CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. R5-2009-0055

WASTE DISCHARGE REQUIREMENTS FOR WASTE MANAGEMENT OF ALAMEDA COUNTY, INC. ALTAMONT LANDFILL AND RESOURCE RECOVERY FACILITY CLASS II AND CLASS III MUNICIPAL SOLID WASTE LANDFILLS AND CLASS II SURFACE IMPOUNDMENTS CONSTRUCTION, OPERATION, AND CORRECTIVE ACTION ALAMEDA COUNTY

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

1. Waste Management of Alameda County, Inc., (hereafter Discharger) owns and operates the Altamont Landfill and Resource Recovery Facility. The facility is regulated by these waste discharge requirements (WDRs) in conformance with California Code of Regulations (CCR) title 27 division 2 subdivision 1 (hereafter Title 27).

2. The facility is within Alameda County unincorporated Altamont Hills about eight miles east of the city limits of Livermore. The facility covers 3.4 square miles (2170± acres) immediately north of Altamont Pass Road in Sections 15, 16, 17, and 21, as shown in Attachment A, which is incorporated herein and made part of this Order by reference. The property includes the following Assessor Parcel numbers: 99B-6225-1, 99B-6250-1, 99B-6275-1-1, 99B-6275-1-2, 99B6275-1-3, 99B-6275-1-4, 99B-6062-1, 99B-6062-2, 99B-6062-3, and 99B-6062-5.

3. On 17 September 2004, the Discharger submitted an Amended Report of Waste Discharge (RWD) as part of the Joint Technical Document (JTD) for the facility. The JTD included a cross-reference index. The information in the RWD/JTD has been used in writing these waste discharge requirements (WDRs). The RWD contains the applicable information required in Title 27, chapter 4, subchapter 3, article 4.

4. These WDRs have been prepared to prescribe requirements for operation of the existing waste management units (Fill Area 1; Units 1 and 2) including an alternative final cover for the remainder of Fill Area 1, Unit 1; leachate and gas condensate management; a revised ground and surface water quality monitoring program; changes to the corrective action monitoring program; the construction of two Class II surface impoundments for leachate storage; and the construction of a Class II municipal solid waste (MSW) management unit (Fill Area 2) on the eastern side of the facility.

5. The Discharger proposes to construct a new 250-acre waste management unit (Fill Area 2, Unit 1) for discharge of MSW and designated waste to an area located east of Fill Area 1, Unit 1. The following table summarizes the past, current, and future permitted disposal areas at the facility, and their classification:

Disposal Area	Lined or Unlined	Start of Operations	Permitted Waste	Unit Classification	Approximate Permitted Acreage / Capacity
Fill Area 1, Unit 1	Unlined	1980	Non-hazardous solid waste, asbestos[1]	Class III	122
Fill Area 1, Unit 2	Lined	1994	Designated and non-hazardous solid waste, asbestos[1]	Class II	113
Fill Area 2	Lined	2009/2010	Designated and non-hazardous solid waste, and asbestos	Class II	250
"Influent" Class II surface impoundment	Double lined	2009	Designated liquid waste	Class II	4.56 million gallons
"Effluent" Class II surface impoundment	Double lined	2009	Designated liquid waste	Class II	4.8 million gallons

[1] Treated auto shredder waste (TASW) has been permitted at these units under a waiver from hazardous waste regulations by the Department of Toxic Substances Control (DTSC). DTSC is considering eliminating the waiver due to new data that indicate TASW should be managed as hazardous waste. This Order therefore prohibits the discharge of TASW at the Altamont Landfill if DTSC finds that it is a hazardous waste that must be managed at a Class I landfill.

6. The facility is located in a sparsely populated area. Land uses within 1,000 feet of the facility are primarily for agriculture such as dry farming and cattle grazing. The facility lies within an area zoned as "A" District and is primarily used for agricultural purposes (public utility and sanitary landfill uses are granted within this designation through the issuance of a conditional use permit). Adjacent land uses include dry-land farming, cattle grazing, and power-producing windmills. Subsidiaries of FPL Energy, Inc., lease portions of the facility property for the installation and operation of power-producing windmills. The general area of the facility is designated in the Alameda County General Plan as Agricultural/Open Space (Open Space Element)

and as Large Parcel Agriculture (East County Area Plan). The facility is in conformance with the County of Alameda Countywide Integrated Waste Management Plan (CoIWMP).

7. The facility consists of an existing unlined Class III waste management unit (Fill Area 1, Unit 1) and a lined Class II unit (Fill Area 1, Unit 2) covering approximately 235 acres. The Discharger proposes to construct a new lined Class II landfill (Fill Area 2) consisting of multiple units as shown on Attachment A. Ancillary facilities that are related to the landfill include the wastewater treatment plant; a tire shredder operation; two landfill gas electric power generation plants; a proposed landfill gas to liquid natural gas conversion facility; on-site water storage tanks; the engineering office trailer; administration offices; the groundwater interceptor barrier trench; a truck washing facility; the guard house; the fueling facility and the maintenance shop as shown on Attachment B, which is incorporated herein and made part of this Order by reference.

8. The facility is the largest landfill in the Bay Area and accepted approximately 1.9 million tons of material in 2008, which includes refuse and cover. According to the Discharger's projections, Fill Area 1 will reach its capacity (not accounting for any waste settlement) around 2010, given an average disposal rate of 6,000 tons/day (five days per week). When Fill Area 2 is completely constructed it will have a capacity of approximately 62 million cubic yards. The waste footprint for Fill Area 2 will be less than or equal to the permitted 250 acres. If the average daily discharge remains the same as Fill Area 1, the Discharger estimates it will take approximately 24 years for Fill Area 2 to reach capacity.

9. 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 that accept MSW.

WASTE AND SITE CLASSIFICATION

10. The Discharger discharges, and proposes to discharge, wastes classified under Title 27 as non-hazardous solid waste and inert waste to Fill Area 1, Unit 1. The Discharger also discharges, and proposes to discharge, wastes classified under Title 27 as designated waste, non-hazardous solid waste, and inert waste to Fill Area 1, Unit 2 and the entire Fill Area 2. These wastes include, but are not limited to, asbestos, commercial and industrial waste, MSW, non-hazardous ash, non-hazardous petroleum and/or metal contaminated soils, salty waste, construction and demolition waste, treated auto shredder waste (refer to Finding No. 17), solidified wastes, and dewatered sewage and wastewater treatment plant waste sludges.

11. The Discharger proposes to discharge landfill leachate, a designated liquid waste, into Class II surface impoundments. The Discharger also proposes to have the option to accept other liquid designated wastes in the Class II surface impoundments provided there is sufficient capacity. Prior to acceptance of other liquid designated wastes, this Order requires the Discharger to submit a JTD amendment that identifies and characterizes the waste, includes any additional measures necessary such as odor and/or vector control, and includes a water balance that demonstrates the impoundments have adequate capacity to accept the waste.

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

    a. Hazardous waste that has been granted a variance from hazardous waste management requirements pursuant to Health and Safety Code section 25143.

    b. Nonhazardous waste that consists of, or contains, pollutants that, under ambient environmental conditions at a waste management unit, could be released in concentrations exceeding applicable water quality objectives or that could reasonably be expected to affect beneficial uses of the waters of the state as contained in the appropriate state water quality control plan.

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

14. The Discharger operates, and proposes to operate, a solidification process that receives non-hazardous liquid and semi-solid wastes and grease trap pumpings. The facility also solidifies the sludge from the facility's Wastewater Treatment Plant. Solidification of non-hazardous liquid and semi-solid wastes and grease trap pumpings takes place in clay-lined pits located in the Class II area to prevent rapid infiltration of the discharged liquid waste. Following discharge to the designated area, on-site soils, ash, ground green and wood waste, processed construction and demolition (C&D) debris, or non-hazardous contaminated soils are used to solidify any free liquid present in the designated area such that the moisture content of the resulting mixture is not in excess of the waste holding capacity. The Discharger is also proposing to utilize MSW received from Transfer Stations in the solidification process. Approval to utilize MSW in the solidification process will be contingent on Regional Water Board staff approval based on demonstration project(s) review. Depending on the analytical information for the wastes that were solidified, the solidified material is then disposed in the appropriate Class II or Class III landfill areas or used as alternative daily cover.

15. The Discharger accepts for disposal and discharges wastes containing greater than one percent (>1%) friable asbestos to the landfill units. These wastes are classified as 'hazardous' under CCR title 22. However, these wastes do not pose a threat to groundwater quality and Section 25143.7 of California's 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 applicable statutes and regulations.

16. The State Water Resources Control Board adopted Resolution No. 87-22 on 19 March 1987. This Resolution allows the discharge of shredder wastes to Class III landfills where WDRs allow such disposal.

17. Treated (stabilized) auto shredder waste (TASW) is any non-recyclable waste from the shredding of automobile bodies (from which batteries, mufflers, mercury switches, and exhaust pipes have been removed), household appliances, and sheet metal. The Discharger proposed to continue to discharge TASW in the top lift of Fill Area 1, Unit 1 where it will not be exposed to acidic leachate. The Discharger also proposes to continue to use TASW as alternative daily cover, beneficial reuse material, or to dispose of it in all the applicable Class II landfill areas. In the past, TASW has been discharged at the landfill under a waiver from the Department of Toxic Substances Control (DTSC), and at the Class III unit, pursuant to Resolution No. 87-22. DTSC's waiver is currently under review and may be rescinded due to new data and information indicating it should be managed as a hazardous waste due to increasingly high concentrations of toxic metals, and concerns about the long-term effectiveness of the stabilization treatment process. If DTSC makes the determination that TASW is a special hazardous waste and requires management at a Class I facility, this Order prohibits the discharge of auto shredder waste (treated or untreated) at the Altamont Landfill.

18. The Discharger proposes to discharge treated wood waste at the landfill. CCR title 22 defines "Treated wood" to mean wood that has been treated with a chemical preservative for purposes of protecting the wood against attacks from insects, microorganisms, fungi, and other environmental conditions that can lead to decay of the wood and the chemical preservative is registered pursuant to the Federal Insecticide, Fungicide, and Rodenticide Act (7 U.S.C. Sec. 136 and following). This may include but is not limited to waste wood that has been treated with chromated copper arsenate (CCA), pentachlorophenol, creosote, acid copper chromate (ACC), ammoniacal copper arsenate (ACA), ammoniacal copper zinc arsenate (ACZA), or chromated zinc chloride (CZC).

19. Findings and specifications in these WDRs 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. Treated wood that is not a hazardous waste can be handled as C&D debris or MSW, as

appropriate, and the limitations and prohibitions for its handling as specified in these WDRs do not apply.

20. Title 22 section 67386.11 allows treated wood waste to be disposed in a composite-lined portion of a MSW landfill that is regulated by WDRs issued pursuant to the California Water Code provided that the landfill:

    a. Comply with the prohibitions in Title 22 section 67386.3, which are:

        i. Treated wood waste shall not be burned, scavenged, commingled with other waste prior to disposal, stored in contact with the ground, recycled without treatment (except as in iii, below), treated except in compliance with 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 many 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 if a verified release is detected from the unit where treated wood is disposed, the disposal of treated wood will be terminated at the unit with the verified release until corrective action ceases the release. .

    d. Handle treated wood waste in a manner consistent with the applicable sections of the California Occupational Safety and Health Act of 1973.

21. The facility operates a wastewater treatment plant (WWTP) on the southeast side of Fill Area 1. Wastewater streams that are processed include leachate from Fill Area 1 and future Fill Area 2, landfill gas condensate, wash water from equipment maintenance, and other designated water collection sumps. The WWTP is designed to treat 75,000 gallons/day and can treat up to 201,600 gallons per day during a peak flow event. The treated water is used for dust control in the lined Class II landfill areas as allowed under Title 27 section 20340(g) when units have

a leachate collection and removal system (LCRS) and contain waste of a similar classification to units from which the leachate was extracted. The Discharger has no NPDES permit for surface water discharge from the plant. The Discharger has proposed to construct two Class II surface impoundments to accommodate the extra volume of leachate generated by Fill Area 2, and has also proposed to return treated leachate and landfill gas condensate to Class II lined landfill units as discussed in Finding 104.

22. Contained within Fill Area 1, Unit 1 is a closed hazardous and designated waste disposal area. This clay lined and capped unit, also known as the Red Star Area, contains mainly laundry wastewater treatment sludge, sandblasting residue, and small amounts of other designated wastes. This area was closed in 1987 by capping with a compacted clay layer and subsequent covering with MSW and finally overlain by the Unit 2 base liner. The area received a variance from DTSC regarding the final closure on 1 June 1998 and noted in the California Regulatory Notice Register 98, Volume No. 25-Z.

23. The Discharger proposes to discharge landfill leachate into two Class II surface impoundments and use it for dust control in lined Class II landfill areas or return it to the lined unit in accordance with CCR Title 27.

24. The exclusion of Hazardous and designated wastes from the facility is accomplished through load checking and waste screening, as described in the Hazardous Waste Exclusion Program included in the Joint Technical Document. Hazardous wastes that are identified and require removal are temporarily stored at the hazardous waste storage area adjacent to the administration office. Shipment of hazardous site offsite is done under EPA ID No. CAD981382732.

SITE DESCRIPTION

Geologic Structures

25. The facility was constructed on top of geological structures that formed as the result of compression and extensional forces applied over geologic time to the underlying stratum. After deposition of sediments and then consolidation, the area experienced an episode of compression, which produced the Altamont Anticline. Also associated with the compressional-folding are secondary fractures, identified on the facilities boring logs. The orientation of the dipping sedimentary beds is 10 to 30 degrees to the east-northeast. The geomorphic features indicate that the Altamont Anticline is a broad structure that trends north-northwest with an axis that skirts the far-western margin of the facility. In addition, RUST (1998) also reported the presence of the Altamont Thrust Fault that underlies the waste management facility, which may have formed during the same compressional episode as the folding. The orientation of the Altamont Thrust Fault is not known. The stratigraphy under the landfill again experienced

deformation as the region experienced extension. As a result, en echelon to the Altamont Anticline is a series of high angle normal faults that dip to the east.

26. There are no known Holocene faults within 200 feet of the facility property (facility boundary). Potential active faults in the Area include the Midway fault (approximately 1.6 miles from the site), the Greenville fault (approximately 3.1 miles from the site), and the Corral Hollow-Carnegie fault (approximately 3.1 from the site) (RUST, 1994a). Major potentially active faults near the Altamont Hills region include the Calaveras, the San Andreas, and the Hayward faults. Based on a review of 13 potentially active faults, the design MCE for the site was established as either a moment magnitude (M_w) 6.7 event on the Great Valley blind thrust Segment 6, termed the near-field design event, or a M_w 7.9 event on the San Andreas Fault, termed the far-field design event. The expected median near-field bedrock MCE PHGA equals 0.72 g and the expected median far-field bedrock MCE PHGA equals 0.10 g. The expected median free-field bedrock MCE significant duration (D_s) equals 10.8 seconds for the near-field MCE and 38.6 seconds for the far-field MCE. The Greenville Fault MCE was eliminated from consideration based on judgment, as the calculated PHGA for this event was significantly smaller (0.57 g for M_w 6.9) than that of the Great Valley blind thrust Segment 6.

