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CENTRAL VALLEY REGION

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WASTE DISCHARGE REQUIREMENTS ORDER R5-2019-0071 and Monitoring and Reporting Program

ORDER INFORMATION

Program:	Land Disposal (Title 27)
Order Type(s):	Waste Discharge Requirements (WDRs) and Monitoring and Reporting Program (MRP)
Status:	Tentative
Dischargers:	City of Avenal and Madera Disposal Systems, Inc.
Facility:	Avenal Regional Landfill
Address:	1200 Skyline Boulevard, Avenal
County:	Kings County
Prior Order(s):	Order R5-2012-0121; Order R5-2005-0023; Order 5-01-060; Order 76-023

I, Patrick Pulupa, Executive Officer, hereby certify that the following is a full, true, and correct copy of the orders adopted by the California Regional Water Quality Control Board, Central Valley Region, on 11 October 2019.

PATRICK PULUPA, Executive Officer

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GLOSSARY

ADC ..... Alternative Daily Cover

Antidegradation Policy ... *Statement of Policy with Respect to Maintaining High Quality Waters in California*, State Water Board Resolution 68-16

Basin Plan ..... Water Quality Control Plan for Tulare Lake Basin, 3rd Edition

bgs ..... Below Ground Surface

CalRecycle ..... California Department of Resources Recovery and Recycling

CAMP ..... Corrective Action Monitoring Program

C&D ..... Construction and Demolition Waste

CEQA ..... California Environmental Quality Act, Public Resources Code section 21000 et seq.

CEQA Guidelines ..... California Code of Regulations, Title 14, section 15000 et seq.

C.F.R. ..... Code of Federal Regulations

COC[s] ..... Constituent[s] of Concern

CQA ..... Construction Quality Assurance

C-Soil ..... Contaminated Soil

DMP ..... Detection Monitoring Program

DTSC ..... California Department of Toxic Substances Control

DWR ..... California Department of Water Resources

EC ..... Electrical Conductivity

EIR ..... Environmental Impact Report

EMP ..... Evaluation Monitoring Program

FEMA ..... Federal Emergency Management Agency

GLOSSARY

GCL.....Geocomposite Liner

HDPE .....High-Density Polyethylene

JTD .....Joint Technical Document

LCRS .....Leachate Collection and Removal System

LEA.....Local Enforcement Agency

LFG.....Landfill Gas Condensate

MCE .....Maximum Credible Earthquake

MDB&M .....Mount Diablo Base and Meridian

MDL .....Method Detection Limit

µg/L.....Micrograms per Liter

µmhos/cm .....Micromhos per Centimeter

mg/L.....Milligrams per Liter

MPE .....Maximum Probable Earthquake

MRP .....Monitoring and Reporting Program

MSL.....Mean Sea Level

MSW .....Municipal Solid Waste

MW.....Monitoring Well

ND.....Non-Detect

PCPMP .....Preliminary Closure and Post-Closure Maintenance Plan

R[O]WD .....Report of Waste Discharge

RCRA.....Resource Conservation and Recovery Act

GLOSSARY

SPRRs ..... Standard Provisions and Reporting Requirements, December 2015 Edition

SERC ..... State Emergency Response Commission

Subtitle D ..... 40 C.F.R. part 258

Title 22 ..... California Code of Regulations, Title 22

Title 23 ..... California Code of Regulations, Title 23

Title 27 ..... California Code of Regulations, Title 27

Unified Guidance ..... *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance* (USEPA, 2009)

USEPA ..... United States Environmental Protection Agency

VOC[s] ..... Volatile Organic Compound[s]

WDRs ..... Waste Discharge Requirements

WMU ..... Waste Management Unit

WQPS ..... Water Quality Protection Standard

(Findings begin on next page)

FINDINGS

The California Regional Water Quality Control Board, Central Valley (Central Valley Water Board) hereby finds as follows:

Introduction

1. City of Avenal (City) owns and Madera Disposal Systems, Inc. (MDS) operates the Avenal Regional Landfill (Facility), which is located within Avenal city limits northeast of the intersection of State Road 269 and Hydril Road in Kings County, Mount Diablo Base and Meridian (MDB&M) section 15, T22S, R17E. The Facility's location is depicted on the Site Location Map in **Attachment A**.

2. As Facility owners and/or operators, the City and MDS (collectively, Dischargers) are responsible for compliance with the Waste Discharge Requirements (WDRs) prescribed in this Order.

3. The existing and future landfill waste management units (WMUs) authorized by this Order are described as follows:

Table 1—Units Permitted under Order

Unit	Liners	Class	Phases	Acreage	Status
Existing Unit[1]	None	Class III	N/A	45	Active
Expansion Unit	Base Liner and Side-Slope Liner	Class III	1 – 3A	13.7	Active
Expansion Unit	Base Liner and Side-Slope Liner	Class III	3B - 6	64.3	Planned

4. The following materials are attached to this Order and incorporated herein:

   a. Attachment A—Location Map

[1] For the purposes of this Order, unlined disposal areas within the Facility—constructed prior to Subtitle D—shall be treated as a single "existing unit."

b. Attachment B—Facility Map

c. Standard Provisions and Reporting Requirements, December 2015 ed. (SPRRs)

5. Also attached **is Monitoring and Reporting Program R5-2019-0071**, which establishes a Monitoring and Reporting Program (MRP) for discharges regulated under the WDRs prescribed herein. Compliance with the MRP and subsequent revisions thereto is required under this Order.

6. Any additional information set forth in the attached **Information Sheet** is also incorporated herein.

Facility

7. The Facility is situated on a 173-acre property, comprised of Assessor's Parcel Number (APN) 38-26-23, at 1200 Skyline Boulevard, Avenal, Kings County. Existing landfill units consist of unlined landfills covering approximately 45 acres and lined landfill units that will cover up to approximately 78 acres. The existing and future permitted landfill area is shown in **Attachment B**.

8. Onsite facilities at Avenal Regional Landfill include an active landfill gas extraction system and a landfill gas flare.

Classifications and Permitting

9. The Facility's landfill is subject to federal municipal solid waste (MSW) regulations promulgated under the Resource Conservation and Recovery Act (RCRA), 42 U.S.C. section 6901 et seq. Typically referred to as "Subtitle D," these MSW regulations are now codified as 40 C.F.R. part 258, and implemented in part through the provisions in California Code of Regulations, title 27 (Title 27).

10. For the purposes of this Order, unlined disposal areas within the Facility are designated as the Existing Unit. The Existing Unit is laterally coextensive with the "Existing Footprint," i.e., the area covered by waste as of the date that the Facility became subject to Subtitle D. (See Title 27, § 20164.)

11. On 27 February 1976, the Central Valley Water Board issued Order 76-023, which classified the Existing Unit as a "Class II-2" waste disposal site for the discharge of "Group II" and "Group III" wastes. These designations were made under the regulations in place at the time.

12. On 16 March 2001, the Central Valley Regional Board issued Order No. 5-01-060, reclassifying the Existing Unit as a "Class III" WMU under the current Title 27 classification system.

13. On 27 January 2005, the Central Valley Regional Board issued Order R5-2005-0023 (2005 WDRs Order), which (1) continued to classify the Existing Unit as a Class III WMU, and (2) further authorized creation of a new Expansion Unit (also Class III) to be constructed in 6 Phases.[2] This Order continues to classify all onsite WMUs as Class III units in accordance with Title 27.

14. On 7 December 2012, the Central Valley Water Board adopted Order R5-2012-0121 (2012 WDRs Order), which authorized discharges of Treated Wood Waste in composite-lined portions of the Expansion Unit. As discussed in **Finding 19**, this Order continues to authorize such discharges.

15. On 27 September 2018, the Dischargers submitted a revised Joint Technical Document (JTD) containing all of the applicable information required per Title 27. Per the JTD, the Dischargers propose to accept liquid waste or semi-solid waste for solidification prior to disposal provided the contaminant concentrations do not exceed the hazardous waste thresholds or the designated waste thresholds described in the most recently approved Waste Acceptance Plan. Liquid waste will be accepted, solidified, and tested in accordance with the most recently approved High Moisture Content Waste Management Plan (the discharge of liquid waste will remain prohibited).

16. Per its Waste Acceptance Plan, the Dischargers propose to continue the discharge nonhazardous, non-designated solid waste, including municipal solid waste, non-friable asbestos waste, construction/demolition waste, dead animals, industrial waste, treated wood waste, and other agricultural and processed green waste in lined waste management units.

17. Waste is classified prior to discharge in accordance with the most recently approved *Waste Acceptance Plan*. The Dischargers propose to accept nonhazardous, non-designated liquid waste for solidification to more than 50 percent solids by weight prior to disposal in lined waste management units.

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[2] As of the date of this Order's adoption, Phases 1 through 3A have already been completed.

These classified wastes may be discharged only in accordance with Title 27, Resolution 93-62, and Subtitle D as required by this Order.

18. The Dischargers propose to continue discharging asbestos-containing waste (i.e., >1% asbestos) at the Facility. Although asbestos-containing waste is classified as "hazardous" under California Code of Regulations, title 22 (Title 22), the discharge of such waste does not pose a threat to water quality, and is therefore authorized for WMUs as specified in **Section B.1**. (Health & Saf. Code, § 25143.7.)

19. The Dischargers propose to continue discharging Treated Wood Waste, [3] as defined per Title 22, section 67386.4, at the Facility. In accordance with Title 22 section 67386.11, this Order authorizes the discharge of treated wood waste to composite lined WMUs specified in **Section B.1**, provided that the Dischargers comply with Health and Safety Code sections 250150.7 and 25143.1.5, Title 22 section 67386.3, and the applicable SPRRs.

Alternative Daily Cover

20. Title 27, section 20690 allows the use of alternative daily cover (ADC) at MSW landfills upon approval by the Local Enforcement Agency (LEA) and concurrence from CalRecycle. Title 27, section 20705 provides the Water Board's regulations for all daily and intermediate cover including that it shall minimize the percolation of liquids through waste and that the cover shall consist of materials that meet the landfill unit classification (Class II or Class III). The regulations also require that for non-composite lined portions of the landfill, that any contaminants in the daily or intermediate cover are mobilized only at concentrations that would not adversely affect beneficial uses of waters of the state in the event of a release. For composite-lined portions of the landfill, the regulations require that

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[3] Title 22 defines "treated wood" to mean wood that has been treated with a chemical preservative for purposes of protecting the wood against attacks from insects, microorganisms, fungi, and other environmental conditions that can lead to decay of the wood and the chemical preservative is registered pursuant to the federal Insecticide, Fungicide, and Rodenticide Act (7 U.S.C. § 136 et seq.). Treated Wood Waste may include waste wood that has been treated with chromated copper arsenate (CCA), pentachlorophenol, creosote, acid copper chromate (ACC), ammoniacal copper arsenate (ACA), ammoniacal copper zinc arsenate (ACZA), or chromated zinc chloride (CZC).

constituents and breakdown products in the cover material are listed in the water quality protection standard.

21. The Dischargers use the following materials for ADC: construction/demolition fines, green waste fines, fines from the Materials Recycling Facility, clean dirt, and tarps. The Dischargers have demonstrated that these materials will minimize percolation of liquids through waste, that they meet the unit classification where they will be discharged, and that the constituents and breakdown products are included in the water quality protection standard.

22. Landfills propose new ADC materials regularly in order to preserve landfill air space and to beneficially reuse waste materials. Title 27, section 20686 includes regulations for beneficial reuse, including use of ADC. Approval of ADC is primarily handled by the LEA and CalRecycle under Title 27, section 20690. This Order allows any ADC proposed for use at the Facility after the adoption of this Order to be approved by Central Valley Water Board staff provided the Dischargers have demonstrated it meets the requirements in Title 27, section 20705. The approved ADC materials should then be listed in the Facility's WDRs during the next regular update or revision with information about the Discharger's demonstration. This Order also includes a requirement that ADC only be used in internal areas of the landfill unless the Discharger demonstrates that runoff from the particular ADC is not a threat to surface water quality. The demonstration can take sedimentation basins into account.

23. The Discharger collects landfill gas (LFG) condensate from the lined and unlined landfill unit and leachate from the lined landfill units. The Dischargers propose to return leachate and landfill gas condensate to the composite-lined landfill units. Title 27, section 20340(g) requires that leachate be returned to the unit from which it came or be discharged in a manner approved by the regional board. This section of Title 27 also references State Water Board Resolution 93 62 regarding liquids restrictions in 40 C.F.R. section 258.28 for MSW landfills. 40 C.F.R. section 258.28 states that liquid waste may not be placed in MSW landfill units unless the waste is leachate or gas condensate derived from the landfill unit and it is designed with a composite liner and an LCRS. Therefore, leachate and landfill gas condensate from composite lined units with an LCRS may be returned to the unit from which they came (except that condensate collected from the unlined units may only be returned to the composite lined units). This Order includes requirements for returning leachate and landfill gas condensate back to composite-lined units such that the liquid waste is not exposed to surface water runoff, will not cause instability of the landfill, and will not seep from the edges of the units.

