

CALIFORNIA REGIONAL WATER QUALITY CONTROL REGIONAL BOARD  
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2010-XXXX  
FOR  
COUNTY OF TULARE  
FOR  
POSTCLOSURE MAINTENANCE AND CORRECTIVE ACTION  
EXETER SOLID WASTE LANDFILL  
TULARE COUNTY

Compliance with this Monitoring and Reporting Program; with Title 27 California Code of Regulations, §20005, et seq. (hereafter Title 27); and with the *Standard Provisions and Reporting Requirements for Waste Discharge Requirements for Nonhazardous Solid Waste Discharges regulated by Title 27*, dated April 2000 (Standard Provisions and Reporting Requirements), is ordered by Waste Discharge Requirements Order R5-2010-XXXX.

**A. REQUIRED MONITORING REPORTS**

<u>Report</u>	<u>Due</u>
1. Groundwater Monitoring (Section D.1)	<b>See Table I</b>
2. Annual Monitoring Summary Report	<b>Annually</b>
3. Surface Water Monitoring (Section D.3)	<b>See Table II</b>
4. Leachate/Seep Monitoring (Section D.4)	<b>See Table III</b>
5. Facility Monitoring (Section D.5)	<b>Annually</b>
6. Response to a Release (Standard Provisions and Reporting Requirements)	<b>As necessary</b>

**B. REPORTING**

The County of Tulare (hereafter Discharger) shall report monitoring data and information as required in this Monitoring and Reporting Program and as required in Order R5-2010-XXXX and the Standard Provisions and Reporting Requirements. Reports which do not comply with the required form will be **REJECTED** and the Discharger shall be deemed in noncompliance with the waste discharge requirements.

In reporting the monitoring data required by this program, the Discharger shall arrange the data in tabular form so that the date, the constituents, the concentrations, and the units are readily discernible. The data shall be summarized in such a manner so as to illustrate clearly the compliance with waste discharge requirements or the lack thereof. Data shall also be submitted in a digital format acceptable to the Executive Officer.

Each monitoring report shall include a compliance evaluation summary as specified in E. Reporting Requirements.

Field and laboratory tests shall be reported in each monitoring report. Monthly, quarterly, semiannual, and annual monitoring reports shall be submitted to the Central Valley Regional Water Quality Control Board (Central Valley Water Board) in accordance with the following schedule for the calendar period in which samples were taken or observations made.

<u>Sampling Frequency</u>	<u>Reporting Frequency</u>	<u>Reporting Periods End</u>	<u>Report Date Due</u>
Monthly	Semiannually	Last Day of Month	by Semiannual schedule
Quarterly	Semiannually	31 March 30 June 30 September 31 December	31 August 31 August 28 February 28 February
Semiannually	Semiannually	30 June 31 December	31 August 28 February
Annually	Annually	31 December	28 February

The Discharger shall submit an **annual monitoring summary report** (annual report) to the Central Valley Water Board covering the previous monitoring year. The annual report shall contain the information specified in E. Reporting Requirements and a discussion of compliance with the waste discharge requirements and the water quality protection standard (WQPS).

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.

## **C. WATER QUALITY PROTECTION STANDARD AND COMPLIANCE PERIOD**

### **1. Water Quality Protection Standard Report**

For the waste management unit (Unit), the WQPS shall consist of all constituents of concern, the concentration limit for each constituent of concern, the point of compliance, and all water quality monitoring points.

Central Valley Water Board staff (Staff) shall review and approve the WQPS, or any modification thereto, for each monitored medium.

The report shall:

- a. Identify **all distinct bodies of surface water and ground water** that could be affected in the event of a release from the Unit or portion of the Unit. This list shall include at least the uppermost groundwater zone and any permanent or ephemeral zones of perched groundwater zones underlying the facility.
- b. Include a map showing the monitoring points for the groundwater monitoring program, and the surface water monitoring program. The map shall include the point of compliance in accordance with §20405 of Title 27.
- c. Evaluate the perennial direction(s) of groundwater movement within the uppermost groundwater zone(s).

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.

