CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LAHONTAN REGION

BOARD ORDER NO. R6V-2011-(TENTATIVE)
WDID NO. 6B360304041

WASTE DISCHARGE REQUIREMENTS
FOR

SAN BERNARDINO COUNTY SOLID WASTE MANAGEMENT DIVISION
HEAPS PEAK CLASS III LANDFILL
LEACHATE TREATMENT AND DISPOSAL SYSTEM

San Bernardino County

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

1. Discharger

   On September 29, 2010, the County of San Bernardino Waste Management Division submitted a Report of Waste Discharge (ROWD) for disposal of treated leachate from the closed Heaps Peak Class III Landfill. The Heaps Peak closed landfill is owned and maintained by the County of San Bernardino Solid Waste Management Division. For the purpose of this Water Board Order (Order), the County of San Bernardino is referred to as the "Discharger."

2. Landfill and Facility

   For the purposes of the Order, the Heaps Peak Class III closed landfill is referred to as the "Landfill," and the Leachate Treatment and Disposal System is referred to as the "Facility." The Landfill stopped accepting waste on November 1, 1981, was closed in 1985, and has been in post-closure maintenance since 1985. The Facility is proposed and has not been constructed to date.

3. Order History

   The Water Board previously adopted Waste Discharge Requirement (WDRs) for the Landfill under Board Order No. 6-80-77 on October 9, 1980. Board Order No. 6-85-33 was adopted on April 30, 1985 rescinding Board Order No. 6-80-77 and prescribing closure requirements for the Landfill. Board Order Amendment No. 6-93-10040 was adopted September 9, 1993 to implement Title 40, Code of Federal Regulations Parts 257 and 258 (Subtitle D Regulations). Board Order No. 6-95-6 was adopted January 12, 1995 to confirm that the Landfill stopped receiving waste prior to October 9, 1991, and has not received waste since that date. Therefore, the Subtitle D regulations do not apply and Board Order Amendment No. 6-93-10040 was rescinded. Board Order No. 6-01-40, adopted June 13, 2001, updated Board Order 6-95-6 and prescribes requirements for the closed Landfill for compliance with

California Code of Regulations, (CCR) title 27. The existing requirements in 6-01-40 for post-closure maintenance and monitoring of the closed Landfill remain in effect.

4. Reasons for Action

The Discharger proposes to construct the Facility to treat mixed groundwater and leachate (referred to hereafter jointly as "leachate") and discharge this treated wastewater to land which could affect groundwater quality. This Order regulates the discharge of treated leachate and groundwater to land. Monitoring and landfill maintenance requirements for the closed Landfill are contained in Board Order No. 6-01-40 and remain in effect. This Order contains requirements for the quality of treated Landfill leachate that can be discharged.

5. Landfill/Facility Location

The Landfill location is shown on Attachments "A and B," and the Facility location is shown in Attachment "C." Attachments "A, B, and C" are made a part of this Order.

6. Description of Landfill

The unlined, closed Landfill was operated from 1964 to 1981 to accept non-hazardous residential, construction and agricultural solid and inert waste. The waste footprint area of the Landfill is about 20 acres shown in Attachment B. During the Landfill's operation, refuse was placed in canyons that are tributary to Shake Creek. Using a canyon-fill type method of placement, the waste was initially loaded along the slope from the upper portions of the slope face. The waste was then compacted with landfill equipment.

The Landfill occupies a north-facing, steeply dipping slope on an east-west trending ridge. Landfill elevation range from about 5,700 feet above mean sea level (MSL) at the toe to about 6,000 feet MSL near its top with an approximate slope ration of 2 (horizontal) to 1 (vertical), or 2H:1V. Surface water in this area drains into tributaries of Shake Creek, which in turn drain into Deep Creek and is part of the headwaters of the Mojave River.

Landfill leachate and comingled groundwater are currently collected at the toe of the landfill and pumped to the top of the slope for storage in portable tanks. The tanks are hauled by truck to off-site treatment and disposal facilities.

7. Landfill Leachate Description

The leachate collection system uses a system of five collection pipelines whose physical connection to the leachate source is uncertain. Two pipelines appear to collect seepage water from springs originating beneath and adjacent to the site. Two pipelines divert water from seeps in the Landfill cover. One pipeline appears to have been installed in the area at the toe of the Landfill where subsurface drainage flows along the original canyon topography. The Discharger collects leachate with

an annual average flow of approximately 1.6 million gallons, with highest flow rates occurring during winter and spring months following heavy rainfall and during snow melt. During high flow periods, peak flows are typically 45 gallons per minute (gpm); in summer months flow decreases to as low as 1 gpm. During February and March 2010, more than 2.0 million gallons of leachate was collected (i.e., approximately 33,333 gallons per day). The peak flow rate for 10 days during this period was 64 gpm.

Leachate collected at the Landfill contains elevated concentrations of iron, manganese, and total dissolved solids (TDS) relative to background water quality. Volatile organic constituents (VOCs) may be present at low concentrations in the leachate. This Order requires discharge limitations for constituents of concern listed in Section I.A. of this Order.

8. Leachate Treatment

Major components of the leachate treatment system include: 1) a 100,000-gallon influent storage tank; 2) two in-line reaction vessels; 3) a dissolved air-floatation (DAF) unit; and 4) a solids storage bin. Leachate will be pumped from the leachate collection system at the toe of the landfill to the influent storage tank that will be positioned adjacent to the treatment system. Compressed air and lime (calcium carbonate, $CaCO_3$) will be dosed to the two in-line reaction vessels which will operate in staggered mode to remove VOCs and to precipitate metals and TDS. Water will then be pumped to the DAF unit where polymer and flocculation agents will be introduced to float precipitated metals and TDS. As precipitates float to the top of the DAF tank, a scraper will remove solids via an air-operated diaphragm pump. The pump conveys solids as a 5%-slurry to a roll-off bin for storage prior to off-site disposal. Liquids draining from the roll-off bin will be collected in a sump and periodically pumped back to the reaction vessels for retreatment with raw leachate. Treated effluent will be pumped to the percolation galleries. A map of the treatment system in shown in Attachment C.

The leachate treatment system is designed to treat the leachate at a maximum flow rate of 80 gpm. Additional storage capacity is provided by the 100,000-gallon influent storage tank for atypical circumstances when leachate flow exceeds 80 gpm when off-site hauling and treatment may occur to supplement on-site treatment. If needed, the contents of the storage tank will be transferred to trucks and hauled for treatment at the Running Springs Treatment Plant, as currently occurs. Under environmental conditions that cause high leachate production rates that would exceed leachate treatment capacity, the Discharger has developed a contingency plan to transfer collected leachate for off-site treatment or disposal.

9. Leachate Treatment System Controls and Emergency Systems

The leachate treatment system will be monitored and coordinated with a Supervisory Control and Data Acquisition (SCADA) system. The SCADA system will monitor facility processes and notify facility personnel with an alarm if leachate collection,

treatment, or disposal process malfunctions occur. The SCADA system will eliminate or minimize potential impacts to water quality due to leachate collection, treatment, and disposal system malfunctions (e.g., pump failure) that may result in an unauthorized discharge. In the event of electrical power interruptions in the primary power supply (i.e. the electrical grid), an on-site backup power generator will be activated by an Automatic Transfer Switch (ATS). The ATS and backup generator were recently installed to prevent unauthorized discharges and will be an integral component of the proposed Facility for leachate collection, treatment, and disposal systems. The ATS and backup generator will be routinely tested by switching off the primary power supply to ensure the emergency power system is properly functioning.

10. Leachate Treatment and Authorized Disposal Site

Treated wastewater will be conveyed in pipelines to percolation galleries located approximately 1200 feet northwest of the treatment plant. The proposed percolation galleries, shown in Attachment "C," are the authorized sites for disposal of treated effluent. No other point of discharge is authorized by this Order.

The proposed percolation galleries will be approximately five feet deep. The upper and lower percolation galleries are designed with footprint areas of 5,200 ft^2 and 6,642 ft^2, respectively. These percolation galleries are designed to provide an infiltration rate of approximately double the maximum anticipated flow rate of leachate from the treatment facility.

11. Solids Disposal

Approximately 2.2 cubic yards of solids in the form of sludge will be generated daily. The actual amount will depend on the amount of leachate processed. Approximately 2 to 2.7 tons of solids will be generated annually. The sludge will contain non-hazardous constituents (i.e., iron, manganese, calcium, and carbonates), and will be hauled by truck to an authorized disposal facility. This Order does not authorize solid waste generated from the treatment process to be disposed at this Facility nor the Landfill.

