

Item No. 9

July 20, 2001

ERRATA SHEET

Order No. 01-53

**Waste Discharge Requirements
for**

USA WASTE OF CALIFORNIA

**EL SOBRANTE LANDFILL
Class III Solid Waste Disposal Site
Riverside County, California**

(Language added is shaded)
(Language deleted is struck out)

STAFF REPORT

1. Page 1 of 3, paragraph 2: revise as follows:

The proposed expansion of the landfill will ~~add approximately~~ **increase the current refuse capacity of the landfill to approximately 108 million tons of refuse capacity, increasing and the life of the landfill by to approximately 30 years.**

ORDER NO. 01-53

2. Page 6 of 20, revise Finding 32, as shown:

32. USA Waste submitted an application on March 14, 2000, to expand the permitted footprint of the ESL. The phased lateral and vertical expansion will increase the current 90-acre disposal area to approximately 495 acres, and result in an increase in the final elevation of the landfill from 1,425 to 1,832 feet above MSL. The proposed expansion of the landfill will ~~add approximately 108 million~~ **99 million** tons of refuse capacity ~~to the current 9 million-ton capacity,~~ increasing the life of the landfill ~~by to~~ **to** approximately thirty years. The 405 acre landfill expansion area is located in Sections 23, 24, and 26, T4S, R6W, SBB&M, and is shown on Attachment B, which is hereby made a part of this order.

3. Page 7 of 20, revise Finding 37.a, as shown:
 - a. Provide minimum static and seismic stability as required under 27CCR §21750(f)(5) on steep side slopes. Steep cut slopes (e.g., ~~1.75:1~~ 1.5:1) are proposed at the landfill to decrease the amount of hard rock requiring excavation by blasting; and

M&RP NO. 01-53

4. Page 15 of 16, revise Reporting, paragraph C.6, as shown:
 - 6. Annual drainage control and maintenance report** — By October 1 of each year, all drainage and erosion control system construction and maintenance activities shall be completed. In accordance with ~~Provision D.5~~ Provision E.5 of WDR Order No. 01-53, annually, by December 31, a site drainage control and maintenance report containing the following information shall be submitted:
5. Page 15 of 16, revise Reporting, paragraph C.6.d, as shown:
 - d. An 11 x 17 inch (or better scale) facility site map required under ~~Provision D.5.e~~ Provision E.5.c of this order indicating the location of the elements listed in paragraph c, above, of this M&RP, and the flow direction of site drainage.

California Regional Water Quality Control Board
Santa Ana Region

Staff Report

July 20, 2001

ITEM: 9

SUBJECT: Revised Waste Discharge Requirements, Order No. 01-53, for USA Waste of California, El Sobrante Landfill, Corona, Riverside County

DISCUSSION:

USA Waste of California (USA Waste) owns and operates the El Sobrante Landfill (ESL), located at 10910 Dawson Canyon Road, Corona, California 91719-5020. The applicable regulations governing municipal solid waste landfills (MSWLFs) are contained in Division 2, Title 27, California Code of Regulations (27CCR).

USA Waste submitted an application on March 14, 2000, to expand the permitted footprint of the ESL. The phased lateral and vertical expansion will increase the current 90-acre disposal area to approximately 495 acres, and result in an increase in the final elevation of the landfill from 1,425 to 1,832 feet above MSL. The proposed expansion of the landfill will add approximately 108 million tons of refuse capacity, increasing the life of the landfill by approximately 30 years.

Groundwater beneath the ESL has exceeded the Ground Water Protection Standard (water standard) established for the facility in accordance with §§20390, 20395, and 20400 of 27CCR. USA Waste has implemented interim corrective measures at the site while continuing to assess the nature and extent of the release at the ESL.

The ESL currently operates under Waste Discharge Requirement (WDR) Order 85-131 as amended by Order No. 98-99. This order updates and replaces WDR Order No. 85-131, and those portions of WDR Order No. 98-99 that apply to the ESL. The existing WDRs for the ESL are being updated to reflect USA Waste's request for expansion of the ESL beyond its current permitted footprint; to incorporate requirements for the installation of engineered alternative liner systems; to implement those portions of the federal regulations that are not addressed by, or are more restrictive than, 27CCR; and to establish a timeframe for implementing a corrective action program (CAP) at the facility.

State Board Resolution No. 93-62 and 27CCR, §20080 allow for engineered alternatives to the prescriptive liner requirements, provided the performance criteria contained in 40CFR §258.40(a)(1) and (c), and 27CCR §20080(b) are satisfied. As part of the permit application for the expansion of the ESL, USA Waste has requested the use of an engineered alternative design (EAD) for both the bottom and side-slope liner systems in place of the prescriptive standard design for all new cells in the expansion area. The proposed EAD liner for the ESL expansion area includes the use of a subdrain system to intercept and collect the intermittent flow from seeps underneath the liner, in lieu

of a five-foot separation zone beneath the landfill. The leachate collection and removal system (LCRS) component (drainage layer) of the EAD meets the requirements of 27CCR §20340. Regional Board staff have evaluated USA Waste's engineering analysis and concluded that the EAD bottom and side-slope liner systems meet the requirements of 27CCR §20080(b, c) for protection of water quality.

Water quality monitoring at the site will be conducted in accordance with 27CCR §20425 (Evaluation Monitoring Program) and 40CFR §258.55 (Assessment Monitoring Program), in accordance with the parameters, schedules, and methods outlined in Monitoring and Reporting Program (M&RP) No. 01-53. All facility appurtenances and containment structures such as the LCRS, drainage and erosion control system, landfill gas extraction and collection system, groundwater treatment system, etc., are required to be operated and maintained in accordance with the requirements of 27CCR and Order No. 01-53. The requirements specified in Order No. 01-53 should be adequate to protect ground and surface water resources of the Region.

A Final Environmental Impact Report (EIR) for the expansion was prepared in accordance with §15167 of the California Environmental Quality Act (CEQA) Guidelines. On September 1, 1998, the Riverside County Board of Supervisors certified the EIR for the expansion of the ESL. Regional Board staff has reviewed and commented on the EIR. If the project is carried out in a manner that implements all the mitigation measures provided for in the EIR, and USA Waste complies with Order No. 01-53, there should be no adverse environmental impacts and adequate protection to water quality will be provided.

Regional Board staff have evaluated the Joint Technical Document (JTD) which includes the performance equivalency demonstration report, slope stability analyses, erosion and drainage control plans, construction quality assurance/ construction quality control (CQA/ CQC) plan, closure/ post-closure maintenance plan, and the financial assurance plan for the proposed expansion. USA Waste has demonstrated that the expansion of the ESL, if conducted as proposed, will not pollute or threaten to pollute the waters of the State. Further, based on the significantly enhanced containment and operational controls proposed by USA Waste, wastes discharged to the expansion area of the ESL during its operation and post-closure period should not pollute or threaten to pollute the waters of the State provided that the facility is also properly maintained in accordance with 27 CCR and its WDRs.

RECOMMENDATION:

Adopt Order No. 01-53 as presented.

Comments were solicited from the following agencies and/or persons:

Donna Orebec

U. S. Environmental Protection Agency, Region 9

Joe Mello/ Ed Wosika

State Water Resources Control Board, Division of Clean Water Programs

Ted Cobb

State Water Resources Control Board, Office of the Chief Counsel

Michael Driller

State Department of Water Resources, Sacramento

State Department of Health Services - San Diego/Santa Ana/San Bernardino

Julie Nauman

California Integrated Waste Management Board, Sacramento

Larry Bowen

South Coast Air Quality Management District, Diamond Bar

John Watkins/ Chuck Strey

Riverside County Department of Environmental Health Services, LEA

Robert Nelson

Riverside County Waste Management Department

Jeff M. Newman

Fish and Wildlife Service, Ecological Services, 2730 Loker Avenue West, Carlsbad, CA 92008

Mark Verwiel, R.G.

Manager, Hydrology Programs, Waste Management, Inc., 155 North Redwood Drive, Suite 250, San Rafael, CA 94903

John Workman, P.E.

Area Engineer, Waste Management. Inc., 9081 Tujunga Avenue, Sun Valley, CA 91352

Paul Willman

Environmental Compliance, Waste Management, Inc., 800 S. Temescal Street, Corona, CA 91719

E. William Hutton

Waste Management Legal Council, 920 Hampshire Road, Suite 6 Westlake Village, CA 91361-2815

Damon De Frates

District Manager, El Sobrante Landfill, Waste Management, Inc., 10910 Dawson Canyon Road, Corona, CA 92883

Brent McManigal

Synagro Composting Company of California, Inc., P.O. Box 7027, Corona, CA 92878-7027

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SANTA ANA REGION**

ORDER NO. 01-53

**WASTE DISCHARGE REQUIREMENTS
FOR**

USA WASTE OF CALIFORNIA

**EL SOBRANTE LANDFILL
CLASS III SOLID WASTE DISPOSAL SITE
RIVERSIDE COUNTY**

The California Regional Water Quality Control Board, Santa Ana Region (hereinafter Regional Board), finds that:

1. USA Waste of California (hereinafter USA Waste) owns and is responsible for the operation and maintenance of the El Sobrante Landfill (ESL). The ESL is a Class III landfill that accepts nonhazardous municipal solid waste (MSW).
2. The discharge of waste to land is regulated by Title 27, California Code of Regulations (27CCR). The terms used in this permit are defined in 27CCR §20264.
3. Landfilling operations at the ESL began in 1986. Approximately 90 acres of the original 178-acre site have been surveyed and permitted for landfilling. The existing, permitted portion of the ESL is located in the NE 1/4 of Section 26, T4S, R6W, SBB&M and is shown on Attachment A, which is hereby made a part of this order. The physical address for the landfill is 10910 Dawson Canyon Road, Corona, California 91719-5020.
4. The ESL currently operates under Waste Discharge Requirement (WDR) Order 85-131 as amended by Order No. 98-99. The current permitted capacity of the ESL is 16.4 million cubic yards (MCY). If the current permitted capacity of the ESL is not expanded, landfilling operations will end in October 2003. This order updates and replaces WDR Order No. 85-131, and those portions of WDR Order No. 98-99 that apply to the ESL.
5. Storm water discharges from the ESL are regulated by the State Water Control Board (SWRCB) Water Quality Order No. 97-03-DWQ, NPDES General Permit No. CAS000001, for discharges of storm water associated with industrial activities.
6. The ESL is currently in an Evaluation Monitoring Program (EMP). USA Waste has also implemented interim corrective measures at the site while continuing to assess the nature and extent of the release at the ESL.
7. The WDRs for the site are being updated to reflect USA Waste's request for expansion of the ESL beyond its current permitted footprint of approximately 90 acres to 495 acres,

and to implement those portions of the federal regulations that are not addressed by, or are more restrictive than, 27CCR, and to establish a timeframe for implementing corrective action.

8. The ESL is located in western Riverside County in the foothills east of the Temescal Valley, between Olsen Canyon and Dawson Canyon. Elevations across the site range from 1,150 feet above mean sea level (MSL) to 1,450 feet above MSL. Natural slopes range from 1.5 (horizontal): 1 (vertical) to nearly flat. The steeper slopes are generally found in the eastern portions of the site.
9. The ESL is located within the Peninsular Ranges Physiographic Province and is part of the Perris Structural Block. The Glen Ivy North segment of the active Elsinore fault zone projects along the Temescal Valley approximately 2 miles west of the site. The site is primarily underlain by the metasedimentary¹ rocks of the Jurassic Bedford Canyon Formation. The Bedford Canyon Formation is composed mainly of thinly to thickly interbedded argillites, quartzites, metabreccias, and metasandstones. Portions of the site are also underlain by Tertiary and Quaternary sedimentary formations including the Lake Mathews Formation, the Silverado Formation and older alluvium. Cretaceous granitic rocks associated with the Southern California Batholith are located in the extreme northeastern portion of the site, and intrusive dikes² of the Cretaceous Temescal Wash Quartz Latite Porphyry were encountered during excavation of some cells in the existing landfill area.
10. The site is located in an arid to semi-arid environment. Average annual site precipitation is estimated to be approximately 12 inches based on precipitation data and maps from the National Weather Service (NOAA Atlas 2 dated 1973). The estimated precipitation for a 24-hour, 100-year storm event is 6 inches. The evaporation rate averages 73.39 inches per year.
11. The ESL is located between Lake Mathews (to the northeast) and Temescal Wash (to the southeast) within the Lake Mathews Hydrologic Area, in the Bedford Canyon Hydrologic Subarea of the Santa Ana River Watershed (Santa Ana Hydrologic Basin). No natural lakes or other bodies of standing water occur at the site. Ephemeral³ seeps and springs occur in several canyons located within or adjacent to the landfill property. Groundwater, of generally poor quality, can be found in the bedrock fractures of the Bedford Canyon Formation and in the alluvium-filled bottoms of the canyons. Depth to groundwater varies beneath the site, with groundwater in the canyon bottoms occurring at depths less than 20 feet, and groundwater beneath the ridges occurring at depths in excess of 150 feet (approximately 1,070 to 1,300 feet above MSL, respectively). Groundwater flow varies across the site, but in the vicinity of the existing landfill it flows

¹ Sedimentary rocks that have been partially metamorphosed. Sedimentary rocks are rocks that have formed from the deposition of sediments from water or air such as silt, sand, and gravel, or through the precipitation of chemicals from water such as limestone and gypsum. Metamorphism is the process by which rocks are altered in the solid state by pressure, heat, and chemical substances.

² Intrusive dikes are tabular bodies of igneous rocks (such as granite) that usually caused by the injection or emplacement of magma into fractures, joints, or bedding of adjacent rocks.

