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Central Valley Region
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16 June 2011 FILE COPY

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NOTICE OF ADOPTION
OF
REVISED WASTE DISCHARGE REQUIREMENTS
FOR
A GREENER GLOBE CORPORATION
BERRY STREET MALL (AKA FINGER'S) LANDFILL
CLASS III LANDFILL
PLACER COUNTY

Revised Waste Discharge Requirements (WDRs) Order No. R5-2011-0048 for the Berry Street Mall (AKA Finger's) Landfill was adopted by the California Regional Water Quality Control Board, Central Valley Region (Central Valley Water Board) at its 9 and 10 June 2011 meeting.

Please review your WDRs carefully to ensure that you understand all aspects of the discharge requirements. Please note that the "Provisions" section of the WDRs requires submittal of certain technical reports by the dates provided in the Order. These submittals include the items listed in the following table.

Required Report	Due Date
Operational status of all landfill monitoring and control facilities	15 August 2011
Updated Postclosure Maintenance and Monitoring Plan (PCMP)	1 December 2011
Obtain and maintain assurances of financial responsibility	31 January 2012
Report of status of required financial responsibility, every two years starting:	31 December 2012
Technical report proposing statistical and nonstatistical data analysis methods	31 July 2012
Updated Water Quality Protection Standard Report	31 July 2012
Corrective Action Plan and revised Evaluation Monitoring Plan	31 July 2012
Amended Report of Waste Discharge	31 July 2013

In addition to technical reports required by the WDRs, the WDRs contain a Monitoring and Reporting Program (MRP), which contains specified monitoring requirements that you must implement. Please review the MRP closely so that you may establish the appropriate sampling schedules and protocols.

In order to conserve paper and reduce mailing costs, a paper copy of the order is being provided only to the Discharger. Interested parties are advised that the full text of this order is available on the Central Valley Water Board's web site at

http://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/index.shtml.

Anyone without access to the Internet who needs a paper copy of the order can obtain one by calling Central Valley Water Board staff.

If you have any questions regarding your revised WDRs, please call John Moody at (916) 464-4641.

If you have any questions regarding compliance with this permit, please contact Todd Del Frate at (916) 464-4737 or by email at tdelfrate@waterboards.ca.gov. Likewise, all technical and monitoring reports required under the permit should be directed to Mr. Del Frate.

VICTOR J. IZZO
Senior Engineering Geologist
Title 27 Permitting and Mining

Enclosures: Adopted Order No. R5-2011-0048
Standard Provisions and Reporting Requirements (August 1997)

Distribution List:

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CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. R5-2011-0048
WASTE DISCHARGE REQUIREMENTS
FOR
POSTCLOSURE MAINTENANCE,
MONITORING, AND CORRECTIVE ACTION
A GREENER GLOBE CORPORATION
BERRY STREET MALL (AKA FINGER'S) LANDFILL
CLASS III LANDFILL
PLACER COUNTY

The California Regional Water Quality Control Board, Central Valley Region, (hereafter Central Valley Water Board) finds that:

1. A Greener Globe Corporation (hereafter referred to as "Discharger") owns the Berry Street Mall Landfill, a closed Class III landfill along Galleria Boulevard about three tenths of a mile north of Berry Street in the City of Roseville, as shown in Attachment A, which is incorporated herein and made part of this Order. The 26-acre site is in the northeast 1/4 of the northeast 1/4, Section 35, T11N, R6E, MDB&M, corresponding to Assessor Parcel Number 015-100-048. The geographic coordinates of the site are 38.765N /-121.267W.

2. These revised Waste Discharge Requirements (WDRs) include updated findings and requirements for landfill monitoring and corrective action in accordance with California Code of Regulations (CCR), title 27, division 2 (Title 27 regulations). Previous WDRs Order 89-115, which predated Title 27 regulations and was issued prior to landfill closure, no longer adequately regulates the facility.

3. The landfill operated from 1946 to November 1987, accepting primarily household wastes. William Finger, principal of Berry Street Mall, Inc. (BSMI), owned and operated the landfill for most of this period. After Finger's death in late 1991, site ownership transferred to BSMI and the Estate of William Finger jointly. In August 1996, the Discharger acquired ownership of the property in foreclosure proceedings.

4. The site includes the closed landfill unit (13 acres) and associated facilities, including precipitation and drainage controls; landfill gas (LFG) controls; leachate sump; monitoring facilities; and access roads. Along the southern side of the site is a landscape nursery in an area formerly operated as an onsite transfer station. The nursery owner leases this portion of the site from the Discharger. The landfill and other onsite facilities are shown in Attachment B, which is incorporated herein and made part of this Order.

5. The landfill has a history of noncompliance with regulatory and enforcement Orders issued by the California Department of Resources Recycling and Recovery (CalRecycle, formerly California Integrated Waste Management Board); the Central Valley Water Board; and the Local Enforcement Agency (LEA), both during and after its operational period (see Information Sheet, Attachment 1). Operational compliance and enforcement issues at the site have included, for example, (a) Exposed waste and leachate seeps; (b) Landfill fires; (c) Cover erosion and drainage issues; (d) Site

cleanup issues; (e) Failure to prepare and submit required technical reports (e.g., monitoring program, corrective action plan, closure and postclosure maintenance plans); and (f) Failure to the implement plans under (e).

6. In 1991, CalRecycle accepted the site into its orphan sites program for the limited purpose of closing the site and implementing corrective action in accordance with Chapter 15 (now Title 27) regulations. In accepting the site into this program, CalRecycle noted that ultimate financial responsibility for the costs of closure and postclosure maintenance and monitoring for the project still lay with the owner. See Finding 44.

WASTES AND UNIT CLASSIFICATION

7. The landfill accepted solid wastes defined as "inert" and "nonhazardous" under Title 27, sections 20230 and 20220, respectively. The landfill also accepted municipal solid waste (MSW), as defined in Title 27, Section 20164. The facility is not subject to federal Subtitle D regulations (Title 40, Code of Federal Regulations, Part 258), however, because it stopped accepting MSW before the effective date of those regulations (9 October 1991).

8. The landfill was constructed prior to enactment of Chapter 15 regulations and consequently was not constructed with a Chapter 15/Title 27 compliant liner. Approximately 95% of the disposal area was unlined, while the remainder (about 1/2 acre) consisted of clay-lined disposal pits that were used for disposal of MSW after 1981. See August 1988 *Solid Waste Assessment Monitoring Proposal, Finger Sanitary Landfill*, prepared by Earthtec Ltd. (1988 Solid Waste Assessment Test (SWAT) work plan).

9. The landfill also was not equipped with a Chapter 15/Title 27-compliant leachate collection and recovery system (LCRS), although the clay-lined disposal pits noted above included a standpipe for monitoring and removal of leachate. As part of landfill closure in 1993, CalRecycle installed a subsurface perimeter drain and downgradient sump to help capture laterally-draining leachate. See Finding 50.

10. Approximately 15 tons per day (5,400 tons per year) of waste, including household refuse (90%), construction and demolition debris (8%), and "wet wastes" in paper or plastic containers (2%) was discharged to the landfill. Prior to 1981, waste was generally disposed of by the area fill method, although from 1967 through 1980, portions of the facility were also used as a burn dump. After 1981, waste was discharged to the lined pits noted in Finding 8 above.

11. Approximately 225,000 tons of waste is estimated to have been discharged to the landfill. The average height of the waste column is estimated to be 35 feet. The lowest elevation of waste is not known, but estimated to be about 169 feet above mean sea level (MSL) based on the depth of the clay-lined disposal pits (20 feet).

12. The landfill is an existing, reclassified unit under Title 27, section 20080(d), since it operated prior to, and closed after, 27 November 1984. Previous WDRs reclassified the landfill to Class III from a previous Subchapter 15 designation.

SITE DESCRIPTION

13. The site is in the Central Valley alluvial plain near the edge of the Sierra Nevada Foothills. Land surrounding the site is characterized by rolling topography with rounded knolls and ridges separated by intermittent streams. Surface elevations within one half mile of the site range from about 227 feet MSL to the east to about 172 feet MSL to the west.

14. The landfill was sited in a shallow, dogleg-shaped ravine approximately corresponding to the northern, southern and eastern site boundaries of the site at about 200 feet MSL. The eastern two thirds of the ravine sloped toward the northwest and the western third to the southwest. The bottom of the ravine included an intermittent stream that exited the western side of the site at about 175 feet MSL. Differences between the original and present site topography and drainage reflect changes associated with landfill development.

15. Land uses within the site vicinity include transportation corridors (e.g., Galleria Boulevard, Roseville Parkway, railroad tracks, I- 80 freeway, other surface streets); commercial (e.g., restaurants, shopping centers, gasoline service stations); recreational (amusement park, golf course); industrial (e.g., cemetery; electrical substations; transfer station; closed landfills; aggregate yard, recycling center); and residential uses. The closest residential development is about 750 feet west of the landfill.

16. A July 2009 Department of Water Resources (DWR) well survey identified three supply wells within a one-mile radius of the site, including one domestic well and two agricultural wells. These wells ranged from 300 to 450 feet deep. All residences of the COR are required by ordinance to be connected to COR water, which is primarily treated surface water from Folsom Lake. For backup purposes, the COR also maintains interties with water agencies in surrounding counties and has five municipal supply wells. The closest of these wells (two) are each about 1.4 miles southwest of the facility.

17. The site is not within a 100-year floodplain based on the Federal Emergency Management Agency's Flood Insurance Rate Map, Community Panel Number 060-61C-0477G, effective November 21, 2001.

SURFACE AND STORM WATER

18. Surface drainage is to an onsite intermittent stream, which is tributary to the south branch of Pleasant Grove Creek, thence Pleasant Grove Creek; Verona Cross Canal; and the Sacramento River.

19. The designated beneficial uses of the Sacramento River (Colusa Basin Drain to "I" Street Bridge) under the Basin Plan (*Water Quality Control Plan for the Sacramento River and San Joaquin River Basins*, 4th Edition) are municipal and domestic supply; agricultural supply (excluding stock watering); water contact recreation; non-contact water recreation; warm freshwater habitat; cold freshwater habitat; migration of aquatic organisms; spawning, reproduction and/or early development; wildlife habitat; and navigation.

20. The site receives an average of about 21 inches per year of precipitation, as determined from Rainfall Depth Duration Frequency data provided by the State Department of Water Resources for the Roseville Fire Station about two miles west of the site. The 100-year, 24-hour precipitation event for this station is 3.6 inches.