12. Site Geology

The Landfill is underlain by Mesozoic age intrusive rock that range in composition from granite to granodiorite, with quartz monzonite being predominant. This highly weathered, granitic bedrock is fractured and brecciated along zones of intersecting fractures. Faulting has not been identified at the Landfill. The bedrock is weathered to depths ranging from about 30 to 40 feet beneath the Landfill. Little or no soil forms on the steep slopes, but soil and alluvial deposits occur on the flatter slopes. A maximum of about 25 feet of locally derived alluvial deposits (medium- to coarse-grained granitic material) overlies the granitic bedrock on the flatter slopes. A thin veneer of Quaternary age streambed alluvium overlies the granitic bedrock in Shake Creek.

13. Site Hydrogeology

The site is located near the top of a mountain in the headwaters of the Mojave River watershed. Groundwater is naturally recharged by rainfall and snowmelt. The groundwater surface, interpreted from groundwater elevation measurements in site monitoring wells, is sub-parallel with the surface topography. Depth to groundwater from three monitoring wells (HP-1, HP-2, and HP-3) installed north of the Landfill along an unnamed ephemeral creek are generally less than 15 feet below ground surface (bgs). Direction of both groundwater flow beneath the Landfill, and site surface water drainage is generally northeast, in the direction of Shake Creek. Depth to groundwater in monitoring well HP-4 has generally increased since monitoring began in 1995, from about 129 feet to 170 feet bgs. Well HP-4 is midway up the waste slope, penetrating the eastern edge of the waste fill, and has been used to monitor groundwater in the fractured bedrock. Within the vicinity of the Landfill, groundwater is believed to occur within the shallow veneer (less than 30 feet) of alluvial and weathered bedrock, as well as within the deeper fractured bedrock. The depth to groundwater at the location of the percolation galleries is approximately 47 feet bgs.

Seeps occur mid-way up the slope of waste fill and at the toe of the waste fill. Hydrology and geochemical investigation results suggest that total leachate collected are a mixture of landfill leachate and non-contaminated shallow groundwater underflow. Seeps originating on landfill slopes likely originate from intermediate cover layers and therefore indicate a landfill leachate contribution. Impact of groundwater from landfill gas, is limited to sporadic, low-concentration detection of VOCs.

Groundwater quality monitoring data from monitoring well HP-1indicates that the average background concentrations of TDS, iron, and manganese are 86 mg/L, 140 mg/L, and 117 mg/L, respectively. Maximum background concentrations for TDS, iron, and manganese are reported as 160 mg/L, 640 mg/L, and 1300 mg/L, respectively. The low TDS concentrations are indicative of fresh groundwater recharge that has not experienced subsurface flow for any significant time or distance.

14. Site Surface Hydrology and Stormwater Runoff

The area in and around the Landfill receives a yearly average of 40 inches of precipitation in the form of rain and snow, which contributes to the intermittent surface flows and seeps in the surrounding drainage. There is no perennial surface water in the drainage at the base of the Landfill slope; however, farther downstream north of the Landfill, yearly water flow may occur in Shake Creek as well as in the drainage immediately east of the Landfill. Shake Creek is approximately 1,800 feet from the Landfill treatment system percolation galleries.

15. Site Topography

Site topography is shown on Attachment "B," which is made a part of this Order. The site is located on steep slopes near the highest elevations of the Mojave River watershed.

16. Receiving Water

The receiving water is the groundwater of the Upper Mojave Hydrologic Area of the Mojave Hydrologic Unit (Department of Water Resources Hydrologic Unit No. 628.20).

17. Lahontan Basin Plan

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

18. Groundwater Beneficial Use

The groundwater beneath the Landfill, Facility, and surrounding area are not located within a groundwater basin named as a groundwater basin pursuant to Basin Plan Plate 2B entitled "Ground Water Basins, Region 6, South Lahontan."

The present and probable beneficial use of groundwater that is not a part of a named basin are recognized as potential or existing municipal and domestic water supply (MUN), as set forth and defined in the Basin Plan.

19. Basis for Effluent Limits

Inorganic Constituents

The effluent limits for inorganic constituents are based on groundwater background concentrations, maximum contaminant levels allowed in drinking water and the best practicable treatment and control technology for the constituents of concern.

Table 1 presents the expected treated effluent concentration and background data provided by the Discharger in the ROWD. Data in the table represents a comparison of the general chemistry of typical treated effluent expected to be discharged with the general chemistry of groundwater upgradient of the Facility (i.e., background). The expected treated effluent concentrations are based on the results of two bench scale tests.

Table 1. Inorganic Constituent Concentrations for Treated Effluent, Average and Maximum Background and Maximum Contaminant Levels

Constituent	MCL	Treated Effluent	Average Background	Maximum Background
Iron (µg/L)	300**	ND	140	640
Manganese (µg/L)	50**	ND	117	1,300
TDS (mg/L)	1000***	332	86	160
Chloride (mg/L)	250**	66	3.4	10
Fluoride (mg/L)	2*	0.13	0.13	0.36
Nitrate (as N, mg/L)	10*	1.17	0.65	4.0
Sulfate (mg/L)	250**	10.7	2.6	10.0

*Primary MCL; **Secondary MCL; ***Secondary MCL, Recommended MCL is 500 mg/L, Short Term Maximum is 1500 mg/L

Effluent limits for inorganic constituents are listed in Table 2 followed by a discussion of the basis for each effluent limit. The annual mean is defined as the average (sum of concentration values divided by number of concentration values) for all sampling and analysis data generated during the preceding year (4 quarters) for a given parameter.

Table 2. Effluent Limits for Inorganic Constituents

Constituent	MCL	Annual Mean Effluent Discharge Limitation	Daily Maximum Effluent Discharge Limitation
Iron (µg/L)	300**	30	60
Manganese (µg/L)	50**	5	10
TDS (mg/L)	1000***	400	600
Chloride (mg/L)	250**	80	160
Fluoride (mg/L)	2*	0.2	0.25
Nitrate (mg/L)	10*	2.0	5.5
Sulfate (mg/L)	250**	25	50
pH (pH units)		6.5 < pH < 8.5	6.5 < pH < 8.5

*Primary MCL; **Secondary MCL; ***Secondary MCL, Recommended MCL is 500 mg/L, Short Term Maximum is 1500 mg/L

Iron and Magnesium

Treatability studies have determined that iron and manganese can be reduced to concentrations as low as non-detectable. The annual average effluent limits for iron and manganese are set at one tenth of their respective secondary maximum contaminant level. These limits are above the non-detectable level since non-detectable levels may not always be achievable with variable concentrations of iron and manganese in background groundwater and leachate at the site. The daily

maximum effluent limits for iron and manganese are set at one fifth of their respective secondary maximum contaminant level. The historical average and maximum iron concentrations in leachate are 624 µg/L and 14,000 µg/L, respectively. The historical average and maximum manganese concentrations in leachate are 2704 µg/L and 9200 µg/L, respectively.

TDS

The annual average effluent limit for TDS is set at 400 mg/L which is the level achievable by the best practicable treatment and control technology and does not adversely impact the beneficial use of municipal drinking water supply. The daily maximum effluent limit for TDS is set at 600 mg/L, above the recommended secondary maximum contaminant level of 500, but well within the range for TDS set as part of the secondary MCLs (i.e., 1000 mg/L).

The TDS effluent limits are primarily based on TDS concentrations in leachate and concentrations achievable in effluent by the best practicable treatment and control technology. The maximum TDS concentration in leachate from 1992 to 2010 was 1000 mg/L. The proposed treatment process is expected to remove 40% of TDS prior to discharge to the infiltration galleries. A 40% reduction in TDS would lower the maximum historical TDS concentration in leachate of 1000 mg/L to 600 mg/L (i.e., daily maximum effluent limit) and would reduce the average historical TDS concentration in leachate of 554 mg/L to 332 mg/L (i.e., below the annual mean effluent limit of 400 mg/L).

Mass balance analyses of groundwater mixing provided by the Discharger in the ROWD indicate that TDS concentrations in groundwater within 1000 feet of the discharge will be 35% less than the discharge concentrations due to comingling with groundwater. Therefore, the maximum TDS concentration allowed to be discharged (i.e., 600 mg/L) is expected to result in receiving water concentrations of no more than 400 mg/L at a point 1000 feet downgradient of the discharge. Compliance with receiving water limits will be monitored at well HP-5 located inside the site boundary, approximately 1200 feet downgradient from the infiltration galleries. For a discharge at the daily maximum effluent limit of 600 mg/L, the TDS concentration in groundwater is expected to be less than 400 mg/L when the discharge reaches monitoring well HP-5.

