

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-201X-XXXX
FOR
GLENN COUNTY
FOR
CORRECTIVE ACTION AND FINAL CLOSURE
GLENN COUNTY CLASS III MUNICIPAL SOLID WASTE LANDFILL
GLENN COUNTY

This monitoring and reporting program (MRP) is issued pursuant to California Water Code section 13267 and incorporates requirements for groundwater monitoring and reporting; facility monitoring, maintenance, and reporting; corrective action program 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 No. R5-201X-XXXX, and the Standard Provisions and Reporting Requirements (SPRRs) dated January 2012. 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 corrective action monitoring program provisions of Title 27 for groundwater and the unsaturated zone in accordance with Standard Monitoring Specifications in Section I of the SPRRs and the Monitoring Specifications in Section G of the WDRs. All monitoring shall be conducted in accordance with the approved 31 October 2007 *Sample Collection and Analysis Plan*, which includes quality assurance/quality control standards.

All compliance monitoring wells established for the corrective action monitoring program shall constitute the monitoring points for the groundwater Water Quality Protection Standard (WQPS). All corrective action monitoring program groundwater monitoring wells and unsaturated zone monitoring devices shall be sampled and analyzed for monitoring parameters and constituents of concern (COCs) as indicated and listed in Tables I through IV of this MRP.

The Discharger may use alternative analytical test methods, including new United States Environmental Protection Agency (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 corrective action 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 Seep Monitoring
A.4	Facility Monitoring
A.5	Corrective Action Monitoring

1. Groundwater Monitoring

The Discharger shall operate and maintain a groundwater corrective action monitoring system that complies with the applicable provisions of Title 27, sections 20415 and 20430. The current groundwater corrective action monitoring system meets applicable requirements of Title 27. However, only one well, M-4, monitors the hydraulically downgradient edge of the landfill, which is approximately 950 feet long on the southern boundary of the Unit. Well M-4 has been dry or contained insufficient water for sampling purposes nine times over the last 17 quarterly monitoring events (September 2009 through September 2013). This Order requires the Discharger to install one new groundwater monitoring well along the southern boundary of the Unit in accordance with Monitoring Specification G.2 and Provision H.7 of WDR Order No. R5-2014-XXXX. This new well should be installed in the uppermost laterally continuous aquifer that wells M-4, M-6, M-11, and M-12 are screened across (Zone D as described in more detail below). The Discharger shall revise the groundwater corrective action monitoring system (after review and approval by Central Valley Water Board staff) as needed to assess the efficacy of the corrective action program implemented at the landfill.

The current groundwater monitoring network for the landfill consists of 11 wells (M-4, M-5A, M-5B, M-6, M-7A, M-7B, M-8, M-9, M-10, M-11, and M-12), although three of these wells have been dry since installation (M-5A, M-9 and M-10). These WDRs require the Discharger to continue gauging wells M-5A, M-9, and M-10 for the presence of water each semiannual monitoring event and to collect samples if sufficient water is encountered during a monitoring event. Groundwater monitoring wells at the landfill have been installed in at least four different higher-permeability gravel intervals across the site, which are described in more detail below. Wells M-7A and M-7B are nested in the same boring and monitor different higher-permeability intervals. Wells M-4, M-6, M-11 and M-12 are installed into the uppermost laterally continuous aquifer penetrated beneath the site at approximately 90 to 100 feet MSL.

To better understand the groundwater monitoring network and the water-bearing zones the wells penetrate, the higher-permeability sand/gravel intervals are referenced as Zone A (shallowest zone located between 140 and 200 feet MSL), Zone B (located between 120 and 140 feet MSL), Zone C (located

between 100 and 120 feet MSL), and Zone D (deepest zone penetrated located between 90 and 100 feet MSL). Zone D is the only interval being monitored by at least three wells. The other zones appear laterally discontinuous and are monitored by less than three wells.

The current groundwater monitoring network consists of the following wells:

Well ID	Installation Date	Total Depth	Screen Interval	Well Type
M-4	August 1990	163.3 ft bgs	152 – 162 ft bgs	Compliance (Zone D)
M-5A	December 2010	57 ft bgs	41 – 56.5 ft bgs	Compliance (Zone A)
M-5B	November 2010	124 ft bgs	103 – 123 ft bgs	Compliance (Zone B)
M-6	September 1990	142.87 ft bgs	132 -142 ft bgs	Background (Zone D)
M-7A	October 2002	146.5 ft bgs	59.75 – 69.75 ft bgs	Compliance (Zone A)
M-7B	October 2002	146.5 ft bgs	109.75 – 144.75 ft bgs	Compliance (Zone C)
M-8	October 2002	167 ft bgs	145 – 165 ft bgs	Compliance (Zone B)
M-9	October 2007	125 ft bgs (backfilled with bentonite from 87 to 125 ft bgs)	65 – 85 ft bgs	Compliance (Zone A)
M-10	October 2007	135 ft bgs (backfilled with bentonite from 110 to 135 ft bgs)	97 – 107 ft bgs	Compliance (Zone B)
M-11	August 2012	170 ft bgs	142 – 162 ft bgs	Compliance (Zone D)
M-12	August 2012	275 ft bgs	219 – 229 ft bgs	Background (Zone D)