### **2. Constituents of Concern**

The constituents of concern include all the waste constituents, their reaction products, and hazardous constituents that are reasonably expected to be in or derived from waste contained in the Unit. The constituents of concern for the Unit are those listed in Tables I and II for the specified monitored medium, and Table V. The Discharger shall monitor all constituents of concern every five years, or more frequently as required in accordance with a corrective action program.

a. **Monitoring Parameters**

Monitoring parameters are constituents of concern that are the waste constituents, reaction products, hazardous constituents, and physical parameters that provide a reliable indication of a release from a Unit. The monitoring parameters for the Unit are those listed in Tables I through III for the specified monitored medium, and Table IV.

**3. Concentration Limits**

The concentration limits for each constituent of concern are as follows:

- a. For anthropogenic (not naturally occurring) constituents, which have no natural, and therefore, no background values, the concentration limit shall be the detection limit of the analytical method(s) used.
- b. Pursuant to §20415(e)(10)(B) of Title 27, for each naturally occurring inorganic constituent of concern, the concentration limit (applicable suite of background data) for that constituent shall be redetermined each semiannual monitoring period according to the following “moving window” formula, and the Discharger shall use the revised resulting concentration limit to apply the parametric Interwell Upper Prediction Limit analysis method featured in the Sanitas™ For Groundwater statistical software package, unless the software indicates that a different method (e.g., the nonparametric version of the same method) is more appropriate. For each reporting period subsequent to the initial reporting period, the Discharger shall create the new concentration limit, for that constituent, by taking the prior reporting period’s background data, adding the newest datum, for that constituent, from background monitoring wells and removing the oldest datum.

**4. Point of Compliance**

The point of compliance for the WQPS is a vertical surface located at the hydraulically downgradient limit of the Unit that extends through the uppermost aquifer underlying the Unit.

**5. Compliance Period**

The compliance period for the Unit shall be the number of years equal to the active life of the Unit plus the closure period. The compliance period is the minimum period during which the Discharger shall conduct a water quality

monitoring program subsequent to a release from the Unit. The compliance period shall begin anew each time the Discharger initiates an evaluation monitoring program.

## **D. MONITORING**

The Discharger shall comply with the detection monitoring program provisions of Title 27 for groundwater, surface water, and leachate in accordance with Detection Monitoring Specifications of Waste Discharge Requirements Order R5-2010-XXXX. All monitoring shall be conducted in accordance with a sample collection and analysis plan, which includes quality assurance/quality control standards, that is approved by Staff.

All point of compliance groundwater monitoring wells and surface water monitoring points established for the detection monitoring program shall constitute the monitoring points for the groundwater and surface water WQPS. All detection monitoring program groundwater monitoring wells, surface water monitoring points, and leachate seepage monitoring points shall be sampled and analyzed for monitoring parameters and constituents of concern as indicated and listed in Tables I through V.

Method detection limits (MDLs) and practical quantitation limits (PQLs) shall be reported. All peaks shall be reported, including those which cannot be quantified and/or specifically identified. Metals shall be analyzed in accordance with the methods listed in Table V.

If methods other than USEPA-approved methods or Standard Methods are used, the exact methodology shall be submitted for review and approval by Staff prior to use.

### **1. Groundwater**

The Discharger shall operate and maintain a groundwater detection monitoring system that complies with the applicable provisions of §20415 and §20420 of Title 27 in accordance with an approved detection monitoring program and §20430 of Title 27 in accordance with an approved corrective action monitoring plan. The Discharger shall collect, preserve, and transport groundwater samples in accordance with the approved sample collection and analysis plan.

The Discharger shall determine the groundwater flow rate and direction in the uppermost groundwater zone, the upper semi-confined groundwater zone,

zones of perched water, and in any additional groundwater zone monitored pursuant to this monitoring and reporting program, and report the results semiannually, including the times of highest and lowest elevations of the water levels in the wells.

A groundwater contour map and tabular data shall be submitted showing the elevation of groundwater within the unconfined groundwater zone, the semi-confined groundwater zone, and any additional groundwater zone with respect to the elevations of the top and bottom of the screened interval and the elevation of the pump intake. The tabular data shall be prepared quarterly and submitted semiannually.

Groundwater samples shall be collected from the point of compliance wells and any additional wells added as part of the approved groundwater monitoring system. Samples shall be collected and analyzed for the monitoring parameters in accordance with the methods and frequency specified in Table I.

The monitoring parameters shall also be evaluated annually with regards to the cation/anion balance, and the results shall be graphically presented using a Stiff diagram, a Piper graph, or a Schueller plot. Samples for the constituents of concern specified in Table I shall be collected and analyzed in accordance with the methods listed in Table V every five years.

