CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

ORDER NO. R2-2010-0064

UPDATED WASTE DISCHARGE REQUIREMENTS AND RECISSION OF ORDER NOS. 76-9, 77-138, AND 86-41 FOR:

CITY OF BERKELEY
BERKELEY LANDFILL
BERKELEY, ALAMEDA COUNTY

The California Regional Water Quality Control Board, San Francisco Bay Region (hereinafter the Regional Water Board), finds that:

DISCHARGER AND LOCATION

1. The City of Berkeley (referred to herein as the Discharger) owns the closed Berkeley Landfill (the Landfill), located at 11 Spinnaker Way in Berkeley. The Landfill is an approximately 90-acre site located in the City of Berkeley, bounded by San Francisco Bay waters on the west, north, and east sides and Spinnaker Way and the Berkeley Marina on the south (Figure 1). The site is maintained as recreational space and is predominantly used as a public park (Cesar Chavez Park).

PURPOSE OF ORDER UPDATE

2. The primary objectives of this Order are to update the Discharger's current Waste Discharge Requirements (WDRs) to:
    a. Reflect changes in closed landfill regulation since closure of the Landfill in 1990;
    b. Require the Discharger to apply for coverage under the General Industrial Storm Water Permit;
    c. Require an Operations and Maintenance Plan;
    d. Require an evaluation of the Landfill's Leachate Barrier and Sump Collection System; and
    e. Update the Landfill's Self-Monitoring Program.

SITE DESCRIPTION AND HISTORY

3. **Dates of Operation and Closure**: The Landfill began accepting non-hazardous municipal solid waste (class-III) in 1961 and continued operations until 1983, after which asphalt, concrete and clean fill was imported for foundation materials and use as final cover. The Landfill was formally closed in phases over the period 1981 through 1990, and is currently undergoing post closure monitoring and maintenance.

4. **Landfill Construction**: The Landfill was constructed on the Bay margin by filling wetlands and shallows. Perimeter levees were constructed extending into the Bay to create cells for waste placement. Built between 1957 and 1968, the levees were originally a series of earth, rock, and concrete material, but were improved in the late 1970's via Regional Water Board requirements to include the construction of slurry trenches (where necessary to prevent seeps), and placement of riprap armor protection. The levees are trapezoidal with approximate 1:1.5 (horizontal to vertical (H:V)) side slopes and a top width of 25 feet.

5. **Waste Characterization**: It is estimated that approximately 1.5 million tons of residential, commercial, and industrial waste was disposed of at the Landfill.

6. **Landfill Base Liner**: There is no engineered base liner at the Landfill. In keeping with practices at the time, wastes were disposed of directly on to San Francisco Bay Mud within the perimeter levees. The thickness of Bay Mud beneath the Landfill footprint ranges between 3.5 ft and 16.5 ft above the first water bearing unit (sand aquifer). The hydraulic conductivity of Bay Mud is reported to range between 10^{-4} and 10^{-8} cm/s, and thus it is considered to have low-permeability.

7. **Landfill Final Cover**: The Landfill was closed in five phases, and the cover profile of each phase varies according to planned post-closure uses as open space or a public park. Figure 2 illustrates the locations of each phase.

    a. Phase I cover is 3-ft to 5-ft thick of soil. A 1985 investigation to determine the physical properties of the soils indicated that it was sufficient to impede water infiltration through the cover into waste.

    b. Phase II cover consists mainly of a soil mound constructed with minimum slopes of 3% and maximum slopes of 4:1 (H:V). A 1985 investigation indicated that the soil consisted of sandy- and silty-clay at a thickness above refuse ranging between 7 ft and 39 ft, and includes a 2-ft thick continuous low-permeability layer (10^{-7} to 10^{-8} cm/s), meeting the CCR Title 27 regulations at the time.

    c. A 1985 investigation revealed that a portion of this area did not contain a continuous layer of low-permeability soil. In response, Phases III and IV were reconstructed with a 2- to 15-ft thick soil foundation layer, overlain by a 1- to 2-ft thick low-permeability clay layer, and a 1.5- to 10-ft thick vegetative layer. The final slopes were constructed with minimum slopes of 3% and maximum slopes of 4.5:1 (H:V).

    Phases I thru IV are vegetated and irrigated.

    d. Phase V is a naturally vegetated, non-irrigated area. Exact cover specifications could not be identified; however construction was performed under Regional Water Board oversight.

8. **2009 Regional Water Board Requirements Regarding Landfill Cover Maintenance**: During a routine inspection in January 2009, Regional Water Board staff identified significant erosion of the cover along the three shorelines of the Landfill. The erosion is a result of significant tunneling by ground squirrels whose large population is of concern at the Landfill. The ground squirrel population appears to be in part the result of feeding by park visitors. In January 2009, Regional Water Board staff required the Discharger to reduce

the ground squirrel population in a manner that protects wildlife, as well as visiting dogs and humans; and to repair the damage to the Landfill cover. This requirement was made pursuant to California Code of Regulations (CCR) Title 27 Section 12090(c)(1). Provision C.10 of this Order requires the Discharger to develop and implement an Operations and Maintenance Plan that addresses maintenance of the cover and control of the rodent population at the Landfill.

9. **Storm Water Drainage**: The final cover of the Landfill is graded to allow storm water to sheet flow directly to the Bay or into drainage ditches which discharge to the Bay. Regular maintenance of this system is necessary to minimize infiltration of storm and irrigation water into the Landfill. Provision C.5 of this Order requires the Discharger to apply for coverage under the General Industrial Storm Water Permit. Provision C.10 requires the Discharger to include storm water preparations and maintenance in its Operations and Maintenance Plan.

10. **Leachate Collection and Removal Systems (LCRS)**: Historic records indicate there were at least two leachate barrier/sumps employed at the Landfill in the mid- to late-1980's. The barriers consist of approximate 100-foot long berms of compacted clay soil keyed into the top of the levee to act as a dam for potential leachate seeps. Collection sumps were installed behind the barriers. The exact locations of the leachate barrier/sumps are unknown, but can be inferred to be the same as existing sumps LCS-1 and LCS-2 (Figure 3). Fluid removal, which ceased in the early 1990's, consisted of pumping via vacuum truck and disposal in the sanitary sewer and routing to a wastewater treatment plant. It is currently unknown whether fluid removal is necessary to prevent impacts on waters of the State. To address this lack of information, Provision C.9 of this Order requires the Discharger to identify the location of each leachate sump, determine if they are functioning, and assess whether fluids should be routinely (or otherwise) removed.

11. **2009 Regional Water Board Requirements Regarding Monitoring System Maintenance**: The Regional Water Board has recently required the Discharger to undertake two actions:

    a. Destruction of Levee Seepage Wells: In 2009 illicit dumping in the Landfill's levee seepage wells was discovered by Regional Water Board staff. The wells are not useful for monitoring at the Landfill and pose a threat to water quality. In January 2009, the Regional Water Board required the Discharger to properly destroy the levee seepage wells. The Discharger submitted a work plan for well destruction that was approved by the Regional Water Board in April 2009.

    b. Monitoring Well Security: During a routine inspection in January 2009, Regional Water Board staff determined that wells were not being properly maintained or secured. In January 2009, the Regional Water Board informed the Discharger of its responsibility to properly maintain the monitoring system of the Landfill, pursuant to CCR Title 27 Section 12090(c)(3), and required the Discharger to repair the damaged wells and to ensure monitoring wells are properly secured after monitoring. The Discharger subsequently repaired and secured all well covers.

Provision C.10 of this Order requires the Discharger to develop and implement an Operations and Maintenance Plan that addresses monitoring system operation and maintenance.

REGIONAL WATER BOARD ORDERS

12. The Regional Water Board adopted WDR Order No. 76-9 for the Discharger and Berkeley Landfill Company, permitting the Landfill during its active phase.

13. Order No. 77-138 amended Order No. 76-9 to revise the compliance time schedule for the Discharger and Berkeley Landfill Company.

14. Order No. 86-41 amended Order No.76-9 to permit the Landfill's closure. The Order required the Discharger to establish a closure and maintenance plan, maintain and operate the LCRS, grade the site to a minimum of 3%, and establish financial assurances. The Self-Monitoring Program was not amended at this time.

GEOLOGICAL AND HYDROGEOLOGICAL SETTING

15. **Geology**: The Landfill sits on an alternating sequence of estuarine and alluvial deposits of the Alameda Formation, which overlies the basement Franciscan Formation. The Landfill is located in a seismically active zone, near three major fault zones:

    a. The San Andreas fault, located approximately 15 miles southwest;
    b. The Hayward fault, located approximately 3 miles northeast; and
    c. The Calaveras Fault, located approximately 12 miles northeast.

