

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM R5-2016-XXXX
FOR
WASTE MANAGEMENT OF ALAMEDA COUNTY, INC.
ALTAMONT LANDFILL AND RESOURCE RECOVERY FACILITY
CLASS II AND CLASS III LANDFILL
CONSTRUCTION, OPERATION, CLOSURE, POST-CLOSURE MAINTENANCE,
AND CORRECTIVE ACTION
ALAMEDA COUNTY

This monitoring and reporting program (MRP) is issued pursuant to California Water Code section 13267 and incorporates requirements for groundwater, unsaturated zone, leachate, gas condensate, and surface water monitoring and reporting; facility monitoring, maintenance, and reporting; corrective action monitoring and reporting; and financial assurances reporting contained in California Code of Regulations, title 27, section 20005, et seq. (hereafter Title 27), Waste Discharge Requirements (WDRs) Order R5-2016-XXXX, and the Standard Provisions and Reporting Requirements (SPRRs) dated December 2015. Compliance with this MRP is ordered by the WDRs and the Discharger shall not implement any changes to this MRP unless a revised MRP is issued by the Central Valley Water Board or the Executive Officer.

A. MONITORING

The Discharger shall comply with the monitoring program provisions of Title 27 for groundwater, surface water, leachate, gas condensate, 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. All monitoring shall be conducted in accordance with the most current approved *Sample Collection and Analysis Plan* (SAP), which includes quality assurance/quality control standards. The most current SAP was submitted in July 2015. WDRs Order R5-201X-XXXX in Provisions H.8 requires the Discharger to submit a revised SAP.

All compliance monitoring wells established for the detection monitoring program shall constitute the monitoring points for the groundwater Water Quality Protection Standard (WQPS). All detection monitoring program groundwater monitoring wells, unsaturated zone monitoring devices, leachate, and surface water monitoring points shall be sampled and analyzed for field parameters, monitoring parameters, and constituents of concern (COCs) where applicable as indicated and listed in Tables I through VI.

The Discharger may use alternative analytical test methods, including new USEPA approved methods, provided the methods have method detection limits equal to or lower than the analytical methods specified in this Monitoring and Reporting Program, and are identified in the approved Sample Collection and Analysis Plan.

The monitoring program of this MRP includes:

Section Monitoring Program

- A.1 Groundwater Monitoring
- A.2 Unsaturated Zone Monitoring (Gas Probes, Lysimeters, Leak Detection System, and Underdrains)
- A.3 Leachate and Landfill Gas Condensate Monitoring (LCRS Monitoring, Seep Monitoring, Class II Surface Impoundment Monitoring, and LCRS Testing)
- A.4 Surface Water Monitoring (Including springs)
- A.5 Facility Monitoring (Including Wastewater Treatment Plant Operations)
- A.6 Corrective Action Monitoring

1. Groundwater Monitoring

The Discharger shall operate and maintain a groundwater monitoring system that complies with the applicable provisions of Title 27, Subchapter 3 “Water Monitoring”. The monitoring system shall be certified by a California-licensed professional civil engineer or geologist as meeting the requirements of Title 27. As identified in the WDRs, the current groundwater monitoring system is being further evaluated to ensure compliance with Title 27 Detection Monitoring Program requirements

The current groundwater monitoring network shall consist of the following:

<u>Fill Area 1- Groundwater Monitoring</u>			
Well No.	Monitoring Program	WMU/Phase	Stratigraphic Zone¹
MW-2A	Detection Monitoring	Unit 1 (U1) and Unit 2 (U2)	W
MW-4A	Detection Monitoring	U2	W
MW-5A	Detection Monitoring	U1	W
MW-6	Detection Monitoring	U2	W/U
MW-7	Detection Monitoring	U1	W/U
MW-11	Detection Monitoring	U1	W
E-03A	Corrective Action	U1	W
E-05	Corrective Action	U1	A
E-07	Corrective Action	U1	W
E-17	Corrective Action	U1	W/U
E-20B	Corrective Action	U1	U
E-23	Corrective Action	U1	W/U
MW-12	Corrective Action	U1	W
PC-1B	Corrective Action	U1	U

¹ A= alluvium, W= weathered bedrock, U = unweathered bedrock

<u>Fill Area 1- Groundwater Monitoring</u>			
Well No.	Monitoring Program	WMU/Phase	Stratigraphic Zone¹
PC-1C	Corrective Action	U1	W/U

<u>Fill Area 1- Water Level Monitoring</u>			
Well No.	Monitoring Program	WMU/Phase	Stratigraphic Zone
E-18	Water Level	U1	W
E-21	Water Level	U1	A/W
E-22	Water Level	U1	A/W/U
MW-1A	Water Level	U2	W
MW-1B	Water Level	U2	W
MW-2B	Water Level	U1 and U2	U
MW-2C	Water Level	U1 and U2	U
MW-3B	Water Level	U1	W/U
MW-3C	Water Level	U1	U
MW-4B	Water Level	U2	W/U
MW-5B	Water Level	U1	U

Note: WM-1 abandoned in July 2013.

<u>Fill Area 2- Groundwater Monitoring</u>			
Well No.	Monitoring Program	WMU/Phase	Stratigraphic Zone
MW-4A	Detection Monitoring	U1	W
MW-8A	Detection Monitoring	U1	A
MW-8B	Detection Monitoring	U1	W
MW-9	Detection Monitoring	U1 Ph7-9	W
MW-10	Detection Monitoring	U1	W
MW-13A	Detection Monitoring	U1 Ph3	A
MW-13B	Detection Monitoring	U1 Ph3	W
MW-14	Detection Monitoring	U1 Ph1	W
PC-1A	Detection Monitoring	U1	W
PC-1C	Detection Monitoring	U1	W/U

Fill Area 2- Water Level Monitoring			
Well No.	Monitoring Program	WMU/Phase	Stratigraphic Zone
WM-2	Water Level	U1	U
ARC-2	Water Level	U1	U
P-2	Water Level	U1	W
PC-1A	Water Level	U1	W
PC-1B	Water Level	U1	U
PC-1C	Water Level	U1	W/U
PC-2A	Water Level	U1	A
PC-2C	Water Level	U1	W
PC-6B / -6B(R)	Water Level	U1	U

Note: WM-1 and HSA-6 abandoned in July 2013.

Fill Area 2 Surface Impoundment SI-1, Groundwater Monitoring			
Well No.	Monitoring Program	WMU/Phase	Stratigraphic Zone
MW-15B	Background Monitoring	U1	To Be Determined
MW-16	Detection Monitoring	U1	To Be Determined
MW-17	Detection Monitoring	U1	To Be Determined
MW-18	Detection Monitoring	U1	To Be Determined

Groundwater samples shall be collected from the background wells, detection monitoring wells, corrective action monitoring wells, and any additional wells added as part of the approved groundwater monitoring system. The collected samples shall be analyzed for the parameters and constituents listed in Table I in accordance with the specified methods and frequencies. Also, refer to section A.7 for any additional requirements or accelerated monitoring frequencies for corrective action monitoring wells. The Discharger shall collect, preserve, and transport groundwater samples in accordance with the approved Sample Collection and Analysis Plan.

Once per quarter, the Discharger shall measure the groundwater elevation in each well, determine groundwater flow direction, and estimate groundwater flow rates in the uppermost aquifer and in any zones of perched water and in any additional portions of the zone of saturation monitored. The results shall be reported semiannually, including the times of expected highest and lowest elevations of the water levels in the wells, pursuant to Title 27, section 20415(e)(15). All groundwater elevations shall be reported using only one common datum (e.g., NGVD29 or NAVD88, etc.) for the entire network.

Samples collected for the COC monitoring specified in Table I shall be collected and analyzed in accordance with the methods listed in Table VI every five years. Five-year COCs were last monitored in November 2015 and shall be monitored again in

November 2020. The results shall be reported in the Annual Monitoring Report for the year in which the samples were collected.

2. Unsaturated Zone Monitoring (Gas Probes, Lysimeters, Leak Detection System, and Underdrains)

The Discharger shall operate and maintain an unsaturated zone detection monitoring system that complies with the applicable provisions of Title 27, sections 20415 and 20420. The Discharger shall collect, preserve, and transport all unsaturated zone samples in accordance with the quality assurance/quality control standards contained in the approved Sample Collection and Analysis Plan.

All 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 for soil-pore liquid and/or soil-pore gas.

The current unsaturated zone monitoring network shall consist of:

<u>Monitoring Point</u>	<u>Status</u>	<u>Device Type</u>	<u>Units Being Monitored</u>
VD	Corrective Action	Underdrain	Fill Area 1, Unit 1
VZM-A	Detection Monitoring	Pan Lysimeter	Fill Area 1, Unit 2
VD2	Corrective Action	Underdrain	Fill Area 1, Unit 2
VZM-B	Detection Monitoring	Pan Lysimeter	Leachate Pond SI-1
UD-1	Detection Monitoring	Underdrain	Fill Area 2, Unit 1, Phase 1
LD-1	Detection Monitoring	Leak Detection	Fill Area 2, Unit 1, Phase 1
LD-2	Detection Monitoring	Leak Detection	Fill Area 2, Unit 1 Leachate Conveyance Pipe (annular space)
GP-1	Detection, Soil-Pore Gas	Gas Probe	Fill Area 1 and Fill Area 2
GP-7	Detection, Soil-Pore Gas	Gas Probe	Fill Area 1
GP-8	Detection, Soil-Pore Gas	Gas Probe	Fill Area 1
GP-9	Detection, Soil-Pore Gas	Gas Probe	Fill Area 1
GP-10	Detection, Soil-Pore Gas	Gas Probe	Fill Area 1
GP-11	Detection, Soil-Pore Gas	Gas Probe	Fill Area 1
GP-12	Detection, Soil-Pore Gas	Gas Probe	Fill Area 1
GP-20	Detection, Soil-Pore Gas	Gas Probe	Fill Area 1 and Fill Area 2

a. Gas Probes

The Discharger operates perimeter LFG probes adjacent to the WMUs as required by CalRecycle which currently act as a proxy for a portion of the unsaturated zone detection monitoring system. Unsaturated zone samples of landfill gas shall be collected from the monitoring network listed above and shall be analyzed for the

soil-pore gas monitoring parameters and constituents listed in Table II in accordance with the specified methods and frequencies. The Discharger shall install unsaturated zone monitoring devices (after review and approval by Central Valley Water Board staff) each time the landfill constructs a new cell or module (phase of construction).

b. Lysimeters (Pan type or other soil-pore liquid type monitoring device)

Lysimeters shall be inspected for the presence of liquid **monthly**. If liquid is detected in a previously dry lysimeter, the Discharger shall verbally and via email communication notify Central Valley Water Board staff within **seven days** and shall immediately sample and test the liquid for Field and Monitoring Parameters listed in Table II. Samples collected for the 5-year COC analyses specified in Table II shall be collected and analyzed in accordance with the methods listed in Table VI every five years, beginning again in 2020.

