

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN DIEGO REGION

MONITORING AND REPORTING PROGRAM NO. R9-2010-0068
FOR THE BONSALL SANITARY LANDFILL
TWIN OAKS VALLEY ROAD
SAN DIEGO COUNTY

The California Regional Water Quality Control Board, San Diego Region (hereinafter San Diego Water Board), finds that:

- 1. Legal and Regulatory Authority:** This Monitoring and Reporting Program (M&RP) conforms to and implements (1) policies and requirements of the Porter-Cologne Water Quality Control Act (Division 7, commencing with Water Code section 13000) including section 13267; (2) applicable State and federal regulations (3) all applicable provisions of Statewide Water Quality Control Plans adopted by the State Water Resources Control Board (State Water Board) and the *Water Quality Control Plan, San Diego Basin* (Basin Plan) adopted by the San Diego Water Board including beneficial uses, water quality objectives, and implementation plans; (4) State Water Board policies and regulations, including, including State Board Resolution No. 68-16 *Statement of Policy with Respect to Maintaining High Quality of Waters in California*, Resolution No. 88-63 *Sources of Drinking Water*, and Resolution No. 92-49 *Policies and Procedures for Investigation and Cleanup and Abatement of Discharges under California Water Code Section 13304*; California Code of Regulations (CCR) Titles 23 and 27; and (5) relevant standards, criteria, and advisories adopted by other State and federal agencies.
- 2. Purpose:** This M&RP is necessary to assess the compliance of the San Diego County Department of Public Works (hereinafter County) with Waste Discharge Requirements Order (WDR) No. 97-15, and Cleanup and Abatement Order (CAO) No. R9-2010-0067. CAO No. R9-2010-0067 was issued to address a release of volatile organic constituents (VOCs) from the Bonsall Sanitary Landfill (Landfill) discharging to waters of the State (groundwater). After the release is adequately addressed, this M&RP will be used to assess ongoing compliance with WDR No. 97-15 and determine if additional releases have occurred.
- 3. Basis for Groundwater Corrective Action Monitoring:** This M&RP requires the County to establish and implement a water quality monitoring program in accordance with CCR Title 27 section 20430(d) to demonstrate the effectiveness of the Corrective Action Program. The presence of waste constituents in groundwater triggered the requirements for an Evaluation Monitoring Program (EMP), under CCR Title 27 section 20425, for the Landfill. The County has completed the requirements for an EMP to the satisfaction of the San Diego Water Board.
- 4. Basis for Groundwater Monitoring System Requirements and Standards:** This M&RP prescribes performance requirements for monitoring systems and corrective

action, as set forth in CCR Title 27 sections 20415(b) and 20430(b), for cleanup and abatement of pollution and nuisance conditions from the release/discharge of waste constituents from the waste management unit into groundwater.

5. **Basis for Requiring Technical and Monitoring Reports:** Water Code section 13267 provides that the San Diego Water Board may require dischargers, past dischargers, or suspected dischargers to furnish those technical or monitoring reports as the San Diego Water Board may specify, provided that the burden, including costs, of these reports, shall bear a reasonable relationship to the need for the reports and the benefits to be obtained from the reports. In requiring the reports, the San Diego Water Board must provide the person with a written explanation with regard to the need for the reports, and identify the evidence that supports requiring that person to provide the reports.
6. **Need for Technical and Monitoring Reports:** The technical and monitoring reports are needed to ensure that the County complies with CCR Title 27 and to enable the San Diego Water Board to effectively assess the compliance by the County with WDR No.97-15 and CAO No. R9-2010-0067. The burden of providing the required reports bears a reasonable relationship to the need for the reports and the benefits to be obtained from the reports.
7. **Need for Surface Water Monitoring:** Pursuant to CCR Title 27 section 20415(c), the County must establish a surface water monitoring system to monitor each surface water body that could be affected by a release from the unit. Surface water hydrogeology for site is presented in the AROWD;¹ however, the AROWD does not assess whether the release could impact surface water.
8. **Qualified Professionals:** Qualified professionals are necessary for preparing the technical and monitoring reports required by this M&RP, to ensure that the collected data and interpretations are reliable and accurate. Professionals should be qualified, licensed where applicable, and competent and proficient in fields pertinent to the required activities. California Business and Professions Code sections 6735, 7835, and 7835.1 require that engineering and geologic evaluations and judgments be performed by or under the direction of registered professionals.
9. **California Environmental Quality Act:** The Bonsall Sanitary Landfill is an existing Site and as such is exempt from the provisions of the California Environmental Quality Act (CEQA) in accordance with Title 14, California Code of Regulations, section 15301. The issuance of this M&RP is also exempt from CEQA because it can be seen with certainty that there is no reasonable possibility of a significant effect on the environment as a result of compliance with the M&RP. (CCR Title 14 section 15061(b).)

¹ Geosyntec Consultants, Revised Amended Report of Waste Discharge and Engineering Feasibility Study, Bonsall Landfill, September 2009.

IT IS HEREBY ORDERED that, pursuant to section 13267 of the Water Code, the County shall comply with the following monitoring and reporting program requirements:

PART I – COMPLIANCE REPORTING

A. REPORTS TO BE FILED WITH THE SAN DIEGO WATER BOARD

1. **Semi-Annual Report:** The semi-annual report shall contain, at a minimum, the following information:
 - a. A list of monitoring parameters (MPars)² for each groundwater monitoring well and landfill gas (LFG) migration monitoring probe;
 - b. Detection limits of laboratory testing and monitoring equipment;
 - c. The concentrations of MPars of samples collected during the current sampling event;
 - d. A map (or copy of an aerial photograph) which indicates the locations of observation stations, monitoring points, background monitoring points, and groundwater flow rate/direction with a graphical presentation (e.g., arrow indicating flow direction on a map);
 - e. A map showing the groundwater elevation encountered at each groundwater monitoring well, and groundwater elevation contours with interpreted groundwater flow direction and gradient;
 - f. A map showing the location and concentration of all MPars that exceed their respective Water Quality Protection Standard;
 - g. Groundwater monitoring well construction information, method and time of groundwater elevation measurement, a description of the method used to purge the well and collect groundwater samples, and quality assurance/quality control (QA/QC) procedures used;
 - h. Field logs used during well purging and sampling. At a minimum the field logs should include the following:
 - i. The well number;
 - ii. Sampling date and time;
 - iii. The method of monitoring field parameters and calibration of equipment used to monitor field parameters;

² MPars are “monitoring parameters” that make up the subset of Constituents of Concern that are monitored in groundwater either to detect a release, or evaluate the effectiveness of corrective actions.