Groundwater samples shall be collected from all wells included in the corrective action monitoring system as listed above, and from the new well to be installed along the southern boundary of the Unit. Wells M-5A, M-9, and M-10, which have been consistently dry since installation, shall be inspected for the presence of groundwater each sampling event and samples shall be collected if sufficient groundwater is present. 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 depth to groundwater in each well, calculate the groundwater elevation, determine the direction and magnitude of the groundwater gradient, and estimate the groundwater flow velocity in the uppermost continuously saturated aquifer and in any other saturated zones that are monitored. If sufficient volumes of groundwater are present in wells M-5A, M-9, and/or M-10, then samples shall be collected and analyzed for the parameters and constituents listed in Table I. 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).

Samples collected for the COCs specified in Table I shall be collected and analyzed in accordance with the methods and frequencies listed in Tables I and IV every five years. **Five-year COCs are due to be monitored during first half 2014 and shall be monitored again during first half 2019, and every five years thereafter.** The results of all groundwater sampling shall be reported in the corresponding Semiannual Monitoring Report required in section B.1 of this MRP, below.

2. Unsaturated Zone Monitoring

Glenn County Landfill has one existing suction lysimeter (SL-1) along the northwestern side of the Unit. Lysimeter SL-1 is located slightly outside of the Unit at a depth of 26.5 feet. Lysimeter SL-1 consistently produces sufficient soil pore liquids for volatile organic compound (VOC) analyses.

A sample shall be collected from lysimeter SL-1 semiannually and analyzed for the parameters and constituents listed in Table II of this MRP. Since only a limited volume of soil pore liquid is obtainable during most sampling events, analyses for VOCs shall be prioritized over the other parameters and constituents listed in Table II. If sufficient soil pore liquid is available, then analyses for the field parameters and general mineral parameters listed in Table II shall also be completed. Lysimeter samples shall be collected, preserved, and transported in accordance with the quality assurance/quality control standards contained in the approved Sample Collection and Analysis Plan. The results of the unsaturated zone monitoring shall be reported in the corresponding Semiannual Monitoring Report required in section B.1 of this MRP, below.

3. Leachate Seep Monitoring

Seep Monitoring: Leachate that seeps to the surface from a landfill Unit shall be sampled and analyzed for the Field Parameters, Monitoring Parameters, and Constituents of Concern 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 section B.3 of this MRP, 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 facility, including any inert disposal cells constructed in the future. 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 controls and constructing a winter tipping pad). 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**. Results of the annual facility inspection shall be reported **by 15 November annually** as required in section B.4 of this MRP, 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. For facility monitoring purposes, a major storm event shall be defined as a five-year 24-hour storm event, resulting in 2.5 inches or more of rain within a 24-hour period. 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, below.

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. 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 that shall be prepared immediately after closure [Title 27, section 21090(e)(1 & 2)]. Reporting shall be in accordance with Section B.6 of this MRP, below.

d. **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>
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 Unit and any inert disposal cell:
 - 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 Unit and any inert disposal cell:
 - 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 corresponding Semiannual Monitoring Reports required in Section B.1 of this MRP, below.

5. Corrective Action Monitoring

The Discharger shall conduct corrective action monitoring to demonstrate the effectiveness of corrective actions implemented in accordance with Title 27, section 20430 and this MRP. Groundwater monitoring wells and the unsaturated zone monitoring point that are in the 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 monitoring frequencies.

The groundwater COCs including Total Organic Carbon, Inorganics (dissolved) and Semi-Volatile Organic Compounds shall be analyzed annually during the first half of each year in accordance with the methods and frequencies listed in Table 1 of this MRP. The remaining COCs listed

in Table 1 shall be analyzed every five years beginning in the first half of 2014.