All pan type lysimeters in Fill Area 1 shall also be monitored for landfill gas in the unsaturated zone. The Discharger shall sample for landfill gas for the Monitoring Parameters listed in Table II.

c. Leak Detection System Monitoring

The leak detection system in each phase of Fill Area 2 shall be inspected for the presence of liquid **monthly**. If liquid is detected in a previously dry leak detection system, the Discharger shall verbally and via email communication notify Central Valley Water Board staff within **seven days** and shall immediately sample and test the liquid for Field and Monitoring Parameters listed in Table II. Samples collected for the 5-year COC analyses specified in Table II shall be collected and analyzed in accordance with the methods listed in Table VI every five years, beginning at the time of the first sample collection.

The Discharger shall monitor the leak detection system associated with each phase of construction in Fill Area 2 Unit 1.

The Discharger shall monitor the leak detection system, the annular space between double walled leachate conveyance pipe for Fill Area 2 Unit 1. The presence of liquid in the annular space shall be monitored monthly at a point immediately prior to the discharge point of leachate to the 8-million gallon Class II surface impoundment. If liquid is detected in a previously dry leak detection system, the Discharger shall verbally and via email communication notify Central Valley Water Board staff within **seven days** and shall immediately sample and test the liquid for Field and Monitoring Parameters listed in Table II and for the 5-year COC analyses specified in Table II shall be collected and analyzed in accordance with the methods listed in Table VI every five years. Based on the monitoring results, the Discharger shall determine if a release from the primary containment system within the leachate conveyance pipe has occurred following SPRRs guidelines.

All leak detection systems in each phase of Fill Area 2 shall also be monitored for landfill gas. The Discharger shall sample and test for landfill gas for the Monitoring Parameters listed in Table II.

d. Underdrain Monitoring

The Discharger shall operate, maintain, and monitor an underdrain system below Fill Area 1 and Fill Area 2 in order to satisfy the requirements of the WDRs R5-2016-XXXX for the approved alternative to 5-foot separation siting requirements (Title 27 section 20240(c)) and provide detection monitoring for a release of landfill leachate and landfill gas to the underdrain system.

The Discharger shall monitor the underdrain system associated with each phase of construction in Fill Area 2 Unit 1. The liquid shall be collected as close to edge of waste as possible for each phase of construction in order to provide representative samples.

All underdrains shall be monitored **monthly** for the presence of liquid, and flow shall be recorded in accordance with Table II. The Discharger shall sample and test any liquid and gas present in the underdrain for Field and Monitoring Parameters listed in Table II. All underdrain samples shall be analyzed for the 5-year COCs specified in Table II every five years, beginning at the time of the first sampling in Fill Area 2 and on the schedule already provided for Fill Area 1 (i.e., next event November 2020).

All underdrains for Fill Area 1 shall also be monitored for landfill gas. All underdrains in each phase of Fill Area 2 shall also be monitored for landfill gas. The Discharger shall sample and test for landfill gas for the Monitoring Parameters listed in Table II.

3. LCRS Monitoring, Seep Monitoring, Annual LCRS Testing, Landfill Gas Condensate Monitoring, Class II Surface Impoundment Monitoring

The Discharger shall operate and maintain the leachate collection and removal system (LCRS), conduct monitoring of any detected leachate seeps, and conduct annual testing of each LCRS in accordance with Title 27 and this monitoring program.

The Discharger shall operate and maintain a LFG condensate collection and removal system, and conduct monitoring and reporting of the quantity and quality of the gas condensate collected.

a. LCRS Monitoring

The Discharger shall operate and maintain a leachate collection and removal system (LCRS) including but not limited to all LCRS gravel windows, all LCRS collection systems, and all LCRS removal systems (LCRS sumps).

The Discharger shall monitor the LCRS with each phase of construction in Fill Area 2.

The current LCRS leachate sump monitoring points are:

<u>Monitoring Point</u>	<u>Waste Management Unit Where LCRS Sump and/or LCRS Discharge Pump is Located</u>
LS	Fill Area 1, Unit 1 LCRS Sump
LS2	Fill Area 1, Unit 2 LCRS Sump
LS-3	Surface Impoundment Leachate Pond SI-1 LCRS Sump
LS-4	Fill Area 2, Unit 1, Phase 1 LCRS Discharge Pipe

All LCRS sumps and/or LCRS discharge pipes shall be inspected monthly for the presence of leachate, and flow shall be recorded in accordance with Table III. If leachate is detected in a previously dry sump for the Leachate Pond, the Discharger shall verbally and via email communication notify Central Valley Water Board staff within **seven days** and shall immediately sample and test the leachate for Field and Monitoring Parameters listed in Table III. Leachate in the LCRS sump and/or LCRS Discharge Pipe shall be sampled for all parameters and constituents in accordance with the frequencies listed in Table III. All LCRS sump and/or LCRS discharge pipe samples shall be analyzed for the 5-year COCs specified in Table III when initially operated and then every five years, beginning again in 2020 for LCRS sumps previously monitored in 2015.

b. Seep Monitoring

Leachate that seeps to the surface from any landfill WMU including its side slopes, intermediate and/or final cover shall be sampled and analyzed for the Field and Monitoring Parameters listed in Table III upon detection. The quantity of leachate shall be estimated and reported separately as Leachate Seep Flow Rate (in gallons/day). Reporting for leachate seeps shall be conducted as required in Section B of this MRP, below.

c. Annual LCRS Testing

All LCRSs shall be tested annually pursuant to Title 27, section 20340(d) to demonstrate proper operation. The results of these tests shall be reported to the Central Valley Water Board in the Annual Monitoring Report and shall include comparisons with earlier tests made under comparable conditions.

d. Landfill Gas Condensate Monitoring

The Discharger shall sample and analyze for the Field and Monitoring Parameters listed in Table III landfill gas condensate collected from all WMUs where landfill gas condensate is to be returned to the WMU. The quantity of landfill gas condensate returned to a WMU shall be measured and reported separately for each WMU as Landfill Gas Condensate Flow Rate (in gallons/month. Reporting for landfill gas condensate shall be conducted as required in Section B.1 of this MRP below.

e. Class II Surface Impoundment Monitoring

Samples shall be collected from each Class II surface impoundment in accordance with the Table III. One sample shall be collected from each surface impoundment

during each semi-annual monitoring period. The following additional parameters will be monitored and reported as part of the semiannual reporting requirement:

Additional Class II Surface Impoundment Monitoring			
<u>Field Parameters</u>	<u>Units</u>	<u>Monitoring Frequency</u>	<u>Reporting Frequency</u>
Flow Rate to each impoundment ¹	gallons/month	Daily	Semiannually
Reapplication Flow Rate to each landfill WMU ⁵	gallons/month	Daily	Semiannually
Precipitation ²	Inches & Tenths/month	Daily	Semiannually
Freeboard ³	Feet & Tenths	Monthly	Semiannually
Off Site Removal of Wastewater ⁴	Gallons per Event	Daily	Semiannually

¹ Flow of wastewater into Class II surface impoundments as measured and recorded at totalizing meter. If the Discharger discharges liquids other than landfill leachate or landfill gas condensate the Discharger shall report the flowrate of all other liquids to the surface impoundment separately.

² Precipitation shall be measured as described in Discharge Specifications.

³ Freeboard shall be measured and recorded monthly and prior to major storm events using permanent markings on the primary geomembrane liner or a free-standing gauge.

⁴ Each time wastewater is removed from the facility for disposal elsewhere, the Discharger shall document the date of removal, gallons removed, and the location of disposal. A copy of each hauling receipt shall be included in the semiannual report.

⁵ The Discharger shall monitor the flowrate to each landfill WMU. The Discharger is prohibited from discharging quantities of liquids to landfill WMUs greater than the amount of landfill leachate and landfill gas condensate permitted to be returned to the landfill WMUs.

Action Leakage Rate: The Discharger shall calculate the leakage rate for each Class II surface impoundment LCRS on a monthly basis, and convert the results into gallons per acre per day value. The results shall be included in the information in the semiannual reports, and compared to the Action Leakage Rates found in the WDRs under Facility Specification C.9. If monitoring of the flow rate into the LCRS shows an exceedance of the Action Leakage Rate required by the WDRs, the Discharger shall follow the procedures in the WDRs under “C. Facility Specifications”. Tabulated leakage rates shall be included in the semiannual monitoring reports.

4. Surface Water Monitoring (Including springs)

At the Altamont Landfill and Resource Recovery Facility, runoff from landfill areas flows to sedimentation basins that periodically discharge to natural drainages.

Discharges to natural drainages to the west of the facility flow west-southwest to channels along Dyer Road that drain to Altamont Creek which may flow into the San Francisco Bay. Discharges to natural drainages to the south and east of the facility flows eastward in un-named channels and ditches to Mountain House Creek, which flows to Old River in the Sacramento-San Joaquin Delta. The current surface water detection monitoring system meets the applicable requirements of Title 27.

