

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
LAHONTAN REGION

**BOARD ORDER NO. R6V-2012-(TENTATIVE)  
WDID NO. 6B360304005**

REVISED WASTE DISCHARGE REQUIREMENTS

FOR

**BARSTOW CLASS III LANDFILL, CLASS II SURFACE IMPOUNDMENTS AND  
SEPTAGE SLUDGE LANDFARM**

\_\_\_\_\_ San Bernardino County \_\_\_\_\_

The California Regional Water Quality Control Board, Lahontan Region (Water Board) finds:

1. Discharger

For the purpose of this Water Board Order (Order), the County of San Bernardino, Solid Waste Management Division, which owns and operates these facilities, is referred to as the "Discharger." On December 21, 2009, the Discharger submitted a Report of Waste Discharge (RWD) as part of the Joint Technical Document (JTD) for an expansion of the existing facility's Landfill. Amendments to the JTD were submitted on September 9, 2011, and February 2, and 3, 2012. The information in the RWD/JTD has been used in writing these Waste Discharge Requirements (WDRs). The RWD/JTD contains the necessary information to constitute a complete Report of Waste Discharge (ROWD) for the Barstow Class III Landfill (Landfill), Class II Surface Impoundments (Impoundments), and Class II Land Treatment Unit (Septage Sludge Landfarm). The RWD/JTD contains the applicable information required in California Code of Regulations (CCR), title 27. The RWD/JTD and supporting documents contain information related to this revision of the WDRs including:

- a. An updated stability analysis for the Landfill following closure.
- b. Proposed changes to the monitoring and reporting program to include additional monitoring points for new Landfill areas and usage of an action leakage rate for responding to leakage into the Impoundment's leachate collection and recovery systems.
- c. A proposal to install an alternative cover-design for final closure of the Landfill.
- d. Information about the newly installed gas collection/control/monitoring system for the existing unlined Landfill and the proposed gas extraction/control/monitoring system for the Landfill expansion.

- e. Information on surface drainage features that would be impacted by Landfill expansion.
- f. Proposed recirculation of leachate into composite-lined portions of future Landfill cells.
- g. Proposed the use of various waste materials as alternative daily cover.

The Landfill is operated by a contract operator (Contractor) under a contractual agreement (Contract) with the Discharger. The Contractor performs all of the day-to-day operations at the Facility. In a letter to the Water Board Executive Officer, dated February 19, 1997, the Discharger indicated that it alone has full and complete responsibility for all activities that take place at the Landfill, including all activities undertaken by the Contractor. The Discharger has specified that this will be the case even if these activities violate waste discharge requirements, or the conditions of the Contract, whether or not the Discharger has approved the activities, or whether the activities are legal or illegal. As such, it is unnecessary to also name the Contractor as a Discharger.

2. Facility

The existing waste management units are located on a 640-acre site, 47 acres of which encompasses the existing Landfill footprint, which includes, from west to east, the Class II Land Treatment Unit, three Class II Surface Impoundments, and the unlined Class III Landfill. These WDRs prescribe requirements for the continued operation and monitoring of the existing waste management units and the construction, operation and monitoring of the lined Landfill expansion area. The expansion area is located east of the existing Landfill within the existing borrow area, encompasses 11.5 acres, and is referred to as the Phase 1 Borrow Area. The Discharger has proposed to ultimately expand the lined areas of the Landfill south and east of the existing Landfill into areas referred to as Phases 1, 2, 3 and 4. This Order prohibits discharge into areas outside of the Phase 1 Borrow Area.

For the purpose of this Order, the unlined Barstow Class III Landfill is referred to as the "unlined Landfill," the Class II Surface Impoundments are referred to as the "Impoundments," and the Land Treatment Unit is referred to as the "Landfarm." Landfill For the purposes of this Order, the unlined Landfill, Impoundments, Landfarm and Phase 1 Borrow Area are collectively referred to as the "Facility." A map of the site location is included as Attachment A. Attachment B shows the Facility layout of the existing and proposed Landfill expansion area. These attachments are incorporated herein and made a part of this Order.

3. Reason for Action

The Water Board is revising the WDRs and updating the Monitoring and Reporting Program (MRP) to prescribe requirements for the construction, operation and monitoring of the proposed lined expansion of the Class III waste management unit into the Phase 1 Borrow Area, which includes approval of an alternative final cover for the existing and future Landfill waste management units. The landfill expansion project is part of a regional plan to reduce the number of County-operated landfills to five regional facilities, including the Barstow Sanitary Landfill. The expansion will significantly extend the life and size of the Facility.

4. Order History

- a. Waste discharge requirements (WDRs) in Board Order No. 6-84-56, were adopted on August 11, 1984, by the Water Board for the Barstow Landfill.
- b. Board Order No. 6-89-33, adopted February 9, 1989, revised the WDRs.
- c. Board Order No. 6-93-10037, adopted September 9, 1993, amended the WDRs to incorporate the requirements of Title 40, Code of Federal Regulations (40 CFR), Parts 257 and 258 (Subtitle D) as implemented in the State of California under State Water Resources Control Board (State Water Board) Resolution No. 93-62.
- d. Board Order No. 6-89-33A1, adopted September 8, 1994, amended the WDRs to include requirements for construction and operation of new lined Class II Surface Impoundments and closure of then-existing unlined Surface Impoundments.
- e. Board Order No. 6-97-79, adopted July 17, 1997, revised the WDRs and MRP to incorporate requirements of Board Order No. 6-93-10037, implement a load-checking program for the Impoundments, provide requirements for the construction and operation of the Landfarm, and to establish limitations for specific constituents, which may be present in the septage sludge and discharged to the Landfill. This Order rescinded Order Nos. 6-93-10037, 6-89-33, 6-89-33A1.
- f. Board Order No. R6V-2008-0025, adopted July 23, 2008, revised the WDRs to add requirements for one additional lined, Class II Surface Impoundment and rescinded Order No. 6-97-79.

5. Facility Location

The Facility is located at 32553 Barstow Road (Highway 247), approximately 3 miles south of the City of Barstow, San Bernardino County, within Sections 30, 31, and 32, Township 9 West, Range 1 West, San Bernardino Baseline and Meridian, as shown on Attachments A and B. Access to the Landfill is off Highway 247.

6. Existing Landfill Description

Landfill disposal operations are currently being conducted within an approximately 47-acre refuse disposal footprint. The existing Landfill is unlined and does not have a leachate collection and removal system (LCRS). The Landfill began operations in 1963, and has been in continuous operation since that time. It is currently scheduled for closure in 2012.

Water Board staff has reviewed information, submitted by the Discharger, showing the footprint of the waste discharged as of October 9, 1993. This Order continues to document the 47-acre unlined Landfill footprint, shown on Attachment B, as the limit of waste that is exempt from Subtitle D requirements for composite liners.

7. Proposed Landfill Expansion Project Description

The proposed Landfill expansion would occur into the Phase 1 Borrow Area and will occupy the existing borrow pit.

Peak annual leachate flow is estimated to be approximately 496,000 gallons during the year 2025. The maximum peak daily leachate flow is expected to be approximately 29,000 gallons (or 20 gallons per minute) during the year 2067. The peak daily leachate head on the liner is calculated to be approximately 0.0164 inches on the bottom liner areas occurring during the year 2076 and 0.017 inches on the side slope areas. Subtitle D requires that leachate collection system is designed and constructed to maintain less than 30 centimeters (12 inches) of depth of leachate on the liner.

Pursuant to CCR, title 27, section 21760, the Water Board will require the Discharger to submit a final design report for the Phase 1 Borrow Area for review and acceptance. Approximately six months prior to completion of filling the unlined Landfill operational refuse area, work will begin on the Phase 1 Borrow Area expansion, pending Water Board Executive Officer review and acceptance of final design reports.

8. Class II Surface Impoundments

The three active Impoundments are double lined with 60 mil (0.06 inch) high density polyethylene (HDPE) plastic. For each Impoundment, a LCRS drainage layer, sloped to collection sumps, exists between the two liners and drains to a collection sump. Each sump is approximately 30-feet deep. The total capacity, in millions gallons for each Impoundment are as follows: West Pond 2.307; East Pond 2.307; South Pond 2.627.

The type of wastes accepted at the Impoundments are septic tank pumpings (septage) and chemical toilet waste.

Contained within a Septage Management Plan, the Discharger has developed a load checking program to prevent the discharge of industrial wastes containing volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs) to the Impoundments. However, because septage and chemical toilet waste can also contain these waste constituents, it is not expected that the load checking program can feasibly eliminate all VOC and SVOC discharges to the Impoundments. The liner system for the Impoundments is capable of containing wastes that have low concentrations of VOCs and SVOCs. This Order acknowledges that septage and chemical toilet waste will contain low concentrations of VOCs and SVOCs and permits such discharge. This Order does not permit the discharge of industrial wastes and requires implementation of the approved Septage Management Plan, including the load checking program to ensure industrial wastes are not discharged to the Impoundments.

9. Landfarm

The Landfarm is an unlined, bermed area that covers approximately 4.3 acres. The Landfarm provides an area for the aeration and treatment of septage sludge received from the Impoundments. The treatment zone is considered to be the native soil to a depth of five feet below the ground surface beneath the Landfarm. Only sludge dried to at least 50 percent solids by weight is allowed in the Landfarm. Only sludge generated from the Impoundments is allowed to be discharged to the Landfarm. Treatment is necessary to remove VOCs and SVOCs from the sludge prior to Landfill disposal. This Order includes numerical effluent limitations for VOCs and SVOCs in septage sludge that can be discharged to the Landfill. This Order requires the Discharger follow an approved Sampling and Analysis Plan (SAP) for the treated sludge prior to disposal to the Landfill. This Order also requires compliance with an approved SAP to ensure constituents of concern have not migrated beyond the treatment zone.

10. Authorized Disposal Sites

The Facility will receive waste from the City of Barstow and nearby communities. The Landfarm will receive septage sludge from the adjacent Impoundments. This Order expands the footprint of the authorized Landfill disposal site to the Phase 1 Borrow Area fill area shown in Attachment B. The only authorized disposal sites for septage and chemical toilet waste are the three Impoundments. The only authorized treatment site for septage sludge from these Impoundments is the Landfarm. Once the septage sludge is treated in the Landfarm to achieve effluent limitations contained in this Order, the only authorized disposal site for the septage sludge is the Landfill or other authorized facilities. The only authorized disposal site for leachate collected from the Landfill is the lined portion of the Landfill or other authorized facilities.

11. Treated Auto Shredder Waste

Treated (stabilized) auto shredder waste (TASW) is any non-recyclable waste from the shredding of automobile bodies (from which batteries, mufflers, mercury switches, and exhaust pipes have been removed), household appliances, and sheet metal. The Discharger proposes to use TASW as alternative daily cover (ADC), beneficial reuse material, in the lined portion of the Landfill. TASW from certain authorized facilities, under a waiver issued by DTSC, and managed pursuant to CCR, title 22, section 66260.200(f), and Department of Toxic Substances Control (DTSC) Policy and Procedure No. 88-6, may be managed as non-hazardous waste. However, DTSC is considering eliminating the waiver due to new data that indicate TASW should be managed as hazardous waste. This Order, therefore, prohibits the discharge of TASW at the Landfill if DTSC finds that TASW is a hazardous waste that must be managed at a Class I Landfill. The Discharger must obtain a waiver from the Department of Toxic Substances Control (DTSC) to discharge TASW at this lined Landfill.

12. Alternative Daily Cover

The Discharger is proposing to use various non-hazardous and designated wastes as alternative daily cover (ADC) on the Landfill, including wood, green waste, compost materials, dried sludge, ash, cement kiln dust, dredge spoils, shredded tires, processed construction and demolition debris, and contaminated soil. These WDRs require that for each type of waste, the Discharger must first demonstrate that it does not pose a threat to water quality and meets the requirements for use as ADC under CCR, title 27, section 20705.

13. Waste Classification

The Discharger discharges, and proposes to discharge, wastes classified under CCR, title 27 as non-hazardous solid waste and inert waste to the existing unlined Landfill and proposed lined Landfill Phase 1 Borrow Areas. The Discharger also discharges wastes classified under CCR, title 27 as designated waste to three existing lined, Impoundments and the Landfarm. The wastes discharged to the existing Landfill include, but are not limited to, commercial and industrial waste, Municipal Solid Waste (MSW), construction and demolition waste, and treated septage sludge from the Landfarm. The septage waste discharged to the Landfarm for treatment is classified in CCR, title 27, section 20210, as solid designated waste. The treated septage sludge from the Landfarm is classified as nonhazardous solid waste (CCR, title 27, Section 20220).

14. Waste Management Unit Classification

This Order continues to classify the Landfill as a Class III waste management unit that accept nonhazardous and inert wastes (including MSW), three Class II Surface Impoundments that accept designated waste, and a Class II Land Treatment Unit (Landfarm) in accordance with CCR, title 27, section 20005, et

seq. The Discharger proposes to construct a new 11.5-acre Class III waste management unit for discharge of nonhazardous, MSW, and inert waste.

15. Subtitle D Compliance Status

Board Order No. 6-93-10037 required the submittal of several items in order to comply with Subtitle D. The Discharger has submitted Water Quality Protection Standards and complete information regarding the acceptance of liquids, the existing waste footprint, the distance from the Landfill to the nearest drinking water source, and whether the Landfill is located in a 100-year floodplain or wetlands. The above-listed items, which have previously been submitted, fulfill the submittal requirements of Subtitle D, as implemented by State Water Board Resolution No. 93-62.

16. Water Quality Protection Standard and Compliance Period

The Water Quality Protection Standard (WQPS) consists of constituents of concern (including monitoring parameters), concentrations limits, monitoring points, and the point of compliance.

This Order requires groundwater and unsaturated zone monitoring. The constituents of concern, monitoring points, and concentration limits for the groundwater and unsaturated zone are described in Monitoring and Reporting Program (MRP) R6V-2012-(TENTATIVE), which is attached to and made part of this Order.

The compliance period for each Unit must 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 must conduct a water quality monitoring program subsequent to a release from the Unit. The compliance period must begin anew each time the Discharger initiates an evaluation monitoring program.

17. Groundwater Elevation Monitoring Frequency

The prescribed requirements for a groundwater monitoring program specified in CCR, title 27, section 20415(e)(15), require the Discharger to measure the static water elevation in each well and determine groundwater flow rate and direction in the uppermost aquifer and in any zones of perched water and in any additional portions of the zone of saturation monitored at least quarterly, including the times of expected highest and lowest elevations of the water levels in the wells.

The Discharger has proposed to continue to measure groundwater elevations semi-annually. This Order continues the approval of this alternative monitoring frequency pursuant to CCR, title 27, section 20380(e)(1 through 3), which allows the Water Board to approve an engineered alternative for this prescriptive standard so long as the Water Board:

- a. Finds that each engineered alternative meets the requirements of section 20080 (b and c);
- b. Finds that for each applicable program under section 20385, the Discharger's proposed monitoring data procurement and analysis methods achieve the program's respective goals, including: those goals for a detection monitoring program, (section 20420[b]), an evaluation monitoring program (section 20425[a][2]), and a corrective action program (section 20430[b]); and
- c. Requires groundwater monitoring at least annually.

Section 20080 (b and c) requires that engineered alternatives must only be approved where the Discharger demonstrates:

- a. The construction of prescriptive standard is not feasible because it is unreasonably and unnecessarily burdensome and will cost substantially more than alternatives, which meet the criteria, or is impractical and will not promote attainment of applicable performance standards; and,
- b. There is a specific engineered alternative that is consistent with the performance goal of the prescriptive standard and affords equivalent protection against water quality impairment.