Site Description

24. The Avenal Regional Landfill lies on the western slope of Kettleman Hills and topographic relief at the site is moderate-to-steep with surface elevations that range from about 860 feet to 1090 feet above Mean Sea Level (MSL). The area has been eroded by seasonal surface water drainages that have created ridge lines throughout the site.

25. Land uses within one mile of the Facility are residential, agricultural and commercial.

26. Historically, there were three groundwater supply wells within one mile of the Facility. These wells were used for irrigation. The City of Avenal uses surface water from the California aqueduct as its drinking water supply source.

27. The geologic units found in the area of the site consist of (from surface downward) the Tulare Formation, the San Joaquin Formation, and the Etchgoin Formation, all of which are underlain by the Great Valley Sequence. The combined thickness of these units exceeds several thousand feet in the site area. The Tulare Formation, which underlies the site, consists of Pliocene-Pleistocene alluvial and lacustrine deposits that exceed a thickness of 1500 feet. In the site area, the formation consists primarily of mudstone deposits interbedded with claystone and sandstone/gravel deposits that trend to the northwest and dip southwest at approximately 30 degrees. The sandstone and gravel horizons vary from about 0.5 feet to 15 feet thick and, for the most part, do not appear to be continuous. Quaternary alluvial deposits exist in channels between ridges, and talus and colluvium cover many of the ridges and slopes.

28. The measured hydraulic conductivity of the native soils underlying the landfill units ranges between 4.57×10^{-7} and 2.28×10^{-5} centimeters per second (cm/s).

29. Title 27 requires that Class III landfills be designed to accommodate the maximum probable earthquake (MPE) event, which is the maximum probable earthquake that is likely to occur during a 100-year interval but not lower that the largest earthquake that has occurred historically. The most recent stability analyses for the site completed for Phases 3 and 4 indicated the MPE would occur about 29 kilometers from the site and is represented by a moment magnitude of 6.9 and a site peak ground acceleration (PGA) of 0.13g.

30. The Facility receives an average of 6.7 inches of precipitation per year as measured at the Kettleman Station. The mean pan evaporation is 111 inches per year as measured at the Avenal 9 SSE Station.

31. The 100-year, 24-hour precipitation event for the Facility is estimated to be 2.43 inches, based on the National Oceanic and Atmospheric Administration Atlas 14, Volume 6, Version 2.

32. The waste management Facility is not within a 100-year flood plain based on the Federal Emergency Management Agency's Flood Insurance Rate Map, Community-Panel Number 06031C0411C.

33. Storm water sedimentation basins are located south of the landfill as shown on **Attachment B**. The basins detain storm water for sedimentation control during the rainy season and are normally dry during the summer months.

Surface Water and Groundwater Conditions

34. The Water Quality Control Plan for the Tulare Lake Basin, 3rd ed. (Basin Plan) designates beneficial uses, establishes water quality objectives, and contains implementation plans and policies for all waters of the Basin.

35. Surface water drainage from the site is southwesterly toward the Kettleman Plain in the Kettleman Hydrologic Area. There are no perennial streams in the Kettleman Plain topographically downgradient of the landfill.

36. The designated beneficial uses of surface water in the Kettleman Hydrologic Area, as specified in the Basin Plan, are municipal and domestic supply (MUN); agricultural supply (AGR); industrial service supply (IND); and industrial process supply (PRO).

37. The first encountered groundwater ranges from about 360 feet to 470 feet below the native ground surface. Groundwater elevations range from about 480 feet MSL to 570 feet MSL.

38. Monitoring data indicate background groundwater quality for first encountered groundwater has specific conductivity ranging between 4270 and 4460 micromhos per centimeter (µmhos/cm), with total dissolved solids (TDS) ranging between 2900 and 3300 milligrams per liter (mg/L).

39. Groundwater flow at the site is minimal due to the low hydraulic conductivity of the geologic materials, very low infiltration rates, and low hydraulic gradients. The age-dating of groundwater tends to confirm a low-flow system with no recent infiltration of precipitation. Groundwater flow is believed to be along the bedding planes in the direction of strike (south 50 degrees east). Monitoring well pairs in different beds indicate flow to the southeast and possibly the northwest; however, the direction of flow is believed to be southeasterly. Secondary groundwater flow may also be to the southwest, toward the Kettleman Plain, if secondary porosity

features exist at depth, which cross the bedding planes. These features (fracture zones and solution zones) have not been observed in drilling cores. The average groundwater gradient within specific beds is approximately 0.009 feet per foot. The average groundwater velocity is 0.02 feet per year.

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

41. Age dating of groundwater of the site indicate that groundwater may be greater than 5,700 years old and is not influenced by modern precipitation. The groundwater has naturally occurring high concentrations of sulfate, chloride, specific conductivity, and total dissolved solids. There has been no indication of a release of any waste constituents from the landfill.

Groundwater and Unsaturated Zone Monitoring

42. As of the date of this Order, the existing groundwater monitoring network is set forth in **Table 2** below. At the time of adoption, the detection monitoring program for groundwater complies with Title 27.

Table 2—Groundwater Monitoring Network

Well	Program	Monitored Units
MW-1	Gradient	Existing Unit and Expansion Unit
MW-3	Detection	Existing Unit and Expansion Unit
MW-4	Detection	Existing Unit and Expansion Unit
MW-6D	Detection	Existing Unit and Expansion Unit
MW-7	Detection	Existing Unit and Expansion Unit
MW-8	Detection	Existing Unit and Expansion Unit

43. The original unsaturated zone monitoring system for the landfill consisted of gypsum block lysimeters, most of which have been abandoned as the landfill has expanded. The unsaturated zone monitoring system now consists of pan lysimeter(s) under the leachate collection sump(s) in the lined portions of the landfill. This system is included in MRP.

44. Volatile organic compounds (VOCs) are often detected in a release from MSW landfills, and are often associated with releases of landfill gas rather than leachate. Since volatile organic compounds are not naturally occurring and thus have no background value, they are not amenable to the statistical analysis procedures contained in Title 27 for the determination of a release of wastes from

a landfill unit. Title 27, sections 20415, subdivision (e)(8)-(9) allows use of a non-statistical evaluation of monitoring data that will provide the best assurance of the earliest possible detection of a release from a landfill unit in accordance with Title 27, section 20415, subdivision (b)(1)(B)(2)-(4). However, Title 27 does not specify a specific method for non-statistical evaluation of monitoring data.

45. The Dischargers submitted a January 2004 Water Quality Protection Standard Report (2004 WQPS Report) proposing statistical data analysis methods to calculate concentration limits for each monitored constituent in accordance with Title 27. The 2004 WQPS Report proposed to use Intrawell data analysis to calculate prediction limits for the monitored constituents. The WQPS and approved data evaluation methods are included in the MRP.

Unit Construction

46. In their June 2003 *Liner Performance Demonstration Report, Avenal Landfill Expansion, City of Avenal, California* (*2003 Demonstration Report*), the Dischargers provided a technical evaluation of the performance of the following base liner (in ascending order) for the Expansion Unit:

    a. A subgrade comprised of bedrock (claystone, mudstones, and occasional sandstone);

    b. A two-foot thick compacted clay layer (with a hydraulic conductivity of less than $1x10^{-7}$ cm/s);

    c. A 60-millimeter HDPE textured geomembrane;

    d. A LCRS gravel layer with a minimum thickness of 12 inches;

    e. geotextile filter layer; and

    f. A12-inch thick operations layer.

    The *2004 Demonstration Report* shows that the proposed base liner configuration meets the applicable performance standard for a Class III landfill.

47. Per the *2004 Demonstration Report*, the Dischargers also sought approval of an engineered alternative to the prescriptive standard for the side-slope liner requirements for the Expansion Unit. The proposed engineered alternative side-slope liner consists of the following (in ascending order):

    a. Prepared subgrade;

b. A one-foot thick compacted clay layer or geosynthetic clay liner;

c. A 60-millimeter HDPE geomembrane;

d. A geocomposite drainage layer; and

e. A 12-inch thick operations layer.

The Dischargers previously demonstrated that construction of a Subtitle D prescriptive standard liner would be unreasonably and unnecessarily burdensome when compared to the proposed engineered alternative design. The proposed engineered alternative remains consistent with the performance goals of the prescriptive standard and affords at least equivalent protection against water quality impairment.

48. A pan lysimeter will be installed beneath any LCRS sump and a portion of the LCRS piping for each new landfill cell/module for the purpose of unsaturated zone monitoring.

49. The previous JTD included a stability analysis completed in 2007 for the final buildout pursuant to Title 27, section 21750(f)(5). The 2007 analyses concluded that the structural components will withstand the forces of the Maximum Credible Earthquake (MCE) without failure of the containment systems or environmental controls. Design based on the MCE is not required for Class III landfills and the earthquake ground motions used for the 2007 analyses are higher than those associated with the MPE. Therefore, the conclusions regarding the integrity of the landfill foundation, final slopes, and containment systems under both static and dynamic conditions throughout the landfill's life including the closure period and post-closure maintenance period remain valid.

50. As with the prior WDRs Orders, this Order continues to approve the Dischargers' proposed liner system for future modules, and continues to require that the Dischargers submit design plans and construction quality assurance (CQA) plans for each new module or modules for review and approval at least 90 days prior to construction.

Landfill Closure and Post-Closure Maintenance

51. The Dischargers submitted a November 2004 Preliminary Closure and Post-Closure Maintenance Plan (PCPMP) for closure and post-closure maintenance of all the unlined and composite-lined landfill units at the facility. The PCPMP provides for post-closure maintenance of all the unlined and composite-lined landfill units at the Facility. The PCPMP further provides for inspection, maintenance, and monitoring during the post-closure maintenance period.

Financial Assurances

52. The Dischargers' operative PCPMP includes costs estimates for:

    a. Closure (Title 27, §§ 21820, 22206);

    b. Post-Closure Maintenance (§§ 22210–22212); and

    c. Corrective Action for foreseeable releases (§§ 22220–22222).

53. As of the date of this Order, the Dischargers' cost estimates, calculated in accordance with Title 27, are as follows:

Table 3—Current Cost Estimates (Financial Assurances)

Requirement	Estimated Cost
Closure	$6,600,000
Post-Closure Maintenance	$6,700,000
Corrective Action	$370,000

54. This Order requires the Dischargers to maintain financial assurances with CalRecycle in at least the Estimated Cost amounts specified above.

Compliance with CEQA

55. The issuance of this Order, which prescribes requirements and monitoring of waste discharges at an existing facility (with negligible or no expansion of its existing uses), is exempt from the procedural requirements of the California Environmental Quality Act (CEQA), Public Resources Code section 21000 et seq., pursuant to California Code of Regulations, title 14, section 15301 (CEQA Guidelines).[4] The discharges authorized under this Order are substantially within parameters established under prior WDRs, particularly with respect to character and volume of discharges.

56. In this Order, the Central Valley Water Board approves acceptance of liquid waste or semi-solid waste at the Facility for solidification prior to disposal. To the extent that such changes to onsite activities are not exempt from CEQA, potential

[4] Construction of the Expansion Unit was previously approved per the 2005 WDRs Order.

environmental impacts were fully analyzed in Kings County's 11 December 2015 addendum to the Environmental Impact Report certified on 9 September 2004. The Central Valley Water Board was consulted with in the course of both environmental review processes. No further environmental review is required at this time.

Compliance with Antidegradation Policy

57. The State Water Resources Control Board's (State Water Board) *Statement of Policy with Respect to Maintaining High Quality Waters in California*, Resolution 68-16 (*Antidegradation Policy*) prohibits the Central Valley Water Board from authorizing degradation of "high quality waters" unless it is shown that such degradation: (1) will be consistent with the maximum benefit to the people of California; (2) will not unreasonably affect beneficial uses, or otherwise result in water quality less than as prescribed in applicable policies; and (3) is minimized through the discharger's best practicable treatment or control.

58. Consistent with Title 27, this Order requires the Dischargers to maintain the Facility so as to contain waste within WMUs, thereby preventing degradation of water quality. To the extent that there are releases from Facility WMUs, Dischargers will be required to address such releases through a Corrective Action Program. (See Title 27, §§ 20385, 20415, 20430.) Accordingly, this Order complies with the *Antidegradation Policy*.

Other Regulatory Considerations

59. For the purposes of California Code of Regulations, title 23 (Title 23), section 2200, the Facility has a threat-complexity rating of 2-B, where:

    a. Threat Category "2" reflects waste discharges that can impair receiving water beneficial uses, cause short-term water quality objective violations, cause secondary drinking water standard violations, and cause nuisances; and

    b. Complexity Category "B" reflects any discharger not included in Category A, with either (1) physical, chemical or biological treatment systems (except for septic systems with subsurface disposal), or (2) any Class II or Class III WMUs.