16. **Hydrogeology**: The Landfill is located in the East Bay Plain Groundwater Sub-Basin. Boring logs for the groundwater monitoring wells at the site indicate the following regarding subsurface conditions at the site:

    a. Perimeter: Boring logs for monitoring wells installed through levee structures indicate subsurface soils along the perimeter consist of 16 to 32.5 ft of sand and gravel fill (used to construct the perimeter levees), underlain by 3.5 to 16.5 ft of Bay Mud, 2 to 3 ft of sand (alluvium), and underlain by additional Bay Mud.

    b. Central: Boring logs drilled through a buried levee in the center of the site (one of the levees constructed to create new waste cells) indicates subsurface soils in the center consist of 7 ft of sandy clay cover material, underlain by 47 ft of clay and gravel fill, underlain by 13 ft of Bay Mud. Similar to the perimeter borings, beneath the initial layer of Bay Mud lays approximately 2 ft of sand, underlain by additional Bay Mud.

17. **Groundwater**: The first water bearing sand unit beneath the Landfill is under confined conditions. Groundwater elevation measurements indicate there is an area of high piezometric head below the center of the Landfill, suggesting groundwater in the confined sand aquifer flows from beneath the center of the Landfill outward in all directions. Since regional information indicates groundwater in the area generally flows westward, it is

believed that the high piezometric head under the central part of the Landfill is likely a response to the overlying weight of the waste and cover. Given the low hydraulic conductivity of Bay Mud underlying the waste, it is unlikely the source of groundwater near the center of the Landfill is leachate. Recent groundwater monitoring for typical Constituents of Concern (COC) in landfills supports this theory, as concentrations were relatively low. Furthermore, piper diagrams indicate the major ion chemistry of groundwater is significantly different from that of the leachate.

18. **Surface Water**: The Landfill is a man-made peninsula surrounded by the San Francisco Bay. A typical diurnal high tide elevation for the Bay is approximately 6.1 ft to 9.2 ft, relative to mean lower low water (MLLW) per National Oceanic and Atmospheric Administration tide and current data for the Alameda, California Station. Average rainfall is approximately 23 inches, occurring primarily between November and April.

19. **Analysis of Potential Hydraulic Connection to San Francisco Bay**: Recent and historic monitoring suggests that landfill leachate is not migrating laterally through the levees into San Francisco Bay. Monitoring data to support this finding includes:

    a. Continuous water level measurements at levee seepage wells: The previous Self-Monitoring Program (SMP, Order No.76-9) required the Discharger to continuously monitor liquid levels in levee seepage wells over a 48-hour period, on a quarterly basis. Historic monitoring data from 1996 to 2008 show static liquid levels, suggesting the absence of tidal fluctuations. This suggests that the waste is not in hydraulic connection with the adjacent Bay water.

    b. Major ion analyses of leachate: Piper diagrams of the ion balance for primary cations and anions in leachate and groundwater samples obtained as part of the 2008 *Site Characterization and Groundwater Investigation Report* (SCS Engineers for the City of Berkeley, 2009) suggest that groundwater wells are dominated by the salt water of Bay sediments underlying the Landfill, while leachate more closely resembles the ion balance for typical fresh, surface water. This suggests the waste is not in hydraulic connection with the adjacent Bay water.

    c. Quarterly liquid level monitoring: Relatively static liquid levels have been measured on a quarterly basis at the levee seepage wells, suggesting seasonal but not tidal influence. The absence of tidal influence suggests the waste is not in hydraulic connection with the adjacent Bay water.

MONITORING PROGRAMS

20. **Groundwater**: The current Self-Monitoring Program (SMP, Order No. 76-9) requires the Discharger to monitor groundwater levels, presumably to infer whether leachate is migrating into groundwater in the subsurface. Chemical analyses of groundwater have not routinely been required or performed at the site.

21. **2007 Regional Water Board Requirements Regarding Groundwater and Leachate Monitoring**: In 2007, Regional Water Board staff required the Discharger to evaluate groundwater and leachate for use in developing the Landfill's updated SMP. In response, the

Discharger submitted the *Site Characterization and Groundwater Investigation Report* (SCS Engineers for the City of Berkeley, 2009). A suite of potential constituents of concern were analyzed quarterly for one year for total dissolved solids (TDS), primary cations and anions, inorganics, volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), organochlorine and organophosphorous pesticides, polychlorinated biphenyls (PCBs), total petroleum hydrocarbons (TPH), and extractable Oil and Grease. The groundwater and leachate monitoring wells used during the site characterization activities are the same as those proposed for the SMP, and are illustrated in Figure 3. Significant results consist of the following:

a. Metals: Cadmium, cobalt, copper, mercury, nickel and zinc were detected in groundwater at levels exceeding (by less than one order of magnitude) the Regional Water Board's Environmental Screening Levels (ESLs, *Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater,* Table B, May 2008); Cadmium and zinc were each detected on one occasion only, and were not detected in any samples from leachate wells during the four quarterly events. Thus the detections of cadmium and zinc in groundwater may be anomalous. Copper was not detected in any leachate samples;

b. Total Petroleum Hydrocarbons as diesel: TPH-d was detected in groundwater at the site at levels below ESLs. TPH-d may be useful in a detection monitoring program as an indicator of a leachate release due to its relatively elevated concentration (an order of magnitude) in some leachate wells;

c. VOCs: VOCs were detected in both groundwater and leachate at concentrations below ESLs. The majority of VOCs detected in leachate were not detected in groundwater;

d. Groundwater/Leachate connection: Piper diagrams indicate groundwater in the first sand aquifer below the Bay Mud is not impacted by leachate; and

e. Groundwater and Leachate Elevations: The first water bearing sand unit beneath the Landfill is under confined conditions. Groundwater elevation measurements indicate there is an area of high piezometric head below the center of the Landfill, suggesting groundwater in the confined sand aquifer flows radially outward from beneath the center of the Landfill. Leachate is present in the waste mass and is no longer pumped at the Landfill. However, the historic trends of liquid level measurements in monitoring wells at the Landfill suggest that there is no hydraulic connection between leachate in the refuse prism and underlying groundwater or adjacent surface waters.

BASIN PLAN AND BENEFICIAL USES

22. The Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan) is the Regional Water Board's master water quality control planning document. It designates beneficial uses and water quality objectives for waters of the State, including surface waters and groundwater. It also includes programs of implementation to achieve water quality objectives. The Basin Plan was duly adopted by the Regional Water Board and approved by the State Water Resources Control Board (State Board), U.S. EPA, and the Office of Administrative Law where required.

23. The existing beneficial uses of San Francisco Bay (the receiving water) are:

    a. Ocean, commercial, and sport fishing;
    b. Shellfish harvesting;
    c. Estuarine habitat;
    d. Fish migration;
    e. Preservation of rare and endangered species;
    f. Fish spawning;
    g. Wildlife habitat;
    h. Water contact recreation;
    i. Non-contact water recreation;
    j. Industrial service supply;
    k. Industrial process supply; and
    l. Navigation.

24. The existing and potential beneficial uses of the East Bay Plain Sub-Basin Groundwater are:

    a. Industrial water supply;
    b. Agricultural water supply; and
    c. Municipal and domestic water supply (however due to the proximity of the Bay, groundwater at the site contains elevated TDS levels, which render the groundwater nonpotable).

CALIFORNIA ENVIRONMENTAL QUALITY ACT

25. This action is an Order to enforce the laws and regulations administered by the Regional Water Board. This action is categorically exempt from the provisions of the California Environmental Quality Act pursuant to Section 15308, Title 14CCR.

NOTIFICATIONS AND MEETING

26. The Regional Water Board has notified the Discharger and interested agencies and persons of its intent to amend the Waste Discharge Requirements, and has provided them with an opportunity for a public hearing and an opportunity to submit their written views and recommendations.

27. The Regional Water Board, in a public meeting, heard and considered all comments pertaining to this amendment of Waste Discharge Requirements.

IT IS HEREBY ORDERED pursuant to the authority in Section 13263 of the California Water Code (CWC), Title 27, Division 2, Subdivision 1 of the California Code of Regulations (CCR), and Chapter 15, Division 3, Title 23 of the California Code of Regulations (Chapter 15) that the Discharger, its agents, successors, and assigns shall meet the applicable provisions contained in CCR Title 27, Chapter 15, and Division 7 CWC, and shall comply with the following:

A. PROHIBITIONS

1. Untreated or inadequately treated groundwater or leachate shall not create a condition of pollution or nuisance as defined in CWC Section 13050(m), nor degrade the quality of waters of the State or of the United States.

