CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER R5-2014-0003

WASTE DISCHARGE REQUIREMENTS
FOR
CHEMICAL WASTE MANAGEMENT, INC.
CLASS I/II WASTE MANAGEMENT UNITS
KETTLEMAN HILLS FACILITY
KINGS COUNTY

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

1. The McKay Trucking Company began disposal operations at the Kettleman Hills Facility (KHF) in March 1975. In 1979, Chemical Waste Management, Inc. (hereafter Discharger), a wholly-owned subsidiary of Waste Management, Inc., purchased the KHF and is the current owner and operator. Class I waste management units (WMUs) at the KHF are currently regulated by Waste Discharge Requirements (WDRs) Order 98-058, which implements regulatory requirements contained in the California Code of Regulations, title 23, chapter 15 (Chapter 15).
2. Sources of waste received at the KHF are mostly from within the State of California.
3. In November 2008, the Discharger submitted an Engineering and Design Report as a Report of Waste Discharge for the Phase III Expansion and Final Closure of Class I Hazardous Waste Landfill B-18. Other technical reports regarding site characteristics, facility design, monitoring, operations, and closure have also been submitted.
4. Class II/III Landfill B-17, and the non-hazardous portion of Class II/III Landfill B-19 that includes the bioreactor, are regulated by WDRs Order R5-2006-0122 and Special Order R5-2011-0065.
5. Health and Safety Code (HSC) section 25204.6(b) requires consolidation of overlapping jurisdiction of the Department of Toxic Substances Control (DTSC), the Central Valley Water Board, and the State Water Board at hazardous waste facilities that are subject to regulation of HSC section 25180, et seq. and Division 7 of the California Water Code. In order to meet this requirement, WDRs adopted by the Central Valley Water Board at Class I facilities are incorporated by reference into the DTSC Hazardous Waste Facility Permit.
6. DTSC implements oversight responsibilities associated with the Class I WMUs and operations permitted in this Order. Enforcement actions considered by DTSC for violations of this Order are coordinated with Central Valley Water Board staff.
7. In January 2010, Governor Arnold Schwarzenegger directed the California Environmental Protection Agency (CalEPA) and the California Department of Public Health (CDPH) to investigate possible environmental contaminants in the air, water and

soil that could cause an apparent increase in the number of infants born with birth defects after 2006 in Kettleman City. Kettleman City community members had raised concerns about birth defects and questioned whether there was a potential link to the Kettleman Hills hazardous waste disposal facility or other environmental exposures. A report, *Investigation of Birth Defects and Community Exposures in Kettleman City, CA*, dated December 2010 found that the levels of pollutants in the air, water, and soil of Kettleman City were comparable to those found in other San Joaquin Valley communities. CalEPA and CDPH found no link between health risks, including birth defects, to Kettleman City residents and the Kettleman Hills Facility. CalEPA and CDPH also did not find a specific cause or environmental exposure that would explain the increase in the number of children born with birth defects. CDPH nevertheless committed to continued monitoring of birth defects in Kettleman City and investigation of water treatment options to ensure a sustainable solution to bring drinking water into compliance with all drinking water standards, including arsenic, among other commitments.

LOCATION AND DESCRIPTION

8. The KHF is approximately one mile north of State Route 41 and about 2.5 miles west of the intersection of Interstate 5 and State Route 41, as shown on Attachment A, which is attached to and made part of this Order. Kettleman City is approximately 3.5 miles northeast of the KHF.

9. The previously authorized waste management area includes 499 acres of the 1,600-acre property and extends generally in a northwest to southeast direction across Section 34, Township(T)22South(S), Range(R)18East(E), and across Section 3, T23S, R18E, Mount Diablo Base & Meridian (Assessor Parcel Nos. 038-330-001, 038-330-019, 038-330-020, 038-320-015, 038-320-020, 038-320-021, and 038-310-005).

10. A Conditional Use Permit issued by Kings County, which includes the expansion of Class I Landfill B-18 and the planned future construction of Class I Landfill B-20, increases the authorized waste management area from 499 to 695.5 acres, as shown on Attachment B that is attached to and made part of this Order.

11. Land in the vicinity of the KHF is used for oil and gas production and a limited amount of cattle grazing.

12. Site topography is characterized by rolling hills and incised ephemeral stream drainages, with elevations varying from 700 to 1,015 feet above mean sea level. Northwest to southeast trending ridges form a physical topographic barrier east of the KHF that prevents runoff toward the Kettleman City area. Ephemeral streams on the east of the KHF drain southeast into the Kettleman Hills and Los Viejos Hills and terminate in the permeable alluvium. The ephemeral streams to the west-southwest of the KHF drain south-southwest towards the Kettleman Plain where surface water runoff terminates in permeable alluvium soil.

13. Surface runoff that collects on the KHF is contained by the facility's storm water retention ponds and does not leave the site. The nearest perennial surface water body is the California Aqueduct, which is east of the KHF towards Kettleman City area, and about 3.5 miles at its nearest point. The KHF is not in a 100-year flood plain based on the Federal Emergency Management Agency's Flood Insurance Rate Map, Community Panel Number 060086 0275B.

14. The Discharger filed a Notice of Intent on 16 February 1996 to obtain coverage under the State Water Board General Permit for Discharges of Storm Water Associated with Industrial Activities, Order No. 97-03-DWQ (the "General Industrial Stormwater Permit"). The Discharger has obtained coverage under the General Industrial Stormwater Permit.

15. The mean annual precipitation measured between 1948 and 2001 at the Kettleman City Climatological Station was 6.56 inches. The mean annual evaporation measured at the same station between 1949 and 1978 was 102.1 inches. The climatological station is located approximately 3.5 miles northeast of the KHF. The probable maximum precipitation in a 24-hour period is 10.3 inches (source: National Oceanic and Atmospheric Association Hydrometeorological Report 58 and 59 (1999)).

GEOLOGY AND HYDROGEOLOGY

16. The KHF is located on the southwest flank of the Kettleman Hills North Dome anticline (North Dome). The Tulare, San Joaquin, and Etchegoin Formations strike approximately 50 degrees west of north, and dip 25 to 35 degrees to the southwest away from the San Joaquin Valley. The San Joaquin Formation crops out at, and directly underlies, operating and closed Class I WMUs at the KHF. The formation consists of laterally continuous interbeds of marine sandstone, siltstone, claystone, and minor amounts of limestone.

17. The facility is on the southwest flank of the anticline (North Dome).The San Joaquin Formation on the northeast side of the North Dome dips 25 to 30 degrees to the northeast, plunging beneath the San Joaquin Valley. Erosion of the central portion of the North Dome has removed the San Joaquin Formation between the KHF and the San Joaquin Valley, including the Kettleman City area. The erosion has formed a gap that separates the beds in the San Joaquin Formation on the west side of the anticline (near KHF) from those on the east side of the anticline (toward Kettleman City). The erosional gap prevents communication between the flanks of the anticline (North Dome). Therefore, the erosional gap eliminates eastward hydraulic communication through the beds of the San Joaquin Formation.

18. Fourteen water bearing sandstones (sands) within the San Joaquin Formation have been identified at the KHF. Groundwater detection monitoring wells for WMUs are constructed with well screens positioned within permeable saturated sand intervals within the formation.

19. No known Holocene faults exist within 200 feet of the KHF. In accordance with current geotechnical and seismic engineering practices, the Discharger determined a mean

peak horizontal ground acceleration of 0.62g. Acceleration was based on an assumed maximum credible earthquake (MCE) of M_w 7.0, on a ramp thrust fault rupturing at a depth of 8 to10 kilometers beneath the KHF.

20. Operating and closed WMUs are designed to withstand the MCE without significant damage to their respective containment and closure cover systems.

21. The WMUs are not known to be in areas subject to rapid geologic change.

22. Over 25 years of groundwater monitoring data have been collected from the San Joaquin Formation at the KHF. Total dissolved solids (TDS) range from 1,700 to greater than 15,000 milligrams per liter (mg/L). The depth to groundwater ranges from approximately 330 feet to greater than 520 feet below ground surface (bgs). Well yields range from 0.1 gallons-per-minute (gpm) to 5.5 gpm.

23. Groundwater flow is predominantly to the southeast at less than 10 feet-per-year (ft/yr) with an average hydraulic gradient of 0.001.

24. Approximately two miles west of the KHF, wells in the Kettleman Plain are used for stock watering, irrigation, and domestic water supply. These wells produce groundwater (TDS ranging from 1,090 to 2,480 mg/L) from the alluvium from depths of 200 to 1,000 feet bgs. The San Joaquin Formation dips 25 to 35 degrees to the southwest of the KHF, plunging several thousand feet below the Kettleman Plain. Several hundred feet of claystone and siltstone interbeds isolate the deeper groundwater contained in the San Joaquin Formation from the groundwater contained in the alluvium and the Tulare Formation units.

25. There are no groundwater supply wells within one mile of the KHF property boundary. The closest recorded well is a domestic well completed in the alluvium on the Kettleman Plain, and located approximately 1.9 miles west of the KHF property boundary line. The well has been dry since 1985.

26. Approximately three miles east of the KHF, groundwater wells in the Kettleman City area are used for irrigation, industrial supply, and domestic and municipal water supply. Wells produce groundwater from the alluvium and upper Tulare Formation from depths of 300 to 1,000 feet bgs. As presented in Finding 17, groundwater in the San Joaquin Formation below the KHF is isolated from the water supply aquifers in the San Joaquin Valley.

27. The TDS concentrations in two drinking water wells serving Kettleman City range from 573 to 907 mg/L. Benzene concentrations in groundwater samples range from non-detect to 61 micrograms per liter (µg/L), and arsenic concentrations range from 2 to 20 µg/L. Treatment removes elevated concentrations of benzene in the wells before the chemical reaches homes. A third well serves the Kettleman City elementary school and, based on well construction and screen interval, produces water from a different groundwater zone, and requires only chlorination treatment. Regulatory agencies will continue efforts to reduce arsenic levels in the drinking water, either through an alternative water source or through improved treatment. The local water district is

analyzing options to bring drinking water into compliance with drinking water standards. As presented in Finding 17, groundwater in the San Joaquin Formation below the KHF is isolated from the water supply aquifers in the San Joaquin Valley.

28. Central Valley Water Board Resolution 89-155, adopted by the Central Valley Water Board on 11 August 1989, amended *The Water Quality Control Plan for the Tulare Lake Basin, 2nd Edition (Revised 2004)*(Basin Plan) to de-designate the municipal or domestic supply (MUN) beneficial use from the groundwater contained in the San Joaquin, Etchegoin, and Jacalitos Formations within one-half mile of the KHF's Class I surface impoundments.

WASTES AND THEIR CLASSIFICATION

29. Class I liquid hazardous waste and Class II liquid nonhazardous waste are discharged to Class I surface impoundments P-9, P-14, and P-16 for solar evaporation in accordance with permits issued by the San Joaquin Valley Air Pollution Control District and DTSC. Class I hazardous and Class II nonhazardous solid waste, and other hazardous waste requiring stabilization/solidification are discharged to Landfill B-18.

WASTE MANAGEMENT UNIT DESIGN AND OPERATION

30. The natural geologic materials immediately underlying the KHF do not meet the permeability standard for new and existing Class I WMUs that is prescribed in California Code of Regulations, title 23 (Title 23), section 2531(b)(1). However, Title 23, section 2510, subsections (b) and (c) allow for the consideration of engineered alternatives to the prescriptive standard, if compliance with the prescriptive standard is not feasible. The Discharger has constructed Class I WMUs that function as an approved engineered alternative that exceeds the performance goal addressed by the prescriptive siting requirement.

31. Landfill B-18 has a base liner system consisting of (from bottom to top):

- a 3.5-foot thick clay liner compacted to a hydraulic conductivity of 1×10^{-7} centimeters per second (cm/sec) or less
- a 60-mil (1 mil = one thousandth of an inch) textured High Density Polyethylene (HDPE) geomembrane
- a 16 ounce (oz.) nonwoven geotextile
- a single-sided geocomposite filter/drainage layer consisting of a 16 oz./square yard nonwoven geotextile thermally-bonded to one side of a Polynet 3000 geonet
- a secondary leachate collection and removal system (LCRS) consisting of a 12-inch thick granular drainage layer
- a 16 oz. nonwoven geotextile filter
- a 1.5-foot thick clay liner compacted to a hydraulic conductivity of 1×10^{-7} cm/sec or less

- a 60-mil textured HDPE geomembrane
- an eight-ounce/square yard nonwoven geotextile
- a primary LCRS consisting of a 12-inch thick granular drainage layer
- an eight-ounce/square yard nonwoven geotextile filter
- a two-foot thick soil operations layer.

The side slope liner consists of (from bottom to top):

- a 3.5-foot thick clay liner compacted to a hydraulic conductivity of 1×10^{-7} cm/sec
- a 60-mil textured HDPE geomembrane
- a geocomposite drainage layer
- a 60-mil textured HDPE geomembrane
- a geocomposite drainage layer
- a 40-mil smooth HDPE protective geomembrane, that is removed and replaced with the operations layer as the waste elevation increases
- a two-foot thick soil operations layer.

32. This Order permits the vertical and lateral expansion (Phase III Expansion) on the north, west, and south sides of Landfill B-18. Attachment C shows the Phase III Expansion Area of approximately 13.8 acres. The expansion will increase the landfill's top elevation from 965 feet to 1,018 feet and increase the waste disposal capacity from the currently permitted volume of 10,700,000 cubic yards to 15,600,000 cubic yards, as shown on Attachment D. Both Attachment C and D are attached to and made part of this Order.

33. The Phase III Expansion is a vertical expansion of the side slope, with the liner detail as shown on Attachment D. The liner system will consist of (from bottom to top):

- a 3-foot thick clay liner compacted to achieve a hydraulic conductivity of 1×10^{-7} cm/sec or less
- a 60-mil HDPE geomembrane (textured on both sides)
- a double-sided geocomposite drainage layer
- a 60-mil HDPE geomembrane (textured on both sides)
- a double-sided geocomposite drainage layer
- a two-foot thick soil operations layer.

A temporary 40-mil smooth HDPE protective geomembrane is placed on top of the side slope liner and is removed immediately prior to placement of the operations layer as the waste elevation increases. It is not part of the permanent liner system.

34. The liner system for the Landfill B-18 Phase III Expansion exceeds the prescriptive standard for Class I hazardous waste containment specified in Chapter 15 of Title 23 of the California Code of Regulations (Chapter 15), which is a single composite system consisting of the following: 1) a three-foot thick clay liner that is one foot thicker than the required two-foot minimum thickness; 2) clay liner field test results for hydraulic conductivity resulted in 4.2×10^{-8} cm/sec, less than the required 1.0×10^{-7} cm/sec; 3) the 60-mil geomembrane is thicker than the required minimum of 40-mils; and 4) a double-sided geocomposite blanket-type drainage layer on top of the geomembrane. A second geomembrane and drainage layer provide for additional containment exceeding Chapter 15 requirements.

35. Attachment B, a part of this Order, shows a plan view of WMUs at the KHF, with the legend indicating which units are regulated by this Order. The WMUs include both operating and closed WMUs. Closed WMUs include: Combined Closure Area (Temporary Container Storage Area, Interim Stabilization Unit, Old Truck Wash, Landfills: B-1, B-4, B-5, B-6, B-7, B-8, B-9, B-9 Extension, B-9 Expansion, B-10, B-11, Surface Impoundments: P-1, P-2, P-3, P-4, P4.5, P-5, P-12,12A, P-13, P-17, Spreading Areas 1, 2, 3, 4, 5 & 6), Landfill B-2, Landfill B-3, Landfill B-13 (Landfill B-12 and the Landfill B-13 Expansion), Landfill B-14, Landfill B-15, Landfill B-16, Landfill B-19 (Class I/II portion), and Surface Impoundments: P-6, P-7, P-8, P-10, P-11 all of which were closed in accordance with approved closure plans.

36. The surface impoundment WMU P-15 is lined and used to contain clean water for construction and/or dust control needs for the facility's access roads.

37. Leachate from the Phase III Expansion will be collected in the existing Landfill B-18 LCRS sumps as shown on Attachments C and D. Any leachate collected will be managed as hazardous waste. Landfill B-18 has four primary LCRS sumps as shown in Attachment C. Below each primary LCRS sump is a secondary LCRS sump.

UNSATURATED ZONE MONITORING

38. The Discharger has demonstrated that the collection of soil-pore liquid samples with lysimeters or similar suction-based technology, as a component of an unsaturated zone monitoring program, is not feasible under ambient conditions at the KHF.

39. The Discharger's current Site-Specific Unsaturated Zone Monitoring Plan (SSUZMP) dated October 2002 was prepared by Geomatrix Consultants, Inc. and was approved by Central Valley Water Board staff in January 2003.