Chloride

The annual average effluent limit for chloride is set at 80 mg/L, which is less than one third of the secondary maximum contaminant level. The treatment process is not expected to affect influent concentrations of chloride and will likely increase chloride concentrations during treatment due to the addition of hydrochloric acid as a final pH adjustment to effluent prior to discharge. The daily maximum effluent limit for chloride is set at 160 mg/L which is approximately two thirds of the secondary maximum contaminant level allowed in drinking water. The historical average and maximum chloride concentrations in leachate are 66 mg/L and 160 mg/L, respectively.

Fluoride

The annual average effluent limit for fluoride is set at 0.2 mg/L which is one tenth of the primary maximum contaminant level allowed in drinking water and is commensurate with the low fluoride concentrations in background groundwater. The daily maximum effluent discharge limitation is set at 0.25 mg/L, which is one eighth of the primary maximum contaminant level allowed in drinking water. These effluent limits are based primarily on low historical fluoride concentrations in groundwater and leachate because the proposed treatment process is not expected to affect influent fluoride concentrations. The historical average and maximum fluoride concentrations in leachate are 0.13 mg/L and 0.20 mg/L, respectively.

Nitrate

The annual average effluent limit for nitrate is set at 2.0 mg/L. which is one fifth of the primary maximum contaminant level allowed in drinking water and is commensurate with the low nitrate concentrations in background groundwater. The daily maximum effluent discharge limitation is set at 5.5 mg/L which is approximately half of the primary maximum contaminant level allowed in drinking water and slightly above the historical maximum background concentration of 4.0 mg/L. These effluent limits are based primarily on historical nitrate concentrations in groundwater and leachate because the proposed treatment process is not expected to affect influent nitrate concentrations. The historical average and maximum nitrate concentrations in leachate are 1.17 mg/L and 5.2 mg/L, respectively.

Sulfate

The annual average effluent limit for sulfate is set at 25 mg/L, which is one tenth of the secondary maximum contaminant level. The daily maximum effluent limit for sulfate is set at 50 mg/L, which is one fifth the secondary maximum contaminant level allowed in drinking water. These effluent limits are based primarily on low historical sulfate concentrations in groundwater and leachate as the proposed treatment process is not expected to affect influent sulfate concentrations. The historical average and maximum sulfate concentrations in leachate are 10.7 mg/L and 22 mg/L, respectively.

pH

Treatability studies have demonstrated that pH in leachate can be treated to levels commensurate with water quality standards (i.e., $6.5 < pH < 8.5$).

Organic Constituents

The effluent limits for organic constituents are based on maximum contaminant levels allowed in drinking water, and the best practicable treatment and control technology for treating the constituents of concern. Because man-made fuel and solvent constituents are not naturally occurring, pre-existing background

concentrations of these constituents are considered non-detect (below analytical laboratory detection limits) in waters of the state in the Lahontan Region.

The best practicable treatment or control technology for organic constituents is capable of reliably removing most man-made constituents to non-detect levels. The commonly achieved detection limits for these constituents in treated wastewater are presented in Table 3.

Table 3. Analytical Methods and Detection Limits for Organic Constituents

Constituent	Detection Level	Units	Analytical Methods*
Total Petroleum Hydrocarbons ($C_2 - C_{15}$)	50	µg/l	EPA 8015
Total Petroleum Hydrocarbons (C_{16} - C_{46})	100	µg/l	EPA 8015
Benzene	0.1	µg/l	EPA 8260
Ethylbenzene	0.5	µg/l	EPA 8260
Toluene	0.5	µg/l	EPA 8260
Xylene	0.5	µg/l	EPA 8260
Methyl tertiary-butyl ether (MTBE)	0.5	µg/l	EPA 8260
Tertiarybutyl alcohol (TBA)	5.0	µg/l	EPA 8260
TAME	0.5	µg/l	EPA 8260
DIPE	0.5	µg/l	EPA 8260
ETBE	0.5	µg/l	EPA 8260
Naphthalene	0.5	µg/l	EPA 8271
Methanol	5.0	µg/l	EPA 8260A
Ethanol	5.0	µg/l	EPA 8260A
Total Lead	1.0	µg/	EPA 7000
Ethylene Dichloride (EDB)	0.02	µg/l	EPA 8011
1,2 Dichloroethane (1,2 DCA)	0.5	µg/l	EPA 8021
Trichloroethane (1,1,1 TCA)	0.5	µg/l	EPA 8021
Tetrachloroethene(PCE)	0.5	µg/l	EPA 8021
Trichloroethene (TCE)	0.5	µg/l	EPA 8021
Trans-1,2 Dichloroethene (Trans-1,2 DCE)	0.5	µg/l	EPA 8021
Cis-1,2 Dichloroethene (Cis-1,2 DCE)	0.5	µg/l	EPA 8021
1,1 Dichloroethene (1,1 DCE)	0.5	µg/l	EPA 8021
1,1 Dichloroethane (1,1 DCA)	0.5	µg/l	EPA 8021
1,1,2 Trichloroethane (1,1,2 TCA)	0.5	µg/l	EPA 8021
Vinyl Chloride	0.5	µg/l	EPA 8021

Alternative analytical methods that provide equivalent detection limits may be proposed.

The State of California and/or the USEPA have set primary drinking water standards for the hydrocarbon constituents listed in Table 4.

Table 4. Primary Drinking Water Standards for Hydrocarbon Constituents

Constituent	Level	Units	Consideration
EDB	0.02	µg/l	Primary State of CA MCL
1,2 DCA 0.	50	µg/l	Primary State of CA MCL
Benzene	1.0	µg/l	Primary State of CA MCL
Toluene	150	µg/l	Primary State of CA MCL
Xylenes	1750	µg/l	Primary State of CA MCL
Ethylbenzene	300	µg/l	Primary State of CA MCL
MTBE	13	µg/l	Primary State of CA MCL
TBA	12	µg/l	Primary State of CA MCL
Naphthalene	170	µg/l	Primary State of CA MCL
PCE	5	µg/l	Primary State of CA MCL
TCE	5	µg/l	Primary State of CA MCL
1,1,1 TCA	200	µg/l	Primary State of CA MCL
trans-1,2 DCE	10	µg/l	Primary State of CA MCL
cis-1,2 DCE	6	µg/l	Primary State of CA MCL
1,1 DCE	6	µg/l	Primary State of CA MCL
1,1 DCA	5	µg/l	Primary State of CA MCL
1,1,2 TCA	32	µg/l	Primary State of CA MCL
Vinyl Chloride	0.5	ug/l	Primary State of CA MCL

The State of California has set secondary drinking water standards for taste and odor of all constituents at a maximum contaminant level of three threshold odor units (TOU), Section 64473, Title 22, of the California Code of Regulations. The proposed secondary drinking water standards listed in Table 5 are lower than or equal to the primary drinking water standards set for these constituents by the State of California.

Table 5. Secondary Drinking Water Standards

Constituent	Level	Units	Consideration
Total Petroleum Hydrocarbons (C_2-C_{15})	50	µg/l	Taste and Odor
Total Petroleum Hydrocarbons (C_{16}-C_{46})	100	µg/l	Taste and Odor
Toluene	42	µg/l	Taste and Odor
Ethylbenzene	29	µg/l	Taste and Odor
Total Xylenes	17	µg/l	Taste and Odor
MTBE	5	ug/l	Taste and Odor
Naphthalene	21	ug/l	Taste and Odor
Methanol	740,000	ug/l	Taste and Odor
Ethanol	760,000	ug/l	Taste and Odor

The effluent limits for organic constituents listed in Table 6 are based on background concentrations, best practical treatment or control technology, and maximum contaminant levels allowed in drinking water. The discharge of an effluent containing constituents in excess of the following limits is prohibited. All samples of effluent are to be single grab samples.

