

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2017-XXXX
FOR
INTERMOUNTAIN LANDFILL, INC.
INTERMOUNTAIN LANDFILL
POST-CLOSURE MAINTENANCE
SHASTA COUNTY

This monitoring and reporting program (“MRP”) is issued pursuant to California Water Code section 13267, and incorporates requirements for groundwater and unsaturated zone monitoring and reporting; facility monitoring, maintenance, and reporting; and financial assurances reporting contained in California Code of Regulations, title 27 (“Title 27”), section 20005 et seq., Waste Discharge Requirements (“WDRs”) Order No. R5-2017-XXXX, and the Standard Provisions and Reporting Requirements dated December 2015 (“SPRRs”). 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 detection monitoring program (“DMP”) provisions of Title 27 for groundwater and the unsaturated zone in accordance with Standard Monitoring Specifications set forth in Section I of the SPRRs, and the Monitoring Specifications set forth in Section G of the WDRs. All monitoring shall be conducted in accordance with the forthcoming Sample Collection and Analysis Plan; Provision 7 of the WDRs requires that this plan be submitted by **30 September 2018**. The Sample Collection and Analysis Plan will include quality assurance/quality control (“QA/QC”) standards.

All compliance monitoring wells established for the DMP shall constitute the monitoring points for the groundwater Water Quality Protection Standard (“WQPS”). All DMP groundwater monitoring wells, unsaturated zone monitoring devices, and leachate monitoring points shall be sampled and analyzed for monitoring parameters and constituents of concern (“COCs”), as set forth in Tables I-V.

The Discharger may use alternative analytical test methods, including new USEPA-approved methods, provided the methods have method detection limits (“MDLs”) equal to or lower than the analytical methods specified in this MRP, and are identified in the approved Sample Collection and Analysis Plan.

The monitoring program of this MRP includes:

<u>Section</u>	<u>Monitoring Program</u>
A.1	Groundwater Monitoring
A.2	Unsaturated Zone Monitoring
A.3	Leachate Monitoring, Seep Monitoring, and LCRS Testing
A.4	Facility Monitoring

1. Groundwater Monitoring

The Discharger shall operate and maintain a groundwater detection monitoring system that complies with the applicable provisions of Title 27, sections 20415 and 20420. The detection monitoring system shall be certified by a California-licensed professional civil engineer or geologist as meeting the requirements of Title 27. The current groundwater detection monitoring system does not meet the applicable requirements of Title 27.

- a. The program does not satisfy Title 27's requirement of establishing a Sample Collection and Analysis Plan. (See Title 27, § 20415, subd. (e)(4).)
- b. The program does not have a complete WQPS. (*Id.*, § 20390.) Concentration Limits, a component of the WPQS requiring annual updates, have not been updated since June 1992.

The current groundwater monitoring network shall consist of the following:

<u>Well</u>	<u>Status</u>	<u>Units Being Monitored</u>
B-1	Detection	WMU-1, WMU-6
B-4	Background	(none)
B-6	Detection	WMU-1
B-9	Detection	WMU-1

Groundwater samples shall be collected from the background well and detection monitoring wells 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. 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 annually, including the times of expected highest and lowest elevations of the water levels in the wells, pursuant to Title 27, section 20415, subdivision (e)(15).

Samples collected for the COC monitoring specified in Table I shall be collected and analyzed, in accordance with the methods listed in Table V, every five years. Five-year COCs shall be monitored, in accordance with the methods listed in Table V, **every five years** beginning in **2022**. The results shall be reported in the Annual Monitoring Report for the year in which the samples were collected.

2. Unsaturated Zone Monitoring

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 current unsaturated zone monitoring network shall consist of:

<u>Mon Pt.</u>	<u>Status</u>	<u>Units Being Monitored</u>
L-1	Detection	WMU-6
L-3	Detection	WMU-1

Unsaturated zone samples shall be collected from the monitoring network listed above and shall be analyzed for the parameters and constituents listed in Table II in accordance with the specified methods and frequencies. Vacuum lysimeters shall be inspected **monthly** for the presence of liquid. If liquid is detected in a previously dry lysimeter, the Discharger shall verbally 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 five-year COC analyses specified in Table II shall be collected and analyzed, in accordance with the methods listed in Table V, **every five years** beginning in **2022**.