The current surface water monitoring points for the landfill are:

<u>Mon Pt.</u>	<u>Point Description</u>
SW-A-1	Basin A
SW-A-2	Basin A Discharge
SW-B-1	Basin B
SW-B-2	Basin B Discharge
SW-C-1	Basin C
SW-C-2	Basin C Discharge
SW-SBA-1	Sedimentation Basin A
SW-SBA-2	Sedimentation Basin A Discharge
SW-SB1-1	Sedimentation Basin 1
SW-SB1-2	Sedimentation Basin 1 Discharge
SW-SB2-1	Sedimentation Basin 2
SW-SB2-2	Sedimentation Basin 2 Discharge

For surface water detection monitoring, a sample shall be collected at each monitoring point location and analyzed for the monitoring parameters and constituents in accordance with the methods and frequency specified in Table IV. All surface water monitoring samples shall be collected and analyzed for the 5-year COCs specified in Table IV every five years, beginning again in 2020.

Following the field survey of springs within one mile of the Facility and a technical report in September 2017, and as approved by Water Board staff, downgradient springs within one mile of the WMU boundaries shall be monitored for the Field and Monitoring Parameters listed in Table III and sampled and analyzed following the methods and frequency specified in Table IV.

5. Facility Monitoring

a. Annual Facility Inspection

Annually, prior to the anticipated rainy season, but no later than **30 September**, the Discharger shall conduct an inspection of the facility to ensure the facility is capable of satisfying the prohibitions, specifications, and provisions sections of the WDRs. The inspection shall assess repair and maintenance needed for drainage control systems, cover systems, and groundwater, surface water, and unsaturated zone monitoring systems; and shall assess preparedness for winter conditions (including but not limited to erosion and sedimentation control). The Discharger shall take photos of any problems areas before and after

repairs. Any necessary construction, maintenance, or repairs shall be completed by **31 October**. Annual facility inspection reporting shall be submitted as required in Section B.4 of this MRP.

b. Major Storm Events

The Discharger shall inspect all precipitation, diversion, and drainage facilities and all landfill side slopes for damage **within 7 days** following major storm events capable of causing damage or significant erosion. The Discharger shall take photos of any problem areas before and after repairs. Necessary repairs shall be completed **within 30 days** of the inspection. Notification and reporting requirements for major storm events shall be conducted as required in Section B.5 of this MRP.

c. Five-Year Iso-Settlement Survey for Closed Units

For closed landfill units, the Discharger shall conduct a five-year iso-settlement survey 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 or ET cover. 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, section 21090(e)(1 & 2)]. Reporting shall be in accordance with Section B.6 of this MRP. The next iso-settlement survey shall be conducted upon completion of installation of closure covers on Fill Area 1 Unit 1 and Fill Area 1 Unit 2 and every five years thereafter.

d. Biennial Closure Cover Leak Search for Closed Units

Pursuant to California Code of Regulations, title 17, section 95471(c) and Title 27, section 21090(a)(4)(A) the Discharger shall conduct biennial monitoring of the integrity of the low-hydraulic-conductivity layer, including a method for effectively identifying and repairing breaches in that layer. Defects will be repaired and tested for adequacy based on the closure CQA Plan. The results shall be reported as required in Section B.7 of this MRP.

e. Post-Earthquake Inspection and Response

In order to ensure that the Facility's waste containment structures have not sustained damage after an earthquake of Magnitude (Mw) 5.0 or greater within 25 miles of the facility or a Magnitude (Mw) 6.0 or greater earthquake within 50 miles of the facility the Discharger shall implement its Post-Earthquake Inspection and Response. The inspection shall include but not limited to inspecting WMU liners (where feasible) and covers; LCRS riser pipes, sump pump operation, and storage tanks; including the flare station; drainage control facilities; and detection monitoring facilities for damage.

The inspection shall be conducted in a timely manner following earthquakes of the magnitude specified above. A report of the inspection shall be submitted within 30 days after the inspection assessing any damage and shall contain proposals to repair or replace any damaged structures or facilities. The results shall be reported as required in Section B.11 of this MRP.

f. Material Recovery Facility

The Discharger shall monitor and report the parameters listed in Table III for all liquid waste generated at the proposed MRF Facility (if constructed) that is classified as non-hazardous waste or designated waste. The Discharger shall also report the disposal method of the liquid waste e.g., Class II surface impoundment, WWTP, etc.

g. Liquid Waste Handling Reporting

Discharger shall monitor and report the amount of liquid waste including but limited to liquid waste generated from recycling operations, truck wash facilities, landfill gas-to-energy plants, and vehicle maintenance facilities, applied to each WMU in accordance with intent and purposes listed in Title 27 section 21090(a)(5)(B) for closed WMUs and Title 27 section 20705 for active and inactive WMUs. The Discharger shall report the results as required in section B.9.

h. Standard Observations

The Discharger shall conduct Standard Observations at the landfill in accordance with this section of the MRP. Standard observations shall be conducted in accordance with the following schedule (except where noted):

<u>Landfill Unit Type</u>	<u>Frequency</u>	<u>Season</u>
Active	Weekly	Wet: 1 October to 30 April
Active	Monthly	Dry: 1 May to 30 September
Inactive/Closed	Monthly	Wet: 1 October to 30 April
Inactive/Closed	Quarterly	Dry: 1 May to 30 September

The Standard Observations shall include:

- 1) For the landfill Units:
 - a) Evidence of ponded water at any point on the landfill outside of any contact storm water/leachate diversions structures on the active face (show affected area on map); and
 - b) Evidence of erosion and/or of day-lighted refuse.
- 2) Along the perimeter and outward slopes of the of the landfill Units:
 - c) Evidence of leachate seeps, estimated size of affected area, and flow rate (show affected area on map); and
 - d) Evidence of erosion and/or of day-lighted refuse.
- 3) For receiving waters:
 - e) Floating and suspended materials of waste origin - presence or absence, source, and size of affected area; and
 - f) Discoloration and turbidity - description of color, source, and size of affected area.

Results of all Standard Observations shall be submitted in the semiannual monitoring reports required in Section B.1 of this MRP.

i. Incoming Waste Monitoring Program

1) Petroleum Contaminated Soils Monitoring

Monitoring requirements for soils accepted for direct disposal in any landfill unit are as follows:

<u>Reporting Parameter/Constituent</u>	<u>Units of</u>	<u>Sampling Frequency</u>
Amount of soil Before acceptance:	Cubic Yards	Every Lot*
for Gasoline: EPA 5030/8015 Modified EPA 5030/8020 TTLC Pb** ⁽¹⁾	mg/kg	Every Lot ¹
for Diesel & Virgin Oil: EPA 3550/8015 Modified	mg/kg	Every Lot
for Waste Oil EPA 3550/8015 Modified EPA 5030/8015 Modified EPA 8260 (or 8010 & 8020) EPA 8270 5520 E&F (total oil & grease) TTLC Metals**: Cd, Cr, Pb, Ni, and Zn	mg/kg	Every Lot
Aquatic 96-Hour Static Bioassay required if: Gasoline is greater than 5,900 ppm; or Diesel is greater than 20,000 ppm; or motor or waste oil is greater than 10,000 ppm.		Every Lot
After Treatment or Discharge: Final disposition of soil		Every Lot*

* The total amount of contaminated soil accepted from a site (gas station, pipeline spill, etc.) shall be defined as a lot. For every lot of soil, representative testing shall be conducted before the soil is accepted at Altamont.

** The WET method shall be run if any total metal concentration exceeds 10 times the STLC or the Designated Level if waste is discharged to the Class III landfill.

¹ The TTLC requirement for Pb applies to when the generator determines that leaded gasoline was or may have been present. In situations where there is proof that a generator's tank never contained leaded gasoline, the TTLC requirement for Pb can be omitted.

2) Designated and Non-Hazardous Solid Waste Monitoring

The Discharger shall monitor all wastes discharged to the Class III and Class II landfill units on a monthly basis and report to the Regional Water Board as follows:

<u>Reporting Parameter</u>	<u>Units of</u>	<u>Frequency of Reporting</u>
Quantity Discharged:		
Non-hazardous Solid Waste	Cubic Yards & Tons	Yearly
Designated Waste	Cubic Yards & Tons	Yearly
Petroleum Contaminated Soil	Cubic Yards & Tons	
Asbestos	Cubic Yards & Tons	Yearly
Sewage and Wastewater	Cubic Yards or Tons	Yearly
Treatment Sludges and Average % Solids	%	Yearly
Location of Discharge	- -	Yearly
Capacity of each WMU Remaining for Waste Disposal	Cubic Yards	Yearly

When it is necessary to determine if a solid waste, including contaminated soil, is a 'designated waste', a Waste Extraction Test (WET) shall be run. The waste may be disposed of in a Class III landfill unit at this site only under the following conditions:

- a) If the concentrations of extractable constituents (expressed in mg/l of extract), as determined by the standard WET (CCR, Title 22, Division 4.5, Chapter 11), do not exceed the Maximum Concentrations specified in the following table, the waste may be co-disposed with 'non-hazardous solid waste'.
- b) If the concentrations of extractable constituents (expressed in mg/l of extract), as determined by the WET run with deionized water in place of the standard citrate buffer, do not exceed the Maximum Concentrations specified in the following table, the waste may be disposed of in an area where the waste will not contact degradable wastes or wastes capable of generating acidic leachate or landfill leachate, or be overlain by wastes capable of generating acidic leachate.

<u>Designated Level Parameter</u>	<u>Maximum Concentration in mg/l of WET Extract</u>
Cadmium	0.05
Chromium (VI)	0.5*
Copper	20
Lead	1.5
Mercury	0.02
Nickel	1.0
Zinc	200

* At the Discharger's discretion, may be met based on Total Chromium analyses, provided that the Total Chromium analyses is below 0.5 mg/l.

The designated levels for petroleum-contaminated soils are 100 mg/kg TPH Diesel by Modified EPA 8015 or equivalent method and non-detectable TPH Gasoline or BTXE by EPA Methods 8015 and 8020. Soils containing greater than 100 mg/kg TPH Diesel or detectable TPH Gasoline or BTXE shall be discharged only to a Class II landfill unit.

3) Treated Auto Shredder Waste Monitoring

Monitoring requirements for treated auto shredder waste accepted at ALRRF are as follows:

<u>Parameter/Constituent</u>	<u>Report in Units of</u>	<u>Sampling Frequency</u>
PCBs	mg/kg	every 1,000 tons*
Location of shredder waste disposal	--	Yearly
Amount of shredder waste accepted	tons	Yearly
BTX&E	mg/l or µg/l	Every 1,000 tons**
Total Petroleum Hydrocarbons (TPH)	mg/kg	Every 1,000 tons**
Designated Level Parameters	mg/l	Every 1,000 tons**

* Or more frequently as required by the Department of Toxic Substances Control.