2. No additional waste, with the exception of purge water from monitoring wells or litter receptacles for public park use, shall be deposited or stored at this site.

3. Wastes shall not be disposed in any position where they can migrate from the disposal site to adjacent geologic materials, waters of the State or of the United States during disposal operations, closure, and during the post-closure maintenance period, per CCR Title 27 Section 20310(a).

4. Waste shall not be exposed.

5. Leachate, storm water or groundwater containing leachate, or in contact with waste, shall not be discharged to waters of the State or of the United States unless specifically authorized under an NPDES permit.

6. The Discharge of leachate that: 1) has the potential to cause corrosion or decay, or otherwise reduce or impair the integrity of the containment structures; 2) if mixed or commingled with other wastes in the unit, could produce a violent reaction including heat, pressure, fire, explosion, or the production of toxic by-products; 3) require a higher level of containment than provided by the unit; 4) are "restricted hazardous wastes", or 5) impair the integrity of the containment structures, are prohibited per CCR Title 27 Section 20200(b)(2).

7. Buildup or mounding of leachate levels within the Landfill, which adversely impacts waters of the State, is prohibited and shall be prevented by operation of a leachate extraction system.

8. The creation of any new waste management unit is prohibited.

9. The relocation of wastes is prohibited without prior Regional Water Board staff concurrence.

10. Excavation within or reconfiguration of any existing waste management unit is prohibited without prior concurrence of Regional Water Board staff. Minor excavation or reconfiguration activities such as for installation of signs or landscaping, or for routine maintenance and repair do not require prior staff concurrence.

11. The Discharger shall not disc the Landfill cap. Alternate methods of controlling vegetative growth, which do not affect the integrity of the Landfill cap, shall be utilized.

12. Surface drainage from tributary areas and internal site drainage from surface or subsurface sources shall not contact or percolate through wastes during the life of the site.

13. The Discharger shall not perform any intrusive activities on the Landfill surface that have the potential to negatively affect the integrity and proper function of the Landfill cap, such as digging or trenching, without prior Regional Water Board approval.

14. The Discharger, or any future owner or operator of the site, shall not cause the following conditions to exist in waters of the State or of the United States at any place outside the existing waste management unit:

    a. Surface Waters:

        i. Floating, suspended, or deposited macroscopic particulate matter or foam;
        ii. Bottom deposits or aquatic growth;
        iii. Adverse changes in temperature, turbidity, or apparent color beyond natural background levels;
        iv. Visible, floating, suspended, or deposited oil or other products of petroleum origin; or
        v. Toxic or other deleterious substances to exist in concentrations or quantities that may cause deleterious effects on aquatic biota, wildlife, or waterfowl, or that render any of these unfit for human consumption either at levels created in the receiving waters, or as a result of biological concentrations.

    b. Groundwater:

        i. Degradation of groundwater quality; or
        ii. Significant migration of pollutants through subsurface transport.

B. SPECIFICATIONS

1. The Discharger shall implement a Detection Monitoring Program (DMP), pursuant to CCR Title 27 Section 20420. The DMP shall be designed to identify any water quality impacts from the Landfill and demonstrate compliance with the Water Quality Protection Standard (WQPS), which is required pursuant to CCR Title 27 Section 20390. The SMP attached to this Order is intended to constitute the DMP for the Landfill.

2. The WQPS for the Landfill shall include the following:

    1. Constituents of Concern: CCR Title 27 Section 20395 defines Constituents of Concern (COCs) as "all waste constituents, reaction products, and hazardous constituents that are reasonably expected to be in or derived from waste contained in the Unit." COCs include the monitoring parameters identified in the SMP attached to this Order, or any future amendment thereof, and all Appendix II parameters in the federal Subtitle D regulations.

a. Monitoring Parameters: Monitoring parameters (MPs), a subset of the COCs, are typically the most mobile and commonly detected COCs in groundwater at the site and are measured on a more frequent basis than the entire list of COCs. The MPs shall include, at a minimum, all constituents identified as such in the SMP attached to this Order, or any future amendments thereof. The Discharger may propose modification to the MPs as additional data become available concerning site-specific source characteristics and natural background water quality. However, modifications shall only be made upon written concurrence from the Executive Officer.

c. Concentration Limits: Concentration limits for all COCs detected at the specified monitoring wells are typically established using the background data set pursuant to CCR Title 27 Section 20400. However, use of background data is inappropriate at this site for two reasons:

i. Background groundwater concentrations are difficult to identify given groundwater conditions at the site. Groundwater in the first shallow sand aquifer is under confined conditions, and flows radially outward beneath the central portion of the Landfill from areas of highest piezometric head. Thus there is no up-gradient or side-gradient.

ii. The Landfill is surrounded by other former landfills. The Berkeley shoreline was constructed by the filling of wetlands with soil fill, construction debris, and municipal waste.

Therefore, background concentrations would not function as intended by CCR Title 27. Alternate Concentration Limits for the Monitoring Parameters, proposed by the Discharger, will instead be utilized in accordance with CCR Title 27 Section 20080(a)(1). Environmental Screening Levels (ESLs, Table B, most recent established) will be used as Concentration Limits for volatile organic compounds (VOCs) and total petroleum hydrocarbons (TPH). If concentrations exceed the ESLs in three or more out of six consecutive monitoring events, further investigation will be initiated to identify any impact from landfill releases.

Metals will also be used as Monitoring Parameters; however ESLs are not appropriate Concentration Limits for metals because concentrations in groundwater at the Landfill already exceed those values. The Discharger proposes to use statistical trend analysis to identify an increase in concentrations of metals in the groundwater. However, the dataset is currently insufficient to perform such analyses. Therefore, Provision C.12 of this Order requires the Discharger to propose a statistical trend analysis, appropriate to evaluate trends, once a robust dataset has been established. The SMP will be amended to incorporate this change.

d. Point of Compliance: CCR Title 27 Section 20405 defines the Point of Compliance (POC) as the "vertical surface located at the hydraulically downgradient limit of the Unit that extends through the uppermost aquifer underlying the Unit." The POC

shall be the hydraulically downgradient perimeter of the waste fill area, and therefore circumscribes the Landfill.

e. Monitoring Points: CCR Title 27 Section 20164 defines Monitoring Points as "a well, device, or location specified in the waste discharge requirements at which monitoring is conducted and at which the water quality protection standard applies." Monitoring points for the Landfill, which are located along the POC and at additional locations, are specified in the SMP attached to this Order, or any future amendments thereof.

3. The Discharger shall conduct monitoring activities according to the SMP and as may be amended by the Executive Officer, to verify the effectiveness of the Landfill's systems for monitoring, containment, collection, treatment, and removal of groundwater, surface water, and leachate, and landfill gas (to minimize the impairment of beneficial uses of water due to gas migration).

4. All monitoring wells shall be constructed in a manner that maintains the integrity of the drill hole, prevents cross-contamination of saturated zones, and produces representative groundwater samples from discrete zones within the aquifer unit each well is intended to monitor.

5. The Discharger shall install any reasonable additional groundwater and leachate monitoring devices required to fulfill the terms of any future SMP issued by the Executive Officer.

6. All samples shall be analyzed by State-certified laboratories, or laboratories accepted by the Regional Water Board, using approved U.S. EPA methods for the type of analysis to be performed. All laboratories shall maintain quality assurance/quality control records for Regional Water Board review. This specification does not apply to analyses that can only be reasonably performed onsite (e.g., pH).

7. The Discharger may file a written request (including supporting documentation) with the Executive Officer, proposing modifications to the attached SMP. If the proposed modifications are acceptable, the Executive Officer may issue a letter of approval that incorporates the proposed revisions into the SMP.

8. The Discharger shall maintain the Landfill so as to prevent a statistically significant increase in water quality parameters at points of compliance as provided in CCR Title 27 Section 20420.

9. Whenever there is "measurably significant" geochemical evidence of an exceedance of concentration limits (as defined in CCR Title 27 Section 20164) or significant physical evidence of a release, the Discharger shall be prepared to implement an Evaluation Monitoring Program (EMP) pursuant to CCR Title 27 Section 20425, at the direction of the Regional Water Board. In such a case, the Discharger shall continue implementing the DMP as prescribed in the SMP. If required, the EMP shall be implemented to determine the nature and extent of any release detected by the DMP.

10. All reports submitted pursuant to this Order shall be prepared under the supervision of and signed by appropriately licensed professionals, such as a California registered civil engineer, registered geologist, and/or certified engineering geologist, and acceptable to the Executive Officer.

11. The Discharger shall notify the Regional Water Board immediately of any failure occurring in the Landfill. Any failure that threatens the integrity of containment or control features or structures at the Landfill shall be promptly corrected after approval of the method and schedule by the Executive Officer.