The Discharger shall collect, preserve, and transport samples in accordance with the QA/QC standards contained in the approved Sample Collection and Analysis Plan.

Monitoring results for the unsaturated zone shall be included in monitoring reports and shall include an evaluation of potential impacts of the subject facility on the unsaturated zone and compliance with the WQPS.

3. Leachate Monitoring and Seep Monitoring

Leachate Monitoring: The Discharger shall operate and maintain the leachate collection and removal system (“LCRS”) collection tank associated with WMU-1, conduct monitoring of any detected leachate seeps, and conduct annual testing of the LCRS in accordance with Title 27 and this MRP.

The LCRS collection tank shall be inspected monthly for the presence of leachate, and flow shall be recorded in accordance with Table III. Leachate in the LCRS collection tank shall then be sampled for all parameters and constituents in accordance with the frequencies listed in Table III whenever liquid is present. The LCRS collection tank samples shall be analyzed for the five-year COCs specified in Table III **every five years** beginning in **2022**.

Seep Monitoring: Leachate that seeps to the surface from a landfill unit 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 as Leachate Flow Rate (in gallons/day). Reporting for leachate seeps shall be conducted as required in MRP Section B.3, below.

4. 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 subject facility. The inspection shall assess repair and maintenance needed for drainage control systems, cover systems, and groundwater monitoring wells; 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 MRP Section B.4, below.

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 inspection. Notification and reporting requirements for major storm events shall be conducted as required in MRP Section B.5, below.

c. 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:

<u>Landfill Unit Type</u>	<u>Frequency</u>	<u>Season</u>
Closed	Monthly	Wet: 1 October to 30 April
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 of the landfill units:
 - a) Evidence of leachate seeps, estimated size of affected area, and flow rate (show affected area on map); and
 - b) Evidence of erosion and/or of day-lighted refuse.

Results of Standard Observations shall be submitted in the annual monitoring report required in MRP Section B.1, below.

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	Annual Monitoring	31 December	1 February

<u>Section</u>	<u>Report</u>	<u>End of Reporting Period</u>	<u>Due Date</u>
B.2	Seep Reporting	Continuous	Immediately & 7 Days 15 November
B.3	Annual Facility Inspection Report	31 October	
B.4	Major Storm Event Reporting	Continuous	7 days from damage discovery
B.5	Financial Assurances Report	31 December	1 June

Reporting Requirements

Annually, the Discharger shall submit monitoring reports with the data and information required by this MRP, WDRs Order No. R5-2017-XXXX, and the SPRRs (particularly SPRRs Section I ["Standard Monitoring Specifications"] and SPRRs 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 WDRs or the lack thereof. Data shall also be submitted in a digital format (e.g., on a compact disk or flash drive).

Field and laboratory tests shall be reported in each monitoring report. 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 California Code of Regulations, title 23 ("Title 23"), sections 3890–3895; and Title 27, division 3.

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.

The Discharger shall retain records of all monitoring information, including all calibration and maintenance records, all original strip chart recordings of continuous monitoring instrumentation, copies of all reports required by this Order, and records of all data used to complete the application for this Order. Records shall be maintained 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) Calculation of results; and

- f) Results of analyses, and the MDL and practical quantitation limit ("PQL") for each analysis. All peaks shall be reported.

Required Reports

1. **Annual Monitoring Report:** Monitoring reports shall be submitted annually and are due on **1 February**. Each annual 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. (See Title 27, § 20415, subd. (e)(15).)
 - d) Cumulative tabulated monitoring data for all monitoring points and constituents for groundwater, unsaturated zone, and leachate. 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 "< [reporting limit]" (e.g., "< 0.10"). Units shall be as required in Tables I-IV, unless specific justification is given to report in other units. Refer to the SPRRs Section I ("Standard Monitoring Specifications") for specific 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 Section J ("Response to a Release") for verified exceedances of a concentration limit for wells/constituents not already in corrective action monitoring.
 - g) An evaluation of the effectiveness of the leachate monitoring and control facilities.