** Only required for shredder waste discharged to Class III unit.

Testing for PCBs shall be conducted using composite samples collected at the shredder facility. The samples shall be analyzed for PCBs using EPA Method 8080.

4) Improper Designated and Hazardous Solid Waste Disposal

The Discharger shall monitor and exclude hazardous and designated wastes from the facility through its load checking and waste screening, as described in the Hazardous Waste Exclusion Program. Any improper disposal of designated waste or hazardous waste in a Class III WMU or hazardous waste in a Class II WMU shall be reported as required in Section B.12 of this MRP.

6. Corrective Action Monitoring

The Discharger shall conduct corrective action monitoring to demonstrate the effectiveness of corrective action in accordance with Title 27 and this MRP. Groundwater monitoring wells and unsaturated zone monitoring points that are in a corrective action monitoring program shall be monitored in accordance with the groundwater and unsaturated zone monitoring requirements in parts A.1 and A.2 of this MRP, except as modified in this part of the MRP for any additional constituents or modified monitored frequencies.

The Discharger shall monitor the following corrective action monitoring wells as required in part A.1 and Table I of this MRP, with the following alternant sampling frequency for the following additional constituents and for all Field and Monitoring Parameters listed in Table I:

<u>Well</u>	<u>Sampling Frequency</u>
E-18	Quarterly ¹
E-21	Quarterly ¹
E-22	Quarterly ¹
MW-1A	Quarterly ¹
MW-1B	Quarterly ¹
MW-2B	Quarterly ¹
MW-2C	Quarterly ¹
MW-3B	Quarterly ¹
MW-3C	Quarterly ¹
MW-4B	Quarterly ¹
MW-5B	Quarterly ¹

¹Quarterly monitoring required until water quality trends are established.

The Discharger shall monitor the following unsaturated zone monitoring points as required in part A.2, and Table II of this MRP and the following alternant sampling frequency for all Field and Monitoring Parameters listed in Table II:

<u>Well</u>	<u>Unit</u>	<u>Sampling Frequency</u>
VD	Fill Area 1, Unit 1	Quarterly
VD2	Fill Area 1, Unit 2	Quarterly

The current unsaturated zone extraction system network is as follows:

<u>Extraction Point</u>	<u>Zone</u>	<u>WMU Being Addressed</u>
VD	Unsaturated	Fill Area 1 Unit 1
VD-2	Unsaturated	Fill Area 1 Unit 2
VZM-A	Unsaturated	Fill Area 1 Unit 2

The Discharger stated that in order to reduce the influence of landfill gas in Fill area 1, the Discharger is removing landfill gas from unsaturated zone piping systems as corrective action. So long as the Discharger finds that landfill gas is the cause of a release of VOCs from Fill Area 1, the Discharger shall continue to remove landfill gas from the extraction points listed above and shall report the amount of VOCs removed.

The Discharger has reported that landfill gas from Unit 1 is the source of VOCs in groundwater and the unsaturated zone at the point of compliance in Fill Area 1 Unit 1 and Unit 2. The Discharger has reported that active landfill gas extraction has been an effective way to minimize the impacts to the groundwater and unsaturated zone. The Discharger shall monitor its active gas extraction system in accordance with Table VII. The Landfill Gas corrective action monitoring results shall be reported as required in Section B.13 of this MRP.

B. REPORTING

The Discharger shall submit the following reports in accordance with the required schedule:

Reporting Schedule

<u>Section</u>	<u>Report</u>	<u>End of Reporting Period</u>	<u>Due Date</u>
B.1	Semiannual Monitoring Report	30 June, 31 December	1 August, 1 February
B.2	Annual Monitoring Report	31 December	1 February
B.3	Seep Reporting	Continuous	Immediately & 7 Days
B.4	Annual Facility Inspection Report	31 October	15 November
B.5	Major Storm Event Reporting	Continuous	7 days from damage discovery
B.6	Survey and Iso-Settlement Map for Closed Landfills	Every Five Years	At Closure Completion and Every Five Years
B.7	Biennial Closure Cover Leak Search	Every Two Years	At Closure Completion and Every Five Years
B.8	Material Recovery Facility (when completed)	30 June, 31 December	1 August, 1 February
B.9	Liquid Waste Handling Report	31 December	1 February
B.10	Post-Earthquake Inspection and Response Report	Continuous	30 Days after Earthquake Event
B.11	Improper Solid Waste Disposal	Continuous	Immediately & 7 Days
B.12	Financial Assurances Report	31 December	1 June
B.13	Landfill Gas Corrective Action Report	31 December	1 February

Reporting Requirements

The Discharger shall submit monitoring reports **semiannually** with the data and information as required in this Monitoring and Reporting Program and as required in WDRs Order R5-2016-XXXX and the Standard Provisions and Reporting Requirements (particularly Section I: "Standard Monitoring Specifications" and Section J: "Response to a

Release”). In reporting the monitoring data required by this program, the Discharger shall arrange the data in tabular form so that the date, the constituents, the concentrations, and the units are readily discernible. The data shall be summarized in such a manner so as to illustrate clearly the compliance with waste discharge requirements

Field and laboratory tests shall be reported in each monitoring report. Semiannual and annual monitoring reports shall be submitted to the Central Valley Water Board in accordance with the above schedule for the calendar period in which samples were taken or observations made. In addition, the Discharger shall enter all monitoring data and monitoring reports into the online Geotracker database as required by Div. 3 of Title 27.

The results of **all monitoring** conducted at the site in accordance with this MRP 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.

The Discharger shall retain records of all monitoring information. Records shall be maintained throughout the life of the facility including the post-closure period. Such records shall be legible and shall show the following for each sample:

- a) 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;
- b) Date, time, and manner of sampling;
- c) Date and time that analyses were started and completed, and the name of the personnel and laboratory performing each analysis;
- d) Complete procedure used, including method of preserving the sample, and the identity and volumes of reagents used;
- e) Results derived by calculation (indicate that calculation was used to derive result); and
- f) Results of analyses, and the MDL and PQL for each analysis. All peaks shall be reported for 5-year COC events.

Required Reports

1. Semiannual Monitoring Report

Monitoring reports shall be submitted semiannually and are due on **1 August** and **1 February**. Each semiannual monitoring report shall contain at least the following:

- a. For each groundwater monitoring point addressed by the report, a description of:
 - 1) The time of water level measurement;
 - 2) 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;
 - 3) 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;

- 4) The type of pump - or other device - used for sampling, if different than the pump or device used for purging; and
 - 5) A statement that the sampling procedure was conducted in accordance with the approved Sample Collection and Analysis Plan.
- b. A map or aerial photograph showing the locations of observation stations, monitoring points, and background monitoring points.
 - c. The estimated quarterly groundwater flow rate and direction in the uppermost aquifer, in any zones of perched water, and in 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 [Title 27, section 20415(e)(15)].
 - d. Cumulative tabulated monitoring data for all monitoring points and constituents for groundwater (MRP Section A.1), unsaturated zone (MRP Section A.2), leachate and gas condensate (MRP Section A.3), and surface water (MRP Section A.4). Concentrations below the reporting limit shall not be reported as non-detect "ND" unless the concentration is below the method detection limit (MDL) and the method detection limit is also given in the table. Laboratory results indicating trace values of COCs between the MDL and PQL (Reporting Limit or RL) shall be reported as estimated values (flagged and estimated value reported). Laboratory results of COCs at or above the PQL shall be reported and indicated clearly as exceeding the PQL relative to laboratory results reported below the PQL. Laboratory results shall clearly distinguish on time series graphs data that is reported as non-detect versus data that was reported at or above MDL (trace) levels. Units shall be monitored as required in Tables I through VI unless specific justification is given to report in other units. Refer to the SPRRs Section I "Standard Monitoring Specifications" for requirements regarding MDLs and PQLs.
 - e. Laboratory statements of results of all analyses evaluating compliance with requirements.
 - f. An evaluation of the concentration of each monitoring parameter (or 5-year COC when five year COC sampling is conducted) as compared to the current concentration limits, and the results of any required verification testing for constituents exceeding a concentration limit. Report any actions taken under SPRRs Section J: Response to a Release for verified exceedances of a concentration limit.
 - g. An evaluation of the effectiveness of the leachate monitoring and control facilities, and of the run-off/run-on control facilities. 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. A summary of all Standard Observations for the reporting period required in Section A.d. of this MRP.
- i. 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 Standard Closure and Post-Closure Maintenance Specifications G.26 through G.29 of the SPRRs.

2. Annual Monitoring Report

The Discharger shall submit an Annual Monitoring Report to the Central Valley Water Board by **1 February** covering the reporting period of the previous monitoring year. If desired, the Annual Monitoring Report may be combined with the second semiannual report, but if so, shall clearly state that it is both a semi-annual and annual monitoring report in its title. Each Annual Monitoring Report shall contain the following information:

- a. 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. If a 5-year COC event was performed, than these parameters shall also be graphically presented. Each such graph shall plot the concentration of one or more constituents for the period of record for a given monitoring point or background monitoring point, at a scale appropriate to show trends or variations in water quality. The graphs shall plot each datum, rather than plotting mean values. Graphical analysis of monitoring data may be used to provide significant evidence of a release.
- b. An evaluation of the monitoring parameters with regards to the cation/anion balance, and a graphical presentation using a Stiff diagram, a Piper graph, or a Schoeller plot.
- c. 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 format such as a computer disk. The Central Valley Water Board regards the submittal of data in hard copy and in digital format as "...the form necessary for..." statistical analysis [Title 27, section 20420(h)], that facilitates periodic review by the Central Valley Water Board.
- d. Hydrographs of each well showing the elevation of groundwater during each sampling event. Information regarding the elevations of the top and bottom of the screened interval, the elevation of the pump intake, and the groundwater elevation shall be provided in a table. These hydrographs and Table shall be prepared and submitted annually.
- e. A comprehensive discussion of the compliance record, and the result of any corrective actions taken or planned which may be needed to bring the Discharger into full compliance with the waste discharge requirements.
- f. A map(s) showing the area and elevations in which filling has been completed during the previous calendar year and a comparison to final closure design contours, and include a projection of the remaining capacity for each discrete landfill module.