60. This Order is issued pursuant to Water Code section 13267, subdivision (b)(1), which provides that:

    > [T]he regional board may require that any person who has discharged, discharges, or is suspected of having discharged or

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

61. The technical reports required under this Order, as well as those required under the separately issued MRP, are necessary to ensure compliance with prescribed WDRs and the provisions of Title 27, Subtitle D (40 C.F.R. part 258) and State Water Board Resolution 93-62. Additionally, the burdens associated with such reports are reasonable relative to the need for their submission.

62. Statistical data analysis methods outlined in the USEPA's 2009 *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance* (*Unified Guidance*) are appropriate for determining compliance with Groundwater Limitations of this Order. Other methods may be appropriate as well.

Procedural Matters

63. All of the above information, as well as the information contained in the attached **Information Sheet**, was considered by the Central Valley Water Board in prescribing the WDRs set forth below.

64. The Dischargers interested agencies and other interested persons were notified of the Central Valley Water Board's intent to prescribe the WDRs in this Order and provided an opportunity to submit their written views and recommendations at a public hearing. (Wat. Code, § 13167.5.)

65. At a public meeting, the Central Valley Water Board heard and considered all comments pertaining to the discharges regulated under this Order.

66. The Central Valley Water Board will review and revise the WDRs in this Order as necessary.

REQUIREMENTS

IT IS HEREBY ORDERED, pursuant to Water Code sections 13263 and 13267: that Orders R5-2005-0023 and R5-2012-0121 are rescinded (except for enforcement

purposes); and that the Dischargers and their respective agents, employees and successors shall comply with the following requirements.

A. Prohibitions—Except as otherwise expressly directed below, the Dischargers shall comply with all Standard Prohibitions (SPRRs, § C), which are incorporated herein, as well as the following.

1. Discharges of "hazardous waste" (as defined per Title 23, § 2601) at the Facility are strictly prohibited. The Department of Toxic Substances Control (DTSC) shall be immediately notified of any such discharges in violation of this Order.

2. Except as specifically authorized **in Section B.1** of this Order, discharges of "designated waste" (as defined per Wat. Code, § 13173) are strictly prohibited.

B. Discharge Specifications—Except as otherwise expressly directed below, the Dischargers shall comply with all Standard Discharge Specifications (SPRRs, § D), which are incorporated herein, as well as the following.

1. The Dischargers shall only discharge waste at the Facility as specified in **Table 4** below.

Table 4—Discharges Authorized under Order

Waste Category	Existing Unit	Expansion Unit (Phases 1-6)
Hazardous Waste	Prohibited	Prohibited
Designated Waste	Prohibited	Prohibited
Municipal Solid Waste (MSW)	Authorized	Authorized
Construction & Demolition Waste (C&D)	Authorized	Authorized
Non-Friable Asbestos-Containing Waste	Authorized	Authorized
Industrial Solid Waste	Authorized	Authorized

Waste Category	Existing Unit	Expansion Unit (Phases 1-6)
Dead Animals[5]	Authorized	Authorized
Treated Wood Waste	Prohibited	Partially Authorized per Section B.3
Agricultural Waste	Authorized	Authorized
Processed Green Waste	Authorized	Authorized
Leachate and Landfill Gas Condensate	Prohibited	Partially Authorized per Section B.6

2. The Dischargers shall promptly remove and relocate all waste discharged at the Facility in violation of this Order. If unable to do so, they shall submit a report to the Central Valley Water Board: explaining how the violative discharge(s) occurred, and why the waste(s) cannot be removed; and proposing waste acceptance program updates to prevent reoccurrences.

3. Treated Wood Waste shall only be discharged to the landfill WMUs specified above in **Section B.1** and **Finding 19**. The Dischargers shall manage such waste in accordance with Health and Safety Code sections 25143.1.5 and 250150.7, and otherwise comply with California Code of Regulations, title 22, section 67386.3. In the event of a verified release from an authorized WMU containing treated wood waste, the Dischargers shall suspend all discharges of treated wood waste until corrective action is terminated.

4. The Dischargers shall use only the following as an Alternative Daily Cover (ADC) for landfill WMUs:

    a. The materials described in **Finding 21** or

    b. Other materials demonstrated to meet the standards of Title 27, section 20705, and approved in writing by the Central Valley Water Board.

[5] To the extent authorized by Kings County.

5. The Dischargers shall not apply ADC materials to areas with drainage beyond contiguous landfill WMUs unless:

   a. The Dischargers demonstrate that resulting runoff will not pose a threat to surface water quality (accounting for sediment and suspended solids removal in a sedimentation basin); and

   b. The Central Valley Water Board approves of the demonstration in writing.

6. Leachate and Landfill Gas Condensate shall only be discharged to composite-lined phases of the Expansion Unit, and in accordance with Sections D.2 – D.4 of the SPRRs (Standard Discharge Specifications). (See Title 27, § 20340.)

C. Facility Specifications—The Dischargers shall comply with all Standard Facility Specifications (SPRRs, § E) which are incorporated herein.

D. Construction Specifications—Except as otherwise directed below, the Dischargers shall comply with all Standard Construction Specifications (SPRRs, § F) and all Standard Storm Water Provisions (SPRRs, § L), which are respectively incorporated herein.

1. The Dischargers shall construct the base liner and side slope liner of new Class III landfill units in accordance with the approved engineered alternative liner design set forth below.

   a. A **composite base liner system** comprised of the following materials (in ascending order):

      i. Prepared subgrade;

      ii. Two-foot thick compacted clay layer with a hydraulic conductivity of less than $1x10^{-7}$ cm/s;

      iii. 60-mil HDPE textured geomembrane;

      iv. 12-inch thick gravel drainage layer;

      v. Geotextile; and

      vi. 12-inch thick soil operations layer.

   b. An engineered alternative **composite side slope liner system** comprised of the following materials (in ascending order):

i. Prepared subgrade;

ii. 12-inch thick compacted clay layer or geosynthetic clay liner;

iii. 60-mil HDPE textured geomembrane;

iv. Geocomposite drainage layer; and

v. 12-inch thick soil operations layer.

2. The Dischargers shall not proceed with liner construction (other than earth moving and grading in preparation for liner construction) until the construction plans, specifications, and all applicable construction quality assurance plans have been approved by Central Valley Water Board staff.

3. The Dischargers may propose changes to the liner system design prior to construction, provided that approved components are not eliminated, the engineering properties of the components are not substantially reduced, and the proposed liner system results in the protection of water quality equal to or greater than the design prescribed by Title 27 and this Order. The proposed changes may be made following written approval by the Executive Officer. Substantive changes to the design require reevaluation as an engineered alternative and approval by the Central Valley Water Board in revised WDRs.

E. Financial Assurances—Except as otherwise directed below, the Dischargers shall comply with all Standard Financial Assurance Provisions (SPRRs, § H), as well as the following.

1. The Dischargers shall maintain with CalRecycle assurances of financial responsibility for the Estimate Cost amounts specified for each category in **Finding 53** and **Table 3**, adjusted annually for inflation.

2. A report regarding financial assurances, or a copy of the financial assurances report submitted to CalRecycle, shall be submitted to the Central Valley Water Board annually, **no later than 1 June**.

3. If CalRecycle determines that the Dischargers' financial assurances for the Facility are inadequate, the Discharger shall, within 90 days of such determination:

a. Obtain a new financial assurance mechanism for the amount specified by CalRecycle; and

b. Submit a report documenting such financial assurances to CalRecycle and the Central Valley Water Board.

4. The Dischargers' PCPMP shall include all components required per Title 27, section 21769, subdivision (c), and include a lump sum cost estimate for:

   a. Completion of all actions required for closure of the Facility WMU;

   b. Preparation of detailed design specifications;

   c. Development of a Final Closure and Post-Closure Maintenance Plan (FCPMP); and

   d. Undertaking at least 30 years of post-closure maintenance.

5. Whenever changed conditions increase the estimated costs of closure and post-closure maintenance, the Dischargers shall promptly submit an updated PCPMP to the Central Valley Water Board, CalRecycle and the LEA.

F. Landfill Closure and Post-Closure Maintenance—Except as otherwise directed below, the Dischargers shall comply with all Standard Closure and Post-Closure Specifications (SPRRs, § G) and closure-related Standard Construction Specifications (SPRRs, § F), as well as the following with respect to closure of the WMU at the Facility. The Dischargers shall submit a final or partial final closure and post-closure maintenance plan at least two years prior to the proposed closure of any portion of each WMU.

G. Monitoring—Except as otherwise directed below, the Dischargers shall comply with all applicable Standard Monitoring Specifications (SPRRs, § I) and Standard Response to Release Specifications (SPRRs, § J), as well as the following:

1. The Dischargers shall comply with all provisions of the separately issued MRP R5-2019-0071 and any subsequent revisions thereto.

2. The Dischargers shall comply with the WQPS set forth in the operative MRP (see also Title 27, § 20390); and shall verify the compliance of the WMU with each subsequent monitoring event.

3. For the WMU, the Dischargers shall implement a groundwater and unsaturated zone detection monitoring program (DMP) in accordance with Title 27, sections 20385, 20415 and 20420.

4. The Dischargers shall implement a corrective action program (CAP) in accordance with Title 27, sections 20385, 20415 and 20430, and Section I of the SPRRs.

5. Constituents of concern (COC) in water passing through the WMU's Point of Compliance shall not exceed concentration limits specified in the operative MRP. The Point of Compliance is a vertical plane situated at the hydraulically downgradient limit of the WMU, extending through the uppermost underlying aquifer. (See Title 27, §§ 20164, 20405.)

H. General Provisions—Except as otherwise expressly directed below, the Dischargers shall comply with the Standard General Provisions (SPRRs, § K), as well as the following.

1. Notwithstanding Section G.1, the provisions of this Order shall supersede any contrary provision in the MRP (and revisions thereto).

2. The Dischargers shall comply with all applicable provisions of Title 27 and Code of Federal Regulations, title 40, part 258, including those not specifically referenced in this Order.

3. Measures implemented as part of a Corrective Action Program (e.g., landfill gas or groundwater extraction) shall not be terminated without express written approval by the Executive Officer. Central Valley Water Board staff shall be notified of all extraction system shutdowns lasting longer than 24 hours. For the purposes of this provision, "terminated" does not include:

   a. Extraction system shutdowns of less than 24 hours (e.g., routine maintenance); and

   b. Planned periods of extraction system nonoperation, if previously approved in writing by Central Valley Water Board staff.

4. The Dischargers shall ensure that operating personnel are familiar with this Order (including all attachments and SPRRs) and the operative MRP, both of which shall be kept onsite and made available at all times to operating personnel and regulatory agency personnel.

5. All reports and monitoring data shall be submitted online in an appropriately formatted file via the State Water Board's GeoTracker Database, at http://geotracker.waterboards.ca.gov. (Title 23, §§ 3892(d), 3893.) Additional information regarding electronic submittals is accessible through the "Information" tab on the GeoTracker homepage.

After uploading a document via GeoTracker, the submitting party shall notify Central Valley Water Board staff via email at CentralValleyFresno@WaterBoards.ca.gov, including the following information body of the email:

Attention:	Title 27 Unit
Report Title:	[Title of Report]
Dischargers:	City of Avenal; Madera Disposal Systems, Inc.
Facility:	Avenal Regional Landfill
County:	Kings County
CIWQS ID:	206861

6. All reports and workplans that involve planning, investigation, evaluation, or design, or other work requiring interpretation and proper application of engineering or geological sciences, shall:

   a. Be prepared by, or under the direction of, professionals registered to practice in California pursuant to Business and Professions Code sections 6735, 7835 and 7835.1; and

   b. Bear the signature(s) and seal(s) of the responsible registered professional(s) described above.

If, in the opinion of the Executive Officer, the Dischargers fail to comply with the provisions of this Order, the Executive Officer may refer this matter to the Attorney General for judicial enforcement, may issue a complaint for administrative civil liability, or may take other enforcement actions. Failure to comply with this Order may result in the assessment of Administrative Civil Liability of up to $10,000 per violation, per day, depending on the violation, pursuant to the Water Code, including sections 13268, 13350 and 13385. The Central Valley Water Board reserves its right to take any enforcement actions authorized by law.

Any person aggrieved by this Central Valley Water Board action may petition the State Water Board for review in accordance with Water Code section 13320 and California Code of Regulations, title 23, section 2050 et seq. The State Water Board must receive the petition by 5:00 p.m. on the 30th day after the date of this Order; if the 30th day falls on a Saturday, Sunday, or state holiday, the petition must be received by the State Water Board by 5:00 p.m. on the next business day. Copies of the law and regulations applicable to filing petitions are available on the State Water Boards' Water Quality Petitions web page (http://www.waterboards.ca.gov/public_notices/petitions/water_quality), and will be provided upon request.