- iv. Purge method (if a pump is used, include pump placement and pumping rate);
 - v. Purging and sampling information such as: date each well was purged, well recovery time, method of disposal of the purged water, an estimate of volume of water purged from each well, the results of all field analyses, depth to groundwater prior to purging, at the conclusion of purging, and when the sample was collected, method of measuring the water level, and field personnel names and signatures;
 - i. A discussion of the condition and performance of the storm water control;
 - j. Site inspection reports;
 - k. Inspection results for temporary soil stockpiles;
 - l. A graphical representation of concentration data versus time, using semi-log plots, covering all available monitoring data for each MPar for at least the previous five years;
 - m. Landfill gas (LFG) monitoring reports, including method and time of landfill gas measurement, quality assurance/quality control (QA/QC) procedures, and measured concentrations of methane and volatile organic compounds (VOCs) in LFG monitoring points;
 - n. Corrective action operational parameters, including natural attenuation parameters for groundwater; LFG extraction rates; and concentrations of methane, carbon dioxide, and oxygen for each LFG extraction well;
 - o. Correlation of dissolved oxygen (DO) and oxidation reduction potential (ORP). Include a plot of dissolved oxygen and ORP data from each sampling event including the r^2 value for the best fit correlation. This is a data QA/QC test for field measured parameters. If the correlation is low, the DO and ORP data should not be used to interpret subsurface conditions, and the monitoring procedures should be further evaluated; and
 - p. An evaluation of corrective action measures (upgrades to the cover, storm water conveyance, and landfill gas extraction system; and monitored natural attenuation) in accordance with CCR Title 27, section 20430(h). If the County or San Diego Water Board determines that the corrective action measures are ineffective, the evaluation shall also document how the Corrective Action Measures will be revised to improve their effectiveness.
2. **Annual Summary Report:** The annual summary report, covering the previous monitoring year, shall contain the following information:

- a. For each monitoring point and background monitoring point, the County shall submit a graphical display per CCR Title 27 section 20415(e)(14) for all data collected within at least the previous five calendar years. Each graph shall plot the concentration of one or more constituents over time for a given monitoring point. For any given constituent, the scale on the concentration axes for all plots should be the same semi-log scale to facilitate comparison and identification of trends. Based on the trend analysis the San Diego Water Board may direct the County to carry out a preliminary investigation to determine whether or not a release is indicated.
- b. For each monitoring point, trend analyses shall include identification of current trends, a comparison to previously identified trends, and a discussion of any significant changes in the trends. A trend analysis shall be prepared for groundwater and landfill gas data.
- c. Documentation of a statistical or non-statistical data analysis at each monitoring well for those MPars that have not previously been detected at that well (Detection Mode).
- d. Updates to the background data set or statistical analysis methods as required by **Part IV.A.2 - Statistical Analysis**.
- e. A written summary of the monitoring results and monitoring system(s), indicating any changes made or observed since the previous Annual Summary Report.
- f. All analytical data obtained during the previous annual reporting period presented in a tabular format. The data shall be provided electronically on compact disks (CDs) or other media as GeoTracker Electronic Data Files (EDFs) with pdfs of the summary table and original laboratory data.
- g. A comprehensive discussion of the compliance record and of all corrective actions taken or planned which may be needed to bring the County into full compliance with WDR No. 97-15, CAO No. R9-2010-0067 or this M&RP. The discussion of the compliance record shall identify any conditions that have failed to comply with any requirements of WDR No. 97-15, CAO No. R9-2010-0067 or this M&RP during the previous annual reporting period. For each condition identified, the actions taken to correct the condition over the previous annual reporting period shall be documented. Activities planned for the reporting period of the next annual report shall be presented with a schedule for completion.
- h. A topographic map at appropriate scale, showing the direction of groundwater flow at the Landfill.

- i. A copy of any amendments made to the Storm Water Pollution Prevention Plan, required by Order No. 97-03-DWQ. If no amendments were made since the previous year, the County shall provide a statement to that effect.
 - j. A summary of all maintenance activities conducted during the reporting period.
 - k. All modifications to the landfill maintenance plan. If no modifications were made since the previous reporting period, the County shall provide a statement to that effect.
 - l. A copy of the entries over the reporting period to the Permanent Log, listing all deficiencies and the actions taken to correct them (See section Part I.A.3.b).
 - m. An assessment of potential surface water impacts by a release of waste constituents from the landfill. If the County determines that a release may affect surface water, the County must propose and implement a Surface Water Monitoring System to monitor each water body that could be affected. Monitoring data should be provided in the Annual Summary Report.
- 3. Site Inspection Reports:** Site inspections shall be completed at least once each quarter and reported to the San Diego Water Board. The Site Inspection Reports shall include all observations and monitoring activities to document compliance with performance standards set forth in CCR Title 27, section 21090(c).
- a. Site Inspection Reports shall be included in an Appendix to each Semi-Annual Report and at a minimum, include the following information: an evaluation of all systems, including the landfill gas collection/ monitoring system, condensate and leachate containment structures, sumps, groundwater monitoring wells, and drainage control structures. The inspection reports shall include the date and time of inspections, and contain information on site conditions and at a minimum a discussion of any significant finding concerning:
 - i. General site conditions;
 - ii. The condition of the storm water conveyance system;
 - iii. The effectiveness of erosion control BMPs;
 - iv. The condition of the water quality monitoring points;
 - v. The status/condition of the landfill gas control system;