- g. A written summary of the monitoring results, indicating any changes made or observed since the previous Annual Monitoring Report.
- h. The results of the annual testing of leachate collection and removal systems required under Standard Facility Specification E.14 of the SPRRs.
- i. Updated concentration limits for each monitoring parameter at each monitoring well based on the new data set as appropriate.
- j. A comprehensive discussion of any Corrective Action Program required by this MRP under Section A.6.

3. Seep Reporting

The Discharger shall report by telephone any seepage from the disposal area **immediately** after it is discovered. A written report shall be filed with the Central Valley Water Board **within seven days**, containing at least the following information:

- a. A map showing the location(s) of seepage;
- b. An estimate of the flow rate;
- c. A description of the nature of the discharge (e.g., all pertinent observations and analyses);
- d. Verification that samples have been submitted for analyses of the Field Parameters and Monitoring Parameters listed in Table III 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.

4. Annual Facility Inspection Reporting

By **15 November** of each year, the Discharger 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. Refer to Section A.5.a. of this MRP, above.

5. Major Storm Event Reporting

Following major storm events capable of causing damage or significant erosion, the Discharger **immediately** shall notify Central Valley Water Board staff of any damage or significant erosion upon discovery and report subsequent repairs within **14 days** of completion of the repairs, including photographs of the problem and the repairs. Refer to Section A.5.b of this MRP, above.

6. Survey and Iso-Settlement Map for Closed Landfills

The Discharger shall conduct a survey and submit an iso-settlement map for each closed area of the landfill every five years pursuant to Title 27, section 21090(e). Refer to Section A.5.c of this MRP, above. The next report is due upon completion of each closed area and every five years thereafter by 1 February under a separate cover as part of the Annual Monitoring Report.

7. Biennial Closure Cover Leak Search for Closed Landfills

The Discharger shall conduct a survey and submit an iso-settlement map for each closed area of the landfill every five years pursuant to Title 27, section 21090(e). Refer to Section A.5.d of this MRP, above. The next report is due upon completion of each closed area and every two years thereafter by 1 February under a separate cover as part of the Annual Monitoring Report.

8. Material Recovery Facility

The Discharger shall report as part of the Semi-Annual Monitoring Report the results of monitoring all liquid waste generated at the proposed MRF Facility (if constructed) that are classified as non-hazardous waste or designated waste including the disposal method of the liquid waste e.g., Class II surface impoundment, WWTP, etc. Refer to Section A.5.f of this MRP, above.

9. Liquid Waste Handling Report

The Discharger shall report as part of the Annual Monitoring Report the results of all monitoring performed in Section A.5.g.

10. Post-Earthquake Inspection and Response Report

Discharger shall report the results of its Post-Earthquake Inspection and Response. The report shall include but not limited to the inspection of the WMU liners and covers; LCRS riser pipes, sump pump operation, and storage tanks; including the flare station; drainage control facilities; and detection monitoring facilities for damage. A report shall include assessing any damage and shall contain proposals to repair or replace any damaged structures or facilities as specified in Section A.5.e of this MRP.

11. Improper Solid Waste Disposal Reporting

The Discharger shall report by telephone any violation of disposal of designated waste or hazardous waste in a Class III WMU or hazardous waste in a Class II WMU **immediately** after it is discovered. A written report shall be filed with the Central Valley Water Board **within seven days**, containing at least the following information:

- a. A map showing the time and location(s) of improper disposal;
- b. An estimate of the quantity and type of waste that was disposed of;
- c. A description of the of the waste (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 III (including the 5-year COCs) of this MRP (if the materials could be sampled), and an estimated date that the results will be submitted to the Central Valley Water Board; and
- e. Corrective measures underway or proposed to remove the waste, and corresponding time schedule.

12. Financial Assurances Report

By **1 June** of each year, the Discharger 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. Refer to Financial Assurances Specifications F.1 through F.3 of the WDRs.

13. Landfill Gas Corrective Action Report

By **1 February** of each year, the Discharger shall submit a landfill gas corrective action report that presents the following:

- 1) A discussion of the landfill gas monitoring results;
- 2) An evaluation of the distribution and concentration of landfill gases in the landfill waste mass and the underlying vadose zone;
- 3) An evaluation of the effectiveness of the landfill gas extraction system; and
- 4) For the landfill gas extraction system: a listing of the dates of shutdown, length of time shutdown, how the system was re-started, the cause of the shutdown, and steps that have been taken to prevent such a shutdown in the future.

The report shall include tabulated data for all field and monitoring parameters and, as requested by Water Board staff, the wells monitored for VOCs, time vs. concentration graphs showing the concentration of total VOCs in each well, as well as a separate graph for each non-methane organic compound (i.e., benzene, toluene, 1,1 dichloroethane, tetrachloroethylene, trichloroethylene, vinyl chloride, Cis 1,2 dichloroethene) detected in the landfill gas well.

The report shall include a discussion about the effectiveness of the Corrective Action Program including comparison of the current data with historical data, trends, and the status of the landfill gas extraction system, including sampling data, flow rates, and effectiveness.

C. WATER QUALITY PROTECTION STANDARD AND COMPLIANCE PERIOD

1. Water Quality Protection Standard Report

For each waste management unit, the Water Quality Protection Standard shall consist of all COCs, the concentration limit for each constituent of concern, the verification retesting procedure to confirm measurably significant evidence of a release, the point of compliance, and all water quality monitoring points for each monitored medium.

The Water Quality Protection Standard for naturally occurring waste constituents consists of the COCs, the concentration limits, and the point of compliance and all monitoring points. Any proposed changes to the Water Quality Protection Standard other than annual update of the concentration limits shall be submitted in a report for review and approval. The report shall:

- a. Identify **all distinct bodies of surface and ground water** that could be affected in the event of a release from a waste management unit or portion of a unit. This list shall include at least the uppermost aquifer and any permanent or ephemeral zones of perched groundwater underlying the facility.
- b. Include a map showing the monitoring points and background monitoring points for the surface water monitoring program, groundwater monitoring program, and the

unsaturated zone monitoring program. The map shall include the point of compliance in accordance with Title 27, section 20405.

- c. Evaluate the perennial direction(s) of groundwater movement within the uppermost groundwater zone(s).
- d. Include a proposed statistical method for calculating concentration limits for monitoring parameters and constituents of concern that are detected in 10% or greater of the background data (naturally-occurring constituents) using a statistical procedure from Title 27, section 20415(e)(8)(A-D)] or section 20415(e)(8)(E).
- e. Include a retesting procedure to confirm or deny measurably significant evidence of a release pursuant to Title 27, section 20415(e)(8)(E) and section 20420(j)(1-3).

The Water Quality Protection Standard (WQPS) shall be certified by a California-registered civil engineer or geologist as meeting the requirements of Title 27. 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 Discharger may request modification of the Water Quality Protection Standard.

The Discharger proposed the methods for calculating concentration limits in its June 2015 Joint Technical Document Appendix B Section 7.3 Statistical Methodology. The Discharger proposed using Intra-well analysis methodology for statistically determining if there is measurably significant evidence of a release from a WMU. As described in the findings in WDRs R5-2016-XXXX and Provisions H.8 the Discharger is required to submit a WQPS that meets the requirements of Title 27. Until a WQPS with concentration limits that meet the requirements of Title 27 is established, the Discharger shall use interim concentration limits shown in Section C.4 of this MRP.

The approved Water Quality Protection Standard including appropriate concentration limits shall be updated every 1 to 2 years for each monitoring well using new and historical monitoring data.

2. Monitoring Parameters

Monitoring parameters are a select group of constituents that are monitored during each monitoring event that are the waste constituents, reaction products, hazardous constituents, and physical parameters that provide a reliable indication of a release from a waste management unit. The monitoring parameters for all waste management units are those listed in Tables I through V for the specified monitored medium.

3. Constituents of Concern (COCs)

The 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 waste management unit, and are required to be monitored every five years [Title 27, sections 20395 and 20420(g)]. The COCs for all waste management units at the facility are those listed in Tables I through IV for the specified monitored medium, and Table VI. The Discharger shall monitor all COCs every five years, or more frequently as required in accordance with a Corrective Action Program. The last 5-year COC report was submitted to the Central Valley Water Board in the 2015 *Annual Monitoring Report*, and 5-year COCs are due to be monitored again in 2020.

4. Concentration Limits

For a naturally occurring constituent of concern, the concentration limit for each constituent of concern shall be determined as follows:

- a. By calculation in accordance with a statistical method pursuant to Title 27, section 20415(e)(8); or
- b. By an alternate statistical method meeting the requirements of Title 27, section 20415(e)(8)(E).

The methods for calculating concentration limits were included in the Discharger’s JTD. The method uses Practical Quantitation Limits (PQLs) as the concentration limits for VOCs, and the Shewart-CUSUM control chart for intra-well statistical analysis of inorganic monitoring parameters.

5. Retesting Procedures for Confirming Evidence of a Release

If monitoring results indicate measurably significant evidence of a release, as described in Standard Monitoring Specification I.45 of the SPRRs, then:

- a. For analytes that are detected in less than 10% of the background samples (such as non-naturally occurring constituents), the Discharger shall use the non-statistical retesting procedure required in Standard Monitoring Specification I.46 of the SPRRs.
- b. For analytes that are detected in 10% or greater of the background samples (naturally occurring constituents), the Discharger shall use one of the statistical retesting procedure as required in Standard Monitoring Specification I.47 of the SPRRs. (Insert any additional information about the specific retesting procedure if an acceptable retesting procedure has been proposed by the Discharger in the Water Quality Protection Standard Report that complies with Title 27, section 20415(e)(8)(E). Refer to Standard Monitoring Specification I.47 for more information.)

6. Point of Compliance

The point of compliance for the water standard at each waste management unit is a vertical surface located at the hydraulically downgradient limit of the Unit that extends through the uppermost aquifer underlying the unit.