GEOLOGY

21. The site is situated just west of the Foothills Fault System, a northwest trending (approximately 200 km long) zone of quaternary faults. Seismic hazards within this system are derived from areal sources, with the hazard distributed across the area rather than a single source. The closest known active fault is the Cleveland Hill fault strand of the Foothills Fault System, located approximately 40 miles north of the site. In 1975, a magnitude 5.8 earthquake on the Cleveland Hill fault resulted in surface rupture. The estimated maximum magnitude earthquake at the site is 6.6. The nearest mapped faults within the Foothills system are the Deadman and Dewitt faults, approximately 12 miles northeast of the site. There are no known Holocene faults within 1000 feet of the facility.

22. The area geology represents a transition between the alluvial deposits of the Sacramento Valley and exposed bedrock of the Sierra Foothills. Regional soils generally consist of Mehrten (Tertiary) underlain by Valley Springs (Tertiary) volcaniclastic deposits. The Mehrten is composed of two superjacent units; the Mehrten Breccia and the Mehrten Conglomerate. The volcaniclastic (breccia) cemented mudflow, is generally interbedded with andesitic (conglomerate) composed of sand and cobbles. The Mehrten formation is typically observed as a cap rock over other sedimentary units, sometimes directly over granitic or metamorphic bedrock. The Mehrten formation is exposed in the uplands that bound the Antelope Creek Valley. The Valley Springs formation is primarily rhyolitic tuff, sandstone, siltstone, claystone, and conglomerate deposits.

23. Monitoring well logs indicate that the site lithology consists primarily of interbedded sandstones (silty, tuffaceous and/or andesitic) with occasional conglomerate (tuffaceous or sandy) and mudstone (tuffaceous, brecciated) deposits. These deposits vary considerably in grain size and degree of bedding and cementing. The contact between the Mehrten and Valley Springs formations ranges from about 80 to 110 feet bgs site wide.

24. Soils at the site have been classified as Toomes-Rock land association (very shallow, very cobbly, medium textured soils underlain by cemented volcanic conglomerate) and Fiddyment-Trigo-Rocklin association (very shallow acidic loam, over hardpan or clay pan and clay, siltstone and sandstone layers). These soils are moderately to very slowly permeable.

UNSATURATED ZONE

25. The minimum separation from waste to groundwater at the site is about 95 feet (169 feet MSL minus 74 feet MSL).

26. Four soil gas monitoring wells, including three perimeter wells (GPs-1 through 3) and one interior well (GP-4) were installed at the site in 1993, as required by the LEA under applicable solid waste regulations (now Title 27, Article 6). Each well included three nested probes screened opposite the waste column in upper (10 feet bgs), middle (25 feet bgs), and lower (40 feet bgs) intervals of the unsaturated zone. See Attachment C.

    a. Since initiation of soil gas monitoring in 1994, methane has been detected at <1% by volume in all probes, except for one event in November 1998, when methane was detected up to 5% by volume in all probes.

    b. None of the probes have been sampled for VOCs.

    These WDRs require that the Discharger monitor the wells quarterly for LFG, and semiannually for VOCs. See Monitoring and Reporting Program (MRP) No. R5-2011-0048, Section E.2.b.

27. Four vacuum lysimeters (LYS-1 through 4) were installed at the site in 1993 to monitor soil pore liquid for the presence of leachate (see Attachment B). The lysimeters were housed in four inch steel pipe installed to a depth of about 25 feet bgs. Gypsum moisture block sensors were included in the design to detect the presence of soil pore liquid. Previous WDRs, which predated installation of the probes, did not require unsaturated zone monitoring and none of the lysimeters have been monitored since an initial sampling event conducted by CalRecycle in 1993 (during which no VOCs were detected in lysimeter liquid). Plans for quarterly lysimeter monitoring were included in the 1994 postclosure maintenance and monitoring plan, but were not implemented (see Finding 54).

28. Provision G.3 requires that Discharger investigate the condition of the lysimeters (and other landfill monitoring and control facilities) to assess whether they are in good working order; and to submit a status report with plans for repair or replacement, as necessary. MRP No. R5-2011-0048 requires that the Discharger monitor the lysimeters twice during the wet season. (No lysimeter monitoring is required during the dry season.) See MRP Section F.3.

GROUNDWATER

29. The beneficial uses of the ground water at the site are municipal and domestic supply, agricultural supply, industrial service supply and industrial process supply.

30. The depth to groundwater at the site ranges from about 115 feet bgs (90 feet MSL) in the southeast corner of the site (i.e., upgradient) to about 133 feet bgs (57 feet MSL) on the northwest side of the site (i.e., downgradient). Boring log information indicates that the upper water bearing zone (UWBZ) occurs in the Valley Springs formation. Based on lithology type (primarily fine sandstone), the overall permeability of the UWBZ has been estimated to be of the order of 1×10^{-3} cm/sec.

31. Groundwater at the site generally flows linearly from southeast to the northwest (or west-northwest) consistent with the local gradient. Some radial type flow has been observed on the western portion of the site, which the Discharger has attributed to the influence of the former ravine (described in Finding 14). Another possible explanation for the apparent gradient change could be measurement error resulting from a lack control in the monitoring data. To resolve this issue, WDR Provision G.7.c requires that the Discharger submit a work plan for the installation of additional groundwater elevation monitoring wells, as necessary, to ensure adequate definition of groundwater flow at the site.

32. Groundwater gradients at the site range from 0.08 feet/feet upgradient to 0.02 feet/feet down gradient. Hydrographs indicate that the down gradient water table has risen up to 10 feet since 2003 such that the onsite gradient has decreased.

33. There are six groundwater monitoring wells at the site (GWs-1 through 6), including one upgradient well, four down gradient wells, and one side gradient well (see Attachment B and MRP Section G.3.a). Information on file also indicates that there may be old monitoring wells at the site that have not been properly abandoned (see 1988 SWAT work plan), as follows:

    a. Three monitoring wells constructed of thin metal casing were reported to have been installed in 1980, at the approximate locations noted in Attachment B. The wells were described as "unlikely to have been plugged or properly abandoned."

    b. It is also unknown whether two PVC cased wells reported to have been installed in 1982 were properly abandoned. The approximate locations of these wells are also noted on Attachment B.

    WDR Provision G.3.iv.5) requires that the Discharger conduct an investigation to locate and properly abandon any wells that could be potential conduits to groundwater. See also Facility Specification D.5.

34. Historical groundwater monitoring data for the site is limited due to the Discharger noncompliance issues noted in Finding 5 herein and the Information Sheet attached to this Order. Also, previous WDRs allowed a reduction in monitoring frequency to annual after 24 months (eight quarters) of monitoring. Most of the groundwater data

for the site was collected during the past ten years.

35. Volatile organic compounds (VOCs) have historically been detected in groundwater at this site as follows:

Constituent	**Concentration**, µg/L[1]			
	1993[2],10-Year Average[3], December 2008			
	Upgradient	Side gradient	Downgradient	
	GW-4	GW-1	GW-3	GW-5
Carbon Tetrachloride (Freon 10)	–,–, –	–,1.4, 1.8	–,–, –	◊, 1.1, 1.0
Chloroform (Freon 20)	–,–, –	7.7, –,–	6.3,–,–	◊, 0.5, 0.9
1,4-Dichlorobenzene	–, 0.6, –	–,–, –	–,–, –	◊,–,–
Dichlorodifluoromethane (Freon 12)	–,0.5,–	–,–, –	–,1.8, 2.3	◊, 2.0, 2.3
Cis-1,2-Dichloroethene	–,–, –	–,–, –	–,0.5,–	◊,–,–
Trichlorofluoromethane (Freon 11)	6.8,–,–	–,–, –	–,–, –	◊,–,–

1. "– " = non-detect (< 0.5 µg/L), "◊" = well not yet installed.
2. Four month average (July to October, 1993).
3. Average computed from May, 1999 to December, 2008 with non-detects included at half of detection limit.

Carbon tetrachloride (Freon 10) remains at approximately historical mean concentrations in down gradient well GW-5 (1.1 µg/L) and sidegradient well GW-1 (1.4 µg/L), but is at or below the detection limit in the other two down gradient wells (GW-3 and 6). Chloroform (Freon 20) and Dichlorodifluoromethane (Freon 12) continue to be detected in down gradient wells GW-3 and/or GW-5. Other VOCs have been sporadically detected in groundwater at lower frequencies and/or concentrations, including 1,1-Dichloroethane; Tetrachloroethene (PCE); Toluene; Trichloroethylene (TCE); and 1,1,1-Trichloroethane. Time series plots since 1999 do not show any clear long term trends, although a few VOCs have declined to low to non-detect concentrations in some wells since 2005 (e.g., cis-1,2 DCE in GW-3).

36. In June 2004, the Discharger implemented an evaluation monitoring program (EMP) to investigate the source and extent of VOC impacts from the landfill, as required under previous Orders (i.e., WDR No. 89-115, CAO No. 99-725, and the Stipulated Final Judgment) consistent with Title 27 regulations. The investigation included installation of two new monitoring wells--GW-5 along the western site boundary and GW-6 along the northern landfill perimeter. Samples from the new wells were nondetect for VOCs. The investigation concluded that the extent of impacts had been sufficiently defined such that no additional investigation was necessary. The results were documented in a January 2005 EMP report (*Site Characterization Report, Berry Street Mall Landfill*, prepared by EBA Engineering, Inc.).

Since completion of the 2004 EMP investigation carbon tetrachloride and other VOCs

have been detected regularly in well GW-5, and intermittently in GW-6. These WDRs require that the Discharger submit, as part of an amended Report of Waste Discharge (RWD) for a corrective action program (CAP), a revised EMP work plan to define the extent of landfill impacts, both onsite and offsite, as necessary. See Provision G.3.iii.

37. The 2004 EMP also included collection of a soil gas sample from well GW-2 (historically dry) deep in the unsaturated zone near the water table to assess whether LFG could be impacting groundwater. TO-14 analysis of the soil gas showed the presence of Trichlorofluoromethane (2.9 ppbv), Dichlorotetrafluoroethane (1.6 ppbv), Dichlorodifluoromethane (26 ppbv), Tetrachloroethene (0.87 ppbv), and Toluene (0.81 ppbv). No carbon tetrachloride or other VOCs were detected in the sample. Trace (<0.0002%) and 4.6% carbon dioxide were also detected in the soil gas. Based on the absence of carbon tetrachloride in the soil gas at GW-2, the EMP report concluded that soil gas was not likely a source of carbon tetrachloride detected in groundwater at the site. The report did not address the fact that carbon tetrachloride was not detected in groundwater in that area (i.e., in nearby well GW-5, the replacement well for GW-2) during the investigation.