40. Unsaturated zone monitoring targets permeable sandstones beneath lined surface impoundments P-9, P-14, and P-16. Three soil-moisture monitoring wells, NP09 in the Mya C/D Sand and NP14 and NP16 in the Cascajo A Sand, are located downdip in the target sandstones in the unsaturated zone several hundred feet above groundwater (see Attachment E). The wells are monitored as specified in the Monitoring and Reporting Program (MRP). Attachment E is attached to and made part of this Order.

41. Unsaturated zone monitoring also targets permeable sandstones beneath closed Landfills B-9 Extension, B-11, B-13, and B-15 that contain drums with liquid waste. Soil-gas monitoring wells GP-9A, GP-9B, GP-11A, and GP-11B are screened in the Mya C/D Sand, and soil-gas monitoring wells GP-13A, GP-13B, GP-15A, and GP-15B are screened in the Mya A Sand (see Attachment E). In addition, GP-8AR was installed as a landfill gas monitoring well for Class II/III Landfill B-19, and monitors for soil-gas in the Tuffaceous A Sand. The wells are monitored as specified in the MRP.

42. Four vadose zone monitoring trenches are located below the Landfill B-18 containment system as shown on Attachment C. The trenches are 12 feet wide and 12 inches deep, and were constructed below the axial low points of the landfill containment system. The trenches are lined with 80-mil HDPE geomembrane, geotextile, and contain high transmissivity granular material. The trenches terminate in the vadose zone collection sumps below each secondary LCRS sump. The vadose zone collection sumps act as unsaturated zone monitoring points. The sumps are monitored as specified in the MRP.

GROUNDWATER MONITORING

43. The Discharger's current site-specific groundwater monitoring plan dated May 2001 was prepared by GeoSyntec Consultants and approved by Central Valley Water Board staff in May 2001.

44. Groundwater impacts from the previous operation of permitted unlined surface impoundments P-9, P-12/12A, and P-18 remain several thousand feet within the KHF property boundary. Surface Impoundment P-9 has been retrofitted with a double liner system that exceeds Chapter 15 requirements. Former Surface Impoundments P-12/12A and P-18 were closed in June 1997 and June 1989, respectively. The areal extent of the impacts is about three acres and has not increased in size during the past 25 years. Waterbearing sandstone zone(s) containing the impacts dip below the KHF away from the Kettleman City area. Due to erosion, water bearing sandstone zones(s) below the KHF are geologically and hydrologically isolated from the groundwater aquifers in the Kettleman City area , as described in Findings 17 and 18.

45. MRP R5-2014-0003, a part of this Order, specifies semi-annual groundwater monitoring for all the groundwater monitoring wells listed in Table 4.

CLOSURE AND POST-CLOSURE

46. The final cover system for Landfill B-18, including the Phase III Expansion, will consist of (from the surface down):

- a minimum 2.5-foot thick vegetated soil layer
- a 12 ounce-per-square-yard nonwoven geotextile
- a 40-mil HDPE geomembrane that is textured on both sides

- a one-foot thick foundation layer having a maximum hydraulic conductivity of 1×10^{-5} cm/sec
- an intermediate soil cover (minimum of one-foot thick) over the last lift of waste.

47. The cover system described in Finding No. 46 is similar to the approved closure systems that were constructed over the Combined Closure Area, Landfill B-13, Landfill B-16, and the closed Class I portion of Landfill B-19 (see Attachment B). Other Class I WMUs were closed in accordance with approved closure plans.

48. The KHF closure and post-closure plans, submitted in accordance with Health and Safety Code section 25246, were reviewed as required by Water Code section 13227. The Board finds that the information in the plans indicates that water quality will be adequately protected during the closure and post-closure monitoring period.

POST- EARTHQUAKE INSPECTION AND RESPONSE PLAN

49. The Discharger will implement the Post-Earthquake Inspection and Response Plan as specified in Discharge Specification 16 in 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 M_w 6.0 or greater earthquake within 50 miles of the facility.

CEQA AND OTHER REGULATORY CONSIDERATIONS

50. To fulfill requirements imposed by the California Environmental Quality Act (CEQA)(Pub. Resources Code, § 21000 et seq.), the Kings County Planning Department (subsequently renamed the Kings County Community Development Agency) prepared and certified an Environmental Impact Report (EIR) in October 1985 for the construction and operation of three Class I WMUs at the KHF. Since the previously permitted hazardous disposal operations at the KHF B-18 Landfill were evaluated in the 1985 EIR, Kings County determined that preparation of a Subsequent EIR (SEIR) was required for its consideration of the B-18/B-20 Hazardous Waste Disposal Project. In conjunction with its approval of Conditional Use Permit (CUP) No. 05-10 for the B-18/B-20 Hazardous Waste Disposal Project, Kings County certified a Final Subsequent Environmental Impact Report (Final SEIR) on 22 December 2009 and filed a Notice of Determination for the Project on 22 December 2009. The Final SEIR consists of the Draft SEIR, the Revised Project Description and Analysis (May 2008), and the Recirculated Portions of the Draft EIR (May 2009); copies of the comments received on all three documents; a list of the persons, organizations, and public agencies who commented; responses to the Kings County Development Agency, as the Lead Agency, to the significant environmental points raised in the review and consultation process; and other information added by the Kings County Community Development Agency, as the Lead Agency. The Central Valley Water Board, acting as a responsible agency, was consulted during the development of these documents, and provided comments on 17 June 2008 and 18 June 2009.

51. CUP No. 05-10 increased the permitted existing operations area at the facility from 499 acres to 695.5 acres. This allowed for the Class I Landfill B-18 Phase III Expansion and for the future construction of Class I Landfill B-20 as addressed in the Final SEIR. This Order does not address the proposed Class I Landfill B-20. The Discharger is required to submit a Report of Waste Discharge prior to proposing construction of other WMUs.

52. This Order implements:

    a. *The Water Quality Control Plan for the Tulare Lake Basin, 2nd Edition* (Revised 2004); and

    b. The prescriptive standards and performance goals contained in Chapter 15 for the construction, operation, and closure of Class I WMUs.

53. Based on site conditions, the threat and complexity of the discharge, the facility is determined to be classified 2-A as defined below:

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

    b. Category A complexity, defined as: "Any discharge of toxic wastes; any small volume discharge containing toxic waste; any facility having numerous discharge points and groundwater monitoring; or any Class 1 waste management unit."

54. Water Code section 13267(b)(1) states 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 proposes to discharge waste within its region… shall furnish, under penalty of perjury, technical or monitoring program reports which the regional board requires. The burden, including costs, of these reports shall bear a reasonable relationship to the need for the report and the benefits to be obtained from the reports. In requiring those reports, the regional board shall provide the person with a written explanation with regard to the need for the reports, and shall identify the evidence that supports requiring that person to provide the reports.

Technical reports required by this Order and the attached MRP are necessary to ensure compliance with these WDRs. The Discharger owns and operates the facility that discharges the waste subject to this Order.

PROCEDURAL REQUIREMENTS

55. The Central Valley Water Board notified the Discharger and interested agencies and persons of its intent to prescribe WDRs for the KHF, and has provided them with an opportunity for a public hearing and an opportunity to submit their written views and recommendations.

56. The Central Valley Water Board, in a public meeting, heard and considered all comments pertaining to the WDRs.

IT IS HEREBY ORDERED that WDRs Order 98-058 is rescinded, except for the purposes of enforcement of violations occurring prior to the Effective Date of this Order, and that pursuant to Water Code sections 13263 and 13267, Chemical Waste Management, Inc., its agents, successors, and assigns, in order to meet the provisions contained in Division 7 of the Water Code and the regulations adopted thereunder, shall comply with the following:

A. PROHIBITIONS

The following discharges are prohibited:

1. The discharge of solid or liquid waste or leachate to surface waters, surface water drainage courses, groundwater, and natural geologic materials adjacent to the WMUs.
2. The discharge of hazardous waste to non-hazardous WMUs, except for hazardous waste that has been granted a variance from hazardous waste management requirements pursuant to Water Code section 13173. Hazardous waste is defined in Chapter 15.
3. The discharge of waste to closed WMUs.
4. The discharge of free liquids, waste containing free liquids, or containerized free liquids to Landfill B-18, with the exception of liquids from lab packs.
5. The discharge of wastes that have the potential to reduce or impair the integrity of containment structures or which, if commingled with other wastes in the WMU, 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 WMU
   - are “restricted hazardous wastes”
6. The discharge of compressed gases (not including aerosol containers).
7. The discharge of Class 1, Division 1.1 or 1.2 explosives (49 C.F.R. § 173.50.) or forbidden explosives. (49 C.F.R. § 173.54.)
8. The discharge of biological agents or infectious wastes.
9. The discharge of municipal solid waste or refuse in Landfill B-18.

B. DISCHARGE SPECIFICATIONS

1. Wastes shall be discharged only into WMUs specifically designed and constructed for their containment, as described in this Order. WMU design plans and specifications for liner construction and closure shall be approved by the Executive Officer prior to construction. WMU liner construction and closure

certification reports shall be approved by the Executive Officer prior to discharge to the WMU or prior to certification of closure.

2. The Discharger shall contact the DTSC regarding regulatory requirements concerning the receipt, transfer, containment, treatment, storage, or disposal of radioactive substances, materials, or wastes at the KHF.

3. For any wastes that are discharged in prohibition of this Order, the Discharger shall respond to such discharges in accordance with an approved contingency or remedial plan.

4. The treatment, storage, or disposal of wastes shall not cause pollution or a nuisance as defined in Water Code section 13050.

5. The Discharger shall immediately notify the Executive Officer 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.

6. Discharges to a WMU shall cease in the event of any containment system failure of that WMU.

7. The KHF shall be fenced and maintained to prevent unauthorized access.

8. The Discharger shall maintain in good working order any WMU, control system, visual observation and/or recording mechanism, or monitoring device installed to achieve compliance with this Order.

9. The discharge shall not cause degradation of any water supply.

10. The KHF shall be graded so that storm water runoff from access roads adjacent to WMUs is diverted away from the landfills.

11. Diversion and drainage facilities for Landfill B-18 shall be designed and constructed to accommodate the anticipated volume of precipitation and peak flows resulting from the 24-hour probable maximum precipitation event (10.3 inches).

12. The Discharger shall maintain a *Storm Water Pollution Prevention Plan* in accordance with the General Industrial Stormwater Permit mentioned in Finding No. 14, or shall retain all storm water on-site.

13. Surface impoundments shall be operated to prevent overtopping as a result of wave action from wind, seismic shaking, and successive heavy precipitation events. In accordance with Title 23, section 2548, in no case shall any surface impoundment be operated with less than two feet of freeboard.

14. The Discharger shall maintain a permanent marker in each surface impoundment as a reference point used to measure the freeboard.

15. The Discharger shall implement the inspection activities specified in the January

2007 *Post Earthquake Inspection and Response Plan* prepared by Golder Associates, following an earthquake of Magnitude (Mw) 5.0 or greater within 25 miles of the facility, or Mw 6.0 or greater earthquake within 50 miles of the facility.

16. All compatible wastes not prohibited by state or federal regulations, or this Order, may be placed in appropriate WMUs as specified in Chapter 15, provided that each waste is verified to be:

    - compatible with containment systems
    - compatible with wastes residing within the WMU

17. Conditions may be added to the KHF design, operating plan, or post closure plans as necessary to protect water quality, human health, and the environment.

C. LANDFILL B-18 PHASE III CONSTRUCTION SPECIFICATIONS

1. In November 2008, the Discharger submitted an *Engineering and Design Report, B-18 Class I Landfill Phase III Expansion and Final Closure, Kettleman Hills Facility, Kettleman City, California* (Final Design Report). The Final Design Report was revised in February 2010 and was approved by Central Valley Water Board staff on14 July 2010. The Final Design Report was revised again in August 2011 to add details concerning the Landfill B-18 Phase IIIA and IIIB construction sequence, temporary slope stability conditions, storm water control, and report submittals. The Discharger shall implement the engineering design plans, construction drawings, technical specifications, and the construction quality assurance (CQA) plan contained in the Final Design Report. The Phase III liner system shall include all the components as listed in Finding No. 33 of this Order.

2. Visual observations and detailed geologic mapping of the excavated area of the Landfill B-18 Phase III subgrade shall be performed by or under the direct supervision of a Professional Geologist licensed in the State of California. A geologic report and map of the excavated subgrade shall be submitted with each construction certification report for the unit.

3. The Discharger shall submit Final Liner Construction Certification Reports for the Landfill B-18 Phase IIIA and IIIB containment systems that were constructed. The following information shall be included as appendices in the certification reports:

    i. a map of the excavated subgrade and a geologic report describing the geology and general condition of the subgrade prior to the Landfill Phase III containment system construction as indicated in Landfill B-18 Phase III Construction Specification C.2.;

    ii. as-built plans and final construction drawings; and

    iii. the CQA testing results. The CQA testing shall include a written summary

of the CQA testing program, all test results, analyses, and copies of the inspector's original field notes.

4. The certification reports shall contain sufficient information and test results to certify that construction was completed in accordance with the Final Design Report as specified in Landfill B-18 Phase III Construction Specification C.1. The certification reports shall be signed by a California registered civil engineer or certified engineering geologist licensed in the State of California and shall be submitted for review and approval by the Executive Officer prior to discharging waste to the Landfill B-18 Phase IIIA and IIIB Expansion areas.

5. Changes to the Landfill B-18 Phase III containment system design or components may be allowed if it is demonstrated that the changes will provide equal or greater protection of water quality and such changes are approved by the Executive Officer.

6. The Discharger shall provide notification, either written or oral, to Central Valley Water Board staff at least **10 days** prior to construction of the Landfill B-18 Phase III subgrade, geologic mapping of the excavated subgrade, installation of geosynthetics and the clay liner, and the extension of the LCRS riser pipes.

D. LEACHATE COLLECTION AND REMOVAL SYSTEM SPECIFICATIONS

1. LCRSs shall be designed, constructed, and maintained to prevent the buildup of hydraulic head on the liner. If a hydraulic head occurs on any portion of the liner, the Discharger shall immediately notify the Central Valley Water Board staff and provide a written notification within **seven days**. The written notification shall include a timetable for implementing corrective action measures necessary to eliminate the hydraulic head.

2. Leachate collected from the Class I surface impoundment LCRSs is to be managed as hazardous waste. The leachate can either be discharged to the impoundment from which it came or in a manner consistent with Chapter 15.

3. Leachate collected from the Landfill B-18 LCRSs is to be managed as hazardous waste. The leachate can be discharged either to the Class I surface impoundments or in a manner consistent with Chapter 15.

4. Leachate collection and removal systems shall be monitored in accordance with MRP R5-2014-0003.

E. UNSATURATED ZONE MONITORING SPECIFICATIONS

1. The Discharger shall perform unsaturated zone monitoring for the operating surface impoundments, Landfill B-18, and closed WMUs in accordance with MRP R5-2014-0003.

F. GROUNDWATER MONITORING SPECIFICATIONS

1. Groundwater shall be monitored in accordance with MRP R5-2014-0003.
2. The Discharger shall provide notification at least **10 days** prior to drilling and installing any new groundwater monitoring wells.
3. For each monitoring report, the Discharger shall state whether the facility is in compliance with the Water Quality Protection Standard using the procedures specified in the MRP R5-2014-0003.
4. The concentration of constituents of concern in groundwater passing the Point of Compliance shall not exceed the concentration limits established pursuant to the MRP R5-2014-0003.
5. The Discharger shall submit a revised *Site-Specific Groundwater Monitoring Plan* (SSGWMP) in accordance with the time specified in Provision H.13 of this Order. The SSGWMP will be incorporated by reference into MRP R5-2014-0003.

G. CLOSURE AND POST- CLOSURE SPECIFICATIONS

1. Cover design for closure of all future and existing Class I/II WMUs shall consist of the following (from the top down):
   - a minimum 2.5-foot thick vegetated soil layer
   - a 12 ounce-per-square-yard nonwoven geotextile
   - a 40-mil HDPE geomembrane that is textured on both sides
   - a one-foot thick foundation layer having a maximum hydraulic conductivity of 1×10^{-5} cm/sec
   - an intermediate soil cover (minimum of one-foot thick) over the last lift of waste.
2. The Discharger shall implement the engineering design plans, construction drawings, technical specifications, and the CQA plan contained in the Final Design Report for the closure of Landfill B-18. The closure cover system shall include the components listed in Finding 46 of this Order.
3. Before closure of WMUs, the Discharger may be required to submit an updated closure plan that incorporates new engineering technology, construction methods and materials, and that ensures consistency with the current State policy and regulations.
4. A Final Closure Construction Certification Report shall be submitted for the cover system constructed. As-built plans and final closure cover drawings and the CQA testing results shall be included in the closure certification report. The CQA testing shall include a written summary of the CQA program, all test results, analyses, and copies of the inspector's original field notes. The closure

certification report shall contain sufficient information and test results to certify that construction was completed in accordance with the approved Final Design Report. The certification report shall be signed by a California registered civil engineer or certified engineering geologist licensed in California and shall be submitted for review and approval by the Executive Officer.

