

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM R5-2018-XXXX  
FOR  
CITY OF AUBURN  
RECOLOGY AUBURN PLACER  
AUBURN LANDFILL  
CLOSED CLASS III LANDFILLS  
POST-CLOSURE MAINTENANCE, EVALUATION MONITORING,  
AND CORRECTION ACTION  
PLACER COUNTY

This monitoring and reporting program (MRP) is issued pursuant to California Water Code section 13267 and incorporates requirements for groundwater, surface water, and unsaturated zone monitoring and reporting; facility monitoring, maintenance, and reporting contained in California Code of Regulations, Title 27, section 20005, et seq. (hereafter Title 27); Waste Discharge Requirements (WDRs) Order R5-2018-XXXX and *Standard Provisions and Reporting Requirements for Waste Discharge Requirements for Industrial Facilities Regulated by Title 27*, dated April 2016 (Industrial 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 monitor closed landfill units LF-1 and LF-2 in accordance with the detection and corrective action monitoring program provisions of Title 27 for groundwater, surface water, and the unsaturated zone. Monitoring shall also be in accordance with the Monitoring Specifications in Section G of the WDRs and the Standard Monitoring Specifications in Section I of the Industrial SPRRs. All monitoring shall be conducted in accordance with the most current approved Sample Collection and Analysis Plan, including quality assurance/quality control standards. The Discharger may use alternative analytical test methods, including new USEPA approved methods, provided the methods have method detection limits equal to or lower than the analytical methods specified in this Monitoring and Reporting Program, and are identified in the approved Sample Collection and Analysis Plan.

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

As described in WDR Finding 37, groundwater beneath the site is currently believed to flow to the southwest, with the possible exception of the northwest portion of the site, where groundwater may flow to the northwest consistent with northwest-sloping topography in that area. This MRP assigns monitoring points to background, detection, and corrective action monitoring programs based on an assumption that groundwater

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flows to the southwest beneath the entire site; however, it is acknowledged that these designations may change over time as warranted by monitoring data new or existing wells and/or if the direction of groundwater flow beneath the site significantly changes.

The monitoring program of this MRP includes:

| <u>Section</u> | <u>Monitoring Program</u>    | <u>Reference Map</u> <sup>1</sup> |
|----------------|------------------------------|-----------------------------------|
| A.1            | Groundwater Monitoring       | WDR Attachment C                  |
| A.2            | Unsaturated Zone Monitoring  | WDR Attachment D                  |
| A.3            | Leachate Monitoring          | WDR Attachment D                  |
| A.4            | Surface Water Monitoring     | WDR Attachments B & C             |
| A.5            | Landfill Facility Monitoring | n/a                               |

1. See reference map for monitoring locations.

### 1. Groundwater Monitoring

The Discharger shall operate and maintain groundwater detection and corrective action monitoring systems that comply with the applicable provisions of Title 27, Subchapter 3 “Water Monitoring”. These groundwater monitoring systems shall be certified by a California-licensed professional civil engineer or geologist as meeting the requirements of Title 27. The current groundwater monitoring systems at the site **do not meet** the applicable requirements of Title 27 (see WDR Finding 40). WDR Provision I.7 therefore provides a schedule and list of tasks necessary for the installation of a Title 27-compliant groundwater monitoring system at the site.

Groundwater monitoring shall be conducted consistent with this MRP and the revised Water Quality Protection Standard (WQPS) Report. Background and downgradient wells for interwell monitoring, including contiguously monitored units/fill areas, shall be identified by tracing the shallow groundwater gradient flow streams (i.e., flow lines perpendicular to the gradient contours) through each unit/fill area, as applicable. Detection monitoring for naturally occurring inorganic constituents at the site shall be conducted using an interwell monitoring approach, unless otherwise approved in the WQPS Report.

Historical releases at the site have consisted primarily of volatile organic compounds (VOCs) and inorganic constituents from landfill LF-1. This MRP therefore places LF-1 in corrective action monitoring and LF-2 in detection monitoring.

The Discharger shall revise the groundwater monitoring system (after review and approval by Central Valley Water Board staff) as needed, upon the installation of the additional wells required under the WDRs.

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a. Monitoring Points (see WDR Attachment C: Site Map)

i. LF-1

| Fill Area | Program                       | Well                        | Relative Location |                |
|-----------|-------------------------------|-----------------------------|-------------------|----------------|
|           |                               |                             | GW Flow           | Unit/Fill Area |
| NFA       | Detection & Corrective Action | E-12                        | Sidegradient      | NW of NFA      |
|           |                               | --- <sup>2</sup>            |                   | West of NFA    |
| SFA       | Background                    | --- <sup>2</sup>            | Downgradient      | SW of NFA      |
|           | Detection & Corrective Action | D, LFW-2, E, R-1, R-2 & R-3 |                   | Downgradient   |
|           |                               |                             |                   |                |
| NFA & SFA | Background                    | A <sup>1</sup>              | Upgradient        | NE of NFA      |
|           | Detection & Corrective Action | --- <sup>1,2</sup>          | Downgradient      | South of SFA   |

1. Contiguous monitoring point for both fill areas.
2. Future well(s) to be installed per WDR Provision I.7.b.

ii. LF-2

| Fill Area         | Program                       | Well               | Relative Location         |                              |
|-------------------|-------------------------------|--------------------|---------------------------|------------------------------|
|                   |                               |                    | GW Flow                   | Unit/Fill Area               |
| Trenches<br>1 - 5 | Background <sup>1</sup>       | E-12 <sup>1</sup>  | Upgradient                | NW of NFA                    |
|                   |                               | --- <sup>1,2</sup> |                           | West of NFA                  |
|                   | Detection & Corrective Action | 1 & E-4            | Sidegradient <sup>1</sup> | SE of LF-2<br>(SW of NFA)    |
|                   |                               |                    |                           | West of LF-2                 |
|                   | Detection <sup>1</sup>        | C                  | Downgradient <sup>1</sup> | SW of LF-2<br>(north of SFA) |
|                   | --- <sup>1,2</sup>            |                    |                           |                              |

1. Interwell monitoring assignments assume groundwater flow to the southwest.
2. Future well(s) to be installed per WDR Provision I.7.b.

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The groundwater monitoring network shall also include any future or replacement wells installed under these WDRs, but not listed in the above table. Where the proximity of units, physical constraints, or other related factors render installation of a monitoring well infeasible, the Discharger may propose a contiguous and/or engineered alternative monitoring system for the unit(s). See WDR Monitoring Specification G.10.

b. **Monitoring Schedule**

Groundwater samples shall be collected from the background wells, detection monitoring wells, corrective action monitoring wells (if any), 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. 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 piezometric groundwater elevation in each well and piezometer, determine groundwater flow direction, and estimate groundwater flow rates in the uppermost aquifer and in any additional zones being monitored. Groundwater elevation monitoring shall be conducted in existing wells and any future wells added as part of the approved groundwater monitoring system. 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). Additional and/or more frequent monitoring and reporting may be required under the Evaluation Monitoring Program required under WDR Section H (Evaluation and Corrective Action Monitoring Specifications).

Samples collected for the COC monitoring specified in Table I shall be collected and analyzed in accordance with the methods listed in Table VI every five years. Five-year COCs were last monitored in **September 2015** and shall be monitored again in **September 2020**. The five-year COC results shall be reported in the Annual Monitoring Report for the year in which the samples were collected.