- h) A summary of all Standard Observations for the reporting period required in MRP Section A, above.
 - 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.
 - j) Copies of field records.
2. **Annual Monitoring Report:** 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 five-year COC event was performed, then 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 Stiff diagram, Piper graph, or 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. The Central Valley Water Board regards the submittal of data both in hard copy and in digital format as the forms necessary for statistical analysis, facilitating periodic review. (See Title 27, § 20420, subd. (h).)
 - d) Hydrographs of each well showing the elevation of groundwater with respect to the elevations of the top and bottom of the screened interval and the elevation of the pump intake. Hydrographs of each well shall be prepared quarterly 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 WDRs.
 - f) A written summary of the monitoring results, indicating any changes made or observed since the previous Annual Monitoring Report.
 - g) The results of the annual testing of LCRS required under Standard Facility Specification E.14 of the SPRRs.
 - h) Updated concentration limits for each monitoring parameter at each monitoring well based on the new data set.
3. **Seep Reporting:** The Discharger shall report by telephone any seepage from the disposal area **immediately upon discovery**. 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**, 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. (See MRP § A.4.a, above, for the inspection requirements.)
5. **Major Storm Event Reporting:** Following major storm events capable of causing damage or significant erosion, the Discharger shall **immediately 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. (See MRP § A.4.b, above, for storm-related inspection requirements.)
6. **Financial Assurances Report:** By **1 June**, 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. (See WDRs, §§ F.1–F.3 [Financial Assurances Specifications].)

C. WATER QUALITY PROTECTION STANDARD AND COMPLIANCE PERIOD

1. Water Quality Protection Standard Report

For each waste management unit (“WMU”), the WQPS shall consist of all COCs, the concentration limit for each COC, the verification retesting procedure to confirm measurably significant evidence of a release, the point of compliance (“POC”), and all water quality monitoring points for each monitored medium.

The WQPS for naturally-occurring waste constituents consists of the COCs, the concentration limits, and the POC and all monitoring points. Any proposed changes to the WQPS 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 WMU 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 groundwater monitoring program and the unsaturated zone monitoring

program. The map shall include the POC 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 COCs that are detected in 10 percent or greater of the background data (naturally-occurring constituents) using a statistical procedure from Title 27, section 20415, subdivisions (e)(8)(A)-(E).
- e. Include a retesting procedure to confirm or deny measurably significant evidence of a release pursuant to Title 27 section 20415, subdivision (e)(8)(E), and Title 27 section 20420, subdivisions (j)(1)-(3).

The 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 WQPS.

The concentration limits in the Discharger's 1992 *Water Quality Protection Standard Report* have not been revised in the intervening years. Provision 7 of WDRs Order No. R5-2017-XXXX requires submittal of an updated WQPS Report. The concentration limits shall be updated annually 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 WMU. The monitoring parameters for all WMUs 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 WMU, and are required to be monitored every five years. (See Title 27, §§ 20395, 20420, subd. (g).) The COCs for all WMUs at the facility are listed in Tables I through IV for the specified monitored medium, and Table V. The Discharger shall monitor all COCs every five years. Five-year COCs were not incorporated in the previous Monitoring and Reporting Program No. 96-222, and five-year COCs are due to be monitored in **2022**.

4. Concentration Limits

The concentration limit for each naturally occurring COC shall be determined as follows:

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

The methods for calculating concentration limits will be updated in the forthcoming WQPS Report. Provision 7 of WDRs Order No. R5-2017-XXXX requires submittal of a revised WQPS Report. Upon approval, the concentration limits will be calculated using the data analysis methods described in the revised WQPS Report.

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:

- b. For analytes detected in less than 10 percent of 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.
- c. For analytes detected in 10 percent or greater of background samples (naturally-occurring constituents), the Discharger shall use one of the statistical retesting procedures specified in Standard Monitoring Specification I.47 of the SPRRs.