12. Final cover systems for waste management units shall be graded and maintained to promote lateral runoff and prevent ponding and infiltration of water.

13. The site shall be protected from any washout or erosion of wastes from inundation, which could occur as a result of a l00-year, 24-hour storm event, or as the result of flooding with a return frequency of 100 years.

14. The Discharger shall install new monitoring stations to replace any monitoring wells designated as monitoring stations that are destroyed or lost during landfill development or expansion.

15. The Discharger shall maintain all devices or designed features, installed in accordance with this Order such that they continue to operate as intended without interruption.

16. The Discharger shall provide and maintain a minimum of two permanent, surveyed monuments near the Landfill from which the location and elevation of wastes, containment structures, and monitoring facilities can be determined throughout the operation, closure, and post-closure maintenance periods. These monuments shall be installed by a licensed land surveyor or registered civil engineer.

17. Containment, collection, drainage, and monitoring systems for groundwater, surface water, and leachate shall be maintained and operated as long as waste or leachate is present and poses a threat to water quality.

18. Methane and other landfill gases shall be adequately vented, removed from the Landfill, or otherwise controlled to minimize the danger of explosion, adverse health effects, nuisance conditions and the impairment of beneficial uses of water due to gas migration.

19. The Discharger shall assure that the structures which control leachate, surface drainage, erosion, and landfill gas are constructed and maintained to withstand conditions generated during the maximum probable earthquake.

20. The Discharger shall provide reasonable access to any property it owns or leases at the site to allow for installation, sampling, monitoring, etc., of all devices and equipment necessary for compliance with the requirements of this Order.
21. When there are multiple landowners or lease holders involved, the Discharger shall provide reasonable access to any property it owns or leases at the site to allow for installation,

sampling, monitoring, etc., of all devices and equipment necessary for compliance with the requirements of this Order.

22. The Discharger shall comply with all applicable provisions of CCR Title 27 that are not specifically referred to in this Order.

C. PROVISIONS

2. **Duty to Comply**: The Discharger shall comply immediately, or as prescribed by the time schedule below, with all Prohibitions, Specifications and Provisions of this Order. All required submittals must be acceptable to the Executive Officer. The Discharger must also comply with all conditions of these waste discharge requirements. Violations may result in enforcement actions, including Regional Water Board orders or court orders requiring corrective action or imposing civil monetary liability, or in modification or revocation of these waste discharge requirements by the Regional Water Board. (CWC Section 13261, 13263, 13265, 13268, 13300, 13301, 13304, 13340, 13350).

3. **Authority**: All technical and monitoring reports required by this Order are required pursuant to CWC Section 13267. Failure to submit reports in accordance with schedules established by this Order or failure to submit a report of sufficient technical quality to be acceptable to the Executive Officer may subject the Discharger to enforcement action pursuant to CWC Section 13268.

4. **Self-Monitoring Program**: The Discharger shall implement and comply with the SMP attached to this Order and any revisions issued by the Executive Officer. The attached SMP is intended to constitute a Detection Monitoring Program (DMP) pursuant to CCR Title 27 Section 20420 and is designed to identify significant water quality impacts from the Landfill and demonstrate compliance with the WQPS established pursuant to CCR Title 27 Section 20390. The Discharger shall submit semi-annual monitoring reports, acceptable to the Executive Officer, no later than March 31st and September 30th of each year in accordance with the SMP. Included in the September report shall be a section detailing repair and maintenance activities needed and performed prior to each rainy season.

COMPLIANCE DATE: Immediately upon adoption of this Order
REPORT DUE DATE: March 31 and September 30 of each year

4. **Report of Waste Discharge (ROWD)**: The Discharger shall submit a technical report, acceptable to the Executive Officer, describing any proposed material change in the character, location, or volume of a discharge, or in the event of a proposed change in use or development of the Landfill [CWC Section 13260(c)]. The technical report shall describe the project, identify key changes to the design that may impact any portion of the Landfill, and specify components of the design necessary to maintain integrity of the Landfill cover and prevent water quality impacts. No material changes to any portion of the Landfill shall be made without approval by the Executive Officer.

COMPLIANCE DATE: 120 days prior to any proposed material change

5. **Industrial Storm Water Permit:** The Discharger shall apply for coverage under the General Industrial Storm Water Permit. This includes submitting a Notice of Intent to the State Board, and preparing and implementing a Storm Water Pollution Prevention Plan (SWPPP). A copy of the SWPPP and any updates shall be submitted to the Regional Water Board Groundwater Protection and Waste Containment Division case manager.

   COMPLIANCE DATE: June 30, 2010

6. **Construction-Related Storm Water Permit**: For any proposed grading or development project greater than one acre in size, the Discharger shall submit a Notice of Intent to the State Board, submit a Storm Water Pollution Prevention Plan (SWPPP) acceptable to the Executive Officer, and implement Best Management Practices (BMPs) for the control of storm water, in accordance with requirements specified in the State Board's General Permit for Storm Water Discharges Associated with Construction Activities (NPDES Permit No. CAS000001). The Discharger will be deemed in compliance with this Provision if another party constructing improvements on property owned by the Discharger, pursuant to an easement granted by the Discharger, has obtained coverage under the General Permit.

   COMPLIANCE DATE: 30 days prior to construction

7. **Well Installation or Destruction Report**: The Discharger shall submit a technical report, acceptable to the Executive Officer, which provides well construction details, geologic boring logs, and well development logs for all new wells installed or destroyed as part of the Discharge Monitoring Program (DMP).

   REPORT DUE DATE: 60 days following well installation or destruction

8. **Financial Assurance Instrument**: The Discharger shall maintain a Financial Assurance Instrument, acceptable to the Executive Officer, pursuant to CCR Title 27 Section 22210 (a). For the purposes of planning the amount of the fund, the Discharger shall assume a post-closure period of at least 30 years from the date of the final phase of closure construction. However, the post-closure maintenance period shall extend as long as wastes pose a threat to water quality. The Discharger shall submit a report every five years that either validates the Instrument's ongoing validity or proposes and substantiates any needed changes (e.g., a documented increase in the monitoring system's ability to provide reliable early detection of a release can cause a decrease in the Instrument's financial coverage). In addition, the Financial Assurance Instrument shall be updated annually based on inflation, and a brief report of these details shall be submitted.

   COMPLIANCE DATE: July 30, 2010 and every five years thereafter, and update for inflation annually

9. **Leachate Barrier and Sump System Maintenance Plan**: The Discharger shall submit a report, acceptable to the Executive Officer, detailing the location and function of the Landfill's leachate barrier and collection sumps (LCSs). The report shall, at a minimum, include a map illustrating the location of each feature, provide recommendations regarding the need for fluid removal, if any, from the LCSs, and include a schedule for regular

maintenance of both the leachate barrier and LCSs. This recommendation shall be incorporated into the Operations and Maintenance Plan in Provision C.10.

REPORT DUE DATE: August 31, 2010

10. **Operations and Maintenance Plan**: The Discharger shall submit an Operations and Maintenance Plan, acceptable to the Executive Officer, including, but not necessarily limited to the following:
    a. Wet season preparations including storm water drainage infrastructure inspection, construction, and maintenance;
    b. The periodic inspection of the Landfill cover, including subsidence or other disturbance that might increase infiltration of storm water;
    c. The periodic assessment of rodent population control and any impacts that might threaten the Landfill cover;
    d. The periodic inspection of perimeter levees for failures which might cause erosion or any other condition which could threaten water quality; and
    e. The periodic inspection and maintenance of the monitoring systems, LCRSs, and LCSs.

REPORT DUE DATE: August 31, 2010 and update biennially

11. **Long-Term Flood Protection Report**: The Discharger shall submit a report, acceptable to the Executive Officer, for long-term flood protection of the Landfill. The plan shall include a consideration of feasible options for achieving protection from a 100-year flood in the face of rising sea levels and increasing flood frequency and intensity. The plan shall consider methods developed by the San Francisco Bay Conservation and Development Commission to predict and protect against future flooding. The Plan shall be updated every five years throughout the post-closure maintenance period of the Landfill utilizing the most recently available and credible information at the time of the update.

REPORT DUE DATE: September 30, 2010 and update every five years thereafter

12. **Propose SMP Trend Analysis for Metals**: The Discharger shall propose an appropriate method to evaluate if groundwater concentrations of metals are increasing at the Landfill. Currently there is insufficient data to accurately evaluate trends in metal data. A robust dataset consists of eight data-points, and the Landfill currently has one year of data. Thus, a robust seasonal dataset should be available in seven years. Therefore, a workplan, acceptable to the Executive Officer, shall be submitted that proposes and justifies a seasonal statistical trend analysis to be used in the place of Concentration Limits for metals for the Landfill's SMP.