- vi. Maintenance activities performed at the site;
 - vii. The condition of temporary soil stockpiles at the site;
 - viii. Identification of all areas that require maintenance work; and
 - ix. A summary of all maintenance activities conducted at the site since the last site inspection.
- b. All observed deficiencies shall be photographed and recorded in the Site Inspection Report and a permanent log that is kept on site or at the County office, and made available for review upon request. Documentation of the actions taken to correct each deficiency and a photograph showing the area after corrective actions should be included in a Site Inspection Report and the permanent site log. The permanent site log must list all inspections conducted by County staff and all federal, State, and local agencies, the results of the inspection, and corrective actions taken to correct all noted deficiencies.
 - c. The Site Inspection Reports shall document compliance with the maintenance requirements listed in maintenance specification B.1. of Order No. 97-15 and directive C.4.c of Order No. R9-2010-0067:
- 4. Landfill Gas Monitoring Reports:** Because LFG control is part of the corrective action, the County shall monitor the LFG control system as described in **Part II.C - LANDFILL GAS MONITORING** and report to the San Diego Water Board.
- a. LFG Monitoring Reports shall be included in an Appendix to each Semi-Annual Report and include the following minimum information:
 - i. Maps showing the location of all LFG extraction wells and LFG monitoring probes;
 - ii. Tables of monitoring results listing the date and time of the measurement, the individual taking the measurement, and at a minimum the following information:
 - 1. Pressure drop at each LFG extraction well; and
 - 2. Methane and Oxygen concentration of extracted LFG.
 - iii. Field monitoring calibration documentation; and
 - iv. Any additional information needed to determine whether or not the LFG control system is operating effectively as part of the corrective action at the Landfill.

- b. LFG data shall be evaluated as described in **Part I.A.1.p – Semi-Annual Report** to determine if the upgrades to the LFG system are functioning effectively as corrective action measures and recommend any upgrades needed.
- 5. Constituents of Concern Report:** The County shall monitor all potential constituents of concern (COCs) and submit a COC Report as follows:
 - a. Every five years the County shall sample all monitoring points and background monitoring points for each monitored medium (excluding landfill gas) for all COCs identified in Table 5 of the AROWD and constituents listed in Appendix II to 40 CFR Part 258 (Appendix II). The first COC report shall be submitted no later than **April 30, 2011** and subsequent COC reports shall be due every fifth year thereafter alternately in the Fall (Reporting Period ends September 30) and Spring (Reporting Period ends March 31). The COC report may be combined with the Semi-Annual Report or any Annual Summary Report having a reporting period that ends at the same time.
 - b. The County shall monitor for all COCs in accordance with this Section, provided that such monitoring need only encompass those COCs that do not also serve as monitoring parameters.
 - c. The MPar list and COC list shall be updated as described in **Part IV.E Five-Year COC Scan**. The updates to the MPar and COC list shall be documented in the Constituents of Concern Report.
- 6. Violation Reports:** If the County determines there has been a violation³ of any requirement in WDR No. 97-15, or directive of CAO No. R9-2010-0068, or this M&RP; then the County must notify the San Diego Water Board office by telephone as soon as practicable once the County has knowledge of the violation. The San Diego Water Board staff may, depending on violation severity, require the County to submit a separate technical report on the violation within five working days of telephone notification.

³ A violation includes any violation of a requirement issued by a regulatory agency relative to requirement of applicable State, federal, or local storm water control permits, or an exceedance of any Water Quality Control Protection Standard.

- B. REPORTING SCHEDULE:** Reports shall be submitted to the San Diego Water Board Office by 5:00 pm on or before the due date, in accordance with the following schedule:

Table B.1: Reporting Schedule

Report Type	Report Frequency	Report Period	Report Due
Semi-Annual Report	Semi-Annual	October - March	April 30
Semi-Annual Report	Semi-Annual	April - September	October 30
Annual Summary Report	Annual	April - March	April 30
COC Report	Five Years	Varies ¹	April 30 or October 30 ¹

¹ COC Reports are due at alternating intervals to account for potential seasonal variations in these data (i.e., every other report is due in April of the reporting year).

C. STANDARD REPORTING REQUIREMENTS

- 1. Submission Procedures.** The County must submit one paper and one electronic, searchable PDF copy of all documents required under this M&RP to:

California Regional Water Quality Control Board, San Diego Region
 9174 Sky Park Court, Suite 100
 San Diego, California 92123
 Attn: Land Discharge Program Supervisor

Larger documents shall be separated at logical places in the report to keep file sizes under 150 mb. The County shall also continue to provide a paper transmittal letter, a paper copy of all figures larger than 11 inches by 17 inches, and an electronic copy (on a CD or other appropriate media) of all reports to the San Diego Water Board. All correspondence and documents submitted to the San Diego Water Board shall include the reference code "210029:cprowell" in the header or subject line.

- 2. Use of Licensed Professionals.** All reports, plans, and documents required under this M&RP must be prepared under the direction of appropriately qualified professionals. California Business and Professions Code sections 6735, 7835, and 7835.1 require that engineering and geologic evaluations and judgments be performed by or under the direction of licensed professionals. A statement of qualifications and license numbers of the responsible lead professionals shall be included in all plans and reports submitted by the County. The lead professional shall sign and affix their license stamp to the report, plan, or document.

