CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM R5-2014-XXXX
FOR
COUNTY OF TULARE
FOR
POSTCLOSURE MAINTENANCE AND CORRECTIVE ACTION
EARLIMART SOLID WASTE LANDFILL
TULARE COUNTY

This monitoring and reporting program (MRP) is issued pursuant to California Water Code Section 13267 and incorporates requirements for: groundwater monitoring and reporting; leachate seep monitoring and reporting, facility monitoring, maintenance 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 R5-2014-XXX, and the Standard Provisions and Reporting Requirements for Nonhazardous Solid Waste Discharges regulated by Subtitle D and/or Title 27 (SPRRs) dated January 2012, which is incorporated herein and made part of this MRP by reference. 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 provisions of Title 27 for groundwater in accordance with Standard Monitoring Specifications in Section I of the SPRRs and the Monitoring Specifications in Section E of the WDRs. All monitoring shall be conducted in accordance with the approved August 2002 detection monitoring program plan, which includes quality assurance/quality control standards.

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 shall be sampled and analyzed for monitoring parameters and constituents of concern (COCs) as indicated and listed in Tables I, III, and IV.

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 MRP, are approved by the Executive Officer, and are incorporated into the detection monitoring program plan.

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The monitoring program of this MRP includes:

Section	Monitoring Program
A.1	Groundwater Monitoring
A.2	Leachate Seep Monitoring
A.3	Facility Monitoring
A.4	Corrective Action 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 meets the applicable requirements of Title 27.

The current groundwater monitoring network shall consist of the following:

Well	Status
M-1A	Background
M-1B	Background
M-1C	Background
M-2	Co-Gradient
M-3A	Detection
M-3B	Detection
M-3C	Detection
M-4	Co-Gradient
M-5	Background
M-6A	Detection
M-6B	Detection
M-7	Detection
M-7B	Detection
Private well (6989 Road 36)	Corrective Action
Private well (7083 Road 136)	Corrective Action
Private well (7101 Road 136)	Corrective Action
Private well (13477 Avenue 72)	Corrective Action

Groundwater samples shall be collected from the background wells, detection monitoring wells, corrective action 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. Groundwater elevations in the background, detection, and co-gradient wells shall be measured quarterly. No sampling of the co-gradient wells is required. The Discharger shall collect,

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preserve, and transport groundwater samples in accordance with the approved detection monitoring program plan. The results of groundwater monitoring shall be reported semiannually as required in Section B.1 of this MRP, below.

Once per quarter, including the times of expected highest and lowest elevations of the water levels in the wells, 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 pursuant to Title 27, Section 20415(e)(15). The results shall be reported semiannually as required in Section B.1 of this MRP, below.

Samples collected for COC monitoring specified in Table I shall be collected and analyzed in accordance with the methods listed in Table IV every five years. Five-year COCs were last monitored in 2013 and shall be monitored again in **2018**. The results shall be reported in the Annual Monitoring Report for the year in which the samples were collected (see B.2 of Reporting of this MRP below).

2. Leachate Seep Monitoring

Leachate that seeps to the surface from a landfill unit (unit) shall be sampled and analyzed for the field and monitoring parameters listed in Table II 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 Section B.3 of this MRP, below.

3. 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. 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 problem 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 unit side slopes for damage **within 7 days** following

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major storm events (i.e., a storm that causes continuous runoff for at least one hour). The Discharger shall take photos of any problems 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 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 the engineered alternative composite final cover system. For each portion of the unit, 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 most recent iso-settlement map was prepared and submitted in 2011.

d. **Standard Observations**

The Discharger shall conduct Standard Observations at the facility in accordance with this section of the MRP. Standard observations shall be conducted in accordance with the following schedule:

Frequency	Season
Monthly	Wet: 1 October to 30 April
Quarterly	Dry: 1 May to 30 September

The Standard Observations shall include:

1) For the unit:

   a) Evidence of ponded water at any point on the unit outside of any contact storm water/leachate diversion 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 unit:

   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 semiannual monitoring reports required in Section B.1 of this MRP below.