Based on over eight years of quarterly groundwater monitoring at the Facility, seasonal fluctuations in groundwater elevation (i.e. inferred changes in direction and velocity) have been minor. Continued quarterly groundwater elevation measurements will not provide an additional level of confidence in attainment of monitoring performance standard, and, thus, is considered unreasonably and unnecessarily burdensome and will cost substantially more than semi-annual monitoring. Therefore, semi-annual groundwater elevation monitoring will meet the prescribed performance standard of CCR, title 27, section 20415, which requires that the monitoring system is appropriate for detecting, at the earliest possible time, a release from the Facility.

18. Groundwater Sampling Frequency

The Discharger has proposed to continue sampling groundwater for monitoring parameters on a semi-annual frequency. Based on over eight years of groundwater sampling, including three years of quarterly sampling, monitoring parameter concentrations have been shown to be stable over time. Therefore, no loss in data would occur under a semi-annual monitoring frequency. This Order continues approval of the semi-annual groundwater sampling.

19. Statistical Methods

Statistical analyses of monitoring data are necessary for the earliest possible detection of measurably significant evidence of a release of waste from the

Facility. CCR, title 27 requires statistical data analysis. The monitoring parameters listed in this Order are believed to be the best indicators of a release from the Facility.

20. Detection Monitoring Program

Pursuant to CCR, title 27, section 20420, the Discharger has proposed a detection monitoring program for the Facility. The detection monitoring program monitors groundwater and the unsaturated zone for evidence of waste constituent migration that may threaten groundwater quality. No evidence of such a release has been detected to date.

21. Evaluation Monitoring Program

An evaluation monitoring program may be required pursuant to CCR, title 27, section 20425, if detection monitoring data indicate evidence of a threat to groundwater quality.

22. Corrective Action Program

A corrective action program (CAP) to remediate released wastes from the Facility may be required pursuant to CCR, title 27, section 20430, should results of an evaluation monitoring program warrant a CAP.

23. Volatile Organic Compounds Detected in Soil Gas

Unsaturated zone monitoring as part of the detection monitoring program at the Landfill began in 1987. At that time, no groundwater was encountered in borings at depths from 50 to 900 feet below ground surface (ft bgs). Four lysimeters were installed; two lysimeters have since been removed to accommodate installation of the Impoundments, and the remaining two lysimeters have not yielded soil pore water samples in 22 years of monitoring.

In 1995, the Discharger installed three soil-pore gas monitoring wells, which have been monitored quarterly through 2008, then semiannually to present. Methane and VOCs are commonly detected in soil-gas samples detected from these wells. The measured concentrations are variable between monitoring events, but no increasing concentration trends were noted in the most recent annual monitoring report. Detected VOCs include 1,1-dichloroethane, 1,1-dichloroethylene, 1,1,1-trichloroethane, chloroform, methylene chloride, xylene, toluene, trichlorofluoromethane, tetrachloroethene, and trichloroethene.

Based on over eight years of groundwater monitoring at the Landfill, VOCs have not impacted groundwater beneath the site. Based on the soil-gas monitoring of both shallow (77 to 85 fbg) and deep (101 to 109 fbg) gas monitoring wells, the gas "halo" around the existing unlined Landfill may have reached steady-state conditions. This monitoring data, on-site hydrogeologic conditions, and depth to

groundwater, would suggest that the existing pressure gradients within the unsaturated zone are not driving Landfill-related gases to deeper horizons.

24. Gas Extraction System

The Discharger has installed a landfill gas collection system at the existing Landfill to control off-site gas migration. The system consists of a series of gas collection wells interconnected by above-ground laterals and a main header pipe connected to the flare station. The Discharger proposes to expand this gas control/recovery system as the Landfill is expanded. Gas condensate is collected and gravity-flows to low-point collection sumps and is pumped to the flare station for destruction. This Order does not allow for discharge of gas condensate at this site.

25. Liner Design

The Discharger submitted an Alternative Liner Petition for the Barstow Sanitary Landfill for future Class III Liner Systems dated January 29, 2008, revised August 10, 2011 (Appendix L in RWD/JTD). As proposed, the bottom liner design is as follows (from top to bottom):

- a. 24-Inch thick gravel operations layer;
- b. Geotextile filter layer;
- c. LCRS gravel layer at least 9 inches thick;
- d. Geotextile;
- e. 60-Mil HDPE geomembrane textured on both sides;
- f. Geotextiled-backed Geosynthetic Clay Liner (GCL) with a permeability of  $3 \times 10^{-9}$  centimeters per second (cm/s) or less; and
- g. 12-Inch thick layer of screened on-site soil material.

As proposed, the slope liner system design is as follows (from top to bottom):

- a. 24-Inch thick gravel operations layer;
- b. Geotextile filter layer;
- c. 60-Mil HDPE geomembrane single-sided textured side down; and
- d. Geotextiled-backed Geosynthetic Clay Liner (GCL) with a permeability of  $3 \times 10^{-9}$  cm/s.

The Discharger proposes to install a geotextile-backed GCL encapsulated within 60-mil HDPE on the floor and slopes of the Landfill in the areas where stability analyses indicate that additional strengths are needed in the liner design and to maintain the required factor of safety of at least 1.5 under static and dynamic conditions, as specified in CCR, title 27, section 21750.

26. Geologic Setting

The Facility is located in the north-central portion of the Mojave Desert geomorphic province of California. The Facility is situated within the northwest portion of Daggett Ridge, a series of northwest-trending hills located south of the town of Daggett. Parts of several right-lateral, strike-slip faults are located within 20 miles of the site, including the Calico, Camp Rock-Emerson, Homestead

Valley, Harper Lake, Helendale, Lockhart and Lenwood faults. Several of these are active fault systems including the Lenwood-Lockhart, Harper Lake, and Landers faults. The age of displacement along these faults is Holocene (last 11,000 years), with movement demonstrated along the Lenwood fault (part of which is close to the site), within the past 200 years. The active Lenwood fault is included in an Alquist-Priolo Special Studies Zone and lies about 1,000 feet south of the Landfill expansion area. There is no evidence of recent displacement along faults traversing the Landfill expansion area (GeoLogic Associates, 2001).

The Facility is underlain by Quaternary sedimentary deposits that unconformably overlie Tertiary (Miocene to Pliocene) sedimentary and volcanic rocks. Quaternary sediments consist of older alluvium with more recent surficial deposits, primarily coarse-grained conglomerates. Immediately south of the Landfill expansion boundary are exposed Tertiary sediments consisting of siltstone, sandstone, and minor amounts of limestone. Detailed descriptions of site sediments are provided by the boring logs contained in the Geotechnical Investigation Report (Appendix B-1 of the JTD). The dominant sediment material is poorly sorted (well-graded), coarse-grained silty sand with minor fine-grained gravel. Resultant deposits of these gravelly sands owe their origin to coalescing alluvial fans emanating from steeper ephemeral watercourses in nearby mountainous bedrock terrain. These young sediments are weakly cemented and poorly lithified.

27. Regional Hydrology

A well-developed, northwest- to west-trending ridge (Daggett Ridge) forms a drainage divide extending through the southwest portion of the property. This watershed boundary separates the Lower Mojave and Middle Mojave sub-units of the Mojave Hydrologic Unit. Drainage is principally to the northeast towards the Mojave River. A smaller portion of the site property drains to the southwest into Stoddard Valley. Local topography is dominated by gently- to moderately-steep hills composed of mixed gravel, sand, and silt. All storm water runoff from the Facility is regulated under the State Water Board's Water Quality Order No. 97-03-DWQ, National Pollutant Discharge Elimination System (NPDES) General Permit No. CAS000001 (General Permit), WDRs for Discharges of Stormwater Associated with Industrial Activities Excluding Construction Activities, or subsequent permits.

28. Hydrogeology and Water Quality

The groundwater receiving waters beneath this Facility are the Lower Mojave River Valley groundwater basin. Southwest of the site, the northwest-trending Lenwood Fault acts as a groundwater barrier (EMCON, 1998), restricting groundwater flow between the groundwater basins of the Lower Mojave River Valley and the Middle Mojave River Valley. Groundwater production wells in the region draw water from conglomerate units beneath Stoddard Valley southwest of the site, and along the margins of the Lower Mojave groundwater basin northeast of the site. Regional groundwater flow southwest of the site, in the Middle Mojave

River Valley basin in the Stoddard Valley is to the northwest. Groundwater flow in the Lower Mojave River Basin, northeast of the fault, is to the northeast.

During a 1988 investigation, the Discharger drilled a boring at the Facility to a depth of 900 ft bgs. The boring did not encounter groundwater. Because of the great depth to groundwater at the Facility, a previous Order did not require groundwater monitoring but instead required unsaturated zone monitoring, which was intended to detect waste constituents that may be migrating downward from the Landfill to the underlying groundwater. In 2001, the Discharger installed groundwater monitoring wells that show groundwater occurs beneath the facility at depths ranging from 744 to 750 ft bgs.

Groundwater at the site occurs in the Quaternary fanglomerate deposits at depths ranging from 746 to 752 ft bgs. Groundwater flow direction is generally to the northeast toward the Mojave River with a horizontal hydraulic gradient of approximately 0.022 feet/foot. The hydraulic conductivity is estimated to be between 0.3 and 0.003 feet per day. Using an estimated effective porosity of 35 percent, the measured hydraulic gradient of 0.02 feet/foot, and the estimated hydraulic conductivities, the calculated groundwater velocity is 0.0002 to 0.02 feet per day.

Based on 10 years of groundwater monitoring from three groundwater monitoring wells installed at the Facility, groundwater quality beneath the site has not been affected by the existing Landfill operations. Groundwater sampling of these wells shows concentrations, in milligrams per liter (mg/L), of total dissolved solids (TDS) that range from 560 to 730, chloride concentrations that range from 9.8 to 100, and nitrate concentrations that range from 0.028 to 2.0 (mg/L as nitrogen[N]). Generally, the groundwater quality supports the designated beneficial uses.

29. Site Topography

The Facility is situated on the northwest flank of Daggett Ridge, a northwest-trending series of low-lying hills extending southeast from the town of Lenwood. Local topography is dominated by gently- to moderately-steep hills. The Landfill expansion area overlies the top of a subridge such that most of the area drainage slopes to the northeast towards the Mojave River. A smaller portion of the site drains to the southwest into Stoddard Valley. Site topography is shown on Attachment A.

30. Site Climatology

The climate of the area is arid and is characterized by long dry summers and moist winters. The average annual rainfall in the area of the Facility is approximately 4.1 inches. The average temperature is 64 degrees Fahrenheit (F) and ranges to an average high temperature in July of 103 degrees F. The average annual pan evaporation rate is approximately 82 inches.

Rain primarily occurs from November through April in this area. Monsoonal thunderstorms provide some precipitation in the summer months. The estimated 100-year/24-hour precipitation event in the vicinity of the Facility is approximately 3.5 inches. The estimated 1000-year/24-hour precipitation event is 3.87 inches.

31. Land Uses

The Facility is in an unincorporated portion of San Bernardino County. The area immediately south of the Facility lies within the Ord-Rodman Desert Wildlife Management Area of the Western Mojave Recovery Unit for the Mojave population of the desert tortoise. Land use designations are: Resource Conservation (RC) south of the Facility, Rural Living (RL) north of the Facility, and RC/RL east and west of the Facility. The surrounding land is undeveloped with the exception of Barstow Road. There are no inhabited structures within 1,000 feet of the Facility. There are no airport runways located within 10,000 feet of the Facility.

32. Landfill Closure and Post-Closure Maintenance

The Discharger has submitted a Preliminary Closure and Post-Closure Maintenance Plan (PCPCMP) in the RWD (JTD Parts E and F). As required by CCR, title 27, section 21780 (d)(1), a Final Closure and Post-Closure Maintenance Plan must be submitted for approval two years prior to the anticipated closure date for the entire Landfill or any portion thereof. The plan generally proposes in-place closure of the Landfill and an extended period of site monitoring. The monitoring media include the unsaturated zone, groundwater, and final cover materials.

The Discharger proposes to construct a monolithic vegetative cover layer. Federal regulations allow for alternative final covers that provide an equivalent reduction in flux to the prescriptive standard, and CCR, title 27 indicates that a similar low through-flow rate should be achieved. State regulations also state that alternatives can be approved that will continue to isolate the waste in the Unit from precipitation and irrigation water at least as well as would a final cover built in accordance with applicable prescriptive standards.

This Order requires that, prior to closure, the Discharger must provide additional supporting data for the final design of the proposed final cover. This Order requires that the Discharger provide a monitoring plan for review and approval by the Executive Officer to monitor the proposed cover. This Order requires the final cover design must meet the performance standards of CCR, title 27.

33. Closure of Class II Surface Impoundments

For Class II Surface Impoundments, CCR, title 27, section 21400(b)(1) states: Unless the Discharger demonstrates, and the Water Board finds, that it is infeasible to attempt clean-closure of the impoundment, then all residual wastes,

including sludges, precipitates, settled solids, and liner materials contaminated by wastes, must be completely removed from the impoundment and discharged to an approved Unit. Remaining containment features must be inspected for contamination and, if not contaminated, can be dismantled. Any natural geologic materials beneath or adjacent to the closed impoundment that have been contaminated must be removed for disposal at an appropriate Unit. For surface impoundments that are successfully clean-closed, as herein described, the Water Board must declare the Unit no longer subject to the State Water Board-promulgated requirements of this title. If, after reasonable attempts to remove such contaminated materials, the Discharger demonstrates that removal of all remaining contamination is infeasible, the surface impoundment must be closed as a Landfill or land treatment unit, as appropriate, pursuant to CCR, title 27, section 21400(b)(2).

34. Financial Assurance

The RWD/JTD submitted by the Discharger contains a PCPCMP for the existing Landfill and expansion fill areas for all Phases of fill. The PCPCMP includes information required by CCR, title 27, section 21769(b), and includes a lump sum estimate of the cost of carrying out all action necessary to close each Unit, to prepare detailed design specifications, to develop the final closure and post-closure maintenance plan, and to carry out the first 30 years of post-closure maintenance.

This Order requires that the Discharger maintain financial assurance with CalRecycle in at least the amount of these cost estimates.

The Discharger has also submitted a cost estimate for corrective action of all reasonably foreseeable releases from the Landfill as required by CCR, title 27, section 22221. The amount of the cost estimate is \$180,520 for the Landfill. This Order required that the Discharger maintain financial assurance with CalRecycle in at least the amount of this cost estimate, but with the Water Board named as beneficiary. This Order also requires the Discharger to submit a cost estimate for corrective action of all known or reasonably foreseeable releases from the Impoundments.

CCR, title 27, sections 21780(c)(3) and (d)(1), require the Discharger to submit the final closure and post-closure maintenance plan, or for the closure of discrete units, the partial final closure and post-closure maintenance plan, at least two years prior to the anticipated date of closure. This Order requires that the Discharger obtain WDRs from the Water Board with closure and post-closure maintenance requirements prior to closure.

35. Receiving Waters

The receiving waters are the groundwaters of the Lower Mojave River Valley Groundwater Basin (Department of Water Resources Sub-basin No. 6-40).

36. Water Quality Control Plan for the Lahontan Region

The Lahontan Water Board adopted a *Water Quality Control Plan for the Lahontan Region* (Basin Plan) that became effective on March 31, 1995. This Order implements the Basin Plan.