38. The EMP report attributed the presence of carbon tetrachloride in wells at the site to an upgradient source, likely the City of Roseville old burn dump about 250 feet east of the site. A review of recent monitoring data for the two City of Roseville sites immediately upgradient of the Berry Street Mall Landfill (i.e., the City of Roseville old burn dump and City of Roseville Landfill) indicates that the VOCs in highest concentrations at these sites generally decrease in concentration with distance away from these sites. The data may be summarized as follows:

Constituent	**Concentration**, µg/L[1, 2]				
	Upgradient —> East			NE	SE
	GW-1/GW-5	MW-7	MW-6	MW-13	MW-12
City of Roseville Landfill					
1,4-Dichlorobenzene	<0.5	0.93	<0.2	*1.1*	<0.2
Cis-1,2-Dichloroethene	<0.5	0.16	<0.1	*1.2*	<0.1
Vinyl Chloride	<0.5	0.31	<0.3	*0.94*	<0.3
City of Roseville Old Burn Dump					
Tetrachloroethene (PCE)	<0.5	*0.77*	0.1	0.30	<0.1
Trichloroethene (TCE)	<0.5	*0.13*	<0.2	0.15	<0.2
Trichlorofluoromethane	<0.5	*0.38*	<0.3	<0.3	<0.3
1,1-Dichloroethane	<0.5	*0.19*	<0.1	<0.1	<0.1
Berry Street Mall Landfill					
Carbon Tetrachloride	*1.8*	1.2	0.47	<0.2	<0.2
Chloroform (Freon 20)	*0.9*	0.22	<0.2	<0.2	<0.2
Dichlorodifluoromethane	*2.3*	1.0	0.24	0.24	<0.2

1. Highest concentration detected in semiannual monitoring since Second Semester 2008.
2. VOCs detected in highest concentrations at each facility shown in italics.

Assuming that the above VOCs are found in highest concentrations closest to their source, it is reasonable to presume that the Berry Street Mall Landfill is the source of carbon tetrachloride, chloroform, dichlorodifluoromethane detected at the site. While the above data does not rule out the possibility that these VOCs may have come from upgradient (or that VOCs detected at the City of Roseville old burn dump may have come from the City of Roseville landfill and/or the Berry Street Mall Landfill), it seems unlikely that a site where wastes were burned (i.e., burn dump) would be a significant source of VOCs.

39. Historical groundwater monitoring for the site shows evidence of elevated concentrations (highlighted in bold) of certain inorganic constituents in downgradient wells, as follows:

Constituent	**Concentration**[1] (mg/L, except where noted)			
	1993[2], 10-Year Average[3], December 2009			
	Upgradient	*Downgradient*		
	GW-4	GW-2	GW-3	GW-5
Chloride	32, 53, 44	*112*, ○, ○	48, 47, 28	◊, 52, 54
Bicarbonate Alkalinity	193, □, □	*635*, ○, ○	390, □, □	◊, □, □
Sulfate	9, 20, 33	45, ○, ○	*115*, 32, 46	◊, 135, *146*
Total Dissolved Solids	295, □, □	*940*, ○, ○	*683*, □, □	◊, □, □
Specific Conductance (µmhos, cm)	438, 520, 586	*1,300*, ○, ○	*965*, 587, 649	◊, *752*, *839*

1. "□" = not analyzed, "○" = well dry, "◊" = well not yet installed.
2. Four month average (July to October, 1993).
3. Average computed from May, 1999 to December, 2009.

The 2005 EMP report acknowledged that elevated salts detected in well GW-5 were likely due to impacts from landfill leachate. Further, elevated salts detected in wells GW-2 (chloride) and GW-3 (sulfate) in 1993 correspond to period when the water table was higher, suggesting possible impacts to the uppermost portion of the UWBZ and/or in the unsaturated zone. Time series plots of the monitoring data since 1999 do not show any clear trends, except for moderately rising sulfate in GW-3. No exceedances for inorganic constituents have been historically detected in sidegradient well GW-1.

Revised WDRs

40. These WDRs (Provision G.8) require that the Discharger submit a revised CAP upon completion of the EMP, including EMP report; engineering feasibility study (EFS); and corrective action monitoring plan. The WDRs (Provision G.7.c) also require that the Discharger submit, as part of the CAP per Section 20430(d), a revised EMP to

complete evaluation monitoring.[1] The MRP in the WDRs requires that the Discharger conduct detection monitoring along the Point of Compliance concurrently with corrective action monitoring to detect any new release (or release of new waste constituents) from the unlined landfill. Only corrective action monitoring is required beyond the Point of Compliance, however. Monitoring at least every 5 years is required for those landfill constituents of concern (COCs) not regularly monitored for in detection and corrective action monitoring programs. Monitoring is required for all water bearing media (i.e., unsaturated zone, groundwater and surface water) as required under Title 27, and the Discharger is required to update the monitoring lists for each program and media based on the results of monitoring, as warranted. The MRP also requires monitoring of all of the landfill's environmental control systems (e.g., leachate sump, lysimeters, LFG wells) to assess whether the landfill is a source of groundwater impacts at the site.

41. The following groundwater water quality criteria have been exceeded downgradient (or sidegradient) of the landfill at this site:

Constituent	**Units**	**WQ Objective**	**Concentration**	
			WQ Limit	*Detected*
Carbon Tetrachloride	µg/L	Chemical Constituents	0.5[1]	1.8
		Toxicity	0.1[2]	
Chloride	mg/L	Chemical Constituents	106[3]	112
TDS	mg/L	Chemical Constituents	450[3]	940
		Taste & Odor	500[4]	
			500[4]	
Specific Conductance	mg/L	Chemical Constituents	700[3]	1,300[4]
		Taste & Odor	900[4]	
			900[4]	

1. California Primary MCL
2. California Public Health Goal
3. Agricultural Goal
4. California Secondary MCL

The above water qualify criteria are presented for comparison purposes only since revised concentration limits required under this Order have not yet been proposed by the Discharger. See MRP Section C.2.b.

42. Title 27 specifies the prescriptive requirements and performance standards applicable to monitoring data analysis (see Monitoring Specifications E.19, E.20, and E.23), and

1. The 2005 EMP report recommended that the Discharger prepare an amended RWD for a CAP to address the historical impacts to groundwater from the landfill. The Discharger subsequently failed to submit the recommended CAP.

requires that such methods be implemented as follows:

a. As specified in the existing MRP under the WDRs; or
b. In accordance with a technical report (certified by an appropriately registered professional) documenting such methods, submitted to, and approved by, the Central Valley Water Board; or
c. In accordance with any water quality data analysis software deemed appropriate for such use by either the Central Valley Water Board or SWRCB.

Consistent with 42.b above, Provision G.7.a requires that the Discharger submit per Section 20415(e)(7)(B) a technical report proposing statistical and nonstatistical data analysis methods for monitoring, while MRP No. R5-2011-0048 specifies the data analysis methods that the Discharger shall use in the interim pending approval of such report (and any necessary revision of the MRP).

43. In addition to the prescriptive data analysis methods specified in Title 27, the Monitoring Specifications under these WDRs allow the Discharger to use non-prescriptive methods such as the *California Nonstatistical Data Analysis Method*, *Gamma 95 Percent Upper Prediction Limit* (Gamma 95% UPL) and *Paired Difference Analysis*. See Information Sheet. Such methods are considered to be more stringent than Title 27 standards per Section 20080(a)(1) because they have higher effectiveness in detecting a release.

CLOSURE AND CORRECTIVE ACTION

44. In June 1992, CalRecycle developed a Final Closure Plan (FCP) for the landfill as approved by the Central Valley Water Board and other interested agencies. The FCP included plans for landfill facility controls (e.g., final cover, grading, precipitation and drainage, leachate, LFG) and monitoring systems (e.g., groundwater, unsaturated zone, surface water) in accordance with Title 27 regulations. Closure was also implemented as a corrective action measure to mitigate potential leachate and LFG impacts to groundwater.

45. The approved landfill final cover design was as follows, from top to bottom:
    a. Vegetative Cover – native grass mix
    b. Erosion Resistant Layer – One foot of clean vegetative cover soil
    c. Low Hydraulic Conductivity (LHC) Layer – one foot of compacted clay ($k \leq 1 \times 10^{-6}$ cm/sec)
    d. Foundation Layer – Two feet of compacted soil

Grading

46. The landfill was closed as a single unit with a north-central top deck and elongated southeast flank. The 2.5-acre top deck (232 feet MSL) was graded to drain at a minimum 3 percent slope toward the southwest (224 feet MSL) and northeast (228 feet MSL) sideslopes. The sideslopes (10.5 acres) were graded from a minimum of about 8H:1V on the west and southeast flanks to a maximum of about 5H:1V along

the eastern flank. Landfill perimeter elevations ranged from about 186 feet MSL west side to 206 feet MSL east side, such that the maximum height of the closed landfill above surrounding grade at the time of closure was about 46 feet.

47. A technical report demonstrating the stability of the cover slopes per Title 27, section 21750(f)(5) was not required for the facility because the landfill unit was closed prior to 18 July 1997 (see Title 27, sections 21090(a) and 20310(g)).

Precipitation and Drainage Controls

48. The landfill precipitation and drainage controls included the following elements:
    a. Top deck
        i. Graded for sheet flow drainage to NE and SW perimeter drop inlets.
        ii. Perimeter berm and swale to help direct runoff to drop inlets.
    b. Overside (O/S) Drains
        i. Installed on NE and SW sideslopes
        ii. 24-inch diameter, corrugated steel
        iii. NE drain discharges to landfill perimeter drain.
        iv. SW drain discharges directly to onsite storm water pond
    c. Landfill perimeter drain
        i. SE perimeter - reinforced concrete "V" ditch (2 ft high x 4 ft wide)
        ii. NE perimeter – same construction as above, but trapezoidal.
        iii. Captures and conveys NE O/S drain and sideslope runoff to storm water pond.
    d. Storm Water Pond
        i. Historically used as landfill sedimentation basin
        ii. Designed to accommodate 5 acre-feet of water
        iii. Equipped with a standpipe, outfall pipe, and a concrete-lined overflow spillway to control water level and outfall discharge rate.
        iv. Part of onsite stream that exits the property in the southeast corner of the site.

    Since the onsite storm water pond is connected with the stream that crosses the site (see Finding 18), it is subject to surface water-related discharge and monitoring requirements under these WDRs. Provision G.3.v requires that the Discharger submit (as part of a revised EMP) a work plan to investigate whether there are discharges to surface water from the landfill site (e.g., storm water, litter) in violation of this Order, while Provision G.8.d requires that the Discharger submit (as part of a revised EFS) a report of the results of that investigation and plans for any necessary measures to correct any such violations.

49. All landfill drainage facilities, including cover swales, drop inlets, overside drains, perimeter ditches, culverts, and the storm water pond were designed to have sufficient capacity to accommodate a 24-hour, 100-year storm event.