<u>Fill Area</u>	<u>Point of Compliance Monitoring Wells</u>
Fill Area 1	MW-2A, MW-4A, MW-5A, MW-6, MW-7, E-05, E-07, E-23, E-20B
Fill Area 2	MW-8A/B, MW-9, MW-13A/B (Phase 3), MW-14 (Phase 1), PC-1A/C (Phase 4)
Surface Impoundment SI-1	To Be Determined

7. Compliance Period

The compliance period for each waste management unit shall be the number of years equal to the active life of the unit plus the closure period. The compliance period is the minimum period during which the Discharger shall conduct a water quality monitoring program subsequent to a release from the waste management unit. The compliance period shall begin anew each time the Discharger initiates an evaluation monitoring program [Title 27, section 20410].

8. Monitoring Points

A monitoring point is a well, device, or location specified in the waste discharge requirements, which monitoring is conducted and at which the water quality protection standard applies. The monitoring points for each monitored medium are listed in Section A of this MRP.

D. TRANSMITTAL LETTER FOR ALL REPORTS

A transmittal letter explaining the essential points shall accompany each report. At a minimum, the transmittal letter shall identify any violations found since the last report was submitted, and if the violations were corrected. If no violations have occurred since the last submittal, this shall be stated in the transmittal letter. The transmittal letter shall also state that a discussion of any violations found since the last report was submitted, and a description of the actions taken or planned for correcting those violations, including any references to previously submitted time schedules, is contained in the accompanying report. The transmittal letter shall contain a statement by the Discharger that it has performed data analysis and whether in accordance with Title 27 section 20420(i) it has determined whether there is "measurably significant" evidence of a release from any WMU. The transmittal letter shall contain a statement by the discharger, or the discharger's authorized agent, under penalty of perjury, that to the best of the signer's knowledge the report is true, accurate, and complete.

The Discharger shall implement the above monitoring program on the effective date of this Program.

Ordered by: _____
PAMELA C. CREEDON, Executive Officer

(Date)

WMH

TABLE I
GROUNDWATER DETECTION MONITORING PROGRAM

Field Parameters

Parameter	Geotracker Code	Units	Sampling Frequency	Reporting Frequency
Groundwater Elevation	GWELEV	Ft. & 100ths, M.S.L.	Quarterly ¹	Semiannual
Temperature	TEMP	°C	Semiannual	Semiannual
Specific Conductance	SC	umhos/cm	Semiannual	Semiannual
pH	PH	pH units	Semiannual	Semiannual
Turbidity	TURB	NTU Turbidity units	Semiannual	Semiannual

Monitoring Parameters

Parameter	Geotracker Code	Units	Sampling Frequency	Reporting Frequency
Total Dissolved Solids	TDS	mg/L ²	Semiannual	Semiannual
Chloride	CL	mg/L	Semiannual	Semiannual
Carbonate as CaCO ₃	CaCO ₃	mg/L	Semiannual	Semiannual
Bicarbonate as CaCO ₃	BICACO ₃	mg/L	Semiannual	Semiannual
Nitrogen, Kjeldahl, Total	KN	mg/L	Semiannual	Semiannual
Nitrogen, Nitrate (as N)	NO ₃ N	mg/L	Semiannual	Semiannual
Nitrogen, Nitrite (as N)	NO ₂ N	mg/L	Semiannual	Semiannual
Sulfate	SO ₄	mg/L	Semiannual	Semiannual
Calcium	CA	mg/L	Semiannual	Semiannual
Magnesium	MG	mg/L	Semiannual	Semiannual
Manganese	MN	mg/L	Semiannual	Semiannual
Potassium	K	mg/L	Semiannual	Semiannual
Sodium	NA	mg/L	Semiannual	Semiannual
Volatile Organic Compounds (See Table V)	(See Table V)	ug/L ³	Semiannual	Semiannual

5-Year Constituents of Concern (see Table VI)

Parameter	Geotracker Code	Units	Sampling Frequency	Reporting Frequency
Total Organic Carbon (TOC)	TOC	mg/L	5 years	Nov. 2020
Inorganics (dissolved)	See Table VI	ug/L	5 years	and every
Volatile Organic Compounds	See Table VI	ug/L	5 years	5 years
Semi-Volatile Organic Compounds	See Table VI	ug/L	5 years	thereafter
Chlorophenoxy Herbicides	See Table VI	ug/L	5 years	
Organophosphorus Compounds	See Table VI	ug/L	5 years	

¹ The Discharger shall monitor groundwater elevation at least quarterly including the times during the year of expected highest and lowest elevations of the water levels in the wells. Groundwater elevation for all groundwater monitoring points shall be reported using a common datum e.g. NGVD29 or NAVD88.

² Milligrams per liter

³ Micrograms per liter

TABLE II
UNSATURATED ZONE DETECTION MONITORING PROGRAM

GAS PROBES (SOIL-PORE GAS)¹

Monitoring Parameters

Parameter	Geotracker Code	Units	Sampling Frequency	Reporting Frequency
Volatile Organic Compounds ² (Use USEPA Method TO-15)	(See Table V)	ug/cm ³	Annual	Annual
Methane	CH4	%	Semiannual	Annual
Carbon Dioxide	CO ₂	%	Semiannual	Annual
Oxygen	OXYGEN	%	Semiannual	Annual

LYSIMETERS, LEAK DETECTION SYSTEM, UNDERDRAINS³ (or any other unsaturated zone monitoring point where liquid and gas may be present)

Field Parameters

Parameter	Geotracker Code	Units	Sampling Frequency	Reporting Frequency
Specific Conductance	SC	umhos/cm	Monthly	Semiannual
pH	PH	pH units	Monthly	Semiannual
Volume of liquid removed		gallons	Monthly	Semiannual

Monitoring Parameters

Parameter	Geotracker Code	Units	Sampling Frequency	Reporting Frequency
Total Dissolved Solids	TDS	mg/L	Semiannual	Semiannual
Chloride	CL	mg/L	Semiannual	Semiannual
Carbonate as CaCO ₃	CACO ₃	mg/L	Semiannual	Semiannual
Bicarbonate as CaCO ₃	BICACO ₃	mg/L	Semiannual	Semiannual
Nitrogen, Nitrate (as N)	NO ₃ N	mg/L	Semiannual	Semiannual
Sulfate	SO ₄	mg/L	Semiannual	Semiannual
Calcium	CA	mg/L	Semiannual	Semiannual
Magnesium	MG	mg/L	Semiannual	Semiannual
Manganese	MN	mg/L	Semiannual	Semiannual

¹ The Discharger may prescreen the gas sample to determine if the sample is required to be laboratory analyzed using Method TO-15 by using an approved gas analyzer to establish methane concentrations or an approved Photo Ionization Detector (PID) to establish total VOCs concentrations at the sampling point. If while using an approved sampling and analysis plan procedure the Discharger detects methane concentrations exceeding 1.0 percent by volume OR organic vapors (total VOCs) are detected with a PID at a concentration greater than 1.0 ppm then a gas sample shall be obtained and laboratory analyzed for specific VOCs using EPA Method TO-15. Both the screening results and laboratory analysis results shall be reported. Otherwise, the Discharger shall report the methane or total VOC screening results and no further laboratory analysis is required.

² Particularly paying special attention to and analyzing for any VOCs historically detected in LCRS sumps LS, LS-2, LS-3, future LCRS sumps, and historically detected in all groundwater monitoring wells.

³ Pan lysimeters shall be inspected for the presence of liquid **monthly**. If liquid is detected in a previously dry pan lysimeter, the Discharger shall verbally and via email communication notify Central Valley Water Board staff within **seven days** and shall immediately sample and test the liquid for Field and Monitoring Parameters listed in Table II.

Parameter	Geotracker Code	Units	Sampling Frequency	Reporting Frequency
Potassium	K	mg/L	Semiannual	Semiannual
Sodium	NA	mg/L	Semiannual	Semiannual
Pentachlorophenol	PCP	ug/L	Annual	Annual
Arsenic (dissolved)	AS	ug/L	Annual	Annual
Copper (dissolved)	CU	ug/L	Annual	Annual
Chromium (dissolved)	CR	ug/L	Annual	Annual
Volatile Organic Compounds ¹ (in liquid matrix) (See Table V)	(See Table V)	ug/L	Semiannual	Semiannual
Volatile Organic Compounds ¹ in gas matrix (Use USEPA Method TO-15)	(See Table V)	ug/cm ³	Semiannual	Semiannual
Methane	CH4	%	Semiannual	Semiannual
Carbon Dioxide	CO ₂	%	Semiannual	Semiannual
Oxygen	OXYGEN	%	Semiannual	Semiannual

5-Year Constituents of Concern (see Table VI)

Parameter	Geotracker Code	Units	Sampling Frequency	Reporting Frequency
Total Organic Carbon (TOC)	TOC	mg/L	5 years	Nov. 2020
Inorganics (dissolved)	See Table VI	ug/L	5 years	and every
Volatile Organic Compounds	See Table VI	ug/L	5 years	5 years
Semi-Volatile Organic Compounds	See Table VI	ug/L	5 years	thereafter
Chlorophenoxy Herbicides	See Table VI	ug/L	5 years	
Organophosphorus Compounds	See Table VI	ug/L	5 years	

¹ Particularly paying special attention to and analyzing for any VOCs historically detected in LCRS sumps LS, LS-2, LS-3, future LCRS sumps, and historically detected in all groundwater monitoring wells.