37. Beneficial Groundwater Uses

The present and probable beneficial uses of groundwater of the Lower Mojave River Valley Groundwater Basin, as set forth and defined in the Basin Plan, are:

- a. Municipal and Domestic Supply (MUN),
- b. Agricultural Supply (AG),
- c. Industrial Service Supply (IND),
- d. Freshwater Replenishment (FRSH), and
- e. Aquaculture (AQUA).

38. Policy for Maintaining High Quality Waters

State Water Board Resolution No. 68-16 requires the Water Board, in regulating the discharge of waste, to (A) maintain existing high quality waters of the State until it is demonstrated that any change in quality will be consistent with maximum benefit to the people of the State, will not unreasonably affect present and anticipated beneficial uses, and will not result in water quality less than that described in State or Regional Water Board policies; and (B) require that any activity which produces or may produce a waste or increased volume or concentration of waste and which discharges or proposes to discharge to existing high quality waters must meet waste discharge requirements which will result in the best practicable treatment or control of the discharge necessary to assure that (a) a pollution or nuisance will not occur and (b) the highest water quality consistent with maximum benefit to the people of the State will be maintained.

Degradation of the quality of the waters of the State is not anticipated or authorized by this discharge.

39. Other Considerations and Requirements for Discharge

Pursuant to California Water Code, section 13241, the requirements of this Order take into consideration:

- a. Past, present, and probable future beneficial uses of water.

This Order identifies existing groundwater quality and past, present, and probable future beneficial uses of water, as described in finding Nos. 28 (Hydrogeology and Water Quality), and 37 (Beneficial Groundwater Uses), respectively. The proposed discharge will not adversely affect present or probable future beneficial uses of water including municipal and domestic

supply, agricultural supply, industrial service supply, freshwater replenishment, and aquaculture because the proposed Landfill expansion is only authorized within lined WMUs and detection monitoring is required to ensure discharges do not reach groundwater.

- b. Environmental characteristics of the hydrographic unit under consideration including the quality of water available thereto.

Finding No. 28 (Hydrogeology and Water Quality) describes the environmental characteristics and quality of water available.

- c. Water quality conditions that could reasonably be achieved through the coordinated control of all factors that affect water quality in the area.

The requirements of this Order will not affect groundwater quality. The Water Board will use its existing authority and these waste discharge requirements to ensure protection of water quality from these discharges.

- d. Economic considerations.

Water Quality Objectives established in the Basin Plan for the Lower Mojave River Valley Groundwater Basin do not subject the Discharger to economic disadvantage as compared to other similar discharges in the Region. This Order will require the Discharger to submit proposals compliant with the requirements of CCR, title 27, and is reasonable.

- e. The need for developing housing within the region.

The Discharger is not responsible for developing housing within the region.

- f. The need to develop and use recycled water.

The Discharger does not propose the use of recycled water at this Facility as there is no locally available source.

40. California Environmental Quality Act

The expansion of this Facility is subject to the provisions of the California Environmental Quality Act ([CEQA], Public Resources Code, section 21000 et seq.) in accordance with CCR, title 14, section 15378. The County of San Bernardino (County) is the CEQA Lead Agency under the CEQA Guidelines. On October 20, 2009, the County certified the Final EIR for the Barstow Sanitary Landfill Expansion Project, which addressed all phases of the Facility expansion, pursuant to provisions of CEQA. The County certified the EIR with a Statement of Overriding Considerations for the Project, with regard to impacts to the following: 1) Aesthetics; 2) Air Quality; and, 3) Global Climate Change. Significant impacts would occur after implementation of feasible mitigation.

As described in the EIR, the Project would include expanding, both vertically and horizontally, into lined waste management units, the waste footprint of the existing solid waste Landfill located south of the City of Barstow. Expansion would occur in phases, which would encompass 284 additional acres and increase the site life of the Landfill an additional 63 years, or projected closure in 2073. As portions of the site reach their final configuration, a final cover layer may be constructed in phases. The post-closure end use for the Barstow Landfill would be undeveloped open space. The discretionary action taken by the Water Board is, however, only for WDRs for expansion into the existing 11.5-acre borrow area. This expansion area, referred to as the Phase 1 Borrow Area has independent utility from the rest of the Project, regardless of whether the rest of the expansion occurs, and so is being addressed separately.

CCR, title 14, section 15096, subdivision (g)(2) states: "When an EIR has been prepared for a project, the Responsible Agency must not approve the project as proposed if the agency finds any feasible alternative or feasible mitigation measures within its powers that would substantially lessen or avoid any significant effect the project would have on the environment."

CCR, title 14, section 15096, subdivision (h) states: "The Responsible Agency must make the findings required by Section 15091 for each significant effect of the project and must make the findings in Section 15093 if necessary."

The Water Board, acting as a CEQA Responsible Agency in compliance with CCR, title 14, section 15096, subdivision (g)(2), evaluated the potentially significant impacts to water quality identified in the EIR for the Phase 1 Borrow Area of the expansion. The Water Board's CEQA findings are as follows:

Potentially significant impact –The Project could cause significant impacts to groundwater and surface water quality.

The Water Board has reviewed the EIR and finds the mitigation measures listed below, and the monitoring of the effectiveness of the mitigation measures, as specified in this Order, are adequate to reduce water quality impacts related to the discharge of waste into the 11.5-acre Phase 1 Borrow Area to less than significant. These mitigation measures have been made requirements of this Order. The Water Board will file a Notice of Determination within five (5) days of the issuance of this Order.

- a. To construct a lined waste containment system that is designed to meet or exceed the minimum State and Federal requirements and performance standards in place at the time of cell design.
- b. Implement adequate and appropriate mitigation as required by the State Water Board General Construction and Industrial Storm Water Orders, and develop a storm water pollution prevention plan.

- c. To construct and design the lined expansion containment structure that would limit, to the greatest extent possible, ponding, infiltration, inundation, erosion, slope failure, washout, and overtopping under a 100-year, 24-hour precipitation event.
- d. To design, construct, and maintain diversion and drainage structures for the lined Landfill that would accommodate storm water runoff; effectively divert storm water run-on; and prevent storm water erosion and downstream impacts due to storm water diversion.

41. Section 13267(b) Provisions

Section 13267(b) of the California Water Code provides that: "In conducting an investigation specified in subdivision (a), the regional board may require that any person who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge within its region, or any citizen or domiciliary, or political agency or entity of this state who had discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge waste outside of its region that could affect the quality of the waters of the state within its region must furnish, under penalty of perjury, technical or monitoring program reports which the regional board requires. The burden, including costs of these reports must bear a reasonable relationship to the need for the reports and the benefits to be obtained from the reports."

42. Technical Reports

The technical reports required by this Order and the attached Monitoring and Reporting Program No. R6V-2012-(TENTATIVE) are necessary to assure compliance with these waste discharge requirements. The Discharger owns and operates the Facility that discharges the waste subject to this Order.

43. Notification of Interested Parties

The Water Board notified the Discharger and interested agencies and persons of its intent to prescribe waste discharge requirements for this discharge and has provided them with an opportunity to submit their written views and recommendations.

44. Right to Petition

Any person aggrieved by this action of the Water Board may petition the State Water Board to review the action in accordance with California Water Code (CWC), section 13320, and California Code of Regulations (CCR), title 23, sections 2050 and following. The State Water Board must receive the petition by 5:00 p.m., 30 days after the date of this Order, except that if the thirtieth day following the date of this Order falls on a Saturday, Sunday, or state holiday, the petition must be received by the State Water Board by 5:00 p.m. on the next

business day. Copies of the law and regulations applicable to filing petitions may be found on the internet at [http://www.waterboards.ca.gov/public\\_notices/petitions/water\\_quality](http://www.waterboards.ca.gov/public_notices/petitions/water_quality), or will be provided upon request.

IT IS HEREBY ORDERED that the Discharger must comply with the following:

I. DISCHARGE SPECIFICATIONS

A. Receiving Water Limitations

The discharge must not cause a violation of any applicable water quality standard for receiving water adopted by the Water Board or the State Water Board as required by the California Water Code (Water Code) and regulations adopted hereunder. This includes the following water limitations for the groundwaters of the Lower Mojave River Valley Groundwater Basin:

1. Bacteria, Coliform: In groundwater, the median concentration of coliform organisms, over any seven-day period, must be less than 1.1 most probable number per 100 milliliters (MPN/100 MLS).
2. Chemical Constituents: Groundwaters must not contain concentrations of chemical constituents in excess of the Maximum Contaminant Level (MCL) or Secondary Maximum Contaminant Level (SMCL), based upon drinking water standards specified in the following provisions of CCR, title 22, which are incorporated by reference into this Order: Table 64431-A of section 64431 (Inorganic Chemicals), Table 64444-A of section 64444 (Organic Chemicals), Table 64449-A of section 64449 (SMCLs - Consumer Acceptance Contaminant Level Limits), and Table 64449-B of Section 64449 (SMCLs - Consumer Acceptance Contaminant Level Ranges) including future changes as the changes take affect.

Groundwaters must not contain concentrations of chemical constituents in amounts that adversely affect the water for beneficial uses (i.e., agricultural purposes).

Groundwaters must not contain concentrations of chemical constituents that adversely affect the water for beneficial uses.

3. Radioactivity: Groundwaters must not contain concentrations of radionuclides in excess of the limits specified Table 4 of CCR, title 22, section 64442, Table 64442, and section 64443, Table 64443, which is incorporated by reference into this Order including future changes as the changes take affect.

4. Taste and Odor: Groundwaters must not contain taste or odor-producing substances in concentrations that cause nuisance or that adversely affect beneficial uses.

## II. REQUIREMENTS AND PROHIBITIONS

### A. General

1. The discharge must not cause pollution, as defined in Section 13050 of the California Water Code, or threatened pollution.
2. Direct pipeline discharge to the Impoundments must be either equipped with devices, or must have fail-safe operating procedures, to prevent overflowing. Discharges must be stopped immediately in the event of any containment system failure and the system repaired.
3. The discharge must not cause a nuisance, as defined in section 13050 of the California Water Code.
4. The discharge of solid wastes, leachate, or any other deleterious material to the groundwaters of the Lower Mojave River Valley Groundwater Basin is prohibited.
5. The discharge of waste, except to the authorized disposal sites, is prohibited.
6. Any presence of toxic substances in concentrations that individually, collectively, or cumulatively cause a detrimental physiological response in humans, plants, animals, or aquatic life is prohibited.
7. The Landfill disposal sites must be protected from inundation, washout, or erosion of wastes and erosion of covering materials resulting from a storm or a flood having a 100-year return period. The Impoundments must be adequately protected against overflow, washout, inundation, structural damage, or a significant reduction in efficiency resulting from a storm or flood having a recurrence interval of once in 1,000 years.
8. Surface drainage from tributary areas, and internal site drainage from surface or subsurface sources, must not contact or percolate through solid wastes discharged at the site.
9. The exterior surfaces of the disposal sites must be graded to promote lateral runoff of precipitation and to prevent ponding.

10. Water used for dust control during Facility operations must be limited to a minimal amount. A "minimal amount" is defined as that amount which will not result in runoff.
11. Wastes other than inert wastes must not be placed in ponded water from any source whatsoever.
12. The discharge of wastes in a manner that does not maintain a five foot soil separation between the wastes and the seasonal high groundwater elevation is prohibited.
13. At closure, all facilities must be closed in accordance with a final CPCMP approved by the Water Board.
14. The discharge of treated auto shredder wastes at the Landfill facility is prohibited if DTSC makes the determination that this material requires management at a Class I facility or if the Discharger fails to obtain a waiver from DTSC for TASW. The discharge of untreated auto shredder waste is prohibited.
15. Waste that contains liquid in excess of the moisture-holding capacity of the waste in Class III Landfill units, or which contains liquid in excess of the moisture-holding capacity as a result of waste management operations, compaction, or settlement, must not be discharged to a Class III Landfill unit.
16. The application of designated wastes as ADC in Class III Landfills is prohibited. The ponding of any liquid on any Landfill unit that has received waste is prohibited.
17. The discharge of wastes (including composting wastes) as part of the final cover for any part of the Landfill is prohibited. Compost may be used as a soil amendment over intermediate or final cover to promote vegetative growth, if applied at agronomic rates and there is no threat to water quality from storm water runoff. Also, soil that contains waste may be used in the foundation layer.
18. The discharge of solid or liquid waste or leachate to surface waters, surface water drainage courses, or groundwater is prohibited.
19. The discharge of groundwater, storm water, or wastewater to surface water or any surface water drainage courses is prohibited without an NPDES permit authorizing the discharge.

B. Landfill

1. Sludge treated at the Landfarm and transported to the Landfill for disposal must not contain VOCs, or SVOCs, in excess of 100 times the method detection limit for each constituent in liquid.
2. Prior to Landfill disposal, all sludge must be characterized in accordance with an approved Sampling and Analysis Plan.
3. Sludge transported to the Landfill for disposal must be greater than or equal to 50 percent solids by weight.
4. No hazardous waste, as defined in CCR, title 23, chapter 15, section 2521, or designated waste, as defined in the Water Code, section 13173, must be discharged at the Landfill.
5. The Discharger must remove and relocate any waste which is or has been discharged at the Landfill in violation of these requirements. The waste must be relocated to a site which is permitted to receive such wastes. All removal and relocation projects must be coordinated with regulatory agencies, including but not limited to the County of San Bernardino Division of Environmental Health Services.
6. During periods of precipitation, the Landfill disposal activity must be confined to the smallest area possible based on the anticipated quantity of wastes.
7. Water used for dust control must not contain detectable concentrations of VOCs or SVOCs.
8. Alternate Daily Cover (ADC) approved by the local enforcement agency (LEA) includes: green waste material, shredded tires, solidified waste with an approved extender, processed construction and demolition material, and/or a geo-synthetic blanket.
9. Pursuant to CCR, title 27, section 20200(a)(1), treated auto shredder waste, contaminated soil, ash, and cement kiln dust that has been confirmed by testing not to be a hazardous waste can be discharged to the Landfill as alternative daily cover over portions of the operating face that are underlain by a composite liner, so long as any stockpiled ADC is protected from producing adverse runoff, in the event of rain.
10. Storm water contacting wastes used as ADC or intermediate cover must be handled and disposed of as leachate, except as allowed under II. Requirements and Prohibitions, A.15.

C. Landfarm

1. Only sludge generated from the Impoundments may be treated in the Landfarm.
2. Sludge transported to the Landfarm for treatment must be greater than or equal to 50 percent solids by weight.
3. No hazardous waste, as defined in CCR, title 22, section 66261.3, and managed as required in CCR, title 23, section 2521, must be accepted at the Landfarm for treatment.
4. Sludge must not be accepted at the Landfarm in excess of the volume that can be treated at any one time.
5. Sludge removed from the Landfarm must be disposed in the Landfill or taken to an off-site disposal site that is permitted to receive such waste.
6. The seepage sludge drying area must be operated and maintained as a Class II Land Treatment Unit until clean closed.
7. The Landfarm must be operated to maximize the degradation, transformation, and immobilization of waste constituents in the treatment zone, in accordance with CCR, title 27, section 20377.
8. Storm water contacting wastes in the Landfarm must be handled and disposed of as leachate.

D. Impoundments

1. No chemical toilet waste containing non-biodegradable toxic substances, defined by CCR, title 22, sections 67410.1 through 67410.7, must be discharged to the Impoundments.
2. No hazardous waste, as defined in CCR, title 23, chapter 15, section 2521, must be discharged to the Impoundments.
3. Wastes discharged to the Impoundments must be load checked and sampled in accordance with an approved SAP.
4. No industrial wastes must be discharged to the Impoundments.
5. The Impoundment freeboard must be a minimum two feet at all times.