5. Changes to the cover system design may be allowed if it is demonstrated that the changes will provide an equal or greater ability to isolate moisture from the waste and such changes are approved by the Executive Officer.

6. The Discharger shall provide notification, either written or oral, to Central Valley Water Board staff at least **10 days** prior to the construction of the closure cover system.

7. The Discharger shall monitor closed Class I WMUs in accordance with the Post-Closure Maintenance Plan and the Monitoring and Reporting Program, that shall include the following elements:

   - final cover monitoring and maintenance
   - settlement monitoring
   - maintenance of permanent monuments
   - LCRS monitoring
   - maintenance of surface water drainage systems
   - groundwater and unsaturated zone monitoring

8. The Discharger shall install and maintain at least two surveyed permanent monuments from which the location and elevation of wastes, containment structures, and monitoring facilities can be determined throughout the post-closure maintenance period in accordance with Section 2580(d) of Title 23.

9. The Discharger shall perform visual inspections of the final cover of any closed WMUs regulated by this Order at least **annually** to check for evidence of settlement, erosion, ponded water, odor, exposed waste, cracks, slope failure, leachate seeps, or damage to the vegetated cover in accordance with the Monitoring and Reporting Program. Areas of the final cover showing evidence of any of the problems including those described above shall be repaired in a timely manner, and the cause shall be investigated to prevent recurrences of the problem(s).

10. The post-closure maintenance and monitoring period shall continue for as long as wastes contained within closed WMUs pose a threat to water quality.

H. PROVISIONS

1. The Discharger may be required to submit technical reports as directed by the Executive Officer.

2. The Discharger shall comply with MRP R5-2014-0003 which is incorporated into and made part of this Order.

3. The Discharger shall comply with the applicable portions of the September 1993 Standard Provisions and Reporting Requirements (SPRR) for WDRs for discharges regulated by Chapter 15. The SPRR is incorporated into and made part of this Order.

4. If there is any conflicting or contradictory language between the Order, the MRP, or the SPRR, language in the Order shall govern over either the MRP or the SPRR, and language in the MRP shall govern over the SPRR.

5. This Order does not authorize violation of any federal, state, or local laws or regulations.

6. The Discharger shall **by 1 March of each year**, submit a copy of a Certificate of Insurance for Closure and Post-Closure Maintenance in accordance with requirements for financial assurances mechanisms contained in Title 22 and Title 23 of the California Code of Regulations. The Discharger shall submit an adjusted certificate using the latest available annual inflation factor adjustment. Any additional cost increases due to changes in closure design, closure construction, or post-closure maintenance and monitoring shall be included in the adjusted certificate.

7. The Discharger shall **by 1 March of each year**, submit a copy of a Certificate of Insurance for initiating and completing corrective action for all known or reasonably foreseeable releases from each waste management unit in accordance with requirements for financial assurance mechanisms contained in Title 22 and Title 23 of the California Code of Regulations. The Discharger shall submit an adjusted certificate using the latest available annual inflation factor adjustment. Any additional cost increases due to changes in completing corrective action(s) shall be included in the adjusted certificate.

8. The Discharger shall submit final construction and closure certification reports in accordance with Landfill B-18 Phase III Construction Specification C.3 and Closure and Post-Closure Specification G.4. The certification reports shall be submitted **within 60 days** following completion of construction or closure of the WMU.

9. The Discharger shall take all reasonable steps to minimize any adverse impact to the waters of the State resulting from noncompliance with this Order. Such steps shall include accelerated or additional monitoring as necessary to determine the nature, extent, and impact of the noncompliance.

10. To assume ownership or operation under this Order, the succeeding owner or operator must apply in writing to the Central Valley Water Board requesting transfer of this Order **within 14 days** of assuming ownership or operation of this facility. The request must contain the requesting entity's full legal name, the

State of incorporation if a corporation, the name and address and telephone number of the persons responsible for contact with the Central Valley Water Board, and a statement. The statement shall comply with the signatory requirements contained in the SPRR 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 and a violation of the Water Code. Transfer of this Order shall be approved by the Central Valley Water Board.

11. The Discharger shall, at a minimum, comply with all notice and reporting requirements of the State Department of Water Resources with regard to the drilling, installation, or decommissioning of any monitoring well, gradient well, piezometer, or gas probe used for compliance with this Order, as required by Water Code sections 13750 through 13755.

12. Monitoring locations may be modified if the Discharger demonstrates to the Board that the new locations provide equal or greater protection of water quality.

13. **Within 90 days** of adoption of this Order, the Discharger shall submit a revised SSGWMP and a revised SSUZMP.

14. The Discharger shall maintain WMUs and their associated LCRS and storm water drainage systems, storm water retention basins, unsaturated zone and groundwater monitoring systems, interim covers, and final covers during the operation, closure, and post-closure maintenance periods as specified in this Order and in the Monitoring and Reporting Program. Central Valley Water Board staff shall be immediately notified of any flooding, equipment failure, slope failure, fire, explosion, earthquake damage, accident, leachate seepage, or gas release that could cause the failure of any portion of the WMU and its related facilities, potentially threatening water quality.

15. The Discharger shall accept hazardous waste in accordance with the Waste Analysis Plan contained in the current Hazardous Waste Facility Permit issued by the DTSC.

16. The Discharger shall have the continuing responsibility to assure protection of waters of the state from discharged wastes and from gases and leachate generated by discharged waste during the active, closure, and post-closure maintenance period of the WMUs.

17. **Annually**, the Discharger shall submit a topographic map and aerial photograph of the facility. The map and photograph shall be at a scale where the WMUs are readily discernible and changes in topography from waste filling operations can be tracked.

18. The Discharger shall comply with all applicable provisions of Chapter 15 that are not specifically referred to in this Order.

19. The Discharger shall maintain a copy of the Order at the facility and provide copies to the appropriate facility employees, who shall comply with the prohibitions, specifications, and provisions contained in the Order. This Order shall be made available to regulatory agency personnel upon request.

20. This Order will be reviewed periodically and revisions made when necessary.

If, in the opinion of the Executive Officer, the Discharger fails to comply with the provisions of this Order, the Executive Officer may refer this matter to the Attorney General for judicial enforcement, may issue a complaint for administrative civil liability, or may take other enforcement actions. Failure to comply with this Order may result in the assessment of Administrative Civil Liability of up to $10,000 per violation, per day, depending on the violation, pursuant to the Water Code, including sections 13268, 13350 and 13385. The Central Valley Water Board reserves its right to take any enforcement actions authorized by law. Any person aggrieved by this action of the Central Valley Water Board may petition the State Water Board to review the action in accordance with Water Code section 13320 and California Code of Regulations, title 23, sections 2050 and following. The State Water Board must receive the petition by 5:00 p.m., 30 days after the date of this Order, except that if the thirtieth day following the date of this Order falls on a Saturday, Sunday, or state holiday, the petition must be received by the State Water Board by 5:00 p.m. on the next business day. Copies of the law and regulations applicable to filing petitions may be found on the Internet at:

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

or will be provided upon request.

I, PAMELA C. CREEDON, Executive Officer, do hereby certify 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 16 January 2014.

Original signed by: Kenneth Landau for

_____
PAMELA C. CREEDON, Executive Officer

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM R5-2014-0003
FOR
CHEMICAL WASTE MANAGEMENT, INC.
CLASS I/II WASTE MANAGEMENT UNITS
KETTLEMAN HILLS FACILITY
KINGS COUNTY

Compliance with this Monitoring and Reporting Program (MRP), with Chapter 15, and with the Standard Provisions and Reporting Requirements dated September 1993 for Class I Waste Management Units (WMUs) is ordered by Waste Discharge Requirements (WDRs) Order No. R5-2014-0003.

Failure to comply with this MRP, or with the Standard Provisions and Reporting Requirements, constitutes noncompliance with the WDRs and the Water Code, which can result in the imposition of civil monetary liability.

A. REQUIRED REPORTS

Report	Due
1. Annual Monitoring Summary Report (Section B.)	**Annually**
2. Constituents of Concern (Section C.1)	**Every 5 years[1]**
3. Groundwater Monitoring (Section D.1)	**Semi-Annually**
4. Incoming Waste Monitoring (Section D.2)	**Monthly**
5. Leachate Collection and Removal System Monitoring (Section D.3)	
a. LCRS Fluid Levels (Section D.3)	**Monthly**
b. Constituents of Concern (Section D.3)	**Quarterly[2]/Annually**
c. Integrity Testing (Section D.3.a)	**Annually**
6. Unsaturated Zone Monitoring (Section D.4)	**Semi-Annually**
7. Class I Surface Impoundment Monitoring (Section D.5)	**Monthly**
8. Facility Monitoring (Section D.6)	
a. Facility Inspection Certification (Section D.6.a.)	**Annually**
b. Post-Closure Inspection Report (Section D.6.b.)	**Annually**
c. Storm Event Inspection (Section D.6.c.)	**When required**
d. Seismic Event Inspection (Section D.6.d.)	**When required**

[1]Sampling shall alternate between the 1st Semi-annual and 2nd Semi-annual sampling events.
[2]Quarterly the first four quarters after waste placement in the B-18 Phase III Expansion WMU begins.

B. REPORTING

The Discharger shall report monitoring data and information as required in this MRP, in the approved *Site-Specific Groundwater Monitoring Plan* (SSGWMP), and in the Standard Provisions and Reporting Requirements. Reports that do not comply with the required format will be **REJECTED** and the Discharger shall be deemed to be in noncompliance with the WDRs. In reporting the monitoring data required by this MRP, the Discharger shall arrange the data in tabular form so that the date, constituents, concentrations, and units are readily discernible. Data shall be submitted in a digital database format, such as Microsoft Access or Excel that is acceptable to Central Valley Water Board staff. The data shall be summarized in such a manner as to illustrate clearly compliance with the WDRs or the lack thereof. A short discussion of the monitoring results, including notations of any water quality violations, shall precede the tabular summaries.

Each monitoring report shall include a compliance evaluation summary as specified in Item 2, 'Reports to be Filed with the Board,' of the 'Reporting Requirements,' of the Standard Provisions and Reporting Requirements.

The Discharger shall submit an **Annual Monitoring Summary Report** covering the previous monitoring year. The annual report shall contain the information specified in Item 4, 'Reports to be Filed with the Board,' of the 'Reporting Requirements,' of the Standard Provisions and Reporting Requirements, and a discussion of compliance with the WDRs and the water quality protection standards (WQPS).

The results of any WDR/MRP monitoring conducted more frequently at the locations specified herein or by the WDRs shall be reported. Field measurements and laboratory tests shall be reported in each monitoring report. Monthly, quarterly, semi-annual, and annual monitoring reports, unless as otherwise indicated, shall be submitted to the 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	Monthly	Last Day of Month	30th day of following month
Quarterly	Quarterly	Last Day of each Calendar Quarter	45th day of the the next quarter
Semi-annual	1st Semi-annual 2nd Semi-annual	30 June 31 December	30 September 31 March

Annual	Annual	31 December[1] 30 September[2]	1 March[1] 15 November[2]
5-Year	5-Year	30 June[3] 31 December[4]	30 September[3] 31 March[4]

[1]Annual Monitoring Summary Report
[2]Annual Facility Inspection & Report
[3]For 1st Semi-Annual Event
[4]For 2nd Semi-Annual Event

C. WATER QUALITY PROTECTION STANDARD AND COMPLIANCE PERIOD

For each WMU, the WQPS consists of a list of: 1) constituents of concern (COC), 2) monitoring parameters, 3) concentration limits for each COC and each monitoring parameter, and 4) all monitoring points.

The WQPS shall apply during the active life of the WMU, closure period, post-closure maintenance period, and any compliance period under Title 23 CCR Section 2550.6.

1. Constituents of Concern

COCs are the waste constituents, reaction products, and hazardous constituents that are reasonably expected to be in or derived from waste contained in the WMUs. Analysis for the COCs is due **every 5 years** and includes all the constituents listed in Table 1.

2. Monitoring Parameters

Monitoring parameters are the waste constituents, reaction products, hazardous constituents, and physical parameters that provide a reliable indication of a release from a WMU. The monitoring parameters for all Class I WMUs are those listed in Table 2. The supplemental hydrochemical parameters and field parameters are those listed in Table 3. Supplemental hydrochemical parameters are only analyzed to track changes in groundwater chemistry over time and are not used for comparison with concentration limits or to determine compliance with the WQPS.

3. Concentration Limits

The concentration limits for COCs and monitoring parameters shall be established as follows:

a. For any anthropogenic COC or monitoring parameters, the concentration limit shall be the Practical Quantitation Limit (PQL) as described in the most recent edition of Manual SW-846 published by United States Environmental Protection Agency (US EPA). Concentrations that lie between the PQL and the Method Detection Limit (MDL) shall be reported as traces. Exceedences shall be determined using the non-statistical procedure specified in the most recent approved version of the SSGWMP.

b. The concentration limits for the naturally occurring COCs listed in Table 1 were revised in the September 2002 Revised Groundwater Concentration Limits report. The concentration limits shall be updated, as appropriate, following each COC monitoring event in accordance with the statistical procedure described in the most recent approved version of the SSGWMP.

4. Monitoring Points

All wells established for groundwater detection monitoring shall constitute the monitoring points for the WQPS. All approved monitoring wells shall be sampled and analyzed for the monitoring parameters and COCs as indicated and listed herein. All approved piezometers and gradient wells shall be sounded as appropriate. The currently approved groundwater monitoring well network includes the detection monitoring wells, corrective action wells, and gradient wells listed in Table 4. Their locations are shown in Attachment E of the WDRs.

5. Revisions to Site-Specific Groundwater Monitoring Plan

The Discharger shall submit revisions, changes, and/or additions to the SSGWMP, when necessary, to reflect the current groundwater monitoring system and groundwater sampling procedures.

D. MONITORING

1. Groundwater

The Discharger shall submit a revised SSGWMP as required by Provision H.13 in the WDRs. The Discharger shall collect, preserve, and transport groundwater samples semi-annually from wells in the approved groundwater monitoring system. Groundwater sampling, analysis, and statistical and non-statistical data evaluations shall be performed in accordance with the procedures described in the revised SSGWMP.

Groundwater monitoring data shall be submitted in the semi-annual Groundwater Monitoring Reports due as specified above in the schedule contained in **B. Reporting**. The reports shall contain, in addition to reporting requirements specified in this MRP, a summary of the laboratory quality assurance/quality control standards and shall indicate that they meet the standards specified in the revised SSGWMP.

The Discharger shall determine 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 MRP **quarterly** and shall report the results in the semi-annual report.

The Discharger may use analytical methods other than those contained in this MRP provided the method has equal or lower reporting limits, can detect all the required COCs and monitoring parameters, and is an approved US EPA method.

2. Incoming Waste

The Discharger shall report on a **monthly** basis, the type and quantity of hazardous waste and designated waste accepted for disposal to the Class I WMUs at the facility.

3. Leachate Collection and Removal Systems

The leachate collection and removal system (LCRS) fluid levels shall be inspected **daily**. For primary LCRSs, the volume of liquid removed shall be measured and reported. For the secondary LCRSs, the volume of liquid removed shall be measured, calculated in gallons per acre per day, and reported. The results of LCRS monitoring shall be reported **monthly**.

Liquids removed from the LCRSs shall be analyzed **quarterly** for four consecutive calendar quarters commencing in the quarter following initial placement of waste within the B-18 Phase III Expansion WMU and **annually** thereafter for the COCs listed in Table 1 of this MRP.

The Discharger shall follow the actions specified in LCRS Specification D.1 contained in the WDRs should any hydraulic head occur on any liner outside of the LCRS sump.

a. Integrity Testing

In accordance with Title 23 CCR Section 2543(d), LCRSs shall be tested **annually** to demonstrate proper operation. The results of the tests shall be compared with earlier tests under comparable conditions.

4. Unsaturated Zone

The Discharger shall submit a revised *Site-Specific Unsaturated Zone Monitoring Plan* with a revised semi-annual sampling schedule for the soil-moisture monitoring wells and the soil-gas monitoring wells, and other appropriate changes as necessary.

Liquids removed from vadose zone collection sumps shall be analyzed **annually** for the COCs listed in Table 1 of this MRP.

5. Class I Surface Impoundments

The Discharger shall measure the fluid levels in all Class I surface impoundments. The calibrated freeboard gauges shall be inspected **daily** and the fluid levels recorded and reported **monthly**.

