CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-201X-XXXX
FOR
COUNTY OF TULARE
WOODLAKE LANDFILL
POST-CLOSURE MAINTENANCE
TULARE COUNTY

This Monitoring and Reporting Program (MRP) is issued pursuant to California Water Code section 13267 and incorporates requirements for groundwater and surface water monitoring and reporting; facility monitoring, maintenance, and reporting; and financial assurances reporting contained in California Code of Regulations, title 27 (Title 27), section 20005 et seq., Waste Discharge Requirements Order No. R5-201X-0054 (WDRs) and the Standard Provisions and Reporting Requirements, dated December 2015 (SPRRs). Compliance with this MRP is ordered by the WDRs, and the Discharger shall not implement any changes to this MRP until a revised MRP is issued by the Central Valley Water Board or its Executive Officer.

A. MONITORING

The Discharger shall comply with the detection monitoring program provisions of Title 27 for groundwater and surface water in accordance with Standard Monitoring Specifications in Section I of the SPRRs and the Monitoring Specifications in Section F of the WDRs. All monitoring shall be conducted in accordance with the most recently approved Detection Monitoring Program (DMP).

All compliance monitoring wells established for the DMP shall constitute the monitoring points for the groundwater Water Quality Protection Standard (WQPS). All detection monitoring program groundwater monitoring wells, surface water monitoring points, and leachate seeps shall be sampled and analyzed for monitoring parameters and Constituents of Concern (COCs) as set forth in Tables I-V, below.

The Discharger may use alternative analytical test methods, including new USEPA approved methods, provided the methods have method detection limits equal to or lower than the analytical methods specified in this MRP, and are identified in the most recently approved DMP.

The monitoring program of this MRP includes:

Section	Monitoring Program
A.1	Groundwater Monitoring
A.2	Seep Monitoring
A.3	Surface Water Monitoring
A.4	Facility Monitoring

1. Groundwater Monitoring

The Discharger shall operate and maintain a groundwater detection monitoring system that complies with the applicable provisions of Title 27, sections 20415 and 20420. The detection monitoring system shall be certified by a California-licensed professional civil engineer or geologist meeting the requirements of Title 27. The current groundwater monitoring network consists the following:

Well	Status	Area
M-11A	Background	Main
M-11B	Background	Main
MW-6[1]	Background	Northeast
M-302	Background	Main
M-8A	Point of Compliance	Main
M-8B	Point of Compliance	Main
M-9A	Point of Compliance	Main
M-9B	Point of Compliance	Main
M-10A	Point of Compliance	Northeast
M-10B	Point of Compliance	Northeast
M-301	Point of Compliance	Main
M-303	Point of Compliance	Northeast
M-5A	Other	Other
M-5B	Other	Other
M-7	Other	Other
M-304	Other	Other

Groundwater samples shall be collected from the background wells, detection monitoring wells, and any additional wells added as part of the approved groundwater monitoring system. The collected samples shall be analyzed for the parameters and constituents set forth in Table I, in accordance with the specified methods and frequencies. The Discharger shall collect, preserve, and transport groundwater samples in accordance with the most recently approved DMP.

[1] Located on the wastewater treatment property approximately 1,400 feet to the east.

Once per quarter, the Discharger shall measure the groundwater elevation in each well, determine groundwater flow direction, and estimate groundwater flow rates in the uppermost aquifer and in any zones of perched water and in any additional portions of the zone of saturation monitored. The results shall be reported semiannually, including the times of expected highest and lowest elevations of the water levels in the wells, pursuant to Title 27, section 20415, subdivision (e)(15).

Every five years, samples collected for the COC monitoring specified in Table I, shall be collected and analyzed in accordance with the methods listed in Table V. Five-year COCs were last monitored in 2013, and shall be monitored again in **2018**. The results shall be reported in the Annual Monitoring Report for the year in which the samples were collected.

2. Seep Monitoring

Upon detection, leachate that seeps to the surface from a landfill unit shall be sampled and analyzed for the Field and Monitoring Parameters listed in Table II. The quantity of leachate shall be estimated and reported as Leachate Flow Rate (in gallons/day). Reporting for leachate seeps shall be conducted per MRP Section B.3, below.