6. There must be no discharge of waste from the Impoundments to the adjacent land areas, except where authorized by this Board Order.

E. Detection Monitoring Program

The Discharger must maintain a detection monitoring program, as required in CCR, title 27, section 20385(a)(1).

F. Evaluation Monitoring Program

The Discharger must establish an evaluation monitoring program whenever there is significant evidence of a threat to groundwater quality from the Facility, as required in CCR, title 27, section 20385(a)(2) or (3).

G. Corrective Action Program

The Discharger must institute a Corrective Action Program when required pursuant to CCR, title 27, section 20385(a)(4).

H. Electronic Submittal of Information

Pursuant to CCR, title 23, section 3890, the Discharger must submit reports, including soil, vapor, and water data, prepared for the purpose of subsurface investigation or remediation of a discharge of waste to land subject to Division 2 of title 27 electronically over the internet to the State Water Board's Geotracker system. This requirement is in addition to, and not superseded by, any other applicable reporting requirement.

III. WATER QUALITY MONITORING AND RESPONSE PROGRAMS

A. Water Quality Protection Standard

1. The Discharger must propose to the Water Board any new constituents of concern proposed for discharge to the Facility at least 180 days before discharge. Before a new discharge commences, the Discharger must estimate the concentrations for such constituents within the waste stream and submit written statistical method(s) in order to detect a release of such constituents.
2. At any given time, the concentration limit for each monitoring parameter constituent of concern must be equal to the background value of that constituent.
3. If the Discharger or Executive Officer determines that concentration limits were or are exceeded, the Discharger may immediately institute verification procedures upon such determination as

specified below or submit and amended Report of Waste Discharge within 90 days of such determination in order to establish an evaluation monitoring program.

4. Monitoring well BRGW-2, BRGW-3 (proposed) or their approved replacement, must be used to delineate the point of compliance and detect a release from the Facility to groundwater.

B. Statistical Methods

1. The Discharger must use approved statistical data analyses methods to evaluate Point of Compliance data in order to determine measurably significant evidence of a release from the Facility. Approved methods may include an intrawell statistical analysis approach proposed by the Discharger.
2. The Discharger must determine, within 45 days after completion of sampling, whether there is measurably significant evidence of a release from the Facility at each Monitoring Point. The analysis must consider all monitoring parameters and constituents of concern. The Executive Officer may make an independent finding that there is statistically significant evidence of a release or physical evidence of a release.
3. If there is measurably significant evidence of a release, the Discharger must immediately notify the Water Board by certified mail (see notification procedures in the Monitoring and Reporting Program). Subsequently, the Discharger may immediately initiate verification procedures as specified below whenever there is a determination by the Discharger or Executive Officer that there is a measurably significant evidence of a release.
4. If the Discharger does not use verification procedures to evaluate evidence of a release, then there is confirmation that there is a measurably significant evidence of a release. The Discharger is required to submit, within 90 days of such confirmation, an amended RWD in order to establish evaluation monitoring or make a demonstration to the Water Board that there is a source other than the Facility that caused evidence of a release (see notification procedures contained in the MRP).

C. Non-Statistical Methods

The Discharger must determine whether there is physical evidence of a threatened impact to water quality from the Landfill. Significant physical evidence may include unexplained volumetric changes in the Landfill, unexplained stress in biologic communities, unexplained changes in soil

characteristics, visible signs of leachate migration, concentration of constituents of concern in soil gas, which may pose a threat to groundwater quality, or any other change to the environment that could reasonably be expected to be the result of a threatened impact to groundwater quality from the Landfill.

D. Verification Procedures

1. The Discharger must immediately initiate verification procedures, as specified below, whenever there is a determination by the Discharger or Executive Officer that there is evidence of a release. If the Discharger declines the opportunity to conduct verification procedures, the Discharger must submit a technical report, as described below, under the heading *Technical Report Without Verification Procedures*.
2. The verification procedure must only be performed for the constituent(s) that has shown a measurably significant evidence of a release and must be performed for those Monitoring Points at which a release is indicated.
3. The Discharger must either conduct a composite retest using data from the initial sampling event with all data obtained from the resampling event or must conduct a discrete retest in which only data obtained from the resampling event must be analyzed to verify evidence of a release.
4. The Discharger must report to the Water Board, by certified mail, the results of the verification procedure, as well as all concentration data collected for use in the retest, within seven days of the last laboratory analysis.
5. If the Discharger or Executive Officer verifies evidence of a release, the Discharger is required to submit, within 90 days of such determination that there is, or was, a release, a technical report pursuant to Section 13267(b) of the California Water Code. The report must propose an evaluation monitoring program or make a demonstration to the Water Board that there is a source other than the Facility that caused evidence of a release (see notification procedures contained in the MRP).

E. Technical Report Without Verification Procedures

If the Discharger chooses not to initiate verification procedures after there has been a determination made for evidence of a release, a technical report must be submitted pursuant to Section 13267(b) of the California Water Code. The report must propose an evaluation monitoring program

or attempt to demonstrate that the release did not originate from the Facility.

IV. FACILITY SPECIFICATIONS

1. The Discharger must, in a timely manner, remove and relocate any wastes discharged at this facility in violation of this Order. If the Discharger is unable to remove and relocate the waste, the Discharger must submit a report to the Water Board explaining how the discharge occurred, why the waste cannot be removed, and any updates to the waste acceptance program necessary to prevent re-occurrence.
2. Waste filling at Landfill modules must be conducted in accordance with a fill plan demonstrating that all temporary refuse fill slopes will be stable under both static and dynamic conditions for the design event for the Facility.
3. All temporary stockpiles of ADC and other wastes must be stable under both static and dynamic conditions for the design event for the Facility.
4. The Discharger must immediately notify the Water Board of any flooding, unpermitted discharge of waste off-site, equipment failure, slope failure, or other change in site conditions which could impair the integrity of waste or leachate containment facilities or precipitation and drainage control structures.
5. Water used for facility maintenance must be limited to the minimum amount necessary for dust control and construction.
6. The Discharger must maintain in good working order any facility, control system, or monitoring device installed to achieve compliance with the waste discharge requirements.
7. Storm water run-off within the waste management facility must either be contained on-site or be discharged in accordance with applicable storm water regulations.
8. The Discharger must maintain a site-specific Storm Water Pollution Prevention Plan and Monitoring Program and Reporting Requirements in accordance with the State Water Board's most recent WDRs for Discharges of Storm Water Associated With Industrial Activities (currently Order No. 97-03-DWQ, NPDES No. CAS000001), or retain all storm water on-site.

V. CONSTRUCTION SPECIFICATIONS

- A. Geologic maps must be prepared by a California Registered Professional Geologist for each excavation phase as the facility is developed. The geologic data must be used to reevaluate each excavation phase with respect to the potential for active faulting and slope instability. If potential hazards or constraints are recognized, the design engineer must evaluate the conditions and, if necessary, incorporate modifications to liner design and/or placement of future Landfill cells to ensure that any potential impacts to liner integrity or underlying groundwater quality are less than significant.
1. **At least 14 days, and not more than 30 days, prior to excavation**, the Discharger must notify the Water Board of the planned excavation schedule.
  2. If potential hazards or constraints, including but not limited to potential Holocene faulting, are identified during geologic mapping, **the Discharger must notify the Water Board within 24 hours** and provide prompt access to the excavation.
  3. **At least 30 days prior to liner installation**, the Discharger must submit for review and acceptance by the Executive Officer, geologic maps and a summary letter on the geologic mapping of the excavation.
- B. Both the bottom liner and side-slope liner of all new Units and lateral expansion areas of existing Units must be constructed in accordance with one of the following composite liner designs.
1. The prescriptive standard design which consists of a lower compacted soil layer that is a minimum of two feet thick with a hydraulic conductivity of  $1 \times 10^{-7}$  cm/sec or less and has a minimum relative compaction of 90 percent. Immediately above the compacted soil layer, and in direct and uniform contact with the soil layer, must be a synthetic flexible membrane component that must be at least 40-mil thick (or at least 60-mil thick if composed of HDPE), which is immediately overlain with a leachate collection and removal system. A soils operations layer must be placed above the leachate collection and removal system; or

2. An engineered alternative composite liner system, as proposed in the JTD, that is comprised of the following :

Bottom Liner System Design: The flat bottom portion of the expansion area will include (from top to bottom):

- 1) minimum 24-inch-thick protective soil cover;
- 2) geotextile;
- 3) 9 - 12-inch thick LCRS drainage layer;
- 4) geotextile;
- 5) 60 mil (0.060 inch) thick HDPE geomembrane (textured on both sides);
- 6) geosynthetic clay liner (GCL); and
- 7) at least a 12-inch-thick layer of compacted, screened on-site soil.

Alternative Bottom Liner System Design: For areas of the Landfill where additional encapsulated strengths are required, an alternative bottom liner will be used. It includes:

- 1) minimum 24-inchthick protective soil cover;
- 2) geotextile;
- 3) 9 to 12-inch thick LCRS drainage layer;
- 4) geotextile;
- 5) 60 mil (0.060 inch) thick HDPE geomembrane (textured on both sides);
- 6) GCL;
- 7) 60 mil (0.060 inch) thick HDPE geomembrane (textured on both sides); and
- 8) at least a 12-inch-thick layer of compacted, screened on-site soil.

Slope Liner System Design: Liner sections with gradients greater than 5:1 (horizontal:vertical) will include (from top to bottom):

- 1) minimum 24-inch-thick protective soil cover;
- 2) geotextile;
- 3) 60 mil (0.060 inch) thick HDPE geomembrane (single-sided textured; textured side down);
- 4) GCL; and
- 5) 16-ounce per square yard cushion geotextile.

Alternative Slope Liner System Design: Liner sections with gradients greater than 5:1 (horizontal:vertical) in areas of the Landfill where additional encapsulated strengths are required will include (from top to bottom):

- 1) minimum 24-inch-thick protective soil cover;
  - 2) geotextile;
  - 3) 60 mil (0.060 inch) thick HDPE geomembrane (single-sided textured; textured side down);
  - 4) GCL;
  - 5) 60 mil (0.060 inch) thick HDPE geomembrane (textured on both sides); and
  - 6) 16-ounce per square yard cushion geotextile
- C. The Discharger may propose changes to the liner system design prior to construction, provided that approved components are not eliminated, the engineered properties of the components are not eliminated, the engineering properties of the components are not substantially reduced, and the proposed liner system results in the protection of water quality equal to or greater than the design prescribed by CCR, title 27, and this Order. The proposed changes may be made following approval by the Executive Officer. Substantive changes to the design require reevaluation as an engineered alternative and approval by the Water Board.
- D. If the Discharger proposes to construct a liner system in which a GCL is placed on top of a subgrade, the subgrade for the bottom and the side slopes of the Unit must be prepared in an appropriate manner using accepted engineering and construction methods so as to provide a smooth surface that is free from rocks, sticks, or other debris that could damage or otherwise limit the performance of the GCL.
- E. A third party, independent of both the Discharger and the construction contractor must perform all of the construction quality assurance monitoring and testing during the construction of a liner system.
- F. The general LCRS design will consist of a granular (gravel) drainage blanket (9 to 12-inches thick) constructed immediately above the liner in the bottom liner areas. The bottom base gravel blanket will host perforated LCRS lateral collectors and mainline pipes that will convey accumulated fluid by gravity to sumps within each phase of development. The perforated main and lateral pipes will be placed in 12-inch-deep V-ditch subgrade swales. The gravel pack will be sized such that 85 percent of the material is larger than the pipe perforations, and will be overlain by a geotextile fabric. Solid riser pipes will connect the leachate sumps to storage tanks located adjacent to each sump. Submersible pumps will convey the leachate from the sumps to the storage tanks. If additional leachate storage is needed, portable tanks will be used.

The LCRS design over sloped liner areas consists of perforated pipe collectors placed in a gravel pack wrapped with a geotextile filter fabric. These pipes will be placed on the interior benches, and the leachate will

flow by gravity to solid LCRS riser pipes and then to the main piping system.

- G. Proposed on-site drainage controls for the expansion area are designed to control precipitation that falls on the Landfill and storm water run-on from the surrounding watershed for a 24-hour, 100-year storm event.

A perimeter channel system consisting of concrete channels will be placed at the perimeter of the refuse footprint. These channels will be completed as the Landfill is developed. The perimeter channel will control run-on from surfaces adjacent to the Landfill that otherwise might flow onto the Landfill. Precipitation that falls directly on the Landfill deck and exterior benches will be directed via berms, bench drains, and bench drain inlets into down drains anchored into the final Landfill surface. The down drains will outlet to the perimeter channel system. Storm water conveyed by the perimeter channel system will discharge directly to one of three proposed storm water basins.

During construction of the Phase 1 Borrow Area of the Landfill expansion, interim precipitation and drainage controls will be utilized. After each excavation phase and liner installation is complete, interim storm water basins will be constructed within the excavation area. The basins will be equipped with submersible pumps and piping will be installed to convey collected storm water to the perimeter channel system.

In addition to the interim drainage controls, the facility will be operated using a combination of BMPs including but not limited to erosion control mats, mulching, hydro seeding, coir logs, straw wattle, and straw bale check dams.

- H. Construction may proceed only after all applicable construction quality plans have been reviewed and accepted by the Executive Officer.
- I. Following the completion of a construction of a Unit or portion of a Unit, and prior to discharge onto the newly constructed liner system, the final documentation required in CCR, title 27, section 20324(d)(1)(C) must be submitted for review and acceptance. The report must be certified by a registered civil engineer or a certified engineering geologist. It must contain sufficient information and test results to verify that construction was in accordance with the design plans and specifications, and with the prescriptive standards and performance goals of CCR, title 27.
- J. At closure, the Discharger must initiate an effort to clean close the Impoundments prior to closing the Impoundments as a Landfill if clean closure is found to be infeasible

- K. Prior to closure, the Discharger must submit a Final Closure Plan or Partial Final Closure Plan for review and acceptance for the Unit or portion of the Unit to be closed. The Discharger must also submit a Post-Closure Maintenance Plan. The final closure plan must include a final design, with supporting documentation, for any alternative cover, and the results of a cover monitoring study. The plan must include proposed criteria for demonstrating compliance with performance standards.

V. PROVISIONS

A. Rescission of Waste Discharge Requirements

Board Order No. R6V-2008-0025 is hereby rescinded except for enforcement purposes.

B. Standard Provisions

The Discharger must comply with the "Standard Provisions for Waste Discharge Requirements" dated September 1, 1994, in Attachment C, which is made part of this Order.

C. Monitoring and Reporting

1. Pursuant to the California Water Code, section 13267(b), the Discharger must comply with Monitoring and Reporting Program No. R6V-2012-(**TENTATIVE**), as specified by the Executive Officer.
2. The Discharger must comply with the "General Provisions for Monitoring and Reporting" dated September 1, 1994, which is attached to and made a part of the Monitoring and Reporting Program.

D. Financial Assurance

The Discharger must obtain and maintain assurances of financial responsibility for initiating and completing corrective action for all known or reasonably foreseeable releases from the Facility in the amount of the approved cost estimate. The Discharger must submit the approved cost estimate and proposed financial assurance mechanism meeting the requirements of Chapter 6, title 27 to the Financial Assurances Section of the California Integrated Waste Management Board (CalRecycle), and made payable to the Water Board. If CalRecycle determines that financial assurance mechanism is inadequate, then within 90 days of notification, the Discharger must submit an acceptable mechanism for at least the amount of the approved cost estimate.