Background, detection, and corrective action monitoring data analysis shall be conducted consistent with the statistical and non-statistical data analysis methods described in Section C.1.e, as updated in the WQPS Report submitted under WDR Provision I.7, as approved by the Executive Officer.

**2. Unsaturated Zone Monitoring**

The Discharger shall operate and maintain an unsaturated zone detection and corrective action monitoring system that complies with the applicable provisions of Title 27, sections 20415 and 20420. Unsaturated zone monitoring at the facility may be limited to soil pore gas monitoring given that all of the units at the site are unlined and that it is not technically feasible to retrofit them with lysimeters.

a. **Monitoring Points (See Attachment D: Facility Map)**

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There are currently 11 soil gas monitoring wells at the site, each with single, double or triple tiered probes, as identified below.

| Screen                    | Soil Gas Probes    |                      |   |
|---------------------------|--------------------|----------------------|---|
|                           | <u>Single Tier</u> | <u>Double Tier</u>   | <u>Triple Tier</u>                      |
| Shallow <sup>1</sup>      | P-4A & P-6         | P-1AS, P-3AS & P-7AS | P-8S, P-9S, P-10S, P-11S, P-12S & P-13S |
| Intermediate <sup>2</sup> | ---                | P-1AI, P-3AI & P-7AI | P-8I, P-9I, P-10I, P-11I, P-12I & P-13I |
| Deep <sup>3</sup>         | ---                | ---                  | P-8D, P-9D, P-10D, P-11D, P-12D & P-13D |

1. Shallow probes all 10 feet deep.
2. Intermediate probes range from 20 to 30 feet deep.
3. Deep probes range from 35 to 45 feet deep.

Soil pore gas monitoring shall also include any future or replacement soil gas wells/probes installed at the site.

b. **Monitoring Schedule**

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. The Discharger shall collect, preserve, and transport samples in accordance with the quality assurance/quality control 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 facility on the unsaturated zone and compliance with the Water Quality Protection Standard.

c. **Confirmation of a Gas Release**

In the event that LFG is detected at levels triggering VOC testing (i.e., methane at or above 1% by volume and/or total organic vapors at or above 50 ppmv, the Discharger shall, within 24-hours, notify Central Valley Water Board staff by telephone or email. Retest sampling in accordance with the approved Sample Collection and Analysis Plan shall be conducted thereafter, as necessary, to confirm a release. Confirmation of a gas release (i.e., LFG) to the unsaturated zone may constitute physically significant evidence of a release under the Landfill SPRRs. Upon confirmation of a gas release, the Discharger shall implement appropriate short term and long term corrective action measures consistent with the Response to Release requirements of the applicable SPRRs and/or as otherwise directed by the Central Valley Water Board.

**3. Leachate Monitoring**

As noted in WDR Finding 6, both LF-1 and LF-2 are unlined and pre-date Title 27/Chapter 15 regulations. Leachate collection facilities at the site are therefore

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currently limited to the non-Title 27 compliant French drain system installed beneath, and along the exterior perimeter of, the NFA and SFA; and a concrete-lined leachate collection sump plumbed to the French drain system located at the southwestern toe of the SFA. The NFA was not constructed with its own sump. This MRP requires that the existing and any future leachate collection sumps installed at the site (e.g., a toe sump for the NFA) be monitored.<sup>1</sup> in addition to any leachate seepage from the landfill cover.

a. Monitoring Points (see WDR Attachment C: Site Map)

The Discharger shall operate and maintain the leachate collection sump at the southwestern toe of LF-1 and any future leachate sump(s) installed at the site. The current leachate collection sump monitoring points are:

| Unit | Fill Area        | Monitoring Point  |
|------|------------------|-------------------|
| LF-1 | NFA <sup>1</sup> | LS-1 <sup>2</sup> |
|      | SFA <sup>1</sup> |                   |
| LF-2 | ---              | n/a <sup>3</sup>  |

1. Both fill areas unlined with dendritic leachate collection system not meeting Title 27 standards.
2. Both fill areas currently plumbed to single sump at toe of SFA.
3. Unit not constructed with liner or leachate collection system.

All (i.e., existing and future) leachate collection sumps for the landfill shall be inspected monthly for the presence of leachate, and flow shall be recorded in accordance with Table III below. Leachate in the leachate collection sump, including any commingled condensate returned to that sump, shall then be sampled for all parameters and constituents in accordance with the frequencies listed in Table III whenever liquid is present. All leachate collection sump samples shall be analyzed for the 5-year COCs specified in Table III every five years, beginning again in 2019.

b. Seep Monitoring

The Discharger shall visually monitor all areas of each closed landfill and fill area (e.g., cover decks, side slopes, and toe) for leachate seeps in the regular course of site/postclosure activities and as part of Facility Monitoring under Section A.5. Any observed leachate seepage from a closed landfill unit shall be sampled upon detection and analyzed for the field parameters and applicable monitoring parameters and COCs listed in Table III. The quantity of leachate shall be estimated and reported as Leachate Flow Rate (in gallons per day). Reporting for leachate seeps shall be conducted as required in Section B.3 of this MRP.

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1. A separate leachate collection sump may be needed for the NFA to prevent NFA leachate from commingling with groundwater if it is determined that groundwater is entering the perimeter leachate drain at the SFA.

**4. Surface Water Monitoring**

The Discharger shall install and operate a surface water detection monitoring system to detect a release from the landfill to surface water and any resulting impacts to surface water if such a release occurs. The monitoring system shall comply with the applicable provisions of Title 27, sections 20415 and 20420.

a. Monitoring Points

Surface water monitoring at the Auburn Landfill shall be conducted in the ditch along Shale Ridge Road and the ephemeral drain to Rock Creek. See Attachments B & C.

| Table A.4.a<br>Surface Water Monitoring Points |               |  |   |
|--|---------------|--|---|
| <u>Monitoring Point</u>                        | <u>Status</u> | <u>Location</u>                          | <u>Surface Water</u>                        |
| SW-1   | Background    | Upstream, eastern site perimeter         | Drainage ditch along Shale Ridge Road       |
| SW-2   | Detection     | Downstream, Western site perimeter       | Drainage ditch along Shale Ridge Road       |
| SW-3   | Detection     | Lowest ground surface near site entrance | Seasonal high groundwater reaching surface  |
| SW-4   | Detection     | Ephemeral drain to Rock Creek            | Surface/groundwater discharge to Rock Creek |

b. Monitoring Schedule

Surface water samples (excluding Storm Water samples collected under the General Industrial Storm Water Permit per A.4.c below) shall be collected at each monitoring point location and analyzed for the monitoring parameters and constituents in accordance with the methods and frequency specified in Table IV. All surface water monitoring samples shall be collected and analyzed for the 5-year COCs specified in Table IV every five years, beginning again in **April 2018**.

c. General Storm Water Permit -- Storm water monitoring shall also be conducted in accordance with the NPDES Industrial Storm Water General Permit (NPDES NO. CAS000001, Order 2014-0057-DWQ).

The above monitoring system meets Title 27 requirements for surface/storm water monitoring.