6. Point of Compliance

The POC for the water standard at each WMU is a vertical surface located at the hydraulically downgradient limit of the unit that extends through the uppermost aquifer underlying the unit. The following are monitoring locations at the POC:

<u>Cell or Module</u>	<u>Point of Compliance Monitoring Wells</u>
WMU-1, WMU-6	B-1
WMU-1	B-6
WMU-1	B-9

7. Compliance Period

For each WMU, the compliance period shall be equal to the sum of unit's active life and closure period. This compliance period shall be the minimum period during which the Discharger shall conduct a water quality monitoring program subsequent to a release from the WMU. The period shall restart with the initiation of each evaluation monitoring program. (See Title 27, § 20410.)

8. Monitoring Points

A monitoring point is a well, device, or location specified in the WDRs, at which monitoring is conducted and at which the WQPS applies. The monitoring points for each monitored medium are listed in MRP Section A.

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, 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)

PD

TABLE I
GROUNDWATER DETECTION MONITORING PROGRAM

<u>Parameter</u>	<u>Units</u>	<u>Sampling Frequency</u>	<u>Reporting Frequency</u>
Field Parameters			
Groundwater Elevation	Ft. & 100ths, M.S.L.	Semiannual	Annual
Temperature	OF	Semiannual	Annual
Electrical Conductivity	umhos/cm	Semiannual	Annual
pH	pH units	Semiannual	Annual
Turbidity	Turbidity units	Semiannual	Annual
Monitoring Parameters			
Total Dissolved Solids (TDS)	mg/L ¹	Annual ³	Annual
Chloride	mg/L	Annual	Annual
Carbonate	mg/L	Annual	Annual
Bicarbonate	mg/L	Annual	Annual
Nitrate - Nitrogen	mg/L	Annual	Annual
Sulfate	mg/L	Annual	Annual
Calcium	mg/L	Annual	Annual
Magnesium	mg/L	Annual	Annual
Potassium	mg/L	Annual	Annual
Sodium	mg/L	Annual	Annual
Volatile Organic Compounds (USEPA Method 8260B, short list, see Table IV)	ug/L ²	Annual	Annual
5-Year Constituents of Concern (see Table V)			
Total Organic Carbon	mg/L	5 years	2022 and every 5 years thereafter
Inorganics (dissolved)	ug/L	5 years	" "
Volatile Organic Compounds (USEPA Method 8260B, extended list)	ug/L	5 years	" "

¹ Milligrams per liter

² Micrograms per liter

³ Wet season sampling event

TABLE II
UNSATURATED ZONE DETECTION MONITORING PROGRAM

VACUUM LYSIMETERS¹

<u>Parameter</u>	<u>Units</u>	<u>Sampling Frequency</u>	<u>Reporting Frequency</u>
Field Parameters			
Electrical Conductivity	umhos/cm	Semiannual	Annual
pH	pH units	Semiannual	Annual
Volume of liquid removed	gallons	Monthly	Annual
Monitoring Parameters			
Total Dissolved Solids (TDS)	mg/L ²	Annual ⁴	Annual
Chloride	mg/L	Annual	Annual
Carbonate	mg/L	Annual	Annual
Bicarbonate	mg/L	Annual	Annual
Nitrate - Nitrogen	mg/L	Annual	Annual
Sulfate	mg/L	Annual	Annual
Calcium	mg/L	Annual	Annual
Magnesium	mg/L	Annual	Annual
Potassium	mg/L	Annual	Annual
Sodium	mg/L	Annual	Annual
Volatile Organic Compounds (USEPA Method 8260B, short list, see Table IV)	ug/L ³	Annual	Annual
5-Year Constituents of Concern (see Table V)			
Total Organic Carbon	mg/L	5 years	2022 and every 5
Inorganics (dissolved)	ug/L	5 years	years thereafter
Volatile Organic Compounds (USEPA Method 8260B, extended list)	ug/L	5 years	" "

¹ Vacuum lysimeters shall be inspected for the presence of liquid **monthly**
² Milligrams per liter
³ Micrograms per liter
⁴ Wet season sampling event