27. During previous investigations at the site, several bedrock faults were identified within the facility boundaries. These include the East Perimeter fault, the Dibblee fault, the Lookout Hill fault, the F4 fault, the West fault, East fault, Huey fault, and WCC fault (RUST, 1994a). William Lettis and Associates, Inc. (WLA) conducted a comprehensive study of fault activity for the site and vicinity in 1993 (WLA, 1993). Results of that study indicate that recent (Holocene) active faults are not present at the facility site (RUST, 1994a). This finding was based on the following:

    - an absence of deformation of Holocene geomorphic surfaces;
    - the presence of late Pleistocene or Holocene deposits without fault traces in trench excavations;
    - an absence of geomorphic expression indicative of Holocene fault activity; and
    - generally short (<1.2 mile) lateral continuity of fault traces based on air-photo interpretation.

28. Excavations conducted by WLA (LFR Levine-Fricke, 2002) near the southern boundary of Fill Area 1 showed an absence of distinct fault zones across the projections of faults identified during geologic field mapping, and the presence of broad zones of greater fracturing and shearing along the projections of these fault zones. Overall, however, the investigations indicate that shallow bedrock in the area directly south of the facility southern boundary is pervasively fractured throughout, with a few broad areas of comparatively more intense fracturing. Data collected throughout the excavations demonstrate that the entire shallow

bedrock package is fractured and sheared, consistent with previous interpretation regarding pervasive weathering of the upper portions of the Panoche formation at the site.

29. Individual faults are characterized by minor offset bedding, drag folding, and gouge zones averaging 0.5 to 1 inch, and up to 6 inches wide. Excavations near the landfill margin show that the siltstones and claystones tend to preserve faulting with distributed deformation across broad zones that have fracture orientations similar to the mapped faults north and south of the excavations. The absence of distinct, well-defined fault zones makes it likely that groundwater flows through the highly fractured rock mass in a manner more similar to that of porous media rather than via fracture flow.

30. A distinct color change, from a tan hue to a pronounced bluish-gray hue in the sediments, occurs across the entire site at different elevations.

31. The high point elevation at the facility is a hill on the facilities north side measured at 1257 feet above msl, while the lowest elevation of 540 feet above msl is at the southern boundary of the waste management facility.

32. The landfill property is situated in an area that is susceptible to mass movement on natural slopes. Landslide deposits occur in and around Fill Area 1. They are typically associated with dip slopes in the Panoche mudstone, and faulted and fractured areas. During the excavation of Unit 2 in Fill Area 1, six landslides occurred on the south-facing slope. The landslides may have been associated with unearthing and reactivating existing landslide deposits or with the fine sediments overlying deep fractured bedrock due to tectonics or weathering. Each of the six landslides was preceded by construction that increased the slope angle and then followed by periods of prolonged intense rainfall.

33. There are several historical landslides within the footprint of the Fill Area 2 expansion. However, prior to installing the liner the Discharger will remove these known landslides to achieve uniform soil properties. If new landsides are unearthed during construction, they will be mapped and then removed.

34. Based on previous work conducted at the site, the F4, Lookout Hill, and Dibblee faults are correlated from north to south across the facility. The westernmost fault zone mapped in Fill Area 1 is the F4 fault on the basis of strike, dip, and location along the facility Entrance Road. East of the F4 fault, geologic field mapping and analysis from four excavations identified two possible faults exposed in railroad cuts that merge to the north and is likely the Lookout Hill fault. In railroad cuts south of facility, the Lookout Hill fault zone strikes N10-18 degrees W, and dips east. Railroad cuts south of Altamont Pass Road provide exposures of the Dibblee Fault. This N10 degrees W-striking, 60-foot wide fault zone contains many nearly vertical shears and fractures. See Attachment C, which is incorporated herein and made part of this Order by reference.

35. The Lookout Hill and Dibblee fault zones appear to cross the facility and project through the railroad cuts south of facility. Many small fractures and joints are present between the two fault zones, indicating pervasive deformation of the bedrock between primary zones of displacement. As indicated above, however, the data collected indicate that the entire shallow bedrock package is fractured and sheared, consistent with previous interpretation regarding pervasive weathering of the upper portions of the Panoche formation at the site (see Attachment C).

36. The West fault has been mapped through Fill Area 2. The fault is mapped through the axis of the main canyon of Fill Area 2 and extends across a small saddle on the southern border of Fill Area 2. The West fault is steeply dipping, without a large mappable offset across the fault. The Huey fault daylights northeast of Fill Area 2 and has similar characteristics to the West fault (see Attachment C).

HYDROLOGY

Surface Water Conditions

37. 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.

38. The facility is near the crest of the Altamont Hills. The regional topography is characterized by moderately to steeply rolling hills and narrow valleys that have a northwest trend. Surface water flows from the ridges down through the valleys and discharges into local drainages. These natural drainages, which are often dry, ultimately drain toward the Sacramento-San Joaquin Delta to the east or the San Francisco Bay toward the west, when surface water flow is sufficient. The drainage divide between the Central Valley Region and San Francisco Bay Region traverses the facility property. Runoff originating on the east side of the facility property drains eastward in un-named channels and ditches to Mountain House Creek, which flows to Old River in the Sacramento-San Joaquin Delta. Runoff originating on the west side of the divide flows west-southwest to channels along Dyer Road that drain into Altamont Creek, which may flow into San Francisco Bay through Arroyo Las Positas, Arroyo Mocho, Arroyo de la Laguna, and Alameda Creek near Union City.

39. For the drainages on the east side of the surface water divide, which drain into Sacramento-San Joaquin Delta, designated beneficial uses of surface waters, as designated in the Basin Plan, are: municipal and domestic supply; agricultural supply; industrial service supply; industrial process supply; water contact and non-contact water recreation; warm freshwater habitat; cold fresh water habitat; migration of aquatic organisms; spawning, reproduction, and/or early

development; wildlife habitat; and navigation. For the drainages on the west side of the surface water divide, as designated in the *Water Quality Control Plan for the San Francisco Bay Basin*, the Arroyo de la Laguna has potential beneficial uses for warm freshwater habitat and cold freshwater habitat, and existing beneficial uses for groundwater recharge, fish migration, water contact recreation, non-contact water recreation, fish spawning, and wildlife habitat.

40. The facility receives an average of about 13 inches of precipitation per year. For the 30-year period from 1971 to 2000, NOAA (2001) reports a normal annual precipitation of 14.8 inches at the Livermore Weather Station and 12.51 inches at Tracy Pumping Weather Station. Annual precipitation recorded at the facility weather station in 1997 was 10.85 inches (Simon, 1998). In 2004, 12.37 inches of precipitation was measured at the EPA ACAP study area on the south side of Fill Area 1, Unit 1. Precipitation at the project site within this range is typical of the Central Valley region. Rainfall is seasonal, with approximately 90 percent of the rainfall occurring between November and April. Snowfall is unusual at the site. Strong westerly winds from the Pacific coast are characteristic of the Altamont Pass area. Evaporation data collected for the site between 1991 and 1997 indicate a mean inferred evaporation of 65.86 inches per year (Simon, 1998). For that time period (1991-1997), the highest mean monthly-inferred evaporation was calculated as 10.85 inches for July and the lowest mean monthly-inferred evaporation was calculated as 1.13 inches for December (Simon, 1998).

41. The 100-year, 24-hour precipitation event is estimated to be 3.75 inches and the 1,000-year, 24-hour precipitation event is estimated to be 4.9 inches, based on Department of Water Resources' bulletin entitled *Rainfall Depth-Duration-Frequency for California*, revised November 1982, updated August 1986.

42. As indicated by the Flood Hazard Map the facility is not within a 100-year floodplain as identified by the Federal Emergency Management Agency (FEMA).

43. During the development of Fill Area 2, the Discharger will regrade and modify wetlands near the base of the waste management unit. Consequently, a complete 401 Water Quality Certification or Wavier, which ensures that the project will comply State regulations, will be necessary prior to receiving the U.S. Army Corps of Engineers Section 404 permit. Both permits are necessary prior to initiating work in the wetlands area. Also, an application for a streambed alteration permit was submitted to the California Department of Fish and Game.

Groundwater Conditions

44. Groundwater is encountered at the site at depths ranging from approximately 140 feet bgs on hilltops to the ground surface in the valley bottoms where Fill Area 2 will be constructed. Groundwater occurs primarily in the upper weathered portions of the Panoche Formation bedrock and in the valley alluvium. Shallow groundwater at the site generally occurs as unconfined water table conditions.

Deeper groundwater within the Panoche Formation Bedrock may occur under confined conditions. In general, the groundwater level fluctuates approximately 2 to 6 feet seasonally.

45. The lithology beneath the facility property generally consists of mantled Quaternary deposits unconformably overlying the Cretaceous Panoche Formation. The Quaternary deposits generally consist of colluvium on the hills and hillsides and alluvium in the valleys. These deposits are generally moderately to highly plastic clays with minor amounts of fine-grained sand and bedrock fragments with residual soil up to 25 feet thick. The Panoche Formation consists of inner bedded claystone, siltstone, and massive indurated sandstone, which are representative marine turbidite sequence. The formation generally strikes northwest and dips east-northeast at 10 to 30 degrees on the east limb of the Altamont Anticline. The depth of weathering in the Panoche Formation is variable and ranges from about 10 to 100 feet below ground surface.

46. Investigations conducted at the site indicate that shallow groundwater flow is influenced by surface topography. The conceptual model for shallow groundwater flow is a topography-driven recharge/discharge flow system, whereby groundwater is recharged predominantly on the hillsides and discharges to the local topographic low. The water table in the conceptual model coincides with the surface topography, and groundwater flows from the highlands (recharge areas) toward the valleys (discharge areas). Vertical hydraulic gradients show a very consistent pattern, with downward gradients measured along the ridges (recharge areas) and upward gradients in the valleys (discharge areas). The magnitudes of vertical hydraulic gradients are generally in the range of 0.1 to 0.6 ft/ft. As reported in the latest Semi-Annual Groundwater Monitoring Report, the horizontal groundwater flow velocity in the alluvium and weathered bedrock is estimated to be approximately 1 foot/day.

47. Hydraulic conductivity of the native soils and bedrock beneath the site is highly variable, but generally decreases with depth. The highest hydraulic conductivity values (up to 6.3×10^{-3} centimeters per second [cm/sec]) have been observed in the shallowest depth intervals. The more transmissive zones are associated with unconsolidated alluvium and the upper, more pervasively weathered portions of the underlying bedrock. Significantly lower hydraulic conductivity values (as low as 3.5×10^{-9} cm/sec) have been measured at depths greater than 100 feet bgs. The hydraulic testing conducted during the 2002 hydrogeologic investigation (LFR, 2002) concluded from three pumping and recovery tests that no measurable hydraulic communication exists between shallow and deeper groundwater zones. The contribution of local groundwater flow to Livermore-Amador Valley's main groundwater basin is considered negligible due to the very low permeability of the geologic materials (Alameda County Water District Zone 7, 2001). Rather, local groundwater flow that does occur discharges as surface water into valley bottoms (Alameda County Water District Zone 7, 2001).

48. Findings from the site characterization investigation indicate groundwater geochemical conditions range from very low TDS to brackish conditions (RUST, 1994a). More recent studies indicate the TDS content of groundwater generally increases with depth (LFR, 2001). Deeper groundwater TDS concentrations are greater than 1,000 mg/L (LFR, 2001). Groundwater geochemistry is primarily sodium bicarbonate to sodium chloride dominated.

49. Monitoring data for 2007 indicate groundwater quality has an electrical conductivity (EC) ranging between 900 and 4,900 micromhos/cm in the groundwater interceptor barrier (GWIB) and monitoring well MW5A, respectfully. During the same time, total dissolved solids (TDS) in groundwater ranged between 520 and 2,800 mg/L in the GWIB and MW5A, respectfully.

50. Groundwater tritium analysis was done as a means of characterizing the age of the groundwater and residence time of groundwater flow beneath the site. Generally, the natural tritium content decreased with depth (LFR, 2001), indicating the water is older with depth. To further refine the estimated age of groundwater beneath the site, RUST (1994a) conducted groundwater age dating using the C14 age dating method. Results of C14 age dating have indicated that deeper groundwater beneath the site can be as old as 30,400 years.

51. The designated beneficial uses of the groundwater, as specified in the Basin Plan, are municipal and domestic supply, agricultural supply, and industrial supply.

GROUNDWATER AND UNSATURATED ZONE MONITORING

52. Review of Alameda County Flood Control and Water Conservation District records in June 2003, indicates that there are 14 municipal, domestic, industrial, or agricultural groundwater supply wells within one mile of the site. The wells include 2S/3E 16E 1, 2S/3E 18C 2, 2S/3E 18J 1, 2S/3E 18J 2, 2S/3E 18J 5, 2S/3E 18J 6, 2S/3E 18J 7, 2S/3E 18 J 8, 2S/3E 21C 2, 2S/3E 19H 1, 2S/3E 21C 11, 2S/3E 21E 1, 2S/3E 21K 1, and 2S/3E 29C 1.

53. The Discharger submitted a Detection Monitoring Program (DMP) for the site on 22 July 2005. The groundwater-monitoring program for facility was designed to provide environmental protection during and after landfill development. The key elements of the DMP include: (1) selection of an effective detection monitoring well network; (2) selection of appropriate monitoring parameters; (3) use of effective statistical methods to identify potential releases from the facility; and (4) appropriate sampling frequency. The groundwater-monitoring program is based on the distinct hydrogeologic and geochemical characteristics of the area and the potential influence of the landfill on the hydrogeologic system. The groundwater-monitoring network consists of a series of monitoring wells in areas considered most likely to identify the earliest possible detection of a potential release from the landfill. However, the groundwater monitoring system proposed

for Fill Area 2 needs additional wells at the Point of Compliance as the waste management unit is expanded throughout its lifespan.

54. Lateral groundwater flow beneath the facility follows the original topography. Fracturing in the upper weathered zone controls vertical groundwater flow. The main emphasis of the detection monitoring program is to monitor groundwater in the canyons immediately downgradient of landfill units. The groundwater monitoring points are described in the attached Monitoring and Reporting Program.

55. Volatile organic compounds (VOCs) are often detected in a release from a landfill, and are the primary waste constituents detected in groundwater beneath a MSW landfill. Since VOCs 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 evaluation of a release of wastes from a Unit.

56. Title 27 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 section 20415(b)(1)(B)2.-4. However, Title 27 does not specify a specific method for non-statistical evaluation of monitoring data.

57. The Regional Water Board may specify a non-statistical data analysis method pursuant to Title 27 section 20080(a)(1). California Water Code section 13360(a)(1) 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.

58. 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.

59. 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 potential release of waste from a Unit has occurred. Following an indication of a potential 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.

60. The Discharger's conceptual groundwater model for Fill Area 1 suggests that the majority of the groundwater flow follows the topography as it passes the facility boundary. The downgradient edge of Fill Area 1 has historically been impacted by VOCs. The Discharger implemented a groundwater cleanup by installing an interceptor barrier.

61. Groundwater-monitoring wells for Fill Area 1 are listed in Monitoring and Reporting Program No. R5-2009-0055. Locations of monitoring wells are shown on Attachment C.