6. Facility Monitoring

a. Facility Inspection

Annually, **prior to 30 September,** the Discharger shall submit written certification that the drainage control system; slope conditions; groundwater, and unsaturated zone monitoring equipment; fencing; and visible portions of waste management unit liners and covers have been inspected and any necessary repairs have been completed.

b. Post-Closure Inspection

Submit an **annual** inspection report of the closed WMUs indicating compliance with Closure and Post-Closure Specifications G.7. and G.9. contained in the WDRs.

c. Storm Events

The Discharger shall inspect all precipitation, diversion, and drainage facilities for damage during the rainy season or following a precipitation event of 1.0 or more inches in a 24-hour period measured at the facility. Necessary repairs shall be implemented as soon as practicable. The Discharger shall report any damage and subsequent repairs **within 45 days** of completion of the repairs.

d. Seismic Events

The Discharger shall perform a full-scale facility inspection **within 24 hours** following an earthquake of magnitude (M_w) 5.0 or greater within 25 miles of the facility or M_w 6.0 or greater earthquake within 50 miles of the facility. The inspection shall be performed in accordance with the facility Post-Earthquake Inspection and Response Plan cited in Discharge Specification B.15 in the WDRs. The Discharger shall report any damage and subsequent repairs **within 45 days** of completion.

Original signed by: Kenneth Landau for

Ordered by: _____
PAMELA C. CREEDON, Executive Officer

16 January 2014
_____
(Date)

TABLE 1
CONSTITUENTS OF CONCERN

	Inorganic parameter	Method		Inorganic parameter	Method
1	Aluminum	6010B	14	Iron	6010B
2	Antimony	6010B	15	Lead	6010B
3	Arsenic	6010B	16	Manganese	6010B
4	Barium	6010B	17	Mercury	7470A
5	Beryllium	6010B	18	Molybdenum	6010B
6	Boron	6010B	19	Nickel	6010B
7	Cadmium	6010B	20	Nitrogen, Nitrate	300.0A
8	Chromium	6010B	21	Selenium	6010B
9	Chromium VI	7196A	22	Silver	6010B
10	Cobalt	6010B	23	Thallium	6010B
11	Copper	218.5	24	Tin	6010B
12	Cyanide	9012A	25	Vanadium	6010B
13	Flouride	300.0A	26	Zinc	6010B

TABLE 1 (Cont.)
CONSTITUENTS OF CONCERN

Organic Parameters (Method 8260B)

27	Acetone	47	p-Dichlorobenzene
28	Acetonitrile	48	Ethylbenzene
29	Acrolein	49	Ethyl methacrylate
30	Acrylonitrile	50	Hexachlorobutadiene
31	Allyl chloride	51	2-Hexanone
32	Benzene	52	Isobutyl alcohol
33	Bromochloromethane	53	Methacrylonitrile
34	Bromodichloromethane	54	Methyl bromide
35	Bromoform	55	Methyl chloride
36	Carbon disulfide	56	Methylene bromide
37	Carbon tetrachloride	57	trans-1,4-Dichloro-2-butene
38	Chlorobenzene	58	Dichlorodifluoromethane
39	Chloroethane	59	1,1-Dichloroethane
40	Chloroform	60	1,2-Dichloroethane
41	Chloroprene	61	1,1-Dichloroethylene
42	Dibromochloromethane	62	cis-1,2-Dichloroethylene
43	1,2-Dibromo-3-chloropropane	63	trans-1,2-Dichloroethylene
44	1,2-Dibromoethane	64	1,2-Dichloropropane
45	o-Dichlorobenzene	65	1,1-Dichloropropene
46	m-Dichlorobenzene	66	1,3-Dichloropropane

TABLE 1 (Cont.)
CONSTITUENTS OF CONCERN

Organic Parameters (Method 8260B)

67	2,2-Dichloropropane	79	1,1,2,2-Tetrachloroethane
68	cis-1,3-Dichloropropene	80	Tetrachloroethylene
69	trans-1,3-Dichloropropene	81	Toluene
70	1,4-Dioxane	82	1,2,4-Trichlorobenzene
71	Methylene chloride	83	1,1,1-Trichloroethane
72	Methyl ethyl ketone	84	1,1,2-Trichloroethane
73	Methyl iodide	85	Trichloroethylene
74	Methyl methacrylate	86	Trichlorofluoromethane
75	4-Methyl-2-petanone	87	1,2,3-Trichloropropane
76	Propionitrile	88	Vinyl acetate
77	Styrene	89	Vinyl chloride
78	1,1,1,2-Tetrachloroethane	90	Xylene (total)

Organic Parameters (Method 8270C)

91	Acenaphthene	96	Aniline
92	Acenaphthylene	97	Anthracene
93	Acetophenone	98	Aramite
94	2-Acetylaminofluorene	99	Benzo(a)anthracene
95	4-Aminobiphenyl	100	Benzo(b)fluoranthene

TABLE 1 (Cont.)
CONSTITUENTS OF CONCERN

Organic Parameters (Method 8270C)

101	Benzo(k)fluoranthene	122	Dibenz(a,h)anthracene
102	Benzo(g,h,i)perylene	123	Dibenzofuran
103	Benzo(a)pyrene	124	Di-n-butyl phthalate
104	Benzyl alcohol	125	Ethyl methanesulfonate
105	Bis(2-chloroethoxy)methane	126	Famphur
106	Bis(2-chloroethyl)ether	127	Fluoranthene
107	Bis(2-chloro-1-methylethyl)ether	128	Fluorene
108	Bis(2-ethylhexyl)phthalate	129	Hexachlorobenzene
109	4-Bromophenyl phenyl ether	130	Hexachlorocyclopentadiene
110	Butyl benzyl phthalate	131	Hexachloroethane
111	p-Chloroaniline	132	Hexachlorophene
112	Chlorobenzilate	133	Hexachloropropene
113	p-Chloro-m-cresol	134	Indeno(1,2,3-cd)pyrene
114	2-Chloronaphthalene	135	Isodrin
115	2-Chlorophenol	136	Isophorone
116	4-Chlorophenyl phenyl ether	137	Isosafrole
117	Chrysene	138	Kepone
118	m-Cresol	139	Methapyrilene
119	o-Cresol	140	3-Methylcholanthrene
120	p-Cresol	141	3,3'-Dichlorobenzidine
121	Diallate	142	2,4-Dichlorophenol

TABLE 1 (Cont.)
CONSTITUENTS OF CONCERN

Organic Parameters (Method 8270C)

143	2,6-Dichlorophenol	164	1-Naphthylamine
144	Diethyl phthalate	165	2-Naphthylamine
145	Dimethoate	166	o-Nitroaniline
146	p-(Dimethylamino)azobenzene	167	m-Nitroaniline
147	7-12-Dimethylbenz(a)anthracene	168	p-Nitroaniline
148	3,3'-Dimethylbenzidine	169	Nitrobenzene
149	alpha-Dimethylphenethylamine	170	o-Nitrophenol
150	2,4-Dimethylphenol	171	p-Nitrophenol
151	Dimethyl phthalate	172	4-Nitroquinoline 1-oxide
152	m-Dinitrobenzene	173	N-Nitrosodi-n-butylamine
153	4,6-Dinitro-o-cresol	174	N-Nitrosodiethylamine
154	2,4-Dinitrophenol	175	N-Nitrosodimethylamine
155	2,4-Dinitrotoluene	176	N-Nitrosodiphenylamine
156	2,6-Dinitrotoluene	177	N-Nitrosodipropylamine
157	Di-n-octyl phthalate	178	N-Nitrosomethylethylamine
158	Diphenylamine	179	N-Nitrosomopholine
159	Disulfoton	180	N-Nitrosopiperidine
160	Methyl methanesulfonate	181	N-Nitrosopyrrolidine
161	2-Methylnaphthalene	182	5-Nitro-o-toluidine
162	Naphthalene	183	Pentachlorobenzene
163	1,4-Naphthoquinone	184	Pentachloroethane

TABLE 1 (Cont.)
CONSTITUENTS OF CONCERN

Organic Parameters (Method 8270C)

185	Pentachloronitrobenzene	194	Pyridine
186	Pentachlorophenol	195	Safrole
187	Phenacetin	196	1,2,4,5-Tetrachlorobenzene
188	Phenanthrene	197	2,3,4,6-Tetrachlorophenol
189	Phenol	198	Tetraethyl dithiopyrophosphate
190	p-Phenylenediamine	199	o-Toluidine
191	2-Picoline	200	2,4,5-Trichlorophenol
192	Pronamide	201	2,4,6-Trichlorophenol
193	Pyrene	202	0,0,0-Triethyl phosphorothioate
		203	sym-Trinitrobenzene

Pesticides (Method 8081A)

204	Aldrin	213	Dieldrin
205	alpha-BHC	214	Endosulfan I
206	beta-BHC	215	Endosulfan II
207	delta-BHC	216	Endosulfan sulfate
208	gamma-BHC (Lindane)	217	Endrin
209	Chlordane	218	Endrin aldehyde
210	4,4'-DDD	219	Heptachlor
211	4,4'-DDE	220	Heptachlor epoxide
212	4,4'-DDT	221	Methoxychlor
		222	Toxaphene

TABLE 1 (Cont.)
CONSTITUENTS OF CONCERN

Polychlorinated biphenyls (Method 8082)

223	Aroclor 1016	227	Aroclor 1248
224	Aroclor 1221	228	Aroclor 1254
225	Aroclor 1232	229	Aroclor 1260
226	Aroclor 1242	230	Aroclor 1262
		231	Aroclor 1268

Organophosphorus Compounds (Method 8141A)

232	Methyl parathion	235	Phorate
233	Parathion	236	Dichlorvos
234	0,0-Diethyl 0-2-pyrazinyl phosphorothioate		

Chlorinated Herbicides (Method 8151A)

237	2,4-D (2,4-Dichlorophenoxyacetic acid)	239	Dinoseb (DNBP; 2-sec-Butyl-4,6-dinitrophenol)
238	Silvex (2,4,5-Trichlorophenoxypropionic acid; 2,4,5-TP)	240	2,4,5-T (2,4,5-Trichlorophenoxyacetic acid)

Carbamate & Urea Pesticides (Method 632)

241	Barban	249	Methiocarb
242	Carbaryl	250	Methomyl
243	Carbofuran	251	Monuron
244	Chlorpropham	252	Neburon
245	Diuron	253	Oxamyl
246	Fenuron	254	Propham
247	Fluometuron	255	Propoxur
248	Linuron	256	Siduron
		257	Swep

TABLE 2
DETECTION MONITORING PARAMETERS - CLASS I WMUs

Organic Parameters (Method 8260B)

1	Benzene	17	1,1-Dichloroethane
2	Bromodichloromethane	18	1,2-Dichloroethane
3	Bromoform	19	1,1-Dichloroethene
4	Bromomethane	20	Ethylbenzene
5	Carbon Tetrachloride	21	trans-1,2-Dichloroethene
6	Chlorobenzene	22	1,2-Dichloropropane
7	Chloroethane	23	trans-1,3-Dichloropropene
8	Chloroform	24	Methylene chloride
9	2-Chloroethylvinyl ether	25	1,1,2,2-Tetrachloroethane
10	Chloromethane	26	Tetrachloroethene
11	cis-1,3-Dichloropropene	27	Toluene
12	Dibromochloromethane	28	1,1,1-Trichloroethane
13	1,2-Dichlorobenzene	29	1,1,2-Trichloroethane
14	1,3-Dichlorobenzene	30	Trichloroethene
15	1,4-Dichlorobenzene	31	Trichlorofluoromethane
16	Dichlorodifluoromethane	32	Vinyl chloride
		33.	Xylenes, total

TABLE 3
SUPPLEMENTAL HYDROCHEMICAL PARAMETERS
AND
FIELD PARAMETERS

	Hydrochemical Parameters[1]	Method
1	Calcium	6010B
2	Potassium	6010B
3	Magnesium	6010B
4	Sodium	6010B
5	Chloride	300.0A
6	Alkalinity	2320B
7	Sulfate	300.0A
8	Silica	6010B
9	Total Dissolved Solids	2540C
10	Total Organic Carbon	5310B

	Field Parameters[2]
1	pH
2	Specific Conductance
3	Temperature
4	Turbidity
5	Dissolved Oxygen

[1]Parameters to be analyzed as part of semi-annual groundwater monitoring program.

[2]Measured in the field prior to sampling groundwater monitoring wells.

TABLE 4
GROUNDWATER MONITORING WELL NETWORK

DETECTION MONITORING WELLS	WMU[1]	CORRECTIVE ACTION WELLS	WMU[2]	GRADIENT WELLS[3]
K5 (Tuffaceous B)[4]	B19,P20,S6	A2 (Neverita B)	P12/12A	K12 (Neverita A)
K7 (Tuffaceous A)	P1,P4,P13,S1,S3,B9 exp	A7 (Neverita B)	P12/12A	K34 (Cascajo A)
K17 (Neverita A)	B19,S5	E1 (Neverita B)	P12/12A	K36 (Tuffaceous A)
K18 (Sand No. 10)	B18	K4R (Neverita B)	P12/12A	K39 (Mya A)
K32R (Mya A)	B18	K6 (Neverita B)	P12/12A	K69 (Neverita A)
K35 (Cascajo A)	P14,P15,P16,S4	A5 (Mya C/D)	P9	K70 (Neverita B)
K37 (Mya C/D)	B9 ext, B11	E2 (Mya C/D)	P9	
K38 (Mya A)	B15	K30R (Mya A)	P9	
K41 (Neverita B)	P6,P8,B9 exp,S1,S2	K44 (Neverita A)	B7	
K42 (Tuffaceous B)	P1,P2,P3,P4,P4.5,B9 exp	K45 (Cascajo A)	B7	
K43 (Mya A)	B8,B9,B10	K63 (Tuffaceous A)	B15	
K46 (Mya A)	B12,B13	K65 (Neverita B)	P18	
K47 (Neverita A)	P7,B1,B4,B5,B6,B9 exp			
K48 (Neverita B)	B19,P18,S6			
K49 (Neverita B)	B16			
K50 (Tuffaceous B)	B14			
K51 (Mya C/D)	B18			
K60 (Pecten A)	P10,P11			
K62 (Tuffaceous B)	B15			
K64 (Tuffaceous A)	B19,P20,S6			
K66 (Neverita A)	B19			
K67 (Sand No. 10)	B18			
K68 (Pecten B)	B18			
K71R (Pecten B)	B18			

[1]Indicates the WMUs monitored by detection monitoring wells. WMUs not shown on Attachment B of the revised WDRs include B2, B3, and S4; P1, P2, P3, P4, P4.5, P13, S1, S2, S3, B1, B4, B5, B6, B8, B9, B9 ext, B9 exp, B-10, and B11 which are all located in the Combined Closure Area; P18, P19, P20, S5, and S6, which are former WMUs within the footprint of Landfill B-19; B12, which is within the footprint of closed Landfill B-13 which is shown on Attachment E of the revised WDRs.

[2]Indicates WMUs monitored by corrective action wells. [3]Groundwater elevations only [4]Water bearing zone being monitored is in parenthesis.

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

STANDARD PROVISIONS AND REPORTING REQUIREMENTS
FOR
WASTE DISCHARGE REQUIREMENTS
FOR
DISCHARGES REGULATED BY CHAPTER 15 AND/OR PART 258
(23 CCR 2510 et.seq. and 40 CFR 258 et. seq.)

SEPTEMBER 1993

GENERAL PROVISIONS

1. The discharge shall neither cause nor contribute to the contamination, degradation, or **pollution of ground water** via the release of waste constituents in either liquid or gaseous phase.

2. The discharge shall neither cause nor contribute to any **surface water pollution**, contamination, or nuisance, including, but not limited to:

   a. floating, suspended, or deposited macroscopic particulate matter or foam;
   b. increases in bottom deposits or aquatic growth;
   c. an adverse change in temperature, turbidity, or apparent color beyond natural background levels;
   d. the creation or contribution of visible, floating, suspended, or deposited oil or other products of petroleum origin;
   e. the introduction or increase in concentration of toxic or other pollutants/contaminants resulting in unreasonable impairment of beneficial uses of waters of the State.

3. The discharge shall not cause any increase in the concentration of waste constituents in soil-pore gas, soil-pore liquid, soil, or other geologic materials outside of the waste management unit if such waste constituents could migrate to waters of the State—in either the liquid or the gaseous phase—and cause **a condition of contamination, pollution, degradation, or nuisance**.

4. The discharge shall not cause the release of pollutants, or waste constituents in a manner which could cause a condition of contamination, pollution, degradation, or nuisance to occur, as indicated by the most appropriate statistical or non-statistical data analysis method and retest method listed in the Monitoring and Reporting Program.
5. The discharger shall take **all reasonable steps to minimize any adverse impact** to the waters of the state resulting from noncompliance with this Order. (“Order,” as used

throughout this document, means the Waste Discharge Requirements). Such steps shall include accelerated or additional monitoring as necessary to determine the nature, extent, and impact of the noncompliance.

6. The requirements prescribed herein do not authorize the commission of any act causing injury to the property of another, and do not protect the discharger from **liabilities** under federal, state, or local laws. This Order does not convey any property rights or exclusive privileges.

7. The provisions of this Order are **severable**. If any provision of this Order is held invalid, the remainder of this Order shall not be affected.

8. 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.