³ Streams or springs that only flow during part of the year, usually in direct response to precipitation.

predominantly from the northeast to the south and southwest at an average hydraulic gradient of 0.08 foot per foot.

12. A Water Quality Control Plan (Basin Plan) became effective on January 24, 1995. The Basin Plan contains beneficial uses and water quality objectives for waters in the Santa Ana Region.
13. Surface drainage from ephemeral streams located on or adjacent to the landfill property is tributary to Temescal Creek Reach 2, the intermittent beneficial uses of which include:
 - a. Agricultural supply,
 - b. Industrial service supply,
 - c. Groundwater recharge,
 - d. Contact water recreation,
 - e. Non-contact water recreation,
 - f. Warm freshwater habitat, and
 - g. Wildlife habitat.
14. Groundwater from the fractured bedrock and alluvial deposits beneath the landfill property flows into the Bedford (Upper Temescal 1) Groundwater Subbasin, the beneficial uses of which include:
 - a. Municipal and domestic supply,
 - b. Agricultural supply,
 - c. Industrial service supply, and
 - d. Industrial process supply.
15. Water quality at the site is currently monitored under an EMP in accordance with the parameters and schedules set forth in Monitoring and Reporting Program (M&RP) No. 98-99-08. Water quality monitoring, sampling, and analyses are conducted and reported on a semi-annual basis. The water quality monitoring program for the ESL currently includes groundwater, surface water (including natural seeps and springs), leachate, landfill gas (LFG), and LFG condensate.
16. Low-level concentrations of inorganics and volatile organic compounds (VOCs), consisting predominantly of 1,1-dichloroethane and 1,1,1-trichloroethane, were detected in wells located near the toe of the landfill in the fall of 1987, and the landfill was placed in an EMP. Since landfill gas (LFG) was considered to be the principal source of the suspected release, a LFG collection and extraction system was installed and began operation in June of 1993.
17. The existing LFG collection and extraction system consists of a series of horizontal collectors and vertical wells located in each operating or completed phase. A series of LFG monitoring probes are located around the perimeter of the existing landfill footprint.

18. In an effort to further reduce the downgradient migration of contaminants in groundwater, a groundwater containment system was constructed at the ESL. Groundwater containment pumping was initiated on July 2, 1996. VOCs are removed from the extracted groundwater using an air-stripper and then discharged into a 5,000-gallon storage tank. The air stripper column was designed to strip VOCs from the extracted groundwater. The treated water is either used for onsite operational purposes over the lined portions of the landfill, or discharged offsite in accordance with the general groundwater cleanup permit, Regional Board Order No. 96-18, National Pollutant Discharge Elimination System (NPDES) Permit No. CAG918001. This permit is currently undergoing revision as the order expires on October 1, 2001.
19. USA Waste has been monitoring leachate annually for Appendix II constituents, and re-testing for newly discovered ones, in order to create a constituent of concern (COC) list containing those Appendix II constituents detected and verified to be present; therefore, by monitoring for detectable COCs, the discharger will be monitoring for all Appendix II constituents that could be released from the landfill.
20. USA Waste has implemented necessary interim measures to control the downgradient migration of VOCs while continuing to assess the suspected release. However, VOCs continue to be identified in samples collected from downgradient wells at the site; therefore, in accordance with 40CFR §258.55, a federal Assessment Monitoring Program (AMP) must be implemented at the site within 90 days of the adoption of this order.
21. Additionally, inorganic impacts have also been tentatively identified both at the toe of the landfill and downgradient of the previous septage ponds, now closed, which were located in the northwest corner of the site.
22. Since more than one Appendix II constituent has been detected in groundwater monitoring wells at the ESL, the groundwater beneath the site has exceeded the Ground Water Protection Standard (water standard) established for the facility in accordance with §§20390, 20395, and 20400 of 27CCR and §§258.55(h or i) of 40CFR.
23. Because a release has been identified at the ESL, USA Waste shall submit a proposal and compliance schedule for implementing an updated EMP and a federal AMP, to the extent that these federal requirements are not addressed by the EMP or the landfill's current monitoring program. USA Waste shall also submit a preliminary Engineering Feasibility Study (EFS) under 27CCR §20425, and begin an Assessment of Corrective Measures (ACM) and Selection of Remedy (SOR) under 40CFR §§258.55, 258.56, and 258.57, respectively. These tasks shall be carried out in accordance with the time frames set forth in M&RP No. 01-53.
24. The Regional Board adopted order No. 85-131 on September 13, 1985, for discharges of municipal solid wastes (MSW) to land at the ESL. Order No. 85-131 contains discharge requirements, provisions, and monitoring and reporting requirements in accordance with Title 23, Division 3, Chapter 15 of the California Code of Regulations (23CCR), for landfill design, operations, and groundwater monitoring.

25. Order No. 85-131 was subsequently amended by WDR Order Nos. 93-57 and 94-17, adopted on September 10, 1993 and March 11, 1994, respectively, to incorporate new federal regulations (Title 40, Code of Federal Regulations [40CFR], Part 258, known as Subtitle D), and to prescribe uniform drainage and erosion control system requirements for MSW landfills in the Santa Ana Region.
26. On July 18, 1997, the State Water Resources Control Board (SWRCB) and the California Integrated Waste Management Board (CIWMB) enacted the Solid Waste Requirements, Subdivision 1 of new Division 2, Title 27, California Code of Regulations (27CCR) to replace the non-hazardous waste portions of 23CCR, Chapter 15.
27. On November 20, 1998, Order Nos. 93-57 and 94-17 were rescinded and replaced by WDR Order No. 98-99. This Order contains additional discharge, monitoring, and reporting requirements that require USA Waste to maintain the ESL in accordance with 27CCR and with State Board Resolution No. 93-62, *Policy for Regulation of Discharges of Municipal Solid Waste* (Resolution No. 93-62).
28. Provision C.2 of Order No. 98-99, 27CCR §20330, and 40CFR §258, stipulate that, as of October 9, 1993, a prescriptive composite liner⁴ design (prescriptive standard design or PSD) must be included in all waste containment systems at MSW landfills. This design must include, at a minimum, an upper synthetic flexible membrane⁵ liner (FML) that is at least 60-mils⁶ thick (if high density polyethylene is used), and a lower component of soil that is at least two feet thick with a hydraulic conductivity no more than 1×10^{-7} cm/s. However, Regional Board Order No. 98-99, Resolution No. 93-62, and 27CCR, §20080 allow for engineered alternatives to the prescriptive liner requirements, provided the performance criteria contained in 40CFR §258.40(a)(1) and (c), and 27CCR §20080(b), are satisfied.
29. Order No. 98-99 was amended on October 7, 1999, by Order No. 99-79, to allow the use of an engineered alternative design (EAD) for both the bottom and side-slope liner systems in the Phase IV-2B cell expansion at the ESL. The EAD was found to meet the required performance criteria, and will afford equivalent or greater protection against water quality impairment as would the PSD.
30. The existing landfill footprint consists of five (5) phases or areas with differing liner systems as follows:
 - a. The Phase I and II areas are unlined and were constructed prior to the adoption of 40CFR §258 regulations. The cells were constructed on excavated bedrock with a permeability of 1×10^{-6} centimeters per second (cm/s) or less. A clay liner was

⁴ A liner is a containment system, usually constructed of low permeability materials such as clay or plastic, which are placed at the bottom of a landfill, between the refuse and the natural subgrade. The purpose of the liner is to prevent, as much as is possible, the infiltration of contaminated water from the landfill into groundwater and is a requirement of current, applicable regulations (40CFR, 27CCR, and the CWA).

⁵ A membrane or geomembrane is a thin, impermeable material used as a liquid or vapor barrier.

⁶ A "mil" is a unit of length equal to 1/1000 inch (0.0254 millimeters), used in measuring the diameter of wire, fabrics, or geosynthetics. "Geosynthetic" is a general term for all synthetic materials used in geotechnical engineering applications such as geotextiles, geocomposites, geogrids, geonets, and geomembranes.

- constructed on the west slope of the Phase I area to comply with the permeability requirements in place at the time of its construction;
- b. The Phase III – Stage 1 area was constructed with a pre-40CFR §258 liner that is composed of two feet of low permeability soil (clay with a permeability of 1×10^{-7} or less), without a flexible membrane liner (FML);
 - c. The remaining portions (“stages” or cells) of the Phase III area and the Phase IV – Stage 2B area were constructed with a 40CFR §258 prescriptive clay liner system which consists of two feet of clay with a permeability less than 1×10^{-7} cm/s overlain by an FML;
 - d. The Phase IV – Stage 2A area has an alternative engineered liner system for both the base and side slopes which incorporates a geosynthetic clay liner⁷ (GCL) in place of the prescriptive liner’s two feet of clay;
 - e. Phase V is a vertical expansion that increases the top elevation of the permitted landfill to an elevation of 1,425 feet above MSL.
31. The environmental control systems installed in several of the existing phases differ slightly from each other:
- a. Leachate in the Phase I area is collected by a sump;
 - b. Leachate in the Phase II area is collected by two (2) toe drains; and
 - c. The Phase III and IV areas have 40CFR 258-style leachate collection and removal systems (LCRS).
32. USA Waste submitted an application on March 14, 2000, to expand the permitted footprint of the ESL. The phased lateral and vertical expansion will increase the current 90-acre disposal area to approximately 495 acres, and result in an increase in the final elevation of the landfill from 1,425 to 1,832 feet above MSL. The proposed expansion of the landfill will add approximately 108 million tons of refuse capacity, increasing the life of the landfill by approximately thirty years. The 405 acre landfill expansion area is located in Sections 23, 24, and 26, T4S, R6W, SBB&M, and is shown on Attachment B, which is hereby made a part of this order.
33. A Final Environmental Impact Report (EIR) for the expansion was prepared in accordance with §15167 of the California Environmental Quality Act (CEQA) Guidelines. On September 1, 1998, the Riverside County Board of Supervisors certified the EIR for the expansion of the ESL.
34. Regional Board staff has reviewed and commented on the EIR. If the project is carried out in a manner that implements all the mitigation measures provided for in the EIR, and USA Waste complies with Order No. 01-53, there should be no adverse environmental impacts and adequate protection to water quality will be provided.

⁷ A geosynthetic liner that contains a layer of clay, usually bentonite, sandwiched between two geotextiles or attached to a geomembrane with adhesive.

35. California Water Code (CWC) §13263(a) requires that waste discharge requirements implement relevant water quality control plans. The requirements contained herein are intended to assure compliance with the water quality control plan, including water quality objectives and beneficial uses. USA Waste is proposing to implement a waste containment system that is significantly more stringent than that required by 27CCR to protect water quality.
36. As part of the permit application for the expansion of the ESL, USA Waste has requested the use of an EAD for both the bottom and side-slope liner systems in place of the PSD for all new cells in the expansion area. The proposed EAD differs from that approved by Order No. 99-79 for the Phase IV-2B cell expansion.
37. Engineered alternatives to the PSD are proposed because they will:
- a. Provide minimum static and seismic stability as required under 27CCR §21750(f)(5) on steep side slopes. Steep cut slopes (e.g., 1.75:1) are proposed at the landfill to decrease the amount of hard rock requiring excavation by blasting; and
 - b. Save installation time and cost while providing equivalent or better protection against water quality impairment offered by the PSD.
38. The profiles of the PSD and the proposed EAD for both the base liner (EAD-BL) and side-slope liner (EAD-SSL) systems are described below, from the top down, and are illustrated on Attachment C, which is hereby made a part of this order:

PSD	EAD-BL	EAD-SSL
Refuse	Refuse	Refuse
24-inch protective soil cover	24-inch protective soil cover	24-inch protective soil cover
Geotextile filter fabric	Geotextile filter fabric	Geocomposite drainage layer
12-inch #1x10 ⁻² cm/s drainage layer	12-inch #1x10 ⁻² cm/s drainage layer	
Geotextile cushion fabric	Geotextile cushion fabric	
Minimum 60-mil high density polyethylene (HDPE) liner	40-mil FML textured synthetic membrane (or 60-mil if HDPE is used)	40-mil FML textured synthetic membrane (or 60-mil if HDPE is used)
24-inch #1x10 ⁻⁷ cm/s low permeability layer	Flexible membrane liner (FML)/ geosynthetic clay liner (GCL) – A bentonite GCL with non-woven geotextile underlain with a 40-mil FML or 40-mil geomembrane backed GCL	Flexible membrane liner (FML)/ geosynthetic clay liner (GCL) – A bentonite GCL with non-woven geotextile underlain with a 40-mil FML or 40-mil geomembrane backed GCL
	12-inch #1x10 ⁻⁷ cm/s low permeability layer	
Prepared subgrade	Prepared subgrade	Prepared subgrade

39. Title 27 §20240(c) stipulates that there shall be a five-foot separation zone between MSW and the highest anticipated elevation of underlying groundwater. There are portions of the ESL expansion area where natural groundwater seeps have been observed at the ground surface. The proposed EAD liner for the ESL expansion area includes the use of a subdrain system to intercept and collect the intermittent flow from the seeps, in lieu of a five-foot separation zone beneath the landfill. Regional Board staff have evaluated USA Waste's engineering analysis and concluded that the subdrain component of the EAD-BL and EAD-SSL liner systems meets the requirements of 27CCR §20080(c) for protection of water quality, and is equivalent to that provided by a five-foot separation zone between the historic high groundwater elevation and the first lift of refuse.
40. Regional Board staff has reviewed the JTD, which includes the performance equivalency demonstration report, slope stability analyses, the construction quality assurance/ construction quality control (CQA/ CQC) plan, PCMP, and financial assurance plan, and the design, operation, and drainage control plans for the expansion area. Regional Board staff has commented and received responses from the USA Waste during the JTD review period. On (date), USA Waste satisfactorily addressed all Regional Board staff comments and the JTD was approved.
41. The capability of the EAD liner systems to afford water quality protection equivalent to the PSD system depends largely on good quality control during manufacturing of the materials used and diligent CQA/ CQC during the installation of these materials.
42. USA Waste is proposing to implement a rigorous CQA/ CQC program for all phases of the project. This CQA/ CQC program is intended to identify and correct any problems associated with the construction of the landfill liner systems. The goal of the CQA/ CQC program is to prevent any potential tears or imperfections in the base and side-slope liner systems.
43. A quality assurance/ quality control (QA/ QC) program will also be implemented during the operation of the landfill. This program includes load checking to screen waste material that comes into the landfill for disposal in order to remove and properly dispose of any hazardous waste detected in the waste stream. The QA/QC program also includes on-going monitoring of various elements of the landfill's liner containment system⁸ so that any problems detected will be corrected immediately.
44. USA Waste has demonstrated that the expansion of the ESL, if conducted as proposed, will not pollute or threaten to pollute the waters of the State. Further, based on the significantly enhanced containment and operational controls proposed by USA Waste, wastes discharged to the expansion area of the ESL during its operation and post-closure period should not pollute or threaten to pollute the waters of the State.

