reporting Frequency</u>
Corrosivity (pH) ²	Bimonthly	Bimonthly
Moisture Content	Bimonthly	Bimonthly
TCLP Metals (Cd, Pb) ³	Bimonthly	Bimonthly
WET Metals (Cd, Cu, Pb, Ni, Zn) ³	Bimonthly	Bimonthly
Total Metals (Cd, Cu, Pb, ni, Zn) ³	Bimonthly	Bimonthly
Dioxins/Furans	Annually	Annually
Acute Aquatic Bioassay ⁴	Annually	Annually

- 1 Four discrete shall be collected and analyzed in accordance with the Ash Sampling and analysis Monitoring Plan (as agreed to by the Department of Toxic Substances Control on September 24, 1990).
- 2 Bimonthly analysis of corrosivity (pH) shall be in accordance with Section 66261.22, Title 22, California Code of Regulations (22 CCR).
- 3 Bimonthly analyses of total metals (Cd, Cu, Pb, Ni, and Zn), TCLP metals (Cd, Pb), and WET metals (Cd, Cu, Pb, Ni, and Zn) shall be in accordance with those procedures outlined in 22 CCR Section 66261.24.
- 4 Annual analysis of acute aquatic bioassay shall be in accordance with 22 CCR Section 66261.24(a)(6).

TABLE VI
MONITORING PARAMETERS FOR DETECTION MONITORING

Surrogates for Metallic Constituents:

pH
Total Dissolved Solids
Electrical Conductivity
Chloride
Sulfate
Nitrate nitrogen

Constituents included in VOC:

USEPA Method 8260B

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

TABLE VI
MONITORING PARAMETERS FOR DETECTION MONITORING
Continued

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

TABLE VII
CONSTITUENTS OF CONCERN & APPROVED USEPA ANALYTICAL METHODS

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

Volatile Organic Compounds:

USEPA Method 8260

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)

TABLE VII

CONSTITUENTS OF CONCERN & APPROVED USEPA ANALYTICAL METHODS

Continued

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, I-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
Hexachloroethane
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

TABLE VII

CONSTITUENTS OF CONCERN & APPROVED USEPA ANALYTICAL METHODS

Continued

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)

Semi-Volatile Organic Compounds:

USEPA Method 8270 - 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)

TABLE VII

CONSTITUENTS OF CONCERN & APPROVED USEPA ANALYTICAL METHODS

Continued

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

TABLE VI

CONSTITUENTS OF CONCERN & APPROVED USEPA ANALYTICAL METHODS

Continued

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

TABLE VI

CONSTITUENTS OF CONCERN & APPROVED USEPA ANALYTICAL METHODS

Continued

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 8141A

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

INFORMATION SHEET

ORDER NO. R5-2008-0144
STANISLAUS COUNTY DEPARTMENT OF ENVIRONMENTAL RESOURCES
FOR OPERATION OF
FINK ROAD CLASS II AND CLASS III LANDFILLS
STANISLAUS COUNTY

The Fink Road Landfill is in western Stanislaus County, about 20 miles southwest of the city of Modesto. The site is 3.5 miles west of Crows Landing, near the intersection of Fink Road and Interstate 5. The Fink Road Landfill facility is owned and operated by Stanislaus County (Discharger).

The Fink Road Landfill facility consists of five waste management units (WMUs):

LF-1: A closed 18.3-acre Class III municipal solid waste landfill, final cap constructed in 1997.

LF-2: An active 92.3-acre Class III municipal solid waste landfill consisting of seven cells, four of which have been constructed.

LF-3: An active 37-acre Class II ash monofill consisting of six cells, three of which have been constructed.

SI-1: A 1-acre Class II surface impoundment for leachate from the leachate collection and removal system (LCRS) of LF-3.

SI-2: A 1.4-acre Class II surface impoundment for leachate from the LCRS of LF-2.

A waste-to-energy (WTE) cogeneration facility, operated by Covanta Stanislaus, Inc., occupies a 16.5-acre area at the southwest corner of the site.