## **2. Corrective Action**

The Discharger shall operate and maintain a groundwater corrective action monitoring system for the purpose of monitoring the nature and extent of the release and the progress of corrective action. Sample collection and analysis shall be conducted on an annual basis. The results of sample analysis shall include a narrative discussion and be summarized in the annual report, in accordance with the date specified under Section B. Reporting of this program.

Corrective action monitoring data analysis shall include the following:

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

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

The semiannual monitoring reports shall include a discussion of the progress of the corrective action toward returning to compliance with the WQPS (as specified in Section 20430(h) of Title 27) and be submitted in accordance with the frequency specified under Section B. Reporting of this program.

### **3. Surface Water Monitoring**

The Discharger shall operate its surface water detection monitoring system where appropriate in accordance with the applicable provisions of §20415 and §20420 of Title 27, as approved by the Staff.

For all monitoring points and background monitoring points assigned to surface water detection monitoring, samples shall be collected and analyzed for the monitoring parameters in accordance with the methods and frequency specified in Table II. All surface water monitoring samples shall be collected and analyzed for the constituents of concern specified in Table V every five years. All monitoring parameters shall be graphed so as to show historical trends at each sample location.

### **4. Leachate Seep Monitoring**

The final cover of the Unit shall be monitored for leachate that seeps to the surface on a quarterly basis. Leachate that seeps to the surface from the Unit shall be sampled and analyzed for the constituents listed in Table III upon detection. The quantity of leachate shall be *estimated* and reported as leachate flow rate (in gallons/day).

## 5. Facility Monitoring

### a. 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 damage to the drainage control system, groundwater monitoring equipment (including wells, etc.), and shall include the Standard Observations contained in Section E.3.f. below. Any necessary construction, maintenance, or repairs shall be completed **by 31 October**. By **15 November** of each year, the Discharger shall submit an annual report describing the results of the inspection and the repair measures implemented, including photographs of the problem and the repairs.

### b. Storm Events

The Discharger shall inspect all precipitation, diversion, and drainage facilities for damage **within 7 days** following *significant storm events*. Necessary repairs shall be completed **within 30 days** of the inspection. The Discharger shall report any damage and subsequent repairs within 45 days of completion of the repairs, including photographs of the problem and the repairs.

## E. REPORTING REQUIREMENTS

1. 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 Order R5-2010-XXXX, and records of all data used to complete the application for Order R5-2010-XXXX. Records shall be maintained throughout the postclosure maintenance period.

Such legible records shall show the following for each sample:

- a. Sample identification and the monitoring point from which it was taken, along with the identity of the individual who obtained the sample;
- b. Date, time, and manner of sampling;
- c. Date and time that analyses were started and completed, and the name of the personnel and laboratory performing each analysis;

- d. Complete procedure used, including method of preserving the sample, and the identity and volumes of reagents used;
    - e. Calculation of results; and
    - f. Results of analyses, and the MDL and PQL for each analysis.
2. 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.
3. Each monitoring report shall include a compliance evaluation summary. The summary shall contain at least:
  - a. For each monitoring point addressed by the report, a description of:
    - 1) The time of water level measurement;
    - 2) The type of pump - or other device - used for purging and the elevation of the pump intake relative to the elevation of the screened interval;
    - 3) The method of purging (the pumping rate; the equipment and methods used to monitor field pH, temperature, and conductivity during purging; the calibration of the field equipment; results of the pH, temperature, conductivity, and turbidity testing; and the method of disposing of the purge water) to remove all portions of the water that was in the well bore while the sample was being taken;
    - 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 Sampling and Analysis Plan.
  - b. A map or aerial photograph showing the locations of observation stations, monitoring points, and background monitoring points.