Leachate Controls

50. To capture potential perimeter leachate seepage (the landfill had a history of seeps during its operational period), a leachate collection system consisting of perforated PVC pipe in a gravel-filled trench (i.e., a French drain) was installed along the landfill perimeter as part of landfill closure construction. The system consisted of a contiguous drain installed along the northern, southern, and western perimeters of the landfill immediately behind the final cover keyway. The drain was graded for gravity drainage and plumbed to a subsurface collection sump southwest of the landfill. See Attachment B. The FCP included a plan for installation of a larger (2,000 gallon) above ground tank adjacent to the sump in the event postclosure monitoring of leachate in sump indicated the need for additional holding capacity. See Finding 54.

Landfill Gas Controls

51. A standby gas collection system (i.e., not including blower and flare) was installed under the landfill cover as part of landfill closure construction in 1993. The system consisted of three-inch perforated HDPE lateral pipe placed in gravel-filled trenches beneath the landfill cover. The laterals were placed horizontally along the top deck and longitudinally along the sideslopes, spaced at approximately 100-foot intervals. To minimize the intake of outside air, non-perforated pipe was used along both ends of each lateral, which daylight (i.e., "stub-out") through the landfill cover along the edge of the deck and slopes. A total of 57 stub-outs were installed, each with removable caps to allow for LFG sampling and venting. See Attachment C.

52. Limited monitoring of the standby LFG collection system conducted by CalRecycle in 1993 concluded that the landfill was generating relatively little LFG. Monitoring of capped lateral stub-outs showed relatively high methane concentrations (up to 65% by volume), but relatively low carbon dioxide concentrations (4%), in the uppermost part of the landfill. Low methane concentrations (0 to 10% by volume) were detected along the base of the landfill. Methane to carbon dioxide ratios were about 10 times higher than would be expected from anaerobic decomposition processes and VOC concentrations (by TO-14 sample analysis) were about 10 to 100 times less than for typical LFG. The study concluded that higher methane concentrations detected in the uppermost portion of the landfill were likely the result of vertical migration and accumulation under the cap, rather than anaerobic decomposition processes. The study further concluded that active LFG extraction was not needed. See Postclosure Maintenance Plan, Appendix H referenced in Finding 54. No monitoring of the standby LFG collection system has been conducted since 1993.

53. Landfill closure construction was completed in May 1993, and documented in an April 1994 certification report (*Report of Construction Quality Assurance Testing and Observation for the Final Closure of the Berry Street Mall Landfill*, prepared by GeoLogic Associates, Inc. and Vector Engineering, Inc.) and 1994 postclosure maintenance plan (see Finding 54). CalRecycle certified the landfill was closed in accordance with the FCP in April 1994, noting that the owner remained responsible for postclosure maintenance and monitoring of the landfill. Central Valley Water Board

staff approved the closure certification report in January 1995.

POSTCLOSURE

54. In 1994, CalRecycle developed and approved a postclosure maintenance and monitoring plan (PCMP) for the site (December 1994 *Final Post-Closure Maintenance Plan, Berry Street Mall Landfill*, prepared by Bryan A. Stirrat & Associates, Inc. and Geologic Associates). The PCMP included schedules for maintenance and monitoring of all of the landfill's environmental control and monitoring systems, including LFG monitoring wells, standby LFG collection system, leachate sump, lysimeters, groundwater monitoring wells, storm drains, and surface water. Previous WDRs, which predated landfill closure, required only surface and groundwater monitoring.

55. The PCMP included conceptual plans for converting the standby LFG collection system to an active LFG extraction system, if needed, including Installation of a LFG flare and/or treatment plant; blower; header and tie-in piping; and condensate collection facilities. Header piping would be placed around the top deck and along the spine of the southeast flank and tied into the laterals. An additional header would also be installed around the base of the landfill (along the outside perimeter of the access road) and tied into the sideslope lateral piping to improve LFG collection. Condensate would be collected by elevating the north end of the header, allowing for gravity drainage to a condensate collection sump. Control valves and sampling ports would also be installed at appropriate points along the laterals/header pipe. Vertical LFG wells would also be installed at the site and tied into the system, if LFG monitoring indicated migration of LFG toward the site perimeter or adjacent structures.

56. CalRecycle conducted limited postclosure monitoring of the landfill (including groundwater, unsaturated zone, soil gas, and LFG) in 1993 and early 1994 after installation of the landfill monitoring systems as part of closure construction. Since then, however, the record indicates that the Discharger (including prior owner and operator under previous WDRs) has only partially implemented the postclosure maintenance and monitoring plan. For example, with the exception of the initial monitoring data collected by CalRecycle, there is no historical monitoring data for leachate, soil pore water, LFG, and surface water. Further, while it appears that perimeter LFG monitoring has been historically conducted, quarterly groundwater monitoring was not initiated at the site until 2002 (see Finding 34). To obtain data necessary for corrective action monitoring, MRP No. R5-2011-0048 includes monitoring requirements and schedules for all of the landfill environmental controls and monitoring systems, while WDR Provision G.4 requires that the Discharger submit an updated postclosure maintenance and monitoring plan to reflect current maintenance and monitoring requirements under this Order.

57. No topographic survey of the site has been conducted since the landfill was closed in 1993. WDR Postclosure Specification C.10 requires that the Discharger perform an aerial topographic survey within the first year of monitoring under this Order and every five years thereafter.

COST ESTIMATES AND FINANCIAL ASSURANCES

58. The 1994 PCMP included the following estimates for the annual cost of post-closure maintenance and monitoring at the landfill:

Item	Estimated Annual Cost, $2010[1]		
	Maintenance	Monitoring	Total
Facility	34,245	43,186	77,431
Landfill Cover	27,383	0[2]	27,383
Leachate Collection System	16,583	0[2]	16,583
Lysimeters	2,232	13,647	15,879
Groundwater Monitoring Wells	3,593	43,877	47,470
Drainage Controls	11,056	39,452	50,508
Perimeter LFG Monitoring Wells	1,935	3,040	4,975
Standby LFG Collection System	4,146	13,820	17,965
Total:	101,173	157,021	258,194

1. 1994 estimates escalated using CalRecycle escalation factors.
2. Included in facility monitoring.
3. Estimated cost of offsite treatment assuming leachate production rate of 10 gallons per month.

Provision G.4 of these WDRs requires that the Discharger submit an updated postclosure maintenance and monitoring plan that includes updated cost estimates for postclosure maintenance and monitoring based on current landfill operations and requirements under these WDRs, including MRP No. R5-2011-0048.

59. The Discharger is not required to demonstrate financial assurances to CalRecycle for closure (Section 22205(b)) and postclosure maintenance (Section 22210(b)), since the landfill ceased operations prior to January 1, 1988. The Discharger is also not required to demonstrate financial assurances to CalRecycle for corrective action (Section 22220(b)), since the landfill ceased operations prior to July 1, 1991.

60. The Discharger is required to demonstrate financial assurances for post-closure maintenance to the Central Valley Water Board pursuant to 27 CCR Section 22212(a). The Discharger has not yet provided this demonstration. Provision G.5 of these WDRs requires that the proposed financial assurance mechanism be an irrevocable fund or other mechanism in the amount of the approved cost estimate meeting CalRecycle standards under Chapter 6 of Title 27, but with the Central Valley Water Board designated as beneficiary.

61. The Discharger is required to demonstrate financial assurances for corrective action (known or reasonably foreseeable release) to the Central Valley Water Board per Title 27, Section 22222. The Discharger has not yet provided cost estimates and demonstrated this funding. Provision G.4.b requires that the Discharger provide an updated cost estimate for corrective action financial assurances, consistent with the requirements of these WDRs, for Board staff approval. Provision G.5 further requires that the Discharger provide and maintain updated financial assurances for corrective action, and that the proposed financial assurance mechanism (in the amount of the

approved cost estimate) be an irrevocable fund or other mechanism meeting CalRecycle standards under Chapter 6 of Title 27, but with the Central Valley Water Board designated as beneficiary.

CEQA AND OTHER CONSIDERATIONS

62. The action to revise the WDRs is exempt from the provisions of the California Environmental Quality Act (Public Resources Code Section 21000, et seq.), in accordance with Title 14, CCR Section 15301 for existing facilities.

63. CalRecycle, acting as lead agency, certified a Negative Declaration for closure of the landfill (State Clearinghouse No.1992052114) on 17 June 1992 in accordance with the California Environmental Quality Act (CEQA) (Public Resources Code Section 21000 et seq.) and CEQA guidelines (14 CCR Section 15000 et seq.). The CIWMB also filed a Notice of Exemption for landfill fire fighting activities at the site on 22 May 1992. Both actions were categorically exempt under CEQA (Title 14, Article 19, Section 15330) as actions by a regulatory agency for protection of the environment.

64. Section 13267(b) of California Water Code (CWC) provides that: "In conducting an investigation specified in subdivision (a), the Central Valley Water Board may require that any person who has discharged, discharges, or is suspected of discharging, or who proposed 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 discharging, or who proposed to discharge waste outside of its region that could affect the quality of the waters of the state within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the Central Valley Water Board requires. The burden, including costs of these reports, shall bear a reasonable relationship to the need for the reports and the benefits to be obtained from the reports." The monitoring and reporting program required by this Order (MRP No. R5-2011-0048, attached) is necessary to assure compliance with these waste discharge requirements. The Discharger owns and operates the facility that discharges the waste subject to this Order.

65. This order implements:
    a. The Basin Plan -- *The Water Quality Control Plan for the Sacramento River and San Joaquin River Basins, 4th Edition;*
    b. Chapters 1 through 7, Subdivision 1, Division 2, Title 27, of the California Code of Regulations, effective 18 July 1997, and subsequent revisions.

PROCEDURAL REQUIREMENTS

66. All local agencies with jurisdiction to regulate land use, solid waste disposal, air pollution, and to protect public health have approved the use of this site for the discharges of waste to land stated herein.

67. The Central Valley 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 for a public hearing and an opportunity to submit their written views and recommendations.

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

69. Any person aggrieved by this action of the Central Valley Water Board may petition the State Water Resources Control Board (State Water Board or SWRCB) to review the action in accordance with CWC section 13320 and California Code of Regulations, 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 the Order, except that if the thirtieth day following the date of this Order falls on a Saturday, Sunday, state holiday, or furlough day, 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

    or will be provided upon request.

IT IS HEREBY ORDERED, pursuant to Sections 13263 and 13267 of the California Water Code, that Order No. 89-115 is rescinded, and that A Greener Globe Corporation, its agents, successors, and assigns, in order to meet the provisions of Division 7 of the California Water Code and the regulations adopted thereunder, shall comply with the following:

A. DISCHARGE PROHIBITIONS

1. The discharge of new or additional waste to the facility is prohibited.

2. The landfill shall not cause pollution or a nuisance, as defined by CWC Section 13050, and shall not cause degradation of any water supply.