9. After notice and opportunity for a hearing, this Order may be **terminated or modified** for cause, including, but not limited to:

    a. Violation of any term or condition contained in this Order;
    b. Obtaining this Order by misrepresentation, or failure to disclose fully all relevant facts;
    c. A change in any condition that results in either a temporary or permanent need to reduce or eliminate the authorized discharge;
    d. A material change in the character, location, or volume of discharge.

10. Before making a **material change** in the character, location, or volume of discharge, the discharger shall file a new Report of Waste Discharge with the Regional Water Quality Control Board (hereafter Board). A material change includes, but is not limited to, the following:

    a. An increase in area or depth to be used for solid waste disposal beyond that specified in waste discharge requirements;
    b. A significant change in disposal method, location or volume (e.g., change from land disposal to land treatment);
    c. A change in the type of waste being accepted for disposal; or
    d. The addition of a major industrial waste discharge to a discharge of essentially domestic waste, or the addition of a new process or product by an industrial facility resulting in a change in the character or type of waste being discharged.

11. The discharger shall, in a timely manner, **remove and relocate** any wastes discharged at this facility in violation of this Order.

12. 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.

13. The discharger shall permit representatives of the Board and the State Water Resources Control Board, upon presentation of credentials, to have **access** during reasonable hours, to:

    a. Enter premises where wastes are treated, stored, or disposed of and facilities in which any records are kept,
    b. Copy any records required to be kept under terms and conditions of this Order,
    c. Inspect, monitoring equipment required by this Order, and
    d. Sample, photograph and video tape any discharge, waste, waste management unit or monitoring device.

14. Except for material determined to be **confidential** in accordance with California law and regulations, all reports prepared in accordance with terms of this Order shall be available for public inspection at the offices of the Board. Data on waste discharges, water quality, geology, and hydrogeology shall not be considered confidential.

REPORTING REQUIREMENTS

General Requirements

1. In the event the discharger does not comply or will be unable to comply with any prohibition or limitation of this Order for any reason, the discharger shall **notify the Board by telephone** at (559) 445-5116 as soon as it or its agents have knowledge of such noncompliance or potential for noncompliance, and shall confirm this notification in writing within two weeks. The written notification shall state the nature, time and cause of **noncompliance**, and shall describe the measures being taken to prevent recurrences and shall include a timetable for corrective actions.

2. The Discharger shall **immediately notify the Board** of any **evidence of a release**, or of any flooding, equipment failure, slope failure, or other **change in site conditions** which could impair the integrity of waste or leachate containment facilities or of precipitation and drainage control structures.

3. The discharger shall **mail a copy of each** monitoring **report** and any other reports required by this Order to:

California Regional Water Quality Control Board
Central Valley Region
1685 E Street
Fresno, CA 93706
(or the current address if the office relocates)

4. 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 for a minimum of five years from the date of the sample, measurement, report, or application. This period may be extended during the course of any unresolved litigation regarding this discharge or when requested by the Board Executive Officer.
Such records shall show the following for each sample:

a. Identity of sample and of 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.

Such records shall also include legible records of the volume and type of each waste discharged at each WMU and the manner and location of discharge. These waste discharge records shall be maintained at the facility until the beginning of the post-closure maintenance period, at which time copies of these records shall be sent to the Board.

5. **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;

i. the authorization is made in writing by a person described in a, b, or c of this provision;
ii. 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 waste management 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
iii. the written authorization is submitted to the Board.

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."

6. In reporting the monitoring data, 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 lack thereof.

7. Unless otherwise required in the Monitoring and Reporting Program, monthly **monitoring reports shall be submitted** to the Board by the 15th day of the month following the month in which the samples were taken or observations made, and quarterly, semiannual, and annual monitoring reports shall be submitted to the Board by the 15th day of the month following the calendar quarter in which the samples were taken or observations made.

8. The results of any monitoring done more frequently than required at the locations specified herein shall be reported to the Board.

Reports to be Filed with the Board

1. A **transmittal letter** explaining the essential points in each report shall accompany each report. Such a letter shall include a discussion of any violations found since the last such report was submitted, and shall describe actions taken or planned for correcting those violations. If the Discharger has previously submitted a detailed time schedule for correcting the violations, a reference to the correspondence transmitting such schedule will be

satisfactory. If no violations have occurred since the last submittal, this shall be stated in the letter of transmittal.

2. Each monitoring report (e.g., Detection Monitoring Report, Constituents of Concern 5-Year Report) shall include a **compliance evaluation summary**. The summary shall contain at least:

   a. For each monitored ground water body, a description and graphical presentation of the gradient and direction of **ground water flow** under/around the waste management unit, based upon water level elevations taken during the collection of the water quality data submitted in the report.
   b. For each monitoring well addressed by the report, a description of the method and time of water level measurement, of the type of pump used for **purging** and the placement of the pump in the well, and of the method of purging (the pumping rate, the equipment and methods used to monitor field pH, temperature, and conductivity during purging, the calibration of the field equipment, results of the pH, temperature, conductivity, and turbidity testing, the well recovery time, and the method of disposing of the purge water).
   c. For each Monitoring Point and Background Monitoring Point addressed by the report, a description of the type of pump—or other device—used and its placement for **sampling**, and a detailed description of the sampling procedure (number and description of the samples, field blanks, travel blanks, and duplicate samples taken, the type of containers and preservatives used, the date and time of sampling, the name and qualifications of the person actually taking the samples, and any other observations).
   d. For each monitoring well addressed by the report, a description of how the well was **purged to remove** all portions of the water that was in the well bore while the sample was being taken.
   e. A **map or aerial photograph** showing the locations of observation stations, Monitoring Points, and Background Monitoring Points.
   f. Laboratory statements of results of all analyses evaluating compliance with requirements.
   g. An evaluation of the effectiveness of the leachate monitoring and control facilities, and of the run-off/run-on control facilities.
   h. A summary and certification of completion of all Standard Observations for the waste management unit, for the perimeter of the WMU, and for the receiving waters.
   i. The quantity and types of wastes discharged and the locations in the WMU where waste has been placed since submittal of the last such report.

3. The Discharger shall report by telephone concerning any **seepage from the disposal area** immediately after it is discovered. A written report shall be filed with the 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); and
d. corrective measures underway or proposed, and corresponding time schedule.

See **RESPONSE TO A RELEASE** below.

4. The Discharger shall submit an **Annual Monitoring Summary Report** to the Board covering the reporting period previous monitoring year. This report shall contain:

a. For each Monitoring Point and Background Monitoring Point, submit in **graphical format** the laboratory analytical data for all samples taken within at least the previous five calendar years. Each such graph shall plot the concentration of one or more constituents for the period of record for a given Monitoring Point or Background Monitoring Point, at a scale appropriate to show trends or variations in water quality. The graphs shall plot each datum, rather than plotting mean values. For any given constituent or parameter, the scale for background plots shall be the same as that used to plot downgradient data. Graphical analysis of monitoring data may be used to provide significant evidence of a release.
b. Unless otherwise exempted by the Executive Officer, all monitoring analytical data obtained during the previous two six-month Reporting Periods, presented in tabular form as well as on 3.50" **computer diskettes**, either in MS-DOS/ASCII format or in another file format acceptable to the Executive Officer. Data sets too large to fit on a single 2 MB diskette may be submitted on disk in a commonly available compressed format (e.g. PKZIP or NORTON BACKUP). The Board regards the submittal of data in hard copy and on diskette as “...the form necessary for...” statistical analysis (2550.8(h)), in that this facilitates periodic review by the Board’s statistical consultant.
c. A **comprehensive discussion of the compliance record**, and the result of any corrective actions taken or planned which may be needed to bring the Discharger into full compliance with the waste discharge requirements.
d. A **map** showing the area and elevations in which filling has been completed during the previous calendar year.
e. A **written summary** of the monitoring results, indicating any changes made or observed since the previous annual report.
f. An **evaluation** of the effectiveness of the leachate monitoring/control facilities.

PROVISIONS FOR MONITORING

General

1. The discharger shall maintain a **written sampling and analysis plan** sufficient to assure compliance with the terms of this Order. Anyone performing sampling on behalf of the discharger shall be familiar with the sampling and analysis plan.

2. All monitoring instruments and devices used by the discharger to fulfill the prescribed monitoring program shall be properly maintained and regularly **calibrated** to ensure their continued accuracy.

3. The discharger shall construct or abandon all **monitoring wells** to meet or exceed the standards stated in the State Department of Water Resources Bulletin 74-81 and subsequent revisions, and shall comply with the reporting provisions for wells required by Water Code Sections 13750 through 13755.

4. All sample analyses shall be conducted at a **laboratory accredited** for such analyses by the State Department of Health Services. The **Quality Assurance-Quality Control Program** must conform to EPA guidelines (e.g., "Laboratory Documentation Requirements for Data Validation," January 1990, USEPA Region 9) or to procedures approved by the Board.

5. The **director of the laboratory** whose name appears on the certification shall supervise all analytical work in his/her laboratory and shall sign all reports of such work submitted to the Regional Board.

6. Unless samples are from water supply wells or unless otherwise specified by the Executive Officer, all ground water samples to be analyzed for **metals** shall be field-filtered. Filtration methods shall minimize the entrainment of air into the sample (by using, for example, in-line pressure filtration).

Sampling and Analytical Methods

1. 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 exceeding 30 days**, unless the Executive Officer approves a longer time period, and shall be taken in a manner that ensures sample independence to the greatest extent feasible.

2. Specific **methods of collection and analysis** must be identified. Sample collection, storage, and analysis shall be performed according to the most recent version of USEPA Methods, such as the latest editions, as applicable, of: (1) "Methods for Organic Chemical Analysis of

Municipal and Industrial Wastewater" (EPA 600 Series), (2) "Test Methods for Evaluating Solid Waste" (SW 846-latest edition), and (3) "Methods for Chemical Analysis of Water and Wastes," and in accordance with an approved sampling and analysis plan.

If methods other than USEPA-approved methods or Standard Methods are used, the exact methodology must be submitted for review and must be approved by the Executive Officer prior to use.

3. The **methods of analysis and the detection limits** used must be appropriate for the expected concentrations. For detection 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.

4. "**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.

5. **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.

   If the lab 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 a concentration associated with a 99% reliability of a non-zero 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.

6. All **QA/QC data** shall be reported, along with the sample results to which they apply, including the method, equipment, and analytical detection and quantitation limits, the percent recovery, an explanation for any recovery that is less than 80%, 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.

7. **Unknown chromatographic peaks** shall be reported, along with an estimate of the concentration of the unknown analyte. When unknown peaks are encountered, second column or second method confirmation procedures shall be performed to attempt to identify and more accurately quantify the unknown analyte.

Analysis of Monitoring Data

Unless an alternate method has been approved by the Executive Officer, the Discharger shall use one of the following methods, according to the method selection procedure below-

One-Way Parametric Analysis of Variance (ANOVA),
One-Way Non-Parametric ANOVA (Kruskal-Wallis Test),
Method of Proportions, or
non-statistical method

-to compare the downgradient concentration of each monitored constituent or parameter with its respective background concentration to determine if there has been a release from the WMU.

Upon receiving written approval from the Executive Officer, alternate statistical procedures may be used for determining the significance of analytical results for **common laboratory contaminants** (i.e., methylene chloride, acetone, diethylhexyl phthalate, and di-n-octyl phthalate). Nevertheless, analytical results involving detection of these analytes in any background or downgradient sample shall be reported and flagged for easy reference by Board staff.

For any given data set, the Discharger should proceed sequentially down the list below of statistical analysis methods, followed by the non-statistical method, and use the first method for which the data qualify. If that analysis tentatively indicates the detection of a release, then the Discharger shall implement the retest procedure under Discrete Retest.

1. The Discharger shall use one of the following **statistical methods** to analyze Constituents of Concern or Monitoring Parameters which exhibit concentrations equal to or exceeding their respective MDL in at least ten percent of the background samples taken during the Reporting Period. Except for pH, which uses a two-tailed approach, the statistical analysis for all constituents and parameters shall be one-tailed (i.e. testing only for statistically significant increase relative to background). If the data are log-normally distributed, then the data shall be transformed, by replacing each data point with the natural log (ln) of the data point, prior to performing the statistical test.

a. The **One-Way Parametric Analysis of Variance (ANOVA)**, followed by multiple comparisons, shall be used when the pooled background data for the parameter or constituent, obtained during a given sampling period, have not more than 15% of the data below the PQL.

This test requires at least four independent samples from each Monitoring Point and Background Monitoring Point during each sampling episode. Prior to analysis, replace all "trace" analytical results with a value halfway between the PQL and the MDL values reported for that sample run, and replace all "non-detect" results with a value equal to half the MDL value reported for that sample run. The ANOVA shall be carried out at the 95% confidence level. Following the ANOVA, the data from each downgradient Monitoring Point shall be tested at a 99% confidence level against the pooled background data. If these multiple comparisons cause the Null Hypothesis (i.e., that there is no release) to be rejected at any Monitoring Point, the Discharger shall conclude that a release is tentatively indicated for that parameter or constituent.

b. The **One-Way Non-Parametric ANOVA (Kruskal-Wallis Test)**, followed by multiple comparisons, shall be used when the pooled background data for the parameter or constituent, obtained within a given sampling period, have not more than 50% of the data below the PQL.

This method requires at least nine independent samples from each Monitoring Point and Background Monitoring Point; therefore, the Discharger shall anticipate the need for taking more than four samples per Monitoring Point, based upon past monitoring results. The ANOVA shall be carried out at the 95% confidence level. Following the ANOVA, the data from each downgradient Monitoring Point shall be tested at a 99% confidence level against the pooled background data. If these multiple comparisons cause the Null Hypothesis (i.e., that there is no release) to be rejected at any Monitoring Point, the Discharger shall conclude that a release is tentatively indicated for that parameter or constituent.

c. The **Method of Proportions** shall be used if the "combined data set"—the data from a given Monitoring Point in combination with the data from the Background Monitoring Points—has between 50% and 90% of the data below the MDL for the constituent or parameter in question.

This method requires:

i. at least nine downgradient data points per Monitoring Point per Reporting Period,
ii. at least thirty data points in the combined data set, and
iii. that $n * P > 5$ [where n is the number of data points in the combined data set and P is the proportion of the combined set that equals or exceeds the MDL].

Therefore, the Discharger shall anticipate the number of samples required, based upon past monitoring results. The test shall be carried out at the 99% confidence level. If the analysis results in rejection of the Null Hypothesis [i.e., that there is no release], the Discharger shall conclude that a release is tentatively indicated for that constituent or parameter.

2. The Discharger shall use the following **non-statistical method** for the VOC_{water} and VOC_{spg} Monitoring Parameters and for all Constituents of Concern which are not amenable to the statistical tests above (i.e., less than 10% of the data from background samples equal or exceed their respective MDL).

Each qualifying constituent at a Monitoring Point shall be determined based on either:

(1) the data from a single sample for that constituent, taken during that Reporting Period from that Monitoring Point, or
(2) (where several independent samples have been analyzed for that constituent at a given Monitoring Point) the data from the sample which contains the largest number of qualifying constituents.

Background shall be represented by the data from all samples taken from Background Monitoring Points during that Reporting Period (at least one sample from each Background Monitoring Point).

The method shall be implemented as follows:

a. *For the Volatile Organics Monitoring Parameter For Water Samples [VOC_{water}]*:
For any given Monitoring Point, the VOC_{water} Monitoring Parameter is a composite parameter addressing all detectable VOCs.

The Discharger shall conclude that a release is tentatively indicated for the VOC_{water} Monitoring Parameter if the data for any Monitoring Point contain either:

i. two or more qualifying VOCs that equal or exceed their respective MDLs, or
ii. one qualifying VOC that equals or exceeds its PQL.

b. *For the Volatile Organics Monitoring Parameter For Soil Pore Gas Samples [VOC_{spg}]*:

The VOC_{spg} Monitoring Parameter is a composite parameter for soil pore gas addressing all VOCs detectable using either GC or GC/MS analysis of at least a ten liter sample of soil pore gas (e.g., collected in a vacuum canister). It involves the same scope of VOCs as does the VOC_{water} Monitoring Parameter.

The Discharger shall conclude that a release is tentatively indicated for the VOC_{spg} Monitoring Parameter if the data for any Monitoring Point contain either:

i. two or more qualifying VOCs that equal or exceed their respective MDLs, or
ii. one qualifying VOC that equals or exceeds its PQL.

c. *For Constituents of Concern*:

The Discharger shall conclude that a release is tentatively indicated if the data for any Monitoring Point contain either:

i. two or more qualifying constituents that equal or exceed their respective MDLs, or
ii. one qualifying constituent which exceeds its PQL.

RESPONSE TO A RELEASE

General

1. If the Discharger determines that there is significant **statistical evidence of a release** (i.e. the initial statistical comparison or non-statistical comparison indicates, for any Constituent of Concern or Monitoring Parameter, that a release is tentatively identified), the Discharger shall immediately notify the Board verbally as to the Monitoring Point(s) and constituent(s) or parameter(s) involved, shall provide written notification by certified mail within seven days of such determination [2550.80(1)], and shall carry out a **discrete retest** *(see below)*.