3. Surface Water Monitoring

The Discharger shall operate a surface water detection monitoring system for any landfill facility where runoff from landfill areas flows or could flow to waters of the United States. The monitoring system shall comply with the applicable provisions of Title 27, sections 20415 and 20420. The current surface water detection monitoring system meets the applicable requirements of Title 27.

The current surface water monitoring points for the landfill are:

Monitoring Point	Status
S-B	Background or Upstream
S-D	Discharge or Downstream

For surface water detection monitoring, a sample shall be collected at each monitoring point location and analyzed for the monitoring parameters and constituents in accordance with the methods and frequency specified in Table III.

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. The inspection shall assess repair and maintenance needed for drainage control systems, cover systems, and groundwater monitoring wells; and

shall assess preparedness for winter conditions (including but not limited to erosion and sedimentation control). The Discharger shall take photos of any problems areas before and after repairs. Any necessary construction, maintenance, or repairs shall be completed by **31 October**. Annual facility inspection reporting shall be submitted per MRP Section B.4, below.

b. Major Storm Events

The Discharger shall inspect all precipitation, diversion, and drainage facilities and all landfill side slopes for damage **within 7 days** following major storm events capable of causing damage or significant erosion. The Discharger shall take photos of any 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 per MRP Section B.5, below.

c. Standard Observations

Quarterly, the Discharger shall conduct Standard Observations at the landfill in accordance with this section of the MRP. Standard Observations shall include:

1) For the landfill units:

   a) Evidence of ponded water at any point on the landfill outside of any contact storm water/leachate diversions structures on the active face (show affected area on map); and

   b) Evidence of erosion and/or of day-lighted refuse.

2) Along the perimeter of the landfill units:

   a) Evidence of leachate seeps, estimated size of affected area, and flow rate (show affected area on map); and

   b) Evidence of erosion and/or of day-lighted refuse.

3) For receiving waters (if applicable):

   a) Floating and suspended materials of waste origin - presence or absence, source, and size of affected area; and

   b) 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 MRP Section B.1, below.

B. REPORTING

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

Reporting Schedule

Section	Report	End of Reporting Period	Due Date
B.1	Semiannual Monitoring Report	30 June, 31 December	**31 August, 28 February**
B.2	Annual Monitoring Report	31 December	**28 February**
B.3	Seep Reporting	Continuous	**Immediately & 7 Days**
B.4	Annual Facility Inspection Report	31 October	**15 November**
B.5	Major Storm Event Reporting	Continuous	**7 days from damage discovery**

Reporting Requirements

Semiannually, the Discharger shall submit monitoring reports containing the data and information required in this MRP, and as required per the WDRs (Order No. R5-201X-XXXX) and the SPRRs—particularly SPRRs Section I ("Standard Monitoring Specifications") and Section J ("Response to a Release"). In reporting the monitoring data required by this MRP, the Discharger shall arrange the data in tabular form so that the date, the constituents, the concentrations, and the units are readily discernible. The data shall be summarized in such a manner so as to illustrate clearly the compliance with waste discharge requirements or the lack thereof. Data shall also be submitted in a digital format (i.e., on a flash drive or compact 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 California Code of Regulations, title 23 (Title 23), sections 3890–3895; and Title 27, division 3.

The results of **all monitoring** conducted at the site shall be reported to the Central Valley Water Board in accordance with the reporting schedule above for the calendar period in which samples were taken or observations made.

The Discharger shall retain records of all monitoring information, including all calibration and maintenance records, all original strip chart recordings of continuous monitoring

instrumentation, copies of all reports required by this Order, and records of all data used to complete the application for this Order. Records shall be maintained throughout the life of the facility including the post-closure period. Such records shall be legible and shall show the following for each sample:

a) Sample identification and the monitoring point or background monitoring point from which it was taken, along with the identity of the individual who obtained the sample;

b) Date, time and manner of sampling;

c) Date and time that analyses were started and completed, and the name of the personnel and laboratory performing each analysis;

d) Complete procedure used, including method of preserving the sample, and the identity and volumes of reagents used;

e) Calculation of results; and

f) Results of analyses, and the MDL and PQL for each analysis (all peaks shall be reported).

Required Reports

1. Semiannual Monitoring Report: Monitoring reports shall be submitted semiannually and are due on **31 August** and **28 February**. Each semiannual monitoring report shall contain at least the following:

a) For each groundwater monitoring point addressed by the report, descriptions 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 monitoring plan.