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4. Corrective Action Monitoring

The Discharger shall conduct corrective action monitoring to demonstrate the effectiveness of corrective action in accordance with Title 27, Section 20430 and this MRP. The Discharger shall sample the four off-site private wells listed in Section A.1 of this MRP on a quarterly basis for VOCs, in accordance with Table V of this MRP. The quarterly sampling results, as well as the operating frequency of LFG extraction system, shall be reported and discussed in semi-annual monitoring reports. Sampling frequency can be reduced, from quarterly to semiannual, after a period of one year with Executive Officer approval. All sampling results shall be reported to the well owner and immediate notification shall be provided to both the well owner and the occupants of any facilities being served by the well if any primary maximum contaminant level is exceeded.

Corrective action monitoring data analysis shall include the following:

a. Nature and Extent:
   1) Comparisons with concentration limits to identify any new or previously undetected constituents at a monitoring point.

b. Effectiveness of Corrective Action:
   1) Preparation of time series plots for representative waste constituents.
   2) Trend analysis for each waste constituent.
   3) The need for additional corrective action measures and/or monitoring wells.

The results of the above analysis, including a narrative discussion, shall be included in each semiannual monitoring report and summarized in the Annual Report, as specified under reporting Section B.1 and B.2 of this MRP below. The semiannual monitoring reports shall also include a discussion of the progress of corrective action toward returning to compliance with the WQPS, as specified in Section 20430(h) of Title 27.

B. REPORTING

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

Reporting Schedule

Section	Report	End of Reporting Period	Due Date
B.1	Semiannual Monitoring Report	30 June/ 31 December	**31 August/** **28 February**

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Section	Report	End of Reporting Period	Due Date
B.2	Annual Monitoring Report	31 December	**28 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	**Immediately upon damage discovery & 14 days after repair completion**
B.6	Survey and Iso-Settlement Map for Closed Landfills	Every Five Years	**2016 and Every Five Years Thereafter**
B.7	Financial Assurances Report	31 December	**1 October each year**

Reporting Requirements

The Discharger shall submit monitoring reports **semiannually** with the data and information as required in this MRP and as required in WDRs Order R5-2014-XXXX and the SPRRs (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 or the lack thereof. Data shall also be submitted in a digital format, such as a computer disk.

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 Division 3 of Title 27.

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

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all data used to complete the application for this Order. Records shall be maintained throughout the life of the facility including the postclosure maintenance 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 PQL for each analysis. All peaks shall be reported.

Required Reports

1. **Semiannual Monitoring Report:** Monitoring reports shall be submitted semiannually and are due on **31 August** and **28 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 detection monitoring program plan.

   b) A map or aerial photograph showing the locations of observation stations, monitoring points, and background monitoring points.

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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) Tabulated monitoring data detected during the reporting period for all monitoring points and constituents for groundwater and leachate seeps. Concentrations below the laboratory reporting limit shall not be reported as "ND" unless the reporting limit is also given in the table. Otherwise they shall be reported "<" the reporting limit (e.g., <0.10). Units shall be as required in Tables I, II, and V 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 five-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 exceedences of a concentration limit.

g) A summary of all Standard Observations for the reporting period required in Section A.3.d of this MRP.

h) A summary of inspection, leak search, and repair of final covers on any closed units in accordance with an approved final postclosure maintenance plan as required by Standard Closure and Postclosure 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 **28 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 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.

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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 and 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 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 waste discharge requirements.

f) A written summary of the monitoring results, indicating any changes made or observed since the previous Annual Monitoring Report.

g) Every fifth year, update concentration limits for each monitoring parameter at each monitoring well based on the new data set.

h) A comprehensive discussion of any CAP required by this MRP under Section A.4.

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 II of this MRP, and an estimated date that the results will be submitted to the Central Valley Water Board; and

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

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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.3.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.3.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 the unit every five years pursuant to Title 27, Section 21090(e). Refer to Section A.3.c of this MRP, above.

7. **Financial Assurances Report:** By **1 October** of each year, the Discharger shall submit a copy of the annual financial assurances report due to CalRecycle that updates the financial assurances for postclosure maintenance and corrective action. Refer to Financial Assurances Specifications E.1 through E.3 of the WDRs.

C. WATER QUALITY PROTECTION STANDARD AND COMPLIANCE PERIOD

1. Water Quality Protection Standard Report

For the unit, 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, 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 point of compliance 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 the unit or portion of the 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. The

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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 COCs 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 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 facility, the Discharger may request modification of the WQPS.