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## 5. Landfill Facility Monitoring

### a. Annual Facility Inspection

Annually, prior to the anticipated rainy season, but no later than **15 September** of each year, the Discharger shall conduct an inspection of all classified units at the landfill facility (i.e., LF-1 and LF-2). The inspection shall assess repair and maintenance needed for drainage control systems, cover systems, leachate collection piping and sump(s), and monitoring systems; and shall assess preparedness for winter conditions (including but not limited to erosion and sedimentation control). The Discharger shall take photos of any problem areas before and after repairs. Any necessary construction, maintenance, or repairs shall be completed by **31 October** of each year. 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 major storm events (i.e. one which produces 2.5 inches or more of precipitation within a 24-hour period, as measured at DWR's Auburn Station) capable of causing damage or significant erosion. The Discharger shall take photos of any problem areas before and after repairs. Necessary repairs shall be completed **within 30 days** of the inspection. Notification and reporting requirements for major storm events shall be conducted as required in Section B.5 of this MRP.

### c. Five-Year Topographic Surveys

Title 27 requires that the Discharger conduct an initial final cover topographic survey upon completion of landfill closure or partial closure and at least every five years thereafter. The purpose of the survey is to track differential settlement of the landfill's low hydraulic conductivity (LHC) layer of the cover. The Discharger is also required to produce an iso-settlement map accurately depicting the estimated total change in elevation of each portion of the final cover's LHC (or engineered alternative cover, as applicable).

The most recent aerial topographic survey of the site was conducted in February 2013. The next topographic survey of the site, including all closed landfill units shall be completed by **April 2018** (if not already completed by this day under previous WDRs) and subsequent topographic surveys of the site shall be completed at least **every five years** thereafter.

Reporting of the above shall be in accordance with Section B.6 of this MRP.

### d. Standard Observations

The Discharger shall conduct Standard Observations at all classified units at the site (i.e., LF-1 and LF-2) in accordance with this section of the MRP. Standard observations shall be conducted monthly during the wet season (1 October to 30 April) and quarterly during the dry season (1 May to 30 September).

The Standard Observations shall include:

- i. For the units:
  - (1) Evidence of ponded water at any point on the unit outside of any contact storm water/leachate diversions structures on the active face (show affected area on map); and
  - (2) Evidence of erosion and/or of day-lighted refuse.
- ii. Along the perimeter of the units:
  - (1) Evidence of leachate seeps, estimated size of affected area, and flow rate (show affected area on map); and
  - (2) Evidence of erosion and/or of day-lighted refuse.
- iii. For receiving waters:
  - (1) Floating and suspended materials of waste origin - presence or absence, source, and size of affected area; and
  - (2) Discoloration and turbidity - description of color, source, and size of affected area.

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

Landfill Facility Monitoring shall also include leachate seep monitoring during the regular course of site/postclosure activities under Section A.3.

## B. REPORTING

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

| <b>Reporting Schedule</b> |                                   |                                |   |
|---------------------------|-----------------------------------|--------------------------------|---|
| <u>Section</u>            | <u>Report</u>                     | <u>End of Reporting Period</u> | <u>Due Date</u>                                     |
| 1                         | Semiannual Monitoring Report      | 30 June & 31 December          | <b>1 August, 1 February</b>                         |
| 2                         | Annual Monitoring Report          | 31 December                    | <b>1 February</b>                                   |
| 3                         | Seep Reporting                    | Continuous                     | <b>Immediately &amp; Within 7 Days</b>              |
| 4                         | Annual Facility Inspection Report | 31 October                     | <b>15 November</b>                                  |
| 5                         | Major Storm Event Reporting       | Continuous                     | <b>Immediately &amp; 14 days from damage repair</b> |

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| <b>Reporting Schedule</b> |  |                                |   |
|---------------------------|--|--------------------------------|---|
| <u>Section</u>            | <u>Report</u>  | <u>End of Reporting Period</u> | <u>Due Date</u>   |
| 6                         | Topographic Survey and Iso-Settlement Map for Closed Landfills | Every 5 Years                  | <b>15 May 2018 &amp; Every 5 years thereafter (All units)</b> |

The Discharger shall enter all monitoring data and reports into the online Geotracker database as required by Division 3 of Title 27 and Chapter 30, Division 3 of Title 23. Notification of the Geotracker upload shall be emailed to the Central Valley Water Board at: [centralvalleysacramento@waterboards.ca.gov](mailto:centralvalleysacramento@waterboards.ca.gov). To ensure that the submittal is routed to the appropriate staff as quickly as possible, the following information shall be included in the body of the email:

|                      |   |
|----------------------|---|
| Attention:           | Title 27 Compliance & Enforcement Unit, or Title 27 Permitting Unit |
| Report Title         |   |
| Geotracker Upload ID |   |
| Discharger name:     | City of Auburn and Recology Auburn Placer                           |
| Facility name:       | Auburn Landfill   |
| County:              | Placer  |
| CIWQS place ID:      | 206725  |

### Reporting Requirements

The Discharger shall submit the monitoring reports required under this Order as pdf uploaded to Geotracker, as described above. Each monitoring report shall include the data and information as required in this Monitoring and Reporting Program and as required in WDRs Order R5-2018-XXXX and the Standard Provisions and Reporting Requirements (particularly Section I: "Standard Monitoring Specifications" and Section J: "Response to a Release"). In reporting the monitoring data required by this program, the Discharger shall arrange the data in tabular form so that the date, the constituents, the concentrations, and the units are readily discernible. The data shall be summarized in such a manner so as to illustrate clearly the compliance with waste discharge requirements or the lack thereof.

Field and laboratory sheets 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.

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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 PQL for each analysis. All peaks shall be reported.
- g. Well purge data sheets.

### Required Reports

#### 1. Semiannual Monitoring Report

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

- a. For each groundwater monitoring point addressed by the report, a description of:
  - i. The time of water level measurement;
  - ii. The type of pump - or other device - used for purging and the elevation of the pump intake relative to the elevation of the screened interval;
  - iii. The method of purging used to stabilize water in the well bore before the sample is taken including the pumping rate; the equipment and methods used to monitor field pH, temperature, and conductivity during purging; results of pH, temperature, conductivity, and turbidity testing; and the method of disposing of the purge water;
  - iv. The type of pump - or other device - used for sampling, if different than the pump or device used for purging; and
  - v. A statement that the sampling procedure was conducted in accordance with the approved Sample Collection and Analysis Plan.
- b. A map or aerial photograph showing the locations of observation stations, monitoring points, and background monitoring points.
- c. Groundwater elevation contour and flow stream maps showing groundwater elevations and the directions of groundwater flow in the uppermost aquifer and in any additional zones of saturation based upon quarterly groundwater elevation monitoring prior to sampling. Corresponding estimates of groundwater gradients

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and flow velocity shall also be provided.

- d. Cumulative tabulated monitoring data for all monitoring points and constituents for groundwater, unsaturated zone, leachate, and surface water. 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 through IV unless specific justification is given to report in other units. Refer to the SPRRs Section I “Standard Monitoring Specifications” for requirements regarding MDLs and PQLs.
- e. Laboratory statements of results of all analyses evaluating compliance with requirements.
- f. An evaluation of the concentration of each monitoring parameter (or 5-year COC when 5-year COC sampling is conducted) as compared to the current concentration limits, and the results of any required verification testing for constituents exceeding a concentration limit. Report any actions taken under SPRRs Section J: Response to a Release for verified exceedances of a concentration limit for wells/constituents not already in corrective action monitoring.
- g. An evaluation of the effectiveness of the leachate monitoring and control facilities, and of the run-off/run-on control facilities.
- h. A summary of all Standard Observations for the reporting period required in Section **A.5.d** of this MRP.
- i. A summary of inspection, leak search, repair or improvement of final covers on any closed landfill units in accordance with the most recently approved PCMP or updated PCMP. See WDR Postclosure Specification E.7 and Standard Closure and Post-Closure Maintenance Specifications G.8, G.11 and G.12 of the Industrial SPRRs.