⁸ The liner containment system includes the landfill liner and leachate containment and recovery system (LCRS), and may also include subdrains, lysimeters (for monitoring any leachate that migrates through the liner into the underlying materials), or a protective soil layer placed over the liner and LCRS system.

45. The proposed post-closure land use is non-irrigated open-space graded to blend in with the natural surroundings and landscaped with low-maintenance ground cover and native plants and shrubs. No construction improvements are proposed on the completed site.
46. USA Waste has indicated in the ESL PCMP that the deed to the landfill property, or some other instrument that is normally examined during title search, will be modified to include, in perpetuity, a notation advising any potential purchaser of the property that:
 - a. The parcel has been used as a MSW landfill,
 - b. The land use options for the parcel are restricted in accordance with the post-closure land uses set forth in the PCMP in the JTD, and
 - c. In the event that USA Waste defaults on carrying out either the PCMP or any corrective action needed to address a release, then the responsibility for carrying out such work falls to the property owner.
47. The Regional Board has notified USA Waste and interested agencies and persons of its intent to prescribe revised WDRs for the ESL.
48. The Regional Board, in a public meeting, heard and considered all comments pertaining to the discharge.

IT IS HEREBY ORDERED that USA Waste, in order to meet the applicable provisions contained in the California Water Code (CWC), Title 27 (27CCR), and Subtitle D of the Federal Code of Regulations (40CFR §258), shall comply with the following:

A. DISCHARGE SPECIFICATIONS

1. GROUNDWATER:

The existing unit at the El Sobrante Landfill (ESL) has had a release to groundwater and is currently monitored under an Evaluation Monitoring Program (EMP). For all new cells, including any cells constructed in the 405-acre expansion area, the discharge shall neither cause nor contribute to the contamination or pollution of ground water via the release of waste constituents in either the liquid or gaseous phase.

2. SURFACE WATER:

The discharge shall neither cause nor contribute to any surface water contamination, pollution, 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 change beyond natural background levels and occurrences;
- d. The creation or contribution of visible, floating, suspended, or deposited oil or other products of petroleum origin; and
- e. The introduction or increase in concentration of toxic or other pollutants/contaminants resulting in unreasonable impairment of beneficial uses of the waters of the State.

3. UNSATURATED ZONE:

The existing unit at the ESL has had a release to groundwater and is currently monitored under an EMP. For all new cells, including any cells constructed in the 405-acre expansion area, 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 ESL if such waste constituents could migrate to the waters of the State and cause a condition of contamination, pollution, or nuisance.

4. CONSTITUENTS OF CONCERN:

The existing unit at the ESL has had a release to groundwater and is in an EMP. For all new cells, including any cells constructed in the 405-acre expansion area, the discharge shall not cause the concentration of any constituent of concern (COC) or monitoring parameter to exceed its respective background value in any monitored medium at any monitoring point pursuant to the attached Monitoring and Reporting Program (M&RP) No. 01-53.

5. LIQUIDS USAGE:

- a. The discharge of liquids, including groundwater, leachate or landfill gas condensate, or their use for dust control or irrigation, at an municipal solid waste (MSW) landfill is prohibited, unless the following conditions are met:
 - i. The liquids are being returned to or used at the landfill that produced it; **and**
 - ii. The portion of the landfill to which these liquids are discharged is equipped with a containment system meeting the requirements of Section B of this order; **or**
 - iii. The liquids generated from the site are disposed of in accordance with a disposal plan approved by the Executive Officer of the Regional Board.
- b. This section shall not apply to groundwater, leachate, and landfill gas condensate generated from an MSW landfill that is treated in accordance with an approved plan prior to being used for dust control or irrigation over the lined portions of the site.

6. ALTERNATIVE LINER DESIGN:

Alternative design - USA Waste has demonstrated that the engineered alternative design (EAD) for the 405-acre expansion area liner system satisfies the criteria for an engineered alternative to the prescriptive standard design (PSD) [as provided by 27CCR, §20080 (b)]. The performance of the EAD equals or exceeds the waste containment capability of the PSD. For each phase of the 405-acre expansion, the following shall apply:

- a. An approved construction quality assurance/ quality control (CQA/ CQC) program for the EAD shall be implemented during each phase of construction;
- b. All mitigation measures proposed by USA Waste shall be implemented to protect water quality;
- c. USA Waste and its contractors shall submit progress reports on a daily basis to the Regional Board during the construction of the landfill's EAD so that compliance with Item (a), above, can be determined;
- d. Within 90 days of completion of the EAD, USA Waste shall submit a final (as-built) report including drawings, maps, and CQA/ CQC certification; and
- e. If the EAD fails to perform as expected, the Regional Board reserves the right to require additional protective measures at the landfill.

B. CONTAINMENT SYSTEMS INSTALLED BEYOND THE EXISTING FOOTPRINT

Discharge prohibition – The discharges of MSW to any area of the ESL beyond the existing footprint of the site is prohibited unless approved by the Regional Board, and such discharge is to an area equipped with a containment system that is constructed in accordance with the standard of the industry, and that meets the additional requirements for both liners and leachate collection systems in accordance with an approved Joint

Technical Document (JTD) or JTD addendum, and any additional requirements of 27CCR §§20330, 20080, and 20340 and State Board Resolution No. 93-62.

C. WATER QUALITY PROTECTION STANDARD

Monitoring program start date - Unless USA Waste proposes, and the Regional Board approves, an alternative water standard that meets the requirements of both 27CCR §20390 and §20425, and 40CFR §258.50 et seq., USA Waste shall monitor compliance with this order using the water standard established by M&RP No. 01-53.

D. PROVISIONS

1. USA Waste shall comply with all discharge prohibitions, discharge specifications, provisions, and monitoring and reporting requirements of this order immediately upon its adoption.
2. The discharge of wastes shall not cause the release of pollutants or waste constituents in a manner that could cause a condition of contamination, pollution, or nuisance to occur, as indicated by the most appropriate statistical or non-statistical data analysis method and retest method listed in the attached M&RP No. 01-53.
3. The treatment or disposal of wastes shall not cause a nuisance or pollution, as defined in the CWC, §13050.
4. All wastes shall be maintained on property owned or controlled by USA Waste.
5. There shall be no disposal of wastes that contain any substances in concentrations toxic to human, animal, or plant life, such that these wastes could commingle with waters of the State.
6. The discharge of hazardous or designated wastes at the site is prohibited.
7. The disposal of liquid wastes into the landfill is prohibited, except as allowed by Discharge Specification A.5.a.iii of this order.
8. The operation of the ESL shall not cause a discharge of pollutants into waters of the United States, including wetlands, that violates any requirements of the Clean Water Act (CWA), including, but not limited to, the National Pollutant Discharge Elimination System (NPDES) requirements, pursuant to CWA §402.
9. During the months when precipitation can be expected, disposal activities shall be confined to the smallest area possible based on anticipated quantity of wastes that will be received and on operational procedures.
10. USA Waste shall remove and properly dispose of any wastes that are placed at the site in violation of these requirements.

11. All sewage treatment plant grit and screening residues disposed of at the site must be segregated from public access and shall meet the following criteria:
 - a. A moisture content of less than 50 percent;
 - b. Disinfection in accordance with a method approved by the local Department of Environmental Health and the Regional Board; and
 - c. An analysis for heavy metals.
12. USA Waste shall require all operators that submit a request to dispose sewage treatment plant grit and screening residues at the ESL to provide a minimum 24-hour notice to landfill personnel, or a written schedule of expected delivery dates and approximate arrival times, before these materials can be transported to the ESL.
13. USA Waste shall establish and maintain permanent monuments in California coordinates (or equivalent) to define the boundary of the footprint of the landfill. The benchmarks shall be certified by a licensed surveyor or a professional civil engineer authorized to practice in California.
14. Prior to the initiation of waste discharge in the proposed expansion area, USA Waste shall install an approved groundwater monitoring network.
15. The water used during landfill operations shall be limited to the minimum amount reasonably necessary for dust control purposes, fire suppression, and minor maintenance.
16. Adequate cover shall be placed over all lifts except the active face at all times.
17. At the end of each operating day, as defined in the ESL's solid waste facility permit, or if landfilling operations cease for more than a 12-hour period, daily cover or an approved alternative daily cover (ADC) must be placed over the active face in a quantity and depth sufficient to prevent any waste from daylighting or as directed by Regional Board staff.
18. USA Waste shall notify the Regional Board immediately of any slope failure occurring in a waste management unit. Any failure that threatens the integrity of containment features or the landfill shall be promptly corrected after approval of a remediation workplan and schedule by the Executive Officer of the Regional Board.
19. USA Waste shall implement the attached M&RP No. 01-53 in order to detect, at the earliest opportunity, any unauthorized discharge of waste constituents from the Unit, or any unreasonable impairment of beneficial uses caused by or associated with discharges of waste to the Unit.
20. At any time, USA Waste may file a written request, including appropriate supporting documents, with the Executive Officer of the Regional Board, proposing modifications to M&RP No. 01-53. USA Waste shall implement any changes in the revised M&RP approved by the Regional Board's Executive Officer upon receipt of a signed copy of the revised M&RP.

21. Because the ESL has had, and continues to have, a measurably significant release, USA Waste shall comply with the following requirements in order to bring the site into compliance with 27CCR §20425 and 40CFR §258.55:
 - a. The water quality monitoring at the ESL shall be conducted in accordance with 27CCR §20425, Evaluation Monitoring Program, and 40CFR §258.55, Assessment Monitoring Program (AMP).
 - b. USA Waste shall submit a proposal and compliance schedule for implementing an updated EMP and a federal AMP at the ESL, within 30 days of the adoption of WDR Order No. 01-53.
 - c. Upon adoption of this order, immediately initiate a scan for all 40CFR Appendix II constituents in accordance with paragraph A.7 of M&RP No. 01-53.
 - d. If detection of a new Appendix II constituent is verified, it must be noted in the operating record within 14 days of receipt of the verification, added to the landfill's COC list, and also added to its monitoring parameter list.
 - e. Within 90 days of the adoption of this order, USA Waste shall submit an updated preliminary Engineering Feasibility Study (EFS) under §20425(c) and shall begin an Assessment of Corrective Measures (ACM), and Selection of Remedy (SOR) under 40CFR §258.55, §258.56, and §258.57, respectively, to the extent that these federal requirements are not addressed by the EMP or the landfill's current monitoring program.
 - f. USA Waste shall continue to conduct annual Appendix II leachate analysis for all Appendix II constituents not yet detected in leachate and to perform verification resampling within six (6) months of the preliminary identification of any new constituents. Any newly detected and verified constituents shall be added to the landfill's COC list and its monitoring parameter list for at least two years.
 - g. USA Waste shall install assessment wells as needed for the AMP and EMP.
 - h. USA Waste shall notify off-site affected parties within 30 days after discovery or confirmation of off-site migration of pollutants.
22. The ACM must address the following issues:
 - a. The performance, reliability, ease of implementation, and potential impacts of appropriate potential remedies, including safety impacts, cross-media impacts, and control of exposure to any residual pollution;
 - b. The time required to begin and complete the remedy;
 - c. The costs of implementing the selected remedy;
 - d. State or local permit requirements or other environmental or public health requirements that may substantially affect implementation of the remedy.

23. The SOR must address the following:
 - a. The selected remedy must meet the following goals and standards:
 - i. Protection of human health and the environment;
 - ii. Attainment of the ground water protection standard [of 40CFR §258.57(h or i)];
 - iii. Control of the source(s) of releases so as to reduce or eliminate further releases of Appendix II constituents; and
 - iv. Compliance with standards for management of wastes as specified in 40CFR §258.58(d).
 - b. In selecting a remedy, USA Waste must consider the evaluation factors contained in 40CFR §258.57(c).
 - c. USA Waste must propose a schedule, effective upon approval by the Executive Officer of the Regional Board, for initiating and completing the remedial activities as set forth in 40CFR §258.57(d)(1-8).
 - d. USA Waste must install a well on the facility boundary, centered on where the release crosses it, and provide the Executive Officer of the Regional Board with a list of all persons who own or reside upon land that overlies the release, per 40CFR §258.55(g)(1)(3)(iii), so that the Regional Board can invite these affected individuals to the Board Meeting at which the proposed corrective measures are chosen.
24. USA Waste shall continue to implement the existing groundwater treatment system and other interim corrective measures pursuant to 27CCR §20425(g) and in compliance with 40CFR §258.58(a)(3).
25. Within 180 days from the adoption of this order, USA Waste must provide an assessment of the projected costs for plume delineation and the CAP. USA Waste must also update the corrective action financial assurance if the projected costs for the CAP exceed the existing “reasonably foreseeable release” coverage.
26. Within 90 days of completion of the EMP/ AMP, USA Waste shall submit a final EFS and an amended JTD, pursuant to 27CCR §20425(c) and (d) and 40CFR §258.58 to establish a CAP.
27. USA Waste shall implement the CAP, pursuant to 27CCR §20430 and 40CFR §258.58, when the Regional Board determines that the EMP and the design of the CAP have been satisfactorily completed, the amended JTD, submitted pursuant to item 25, above, has been approved, and the WDRs for the site have been appropriately revised.