The Discharger proposed the methods for calculating concentration limits in the September 2002 *Water Quality Protection Standard Report Update*. Pursuant to Title 27 CCR Section 20415(e)(10)(B), for each naturally occurring inorganic COC, the concentration limit (applicable suite of background data) for that constituent shall be re-determined each semiannual monitoring period according to the following “moving window” formula, and the Discharger shall use the resulting concentration limit to apply the parametric Interwell Upper Prediction Limit analysis method featured in the Sanitas™ for Groundwater statistical software package, unless the software indicates that a different method (e.g., the nonparametric version of the same method) is more appropriate. Sanitas™ Batch Mode is performed on the entire monitoring well network for all constituents. Constituents that indicate an exceedence under Batch Mode are further analyzed under Sanitas™ Interactive Mode to verify or refute whether the prediction limit established for the constituent was appropriate for the background data set. For each reporting period subsequent to the initial reporting period, the Discharger shall create the new concentration limit, for that constituent, by taking the prior reporting period’s background data, adding the newest datum, for that constituent, from background monitoring wells and removing the oldest datum. Monitoring wells M-1A, M-1B, M-1C and M-5 are currently being used for the collection of background data.

The WQPS shall be updated, at a minimum, every five years; or as required by natural changes in background water quality.

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2. Monitoring Parameters

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

3. Constituents of Concern

The COCs include a larger group of waste constituents and hazardous constituents that are reasonably expected to be in or derived from waste contained in the unit, and are required to be monitored every five years [Title 27, Sections 20395 and 20420(g)]. The COCs for the unit at the facility are those listed in Table I and Table IV. The Discharger shall monitor all COCs every five years, or more frequently as required in accordance with a CAP. The last five-year COC report was submitted to the Central Valley Water Board in the *2013 First Semiannual Monitoring Report*, and **5-year COCs are due to be monitored again in 2018.**

4. Concentration Limits

For a naturally occurring COC, the concentration limit for each COC 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).

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.

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6. Point of Compliance

The Point of Compliance for the water standard at each unit 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 point of compliance:

Point of Compliance Monitoring Wells
M-3A
M-3B
M-3C
M-6A
M-6B
M-7
M-7B

7. Compliance Period

The compliance period for each 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 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, at which monitoring is conducted and at which the WQPS 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 whether 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.

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

Ordered by:_____
PAMELA C. CREEDON, Executive Officer

_____
(Date)

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TABLE I

GROUNDWATER DETECTION MONITORING PROGRAM

Parameter	Units	Sampling Frequency	Report Frequency
Field Parameters			
Groundwater Elevation	Ft. & 100ths, M.S.L	Quarterly	Semiannual
Temperature	^{o}F	Semiannual	Semiannual
Electrical Conductivity	µmhos/cm	Semiannual	Semiannual
pH	pH units	Semiannual	Semiannual
Turbidity	Turbidity units	Semiannual	Semiannual
		Semiannual	Semiannual
Monitoring Parameters			
Total Dissolved Solids (TDS)	mg/L[1]	Semiannual	Semiannual
Chloride	mg/L	Semiannual	Semiannual
Carbonate	mg/L	Semiannual	Semiannual
Bicarbonate	mg/L	Semiannual	Semiannual
Nitrate-Nitrogen	mg/L	Semiannual	Semiannual
Sulfate	mg/L	Semiannual	Semiannual
Calcium	mg/L	Semiannual	Semiannual
Magnesium	mg/L	Semiannual	Semiannual
Potassium	mg/L	Semiannual	Semiannual
Sodium	mg/L	Semiannual	Semiannual
Volatile Organic Compounds (USEPA Method 8260B, short list, see Table III)	µg/L[2]	Semiannual	Semiannual
Five-Year Constituents of Concern (see Table IV)			
Total Organic Carbon	mg/L	5 years	5 years
Inorganics (dissolved)	µg/L	5 years	5 years
Volatile Organic Compounds (USEPA Method 8260B, extended list)	µg/L	5 years	5 years
Semi-Volatile Organic Compounds (USEPA Method 8270D)	µg/L	5 years	5 years
Chlorophenoxy Herbicides (USEPA Method 8151A)	µg/L	5 years	5 years
Organophosphorus Compounds (USEPA Method 8141B)	µg/L	5 years	5 years