Table 6. Effluent Limits for Organic Constituents

Constituents	Units	30-day Median	Daily Maximum
Total Petroleum Hydrocarbons (C_2-C_{46})	µg/l	<50	100
Benzene	µg/l	<0.50	1.0
Toluene	µg/l	<0.50	42.0
Ethylbenzene	µg/l	<0.50	29.0
Total Xylenes	µg/l	<0.50	17.0
Naphthalene	µg/l	<0.5	20.0
MTBE	µg/l	<0.5	5.0
TBA	µg/l	<5.0	12.0
EDB	µg/l	<0.02	0.02
1,2 DCA	µg/l	<0.50	0.50
1,1,1 TCA	µg/l	<0.50	200.0
PCE	µg/l	<0.50	5.0
TCE	µg/l	<0.50	5.0
Trans-1,2 DCE	µg/l	<0.50	10.0
Cis-1,2 DCE	µg/l	<0.50	6.0
1,1 DCE	µg/l	<0.50	6.0
1,1 DCA	µg/l	<0.50	5.0
1,1,2 TCA	µg/l	<0.50	32.0
vinyl chloride	ug/l	<0.50	0.50

20. Antidegradation Policy

State Water Board Resolution No. 68-16, "Statement of Policy with Respect to Maintaining High Quality of Waters in California," states,

> *"1. Whenever the existing quality of water is better than the quality established in policies as of the date on which such policies become effective, such existing high quality will be maintained until it has been demonstrated to the State that a change will be consistent with the maximum benefit to the people of the State, will not unreasonably affect present and anticipated beneficial use of such water and will not result in water quality less than that prescribed in the policies.*

2. *Any activity which produces or may produce a waste...and which discharges or proposes to discharge to existing high quality waters will be required to meet waste discharge requirements which will result in the best practicable treatment or control of the discharge necessary to assure that (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."*

Groundwater quality at the site is high quality with respect to TDS and chloride, but is not high quality with respect to iron and manganese which naturally occur in concentrations above their respective secondary maximum contaminant levels. The proposed treatment process will generate treated effluent with substantially reduced iron and manganese compared with background, but the discharge will result in elevated concentrations of TDS and chloride in groundwater for a short distance from the discharge location. The groundwater will remain high quality with respect to TDS and chloride consistent with the antidegradation policy provided that the discharge is in compliance with the effluent limits required by this Order. Finding No. 19 presents data for the historical background concentrations and expected effluent concentrations for the constituents of concern.

Iron and Manganese

Water quality will be not be degraded with respect to iron and manganese because the proposed treatment process is very efficient at removing these constituents. Local groundwater quality will be improved due comingling with treated effluent. Implementation of the best practicable treatment and control technology will result in improved water quality so no further justification is necessary with respect to iron and manganese.

TDS

Treated effluent will degrade ground water quality with respect to TDS in the immediate vicinity of the discharge. Typical TDS concentrations in groundwater upgradient of the Facility are approximately 100 mg/L. The Discharger has provided calculations predicting that comingling of the treated effluent discharge with groundwater will lower TDS concentrations in groundwater due to the discharge by approximately 35% within 1000 feet of groundwater flow. This means that an elevated TDS concentration of 332 mg/L in groundwater at the point of discharge would be reduced to approximately 216 mg/L within 1000 feet of subsurface flow representing an increase in TDS concentration in groundwater from 100 to 216 mg/L. The difference between a TDS concentration of 100 and 216 mg/L is not significant because both are within a range of concentrations that would be considered high quality for any groundwater.

Under the worst case scenario, as described in Finding No. 19, a slug of treated effluent that is discharged with a TDS concentration at or near the daily maximum effluent limit of 600 mg/L would be expected to raise the TDS concentration in

groundwater to 600 at the point of discharge. Subsequently, the TDS concentration in groundwater is expected to be reduced by 35% to approximately 400 mg/L within 1000 feet of groundwater flow due to mixing and attenuation. Under these atypical conditions, the proposed discharge will likely temporarily double the TDS concentration in local groundwater from approximately 200 to 400 mg/L. An increase in TDS concentration to 400 mg/L is significant, but will be short term and limited in distance. The discharge will not cause receiving water objectives to be exceeded. Given the level of degradation that may occur, expenditure of additional resources for treatment is not warranted.

The proposed treatment process represents the best practicable treatment or control technology to reduce iron and manganese concentrations to acceptable levels and comes at the cost of a small increase in TDS concentrations in groundwater due to salts added during treatment to achieve the goal of reduced iron and manganese. Because the local groundwater often does not meet secondary maximum contaminant levels for iron and manganese, the benefit of reduced iron and manganese in groundwater due to comingling with treated effluent outweighs the slight increase in groundwater TDS levels over a short distance. Given that the TDS concentration in typical effluent is 332 mg/L and is well below the recommended secondary maximum contaminant level of 500 mg/L, additional treatment costs to reduce the TDS level in effluent to a concentration at or below background level is not warranted. Treated effluent is not expected to have atypically high TDS concentrations often enough to cause significant degradation of groundwater quality.

The health and safety benefits of treating and discharging wastewater on-site to eliminate the need for hauling wastewater by truck to a remote treatment location are immeasurable. Some 3,000 to 4,000 truck trips per year are currently required to haul wastewater to the Running Springs Wastewater Treatment Facility. Because the facility is located on a steep winding mountain road and the trucks have to move slower than typical traffic, other motorists often come around a curve and are taken by surprise by the slow moving trucks creating a hazardous condition. During the winter, the driving conditions are more dangerous due to thick fog and icy road conditions. The health and safety of the truck drivers and the general public using the mountain road leading to the Facility will be greatly improved by substantially reducing or eliminating the truck traffic in and out the Facility for the purpose of hauling wastewater. Benefits to water quality include: 1) reduced risk of water quality impacts due to spills associated with truck accidents, 2) reduced risk of unauthorized discharges from the facility when trucking wastewater becomes too dangerous during winter weather conditions, and 3) improved groundwater quality with respect to iron and manganese.

The limited degradation of groundwater quality associated with on-site treatment and discharge is in the best interest of the people of California for the health and safety and water quality benefits that will be gained if the proposed treatment process is implemented.

Chloride

Hydrochloric acid is used in the proposed leachate treatment process as a final pH adjustment prior to discharge. Consequently, water quality degradation with respect to chloride is expected. The discharge of typical effluent with the expected chloride concentration of 66 mg/L will increase the chloride concentration in groundwater at the point of discharge by approximately 20 times the average background groundwater concentration of 3.4 mg/L. The chloride concentration in groundwater is expected to be reduced to approximately 44 mg/L within 1000 feet of the discharge due to mixing with existing groundwater, as explained above for TDS. Degradation of water quality with respect to the discharge causing increases in chloride from 3.4 mg/L to 44 mg/L (approximately 1/5 of maximum contaminant level of 250 mg/L) is acceptable due to the fact that the Facility will use the best practicable treatment and control technologies and will result in overall water quality improvement with the use of the treatment process to remove iron and manganese concentrations from effluent to substantially below their respective MCL values and background groundwater concentrations that often exceed MCL values.

The degradation of water quality with respect to chloride is warranted for the health and safety benefits to be gained by on-site treatment and discharge of wastewater compared with hauling wastewater by truck as described above for TDS.

Fluoride

The expected fluoride concentration in effluent is essentially the same as the background groundwater concentration for fluoride because fluoride is unaffected by the treatment process and historical average fluoride concentration in leachate is the same as background. No water quality degradation is expected with respect to fluoride.

Nitrate

The nitrate concentration in effluent (1.17 mg/L) is slightly elevated compared with average nitrate concentrations in background groundwater (0.65 mg/L). The increase in groundwater nitrate concentration this will cause is slight in comparison with the nitrate MCL (10 mg/L), and is expected to be further reduced due to mixing as explained above for TDS. Nitrate is not affected by the proposed treatment process so additional nitrate removal is not possible without requiring additional costs for an additional treatment process. The nitrate concentrations to be discharged are limited and protective of water quality objectives and additional treatment costs are not warranted. The slight increase in nitrate in local groundwater due to the discharge is warranted for the health and safety benefits that project implementation will provide as discussed above for TDS.

Sulfate

The sulfate concentration in effluent (10.7 mg/L) is approximately four times the concentration in background groundwater (2.6 mg/L), but is less than 5% of the maximum contaminant level. Discharge of the effluent will cause groundwater sulfate concentrations to be elevated at the point of discharge. The elevated sulfate concentration of 10.7 mg/L in groundwater is expected to attenuate by 35% to 7 mg/L due to mixing with groundwater within1000 feet of subsurface flow. The sulfate concentrations to be discharged and the attenuated concentrations due to mixing are well below the sulfate MCL of 250 mg/L. Therefore, additional treatment costs are not warranted to reduce sulfate concentrations in effluent. The slight increase in sulfate in local groundwater due to the discharge is warranted for the health and safety benefits that project implementation will provide as discussed above for TDS.

pH

The pH of treated effluent is 7.5 which is within the allowable range of 6.5 to 8.6. Groundwater is not expected to be degraded with respect to pH because the proposed treatment process includes pH adjustment as final step. In this case, implementation of the best practicable treatment and control technology prevents water quality degradation with respect to pH.