62. The unsaturated zone beneath Fill Area 1 is monitored by pan lysimeters designated VZM-A and VD (Unit 1), and VD2 (Unit 2). The Discharger proposes to monitor the unsaturated zone beneath Fill Area 2 with a pan lysimeter.

63. The Groundwater monitoring system for Fill Area 2 is listed in Monitoring and Reporting Program No. R5-2009-0055. Locations of monitoring wells are shown on Attachment C.

64. To monitor groundwater conditions on the northern boundary of Fill Area 2, an additional well must be installed in the weathered zone in the saddle area at the intersection of the West Fault and the northern extent of Fill Area 2. This Order requires a work plan for installation of a monitoring well at this location.

65. Title 27 requires that a detection monitoring well is installed at the downgradient edge of the Unit. Fill Area 2 will be filled in stages. As a result, the footprint of the waste management unit will expand over time. The Discharger must develop and implement a plan that will ensure there will be a groundwater monitoring well at the downgradient edge of the waste throughout the life of the facility.

66. The Discharger must propose a monitoring program for the two Class II surface impoundments which complies with Title 27. This Order requires installation of monitoring well(s) or other approved monitoring device for the two Class II surface impoundments.

LEACHATE MONITORING

67. Leachate produced within Fill Area 1 is monitored at locations designated as LS, LS2, and Wastewater Treatment Plant Effluent.

68. During 2007, Fill Area 1, Unit 1 and Valley Drain produced an average of 3,062 gallons of leachate per day. Fill Area 1, Unit 2 produced an average of 5,053 gallons of leachate per day for the same period.

69. The Discharger will monitor leachate produced in Fill Area 2 from the sump. The volume of leachate will vary with the amount of area exposed.

LANDFILL GAS

70. The facility has installed vertical and horizontal landfill gas collection wells and piping into the waste of Fill Area 1, Unit 2. The collection system utilizes high-density polyethylene (HDPE) collection pipe and Schedule 80 PVC or steel riser pipe for wells. As the landfill expands, new wells and collection piping is brought online. Landfill gas collected from the system is collected and drawn to the landfill gas-to-energy facility, which consumes an average of 3.6 million cubic feet of landfill gases per day.

71. Landfill gas condensate generated within Fill Area 1 is collected and gravity flows through the lateral and header pipes to a storage tank located at the former landfill gas flare station. The condensate unable to gravity flow to the gas-to-energy plant is collected in sumps, which are pumped regularly to a point where they will gravity flow to the storage tank. The condensate is then removed from the storage tank for destruction in the landfill flare(s) or returned to a lined unit in accordance with CCR title 27. Alternatively, the Discharger may separate the aqueous phase from the landfill gas condensate for processing in the WWTP.

72. There are 15 landfill gas monitoring wells for Fill Area 1. A landfill gas monitoring program for Fill Area 2 must be developed and installed prior to placement of waste within the waste management unit.

GROUNDWATER DEGRADATION AND CORRECTIVE ACTION

73. Low concentrations of VOCs were detected in groundwater below the Fill Area 1, Unit 1 landfill toe in 1982. Monitoring wells E-05 and E-07 were installed near the toe in 1985 to assist in the monitoring. A GWIB was installed in 1987 to contain and extract groundwater in the toe area. The toe area of the landfill was closed with a prescriptive cover liner system, and landfill gas collection and control were implemented as corrective actions. The VOCs reported during the initial operation of the GWIB have not been detected above reporting limits since 1992 (SCS Engineers, July, 2003). A detailed evaluation and pilot study program was conducted in 2003 and 2004 to assess the effectiveness of the GWIB. The results of the study indicated that extraction from the GWIB had no consequential effect on groundwater quality at the site, and groundwater extraction from the GWIB, therefore, was terminated in 2004. Based on review of the data, a Revised Engineering Feasibility Study was submitted in 2005, which included continued landfill gas extraction coupled with monitored natural attenuation as the appropriate remedial action. Groundwater monitoring continues in this area. These WDRs adopt the new corrective action measures for this area as described in the 2005 Revised Engineering Feasibility Study. Monitoring wells E-05 and E-07 are Point of Compliance wells in this area.

74. Low concentrations of VOCs were detected on the east side of Fill Area 1, Unit 1 at monitoring well E-20B in 1999. Monitoring data collected from the E-20B area over the past several years have shown a continuing decrease in the concentrations of VOCs. The lateral and vertical extent of groundwater impacts has been defined. The source of the low concentrations of VOCs detected in E-20B has been attributed to landfill gas. Landfill gas collection and extraction systems were installed as corrective actions to mitigate the impact. These efforts, in addition to natural attenuation processes, have resulted in improved groundwater quality at E-20B. Based on review of the data, a Revised Engineering Feasibility Study was submitted in 2005, which included continued landfill gas and condensate extraction coupled with monitored natural attenuation as the appropriate remedial action. These WDRs adopt the corrective action measures for this area as described in the 2005 Revised Engineering Feasibility Study. To facilitate the groundwater cleanup strategy outlined in Title 27, monitoring well E-20B is now identified as a corrective action well.

75. The following VOCs have been detected routinely in groundwater: dichlorofluoromethane, trichlorofluromethane, dichlorodifluoromethane, diethyl ether, tetrahydrofuran, and vinyl chloride.

LINER PERFORMANCE DEMONSTRATION

76. 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 Water Resources Control Board responded, in part, that “a single composite liner system continues to be an adequate minimum standard” but added that 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.”

77. In a letter dated 17 April 2001, the Executive Officer notified Owners and Operators of Solid Waste Landfills that “the Regional Water 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.”

78. The Discharger submitted a liner performance appraisal for construction of the liner system at the facility Class II waste management units (Golder Associates, Inc. October 2001; and GeoSyntec Consultants, Inc., July 2004). The liner performance appraisals comply with the requirements in Title 27.

CONSTRUCTION AND ENGINEERED ALTERNATIVE

79. On 17 June 1993, and as amended on 21 July 2005, the State Water Resources Control Board adopted Resolution No. 93-62 implementing a policy for the construction, monitoring, and operation of MSW landfills that is consistent with the federal MSW regulations promulgated under Title 40, Code of Federal Regulations, Part 258 (Subtitle D).

80. Resolution No. 93-62 requires the construction of a specified composite liner system at new MSW landfills, or expansion areas of existing MSW landfills, that receive wastes after 9 October 1993.

81. 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 and that its components, in combination, equal or exceed the waste containment capability of the prescriptive design .

82. Title 27 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 sections 20080(c)(1) and (2), the Discharger must demonstrate that the prescriptive design is unreasonably and unnecessarily burdensome and will cost substantially more than an alternative which will meet the criteria contained in Title 27 section 20080(b), or would be impractical and would not promote attainment of applicable performance standards. The Discharger must also demonstrate that the proposed engineered alternative liner 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 section 20080(b)(2).

83. California Water Code section 13360(a)(1) allows the Regional Water Board to specify the design, type of construction, and/or particular manner in which compliance must be met in WDRs or orders for the discharge of waste at solid waste disposal facilities.

84. The Discharger proposes liner systems for Fill Area 2 and the Class II surface impoundments which will be designed, constructed, and operated to prevent migration of wastes from the Unit to adjacent natural geologic materials, groundwater, or surface water during disposal operations, closure, and the post-closure maintenance period in accordance with the criteria set forth in Title 27 for a Class II waste management units.

Groundwater Separation

85. The Discharger submitted a Report of Waste Discharge requesting approval of an engineered alternative to five feet of groundwater separation for Fill Area 2 similar to that constructed in Fill Area 1, Unit 2. This Order conditionally approves the

proposed three feet of separation for Fill Area 2 and requires that the Discharger monitor the water in the groundwater underdrain for impacts. If impacts are found and confirmed, the Discharger must provide five feet of separation in all future units in Fill Area 2 constructed after the impacts are found (Discharge Specification B.2), and also investigate and remediate the impacts as required in section E. Detection Monitoring Specifications of these WDRs.

Engineered Alternative Liner System for Fill Area 2

86. The Discharger's proposed engineered alternative bottom liner system in Fill Area 2 consists of, from top to bottom:

a. A one-foot thick gravel LCRS;
b. A 60-mil thick HDPE geomembrane;
c. A two-foot compacted low-permeability soil layer;
d. A one-foot compacted general earth fill layer;
e. A geotextile separator;
f. A one-foot thick groundwater subdrain gravel layer; and
g. Prepared subgrade.

87. Side slope liners are proposed to be constructed of, from top to bottom:

a. A geocomposite drainage layer LCRS;
b. A 60-mil HDPE geomembrane;
c. A two-foot compacted low-permeability soil layer or a Geosynthetic Clay Layer (GCL);
d. A one-foot compacted general earth fill layer in the portion of the wetted footprint of the landfill;
e. A double-sided subdrain drainage geocomposite; and
f. Prepared subgrade.

88. The Discharger has adequately demonstrated that construction of a Subtitle D prescriptive standard liner would be unreasonable and unnecessarily burdensome when compared to the proposed engineered alternative design. The Discharger has demonstrated that the proposed engineered alternative is consistent with the performance goals of the prescriptive standard and affords at least equivalent protection against water quality impairment.

89. The LCRS for the bottom liner consists of a one-foot permeable gravel layer overlying a geotextile fabric and the HDPE geomembrane; intermediate perforated collection pipe network; a depressed sump area; and a side-slope riser with leachate pump. The leachate collection and removal system for the side-slope liner consists of a double-sided geocomposite. The design leachate generation rate is 580 gallons per minute. The design extraction rate is 1,160 gallons per minute.

90. Construction will proceed only after all applicable construction quality assurance plans have been approved by the Executive Officer.

Class II Surface Impoundments Liner System

91. The Class II surface impoundments will have a lined area of approximately one acre in size and a maximum water storage depth of about 3 meters (10 feet) excluding the two-foot minimum freeboard requirement. The Discharger proposes an engineered alternative to the prescriptive liner requirements of Title 27 for the Class II surface impoundments. The engineered alternative consists of from the top down:

a. 1.5 foot operations soil layer;
b. 40-mil sacrificial HDPE geomembrane;
c. the primary 60-mil-thick HDPE geomembrane;
d. HDPE Geonet;
e. LCRS gravel;
f. The secondary 40-mil HDPE geomembrane;
g. A GCL;
h. The pan lysimeter single sided geocomposite;
i. Pan lysimeter gravel;
j. A tertiary 40-mil HDPE geomembrane;
k. 4-inch select soil liner bedding; and
l. A compacted subgrade.

The Discharger proposed the soil operations layer and sacrificial geomembrane layer to protect the primary liner when the impoundments are cleaned out.

92. The Class II surface impoundments will be graded with positive slopes such that the geocomposite LCRS layer will drain to a LCRS collection sump. The LCRS sump will have minimum plan dimensions of 3 meters (10 feet) square, a thickness of 0.3 meters (one-foot), and a volume of about 2.83 meters^3 (~100 cubic feet). The LCRS sump will contain drainage gravel and a minimum 0.15-meter (6-inch) diameter perforated HDPE collection pipe for removal of any liquid from the leak detection system.

93. The LCRS geocomposite drainage layer will have a minimum transmissivity of 4×10^{-4} meters^2 per second (4×10^{-3} feet^2 per second). Assuming a hypothetical damage to the primary geomembrane liner equal to a 1 millimeter diameter hole for every acre of lined area (suggested standard value for modern liner construction & CQA) and a maximum permitted hydraulic head of 0.3m (e.g., 12-inch maximum), the LCRS geocomposite will have a flow capacity of 20 meters^3 per acre per day (e.g., >5,000 gallons per acre per day). The minimum 0.15-meter (6-inch) diameter perforated HDPE collection pipe and LCRS sump will both have capacities of at least 21 meters^3 per acre per day

(~5,550 gallons per acre per day). Given a recommended Action Leakage Rate of 7.57 meters^3 per acre per day (2,000 gallons per acre per day) for the Class II Impoundments, the proposed LCRS geocomposite drainage layer, sump, and pump system will exceed the volume of leachate by 2.5 times. This exceeds the minimum requirement of 2.0 times as required by Title 27.

CLOSURE

Landfill Closure and Final Cover Design

94. The RWD/JTD submitted by the Discharger contains a final closure system for the Unlined Area, Fill Area 1, Unit I that consists of the following (from bottom-to-top): a two-foot foundation layer comprised of random soils; a one-foot low-permeability layer of compacted fine grained soils, which will yield a permeability of $1x10^{-7}$ cm/sec or less; and a one-foot vegetative layer comprised of random soils. This cover design has since been replaced (see Findings 97 through 102).

95. The RWD/JTD submitted by the Discharger contains a final closure system for Fill Area 1, Unit 2 and Fill Area 2 at the landfill. This cover system consists of the following (from bottom-to-top): a two-foot foundation layer comprised of random soils; a one-foot low-permeability layer of compacted fine grained soils, which will yield a permeability of $1x10^{-7}$ cm/sec or less; a flexible membrane liner (FML) consisting of a minimum 60-mil HDPE cover; a synthetic drainage layer (e.g., geonet) overlain by 16-ounce geotextile material; and a one-foot vegetative layer comprised of random soils. This cover design has since been replaced (see Findings 97 through 102).

96. In 1989, the Discharger closed approximately 9 acres of Fill Area 1, Unit 1 with a soil cover. In 1992, the Discharger closed approximately 17.8 acres of Fill Area 1, Unit 1 with a soil cover consisting of a one foot vegetative soil layer over a one foot compacted clay soil layer over existing interim cover.

97. The Discharger submitted a December 2008 *Alternative Final Cover Design Report* (AFC Report) for the remainder of Fill Area 1 (Units 1 and 2). The proposed alternative final cover is an evapotranspirative (ET) cover, also known as a water balance cover. This type of cover functions by storing moisture between the soil particles during the rainy season, and releasing that moisture during the growing season and dry season through plant uptake and evaporation. The AFC Report states that this type of cover has advantages over a prescriptive cover that include better ability to accommodate settling and subsidence, increased rooting depth for native vegetation, better static and seismic slope stability, reduced complexity for long-term maintenance, better ecological diversity and density, and potentially increased end-use capabilities.

98. Federal regulations allow for alternative final covers that provide an “equivalent reduction in flux” to the prescriptive standard, and State regulations under Title 27

indicate that a "similar low through-flow rate" should be achieved. State regulations also say that alternatives can be approved that "will continue to isolate the waste in the Unit from precipitation and irrigations waters at least as well as would a final cover built in accordance with applicable prescriptive standards."

99. The AFC Report presented results from a five-year pilot study of a four-foot thick ET cover conducted under the Alternative Covers Assessment Project (ACAP), a US EPA program. The project was one of many ACAP projects conducted in California and the United States. The ACAP cover performed well until the third year of the study at which point increased percolation was measured in the underlying lysimeter. Moisture probe and lysimeter data indicated an immediate response to rainfall even at the deepest points in the cover. The Discharger concluded that preferential flow was occurring, and that it was caused by shrinkage of the soil away from the edges of the lysimeters and moisture probes. The Discharger also concluded that the cause was its placement at above-optimum moisture and with too much compaction that would cause the soil to shrink when it dried out during the summer.