- 3. ELECTRONIC DATA SUBMITTALS:** The State's Electronic Reporting Regulations (Chapter 30, Division 3 of Title 23 CCR) ⁴ require electronic submission of any report or data required by a regulatory agency from a cleanup site. All information submitted to the San Diego Water Board in compliance with this M&RP is also required to be submitted electronically via the Internet into the Geotracker database <http://geotracker.waterboards.ca.gov/> (Geotracker Site ID: L10001753716). The electronic data must be uploaded on or prior to the regulatory due dates set forth in the M&RP or addenda thereto. To comply with these requirements, the County must upload to the Geotracker database the following minimum information: ⁵
- a. **Laboratory Analytical Data:** Analytical data (including geochemical data) for all soil, vapor, and water samples in Electronic Data File (EDF) format. Water, soil, and vapor data include analytical results of samples collected from monitoring wells, boreholes, LFG probes, LFG extraction wells, soil vapor wells, piezometers, surface water, stockpiles, and drinking water wells.
 - b. **Location Data:** The latitude and longitude of any permanent monitoring well for which data is reported in EDF format, accurate to within 1 meter and referenced to a minimum of two reference points from the California Spatial Reference System (CSRS-H), if available.
 - c. **Monitoring Well Elevation Data:** The surveyed elevation relative to a geodetic datum of any permanent monitoring well. Elevation measurements shall be made at the top of groundwater well casings for all groundwater monitoring wells.
 - d. **Depth-to-Water Data:** The depth-to-water in monitoring wells even if groundwater samples are not actually collected during the sampling event.
 - e. **Monitoring Well Screen Intervals:** The depth to the top of the screened interval and the length of screened interval for any permanent monitoring well.
 - f. **Site Map:** Site map or maps which display discharge locations, streets bordering the facility, and sampling locations for all soil, water, and vapor samples. The site map is a stand-alone document that may be submitted in various electronic formats. A site map must also be uploaded to show the maximum extent of any waste constituent in groundwater. An updated site map may be submitted at any time.

⁴ As required by California Code of Regulations, Title 23, section 3890 et seq.

⁵ Reporting requirements per California Code of Regulations, Title 23, section 3893(b).

- g. **Boring logs:** Boring logs (in searchable PDF format) prepared by an appropriately licensed professional.
 - h. **Electronic Report:** A complete copy (in searchable PDF format) of all work plans, assessment, cleanup, and monitoring reports including the signed transmittal letters, professional certifications, and all data presented in the reports.
4. **Transmittal Letter.** A letter summarizing significant findings shall be submitted as part of each report. The transmittal letter shall include:
- a. A summary of all violations incurred since the last report. Violations include verbal and written notices of violation from federal, State, and local regulatory agencies, and violations noted by the County, such as exceedance of the Water Quality Protection Standard, failure to conduct monitoring as required by this M&RP, or any other violation of WDR No. 97-15, CAO No. R9-2010-0067, or this M&RP.
 - b. A discussion of any condition identified since the last report was submitted that does not comply with WDR No. 97-15, CAO No. R9-2010-0067, or this M&RP, and a description of all actions taken or planned to correct the violation(s). The County shall describe any actions taken to address previously identified violations and the status of any ongoing violations. If no violations have occurred since the last submittal, this shall be stated in the transmittal letter.
 - c. A statement certifying that the County shall conduct corrective actions during the next annual reporting period to address all deficiencies listed in the Annual Report (See **Part I.A.2.g - Reporting Requirement**) and that funding and other resources as required will be allocated to conduct the activities according to the proposed schedule.
 - d. The person signing the Transmittal Letter must make the following certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

- e. All documents submitted to the San Diego Water Board shall be signed by either a principal executive officer or ranking elected official, or by a duly authorized representative of that person. An individual is a duly authorized representative only if:
 - i. The authorization is made in writing by an authorized representative of the County;
 - ii. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity; and
 - iii. The authorization is submitted to the Executive Officer prior to submission of the document.

PART II – CORRECTIVE ACTION MONITORING SPECIFICATIONS

A. WATER QUALITY PROTECTION STANDARD: The Bonsall Sanitary Landfill is in violation of its water quality protection standard (WQPS) any time a given detection mode well/MPar pair exhibits a measurably significant increase over the applicable WQPS [per CCR Title 27, section 20415(e)(7)]. All well/MPar pairs in corrective action monitoring remain in violation of the WQPS until completion of a successful proof period that ends the CAP [see CCR Title 27, section 20430(g)]. Pursuant to criteria established by CCR Title 27, section 20390, the WQPS for groundwater at the Bonsall Sanitary Landfill consists of the following components:

1. **Constituents of Concern (COC)** [CCR Title 27, section 20395]

The COCs for the Bonsall Landfill are listed in Table 5 of the AROWD. Updates to the COC list will be made pursuant to **Part I.A.5 – Constituents of Concern Report**. Statistical and non-statistical data analysis is limited to only those COCs that are on the current MPar list.

2. **Concentration Limits** [CCR Title 27, section 20400(b) and (c)]

As established in Order No. R9-2010-0067, the concentration limit of a given well/MPar pair is its applicable background data set, as determined or updated pursuant to **Part IV.A.2 – Background Data Set** and **Part IV.D – Ongoing Background Well Testing**. For organic constituents, the Maximum Contaminant Levels or (MCLs) as promulgated by the California Department of Public Health may be used as a Concentration Limit Greater than Background (CLGB) for evaluation of corrective action within the existing release. For constituents with no established MCL, the Concentration Limit will be set at the concentrations as of first quarter 2010 (see Finding 4) to preserve the existing water quality and allow detections of future releases of waste constituents from the landfill. CLGBs are not established for new releases.

3. **Point of Compliance And Monitoring Wells** [CCR Title 27, section 20405]

Compliance wells for the Bonsall Landfill include wells: BOGW-3, BOGW-7, BOGW-8, BOGW-10, BOGW-11, BOGW-12S, BOGW-12D, ITBO-1 and OFBO-1. *Background wells* for the Bonsall Landfill include wells BOGW-1 and BOGW-9. As conditions warrant, additional wells shall be installed such that the groundwater monitoring system meets the performance requirements of CCR Title 27, section 20415(b). Any additional wells shall be proposed by the County in the next Semi-Annual Report, and automatically added to the list of compliance or background wells unless rejected by the San Diego Water Board.

4. **Compliance Period** [CCR Title 27, section 20410]

The compliance period for this Landfill, at a minimum, is 30 years and started with the initiation of the evaluation monitoring program. Compliance monitoring shall continue through 2038 or until the site has been in continuous compliance with its WQPS for a period of three consecutive years, whichever is later.