Organic Constituents

Organic compounds are typically not found in groundwater or the treated leachate. Therefore, average effluent limitations for organic compounds are set at the detection limits and daily maximum effluent limits are set at the maximum contaminant levels allowed in drinking water. Compliance with these effluent limits adequately addresses concerns about potential degradation of water quality due to organic constituents. The proposed treatment process includes dissolved air floatation. This treatment step would be expected to volatilize any trace organic constituents to the atmosphere.

The Water Board has considered antidegradation policies and finds that the subject discharge of treated effluent to land is consistent with provisions of these policies and is in the best interest of the people of the State of California.

This Order is consistent with Resolution No. 68-16 for the following reasons:

a. The purpose of this project is to improve health and safety conditions for facility personnel and the general public by substantially reducing or eliminating the current practice of hauling wastewater with 3,000 to 4,000 truck trips per year to a remote facility for wastewater treatment. Benefits to water quality include: 1) reduced risk of water quality impacts due to spills associated with truck accidents, 2) reduced risk of unauthorized discharges from the facility when trucking wastewater becomes too dangerous during hazardous winter weather conditions, and 3) improved groundwater quality with respect to iron and

manganese. The limited degradation of groundwater quality associated with on-site treatment and discharge is in the best interest of the people of California for the health and safety and water quality benefits that will be gained if the proposed treatment process is implemented.

b. This Order prohibits the discharge of treated water that causes a pollution or nuisance.

c. The discharge of treated leachate and groundwater is protective of current and potential beneficial uses of the receiving water.

d. This Order requires the Discharger to use the best practical treatment and control technology to reduce or eliminate impacts to groundwater resources.

e. The increased concentrations of TDS, chloride, nitrate, and sulfate in groundwater due to the discharge are acceptable because the increases will only occur over a short distances and the concentrations will always remain well below their respective maximum contaminant levels allowed in the receiving water.

21. Waste Discharge Prohibition and Exemption

Waste Discharge Prohibition No. 3 for the Mojave Hydrologic Unit specifically prohibits the discharge of waste from new leaching or percolation systems within the Deep Creek watershed above the elevation of 3,200 feet. An exemption to this prohibition may be granted whenever the Regional Board finds that the operation of septic tanks, cesspools, or other means of waste disposal in a particular area will not, individually or collectively, directly or indirectly, adversely affect water quality or beneficial uses, and that the installation of sewer lines in the area would have a damaging effect upon the environment.

The proposed percolation galleries for disposal of treated effluent are located above 3200 feet in the Deep Creek watershed. Therefore, the waste discharge prohibition is applicable to the proposed waste discharge.

The Regional Board finds that the proposed waste discharge of treated effluent in the percolation galleries will not individually or collectively, directly or indirectly, adversely affect water quality or beneficial uses for reasons described above. Connecting a sewer line to the Facility would have a damaging effect upon the environment because the nearest sewer connection is approximately three miles away over rugged mountainous terrain where it is difficult for construction not to impact the environment. Therefore, the proposed discharge of waste to percolation galleries is acceptable and exempt from the waste discharge prohibition.

22. California Environmental Quality Act

This project is subject to the provisions of the California Environmental Quality Act (CEQA, Public Resources Code Section 21000 et seq.) in accordance with Public Resources Code, section 21065. The County of San Bernardino is the CEQA Lead Agency for this project. The Water Board is a responsible agency under CEQA for this project. The County of San Bernardino issued a Mitigated Negative Declaration for the project to construct the leachate collection, treatment, and disposal facility on September 29, 2011 for a 30-day public review period.

The Mitigated Negative Declaration was adopted by the San Bernardino County Board of Supervisors on _____, following public review and comment.

23. Consideration of California Water Code Section 13241 Factors

California Water Code (CWC). Section 13263 requires that the Water Board, when prescribing WDRs, take into consideration these factors:

a. Past, Present, and Probable Future Beneficial Uses of Water – The receiving waters are the groundwaters of the Upper Mojave Hydrologic Area of the Mojave Hydrologic Unit. The beneficial use of the groundwater is described in Finding No. 18. The receiving water limits are described in Discharge Specification I.B. of this Order. These limits are specified to minimize water quality degradation and maintain the most sensitive beneficial use: Municipal and Domestic Supply (MUN).

b. Environmental Characteristics of the Hydrographic Unit Under Consideration, Including the Quality of Water Available Thereto – Hydrogeologic characteristics of the discharge area in the Upper Mojave Hydrologic Area of the Mojave Hydrologic Unit is described in Finding No. 13. This hydrologic unit has experienced overdraft conditions due to groundwater pumping for beneficial use of municipal water supply. For most constituents, the groundwater quality is sufficient to support the designated beneficial use of municipal water supply. However, it should be noted that the average concentration of manganese measured in background groundwater (117 mg/L) is more than double the secondary maximum contaminant level (50 mg/L). Costs for wastewater treatment have been added to the project to reduce the level of water quality degradation.

c. Water Quality Conditions that Could Reasonably Be Achieved through the Coordinated Control of All Factors, Which Affect Water Quality in the Area – The current and future beneficial uses and existing water quality in the area will be maintained.

d. Economic Considerations – This Order regulates operation and upgrading of the Discharger's Landfill with the operation of the Facility. The revenue sources for the operations and upgrades are service charges and taxes.

Operational costs and exposure to potential liability associated with the current practice of trucking liquid-filled tanks on icy mountain roads in the winter are considerable and unpredictable. On-site treatment of leachate will significantly reduce potential financial liability compared with the current practice of trucking wastewater to a wastewater treatment plant or to a landfill for dust control.

e. The Need to Develop and Use Recycled Water – The proposed project would infiltrate treated leachate and groundwater collected from subsurface piping and seepage. Discharge of the treated effluent will provide only limited net recharge to local groundwater since all the wastewater originates from groundwater nearby in the same watershed.

24. Title 27 California Code of Regulations (CCR) Exemption

As provided in title 27, CCR, section 20090, the following activities shall be exempt from the State Water Resources Control Board-promulgated provisions of this subdivision, so long as the activity meets, and continues to meet, all preconditions listed:

"Wastewater -Discharges of wastewater to land, including but not limited to evaporation ponds, percolation ponds, or subsurface leach fields if the following conditions are met:

(1) The applicable RWQCB [Water Board] has issued WDRs, reclamation requirements, or waived such issuance;

(2) The discharge is in compliance with the applicable water quality control plan; and

(3) The wastewater does not need to be managed according to Chapter 11, Division 4.5, Title 22 of this code as a hazardous waste."

The discharge of wastewater that is the subject of this Order meets the preconditions for Title 27 exemption:

(1) The discharge to the percolation galleries is regulated by the WDRs in this Order.

(2) The discharge will maintain compliance with the Basin Plan by maintaining compliance with the WDRs in this Order.

(3) The discharge is not required to be managed as a hazardous waste.

25. Notification of Interested Parties

The Water Board has notified the Discharger and all known interested agencies and persons of its intent to adopt WDRs for the project.

26. Consideration of Interested Parties

The Water Board, in a public meeting, heard and considered all comments pertaining to the discharge.

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

I. DISCHARGE SPECIFICATIONS

A. Effluent/Discharge Limitations

Any detected concentration above a daily maximum limitation or average mean value determined to be above the annual mean limitation listed in Table 7 is a violation of this Order.

Table 7. Effluent Limitations for Inorganic Constituents

Constituent	Annual Mean Effluent Discharge Limitation	Daily Maximum Effluent Discharge Limitation
Iron (µg/L)	30	60
Manganese (µg/L)	5	10
TDS (mg/L)	400	600
Chloride (mg/L)	80	160
Fluoride (mg/L)	0.2	0.25
Nitrate (mg/L)	2.0	5.5
Sulfate (mg/L)	25	50
pH (pH units)	6.5 < pH < 8.5	6.5 < pH < 8.5

The discharge of an effluent in excess of the limitations listed in Table 8 is prohibited. All samples of effluent are to be single grab samples.