100. The AFC Report also presented information from the examination of the existing final covers that were installed in 1989 and 1992. Several trenches were dug into the covers to examine the soil and rooting depths. The soil was found to be in generally good condition, with no evidence of preferential flow having developed during the almost 20 years since the covers were installed. The Discharger also conducted a borrow source investigation to verify the properties of the particular types of soil needed to complete the proposed final cover.

101. Based on the above information, the Discharger designed a proposed four-foot thick ET cover consisting of two feet of soil placed loosely at below-optimum moisture over two feet of compacted soil, a design similar to the cover placed in 1992. The cover would be vegetated using native annual and perennial species selected to maximize removal of moisture from the cover. The Discharger conducted extensive modeling of the proposed cover over a ten-year period, including the two wettest years on record (1982-83) using rainfall data from the nearby Livermore station. The cover was also modeled under conditions of five consecutive years of above average precipitation of 17.7 inches per year based on 2005 rainfall. Rainfall was measured at the ACAP test plot during the study and indicated rainfall at the site is similar to, but slightly less than that measured at the Livermore station that averages 14.8 inches per year. The modeling indicated that the proposed cover would allow percolation to a maximum depth of 23.2 inches into the cover over the ten year period under the above average precipitation conditions that included the wettest two years on record. The modeling also indicated that the proposed cover would allow percolation to a maximum depth of 20.1 inches over the five-year period of above-average rainfall. These results indicate that there would be no flux through the proposed four-foot

(48-inch) cover under either scenario, and that it would therefore meet both the State and federal regulatory requirements.

102. This Order approves the proposed alternative final cover design for closure of the remainder of Fill Area 1, Unit 1, with a contingency that it is shown to isolate the wastes from precipitation through monitoring (refer to Construction Specification D.15 and Provision 23.c of this Order). Prior to approval of an alternative final cover for Fill Area 1, Unit 2, or for Fill Area 2, this Order requires the Discharger to provide an additional study of the proposed final cover after it is installed on Fill Area 1, Unit 1. This Order requires that the Discharger provide a monitoring plan for review and approval by the Executive Officer to monitor the proposed cover. The purpose of the additional study and monitoring is to provide additional data upon which to evaluate whether the cover will perform as modeled, given that the ACAP cover did not perform as expected, prior to approval of an alternative cover for the remainder of the landfill. Once the study is completed, the Discharger may submit a proposal for an alternative final cover for Fill Area 1, Unit 2, and if desired, for Fill Area 2 with any necessary adjustments to the proposed design based on the results of the study.

Closure of Class II Surface Impoundments

103. For the Class II surface impoundments Section 21400(b)(1) of CCR Title 27 states: Unless the Discharger demonstrates, and the RWQCB finds, that it is infeasible to attempt clean-closure of the impoundment, then all residual wastes, including sludges, precipitates, settled solids, and liner materials contaminated by wastes, shall be completely removed from the impoundment and discharged to an approved Unit. Remaining containment features shall be inspected for contamination and, if not contaminated, can be dismantled. Any natural geologic materials beneath or adjacent to the closed impoundment that have been contaminated shall be removed for disposal at an appropriate Unit. For surface impoundments that are successfully clean-closed, as herein described, the RWQCB shall declare the Unit no longer subject to the SWRCB-promulgated requirements of this title. If, after reasonable attempts to remove such contaminated materials, the Discharger demonstrates that removal of all remaining contamination is infeasible, the surface impoundment shall be closed as a landfill or land treatment unit, as appropriate, pursuant to 21400(b)()(2) of CCR Title 27.

LEACHATE AND CONDENSATE MANAGEMENT

104. As part of the amended RWD/JTD, the Discharger submitted a December 2008 *Leachate and Condensate Recirculation Plan* requesting approval for returning leachate and landfill gas condensate to units with similar classification and waste characteristics from which they originated to reduce leachate and condensate management costs. Title 27 CCR 20340(g) requires that leachate be returned to

the unit of origination (or unit of similar classification) or be discharged in a manner approved by the Regional Water Board. This section also references State Water Board Resolution No. 93-62 regarding liquids restrictions in 40CFR 258.28 for MSW landfills, which states that liquid waste may not be placed in MSW landfill units unless the waste is leachate or gas condensate derived from the landfill unit and it is designed with a composite liner and leachate collection system. Therefore, leachate and landfill gas condensate from composite lined units at the landfill may be returned to the unit from which they came or units of the same classification (Class II in this case). This Order includes requirements for returning leachate and landfill gas condensate back to the units in such a way that it is not exposed to surface water runoff, will not cause instability of the landfill, and will not seep from the edges of the units.

POST-EARTHQUAKE INSPECTION AND RESPONSE PLAN

105. The Discharger will implement a Post-Earthquake Inspection and Response Plan as required by this Order. An inspection will be conducted following an earthquake of Magnitude (M_w) 5.0 or greater within 25 miles of the facility or a Magnitude (M_w) 6.0 or greater earthquake within 50 miles of the facility.

CLOSURE, POST-CLOSURE MAINTENANCE, AND FINANCIAL ASSURANCE

106. The Preliminary Closure and Post Closure Maintenance Plan (PCPCMP) includes information required by Title 27 CCR Section 21769(b), and 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 thirty years of post-closure maintenance. The total amount of the closure cost estimate is $23.9 million for Fill Area 1 and Stage 1 of Fill Area 2, Unit 1, and the cost estimate for post-closure maintenance in this same area is $36.7 million. The Regional Water Board hereby approves these cost estimates. This Order requires that the Discharger maintain financial assurance with the California Integrated Waste Management Board (CIWMB) in at least the amount of these cost estimates.

107. The Discharger has also submitted a cost estimate for corrective action of all known or reasonably foreseeable releases as required by Title 27 Section 22221. The amount of the approved cost estimate is $793,877 for Fill Area 1. This Order requires that the Discharger maintain financial assurance with the CIWMB in at least the amount of this cost estimate. This Order also requires the Discharger to submit a cost estimate for corrective action of all known or reasonably foreseeable releases from the disposal facility.

108. 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

109. Waste Management of Alameda County owns and operates the facility under the existing Conditional Use Permit (CUP) C-6395. The March 1996 Final Environmental Impact Report (EIR), consisting of the Draft EIR together with the Response to Comments document, was certified by the Zoning Administrator and the Alameda County Board of Supervisors in 1996 for expansion of the landfill into Fill Area 2. The new CUP (C-5512) was issued by the Zoning Administrator in May 1996. It was appealed and upheld by the Alameda County Board of Supervisors through the adoption of Resolution No. R-97-284 on 5 December 1996, which imposed additional conditions on the approved expansion and reduced the expansion to 80 million tons. Subsequent litigation in California Superior Court in 1997 led to the withdrawal of CUP C-5512 by the Alameda County Board of Supervisors. A negotiated settlement to the lawsuit was reached by all parties in December 1999, approving the development of 40 million tons of MSW landfill capacity for Fill Area 2, plus additional associated capacity for daily and immediate cover soil, alternate daily cover materials, and final cover system. The settlement also limited the area of Fill Area 2 to 250 acres. The Alameda County Board of Supervisors certified and amended the Final EIR and reissued CUP C-5512 on 9 March 2000. The EIR identified the following potential significant impacts:

    a. Leachate may infiltrate groundwater
    b. Potentially increase leachate generation
    c. Stormwater runoff contacting landfill waste

110. The EIR evaluated the impacts and found that compliance with Title 27 and Subtitle D will provide adequate water quality protection and reduce potential impacts to a less than significant level.

111. This order implements:

    a. The *Water Quality Control Plan for the Sacramento River Basin and the San Joaquin River Basins, Fourth Edition*;

    b. The prescriptive standards and performance goals of California Code of Regulations title 27 chapters 1 through 7, subdivision 1, division 2, 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.

112. California Water Code section 13267(b) provides that: "In conducting an investigation specified in subdivision (a), the regional board may require that any person who has discharged, discharges, or is suspected of having 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 regional board requires. The burden, including costs of these reports, shall bear a reasonable relationship to the need for the reports and the benefits to be obtained from the reports."

113. The technical reports required by this Order and the attached "Monitoring and Reporting Program No. R5-2009-0055" are necessary to assure compliance with these waste discharge requirements. The Discharger owns and operates the facility that discharges the waste subject to this Order.

PROCEDURAL REQUIREMENTS

114. All local agencies with jurisdiction to regulate land use, solid waste disposal, air pollution, and to protect public health have approved the use of this site for the discharges of waste to land stated herein.

115. The 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.

116. The Regional Water Board, in a public meeting, heard and considered all comments pertaining to the discharge.

117. Any person aggrieved by this action of the Regional Water Board may petition the State Water Board to review the action in accordance with CWC section 13320 and California Code of Regulations, title 23, sections 2050 and following. The State Water Board must receive the petition by 5:00 p.m., 30 days after the date of the Order, except that if the thirtieth day following the date of this Order falls on a Saturday, Sunday, or state holiday, the petition must be received by the State Water Board by 5:00 p.m. on the next business day. Copies of the law and regulations applicable to filing petitions may be found on the Internet at:

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

or will be provided upon request.

IT IS HEREBY ORDERED, pursuant to California Water Code sections 13263 and 13267, that Order No. R5-2002-0119 is rescinded, and that Waste Management of Alameda County, Inc. its agents, successors, and assigns, in order to meet the provisions of California Water Code division 7 and the regulations adopted there under, shall comply with the following:

A. PROHIBITIONS

1. The discharge of 'hazardous waste' is prohibited. For the purposes of this Order, the term 'hazardous waste' is as defined in California Code of Regulations title 23 section 2510 et seq. However, the facility may accept asbestos.

2. The discharge of treated auto shredder wastes at the landfill facility is prohibited if DTSC makes the determination that this material requires management at a Class I facility. The discharge of untreated auto shredder waste is prohibited.

3. The discharge of wastes outside of a Unit or portions of a Unit specifically designed for their containment is prohibited.

4. The discharge of waste to a closed Unit is prohibited.

5. The discharge to landfill units of liquid or semi-solid waste (i.e., waste containing less than 50 percent solids), except leachate, landfill gas condensate, dewatered sewage or water treatment sludge as provided in Title 27 section 20220(c), is prohibited.

6. The discharge to landfill units of solid waste containing free liquid or moisture in excess of the waste's moisture holding capacity is prohibited.

7. The discharge of 'designated waste' to Class III landfill units is prohibited. For the purposes of this Order, 'designated waste' is as defined in Title 27 and described in Monitoring and Reporting Program No. R5-2009-0055.

8. The discharge of waste constituents to the unsaturated zone or to groundwater is prohibited.

9. The discharge of solid or liquid waste or leachate to surface waters, surface water drainage courses, or groundwater is prohibited.

10. The discharge of wastes that have the potential to reduce or impair the integrity of containment structures is prohibited.

11. The discharge of wastes 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 require a higher level of containment than provided by the unit, or are “restricted hazardous wastes”, is prohibited.

12. The Discharge of any liquid wastes to the Class II surface impoundments prior to submittal of a final construction report and completion of electronic leak survey of each containment layer is prohibited.

B. DISCHARGE SPECIFICATIONS

1. Wastes shall be discharged only into waste management units (WMUs) specifically designed for their containment and/or treatment, as described in this Order. Class II landfills shall include liner systems which prevent the movement of fluid, including waste and leachate from the waste management units, to waters of the State so long as such waste poses a threat to water quality.

2. A minimum separation of five feet shall be maintained between wastes or leachate and the highest anticipated elevation of underlying groundwater including the capillary fringe, except at Fill Area 1, Unit 2 and Fill Area 2 where minimum separation shall be three feet due to engineered drainage structures (i.e., underdrains) separating wastes (including leachate) from groundwater. If monitoring of the groundwater underdrain system at Fill Area 2 indicates landfill waste constituents have impacted groundwater, future modules of Fill Area 2 shall provide a minimum of five feet of separation between wastes or leachate and groundwater.

3. The discharge shall remain within the designated disposal area at all times.

4. “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 D.2, and only if the wastes are handled in accordance with California Health and Safety Code sections 25143.1.5 and 250150.7.

5. Treated wood must be managed to ensure consistency with California Health and Safety Code sections 25143.1.5 and 25150.7. 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.

6. Discharge Specifications B.4 and B.5, 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.

7. Treated wood waste shall not be discharged to landfill cells that are leaking. Treated wood waste shall not be discharged 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.

8. The handling and disposal of friable asbestos-containing wastes at the facility shall be in accordance with all applicable federal and state laws and regulations.

9. Alternate Daily Cover (ADC) approved by the local enforcement agency (LEA) include: green waste material, shredded tires, solidified waste with an approved extender, biosolids, processed construction and demolition material, and/or a geo-synthetic blanket.

10. All wells within 500 feet of a waste management unit shall have a sanitary seal that meets the requirements of Zone 7 of the Alameda County Flood Control and Water Conservation District prior to the discharge of waste to the unit or the well(s) shall be properly abandoned. A record of the sealing and/or abandonment of such wells shall be sent to the Board and to the Zone 7 water agency.

11. Unsaturated zone monitoring systems shall be capable of measuring both saturated and unsaturated flows that may occur as a result of a release from the waste management unit.

12. Leachate or landfill gas condensate from a lined landfill module shall be discharged either to a publicly owned treatment works under permit, to the composite-lined landfill unit from which it was generated, or to units of the same or higher classification and of similar waste characteristics. Leachate and condensate returned to a landfill unit shall be managed such that it does not cause instability of the waste, does not cause leachate seeps, does not generate additional landfill gas that is not extracted from the landfill by an active landfill gas extraction system, does not cause contaminants to enter surface water runoff, and does not cause leachate volumes to exceed the maximum capacity of the LCRS or violation of Construction Specification No. D.10 of this Order. This shall be accomplished as proposed in the December 2008 *Leachate and Condensate Recirculation Plan* and any approved amendments to the plan.

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. If the waste is a hazardous waste, the Discharger shall immediately notify the DTSC.

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 that 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. Liquid from the Class II surface impoundments shall only be used for dust control in lined Class II landfill areas.

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.

SURFACE IMPOUNDMENT SPECIFICATIONS

8. At no time shall the freeboard of the Class II surface impoundments be less than two feet.

9. Any direct-line discharge to a surface impoundment shall have fail-safe equipment or operating procedures to prevent overfilling.

10. The surface impoundments shall be maintained to prevent scouring and/or erosion of the liner and other containment features at points of discharge to the impoundment and by wind-caused wave action at the waterline.

11. Leachate removed from the secondary containment of the surface impoundments shall be placed back into the surface impoundments.

12. If the depth of fluid in an LCRS sump exceeds the level where leachate would back up into the drainage layer, then the Discharger shall immediately cease the discharge of waste (including leachate) to the surface impoundment and shall

notify the Regional Water Board in writing within seven days. Notification shall include a timetable for remedial action to repair the upper liner of the impoundment or other action necessary to reduce leachate production.

13. The **Action Leakage Rate** (ALR) for each Class II surface impoundment is **2,000 gpad** (gallons per acre per day) as averaged over a 30-day period. If leachate generation in an LCRS of a Class II surface impoundment exceeds the required ALR, the Discharger shall immediately take steps to locate and repair leak(s) in the liner system and notify the Regional Water Board. If repairs do not result in a leakage rate less than the required ALR, the Discharger shall immediately cease the discharge of waste, including leachate, to the surface impoundment and notify the Regional Water Board. The notification shall include a timetable for remedial action to repair the upper liner of the surface impoundment or action necessary to reduce leachate production.