TABLE III
LEACHATE MONITORING ¹, SEEP MONITORING ²

<u>Parameter</u>	<u>Units</u>	<u>Sampling Frequency</u>	<u>Reporting Frequency</u>
Field Parameters			
Total Flow	Gallons	Monthly	Annual
Flow Rate	Gallons/Day	Monthly	Annual
Electrical Conductivity	umhos/cm	Quarterly	Annual
pH	pH units	Quarterly	Annual
Monitoring Parameters			
Total Dissolved Solids (TDS)	mg/L ³	Annually	Annually
Chloride	mg/L	Annually	Annually
Carbonate	mg/L	Annually	Annually
Bicarbonate	mg/L	Annually	Annually
Nitrate - Nitrogen	mg/L	Annually	Annually
Sulfate	mg/L	Annually	Annually
Calcium	mg/L	Annually	Annually
Magnesium	mg/L	Annually	Annually
Potassium	mg/L	Annually	Annually
Sodium	mg/L	Annually	Annually
Volatle Organic Compounds (USEPA Method 8260B, short list, see Table IV)	ug/L ⁴	Annually	Annually
5-Year Constituents of Concern (see Table V)			
Total Organic Carbon	mg/L	5 years	2022 and every 5
Inorganics (dissolved)	ug/L	5 years	years thereafter
Volatle Organic Compounds (USEPA Method 8260B, extended list)	ug/L	5 years	" "
Semi-Volatle Organic Compounds (USEPA Method 8270C or D)	ug/L	5 years	" "

¹ If leachate is detected in a previously dry tank, the Discharger shall verbally 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 tank shall then be sampled for all parameters and constituents in accordance with the frequencies listed in Table III whenever liquid is present.

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

³ milligrams per liter

⁴ micrograms per liter

TABLE IV

MONITORING PARAMETERS FOR DETECTION MONITORING

Surrogates for Metallic Constituents:

pH
Total Dissolved Solids
Electrical Conductivity
Chloride
Sulfate
Nitrate nitrogen

Volatile Organic Compounds, short list:

USEPA Method 8260B

Acetone
Acrylonitrile
Benzene
Bromochloromethane
Bromodichloromethane
Bromoform (Tribromomethane)
Carbon disulfide
Carbon tetrachloride
Chlorobenzene
Chloroethane (Ethyl chloride)
Chloroform (Trichloromethane)
Dibromochloromethane (Chlorodibromomethane)
1,2-Dibromo-3-chloropropane (DBCP)
1,2-Dibromoethane (Ethylene dibromide; EDB)
o-Dichlorobenzene (1,2-Dichlorobenzene)
m-Dichlorobenzene (1,3-Dichlorobenzene)
p-Dichlorobenzene (1,4-Dichlorobenzene)
trans-1,4-Dichloro-2-butene
Dichlorodifluoromethane (CFC-12)
1,1-Dichloroethane (Ethylidene chloride)
1,2-Dichloroethane (Ethylene dichloride)
1,1 -Dichloroethylene (1,1 -Dichloroethene; Vinylidene chloride)
cis- 1,2-Dichloroethylene (cis- 1,2-Dichloroethene)
trans-1,2-Dichloroethylene (trans-1,2-Dichloroethene)
1,2-Dichloropropane (Propylene dichloride)
cis- 1,3-Dichloropropene
trans- 1,3-Dichloropropene
Di-isopropylether (DIPE)
Ethanol
Ethyltertiary butyl ether
Ethylbenzene
2-Hexanone (Methyl butyl ketone)
Hexachlorobutadiene
Methyl bromide (Bromomethane)
Methyl chloride (Chloromethane)

TABLE IV
MONITORING PARAMETERS FOR DETECTION MONITORING

Continued

Methylene bromide (Dibromomethane)
Methylene chloride (Dichloromethane)
Methyl ethyl ketone (MEK: 2-Butanone)
Methyl iodide (Iodomethane)
Methyl t-butyl ether
4-Methyl-2-pentanone (Methyl isobutylketone)
Naphthalene
Styrene
Tertiary amyl methyl ether
Tertiary butyl alcohol
1,1,1,2-Tetrachloroethane
1,1,2,2-Tetrachloroethane
Tetrachloroethylene (Tetrachloroethene; Perchloroethylene)
Toluene
1,2,4-Trichlorobenzene
1,1,1-Trichloroethane (Methylchloroform)
1,1,2-Trichloroethane
Trichloroethylene (Trichloroethene)
Trichlorofluoromethane (CFC- 11)
1,2,3-Trichloropropane
Vinyl acetate
Vinyl chloride
Xylenes