3. The following types of discharges from the landfill site to surface water (or any surface water drainage course) are specifically prohibited:

    a. Solid waste

    b. Liquid waste or leachate

    c. Wastewater or groundwater (treated or untreated) in the absence of a National Pollutant Discharge Elimination System (NPDES) permit authorizing the discharge

    d. Any discharge in excess of surface water concentration limits and/or resulting in a confirmed release to surface water under Title 27.

B. DISCHARGE SPECIFICATIONS

1. The discharge shall remain within the designated disposal area at all times.

2. The Discharger shall, in a timely manner, remove and relocate any wastes discharged at this facility in violation of this Order.

3. Storm water runoff from the facility shall be monitored in accordance with MRP No. R5-2011-0048 and applicable storm water regulations.

4. A minimum separation of five feet shall be maintained between wastes or leachate and the highest anticipated elevation of underlying groundwater per Title 27 section 20240(c).

C. POSTCLOSURE SPECIFICATIONS

1. Throughout the postclosure period, the Discharger shall carry out all necessary landfill postclosure maintenance and monitoring activities consistent with the plans and schedules in the postclosure maintenance and monitoring plan, as approved by the Central Valley Water Board, CalRecycle, and the LEA. See Title 27, section 20950(a)(1).

2. Final cover shall be maintained and kept graded to prevent ponding, promote lateral runoff, and prevent soil erosion due to high run-off velocities.

3. Areas with slopes greater than 10%, surface drainage courses, and areas subject to erosion by wind or water shall be maintained to prevent such erosion.

4. The erosion-resistant layer shall be maintained with native or other vegetation capable of providing effective erosion resistance.

5. Precipitation and drainage control systems shall be designed, constructed, operated and maintained to convey peak flows from a 100-year, 24-hour storm event. All storm water controls shall be maintained so that they function effectively during precipitation events.

6. The closed landfill shall be maintained to prevent, to the greatest extent possible, ponding, infiltration, inundation, erosion, slope failure, and washout.

7. Annually, prior to the anticipated rainy season but no later than **31 October**, any necessary erosion control measures shall be implemented and any necessary construction, maintenance, or repairs of precipitation and drainage control facilities shall be completed to prevent storm water flows from:
   a. Contacting or percolating through wastes;
   b. Causing erosion or inundation of the landfill cover or other areas of site;
   c. Causing sedimentation and clogging of the storm drains; and/or
   d. Discharging sediment loads to surface waters.

8. The Discharger shall obtain coverage under the General Storm Water Permit for Industrial Activities.

9. The Discharger shall continue to monitor all required media per MRP No. R5-2011-0048 throughout the postclosure maintenance period.

10. The Discharger shall conduct an aerial site survey of the site for the purpose of updating the topographic map for the site at least every five years. The first aerial site survey under this Order shall be conducted within the first monitoring year (i.e., by **31 December 2011)**. A copy of the updated topographic map shall be included in the Annual Monitoring Summary Report. See MRP Section I.2.d.

11. The postclosure maintenance period shall continue until the Central Valley Water Board verifies that remaining waste in the landfill will not threaten water quality.

D. FACILITY SPECIFICATIONS

1. All final cover slopes shall be capable of withstanding a maximum probable earthquake.

2. The Discharger shall immediately notify the Central Valley Water Board of any flooding, unpermitted discharge of waste off-site, equipment failure, slope failure, or other change in site conditions that could impair the integrity of waste or leachate containment facilities or precipitation and drainage control structures.

3. The Discharger shall maintain the landfill final cover, precipitation and drainage controls, monitoring wells, LFG monitoring wells, lysimeters, leachate controls, standby gas extraction system, and all other associated landfill facilities, as necessary, in order to comply with this Order.

4. The Discharger shall maintain in good working order any facility, control system, or monitoring device installed to achieve compliance with the waste discharge requirements.

5. All wells within 500 feet of the waste management units shall have sanitary seals that meet the requirements of the Placer County Environmental Health Department or shall be properly abandoned. A record of the sealing and/or abandonment of such wells shall be sent to the Central Valley Water Board and to the State Department of Water Resources.

6. The Discharger shall maintain a copy of this Order and make it available at all times to facility operating personnel, who shall be familiar with its contents, and to regulatory agency personnel.

E. MONITORING SPECIFICATIONS

1. The Discharger shall develop and implement field parameter, background,

detection, corrective action, and COC monitoring programs for the landfill as specified in this Order, including in MRP No. R5-2011-0048.

2. The Discharger shall comply with the Water Quality Protection Standard (WQPS) as specified in MRP No. R5-2011-0048 and the August 1997 Standard Provisions and Reporting Requirements (SPRR).

3. The concentrations of landfill COCs in waters passing the Point of Compliance shall not exceed concentration limits (CLs) established in accordance with this Order.

Monitoring Programs

Field Parameter Monitoring

4. The Discharger shall implement field parameter monitoring, including, but not limited to, groundwater elevation monitoring, consistent with Section 20415(e), subparagraphs 13 and 15. Groundwater elevation monitoring shall include measurements for determination of groundwater surface elevation, flow direction and flow velocity. Field parameter monitoring shall be conducted concurrent with the other monitoring programs for water-bearing media under MRP No. R5-2011-0048.

Background Monitoring

5. The Discharger shall implement a Background Monitoring Program for the unit consistent with Section 20415, including, but not necessarily limited to, subsections 20415 (b), (e)(6), and (e)(10). The background monitoring list shall consist of all compliance monitoring program parameters/WQPS COCs listed in MRP Tables J.1 and 2, respectively.

6. Background data shall be screened (i.e., for trends, outliers, seasonality) as necessary to ensure that it represents a single statistical population (i.e., one that does not show appreciable variation per Section 20415(e)(10)) unaffected by a release from the unit or offsite source.

7. As part of the WQPS, the Discharger shall propose CLs for each medium consistent with Section 20400.

   a. Proposed CLs for nonstatistical constituents naturally occurring in background (e.g., certain metals) shall not exceed the PQL.

   b. Proposed CLs for nonstatistical constituents not naturally occurring in background (e.g., VOCs, certain nonstatistical metals) shall not exceed the MDL.

   c. Any proposal for concentration limits greater than background (CLGBs) shall be accompanied by the requisite demonstration under Section 20400(c) (i.e., that it is technologically or economically infeasible to achieve the background value for that constituent and that the constituent will not pose a substantial

present or potential hazard to human health or the environment). Approval of CLGBs shall require approval of revised WDRs by the Central Valley Water Board.[2]

Detection Monitoring

8. Concurrent with corrective action monitoring under Monitoring Specification E.13, the Discharger shall implement a Detection Monitoring Program for the unit, including required background monitoring, consistent with applicable provisions of Section 20415 and Section 20420. The goals of the Detection Monitoring Program shall be to:

   a. Detect a release from the unit (i.e., new waste constituent crossing Point of Compliance);

   b. Update the detection monitoring parameter list; and

   c. Qualify any new corrective action monitoring parameters.

9. The detection monitoring parameter list for a given water-bearing media shall include the following constituents not already corrective action monitoring parameters under Monitoring Specification E.14:

   a. Any constituent in the same group (or subgroup) as a listed corrective action monitoring parameter, based on the constituent groupings in MRP Tables J.1.B.b and 2 (e.g., heavy metal, BTEX compound);

   b. Any parent compound of a listed organic corrective action monitoring parameter, based on MRP Table J.1.B.b, as updated per Monitoring Specification E.10.b.iii.

   c. Any constituent on the COC monitoring parameter list detected in other media (e.g., leachate, LFG, unsaturated zone); and

   d. Any constituent on the COC monitoring parameter list identified by monitoring data analysis as potentially associated with a release. See Monitoring Specifications E.21.b or E.23.ii.

   Proposed data analysis methods for detection monitoring shall be consistent with Monitoring Specifications E.18 through E.23 herein, as applicable.

10. The Discharger shall respond as follows in response to detecting evidence of a release:[3]

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2. CLGBs shall be limited to wells within the area of the release as of the start of the corrective action monitoring program under this Order (i.e., date of this Order) absent special application of the California Water Code.

3. Exceedances that the Discharger demonstrates are the result of (1) sample corruption; (2) laboratory interferences; (3) error; (4) natural variation in the water quality; (5) statistical evaluation, or (6) other cause not associated with a release from the unit shall neither provide a preliminary indication of a release nor, in the case of verification testing, confirm a release. Retesting may be necessary, however,

a. Preliminary Indication
   i. Immediately notify Central Valley Water Board staff of such indication by phone or e-mail; and,
   ii. Within 30 days, or as otherwise approved under the analysis method (i.e., up to 90 days), conduct verification (retest) sampling.[4]

b. Confirmation
   i. Immediately notify the Central Valley Water Board about the constituent verified to be present at the monitoring point, and follow up with written notification submitted by certified mail within seven days of validation; and
   ii. Proceed in accordance with Monitoring Specification E.12 below.
   iii. Update the affected monitoring lists (i.e., monitoring points, monitoring parameters). See Monitoring Specification E.25.

11. Notwithstanding the results of preliminary and/or confirmation testing above, the Discharger shall consider whether there is physically significant evidence of a release from the Unit per Title 27, Section 20385(a)(3), which states:

    Significant physical evidence of a release includes unexplained volumetric changes in surface impoundments, unexplained stress in biological communities, unexplained changes in soil characteristics, visible signs of leachate migration, and unexplained water table mounding beneath or adjacent to the Unit and any other change to the environment that could reasonably be expected to be the result of a release from the Unit. . .

    If there is physically significant evidence of a release, the Discharger shall proceed in accordance with Monitoring Specification E.12 below.

12. If the Discharger determines that there is either materially or physically significant evidence of a release from the Unit at any monitoring point, the Discharger shall immediately implement the requirements for *Response to a Release* contained in the SPRR.

Corrective Action Monitoring

13. The Discharger shall implement a corrective action monitoring program for the unit, including required background monitoring, consistent with applicable provisions of Section 20415 and Section 20430(d). The goals of the corrective action monitoring program shall be as follows:

    a. Complete evaluation monitoring (as necessary);

    b. Track changes in water quality associated with the release (including any new constituents added through the Detection Monitoring Program); and

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to make this demonstration or to obtain valid monitoring data. See Section 20420(k)(7).

4. Exceedances for any constituent for which the Discharger fails to conduct a retest will be considered confirmed without retest unless and until the Discharger demonstrates its absence through subsequent monitoring.

c. Monitor the effectiveness of corrective action measures in returning to the water quality protection standard.