The Discharger must obtain and maintain assurances of financial responsibility for closure and post-closure maintenance costs in the amount of the cost estimates in the approved preliminary or final closure and post-closure maintenance plan, as applicable. The Discharger must submit a proposed financial assurance mechanism for closure and post-closure maintenance meeting the requirements of Chapter 6, title 27 to the Financial Assurances Section of CalRecycle. If CalRecycle determines that either the amount of coverage or the mechanism is inadequate, then within 90 days of notification, the Discharger must submit an acceptable mechanism for at least the amount of the approved cost estimate.

E. Alternative Cover Monitoring and Contingency Plan

**At least 90 days** prior to construction of the final cover the Discharger must submit a Monitoring and Contingency Plan with a plan for monitoring the cover to demonstrate it is meeting regulatory performance standards, and must propose alternatives for the cover if it fails to meet the performance standards. The plan must include proposed criteria for demonstrating compliance with performance standards as specified in CCR, title 27.

VII. TIME SCHEDULE

A. Closure and Post-Closure Maintenance Plan

The Discharger must update the preliminary closure and post-closure maintenance plan (PCPCMP) **any time there is a change** that will increase the amount of the closure and post-closure maintenance cost estimate. The updated PCPCMP must be submitted to the Water Board, the Local Enforcement Agency and CalRecycle. The updated PCPCMP must meet the requirements of CCR, title 27, section 21769(b), and include an itemized and lump sum estimate of the costs of carrying out all actions necessary to close the Facility, preparing detailed design specifications, developing the Final Closure Plan, and to carry out the first 30 years of post-closure maintenance. A Final Closure and Post-Closure Maintenance Plan must be submitted prior to closure and closure must not be conducted in the absence of closure WDRs.

B. Known or Reasonably Foreseeable Release Plan

The Discharger must update the plan for a Known or Reasonably Foreseeable Release (KRFR), pursuant to CCR, title 27, section 20380(b), as necessary and submitted to the Water Board **annually**. The KRFR Plan must include the applicable requirements of CCR, Title 27, sections 22220 to 22222, including a cost estimate to implement the plan and a proposed financial assurance instrument.

C. Financial Assurance - PCPCM

Evidence that a separate Financial Assurance Instrument(s) providing adequate funding for the Preliminary Closure and Post-Closure Maintenance Lump Sum Estimate in Section VI.D of this Order must be submitted to the Water Board, pursuant to CCR, title 27, section 22207 and 22212 by **January 15, 2013, revised as necessary and re-submitted every two years thereafter.**

D. Financial Assurance - KRFR

Evidence that a separate Financial Assurance Instrument(s) providing adequate funding for the Known or Reasonably Foreseeable Release lump sum estimate required in section VI.E of this Order must be submitted to the Water Board, pursuant to CCR, title 27, section 22222 by **January 15, 2013** and revised, as necessary, and re-submitted **annually thereafter.** This can be submitted with the KRFR Plan required in Section VI.E of this Order.

E. Construction Quality Assurance Plan

Pursuant to CCR, title 27, sections 20323 and 20324, the Discharger must submit a final Construction Quality Assurance Plan **at least 90 days prior to beginning construction** of any Landfill expansion for review and approval by the Executive Officer.

F. Final Proposed Construction Drawings, Specifications, and Descriptions

Pursuant to CCR, title 27, section 21760(a)(1), **at least 90 days prior to beginning construction** of the Landfill expansion, the Discharger must submit final proposed plans, specifications, and descriptions associated with the construction for review and acceptance by the Executive Officer. The submittals should include specifications and descriptions for all excavation, grading, liners, LRCS components, leak detection components, precipitation and drainage control facilities, interim covers, and vadose zone monitoring wells required in the attached Monitoring and Reporting Program. The submittals should include a proposed schedule for the construction activities.

G. Final As-Built Construction Drawings, Specifications, and Descriptions

Pursuant to CCR, title 27, section 21760(a)(1), following the completion of construction of any Landfill expansion, and **at least 60 days prior to discharge** into the new Landfill cell, the Discharger must provide as-built plans, specifications, and descriptions for all excavation, grading, liners, LRCS components, leak detection components, precipitation and drainage control facilities, and interim covers for review and acceptance by the

Executive Officer. This report can be combined with the Final Documentation reports discussed (Section VII[H]) below.

H. Final Documentation Reports

Following the completion of construction of the Landfill expansion, and **at least 60 days prior to discharge** into the new Landfill cell, the Final Documentation report required in CCR, title 27, section 20324, subdivision (d)(1)(C), must be submitted for review and acceptance by the Executive Officer. This report must be submitted **no later than 180 days** after completion of construction activities. It must be certified by a registered civil engineer or a certified engineering geologist. It must contain sufficient information and test results to verify that construction in accordance with the submitted design plans and specifications and with the accepted engineered alternative to the prescriptive standards and performance goals of CCR, title 27.

I. Seismic Event Inspection

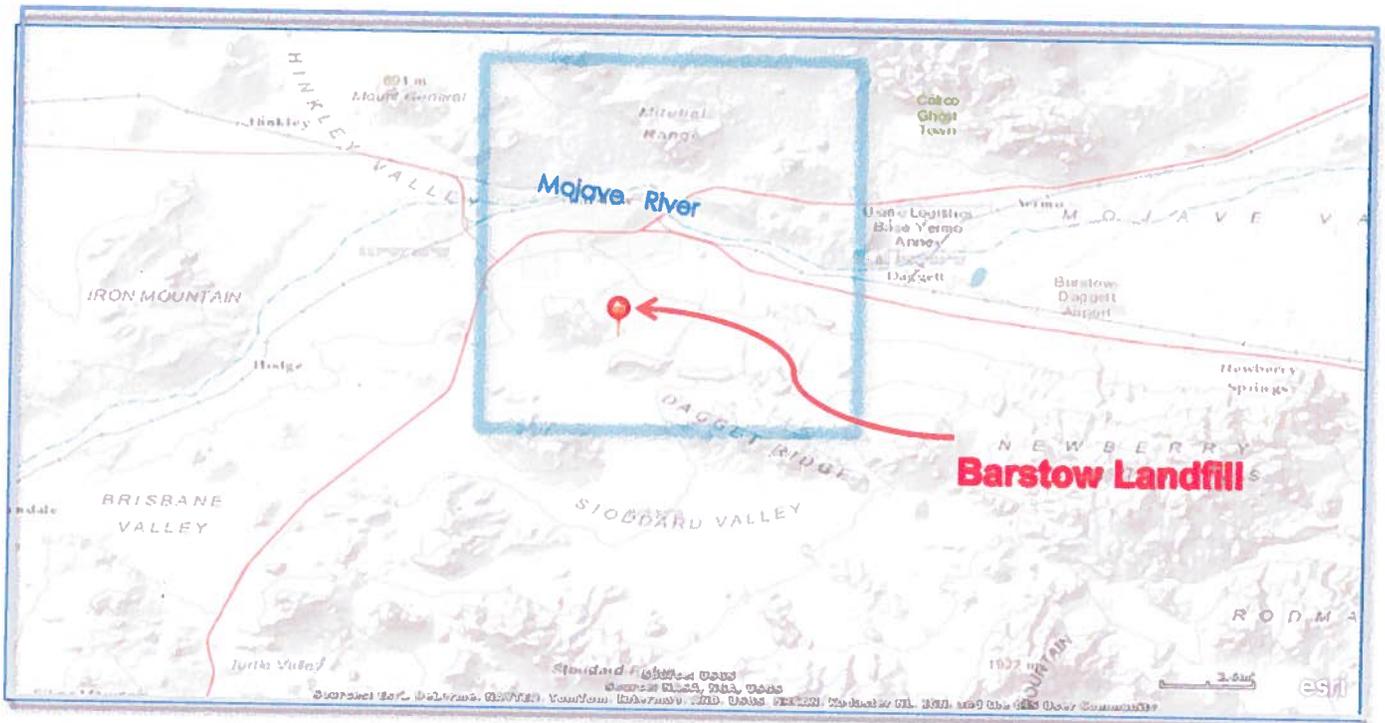
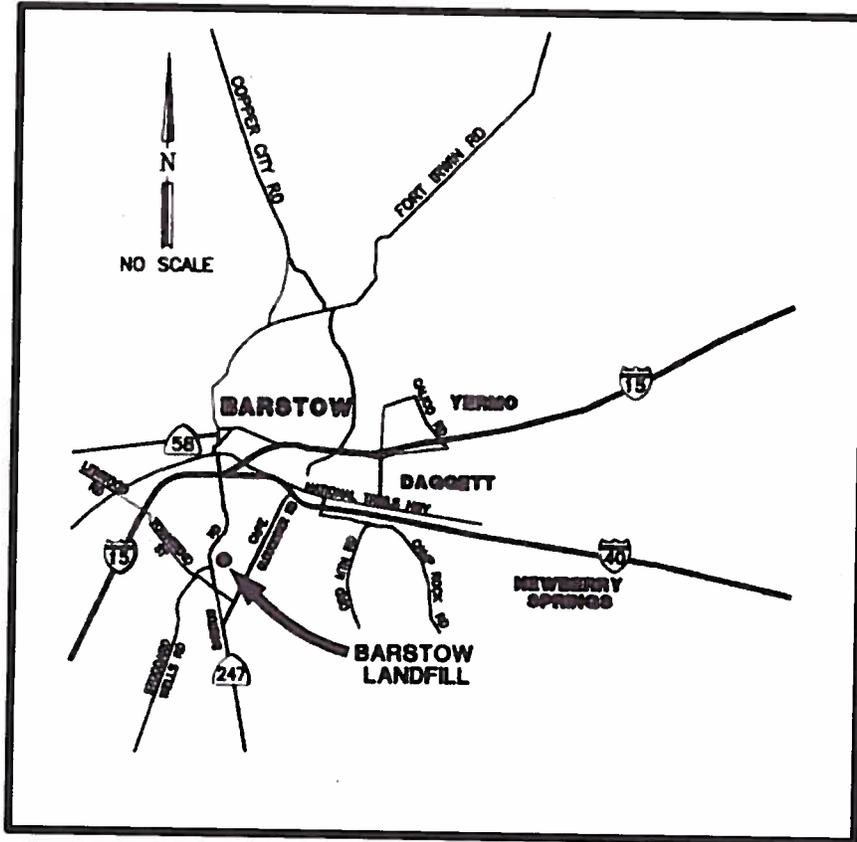
1. **Within 90 days of the adoption of this Order**, the Discharger must submit a revised post-earthquake inspection plan for review and acceptance. The revised plan must include inspecting WMU liners and covers; LCRS riser pipes, sump pump operation, and storage tanks; including the flare station; drainage control facilities; and detection monitoring facilities for damage following an earthquake of Magnitude (M) 5.0 or greater within 25 miles of the facility or a M6.0 or greater earthquake within 50 miles of the facility.
2. An earthquake inspection must be conducted within 3 days following earthquakes of the magnitude as specified in Section VII. I.1. above. A report of the inspection must be submitted within 30 days after the inspection assessing any damage and must contain proposals to repair or replace any damaged structures or facilities.

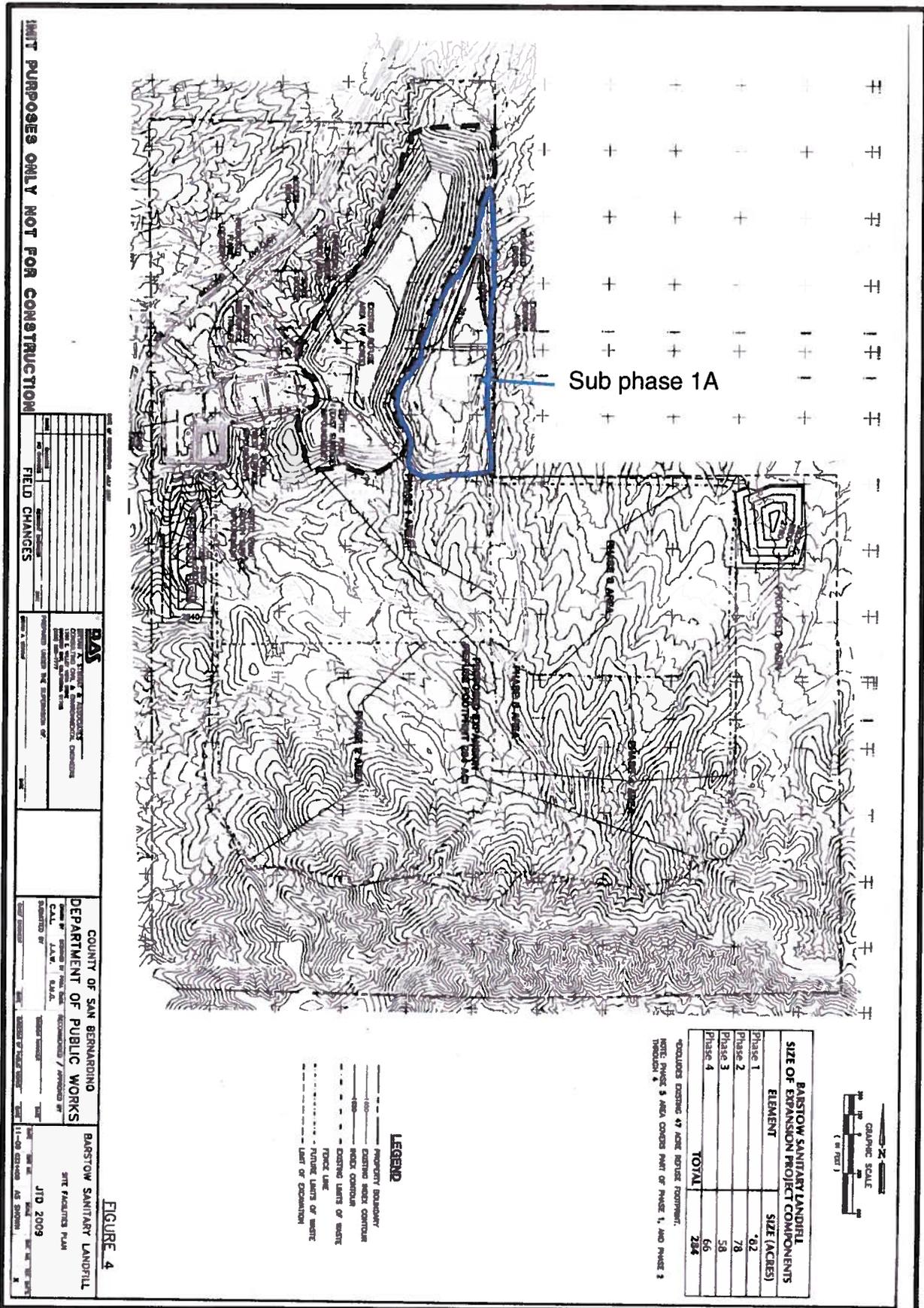
I, Harold J. Singer, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Lahontan Region, on May 9, 2012.

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HAROLD J. SINGER  
EXECUTIVE OFFICER

Attachments: A. Facility Location with Existing Facilities  
B. Proposed Expansion Layout  
C. Standard Provisions for Waste Discharge Requirements.





CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
LAHONTAN REGION

**STANDARD PROVISIONS**  
FOR WASTE DISCHARGE REQUIREMENTS

1. Inspection and Entry

The Discharger shall permit Regional Board staff:

- a. to enter upon premises in which an effluent source is located or in which any required records are kept;
- b. to copy any records relating to the discharge or relating to compliance with the Waste Discharge Requirements (WDRs);
- c. to inspect monitoring equipment or records; and
- d. to sample any discharge.