The Discharger shall submit Semiannual Progress Reports assessing the effectiveness of the corrective action program, in accordance with Title 27, section 20430(h). Beginning in 2014 and continuing until final closure construction is completed, the Semiannual Progress Reports shall describe progress with installing the passive landfill gas collection and venting system and the phased construction of the foundation layer and other components of the final cover system. Include a map showing the areas where construction of the passive landfill gas collection and venting system and final cover system occurred during the corresponding reporting period. Once final closure construction is completed, the Semiannual Progress Reports shall evaluate groundwater and unsaturated zone sample results for increasing or decreasing concentration trends and also describe the condition of the final cover system, passive landfill gas collection and venting system, and corrective action program monitoring devices around the landfill. Semiannual Progress Reports shall be included with the corresponding Semiannual Monitoring Reports required in section B.1 of this MRP, 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	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	Financial Assurances Report	31 December	1 June

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 No. R5-201X-XXX 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 so that compliance with the WDRs, or lack thereof, is clearly illustrated. 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 all data used to complete the application for this Order. Records shall be maintained throughout the life of the facility including the post-closure maintenance period. Such records shall be legible and shall show the following for each sample:

- a) Sample identification and the 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 method detection limit (MDL) and practical quantitation limit (PQL) for each analysis. All peaks shall be reported.

Required Reports

1. **Semiannual Monitoring Report:** Monitoring reports shall be submitted semiannually and are due by **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 the Unit, observation stations, monitoring points, all appurtenant structures and roads, and the areas where construction of the passive landfill gas collection and venting system and final cover system occurred during the corresponding reporting period.
 - c) The estimated quarterly magnitude and direction of the groundwater gradient in the uppermost continuously saturated aquifer, and if possible, in any zones of perched water and 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 from each monitoring point for all monitoring parameters and constituents of concern for groundwater, the unsaturated zone, and leachate seeps (if any). Units shall be as required in Tables I through III 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 sample results for all analyses evaluating compliance with these requirements.
 - f) An evaluation of the concentration of each monitoring parameter (or 5-year COC when 5-year COC sampling is conducted) as compared to the current concentration limits in the Water Quality Protection Standard, 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.

- g) A summary of all Standard Observations for the reporting period required in Section A.4.d of this MRP.
 - h) A summary of inspections, leak searches, and repairs of the final cover on any closed landfill Unit in accordance with the approved final post-closure maintenance plan and as required by Standard Closure and Post-Closure Maintenance Specifications G.26 through G.29 of the SPRRs.
 - i) The Semiannual Progress Reports required for a corrective action program pursuant to Monitoring Specification G.7 of WDR Order No. R5-2014-XXXX and Title 27, section 20430(h).
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 Monitoring 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) Results of all monitoring parameters shall be graphed to show historical trends at each monitoring point and background monitoring point for all samples taken. 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 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 map 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 year in which each discrete landfill module will be filled.
 - g) A written summary of the monitoring results, indicating any changes made or observed since the previous Annual Monitoring Report.
 - h) Updated concentration limits for each monitoring parameter and constituent of concern at each monitoring well based on the new data set.
 - i) A comprehensive discussion of any Corrective Action Program required by this MRP under Section A.5.
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, monitoring parameters, and constituents of concern 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 a corresponding time schedule for completing the corrective action.
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.4.a of this MRP, above.
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. For facility monitoring purposes, a major storm event shall be defined as a five-year 24-hour storm event, resulting in

2.5 inches or more of rain within a 24-hour period. Refer to Section A.4.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 after completing the Initial Survey and Map pursuant to Title 27, section 21090(e). Refer to Section A.4.c of this MRP, above.
7. **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 Assurance Specifications F.1 through F.5 of the WDRs.

C. WATER QUALITY PROTECTION STANDARD AND COMPLIANCE PERIOD

1. Water Quality Protection Standard Report

For each waste management unit, the Water Quality Protection Standard (WQPS) shall consist of all monitoring parameters and 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.

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 zones of groundwater monitored at the site** that could be affected in the event of a release from 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 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).

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 Discharger proposed methods for calculating concentration limits in the 25 February 2009 *Water Quality Protection Standard Report*. However, the WQPS concentration limits have not been updated since 2009, so General Monitoring Specification G.4 of WDR Order No. R5-2014-XXXX requires the Discharger to provide an updated WQPS report with updated concentration limits and monitoring points **by 15 January 2015**.

The WQPS concentration limits shall be updated annually in the Annual Monitoring Report 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 III 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, or more frequently as required in a Corrective Action Program. The COCs for the Unit are those listed in Tables I, III, and IV for the specified monitored medium. The 5-year COCs are due to be monitored during first half 2014 and again every five years thereafter.

4. Concentration Limits

For a naturally occurring constituent of concern, the concentration limit 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 concentration limits included in the February 2009 *Water Quality Protection Standard Report* have not been updated. This Order requires the Discharger to provide an updated WQPS report **by 15 January 2015** that includes updated concentration limits and water quality monitoring points.

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 procedures as required in Standard Monitoring Specification I.47 of the SPRRs.