TABLE V
5-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS

<u>Inorganics (dissolved):</u>	<u>USEPA Method</u>
Aluminum	6010
Antimony	7041
Barium	6010
Beryllium	6010
Cadmium	7131A
Chromium	6010
Cobalt	6010
Copper	6010
Silver	6010
Tin	6010
Vanadium	6010
Zinc	6010
Iron	6010
Manganese	6010
Arsenic	7062
Lead	7421
Mercury	7470A
Nickel	7521
Selenium	7742
Thallium	7841
Cyanide	9010C
Sulfide	9030B

Volatile Organic Compounds, extended list:

USEPA Method 8260B

Acetone
Acetonitrile (Methyl cyanide)
Acrolein
Acrylonitrile
Allyl chloride (3-Chloropropene)
Benzene
Bromochloromethane (Chlorobromomethane)
Bromodichloromethane (Dibromochloromethane)
Bromoform (Tribromomethane)
Carbon disulfide
Carbon tetrachloride
Chlorobenzene
Chloroethane (Ethyl chloride)
Chloroform (Trichloromethane)
Chloroprene
Dibromochloromethane (Chlorodibromomethane)
1,2-Dibromo-3-chloropropane (DBCP)
1,2-Dibromoethane (Ethylene dibromide; EDB)
o-Dichlorobenzene (1,2-Dichlorobenzene)

TABLE V
5-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS

(Continued)

m-Dichlorobenzene (1,3-Dichlorobenzene)
p-Dichlorobenzene (1,4-Dichlorobenzene)
trans- 1,4-Dichloro-2-butene
Dichlorodifluoromethane (CFC 12)
1,1 -Dichloroethane (Ethylidene chloride)
1,2-Dichloroethane (Ethylene dichloride)
1,1 -Dichloroethylene (1, 1-Dichloroethene; Vinylidene chloride)
cis- 1,2-Dichloroethylene (cis- 1,2-Dichloroethene)
trans- 1,2-Dichloroethylene (trans- 1,2-Dichloroethene)
1,2-Dichloropropane (Propylene dichloride)
1,3-Dichloropropane (Trimethylene dichloride)
2,2-Dichloropropane (Isopropylidene chloride)
1,1 -Dichloropropene
cis- 1,3-Dichloropropene
trans- 1,3-Dichloropropene
Di-isopropylether (DIPE)
Ethanol
Ethyltertiary butyl ether
Ethylbenzene
Ethyl methacrylate
Hexachlorobutadiene
2-Hexanone (Methyl butyl ketone)
Isobutyl alcohol
Methacrylonitrile
Methyl bromide (Bromomethane)
Methyl chloride (Chloromethane)
Methyl ethyl ketone (MEK; 2-Butanone)
Methyl iodide (Iodomethane)
Methyl t-butyl ether
Methyl methacrylate
4-Methyl-2-pentanone (Methyl isobutyl ketone)
Methylene bromide (Dibromomethane)
Methylene chloride (Dichloromethane)
Naphthalene
Propionitrile (Ethyl cyanide)
Styrene
Tertiary amyl methyl ether
Tertiary butyl alcohol
1,1,1,2-Tetrachloroethane
1,1,2,2-Tetrachloroethane
Tetrachloroethylene (Tetrachloroethene; Perchloroethylene; PCE)
Toluene
1,2,4-Trichlorobenzene

TABLE V
5-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS

(Continued)

1,1,1 -Trichloroethane (Methylchloroform)
1,1,2-Trichloroethane
Trichloroethylene (Trichloroethene; TCE)
Trichlorofluoromethane (CFC- 11)
1,2,3-Trichloropropane
Vinyl acetate
Vinyl chloride (Chloroethene)
Xylene (total)

Semi-Volatile Organic Compounds:

