

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER R5-2014-XXXX

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 to 10 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 ($\mu\text{g/L}$), and arsenic concentrations range from 2 to 20 $\mu\text{g/L}$. 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-____, 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 on 14 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. 31 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-_____.

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-_____.

F. GROUNDWATER MONITORING SPECIFICATIONS

1. Groundwater shall be monitored in accordance with MRP R5-2014-_____.
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-_____.
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-_____.
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-_____.

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. 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.
 6. 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
 7. 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.

8. 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).
9. 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-____ 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.

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

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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 Xx Month 2014.

PAMELA C. CREEDON, Executive Officer