- c. For each groundwater body, a description and graphical presentation of the gradient and direction of groundwater flow under/around the Unit, and the groundwater flow rate, based upon water level elevations taken prior to the collection of the water quality data submitted in the report.
  - d. Laboratory statements of results of all analyses evaluating compliance with requirements.
  - e. An evaluation of the effectiveness of the leachate monitoring and control facilities, and of the run-off/run-on control facilities.
  - f. A summary and certification of completion of all **Standard Observations** for the Unit, for the perimeter of the Unit, and for the receiving waters. The Standard Observations shall include the items listed below.
    - 1) For the Unit:
      - a) Evidence of ponded water at any point on the Unit (show affected area on map);
      - b) Evidence of odors - presence or absence, characterization, source, and distance of travel from source; and
      - c) Evidence of erosion and/or of day-lighted refuse.
    - 2) Along the perimeter of the Unit:
      - a) Evidence of liquid leaving or entering the Unit, estimated size of affected area, and flow rate (show affected area on map);
      - b) Evidence of odors - presence or absence, characterization, source, and distance of travel from source; and
      - c) Evidence of erosion and/or of day-lighted refuse.
4. The Discharger shall report by telephone any leachate 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 a minimum, the following information:
- a. A map showing the location(s) of leachate 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 Constituents of Concern and Monitoring Parameters, 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.
5. The Discharger shall submit an annual report to the Central Valley Water Board covering the reporting period of the previous monitoring year. This report shall contain:
  - a. All detected monitoring parameters and constituents of concern shall be graphed so as to show historical trends at each monitoring point, for all samples taken within at least the previous five calendar years. Each such graph shall plot the concentration of one or more constituents for the period of record for a given 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. For any given constituent or parameter, the scale for background plots shall be the same as that used to plot downgradient data. Graphical analysis of monitoring data may be used to provide significant evidence of a release.
  - b. Unless otherwise exempted by the Executive Officer, all monitoring analytical data obtained during the previous two six-month reporting periods, shall be presented in tabular form as well as in a digital format acceptable to the Executive Officer. The Central Valley Water Board regards the submittal of data in hard copy and digital format as "...the form necessary for..." statistical analysis [§20420(h) of Title 27], in that this facilitates periodic review by Central Valley Water Board staff.
  - c. 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.
  - d. A map showing the area and elevations in which filling has been completed during the previous calendar year and a comparison to final closure design contours.
  - e. A written summary of the monitoring results, indicating any changes made or observed since the previous annual report.

- f. An evaluation of the effectiveness of the leachate monitoring/control facilities.
- g. A written summary of the monitoring results of periodic leak searches to evaluate the structural integrity of the final cover system.

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

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

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

VSM: 4/26/2010

**TABLE I**  
**GROUNDWATER DETECTION MONITORING PROGRAM**

<u>Parameter</u>	<u>Units</u>	<u>Frequency</u>
<b>Field Parameters</b>		
Groundwater Elevation	Ft. & hundredths, M.S.L. <sup>1</sup>	Quarterly
Temperature	°C <sup>2</sup>	Semiannual
Electrical Conductivity	µmhos/cm <sup>3</sup>	Semiannual
pH	pH units	Semiannual
Turbidity	NTU <sup>4</sup>	Semiannual
<b>Monitoring Parameters</b>		
Total Dissolved Solids (TDS)	mg/L <sup>5</sup>	Semiannual
Chloride	mg/L	Semiannual
Carbonate	mg/L	Semiannual
Bicarbonate	mg/L	Semiannual
Nitrate - Nitrogen	mg/L	Semiannual
Sulfate	mg/L	Semiannual
Calcium	mg/L	Semiannual
Magnesium	mg/L	Semiannual
Potassium	mg/L	Semiannual
Sodium	mg/L	Semiannual
Volatile Organic Compounds (USEPA Method 8260B, see Table IV)	µg/L <sup>6</sup>	Semiannual
<b>Constituents of Concern (see Table V)</b>		
Total Organic Carbon	mg/L	5 years
Inorganics (dissolved)	mg/L	5 years
Volatile Organic Compounds (USEPA Method 8260B, extended list)	µg/L	5 years
Semi-Volatile Organic Compounds (USEPA Method 8270C)	µg/L	5 years
Chlorophenoxy Herbicides (USEPA Method 8151A)	µg/L	5 years
Organophosphorus Compounds (USEPA Method 8141A)	µg/L	5 years

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1. Feet and hundredths of a foot above mean sea level.
  2. Degrees Celsius.
  3. Micromhos per centimeter.
  4. Nephelometric turbidity units.
  5. Milligrams per liter.
  6. Micrograms per liter