REPORT DUE DATE: September 30, 2015

13. **Earthquake Inspection**: The Discharger shall submit a detailed Post-Earthquake Inspection Report acceptable to the Executive Officer, in the event of any earthquake generating ground shaking of Richter Magnitude 7 or greater at or within 30 miles of the Landfill. The report shall describe the containment features, groundwater monitoring, and control facilities potentially impacted by seismic deformations of the Landfill. Damage to any waste containment facility that may impact waters of the State must be reported immediately to the Executive Officer.

    COMPLIANCE DATE: Within 6 weeks of earthquake

14. **Change in Site Conditions:** The Discharger shall immediately notify the Regional Water Board of any flooding, ponding, settlement, equipment failure, slope failure, exposure of waste, liner leakage, or other change in site conditions that could impair the integrity of the Landfill cap, waste or leachate containment facilities, and/or drainage control structures and shall immediately make repairs. Within 30 days, the Discharger shall prepare and submit a technical report, acceptable to the Executive Officer, documenting the corrective measures taken.

    NOTIFICATION DUE DATE: Immediately upon occurrence
    REPORT DUE DATE: 30 days after initial notification

15. **Availability:** A copy of these WDRs shall be maintained by the Discharger and shall be made available by the Discharger to all employees or contractors performing work (maintenance, monitoring, repair, construction, etc.) at the Landfill [CWC Section 13263].

16. **Change in Ownership**: The Discharger must notify the Executive Officer in writing at least 30 days in advance of any proposed transfer of this Order's responsibility and coverage to a new discharger. The notice must include a written agreement between the Discharger and the new discharger containing a specific date for the transfer of this Order's responsibility and coverage between the Discharger and the new discharger. This agreement shall include an acknowledgment of which discharger is liable for violations up to the transfer date and which discharger is liable from the transfer date on [CWC Sections 13267 and 13263].

17. **ROWD Reporting**: When a discharger becomes aware that it failed to submit any relevant facts in a Report of Waste Discharge (ROWD) or submitted incorrect information in a ROWD or in any report to the Regional Water Board, it shall promptly submit such facts or information [CWC Sections 13260 and 13267].

18. **Revision**: These waste discharge requirements are subject to review and revision by the Regional Water Board [CCR Section 13263].

19. **Vested Rights**: This Order does not convey any property rights of any sort or any exclusive privileges. The requirements prescribed herein do not authorize the commission of any act causing injury to persons or property, do not protect the Discharger from liability under federal, State or local laws, nor do they create a vested right for the Discharger to continue the waste discharge [CWC Section 13263(g)].

20. **Severability**: Provisions of this Order are severable. If any provisions of these WDRs are found invalid, the remainder of these requirements shall not be affected [CWC Section 9213].

21. **Operation and Maintenance**: The Discharger shall, at all times, properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) that are installed or used by the Discharger to achieve compliance with conditions of this Order. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls including appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of this order [CWC Section 13263(f)].

22. **Reporting of Hazardous Substance Release**: If any hazardous substance is discharged in or on any waters of the State, or discharged or deposited where it is, or probably will be, discharged in or on any waters of the State, the Discharger shall report such discharge to the Regional Water Board by calling (510) 622-2300 during regular office hours (Monday through Friday, 8:00 a.m. to 5:00 p.m.). A written report shall be mailed or submitted electronically to the Regional Water Board within 5 business days. The report shall describe: the nature of the hazardous substance, estimated quantity involved, duration of incident, cause of release, estimated size of affected area, nature of effect, corrective actions taken or planned, schedule of corrective actions planned, and persons/agencies notified.

23. **Entry and Inspection**: The Discharger shall allow the Regional Water Board, or an authorized representative upon the presentation of credentials and other documents as may be required by law, to:

    a. Enter upon the Discharger's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this Order;
    b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this Order;
    c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Order; and
    d. Sample or monitor at reasonable times, for the purposes of assuring compliance with this Order or as otherwise authorized by the California Water Code, any substances or parameters at any location [CWC Section 13267].

24. **Analytical Methods**: Unless otherwise permitted by the Executive Officer, all analyses shall be conducted at a laboratory certified for such analyses by the State Department of Public Health. The Executive Officer may allow use of an uncertified laboratory under exceptional circumstances, such as when the closest laboratory to the monitoring location is outside the State boundaries and therefore not subject to certification. All analyses shall be required to be conducted in accordance with the latest edition of "Guidelines Establishing

Test Procedures for Analysis of Pollutants" [40 CFR Part 136] promulgated by U.S. EPA [CCR Title 23 Section 2230].

25. **Discharges To Navigable Waters**: Any person discharging or proposing to discharge to navigable waters from a point source (except for discharge of dredged or fill material subject to Section 404 of the Clean Water Act and discharge subject to a general NPDES permit) must file an NPDES permit application with the Regional Water Board [CCR Title 2 Section 223571].

26. **Endangerment of Health or the Environment**: The Discharger shall report any event of noncompliance that may endanger human health or the environment. Any such information shall be provided orally to the Executive Officer, or an authorized representative, within 24 hours from the time the Discharger becomes aware of the circumstances by calling (510) 622-2300 during regular office hours (Monday through Friday, 8:00 a.m. to 5:00 p.m.). A written report shall be mailed or submitted electronically to the Regional Water Board within 5 business days of the time a Discharger becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times; and, if the noncompliance has not been corrected, the anticipated time it is expected to continue and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance. The Executive Officer, or an authorized representative, may waive the written report on a case-by-case basis if the oral report has been received within 24 hours.

27. **Document Distribution**: Copies of all correspondence, technical reports, and other documents pertaining to compliance with this Order shall be provided to the following agencies:

    a. California Regional Water Quality Control Board, San Francisco Bay Region;
    b. Alameda County Department of Environmental Health (Local Enforcement Agency); and
    c. California Integrated Waste Management Board

    The Executive Officer may modify this distribution list as needed.

28. **Reporting Requirements:**

a. Hardcopies:

i. Technical reports/plans, submitted by the Discharger, in compliance with the Prohibitions, Specifications, and Provisions of this Order, shall be submitted to the Regional Water Board on the schedule specified herein. Hard copies of these reports/plans shall consist of a letter report that includes the following:

a) Identification of any obstacles that may threaten compliance with the schedule;
b) In the event of non-compliance with any Prohibition, Specification or Provision of this Order, written notification which clarifies the reasons for non-compliance and which proposes specific measures and a schedule to achieve compliance. This written notification shall identify work not completed that was projected for completion, and shall identify the impact of non-compliance on achieving compliance with the remaining requirements of this Order;
c) In the self-monitoring reports, an evaluation of the current groundwater monitoring system and a proposal for modifications as appropriate; and
d) A signed transmittal letter and professional certification by a California Licensed Civil Engineer or a Professional Geologist.

ii. All application reports or information to be submitted to the Executive Officer shall be signed and certified as follows:

a) For a corporation – by a principle executive officer or the level of vice-president or an appropriate delegate;
b) For a partnership or sole proprietorship – by a general partner or the proprietor, respectively; or
c) For a municipality, state, federal, or other public agency – by either a principal executive officer or ranking elected official.

b. Electronic Submittals:

i. The State Board has adopted regulations requiring electronic report and data submittal to Geotracker [http://www.geotracker.swrcb.ca.gov/]. The text of the regulations can be found at the following link: http://www.waterboards.ca.gov/ust/cleanup/electronic_reporting/docs/final_electronic_regs_dec04.pdf

ii. The Discharger is responsible for submitting the following via the internet:

a) Groundwater analytical data;
b) Surveyed locations of monitoring wells;
c) Boring logs describing monitoring well construction;
d) Portable data format (PDF) copies of all reports identified in 1 and 2 above (the document, in its entirety [signature pages, text, figures, tables, etc.] must be saved to a single PDF file);
e) Copies of all correspondence, reports, and documents pertaining to compliance with the Prohibitions, Specifications, and Provisions of this Order related to storm water and compliance with the State Board General Permit No.

CAS000001 for the Discharge of Storm Water Associated with Industrial Activities; and

f) Any additional submittal to GeoTracker the Executive Officer requires.

iii. Upon request, monitoring results shall also be provided electronically in Microsoft Excel® to allow for ease of review of site data, and to facilitate data computations and/or plotting that Regional Water Board staff may undertake during the review process. Data tables submitted in electronic spreadsheet format will not be included in the case of file review and should therefore be submitted on CD and included with the hard copy of the report. Electronic tables shall include the following information:

a) Well designations;
b) Well location coordinates (latitude and longitude);
c) Well construction (including top of well casing elevation, total well depth, screen interval depth below ground surface, screen interval elevation, and a characterization of geology of subsurface the well is located in);
d) Groundwater depths and elevations (water levels);
e) Current analytical results by constituent of concern (including detection limits for each constituent);
f) Historical analytical results (including the past five years, unless otherwise requested); and
g) Measurement dates.