28. USA Waste shall install any additional ground water, soil pore liquid, soil pore gas, or leachate monitoring devices determined by the Executive Officer of the Regional Board to be necessary to comply with M&RP No. 01-53.
29. USA Waste shall expand the existing landfill gas collection and recovery system as the landfill operation progresses in order to prevent the migration of landfill gas to groundwater and to the environment.
30. This Order supersedes and replaces WDR Order No. 85-131, which is hereby rescinded. This order also replaces portions of WDR Order No. 98-99 that are specific to the ESL; therefore, Order No. 98-99 is no longer applicable to the ESL.

E. DRAINAGE AND EROSION CONTROL

1. Waste management units shall be designed, constructed, and maintained to prevent, to the greatest extent possible, ponding, infiltration, inundation, erosion, slope failure, and washout which could occur as a result of precipitation from a 100-year, 24-hour frequency storm. This shall be accomplished by, at a minimum, the following:
 - a. Top deck surfaces shall be constructed to achieve a minimum of one percent (1%) slope, including structures which direct water to downdrains;
 - b. Downdrains and other necessary drainage structures must be constructed for all sideslopes as necessary; and
 - c. All components of the facility drainage system must be designed and constructed to withstand site-specific maximum intensity precipitation (peak flow⁹) from a 100-year, 24-hour storm.
2. Leachate and landfill gas condensate containment system structures shall be protected and maintained continuously to ensure their effectiveness and to prevent commingling of leachate and gas condensate with surface run-on and runoff.
3. USA Waste shall design, construct, and maintain:
 - a. A run-on drainage control system to prevent flow from off-site sources onto the disposal areas of the landfill (active or inactive portions), and to collect and divert both the calculated volume of precipitation and the peak flow from off-site sources that result from a 100-year, 24-hour storm;
 - b. A runoff drainage control system to minimize sheet flow from the disposal areas, and to collect and divert both the calculated volume of precipitation and the peak flow from on-site surface runoff that results from a 100-year, 24-hour storm; and
 - c. Drainage control structures to divert natural seepage from native ground and to prevent such seepage from entering the waste management units.

⁹ Peak flow is the maximum expected flow of run-on and runoff resulting from precipitation both on and off-site for a given recurrence interval.

4. All drainage structures shall be protected and maintained continuously to ensure their effectiveness.
5. Annually, by **October 1**, all drainage control system construction and maintenance activities shall be completed. By December 31 of each year, USA Waste shall submit a drainage control system maintenance report to the Executive Officer of the Regional Board. The drainage control system maintenance report shall include, but not be limited to, the following information:
 - a. For the previous 12 months, a summary of the adequacy and effectiveness of the drainage control system to collect and divert the calculated volume of precipitation and peak flows resulting from a 100-year, 24-hour storm;
 - b. A tabular summary of both new and existing drainage control structures, including the types and completion dates of maintenance activities performed for each of these structures; and
 - c. An 11"x17" or larger site map indicating the locations of the elements listed in Item b., above, and the flow direction of all site drainage.
6. At least 30 days prior to the construction of any new significant elements of the drainage and erosion control system, USA Waste shall submit a workplan outlining all design parameters and calculations, construction details, and a construction quality assurance plan for approval by Regional Board staff. USA Waste shall submit as-built drawings of these changes or improvements to the drainage and erosion control system within 4 weeks of completing construction.
7. Temporary emergency repairs or improvements to the existing drainage and erosion control system at the site that must be implemented to avoid a violation of Order No. 01-53 or 27CCR §20365(a) are exempt from the requirements of Provision E.6 of this order. However, Regional Board staff must be notified within 48 hours of the implementation of these repairs or improvements.
8. All design plans, construction plans, and operation and maintenance plans shall be prepared by, or prepared under the direct supervision of, a registered civil engineer or a certified engineering geologist.
9. Periodic inspection of the waste management units, the drainage control system, and all containment structures shall be performed to assess the conditions of these facilities and to initiate corrective actions necessary to maintain compliance with Provisions E.1 through E.5 of this order.
10. The facility shall be surveyed once a year either by aerial surveillance or a licensed surveyor to assure compliance with the one percent slope requirements. By December 31 of each year, a map compiled from the survey data shall be submitted to the Regional Board, showing landfill elevations, the flow direction of all site drainage, the drainage control system, and containment structures.

11. USA Waste shall notify the Executive Officer of the Regional Board by telephone (909-782-4130) within 24 hours of any failure of facilities necessary to maintain compliance with the requirements in this order. Within five days, the notification shall be submitted in writing to the Executive Officer.
12. USA Waste shall maintain a copy of this order at the site so as to be available at all times to site operating personnel.
13. USA Waste shall permit the Regional Board:
 - a. Entry upon premises where a discharge source is located;
 - b. To copy any records required to be kept under terms and conditions of this order;
 - c. To photograph or videotape any structures, facilities, activities, or other phenomena that could result in adverse impacts to water quality and that are pertinent to compliance of the landfill with its WDRs; and
 - d. To sample any discharges.
14. USA Waste shall notify the Regional Board in writing of any proposed change in ownership or responsibility for construction, operation, closure or post-closure maintenance of the landfill. This notification shall be given prior to the effective date of the change and shall include a statement by the new discharger that construction, operation, closure, and post-closure maintenance will be in compliance with any existing WDRs and any revisions thereof.

F. REQUIRED REPORTS AND NOTICES

1. REPORTING PROVISIONS:
 - a. All applications, reports or information submitted to the Regional Board shall be signed and certified in accordance with 40CFR §122.22.
 - b. USA Waste shall furnish, within a reasonable time, any information the Regional Board may request to determine whether cause exists for modifying, reissuing, or terminating this order. USA Waste shall also furnish to the Regional Board, upon request, copies of records that this order requires the discharger to maintain.
2. USA Waste shall file a JTD or JTD amendment with the Regional Board at least 120 days before making any material change or proposed change in the character, location, volume, treatment, or disposal methods of any discharge of waste.
3. USA Waste shall give advance notice to the Regional Board of any planned changes in the permitted facility or site activities that may result in noncompliance with these WDRs.
4. USA Waste shall submit to the Executive Officer, as part of the application for proposed discharge, a report certifying the adequacy of each component of the existing and any future groundwater treatment system(s) and the associated operation and maintenance (O & M) manual. This certification shall contain a requirement-by-

requirement analysis, based on accepted engineering practice, of how the process and physical design of the treatment systems will ensure compliance with this order. The design engineer shall affix his/her signature, professional license number and seal to this certification.

5. In the event of any change in control or ownership of land or waste discharge facilities currently owned or controlled by USA Waste, USA Waste shall notify the succeeding owner or operator of the existence of this order by letter. A copy of this letter shall be signed by the new owner accepting responsibility for complying with this order, and shall be forwarded to the Executive Officer of the Regional Board.
6. Prior to discharging any waste in the proposed expansion area, USA Waste shall file with the Regional Board an operations plan for approval by the Executive Officer, which shall be updated whenever substantial changes in operations are made. A report documenting conformance with the operations plans shall be submitted annually. The operations plan shall include the information required by 27CCR §21760(b).
7. The operations plan shall also include the following:
 - a. A map showing the boundaries of the disposal site and waste disposal areas;
 - b. A description of the waste materials anticipated to be received;
 - c. A general description of disposal site operations;
 - d. Measures proposed for control of drainage, leachate, and gases;
 - e. Ground water monitoring or other monitoring program; and
 - f. Anticipated land use after termination of disposal operations.
8. CLOSURE AND POST-CLOSURE PLANS:

In accordance with 27CCR, §21780 (b)(3), final closure and postclosure maintenance plans (PCMPs) for solid waste landfills shall be submitted two years prior to the anticipated date of closure. Within five years of the anticipated date of closure, the operator may submit the final closure and PCMPs in lieu of submitting new or updated preliminary closure and PCMPs.
9. FINANCIAL ASSURANCE PLANS:

USA Waste shall obtain and maintain assurances of financial responsibility for:

 - a. Closure activities pursuant to 27CCR §22205;
 - b. Post-closure maintenance activities pursuant to 27CCR §22210;
 - c. Operating liability pursuant to 27CCR §22215; and
 - d. Corrective action activities pursuant to 27CCR, §22220.

G. PERMIT RE-OPENING, REVISION, REVOCATION, AND RE-ISSUANCE

1. If more stringent applicable water quality standards are promulgated or approved pursuant to section 303 of the federal CWA, 40CFR, or 27CCR, or amendments thereto, the Regional Board will revise and modify this order in accordance with such standards.
2. This order may be modified to address any changes in state or federal plans, policies or regulations that would affect the water quality standards for the discharges.
3. Any noncompliance with this order constitutes a violation of the CWC and 27CCR, and is grounds for enforcement action.
4. This order may be modified, revoked and reissued, or terminated for cause. The filing of a request by a discharger for modification, revocation and re-issuance, or termination of this order, or a notification of planned changes or anticipated noncompliance, does not stay any condition of this order.

I, Gerard J. Thibeault, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an order adopted by the California Regional Water Quality Control Board, Santa Ana Region, on July 20, 2001.

Gerard J. Thibeault
Executive Officer

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SANTA ANA REGION**

ORDER NO. 01-53

**MONITORING AND REPORTING PROGRAM (M&RP) NO. 01-53
FOR**

USA WASTE OF CALIFORNIA

**EL SOBRANTE LANDFILL
CLASS III SOLID WASTE DISPOSAL SITE
RIVERSIDE COUNTY**

A. GENERAL

1. Groundwater beneath the El Sobrante Landfill (ESL) has exceeded the Groundwater Protection Standard (water standard) of both Title 27, California Code of Regulations (27CCR) §§20390, 20395, and 20400, and Title 40, Federal Code of Regulations (40CFR) §§258.50 et seq. USA Waste shall perform monitoring activities to identify and track violations of the water standard at the ESL.
2. The concentration limit for any given Constituent of Concern (COC) or monitoring parameter in a given monitored medium (e.g. the uppermost aquifer) at a municipal solid waste (MSW) landfill shall be established in accordance with 27CCR §20400 and §20415(e)(6,7, and 10). These concentration limits shall be used as the basis of comparison with data from the monitoring points in that monitored medium.
3. The current COC list for the site includes both organic and inorganic constituents that could be expected to be produced by the unit or have been already been produced by it (see Attachment D, Table 1). Title 40CFR §258 Appendix II constituents that have been detected and verified in liquids collected from the unit (leachate, landfill gas [LFG] condensate, seeps, or subdrains) have also been permanently added to the COC list for the facility. [Note: see Table 2, Attachment D for subset of Appendix II constituents that have been identified at the facility to date.] Any non-COC Appendix II constituents that are detected (and verified) in the liquids collected from the unit shall be permanently added to the landfill's COC list, and shall also be added to its monitoring parameter list (for a minimum two years) in accordance with paragraph B1.b.v of this M&RP.
4. Compliance and background monitoring points for the existing permitted portion of the ESL shall be established and monitored in accordance with 27CCR §20425 (Evaluation Monitoring Program) and 40CFR §258.55 (Assessment Monitoring

Program), in accordance with the parameters, schedules, and methods outlined in this Monitoring and Reporting Program (M&RP). [See Attachment D, Table 3].

5. Compliance and background monitoring points for the expansion areas shall be proposed and substantiated in accordance with 27CCR §20405, and shall be monitored in accordance with the parameters, schedules, and methods outlined in this M&RP. [See Attachment D, Table 3].
6. INTERIM CORRECTIVE MEASURES:

Low-level concentrations of volatile organic compounds (VOCs), consisting predominantly of 1,1-dichloroethane and 1,1,1-trichloroethane, were detected in wells located near the toe of the ESL in the fall of 1987, and the site was placed in an Evaluation Monitoring Program (EMP). While USA Waste investigated the suspected release, interim corrective measures were also implemented to contain the suspected release as follows:

- a. A landfill gas extraction and collection system was installed and began operation in June of 1993.
 - b. A groundwater extraction and treatment system was constructed at the ESL, and groundwater pumping was initiated on July 2, 1996. The system functions as follows:
 - i. Groundwater is pumped from impacted groundwater monitoring wells and discharged through an air-stripper column designed to strip VOCs from the extracted groundwater;
 - ii. The treated groundwater is then routed into a 5,000-gallon storage tank; and
 - iii. The treated water is either used for onsite operational purposes over the lined portions of the landfill, or is discharged offsite in accordance with National Pollutant Discharge Elimination System (NPDES) Order No. 96-18.
 - c. USA Waste has proposed updating their data analysis methods, monitoring parameters, and COC list (via leachate sampling results, to define the subset of Appendix II constituents that the landfill could possibly release). USA Waste has also proposed changes in the monitoring well network at the site to improve the effectiveness of their monitoring. These changes and improvements have been incorporated into this M&RP.
7. Since this order recognizes that there has been a release at the ESL, and an Evaluation Monitoring Program (EMP) and a federal Assessment Monitoring Program (AMP) must be implemented at the site within 90 days of the adoption of WDR Order No. 01-53, USA Waste shall perform the following [see also the related reporting requirements of paragraph C.7 of this M&RP]:
 - a. **Initial Full Appendix II Scan** – Upon adoption of this order all groundwater monitoring points must be sampled and analyzed immediately (presence/absence, not statistical) for all Appendix II constituents (for complete list of Appendix II constituents, see 40CFR §258.55). Within 30 days of the detection of any

Appendix II constituent(s) that is/are not yet on the COC list, USA Waste shall resample for each such constituent at all groundwater monitoring points at which it was detected. Any Appendix II constituent that is detected and confirmed at one or more groundwater monitoring points becomes a new COC for the ESL and shall also be added to the ESL's monitoring parameter list, pursuant to 40CFR §258.55(b-d). [Note: See paragraph A.12 of this M&RP regarding the validation and establishment of a background data set (concentration limit), for intra-well comparisons for a new COC at existing wells.]