B. GROUNDWATER MONITORING: The specific requirements for the applicable groundwater monitoring programs are defined by performance standards given in CCR Title 27, section 20415(b) and (e).

1. The monitoring program shall include a sufficient number of Monitoring Points, installed at appropriate depths and locations to provide:
 - a. The best assurance of the earliest possible detection of a release from the landfill (Detection Monitoring Program);
 - b. The data needed to evaluate changes in water quality due to the release from the Unit (Evaluation Monitoring Program); and
 - c. The data needed to evaluate the effectiveness of the Corrective Action Program.
2. The County shall implement a groundwater monitoring program that at a minimum includes the following:
 - a. The County shall use and maintain groundwater monitoring wells listed in **Part II.A.3 - Point of Compliance and Monitoring Wells** to implement the groundwater monitoring programs.

- b. Groundwater samples shall be collected, analyzed and reported for the MPars shown in the following table:

MONITORING PARAMETERS	UNITS	SAMPLING AND REPORTING FREQUENCY
pH	pH	Semi-annually
Field Conductivity	µS/cm	Semi-annually
Turbidity	NTU	Semi-annually
Total Dissolved Solids	mg/L	Semi-annually
Chloride	mg/L	Semi-annually
Sulfate	mg/L	Semi-annually
Nitrate as Nitrogen	mg/L	Semi-annually
Bicarbonate	mg/L	Semi-annually
Carbonate	mg/L	Semi-annually
Chemical Oxygen Demand	mg/L	Semi-annually
Calcium	mg/L	Semi-annually
Potassium	mg/L	Semi-annually
Magnesium	mg/L	Semi-annually
Sodium	mg/L	Semi-annually
Volatile Organic Compounds	µg/l	Semi-annually
Semi Volatile Organic Compounds (BOGW -3 and BOGW-8 only)	µg/l	Semi-annually

Note: mg/l = milligrams/liter and µg/l = micrograms/liter

- c. Groundwater samples shall be collected, analyzed, and reported for the Monitored Natural Attenuation Parameters shown on the following table.

MONITORED NATURAL ATTENUATION PARAMETER	METHOD	SAMPLING AND REPORTING FREQUENCY
Dissolved Oxygen	Field Method	Semi-annually
Oxidation Reduction Potential	Field Method	Semi-annually
Ethene	RSK-175M	Semi-annually

- d. Prior to pumping monitoring wells for sampling, the static water elevation shall be measured to the nearest 0.01 foot in each well.
- e. For any given monitored medium, samples shall be collected:
 - i. From all Monitoring Points and Background Monitoring Points to satisfy the data analysis requirements for a given Reporting Period;
 - ii. In a manner that ensures sample integrity to the greatest extent feasible; and
 - iii. Samples shall be collected as late in the Reporting Period as feasible, considering the time needed to analyze the samples, analyze the resulting data, and to prepare and submit the monitoring report to the San Diego Water Board within **30 days** after the end of the Reporting Period.
- f. Prior to purging and sampling monitoring wells, the County shall assess the well for the presence of a floating immiscible layer. If an immiscible layer is found, the County shall notify the San Diego Water Board within **24 hours** of the discovery.
- g. Groundwater elevations shall be monitored at least once during the monitoring period at the times of expected highest and lowest elevations of the water level for the respective groundwater body [CCR Title 27, section 20415(e)(15)]. Groundwater elevations shall be measured within a period of time short enough to avoid temporal variations in groundwater elevation.
- h. Groundwater sampling shall also include an accurate determination of field parameters (pH, temperature, electrical conductivity, and turbidity) [CCR Title 27, section 20415(e)(13)].

C. LANDFILL GAS MONITORING: The County shall implement a LFG monitoring program, as described in the AROWD, and meets the following minimum requirements:

- 1. **Monthly Landfill Gas Monitoring:** Once a month all LFG extraction wells and perimeter probes shall be monitored as follows:
 - a. LFG Extraction Wells
 - i. Methane
 - ii. Carbon Dioxide
 - iii. Oxygen

- iv. Static Pressure
 - v. Flow Rate
 - b. LFG Perimeter Probes
 - i. Methane
 - ii. Carbon Dioxide
 - iii. Oxygen
- 2. **Annual Perimeter Probe Monitoring:** Once a year perimeter probes MP-1, MP-2, MP-3, MP-5, and MP-9 shall be monitored for:
 - a. VOCs
 - b. Fixes Gases
 - i. Oxygen
 - ii. Carbon Dioxide
 - iii. Methane
 - iv. Nitrogen
 - v. Helium
 - vi. Ethane
 - vii. Ethene
 - viii. Propane
- 3. **Monitoring Locations:** Additional probes may be included in the annual monitoring if required to detect a release or to monitor the progress of corrective action measures. The County may propose, or the San Diego Water Board may require additional perimeter probes to be included.
- 4. **Replacement of Previous Order:** Upon issuance by the Executive Officer, this Monitoring and Reporting Program Order No. R9-2010-0068 supersedes Monitoring and Reporting Program Order No. 97-15 and all addenda thereto.

PART III – SAMPLING AND ANALYSIS

A. STANDARD MONITORING PROVISIONS

1. The County shall comply with the requirements of CCR Title 27, sections 20385 through 20430.
2. Unless otherwise permitted by the San Diego Water Board, all analyses shall be conducted at a laboratory accredited for such analyses by the California Department of Public Health.
3. Any report presenting new analytical data is required to include the complete Laboratory Analytical Report(s). The Laboratory Analytical Report(s) shall be signed by the laboratory director and contain:
 - a. A complete sample analytical report.
 - b. A complete laboratory QA/QC report.
 - c. A discussion of the sample and QA/QC data.
 - d. A properly completed Chain of Custody form for the analyzed samples.
 - e. A transmittal letter stating whether or not all the analytical work was supervised by the director of the laboratory, and contain the following statement, "All analyses were conducted at a laboratory accredited for such analyses by the California Department of Public Health in accordance with current USEPA procedures."
4. Specific methods of analysis shall be identified in monitoring program reports. If the County proposes to use methods or test procedures other than those included in the most current version of "Test Methods for Evaluations of Solid Waste, Physical/Chemical Methods, SW-846" (USEPA) or 40 CFR, Part 136, "Guidelines Establishing Test Procedures for the Analysis of Pollutants; Procedures for Detection and Quantification," a Sampling and Analysis Plan must be submitted, with the rationale for the change, to the San Diego Water Board for review for approval prior to implementing the requested change.
5. If the County monitors sampling point or MPar more frequently than required by this M&RP, the results shall be included in the monitoring reports. The County shall also report the increased frequency of monitoring and specific monitoring locations to the San Diego Water Board.