## 2. Annual Monitoring Report

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

- a. All monitoring parameters shall be graphed to show historical trends at each monitoring point and background monitoring point, for all samples taken within at least the previous 10 calendar years. If a 5-year COC event was performed, than these parameters shall also be graphically presented for the entire history of COC monitoring. Each such graph shall plot the concentration of one or more constituents for the period of record for a given monitoring point or background

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monitoring point, at a scale appropriate to show trends or variations in water quality. Constituent monitoring data of incompatible scales/ranges shall not be plotted on the same graph. 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 per Geotracker. The Central Valley Water Board regards the submittal of data 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. Updated concentration limits for each monitoring parameter at each monitoring well based on the new data set.
- h. A summary of any new wells installed or abandoned at the site during the previous year in accordance with WDR Provision I.9.

### 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 A.3 of this MRP, and an estimated date that the results will be submitted to the Central Valley Water Board; and

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

#### 4. Annual Facility Inspection Reporting

By **15 November** of each year, the Discharger shall submit an Annual Facility Inspection Report describing measures implemented based on the Annual Facility Inspection, including inspections and repairs, preparations for winter, and photographs of any problem areas and the repairs. See Section A.5.a.

#### 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. See Section A.5.b.

#### 6. 5-Year Topographic Survey(s)

By **15 May 2018**, the Discharger shall submit the report for the **April 2018** topographic survey conducted under this Order (or previous WDRs) for the closed landfill units at the site. Subsequent topographic reports for the site shall be submitted at least **every five years** thereafter. Each report shall include topographic survey and a base-line iso-settlement map for the closed unit. See MRP Section A.5.c.

### C. WATER QUALITY PROTECTION STANDARD

The Water Quality Protection Standard for the landfill unit shall consist of all Constituents of Concern (COCs), Concentration Limits, the Point of Compliance, and all Monitoring Points consistent with this Order and Title 27, Section 20390.

#### 1. Water Quality Protection Standard Report

By **31 January 2020**, the Discharger shall submit a revised Water Quality Protection Standard (WQPS) Report proposing a WQPS for each classified unit at the site consistent with the Findings and Requirements of this Order. At a minimum, the report shall include the following information:

- a. Identify **all distinct bodies of surface and ground water** that could be affected in the event of a release from a waste management unit or portion of a unit. This list shall include at least the uppermost aquifer, unsaturated zone, and any permanent or ephemeral zones of perched groundwater underlying the facility.
- b. Evaluate the perennial direction(s) of groundwater movement within the uppermost groundwater zone(s).
- c. A map showing the monitoring points and background monitoring points for groundwater, the unsaturated zone, and surface water for each unit and/or fill area. The map shall show the point of compliance for each unit in accordance with Title 27, section 20405.
- d. Listings/tables showing all elements of the WQPS for each unit and water bearing

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media, including, but not limited to, concentration limits for all monitoring parameters and 5-year COCs. See Standard Monitoring Specification I.25, SPRR.

- e. Proposed data analysis methods for calculating concentration limits for monitoring parameters and constituents of concern detected in 10% or greater of the background data (e.g., naturally-occurring constituents) per Title 27, section 20415(e)(8)(A-D)] or section 20415(e)(8)(E). See WDR Findings 41 and 44.
- f. 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).

Once approved, the concentration limits of the WQPS shall be annually updated to reflect current background monitoring data using the approved data analysis methods. Any subsequent proposed changes to the WQPS, other than annual update of the concentration limits shall be submitted in the form of a revised WQPS report for review and approval by the Executive Officer. The WQPS shall be certified by a California-registered civil engineer or geologist as meeting the requirements of Title 27.

## 2. Monitoring Parameters

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

## 3. Constituents of Concern (COCs)

The COCs include a larger group of waste constituents, their reaction products, and hazardous constituents that are reasonably expected to be in or derived from waste contained in the waste management unit, and are required to be monitored every five years [Title 27, sections 20395 and 20420(g)]. The COCs for all waste management units at the facility are those listed in Tables I through IV for the specified monitored medium, and Table VI. The Discharger shall monitor all COCs every five years, or more frequently as required in accordance with a Corrective Action Program. The last 5-year COC report was submitted to the Central Valley Water Board in the **2015 Second Semiannual, Annual, and Five-Year COC Monitoring Report**, and 5-year COCs are due to be monitored again in **September 2020**.

## 4. Concentration Limits

As noted in the WDR Findings, additional monitoring wells need to be installed at the site to confirm the direction of groundwater flow and/or to comply with Title 27 performance standards for background, detection, and/or corrective action monitoring at each unit. The Discharger therefore does not yet have an approved set of concentration limits for naturally occurring constituents in groundwater for each unit. The WQPS for the site will therefore need to be revised once the required wells have been installed and monitored for monitoring parameters and 5-year COCs. Proposed concentration limits for all water bearing media (e.g., surface water and groundwater) shall therefore be included in the revised WQPS Report required under the WDR Provisions.

For a naturally occurring constituent of concern, the concentration limit for each constituent of concern shall be determined by calculation in accordance with a statistical method pursuant to Title 27, section 20415(e)(8); or by an alternate statistical method meeting the requirements of Title 27, section 20415(e)(8)(E).

a. Detection Monitoring

- i. Non-naturally occurring COCs - The concentration limits for non-naturally-occurring constituents of concern, including organic compounds (e.g., VOCs and dissolved metals not detectable in background), shall be the laboratory detection limit.
- ii. Naturally Occurring COCs - The concentration limits for naturally-occurring COCs (e.g., general minerals and dissolved metals detectable in background) shall be determined by statistical analysis of upgradient monitoring data. The data analysis method for calculating concentration limits for naturally-occurring COCs under this Order shall be the interwell/intrawell Tolerance Limit Method, or as otherwise proposed in the revised WQPS Report and approved by Board staff. Concentration limits for naturally occurring COCs shall be updated annually and included in the Annual Monitoring Report submitted under Section g of this MRP.

b. Corrective Action Monitoring

The concentration limits for corrective action monitoring shall be the same as those for detection monitoring absent approval of a proposal for concentration limits greater than background (CLGBs) under Title 27 Section 20400(c) and revision of the WDRs. Time series plots and/or an intrawell statistical procedure (e.g., Mann-Kendall test) shall be used for trend analysis to monitor corrective action progress.

**5. 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. The Point of Compliance wells for LF-2 shall include wells R-2, D, LFW-2, E and any future well(s) installed along the downgradient or sidegradient perimeter of LF-1. The Point of Compliance wells for LF-2 are not yet known because the groundwater gradient direction has not yet been confirmed. The WQPS Report required under the WDR provisions is required to specify the Point of Compliance well for each unit.