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

c) The estimated quarterly groundwater flow rate and direction in the uppermost aquifer, in any zones of perched water, and in any additional zone of saturation monitored based upon water level elevations taken prior to the collection of the water quality data submitted in the report. (See Title 27, § 20415, subd. (e)(15).)

d) Cumulative tabulated monitoring data for all monitoring points and constituents for groundwater, unsaturated zone, and leachate. Concentrations below the laboratory reporting limit shall not be reported as "ND" unless the reporting limit is also given in the table. Otherwise, they shall be reported "< [reporting limit]" (e.g., "< 0.10"). Units shall be as required in Tables I-IV, unless specific justification is given to report in other units. Refer to the SPRRs Section I ("Standard Monitoring Specifications") for specific requirements regarding MDLs and PQLs.

e) Laboratory statements of results of all analyses evaluating compliance with requirements.

f) An evaluation of the concentration of each monitoring parameter (or 5-year COC when five year COC sampling is conducted) as compared to the current concentration limits, and the results of any required verification testing for constituents exceeding a concentration limit. Report any actions taken under Section J ("Response to a Release") for verified exceedances of a concentration limit for wells/constituents not already in corrective action monitoring.

g) A summary of all Standard Observations for the reporting period required in MRP Section A.4.c, above.

h) A summary of inspection and repair of final covers on any closed landfill units in accordance with an approved final post-closure maintenance plan as required by Standard Closure and Post-Closure Maintenance Specifications G.26 through G.29 of the SPRRs.

2. **Annual Monitoring Report:** The Discharger shall submit an Annual Monitoring Report to the Central Valley Water Board by **28 February** covering the reporting period of the previous monitoring year. If desired, the Annual Monitoring Report may be combined with the second semiannual report, but if so, shall clearly state that it is both a semi-annual and annual monitoring report in its title. Each Annual Monitoring Report shall contain the following information:

a) All monitoring parameters shall be graphed to show historical trends at each monitoring point and background monitoring point, for all samples taken within at least the previous five calendar years. If a 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, Piper graph or Schoeller plot.

c) All historical monitoring data, for which there are detectable results, including data for the previous year, shall be submitted in tabular form, in a digital file format. The Central Valley Water Board regards the submittal of data both in hard copy and in digital format as the forms necessary for statistical analysis, facilitating periodic review. (See Title 27, § 20420, subd. (h).)

d) Hydrographs of each well showing the elevation of groundwater with respect to the elevations of the top and bottom of the screened interval and the elevation of the pump intake. Hydrographs of each well shall be prepared quarterly and submitted annually.

e) A comprehensive discussion of the compliance record, and the result of any corrective actions taken or planned needed to bring the Discharger into full compliance with the WDRs.

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

g) Updated concentration limits for each monitoring parameter at each monitoring well based on the new data set.

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

a) A map showing the location(s) of seepage;

b) An estimate of the flow rate;

c) A description of the nature of the discharge (e.g., all pertinent observations and analyses);

d) Verification that samples have been submitted for analyses of the Field Parameters and Monitoring Parameters listed in Table II, and an estimated date that the results will be submitted to the Central Valley Water Board; and

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

4. Annual Facility Inspection Reporting: By **15 November** of each year, the Discharger shall submit a report describing the results of the inspection and the repair measures implemented, preparations for winter, and include photographs of any problem areas and the repairs. (See MRP § A.4.a, above.)

5. Major Storm Event Reporting: Following major storm events capable of causing damage or significant erosion, the Discharger shall notify Central Valley Water Board staff **immediately upon discovery** of any damage or significant erosion; and report subsequent repairs **within 14 days** of completion of the repairs. Photographs of any problem(s) and repairs performed shall be submitted with the report. (See MRP § A.4.b, above.)

C. WATER QUALITY PROTECTION STANDARD AND COMPLIANCE PERIOD

1. Water Quality Protection Standard (WQPS) Report

For each Waste Management Unit (WMU), the Water Quality Protection Standard (WQPS) shall consist of all COCs, the concentration limit for each constituent of concern, the verification retesting procedure to confirm measurably significant evidence of a release, the point of compliance, and all water quality monitoring points for each monitored medium.