Table 8. Effluent Limitations for Organic Constituents

Constituents	**Units**	**30-day Median**	**Daily Maximum**
Total Petroleum Hydrocarbons (C_2-C_{46})	µg/l	<50	100
Benzene	µg/l	<0.50	1.0

Toluene	µg/l	<0.50	42.0
Ethylbenzene	µg/l	<0.50	29.0
Total Xylenes	µg/l	<0.50	17.0
Naphthalene	µg/l	<0.5	20.0
MTBE	µg/l	<0.5	5.0
TBA	µg/l	<5.0	12.0
EDB	µg/l	<0.02	0.02
1,2 DCA	µg/l	<0.50	0.50
1,1,1 TCA	µg/l	<0.50	200.0
PCE	µg/l	<0.50	5.0
TCE	µg/l	<0.50	5.0
Trans-1,2 DCE	µg/l	<0.50	10.0
Cis-1,2 DCE	µg/l	<0.50	6.0
1,1 DCE	µg/l	<0.50	6.0
1,1 DCA	µg/l	<0.50	5.0
1,1,2 TCA	µg/l	<0.50	32.0
vinyl chloride	ug/l	<0.50	0.50

B. Receiving Groundwater Limitations

The discharge shall not cause the presence of the following substances or conditions in groundwater of the Mojave Hydrologic Unit.

1. Bacteria – Waters shall not contain concentrations of coliform organisms attributable to human wastes. The median concentration of coliform organisms, over any seven-day period, shall be less than 1.1/100 ml in groundwater.

2. Chemical Constituents – Groundwater designated as Municipal and Domestic Supply (MUN) shall 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 Title 22, CCR: Table 64431-A of Section 64431 (Inorganic Chemicals), Table 64431-B of Section 64431 (Fluoride), Table 64444-A of Section 64444 (Organic Chemicals), Table 64449-A of Section 64449 (Secondary Maximum Contaminant Levels – Consumer Acceptance Limits), and Table 64449-B of Section 64449 (Secondary Maximum Contaminant Levels – Ranges).

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

   Waters shall not contain concentrations of chemical constituents that adversely affect the water for beneficial uses.

3. Radioactivity – Radionuclides shall not be present in concentrations that are deleterious to human, plant, animal, or aquatic life, or that results in the accumulation of radionuclides in the food chain to an extent that it presents a hazard to human, plant, animal, or aquatic life. Waters shall not contain concentrations of radionuclides in excess of limits specified in the CCR, Title 22, Chapter 15, Article 5, Section 64443.

4. Taste and Odors – Groundwater shall not contain taste or odor-producing substances in concentrations that cause nuisance or that adversely affect beneficial uses. For groundwater designated as MUN, at a minimum, concentrations shall not exceed adopted SMCLs specified in Table 64449-A of Section 64449 (SMCLS – Acceptance Limits), and Table 64449-B of Section64449 (SMCLs – Ranges) of Title 22 of the CCR, including future changes as the changes take effect.

II. REQUIREMENTS AND PROHIBITIONS

A. General

1. Treated or untreated leachate shall not be discharged directly to surface waters of the State or waters of the United States.

2. The only authorized disposal areas for the treated wastewater are the percolation galleries identified in Attachment "C" of this Order.

3. The discharge of waste in violation of any narrative Water Quality Objective contained in the Basin Plan is prohibited. The discharge of waste in violation of the Nondegradation Objective, Resolution No. 68-16, is prohibited. Allowable degradation in compliance with Resolution No. 68-16 is described in Finding No. 20 of this Order.

4. The discharge of waste that causes a violation of any numeric Water Quality Objective contained in the Basin Plan is prohibited.

5. Where any numeric or narrative Water Quality Objective contained in the Basin Plan is already being violated, the discharge of waste that causes further degradation or pollution is prohibited.

6. Discharges from the Facility shall not cause a pollution as defined in Section 13050 of the CWC, or a threatened pollution.

7. The discharge shall not cause a nuisance as defined in Section 13050 of the CWC.

8. The discharge of solid wastes, untreated leachate, or any other deleterious material to the groundwater of the Mojave Hydrologic Unit is prohibited.

9. There shall be no discharge, bypass, or diversion of polluted or partially treated water, sludge, grease, oils, purge water, development water, or pump test water from the collection, transport, or disposal facilities to adjacent land areas or surface waters.

10. The Discharger shall comply with the CWC, Division 7, Chapter 10 when installing and/or abandoning groundwater monitoring wells.

B. Specific

1. The discharge shall not cause the receiving water at the point of discharge to have a TDS concentration greater than 600 mg/L.

2. The discharge shall not cause the receiving water 1000 feet downgradient of the discharge to have a TDS concentration greater than 400 mg/L.

III. PROVISIONS

A. Standard Provisions

The Discharger shall comply with the "Standard Provisions for WDRs," dated September 1, 1994, in Attachment "D," which is made part of this Order.

B. Monitoring and Reporting

1. Pursuant to CWC Section 13267(b), the Discharger shall comply with the attached Monitoring and Reporting Program (MRP) No. R6V-2011-(TENTATIVE) as specified by the Executive Officer pursuant to Section 13267 of the CWC. (Attachment "E")

2. The Discharger shall comply with the "General Provisions for Monitoring and Reporting," dated September 1, 1994, which is made part of the MRP.

C. Basin Plan Exemption

The Discharger is granted an exemption to Waste Discharge Prohibition No. 3 for the Mojave Hydrologic Unit which specifically prohibits the discharge of waste from new leaching or percolation systems within the Deep Creek watershed above the elevation of 3,200 feet as described in Finding No. 21.

IV. TIME SCHEDULE

A. The Discharger shall submit a groundwater monitoring plan by **May 15, 2012**, that describes proposed groundwater monitoring wells to be used to characterize the effects of the discharge of treated leachate on groundwater quality and to distinguish these effects from the effects of the Landfill.

B. Pursuant to "General Provisions for Monitoring and Reporting," dated September 1, 1994, the Discharger shall submit a Sampling and Analysis Plan (SAP) by **May 15, 2012**, that describes proposed sampling and analysis to be conducted to characterize the effects of the discharge of treated leachate on groundwater quality and to distinguish these effects from the effects of the Landfill.

C. The Discharger shall submit a technical report by **July 15, 2012** that describes the best practicable method to adjust the pH of the effluent to minimize degradation of water quality.

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 March 14 and 15, 2012.