**6. 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].

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**7. Monitoring Points**

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

**D. TRANSMITTAL LETTER FOR ALL REPORTS**

A transmittal letter explaining the essential points shall accompany each report. At a minimum, the transmittal letter shall identify any violations found since the last report was submitted, and if the violations were corrected. If no violations have occurred since the last submittal, this shall be stated in the transmittal letter. The transmittal letter shall also state that a discussion of any violations found since the last report was submitted, and a description of the actions taken or planned for correcting those violations, including any references to previously submitted time schedules, is contained in the accompanying report. The transmittal letter shall contain a statement by the discharger, 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 Order.

Ordered by: \_\_\_\_\_  
PAMELA C. CREEDON, Executive Officer

\_\_\_\_\_  
(Date)

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**TABLE I  
 GROUNDWATER DETECTION AND  
 CORRECTIVE ACTION MONITORING PROGRAM**

| <u>Parameter</u>  | <u>Geotracker Code</u> | <u>Units</u>        | <u>Sampling Frequency</u>                          | <u>Reporting Frequency</u>                       |
|---|------------------------|---------------------|--|--|
| <b>Field Parameters</b>   |                        |                     |  |  |
| Groundwater Elevation   | GWELEV                 | Ft. & 10ths, M.S.L. | Quarterly  | Semiannual                                       |
| Groundwater Separation  |                        | Ft. & 10ths, M.S.L. | Quarterly  | Semiannual                                       |
| Temperature   | TEMP                   | °F                  | Semiannual   | Semiannual                                       |
| Electrical Conductivity   | SC                     | umhos/cm            | Semiannual   | Semiannual                                       |
| pH  | PH                     | pH units            | Semiannual   | Semiannual                                       |
| Turbidity   | TURB                   | Turbidity units     | Semiannual   | Semiannual                                       |
| <b>Monitoring Parameters</b>  |                        |                     |  |  |
| Total Dissolved Solids (TDS)  | TDS                    | mg/L                | Semiannual   | Semiannual                                       |
| Chloride  | CL                     | mg/L                | Semiannual   | Semiannual                                       |
| Carbonate   | CACO3                  | mg/L                | Semiannual   | Semiannual                                       |
| Bicarbonate   | BICACO3                | mg/L                | Semiannual   | Semiannual                                       |
| Nitrate - Nitrogen  | NO3N                   | mg/L                | Semiannual   | Semiannual                                       |
| Sulfate   | SO4                    | mg/L                | Semiannual   | Semiannual                                       |
| Calcium   | CA                     | mg/L                | Semiannual   | Semiannual                                       |
| Magnesium   | MG                     | mg/L                | Semiannual   | Semiannual                                       |
| Potassium   | K                      | mg/L                | Semiannual   | Semiannual                                       |
| Sodium  | NA                     | mg/L                | Semiannual   | Semiannual                                       |
| Volatile Organic Compounds<br>(USEPA Method 8260B, short list, see Table V) |                        | ug/L                | Semiannual   | Semiannual                                       |
| Total Recoverable Phenols <sup>2</sup><br>(USEPA Method 420.1 or 420.4)     |                        | ug/L                | Semiannual   | Semiannual                                       |
| Phenols <sup>1</sup><br>(USEPA Method 604)                                  |                        | ug/L                | Semiannual   | Semiannual                                       |
| Inorganics, dissolved (see Table VI) <sup>1</sup>                           |                        | ug/L                | Annually   | Annually   |
| <b>5-Year Constituents of Concern (see Table VI)</b>                        |                        |                     |  |  |
| Total Organic Carbon  | TOC                    | mg/L                | 30 September 2020<br>& every 5 years<br>thereafter | 1 February 2021<br>& every 5 years<br>thereafter |
| Inorganics (dissolved)  |                        | ug/L                | " "  | " "  |
| Volatile Organic Compounds<br>(USEPA Method 8260B, extended list)           |                        | ug/L                | " "  | " "  |
| Semi-Volatile Organic Compounds<br>(USEPA Method 8270C or D)                |                        | ug/L                | " "  | " "  |
| Chlorophenoxy Herbicides<br>(USEPA Method 8151A)                            |                        | ug/L                | " "  | " "  |
| Organophosphorus Compounds  |                        | ug/L                | " "  | " "  |

<sup>2</sup>. Additional monitoring parameters for LF-2 only.

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(USEPA Method 8141B)

**TABLE II**  
**UNSATURATED ZONE DETECTION AND**  
**CORRECTIVE ACTION MONITORING PROGRAM**

**SOIL-PORE GAS<sup>1</sup>**

| <u>Parameter</u>  | <u>Geotracker Code</u> | <u>Units</u>       | <u>Sampling Frequency</u> | <u>Reporting Frequency</u> |
|---|------------------------|--------------------|---------------------------|----------------------------|
| <b>Monitoring Parameters</b>                                    |                        |                    |                           |                            |
| Methane   | CH4                    | %                  | Semiannual                | Semiannual                 |
| Carbon Dioxide  | C02                    | %                  | Semiannual                | Semiannual                 |
| Organic Vapors  | ---                    | ppmv               | Semiannual                | Semiannual                 |
| Volatile Organic Compounds <sup>1</sup><br>(USEPA Method TO-15) | ---                    | ug/cm <sup>3</sup> | Annual                    | Annual                     |

<sup>1</sup>. Gas samples may be prescreened to determine if laboratory analysis using Method TO-15 is required. A gas analyzer for methane concentrations or a Photo Ionization Detector (PID) for total VOCs concentrations may be used. If methane concentrations exceeding 1.0 percent by volume OR organic vapors (total VOCs) are detected at a concentration greater than 50 ppmv then a gas sample shall be obtained and analyzed for VOCs using EPA Method TO-15. Both the screening results and laboratory analysis results shall be reported. Otherwise, the Discharger shall report the methane or total VOC screening results and no further laboratory analysis is required.

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**TABLE III**  
**LEACHATE MONITORING<sup>1,2</sup>**

| <u>Parameter</u>  | <u>Geotracker Code</u> | <u>Units</u> | <u>Sampling Frequency</u> | <u>Reporting Frequency</u> |
|---|------------------------|--------------|---------------------------|----------------------------|
| <b>Field Parameters</b>   |                        |              |                           |                            |
| Total Flow  |                        | Gallons      | Quarterly                 | Quarterly                  |
| Flow Rate   | FLOW                   | Gallons/Day  | "                         | "                          |
| Electrical Conductivity   | SC                     | umhos/cm     | "                         | "                          |
| pH  | PH                     | pH units     | "                         | "                          |
| <b>Monitoring Parameters</b>  |                        |              |                           |                            |
| Total Dissolved Solids (TDS)  | TDS                    | mg/L         | Semiannual                | Semiannual                 |
| Chloride  | CL                     | mg/L         | "                         | "                          |
| Carbonate   | CACO3                  | mg/L         | "                         | "                          |
| Bicarbonate   | BICACO3                | mg/L         | "                         | "                          |
| Nitrate - Nitrogen  | NO3N                   | mg/L         | "                         | "                          |
| Sulfate   | SO4                    | mg/L         | "                         | "                          |
| Calcium   | CA                     | mg/L         | "                         | "                          |
| Magnesium   | MG                     | mg/L         | "                         | "                          |
| Potassium   | K                      | mg/L         | "                         | "                          |
| Sodium  | NA                     | mg/L         | "                         | "                          |
| Volatile Organic Compounds<br>(USEPA Method 8260B, short list, see Table V) |                        | ug/L         | "                         | "                          |
| Total Recoverable Phenols<br>(USEPA Method 420.1 or 420.4)                  |                        | ug/L         | Semiannual                | Semiannual                 |
| Phenols<br>(USEPA Method 604)   |                        | ug/L         | Semiannual                | Semiannual                 |
| Inorganics, dissolved (see Table VI)  |                        | ug/L         | Annually                  | Annually                   |

<sup>1</sup>. Includes both leachate seep and leachate collection sump monitoring.  
<sup>2</sup>. The Discharger shall report by telephone immediately the leachate seep is discovered and file a written report with the Central Valley Water Board within seven days. See MRP Section 3.