29. This Order supersedes and rescinds Order Nos.76-9, 77-138, and 86-41.

I, Bruce H. Wolfe, Executive Officer, do hereby certify that the foregoing is a full, complete, and correct copy of and Order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region on April 14, 2010.

Digitally signed by Bruce Wolfe
Date: 2010.04.19 15:28:22 -07'00'

Bruce H. Wolfe
Executive Officer

Attachments:

Figure 1, Berkeley Landfill Location Map

Figure 2, Phases of Closure and Cover

Figure 3, Site Plan Illustrating Groundwater and Leachate Monitoring Wells and Approximate Locations of the Leachate Collection and Recovery Systems, Leachate Collection Sumps, and Slurry Walls.

Self-Monitoring Program

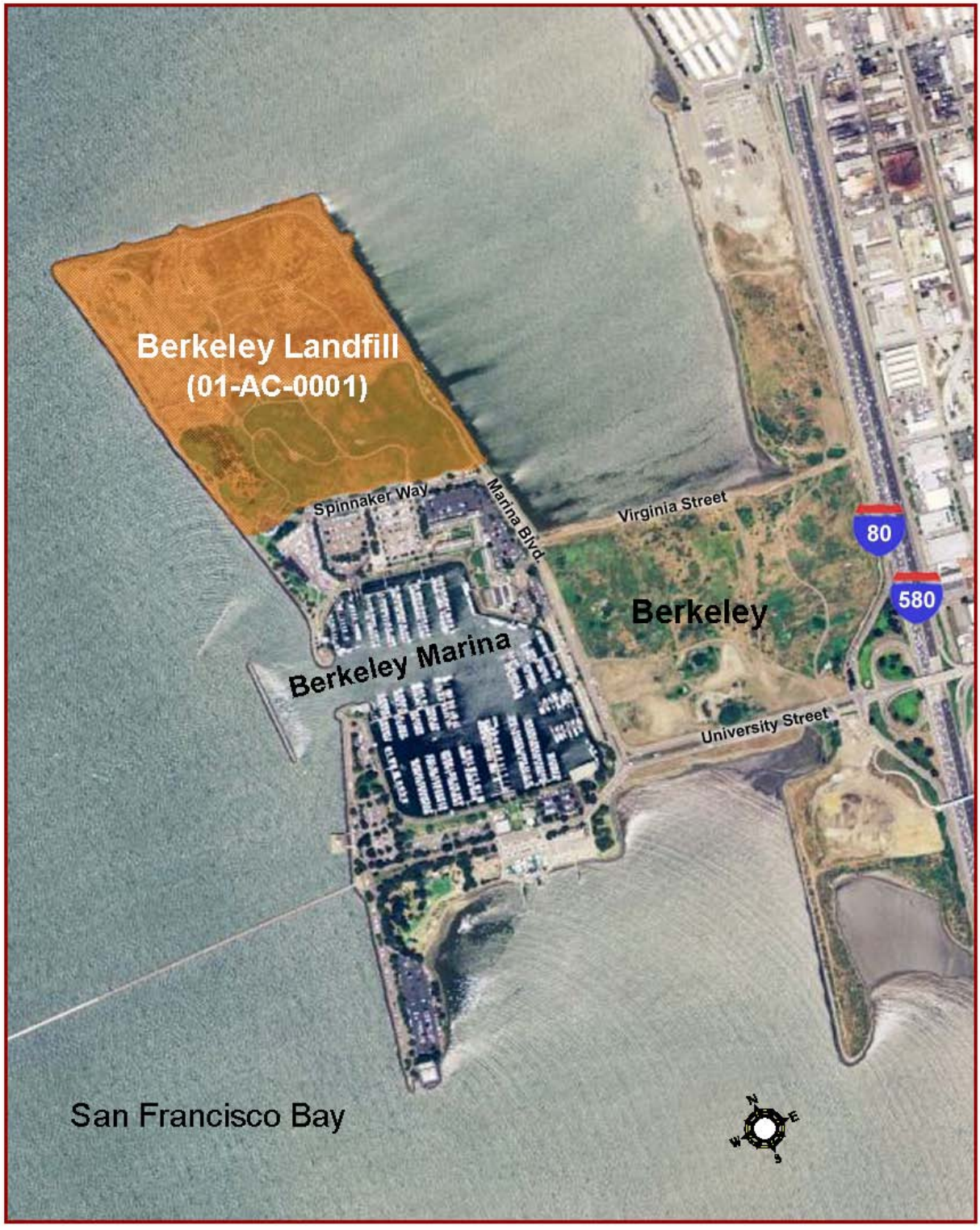

Figure 1: Berkeley Landfill Location Map

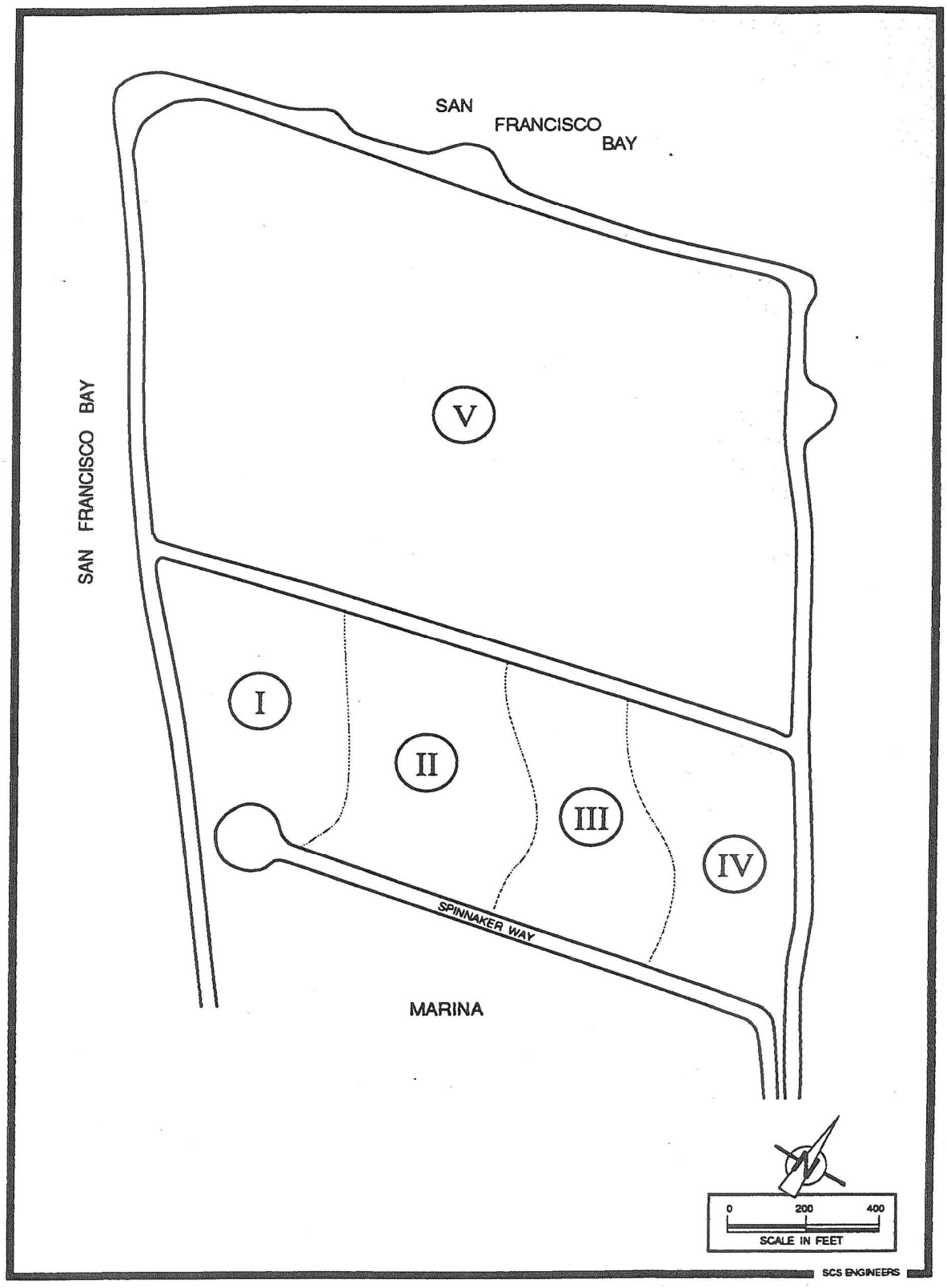

Figure 2: Phases of Closure and Cover

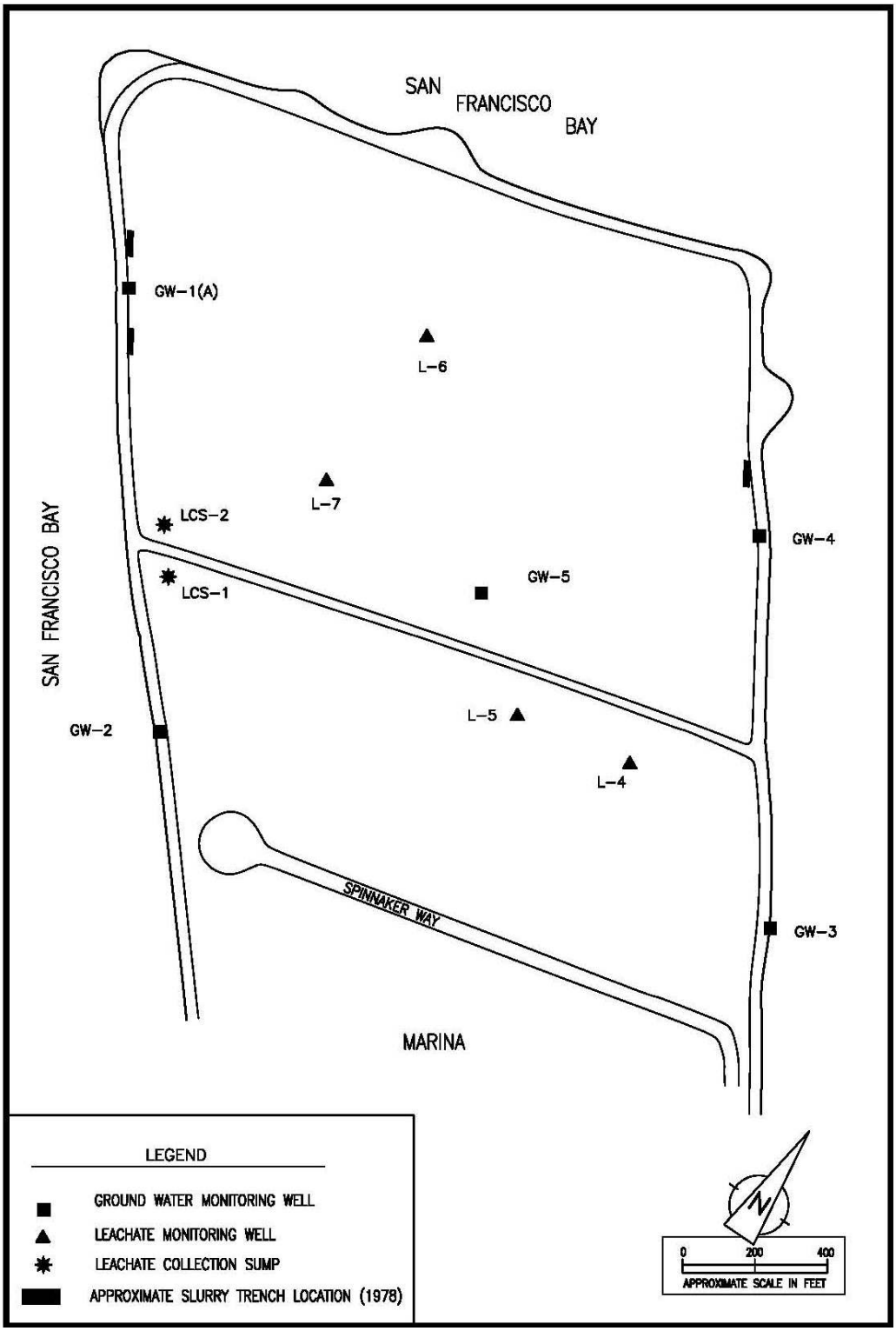

Figure 3: Site Plan Illustrating Groundwater and Leachate Monitoring Wells and Approximate Locations of the Leachate Collection and Recovery Systems, Leachate Collection Sumps, and Slurry Walls.

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

SELF-MONITORING PROGRAM

FOR

CITY OF BERKELEY

BERKELEY LANDFILL,
11 SPINNAKER WAY,
BERKELEY, CA
ALAMEDA COUNTY

ORDER R2-2010-0064

CONSISTS OF

PART A

AND

PART B

PART A

This Self-Monitoring Program (SMP) specifies monitoring and reporting requirements, including:

a. General monitoring requirements for landfills and waste management units (Part A);
b. Self-monitoring report content and format (Part A);
c. Self-monitoring report submittal frequency and schedule (Part B);
d. Monitoring locations and frequency (Part B); and
e. Monitoring parameters and analytes (Part B).

A. AUTHORITY AND PURPOSE

For discharges of waste to land, water quality monitoring is required pursuant to the California Code of Regulations (CCR), Division 2, Title 27, Subdivision 1, Chapter 3, Subchapter 3, Sections 20380 through 20435. The principal purposes of an SMP are: (1) to document compliance with waste discharge requirements (WDRs) and prohibitions established by the Regional Water Board, (2) to facilitate self-policing by the waste Discharger in the prevention and abatement of pollution arising from the waste discharge, (3) to develop or assist in the development of effluent standards of performance and toxicity standards, and (4) to assist the Discharger in complying with the requirements of Title 27.

B. MONITORING REQUIREMENTS

Monitoring refers to the observation, inspection, measurement, and/or sampling of environmental media, and the Landfill containment and control facilities, and waste disposed in the Landfill. The following defines the types of monitoring that may be required.

Monitoring of Environmental Media

The Regional Water Board may require monitoring of groundwater, surface water, storm water, leachate, landfill gas and any other environmental media that may pose a threat to water quality or provide an indication of a water quality threat at the site.

Sample collection, storage, and analyses shall be performed according to the most recent version of U.S. EPA-approved methods or in accordance with a sampling and analysis plan (SAP) approved by Regional Water Board staff. Analytical testing of environmental media required by this SMP shall be performed by a California State-approved laboratory for the required analyses. The director of the laboratory whose name appears on the certification shall be responsible for supervising all analytical work in his/her laboratory and shall have signing authority for all reports or may designate signing of all such work submitted to the Regional Water Board.