14. The LCRS for each Class II surface impoundment shall be operated 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 the LCRS sump shall be kept at the minimum needed to ensure efficient pump operation.

15. The LCRS shall be designed and operated to function without clogging through the scheduled closure of the surface impoundments. The surface impoundments shall be equipped to facilitate annual testing to demonstrate proper operation as required by §20340(d) of Title 27.

16. If leachate is detected in a Pan Lysimeter of a surface impoundment indicating a leak in the containment structures the Discharger shall:

    a. Immediately cease discharge of waste (including leachate) to the surface impoundment until the leaks can be found and repaired,

    b. Report to the RWQCB that the containment structures have failed within 72 hours of the discovery,

    c. Submit written notification of the release to the RWQCB within seven days and include a time schedule to repair the containment structures, and

    d. Discharge of wastes to the surface impoundment shall not resume until the RWQCB has determined that repairs to the liners are complete and there is no further threat to water quality.

17. The depth of the fluid in the leachate sump of the Class II surface impoundments shall be kept at the minimum needed for efficient pump operation (given the pump intake height and cycle frequency), and leachate shall not back up onto the secondary liner system outside of the sump area.

18. Leachate generation within a surface impoundment LCRS shall not exceed 85% of the design capacity of (a) the LCRS, or (b) the sump pump. If leachate generation exceeds this value and/or if the depth of the fluid in an LCRS exceeds the minimum needed for safe pump operation, then the Discharger shall immediately cease the discharge of waste (including leachate) to the impoundment and shall notify the Regional Water Board in writing within **seven days**. Notification shall include a timetable for a remedial action to repair the upper liner of the impoundment or other action necessary to reduce leachate production.

19. Sediment or solids that accumulate in the Class II surface impoundments shall be removed when necessary to maintain the designed storage capacity. Sludge and solids removal shall be accomplished in a manner that ensures the continued integrity of liners and leachate collection systems in accordance with the facility's operations plan. Prior to disposal of these solids, sufficient samples shall be taken for their characterization and classification pursuant to Title 27.

20. Following sediment/solids removal from the Class II surface impoundments, the liner system shall be inspected for damage within 30 days and any damage shall be repaired within 60 days prior to the discharge of additional wastewater.

D. CONSTRUCTION SPECIFICATIONS

1. The Discharger shall submit 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 CCR title 27 section 20324; and

   b. A geotechnical evaluation of the area soils, evaluating their use as the base layer; and

   c. 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 CCR title 27 CCR section 20415(d).

Landfill Liner System Components

2. The Discharger shall install the proposed engineered alternative for the bottom liner system in Fill Area 2 similar to the one installed for Fill Area 1, Unit 2. The composite liner system shall consist of, from top-to-bottom, the following:

    a. A one-foot thick gravel LCRS;
    b. A 60-mil thick HDPE geomembrane;
    c. A two-foot compacted low-permeability soil layer;
    d. A one-foot compacted general earth fill layer;
    e. A geotextile separator;
    f. A one-foot thick groundwater subdrain gravel layer; and
    g. Prepared subgrade.

3. The Discharger shall install the proposed engineered alternative for the side slope liner system in Fill Area 2. The side slope liner shall consist of, from top-to-bottom, the following:

    a. A geocomposite drainage layer LCRS;
    b. A 60-mil HDPE geomembrane;
    c. A two-foot compacted low-permeability soil layer or GCL;
    d. A one-foot compacted general earth fill layer in the portion of the wetted footprint of the landfill;
    e. A double-sided subdrain drainage geocomposite; and
    f. Prepared subgrade.

Class II Surface Impoundment Liner System

4. The surface impoundment shall consist of the following layers from the top-to-bottom:

    a. 1.5 foot operations soil layer;
    b. 40-mil sacrificial HDPE geomembrane;
    c. The primary 60-mil-thick HDPE Geomembrane;
    d. HDPE Geonet;
    e. LCRS gravel;
    f. The secondary 40-mil HDPE geomembrane;
    g. A GCL;
    h. The pan lysimeter single sided geocomposite;
    i. Pan lysimeter gravel;
    j. A tertiary 40-mil HDPE geomembrane;
    k. 4-inch select soil liner bedding; and
    l. A compacted subgrade.

5. The surface impoundments and related containment structures shall be constructed and maintained to prevent, to the greatest extent possible, inundation, erosion, slope failure, washout, and overtopping under 1,000-year, 24-hour precipitation conditions, and shall be designed to contain the 100-year wet season precipitation without using the required two feet of freeboard.

General Construction Specifications

6. 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.

7. If the Discharger proposes to construct a 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.

8. Materials used to construct liners shall have appropriate physical and chemical properties to ensure containment of discharged wastes over the operating life, closure, and post-closure maintenance period of the waste management unit.

9. Materials used to construct LCRSs shall have appropriate physical and chemical properties to ensure the required transmission of leachate over the life of the waste management unit and the post-closure maintenance period.

10. LCRSs shall be designed, constructed, and maintained to collect twice the anticipated daily volume of leachate generated by each waste management unit and to prevent the buildup of hydraulic head on the underlying liner at any time. The depth of the fluid in any LCRS sump shall be kept at the minimum depth needed for efficient pump operation.

11. Construction shall proceed only after all applicable construction quality assurance plans have been approved.

12. Following the completion of construction of any Unit (including the Class II surface impoundments) or portion of a Unit, the Discharger shall conduct a leak detection test on the bottom geomembrane layer of the floor or base containment system (excludes side-slope areas). The Discharger shall use the protocol outlined in ASTM standard 7007, or other equivalent standard. Any defects found shall be identified and repaired accordingly.

13. Prior to discharge onto the newly constructed liner system, the final documentation required in CCR title 27 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.

14. 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.

Closure Construction Specifications

15. For the remaining unclosed area of Fill Area 1, Unit 1, the Discharger shall install the proposed engineered alternative evapotranspirative cover described in Findings 97 through 102 of this Order, and as proposed in the Discharger's December 2008 *Alternative Final Cover Design Report*. The Discharger shall submit a monitoring and contingency plan for the alternative cover to demonstrate its effectiveness in isolating the waste from precipitation. If the cover fails to isolate the waste from precipitation, the contingency plan will be implemented. If cover meets the performance standards of Title 27, it demonstrates the adequacy of this cover for closure of Fill Area 1, Unit 2 and/or Fill Area 2 of the landfill (refer to Provision 23.c). Consideration of approval of an alternative cover for these units would require Regional Water Board approval in a future revision of the WDRs.

16. For Fill Area 1, Unit 2 and Fill Area 2 at the landfill, the final cover system shall consist of, from top-to-bottom, the following:

    a. A one-foot vegetative layer comprised of random soils;
    b. A synthetic drainage layer (e.g., geonet) overlain by 16-ounce geotextile material;
    c. A flexible membrane liner (FML) consisting of a minimum 60-mil HDPE cover;
    d. A one-foot low-permeability layer of compacted fine grained soils, which will yield a permeability of $1x10^{-7}$ cm/sec or less; and
    e. A two-foot foundation layer comprised of random soils.

17. At closure, the Discharger must initiate an effort to clean close the Class II surface impoundments prior to closing the surface impoundments as a landfill if clean closure is found to be infeasible.

18. Prior to closure, the Discharger shall submit a Final Closure Plan or Partial Final Closure Plan for review and approval for the Unit or portion of the Unit to be closed. The Discharger shall also submit a Post-Closure Maintenance Plan.

E. DETECTION AND CORRECTIVE ACTION MONITORING SPECIFICATIONS

1. The Discharger shall submit for review and approval a groundwater detection monitoring program demonstrating compliance with Title 27 for any landfill expansion.

2. The Discharger shall comply with the detection and corrective action monitoring program provisions of Title 27 for groundwater, surface water, and the unsaturated zone, as appropriate, and in accordance with Monitoring and Reporting Program No. R5-2009-0055. A detection monitoring program for any new Unit shall be installed, operational, and one year of monitoring data collected prior to the discharge of wastes [CCR, title 27, 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.

4. The Discharger shall comply with the Water Quality Protection Standard as specified in this Order, Monitoring and Reporting Program No. R5-2009-0055, and the Standard Provisions and Reporting Requirements, dated April 2000. If there is any conflicting or contradictory language between the Waste Discharge Requirements (WDRs), the Monitoring and Reporting Program (MRP), or the Standard Provisions and Reporting Requirements (SPRR), then language in the WDRs shall govern over either the MRP or the SPRR, and language in the MRP shall govern over the SPRR.

5. The Water Quality Protection Standard for organic compounds that 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., USEPA 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. R5-2009-0055. Title 27, section 20405(a) defines the Point of Compliance as: “a vertical surface located at the hydraulically downgradient limit of the Unit that extends through the uppermost aquifer underlying the Unit. For each Unit, the RWQCB shall specify Monitoring Points (as defined in §20164) along the Point of Compliance, and shall specify additional Monitoring Points at locations determined pursuant to §20415(b-d) at which the Water Standard under §20390 applies and at which monitoring shall be conducted.”

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. R5-2009-0055 and CCR, title 27, section 20415(e).

8. The Discharger shall establish and maintain an approved Sample Collection and Analysis Plan. The Sample Collection and Analysis Plan shall at a minimum include:

   a. Sample collection procedures describing purging techniques, sampling equipment, and decontamination of sampling equipment;
   b. Sample preservation information and shipment procedures;
   c. Sample analytical methods and procedures;
   d. Sample quality assurance/quality control (QA/QC) procedures; 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 by the Executive Officer, and shall be taken in a manner that ensures sample independence to the greatest extent feasible. Specific methods of collection and analysis must be identified. Sample collection, storage, and analysis shall be performed according to the most recent and appropriate 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. 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 during COC monitoring 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 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. 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 CCR, title 27, section 20415(e)(8)(A-D)] in accordance with CCR, title 27, section 20415(e)(8)(E), for review and approval.

19. The Discharger may propose an alternate statistical method [to the methods listed under CCR, title 27, section 20415(e)(8)(A-D)] in accordance with CCR, title 27, 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 (e.g., 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. Unless a given monitoring point is already under corrective action monitoring for a given constituent, the Discharger shall conclude that the exceedance provides a preliminary indication of a release or a change in the nature or extent of the release, at that monitoring point, if ***either:***

        1) The data contains two or more analytes that equal or exceed their respective MDLs; or

        2) The data contains one or more analyte that equals or exceeds its PQL.

    b. **Discrete Retest** [CCR, title 27, 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 is confirmed 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.

F. LANDFILL GAS SYSTEM SPECIFICATIONS

1. Landfill gas collection and control systems shall be operated to minimize and control air intrusion and to prevent direct venting of the gas to the atmosphere.

2. Landfill gas collection and control systems shall be operated so that the methane concentration is less than 500 parts per million above background at the surface of the landfill.

3. There shall be a sufficient number and spacing of horizontal collectors or vertical gas collection wells to control landfill gas migration and emissions.

4. Landfill gas shall be extracted from the landfill's primary LCRS as necessary to control gas.

5. No waste may be placed into Fill Area 2 until the Discharger has an approved landfill gas monitoring program and the basal system components installed.

G. 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. R5-2009-0055, 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 (CCR, title 27, section 20005 et seq. and 40 CFR 258 et seq.), dated April 2000, which are hereby incorporated into this Order. If there is any conflicting or contradictory language between the Waste Discharge Requirements (WDRs), the Monitoring and Reporting Program (MRP), or the Standard Provisions and Reporting Requirements (SPRR), then language in the WDRs shall govern over either the MRP or the SPRR, and language in the MRP shall govern over the SPRR.

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 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. A copy of all documents submitted to the Regional Water Board shall be maintained in the facility's operating record.

8. 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 evaluate the nature, extent, and impact of the noncompliance.

9. 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 landfill 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.

10. 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.

11. 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 G.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.

12. The Discharger shall update the preliminary closure and post-closure maintenance plan (PCPCMP) any time there is a change that will increase the amount of the closure and post-closure maintenance cost estimate. The updated PCPCMP shall be submitted to the Regional Water Board, and if applicable, shall be submitted to the Local Enforcement Agency, and the CIWMB. The PCPCMP shall meet the requirements of CCR, title 27, section 21769(b), and include a lump sum estimate of the cost of carrying out all actions necessary to close each Unit, to prepare detailed design specifications, to develop the final closure and post-closure maintenance plan, and to carry out the first thirty years of post-closure maintenance. 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.

Financial Assurances for Corrective Action

13. The Discharger shall maintain cost estimates and funding for initiating and completing corrective action for all known or reasonably foreseeable releases from Fill Area 1, each unit of Fill Area 2 prior to discharge of waste, and the Class II surface impoundments prior to discharge of waste.

14. Pursuant to Title 27, section 22221, the Discharger shall obtain and maintain financial assurances for corrective action of all known or reasonably foreseeable releases for **Fill Area 1** in at least the amount of the approved cost estimate described in Finding No. 107.

15. Pursuant to Title 27, section 22221, the Discharger shall submit a cost estimate and proposed financial assurance mechanism to the Regional Water Board for corrective action for a reasonably foreseeable release for each unit of **Fill Area 2**, prior to discharge, meeting the requirements of Title 27, chapter 6. Once approved, the Discharger shall establish an irrevocable fund for corrective action financial assurance with the CIWMB **prior to discharge** to each unit.

16. Pursuant to Title 27, section 22222, the Discharger shall submit a cost estimate and proposed financial assurance mechanism to the Regional Water Board for corrective action of all reasonably foreseeable releases from the **Class II surface impoundments**. Once approved, the Discharger shall establish an irrevocable fund for corrective action financial assurance with the Regional Water Board using the approved mechanism, in the amount of the approved cost estimate, and naming the “CIWMB” as beneficiary, **prior to discharge** to the units.

17. At least **annually** (as required by the CIWMB), the Discharger shall submit a report demonstrating that the financial assurance fund for corrective action for **Fill Area 1** has been updated in accordance with the fund balance calculations provided in Section 22226 of Title 27.

18. At least **annually** (as required by the CIWMB), the Discharger shall submit a report demonstrating that the financial assurance fund for a reasonably foreseeable release from **Fill Area 2** in accordance with the fund balance calculations provided in Title27, section 22226.

19. At least **annually** (as required by the CIWMB), the Discharger shall submit a report demonstrating that the financial assurance fund for a reasonably foreseeable release from **Class II surface impoundments** in accordance with the fund balance calculations provided in Title 27, section 22226.

Financial Assurances for Closure and Post-Closure Maintenance

20. The Discharger shall obtain and 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. Pursuant to Title 27, sections 20950(f), 22207, and 22212, the Discharger shall obtain and maintain financial assurance for closure and post-closure maintenance of **Fill Area I, and each unit of Fill Area 2** with the CIWMB in at least the amounts of the approved cost estimates described in Finding No. 106.

21. At least **annually** (as required by the CIWMB), the Discharger shall submit a report demonstrating that the financial assurance fund for closure and post-closure maintenance has been updated in accordance with the fund balance calculations provided in Title 27, section 22225.