   If the retest confirms the existence of a release, the Discharger shall carry out the requirements of **3. below**. In any case, the Discharger shall inform the Board of the outcome of the retest as soon as the results are available, following up with written results submitted by certified mail within seven days of completing the retest.

2. If the Discharger determines that there is significant **physical evidence of a release**, the Discharger shall notify the Board of this fact by telephone within 24 hours and by certified mail within 7 days, and shall carry out the requirements of **3. below** for all potentially-affected monitored media.

3. If the Discharger concludes that a release has been discovered:

   a. If this conclusion is not based upon “direct monitoring” of the Constituents of Concern, then the Discharger shall, within thirty days, sample for all Constituents of Concern at all Monitoring Points in the affected medium for the waste management unit and submit

them for laboratory analysis. Within seven days of receiving the laboratory analytical results, the Discharger shall notify the Regional Board, by certified mail, of the concentration of all Constituents of Concern at each Monitoring Point in the affected medium. Because this scan is not to be statistically tested against background, only a single datum is required for each Constituent of Concern at each Monitoring Point [2550.8(k)(1)].

b. The Discharger shall, within 90 days of discovering the release, submit a Revised Report of Waste Discharge proposing an Evaluation Monitoring Program meeting the requirements of 2550.8(k)(5) and 2550.9 of Article 5, and, if Part 258 is applicable to the site, satisfying the requirements of 40 CFR 258.55 .

c. The Discharger shall, within 180 days of discovering the release, submit to the Board a preliminary engineering feasibility study meeting the requirements of 2550.8(k)(6) of Article 5.

Discrete Retest

In the event that the Discharger concludes that a release has been tentatively indicated (under the statistical or nonstatistical methods above), the Discharger shall, within 30 days of this indication, collect two new suites of samples for the indicated Constituent(s) of Concern or Monitoring Parameter(s) at each indicating Monitoring Point, collecting at least as many samples per suite as were used for the initial test. Resampling of the Background Monitoring Points is optional. Samples shall be analyzed using the same analytical methods which produced the original data which showed tentative evidence of a release. Sample data shall be analyzed using the same statistical procedure or non-statistical procedure which provided the tentative evidence of a release.

As soon as the data are available, the Discharger shall rerun the statistical method (or non-statistical comparison) separately upon each suite of retest data. For any indicated Monitoring Parameter or Constituent of Concern at an affected Monitoring Point, if the test results of either (or both) of the retest data suites confirm the original indication, the Discharger shall conclude that a release has been discovered.

All retests shall be carried out only for the Monitoring Point(s) for which a release is tentatively indicated, and only for the Constituents of Concern or Monitoring Parameters which triggered the indication there, as follows:

1. If an ANOVA method was used for the original data, the retest shall involve only a repeat of the multiple comparison procedure, carried out separately on each of the two new suites of samples taken from the indicating Monitoring Point;

2. If the Method of Proportions statistical test was used for the original data, the retest shall consist of a full repeat of the statistical test for the indicated constituent or parameter, performed separately on each of the new sample suites from the indicating Monitoring Point;

3. If the non-statistical method was used for the original data:

   a. Because the VOC Monitoring Parameters [VOC_{water} or VOC_{spg}] each address, as a single parameter, an entire family of constituents which are likely to be present in any landfill release, the scope of the laboratory analysis for each retest sample shall include all VOCs detectable in that retest sample. Therefore, a confirming retest for either parameter shall have validated the original indication even if the suite of constituents in the confirming retest sample(s) differs from that in the sample which initiated the retest;

   b. Because all Constituents of Concern that are jointly addressed in the non-statistical testing remain as individual Constituents of Concern, the scope of the laboratory analysis for the nonstatistical retest samples shall be narrowed to involve only those constituents detected in the sample which initiated the retest.

Response to Detection in Background of VOCs
(or any other constituent which is expected to be "zero" in background and thus not amenable to statistical analysis)

1. Except as provided in 3. below, any time the laboratory analysis of a sample from a Background Monitoring Point, sampled for VOCs, shows either:

   (1) two or more VOCs at or above their respective MDL, or
   (2) one VOC at or above its respective PQL,

   then the Discharger shall:
   a. immediately notify the Board by phone,
   b. follow up with written notification by certified mail within seven days,
   c. obtain two new independent VOC samples from that Background Monitoring Point
   d. and send such samples for laboratory analysis of all detectable VOCs within thirty days.

2. If either or both the new samples validates the presence of VOC(s), using the above procedure, the Discharger shall:

   a. immediately notify the Regional Board about the VOC(s) verified to be present at that Background Monitoring Point, and follow up with written notification submitted by certified mail within seven days of validation; and

b. within 180 days of validation, submit a report—acceptable to the Executive Officer—which examines the possibility that the detected VOC(s) originated from the Unit and proposing appropriate changes to the monitoring program.

3. If the Executive Officer determines, after reviewing the report submitted under 2.b. above, that the VOC(s) detected originated from a source other than the WMU, the Executive Officer will make appropriate changes to the monitoring program.

4. If the Executive Officer determines, after reviewing the report submitted under 2.b. above, that the detected VOC(s) most likely originated from the WMU, the Discharger shall assume that a release has been detected and shall immediately begin carrying out the applicable General requirements for Response to a Release, above.

Release beyond facility boundary

1. Any time the discharger concludes that a release from the waste management unit has proceeded beyond the facility boundary, the discharger shall so notify all persons who either own or reside upon the land that directly overlies any part of the plume (Affected Persons).

2. Initial notification to Affected Persons shall be accomplished within 14 days of making this conclusion and shall include a description of the discharger's current knowledge of the nature and extent of the release.

3. Subsequent to initial notification, the discharger shall provide updates to all Affected Persons, including any persons newly affected by a change in the boundary of the release, within 14 days of concluding there has been any material change in the nature or extent of the release.

4. Each time the discharger sends a notification to Affected Persons, the discharger shall provide the Board, within seven days of sending such notification, with both a copy of the notification and a current mailing list of Affected Persons.

STANDARD CONDITIONS

Supervision and Certification

1. All waste management units shall be **designed and constructed** under the direct supervision of a California registered civil engineer or a certified engineering geologist and shall be certified by that individual as meeting the prescriptive standards, or approved engineered alternative design, and performance goals of Chapter 15 prior to waste discharge.

2. All ground water monitoring and corrective action required for MSWLF units pursuant to 40 CFR Part 258 shall be implemented and certified, as appropriate, by a qualified ground water scientist as specified in 40 CFR 258.50(f).

3. Designs of waste management units shall include a **Construction Quality Assurance Plan**, which shall:

   a. be submitted for review and approval by the Board prior to construction;
   b. demonstrate that the waste management unit has been constructed according to the specifications and plans as approved by the Board; and
   c. provide quality control on the materials and construction practices used to construct the waste management unit and prevent the use of inferior products and/or materials which do not meet the approved design plans or specifications.

4. **Closure** of each waste management unit shall be performed under the direct supervision of a California registered civil engineer or California certified engineering geologist.

Construction

1. 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 units.

2. Materials used to construct **leachate collection and removal systems** (LCRSs) shall have appropriate physical and chemical properties to ensure the required transmission of leachate over the life of the WMUs and the post-closure maintenance period.

3. Hydraulic conductivities determined through laboratory methods shall be confirmed by appropriate **field testing**, and the results shall be submitted to the Board prior to construction.

Operations

1. The discharger shall maintain in **good working order** and operate as efficiently as possible any facility, control system, or monitoring device installed to achieve compliance with the waste discharge requirements.

2. For any **electrically** operated equipment at the site, the **failure** of which could cause loss of control or containment of waste materials, or violation of this Order, the discharger shall employ safeguards to prevent loss of control over wastes. Such safeguards may include alternate power sources, standby generators, retention capacity, operating procedures, or other means.

3. 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.

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

5. By the effective date of waste discharge requirements, the discharger shall have a plan for preventing and controlling **accidental discharges**, and for minimizing the effect of such events. This plan shall:

   a. Identify the possible sources of accidental loss or leakage of wastes from each waste storage, treatment, or disposal unit.
   b. Evaluate the effectiveness of present waste management units and operational procedures, and identify needed changes or contingency plans.
   c. Predict the effectiveness of the proposed changes in waste management facilities and procedures and provide an implementation schedule containing interim and final dates when changes will be implemented.

   The Board, after review of the plan, may establish conditions that it deems necessary to control leakage and minimize its effects.

6. Methane and other **landfill gases** shall be adequately vented, removed from landfill units, or otherwise controlled to prevent the danger of explosion, adverse health effects, nuisance conditions, or the impairment of beneficial uses of water due to migration through the vadose (unsaturated) zone.

7. During the rainy season a minimum one-foot thickness of low permeability **soil or alternative cover**, approved by the Board and by the California Integrated Waste Management Board, shall be maintained over all but the active disposal area of the landfill units. The active disposal area shall be confined to the smallest area practicable based on the anticipated quantity of waste discharge and other waste management facility operations.

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

9. Surface impoundments shall be designed, constructed and maintained to prevent scouring and/or erosion of the liners and other containment features at points of discharge to the impoundments and by wave action at the waterline.

10. Leachate removed from a surface impoundment LCRS shall be discharged to the impoundment from which it originated. Leachate removed from a landfill shall not be discharged to any landfill.

11. Solids which accumulate in a surface impoundment shall be periodically removed to maintain minimum freeboard requirements and to maintain sufficient capacity for landfill and surface impoundment leachate and for the discharge of wastes. Prior to removal of these solids, sufficient samples shall be taken for their characterization and classification pursuant to Article 2 of Chapter 15. The rationale for the sampling protocol used, the results of this sampling, and a rationale for classification of the solids shall be submitted to the Board for review. The solids may be discharged to the Class III landfill units only if the Board determines that they qualify for classification as “nonhazardous solid waste” or “inert waste.”

12. Water used for facility maintenance shall be limited to the minimum amount necessary for dust control.

Siting

1. Waste management units shall be designed, constructed, and operated to prevent inundation or washout due to floods with a 100-year return period.

   Class II 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 1000-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.

   Class III landfill units and related containment structures shall be constructed and maintained to prevent, to the greatest extent possible, ponding, infiltration, inundation, erosion, slope failure, washout, and overtopping under 100-year, 24-hour precipitation conditions.

2. Surface drainage from tributary areas and internal site drainage from surface or subsurface sources shall not contact or percolate through wastes, and shall either be contained on-site or be discharged in accordance with applicable storm water regulations.

Closure

1. Closed WMUs shall be provided with at least two **permanent monuments**, installed by a licensed land surveyor or by a registered civil engineer authorized to perform land surveying, from which the location and elevation of all wastes, containment structures, and monitoring facilities can be determined throughout the post-closure maintenance period.

2. Areas with **slopes greater than ten percent**, surface drainage courses, and areas subject to erosion by wind or water shall be designed and constructed to prevent such erosion.

Post-Closure

1. The post-closure maintenance period shall continue until the Board determines that remaining wastes in all WMUs will not threaten water quality.

2. The owner of the waste management facility shall have the continuing responsibility to assure protection of usable waters from discharged wastes and from gases and leachate generated by discharged waste during the active life, closure, and post-closure maintenance period of the WMUs and during subsequent use of the property for other purposes.

DEFINITIONS

Unless otherwise stated, all terms are as defined in Chapter 2, Division 7, of the California Water Code (Section 13050 et.seq.), in Article 10, Chapter 15, Division 3, Title 23 of the California Code of Regulations (23 CCR 2600 et.seq.), and in Section 258.2, and elsewhere in Part 258, Title 40 of the Code of Federal Regulations.

The following additional definitions apply to the Order:

1. "**Affected Persons**" means all individuals who either own or occupy land outside the boundaries of the parcel upon which the landfill is located that has been or may be affected by the release of leachate or waste constituents (in gas or liquid phase) from an MSW landfill.

2. "**Background Monitoring Point**" means a device (e.g., well) or location (e.g., a specific point along a lakeshore), upgradient or sidegradient from the waste management unit, or as otherwise approved by the Executive Officer, where water quality samples are taken that are not affected by any release from the waste management unit and that are used as a basis of comparison against samples taken from downgradient Monitoring Points.

3. "**Composite liner**" means a liner that consists of two or more components, which include a Synthetic Liner in direct and uniform contact with an underlying layer of prepared, low-permeability soil such that the net permeability of the resulting combination is significantly less than would be expected by reference to the permeability of the individual components layers.

4. Unless otherwise specified, "**composite sample**" means a combination of individual samples either collected over a specified sampling period or collected over an area at one time (synoptically):
   a. at equal time intervals,
   b. at varying time intervals so that each sample represents an equal portion of the media to be sampled.

The duration of the sampling period shall be specified in the Monitoring and Reporting Program. The method of compositing shall be reported with the results.

5. "**Constituents of Concern (COC)**" means those constituents which are likely to be in the waste in the WMU or which are likely to be derived from waste constituents in the event of a release.

6. "**Daily maximum concentration**" means the highest measurement made on any single discrete sample or composite sample.

7. "**Existing Footprint**" means the portion of land covered by waste discharged to an MSWLF as of midnight on the day before the Federal Deadline. The term includes the area under the active face of the landfill as well as all portions of the landfill unit containing waste that is obscured from view by daily, intermediate, or permanent cover. The term includes only areas covered with waste that is discharged in a manner that is consistent either with past operating practices or with modifications thereof that ensure good management of the waste. The term has the same meaning as the area enclosed by the "waste boundaries of an existing MSWLF unit," as used in the definition of the federal term of art "lateral expansion" in 40 CFR 258.2.

8. "**Federal Deadline**" means the date listed in 40 CFR 258(j)—currently October 9, 1993—when the majority of the provisions in the federal MSW regulations become effective.

9. "**Federal MSW regulations**" means the regulations promulgated by the United States Environmental Protection Agency on October 9, 1991 (Title 40, Code of Federal Regulations, Parts 257 and 258).

10. "**Grab sample**" means a discrete sample collected in less than 15 minutes.

11. "**Matrix effect**" means any change in the method detection limit or practical quantitation limit for a given analyte as a result of the presence of other constituents - either of natural origin or introduced by humans as a result of a release or spill - that are present in the sample of water or soil-pore gas being analyzed.

12. "**Method detection limit** (**MDL**)" means the lowest constituent concentration associated with a 99% reliability of a "non-zero" analytical result. The MDL shall reflect the detection capabilities of the specific analytical procedure and equipment used by the laboratory. MDLs reported by the laboratory shall not simply be restated from USEPA analytical method manuals. In relatively interference-free water, laboratory-derived MDLs are expected to closely agree with published USEPA MDLs. If the lab suspects that, due to matrix or other effects, the detection limit for a particular analytical run differs significantly from the laboratory-derived MDL, the results should be flagged accordingly, along with an estimate of the detection limit achieved.

13. "**Monitoring Parameters**" means the short list of constituents and parameters used for the majority of monitoring activity at a given WMU. Monitoring for the short list of Monitoring Parameters constitutes "indirect monitoring," in that the results are used to indicate indirectly the success or failure of adequate containment for the longer list of Constituents of Concern.

14. "**Monitored Media**" means those water-, solid-, or gas-bearing media that are monitored pursuant to the Monitoring and Reporting Program. The Monitored Media may include:
    a. Ground water in the uppermost aquifer, in any other portion of the zone of saturation in which it would be reasonable to anticipate that waste constituents migrating from the WMU could be detected, and in any perched zones underlying the WMU,
    b. Any bodies of surface water that could be measurably affected by a release,
    c. Soil pore liquid beneath and/or adjacent to the WMU, and
    d. Soil pore gas beneath and/or adjacent to the Unit.

15. "**Monitoring Point**" means a device (e.g., well) or location (e.g., a specific point along a lakeshore), downgradient from the landfill and that is assigned in this Order, at which samples are collected for the purpose of detecting a release by comparison with samples collected at Background Monitoring Points.

16. "**Monthly average concentration**" means the arithmetic mean of measurements made during the month.

17. "**Monthly average discharge**" means the total discharge by volume during a calendar month divided by the number of days in the month that the facility was discharging (e.g. gallons per day, cubic feet per day).

    Where less than daily sampling is required by this Order, the monthly average shall be determined by the summation of all the measured discharges divided by the number of days during the month when the measurements were made.

18. "**MSWLF, or MSW landfill**" means a Class II or Class III landfill unit in this region that accepts, or has accepted, municipal solid wastes, and that is subject to regulation under either or both Chapter 15 and the federal MSW regulations.

19. "**Order**," as used throughout this document, means the Waste Discharge Requirements. The Monitoring and Reporting Program and Standard Provisions and Reporting Requirements are incorporated by reference into the Waste Discharge Requirements.