2. Reporting Requirements

- a. Pursuant to California Water Code 13267(b), the Discharger shall immediately notify the Regional Board by telephone whenever an adverse condition occurred as a result of this discharge; written confirmation shall follow within two weeks. An adverse condition includes, but is not limited to, spills of petroleum products or toxic chemicals, or damage to control facilities that could affect compliance.
- b. Pursuant to California Water Code Section 13260 (c), any proposed material change in the character of the waste, manner or method of treatment or disposal, increase of discharge, or location of discharge, shall be reported to the Regional Board at least 120 days in advance of implementation of any such proposal. This shall include, but not be limited to, all significant soil disturbances.
- c. The Owners/Discharger of property subject to WDRs shall be considered to have a continuing responsibility for ensuring compliance with applicable WDRs in the operations or use of the owned property. Pursuant to California Water Code Section 13260(c), any change in the ownership and/or operation of property subject to the WDRs shall be reported to the Regional Board. Notification of applicable WDRs shall be furnished in writing to the new owners and/or operators and a copy of such notification shall be sent to the Regional Board.
- d. If a Discharger becomes aware that any information submitted to the Regional Board is incorrect, the Discharger shall immediately notify the Regional Board, in writing, and correct that information.
- e. Reports required by the WDRs, and other information requested by the Regional Board, must be signed by a duly authorized representative of the Discharger. Under Section 13268 of the California Water Code, any person failing or refusing to furnish technical or monitoring reports, or falsifying any information provided therein, is guilty of a misdemeanor and may be liable civilly in an amount of up to one thousand dollars (\$1,000) for each day of violation.

- f. If the Discharger becomes aware that their WDRs (or permit) are no longer needed (because the project will not be built or the discharge will cease) the Discharger shall notify the Regional Board in writing and request that their WDRs (or permit) be rescinded.

3. Right to Revise WDRs

The Regional Board reserves the privilege of changing all or any portion of the WDRs upon legal notice to and after opportunity to be heard is given to all concerned parties.

4. Duty to Comply

Failure to comply with the WDRs may constitute a violation of the California Water Code and is grounds for enforcement action or for permit termination, revocation and re-issuance, or modification.

5. Duty to Mitigate

The Discharger shall take all reasonable steps to minimize or prevent any discharge in violation of the WDRs which has a reasonable likelihood of adversely affecting human health or the environment.

6. Proper Operation and Maintenance

The Discharger shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) that are installed or used by the Discharger to achieve compliance with the WDRs. Proper operation and maintenance includes adequate laboratory control, where appropriate, and appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities or similar systems that are installed by the Discharger, when necessary to achieve compliance with the conditions of the WDRs.

7. Waste Discharge Requirement Actions

The WDRs may be modified, revoked and reissued, or terminated for cause. The filing of a request by the Discharger for waste discharge requirement modification, revocation and re-issuance, termination, or a notification of planned changes or anticipated noncompliance, does not stay any of the WDRs conditions.

8. Property Rights

The WDRs do not convey any property rights of any sort, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations.

9. Enforcement

The California Water Code provides for civil liability and criminal penalties for violations or threatened violations of the WDRs including imposition of civil liability or referral to the Attorney General.

10. Availability

A copy of the WDRs shall be kept and maintained by the Discharger and be available at all times to operating personnel.

11. Severability

Provisions of the WDRs are severable. If any provision of the requirements is found invalid, the remainder of the requirements shall not be affected.

12. Public Access

General public access shall be effectively excluded from treatment and disposal facilities.

13. Transfers

Providing there is no material change in the operation of the facility, this Order may be transferred to a new owner or operation. The owner/operator must request the transfer in writing and receive written approval from the Regional Board's Executive Officer.

14. Definitions

- a. "Surface waters" as used in this Order, include, but are not limited to, live streams, either perennial or ephemeral, which flow in natural or artificial water courses and natural lakes and artificial impoundments of waters. "Surface waters" does not include artificial water courses or impoundments used exclusively for wastewater disposal.
- b. "Ground waters" as used in this Order, include, but are not limited to, all subsurface waters being above atmospheric pressure and the capillary fringe of these waters.

15. Storm Protection

All facilities used for collection, transport, treatment, storage, or disposal of waste shall be adequately protected against overflow, washout, inundation, structural damage or a significant reduction in efficiency resulting from a storm or flood having a recurrence interval of once in 100 years.

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
LAHONTAN REGION**

**MONITORING AND REPORTING PROGRAM NO. R6V-2012-(TENTATIVE)  
WDID NO. 6B360304005**

FOR

**BARSTOW CLASS III LANDFILL, CLASS II SURFACE IMPOUNDMENTS,  
AND SEPTAGE SLUDGE LANDFARM**

San Bernardino County

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**I. REQUIRED MONITORING REPORTS**

<u>Report</u>	<u>Frequency</u>
1. Groundwater Monitoring (Section IV.A)	See Table I
2. Unsaturated Zone Monitoring (Section IV.B)	See Table II
3. Leachate Monitoring (Section IV.C)	See Table III
4. Facility Monitoring (Section IV.D)	As necessary
5. Landfarm Septage Monitoring (Section IV.E)	As necessary
6. Incoming Waste Monitoring (IV.F.)	Annual/Semiannual
7. Annual Monitoring Summary Report (V.B.2)	Annually
8. Notice of Tentative Release (Section VI.C.)	As necessary

**II. REPORTING**

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

Each monitoring report must include a compliance evaluation summary as specified in Section VI. Reporting Requirements, below.

Field tests and laboratory results must be submitted in each monitoring report. Monthly, quarterly, semiannual, annual, two-and five-year monitoring reports must be submitted to the Water Board in accordance with the following schedule for the period in which samples were taken or observations made.

Monitoring Period*	Reporting Frequency	Report Date Due
Weekly/Monthly	Semiannually	April 30 and October 31
Quarterly 1 <sup>st</sup> Oct 1 - Dec 31 2 <sup>nd</sup> Jan 1 - Mar 31 3 <sup>rd</sup> Apr 1 - Jun 30 4 <sup>th</sup> July 1 - Sept 30	Semiannually	April 30 and October 31
Semiannually 1 <sup>st</sup> Oct 1 - Mar 31 2 <sup>nd</sup> Apr 1 - Sept 30	Semiannually	April 30 and October 31
Annually Oct 1 - Sept 30	Annually	October 31
2-year	Every 2 years	October 31
5-Year	Every 5 Years	April 30
* Year defined as October 1 through September 30		

The Discharger must submit an Annual Monitoring Summary Report (Annual Report) to the Water Board covering the previous monitoring year. The Annual Report must contain the information specified in Section VI. Reporting Requirements, below, and a discussion of compliance with the waste discharge requirements and the Water Quality Protection Standard. The Annual Report, and, when applicable, the 2-year monitoring report can be combined with the year-end Semiannual Report such that three summary reports are not required by the October 31 due date. The last 5-year Constituent-of-Concern (COC) groundwater monitoring event was conducted during 2010; therefore, the next COC event is scheduled to take place in 2015.

**III. WATER QUALITY PROTECTION STANDARD**

- A. For each waste management unit (Class III Landfill, Class II Surface Impoundment, and Land Treatment Unit), the Water Quality Protection Standard (WQPS) must consist of all constituents of concern (COCs), the concentration limit for each COC, the point of compliance, and all water quality monitoring points. A WQPS is required by California Code of Regulations (CCR), title 27, section 20390, to assure the earliest possible detection of a release from the Landfill, Surface Impoundments, and Land Treatment Unit (collectively the Facility) to the underlying soil and/or groundwater.

The WQPS for naturally occurring waste constituents consists of the COCs, the concentration limits, and the point of compliance and all monitoring points.

Proposed modifications of the WQPS must be submitted to the Water Board in a report for review and acceptance. The report must:

1. Identify all distinct bodies of surface water and groundwater that could be affected in the event of a release from the Facility or portion of the Facility. This list must include at least the uppermost aquifer and any permanent or ephemeral zones of perched groundwater underlying the Facility.
2. Include a map showing the monitoring points and background monitoring points for the surface water monitoring program, groundwater monitoring program, and the unsaturated zone monitoring program. The map must include the point of compliance in accordance with CCR, title 27, section 20405.
3. Evaluate the perennial direction(s) of groundwater movement within the uppermost groundwater zone(s).
4. The WQPS must be certified by a California-registered civil engineer or geologist as meeting the requirements of CCR, title 27. If subsequent sampling of the background monitoring point(s) indicates significant water quality changes due to either seasonal fluctuations or other reasons unrelated to waste management activities at the Facility, the Discharger may request modification of the WQPS.

B. Constituents of Concern

The COCs 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 Facility. The COCs for all portions of the Facility are those listed in Tables I-III for the specified monitored medium. The Discharger must monitor all COCs every five years.

For non-anthropogenic monitoring parameters (e.g., trace metals), the Discharger is responsible for collecting sufficient intra-well background data such that statistical analyses of non-anthropogenic COCs can be performed.  
Monitoring Parameters

Monitoring parameters are COCs 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 all Units are those listed in Tables I - III for the specified monitored medium.

C. Concentration Limits

For a naturally occurring COC, the concentration limit for each COC must be determined by a statistical method meeting the requirements of CCR, title 27, section 20415(e)(8)(E). Concentration limits must be updated by the Discharger every two years and reported in the Annual Report for the respective reporting period.

D. Point of Compliance

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

E. Compliance Period

The compliance period for each Unit must 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 must conduct a water quality monitoring program subsequent to a release from the Unit. The compliance period must begin anew each time the Discharger initiates an evaluation monitoring program.

IV. MONITORING

The Discharger must comply with the detection monitoring program provisions of CCR, title 27, for groundwater and the unsaturated zone. Groundwater detection monitoring for the Landfill expansion waste units must be installed, be operational, and have one year of quarterly monitoring data collected prior to the discharge of wastes. All monitoring must be conducted in accordance with a Sampling and Analysis Plan (SAP), which includes quality assurance/quality control standards.

All point of compliance monitoring wells established for the detection monitoring program must constitute the monitoring points for the groundwater WQPS. All detection monitoring program groundwater monitoring wells, unsaturated zone monitoring devices, and leachate monitoring points must be sampled and analyzed for monitoring parameters and COCs as indicated and listed in Tables I – III (Attachments C-E).

Method detection limits and practical quantitation limits must be reported. All peaks must be reported, including those which cannot be quantified. Metals must be analyzed in accordance with the methods listed in Table IV (Attachment F). The Discharger may use alternative analytical test methods, including new U.S. EPA approved methods, provided the methods have method detection limits equal to or lower than the analytical methods specified in this Monitoring and Reporting Program.

A. Groundwater

The Discharger must operate and maintain a groundwater detection monitoring system that complies with the applicable provisions of CCR, title 27, sections 20415 and 20420 in accordance with approved Detection Monitoring Program, where appropriate. The monitoring system must be certified by a California-licensed professional civil engineer or geologist as meeting the requirements of CCR, title 27. The Discharger must collect, preserve, and transport groundwater samples in accordance with the approved SAP.

The Discharger must measure groundwater depth in all groundwater monitoring wells semiannually and assess the groundwater flow rate and direction in the uppermost aquifer and in any zones of perched water and in any additional zone of saturation monitored pursuant to this Monitoring and Reporting Program, and report the results semiannually, including the times of expected highest and lowest elevations of the water levels in the wells. The parameters listed below must be calculated and reported in tabular form semi-annually. Include a figure illustration showing the boundary of waste units, direction of groundwater movement, location of monitoring points, and the contoured groundwater surface in feet above mean sea level.

<u>Parameter</u>	<u>Units</u>
Slope of Groundwater (Gradient)	Feet/mile
Direction of Groundwater Gradient	Degrees from north
Velocity of Groundwater Flow	Feet/year

Groundwater samples must be collected from the following monitoring wells, as applicable. Samples must be collected and analyzed for the monitoring parameters and COCs in accordance with the methods and frequency specified in Table I (Attachment C). The groundwater monitoring well locations are shown in Attachment A of this Monitoring and Reporting Program, and the specific wells are listed below.

Landfill Detection Monitoring Groundwater Monitoring Wells			
Well Name <sup>1</sup>	Purpose	Total Depth (feet below ground surface)	Screened Interval (feet below ground surface)
BRGW-1 <sup>2</sup>	upgradient	810	740-800
BRGW-2	compliance	811	720-800
BRGW-3 <sup>3</sup>	peizometer	806	746-806
BRGW-4(proposed)	compliance	850 <sup>4</sup>	To be determined

<sup>1</sup> Or approved replacement.

<sup>2</sup> Sampled for all COCs every 5-years only.

<sup>3</sup> BRGW-3 used to monitor water level only.

<sup>4</sup> Projected depth.

#### B. Unsaturated Zone

The Discharger must operate and maintain an unsaturated zone detection monitoring system that complies with the applicable provisions of CCR, title 27, sections 20415, 20420, and 20435 in accordance with an approved Detection Monitoring Program. The Discharger must collect, preserve, and transport samples in accordance with the quality assurance/quality control standards contained in the approved SAP.

Unsaturated zone samples must be collected from the monitoring devices of the approved unsaturated zone monitoring system. The collected samples must be analyzed for the listed constituents in accordance with the methods and frequency specified in Table II (Attachment D). Samples for the COCs specified in Table II must be collected and analyzed every five years, at a minimum.

Table II (Attachment D) presents the list of analytes and mediums to be sampled (liquid or soilpore gas, as applicable).

Upon detection of water in a previously dry lysimeter, the Discharger must immediately sample the liquid and must continue to sample the lysimeter as described in Table II. The quantity of water pumped from each sump must be measured continuously and reported as subdrain flow (total gallons/month).

Quarterly, the unsaturated zone monitoring system beneath the Impoundments (neutron probe) must be analyzed for soil moisture. The results must be compared against background moisture, as was measured prior to operation/waste discharges to the Impoundments. All equipment used to measure/derive soil moisture must be calibrated as required by manufacturer's recommendations.

Unsaturated zone monitoring reports must be included with the corresponding semiannual groundwater monitoring and must include an evaluation of potential impacts of the Facility on the unsaturated zone and in compliance with the WQPS.

1. Landfill and Surface Impoundments

The existing Landfill unsaturated zone monitoring program consists of 11 soil gas monitoring probes, and 2 lysimeters. Unsaturated zone monitoring for Phase 1 Borrow Area will include a pan lysimeter beneath the LCRS sump. The existing surface impoundment unsaturated zone monitoring program consists of 8 moisture probes (BV-1 through BV-8) (neutron probes). The locations of these monitoring points are shown on Attachment A of this Monitoring and Reporting Program.

2. Landfill Gas

Landfill gas samples must also be collected from all pan lysimeters and gas probes (Attachment A) on a semi-annual basis as a part of the unsaturated zone landfill gas detection monitoring program and monitored for methane, carbon dioxide, oxygen content and organic vapors using field instruments (Table III, Attachment E). Probes to be monitored include BRSG-1, BRSG-2, BRSG-3, BARSTOW-07, BARSTOW-08, BARSTOW-09, BARSTOW-10, BARSTOW-11, BARSTOW-12, BARSTOW-13, AND BARSTOW-14, and pan lysimeters.

If the photoionization detector indicates the presence of organic vapors at 5 part per million (ppm) or greater or methane at 5.0 percent or greater in a gas monitoring probe or pan lysimeter, then a gas sample must be obtained and analyzed for VOCs using EPA Method TO-15.

3. Land Treatment Unit

Unsaturated zone monitoring program at the Land Treatment Unit (Landfarm) consists of soil sampling, at 5-foot depths, from four soil borings from the Landfarm area annually. Background soil analysis will be compared to these results.