6. Sample collection, storage, and analysis shall be performed according to the protocols included in the USEPA's "SW-846: Test Methods for Evaluating Solid wastes, Physical/Chemical Methods" (available online at <http://www.epa.gov/epawaste/hazard/testmethods/index.htm>) and in accordance with a written sampling and analysis plan, approved by the San Diego Water Board.
7. All monitoring instruments and equipment shall be properly calibrated and maintained as necessary to ensure accuracy of measurements.
8. The County shall retain records of all monitoring information, including all calibration and maintenance records, and copies of all reports required by this M&RP. Records shall be maintained for a minimum of five years from the date of the sample, measurements, report, or application. This period may be extended during the course of any unresolved litigation regarding this discharge or when requested by the San Diego Water Board.
9. Records of monitoring information shall include:
 - a. The date, identity of sample, Monitoring Point from which the sample was collected, and time of sampling or measurement;
 - b. The name of the individual(s) who performed the sampling or measurements;
 - c. Date and time that analyses were started and completed, and the names of the individuals performing each analysis;
 - d. The analytical techniques or method used, including method of preserving the sample and the identity and volumes of reagents used;
 - e. Results of analyses and the method detection limit (MDL) for each parameter;
 - f. Laboratory quality assurance results (e.g., percent recovery, response factor, etc.); and
 - g. Chain of Custody forms.
10. The County shall comply with the following:
 - a. The methods of analysis shall be appropriate for the expected concentrations.
 - b. The method of analysis with the lowest MDL shall be used.

- c. Analytical results falling between the MDL and the practical quantitation limit (PQL) shall be reported as “trace” and shall be accompanied by documents reporting both by the MDL and PQL values for that analytical run.
- d. MDLs and PQLs shall be derived by the laboratory for each analytical procedure, according to State of California laboratory accreditation procedures. In a relatively interference-free laboratory derived MDLs and PQLs are expected to closely agree with published USEPA MDLs and PQLs.

If the laboratory suspects that, due to a change in matrix or other effects, the MDL or PQL for a particular analytical run differs significantly from historic MDL or PQL values the results shall be flagged and reported in the QA/QC report.

- e. The MDL shall always be calculated such that it represents a concentration associated with a 99 percent reliability of a non-zero result.
- f. The PQL shall represent the lowest concentration at which a numerical value can be assigned with reasonable certainty.
- g. All Quality Assurance/Quality Control (QA/QC) data shall be reported, along with the sample results to which it applies. The QA/QC information shall include the method, equipment, and analytical detection and quantitation limits, the recovery rates, an explanation for any recovery rate that is less than 80 percent, the results of equipment and method blanks, the results of spiked and surrogate samples, the frequency of quality control analysis, and the name and qualifications of the person(s) performing the analyses. Sample results shall be reported unadjusted for blank results or spike recovery. In cases where contaminants are detected in QA/QC samples (i.e., field, trip, or laboratory blanks), the accompanying sample results shall be appropriately flagged.
- h. Upon receiving written approval from the San Diego Water Board, a proposed alternative statistical or non-statistical procedure may be used for determining the significance of analytical results for a constituent that is a common laboratory contaminant (e.g., methylene chloride, acetone, diethylhexyl phthalate, and di-n-octyl phthalate) during any given Reporting Period in which QA/QC samples show evidence of laboratory contamination for that constituent. Nevertheless, analytical results involving detection of these analytes in any background or downgradient sample shall be reported and flagged for easy reference by the San Diego Water Board.

- i. Unknown chromatographic peaks shall be reported, along with an estimate of the concentration of the unknown analyte. When unknown peaks are encountered, second column or second method confirmation procedures shall be performed to attempt to identify and more accurately quantify the unknown analyte.

PART IV – STATISTICAL ANALYSIS

A. STATISTICAL DATA ANALYSIS METHODOLOGY

1. **Water Quality Monitoring Objective:** The objectives of the corrective monitoring program are to monitor the effectiveness of the corrective action measures and determine whether any MPar has exhibited a new measurably significant increase at any well. Therefore, the County shall monitor each well/MPar pair in one of the three following modes:
 - a. **Detection Mode:** The purpose of the Detection Mode monitoring, for any well/MPar pair is to detect the arrival of an MPar at that well in a concentration high enough to trigger a measurably significant indication using an appropriate statistical or non-statistical data analysis method.
 - b. **Tracking Mode:** For an MPar that has produced a measurably significant increase at any well, the purpose of tracking monitoring, for that well/MPar pair, is to verify the suitability and effectiveness of the existing or proposed corrective measures by tracking changes in the MPar's concentration at that location via regular updates to concentration-versus-time plot.
 - c. **Proof Mode:** For an MPar that has successfully undergone corrective action in a given well, the purpose of monitoring, for that well/MPar pair is to verify that the concentrations of the MPar remain below the concentration limit for a period of three years. Any constituent that remains at concentrations less than the concentration limit for all samples within a three-year period may be removed from the MPar list upon recommendation by the County and approval by the San Diego Water Board.
2. **Background Data Set** – The initial background data set for each MPar at a given compliance well (well/MPar pair), shall include all validated data obtained between 1991 and 2009, as presented in Appendix H of the AROWD. Every two years the County shall update the background data set with the new data from that well, providing that the new data do not indicate a statistically significant increase over the previous background dataset. The County may retire the well/MPar's oldest two years of background data. The new background dataset shall be presented and discussed in the appropriate annual report (CCR Title 27, section 20415(e)(14)).