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**TABLE IV**  
**SURFACE WATER DETECTION MONITORING PROGRAM**

| <u>Parameter</u>  | <u>Geotracker Code</u> | <u>Units</u>    | <u>Sampling Frequency</u> <sup>1</sup>               | <u>Reporting Frequency</u>                         |
|---|------------------------|-----------------|--|--|
| <b>Field Parameters</b>   |                        |                 |  |  |
| Electrical Conductivity   | SC                     | umhos/cm        | Semiannual   | Semiannual   |
| pH  | PH                     | pH units        | Semiannual   | Semiannual   |
| Turbidity   | TURB                   | Turbidity units | Semiannual   | Semiannual   |
| Flow Rate.  |                        | Yes or No       | Semiannual   | Semiannual   |
| <b>Monitoring Parameters</b>  |                        |                 |  |  |
| Total Dissolved Solids (TDS)  | TDS                    | mg/L            | Semiannual   | Semiannual   |
| Carbonate   | CACO3                  | mg/L            | Semiannual   | Semiannual   |
| Bicarbonate   | BICACO3                | mg/L            | Semiannual   | Semiannual   |
| Chloride  | CL                     | mg/L            | Semiannual   | Semiannual   |
| Nitrate - Nitrogen  | NO3N                   | mg/L            | Semiannual   | Semiannual   |
| Sulfate   | SO4                    | mg/L            | Semiannual   | Semiannual   |
| Calcium   | CA                     | mg/L            | Semiannual   | Semiannual   |
| Magnesium   | MG                     | mg/L            | Semiannual   | Semiannual   |
| Potassium   | K                      | mg/L            | Semiannual   | Semiannual   |
| Sodium  | NA                     | mg/L            | Semiannual   | Semiannual   |
| Volatile Organic Compounds<br>(USEPA Method 8260B, short list, see Table V) |                        | ug/L            | Semiannual   | Semiannual   |
| <b>5-Year Constituents of Concern (see Table VI)</b>                        |                        |                 |  |  |
| Total Organic Carbon  | TOC                    | mg/L            | 30 September 2020<br>and every 5 years<br>thereafter | 1 February 2021<br>and every 5 years<br>thereafter |
| Inorganics (dissolved)  |                        | ug/L            | “ “  | “ “  |
| Volatile Organic Compounds<br>(USEPA Method 8260B, extended list)           |                        | ug/L            | “ “  | “ “  |
| Semi-Volatile Organic Compounds<br>(USEPA Method 8270C or D)                |                        | ug/L            | “ “  | “ “  |
| Chlorophenoxy Herbicides<br>(USEPA Method 8151A)                            |                        | ug/L            | “ “  | “ “  |
| Organophosphorus Compounds<br>(USEPA Method 8141B)                          |                        | ug/L            | “ “  | “ “  |

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<sup>1</sup>. Semiannual surface water monitoring is required twice per year when there is water present at the designated surface water monitoring point any time during the reporting period (1 January to 30 June or 1 July to 31 December).

**TABLE V**

**MONITORING PARAMETERS FOR DETECTION MONITORING**

**Surrogates for Metallic Constituents:**

| <u>COC Description</u>  | <u>Geotracker Code</u> |
|-------------------------|------------------------|
| pH                      | PH                     |
| Total Dissolved Solids  | TDS                    |
| Electrical Conductivity | SC                     |
| Chloride                | CL                     |
| Sulfate                 | SO4                    |
| Nitrate nitrogen        | NO3N                   |

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

|  |         |
|--|---------|
| Acetone  | ACE     |
| Acrylonitrile  | ACRAMD  |
| Benzene  | BZ      |
| Bromochloromethane   | BRCLME  |
| Bromodichloromethane   | BDCME   |
| Bromoform (Tribromomethane)                                      | TBME    |
| Carbon disulfide   | CDS     |
| Carbon tetrachloride   | CTCL    |
| Chlorobenzene  | CLBZ    |
| Chloroethane (Ethyl chloride)                                    | CLEA    |
| Chloroform (Trichloromethane)                                    | TCLME   |
| Dibromochloromethane (Chlorodibromomethane)                      | DBCME   |
| 1,2-Dibromo-3-chloropropane (DBCP)                               | DBCP    |
| 1,2-Dibromoethane (Ethylene dibromide; EDB)                      | EDB     |
| o-Dichlorobenzene (1,2-Dichlorobenzene)                          | DCBZ12  |
| m-Dichlorobenzene (1,3-Dichlorobenzene)                          | DCBZ13  |
| p-Dichlorobenzene (1,4-Dichlorobenzene)                          | DCBZ14  |
| trans-1,4-Dichloro-2-butene                                      | DCBE14T |
| Dichlorodifluoromethane (CFC-12)                                 | FC12    |
| 1,1-Dichloroethane (Ethylidene chloride)                         | DCA11   |
| 1,2-Dichloroethane (Ethylene dichloride)                         | DCA12   |
| 1,1 -Dichloroethylene (1,1 -Dichloroethene; Vinylidene chloride) | DCE11   |
| cis- 1,2-Dichloroethylene (cis- 1,2-Dichloroethene)              | DCE12C  |
| trans-1,2-Dichloroethylene (trans-1,2-Dichloroethene)            | DCE12T  |
| 1,2-Dichloropropane (Propylene dichloride)                       | DCPA12  |
| cis- 1,3-Dichloropropene   | DCP13C  |
| trans- 1,3-Dichloropropene                                       | DCP13T  |
| Di-isopropylether (DIPE)   | DIPE    |
| Ethanol  | ETHANOL |
| Ethyltertiary butyl ether  | ETBE    |
| Ethylbenzene   | EBZ     |
| 2-Hexanone (Methyl butyl ketone)                                 | HXO2    |
| Hexachlorobutadiene  | HCBU    |
| Methyl bromide (Bromomethene)                                    | BRME    |
| Methyl chloride (Chloromethane)                                  | CLME    |

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**TABLE V**  
**MONITORING PARAMETERS FOR DETECTION**  
**AND CORRECTIVE ACTION MONITORING**