**TABLE II**  
**SURFACE WATER DETECTION MONITORING PROGRAM**

<u>Parameter</u>	<u>Units</u>	<u>Frequency</u>
<b>Field Parameters</b>		
Temperature	°C <sup>1</sup>	Semiannual
Electrical Conductivity	µmhos/cm <sup>2</sup>	Semiannual
pH	pH units	Semiannual
Turbidity	NTU <sup>3</sup>	Semiannual
<b>Monitoring Parameters</b>		
Total Dissolved Solids (TDS)	mg/L <sup>4</sup>	Semiannual
Carbonate	mg/L	Semiannual
Bicarbonate	mg/L	Semiannual
Chloride	mg/L	Semiannual
Nitrate - Nitrogen	mg/L	Semiannual
Sulfate	mg/L	Semiannual
Calcium	mg/L	Semiannual
Magnesium	mg/L	Semiannual
Potassium	mg/L	Semiannual
Sodium	mg/L	Semiannual
Volatile Organic Compounds (USEPA Method 8260B, see Table IV)	µg/L <sup>5</sup>	Semiannual
<b>Constituents of Concern (see Table V)</b>		
Total Organic Carbon	mg/L	5 years
Inorganics (dissolved)	mg/L	5 years
Volatile Organic Compounds (USEPA Method 8260B, extended list)	µg/L	5 years
Semi-Volatile Organic Compounds (USEPA Method 8270C)	µg/L	5 years
Chlorophenoxy Herbicides (USEPA Method 8151A)	µg/L	5 years
Organophosphorus Compounds (USEPA Method 8141A)	µg/L	5 years

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1. Degrees Celsius.
  2. Micromhos per centimeter.
  3. Nephelometric turbidity units.
  4. Milligrams per liter.
  5. Micrograms per liter

**TABLE III**  
**LEACHATE/SEEP MONITORING PROGRAM**

<u>Parameter</u>	<u>Units</u>	<u>Frequency</u>
<b>Field Parameters</b>		
Total Flow	Gallons	Upon leachate seep discovery
Flow Rate	Gallons/Day	Upon leachate seep discovery
Electrical Conductivity	$\mu\text{mhos}/\text{cm}^1$	Upon leachate seep discovery
pH	pH units	Upon leachate seep discovery
<b>Monitoring Parameters</b>		
Total Dissolved Solids (TDS)	$\text{mg}/\text{L}^2$	Upon leachate seep discovery
Chloride	$\text{mg}/\text{L}$	Upon leachate seep discovery
Carbonate	$\text{mg}/\text{L}$	Upon leachate seep discovery
Bicarbonate	$\text{mg}/\text{L}$	Upon leachate seep discovery
Nitrate - Nitrogen	$\text{mg}/\text{L}$	Upon leachate seep discovery
Sulfate	$\text{mg}/\text{L}$	Upon leachate seep discovery
Calcium	$\text{mg}/\text{L}$	Upon leachate seep discovery
Magnesium	$\text{mg}/\text{L}$	Upon leachate seep discovery
Potassium	$\text{mg}/\text{L}$	Upon leachate seep discovery
Sodium	$\text{mg}/\text{L}$	Upon leachate seep discovery
Volatile Organic Compounds (USEPA Method 8260B, see Table IV)	$\mu\text{g}/\text{L}^3$	Upon leachate seep discovery

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1. Micromhos per centimeter.
  2. Milligrams per liter.
  3. Micrograms per liter

## TABLE IV

### MONITORING PARAMETERS FOR DETECTION MONITORING

#### Surrogates for Metallic Constituents:

pH  
Total Dissolved Solids  
Electrical Conductivity  
Chloride  
Sulfate  
Nitrate nitrogen

#### Constituents included in VOCs:

##### USEPA Method 8260B

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

**TABLE IV**  
**MONITORING PARAMETERS FOR DETECTION MONITORING**  
**(Continued)**

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

**TABLE V**  
**CONSTITUENTS OF CONCERN & APPROVED USEPA ANALYTICAL METHODS**

<u>Inorganics (dissolved):</u>	<u>USEPA Method/Standard Method</u>
Aluminum	200.8
Antimony	200.8
Barium	200.8
Beryllium	200.8
Cadmium	200.8
Chromium	200.8
Cobalt	200.8
Copper	200.8
Silver	200.8
Tin	200.8
Vanadium	200.8
Zinc	200.8
Iron	200.8
Manganese	200.8
Arsenic	200.8
Lead	200.8
Mercury	245.1
Nickel	200.8
Selenium	200.8
Thallium	200.8
Cyanide	SM <sup>1</sup> 4500-CN
Sulfide	SM 4500-CN