TABLE III

**LEACHATE MONITORING¹, GAS CONDENSATE MONITORING, SEEP MONITORING²,
WWTP MONITORING, CLASS II SURFACE IMPOUNDMENT MONITORING, AND LCRS
TESTING³**

Field Parameters

Parameter	Geotracker Code	Units	Sampling Frequency	Reporting Frequency
Flow Rate	FLOW	Gallons/Month	Monthly	Semiannual
Specific Conductance	SC	umhos/cm	Monthly	Semiannual
pH	PH	pH units	Monthly	Semiannual

Monitoring Parameters

Parameter	Geotracker Code	Units	Sampling Frequency	Reporting Frequency
Total Dissolved Solids	TDS	mg/L	Semiannual	Semiannual
Chloride	CL	mg/L	Semiannual	Semiannual
Carbonate as CaCO ₃	CaCO ₃	mg/L	Semiannual	Semiannual
Bicarbonate as CaCO ₃	BICaCO ₃	mg/L	Semiannual	Semiannual
Nitrogen, Nitrate (as N)	NO ₃ N	mg/L	Semiannual	Semiannual
Sulfate	SO ₄	mg/L	Semiannual	Semiannual
Calcium	CA	mg/L	Semiannual	Semiannual
Magnesium	MG	mg/L	Semiannual	Semiannual
Manganese	MN	mg/L	Semiannual	Semiannual
Potassium	K	mg/L	Semiannual	Semiannual
Sodium	NA	mg/L	Semiannual	Semiannual
Pentachlorophenol	PCP	ug/L	Annual	Annual
Arsenic (dissolved)	AS	ug/L	Annual	Annual
Copper (dissolved)	CU	ug/L	Annual	Annual
Chromium (dissolved)	CR	ug/L	Annual	Annual
Volatile Organic Compounds (See Table V)	(See Table V)	ug/L	Semiannual	Semiannual

5-Year Constituents of Concern (see Table VI)

Parameter	Geotracker Code	Units	Sampling Frequency	Reporting Frequency
Total Organic Carbon (TOC)	TOC	mg/L	5 years	Nov. 2020
Inorganics (dissolved)	See Table VI	ug/L	5 years	and every
Volatile Organic Compounds	See Table VI	ug/L	5 years	5 years
Semi-Volatile Organic Compounds	See Table VI	ug/L	5 years	thereafter
Chlorophenoxy Herbicides	See Table VI	ug/L	5 years	
Organophosphorus Compounds	See Table VI	ug/L	5 years	
LCRS Testing³	---		Annually	Annually

¹ If leachate is detected in a previously dry sump, the Discharger shall verbally and via email communication notify Central Valley Water Board staff within **seven days** and shall immediately sample and test the leachate for Field and Monitoring Parameters listed in Table III. Leachate in the LCRS sump shall be sampled for all parameters and constituents in accordance with the frequencies listed in Table III whenever liquid are present.

² Leachate seeps shall be sampled and analyzed for the Field and Monitoring Parameters in this table upon detection and/or reappearance. The quantity of leachate shall be estimated and reported in gallons/day. Also, refer to Section B.3

³ The Discharger shall test each LCRS annually pursuant to Title 27, section 20340(d) to demonstrate proper operation. The results of the tests shall be compared with earlier tests made under comparable conditions.

TABLE IV
SURFACE WATER DETECTION MONITORING PROGRAM

Field Parameters

Parameter	Geotracker Code	Units	Sampling Frequency¹	Reporting Frequency
Specific Conductance	SC	umhos/cm	Semiannual	Semiannual
pH	PH	pH units	Semiannual	Semiannual
Dissolved Oxygen	DOSAT	% Saturation	Semiannual	Semiannual
Turbidity	TURB	Turbidity units	Semiannual	Semiannual
Temperature	TEMP	°C	Semiannual	Semiannual
Discharge to Waters of U.S.		Yes or No	Semiannual	Semiannual

Monitoring Parameters

Parameter	Geotracker Code	Units	Sampling Frequency	Reporting Frequency
Biologic Oxygen Demand	BOD	mg/L	Semiannual	Semiannual
Total Dissolved Solids	TDS	mg/L	Semiannual	Semiannual
Chloride	CL	mg/L	Semiannual	Semiannual
Carbonate as CaCO ₃	CaCO ₃	mg/L	Semiannual	Semiannual
Bicarbonate as CaCO ₃	BICaCO ₃	mg/L	Semiannual	Semiannual
Ammonia (un-ionized)	NH ₃	mg/L	Semiannual	Semiannual
Nitrogen, Nitrate (as N)	NO ₃ N	mg/L	Semiannual	Semiannual
Sulfate	SO ₄	mg/L	Semiannual	Semiannual
Calcium	CA	mg/L	Semiannual	Semiannual
Magnesium	MG	mg/L	Semiannual	Semiannual
Potassium	K	mg/L	Semiannual	Semiannual
Sodium	NA	mg/L	Semiannual	Semiannual
Total Organic Carbon (TOC)	TOC	mg/L	Semiannual	Semiannual
Total Suspended Solids	TSS	mg/L	Semiannual	Semiannual
Inorganics (dissolved)	See Table VI	ug/L	Annual	Annual
Volatile Organic Compounds (See Table V)	(See Table V)	ug/L	Semiannual	Semiannual

5-Year Constituents of Concern (see Table VI)

Parameter	Geotracker Code	Units	Sampling Frequency	Reporting Frequency
Chemical Oxygen Demand	COD	mg/L	5 years	Nov 2020 and every 5 years thereafter
Inorganics (dissolved)	See Table VI	ug/L	5 years	5 years thereafter
Volatile Organic Compounds	See Table VI	ug/L	5 years	5 years thereafter
Semi-Volatile Organic Compounds	See Table VI	ug/L	5 years	5 years thereafter
Chlorophenoxy Herbicides	See Table VI	ug/L	5 years	5 years thereafter
Organophosphorus Compounds	See Table VI	ug/L	5 years	5 years thereafter

¹ Semiannual surface water monitoring is required at a minimum of twice per year when there is water present in the designated surface water monitoring points at the beginning and the end of the wet season (15 October through 15 May). Reporting shall include whether there was flow from the facility to waters of the U.S. (as defined as the confluence of the storm water drainage course and a waterway identified on USGS maps) when the samples were collected.

TABLE V

MONITORING PARAMETERS FOR DETECTION MONITORING

Surrogates for Metallic Constituents:

<u>Analyte Description</u>	<u>Geotracker Code</u>
pH	PH
Total Dissolved Solids	TDS
Specific Conductance	SC
Chloride	CL
Sulfate	SO4
Nitrogen, Nitrate (as N)	NO3N

Volatile Organic Compounds, short list (USEPA Method 8260B):

<u>Analyte Description</u>	<u>Geotracker Code</u>
Acetone	ACE
Acrylonitrile	ACRAMD
Benzene	BZ
Bromochloromethane	BRCLME
Bromodichloromethane	BDCME
Bromoform	TBME
Carbon disulfide	CDS
Carbon tetrachloride	CTCL
Chlorobenzene	CLBZ
Chloroethane	CLEA
Chloroform	TCLME
Dibromochloromethane	DBCME
1,2-Dibromo-3-chloropropane	DBCP
1,2-Dibromoethane	EDB
1,2-Dichlorobenzene	DCBZ12
1,3-Dichlorobenzene	DCBZ13
1,4-Dichlorobenzene	DCBZ14
trans-1,4-Dichloro-2-butene	DCBE14T
Dichlorodifluoromethane	FC12
1,1-Dichloroethane	DCA11
1,2-Dichloroethane	DCA12
1,1-Dichloroethene	DCE11
cis-1,2-Dichloroethene	DCE12C
trans-1,2-Dichloroethene	DCE12T
1,2-Dichloropropane	DCPA12
cis-1,3-Dichloropropene	DCP13C
trans-1,3-Dichloropropene	DCP13T
Di-isopropyl ether (DIPE)	DIPE
Ethanol (EtOH)	ETHANOL
Ethyl tert-butyl ether (ETBE)	ETBE
Ethylbenzene	EBZ
2-Hexanone	HXO2

TABLE V (Continued)

Volatile Organic Compounds, short list (continued)

<u>Analyte Description</u>	<u>Geotracker Code</u>
Hexachlorobutadiene	HCBU
Bromomethane	BRME
Chloromethane	CLME
Dibromomethane	DBMA
Dichloromethane	DCMA
2-Butanone	MEK
Methyl iodide	IME
Methyl-tert-butyl ether (MTBE)	MTBE
4-Methyl-2-pentanone	MIBK
Naphthalene	NAPH
Styrene	STY
tert-Amyl methyl ether (TAME)	TAME
tert-Butyl alcohol (TBA)	TBA
1,1,1,2-Tetrachloroethane	TC1112
1,1,2,2-Tetrachloroethane	PCA
Tetrachloroethene (PCE)	PCE
Toluene	BZME
1,2,4-Trichlorobenzene	TCB124
1,1,1-Trichloroethane	TCA111
1,1,2-Trichloroethane	TCA112
Trichloroethene (TCE)	TCE
Trichlorofluoromethane	FC11
1,2,3-Trichloropropane	TCPR123
Vinyl acetate	VA
Vinyl chloride	VC
Xylenes	XYLENES

ADDITIONAL COCS REQUIRING MONITORING DUE TO 5-YEAR DETECTION MONITORING¹

2,4-D	24D
2,4-Dimethylphenol	DMP24
2-Methylnaphthalene	MTNPH2
2-Methylphenol (o-Cresol)	MEPH2
3-methylphenol	MEPH3
4-Methylphenol (p-Cresol)	MEPH4
5-Nitro-o-toluidine	TLDNONT5
Acenaphthene	ACNP
Acetophenone	ACPHN
Aldrin	ALDRIN
Atrazine	ATRAZINE
Benzyl alcohol	BZLAL
Bis-(2-ethylhexyl)phthalate	BIS2EHP

¹ Use approved EPA method 8260B for these COCs

**ADDITIONAL COCS REQUIRING MONITORING DUE TO 5-YEAR DETECTION MONITORING
(continued)**

Dimethyl phthalate	DMPH
Di-n-octyl phthalate	DNOP
Dinoseb	DINOSEB
Disulfoton	DISUL
Endosulfan I	ENDOSULFANA
Fluoranthene	FLA
gamma-BHC (Lindane)	BHCGAMMA
Heptachlor	HEPTACHLOR
n-Nitrosodi-n-propylamine	NNSPR
o-Toluidine	TLDNO
Phenanthrene	PHAN
Phenol	PHENOL
Pyrene	PYR

TABLE VI
5-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS

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

Volatile Organic Compounds, extended list (USEPA Method 8260B):