- b. **Five-Yearly COC Scan** — Every five years, subsequent to the initial scan (under paragraph A.7.a), USA Waste shall analyze all groundwater monitoring points (as described in paragraphs A.7.b.i & ii) for the detectable presence (including trace determinations) of all COCs not yet known to be part of the release, including all Appendix II constituents (Attachment D, Table 2) that have ever been detected and verified in leachate (see paragraph A.9 of this M&RP) but not yet identified as part of the release. This constitutes the means by which USA Waste continues to meet the requirements of 40CFR §258.55(b-d). [Note: See monitoring and reporting schedule, Table 3, Attachment D, and paragraph C.7 of this M&RP].
 - i. A minimum of one sample from each compliance well must be collected and analyzed during each COC scanning event. If a COC is detected that is not yet on the monitoring parameter list, USA Waste shall, within 30 days, take a single resample from the indicating well(s) and reanalyze it only for the indicated constituents.
 - ii. Any COC detected in samples collected from a groundwater monitoring well, and verified by a retest, automatically becomes part of the monitoring parameter list for the facility. USA Waste shall notify Regional Board staff of any such change immediately, via telephone or e-mail, shall note it in the operating record within 14 days of the verification, and shall note prominently the constituent(s) added to the monitoring parameter list in the next scheduled monitoring report. This constitutes the means by which USA Waste shall meet the requirements of 40CFR §258.55(d)(2).
- c. **COC List** — At this time, the COC list consists of those constituents listed in Table 1, Attachment D of this M&RP. In addition, at any subsequent time, the COC list shall include all Appendix II constituents detected and verified in the initial scan (under paragraph A.7.a of this M&RP); and all Appendix II constituents that have been detected and affirmed in leachate (under paragraph B.1.b.v of this M&RP).
- d. Per 40 CFR §258.55(b), USA Waste may request, and the Executive Officer of the Regional Board may approve, a specified subset of wells to be sampled during assessment monitoring, and the removal of some Appendix II constituents from the COC list if it can be shown that the removed constituents are not reasonably expected to be in or derived from the waste contained in the Unit (i.e., as per this M&RP, the constituents have not been detected and verified in leachate from the landfill).

8. STATISTICAL DATA ANALYSIS METHODOLOGY:

- a. Intra-well comparison methods shall be used for all compliance wells for all constituents that are detectable at concentrations above their respective Method Detection Limit¹ (MDL) in 10% or more of the background data to date. Therefore, the concentration limit for such a constituent, at any given compliance well, shall be the background value as indicated by all validated data from that compliance well in the period including the years 1995 and through 2001. Every two years, at the beginning of the second quarter (spring) monitoring period (April 1), newer data shall be added to the background data set for each compliance well after being validated by a method approved by the Executive Officer of the Regional Board. At any time the background data set shall consist of, as a minimum, the last five (5) years of monitoring data, except for newly detected monitoring parameters for which there is less than 5 years of data available.
- b. Per 27CCR §20415(e)(9)(C), if a control chart approach is used to evaluate water quality monitoring data, the specific type of control chart and its associated statistical parameter values (e.g., the upper control limit) shall be included in the supporting documentation as required by §20415(e)(7). USA Waste shall use the procedure only if this supporting documentation shows the procedure to be protective of human health and the environment. Any control charting procedure must have a false positive rate of no less than 1 percent for each monitoring point charted. For example, upper control limits on X bar or R Charts used only once every six months (where no composite retest is used) must be set at no more than 2.327 standard deviations of the statistic plotted for a one-sided statistical comparison, or at no more than 2.576 standard deviations of the statistic plotted for a two-sided statistical comparison.
- c. In the event that an approved data analysis method provides a preliminary indication that a given monitoring parameter has a measurably significant increase at a given well, USA Waste shall conduct a verification procedure (retest) in accordance with 27CCR §20415(e)(8)(E).
- d. The verification procedure shall be performed only for the constituent(s) or parameter(s) that has shown "measurably significant" (see 27CCR §20164) evidence of a release, and shall be performed only for those monitoring points at which a release is indicated.
- e. For any COC or monitoring parameter that is detectable at concentrations above its respective MDL in 10% or less of the background data to date, the constituent's concentration limit shall be its MDL. A measurable exceedance of this concentration limit shall be determined by application of the non-statistical analysis method described in paragraph A.9 of this M&RP.

¹ The method detection limit, or MDL, is the minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero, as defined in 40CFR §136, Appendix B.

- f. **Water Quality Monitoring Approach** — Except for COC scans, under paragraph A.7, the monitoring approach used for each monitoring parameter at each compliance well (well/MPar pair) shall be controlled by whether that monitoring parameter has exhibited a measurably significant increase at that well. Therefore, USA Waste shall monitor each well/MPar pair in one of two modes, as follows, either:
- i. **Detection Mode** — For an the monitoring parameter that has not produced a measurably significant increase at that compliance well, the purpose of monitoring, for that well/MPar pair, is to watch for the monitoring parameter's arrival at that well at a concentration strong enough to trigger a measurably significant indication using an appropriate statistical or nonstatistical data analysis method. Once an monitoring parameter shows a measurably significant increase at a well, future monitoring of that well/MPar pair is done in “tracking mode”; or
 - ii. **Tracking Mode** — For an monitoring parameter that has produced a measurably significant increase at that well, the purpose of the monitoring, for that well/MPar pair, is to verify the suitability and effectiveness of the existing or proposed corrective measures by tracking changes in the monitoring parameter's concentration at that location via a concentration-versus-time plot.
- g. **Detection Mode Data Analyses** — The following applies to all detection mode data analyses (i.e., this paragraph does not apply to the scans under paragraphs A.7.a, A.7.b, or B.1.b.v.):
- i. **Monitoring Parameters Readily Detectable in Background** — At any given monitoring point, USA Waste shall apply an appropriate statistical analysis for each detection mode monitoring parameter that exceeds its respective MDL in at least 10% of the applicable background data set;
 - ii. **Monitoring Parameters Not Readily Detectable in Background** — For any monitoring point at which one or more monitoring parameters, in detection mode, exceed their respective MDL in less than 10% of the applicable background data set, USA Waste shall analyze the data for these monitoring parameters via the California Nonstatistical Data Analysis Method (CNSDAM) test described in paragraph A.9 of this M&RP.

9. CALIFORNIA NONSTATISTICAL DATA ANALYSIS METHOD (CNSDAM)

- a. **Non-Statistical Method For Seldom-Detected Detection Mode Monitoring Parameters** — For any given compliance (downgradient) well, regardless of the monitoring program (DMP, EMP, AMP, or CAP), USA Waste shall use this data analysis method, jointly, for all constituents on the “scope list” of paragraph A.9.a.i of this M&RP (or, for each retest sample, the modified scope list of paragraph A.9.a.iii).

- i. **Scope List** — Create a current “scope list” showing each detection mode monitoring parameter, at that well, that exceeds its MDL in less than 10% of its background data (see paragraph A.8.f.i of this M&RP).
 - ii. **Two Triggers** — From the scope list made under paragraph A.9.a.i, above, for an initial test [or, for a retest, the modified scope list under A.9.b, below], identify each monitoring parameter in the current sample from that well that exceeds its respective MDL or Practical Quantitation Level (PQL)². USA Waste shall conclude that these identified monitoring parameters provide a tentative indication [or, for a retest, provide a measurably significant indication], at that well, of a change in the nature or extent of the release if **either:**
 - (a) two or more of the monitoring parameters exceed their respective MDL,
 - or*
 - (b) at least one monitoring parameter equals or exceeds its PQL.
- b. **Discrete Retest** [27 CCR §20415(e)(8)(E)]:
- i. In the event that USA Waste concludes (pursuant to paragraph A.9.a.ii, above) that there is a tentative indication of a release, then USA Waste shall immediately notify Regional Board staff by phone or e-mail and, within 30 days of such indication, shall collect two new (retest) samples from the indicating compliance well.
 - ii. USA Waste shall analyze the retest samples only for those constituents indicated in the original test, under paragraph A.9.a.ii, and these indicated constituents shall comprise the “modified scope list.” As soon as the retest data are available, USA Waste shall apply the same test [under paragraph A.9.a.ii, above, but using this modified scope list] to separately analyze each of the two suites of retest data at that compliance well.
 - iii. If either (or both) of the retest samples trips either (or both) of the triggers under paragraph A.9.a.ii, then USA Waste shall conclude that there is a change at that well in the nature or extent of the known release for the constituent(s) indicated in the validating retest sample(s). Furthermore, thereafter, USA Waste shall monitor the indicated constituent(s) in tracking mode (instead of detection mode; see paragraph A.9.a.ii of this M&RP) at that well, shall remove the constituent(s) from the scope list created (under paragraph A.9.i of this M&RP) for that well, and shall highlight this conclusion and these changes in the next scheduled monitoring report.

² The practical quantitation level, or PQL, is the lowest concentration of a substance that can be consistently determined within +/- 20% of the true concentration by 75% of the laboratories tested in a performance evaluation study. Alternatively, if performance data are not available, the PQL for carcinogens is the method detection limit (MDL) multiplied by 5, and for noncarcinogens is the MDL x 10. Estimated PQLs are listed in Appendix II to 40CFR258.

10. MONITORING PARAMETERS:

- a. USA Waste shall analyze separate samples from each water-bearing medium (e.g., surface water including seeps and springs, the uppermost aquifer beneath the site, perched zones, subdrains, or soil-pore liquid [vadose zone³]), and from leachate, landfill gas (LFG), and LFG condensate, for the approved monitoring parameters and frequencies listed in Attachment D, Tables 4-8, of this M&RP. The monitoring parameters must be analyzed in accordance with the methods listed in Table 9 of Attachment D.
- b. For any constituents that are detected at concentrations above their respective MDL in 10% or less of the background data to date for all monitored mediums except leachate, LFG, and LFG condensate, the constituent's concentration limit shall be its MDL at any given time.
- c. USA Waste shall test the analytical data from all monitored mediums, except leachate, LFG, and LFG condensate, using the **statistical methods** allowed by 27CCR §20415(e)(8) for the following parameters:
 - i. **General Chemistry** — Bicarbonate, Carbonate, Chemical Oxygen Demand (COD), Chloride, Nitrate (as Nitrogen), Sulfate, and Total Dissolved Solids (TDS);
 - ii. **Leachate Indicator Metals** — Calcium, Iron, Magnesium, Manganese, Potassium, and Sodium;
 - iii. **Detectable VOCs** — Each VOC that exceeds its respective MDL in at least ten percent (10%) of the applicable background data set for a monitored water-bearing medium during a given reporting period;
 - iv. **Trace Metals** — All Appendix I trace metals (only for background monitoring points in the expansion area; see Table 5, Attachment D for list of constituents) that exceed their respective MDL in at least 10% of the applicable background data set; and
 - v. **Other Monitoring Parameters** — Any monitored Appendix II constituent not covered under paragraphs A.10.c.iii and iv, above, that exceeds its respective MDL in at least 10% of the applicable background data set for a monitored water-bearing medium during a given reporting period.
- d. Monitoring parameters for the required monitoring program at the ESL shall be approved by the Executive Officer of the Regional Board. The Executive Officer may approve alternative monitoring parameters that meet the requirements of both 27CCR §§20380 et seq. and 40CFR §258.54. The Executive Officer may also approve alternative statistical or non-statistical methods that meet the requirements of 27CCR §20415(e) and 40CFR §258.53.

³ The vadose zone, or zone of aeration, is a subsurface zone that is located directly above the water table and contains water at less than atmospheric pressure. The vadose zone includes water held by capillarity and air or gases held generally under atmospheric pressure.

11. USA Waste shall develop and maintain the COC list (under 27CCR §20395) as follows:

- a. **Building and augmenting the COC list** — The COC list includes:
 - i. All waste constituents listed in WDR Order No. 01-53; and
 - ii. Each constituent listed in Appendix II that is not already a COC for the landfill, and that was both:
 - (a) Detected in the annual October sampling of the landfill's leachate (see paragraph B.1.b.v. of this M&RP); and
 - (b) Also detected in the retest of a leachate sample collected the following April.

12. ESTABLISHING BACKGROUND VALUES

- a. **For Existing Monitoring Points** — Whenever a new COC is established, under paragraph A.7.a. or B.1.b.v. of this M&RP, USA Waste shall establish the prevailing concentration of that constituent by taking one sample at least quarterly for two years at each background and downgradient monitoring point. USA Waste shall use these data: 1) to validate downgradient monitoring well data relative to upgradient well data, via box-and-whiskers plots, to show that it is reasonable to assume that each downgradient well's data do not reflect a release; and 2) subsequent to such validation, to serve as the initial background data set for intra-well comparisons at that well.
- b. **For New Monitoring Points** — For any upgradient or downgradient well installed after the effective date of this M&RP, USA Waste shall establish the prevailing concentration for each COC by taking at least one sample quarterly for two years. These data shall be used, as described in 1) and 2), under paragraph A.12.a.