Attachments:
Attachment A—Location Map
Attachment B—Facility Map

Monitoring and Reporting Program R5-2019-0071[Separate Order]

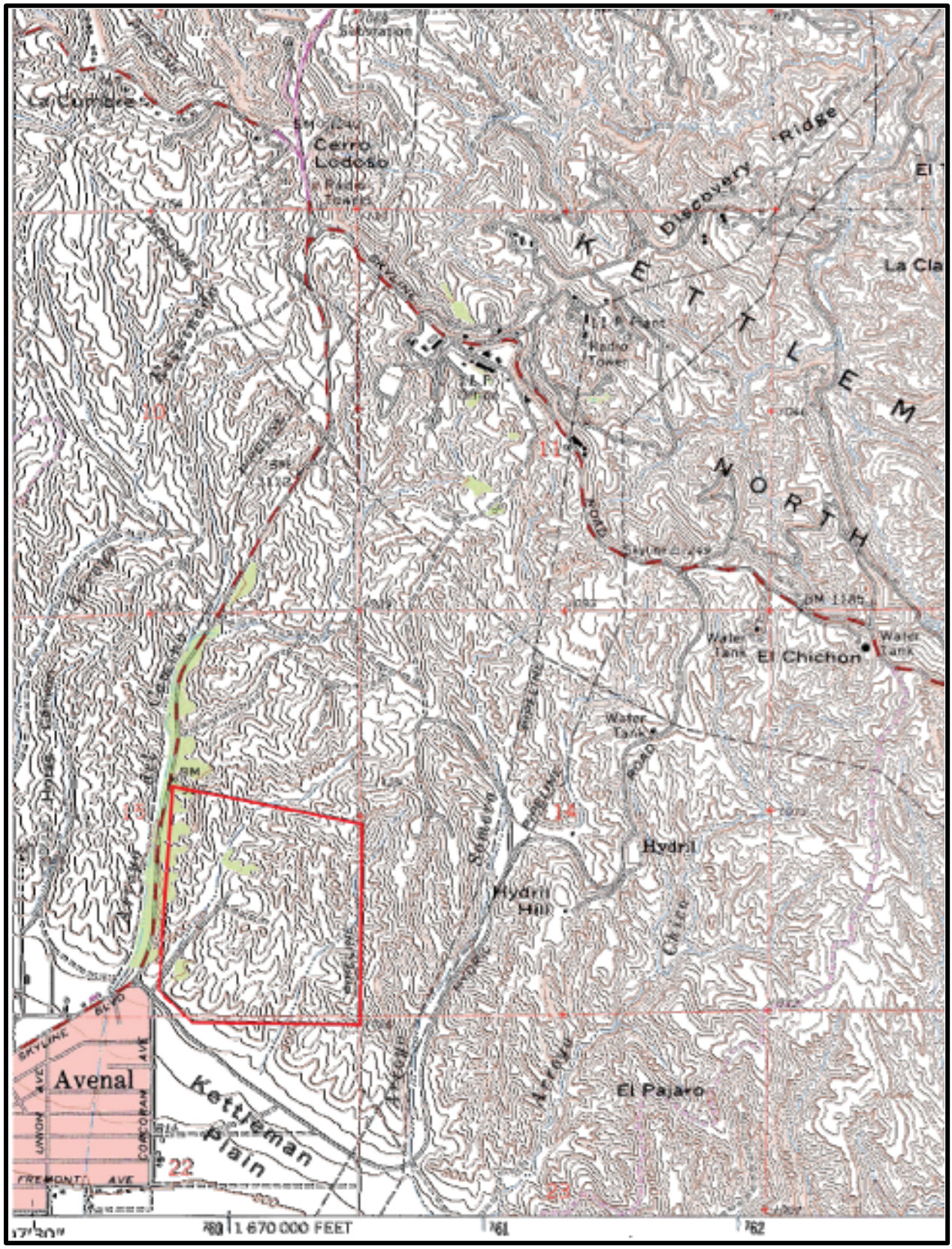
Information Sheet

ATTACHMENT A—LOCATION MAP

(see map on next page)

WASTE DISCHARGE REQUIREMENTS
ORDER NO. R5-2019-0071
CITY OF AVENAL & MADERA DISPOSAL SYSTEMS, INC.
AVENAL REGIONAL LANDFILL
KINGS COUNTY

ATTACHMENT A - SITE LOCATION MAP

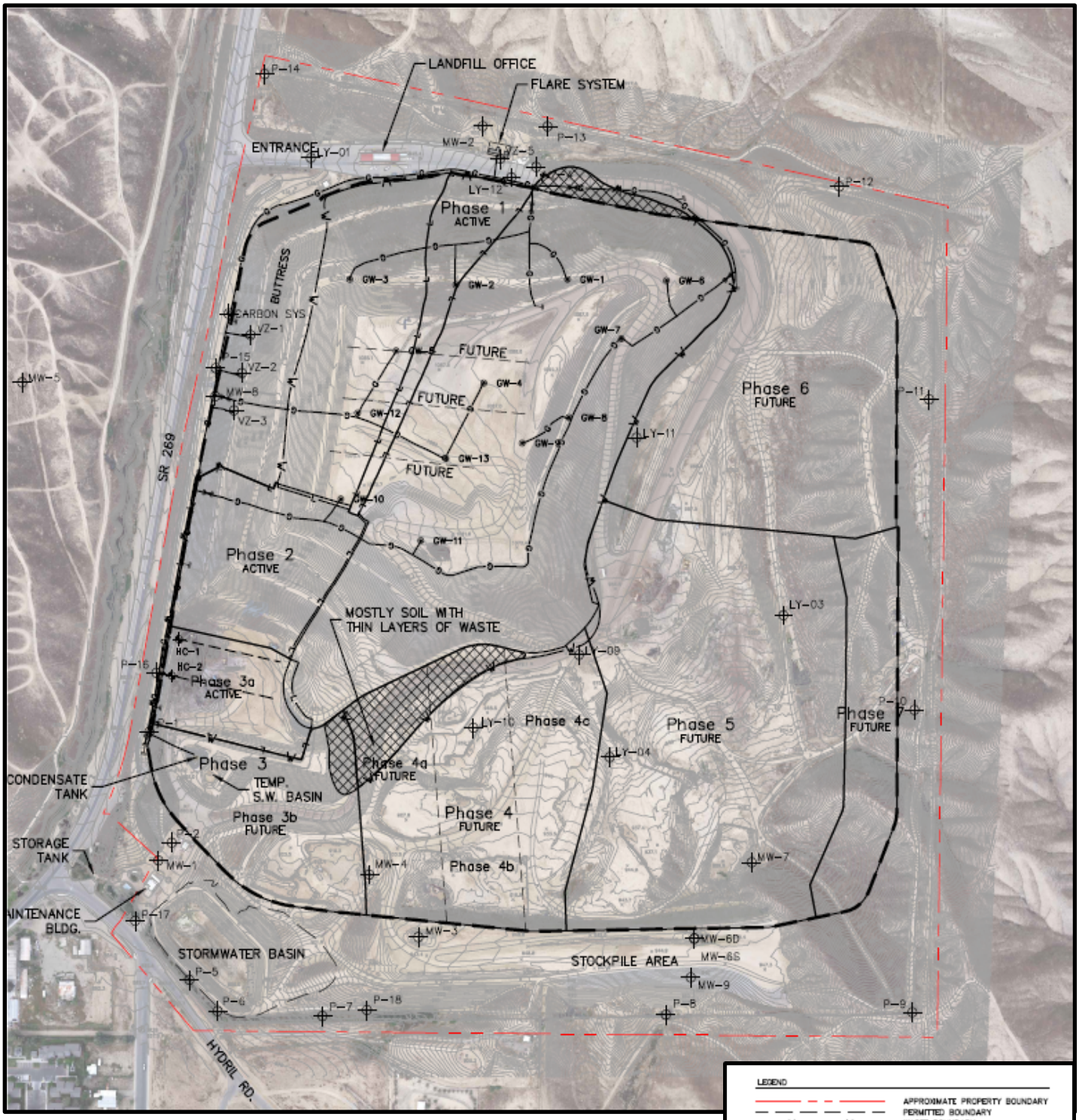


ATTACHMENT B—FACILITY MAP

(see map on next page)

WASTE DISCHARGE REQUIREMENTS
ORDER NO. R5-2019-0071
CITY OF AVENAL & MADERA DISPOSAL SYSTEMS, INC.
AVENAL REGIONAL LANDFILL
KINGS COUNTY

ATTACHMENT B - FACILITY MAP



CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM R5-2019-0071

MONITORING AND REPORTING PROGRAM
FOR
CITY OF AVENAL
AND
MADERA DISPOSAL SYSTEMS
AVENAL REGIONAL LANDFILL
KINGS COUNTY

Separately issued pursuant to Water Code section 13267, subdivision (b)(1), this Order establishes a Monitoring and Reporting Program (MRP) for waste discharges regulated under Waste Discharge Requirements Order R5-2019-0071 (WDRs Order). Each of the Findings set forth in the WDRs Order, including those pertaining to the need for submission of reports, are hereby incorporated as part of this MRP Order.

This MRP Order may be separately revised by the Executive Officer, in accordance with their delegated authority under Water Code section 13223.

A. Monitoring Requirements

1. Groundwater Monitoring

a. **Required Network**—The Facility's groundwater monitoring network shall consist of the wells listed below in **Table 1**. As of the date of this Order, the Dischargers' groundwater monitoring network meets the requirements of Title 27. The Dischargers shall revise the groundwater detection monitoring system each time a new landfill cell or module is constructed.

Table 1—Groundwater Monitoring Network

Well	Program	Monitored Units
MW-1	Gradient	Existing Unit and Expansion Unit
MW-3	Detection	Existing Unit and Expansion Unit
MW-4	Detection	Existing Unit and Expansion Unit
MW-6D	Detection	Existing Unit and Expansion Unit
MW-7	Detection	Existing Unit and Expansion Unit
MW-8	Detection	Existing Unit and Expansion Unit

b. **Sample Collection and Analysis**—Groundwater samples shall be collected from each well, and analyzed for the field parameters and monitoring parameters specified in **Table 2** (in accordance with the specified schedule).[1]

Table 2—Groundwater Detection Monitoring Program: Field Parameters and Monitoring Parameters

Field Parameters	GeoTracker Code	Units	Sampling Freq.	Reporting Freq.
Temperature	TEMP	°F	Semiannually	Semiannually
Electrical Conductivity	SC	µmhos/cm	Semiannually	Semiannually
pH	PH	pH Units	Semiannually	Semiannually
Turbidity	TURB	NTUs	Semiannually	Semiannually

Monitoring Parameters	GeoTracker Code	Units	Sampling Freq.	Reporting Freq.
TDS	TDS	mg/L	Semiannually	Semiannually
Chloride	CL	mg/L	Semiannually	Semiannually
Carbonate	CACO3	mg/L	Semiannually	Semiannually
Bicarbonate	BICACO3	mg/L	Semiannually	Semiannually
Nitrate as Nitrogen	NO3N	mg/L	Semiannually	Semiannually
Sulfate	SO4	mg/L	Semiannually	Semiannually
Calcium	CA	mg/L	Semiannually	Semiannually
Magnesium	MG	mg/L	Semiannually	Semiannually
Potassium	K	mg/L	Semiannually	Semiannually
Sodium	NA	mg/L	Semiannually	Semiannually
Short List VOCs (per Attachment A)	(*various*)	µg/L	Semiannually	Semiannually
1,2,3-Trichloropropane per Method SRL-524M-TCP	TCPR123	ng/L	Semiannually	Semiannually

[1] Monitoring wells established for the Detection Monitoring Program (DMP) constitute the monitoring points for the groundwater Water Quality Protection Standard (WQPS).

c. **Analysis for Five-Year COCs**—Additionally, the Dischargers shall analyze for groundwater samples from each well for the Five-Year COCs listed in **Table 3**.[2]

Table 3—Groundwater Detection Monitoring Program, Five-Year COC Monitoring Parameters

Parameter	GeoTracker Code	Units	Sampling & Reporting Freq.
Total Organic Carbon	TOC	mg/L	Every 5 Years Next Report Due: 2022
Dissolved Inorganics (per Attachment B)	(*various*)	µg/L	Every 5 Years Next Report Due: 2022
Extended List VOCs (per Attachment C)	(*various*)	µg/L	Every 5 Years Next Report Due: 2022
Semi-Volatile Organic Compounds (per Attachment D)	(*various*)	µg/L	Every 5 Years Next Report Due: 2022
Chlorophenoxy Herbicides (per Attachment E)	(*various*)	µg/L	Every 5 Years Next Report Due: 2022
Organophosphorus Compounds (per Attachment E)	(*various*)	µg/L	Every 5 Years Next Report Due: 2022

d. **Groundwater Conditions**—Each quarter, the Dischargers shall also monitor overall groundwater conditions specified per **Table 4**. The results monitoring shall be reported in each Semiannual Monitoring Report (SMR).