Annually, the Discharger must verify that the COCs and soil treatment nutrients are not migrating past the 5-foot vertical treatment zone underlying the Landfarm. Soil samples must be collected immediately below the 5-foot zone and analyzed for the monitoring parameters listed below. If results of sample analyses indicate that monitoring

parameter concentrations are greater than the limits indicated below, the Discharger must repeat sample collection at 1-foot intervals until laboratory analytical results show that concentrations are no greater than background. If monitoring parameter concentrations are found below the 5-foot treatment zone, the Discharger must report evidence of a release. The samples must be collected and composited according to methods specified in the federal Environmental Protection Agency's current version of the manual "Test Methods for Evaluating Solid Waste" (SW-846).

Monitoring Parameters	Units <sup>1</sup>	Limit <sup>2</sup>
Volatile Organic Compounds (USEPA Method 8260)	µg/Kg	2 x MDL
Semi-Volatile Organic Compounds (USEPA Method 8270)	µg/Kg	2 x MDL
Title 22 metals - arsenic, antimony, barium, beryllium, cadmium, total chromium, cobalt, copper, lead, mercury, molybdenum, nickel, selenium, silver, thallium, vanadium, and zinc.	mg/Kg	Upper 95 Tolerance Limit/ 2x MDL
Other nutrients added to septage soil	mg/Kg	MDL

<sup>1</sup> µg/Kg = micrograms per kilogram; mg/Kg = milligrams per kilogram.

<sup>2</sup> For metals not detected in background samples, the limit is two times the method detection limit (MDL); otherwise the limit for metals is the upper 95 percent tolerance limit of metals detected in background soil.

C. Leachate/Seep Monitoring

1. All landfill leachate collection and removal system (LCRS) sumps must be inspected monthly for leachate generation. Upon detection of leachate in a previously dry leachate collection and removal system, leachate must be sampled immediately and analyzed for the constituents listed in Table III (Attachment E). Leachate must then be sampled and analyzed for monitoring parameters annually in accordance with Table III thereafter, with a retest during the following quarter if constituents are detected that have not been previously detected. Leachate field parameters must be sampled and analyzed in accordance with Table III. The COCs list must include all constituents listed in Table VI (Attachment F). The quantity of leachate pumped from each sump must be measured and reported monthly as Leachate Flow Rate (in gallons/month). Initial annual sampling may occur in October until the highest flow rates are observed, after which annual sampling must take place during periods of maximum leachate flow rates.

All leachate collection and removal system sumps must be tested annually to demonstrate operation in conformance with these waste discharge requirements. The results of these tests must be reported to the Water Board and must include comparison with earlier tests made under comparable conditions.

Leachate which seeps to the surface from any Unit must be sampled and analyzed for the Monitoring Parameters and COCs listed in Table III (Attachment E) upon detection. The quantity of leachate must be estimated and reported as Leachate Flow Rate (in gallons/day).

2. The Discharger must conduct the following inspections and testing of the leachate collection and recovery system (LCRS) for the Surface Impoundments and report results in the Semiannual Monitoring Reports:
  - a. Weekly, visual inspection for liquid in the leakage detection sumps. The results of those inspections must be recorded in a paper or electronic log. The quantity of leachate pumped from each sump must be measured and reported monthly as Leachate Flow Rate (in gallons/day).
  - b. Any volume of liquid since last pumped out of the leakage detection sumps must be recorded along with date, time and discharge location, in a paper or electronic log kept on-site. Report this volume in total gallons and as calculated gallons per day per acre. The Discharger must follow the Action Response Plan described below when liquid is detected in the LCRS sumps.
  - c. Annually, each LCRS must be tested to demonstrate proper operation. The results of the testing must be submitted in the annual monitoring reports. The Annual Report must include a description of the method used to test each LCRS.

3. Action Leakage Rates

The factors set by the Water Board and used to calculate the Action Leakage Rates (ALRs) for the Surface Impoundments are shown in the table below – LCRS Action Leakage Rates.

LCRS ACTION LEAKAGE RATES			
Sump monitoring point	Surface Area (Acres)	Unit Leakage Rate (gallons per day/acre)	Action Leakage Rate (Gallons per day)
BN-East	1.2	500	600 <sup>1</sup>
BN-West	1.29	500	645 <sup>1</sup>
BN-South <sup>2</sup>	1.35	500	675 <sup>3</sup> /109 <sup>1</sup>

<sup>1</sup> Weekly monitoring/pumping.  
<sup>2</sup> Action leakage rate based on sump capacity.  
<sup>3</sup> Daily monitoring/pumping.

4. Action Response Plan

If liquids are detected in the LCRS Surface Impoundment sumps, the Discharger must respond as set out below:

Reporting Flow Rate	Action/Response
Less than ALR	Record weekly flow rate in gallons per day and submit recorded flow rates with the next Semiannual Report.
Greater than ALR	<ol style="list-style-type: none"> <li>1. Notify the Water Board as described in MRP Section IV.B.2.</li> <li>2. Assess source of leak.</li> <li>3. Take immediate actions to lower leakage to below ALR.</li> <li>4. The Discharger must immediately collect a grab sample of the leachate and must analyze for the parameters identified in MRP Section IV.B. above, and other constituents as necessary to determine source.</li> <li>5. Leachate collected in sumps must be returned to a Surface Impoundment that is not exceeding the ALR.</li> </ol>

D. Facility Monitoring

1. Annually, prior to the anticipated rainy season, but no later than **September 30**, the Discharger must conduct an inspection of the Facility. The inspection must assess damage to the drainage control system, groundwater monitoring equipment (including wells, etc.). Any necessary construction, maintenance, or repairs must be completed by **October 31**. By **November 15** of each year, the Discharger must submit an Annual Report describing the results of the inspection and the repair measures implemented, including photographs of the problem and repairs.

2 Storm Events

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

3. Surface Impoundments

- a. Monthly, measure the freeboard from the top of the lowest part of the Impoundment dike to the wastewater surface in feet. If the Impoundment is dry, indicate that it is dry or empty.
- b. Weekly, the integrity of the Impoundment dikes and liners must be inspected. Should the inspection indicate that any unauthorized discharge has occurred, or may occur, the Water Board must be notified within 48 hours, followed by confirmation in writing.
- c. Data must be collected and analyzed for the constituents listed above in accordance with the approved load checking program for waste discharged to the Impoundments which includes:
  - i. Septage load checking sampling analysis,
  - ii. Semi-annual grab sample analyses of wastewater, and
  - iii. Two-year grab sample analyses of dried sludge.

E. Landfarm

1. Representative septage solid samples must be collected and analyzed for the constituents listed above (IV.B.3.) for every batch of treated septage sludge prior to removal from the Landfarm. The status and/or results of sample analysis must be reported semi-annually. Septage solids discharged to the landfill must not contain VOCs or SVOCs greater than 100 times the method detection limit for each COC in liquid. Metals must not be discharged to the Landfill at levels exhibiting toxicity pursuant to CCR, title 22.
2. Data must be collected and recorded in accordance with the approved SAP.

F. Incoming Waste Monitoring Program

The Discharger must monitor all waste discharged to the Class III Landfill, Class II Surface Impoundments, and Landfarm on a monthly basis and report to the Water Board as follows:

Report Parameters	Units	Reporting Frequency
Non-Hazardous Solid Waste	Cubic Yards & Tons	Annually
Designated Liquid Waste	Gallons	Semiannually
Designated Liquid Waste	Millions of gallons (cumulative)	Semiannually
Septage Sludge	Cubic Yards	Semiannually
Location of Discharge	Map	Semiannually
Capacity of Landfill Units Remaining	Percent	Annually

V. DATA ANALYSIS

The Discharger must use the following non-statistical method for all analytes that are detected in less than 10 percent of the background samples. The non-statistical method must be implemented as follows:

A. From the COC or monitoring parameter list, identify each analyte in the current sample that exceeds either its respective MDL or practical quantitation limit (PQL). Unless a given monitoring point is already under corrective action monitoring for a given constituent, the Discharger must conclude that the exceedance provides a preliminary indication of a release or a change in the nature or extent of the release, at that monitoring point, if either:

1. The data contains two or more analytes that equal or exceed the respective MDLs; or
2. The data contains one or more analyte that equals or exceeds the respective PQL.

B. Discrete Retest

1. In the event that the Discharger concludes (pursuant to paragraph V.A., above) that there is a preliminary indication of a release, then the Discharger must immediately notify Water Board staff by phone or e-mail and, within 30 days of such indication, and must collect two new (retest) samples from the monitoring point where the release is preliminarily indicated in accordance with CCR, title 27, section 20415 (e)(8)(E).

2. For any given retest sample, the Discharger must include, in the retest analysis, only the laboratory analytical results for those analytes detected in the original sample. As soon as the retest data are available, the Discharger must conclude that there is measurably significant evidence of a release if two or more analytes equal or exceed their respective MDLs or if one or more analyte equals or exceeds its PQL and must:
  - a. Immediately (within 24 hours or next working day) notify the Water Board about any constituent or constituents verified to be present at the monitoring point, and follow up with written notification submitted by certified mail within seven days of validation.
  - b. Comply with the Notice of Tentative Release requirements below if any constituent or constituents were verified to be present.
  - c. Any analyte that is confirmed per this method must be added to the monitoring parameter list such that it is monitored during each regular monitoring event.

If the Discharger determines that there is measurably significant evidence of a release from the Unit at any monitoring point, the Discharger must immediately implement the requirements of VI. C. 1. Notice of Tentative Release, below.

## VI. REPORTING REQUIREMENTS

The following monitoring reports must be submitted to the Water Board as specified below:

### A. General Provisions

The Discharger must comply with Attachment B, "General Provisions for Monitoring and Reporting," dated September 1, 1994, which is attached to and made part of this Monitoring and Reporting Program.

### B. Scheduled Reports to be Filed with the Water Board

1. Semi-annual, annual, two-year, and five-year monitoring reports must be submitted to the Water Board no later than 30 days following the monitoring period and include the following.

- a. Results of sampling analyses, including statistical limits for each groundwater monitoring point;
  - b. Results of laboratory analyses of soil gas and non-statistical data analyses. Non-statistical analyses must include time-series plots for all soil gas COCs at all monitoring points;
  - c. Data collected in accordance with the approved load-checking program for the Impoundments;
  - d. Data collected in accordance with the approved Sampling and Analysis Plan for the Landfarm;
  - e. Semi-annually, information on the effectiveness of the load-checking program for the Landfill and Impoundments;
  - f. A letter transmitting the essential points in each report must accompany each report. The letter must include a discussion of any requirement violations found since the last report was submitted and must describe actions taken or planned for correcting those violations;
  - g. If the Discharger has previously submitted a detailed time schedule for correcting requirement violations, a reference to the correspondence transmitting this schedule will be satisfactory. If no violations have occurred since the last submittal, this must be stated in the letter of transmittal; and,
  - h. A map or aerial photograph showing the locations of the monitoring points.
2. Annual Reports must be submitted to the Water Board no later than October 31 of each year. The reports must include the following:
- a. Time series data plots of the past five years of groundwater, soil gas, and soil moisture analysis at a minimum;
  - b. A map showing the groundwater elevation and monitoring points;
  - c. An assessment of the adequacy of financial assurance, as required by this Order; and
  - d. The Discharger must review the Preliminary Closure and Post-Closure Maintenance Plan (PCPCMP) annually to determine if significant changes in the operation of the Landfill warrant an

update of the PCPCMP. Changes to the PCPCMP must be submitted annually.

3. Five-Year Constituent of Concern Monitoring Program

Pursuant to CCR, title 27, section 20420(g), every five years the Discharger must sample for COCs with successive direct monitoring efforts being carried out alternatively during October through March of one five-year sampling event and April through September of the next five-year sampling event, and every fifth year, thereafter. The next five-year COC sampling event must take place during the April through September of 2015, winter/spring monitoring period and reported no later than 30 days following the monitoring period.

C. Unscheduled Reports to be Filed With the Water Board

1. Notice of Tentative Release

Should the appropriate statistical or non-statistical data analysis indicate, for a given constituent of concern, that a release is tentatively identified, the Discharger must:

- a. Immediately notify the Water Board verbally as to the monitoring point(s) and constituent(s) or parameter(s) involved.
- b. Provide written notification by certified mail within seven days of such determination (CCR, title 27, section 20420[jj]). The notification should indicate the Discharger's intent to conduct verification sampling, initiate evaluation monitoring procedures, or demonstrate that a source other than the Landfill is responsible for the release.
- c. If the Discharger chooses to attempt to demonstrate that a source other than the Landfill is responsible for the release, the Discharger must submit a supporting technical report within 90 days of detection of the release.

2. Evaluation Monitoring Program

The Discharger must, within 90 days of verifying a release, submit a technical report pursuant to section 13267(b) of the California Water Code proposing an Evaluation Monitoring Program (EMP). If the Discharger decides not to conduct verification procedures, or decides not to make a demonstration that a source other than the Landfill is responsible for the release, the release will be considered verified.

3. Engineering Feasibility Study Report

The Discharger must, within 180 days of verifying a release, submit a Technical Report discussing conclusions and recommendations from the DMP and the EMP. The report must include an Engineering Feasibility Study along with a proposed corrective action program (CAP) or recommend a return to DMP in accordance with CCR, title 27, section 20425.

4. Revised Septage Management Plan

The Discharger must submit a revised Septage Management Plan should septage handling conditions change to the extent that revisions to the load-checking program or septage sampling are required.