13. VADOSE ZONE MONITORING

- a. As allowed under 27CCR §20415(d)(5), subdrain liquids monitoring will be conducted in lieu of soil-pore liquid monitoring for those units or cells that require the placement of subdrains to control groundwater seepage beneath the liner system (see Appendix D, Tables 4 and 5 for the required monitoring parameters). For those units or cells that do not have a subdrain collection system, and are underlain by fractured bedrock that does not contain perched groundwater, soil-pore liquid monitoring is not considered to be effective and is, therefore, not necessary. Any newly constructed units or cells that are underlain predominantly by porous materials, such as alluvium or colluvium, will require the installation of lysimeters or sumps beneath the liner system to collect soil-pore liquid samples for analysis.
- b. In addition, LFG shall be monitored quarterly from perimeter gas probes GP 4, GP 5, GP 6, GP 7, GP 8, GP 9, GP 10R, and GP 11 (or equivalent locations) for carbon dioxide, methane and oxygen. If methane concentrations are greater than

1% by volume in any probe(s), then the LFG shall be sampled from the probe(s) and from the LFG control system header for the monitoring parameters in Table 7, Attachment D. LFG sampling shall be conducted on a semi-annual basis (during the Spring and Fall monitoring periods) in accordance with the schedules outlined in Table 3, Attachment D. Monitoring of LFG is considered necessary in order to provide a method for detecting LFG-transported constituents that may not be detected by subdrain liquids monitoring as described in A.11.a, above, and that could impact groundwater beneath the facility. After two years of LFG data have been collected and compared to the other water quality monitoring parameters at the site, USA Waste may request a decrease in the number of perimeter probes monitored if it can be shown that the quality and types of the data collected at the site will not be adversely impacted.

B. MONITORING PROGRAM

1. WATER QUALITY MONITORING:

- a. Sample collection, storage, and analysis shall be performed according to the most recent version of Standard United States Environmental Protection Agency (USEPA) Methods (USEPA Publication "SW-846").
- b. USA Waste shall comply with the requirements of 27CCR §20415 for any water quality monitoring program developed to satisfy 27 CCR §20420, §20425, or §20430 and the requirements of this order.
 - i. The groundwater monitoring shall meet the requirements of 27CCR §20415(b) and 40CFR §258.51 (a, c, and d).
 - ii. The surface water monitoring shall meet the requirements of 27CCR §20415(c). In addition, whenever possible, volumetric flow shall be measured, or, as a minimum, visually estimated, for all seeps or springs monitored at the site.
 - iii. Unsaturated zone monitoring shall meet the requirements of 27CCR §20415(d) and shall be conducted in accordance with paragraph A.13 of this M&RP.
 - iv. All general monitoring requirements shall be in accordance with 27CCR §20415(e).
 - v. Pursuant to 40CFR §258.55(b), the October leachate sample(s) shall be analyzed for all constituents of Appendix II (to 40CFR §258), and also the constituents of Table 6 of Attachment D (to this M&RP) that have not, to date, been detected in the landfill's leachate and verified by resampling. If the October leachate testing identifies any new Appendix II constituents that have not been previously detected in the leachate, USA Waste shall obtain a single leachate retest sample the following April and analyze it for the new constituents. Any such new constituents verified in the April retest become part of the landfill's COC list and are added to its monitoring parameter list for a minimum of two years. [Note: see paragraph A.12 of this M&RP

regarding the validation and establishment of a background data set for intra-well comparisons for a new COC at existing wells.]

- c. Because this order recognizes that a release has already been identified at the ESL, USA Waste must implement both a revised EMP and a federal AMP within 90 days of the adoption of WDR Order No. 01-53. No part of the Unit shall implement a detection monitoring program (DMP). The EMP must meet the requirements contained in 27CCR §20425, and the federal AMP must meet any additional requirements contained in 40CFR §258.55. Therefore, USA Waste shall:
 - i. Within 30 days of the adoption of this order, submit a proposal and compliance schedule for implementing an updated EMP and an AMP. The compliance schedule shall include a substantiated list of proposed realistic dates for meeting all applicable milestones of the EMP/ AMP, and the milestones associated with the implementation of the programs required under paragraphs B.1.c.ii and iii, below.
 - ii. Within 90 days of the adoption of this order, submit a preliminary Engineering Feasibility Study (EFS) under 27CCR §20425. USA Waste shall also begin an Assessment of Corrective Measures (ACM) and Selection of Remedy (SOR) under 40CFR §§258.55, 258.56, and 258.57, respectively, to the extent that these federal requirements are not addressed by the EMP or the landfill's current monitoring program.
 - iii. Within 180 days of the adoption of this order, USA Waste shall submit an EMP progress report, a final EFS, and a draft amended Joint Technical Document (JTD), meeting the requirements of 27CCR §20425(c) and (d) and 40CFR §258.56, §258.57, and §258.58, to establish a CAP.
- d. Regardless of the monitoring program (EMP/ AMP or CAP), USA Waste shall continue to monitor groundwater for all well/MPar pairs in accordance with paragraph A.8.f of this M&RP.

2. GENERAL SITE MONITORING:

- a. All deficiencies identified during general site monitoring shall be documented, and the information transmitted to the Regional Board via facsimile (FAX), e-mail, or other approved method, within 48 hours of occurrence. This same documentation must also be submitted as part of the reports described in paragraph C.4 of this M&RP.
- b. At a minimum, all systems, such as landfill gas condensate and leachate containment structures, groundwater extraction and treatment systems, subdrains, sumps, and lysimeters, shall be inspected and evaluated on a weekly basis for their effectiveness. All deficiencies identified, and the dates and types of corrective action taken, shall be recorded in a permanent log. All deficiencies shall be photographed (if possible) for the record. The volume of liquids collected in each containment structure shall be recorded weekly for active sites. Liquid samples, such as gas condensate and leachate, shall be collected in

accordance with the monitoring frequency in Attachment D, Table 3, and analyzed for constituents specified in Tables 6 and 7 of this M&RP.

- c. Monthly, USA Waste shall inspect all waste management units and shall evaluate their effectiveness to comply with Discharge Specification B.2 of Order No. 01-53. All areas of slope failure, differential settlement, fissuring, erosion, ponding, leachate staining, and seepage into or from the landfill shall be identified, field-marked, and documented. In the event seepage is discovered the location of each seep shall be mapped and a mitigation plan submitted for the approval of the Executive Officer of the Regional Board. All findings shall be photographed for the record.
- d. At a minimum, all run-on and runoff drainage control structures shall be inspected and evaluated quarterly for their effectiveness. During dry weather conditions, the effectiveness of the drainage control system shall be evaluated on the basis of its conformance to the as-built drawings, or revised drawings, for the system. All deficiencies shall be identified, recorded and mitigated. Any failure of the drainage and erosion control system at the site must be reported to the Executive Officer of the Regional Board within 24 hours of the occurrence of the event.
- e. Annually, **by October 15**, an aerial or ground survey of the landfill facility shall be performed in accordance with the schedule in Attachment D, Table 3, of this M&RP.

C. REPORTING

1. **Monitoring report contents** — All reports shall be submitted no later than one month following the end of their respective reporting period. The reports shall be comprised of at least the following, in addition to the specific contents listed for each type of report:
 - a. **Transmittal letter** — A letter summarizing the essential points in the report. This letter shall include a discussion of any violations or changes in the nature or extent of the release found since the last such report was submitted, and shall describe actions taken or planned for correcting those violations or changes.
 - b. **Compliance evaluation summary** — For groundwater monitoring and COC reports, a compliance evaluation summary shall be included which references the sampling and quality assurance plans. For modifications to sampling activities, the summary shall include a discussion of the actual activities for at least the following:
 - i. **Flow rate/direction** — For each monitored groundwater body, a description and graphical presentation (e.g., arrow on a map) of the velocity and direction of groundwater flow under/around the Unit, based upon water level elevations taken during the collection of the water quality samples;
 - ii. **Well information** — For each monitoring well addressed by the report, a description of the method and time of water level measurement, and a

description of the method of purging used before sampling to remove stagnant water in the well, pursuant to 27CCR §20415(e)(12)(B); and

- iii. **Sampling Information** — For each monitoring point addressed by the report, a description of the type of pump or other device used and its vertical 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);
 - c. **Map** — A map (or copy of an aerial photograph) showing the locations of observation stations and monitoring points.
 - d. **Laboratory data** — The laboratory results of all analyses shall be submitted in accordance with paragraph C.4.a of this M&RP, and shall indicate for each analyte that is detected at less than its respective PQL:
 - i. The PQL and the estimated MDL;
 - ii. An indication as to whether the constituent was detected or not; and
 - iii. In the case of a trace detection, the estimated concentration, if possible.
 - e. **Statistical verification procedure and reporting** — Per 27CCR §20415(e)(8)(6), USA Waste shall notify the Executive Officer of the Regional Board by certified mail of the results of both the initial statistical test and the results of the verification procedure, as well as all concentration data collected for use in these tests within seven (7) days of the last laboratory analysis of the samples collected for the verification procedure.
 - f. **Landfill gas condensate and leachate containment systems, groundwater extraction and treatment system, subdrain, and lysimeter monitoring** — A statement as to the condition and performance of these systems and monitoring points.
 - g. **Permanent and interim drainage and erosion control systems** — A statement as to the condition and performance of these systems.
 - h. **Waste type and placement** — The quantity and types of wastes discharged and the locations in the landfill where waste has been placed since submittal of the last such report.
 - i. If alternative daily cover (ADC) is used at the site that meets the requirements of 27CCR §20705(e), and has been approved by Regional Board staff, the type, amount (including, if applicable, average thickness), method of placement, and any problems or deficiencies must be noted in the report.
2. **October leachate sampling results** — USA Waste shall report to the Regional Board, no later than January 31 of each year, the analytical results of the leachate sample taken the previous October, including an identification of all detected Appendix II constituents that are not on the landfill's COC list (non-COCs).

3. **April retest results** — If the annual leachate sample taken in October identifies any non-COCs USA Waste shall collect and analyze a retest sample the following April. The retest sample shall be analyzed only for the non-COCs detected in the October sample. During any year in which an April leachate retest is carried out, USA Waste shall submit a report to the Regional Board no later than August 1 of that year. This report must identify all constituents that were detected in both the previous calendar year's October sample and in the April retest sample, and must permanently add these constituents to the landfill's COC list, and for at least two years, must also add them to its monitoring parameter list. The report shall also include an updated COC list that includes the Appendix II constituents that are newly detected in both the October and April leachate samples.
4. **Compliance monitoring reports:**
 - a. Semi-annually, USA Waste shall submit quarterly water quality monitoring and analytical data (pursuant to paragraphs B.1 and B.2.a, b, and c of this M&RP) for the monitoring periods and reporting due dates specified in Attachment D, Table 3 of this M&RP. USA Waste may propose an alternate schedule, and the Executive Officer may approve the proposal, or may require USA Waste to comply under an alternate reporting frequency.
 - b. General site monitoring and analytical data (pursuant to paragraphs B.1, and B.2.a, b, and c of this M&RP) may be submitted semi-annually for the monitoring periods and reporting due dates specified in Attachment D, Table 3 of this M&RP. When necessary, abbreviated reports shall also be submitted under the following conditions:
 - i. Within 48 hours of the occurrence or identification of any deficiencies or failures of on-site systems such as landfill gas condensate and leachate containment structures, groundwater extraction and treatment systems, subdrains, and lysimeters. A brief synopsis, including pertinent photographs, shall be forwarded to Regional Board staff.
 - ii. If any areas of slope failure, differential settlement, fissuring, erosion, ponding, leachate staining, and/ or seepage into or from the landfill are identified, a brief report with pertinent photographs shall be submitted to Regional Board staff within 48 hours of the occurrence of the event.
 - iii. During the rainy season, USA Waste shall submit a brief "storm report" within 48 hours of a major storm event (defined as any storm that exceeds 0.5 inches of precipitation within a 24-hour period⁴ at the site), or if more than minor erosion occurs. This report shall include pertinent photographs, the identification of any deficiencies, and the date and type of corrective action that has, or will be, taken to correct these deficiencies.
5. **Annual summary report** — USA Waste shall submit an annual report to the Regional Board covering the previous monitoring year (April 1 of the previous year

⁴ A 24-hour period is defined as the 24 hours following the beginning of the initial rainfall event.

through March 31 of the following year). The annual summary reports are due on April 30 (see Attachment D, Table 9). This report may be combined with the detection monitoring report period ending March 31, and shall meet the following requirements:

- a. **Graphical Presentation** — All graphs shall include, at a minimum, the last five (5) years of available data for that monitoring point or constituent. Trend analyses shall include analysis of trends that have been identified over the last monitoring year, and analysis of any newly identified trends, significant changes in a known trend or trend reversals identified in the historical data collected over the last 5 years for groundwater, surface water (including seeps and springs), and vadose zone monitoring points (subdrains, lysimeters, or LFG).
 - i. Graphing of the Analytical Data shall be in accordance with 27CCR §20415(e)(14):
 - (a) All graphs shall be at a scale appropriate to show trends or variations in water quality;
 - (b) All graphs for a given constituent shall be plotted at the same scale to facilitate visual comparison of monitoring data; and
 - (c) Each graph shall represent data from one compliance or background monitoring point and one COC or monitoring parameter.
 - ii. Graphing of analytical data shall also include pertinent constituent trend charts for groundwater, surface water, vadose zone monitoring points, or other medium of interest that provide a comparison of both the background and compliance monitoring data, and an indication of the behavior of constituents in the various media at the site.
- b. Hydrographs shall be provided for analysis and identification of any historical groundwater elevation fluctuations at the site. Background wells and compliance wells within the same aquifer shall be plotted on the same graph for comparison.
- c. **Table and diskette(s)** — Data for all monitoring parameters detected at measurably significant concentrations (at or above the MDL) during the previous twelve months shall be presented in hard copy tabular form as well as on floppy disk, CD-ROM, or in a commonly available compressed format (e.g., WinZip or NORTON BACKUP) in accordance with 27CCR §20420(h). The data shall be presented in MS-DOS/ASCII format, EXCEL, or other file format acceptable to the Executive Officer of the Regional Board. This data set shall also include the background data used as a reference in detecting the measurably significant increase.
- d. **Compliance record discussion** — A comprehensive discussion of the compliance record, and of any corrective actions taken or planned which may be needed to bring USA Waste into full compliance with the landfill's waste discharge requirements.
- e. **Waste allocation map** — A map showing the area, if any, in which filling has been completed during the previous calendar year.