20. "**Practical quantitation limit** (**PQL**)" means the lowest constituent concentration at which a numerical concentration can be assigned with reasonable certainty that its value 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. The PQL

shall reflect the quantitation capabilities of the specific analytical procedure and equipment used by the laboratory. PQLs reported by the laboratory shall not simply be restated from U.S. EPA analytical method manuals. In relatively interference-free water, laboratory-derived PQLs are expected to closely agree with published U. S. EPA PQLs. If the lab suspects that, due to matrix or other effects, the quantitation limit for a particular analytical run differs significantly from the laboratory-derived PQL, the results should be flagged accordingly, along with an estimate of the quantitation limit achieved.

21. "**Reporting Period**" means the time interval during which samples are collected and analyzed, and the results then reported to the Board, to comply with a specified monitoring and reporting frequency. The maximum reporting period for analysis of all Constituents of Concern is five years; for Monitoring Parameters it is six months (generally, Spring/Summer = April 1 to September 30, and Fall/Winter = October 1 to March 31). The Reporting Period for the Annual Summary Report extends from April 1 of the previous year to March 31 of the current year. The due date for the submittal of any given report will be 15 days after the end of its Reporting Period, unless otherwise stated.

22. "**Receiving Waters**" refers to any surface or ground water which actually or potentially receives waste constituents, leachate, or surface or ground waters which come in contact with waste materials or contaminated soils.

23. "**Sample size**":

    a. For Monitoring Points, means the number of data points obtained from a given Monitoring Point during a given Reporting Period used for carrying out the statistical or non-statistical analysis of a given analyte during a given Reporting Period; or
    b. For Background Monitoring Points, means the number of new and existing data points collected under 2550.7(e)(11 and 12) from all applicable Background Monitoring Points in a given monitored medium—used to collectively represent the background concentration and variability of a given analyte in carrying out statistical or non-statistical analysis of that analyte during a given Reporting Period.

24. "**Standard Observations**" means:

    a. For Receiving Waters:

        i. Floating and suspended materials of waste origin: presence or absence, source, and size of affected area;
        ii. Discoloration and turbidity: description of color, source, and size of affected area;
        iii. Evidence of odors: presence or absence, characterization, source, and distance of travel from source;
        iv. Evidence of water uses: presence of water-associated wildlife;

v. Flow rate; and
vi. Weather conditions: wind direction and estimated velocity, total precipitation during recent days and on the day of observation;

b. Along the perimeter of the WMU:

i. Evidence of liquid leaving or entering the Unit, estimated size of affected area, and flow rate (show affected area on map);
ii. Evidence of odors: presence or absence, characterization, source, and distance of travel from source; and
iii. Evidence of erosion and/or of daylighted refuse.

c. For the WMU:

i. Evidence of ponded water at any point on the waste management facility (show affected area on map);
ii. Evidence of odors: presence or absence, characterization, source, and distance of travel from source; and
iii. Evidence of erosion and/or of daylighted refuse.

25. "**Standard Analysis and Measurements**" means:

a. Turbidity, in NTU;
b. Water elevation to the nearest 1/100th foot above mean sea level; and
c. Sampling and statistical/non-statistical analysis of the Monitoring Parameters.

26. "**Synthetic Liner**" means a layer of flexible, man-made material that is installed in accordance with the standard of the industry over an area of land prior to the discharge of waste there.

27. "**VOC_{water}**" (Volatile Organics Monitoring Parameter for Water) means the composite monitoring parameter encompassing all VOCs that are detectable in less than ten percent of applicable background samples from a monitored water-bearing medium (e.g., the unsaturated zone, the uppermost aquifer, a zone of perched ground water, or a surface water body). This parameter is analyzed via the non-statistical analytical method described elsewhere in this Order to identify a release to waters of the state of VOCs whose presence in background water is detected too infrequently to allow statistical analysis.

28. "**VOC_{spg}**" (Volatile Organics Monitoring Parameter for Soil Pore Gas) means Monitoring Parameters addressing all volatile organic constituents detectable in a sample of soil pore gas.

29. "**Volatile organic constituents** (**VOCs**)" means the suite of organic constituents having a high vapor pressure. The term includes at least the 47 organic constituents listed in Appendix I to 40 CFR Part 258.

Partial Table of Contents for

STANDARD PROVISIONS AND REPORTING REQUIREMENTS
for Chapter 15 (23 CCR 2510, et seq.) and Part 258 (40 CFR 258)
September 1993

INFORMATION SHEET

ORDER R5-2014-0003
WASTE DISCHARGE REQUIREMENTS
FOR CHEMICAL WASTE MANAGEMENT, INC.
CLASS I WASTE MANAGEMENT UNITS
KETTLEMAN HILLS FACILITY, KINGS COUNTY

Chemical Waste Management, Inc. (CWMI) owns and operates the 1,600-acre Kettleman Hills Facility (KHF), which is located one mile north of State Highway 41 and 3.5 miles southwest of Kettleman City in Kings County. The disposal of Class I hazardous waste at the KHF is currently regulated by Waste Discharge Requirements (WDRs) Order 98-058, which was issued by the California Regional Water Quality Control Board, Central Valley Region (Central Valley Water Board) on 27 February 1998, and a Department of Toxic Substances Control (DTSC) Hazardous Waste Facility Permit. The WDRs regulate the disposal and monitoring of Resource Conservation and Recovery Act hazardous waste, and California Class I hazardous and Class II designated wastes discharged to Class I waste management units (WMUs) at the KHF.

The geologic setting of the KHF is on the west flank of the North Kettleman Dome anticline. Site topography is characterized by rolling hills and incised ephemeral stream drainages, with elevations varying from 700 to 1,015 feet above mean sea level. Northwest to southeast trending ridges form a physical topographic barrier east of the KHF that would prevent any runoff from flowing towards the Kettleman City area.

Ephemeral streams to the east of the KHF drain southeast into the Kettleman Hills and Los Viejos Hills and terminate in the permeable alluvium. The ephemeral streams to the west-southwest of the KHF drain south-southwest towards the Kettleman Plain, where surface water runoff terminates in permeable alluvium soil. Surface runoff that collects on the KHF is contained by the facility's storm water retention ponds and does not leave the site. The nearest perennial surface water body is the California Aqueduct, which is east of the KHF towards Kettleman City area, and about 3.5 miles away from the KHF at its nearest point. The KHF is not located within a 100-year flood plain, and the WMUs are not located in areas subject to rapid geologic change.

Naturally occurring groundwater quality beneath the KHF is poor, with total dissolved solids ranging from 1,700 to greater than 15,000 milligrams per liter. The depth to groundwater ranges from 330 feet to greater than 520 feet below the ground surface. Well yields are low, ranging from 0.1 gallons per minute (gpm) to 5.5 gpm. Groundwater flows predominately to the southeast at less than 10 feet per year, with a hydraulic gradient of 0.001. Groundwater in the San Joaquin Formation below the KHF is hydrogeologically isolated from water supply aquifers in the San Joaquin Valley. Central Valley Water Board Resolution 89-155 amended *The Water Quality Control Plan for the Tulare Lake Basin, 2nd Edition (Revised 2004)*(Basin Plan) to de-designate the municipal or domestic supply (MUN) beneficial use from the groundwater contained in the San Joaquin, Etchegoin, and Jacalitos Formations within one-half mile of the KHF's Class I surface impoundments.

In the mid- to late 1980's, groundwater sampling identified releases from unlined WMUs at the KHF. A subsequent investigation showed that although pollutants had impacted groundwater in the underlying San Joaquin Formation, these impacts were highly localized; only groundwater beneath and/or slightly downgradient of the WMUs was affected, due to the fact that groundwater in the area has a very low flow velocity. In response to the releases, all of the unlined WMUs were either closed or were bought up to current operating standards through the installation of appropriate engineered containment

systems. A pump-and-treat system was also installed to remediate the groundwater impacts and to ensure that the releases did not spread. Operation of the pump-and-treat system was suspended in 2007 after DTSC and Central Valley Water Board determined that the system had been effective. Since that time, quarterly groundwater sampling is still being conducted and monitored natural attenuation continues. The sampling confirms that the impacted groundwater remains within the KHF boundary.

Approximately 3.5 miles east of the KHF, groundwater wells in the Kettleman City area are used for irrigation, industrial supply, and domestic and municipal water supply. The wells produce groundwater from the alluvium and upper Tulare Formation from depths of 300 to 1,000 feet below ground surface, which is isolated from groundwater below the KHF. Concentrations of Total Dissolved Solids in two drinking water wells serving Kettleman City range from 573 to 907 milligrams per liter. Benzene concentrations in groundwater samples range from non-detect to 61 micrograms per liter (µg/L), and arsenic concentrations range from 2 to 20 µg/L. Treatment removes benzene from groundwater before it is distributed to homes. The California Department of Public Health (CDPH) has provided financial support to the local water district, which is studying options to bring the drinking water into compliance with drinking water standards, which may include improved treatment or obtaining surface water from the California Aqueduct.

Starting in 2006, several birth defects were observed in the Kettleman City area, and community members questioned whether there was a potential link between the birth defects and the Kettleman Hills hazardous waste disposal facility or were caused by other environmental exposures. Responding to these concerns, in January 2010 Governor Arnold Schwarzenegger directed the California Environmental Protection Agency (CalEPA) and the CDPH to investigate whether environmental contaminants in the air, water, and soil could have caused the birth defects. In December 2010, CalEPA and CDPH produced a report, *Investigation of Birth Defects and Community Exposures in Kettleman City CA*, which found that the levels of pollutants in the air, water, and soil of Kettleman City were comparable to those found in other San Joaquin Valley communities. The report also concluded that benzene and arsenic in the groundwater was naturally occurring (as is the case throughout the Central Valley). The investigation did not find a specific cause or environmental exposure that would explain the increase in the number of children born with birth defects.

The revised WDRs will:

1) Regulate the construction and continued operation of the Phase III Expansion and the final closure of Class I/II Landfill B-18. The Phase III Expansion will increase the landfill footprint from 53 to 67 acres, and will adding about 4,900,000 cubic yards of waste disposal capacity to extend the landfill's operating life by about 8 to 9 years. The Kings County Planning Commission approved Conditional Use Permit (CUP 05-10) for CWMI, which increased the operations area from 499 to 695.5 acres for the Landfill B-18 Phase III Expansion and authorized the construction of Class I Landfill B-20 (the revised WDRs do not address proposed Landfill B-20). The Landfill B-18 Phase III Expansion is a sideslope expansion with a liner system that exceeds the prescriptive and performance standards contained in the California Code of Regulations, title 23, chapter 15 (Chapter 15). The Board considers the existing

groundwater monitoring well network to be adequate, and is not requiring the installation of additional groundwater monitoring wells at this time.

2) Regulate the discharge of liquid hazardous and designated waste to surface impoundments P-9, P-14, and P-16.

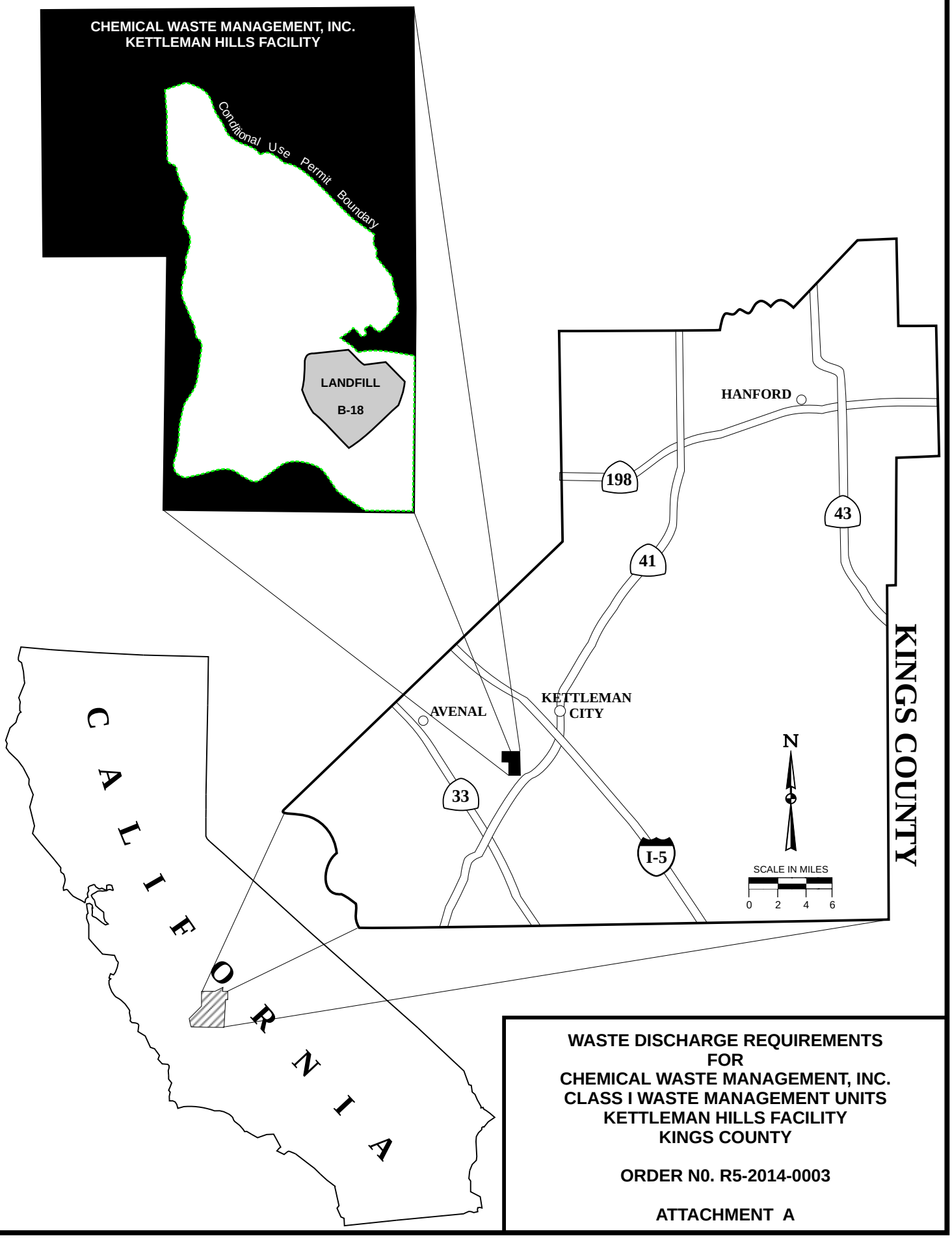
3) Address the closure and post-closure monitoring of the Class I WMUs at the KHF.

4) Reduce the groundwater monitoring frequency from quarterly to semi-annual. This reduction is based on the consistency of historic groundwater sampling results and the low groundwater flow velocities beneath the KHF. With groundwater flow velocities less than 10 feet per year, the reduction from quarterly to semi-annual sampling would only allow contaminants to migrate a maximum additional distance of about 2.5 feet before they would be detected during the next semi-annual sampling event. Depth-to-water measurements and flow velocities will still be documented quarterly. Resampling is required to verify any detection greater than a water quality protection standard. Semi-annual sampling may only be implemented when also allowed by the Hazardous Waste Facility Permit issued by DTSC.

5) Require CWMI to collect samples from the leachate collection and removal system (LCRS) each quarter for the first four quarters after waste is placed in the B-18 Phase III Expansion WMU. These samples will be analyzed for all constituents of concern. LCRS sampling will continue annually thereafter.

6) Update and revise the technical information contained in the Findings. Order R5-2014-0003 will be incorporated by reference into the DTSC Hazardous Waste Facility Permit.