Table 4—Groundwater Conditions Monitoring

Parameter	GeoTracker Code	Monitoring Freq.	Reporting Freq.
Elevation (Well-Specific)	ELEV	Quarterly	Semiannually
Gradient	(none)	Quarterly	Semiannually
Flow Rate[3]	(none)	Quarterly	Semiannually

[2] Five-Year COCs were last monitored in 2017, and shall be analyzed again in 2022.

[3] To the extent feasible, the Dischargers shall determine ground water flow rate and direction in: (1) the uppermost aquifer; (2) any zones of perched water; and (3) in any additional portions of the zone of saturation monitored pursuant to Title 27, section 20415, subdivision (b)(1).

2. Unsaturated Zone Monitoring

a. **Compliance with Title 27**—The Dischargers shall operate and maintain an unsaturated zone detection monitoring system in accordance with Title 27, sections 20415 and 20420.

b. **Current Network**—The Dischargers' unsaturated zone monitoring network currently consists of a pan lysimeter placed underneath each leachate sump. As of the date of this Order, the network complies with the requirements of Title 27. Each time a new cell or module is constructed, the Dischargers shall install additional unsaturated zone monitoring devices reviewed and approved by Central Valley Water Board staff.

c. **Monthly Lysimeter Inspection**—Monthly, each of the pan lysimeters shall be inspected for the presence of liquid. Any liquid present in the lysimeter shall be analyzed for the same field parameters and monitoring parameters specified below in **Table 5**. If liquid is detected in a previously dry pan lysimeter, the Dischargers shall, **within 7 days**, notify Central Valley Water Board staff of the detection.[4]

Table 5—Unsaturated Zone Detection Monitoring Program: Field Parameters and Monitoring Parameters

Field Parameters	GeoTracker Code	Units	Sampling Freq.	Reporting Freq.
Electrical Conductivity	SC	µmhos/cm	Semiannually	Semiannually
pH	PH	pH Units	Semiannually	Semiannually
Volume of Removed Liquid	(*none*)	Gallons	Monthly	Semiannually

Monitoring Parameters	GeoTracker Code	Units	Sampling Freq.	Reporting Freq.
TDS	TDS	mg/L	Semiannually	Semiannually
Chloride	CL	mg/L	Semiannually	Semiannually
Carbonate	CACO3	mg/L	Semiannually	Semiannually
Bicarbonate	BICACO3	mg/L	Semiannually	Semiannually
Nitrate (as Nitrogen)	NO3N	mg/L	Semiannually	Semiannually
Sulfate	SO4	mg/L	Semiannually	Semiannually
Calcium	CA	mg/L	Semiannually	Semiannually
Magnesium	MG	mg/L	Semiannually	Semiannually

[4] This notification need not be provided in writing (i.e., verbal notification will suffice).

Monitoring Parameters	GeoTracker Code	Units	Sampling Freq.	Reporting Freq.
Potassium	K	mg/L	Semiannually	Semiannually
Sodium	NA	mg/L	Semiannually	Semiannually
Short List VOCs (see Attachment A)	(*various*)	µg/L	Semiannually	Semiannually
1,2,3-Trichloropropane per Method SRL-524M-TCP	TCPR123	ng/L	Semiannually	Semiannually

d. **Analysis for Five-Year COCs**—Every five years, liquid from each pan lysimeter shall be analyzed for the monitoring parameters specified below in **Table 6** (does not include soil pore gas).[5]

Table 6—Unsaturated Zone Detection Monitoring Program, Five-Year COC Monitoring Parameters

Parameter	GeoTracker Code	Units	Sampling & Reporting Freq.
Total Organic Carbon	TOC	mg/L	Every 5 Years Next Report Due: 2022
Dissolved Inorganics (per Attachment B)	(*various*)	µg/L	Every 5 Years Next Report Due: 2022
Extended List VOCs (per Attachment C)	(*various*)	µg/L	Every 5 Years Next Report Due: 2022
Semi-Volatile Organic Compounds (per Attachment D)	(*various*)	µg/L	Every 5 Years Next Report Due: 2022
Chlorophenoxyl Herbicides (per Attachment E)	(*various*)	µg/L	Every 5 Years Next Report Due: 2022
Organophosphorus Compounds (per Attachment E)	(*various*)	µg/L	Every 5 Years Next Report Due: 2022

e. Monitoring results for the unsaturated zone shall be included in monitoring reports, and shall include an evaluation of potential impacts of the Facility on the unsaturated zone and compliance with the Water Quality Protection Standard (WQPS).

3. Leachate Monitoring

a. **Compliance with Title 27**—The Dischargers shall operate and maintain leachate collection and removal system (LCRS) sumps,

[5] If no liquid is present within the five-year timeframe, no analysis is required.

and conduct monitoring of any detected leachate seeps in accordance with Title 27 and this Order.

b. **Monitoring Point**—Currently, the only monitoring point for LCRS sumps is located at the tank located at the Expansion Unit.

c. **Monthly Sump Inspection**—Each LCRS sump shall be inspected monthly for the presence of leachate, with total flow and flow rate recorded and reported in accordance with **Table 7** below.

d. **Leachate Sampling and Analysis**—Upon detecting leachate in a previously dry sump, the Dischargers shall notify Central Valley Water Board staff within seven days, and immediately sample and analyze leachate for the field parameters and monitoring parameters listed in **Table 7**. Thereafter, whenever leachate is present in the sump during the monthly inspection, the leachate shall be sampled and analyzed in accordance with the field parameters and monitoring parameters specified in Table 7.

Table 7—Leachate Monitoring: Field Parameters and Monitoring Parameters

Field Parameters	GeoTracker Code	Units	Sampling Freq.	Reporting Freq.
Total Flow	(*none*)	Gallons	Monthly	Semiannually
Flow Rate	FLOW	Gallons/Day	Monthly	Semiannually
Electrical Conductivity	SC	µmhos/cm	Quarterly	Semiannually
pH	PH	pH Units	Quarterly	Semiannually

Monitoring Parameters	GeoTracker Code	Units	Sampling Freq.	Reporting Freq.
TDS	TDS	mg/L	Upon 1st Discovery and Annually Thereafter	Annually
Chloride	CL	mg/L	Upon 1st Discovery and Annually Thereafter	Annually
Carbonate	CACO3	mg/L	Upon 1st Discovery and Annually Thereafter	Annually
Bicarbonate	BICACO3	mg/L	Upon 1st Discovery and Annually Thereafter	Annually
Nitrate (as Nitrogen)	NO3N	mg/L	Upon 1st Discovery and Annually Thereafter	Annually
Sulfate	SO4	mg/L	Upon 1st Discovery and Annually Thereafter	Annually

Monitoring Parameters	GeoTracker Code	Units	Sampling Freq.	Reporting Freq.
Calcium	CA	mg/L	Upon 1st Discovery and Annually Thereafter	Annually
Magnesium	MG	mg/L	Upon 1st Discovery and Annually Thereafter	Annually
Potassium	K	mg/L	Upon 1st Discovery and Annually Thereafter	Annually
Sodium	NA	mg/L	Upon 1st Discovery and Annually Thereafter	Annually
Short List VOCs (see Attachment A)	(*various*)	µg/L	Upon 1st Discovery and Annually Thereafter	Annually
1,2,3-Trichloropropane per Method SRL-524M-TCP	TCPR123	ng/L	Upon 1st Discovery and Annually Thereafter	Annually

4. **Analysis for Five-Year COCs**—Every five years, the Dischargers shall sample and analyze leachate present in the sump for the monitoring parameters listed in **Table 8**. The Dischargers shall perform this analysis again in 2022.

Table 8—Leachate Monitoring: Five-Year COC Monitoring Parameters

Parameter	GeoTracker Code	Units	Sampling & Reporting Freq.
Total Organic Carbon	TOC	mg/L	Every 5 Years Next Report Due: 2022
Dissolved Inorganics (per Attachment B)	(*various*)	µg/L	Every 5 Years Next Report Due: 2022
Extended List VOCs (per Attachment C)	(*various*)	µg/L	Every 5 Years Next Report Due: 2022
Semi-Volatile Organic Compounds (per Attachment D)	(*various*)	µg/L	Every 5 Years Next Report Due: 2022
Chlorophenoxy Herbicides (per Attachment E)	(*various*)	µg/L	Every 5 Years Next Report Due: 2022
Organophosphorus Compounds (per Attachment E)	(*various*)	µg/L	Every 5 Years Next Report Due: 2022

5. **Seep Monitoring**—Leachate that seeps to the surface from any landfill WMU shall, immediately upon detection, be sampled and analyzed for the field parameters and monitoring parameters in **Table 7** and **Table 8**. Additionally, the volume of leachate seepage shall be estimated in terms of gallons per day, and reported as “Leachate Flow Rate” per Section C.3 of this MRP.

6. General Monitoring Provisions

a. Detection Monitoring Systems

i. All detection monitoring systems designed and constructed pursuant to this Order shall be a certified by a California-licensed professional civil engineer or geologist (Qualified Professional) as meeting the requirements of Title 27.

ii. The Dischargers shall revise its DMP system, the groundwater detection monitoring system (after review and approval by Central Valley Water Board staff) as needed each time a new landfill cell or module is constructed.

iii. The Dischargers shall comply with the detection monitoring program provisions of Title 27 for groundwater and the unsaturated zone in accordance with Standard Monitoring Specifications in Section I of the SPRRs and the Monitoring Specifications in Section G of the WDRs.

b. Sample Collection and Analysis Plan

i. All samples shall be collected, preserved and transported in accordance with the approved Sample Collection and Analysis Plan (SCAP) and the quality assurance/quality control (QA/QC) standards therein.

ii. The Dischargers may use alternative analytical test methods (including new USEPA-approved methods), provided that the alternative methods have method detection limits (MDLs) equal to or lower than the analytical methods specified in this MRP, and are identified in the approved SCAP.

B. Additional Facility Monitoring

1. Regular Visual Inspection—The Dischargers shall perform regular visual inspections at the Facility in accordance with **Table 9** and **Table 10**. Results of these regular visual inspections shall be included in Semiannual Monitoring Reports (SMRs).

Table 9—Regular Visual Inspections

Category	Observations
Within Unit	• Evidence of ponded water at any point on unit outside of any contact storm water/leachate diversions structures on the active face of unit (record affected areas on map). • Evidence of erosion and/or of day-lighted refuse.
Unit Perimeter	• Evidence of leachate seeps, estimated size of affected area and flow rate (record affected areas on map). • Evidence of erosion and/or of day-lighted refuse.
Receiving Waters	• Floating and suspended materials of waste origin—presence or absence, source and size of affected areas. • Discoloration and turbidity—description of color, source and size of affected areas.

Table 10—Regular Visual Inspection Schedule

Category	Wet Season (1 Oct. to 30 April)	Dry Season (1 May to 30 Sept.)
Active Units	Weekly	Monthly
Inactive or Closed Units	Monthly	Quarterly

2. **Annual LCRS Testing**—Each Leachate Collection and Removal System (LCRS) shall be tested annually to demonstrate proper operation, with the results of each test being compared to the results of prior testing. (See Title 27, § 20340, subd. (d).)

3. **Annual Facility Inspections**—Prior to **30 September** of each year, the Dischargers shall inspect the Facility to assess repair and maintenance needs for drainage control systems, cover systems and groundwater monitoring wells; and preparedness for winter conditions (e.g., erosion and sedimentation control). If repairs are made as result of the annual inspection, problem areas shall be photographed before and after repairs. Any necessary construction, maintenance, or repairs shall be completed by 31 October. See Section C.4 for reporting requirements.

4. **Major Storm Events**—Within **seven days** of any storm event capable of causing damage or significant erosion (Major Storm Event), the Dischargers shall inspect the Facility for damage to any precipitation, diversion and drainage facilities, and all landfill side slopes. Necessary

repairs shall be completed within 30 days of the inspection. The Dischargers shall take photos of any problem areas before and after repairs. See Section C.5 for reporting requirements.

5. **Five-Year Iso-Settlement Surveys (Closed Landfill Units)**—The Dischargers shall conduct a five-year iso-settlement survey of each closed landfill units, and produce an iso-settlement map accurately depicting the estimated total change in elevation of each portion of the final cover's low-hydraulic-conductivity layer. For each portion of the landfill, this map shall show the total lowering of the surface elevation of the final cover, relative to the baseline topographic map. (Title 27, § 21090, subds. (e)(1)-(2).) See Section C.6 for reporting requirements.