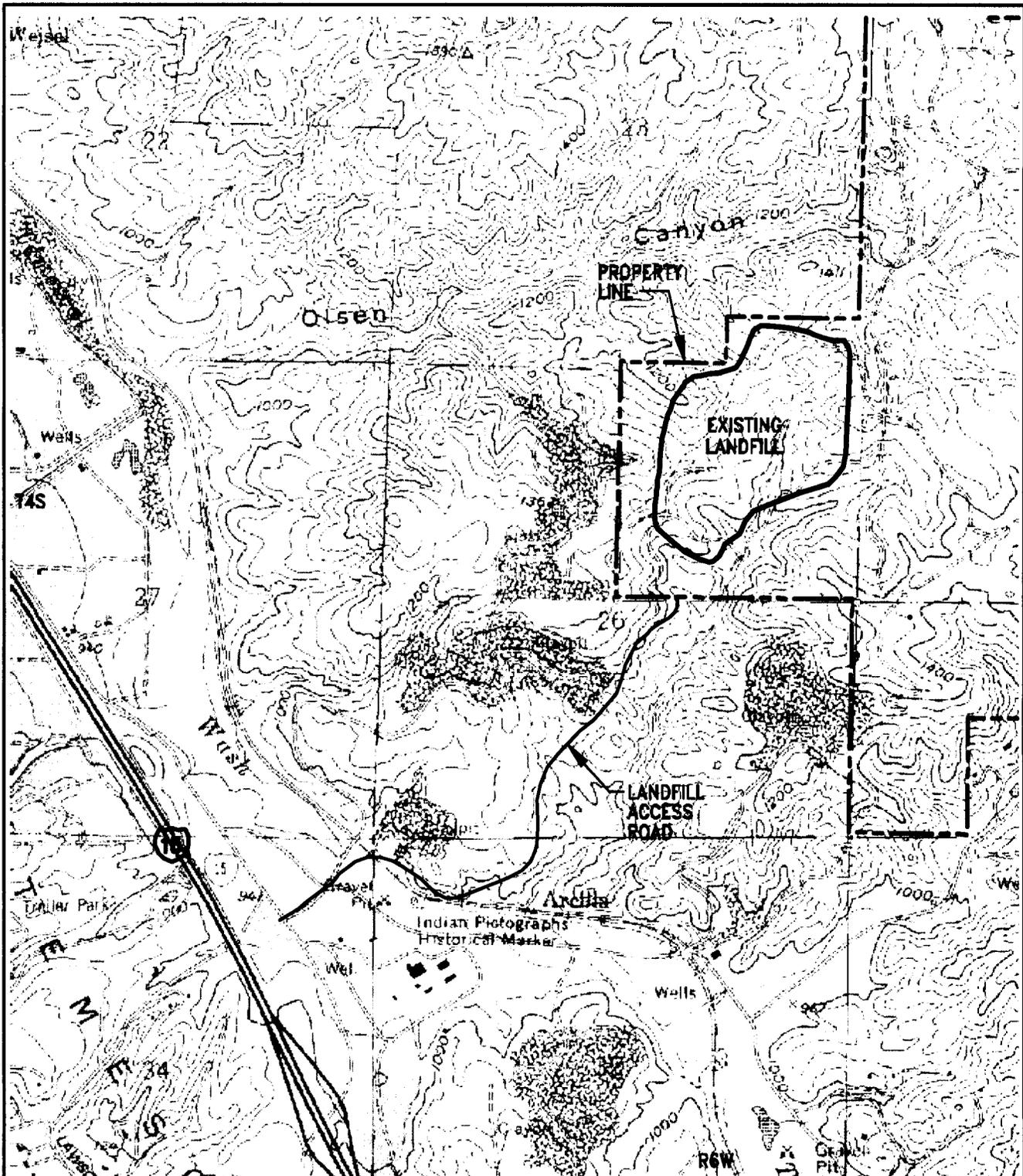
- f. **Summary of changes** — A written summary of monitoring results and monitoring and control system(s), indicating any changes made or observed since the previous annual report.
 - g. **Leachate and gas control** — For units having leachate and gas monitoring/control facilities, an evaluation of their effectiveness, pursuant to 27CCR §20340(b, c, & d).
6. **Annual drainage control and maintenance report** — By October 1 of each year, all drainage and erosion control system construction and maintenance activities shall be completed. In accordance with Provision D.5 of WDR Order No. 01-53, annually, by December 31, a site drainage control and maintenance report containing the following information shall be submitted:
- a. A summary of the containment structure, waste management unit, and drainage control system records for the monitoring period. The summary shall include a list of deficiencies identified and the dates and types of corrective actions taken to achieve compliance with the requirements contained in this order. If corrective actions for identified deficiencies could not be implemented by the end of the monitoring period, USA Waste shall provide the reason(s) for noncompliance and a time schedule for implementing the corrective actions.
 - b. For the previous 12 months, a summary of the adequacy and effectiveness of both permanent and interim drainage control systems to collect and divert the calculated volume of precipitation and peak flows resulting from a 100-year, 24-hour storm.
 - c. A tabular summary of the new and existing drainage control structures, including the type of structure and its dimensions (especially for conveyance structures), and the completion dates of maintenance activities performed for each of the structures.
 - d. An 11 x 17 inch (or better scale) facility site map required under Provision D.5.c of this order indicating the location of the elements listed in paragraph c, above, of this M&RP, and the flow direction of site drainage.
7. **Nonstatistical Scans** — USA Waste shall comply with the following requirements when conducting any nonstatistical scan under paragraph A.7 of this M&RP, including the five-year COC scan, if a previously undetected constituent is discovered in any groundwater monitoring well:
- a. Within 24 hours, USA Waste shall notify Regional Board staff of the well(s) and constituent(s) involved by telephone or e-mail.
 - b. If the retest sample verifies the presence of the constituent, then, within 7 days:
 - i. USA Waste shall communicate the verification to Regional Board staff by phone;
 - ii. The constituent shall be added to the monitoring parameter list for the site;

- iii. USA Waste shall insert a dated copy of the revised monitoring parameter list in the Operating Record; and
 - iv. USA Waste shall report the new monitoring parameter prominently in the next monitoring report thereafter.
8. **Reporting Schedule** — USA Waste shall submit all reports/documents in accordance with the deadlines specified in Attachment D, Table 3 of this M&RP.
9. **Signature** — All reports shall be signed by a responsible officer or a duly authorized representative of USA Waste and shall be submitted under penalty of perjury.

I, Gerard J. Thibeault, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an order adopted by the California Regional Water Quality Control Board, Santa Ana Region.

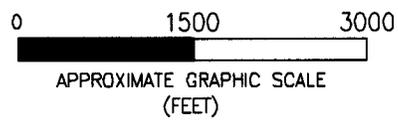
Gerard J. Thibeault
Executive Officer

July 20, 2001

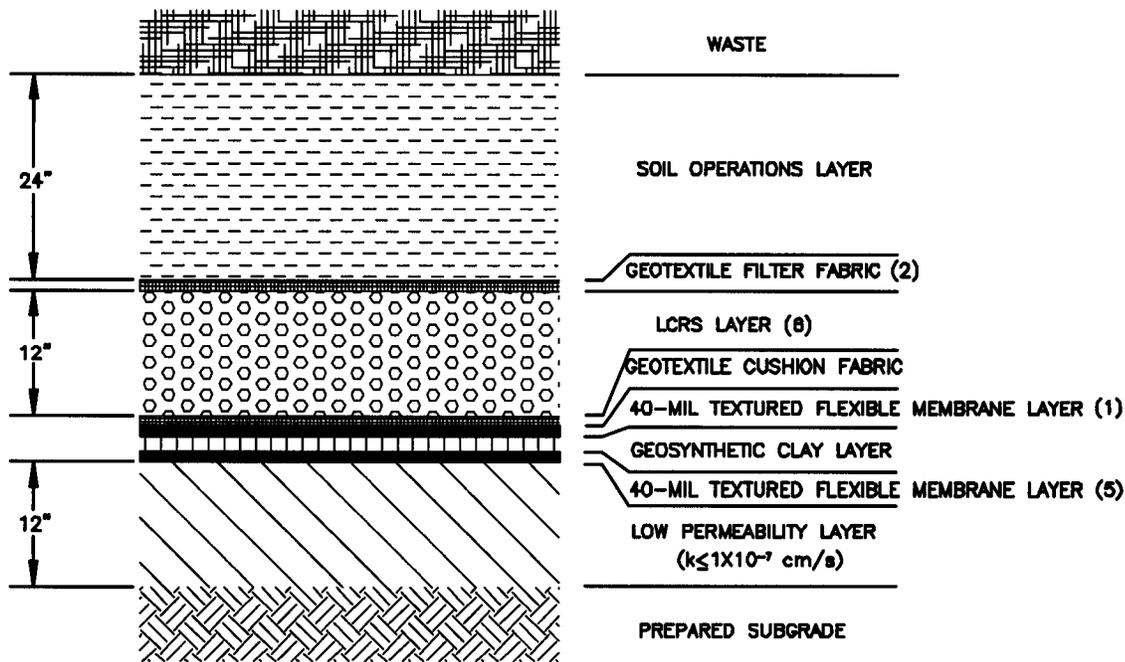


REFERENCE: USGS 7.5-MINUTE LAKE MATHEWS, CA QUADRANGLE, DATED 1967, PHOTOREVISED IN 1988.

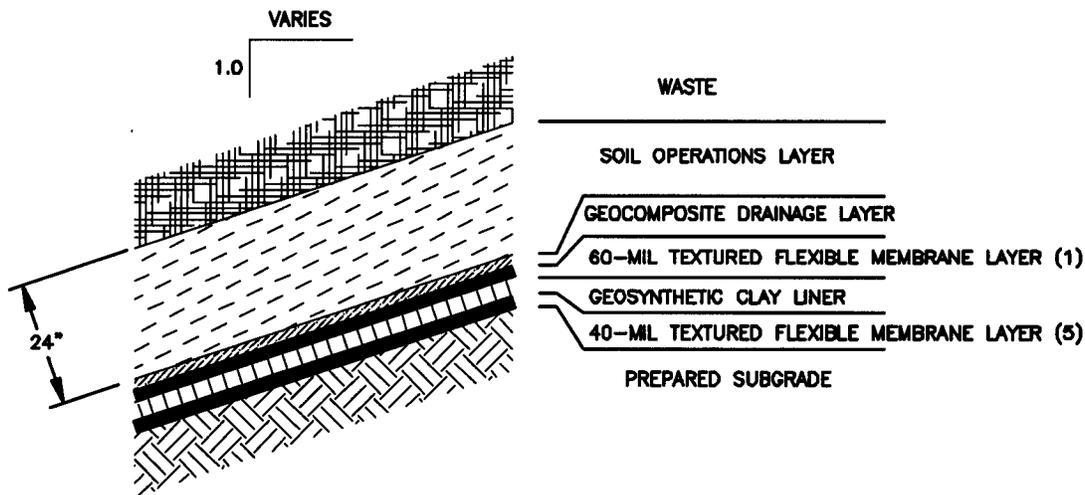
**ATTACHMENT A: LOCATION OF
EXISTING (PERMITTED) LANDFILL
USA WASTE - EL SOBRANTE LANDFILL
WDR NO. 01-53**



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PROPOSED COMPOSITE BOTTOM LINER (4)
SCALE: NTS



PROPOSED SIDE SLOPE LINER (3) (4)
SCALE: NTS

ATTACHMENT C: LINER SYSTEM DETAIL
USA WASTE - EL SOBRANTE LANDFILL
WDR NO. 01-53

NOTES:

- 1) IF HIGH DENSITY POLYETHYLENE (HDPE) IS USED, MINIMUM THICKNESS WILL BE 60-MIL.
- 2) THIS LAYER MAY BE REPLACED WITH PROPERLY GRADED SAND.
- 3) SIDE SLOPE LINER HAS A MAXIMUM SLOPE OF 1.75 TO 1.
- 4) ADDITIONAL BOTTOM AND SIDE SLOPE LINER CONFIGURATION MAY BE CONSIDERED. PRIOR APPROVAL OF AN ALTERNATIVE CONFIGURATION WILL BE OBTAINED FROM THE RWQCB.
- 5) IF HIGH DENSITY POLYETHYLENE (HDPE) IS USED, MINIMUM THICKNESS WILL BE 40-MIL.
- 6) LCRS = LEACHATE COLLECTION AND REMOVAL SYSTEM.