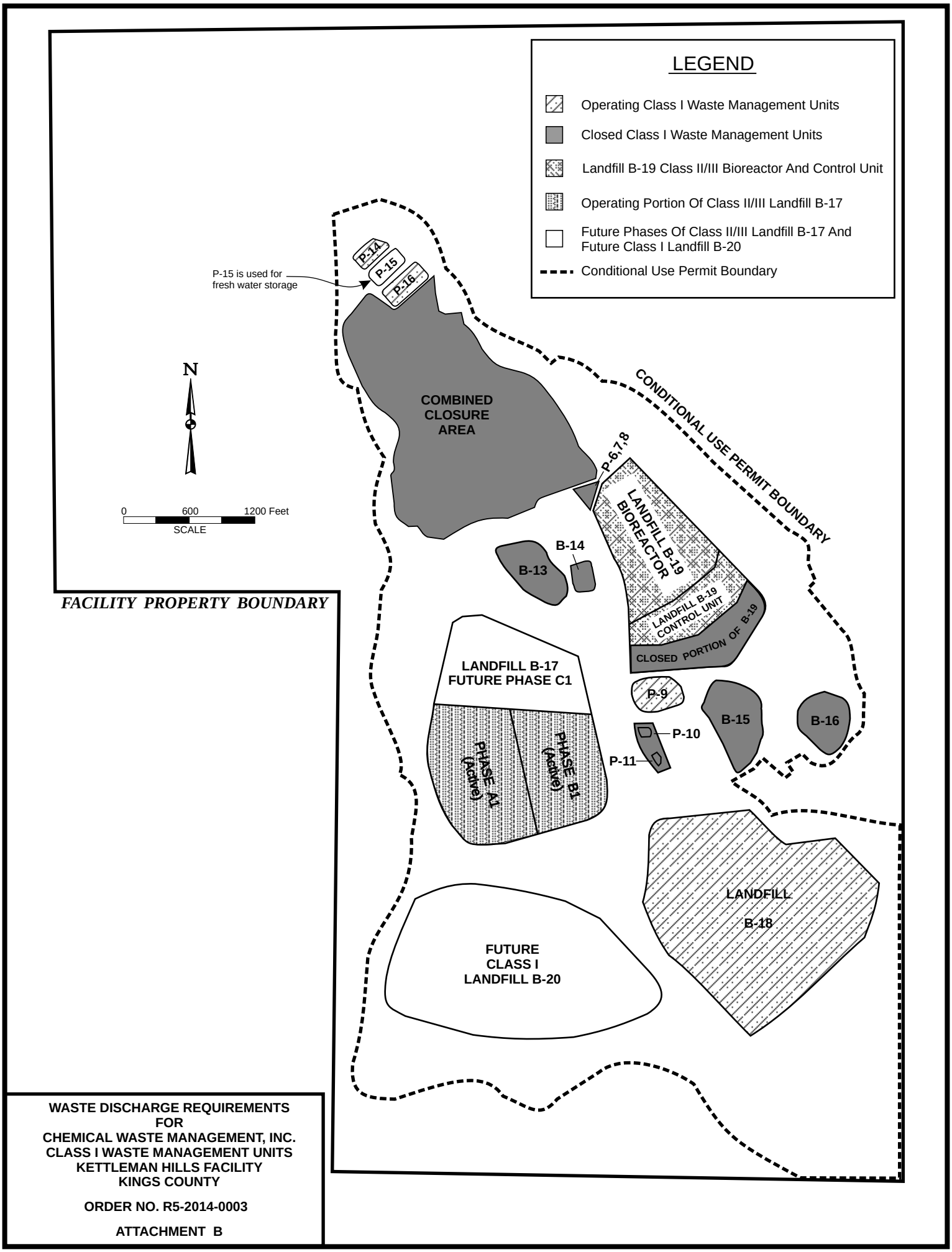
To fulfill requirements imposed by the California Environmental Quality Act (Pub. Resources Code, § 21000 et seq.), Kings County prepared and certified a Final Subsequent Environmental Impact Report for the B-18/B-20 Hazardous Waste Disposal Project and filed a Notice of Determination on 22 December 2009. The Central Valley Water Board, acting as a responsible agency, was consulted during the development of these documents. Compliance with the WDRs will preclude and mitigate any adverse impacts to water quality. The WDRs implement the Basin Plan and the prescriptive standards and performance goals of Chapter 15 of Title 23 of the California Code of Regulations for the construction, operation, and closure of Class I WMUs. CWMI is required to submit a Report of Waste Discharge prior to proposing the construction of any additional WMUs.



WASTE DISCHARGE REQUIREMENTS
FOR
CHEMICAL WASTE MANAGEMENT, INC.
CLASS I WASTE MANAGEMENT UNITS
KETTLEMAN HILLS FACILITY
KINGS COUNTY

ORDER N0. R5-2014-0003

ATTACHMENT A

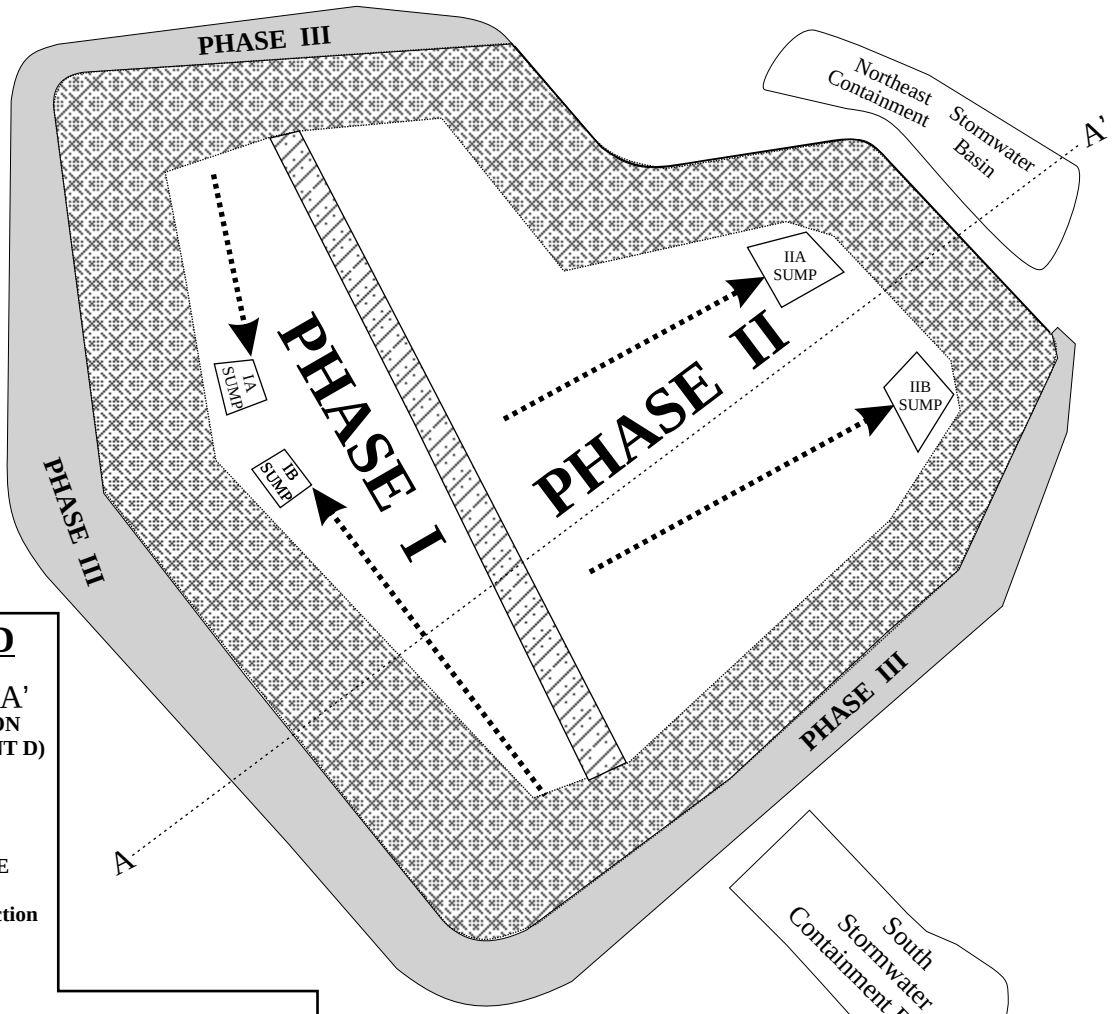


WASTE DISCHARGE REQUIREMENTS FOR CHEMICAL WASTE MANAGEMENT, INC. CLASS I WASTE MANAGEMENT UNITS KETTLEMAN HILLS FACILITY KINGS COUNTY

ORDER NO. R5-2014-0003

ATTACHMENT B

LANDFILL B-18



LEGEND

A·····A'
CROSS-SECTION (see ATTACHMENT D)

VADOSE ZONE TRENCHES (arrows show direction of drainage)

PHASE III SIDESLOPE EXPANSION AREA (13.8 acres)

LANDFILL SIDESLOPES (PHASE I & II)

LANDFILL BASE (PHASE I & II)

SUBGRADE BERM DIVIDING PHASE I AND II

N

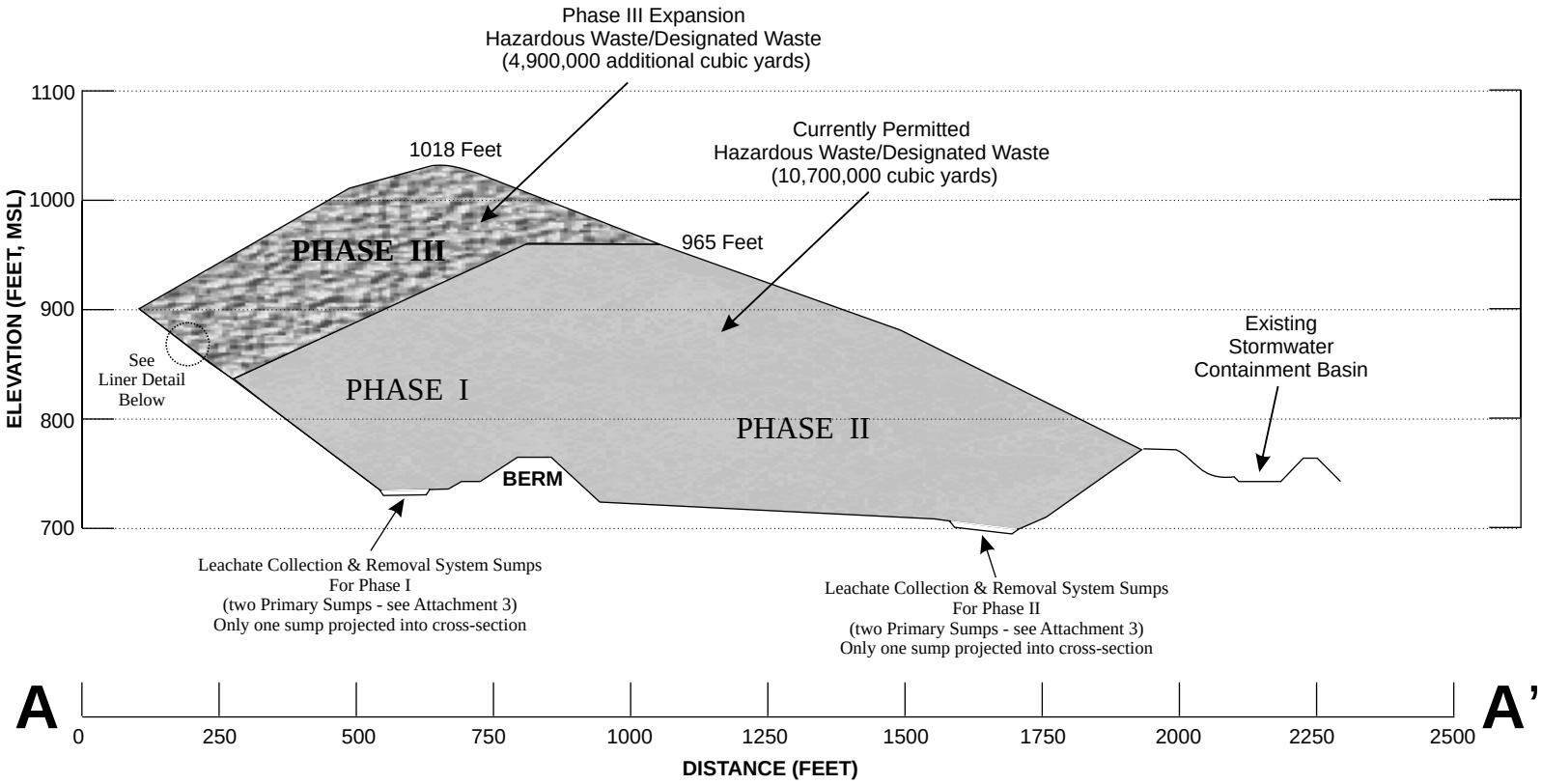
0 200 400
SCALE IN FEET

WASTE DISCHARGE REQUIREMENTS FOR CHEMICAL WASTE MANAGEMENT, INC. CLASS I WASTE MANAGEMENT UNITS KETTLEMAN HILLS FACILITY KINGS COUNTY

ORDER NO. R5-2014-0003

ATTACHMENT C

LANDFILL B-18 CROSS-SECTION



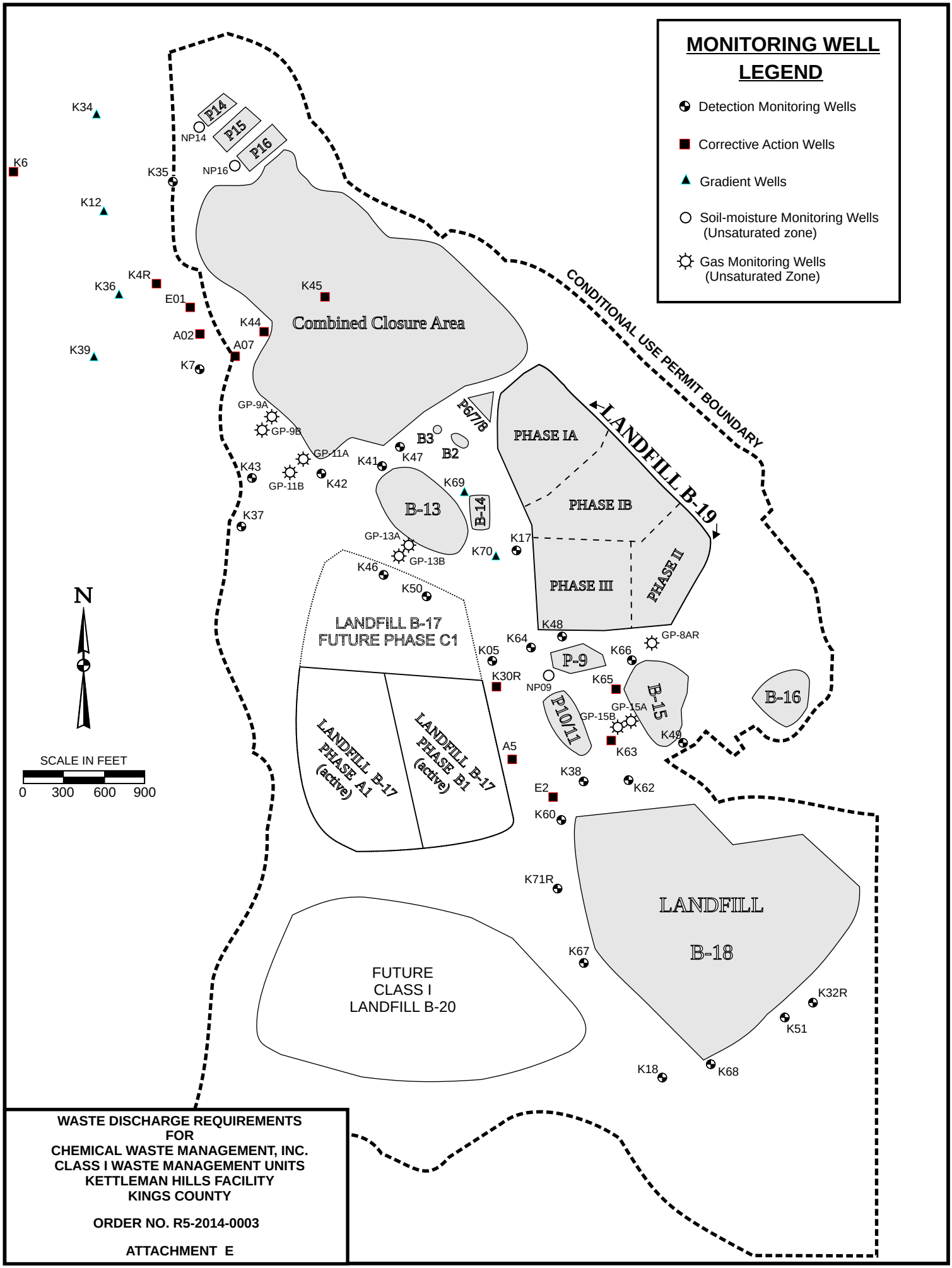
PHASE III EXPANSION
SIDESLOPE LINER DETAIL
(from bottom to top):

- a 3-foot thick clay liner compacted to achieve a hydraulic conductivity of 1 x 10^{-7} cm/sec or less
- a 60-mil HDPE geomembrane (textured on both sides)
- a double-sided geocomposite drainage layer
- a 60-mil HDPE geomembrane (textured on both sides)
- a double-sided geocomposite drainage layer
- a 40-mil smooth HDPE protective geomembrane, that is removed and replaced with the operations layer as the waste elevation increases.
- a two-foot thick soil operations layer.

WASTE DISCHARGE REQUIREMENTS
FOR
CHEMICAL WASTE MANAGEMENT, INC.
CLASS I WASTE MANAGEMENT UNITS
KETTLEMAN HILLS FACILITY
KINGS COUNTY

ORDER NO. R5-2014-0003

ATTACHMENT D



WASTE DISCHARGE REQUIREMENTS
FOR
CHEMICAL WASTE MANAGEMENT, INC.
CLASS I WASTE MANAGEMENT UNITS
KETTLEMAN HILLS FACILITY
KINGS COUNTY

ORDER NO. R5-2014-0003

ATTACHMENT E