14. The corrective action monitoring parameter list for a given water-bearing media shall include:

    a. Any constituent historically confirmed as part of the release in one or more landfill compliance wells;

    b. Any constituent confirmed as part of the release under either the detection or COC monitoring programs under the MRP. See Monitoring Specification E.25.a.

    c. Any constituent that is a potential breakdown product of a corrective action monitoring parameter qualified under a or b above.

    Proposed data analysis methods for corrective action monitoring shall be as specified in Monitoring Specification E.24.

15. Prior to termination of corrective action measures required under Section 20430(c), the discharger shall demonstrate, pursuant to Section 20430(f), that the constituents of the release have been reduced to levels below CLs throughout the entire zone affected by the release. During this "proof period", the Discharger shall demonstrate that:

    a. The concentration of each constituent in each sample from each monitoring point remained at or below its CL for at least one year, beginning immediately after the suspension of corrective action measures; and

    b. The individual sampling events for each monitoring point must have been evenly distributed throughout the proof period and have consisted of at least eight sampling events per year per monitoring point.

    c. At the end of the proof period, a single data analysis method (statistical or nonstatistical, as appropriate) shall be used for each monitoring parameter at each monitoring point to determine whether that parameter has been reduced to levels at or below CLs at that monitoring point.

    The Discharger shall notify the Board and obtain Executive Officer approval prior to (1) suspending corrective action measures prior to making the above demonstration; and (2) terminating corrective action measures after making the above demonstration.

COC Monitoring

16. The Discharger shall implement a COC monitoring program at the site, including required background monitoring, consistent with applicable provisions of Section 20415, 20420(g), and 20425(e)(4). The goals of the COC monitoring program shall be as follows:

    a. Scan for COCs potentially associated with the release

b. Detect COCs associated with release in background, Point of Compliance, or other compliance wells.

c. Qualify Detection and corrective action monitoring parameters

d. Update COC monitoring parameter list.

Proposed data analysis methods for COC monitoring shall be consistent with those for detection monitoring.

17. The COC monitoring parameter list for a given water-bearing media (e.g., MRP Table J.1.B.c) shall consist of all COCs under the WQPS not included in regular monitoring under Monitoring Specifications E.9 and E.14, based on the COC listing in MRP Table J.2.

Monitoring Data Analysis Methods

Detection and COC Monitoring

Statistical Methods

18. For monitoring parameters/COCs for which at least 10% of the data from background equal or exceed their respective MDL at a given monitoring point (hereafter referred to as "statistical" monitoring parameters/COCs), the Discharger shall use a statistical data analysis method for monitoring. Borderline statistical monitoring parameters/COCs (e.g.., those for which less than 20% of the data from background samples equal or exceed their respective MDL) should be periodically rechecked to verify that they are still statistical. If such check indicates that they are no longer statistical, they shall be re-designated as nonstatistical parameters per E.22.

19. Proposed statistical methods for data analysis shall meet or exceed all applicable performance standards specified in Title 27, as follows:

    a. Initial Testing -- Section 20415(e)(9) (e.g., fit and performance, α level, confidence level)

    b. Verification Testing – Same as above plus Section 20415(e)(8)(E) (e.g., discrete retest rule).

20. Proposed statistical methods for data analysis shall meet or exceed all applicable prescriptive standards specified in Title 27, as follows:

    a. Initial Testing

        i. Method(s) shall be as listed in Section 20415(e)(8) (e.g., prediction limits, control chart); and/or

        ii. As approved by the Executive Officer under Section 20415(e)(7)(B) or as an engineered alternative under 20080(b); and/or

        iii. As authorized under the WDRs or MRP as a more stringent method per 20080(a)(1). Example: Gamma 95% UPL Method (see Finding 43).

b. Verification Testing -- Same as above plus method shall conform to the requirements of Section 20420(j) (e.g., protocols for discrete retest rule).

i. A single composite retest (pass 1-of-2); or
ii. At least two discrete retests (e.g., pass 2-of-3, pass 3-of-4)

For any given retest sample, the Discharger shall include in the retest analysis only the laboratory analytical results for those analytes detected in the original sample.

21. Statistical Trigger Criteria

a. Release

The statistical trigger criteria for detection of a release (or new release constituent), using the appropriate statistical data analysis methods referenced above, shall include the following:

i. Null hypothesis -- No measurably significant evidence of a release.

ii. Confidence Interval – 90 to 95%[5]

iii. Release Trigger -- Rejection of null hypothesis for a given detection or COC monitoring parameter at a given monitoring point provides the following:

1) Initial Testing -- A preliminary indication of measurably significant evidence of a release

2) Verification Testing -- Confirmation of measurably significant evidence of a release

b. Potential Release[6]

The criteria for identifying potential release constituents to add to the detection monitoring parameter list, using the appropriate statistical data analysis methods referenced above, shall include the following:

i. Null Hypothesis – No measurably significant evidence of a potential release

ii. Confidence Interval – 75 to <90%[5]

iii. Potential Release Trigger -- Rejection of null hypothesis for a given detection or COC monitoring parameter at a given monitoring point provides the following:

1) Initial Testing -- A preliminary indication of measurably significant evidence of a potential release

2) Verification Testing -- Confirmation of measurably significant evidence

5. Confidence interval required to reject null hypothesis using appropriate statistical method.

6. "Potential Release" defined as landfill COC detected above background concentration, but (within confidence interval) below CL.

of a potential release

Nonstatistical Methods

22. For monitoring parameters/COCs for which less than 10% of the data from background samples equal or exceed their respective MDL (hereafter referred to as "nonstatistical" monitoring parameters/COCs, including inorganic constituents not generally detected in background, VOCs, and other organic compounds), the Discharger shall use a nonstatistical data analysis method for monitoring. Borderline nonstatistical monitoring parameters/COCs (e.g.., those for which almost 10% of the data from background samples equal or exceed their respective MDL) should be periodically rechecked to verify that they are still nonstatistical. If such check indicates that they are no longer nonstatistical, they shall be re-designated as statistical parameters per E.18.

23. Proposed nonstatistical methods for data analysis shall consist of one or more of the following, as appropriate:

    a. California Nonstatistical Data Analysis Method (pass 2-in-3)

       Nonstatistical Trigger -- For each monitoring point, identify each analyte (i.e., monitoring parameter or COC) in the current sample that exceeds its respective PQL and/or MDL.

       i. Release -- measurably significant evidence of a release shall be tentatively indicated, and upon retesting confirmed, if one or both of the following criteria are met in each test:

          1) The data contain two or more analytes that equal or exceed their respective MDLs; and/or

          2) The data contain one analyte that equals or exceeds its PQL.

       ii. Potential Release – measurably significant evidence of a potential release shall be tentatively indicated, and upon retesting confirmed, if both of the following criteria are met during testing:

          1) The data contains one analyte that equals or exceeds its MDL; and

          2) Retesting under E.23.i fails to confirm measurably significant evidence of a release

    b. Other Methods -- Any nonstatistical method that satisfies Title 27 performance standards (i.e., Monitoring Specification above) and meets the goals of the monitoring program, as approved by the Executive Officer. See Sections 20415(e)(7) and 20415(e)(8).

<u>Corrective Action Monitoring</u>

24. Corrective action monitoring shall include one or more of the following data analysis methods, as appropriate:

    a. Statistical and nonstatistical data analysis methods used to quantify release (see Monitoring Specifications E.18 through E.23).

i. Compare current corrective action monitoring data to current background data
   1) Use single constituent criteria under California Nonstatistical Data Analysis Method for nonstatistical data. See E.23.i.2).
   2) Compare historical corrective action monitoring data to current background data (e.g., calculate running means).

b. Evaluation of trends associated with release
   i. Statistical methods (e.g., least squares fit, Sens slope)
   ii. Graphical methods (i.e., time series plots, comparison of concentration contour maps).

c. Water quality chemistry analysis

Updating Monitoring Lists

25. Statistical and nonstatistical monitoring parameters so qualified above shall, for a given water-bearing media (i.e., unsaturated zone or groundwater), be handled as follows:

a. Constituents Associated With Release

The following monitoring parameters shall be removed from the detection or COC monitoring parameter list (MRP Table J.1.B.a or J.1.B.c), as applicable, and added to the corrective action monitoring parameter list (MRP Table J.1.B.b):

i. Those qualified by data analysis under E.21 and E.23.i (i.e., confirmed exceedances); and
ii. Those associated with corrective action monitoring parameters (i.e., breakdown or daughter products) per E.14.c.

b. Constituents Potentially Associated With Release

The following monitoring parameters shall be removed from the COC monitoring parameter list (MRP Table J.1.B.c) and added to the detection monitoring parameter list (MRP Table J.1.B.a):

i. Those qualified by data analysis under E.21.b or E.23.ii;
ii. Those detected in other media per E.9.c; and
iii. Those potentially associated with corrective action, including:
   1) A constituent in same group/subgroup per E.9.a; and/or
   2) A parent constituent per E.9.b.

Sample Collection and Laboratory Analysis

26. The Discharger shall develop, implement, and maintain a Sample Collection and Analysis Plan for monitoring that includes the following elements:

a. Sample collection procedures describing purging techniques, sampling equipment, and decontamination of sampling equipment;

b. Sample preservation information and shipment procedures;
c. Sample analytical methods and procedures; Sample quality assurance/quality control (QA/QC) procedures; and
d. Chain of custody control.

The Sample Collection and Analysis Plan shall also be consistent with Monitoring Specifications E.27 through E.30 below. See MRP Sections I.2.e.i and I.5 for reporting requirements.

27. The Discharger shall provide Central Valley Water Board staff a minimum of one-week notification prior to commencing any field activities related to the installation, non-routine repair, or abandonment of monitoring devices. The Discharger shall also provide Central Valley Water Board staff with a sampling schedule at least 48 hours prior to initiation of each detection, evaluation, or corrective action monitoring event conducted pursuant to MRP No. R5-2011-0048.

28. Sample collection and analysis shall be conducted consistent with the following:
    a. The performance standards specified in Section 20415(e)(12); and
    b. Provisions 1 through 7, *Sampling and Analytical Methods*, *Provisions For Monitoring*, SPRR.

29. Any PQL validated pursuant to Section 20415(e)(7) that is used in the statistical method shall be the lowest concentration (or value) that can be reliably achieved within limits of precision and accuracy specified in the WDRs for routine laboratory operating conditions that are available to the facility. Any Section 20415(e)(7) technical report submitted by the Discharger shall consider the PQLs listed in Appendix IX to Chapter 14 of Division 4.5 of Title 22, California Code of Regulations, for guidance when specifying limits of precision and accuracy.