Required Technical Reports

22. All technical reports required by this Order shall be submitted pursuant to California Water Code, section 13267.

23. The Discharger shall submit the following technical reports related to installation and initial sampling of new groundwater monitoring wells, landfill module construction, landfill gas, and seismic inspections:

    a. **Groundwater Monitoring for Fill Area 2**

        1. The Discharger shall submit a work plan or work plans to install groundwater monitoring wells for Fill Area 2 as necessary to complete well installation and required initial sampling prior to placement of waste in the corresponding units. The work plan(s) shall propose monitoring wells for

the following areas:

i. In the weathered zone at the intersection of the northern extent of Fill Area 2 and the West Fault.

ii. At the downgradient edge of each module of Fill Area 2 as the area expands into the permitted landfill footprint.

2. **Within 60 days after installation of the wells**, the Discharger shall submit a well installation report.

3. **Prior to discharge** to new modules in Fill Area 2, the Discharger shall submit a Water Quality Protection Standard for detection monitoring wells based on un-impacted background groundwater data.

b. **Groundwater Monitoring for Class II Surface Impoundments**

1. The Discharger shall submit a work plan proposing a monitoring program for the Class II surface impoundments. The work plan must be approved prior to discharge to the impoundments.

2. **Within 60 days after installation of a monitoring network** (if applicable), the Discharger shall submit a monitoring network installation report.

3. **Prior to discharge** to the Class II surface impoundments, the Discharger shall submit a Water Quality Protection Standard for detection monitoring based on un-impacted background groundwater data.

c. **Construction Report**

1. **Prior to discharge** to new modules of Fill Area 2, the Discharger shall submit a final construction report that contains all information concerning the placement of the containment system. These reports shall provide information demonstrating that the CQA plan was implemented as proposed and that the construction proceeded in accordance with design criteria, plans, and specifications. The Discharger shall submit copies of the Final Documentation report to the Regional Water Board as prepared by the CQA officer.

2. **Prior to discharge** to the Class II surface impoundments, the Discharger shall submit the final construction report that contains all information concerning the placement of the containment system. This document shall provide information demonstrating that the CQA plan was implemented as proposed and that the construction proceeded in accordance with design criteria, plans, and specifications. The Discharger

shall submit copies of the Final Documentation report to the Regional Water Board as prepared by the CQA officer.

d. **Alternative Cover Monitoring and Contingency Plan**

1. **Prior to construction** of the alternative final cover for Fill Area 1, Unit 1, the Discharger shall submit a Monitoring and Contingency Plan with a plan for monitoring the cover to demonstrate it is meeting regulatory performance standards, and shall propose alternatives for the cover if it fails to meet the performance standards. The plan shall include proposed criteria for demonstrating compliance with performance standards.

e. **Landfill Gas**

1. **Within 90 days of the adoption of this Order**, the Discharger shall submit a landfill gas extraction installation and monitoring plan for Fill Area 2 to the Regional Water Board and the CIWMB.

f. **Seismic Event Inspection**

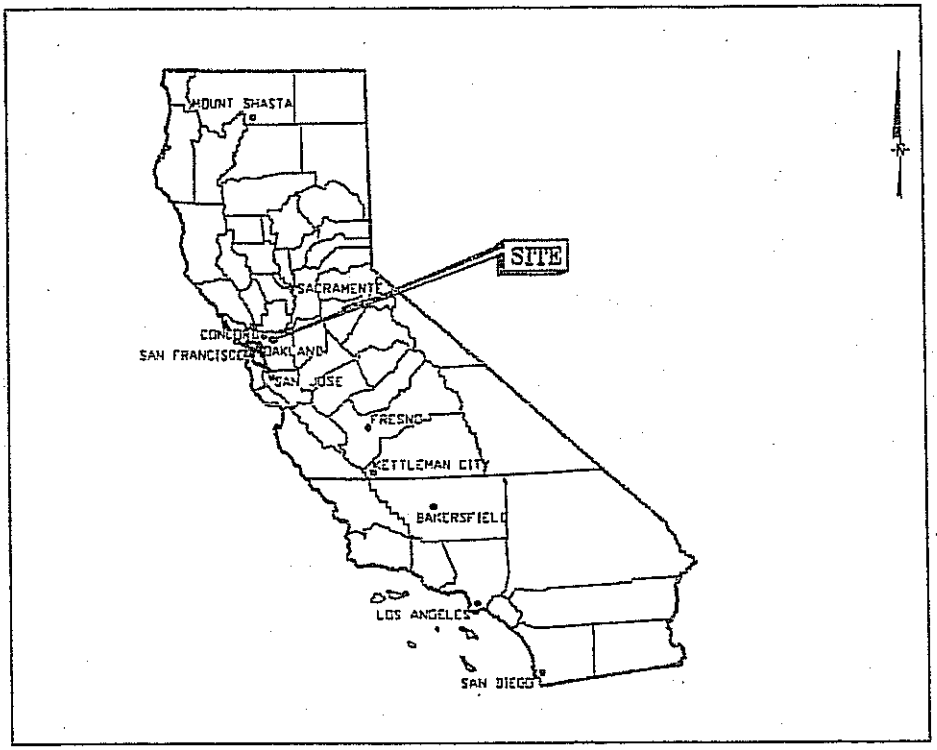
1. **Within 90 days of the adoption of this Order**, **t**he Discharger shall submit a revised post-earthquake inspection plan for review and approval. The revised plan shall include inspecting WMU liners and covers; LCRS riser pipes, sump pump operation, and storage tanks; including the flare station; drainage control facilities; and detection monitoring facilities for damage following an earthquake of Magnitude (M) 5.0 or greater within 25 miles of the facility or a M6.0 or greater earthquake within 50 miles of the facility.

2. An earthquake inspection shall be conducted in a timely manner following earthquakes of the magnitude as specified in Provision 23.f.1. A report of the inspection shall be submitted within 30 days after the inspection assessing any damage and shall contain proposals to repair or replace any damaged structures or facilities.

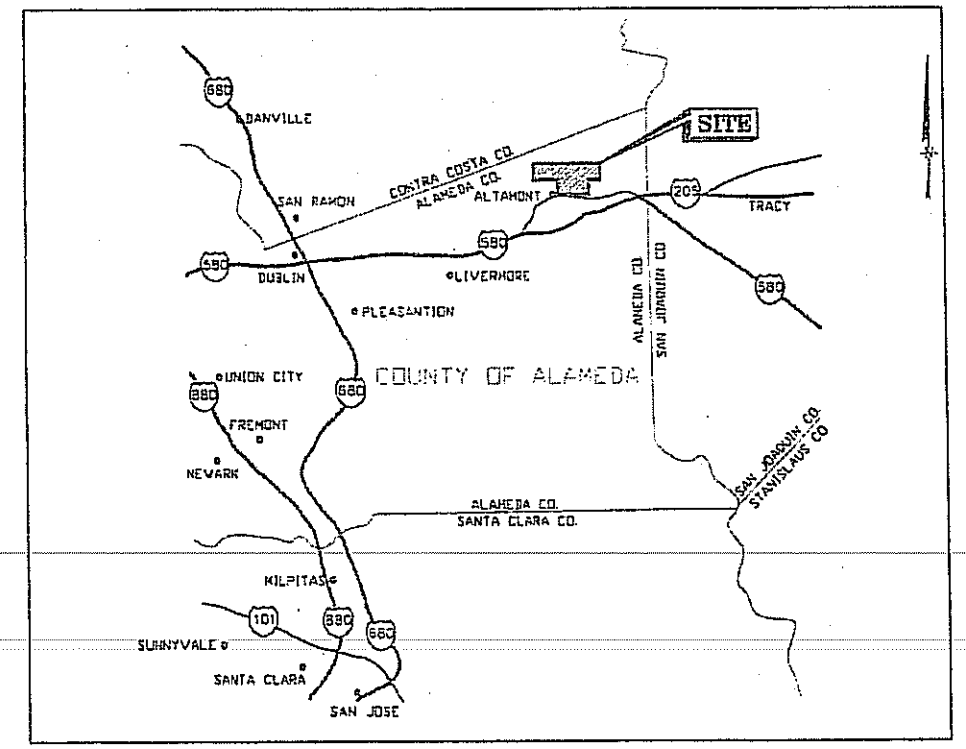
I, PAMELA C. CREEDON, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on 24 April 2009.

_____
PAMELA C. CREEDON, Executive Officer

HFH/WLB

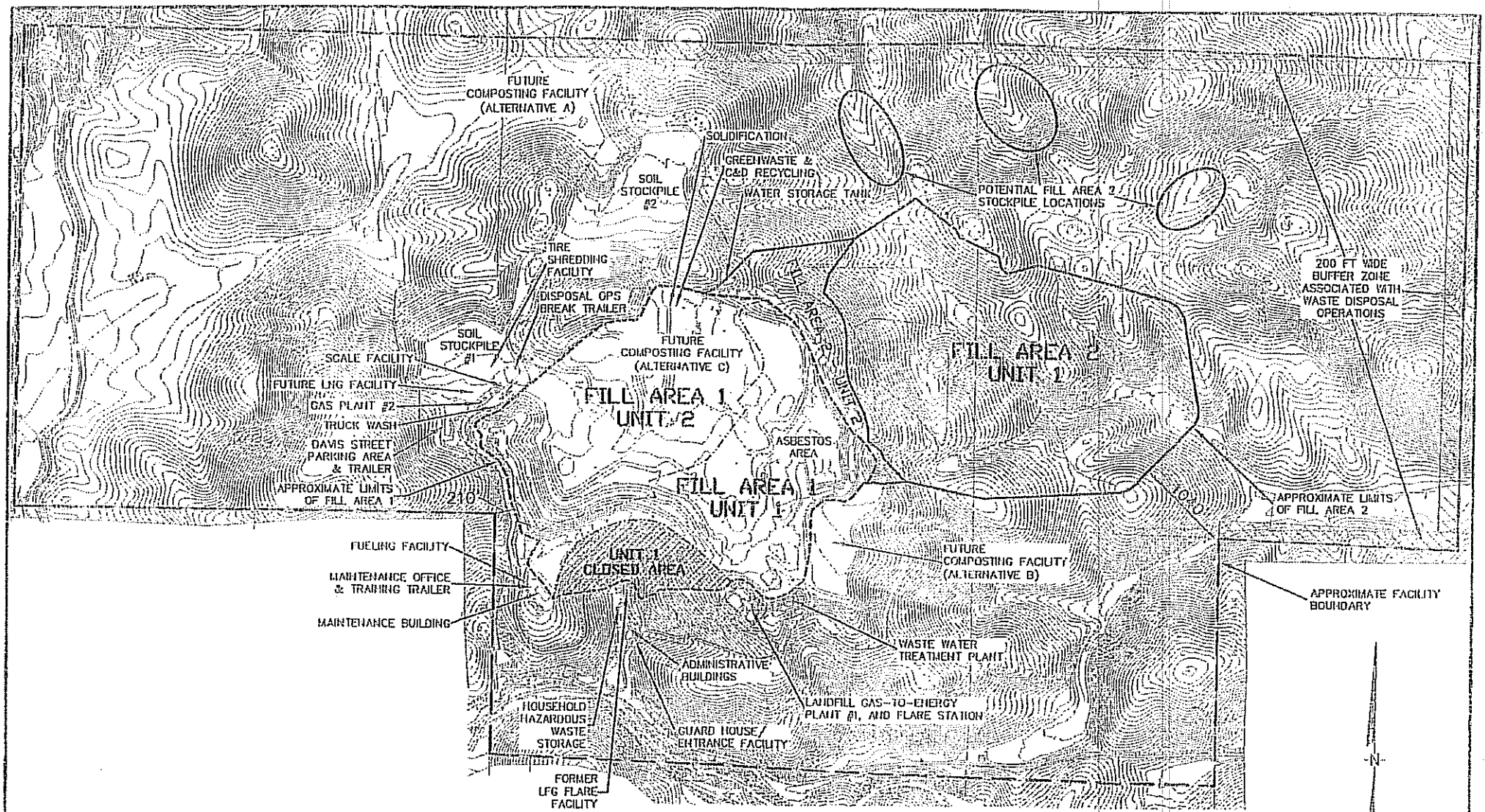


VICINITY MAP



LOCATION MAP

SITE VICINITY MAPS ALTAMONT LANDFILL & RESOURCE RECOVERY FACILITY ALAMEDA COUNTY, CALIFORNIA	Attachment A

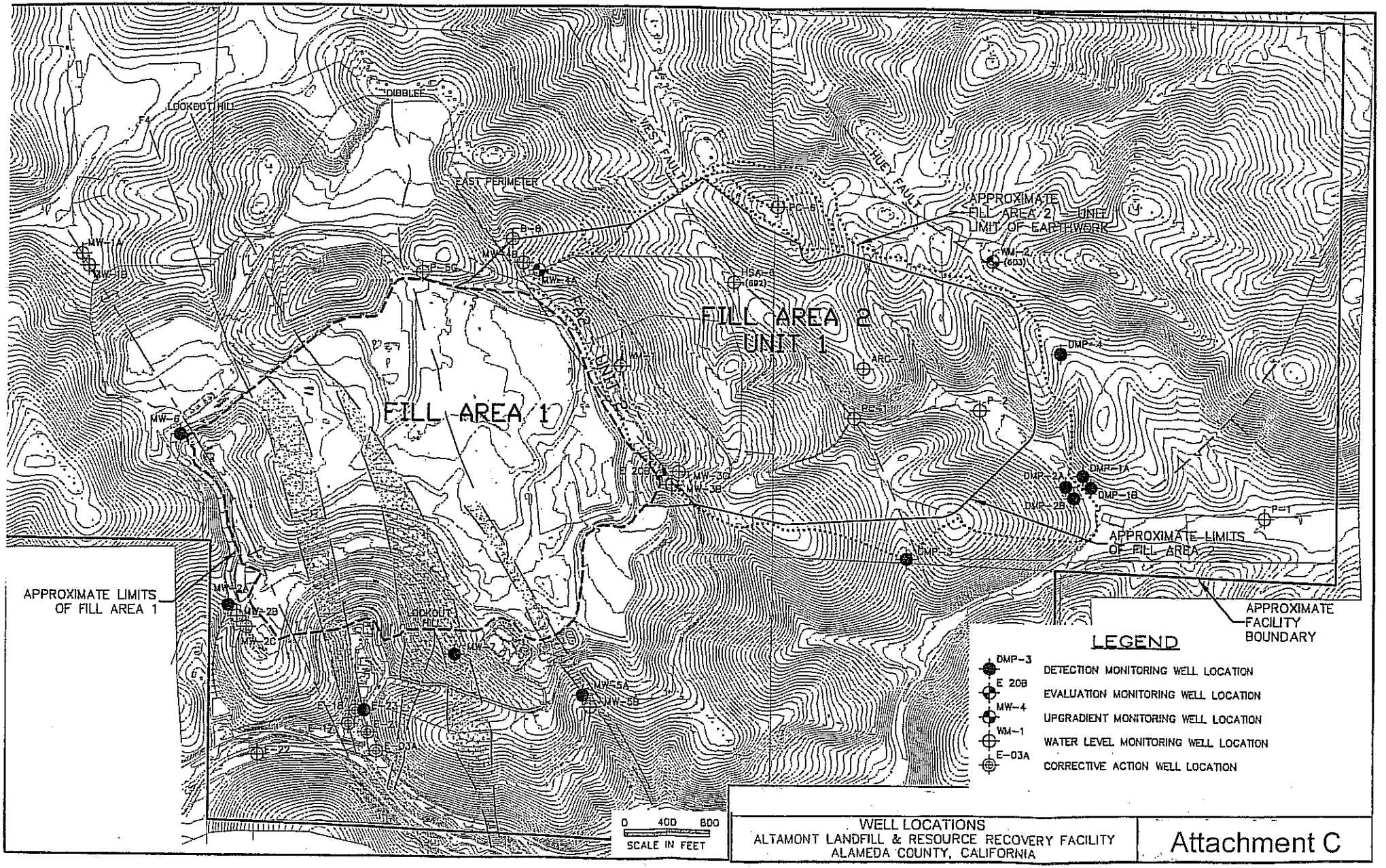


NOTE:

1. TOPOGRAPHIC MAP BASED ON 1992 BASE AERIAL SURVEY AND JANUARY 2005 UPDATE IN ACTIVE LANDFILL AREA. FLOWN BY WALKER & ASSOCIATES.