C. Reporting Requirements

Table 11—Summary of Reporting Schedule

Report	End of Reporting Period	Due Date
Semiannual Monitoring Report (§ C.1C.1)	30 June, 31 December	1 August, 1 February
Annual Monitoring Report (§ C.2)	31 December	1 February
Leachate Seep Notification via Phone or Email (§ C.3)	(Continuous)	Immediately upon Discovery
Written Leachate Seep Report (§ C.3)	(Continuous)	7 Days After Discovery
Facility Inspection Report (§ C.4)	31 October	15 November
Major Storm Event Report (§ C.5)	(Continuous)	7 Days After Discovery
Survey / Iso-Settlement Map (§ xx)	Every 5 Years	5 Years After Closure
Financial Assurances Report (§ C.7)	31 December	1 June

1. **Semiannual Monitoring Reports (SMRs)**—On **1 August** and **1 February**[6] of each year, the Dischargers shall submit Semiannual Monitoring Reports (SMRs) in accordance with the provisions below.

   a. For each groundwater monitoring point addressed by the report, the SMR shall contain a description of:

      i. The time of water level measurement;

      ii. The type of pump (or other device) used for purging and the elevation of the pump intake relative to the elevation of the screened interval;

      iii. The method of purging used to stabilize water in the well bore before the sample is taken including the pumping rate; the equipment and methods used to monitor field pH, temperature, and conductivity during purging; results of pH, temperature, conductivity, and turbidity testing; and the method of disposing of the purge water;

      iv. The type of pump (or other device) used for sampling, if different than the pump or device used for purging; and

      v. A statement that the sampling procedure was conducted in accordance with the approved SCAP.

   b. The SMR shall include a map or aerial photograph showing the locations of observation stations, monitoring points, and background monitoring points.

   c. The SMR shall include an estimated quarterly groundwater flow rate and direction in: (1) the uppermost aquifer; (2) any zones of perched water; and (3) any additional zone of saturation monitored based upon water level elevations taken prior to the collection of the water quality data submitted in the report. (See Title 27, § 20415, subd. (e)(15).)

   d. The SMR shall include cumulative tabulated monitoring data for all monitoring points and constituents for groundwater, unsaturated zone, leachate, and surface water (if required under this Order).

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[6] The 1 Feb. Semiannual Monitoring Report may be combined with the Annual Monitoring Report (due on the same date), provided that the combination is clearly indicated in the title of the report.

Concentrations below the laboratory reporting limit shall not be reported as “ND” unless the reporting limit is also given in the table. Otherwise they shall be reported “<” the reporting limit (e.g., <0.10). Absent specific justification for reporting in other units, all units shall be as required per Table 2, Table 3, Table 5, Table 6, Table 7 and Table 8. (See SPRRs, § I. [Standard Monitoring Specifications re: MDLs and PQLs].)

e. The SMR shall include laboratory statements of results of all analyses evaluating compliance with the WDRs.

f. The SMR shall include an evaluation of the concentration of each monitoring parameter, or Five-Year COC monitoring parameter, when such sampling is conducted, as compared to the current concentration limits, and the results of any required verification testing for constituents exceeding a concentration limit. In the event of verified exceedances of concentration limits for wells or constituents not already in corrective action monitoring, the Dischargers shall report any actions taken under Section J of the SPRRs (Response to Release).

g. The SMR shall include an evaluation of the effectiveness of leachate monitoring and control facilities, as well as run-off/run-on control facilities. The Dischargers shall include a summary of any instances where leachate depth on an MSW landfill liner system exceeded 30 cm (excluding the leachate sump), and information about the required notification and corrective action in Standard Facility Specification E.13 of the SPRRs.

h. The SMR shall include a summary of all Regular Visual Inspections (§ B.1) conducted during the reporting period.

i. The SMR shall include a summary of inspection, leak search, and repair of final covers on any closed landfill units in accordance with an approved final post-closure maintenance plan as required by Sections G.26-29 of the SPRRs (Standard Closure and Post-Closure Maintenance Specifications).

2. **Annual Monitoring Reports (AMRs)**—On **1 February** of each year,[7] the Dischargers shall submit Annual Monitoring Reports (AMRs) in accordance with the provisions below.

   a. The AMR shall include graphs showing historical trends for monitoring parameters at each background and compliance monitoring point.[8] All monitoring parameters shall be graphed to show historical trends at each monitoring point and background monitoring point, for all samples taken within at least the previous five calendar years. All analyses for Five-Year COCs shall be graphically presented in the graph. Each graph shall plot the concentration of one or more constituents for the period of record for a given monitoring point or background monitoring point, at a scale appropriate to show trends or variations in water quality. The graphs shall plot each datum, rather than plotting mean values.[9]

   b. The AMR shall also include the following:

      i. An evaluation of the monitoring parameters with regard to the cation/anion balance, and a graphical presentation using a Stiff diagram, Piper graph or Schoeller plot;

      ii. All historical monitoring data for which there are detectable results, including data for the previous year, shall be submitted in tabular form in a digital file[10];

      iii. Quarterly hydrographs of each well showing the elevation of groundwater with respect to the elevations of the top and

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[7] See instructions in **Footnote 6** regarding combination of AMR with the 1 Feb. SMR.

[8] If analyzed during the annual reporting period, the monitoring parameters for Five-Year COCs shall be included in the graphs as well.

[9] Graphical analysis of monitoring data may be used to provide significant evidence of a release.

[10] For the purposes of this Order, the Central Valley Water Board regards submittal of data in hard copy and digital formats as necessary for statistical analysis and periodic review. (Title 27, § 20420, subd. (h).)

bottom of the screened interval and the elevation of the pump intake[11];

iv. A comprehensive discussion of the compliance record, and the result of any corrective actions taken or planned which may be needed to bring the Dischargers into full compliance with the waste discharge requirements;

v. A map showing the area and elevations in which filling has been completed during the previous calendar year, a comparison to final closure design contours, and a projected year in which each discrete landfill module will be filled;

vi. A written summary of the monitoring results, indicating any changes made or observed since the previous AMR;

vii. Results of annual LCRS testing (see MRP, § B.2); and

viii. Updated concentration limits for each monitoring parameter at each monitoring well based on the new data set.

3. **Seep Reporting**—Upon discovery of seepage from any disposal area within the Facility, the Dischargers shall **immediately** report such seepage to the Central Valley Water Board via telephone or email; and **within seven days**, submit a written report with the following information:

a. Map(s) depicting the location(s) of seepage;

b. Estimated flow rate(s);

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

d. Verification that samples have been submitted for analyses of the Field Parameters and Monitoring Parameters listed in **Table 7** and **Table 8**Table 8 of this MRP, and an estimated date that the results will be submitted to the Central Valley Water Board; and

e. Corrective measures underway or proposed, and corresponding time schedule.

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[11] Hydrographs shall be prepared quarterly, but submitted annually.

4. **Annual Facility Inspection Report**—By **15 November** of each year, the Dischargers shall submit a report describing the results of the inspection and the repair measures implemented, preparations for winter, and include photographs of any problem areas and the repairs. (See MRP, § B.3.)

5. **Major Storm Event Reports**—Immediately following each post-storm inspection described in Section B.4 of this MRP, the Dischargers shall notify Central Valley Water Board staff of any damage or significant erosion (upon discovery). Subsequent repairs shall be reported to the Central Valley Water Board (together with before and after photos of the repaired areas) within 14 days of completion.

6. **Survey and Iso-Settlement Map (Closed Landfill Units)**—The Dischargers shall submit all iso-settlement maps prepared in accordance with Section B.5 of this MRP. (See Title 27, § 21090, subd. (e).)

7. **Financial Assurances Report**—By **1 June** of each year, the Dischargers shall submit a copy of the annual financial assurances report due to CalRecycle that updates the financial assurances for closure, post-closure maintenance, and corrective action.

8. **Water Quality Protection Standard Reporting**—The Dischargers shall submit Water Quality Protection Reports (WQPS Reports) as required per see Section E.2 of this MRP.

9. **General Reporting Provisions**

   a. **Transmittal Letters**—Each report submitted under this MRP shall be accompanied by a Transmittal Letter providing a brief overview of the enclosed report, as well as the following:

      i. Any violations found since the last report was submitted, a description of all actions undertaken to correct the violation (referencing any previously submitted time schedules for compliance), and whether the violations have been corrected[12];

      ii. A statement from the submitting discharger, or its authorized agent, signed under penalty of perjury, certifying that, to the

[12] if no violations have occurred since submittal of the last report, the Transmittal Letter shall so state.

best of the signer's knowledge, the contents of the enclosed report are true, accurate and complete.

b. **Monitoring Data and Reports**—All monitoring data and reports under this MRP shall be submitted via the State Water Board's Geotracker Database at https://geotracker.waterboards.ca.gov. (See Title 23, § 3890 et seq.; Title 27, div. 3.)

After uploading each report, the Dischargers shall notify Central Valley Water Board staff via email at CentralValleyFresno@WaterBoards.ca.gov. The following information shall be included in the body of the email:

Attention:	Title 27 Unit
Report Title:	[Title]
GeoTracker Upload ID:	[Number]
Discharger Name:	City of Avenal and Madera Disposal Systems, Inc.
Facility Name:	Avenal Regional Landfill
County:	Kings County
CIWQS Place ID:	20681

c. **Data Presentation and Formatting**—In reporting monitoring data, the Dischargers shall arrange the data in tabular form so that the date, the constituents, the concentrations, and the units are readily discernible. Additionally, the submitted data shall be summarized in such a manner so as to illustrate clearly the compliance with waste discharge requirements or the lack thereof.

d. **Compliance with SPRRs**—All reports submitted under this MRP shall comply with applicable provisions of the SPRRs, including those in Section I (Standard Monitoring Specifications) and Section J (Response to Release).

e. **Additional Requirements for Monitoring Reports**—Each monitoring report submitted under this MRP (e.g., SMRs per § C.1) shall include a discussion of relevant field and laboratory tests, and the results of all monitoring conducted at the site shall be reported to the Central Valley Water Board in accordance with the reporting schedule above for the calendar period in which samples were taken or observations made.

D. Record Retention Requirements—The Dischargers shall maintain permanent records of all monitoring information, including without limitation: calibration and maintenance records; original strip chart recordings of continuous monitoring instrumentation; copies of all reports required by this MRP; and records of all data used to complete the application for WDRs. Such records shall be legible, and show the following for each sample:

1. Sample identification and the monitoring point or background monitoring point from which it was taken, along with the identity of the individual who obtained the sample;

2. Date, time and manner of sampling;

3. Date and time that analyses were started and completed, and the name of the personnel and laboratory performing each analysis;

4. A complete list of procedures used (including method of preserving the sample, and the identity and volumes of reagents used);

5. A calculation of results; and

6. The results of all analyses, as well as the MDL and PQL for each analysis (all peaks shall be reported).

E. Water Quality Protection Standard (WQPS)

1. Components of WQPS

a. For **each WMU**, the WQPS shall consist of: (i) all Constituents of Concern (COCs); (ii) the concentration limit applicable for each COC; (iii) the verification retesting procedure to confirm measurably significant evidence of a release; the point of compliance; and (iv) all water quality monitoring points for each monitored medium.

b. For **naturally occurring constituents**, the WQPS shall consist of: (i) naturally occurring COCs; (ii) the concentration limits of each naturally occurring COC; (iii) the point of compliance; and (iv) all monitoring points.

2. WQPS Report—Any proposed changes to the WQPS, other than annual update of the concentration limits, shall be submitted in a WQPS Report for review and approval.

a. The WQPS report shall be certified by a Qualified Professional (per MRP, § A.6.a.i), and contain each of the following components

i. An identification of all distinct bodies of surface water and groundwater[13] that could be affected in the event of a release from a WMU or portion thereof;

ii. A map of monitoring points and background monitoring points for the detection monitoring programs for groundwater, surface water (if required) and the unsaturated zone, as well as the point of compliance in accordance with Title 27, section 20405;

iii. An evaluation the perennial direction(s) of groundwater movement within the uppermost zone(s);

iv. A proposed statistical method for calculating concentration limits for monitoring parameters and COCs detected in at least 10 percent of the background data (naturally-occurring constituents) using a statistical procedure from subdivisions (e)(8)(A)-(D) or (e)(8)(E) of Title 27, section 20415; and

v. A re-testing procedure to confirm or deny measurably significant evidence of a release (see Title 27, §§ 20415, subd. (e)(8)(E), 20420, subds. (j)(1)-(3)).

b. If subsequent sampling of the background monitoring point(s) indicates significant water quality changes due to either seasonal fluctuations or other reasons unrelated to waste management activities at the site, the Dischargers may request modification of the WQPS.

c. The Dischargers proposed methods for calculating concentration limits in their 204 WQPS Report. Limits are calculated using intrawell prediction limits.

d. The WQPS shall be updated annually for each monitoring well using new and historical monitoring data.

3. Monitoring Parameters—A select group of constituents monitored during each sampling event, monitoring parameters are the waste constituents,

[13] This list shall include at least the uppermost aquifer and any permanent or ephemeral zones of perched groundwater underlying the facility.

reaction products, hazardous constituents and physical parameters that provide a reliable indication of a release from a given WMU.