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. All groundwater monitoring wells at Glenn County Landfill, except for wells M-6 and M-12 are considered point of compliance monitoring wells for the corrective action program.

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, at which monitoring is conducted and 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 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 in accordance with General Provision K.2 of the SPRRs.

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

Ordered by: _____
PAMELA C. CREEDON, Executive Officer

(Date)

DPS

TABLE I
GROUNDWATER CORRECTIVE ACTION 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.	Quarterly	Semiannual
Temperature	°F	Semiannual	Semiannual
Electrical Conductivity	umhos/cm	Semiannual	Semiannual
pH	pH units	Semiannual	Semiannual
Turbidity	Turbidity units	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, extended list, see Table IV)	ug/L ²	Semiannual	Semiannual
Constituents of Concern (see Table IV)			
Total Organic Carbon	mg/L	Annually ³	Annually
Inorganics (dissolved)	ug/L	Annually ³	Annually
Semi-Volatile Organic Compounds (USEPA Method 8270D)	ug/L	Annually ³	Annually
Chlorophenoxy Herbicides (USEPA Method 8151A)	ug/L	5 years ⁴	1 August 2014 & every 5 years thereafter
Organophosphorus Compounds (USEPA Method 8141B)	ug/L	5 years ⁴	1 August 2014 & every 5 years Thereafter

¹ Milligrams per liter (Parts Per Million – PPM).

² Micrograms per liter (Parts Per Billion – PPB).

³ Annual samples shall be collected during the first half of each year at the time of highest anticipated groundwater elevation.

⁴ 5-year Constituent of Concern sampling shall occur during the first half of each year, beginning in 2014.

TABLE II
UNSATURATED ZONE CORRECTIVE ACTION MONITORING PROGRAM

SUCTION LYSIMETERS SL-1

<u>Parameter</u>	<u>Units</u>	<u>Sampling Frequency</u>	<u>Reporting Frequency</u>
Field Parameters			
Electrical Conductivity	umhos/cm	Semiannual	Semiannual
pH	pH units	Semiannual	Semiannual
Volume of liquid removed	gallons	Semiannual	Semiannual
Monitoring Parameters			
Volatile Organic Compounds (VOCs) ¹ (USEPA Method 8260B, extended list, see Table IV)	ug/L	Semiannual	Semiannual
Total Dissolved Solids (TDS)	mg/L	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

¹ Due to low yields, prioritize analyses of soil pore liquid samples for VOCs first, then the Field Parameters, and then the remaining Monitoring Parameters.

TABLE III
LEACHATE SEEP MONITORING¹

<u>Parameter</u>	<u>Units</u>	<u>Sampling Frequency</u>
Field Parameters		
Total Flow	Gallons	Upon Detection
Flow Rate	Gallons/Day	Upon Detection
Electrical Conductivity	umhos/cm	Upon Detection
pH	pH units	Upon Detection
Monitoring Parameters		
Total Dissolved Solids (TDS)	mg/L	Upon Detection
Chloride	mg/L	Upon Detection
Carbonate	mg/L	Upon Detection
Bicarbonate	mg/L	Upon Detection
Nitrate - Nitrogen	mg/L	Upon Detection
Sulfate	mg/L	Upon Detection
Calcium	mg/L	Upon Detection
Magnesium	mg/L	Upon Detection
Potassium	mg/L	Upon Detection
Sodium	mg/L	Upon Detection
Constituents of Concern (see Table IV)		
Total Organic Carbon	mg/L	Upon Detection
Inorganics (dissolved)	ug/L	Upon Detection
Volatile Organic Compounds (USEPA Method 8260B, extended list)	ug/L	Upon Detection
Semi-Volatile Organic Compounds (USEPA Method 8270D)	ug/L	Upon Detection
Chlorophenoxy Herbicides (USEPA Method 8151A)	ug/L	Upon Detection
Organophosphorus Compounds (USEPA Method 8141B)	ug/L	Upon Detection

¹ Leachate seeps shall be sampled and analyzed for the Field Parameters, Monitoring Parameters, and Constituents of Concern listed in this table upon detection. The quantity of leachate shall be estimated and reported in gallons/day. Also, refer to Section B.3 of this MRP.

TABLE IV

CONSTITUENTS OF CONCERN (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 IV

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 IV

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 8270D - 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)

TABLE IV

COCs & APPROVED USEPA ANALYTICAL METHODS

Continued

4,4'-DDD
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-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

TABLE IV

COCs & APPROVED USEPA ANALYTICAL METHODS

Continued

Methyl methanesulfonate
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

TABLE IV
COCs & APPROVED USEPA ANALYTICAL METHODS

Continued

Chlorophenoxy Herbicides:

USEPA Method 8151A

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 8141B

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