30. The statistical method shall account for data below the PQL with one or more statistical procedures that are protective of human health and the environment. For any given constituent monitored at a background or down gradient monitoring point, an indication that falls between the MDL and the PQL for that constituent (i.e., trace detection) shall be identified and used in appropriate statistical or nonstatistical tests. Nevertheless, for a statistical method that is compatible with the proportion of censored data (trace and ND indications) in the data set, the Discharger can use the laboratory's concentration estimates in the trace range (if available) for statistical analysis, in order to increase the statistical power by decreasing the number of "ties".

F. REPORTING REQUIREMENTS

1. The Discharger shall comply with the reporting requirements specified in this Order, including MRP R5-2011-0048 and the SPRR.

2. The Discharger shall notify the Central Valley Water Board in writing of any proposed change in ownership or responsibility for construction or operation of the landfill. To assume ownership or operation under this Order, the succeeding owner or operator must apply in writing to the Central Valley Water Board requesting transfer of the Order within 14 days of assuming ownership or operation of this facility. The request must contain the requesting entity's full legal name, the State of incorporation if a corporation, the name and address and telephone number of the persons responsible for contact with the Central Valley Water Board, and a statement. The statement shall comply with the signatory requirements contained in the SPRR (Reporting Requirement 5) and state that the new owner or operator assumes full responsibility for compliance with this Order. Failure to submit the request shall be considered a discharge without requirements, a violation of the California Water Code. Transfer of this Order shall be approved or disapproved by the Central Valley Water Board.

3. The discharger shall mail a copy of each monitoring report, including electronic copies on compact disk and any other reports required under this Order, to:

   California Regional Water Quality Control Board
   Central Valley Region
   11020 Sun Center Drive, Suite 200
   Rancho Cordova, CA 95670

   (or the current address if the office relocates)

4. The Discharger or persons employed by the Discharger shall comply with all notice and reporting requirements of the State Department of Water Resources with regard to construction, alteration, destruction, or abandonment of all monitoring wells used for compliance with this Order or with MRP No. R5-2011-0048, as required by CWC sections 13750 through 13755.

5. By **31 August 2011**, the Discharger shall establish and maintain an account with the SWRCB's GeoTracker geographic information system data base, including a full declaration of the names and locations of all waste management units and Field Points (the GeoTracker name for monitoring points), plus a declaration of all COCs, and shall begin uploading word-searchable pdf copies of all monitoring program reports and associated laboratory sheets (the latter in GeoTracker's proprietary format) required under these WDRs. The Discharger shall also upload any additional monitoring program reports or report features required by the Executive Officer beginning with the Reporting Period following notification to submit such additional reports/report-features.

G. PROVISIONS

1. The Discharger shall comply with the MRP No. R5-2011-0048, which is attached to and made part of this order. A violation of the MRP is a violation of these waste discharge requirements.

2. The Discharger shall comply with the August 1997 SPRR, which are hereby incorporated into this Order. The SPRR contain important provisions and requirements with which the Discharger must comply. A violation of any of the SPRR is a violation of these waste discharge requirements.

3. Consistent with required facility monitoring under MRP Section B, the Discharger shall investigate and, by **15 August 2011**, submit a report describing the condition and operational status of all landfill monitoring and control facilities at the site, including, but not necessarily limited to, the following:
   a. Landfill containment system (i.e., cover)
   b. Subsurface leachate drain and collection sump
   c. Landfill precipitation and drainage controls
   d. Standby LFG collection system
   e. LFG monitoring points (i.e., stub-outs)
   f. Soil gas monitoring wells
   g. Lysimeters
   h. Groundwater monitoring wells

   For each monitoring and/or control facility above, the status report shall address/include the following:
   - Intended purpose or function of facility or device;
   - Design and mode of operation;
   - Operational history;
   - Current condition and operational status;
   - Effectiveness in achieving purpose or function (i.e., as designed and in current condition);
   - Whether facility meets requirements of WDRs;
   - Proposed measures (i.e., repairs, replacement, and/or improvement) to restore/improve facility effectiveness and/or bring facility into WDR compliance; and
   - A work plan and schedule for implementing such proposed measures.

4. By **1 December 2011**, the Discharger shall submit an updated postclosure maintenance and monitoring plan (PCMP) that reflects current operations and requirements under these WDRs, including MRP R5-2011-0048. The postclosure maintenance and monitoring plan shall meet the requirements of Title 27, section 21769(c) applicable to a closed landfill, including, but not limited to, updated cost estimates for the following:

a. Annual and 30-year
   i. Landfill postclosure maintenance (e.g., cover, drainage controls, LFG extraction system, monitoring systems) per Title 27 section 22212(a); and
   ii. Landfill postclosure corrective action monitoring

b. A lump sum cost estimate for corrective action measures to address known or reasonably foreseeable release per Title 27 section 22222.

Copies of the updated PCMP shall also be provided to CalRecycle and the LEA.

5. By **31 January 2012**, the Discharger shall obtain and maintain assurances of financial responsibility for post-closure maintenance (including monitoring) and corrective action for the landfill in at least the amount of the cost estimates submitted under Provision G.4 above. The financial assurances mechanism for each shall be an irrevocable fund or other acceptable mechanism under CalRecycle-promulgated sections of Chapter 6, Title 27, but with the Central Valley Water Board designated as beneficiary.

6. By **31 December 2012** and **every two years** thereafter (or earlier if requested by the Executive Officer), the Discharger shall submit for the Executive Officer's review and approval a report as to the status of the above-required financial assurances. The report shall identify the following:

   a. Required financial assurances for the facility, including type and current amounts, as escalated;
   b. Financial assurance instrument(s) or mechanism(s) and corresponding amounts provided to satisfy the required financial assurances;
   c. Validity and ongoing viability of the above financial assurance mechanism(s), including any needed changes. This demonstration shall include evidence that the required financial assurance mechanisms satisfy the CalRecycle-promulgated sections of Title 27, Chapter 6.

7. By **31 July 2012**, the Discharger shall submit a report that includes the following items under Title 27:

   a. Pursuant to Section 20415(e)(7)(B), a technical report proposing statistical and nonstatistical data analysis methods for background, detection, and corrective action monitoring (including associated evaluation monitoring) consistent with Title 27 requirements and the monitoring specifications of this Order.
   b. Pursuant to Section 20390, an updated WQPS Report, including an updated list of COCs, CLs, Monitoring and Compliance Points, and the Compliance Period consistent with Title 27 requirements and the monitoring specifications of this Order.
   c. Pursuant to Section 20430, a Corrective Action Plan, including a revised Evaluation Monitoring Plan, with plans and implementation schedules for:

i. Surveying of all groundwater monitoring wells for the facility.

ii. Installation of additional monitoring wells, onsite and/or offsite, as necessary, to adequately characterize the direction of groundwater flow at the site.

iii. Installation of additional monitoring wells, as necessary, to adequately define the extent of groundwater impacts, including the following:

1) Laterally and vertically;
2) Onsite and offsite; and
3) Upgradient and downgradient.

iv. Investigation as to the source(s), and transmission media for, waste constituents causing groundwater impacts at the site, including, but not necessarily limited to, the following:

1) Wastes historically discharged to the landfill or used or generated in site operations;
2) Landfill leachate, LFG, and soil gas;
3) Onsite soil, including any potential wastes or waste residues outside of the landfill unit;
4) Soil pore fluid, groundwater, surface water, and storm water;
5) Any old wells that could be potentially serve as conduits to groundwater (see Facility Specification D.5), including, but not necessarily limited to, those described in Finding 33.
6) Other potential sources (onsite and/or offsite) other than the landfill that may be causing or contributing to groundwater impacts at the site (i.e., to demonstrate the extent to which the landfill may not be the cause of those impacts).

v. Investigation as to whether (and the extent to which) there are, or may be, discharges to the landfill site to surface water (e.g., leachate, storm water, litter) in violation of these WDRs (e.g., Discharge Prohibition A.3.d, Postclosure Specifications C.7.d and C.8).

Since the landfill is in corrective action under Section 20430, the revised Evaluation Monitoring Plan need not be implemented within the prescribed timeline under Section 20425.

8. By **31 July 2013**, the Discharger shall, pursuant to Section 20430, submit an amended RWD for a revised CAP, including the following information:

a. Evaluation Monitoring Plan Report -- The results of the Evaluation Monitoring Plan investigation implemented under Provision G.7.

b. Evaluation of Corrective Action Measures -- A discussion of as to the effectiveness and sufficiency of previous corrective action measures implemented at the site. This discussion may reference any current information in monitoring reports submitted under the MRP.

c. Engineering Feasibility Study (EFS) -- A detailed discussion of corrective action needs and options for all monitored media at the site, including groundwater, the unsaturated zone, and surface water. The discussion shall include, but not necessarily be limited to, the need for the following:
   i. LFG extraction (active or passive)
   ii. Soil gas control
   iii. Groundwater remediation;
   iv. Storm water treatment and best management practices
   v. Re-routing of natural stream around storm water pond.

d. Amended CAP -- Proposed corrective action measures for addressing impacts, potential impacts, and/or WDR compliance issues related to the monitored media in G.8.c above.

e. Monitoring Plan -- A plan to monitor the release and progress of corrective action measures consistent with the MRP.

f. Cost estimates for implementing additional corrective action, including monitoring.

g. An implementation schedule.

9. The Discharger shall take all reasonable steps to minimize any adverse impact to the waters of the State resulting from noncompliance with this Order. Such steps shall include accelerated or additional monitoring as necessary to determine the nature, extent, and impact of the noncompliance.

10. The fact that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with this Order shall not be regarded as a defense for the Discharger's violations of the Order.

11. The Discharger shall also notify the Central Valley Water Board of any proposed land use or closure plan changes. This notification shall be given 90 days prior to the effective date of the change and shall be accompanied by an amended Report of Waste Discharge and any technical documents that are needed to demonstrate continued compliance with these waste discharge requirements.

12. The Central Valley Water Board will review this Order periodically and will revise these requirements when necessary.

I, PAMELA C. CREEDON, 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, Central Valley Region, on 10 June 2011.

_____
PAMELA C. CREEDON, Executive Officer

JDM

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2011-0048
POSTCLOSURE MAINTENANCE,
MONITORING, AND CORRECTIVE ACTION
A GREENER GLOBE CORPORATION
BERRY STREET MALL (AKA FINGER'S) LANDFILL
CLASS III LANDFILL
PLACER COUNTY

This monitoring and reporting program (MRP) is issued pursuant to California Water Code section 13267 and incorporates requirements for landfill postclosure maintenance and monitoring contained in California Code of Regulations (CCR), title 27, division 2 (Title 27 regulations); Waste Discharge Requirements (WDRs) Order No. R5-2011-0048; and the August 1997 Standard Provisions and Reporting Requirements (SPRR). Compliance with this MRP is ordered by the WDRs. The Discharger shall not implement any changes to this MRP unless a revised MRP is issued by the Executive Officer. Regulatory sections quoted in this MRP refer to CCR, Title 27 unless otherwise noted.