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

The report shall:

a) Identify **all distinct bodies of surface and ground water** that could be affected in the event of a release from a WMU or portion of a unit. This list shall include at least the uppermost aquifer and any permanent or ephemeral zones of perched groundwater underlying the facility.

b) Include a map showing the monitoring points and background monitoring points for the groundwater monitoring program and the unsaturated zone monitoring program. The map shall include the point of compliance in accordance with Title 27, section 20405.

c) Evaluate the perennial direction(s) of groundwater movement within the uppermost groundwater zone(s).

d) Include a proposed statistical method for calculating concentration limits for monitoring parameters and COCs that are detected in 10 percent or greater of the background data (naturally-occurring constituents) using a statistical procedure from Title 27, section 20415, subdivisions (e)(8)(A)-(E).

e. Include a retesting procedure to confirm or deny measurably significant evidence of a release pursuant to section 20415, subdivision (e)(8)(E) and section 20420, subdivisions (j)(1)-(3) of Title 27.

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 the methods for calculating concentration limits and the limits are calculated using interwell tolerance limits based on background data from background monitoring wells.

The WQPS shall be updated annually for each monitoring well using new and historical monitoring data.

2. Monitoring Parameters

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

3. Constituents of Concern (COCs)

COCs include a larger group of waste constituents, their reaction products, and hazardous constituents that are reasonably expected to be in or derived from waste contained in the WMU, and are required to be monitored every five years. (See Title 27, § 20395, 20420, subd. (g).) The facility WMU's "Five-year COCs" are listed in Tables I-V for the specified monitored medium. The Discharger shall monitor all COCs every five years, or more frequently as required in accordance with a Corrective Action Program. The last five-year COC report was submitted to the Central Valley Water Board in the 2013 *Annual Monitoring Report*, and five-year COCs are due to be monitored again in **2018.**

4. Concentration Limits

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

a. By calculation in accordance with a statistical method pursuant to Title 27, section 20415, subdivision (e)(8); or

b. By an alternate statistical method meeting the requirements of Title 27, section 20415, subdivision (e)(8)(E).

The approved method for calculating concentration uses interwell tolerance limits based on background data from background monitoring well.

5. Retesting Procedures for Confirming Evidence of a Release

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

b. For analytes 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.

c. For analytes that are detected in 10% or greater of the background samples (naturally occurring constituents), the Discharger shall use one of the statistical retesting procedure as required in Standard Monitoring Specification I.47 of the SPRRs.

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.

7. Compliance Period

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

8. Monitoring Points

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

D. TRANSMITTAL LETTER FOR ALL REPORTS

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

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

Ordered By: _____
PAMELA C. CREEDON,
Executive Officer

_____
(Date)

TABLE I

GROUNDWATER DETECTION MONITORING PROGRAM

Parameters	Units	Sampling Frequency	Reporting Frequency
Field Parameters			
Groundwater Elevation	Feet & 100ths, MSL	Quarterly	Semiannually
Temperature	Fahrenheit	Semiannually	(same)
Electrical Conductivity	umhos/cm	Semiannually	(same)
pH	pH units	Semiannually	(same)
Turbidity	Turbidity Units	Semiannually	(same)
Monitoring Parameters			
Total Dissolved Solids (TDS)	mg/L[1]	Semiannually	Semiannually
Chloride	mg/L	(same)	(same)
Carbonate	mg/L	(same)	(same)
Bicarbonate	mg/L	(same)	(same)
Nitrate-Nitrogen	mg/L	(same)	(same)
Sulfate	mg/L	(same)	(same)
Calcium	mg/L	(same)	(same)
Magnesium	mg/L	(same)	(same)
Potassium	mg/L	(same)	(same)
Sodium	mg/L	(same)	(same)
Volatile Organic Compounds (USEPA Method 8260B, short list, see Table IV)	ug/L[2]	(same)	(same)
5-Year Constituents of Concern (see Table V)			
Total Organic Carbon	mg/L	Every 5 Years	2018 and Every 5 Years Thereafter
Inorganics (dissolved)	ug/L	(same)	(same)
Volatile Organic Compounds (USEPA Method 8260B, extended list)	ug/L	(same)	(same)
Semi-Volatile Organic Compounds (USEPA Method 8270C or D)	ug/L	(same)	(same)
Chlorophenoxy Herbicides (USEPA Method 8151A)	ug/L	(same)	(same)
Organophosphorus Compounds (USEPA Method 8141B)	ug/L	(same)	(same)