All monitoring instruments and devices used to conduct monitoring in accordance with this SMP shall be maintained and calibrated as necessary to ensure their continued accuracy. All flow measurement devices shall be calibrated at least once every two years.

Receiving waters refer to any surface water that actually or potentially receives surface or groundwater that pass over, through, or under waste materials or impacted soils. In this case, the

groundwater beneath and adjacent to the Landfill areas and the surface run-off from the site are considered receiving waters.

Standard Observations

Standard observations refer to observations within the limits of the Landfill, at their perimeter, and of the receiving waters beyond their limits. Standard observations to be performed and recorded include:

1. The Landfill:

    a. Evidence of ponded water on the Landfill, including a map of approximate locations, and an estimate of the size of the area affected and the volume of water;
    b. Evidence of odors, including their presence or absence, characterization, source, and distance of travel from source; and
    c. Evidence of erosion and/or daylighted waste, including a map of the approximate location and an assessment of the likelihood that soil or waste was lost to the Bay.

2. Perimeter of the Landfill:

    a. Evidence of liquid leaving or entering the Landfill, estimated size of affected area and flow rate (show affected area on map);
    b. Evidence of odors, including their presence or absence, characterization, source, and distance of travel from source;
    c. Evidence of erosion and/or daylighted waste; and
    d. Measurement of groundwater elevations.

3. Receiving Waters:

    a. Floating and suspended materials of waste origin, including their 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 beneficial use, such as presence of water associated with wildlife;
    e. Estimated flow rate; and
    f. Weather conditions, such as estimated wind direction and velocity, total precipitation.

Facilities Inspections

Facilities inspections refer to the inspection of all containment and control structures and devices associated with the Landfill. Containment and control facilities may include the following:

1. Final cover;
2. Storm-water management system (SWMS) elements such as perimeter drainage and diversion channels, ditches and down-chutes, and detention and sedimentation ponds or collection tanks;
3. Landfill gas system; and

4. Leachate barrier and collection sump system (LCS) elements such as leachate storage tanks, pumps and control equipment.

Quality Assurance/Quality Control (QA/QC) Sample Monitoring

The Discharger shall collect duplicate, field blank, equipment blank (if appropriate) and trip blank samples for each semiannual monitoring event at the following frequencies:

1. Duplicate sample – one sample per 20 regular samples;
2. Field blank – one per semiannual monitoring event;
3. Equipment blank – one sample per 10 monitoring stations; and
4. Trip blank – one sample per cooler.