The closed 18.3-acre LF-1 was previously permitted for the disposal of municipal solid waste, infectious waste, and construction debris. These wastes are classified as "nonhazardous solid waste" or "inert waste". Landfill operations in LF-1 ceased in June 1993 following construction and commencement of operations of LF-2, Cell 1. Detection of volatile organic compounds in the groundwater downgradient of the LF-1 indicated a release from this WMU. The Discharger implemented the first phase of corrective action in 1997. The first phase consisted of final grading, final drainage, and placement of a final cap over LF-1. The second phase included a landfill gas collection system installed in 1998. The Discharger also conducts corrective action monitoring to determine the effectiveness of the corrective actions.

LF-2 is a Class III Municipal Solid Waste Landfill. With the current revision of the WDRs, Cell 4 and future cells of LF-2 are also permitted to accept treated wood waste as allowed under Section 25150.8 of the Health and Safety Code and Section 67386.11 of Title 22, CCR. Cells 3 and 4 are currently active, and Cells 1 and 2 have reached capacity. Municipal solid wastes are currently being disposed of in LF-2, Cell 3. On 27 April 2004, the Discharger submitted a performance demonstration for a proposed single composite liner design to be used for future Cells III at LF-2. The liner design consists of from bottom to top: a prepared sub-grade, a pan lysimeter under the leachate sump and the LCRS troughs, 1-foot of compacted soil with a hydraulic conductivity of 10^{-6} cm/sec or less, a GCL with a hydraulic conductivity of 5×10^{-9} cm/sec or less, a 60-mil thick HDPE geomembrane, 0.5 feet thick blanket LCRS, and a minimum 24 inch thick operations layer. An electronic leak detection test and repairs are required prior to the discharge of waste. The liner demonstration projected

VOC concentrations in groundwater less than detection limits and increases in salt concentrations less than the natural variability in background groundwater. These WDRs find that the proposed liner design will be installed at least 10 feet above groundwater level, which meets the performance standard for Class III landfill units.

LF-3 is a Class II ash monofill that accepts only ash from the adjacent waste to energy plant. The plant and LF-3 have been in operation since 1988. LF-3 has a total capacity of 3.13 million cubic yards. Double composite base liner was previously approved for use in LF-3. Previous Waste Discharge Requirements approved the use of a double composite liner design that consists of two composite liners separated by an LCRS and also overlain by a second LCRS for use in Class II cells at LF-3. There has also been a release of wastes from LF-3. LF-3 was placed in evaluation monitoring during 1997 due, in part, to elevated levels of inorganic constituents in downgradient compliance well MW-16. The cause of the release was determined to be leachate that was backing up in LF-3. During 1998, the Discharger reconfigured the leachate piping so that leachate would drain properly. The leachate impoundment SI-1 was also reconstructed and made larger, partially in response to a release from that unit. Additional monitoring wells MW-20, 21 and 22 were also installed around LF-3 to provide better groundwater monitoring. Monitoring of these wells continues to indicate a release from LF-3, including elevated inorganic constituents in MW-17, 20, and 21, and methyl-tertiary butyl ether in MW-17. This Order requires the discharger to investigate the release, and to submit a work plan and reports to address the investigation and corrective action.

The Discharger reconstructed SI-1 in 1999 to increase the impoundment storage capacity from approximately 218,000 gallons to 5 million gallons and replaced the existing two-foot thick low-permeability layer with an engineered alternative. This alternative consists of, from bottom to top: a GCL; an 80-mil HDPE geomembrane secondary liner; an HDPE geonet; and an 80-mil HDPE geomembrane primary liner. The Regional Water Board approved this engineered alternative in Waste Discharge Requirements Order No. 98-184.

Surface drainage for the northern quarter of the site is to the South Fork of Little Salado Creek, a tributary of the San Joaquin River. The remaining three quarters of the site drains to the east via a closed conduit under Interstate 5 and the California Aqueduct and thence via an open channel to Crow Creek, a tributary of the San Joaquin River.

WLB: 9/11/2008