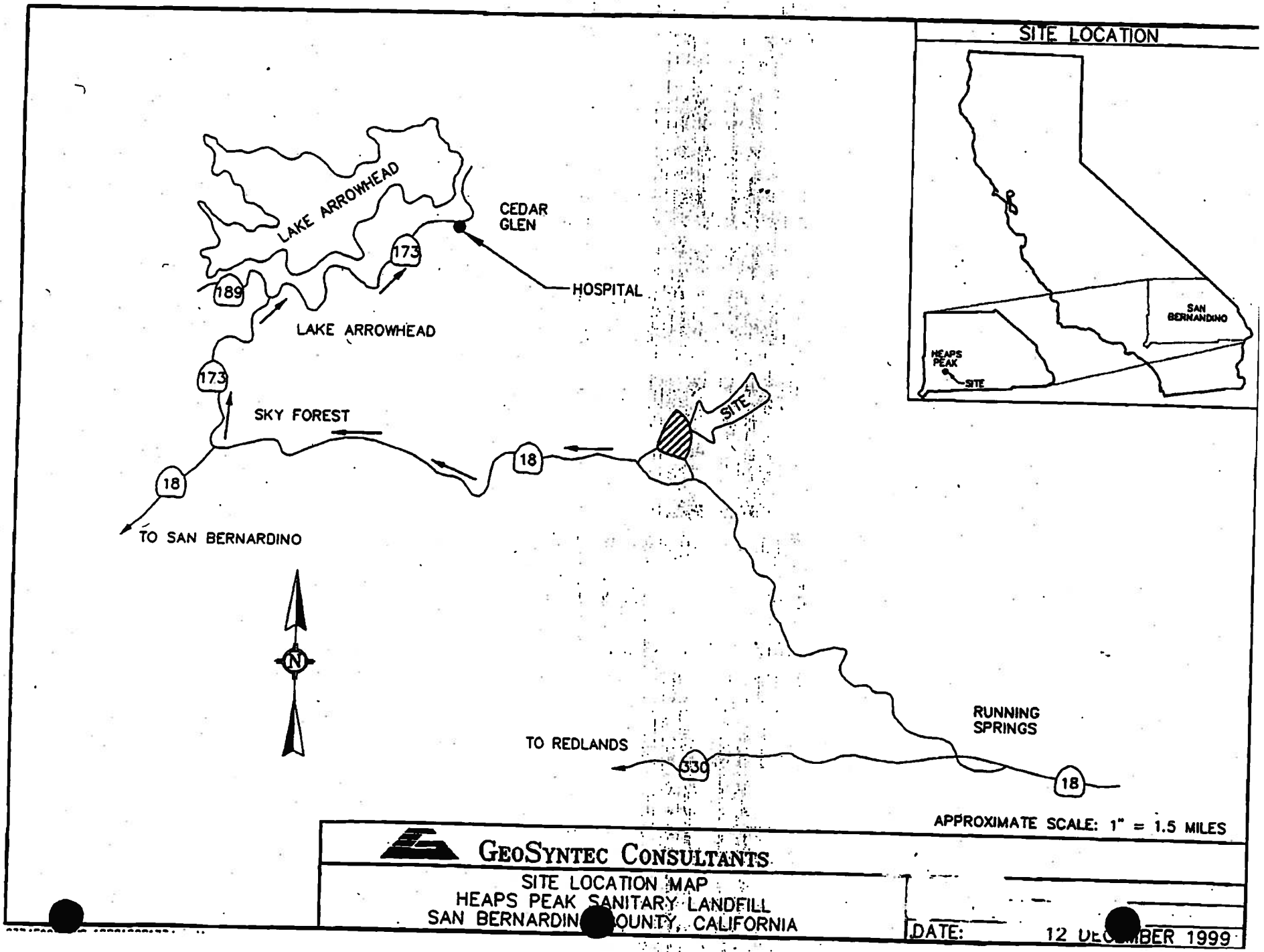
_____

HAROLD J. SINGER
EXECUTIVE OFFICER

Attachments
A. Location Map
B. Landfill footprint, topography, and monitoring wells
C. Landfill leachate treatment program
D. Standard Provisions for WDRs
E. MRP No. R6V-2011-(TENTATIVE)

JS/rp BO2012/HeapsPeak/Tentative/R6V-2012-TentWDRs-HeapsPeakLF(2011-12-22).doc

ATTACHMENT A

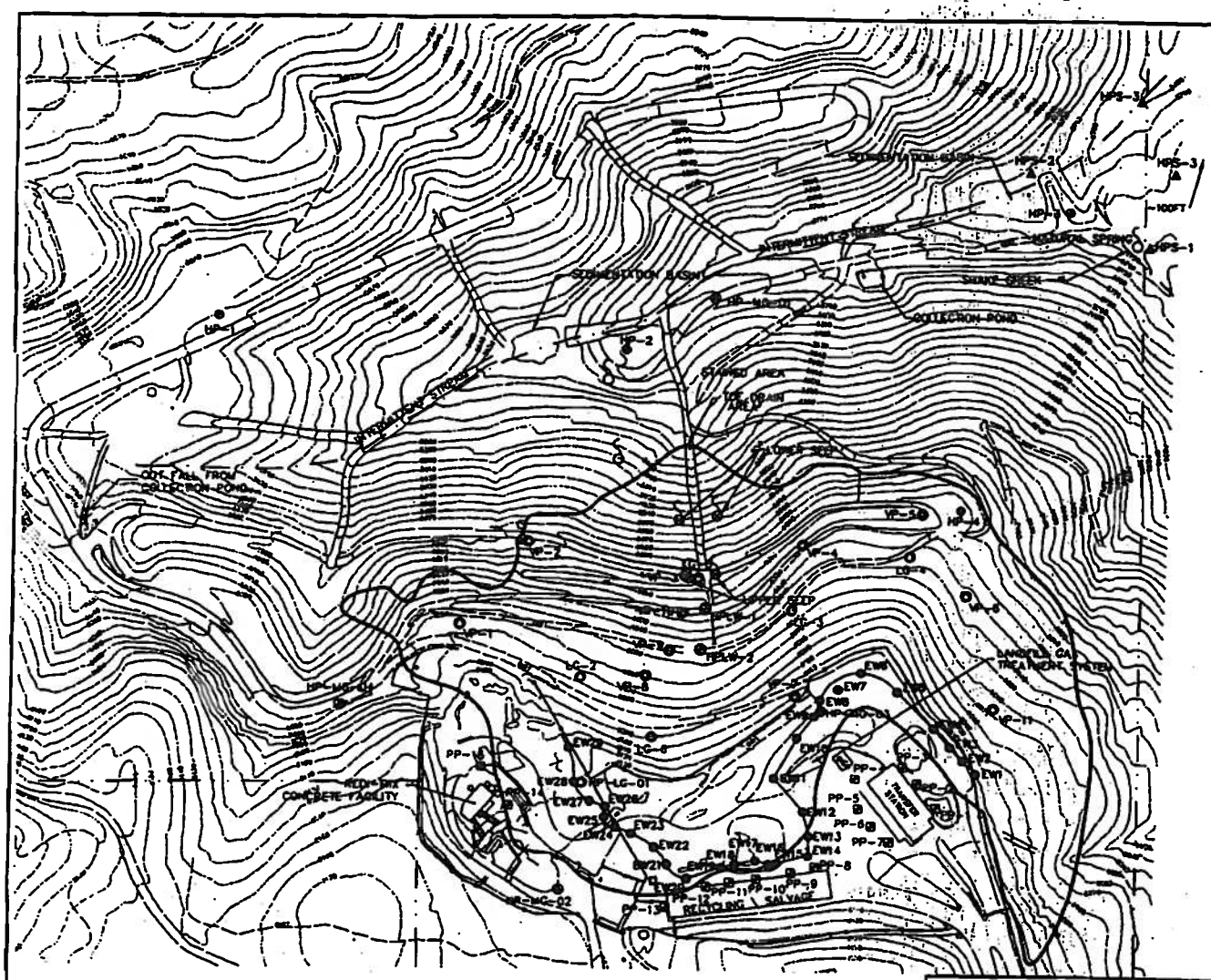


GeoSyntec Consultants

SITE LOCATION MAP
HEAPS PEAK SANITARY LANDFILL
SAN BERNARDINO COUNTY, CALIFORNIA

DATE: 12 DECEMBER 1999

ATTACHMENT B



LEGEND

- LANDFILL GAS EXTRACTION WELL (EW-1)
- LANDFILL GAS MIGRATION MONITORING PROBE (HP-MG-01)
- EXISTING LANDFILL GAS MONITORING PROBE (HP-LG-01)
- SURFACE WATER MONITORING POINT (HPS-1)
- PERIMETER GAS MIGRATION MONITORING PROBE (PP-08)
- GROUNDWATER MONITORING WELL (HP-1)
- LANDFILL GAS MONITORING PROBE (VP-01)
- TEMPORARY LEACHATE MONITORING WELL (HPLW-1)
- POST-LANDFILL SEEP (RWQCB, 1995)
- PRE-LANDFILL SEEP (PIONEER, 1974)
- APPROXIMATE LIMITS OF REFUSE
- APPROXIMATE PROPERTY BOUNDARY
- APPROXIMATE LOCATION OF ROADS
- STREAM

NOTE:

1) LEACHATE MONITORING WELL, LANDFILL GAS MONITORING PROBE, AND SEEP LOCATIONS HAVE NOT BEEN SURVEYED.
2) TOPOGRAPHIC MAPS WERE OBTAINED FROM WSD RECORDS MAINTAINED BY NORCAL.
3) RECORD DRAWINGS SHOWING THE TOE DRAIN LOCATION ARE NOT PRESENT IN WSD RECORDS MAINTAINED BY NORCAL.

200 100 0 200 400

APPROXIMATE SCALE (FEET)