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1. Standard Methods

**Volatile Organic Compounds:**

**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)

**TABLE V**

**CONSTITUENTS OF CONCERN & APPROVED USEPA ANALYTICAL METHODS**

**(Continued)**

Chloroprene  
Dibromochloromethane (Chlorodibromomethane)  
1,2-Dibromo-3-chloropropane (DBCP)  
1,2-Dibromoethane (Ethylene dibromide; EDB)  
o-Dichlorobenzene (1,2-Dichlorobenzene)  
m-Dichlorobenzene (1,3-Dichlorobenzene)  
p-Dichlorobenzene (1,4-Dichlorobenzene)  
trans- 1,4-Dichloro-2-butene  
Dichlorodifluoromethane (CFC 12)  
1,1 -Dichloroethane (Ethylidene chloride)  
1,2-Dichloroethane (Ethylene dichloride)  
1,1 -Dichloroethylene (1, 1-Dichloroethene; Vinylidene chloride)  
cis- 1,2-Dichloroethylene (cis- 1,2-Dichloroethene)  
trans- 1,2-Dichloroethylene (trans- 1,2-Dichloroethene)  
1,2-Dichloropropane (Propylene dichloride)  
1,3-Dichloropropane (Trimethylene dichloride)  
2,2-Dichloropropane (Isopropylidene chloride)  
1,1 -Dichloropropene  
cis-1,3-Dichloropropene  
trans- 1,3-Dichloropropene  
Di-isopropylether (DIPE)  
Ethanol  
Ethyltertiary butyl ether  
Ethylbenzene  
Ethyl methacrylate  
Hexachlorobutadiene  
Hexachloroethane  
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

## TABLE V

### CONSTITUENTS OF CONCERN & APPROVED USEPA ANALYTICAL METHODS

(Continued)

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

#### Semi-Volatile Organic Compounds:

##### **USEPA Method 8270C - base, neutral, & acid extractables**

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

**TABLE V**

**CONSTITUENTS OF CONCERN & APPROVED USEPA ANALYTICAL METHODS**

**(Continued)**

p-Chloro-m-cresol (4-Chloro-3-methylphenol)  
2-Chloronaphthalene  
2-Chlorophenol  
4-Chlorophenyl phenyl ether  
Chrysene  
o-Cresol (2-methylphenol)  
m-Cresol (3-methylphenol)  
p-Cresol (4-methylphenol)  
4,4'-DDD  
4,4'-DDE  
4,4'-DDT  
Diallate  
Dibenz[a,h]anthracene  
Dibenzofuran  
Di-n-butyl phthalate  
3,3'-Dichlorobenzidine  
2,4-Dichlorophenol  
2,6-Dichlorophenol  
Dieldrin  
Diethyl phthalate  
p-(Dimethylamino)azobenzene  
7,12-Dimethylbenz[a]anthracene  
3,3'-Dimethylbenzidine  
2,4-Dimethylphenol (m-Xylenol)  
Dimethyl phthalate  
m-Dinitrobenzene  
4,6-Dinitro-o-cresol (4,6-Dinitro-2-methylphenol)  
2,4-Dinitrophenol  
2,4-Dinitrotoluene  
2,6-Dinitrotoluene  
Di-n-octyl phthalate  
Diphenylamine  
Endosulfan I  
Endosulfan II  
Endosulfan sulfate  
Endrin  
Endrin aldehyde  
Ethyl methanesulfonate  
Famphur  
Fluoranthene  
Fluorene  
Heptachlor  
Heptachlor epoxide  
Hexachlorobenzene

**TABLE V**

**CONSTITUENTS OF CONCERN & APPROVED USEPA ANALYTICAL METHODS**

**(Continued)**

Hexachlorocyclopentadiene  
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-Nitrosopyrrolidine  
5-Nitro-o-toluidine  
Pentachlorobenzene  
Pentachloronitrobenzene (PCNB)  
Pentachlorophenol  
Phenacetin  
Phenanthrene  
Phenol  
p-Phenylenediamine  
Polychlorinated biphenyls (PCBs; Aroclors)  
Pronamide  
Pyrene  
Safrole  
1,2,4,5-Tetrachlorobenzene  
2,3,4,6-Tetrachlorophenol

**TABLE V**

**CONSTITUENTS OF CONCERN & APPROVED USEPA 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 8141A**

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