[1] Milligrams per liter
[2] Micrograms per liter

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TABLE II

LEACHATE SEEP MONITORING[1]
(When a leachate seep has occurred)

Parameter	Units
Field Parameters	
Total Flow	Gallons
Flow Rate	Gallons/Day
Electrical Conductivity	µmhos/cm
pH	pH units
Monitoring Parameters	
Total Dissolved Solids (TDS)	mg/L
Chloride	mg/L
Carbonate	mg/L
Bicarbonate	mg/L
Nitrate - Nitrogen	mg/L
Sulfate	mg/L
Calcium	mg/L
Magnesium	mg/L
Potassium	mg/L
Sodium	mg/L
Volatile Organic Compounds (USEPA Method 8260B, short list, see Table III)	µg/L

[1] 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.

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TABLE III

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- l ,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 (Bromomethene)
Methyl chloride (Chloromethane)

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TABLE III

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

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TABLE IV
FIVE-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS

Inorganics (dissolved):	**USEPA Method**
Aluminum	200.8
Antimony	200.8
Barium	200.8
Beryllium	200.8
Cadmium	200.8
Chromium	200.8
Cobalt	200.8
Copper	200.8
Silver	200.8
Tin	200.8
Vanadium	200.8
Zinc	200.8
Iron	200.8
Manganese	200.7
Arsenic	200.8
Lead	200.8
Mercury	245.1
Nickel	200.8
Selenium	200.8
Thallium	200.8
Cyanide	SM[1] 4500-CN
Sulfide	SM 4500-SF

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)

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TABLE IV

FIVE-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS

Continued

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, l-Dichloroethene; Vinylidene chloride)
cis- l ,2-Dichloroethylene (cis- 1,2-Dichloroethene)
trans- l ,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- l ,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
1,1,1 -Trichloroethane (Methylchloroform)
1,1,2-Trichloroethane
Trichloroethylene (Trichloroethene; TCE)

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TABLE IV

FIVE-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS

Continued

Trichlorofluoromethane (CFC- 11)
1,2,3-Trichloropropane
Vinyl acetate
Vinyl chloride (Chloroethene)
Xylene (total)

Semi-Volatile Organic Compounds:

USEPA Method 8270 - 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-methyethyl) 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
4,4'-DDE
4,4'-DDT

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TABLE IV

FIVE-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS

Continued

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-Dimehtylphenol (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
2-Methylnaphthalene
1,4-Naphthoquinone

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TABLE IV

FIVE-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS

Continued

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-Nitrosospyrrolidine
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

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TABLE IV

FIVE-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS

Continued

Chlorophenoxy Herbicides:

USEPA Method 8151
2,4-D (2,4-Dichlorophenoxyacetic acid)
Dinoseb (DNBP; 2-sec-Butyl-4,6-dinitrophenol)
Silvex (2,4,5-Trichlorophenoxypropionic acid; 2,4,5-TP)
2,4,5-T (2,4,5-Trichlorophenoxyacetic acid)

Organophosphorus Compounds:

USEPA Method 8141
Atrazine
Chlorpyrifos
0,0-Diethyl 0-2-pyrazinyl phosphorothioate (Thionazin)
Diazinon
Dimethoate
Disulfoton
Methyl parathion (Parathion methyl)
Parathion
Phorate
Simazine

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[1] Standard Methods

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TABLE V

CORRECTIVE ACTION MONITORING PROGRAM

Parameter	Units	Sampling Frequency	Report Frequency
Field Parameters			
Groundwater Elevation	Ft. & 100ths, M.S.L	Quarterly[1]	Semiannual
Temperature	^{o}F	Quarterly[1]	Semiannual
Electrical Conductivity	µmhos/cm	Quarterly[1]	Semiannual
pH	pH units	Quarterly[1]	Semiannual
Turbidity	Turbidity units	Quarterly[1]	Semiannual
		Quarterly[1]	Semiannual
Monitoring Parameters		Quarterly[1]	
Volatile Organic Compounds (USEPA Method 8260B, short list, see Table III)	µg/L[2]	Quarterly[1]	Semiannual

[1] May be reduced to semiannual with Executive Officer approval (See section A.5 of this MRP)
[2] Micrograms per liter

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