[1] Milligrams per Liter
[2] Micrograms per Liter

TABLE II

SEEP MONITORING

Parameters	Units	Sampling Frequency[1]	Reporting Frequency
Field Parameters			
Total Flow	Gallons	Monthly	Semiannually
Flow Rate	Gallons per Day	Monthly	Semiannually
Electrical Conductivity	umhos/cm	Quarterly	Semiannually
pH	pH units	Quarterly	Semiannually
Monitoring Parameters			
Total Dissolved Solids (TDS)	mg/L	Annually	Annually
Chloride	mg/L	(same)	(same)
Carbonate	mg/L	(same)	(same)
Bicarbonate	mg/L	(same)	(same)
Nitrate-Nitrogen	mg/L	(same)	(same)
Sulfate	mg/L	(same)	(same)
Calcium	mg/L	(same)	(same)
Magnesium	mg/L	(same)	(same)
Potassium	mg/L	(same)	(same)
Sodium	mg/L	(same)	(same)
Volatile Organic Compounds (USEPA Method 8260B, short list, see Table IV)	ug/L	(same)	(same)

[1] Sampling frequency only applies to periods in which leachate seeps are active.

TABLE III

SURFACE WATER DETECTION MONITORING PROGRAM

Parameters	Units	Sampling Frequency[1]	Reporting Frequency
Field Parameters			
Electrical Conductivity	umhos/cm	(same)	(same)
pH	pH units	(same)	(same)
Turbidity	Turbidity Units	(same)	(same)
Flow to Waters of the United States	Yes / No	(same)	(same)
Monitoring Parameters			
Total Dissolved Solids (TDS)	mg/L	Semiannually	Semiannually
Chloride	mg/L	(same)	(same)
Carbonate	mg/L	(same)	(same)
Bicarbonate	mg/L	(same)	(same)
Nitrate-Nitrogen	mg/L	(same)	(same)
Sulfate	mg/L	(same)	(same)
Calcium	mg/L	(same)	(same)
Magnesium	mg/L	(same)	(same)
Potassium	mg/L	(same)	(same)
Sodium	mg/L	(same)	(same)
Volatile Organic Compounds (USEPA Method 8260B, short list, see Table IV)	ug/L	(same)	(same)
5-Year Constituents of Concern (see Table V)			
Total Organic Carbon	mg/L	Every 5 Years	2018 and Every 5 Years Thereafter
Inorganics (dissolved)	ug/L	(same)	(same)
Volatile Organic Compounds (USEPA Method 8260B, extended list)	ug/L	(same)	(same)
Semi-Volatile Organic Compounds (USEPA Method 8270C or D)	ug/L	(same)	(same)
Chlorophenoxy Herbicides (USEPA Method 8151A)	ug/L	(same)	(same)
Organophosphorus Compounds (USEPA Method 8141B)	ug/L	(same)	(same)

[1] 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). Reporting shall include whether there was flow from the facility to waters of the U.S. when the samples were collected.

TABLE IV

MONITORING PARAMETERS FOR DETECTION MONITORING

Surrogates for Metallic Constituents

- pH
- Total Dissolved Solids
- Electrical Conductivity
- Chloride
- Sulfate
- Nitrate Nitrogen

Volatile Organic Compounds—Short List

USEPA Method 8260B

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

TABLE IV—MONITORING PARAMETERS FOR DETECTION MONITORING (CONTINUED)

- Hexachlorobutadiene
- Methyl bromide (Bromomethene)
- Methyl chloride (Chloromethane)
- Methylene bromide (Dibromomethane)
- Methylene chloride (Dichloromethane)
- ethyl ethyl ketone (MEK: 2-Butanone)
- Methyl iodide (Iodomethane)
- Methyl t-butyl ether
- 4-Methyl-2-pentanone (Methyl isobutylketone)
- Naphthalene
- Styrene
- Tertiary amyl methyl ether
- Tertiary butyl alcohol
- 1,1,1,2-Tetrachloroethane
- 1,1.2,2-Tetrachloroethane
- Tetrachloroethylene (Tetrachloroethene; Perchloroethylene)
- Toluene
- 1,2,4-Trichlorobenzene
- 1,1,1-Trichloroethane (Methylchloroform)
- 1,1,2-Trichloroethane
- Trichloroethylene (Trichloroethene)
- Trichlorofluoromethane (CFC- 11)
- 1,2,3-Trichloropropane
- Vinyl acetate
- Vinyl chloride
- Xylenes