The County shall validate the proposed intra-well background dataset for each MPar at each existing well, and for each new well. The County shall report the validated background dataset, for each affected well/MPar pair, in the next scheduled monitoring report. Initial background data validation shall be as follows:

- a. **Accelerated Background Data Procurement:** If there are *less than ten sampling events* for a given MPar at any well, the County shall implement the accelerated data procedure described in **Part IV.A.2.c – Intra-Well Background Validation for New Well/MPar Pairs** prior to initiating the intra-well background data set validation procedure described below.
- b. **Validate Upgradient Data for Organic Appendix II MPars:** For any Appendix II organic compound that is an MPar, the initial intra-well data validation, shall only utilize data from background wells that do not exceed the constituent's method detection limit for 90 percent of the analyses. Such organic constituents should not be detectable at background wells except in error (around 1 percent of the time) or because the constituent comes either from the Unit or from another source. If organic constituents are detected in more than 10 percent of analyses in background wells the MPar should be rejected. If the County cannot adequately explain the reason for the constituent's presence, the County shall conduct an investigation under **Part IV.C - Statistical Analysis**.
- c. **Intra-Well Background Validation for New Well/MPar Pairs:** For new wells, or a new MPar at an existing well, the County shall establish the background concentration for each MPar by collecting and analyzing samples monthly from each well with insufficient background data until each well has at least 10 data points. If monthly sampling would not provide representative data, the County shall submit an alternate sampling plan to the San Diego Water Board for approval. Once ten data points are available the following intra-well comparison background dataset the following methods shall be used:
 - i. **Commonly Qualified Constituents:** For any MPar that, absent the Landfill's existence, would usually be detected in groundwater at concentrations exceeding the constituent's PQL, the County shall validate the proposed intra-well background data at each compliance well by comparing it to a pooled box-and-whiskers (pooled data) plot from all "background" (upgradient or cross-gradient background) wells completed in the same groundwater aquifer. A compliance well's data cannot be used for an intra-well comparison if constituent's median concentration exceeds the 75th percentile of the pooled data. Inter-well comparisons shall be used for these wells. Data sets from a well/MPar pair whose existing data's median is less than the pooled

background plot's 75th percentile shall be used as the initial background dataset for intra-well comparisons for that well/MPar pair.

- ii. **Rarely Quantified Constituents:** For an MPar that, absent the Landfill's existence, would seldom be detected in groundwater (e.g., synthetic constituents), the County shall identify the highest value from the pooled dataset from all background wells that have passed validation under ***Statistical Analysis Part IV.A.2.b*** or, in a case where all applicable upgradient well data is non-detect, the MDL. The County shall use this value as a basis of comparison to validate the data points in the proposed intra-well background dataset. The initial intra-well background dataset for that downgradient well shall consist of all data points in the proposed intra-well background dataset that are less than this value.
3. **Performance Standards:** All data analysis methods (statistical or non statistical) shall meet the requirements of CCR Title 27, section 20415(e)(9).
4. **Retest is Part of the Method:** The County shall conduct two re-tests whenever test results indicate that a MPar has an increased concentration to verify the initial data (CCR Title 27, section 20415(e)(8)(E)). A measurably significant increase exists if either or both the retest samples validate the preliminary indication.
5. **Limited Retest Scope:** For any given groundwater monitoring point, the County may perform the verification procedure only for those MPars that have shown a preliminary indication from that well for that reporting period.
6. **Detection Mode Data Analyses:** The County shall comply with the following when conducting detection mode sampling:
 - a. **MPars Readily Detectable in Background:** To determine if a new release has occurred the County shall use the intrawell prediction limits for calcium, magnesium, sulfate, and TDS, and interwell tolerance limits for all other constituents as presented in the AROWD. The County shall recalculate these limits every two years as described in the following sections. For any new MPar or monitoring well, the County shall propose and substantiate an appropriate statistical method for that well/MPar pair.
 - b. **MPars Not Readily Detectable in Background:** The County shall use the California Non-Statistical Data Analysis Method test described in ***Part IV.B Statistical Analysis*** for any monitoring point in which one or more MPars exceed their respective MDL in less than 10 percent of the applicable background dataset.

B. CALIFORNIA NON-STATISTICAL DATA ANALYSIS METHOD

1. Non-Statistical Method for Detection Mode MPars Seldom Found in

Background: The County shall use this data analysis for all constituents on the “scope list”, for each retest sample, or for the modified scope list.

- a. **Scope List:** Every MPar that exceeds its MDL in less than 10 percent of its background data set shall be placed on the “scope list.”
- b. **Two Triggers:** A measurably significant indication of a release occurs when:
 - i. Two or more of the MPars exceed their respective MDL; or
 - ii. One or more of the MPars equals or exceeds its respective PQL.

2. Discrete Retest [CCR Title 27, section 20415(e)(8)(E)]:

- a. In the event that the County concludes (pursuant to paragraph b.ii above) that there is a tentative indication of a release, then the County shall immediately notify the San Diego Water Board by phone or e-mail and, within **60 days** of the original sampling event, shall collect two new retest samples from the indicating compliance well.
- b. For any given compliance well retest sample, the County shall include, in the retest analysis, only the laboratory analytical results for those constituents indicated in that well’s original test and those indicated constituents shall comprise the well’s “modified scope list.” As soon as the retest data are available, the County shall apply the same test [under paragraph C.1.b above, but using the modified scope list] to separately analyze each of the two suites of retest data at that compliance well.
- c. If either or both of the retest samples trips either or both of the triggers under paragraph C.1.b above, then the County shall conclude that there is a measurably significant increase at that well for the constituent(s) indicated in the validating retest sample(s). Furthermore, thereafter, the County shall monitor the indicated constituent(s) in tracking mode instead of detection mode (see **Statistical Analysis Part VI.A.1.b**) at that well, and shall highlight this conclusion and these changes in the next scheduled monitoring report.