USEPA Method 8270C or D - base, neutral, & acid extractables

Acenaphthene
Acenaphthylene
Acetophenone
2-Acetylaminofluorene (2-AAF)
Aldrin
4-Aminobiphenyl
Anthracene
Benzo[a]anthracene (Benzanthracene)
Benzo[b]fluoranthene
Benzo[k]fluoranthene
Benzo[g,h,i]perylene
Benzo[a]pyrene
Benzyl alcohol
Bis(2-ethylhexyl) phthalate
alpha-BHC
beta-BHC
delta-BHC
gamma-BHC (Lindane)
Bis(2-chloroethoxy)methane
Bis(2-chloroethyl) ether (Dichloroethyl ether)
Bis(2-chloro-1-methylethyl) ether (Bis(2-chloroisopropyl) ether; DCIP)
4-Bromophenyl phenyl ether
Butyl benzyl phthalate (Benzyl butyl phthalate)
Chlordane
p-Chloroaniline
Chlorobenzilate
p-Chloro-m-cresol (4-Chloro-3-methylphenol)
2-Chloronaphthalene
2-Chlorophenol
4-Chlorophenyl phenyl ether
Chrysene
o-Cresol (2-methylphenol)
m-Cresol (3-methylphenol)
p-Cresol (4-methylphenol)
4,4'-DDD

TABLE V
5-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS

(Continued)

4,4'-DDE
4,4'-DDT
Diallate
Dibenz[a,h]anthracene
Dibenzofuran
Di-n-butyl phthalate
3,3'-Dichlorobenzidine
2,4-Dichlorophenol
2,6-Dichlorophenol
Dieldrin
Diethyl phthalate
p-(Dimethylamino)azobenzene
7,12-Dimethylbenz[a]anthracene
3,3'-Dimethylbenzidine
2,4-Dimethylphenol (m-Xylenol)
Dimethyl phthalate
m-Dinitrobenzene
4,6-Dinitro-o-cresol (4,6-Dinitro-2-methylphenol)
2,4-Dinitrophenol
2,4-Dinitrotoluene
2,6-Dinitrotoluene
Di-n-octyl phthalate
Diphenylamine
Endosulfan I
Endosulfan II
Endosulfan sulfate
Endrin
Endrin aldehyde
Ethyl methanesulfonate
Famphur
Fluoranthene
Fluorene
Heptachlor
Heptachlor epoxide
Hexachlorobenzene
Hexachlorocyclopentadiene
Hexachloroethane
Hexachloropropene
Indeno(1,2,3-c,d)pyrene
Isodrin
Isophorone
Isosafrole
Kepone
Methapyrilene
Methoxychlor
3-Methylcholanthrene
Methyl methanesulfonate

TABLE V
5-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS

(Continued)

2-Methylnaphthalene
1,4-Naphthoquinone
1-Naphthylamine
2-Naphthylamine
o-Nitroaniline (2-Nitroaniline)
m-Nitroaniline (3-Nitroaniline)
p-Nitroaniline (4-Nitroaniline)
Nitrobenzene
o-Nitrophenol (2-Nitrophenol)
p-Nitrophenol (4-Nitrophenol)
N-Nitrosodi-n-butylamine (Di-n-butylnitrosamine)
N-Nitrosodiethylamine (Diethylnitrosamine)
N-Nitrosodimethylamine (Dimethylnitrosamine)
N-Nitrosodiphenylamine (Diphenylnitrosamine)
N-Nitrosodipropylamine (N-Nitroso-N-dipropylamine; Di-n-propylnitrosamine)
N-Nitrosomethylethylamine (Methylethylnitrosamine)
N-Nitrosopiperidine
N-Nitrosopyrrolidine
5-Nitro-o-toluidine
Pentachlorobenzene
Pentachloronitrobenzene (PCNB)
Pentachlorophenol
Phenacetin
Phenanthrene
Phenol
p-Phenylenediamine
Polychlorinated biphenyls (PCBs; Aroclors)
Pronamide
Pyrene
Safrole
1,2,4,5-Tetrachlorobenzene
2,3,4,6-Tetrachlorophenol
o-Toluidine
Toxaphene
2,4,5-Trichlorophenol
0,0,0-Triethyl phosphorothioate
sym-Trinitrobenzene