GeoSyntec Consultants

SITE MAP
HEAPS PEAK SANITARY LANDFILL
SAN BERNARDINO COUNTY, CALIFORNIA

DATE: 12 DECEMBER 1999

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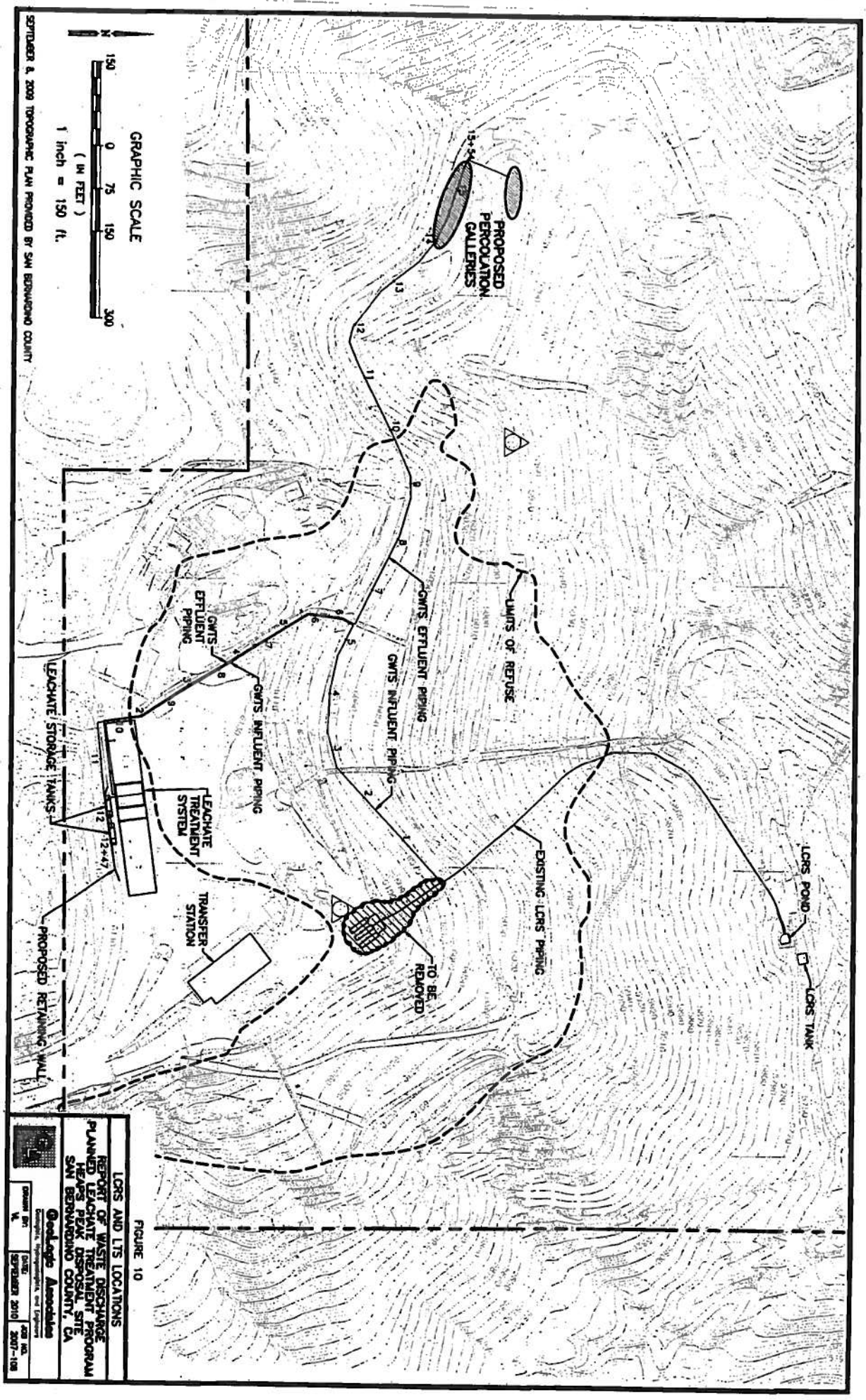
ATTACHMENT C



ATTACHMENT D

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-2011-(TENTATIVE)
WDID NO. 6B360304041

FOR

SAN BERNARDINO COUNTY SOLID WASTE DIVISION
HEAPS PEAK CLASS III LANDFILL
LEACHATE TREATMENT AND DISPOSAL SYSTEM

San Bernardino County

I. MONITORING

The following Influent, Effluent, and Receiving Water Monitoring schedules detail sampling frequency. Constituents to be analyzed are listed. The frequency of the sampling or number of parameters analyzed may be reduced if the Discharger provides justification to the Executive Officer that such a reduction is warranted. Under certain adverse conditions, more frequent sampling is required if it is appropriate. An adverse condition is defined as any problem which does or could affect efficiency of the treatment Facility, collection system, or treated leachate disposal system. If at any time the system is shut down for a continuous period greater than 60 days, the following influent and effluent monitoring programs must be reinstated unless otherwise specifically approved by the Executive Officer.

A. Treatment Facility Startup Monitoring

Prior to disposal of any treatment plant effluent, the Discharger shall conduct startup monitoring to confirm that the plant will produce effluent that complies with standards prescribed in the Waste Discharge Requirements (WDRs). During startup monitoring, the Discharger shall direct the effluent to a temporary, impervious storage container. Startup monitoring shall be conducted until two consistent, consecutive sample results indicate system stability and compliance with the Order. Samples shall be taken a minimum of twelve hours apart and a maximum of 72 hours apart. Only treatment plant effluent is required to be analyzed during startup monitoring. Effluent that does not meet the Discharge Specifications for effluent shall not be discharged to land.

B. Treatment Facility Flow Monitoring

The following information shall be recorded in a permanent log book:

1. The total volume, in gallons, of leachate flow to the treatment facility for each day.

2. The total volume, in gallons, of leachate flow to the treatment facility for each month.

3. The average flow rate, in gallons per day, of wastewater to the treatment facility calculated each month.

4. The total volume, in gallons, of leachate flow to the disposal facility (ies) for each month.

5. The treatment system non-operation time in hours of each non-operation period and in total hours of non-operation during the reporting period.

II. TREATMENT FACILITY INFLUENT MONITORING

The purpose of the influent monitoring is to verify the efficiency of the treatment system. Influent sample shall be collected after the last connection before the waste inters the treatment process. Influent samples should be representative of the volume and nature of the influent. Time of collection of a grab sample shall be recorded. Specific parameters to be monitored and reported are shown below.

Inorganic Parameter	Units
Iron	mg/L
Manganese	mg/L
TDS	mg/L
Chloride	mg/L
Fluoride	mg/L
Nitrate	mg/L as N
Sulfate	mg/L
pH	pH units

The minimum frequency of sampling shall be as follows:

A. During the first two months of treatment operation, samples shall be collected on the 1st, 4th, 14th, 28th, and 56th days of operation.

B. During the third to sixth month, the sampling shall be every 30 days.

C. Thereafter, the sampling frequency shall be quarterly during a calendar quarter.

Organic Parameters

A minimum of one of each of the following analyses of the wastewater influent will be conducted semi-annually:

a. Chlorinated volatile hydrocarbons (EPA Method 8021 or equivalent).

b. Aromatic volatile hydrocarbons (EPA Method 8260 or equivalent).

c. Total petroleum hydrocarbons (TPH) in the gasoline and diesel ranges (EPA Method 8015 or equivalent). Additional or alternative TPH analyses may be required if the suspected pollutants contain hydrocarbon fractions outside the range of these tests.

III. TREATMENT FACILITY EFFLUENT MONITORING

Effluent samples shall be collected after the last connection through which wastes can be admitted into the effluent discharge. Effluent samples should be representative of the volume and nature of the influent. Time of collection of a grab sample shall be recorded. The sampling parameters and frequency for effluent shall be the same as those identified for influent sampling and analysis.

IV. RECEIVING WATER MONITORING

Samples shall be collected from the groundwater monitoring wells semiannually (once during the wet season and once during the dry season) and analyzed for the same parameters listed above for influent and effluent. In addition, the parameters listed below shall be determined each time wells are sampled and reported in tabular form. Include a map showing the water table contours.

Parameter	Units
Depth to groundwater	feet bgs
Electrical conductivity	micormhos/cm
pH	pH units
Temperature	deg. F or C
Turbidity	NTUs
Groundwater gradient	ft/ft
Groundwater direction	compass direction
Groundwater velocity	ft/day
Static water level	ft above mean sea level

V. REPORTING

A. Quarterly monitoring reports shall be submitted to the Water Board by the fifteenth (15th) day of January, April, July and October of each year covering the prior quarter. These reports shall contain the following information in addition to what is required in the General Provision for Monitoring and Reporting.

1. All data collected from the previous quarter.

2. A map or aerial photograph showing the locations of monitoring wells in the receiving water program.

3. Information on operation and maintenance of the Facility which may affect water quality.

C. In reporting the monitoring data, the Discharger shall arrange the data in tabular and/or graphical form so that the date, the constituents, and the concentrations are readily discernible. The data shall be summarized in such a manner to illustrate clearly the compliance with WDRs. The Discharger shall report all periods of non-operation.

D. The Discharger shall submit an annual report to the Water Board by the thirtieth (30^{th}) of January of each year. The report shall contain both tabular and graphical summaries of the monitoring data obtained during the previous year. In addition, the Discharger shall discuss the compliance record and the corrective actions taken or planned which may be needed to bring the discharge into full compliance with the WDRs. This report may be combined with the fourth quarterly report or submitted under separate cover.

E. The Discharger shall implement the above monitoring program immediately upon initial operation of the treatment facility.

F. This Monitoring and Reporting Program may be modified by the Executive Officer.

Ordered by: _____ Dated: _____
HAROLD J. SINGER
EXECUTIVE OFFICER

Attachment: 1. General Provisions for Monitoring and Reporting

JS/rp BO2011/HeapsPeak/Tentative/R6V-2011TentMRP-HeapsPeakLF

ATTACHMENT A

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.