C. FREQUENT DETECTIONS OF AN ORGANIC CONSTITUENT IN A

BACKGROUND WELL: An “excessive proportion” of an MPar or a COC exists when 10 percent or more of the MPar data collected from a given background well are reported to have concentrations equal to or greater than the MDL. An “excessive frequency” exists when either a MPar or COC are reported to have concentrations equal to or greater than the MDL for two consecutive sampling events. The County shall notify the San Diego Water Board within **30 days** of the

determination that either an “excessive proportion” or “excessive frequency” exists. Furthermore, within **180 days** the County shall submit a report to the San Diego Water Board that evaluates if the MPar is from the site and proposes appropriate changes to the monitoring program. Based on the evaluation the San Diego Water Board may:

1. Conclude that the organic constituent originated from a source other than the Unit and require the County to make appropriate changes to the monitoring program, such as using an appropriate statistical inter-well comparison procedure with a suite of background data that reflects the expected concentration for that constituent; or
 2. Conclude that the organic compound originated from the site and require the County to:
 - a. list the constituent as an MPar in the next scheduled monitoring report, if it is not already so listed, and shall note this change in the Transmittal Letter;
 - b. include this background well as part of the release for that MPar and consider this well as a compliance well as part of the Evaluation Monitoring Program; and
 - c. within 120 days, install a new upgradient or cross-gradient background well in a portion of the aquifer that will provide data representative of background conditions for the Unit’s Compliance Wells.
- D. ONGOING BACKGROUND WELL TESTING.** The County shall continue to monitor background wells, for each MPar and COC, each time that MPar or COC is monitored at downgradient wells. New background well data shall be included in the semi-annual report [see **CCR Title 27, section 20415(e)(14)**] as a time-versus-concentration plot for that “background” well and constituent. Any time such a plot for a given well and constituent shows two successive data points in excess of the MDL for any organic constituent that has not already been investigated at that well, in **Part IV.C - Statistical Analysis**, the County shall notify the San Diego Water Board within **30 days** of the sampling event by phone or e-mail and shall initiate an investigation within **180 days** of noting this condition.
- E. FIVE-YEAR COC SCAN.** Every five years, subsequent to the initial Appendix II scan per **Part I.A.5 - Constituents of Concern Report**, the County shall analyze a sample from every groundwater monitoring well for all COCs not yet known to be part of the release, including all Appendix II constituents.
1. If a COC is detected (including trace value) that is not yet on the MPar list, the County shall, within **30 days**, resample the well and reanalyze the sample for the newly-detected constituent(s).

2. All COCs verified by a retest becomes part of the MPar list for the Site. The County shall notify the San Diego Water Board of any such change within **30 days** of the retest, via phone, facsimile or e-mail and shall list the constituent(s) added to the MPar list in the next scheduled monitoring report, along with a listing of which well(s) were involved in this detection and verification.

PART V – CONTINGENCY REPORTING

A. NOTIFICATION OF A RELEASE

1. The County shall notify the San Diego Water Board by telephone or e-mail within **24 hours**, and by mail within **seven days** when the County determines that there is significant physical evidence of a release.
2. The County shall notify the San Diego Water Board by telephone or e-mail within **30 days** of a sampling event when they determine that there is significant statistical evidence of a release. The County shall provide written notification by certified mail within **seven days** of the initial notification, and conduct a discrete test per **Part IV.A.4** (statistical method) or **Part IV.B.2** (non-statistical method).

B. EVALUATION OF A RELEASE. If the County determines that a release has been discovered it shall :

1. within **90 days** of determining there is measurably significant evidence of a release, submit an Amended Report of Waste Discharge proposing an Evaluation Monitoring Program meeting the requirements of CCR Title 27, sections 20420(k)(5) and 20425.
2. within **180 days** of discovering the release, submit to the San Diego Water Board a preliminary engineering feasibility study report meeting the requirements of CCR Title 27, section 20420(k)(6).

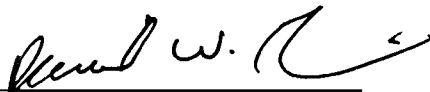
C. RELEASE BEYOND THE FACILITY BOUNDARY

1. The County shall implement the Public Participation Plan included in the AROWD.
2. Within **14 days** of concluding that a release has migrated beyond the facility boundary the County shall notify all affected persons (i.e., individuals and private and public entities who either own or occupy property that overlies the release).
3. The initial notification shall include a description of the County's current knowledge of the nature and extent of the release.
4. The County shall provide updates to all affected persons.

5. The County shall provide the San Diego Water Board a copy of the current mailing list of affected persons and copies of the notification and updates with **seven days** of sending such notifications.

PART VI – PROVISIONS

- A. ENFORCEMENT DISCRETION:** The San Diego Water Board reserves its right to take any enforcement action authorized by law for violations of the terms and conditions of this Order.
- B. ENFORCEMENT NOTIFICATION:** Failure to comply with requirements of this Order may subject the County to enforcement action, including but not limited to: imposition of administrative civil liability in an amount not to exceed \$1,000 for each day the violation occurs under Water Code section 13268, not to exceed \$5,000 for each day in which the violation occurs under Water Code section 13350, not to exceed \$10,000 for each day in which the violation occurs under Water Code Section 13308 or referral to the Attorney General for injunctive relief or civil or criminal liability.
- C. REQUESTING ADMINISTRATIVE REVIEW BY THE STATE WATER BOARD:** Any person affected by this action of the San Diego Water Board may petition the State Water Board to review the action in accordance with section 13320 of the Water Code and CCR Title 23 section 2050. The petition must be received by the State Board (Office of Chief Counsel, P.O. Box 100, Sacramento, California 95812) within 30 days of the date of this Order. Copies of the law and regulations applicable to filing petitions will be provided upon request.



David W. Gibson
Executive Officer