**Continued**

|  |         |
|--|---------|
| Methylene bromide (Dibromomethane)                         | DBMA    |
| Methylene chloride (Dichloromethane)                       | DCMA    |
| Methyl ethyl ketone (MEK: 2-Butanone)                      | MEK     |
| Methyl iodide (Iodomethane)                                | IME     |
| Methyl t-butyl ether                                       | MTBE    |
| 4-Methyl-2-pentanone (Methyl isobutylketone)               | MIBK    |
| Naphthalene  | NAPH    |
| Styrene  | STY     |
| Tertiary amyl methyl ether                                 | TAME    |
| Tertiary butyl alcohol                                     | TBA     |
| 1,1,1,2-Tetrachloroethane                                  | TC1112  |
| 1,1,2,2-Tetrachloroethane                                  | PCA     |
| Tetrachloroethylene (Tetrachloroethene; Perchloroethylene) | PCE     |
| Toluene  | BZME    |
| 1,2,4-Trichlorobenzene                                     | TCB124  |
| 1,1,1-Trichloroethane (Methylchloroform)                   | TCA111  |
| 1,1,2-Trichloroethane                                      | TCA112  |
| Trichloroethylene (Trichloroethene)                        | TCE     |
| Trichlorofluoromethane (CFC- 11)                           | FC11    |
| 1,2,3-Trichloropropane                                     | TCPR123 |
| Vinyl acetate  | VA      |
| Vinyl chloride   | VC      |
| Xylenes  | XYLENES |

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**TABLE VI**  
**5-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS**

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

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

| <b><u>COC Description</u></b>               | <b><u>Geotracker Code</u></b> |
|---|-------------------------------|
| Acetone                                     | ACE                           |
| Acetonitrile (Methyl cyanide)               | ACCN                          |
| Acrolein                                    | ACRL                          |
| Acrylonitrile                               | ACRAMD                        |
| Allyl chloride (3-Chloropropene)            | CLPE3                         |
| Benzene                                     | BZ                            |
| Bromochloromethane (Chlorobromomethane)     | BRCLME                        |
| Bromodichloromethane (Dibromochloromethane) | DBCME                         |
| Bromoform (Tribromomethane)                 | TBME                          |
| Carbon disulfide                            | CDS                           |
| Carbon tetrachloride                        | CTCL                          |
| Chlorobenzene                               | CLBZ                          |
| Chloroethane (Ethyl chloride)               | CLEA                          |
| Chloroform (Trichloromethane)               | TCLME                         |
| Chloroprene                                 | CHLOROPRENE                   |
| Dibromochloromethane (Chlorodibromomethane) | DBCME                         |
| 1,2-Dibromo-3-chloropropane (DBCP)          | DBCP                          |
| 1,2-Dibromoethane (Ethylene dibromide; EDB) | EDB                           |
| o-Dichlorobenzene (1,2-Dichlorobenzene)     | DCBZ12                        |

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**TABLE VI**

**5-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS**

**Continued**

|  |           |
|--|-----------|
| m-Dichlorobenzene (1,3-Dichlorobenzene)                          | DCBZ13    |
| p-Dichlorobenzene (1,4-Dichlorobenzene)                          | DCBZ14    |
| trans- 1,4-Dichloro-2-butene                                     | DCBE14T   |
| Dichlorodifluoromethane (CFC 12)                                 | FC12      |
| 1,1 -Dichloroethane (Ethylidene chloride)                        | DCA11     |
| 1,2-Dichloroethane (Ethylene dichloride)                         | DCA12     |
| 1,1 -Dichloroethylene (1, 1-Dichloroethene; Vinylidene chloride) | DCE11     |
| cis- 1,2-Dichloroethylene (cis- 1,2-Dichloroethene)              | DCE12C    |
| trans- 1,2-Dichloroethylene (trans- 1,2-Dichloroethene)          | DCE12T    |
| 1,2-Dichloropropane (Propylene dichloride)                       | DCPA12    |
| 1,3-Dichloropropane (Trimethylene dichloride)                    | DCPA13    |
| 2,2-Dichloropropane (Isopropylidene chloride)                    | DCPA22    |
| 1,1 -Dichloropropene   | DCP11     |
| cis- 1,3-Dichloropropene   | DCP13C    |
| trans- 1,3-Dichloropropene                                       | DCP13T    |
| Di-isopropylether (DIPE)   | DIPE      |
| Ethanol  | ETHANOL   |
| Ethyltertiary butyl ether  | ETBE      |
| Ethylbenzene   | EBZ       |
| Ethyl methacrylate   | EMETHACRY |
| Hexachlorobutadiene  | HCBU      |
| 2-Hexanone (Methyl butyl ketone)                                 | HXO2      |
| Isobutyl alcohol   | ISOBTOH   |
| Methacrylonitrile  | METHACRN  |
| Methyl bromide (Bromomethane)                                    | BRME      |
| Methyl chloride (Chloromethane)                                  | CLME      |
| Methyl ethyl ketone (MEK; 2-Butanone)                            | MEK       |
| Methyl iodide (Iodomethane)                                      | IME       |
| Methyl t-butyl ether   | MTBE      |
| Methyl methacrylate  | MMTHACRY  |
| 4-Methyl-2-pentanone (Methyl isobutyl ketone)                    | MIBK      |
| Methylene bromide (Dibromomethane)                               | DBMA      |
| Methylene chloride (Dichloromethane)                             | DCMA      |
| Naphthalene  | NAPH      |
| Propionitrile (Ethyl cyanide)                                    | PACN      |
| Styrene  | STY       |
| Tertiary amyl methyl ether                                       | TAME      |
| Tertiary butyl alcohol   | TBA       |
| 1,1,1,2-Tetrachloroethane  | TC1112    |
| 1,1,2,2-Tetrachloroethane  | PCA       |
| Tetrachloroethylene (Tetrachloroethene; Perchloroethylene; PCE)  | PCE       |
| Toluene  | BZME      |
| 1,2,4-Trichlorobenzene   | TCB124    |
| 1,1,1 -Trichloroethane (Methylchloroform)                        | TCA111    |

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**TABLE VI**

**5-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS**

**Continued**

|  |         |
|--|---------|
| 1,1,2-Trichloroethane                    | TCA112  |
| Trichloroethylene (Trichloroethene; TCE) | TCE     |
| Trichlorofluoromethane (CFC- 11)         | FC11    |
| 1,2,3-Trichloropropane                   | TCPR123 |
| Vinyl acetate                            | VA      |
| Vinyl chloride (Chloroethene)            | VC      |
| Xylene (total)                           | XYLENES |

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

|  |           |
|--|-----------|
| Acenaphthene   | ACNP      |
| Acenaphthylene   | ACNPY     |
| Acetophenone   | ACPHN     |
| 2-Acetylaminofluorene (2-AAF)  | ACAMFL2   |
| Aldrin   | ALDRIN    |
| 4-Aminobiphenyl  | AMINOBP4  |
| Anthracene   | ANTH      |
| Benzo[a]anthracene (Benzanthracene)                                    | BZAA      |
| Benzo[b]fluoranthene   | BZBF      |
| Benzo[k]fluoranthene   | BZKF      |
| Benzo[g,h,i]perylene   | BZGHIP    |
| Benzo[a]pyrene   | BZAP      |
| Benzyl alcohol   | BZLAL     |
| Bis(2-ethylhexyl) phthalate  | BIS2EHP   |
| alpha-BHC  | BHCALPHA  |
| beta-BHC   | BHCBETA   |
| delta-BHC  | BHCDELTA  |
| gamma-BHC (Lindane)  | BHCGAMMA  |
| Bis(2-chloroethoxy)methane   | BECEM     |
| Bis(2-chloroethyl) ether (Dichloroethyl ether)                         | BIS2CEE   |
| Bis(2-chloro-1-methylethyl) ether (Bis(2-chloroisopropyl) ether; DCIP) | BIS2CIE   |
| 4-Bromophenyl phenyl ether   | BPPE4     |
| Butyl benzyl phthalate (Benzyl butyl phthalate)                        | BBP       |
| Chlordane  | CHLORDANE |
| p-Chloroaniline  | CLANIL4   |
| Chlorobenzilate  | CLBZLATE  |
| p-Chloro-m-cresol (4-Chloro-3-methylphenol)                            | C4M3PH    |
| 2-Chloronaphthalene  | CNPH2     |
| 2-Chlorophenol   | CLPH2     |
| 4-Chlorophenyl phenyl ether  | CPPE4     |
| Chrysene   | CHRYSENE  |
| o-Cresol (2-methylphenol)  | MEPH2     |
| m-Cresol (3-methylphenol)  | MEPH3     |
| p-Cresol (4-methylphenol)  | MEPH4     |