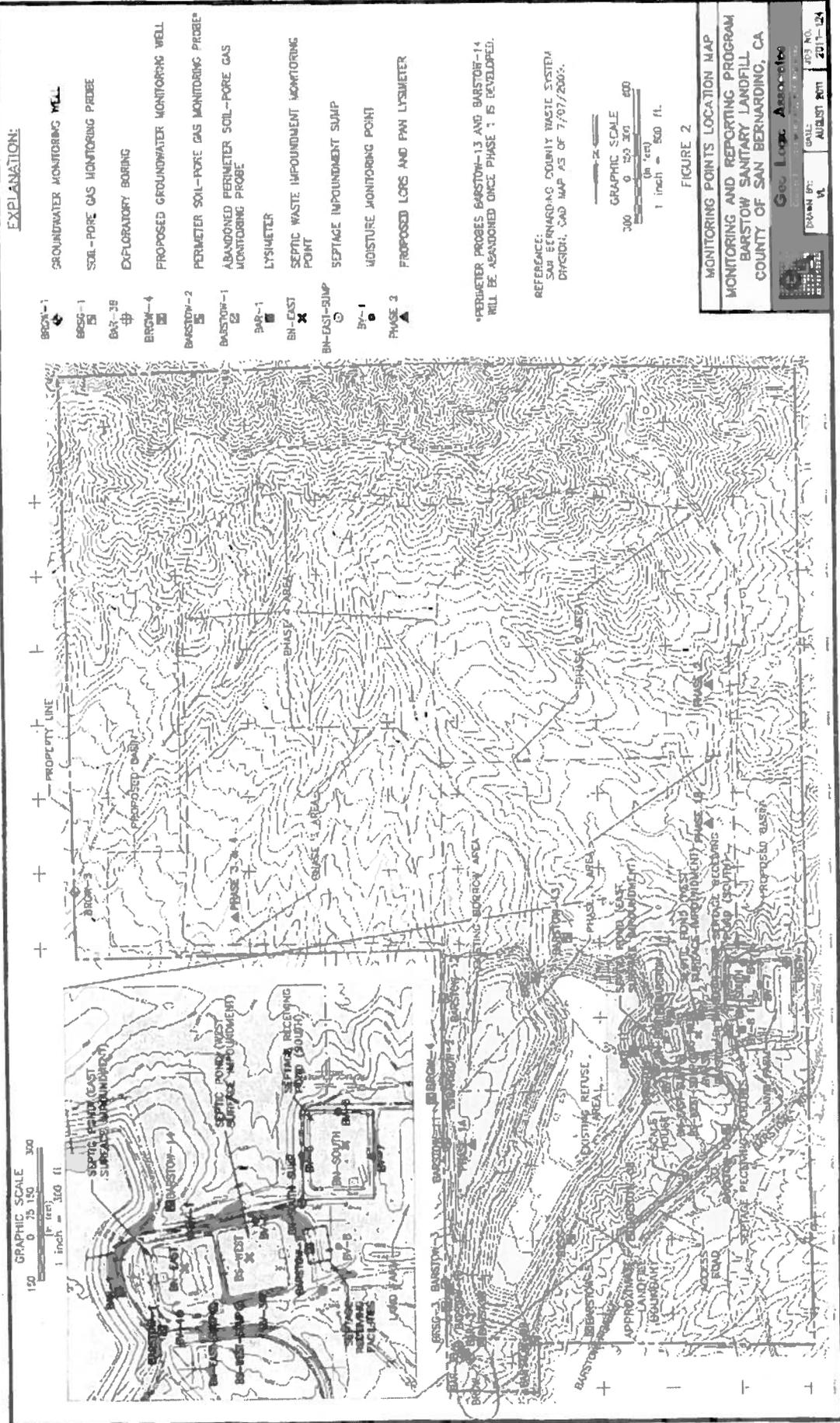
Ordered by: \_\_\_\_\_ Dated: \_\_\_\_\_  
HAROLD J. SINGER  
EXECUTIVE OFFICER

- Attachments:
- A. Monitoring Points Location Map
  - B. General Provisions for Monitoring and Reporting
  - C. Table I - Groundwater Detection Monitoring Program
  - D. Table II - Unsaturated Zone Detection Monitoring Program
  - E. Table III - Leachate Detection Monitoring Program
  - F. Table IV - Monitoring Parameters
  - G. Table V - Constituents of Concerned & Approved USEPA Analytical Methods

**MONITORING AND REPORTING  
PROGRAM NO. R6V-2012- [TENTATIVE]  
WDID No. 6B360304005**

**Attachment A**

**BARSTOW CLASS III LANDFILL  
San Bernardino County**



CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
LAHONTAN REGION

**GENERAL PROVISIONS**  
FOR MONITORING AND REPORTING

1. **SAMPLING AND ANALYSIS**

- a. All analyses shall be performed in accordance with the current edition(s) of the following documents:
  - i. Standard Methods for the Examination of Water and Wastewater
  - ii. Methods for Chemical Analysis of Water and Wastes, EPA
- b. All analyses shall be performed in a laboratory certified to perform such analyses by the California State Department of Health Services or a laboratory approved by the Regional Board Executive Officer. Specific methods of analysis must be identified on each laboratory report.
- c. Any modifications to the above methods to eliminate known interferences shall be reported with the sample results. The methods used shall also be reported. If methods other than EPA-approved methods or Standard Methods are used, the exact methodology must be submitted for review and must be approved by the Regional Board prior to use.
- d. The Discharger shall establish chain-of-custody procedures to insure that specific individuals are responsible for sample integrity from commencement of sample collection through delivery to an approved laboratory. Sample collection, storage, and analysis shall be conducted in accordance with an approved Sampling and Analysis Plan (SAP). The most recent version of the approved SAP shall be kept at the facility.
- e. The Discharger shall calibrate and perform maintenance procedures on all monitoring instruments and equipment to ensure accuracy of measurements, or shall insure that both activities will be conducted. The calibration of any wastewater flow measuring device shall be recorded and maintained in the permanent log book described in 2.b, below.
- f. A grab sample is defined as an individual sample collected in fewer than 15 minutes.
- g. A composite sample is defined as a combination of no fewer than eight individual samples obtained over the specified sampling period at equal intervals. The volume of each individual sample shall be proportional to the discharge flow rate at the time of sampling. The sampling period shall equal the discharge period, or 24 hours, whichever period is shorter.

## 2. OPERATIONAL REQUIREMENTS

### a. Sample Results

Pursuant to California Water Code Section 13267(b), the Discharger shall maintain all sampling and analytical results including: strip charts; date, exact place, and time of sampling; date analyses were performed; sample collector's name; analyst's name; analytical techniques used; and results of all analyses. Such records shall be retained for a minimum of three years. This period of retention shall be extended during the course of any unresolved litigation regarding this discharge, or when requested by the Regional Board.

### b. Operational Log

Pursuant to California Water Code Section 13267(b), an operation and maintenance log shall be maintained at the facility. All monitoring and reporting data shall be recorded in a permanent log book.

## 3. REPORTING

- a. For every item where the requirements are not met, the Discharger shall submit a statement of the actions undertaken or proposed which will bring the discharge into full compliance with requirements at the earliest time, and shall submit a timetable for correction.
- b. Pursuant to California Water Code Section 13267(b), all sampling and analytical results shall be made available to the Regional Board upon request. Results shall be retained for a minimum of three years. This period of retention shall be extended during the course of any unresolved litigation regarding this discharge, or when requested by the Regional Board.
- c. The Discharger shall provide a brief summary of any operational problems and maintenance activities to the Board with each monitoring report. Any modifications or additions to, or any major maintenance conducted on, or any major problems occurring to the wastewater conveyance system, treatment facilities, or disposal facilities shall be included in this summary.
- d. Monitoring reports shall be signed by:
  - i. In the case of a corporation, by a principal executive officer at least of the level of vice-president or his duly authorized representative, if such representative is responsible for the overall operation of the facility from which the discharge originates;
  - ii. In the case of a partnership, by a general partner;
  - iii. In the case of a sole proprietorship, by the proprietor; or

- iv. In the case of a municipal, state or other public facility, by either a principal executive officer, ranking elected official, or other duly authorized employee.
- e. Monitoring reports are to include the following:
  - i. Name and telephone number of individual who can answer questions about the report.
  - ii. The Monitoring and Reporting Program Number.
  - iii. WDID Number.
- f. Modifications

This Monitoring and Reporting Program may be modified at the discretion of the Regional Board Executive Officer.

#### 4. NONCOMPLIANCE

Under Section 13268 of the Water Code, any person failing or refusing to furnish technical or monitoring reports, or falsifying any information provided therein, is guilty of a misdemeanor and may be liable civilly in an amount of up to one thousand dollars (\$1,000) for each day of violation under Section 13268 of the Water Code.

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**TABLE I  
GROUNDWATER DETECTION MONITORING PROGRAM**

<u>Parameter</u>	<u>Units</u>	<u>Frequency</u>
<b>Field Parameters<sup>1</sup></b>		
Depth to Groundwater	Feet below ground surface	Semiannual
Groundwater Elevation	Feet. & hundredths, above mean sea Level	Semiannual
Temperature	Degrees Centigrade	Semiannual
Electrical Conductivity	µmhos/cm	Semiannual
pH	pH units	Semiannual
Turbidity	Turbidity units	Semiannual
<b>Monitoring Parameters<sup>2</sup></b>		
Chemical Oxygen Demand	mg/L	Semiannual
Total Kjeldahl Nitrogen	mg/L	Semiannual
Total Dissolved Solids (TDS)	mg/L	Semiannual
Chloride	mg/L	Semiannual
Bicarbonate	mg/L	Semiannual
Sulfate	mg/L	Semiannual
Volatile Organic Compounds (USEPA Method 8260, see Table V)	µg/L	Semiannual
<b>Supplemental Parameters<sup>3</sup></b>		
Carbonate	mg/L	Semiannual
Nitrate - Nitrogen	mg/L (as Nitrogen)	Semiannual
Calcium (dissolved)	mg/L	Semiannual
Magnesium (dissolved)	mg/L	Semiannual
Potassium (dissolved)	mg/L	Semiannual
Sodium (dissolved)	mg/L	Semiannual
<b>Constituents of Concern (see Table IV)</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
Organochlorine Pesticides (USEPA Method 8081A)	µg/L	5 years
Polychlorinated Biphenyls (USEPA Method 8082)	µg/L	5 years

<sup>1</sup> Field parameters are collected for informational purposes to document groundwater conditions at the time of sampling and are not included in statistical analyses.

<sup>2</sup> Discharger must apply the statistical analyses described in Section C.4.1 of this MRP to the inorganic monitoring parameters included on this list.

<sup>3</sup> Supplemental parameters provide important information regarding groundwater geochemistry, but these parameters are not included in routine statistical analyses.

TABLE II  
UNSATURATED ZONE DETECTION MONITORING PROGRAM

SOIL-PORE GAS

<u>Parameter</u>	<u>Units</u>	<u>Frequency</u>
<b>Monitoring Parameters</b>		
Volatile Organic Compounds (USEPA Method TO-14)	µg/cm <sup>3</sup>	Semiannual
Methane	Percent	Semiannual

PAN LYSIMETERS (or other unsaturated zone monitoring device)

<u>Parameter</u>	<u>Units</u>	<u>Frequency</u>
<b>Field Parameters</b>		
Electrical Conductivity	µmhos/cm	Quarterly
pH	pH units	Quarterly
<b>Monitoring Parameters</b>		
Total Dissolved Solids (TDS)	mg/L	Annually
Chloride	mg/L	Annually
Carbonate	mg/L	Annually
Bicarbonate	mg/L	Annually
Nitrate	mg/L(as Nitrogen)	Annually
Sulfate	mg/L	Annually
Calcium	mg/L	Annually
Magnesium	mg/L	Annually
Potassium	mg/L	Annually
Sodium	mg/L	Annually
Volatile Organic Compounds (USEPA Method 8260B, see Table V)	µg/L	Annually

Constituents of Concern (see Table V)

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
Organochlorine pesticides (USEPA Method 8081A)	µg/L	5 years
Polychlorinated Biphenyls (USEPA Method 8082)	µg/L	5 years

TABLE III

LEACHATE DETECTION MONITORING PROGRAM

<u>Parameter</u>	<u>Units</u>	<u>Frequency</u>
<b>Field Parameters</b>		
Total Flow	Gallons	Quarterly
Flow Rate	Gallons/Month	Quarterly
Electrical Conductivity	µmhos/cm	Quarterly
pH	pH units	Quarterly
<b>Monitoring Parameters</b>		
Total Dissolved Solids (TDS)	mg/L	Annually
Chloride	mg/L	Annually
Carbonate	mg/L	Annually
Bicarbonate	mg/L	Annually
Nitrate – Nitrogen	mg/L	Annually
Sulfate	mg/L	Annually
Calcium	mg/L	Annually
Magnesium	mg/L	Annually
Potassium	mg/L	Annually
Sodium	mg/L	Annually
Volatile Organic Compounds (USEPA Method 8260B, see Table V)	µg/L	Annually
<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
Organochlorine pesticides (USEPA Method 8081A)	µg/L	5 years
Polychlorinated Biphenyls (USEPA Method 8082)	µg/L	5 years

**TABLE IV  
MONITORING PARAMETERS**

**Surrogates for Metallic Constituents**

pH  
Total Dissolved Solids  
Electrical Conductivity  
Chloride  
Sulfate

**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)  
p-Dichlorobenzene (1,4-Dichlorobenzene)  
trans-1,4-Dichloro-2-butene  
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  
Ethylbenzene  
2-Hexanone (Methyl butyl ketone)  
Methyl bromide (Bromomethane)  
Methyl chloride (Chloromethane)  
Methylene bromide (Dibromomethane)  
Methylene chloride (Dichloromethane)  
Methyl ethyl ketone (MEK: 2-Butanone)  
Methyl iodide (Iodomethane)  
Methyl t-butyl ether

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

4-Methyl-2-pentanone (Methyl isobutylketone)  
Styrene  
1,1,1,2-Tetrachloroethane  
1,1,2,2-Tetrachloroethane  
Tetrachloroethylene (Tetrachloroethene; Perchloroethylene)  
Toluene  
1,1,1-Trichloroethane (Methylchloroform)  
1,1,2-Trichloroethane  
Trichloroethylene (Trichloroethene)  
Trichlorofluoromethane (CFC-11)  
1,2,3-Trichloropropane  
Vinyl acetate  
Vinyl chloride  
Xylenes

TENTATIVE

TABLE V

CONSTITUENTS OF CONCERN & APPROVED USEPA ANALYTICAL METHODS

**Dissolved Inorganics (USEPA Method<sup>1</sup>)**

Aluminum (6010)  
Antimony (7041)  
Barium (6010)  
Beryllium (6010)  
Cadmium (7131A)  
Chromium (6010)  
Cobalt (6010)  
Copper (6010)  
Silver (6010)  
Tin (6010)  
Vanadium (6010)  
Zinc (6010)  
Iron (6010)  
Manganese (6010)  
Arsenic (7062)  
Lead (7421)  
Mercury (7470A)  
Nickel (7521)  
Selenium (7742)  
Thallium (7841)  
Cyanide (9010B)  
Sulfide (9030B)

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<sup>1</sup> The Discharger may use alternative methods, including new USEPA-approved methods, provided they have the methods detection limits equal or lower than the analytical methods specified.

**Volatile Organic Compounds (USEPA Method 8260)**

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)

TABLE V (Continued)  
CONSTITUENTS OF CONCERN & APPROVED USEPA ANALYTICAL METHODS

Chloroform (Trichloromethane)  
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)

TABLE V (Continued)  
CONSTITUENTS OF CONCERN & APPROVED USEPA ANALYTICAL METHODS

Styrene  
Tertiary amyl methyl ether  
Tertiary butyl alcohol  
1,1,1,2-Tetrachloroethane  
1,1,2,2-Tetrachloroethane  
Tetrachloroethylene (Tetrachloroethene; Perchloroethylene; PCE)  
Toluene  
1,2,4-Trichlorobenzene  
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 8270 - 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

TABLE V (Continued)  
CONSTITUENTS OF CONCERN & APPROVED USEPA ANALYTICAL METHODS

Butyl benzyl phthalate (Benzyl butyl phthalate)  
Chlordane  
p-Chloroaniline  
Chlorobenzilate  
p-Chloro-m-cresol (4-Chloro-3-methylphenol)  
2-Chloronaphthalene  
2-Chlorophenol  
4-Chlorophenyl phenyl ether  
Chrysene  
o-Cresol (2-methylphenol)  
m-Cresol (3-methylphenol)  
p-Cresol (4-methylphenol)  
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

TABLE V (Continued)  
CONSTITUENTS OF CONCERN & APPROVED USEPA ANALYTICAL METHODS

Famphur  
Fluoranthene  
Fluorene  
Heptachlor  
Heptachlor epoxide  
Hexachlorobenzene  
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

**TABLE V (Continued)**  
**CONSTITUENTS OF CONCERN & APPROVED USEPA ANALYTICAL METHODS**

p-Phenylenediamine  
Polychlorinated biphenyls (PCBs; Aroclors)  
Pronamide  
Pyrene  
Safrole  
1,2,4,5-Tetrachlorobenzene  
2,3,4,6-Tetrachlorophenol  
o-Toluidine  
Toxaphene  
2,4,5-Trichlorophenol  
0,0,0-Triethyl phosphorothioate  
sym-Trinitrobenzene

**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

**Organochlorine Pesticides (USEPA Method 8081A)**

**Polychlorinated Biphenyls (USEPA Method 8082)**