C. REPORTING REQUIREMENTS

Reporting responsibilities of waste dischargers are specified in Sections 13225(a), 13267(b), 13383, and 13387(b) of the California Code of Regulations (CCR) and this Regional Water Board's Resolution No.73-16 and Order No. 93-113. At a minimum, each Self-Monitoring Report (SMR) shall include the following information:

1. Transmittal Letter: A cover letter transmitting the essential points of the monitoring report shall be included with each SMR. The transmittal letter shall discuss any violations during the reporting period and actions taken or planned to correct the problem. The letter shall also certify the completion of all monitoring requirements. The letter shall be signed by the Discharger's principal executive officer or his/her duly authorized representative, and shall include a statement by the official, under penalty of perjury, that the report is true and correct to the best of the official's knowledge.

2. Graphic Presentation: The following maps, figures, and graphs (if applicable) shall be included in each SMR to visually present data collected pursuant to this SMP:

    a. Plan-view maps showing all monitoring and sampling locations, waste management units, containment and control structures, treatment facilities, surface water bodies, and site/property boundaries;
    b. Groundwater level/piezometric surface contour maps for each groundwater-bearing zone of interest showing inferred groundwater gradients and flow directions under/around the Landfill, based upon the past and present water level elevations and pertinent visual observations; and
    c. Any other maps, figures, photographs, cross-sections, graphs, and charts necessary to visually demonstrate the appropriateness and effectiveness of sampling, monitoring, characterization, investigation, or remediation activities relative to the goals of this SMP.

3. Tabular Presentation: The following data (if applicable) shall be presented in tabular form and included in each SMR to show a chronological history and allow quick and easy reference:

    a. Well designation;
    b. Well location coordinates (latitude and longitude);

c. Well construction (including top of well casing elevation, total well depth, screen interval depth below ground surface, and screen interval elevation);
d. Groundwater depths;
e. Groundwater elevations;
f. Current analytical results (including analytical method and detection limits for each constituent);
g. Historical analytical results (including at least the past five years unless otherwise requested); and
h. Measurement dates.

4. Compliance Evaluation Summary and Discussion:

a. A summary and certification of completion of all environmental media monitoring, standard observations, and facilities inspections;
b. The signature of the laboratory director or his/her designee indicating that he/she has supervised all analytical work in his/her laboratory; and
c. Provide a discussion of the field and laboratory results that includes the following information:
    i. Data interpretations;
    ii. Conclusions;
    iii. Recommendations;
    iv. Newly implemented or planned investigations and remedial measures;
    v. Data anomalies;
    vi. Variations from protocols;
    vii. Condition of wells; and
    viii. Effectiveness of leachate monitoring and control facilities.

5. Appendices: The following information shall be provided as appendices in electronic format only unless requested otherwise by Regional Water Board staff and unless the information is already contained in a SAP approved by Regional Water Board staff:

a. New boring and well logs;
b. Method and time of water level measurements;
c. Purging methods and results including the type of pump used, pump placement in the well, pumping rate, equipment and methods used to monitor field pH, temperature, and electrical conductivity, calibration of the field equipment, pH temperature, conductivity, and turbidity measurements, and method of disposing of the purge water;
d. Sampling procedures, field, equipment, and travel blanks, number and description of duplicate samples, type of sample containers and preservatives used, the date and time of sampling, the name of the person actually taking the samples, and any other relevant observations; and
e. Documentation of laboratory results, analytical methods, detection limits (DLs) and reporting limits (RLs), and Quality Assurance/Quality Control (QA/QC) procedures for the required sampling.

D. CONTINGENCY REPORTING

1. The Discharger shall report to the Regional Water Board by telephone (510-622-2300, Monday through Friday, 8 a.m to 5 p.m.) any measurably significant discharge (CCR Title 27 Section 20164) from the disposal area immediately after it is discovered. The Discharger shall submit a written report with the Regional Water Board within five days of discovery of any discharge. The written report shall contain the following information:

    a. A map showing the location(s) of discharge;
    b. Approximate flow rate;
    c. Nature of effects (e.g., all pertinent observations and analyses); and
    d. Corrective measures underway or proposed.

2. The Discharger shall submit a written report to the Regional Water Board within seven days of determining that a statistically significant difference occurred between a SMP sample set and an approved Water Quality Protection Standard (WQPS). The written report shall indicate which WQPS(s) have been exceeded. If appropriate, the Discharger shall resample at the compliance point(s) where this difference has been found within 30 days.

3. If re-sampling and analysis confirms the earlier finding of a statistically significant difference between SMP results and WQPS(s), the Discharger shall, upon determination by the Executive Officer, submit to the Regional Water Board an amended Report of Waste Discharge (ROWD) as specified in CCR Title 27 Section 20420 for establishment of an Evaluation Monitoring Program (EMP) meeting the requirements of CCR Title 27 Section 20425.

E. REPORTING REQUIREMENTS

The Discharger shall submit SMRs to Regional Water Board staff in accordance with the schedule indicated in Table B-1. Reports due at the same time maybe combined into one report for convenience, as long as monitoring activities and results pertaining to each monitoring period are clearly distinguishable. Reports shall be submitted in accordance with Provision C.3 in the WDRs.

F. MAINTENANCE OF WRITTEN RECORDS

The Discharger shall maintain information required pursuant to this SMP for at least five years. The five-year period of retention shall be extended during the course of any unresolved litigation regarding a discharge or when requested by the Regional Water Board.

PART B

A. MONITORING LOCATIONS AND FREQUENCY

Monitoring locations, frequencies, parameters, and analytes are specified in Table B-1 of this SMP and as indicated below. Monitoring locations are shown in Figure 3.

1. **Environmental Media**

   a. Groundwater:

      Groundwater shall be monitored at the locations specified in Table B-1 and shown on Figure 3. Monitoring frequencies, parameters, and analytes shall be in accordance with Table B-1. Groundwater elevations shall be measured quarterly (see Standard Observations in Part A).

   b. Leachate:

      Leachate shall be monitored at the locations specified in Table B-1 and shown on Figure 3. Monitoring frequencies, parameters, and analytes shall be in accordance with Table B-1.

   c. Storm Water:

      Storm water shall be monitored according to the Landfill's Storm Water Pollution Prevention Plan (SWPPP).

2. **Standard Observations**

   Standard observations (described in Part A) shall be made within the Landfill, along the perimeter of the Landfill, and of the water courses and receiving waters beyond their limits. Standard observations shall be conducted at the frequency specified in Table B-1.

3. **Facilities Inspections**

   The Discharger shall inspect all containment and control structures and devices associated with the Landfill to ensure proper and safe operation.

4. **Quality Assurance/Quality Control Samples**

   The QA/QC samples shall be analyzed for VOCs (field blank, equipment blank and trip blank) or for same tests as a regular sample (duplicate sample).

B. REPORTING SCHEDULE

The Discharger shall submit SMRs to Regional Water Board staff in accordance with the schedule indicated in Table B-1. Reports due at the same time maybe combined into one report for convenience, as long as monitoring activities and results pertaining to each monitoring period are clearly distinguishable.

Table B-1: Self-Monitoring Program

Groundwater Wells: GW-1A, GW-2, GW-3, GW-4, and GW-5		**Leachate Wells:** L-4, L-5, L-6, and L-7
Monitoring Event	**Frequency**	**Parameters**
Constituents of Concern	**Once every five years** beginning January 2013	**Monitoring Parameters and Total Organic Carbon** **Dissolved Inorganics** – aluminum, antimony, arsenic, barium, beryllium, cadmium, total chromium, cobalt, copper, iron, lead, manganese, molybdenum, nickel, selenium, silver, tin, thallium, vanadium,, zinc, hexavalent chromium, mercury, and cyanide **Volatile Organic Compounds** **Semi-Volatile Organic Compounds** **Chlorophenoxy Herbicides** **Organophosphorous Pesticides**
Monitoring Parameters	**Semi-Annually** 1st Semi-Annual Sampling event - January REPORT DUE March 31st 2nd Semi-Annual Sampling event – July REPORT DUE September 30th	**Total Dissolved Solids** **Primary Cations** – calcium, magnesium, sodium, and potassium **Primary Anions** – carbonate, bicarbonate chloride, nitrate (as N), and sulfate **Volatile Organic Compounds** – aromatics and halogenated compounds **Total Petroleum Hydrocarbons** – gasoline range (TPH-g) and diesel range (TPH-d) with silica-gel cleanup
Standard Observations	**Quarterly**	**As detailed in Part A**