TABLE V
FIVE-YEAR COCs & USEPA-APPROVED ANALYTICAL METHODS

Inorganics (Dissolved)	USEPA Method	Inorganics (Dissolved)	USEPA Method
Aluminum	6010	Zinc	6010
Antimony	7041	Iron	6010
Barium	6010	Manganese	6010
Beryllium	6010	Arsenic	7062
Cadmium	7131A	Lead	7421
Chromium	6010	Mercury	7470A
Cobalt	6010	Nickel	7521
Copper	6010	Selenium	7742
Silver	6010	Thallium	7841
Tin	6010	Cyanide	9010C
Vanadium	6010	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)

TABLE V - FIVE-YEAR COCs & USEPA-APPROVED ANALYTICAL METHODS (CONTINUED)

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

TABLE V - FIVE-YEAR COCs & USEPA-APPROVED ANALYTICAL METHODS (CONTINUED)

- Tetrachloroethylene (Tetrachloroethene; Perchloroethylene; PCE)
- Toluene
- 1,2,4-Trichlorobenzene
- 1,1,1 -Trichloroethane (Methylchloroform)
- 1,1,2-Trichloroethane
- Trichloroethylene (Trichloroethene; TCE)
- Trichlorofluoromethane (CFC- 11)
- 1,2,3-Trichloropropane
- Vinyl acetate
- Vinyl chloride (Chloroethene)
- Xylene (total)

Semi-Volatile Organic Compounds

USEPA Method 8270C or D—Base, Neutral & Acid Extractables

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

TABLE V - FIVE-YEAR COCs & USEPA-APPROVED ANALYTICAL METHODS (CONTINUED)

- 2-Chlorophenol
- 4-Chlorophenyl phenyl ether
- Chrysene
- o-Cresol (2-methylphenol)
- m-Cresol (3-methylphenol)
- p-Cresol (4-methylphenol)
- 4,4'-DDD
- 4,4'-DDE
- 4,4'-DDT
- 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

TABLE V - FIVE-YEAR COCs & USEPA-APPROVED ANALYTICAL METHODS (CONTINUED)

- Hexachlorocyclopentadiene
- Hexachloroethane
- Hexachloropropene
- Indeno(1,2,3-c,d)pyrene
- Isodrin
- Isophorone
- Isosafrole
- Kepone
- Methapyrilene
- Methoxychlor
- 3-Methylcholanthrene
- Methyl methanesulfonate
- 2-Methylnaphthalene
- 1,4-Naphthoquinone
- 1-Naphthylamine
- 2-Naphthylamine
- o-Nitroaniline (2-Nitroaniline)
- m-Nitroaniline (3-Nitroaniline)
- p-Nitroaniline (4-Nitroaniline)
- Nitrobenzene
- o-Nitrophenol (2-Nitrophenol)
- p-Nitrophenol (4-Nitrophenol)
- N-Nitrosodi-n-butylamine (Di-n-butylnitrosamine)
- N-Nitrosodiethylamine (Diethylnitrosamine)
- N-Nitrosodimethylamine (Dimethylnitrosamine)
- N-Nitrosodiphenylamine (Diphenylnitrosamine)
- N-Nitrosodipropylamine (N-Nitroso-N-dipropylamine; Di-n-propylnitrosamine)
- N-Nitrosomethylethylamine (Methylethylnitrosamine)
- N-Nitrosopiperidine
- N-Nitrosospyrrolidine
- 5-Nitro-o-toluidine
- Pentachlorobenzene
- Pentachloronitrobenzene (PCNB)
- Pentachlorophenol
- Phenacetin
- Phenanthrene
- Phenol
- p-Phenylenediamine
- Polychlorinated biphenyls (PCBs; Aroclors)
- Pronamide
- Pyrene
- Safrole
- 1,2,4,5-Tetrachlorobenzene
- 2,3,4,6-Tetrachlorophenol

TABLE V - FIVE-YEAR COCs & USEPA-APPROVED ANALYTICAL METHODS (CONTINUED)

- o-Toluidine
- Toxaphene
- 2,4,5-Trichlorophenol
- 0,0,0-Triethyl phosphorothioate
- sym-Trinitrobenzene

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
- Methyl parathion (Parathion methyl)
- Parathion
- Phorate
- Simazine