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**TABLE VI**

**5-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS**

**Continued**

|   |             |
|---|-------------|
| 4,4'-DDD  | DDD44       |
| 4,4'-DDE  | DDE44       |
| 4,4'-DDT  | DDT44       |
| Diallate  | DIALLATE    |
| Dibenz[a,h]anthracene                             | DBAHA       |
| Dibenzofuran                                      | DBF         |
| Di-n-butyl phthalate                              | DNBP        |
| 3,3'-Dichlorobenzidine                            | DBZD33      |
| 2,4-Dichlorophenol                                | DCP24       |
| 2,6-Dichlorophenol                                | DCP26       |
| Dieldrin  | DIELDRIN    |
| Diethyl phthalate                                 | DEPH        |
| p-(Dimethylamino)azobenzene                       | PDMAABZ     |
| 7,12-Dimethylbenz[a]anthracene                    | DMBZA712    |
| 3,3'-Dimethylbenzidine                            | DMBZD33     |
| 2,4-Dimethylphenol (m-Xylenol)                    | DMP24       |
| Dimethyl phthalate                                | DMPH        |
| m-Dinitrobenzene                                  | DNB13       |
| 4,6-Dinitro-o-cresol (4,6-Dinitro-2-methylphenol) | DN46M       |
| 2,4-Dinitrophenol                                 | DNP24       |
| 2,4-Dinitrotoluene                                | DNT24       |
| 2,6-Dinitrotoluene                                | DNT26       |
| Di-n-octyl phthalate                              | DNOP        |
| Diphenylamine                                     | DPA         |
| Endosulfan I                                      | ENDOSULFANA |
| Endosulfan II                                     | ENDOSULFANB |
| Endosulfan sulfate                                | ENDOSULFANS |
| Endrin  | ENDRIN      |
| Endrin aldehyde                                   | ENDRINALD   |
| Ethyl methanesulfonate                            | EMSULFN     |
| Famphur   | FAMPHUR     |
| Fluoranthene                                      | FLA         |
| Fluorene  | FL          |
| Heptachlor  | HEPTACHLOR  |
| Heptachlor epoxide                                | HEPT-EPOX   |
| Hexachlorobenzene                                 | HCLBZ       |
| Hexachlorocyclopentadiene                         | HCCP        |
| Hexachloroethane                                  | HCLEA       |
| Hexachloropropene                                 | HCPR        |
| Indeno(1,2,3-c,d)pyrene                           | INP123      |
| Isodrin   | ISODRIN     |
| Isophorone  | ISOP        |
| Isosafrole  | ISOSAFR     |
| Kepone  | KEP         |
| Methapyrilene                                     | MTPYRLN     |
| Methoxychlor                                      | MTXYCL      |

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**TABLE VI**

**5-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS**

**Continued**

|  |            |
|--|------------|
| 3-Methylcholanthrene   | MECHLAN3   |
| Methyl methanesulfonate  | MMSULFN    |
| 2-Methylnaphthalene  | MTNPH2     |
| 1,4-Naphthoquinone   | NAPHQ14    |
| 1-Naphthylamine  | AMINONAPH1 |
| 2-Naphthylamine  | AMINONAPH2 |
| o-Nitroaniline (2-Nitroaniline)  | NO2ANIL2   |
| m-Nitroaniline (3-Nitroaniline)  | NO2ANIL3   |
| p-Nitroaniline (4-Nitroaniline)  | NO2ANIL4   |
| Nitrobenzene   | NO2BZ      |
| o-Nitrophenol (2-Nitrophenol)  | NTPH2      |
| p-Nitrophenol (4-Nitrophenol)  | NTPH4      |
| N-Nitrosodi-n-butylamine (Di-n-butylnitrosamine)                           | NNSBU      |
| N-Nitrosodiethylamine (Diethylnitrosamine)                                 | NNSE       |
| N-Nitrosodimethylamine (Dimethylnitrosamine)                               | NNSM       |
| N-Nitrosodiphenylamine (Diphenylnitrosamine)                               | NNSPH      |
| N-Nitrosodipropylamine (N-Nitroso-N-dipropylamine; Di-n-propylnitrosamine) | NNSPR      |
| N-Nitrosomethylethylamine (Methylethylnitrosamine)                         | NNSME      |
| N-Nitrosopiperidine  | NNSPPRD    |
| N-Nitrosopyrrolidine   | NNSPYRL    |
| 5-Nitro-o-toluidine  | TLDNONT5   |
| Pentachlorobenzene   | PECLBZ     |
| Pentachloronitrobenzene (PCNB)   | PECLNO2BZ  |
| Pentachlorophenol  | PCP        |
| Phenacetin   | PHNACTN    |
| Phenanthrene   | PHAN       |
| Phenol   | PHENOL     |
| p-Phenylenediamine   | ANLNAM4    |
| Polychlorinated biphenyls (PCBs; Aroclors)                                 | PCBS       |
| Pronamide  | PRONAMD    |
| Pyrene   | PYR        |
| Safrole  | SAFROLE    |
| 1,2,4,5-Tetrachlorobenzene   | C4BZ1245   |
| 2,3,4,6-Tetrachlorophenol  | TCP2346    |
| o-Toluidine  | TLDNO      |
| Toxaphene  | TOXAP      |
| 2,4,5-Trichlorophenol  | TCP245     |
| 0,0,0-Triethyl phosphorothioate  | TEPTH      |
| sym-Trinitrobenzene  | TNB135     |

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**TABLE VI**  
**5-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS**  
**Continued**

**Chlorophenoxy Herbicides (USEPA Method 8151A):**

|   |         |
|---|---------|
| 2,4-D (2,4-Dichlorophenoxyacetic acid)                  | 24D     |
| Dinoseb (DNBP; 2-sec-Butyl-4,6-dinitrophenol)           | DINOSEB |
| Silvex (2,4,5-Trichlorophenoxypropionic acid; 2,4,5-TP) | SILVEX  |
| 2,4,5-T (2,4,5-Trichlorophenoxyacetic acid)             | 245T    |

**Organophosphorus Compounds (USEPA Method 8141B):**

|  |           |
|--|-----------|
| Atrazine   | ATRAZINE  |
| Chlorpyrifos   | CLPYRIFOS |
| 0,0-Diethyl 0-2-pyrazinyl phosphorothioate (Thionazin) | ZINOPHOS  |
| Diazinon   | DIAZ      |
| Dimethoate   | DIMETHAT  |
| Disulfoton   | DISUL     |
| Methyl parathion (Parathion methyl)                    | PARAM     |
| Parathion  | PARAE     |
| Phorate  | PHORATE   |
| Simazine   | SIMAZINE  |

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