SITE PLAN
ALTAMONT LANDFILL & RESOURCE RECOVERY FACILITY
ALAMEDA COUNTY, CALIFORNIA

Attachment B



WELL LOCATIONS
ALTAMONT LANDFILL & RESOURCE RECOVERY FACILITY
ALAMEDA COUNTY, CALIFORNIA

Attachment C

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2009-0055
FOR
WASTE MANAGEMENT OF ALAMEDA COUNTY, INC.
ALTAMONT LANDFILL AND RESOURCE RECOVERY FACILITY
CLASS II AND CLASS III MUNICIPAL SOLID WASTE LANDFILLS AND
CLASS II SURFACE IMPOUNDMENTS
CONSTRUCTION, OPERATION, AND CORRECTIVE ACTION
ALAMEDA COUNTY

The Discharger shall comply with this Monitoring and Reporting Program, with California Code of Regulations, title 27, 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 (Title 27, §20005 et seq. and 40 CFR 258)*, dated April 2000, as ordered by Waste Discharge Requirements Order No. R5-2009-0055.

A. REQUIRED MONITORING REPORTS

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

B. REPORTING

The Discharger shall submit semiannual monitoring reports with the data and information required in this Monitoring and Reporting Program and as required in Order No. R5-2009-0055 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 (.xls) acceptable to the Executive Officer.

Each monitoring report shall include a compliance evaluation summary as specified in E. 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 Regional Water Board in accordance with the following schedule for the calendar period in which samples were taken or observations made.

Sampling Frequency	Reporting Frequency	Reporting Periods End	Report Date Due
Monthly	Semiannually	Last Day of Month	**by Semiannual Schedule**
Quarterly	Semiannually	31 March	**by Semiannual Schedule**
		30 June	**by Semiannual Schedule**
		30 September	**by Semiannual Schedule**
		31 December	**by Semiannual Schedule**
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 Regional Water Board covering the previous monitoring year. The annual report shall contain the information specified in E. Reporting Requirements, below, and a discussion of compliance with the waste discharge requirements and the Water Quality Protection Standard. The Annual Monitoring Report can be combined with the year-end Semiannual Report such that two summary reports are not required by the January 31 due date. The last 5-year Constituent-of-Concern (COC) groundwater monitoring event was conducted during 2005; therefore, the next COC event is scheduled to take place in **2010**.

The results of **all monitoring** conducted at the site shall reported to the Regional Water 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) {Fill Area I, Fill Area II and the Class II Surface Impoundments}, the Water Quality Protection Standard shall consist of all COCs, the concentration limit for each COC, the point of compliance, and all water quality monitoring points for each monitored medium.

The Water Quality Protection Standard for naturally occurring waste constituents consists of the COCs, the concentration limits, and the point of compliance and all monitoring points. 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 Title 27, §20405.

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 (COCs)

The COCs 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 COCs for all Units at the facility are those listed in Tables I through IV

for the specified monitored medium. The Discharger shall monitor all COCs every five years, or more frequently as required in accordance with a Corrective Action Program.

The Discharger shall add the following monitoring parameters to the COC list: (1) tetrahydrofuran (THF), (2) diethyl ether, (3) dichlorofluoromethane, (4) dichlorodifluoromethane, and (5) trichlorofluoromethane. The Discharger shall monitor all COCs every five years.

For non-anthropogenic monitoring parameters (e.g., trace metals), the Discharger is responsible for collecting sufficient intra-well background data such that statistical analysis of non-anthropogenic COCs can be performed.

The last 5-year COC monitoring event was conducted during 2005; therefore, the next COC event is scheduled to take place in **2010**. The Discharger shall monitor all constituents of concern every five years, or more frequently as required in accordance with a Corrective Action Program. The Discharger shall monitor all COCs as specified in Table VI.

3. Monitoring Parameters

Monitoring parameters are COCs 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.

4. Concentration Limits

For a naturally occurring COC, the concentration limit for each COC shall be determined by an alternate statistical method meeting the requirements of Title 27, §20415(e)(8)(E). Concentration limits shall be updated by the Discharger every two years and reported in the Annual Monitoring Summary Report for the respective reporting period. Calculation of the limits will follow ASTM Standard D 6312 – 98 "Developing Appropriate Statistical Approaches for Ground-Water Detection Monitoring Programs" and the most recently approved Detection Monitoring Plan for the facility.

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.

6. 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.

D. MONITORING

The Discharger shall comply with the detection and corrective action monitoring program provisions of Title 27 for groundwater, surface water, and the unsaturated zone. Detection monitoring for Fill Area II shall be installed, operational, and one year of monitoring data collected **prior to** the discharge of wastes. 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 and corrective action 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 COCs 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. 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 approved Detection and Corrective Action Monitoring Programs, where appropriate. The monitoring system shall be certified by a California-licensed professional civil engineer or geologist as meeting the requirements of Title 27. The Discharger shall collect, preserve, and transport groundwater samples in accordance with the approved Sample Collection and Analysis Plan.

The Discharger shall assess 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 expected highest and lowest elevations of the water levels in the wells.

Groundwater samples shall be collected from the following monitoring wells. Samples shall be collected and analyzed for the monitoring parameters in accordance with the methods and frequency specified in Table I.

Landfill Groundwater Monitoring Wells

Monitoring Program	Fill Area	Well No.
Detection Monitoring	1	MW-2A, MW-5A, MW-6, MW-7, E-05, E-07, E-23
Detection Monitoring	2	MW-4A, MW-8A, MW-8B, MW-9, MW-10
Corrective Action (VOCs)	1	E-03A, E-05, E-07, E-17, E-20B, E-23

Landfill Groundwater Piezometers

Fill Area	Well No.
1	E-18, E-21, E-22, MW-1A, MW-1B, MW-2B, MW-2C, MW-3B, MW-3C, MW-4B, MW-5B, WM-1
2	MW-3B, MW-3C, MW-4B, WM-1, WM-2, ARC-2, HSA-6, P-2, PC-1A, PC-1B, PC-1C, PC-2A, PC-2C, PC-6B
Other wells not required to be monitored	B-8, P-1, P-5G, PC-6A

Samples for the COCs specified in Table I shall be collected and analyzed in accordance with the methods listed in Table VI every five years. The last 5-year COC groundwater monitoring event was conducted during 2005; therefore, the next COC event is scheduled to take place in 2010.

2. Unsaturated Zone Monitoring

The Discharger shall operate and maintain an unsaturated zone detection monitoring system that complies with the applicable provisions of Title 27, §20415 and §20420, 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 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. Samples for the COCs specified in Table II shall be collected and analyzed in accordance with the methods listed in Table VI every five years.

Sumps for subdrains under Fill Area I, Unit 1 and Unit 2 shall be inspected weekly for water. For Fill Area 1, Unit 1, valley subdrain data may be combined with leachate sump data if both sources share a common sump. The locations to be sampled are identified as VZM-A and VD. For Fill Area 1, Unit 2, the location to be samples is identified as VD2. Field samples from these locations shall be sampled on a quarterly basis, while samples needed for chemical analysis shall be collected on an annual basis. Table II presents the list of analytes and mediums to be sampled (liquid or soil-pore gas, as applicable). The quantity of water pumped from each sump shall be measured continuously and reported as subdrain flow (total gallons/month).

For Fill Area II, the pan lysimeters and groundwater subdrains shall be checked monthly for liquid and monitoring shall also include the total volume of liquid removed from the system. Upon detection of water in a previously dry lysimeter or subdrain, the Discharger shall immediately sample the liquid and shall continue to sample the lysimeter as described in Table II. 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. The quantity of water pumped from each sump shall be measured continuously and reported as subdrain flow (total gallons/month).

3. Leachate/Seep Monitoring

All Unit leachate collection and removal system sumps shall be inspected weekly 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 for monitoring parameters annually during the fourth quarter in accordance with Table III thereafter, with a retest during the following second quarter if constituents are detected that have not been previously detected. Leachate field parameters shall be sampled and analyzed in accordance with Table III. The COCs 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/month). Leachate monitoring locations for Fill Area 1 are designated as LS, LS2, and the wastewater treatment plant effluent.

All leachate collection and removal system sumps shall be tested annually to demonstrate operation in conformance with waste discharge requirements. The results of these tests shall be reported to the Regional Water Board and shall include comparison with earlier tests made under comparable conditions.

Leachate which seeps to the surface from any Unit shall be sampled and analyzed for the Monitoring Parameters and COCs listed in Table III upon detection. The quantity of leachate shall be *estimated* and reported as Leachate Flow Rate (in gallons/day).

4. Leachate Treatment Plant Monitoring

Effluent from the leachate treatment plant shall be measured continuously and reported as Leachate Treatment Plant Effluent Volume (gallons/month). Any spills associated with the leachate shall be immediately sampled for the parameters listed in Table III. The Regional Water Board shall be notified **immediately** by phone about the event and how it was remedied. A written report shall also be filed with the Regional Water Board **within seven days**, containing at least the following information:

a) An estimate of the spill volume;

b) A description of the nature of the discharge (e.g., all pertinent observations and analyses);

c) Verification that samples have been submitted for analyses of the Monitoring Parameters and COCs listed in Table III of this MRP, and an estimated date that the results will be submitted to the Regional Water Board; and

d) Corrective measures underway or proposed, and corresponding time schedule.

5. Surface Water Monitoring

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

For all monitoring points and background monitoring points assigned to surface water detection monitoring, 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 COCs specified in Table IV every five years.

The Discharger shall comply with the requirements of the Industrial Activities Stormwater General Permit (storm water permit). Surface water flows from on and around the landfill shall be sampled at the point(s) where they leave the facility boundary at times when discharge from the storm water retention basins is occurring. In conjunction with the storm water permit, samples shall be taken **twice during the wet season** (October 1 to May 30) and analyzed for parameters listed in Table IV. Samples shall also be collected from each stormwater retention basin **annually** and shall be analyzed for the parameters listed in Table IV so that the quality of water in the retention basins is known, and to provide additional data for assessment of any water quality issues with the data from the required surface water samples. The annual retention basin samples shall be taken at the same time as one of the required surface water sampling events.

6. 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 E.3.f. 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 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 repairs.

7. Incoming Waste Monitoring Program

a. Petroleum Contaminated Soils Monitoring

Monitoring requirements for soils accepted for direct disposal in any landfill unit are as follows:

Report in Parameter/Constituent	**Units of**	**Sampling Frequency**
Amount of soil	Cubic Yards	Every Lot*
Before acceptance:		
for Gasoline:	mg/kg	Every Lot[1]
EPA 5030/8015 Modified EPA 5030/8020 TTLC Pb**(1)		
for Diesel & Virgin Oil:	mg/kg	Every Lot
EPA 3550/8015 Modified		
for Waste Oil	mg/kg	Every Lot
EPA 3550/8015 Modified EPA 5030/8015 Modified EPA 8260 (or 8010 & 8020) EPA 8270 5520 E&F (total oil & grease) TTLC Metals**: Cd, Cr, Pb, Ni, Zn		
Aquatic 96-Hour Static Bioassay required if: Gasoline is greater than 5,900 ppm; or Diesel is greater than 20,000 ppm; or Motor or waste oil is greater than 10,000 ppm.		Every Lot
After Treatment or Discharge: Final disposition of soil		Every Lot*

* The total amount of contaminated soil accepted from a site (gas station, pipeline spill, etc.) shall be defined as a lot. For every lot of soil, representative testing shall be conducted before the soil is accepted at Altamont.

** The WET method shall be run if any total metal concentration exceeds 10 times the STLC or the Designated Level if waste is discharged to the Class III landfill.

[1] The TTLC requirement for Pb applies to when the generator determines that leaded gasoline was or may have been present. In situations where there is proof that a generator's tank never contained leaded gasoline, the TTLC requirement for Pb can be omitted.

b. Designated and Non-Hazardous Solid Waste Monitoring

The Discharger shall monitor all wastes discharged to the Class III and Class II landfill units on a monthly basis and report to the Regional Water Board as follows:

Report in Parameter	**Units of**	**Frequency of Reporting**
Quantity Discharged:		
Non-hazardous Solid Waste	Cubic Yards & Tons	Yearly
Designated Waste	Cubic Yards & Tons	Yearly
Petroleum Contaminated Soil	Cubic Yards & Tons	
Asbestos	Cubic Yards & Tons	Yearly
Sewage and Wastewater Treatment Sludges	Cubic Yards or Tons	Yearly
Average % Solids	%	Yearly
Location of Discharge	- -	Yearly
Minimum Elevation(s) of Discharge during Quarter	Feet & Tenths, Mean Sea Level	Yearly
Capacity of Landfill Units Remaining	Percent	Yearly

When it is necessary to determine if a solid waste, including contaminated soil, is a 'designated waste', a Waste Extraction Test (WET) shall be run. The waste may be disposed of in a Class III landfill unit at this site only under the following conditions:

i. If the concentrations of extractable constituents (expressed in mg/l of extract), as determined by the standard WET (CCR, Title 22, Division 4.5, Chapter 11), do not exceed the Maximum Concentrations specified in the following table, the waste may be co-disposed with 'non-hazardous solid waste'.

ii. If the concentrations of extractable constituents (expressed in mg/l of extract), as determined by the WET run with deionized water in place of the standard citrate buffer, do not exceed the Maximum Concentrations specified in the following table, the waste may be disposed of in an area where the waste will not contact degradable wastes or wastes capable of generating acidic leachate or landfill leachate, or be overlain by wastes capable of generating acidic leachate.

Designated Level Parameter	Maximum Concentration in mg/l of WET Extract
Cadmium	0.05
Chromium (VI)	0.5*
Copper	20
Lead	1.5
Mercury	0.02
Nickel	1.0
Zinc	200

* At the Discharger's discretion, may be met based on Total Chromium analyses, provided that the Total Chromium analyses is below 0.5 mg/l.