For the purposes of this MRP, the monitoring parameters are set forth in: Table 2 and Table 3 (groundwater); Table 5 and Table 6 (unsaturated zone); and Table 7 and Table 8 (leachate).

4. **Constituents of Concern (COCs)**—COCs include a larger group of waste constituents, their reaction products, and hazardous constituents that are reasonably expected to be in or derived from waste contained in the WMU, and are required to be monitored every five years. (See Title 27, §§ 20395, 20420(g).) The COCs under this Order are as follows:

   For the purposes of this MRP, the COCs are set forth in: Table 2 and Table 3 (Groundwater); Table 5 and Table 6 (Unsaturated Zone); and Table 7 and Table 8 (Leachate).

   Additionally, Table 2, Table 5 and Table 7 incorporate additional COCs set forth in MRP Attachment A (Volatile Organic Compounds, Short List).

   Further, Table 3, Table 6 and Table 8 incorporate the Five-Year COCs listed in MRP Attachment B (Dissolved Inorganics), MRP Attachment C (Volatile Organic Compounds, Extended List), MRP Attachment D (Semi-Volatile Organic Compounds) and MRP Attachment E (Chlorophenoxy Herbicides and Organophosphorus Compounds). The last Five-Year COC Report was submitted in the 2017 AMR. Five-Year COCs are to be monitored again in 2022.

5. **Concentration Limits**—The concentration limit of each naturally occurring COC shall be determined as follows:

   a. By calculation in accordance with a statistical method in accordance with Title 27, section 20415, subdivision (e)(8); or

   b. By an alternate statistical method in accordance with Title 27, section 20415, subdivision (e)(8)(E).

6. **Retesting Procedures to Confirm Release**—If monitoring results indicate measurably significant evidence of a release per Section I.45 of the SPRRs, the Dischargers shall:

   a. For analytes detected in less than 10 percent of background samples (e.g., non-naturally occurring), the Dischargers shall use the non-statistical retesting procedure required per Section I.46 of the SPRRs (Standard Monitoring Specifications).

b. For analytes detected in at least 10 percent of background samples (naturally occurring), the Dischargers shall use one of the statistical retesting procedures required per Section I.47 of the SPRRs.

7. Point of Compliance (POC)—For purposes of the WQPS, point of compliance (POC) of each WMU shall be the vertical surface located at the hydraulically down-gradient limit extending through the uppermost underlying aquifer. The POC monitoring wells at the Facility are **MW-3**, **MW-4**, **MW-6D**, **MW-7** and **MW-8**.

8. Monitoring Points—A monitoring point is a well, device, or location specified in the WDRs, which monitoring is conducted and at which the WQPS applies. The monitoring points are listed in **Table 1** (Groundwater), **Section A.2.b** (Unsaturated Zone) and **Section A.3.b** (Leachate).

9. Compliance Period—The Compliance Period for the WMU shall be the number of years equal to its active life plus the closure period. The compliance period is the minimum period during which the Dischargers shall conduct a water quality monitoring program subsequent to a release from the WMU. The compliance period shall begin anew each time the Dischargers initiates an Evaluation Monitoring Program. (See Title 27, § 20410.)

If, in the opinion of the Executive Officer, the Dischargers fail to comply with the provisions of this Order, the Executive Officer may refer this matter to the Attorney General for judicial enforcement, may issue a complaint for administrative civil liability, or may take other enforcement actions. Failure to comply with this Order may result in the assessment of Administrative Civil Liability of up to $10,000 per violation, per day, depending on the violation, pursuant to the Water Code, including sections 13268, 13350 and 13385. The Central Valley Water Board reserves its right to take any enforcement actions authorized by law.

Any person aggrieved by this Central Valley Water Board action may petition the State Water Board for review in accordance with Water Code section 13320 and California Code of Regulations, title 23, section 2050 et seq. The State Water Board must receive the petition by 5:00 p.m. on the 30th day after the date of this Order; if the 30th day falls on a Saturday, Sunday, or state holiday, the petition must be received by the State Water Board by 5:00 p.m. on the next business day. Copies of the law and regulations applicable to filing petitions are available on the State Water Boards' Water Quality Petitions web page (http://www.waterboards.ca.gov/public_notices/petitions/water_quality/), and will be provided upon request.

MRP Glossary

MRP Attachments

Attachment A—Volatile Organic Compounds, Short List
Attachment B—Dissolved Inorganics (Five-Year COCs)
Attachment C—Volatile Organic Compounds, Extended List (Five-Year COCs)
Attachment D—Semi-Volatile Organic Compounds (Five-Year COCs)
Attachment E—Chlorophenoxy Herbicides and Organophosphorus Compounds (Five-Year COCs)

MRP GLOSSARY

AMR .....Annual Monitoring Report

COCs .....Constituents of Concern

DMP .....Detection Monitoring Program

Five-Year COCs .....COCs Monitored Every Five Years

GP .....Gas Probe

LCRS .....Leachate Collection and Removal System

MDL .....Method Detection Limit

µg/L.....Micrograms per Liter

mg/L.....Milligrams per Liter

MRP .....Monitoring and Reporting Program

MSW .....Municipal Solid Waste

MW.....Monitoring Well

ND.....Non-Detect (i.e., < RL)

POC .....Point of Compliance

QA/QC .....Quality Assurance / Quality Control

RL .....Laboratory Reporting Limit

SCAP .....Sample Collection and Analysis Plan

SMR.....Semiannual Monitoring Report

SPRRs .....Standard Provisions and Reporting Requirements, December 2015 Edition

Title 27.....California Code of Regulations, Title 27

USEPA.....United States Environmental Protection Agency

WDRs Order.....Waste Discharge Requirements Order

WMU .....Waste Management Unit

WQPS .....Water Quality Protection Standard

MRP ATTACHMENT A—VOLATILE ORGANIC COMPOUNDS, SHORT LIST

Volatile Organic Compounds—Short List USEPA Method 8260B	**GeoTracker Code**
Acetone	ACE
Acrylonitrile	ACRAMD
Benzene	BZ
Bromochloromethane	BRCLME
Bromodichloromethane	BDCME
Bromoform (Tribromomethane)	TBME
Carbon disulfide	CDS
Carbon tetrachloride	CTCL
Chlorobenzene	CLBZ
Chloroethane (Ethyl chloride)	CLEA
Chloroform (Trichloromethane)	TCLME
Dibromochloromethane (Chlorodibromomethane)	DBCME
1,2-Dibromo-3-chloropropane (DBCP)	DBCP
1,2-Dibromoethane (Ethylene dibromide; EDB)	EDB
o-Dichlorobenzene (1,2-Dichlorobenzene)	DCBZ12
m-Dichlorobenzene (1,3-Dichlorobenzene)	DCBZ13
p-Dichlorobenzene (1,4-Dichlorobenzene)	DCBZ14
trans- l ,4-Dichloro-2-butene	DCBE14T
Dichlorodifluoromethane (CFC-12)	FC12
1,1-Dichloroethane (Ethylidene chloride)	DCA11

MRP ATTACHMENT A—VOLATILE ORGANIC COMPOUNDS, SHORT LIST

Volatile Organic Compounds—Short List USEPA Method 8260B	**GeoTracker Code**
1,2-Dichloroethane (Ethylene dichloride)	DCA12
1,1 -Dichloroethylene (1,1 -Dichloroethene; Vinylidene chloride)	DCE11
cis- 1,2-Dichloroethylene (cis- 1,2-Dichloroethene)	DCE12C
trans-1,2-Dichloroethylene (trans-1,2-Dichloroethene)	DCE12T
1,2-Dichloropropane (Propylene dichloride)	DCPA12
cis- 1,3-Dichloropropene	DCP13C
trans- 1,3-Dichloropropene	DCP13T
Di-isopropylether (DIPE)	DIPE
Ethanol	ETHANOL
Ethyltertiary butyl ether	ETBE
Ethylbenzene	EBZ
2-Hexanone (Methyl butyl ketone)	HXO2
Hexachlorobutadiene	HCBU
Methyl bromide (Bromomethene)	BRME
Methyl chloride (Chloromethane)	CLME
Methylene bromide (Dibromomethane)	DBMA
Methylene chloride (Dichloromethane)	DCMA
Methyl ethyl ketone (MEK: 2-Butanone)	MEK
Methyl iodide (Iodomethane)	IME
Methyl t-butyl ether	MTBE

MRP ATTACHMENT A—VOLATILE ORGANIC COMPOUNDS, SHORT LIST

Volatile Organic Compounds—Short List USEPA Method 8260B	**GeoTracker Code**
4-Methyl-2-pentanone (Methyl isobutylketone)	MIBK
Naphthalene	NAPH
Styrene	STY
Tertiary amyl methyl ether	TAME
Tertiary butyl alcohol	TBA
1,1,1,2-Tetrachloroethane	TC1112
1,1.2,2-Tetrachloroethane	PCA
Tetrachloroethylene (Tetrachloroethene; Perchloroethylene)	PCE
Toluene	BZME
1,2,4-Trichlorobenzene	TCB124
1,1,1-Trichloroethane (Methylchloroform)	TCA111
1,1,2-Trichloroethane	TCA112
Trichloroethylene (Trichloroethene)	TCE
Trichlorofluoromethane (CFC- 11)	FC11
1,2,3 Trichloropropane [*use SRL-524M-TCP in lieu of USEPA Method 8260*]	TCPR123
Vinyl acetate	VA
Vinyl chloride	VC
Xylenes	XYLENES

MRP ATTACHMENT B—DISSOLVED INORGANICS (FIVE-YEAR COCS)

Constituent	GeoTracker Code	USEPA Method
Aluminum	AL	6010
Antimony	SB	7041
Barium	BA	6010
Beryllium	BE	6010
Cadmium	CD	7131A
Chromium	CR	6010
Cobalt	CO	6010
Copper	CU	6010
Silver	AG	6010
Tin	SN	6010
Vanadium	V	6010
Zinc	ZN	6010
Iron	FE	6010
Manganese	MN	6010
Arsenic	AS	7062
Lead	PB	7421
Mercury	HG	7470A
Nickel	NI	7521
Selenium	SE	7742
Thallium	TL	7841
Cyanide	CN	9010C
Sulfide	S	9030B

MRP ATTACHMENT C—VOLATILE ORGANIC COMPOUNDS, EXTENDED LIST (FIVE-YEAR COCS)

Volatile Organic Compounds USEPA Method 8260, Extended List	**GeoTracker Code**
Acetone	ACE
Acetonitrile (Methyl cyanide)	ACCN
Acrolein	ACRL
Acrylonitrile	ACRAMD
Allyl chloride (3-Chloropropene)	CLPE3
Benzene	BZ
Bromochloromethane (Chlorobromomethane)	BRCLME
Bromodichloromethane (Dibromochloromethane)	DBCME
Bromoform (Tribromomethane)	TBME
Carbon disulfide	CDS
Carbon tetrachloride	CTCL
Chlorobenzene	CLBZ
Chloroethane (Ethyl chloride)	CLEA
Chloroform (Trichloromethane)	TCLME
Chloroprene	CHLOROPRENE
Dibromochloromethane (Chlorodibromomethane)	DBCME
1,2-Dibromo-3-chloropropane (DBCP)	DBCP
1,2-Dibromoethane (Ethylene dibromide; EDB)	EDB
o-Dichlorobenzene (1,2-Dichlorobenzene)	DCBZ12
m-Dichlorobenzene(1,3-Dichlorobenzene)	DCBZ13
p-Dichlorobenzene (1,4-Dichlorobenzene)	DCBZ14
trans- 1,4-Dichloro-2-butene	DCBE14T
Dichlorodifluoromethane (CFC 12)	FC12
1,1 -Dichloroethane (Ethylidene chloride)	DCA11
1,2-Dichloroethane (Ethylene dichloride)	DCA12

MRP Attachment C—VOLATILE ORGANIC COMPOUNDS, Extended List (FIVE-YEAR COCs)

Volatile Organic Compounds USEPA Method 8260, Extended List	**GeoTracker Code**
1,1 -Dichloroethylene (1, l-Dichloroethene; Vinylidene chloride)	DCE11
cis- l ,2-Dichloroethylene (cis- 1,2-Dichloroethene)	DCE12C
trans- l ,2-Dichloroethylene (trans- 1,2-Dichloroethene)	DCE12T
1,2-Dichloropropane (Propylene dichloride)	DCPA12
1,3-Dichloropropane (Trimethylene dichloride)	DCPA13
2,2-Dichloropropane (Isopropylidene chloride)	DCPA22
1,1 -Dichloropropene	DCP11
cis- 1,3-Dichloropropene	DCP13C
trans- l ,3-Dichloropropene	DCP13T
Di-isopropylether (DIPE)	DIPE
Ethanol	ETHANOL
Ethyltertiary butyl ether	ETBE
Ethylbenzene	EBZ
Ethyl methacrylate	EMETHACRY
Hexachlorobutadiene	HCBU
2-Hexanone (Methyl butyl ketone)	HXO2
Isobutyl alcohol	ISOBTOH
Methacrylonitrile	METHACRN
Methyl bromide (Bromomethane)	BRME
Methyl chloride (Chloromethane)	CLME
Methyl ethyl ketone (MEK; 2-Butanone)	MEK
Methyl iodide (Iodomethane)	IME
Methyl t-butyl ether	MTBE
Methyl methacrylate	MMTHACRY
4-Methyl-2-pentanone (Methyl isobutyl ketone)	MIBK
Methylene bromide (Dibromomethane)	DBMA