<u>COC Description</u>	<u>Geotracker Code</u>
Acetone	ACE
Acetonitrile	ACCN
Acrolein	ACRL
Acrylonitrile	ACRAMD
Allyl chloride	CLPE3
Benzene	BZ
Bromochloromethane	BRCLME
Dibromochloromethane	DBCME
Bromoform	TBME
Carbon disulfide	CDS
Carbon tetrachloride	CTCL
Chlorobenzene	CLBZ
Chloroethane	CLEA
Chloroform	TCLME
2-Chloro-1,3-butadiene (Chloroprene)	CHLOROPRENE
Dibromochloromethane	DBCME
1,2-Dibromo-3-chloropropane	DBCP
1,2-Dibromoethane	EDB

TABLE VI (Continued)

Volatile Organic Compounds, extended list (continued)

<u>COC Description</u>	<u>Geotracker Code</u>
1,2-Dichlorobenzene	DCBZ12
1,3-Dichlorobenzene	DCBZ13
1,4-Dichlorobenzene	DCBZ14
trans-1,4-Dichloro-2-butene	DCBE14T
Dichlorodifluoromethane	FC12
1,1-Dichloroethane	DCA11
1,2-Dichloroethane	DCA12
1,1-Dichloroethene	DCE11
cis-1,2-Dichloroethene	DCE12C
trans-1,2-Dichloroethene	DCE12T
1,2-Dichloropropane	DCPA12
1,3-Dichloropropane	DCPA13
2,2-Dichloropropane	DCPA22
1,1-Dichloropropene	DCP11
cis-1,3-Dichloropropene	DCP13C
trans-1,3-Dichloropropene	DCP13T
Di-isopropyl ether (DIPE)	DIPE
Ethanol (EtOH)	ETHANOL
Ethyl tert-butyl ether (ETBE)	ETBE
Ethylbenzene	EBZ
Ethyl methacrylate	EMETHACRY
Hexachlorobutadiene	HCBU
2-Hexanone	HXO2
Isobutanol	ISOBTOH
Methacrylonitrile	METHACRN
Bromomethane	BRME
Chloromethane	CLME
2-Butanone	MEK
Methyl iodide	IME
Methyl-tert-butyl ether (MTBE)	MTBE
Methylmethacrylate	MMETHACRY
4-Methyl-2-pentanone	MIBK
Dibromomethane	DBMA
Dichloromethane	DCMA
Naphthalene	NAPH
Propionitrile	PACN
Styrene	STY
tert-Amyl methyl ether (TAME)	TAME
tert-Butyl alcohol (TBA)	TBA
1,1,1,2-Tetrachloroethane	TC1112
1,1,2,2-Tetrachloroethane	PCA

TABLE VI (Continued)

Volatile Organic Compounds, extended list (continued)

<u>COC Description</u>	<u>Geotracker Code</u>
Tetrachloroethene (PCE)	PCE
Toluene	BZME
1,2,4-Trichlorobenzene	TCB124
1,1,1-Trichloroethane	TCA111
1,1,2-Trichloroethane	TCA112
Trichloroethene (TCE)	TCE
Trichlorofluoromethane	FC11
1,2,3-Trichloropropane	TCPR123
Vinyl acetate	VA
Vinyl chloride	VC
Xylenes	XYLENES

Semi-Volatile Organic Compounds (USEPA Method 8270C or D - base, neutral, & acid extractables):

<u>COC Description</u>	<u>Geotracker Code</u>
Acenaphthene	ACNP
Acenaphthylene	ACNPY
Acetophenone	ACPHN
2-Acetylaminofluorene	ACAMFL2
Aldrin	ALDRIN
4-Aminobiphenyl	AMINOBP4
Anthracene	ANTH
Benzo(a)anthracene	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	BIS2CEE
Bis(2-chloroisopropyl)ether	BIS2CIE
4-Bromophenyl phenyl ether	BPPE4
Benzyl butyl phthalate	BBP
Chlordane	CHLORDANE
4-Chloroaniline	CLANIL4
Chlorobenzilate	CLBZLATE

TABLE VI (Continued)

Semi-Volatile Organic Compounds (continued)

<u>COC Description</u>	<u>Geotracker Code</u>
4-Chloro-3-methylphenol	C4M3PH
2-Chloronaphthalene	CNPH2
2-Chlorophenol	CLPH2
4-Chlorophenyl phenyl ether	CPPE4
Chrysene	CHRYSENE
2-Methylphenol (o-Cresol)	MEPH2
3-methylphenol	MEPH3
4-Methylphenol (p-Cresol)	MEPH4
4,4'-DDD	DDD44
4,4'-DDE	DDE44
4,4'-DDT	DDT44
Diallate (cis- or trans-)	DIALLATE
Dibenzo(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
azobenzene	AZOBENZENE
7,12-Dimethylbenz(a)anthracene	DMBZA712
3,3'-Dimethylbenzidine	DMBZD33
2,4-Dimethylphenol	DMP24
Dimethyl phthalate	DMPH
1,3-Dinitrobenzene	DNB13
2-Methyl-4,6-dinitrophenol	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

TABLE VI (Continued)

Semi-Volatile Organic Compounds (continued)

<u>COC Description</u>	<u>Geotracker Code</u>
Heptachlor	HEPTACHLOR
Heptachlor epoxide	HEPT-EPOX
Hexachlorobenzene	HCLBZ
Hexachlorocyclopentadiene	HCCP
Hexachloroethane	HCLEA
Hexachloropropene	HCPR
Indeno(1,2,3-cd)pyrene	INP123
Isodrin	ISODRIN
Isophorone	ISOP
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
2-Nitroaniline	NO2ANIL2
3-Nitroaniline	NO2ANIL3
4-Nitroaniline	NO2ANIL4
Nitrobenzene	NO2BZ
2-Nitrophenol	NTPH2
4-Nitrophenol	NTPH4
n-Nitroso-di-n-butylamine	NNSBU
N-Nitrosodiethylamine	NNSE
N-Nitrosodimethylamine	NNSM
N-Nitrosodiphenylamine	NNSPH
n-Nitrosodi-n-propylamine	NNSPR
N-Nitrosomethylethylamine	NNSME
N-Nitrosopiperidine	NNSPPRD
N-Nitrosopyrrolidine	NNSPYRL
5-Nitro-o-toluidine	TLDNONT5
Pentachlorobenzene	PECLBZ
Pentachloronitrobenzene	PECLNO2BZ
Pentachlorophenol	PCP
Phenacetin	PHNACTN
Phenanthrene	PHAN
Phenol	PHENOL
1,4-Phenylenediamine	ANLNAM4
Polychlorinated biphenyls (PCBs)	PCBS

TABLE VI (Continued)

Semi-Volatile Organic Compounds (continued)

<u>COC Description</u>	<u>Geotracker Code</u>
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
o,o,o-Triethyl phosphorothioate	TEPTH
1,3,5-Trinitrobenzene	TNB135

Chlorophenoxy Herbicides (USEPA Method 8151A):

<u>COC Description</u>	<u>Geotracker Code</u>
2,4-D	24D
Dinoseb	DINOSEB
2,4,5-TP (Silvex)	SILVEX
2,4,5-T	245T

Organophosphorus Compounds (USEPA Method 8141B):

<u>COC Description</u>	<u>Geotracker Code</u>
Atrazine	ATRAZINE
Chlorpyrifos	CLPYRIFOS
Thionazine	ZINOPHOS
Diazinon	DIAZ
Dimethoate	DIMETHAT
Disulfoton	DISUL
Parathion methyl	PARAM
Parathion ethyl	PARAE
Phorate	PHORATE
Simazine	SIMAZINE

TABLE VII
LANDFILL GAS (LFG) CORRECTIVE ACTION MONITORING PROGRAM

Parameter	Units	Sampling Frequency	Reporting Frequency
LFG Extraction Well Field (Only extraction well fields for WMUs in corrective action due to LFG related exceedances at WMU compliance points are required to be monitored)			
<u>Gas concentrations at each well</u>			
Methane	% by volume	Monthly	Semiannually
Carbon Dioxide	% by volume	Monthly	Semiannually
Oxygen	% by volume	Monthly	Semiannually
Remainder gas	% by volume	Monthly	Semiannually
Gas Temperature at each well	°F	Monthly	Semiannually
Gas Flow rate	CFM	Monthly	Semiannually
<u>Gas Pressure at each well</u>			
Initial static pressure in wellhead	inches H ₂ O	Monthly	Semiannually
Adjusted static pressure in wellhead	inches H ₂ O	Monthly	Semiannually

Perimeter LFG Migration Monitoring Probes GP-1 and GP-7 through GP-12,

Gas Concentration			
Methane	% by volume	Quarterly	Semiannually
Carbon Dioxide	% by volume	Quarterly	Semiannually
Oxygen	% by volume	Quarterly	Semiannually
Remainder gas	% by volume	Quarterly	Semiannually
Probe Pressure/Vacuum	inches H ₂ O	Quarterly	Semiannually

Landfill Gas Corrective Action Monitoring Points in Fill Area 1¹:

Gas Concentration			
Methane	% by volume	Monthly	Semiannually
Carbon Dioxide	% by volume	Monthly	Semiannually
Oxygen	% by volume	Monthly	Semiannually
Remainder gas	% by volume	Monthly	Semiannually
Probe Pressure/Vacuum	inches H ₂ O	Monthly	Semiannually
VOCs ² by USEPA Method TO-15	µg/cm	Semiannually	Semiannually

1. Landfill Gas Corrective Action Monitoring Points for Fill Area 1 are listed in Section A.6 of this MRP.

2. The Discharger may prescreen the gas sample to determine if the sample is required to be laboratory analyzed using Method TO-15 by using an approved gas analyzer to establish methane concentrations or an approved Photo Ionization Detector (PID) to establish total VOCs concentrations at the sampling point. If while using an approved sampling and analysis plan procedure the Discharger detects methane concentrations exceeding 1.0 percent by volume OR organic vapors (total VOCs) are detected with a PID at a concentration greater than 1.0 ppm then a gas sample shall be obtained and laboratory analyzed for specific VOCs using EPA Method TO-15. Both the screening results and laboratory analysis results shall be reported. Otherwise, the Discharger shall report the methane or total VOC screening results and no further laboratory analysis is required.