ATTACHMENT D
USA WASTE OF CALIFORNIA

DRAFT

TABLE 1
CURRENT¹ CONSTITUENT OF CONCERN (COC) LIST
FOR THE EL SOBRANTE LANDFILL

General Chemistry	Metals	Volatile Organic Compounds (VOCs)	
Alkalinity (Total)	Aluminum	Acetone	1,1,1,2-Tetrachloroethane
Ammonia (as Nitrogen)	Antimony	Acrylonitrile	1,1,2,2-Tetrachloroethane
Anions	Arsenic	Benzene	Tetrachloroethene (PCE)
Bicarbonate	Barium	Bromochloromethane	Toluene
Carbonate	Beryllium	Bromodichloromethane	1,1,1-Trichloroethane
Cations	Boron	Bromoform	1,1,2-Trichloroethane
Chemical Oxygen Demand (COD)	Cadmium	Bromomethane	Trichloroethene (TCE)
Chloride	Calcium	Carbon Disulfide	Trichlorofluoromethane
Cyanide	Chromium (Total)	Carbon Tetrachloride	1,2,4-Trimethylbenzene
Dissolved Oxygen	Chromium (Hexavalent)	Chlorobenzene	Vinyl Acetate
Fluoride	Cobalt	Chloroethane	Vinyl Chloride
Hardness	Copper	Chloroform	o-Xylene
Hydroxide	Iron	Chloromethane	p+m-Xylene
Nitrate (as Nitrogen)	Lead	Dibromochloromethane	Semi-Volatile Organic Compounds (SVOCs)
pH	Magnesium	1,2-Dibromo-3-chloropropane	Benzoic Acid
Phenols (Total)	Manganese	1,2-Dichlorobenzene	bis(2-Ethylhexyl) Phthalate
Phosphate	Mercury	1,4-Dichlorobenzene	Butylbenzylphthalate
Phosphorus (Total)	Molybdenum	trans-1,4-Dichloro-2-butene	2-Methylphenol (m-Cresol)
Specific Conductance	Nickel	Dichlorodifluoromethane	4-Methylphenol (o-Cresol)
Sulfate	Potassium	1,1-Dichloroethane	2,4 Dimethylphenol (p-Cresol)
Sulfide	Selenium	1,2-Dichloroethane	Dimethylphthalate
Total Dissolved Solids (TDS)	Silver	1,1-Dichloroethene	di-n-Butylphthalate
	Sodium	cis-1,2-Dichloroethene	Napthalene
	Thallium	trans-1,2-Dichloroethene	Nitrobenzene-d5
	Tin	1,2-Dichloropropane	Phenol-d5
	Vanadium	cis-1,3-Dichloropropene	Organochlorine Pesticides
	Zinc	trans-1,3-Dichloropropene	Aldrin
		Ethylbenzene	delta-BHC
		Ethylene dibromide (EDB)	Dieldrin
		Isobutyl Alcohol	Endosulfan II
		Isopropylbenzene	Heptachlor epoxide
		Methylene Chloride	Chlorinated Herbicides
		Methyl Butyl Ketone	2,4,5-TP (Silvex)
		Methyl Tertiary Butyl Ether (MTBE)	Polychlorinated Biphenyls (PCBs)
		Methyl Ethyl Ketone (MEK)	Aroclor 1016-1260
		Methyl Iodide	
		4-Methyl-2-Pentanone	
		Styrene	
		Tetrachloroethane	

¹ The COC list shall be updated in accordance with paragraphs A.11.a, b, and c of M&RP No. 01-53.

TABLE 2
SUBSET OF 40CFR §258 APPENDIX II CONSTITUENTS
DETECTED IN LEACHATE²

General Chemistry	Volatile Organic Compounds (VOCs)	
Cyanide Sulfide	Acetone Acrylonitrile Benzene	Isopropylbenzene Methylene Chloride Methyl Butyl Ketone
Metals	Bromochloromethane Bromodichloromethane	Methyl Ethyl Ketone (MEK) Methyl Iodide
Antimony Arsenic Barium Beryllium Boron Cadmium Calcium Chromium (Total) Chromium (Hexavalent) Cobalt Copper Iron Lead Magnesium Manganese Mercury Nickel Potassium Selenium Silver Sodium Thallium Tin Vanadium Zinc	Bromoform Bromomethane 2-Butanone (MEK) Carbon Disulfide Carbon Tetrachloride Chlorobenzene Chloroethane Chloroform Chloromethane Dibromochloromethane 1,2-Dibromo-3-chloropropane 1,2-Dichlorobenzene 1,4-Dichlorobenzene trans-1,4-Dichloro-2-butene Dichlorodifluoromethane 1,1-Dichloroethane 1,2-Dichloroethane 1,1-Dichloroethene cis-1,2-Dichloroethene trans-1,2-Dichloroethene 1,2-Dichloropropane cis-1,3-Dichloropropene trans-1,3-Dichloropropene Ethylbenzene Ethylene dibromide (EDB) Isobutyl Alcohol	4-Methyl-2-Pentanone Styrene 1,1,1,2-Tetrachloroethane 1,1,2,2-Tetrachloroethane Tetrachloroethene (PCE) Toluene 1,1,1-Trichloroethane 1,1,2-Trichloroethane Trichloroethene (TCE) Trichlorofluoromethane 1,2,3-Trichloropropane 1,2,4-Trimethylbenzene Vinyl Acetate Vinyl Chloride o-Xylene p+m-Xylene

² This list shall be updated each year in accordance with paragraph B.1.b.v of M&RP No. 01-53.

**TABLE 3
 MONITORING AND REPORTING FREQUENCY**

Task Description	Monitoring Frequency	Report Due Date
Evaluation Monitoring ³	Quarterly ⁴	Semi-annual Reporting ⁵
Expansion Area Background Monitoring (see footnote below for types of monitored mediums)	Quarterly	Semi-annual Reporting
General Site Monitoring	Quarterly	Semi-annual Reporting
Leachate Monitoring	Annually (October 1 – October 31)	January 31 of the following year
April Leachate Re-test	As Required (April 1 – April 30)	August 1 of each year
Landfill Gas (LFG) Monitoring (Perimeter probes and LFG control system header)	April 1 – September 30	October 31 of each year
	October 31 – March 31	April 30 of each year
LFG Condensate Monitoring	Quarterly	Semi-annual Reporting
Annual Summary	April 1 of previous year through March 31	April 30 of each year
Federal Assessment Monitoring	All Appendix II constituents by September 30, 2001	January 31, 2002
Five-Year COC Scan	April 1 – September 30, 2001	October 31, 2001
	October 1, 2005 – March 31, 2006	April 30, 2006, and every fifth year thereafter, alternately in the Spring (April 30) and the Fall (October 31)
Annual Drainage Control and Maintenance	By October 1 of each year	December 31 of each year
Aerial or ground survey	Not applicable	Annually, by October 15

³ Monitored mediums include groundwater, surface water (including natural seeps and springs), subdrains, and soil-pore liquid.

⁴ Quarterly monitoring is conducted during the Winter (January 1 – March 31), Spring (April 1 – June 30), Summer (July 1 – September 30), and Fall (October 1 – December 31) monitoring periods.

⁵ Semi-annual reporting – reports are due April 30 (includes data collected during the Fall and Winter monitoring periods) and October 31 (includes data collected during the Spring and Summer monitoring periods).

TABLE 4
EVALUATION MONITORING PARAMETERS

1) Volatile organic compounds per 27 CCR §20420 including all 40CFR §258 Appendix II constituents
2) General chemistry: Bicarbonate, Carbonate, Chemical Oxygen Demand (COD), Chloride, pH, Nitrate as Nitrogen, Sulfate, and Total Dissolved Solids (TDS)
3) Leachate Indicator Metals: Calcium, Iron, Magnesium, Manganese, Sodium, and Potassium
5) Field measurements (i.e., groundwater elevation, estimated volumetric flow (subdrains [if applicable], seeps, or springs) or estimated volume of soil-pore liquid (subdrains [if applicable], sumps, or lysimeters), specific conductance, pH, temperature, turbidity, and dissolved oxygen)

TABLE 5
EXPANSION AREA
BACKGROUND MONITORING PARAMETERS

1) Volatile organic compounds per 27 CCR §20420 including all 40CFR §258 Appendix II constituents
2) General chemistry: Bicarbonate, Carbonate, Chemical Oxygen Demand (COD), Chloride, pH, Nitrate as Nitrogen, Sulfate, and Total Dissolved Solids (TDS)
3) Leachate Indicator Metals: Calcium, Iron, Magnesium, Manganese, Sodium, and Potassium
4) Trace metal constituents identified through reference in 27 CCR §20420 (Appendix I metals), including: antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, nickel, selenium, silver, thallium, vanadium, and zinc
5) Field measurements (i.e., groundwater elevation, estimated volumetric flow (subdrains [if applicable], seeps, or springs) or soil-pore liquid (subdrains [if applicable], sumps, or lysimeters), specific conductance, pH, temperature, turbidity, and dissolved oxygen)

TABLE 6
LEACHATE MONITORING PARAMETERS

1) Volatile organic compounds per 27 CCR §20420 including all identified 40CFR §258 Appendix II constituents
2) General chemistry: Ammonia and Nitrate as Nitrogen, Bicarbonate, Carbonate, Chemical Oxygen Demand (COD), Chloride, pH, Sulfate, and Total Dissolved Solids (TDS)
3) Metals: Calcium, Iron, Magnesium, Manganese, Sodium, and Potassium
4) Trace metal constituents identified through reference in 27 CCR §20420, including: antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, nickel, selenium, silver, thallium, vanadium, and zinc;
5) Field measurements (i.e., liquid levels/ volume, specific conductance, pH, temperature, turbidity, and dissolved oxygen)

TABLE 7
LANDFILL GAS MONITORING PARAMETERS

1) Volatile Organic Compounds by EPA Method TO-14
2) Fixed Gases: Carbon Dioxide (CO ₂), Methane (CH ₄), Nitrogen (N ₂), Oxygen (O ₂)
3) Field measurements (i.e., if applicable: flow rate, temperature, and pressure; fixed gases: carbon dioxide, methane, nitrogen, and oxygen)

TABLE 8
LANDFILL GAS CONDENSATE MONITORING PARAMETERS

1) Volatile and semi-volatile organic compounds (VOCs and SVOCs) per 27CCR §20420, including all 40CFR §258 Appendix II constituents except TCDD (Dioxin).
2) General chemistry: Bicarbonate, Carbonate, Chloride, pH, Nitrate as Nitrogen, Sulfate, and Total Dissolved Solids (TDS)
3) Metals: Calcium, Iron, Magnesium, Manganese, Sodium, and Potassium
4) Trace metal constituents identified through reference in 27 CCR §20420, including: antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, nickel, selenium, silver, thallium, vanadium, and zinc;
5) Field measurements (i.e., liquid levels, electrical conductance, pH, temperature, turbidity, and dissolved oxygen)

TABLE 9
LIST OF ANALYTICAL PARAMETERS AND METHODS

Parameter	USEPA Method*	Method Description	Container	Preservative
LIQUIDS MONITORING				
Ammonia as Nitrogen	350.1	Colorimetric, Automated, Phenate	Plastic	Cool, 4°C
Bicarbonate (HCO ₃)	310.1	Titrimetric	Plastic	Cool, 4°C
Carbonate (CaCO ₃)	310.1	Titrimetric	Plastic	Cool, 4°C
Chemical Oxygen Demand	410.4	Colorimetric	Plastic	Cool, 4°C
Chloride (Cl)	300.0	Ion Chromatography	Plastic	Cool, 4°C
pH	150.1	Electrometric	Plastic	Cool, 4°C
Nitrate (NO ₃) As Nitrogen	300.0	Ion Chromatography	Plastic	Cool, 4°C
Sulfate (SO ₄)	300.0	Ion Chromatography	Plastic	Cool, 4°C
Total Dissolved Solids (TDS)	160.1	Gravimetric	Plastic	Cool, 4°C
Calcium (Ca)	200.7/215	ICP/ ICP-MS	Plastic	Nitric Acid - 4°C
Iron (Fe)	200.7/236.1	ICP/ ICP-MS	Plastic	Nitric Acid - 4°C
Magnesium (Mg)	200.7/242.1	ICP/ ICP-MS	Plastic	Nitric Acid - 4°C
Manganese (Mn)	200.7/243.1	ICP/ ICP-MS	Plastic	Nitric Acid - 4°C
Potassium (K)	200.7/258.1	ICP/ ICP-MS	Plastic	Nitric Acid - 4°C
Sodium (Na)	200.7/273.1	ICP/ ICP-MS	Plastic	Nitric Acid - 4°C
Trace Metals	200 Series	ICP/ ICP-MS	Plastic	Nitric Acid - 4°C
SVOCs/ Herbicides/ Pesticides	8270	GC/ MS with Solid-phase Extraction	VOA Vial (Glass)	Hydrochloric Acid - 4°C
VOCs	8260	Purge and Trap GC/ MS	VOA Vial (Glass)	Hydrochloric Acid - 4°C
GAS MONITORING**				
Fixed Gases (CO ₂ , CH ₄ , N ₂ , O ₂)	3 (Modified)	GC/FID	Tedlar Bag	Light-Sealed
VOCs	TO-14	GC/MS	Tedlar Bag	Light-Sealed

* Other equivalent analytical methods may be used if approved by the Executive Officer of the Regional Board.

** Nitrogen (N₂) trip blanks shall be analyzed for the same parameters as the primary gas samples.

ICP - Inductively Coupled Plasma Spectrometry GC - Gas Chromatograph MS - Mass Spectrometry

FID - Flame Ionization Detector VOA - Volatile Organic Analyte

USEPA - U.S. Environmental Protection Agency

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