MRP Attachment C—VOLATILE ORGANIC COMPOUNDS, Extended List (FIVE-YEAR COCs)

Volatile Organic Compounds USEPA Method 8260, Extended List	**GeoTracker Code**
Methylene chloride (Dichloromethane)	DCMA
Naphthalene	NAPH
Propionitrile (Ethyl cyanide)	PACN
Styrene	STY
Tertiary amyl methyl ether	TAME
Tertiary butyl alcohol	TBA
1,1,1,2-Tetrachloroethane	TC1112
1,1,2,2-Tetrachloroethane	PCA
Tetrachloroethylene (Tetrachloroethene; Perchloroethylene; PCE)	PCE
Toluene	BZME
1,2,4-Trichlorobenzene	TCB124
1,1,1 -Trichloroethane (Methylchloroform)	TCA111
1,1,2-Trichloroethane	TCA112
Trichloroethylene (Trichloroethene; TCE)	TCE
Trichlorofluoromethane (CFC-11)	FC11
1,2,3-Trichloropropane [*use SRL-524M-TCP in lieu of USEPA Method 8260*]	TCPR123
Vinyl acetate	VA
Vinyl chloride (Chloroethene)	VC
Xylene (total)	XYLENES

MRP ATTACHMENT D—SEMI-VOLATILE ORGANIC COMPOUNDS (FIVE-YEAR COCS)

Semi-Volatile Organic Compounds USEPA Methods 8270C or 8270D (Base, Neutral & Acid Extractables)	**GeoTracker Code**
Acenaphthene	ACNP
Acenaphthylene	ACNPY
Acetophenone	ACPHN
2-Acetylaminofluorene (2-AAF)	ACAMFL2
Aldrin	ALDRIN
4-Aminobiphenyl	AMINOBPH4
Anthracene	ANTH
Benzo[a]anthracene (Benzanthracene)	BZAA
Benzo[b]fluoranthene	BZBF
Benzo[k]fluoranthene	BZKF
Benzo[g,h,i]perylene	BZGHIP
Benzo[a]pyrene	BZAP
Benzyl alcohol	BZLAL
Bis(2-ethylhexyl) phthalate	BIS2EHP
alpha-BHC	BHCALPHA
beta-BHC	BHCBETA
delta-BHC	BHCDELTA
gamma-BHC (Lindane)	BHCGAMMA
Bis(2-chloroethoxy) methane	BECEM
Bis(2-chloroethyl) ether (Dichloroethyl ether)	BIS2CEE
Bis(2-chloro-1-methyethyl) ether (Bis(2-chloroisopropyl) ether; DCIP)	BIS2CIE
4-Bromophenyl phenyl ether	BPPE4
Butyl benzyl phthalate (Benzyl butyl phthalate)	BBP
Chlordane	CHLORDANE

MRP ATTACHMENT D—SEMI-VOLATILE ORGANIC COMPOUNDS (FIVE-YEAR COCS)

Semi-Volatile Organic Compounds USEPA Methods 8270C or 8270D (Base, Neutral & Acid Extractables)	**GeoTracker Code**
p-Chloroaniline	CLANIL4
Chlorobenzilate	CLBZLATE
p-Chloro-m-cresol (4-Chloro-3-methylphenol)	C4M3PH
2-Chloronaphthalene	CNPH2
2-Chlorophenol	CLPH2
4-Chlorophenyl phenyl ether	CPPE4
Chrysene	CHRYSENE
o-Cresol (2-methylphenol)	MEPH2
m-Cresol (3-methylphenol)	MEPH3
p-Cresol (4-methylphenol)	MEPH4
4,4'-DDD	DDD44
4,4'-DDE	DDE44
4,4'-DDT	DDT44
Diallate	DIALLATE
Dibenz[a,h]anthracene	DBAHA
Dibenzofuran	DBF
Di-n-butyl phthalate	DNBP
3,3'-Dichlorobenzidine	DBZD33
2,4-Dichlorophenol	DCP24
2,6-Dichlorophenol	DCP26
Dieldrin	DIELDRIN
Diethyl phthalate	DEPH
p-(Dimethylamino) azobenzene	PDMAABZ
7,12-Dimethylbenz[a]anthracene	DMBZA712
3,3'-Dimethylbenzidine	DMBZD33
2,4-Dimehtylphenol (m-Xylenol)	DMP24

MRP ATTACHMENT D—SEMI-VOLATILE ORGANIC COMPOUNDS (FIVE-YEAR COCS)

Semi-Volatile Organic Compounds USEPA Methods 8270C or 8270D (Base, Neutral & Acid Extractables)	**GeoTracker Code**
Dimethyl phthalate	DMPH
m-Dinitrobenzene	DNB13
4,6-Dinitro-o-cresol (4,6-Dinitro-2-methylphenol)	DN46M
2,4-Dinitrophenol	DNP24
2,4-Dinitrotoluene	DNT24
2,6-Dinitrotoluene	DNT26
Di-n-octyl phthalate	DNOP
Diphenylamine	DPA
Endosulfan I	ENDOSULFANA
Endosulfan II	ENDOSULFANB
Endosulfan sulfate	ENDOSULFANS
Endrin	ENDRIN
Endrin aldehyde	ENDRINALD
Ethyl methanesulfonate	EMSULFN
Famphur	FAMPHUR
Fluoranthene	FLA
Fluorene	FL
Heptachlor	HEPTACHLOR
Heptachlor epoxide	HEPT-EPOX
Hexachlorobenzene	HCLBZ
Hexachlorocyclopentadiene	HCCP
Hexachloroethane	HCLEA
Hexachloropropene	HCPR
Indeno(1,2,3-c,d) pyrene	INP123
Isodrin	ISODRIN
Isophorone	ISOP

MRP ATTACHMENT D—SEMI-VOLATILE ORGANIC COMPOUNDS (FIVE-YEAR COCS)

Semi-Volatile Organic Compounds USEPA Methods 8270C or 8270D (Base, Neutral & Acid Extractables)	**GeoTracker Code**
Isosafrole	ISOSAFR
Kepone	KEP
Methapyrilene	MTPYRLN
Methoxychlor	MTXYCL
3-Methylcholanthrene	MECHLAN3
Methyl methanesulfonate	MMSULFN
2-Methylnaphthalene	MTNPH2
1,4-Naphthoquinone	NAPHQ14
1-Naphthylamine	AMINONAPH1
2-Naphthylamine	AMINONAPH2
o-Nitroaniline (2-Nitroaniline)	NO2ANIL2
m-Nitroaniline (3-Nitroaniline)	NO2ANIL3
p-Nitroaniline (4-Nitroaniline)	NO2ANIL4
Nitrobenzene	NO2BZ
o-Nitrophenol (2-Nitrophenol)	NTPH2
p-Nitrophenol (4-Nitrophenol)	NTPH4
N-Nitrosodi-n-butylamine (Di-n-butylnitrosamine)	NNSBU
N-Nitrosodiethylamine (Diethylnitrosamine)	NNSE
N-Nitrosodimethylamine (Dimethylnitrosamine)	NNSM
N-Nitrosodiphenylamine (Diphenylnitrosamine)	NNSPH
N-Nitrosodipropylamine (N-Nitroso-N-dipropylamine; Di-n-propylnitrosamine)	NNSPR
N-Nitrosomethylethylamine (Methylethylnitrosamine)	NNSME
N-Nitrosopiperidine	NNSPPRD
N-Nitrosospyrrolidine	NNSPYRL
5-Nitro-o-toluidine	TLDNONT5

MRP ATTACHMENT D—SEMI-VOLATILE ORGANIC COMPOUNDS (FIVE-YEAR COCS)

Semi-Volatile Organic Compounds USEPA Methods 8270C or 8270D (Base, Neutral & Acid Extractables)	**GeoTracker Code**
Pentachlorobenzene	PECLBZ
Pentachloronitrobenzene (PCNB)	PECLNO2BZ
Pentachlorophenol	PCP
Phenacetin	PHNACTN
Phenanthrene	PHAN
Phenol	PHENOL
p-Phenylenediamine	ANLNAM4
Polychlorinated biphenyls (PCBs; Aroclors)	PCBS
Pronamide	PRONAMD
Pyrene	PYR
Safrole	SAFROLE
1,2,4,5-Tetrachlorobenzene	C4BZ1245
2,3,4,6-Tetrachlorophenol	TCP2346
o-Toluidine	TLDNO
Toxaphene	TOXAP
2,4,5-Trichlorophenol	TCP245
0,0,0-Triethyl phosphorothioate	TEPTH
sym-Trinitrobenzene	TNB135

MRP ATTACHMENT E—CHLOROPHENOXY HERBICIDES AND ORGANOPHOSPHORUS COMPOUNDS (FIVE-YEAR COCS)

Chlorophenoxy Herbicides USEPA Method 8151A	**GeoTracker Code**
2,4 D (2,4 Dichlorophenoxyacetic acid)	24D
Dinoseb (DNBP; 2 sec Butyl 4,6 dinitrophenol)	DINOSEB
Silvex (2,4,5 Trichlorophenoxypropionic acid; 2,4,5 TP)	SILVEX
2,4,5 T (2,4,5 Trichlorophenoxyacetic acid)	245T

Organophosphorus Compounds USEPA Method 8141B	**GeoTracker Code**
2,4 D (2,4 Dichlorophenoxyacetic acid)	24D
Dinoseb (DNBP; 2 sec Butyl 4,6 dinitrophenol)	DINOSEB
Silvex (2,4,5 Trichlorophenoxypropionic acid; 2,4,5 TP)	SILVEX
2,4,5 T (2,4,5 Trichlorophenoxyacetic acid)	245T

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER R5-2019-0071

WASTE DISCHARGER REQUIREMENTS
FOR
CITY OF AVENAL
AND
MADERA DISPOSAL SYSTEMS, INC.
AVENAL REGIONAL LANDFILL
KINGS COUNTY

AND

MONITORING AND REPORTING PROGRAM

INFORMATION SHEET

The City of Avenal and Madera Disposal Systems, Inc. (collectively, Dischargers) own and operate the Avenal Regional Landfill (Facility), which is located northeast of the intersection of State Road 269 and Hydril Road within the incorporated limits of the City of Avenal, in Section 15, T22S, R17E, MDB&M.

The Facility is on a 173-acre property at 1200 Skyline Boulevard, Avenal. Unlined landfill disposal areas cover approximately 45 acres. For the purposes of this Order, the unlined areas are treated as a single landfill waste management unit (WMU), referred to as the “Existing Unit.” The Facility is currently in the process of expanding by approximately 78 acres. These areas of expansion are treated as a single WMU, referred to as the “Expansion Unit.” All 6 phases of the Expansion Unit will be lined and constructed to current regulatory standards. Construction of the Expansion Unit is already authorized in prior waste discharge requirements (WDRs) orders from the Central Valley Water Board.

The Facility is currently regulated by WDRs Orders R5-2005-0023 and R5-2012-0121, which prescribe requirements for operations and construction. The new WDRs will update the operation and construction requirements, including the acceptance of nonhazardous, non-designated liquid waste for solidification prior to disposal in the lined Expansion Unit.

Groundwater flow at the site is minimal due to the low hydraulic conductivity of the geologic material, very low infiltration rates, and low hydraulic gradients. The age-dating of groundwater tends to confirm a low-flow system with no recent infiltration of precipitation. Groundwater flow is believed to be along the bedding planes in the

direction of strike (south 50 degrees east). Monitoring well pairs in different beds indicate flow to the southeast and possibly the northwest; however, the direction of flow is believed to be southeasterly. Secondary groundwater flow may be to the southwest, toward the Kettleman Plain, if secondary porosity features exist at depth, which cross the bedding planes. These features (fracture zones and solution zones) have not been observed in drilling cores. The average groundwater gradient within specific beds is approximately 0.009 feet per foot. The average groundwater velocity is 0.02 feet per year. Age dating of groundwater of the site indicate that groundwater may be greater than 5,700 years old and is not influenced by modern precipitation. The groundwater has naturally occurring high concentrations of sulfate, chloride, specific conductivity, and total dissolved solids. There has been no indication of a release of any waste constituents from the landfill.