The designated levels for petroleum-contaminated soils are 100 mg/kg TPH Diesel by Modified EPA 8015 or equivalent method and nondetectable TPH Gasoline or BTXE by EPA Methods 8015 and 8020. Soils containing greater than 100 mg/kg TPH Diesel or detectable TPH Gasoline or BTXE shall be discharged only to a Class II landfill unit.

c. Shredder Waste Monitoring

Monitoring requirements for shredder waste accepted at Altamont are as follows:

Parameter/Constituent	Report in Units of	Sampling Frequency
PCBs	mg/kg	Every 1,000 tons*
Location of shredder waste disposal	--	Yearly
Amount of shredder waste accepted	tons	Yearly
BTX&E	mg/l or µg/l	Every 1,000 tons**
Total Petroleum Hydrocarbons (TPH)	mg/kg	Every 1,000 tons**
Designated Level Parameters	mg/l	Every 1,000 tons**

* Or more frequently as required by the Department of Toxic Substances Control.
** Only required for shredder waste discharged to Class III unit.

Testing for PCBs shall be conducted using composite samples collected at the shredder facility. The samples shall be analyzed for PCBs using EPA Method 8080.

E. 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 contain at least the following:

   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 used to stabilize water in the well bore before the sample is taken including the pumping rate; the equipment and methods used to monitor field pH, temperature, and conductivity during purging;

results of pH, temperature, conductivity, and turbidity testing; and the method of disposing of the purge water;

4) The type of pump - or other device - used for sampling, if different than the pump or device used for purging; and

5) A statement that the sampling procedure was conducted in accordance with the approved 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). 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; and

f) Weather conditions - wind direction and estimated velocity, total precipitation on the day of observation.

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 analyses of the Monitoring Parameters and COCs listed in Table III of this MRP, 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 shall be graphed to show historical trends at each monitoring point and background monitoring point, for all samples taken within at least the previous five calendar years. If a 5-year COC event was performed, than these parameters shall also be graphically presented. Each such graph shall plot the concentration of one or more constituents for the

period of record for a given monitoring point or background monitoring point, at a scale appropriate to show trends or variations in water quality. The graphs shall plot each datum, rather than plotting mean values. 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) An evaluation of the monitoring parameters with regards to the cation/anion balance, and a graphical presentation using a Stiff diagram, a Piper graph, or a Schueller plot.

c) All historical monitoring data collected during the previous 5-years, and for which there are detectable results, including data for the previous year, shall be submitted in tabular form and 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)], that facilitates periodic review by the Regional Water Board.

d) 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.

e) 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.

f) A written summary of the monitoring results, indicating any changes made or observed since the previous annual report.

g) 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

24 April 2009
(Date)

HFH/WLB

TABLE I

GROUNDWATER DETECTION MONITORING PROGRAM

Parameter	Units	Frequency
Field Parameters[1]		
Groundwater Elevation	Ft. & hundredths, M.S.L.	Quarterly
Temperature	^{o}C	Semiannual
Electrical Conductivity	µmhos/cm	Semiannual
pH	pH units	Semiannual
Turbidity	Turbidity units	Semiannual
Monitoring Parameters[2]		
Chemical Oxygen Demand	mg/L	Semiannual
Total Kjeldahl Nitrogen	mg/L	Semiannual
Total Dissolved Solids (TDS)	mg/L	Semiannual
Chloride	mg/L	Semiannual
Bicarbonate	mg/L	Semiannual
Sulfate	mg/L	Semiannual
Volatile Organic Compounds (USEPA Method 8260, see Table V)	µg/L	Semiannual
Supplemental Parameters[3]		
Carbonate	mg/L	Semiannual
Nitrate - Nitrogen	mg/L	Semiannual
Calcium (dissolved)	mg/L	Semiannual
Magnesium (dissolved)	mg/L	Semiannual
Potassium (dissolved)	mg/L	Semiannual
Sodium (dissolved)	mg/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

1 Field parameters are collected for informational purposes to document groundwater conditions at the time of sampling, and are not included in statistical analysis.

2 Discharger shall apply the statistical analyses described in Section C.4.1 of this MRP to the inorganic monitoring parameters included on this list.

3 Supplemental parameters provide important information regarding groundwater geochemistry, but these parameters are not included in routine statistical analysis.

TABLE II

UNSATURATED ZONE DETECTION MONITORING PROGRAM

SOIL-PORE GAS

Parameter	Units	Frequency
Monitoring Parameters		
Volatile Organic Compounds (USEPA Method TO-14)	$\mu g/cm^3$	Semiannual
Methane	%	Semiannual

PAN LYSIMETERS (or other unsaturated zone monitoring device)

Parameter	Units	Frequency
Field Parameters		
Electrical Conductivity	µmhos/cm	Quarterly
pH	pH units	Quarterly
Monitoring Parameters		
Total Dissolved Solids (TDS)	mg/L	Annually
Chloride	mg/L	Annually
Carbonate	mg/L	Annually
Bicarbonate	mg/L	Annually
Nitrate - Nitrogen	mg/L	Annually
Sulfate	mg/L	Annually
Calcium	mg/L	Annually
Magnesium	mg/L	Annually
Potassium	mg/L	Annually
Sodium	mg/L	Annually
Volatile Organic Compounds (USEPA Method 8260B, see Table V)	µg/L	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

TABLE III

LEACHATE DETECTION MONITORING PROGRAM

Parameter	Units	Frequency
Field Parameters		
Total Flow	Gallons	Quarterly
Flow Rate	Gallons/Month	Quarterly
Electrical Conductivity	µmhos/cm	Quarterly
pH	pH units	Quarterly
Monitoring Parameters		
Total Dissolved Solids (TDS)	mg/L	Annually
Chloride	mg/L	Annually
Carbonate	mg/L	Annually
Bicarbonate	mg/L	Annually
Nitrate - Nitrogen	mg/L	Annually
Sulfate	mg/L	Annually
Calcium	mg/L	Annually
Magnesium	mg/L	Annually
Potassium	mg/L	Annually
Sodium	mg/L	Annually
Volatile Organic Compounds (USEPA Method 8260B, see Table V)	µg/L	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

TABLE IV

SURFACE WATER DETECTION MONITORING PROGRAM

Parameter	Units	Frequency
Field Parameters		
Temperature	^{o}C	Semiannual
Electrical Conductivity	µmhos/cm	Semiannual
pH	pH units	Semiannual
Turbidity	Turbidity units	Semiannual
Monitoring Parameters		
Total Dissolved Solids (TDS)	mg/L	Semiannual
Carbonate	mg/L	Semiannual
Bicarbonate	mg/L	Semiannual
Chloride	mg/L	Semiannual
Nitrate - Nitrogen	mg/L	Semiannual
Sulfate	mg/L	Semiannual
Calcium	mg/L	Semiannual
Magnesium	mg/L	Semiannual
Potassium	mg/L	Semiannual
Sodium	mg/L	Semiannual
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

MONITORING PARAMETERS FOR DETECTION MONITORING

Surrogates for Metallic Constituents:

pH
Total Dissolved Solids
Electrical Conductivity
Chloride
Sulfate

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- l ,4-Dichloro-2-butene
Dichlorodifluoromethane (CFC-12)
Dichlorofluoromethane
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
Diethyl ether
Di-isopropylether (DIPE)
Ethanol
Ethyltertiary butyl ether
Ethylbenzene
2-Hexanone (Methyl butyl ketone)

TABLE V (Continued)

MONITORING PARAMETERS FOR DETECTION MONITORING

Hexachlorobutadiene
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)
Tetrahydrofuran
Toluene
1,2,4-Trichlorobenzene
1,1,1-Trichloethane (Methylchloroforrn)
1,1,2-Trichloroethane
Trichloroethylene (Trichloroethene)
Trichlorofluoromethane (CFC- 11)
1,2,3-Trichloropropane
Vinyl acetate
Vinyl chloride
Xylenes

TABLE VI

CONSTITUENTS OF CONCERN & APPROVED USEPA ANALYTICAL METHODS

Inorganics (dissolved):	**USEPA Method[1]**
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

1 The Discharger may use alternative methods, including new USEPA-approved methods, provided they have the methods detection limits equal or lower than the analytical methods specified.

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 VI (Continued)

CONSTITUENTS OF CONCERN & APPROVED USEPA ANALYTICAL METHODS

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, l-Dichloroethene; Vinylidene chloride)
cis- l ,2-Dichloroethylene (cis- 1,2-Dichloroethene)
trans- l ,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- l ,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
1,1,2,2-Tetrachloroethane

TABLE VI (Continued)

CONSTITUENTS OF CONCERN & APPROVED USEPA ANALYTICAL METHODS

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

TABLE VI (Continued)

CONSTITUENTS OF CONCERN & APPROVED USEPA ANALYTICAL METHODS

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-Dimehtylphenol (m-Xylenol)
Dimethyl phthalate
m-Dinitrobenzene
4,6-Dinitro-o-cresol (4,6-Dinitro-2-methylphenol)
2,4-Dinitrophenol
2,4-Dinitrotoluene
2,6-Dinitrotoluene
Di-n-octyl phthalate
Diphenylamine
Endosulfan I
Endosulfan II
Endosulfan sulfate
Endrin
Endrin aldehyde
Ethyl methanesulfonate
Famphur
Fluoranthene
Fluorene
Heptachlor
Heptachlor epoxide
Hexachlorobenzene
Hexachlorocyclopentadiene
Hexachloropropene
Indeno(1,2,3-c,d)pyrene
Isodrin
Isophorone

TABLE VI (Continued)

CONSTITUENTS OF CONCERN & APPROVED USEPA ANALYTICAL METHODS

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-Nitrosospyrrolidine
5-Nitro-o-toluidine
Pentachlorobenzene
Pentachloronitrobenzene (PCNB)
Pentachlorophenol
Phenacetin
Phenanthrene
Phenol
p-Phenylenediamine
Polychlorinated biphenyls (PCBs; Aroclors)
Pronamide
Pyrene
Safrole
1,2,4,5-Tetrachlorobenzene
2,3,4,6-Tetrachlorophenol
o-Toluidine
Toxaphene
2,4,5-Trichlorophenol
0,0,0-Triethyl phosphorothioate
sym-Trinitrobenzene

TABLE VI (Continued)

CONSTITUENTS OF CONCERN & APPROVED USEPA ANALYTICAL METHODS

Chlorophenoxy Herbicides:

USEPA Method 8l51A
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. R5-2009-0055
WASTE MANAGEMENT OF ALAMEDA COUNTY, INC.
ALTAMONT LANDFILL AND RESOURCE RECOVERY FACILITY
ALAMEDA COUNTY

Waste Management of Alameda County, Inc., (hereafter Discharger) owns and operates the Altamont Landfill and Resource Recovery Facility. The Altamont facility covers nearly 2200 acres in the relatively isolated Altamont Hills in eastern Alameda County. Altamont is the largest landfill in the Bay Area and accepted approximately 1.7 million tons of material in 2007, which includes refuse and cover. The landfill consists of existing Fill Area 1, and a proposed expansion area, Fill Area 2. According to the Discharger's projections, Fill Area 1 will reach its capacity around 2010, given an average disposal rate of 6,000 tons/day. When Fill Area 2 is completely constructed it will have a capacity of approximately 62 million cubic yards. The waste footprint for Fill Area 2 will be less than or equal to the permitted 250 acres. If the average daily discharge remains the same as Fill Area 1, the Discharger estimates it will take approximately 24 years for Fill Area 2 to reach capacity. The facility has an estimated total capacity of 300 million cubic yards for Fill Area 1 and Fill Area 2. Fill Area 1 consists of a Class III landfill unit designated as Unit 1, and a Class II landfill unit designated as Unit 2. Fill Area 1, Unit 1 consists of both unlined and lined areas. Fill Area 2 will be constructed and managed as a Class II landfill.

The Discharger submitted a 17 September 2004 Report of Waste Discharge (RWD) as part of the Joint Technical Document for the facility. Subsequent documents have also been submitted including a December 2008 *Alternative Final Cover Design Report* for Fill Area 1, and documents related to leachate recirculation and corrective action for groundwater impacts. These revised waste discharge requirements (WDRs) approve and provide requirements for several proposals by the Discharger including: an alternative final cover for the remainder of Fill Area 1, Unit 1; recirculation of leachate into lined Class II landfill units; construction of two Class II surface impoundments for leachate storage; and the construction of Fill Area 2 on the eastern side of the facility. The revised WDRs also include a revised ground and surface water quality monitoring program, and changes to the corrective action monitoring program including requirements for the initiation of corrective action around monitoring well E-20B, and a change in corrective action approach in the Fill Area 1 main canyon area.

Low concentrations of volatile organic compounds (VOCs) were detected in groundwater below the Fill Area 1, Unit 1 landfill toe in 1982. Monitoring wells E-05 and E-07 were installed near the toe in 1985 to assist in the monitoring. A groundwater interceptor barrier (GWIB) was installed in 1987 to contain and extract groundwater in the toe area. The toe area of the landfill was closed with a prescriptive cover liner system and landfill gas collection and control were implemented as corrective actions. The VOCs noted during the initial operation of the GWIB have not been detected above reporting limits since 1992 (SCS Engineers, July, 2003). A detailed evaluation and pilot study program was conducted in 2003 and 2004 to assess the effectiveness of the GWIB. The results of the study indicated that extraction from the GWIB had no consequential effect on groundwater quality at the site, therefore, groundwater extraction from the GWIB was terminated in 2004. Based on review of the data, a Revised Engineering Feasibility Study was submitted in 2005, which included continued landfill gas extraction coupled with monitored natural attenuation as the

appropriate remedial action. Groundwater monitoring continues in this area. These WDRs adopt the new corrective action measures for this area as described in the 2005 Revised Engineering Feasibility Study. Monitoring wells E-05 and E-07 are Point of Compliance wells in this area.

Low concentrations of VOCs were detected on the east side of Fill Area 1, Unit 1 at monitoring well E-20B in 1999. Monitoring data collected from the E-20B area over the past several years have shown a continuing decrease in the concentrations of VOCs. The source of the low concentrations of VOCs detected in E-20B has been attributed to landfill gas. Landfill gas collection extraction systems were installed as corrective actions to mitigate the impact. These efforts, in addition to natural attenuation processes, have resulted in improved groundwater quality at E-20B. Based on review of the data, a Revised Engineering Feasibility Study was submitted in 2005, which included continued landfill gas and condensate extraction coupled with a monitored natural attenuation as the appropriate remedial action. To facilitate the groundwater cleanup strategy outlined in Title 27, monitoring well E-20B is now identified as a corrective action well.

The Discharger requested approval of an engineered alternative to five feet of groundwater separation for Fill Area 2 similar to that constructed in Fill Area 1, Unit 2. The WDRs conditionally approve the proposed three feet of separation for Fill Area 2 and require that the Discharger monitor the water in the groundwater underdrain for impacts. If impacts are found and confirmed, the Discharger must provide five feet of separation in all future units in Fill Area 2 constructed after the impacts are found, and also investigate and remediate the impacts as required in section E. of the WDRs, Detection Monitoring Specifications .

Topography of the site is characterized by moderate to steep rolling hills and narrow valleys with some hummocky landslide areas. Rocks underlying the site are part of the Uhalde formation consisting of mudstone with minor interbedded sandstone. Except for outcrop areas, the Uhalde Formation is blanketed by clay soil or alluvial deposits in the drainage channels and valley areas. Surface water flows from the ridges down through the valleys and discharges into local drainages. These natural drainages, which are often dry, ultimately drain toward the Sacramento-San Joaquin Delta to the east or the San Francisco Bay toward the west, when surface water flow is sufficient.

WLB