MONITORING SUMMARY TABLE

Section	Requirement	Frequency
A	Standard Observations	Quarterly
B	Facility Monitoring:	
	1. Maintenance Inspections	Quarterly
	2. Storm Response	Within 7 Days After Significant Storm Event
	3. Site Winterization	Annually
C	Water Quality Protection Standard	Update as necessary
D	Leachate Monitoring	Quarterly/Semiannually
E	Landfill Gas (LFG) Monitoring	
	1. Standby LFG Collection System	Quarterly
	2. Soil Gas	Quarterly
F	Unsaturated Zone Monitoring	Semiannually
G	Groundwater Monitoring Programs	
	1. Field Parameter	Quarterly
	2. Background	Same As Compliance[1]
	3. Compliance	
	a. Detection	Semiannually
	b. Corrective Action	Semiannually
	c. Constituents of Concern (COCs)	Every 5 years
H	Surface Water Monitoring:	
	1. Onsite stream	Semiannually
	2. Storm Water	Semiannually

Section	Requirement	Frequency
I	Reporting	
	1. Semiannual Report	Semiannually
	2. Annual Monitoring Summary	Annually
	3. COC Monitoring Report	Every five-years
	4. Other Reports	See Section I.4
J	Attachment Tables	
	1. Groundwater Monitoring Schedules	See Table J.1
	2. COC List	See Table J.2

1. More frequent monitoring may be required to establish CLs for inorganic COCs or in response to a release. See Sections C.2.b and G.3.a.iv.

A. STANDARD OBSERVATIONS

Standard Observations of the facility, including visual and olfactory monitoring, shall be performed in accordance with the Standard Provisions, as follows:

1. Monitoring Points – Landfill unit, unit perimeter, and adjacent creek.
2. Monitoring List – See Definition 24, SPRR.
3. Monitoring Schedule – Quarterly
4. If Leachate Detected –
   a. Any landfill leachate seeps (or other significant physical evidence of a release) detected during these inspections (or at any other time) shall be immediately reported to Central Valley Water Board staff with written follow-up within 7 days.[1]
   b. If leachate or other waste enters the facility drainage system, representative samples of the discharge shall be collected and analyzed for all Table J.2 COCs.
   c. If a discharge to surface water occurs, the Discharger shall follow the response to release provisions of the Standard Provisions.[2]

See Sections I.1.c and I.1.h.i herein for reporting requirements.

B. FACILITY MONITORING

The Discharger shall conduct facility monitoring, including (but not necessarily limited to) visual monitoring, to ensure that all significant landfill facilities are functioning properly and are in adequate maintenance and repair. Any damage to the landfill facilities observed during these inspections shall be flagged and repaired in accordance with the Postclosure Maintenance Plan.

1. Monitoring Points – Landfill unit and associated controls and monitoring facilities

1. See Provision 3, *Reports to be Filed with the Board, REPORTING REQUIREMENTS*, SPRR.
2. See Provisions 2 and 3, *General, RESPONSE TO RELEASE, PROVISIONS FOR MONITORING*, SPRR.

(e.g., landfill cover, precipitation and drainage controls, standby LFG collection system, leachate drain and sump, lysimeters, monitoring wells, access roads).

2. Monitoring List and Schedule

Table B.2

Item	Inspection Frequency	Complete Repairs[1]
1. Regular Maintenance	Quarterly	Within 30 days
2. Storm Response	Within one week of significant storm event[2]	Within two weeks of storm event
3. Site Winterization	By September 30 of each year	By October 31 of each year

1. If necessary repairs cannot be completed within specified time frame, the Discharger shall, within seven days, notify the Central Valley Water Board and provide a schedule for completing them.
2. A "significant" storm event shall be one that produces 2.0 inches or more of precipitation within a 24-hour period, as measured at the Roseville Fire Station.

See Sections I.1.c.ii and I.1.h.i herein for facility reporting requirements.

C. WATER QUALITY PROTECTION STANDARD (Section 20390)

The Water Quality Protection Standard (WQPS) shall consist of the following:

1. Constituents of Concern (Section 20395)

   The Constituents of Concern (COC) list shall include all the waste constituents, their reaction products, and hazardous constituents that are reasonably expected to be in or derived from waste contained in the Unit. The COCs for all monitored waters at the site (i.e., unsaturated zone, groundwater, and surface water) shall be as listed in Table J.2 herein.

2. Concentration Limits (Section 20400)

   Concentration Limits (CLs) for all monitoring parameters/COCs shall be developed and updated consistent with WDR Monitoring Specification E.7.

   a. Unsaturated zone

      CLs for inorganic constituents in the unsaturated zone have not yet been developed (and no interim CLs have been specified in this MRP) due to lack of historical data (see WDR Finding 27). CLs for these constituents shall be developed (and updated thereafter) once a sufficient amount of background monitoring data has been collected and evaluated under Section F herein.

   b. Groundwater

      CLs for inorganic constituents in groundwater developed under previous WDRs are no longer considered valid (e.g., out of date, COC list incomplete, detection limits too high, data improperly pooled). Interim CLs for these constituents have been specified in this MRP based on available monitoring data, as noted in Table J.2 and explained in the Information Sheet attached to this Order. Revised CLs for these constituents shall be developed (and updated thereafter) once a sufficient amount of background monitoring data

has been collected and evaluated under Section G.2 herein.[3]

c. Surface Water

CLs for surface water developed under previous WDRs are no longer considered valid for similar reasons as groundwater CLs, and no interim CLs have been specified in this MRP due to a lack of historical data. Revised CLs for surface water shall be developed (and updated thereafter) once a sufficient amount of background monitoring data has been collected under Section H.1.c herein. Surface water CLs may be proposed as paired differences of upstream and downstream data for each statistical monitoring parameter/COC. See WDR Finding 43 and Information Sheet.

3. Monitoring and Compliance Points (Section 20405)
   a. Monitoring Points
      i. Unsaturated Zone – All lysimeters (i.e., LYS-1 through 4).
      ii. Groundwater – All wells (i.e., GWs-1 through 6).
      iii. Surface Water – All stations (i.e., S-1 through S-3).
   b. Compliance Points
      i. Point of Compliance (POC) Wells[4]
         1) All downgradient (and cross gradient) wells on the landfill perimeter (i.e., GWs-1, 2, 3, 5 and 6);
         2) Any future wells that meet the above criteria.
      ii. Other Compliance Wells
         1) All upgradient perimeter wells within the zone of influence of LFG (i.e., GW-4);
         2) All impacted wells beyond the POC; and
         3) Any future wells that meet either of the above criteria.

4. Compliance Period (Section 20410)

   The landfill compliance period, applicable to all water-bearing media, is the minimum period during which the Discharger shall conduct a water quality monitoring program subsequent to a release from the Unit. It is equal to the active life of the Unit plus the closure period. The landfill began operations in 1946 and closed in 1993. The compliance period is therefore 47 years.[5]

The WQPS shall be updated at least annually based on the results of monitoring. For WQPS reporting, see Section I.4.b herein.

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3. WDR Provision G.7.b requires that the Discharger submit an updated WQPS report, including CLs, consistent with this Order.

4. Title 27 defines the Point of Compliance as a vertical surface located at the hydraulically downgradient limit of the Unit that extends through the uppermost aquifer underlying the Unit.

5. If the landfill is in corrective action at the scheduled end of the compliance period, the compliance period shall be extended until the discharger can demonstrate that the Unit has been in continuous compliance with its WQPS for a period of at least three consecutive years, including proof period under Section 20430(f).

D. LEACHATE MONITORING

1. Sump
   a. Monitoring Points -- L-1 (Leachate collection sump). See Attachment B.
   b. Monitoring List – Volume collected (gallons); All Table J.1 monitoring parameters, except as follows:
      i. Elevation -- Monitor leachate elevation from reference point (or depth in sump) based on measurement or observation.
      ii. Redox potential not required
   c. Monitoring Schedule:

Table D.1.c

Parameter[1]	Units	Frequency	Data Analysis
Field Parameters	See Table J.1	Quarterly	n/a
General Parameters	See Table 2	Semiannually	n/a
General Minerals	mg/L	Annually	n/a
Dissolved Metals	µg/L	Annually	n/a
VOCs	µg/L	Semiannually	n/a
Other Organic COCs	µg/L	Every 2½ years	n/a

1. See Tables J.1 and 2 for full list of constituents and EPA test methods.

Visual Inspections shall be conducted at least quarterly for the presence or absence of leachate. Any liquid detected in the sump shall be removed after completion of sampling.

   d. If COC Monitoring Parameter Detected -- If a constituent is detected in leachate that is a COC monitoring parameter under the groundwater monitoring program (see Table J.1.B.c), that constituent shall be monitored at least **semiannually** under this section and the groundwater monitoring lists updated accordingly. See WDR Monitoring Specification E.25.b.

E. LANDFILL GAS MONITORING

The Discharger shall monitor for LFG to assess whether it contains constituents that could impact groundwater and the need for corrective action measures to mitigate any such source (e.g., LFG extraction, soil venting).

1. Standby LFG Collection System
   a. Monitoring Points

Header/Lateral	Sampling Locations[1, 2]
Landfill Crown	99; 100; 102 to 109; 113 to 125
SE Flank Spine	94 to 99
Landfill Base - SW	36; 37; 39; 42; 58; 64; 67; 88; 90
Landfill Base - North	138; 139; 142, 144; 147 to 153
Landfill Base - East	69 to 72; 135 to 137

1. Sampling shall be conducted at stub-outs protruding from landfill cover.
2. Additional monitoring may be necessary if system activated.
3. See WDR Attachment C for monitoring locations.

b. Monitoring List and Schedule

Table E.1.b

Parameter	Units	Frequency	Method
Gas Pressure	psig	Quarterly	Meter
Ambient Temperature	^{o}C, ^{o}F	Quarterly	Meter
Methane	%	Quarterly	Meter
Carbon Dioxide	%	Quarterly	Meter
VOCs[1, 2]	ppbv	Semiannually	EPA Method TO-15 or 8260B

1. VOC sampling may be limited to one probe in each well, provided that VOC sampling of probes in well is rotated each semiannual monitoring event.
2. VOC sampling not required if probe has been previously sampled for VOCs under this Order and methane is currently detected at less than 5% by volume.

Field meters shall be calibrated for each parameter before use.

2. Soil Gas

a. Monitoring Points

Soil Gas Well	Location	Probes		
		Shallow	Middle	Deep
GP-1	Northern Site Perimeter	GP-1S	GP-1M	GP-1D
GP-2	NW Corner of Site	GP-2S	GP-2M	GP-2D
GP-3	Western Site Perimeter	GP-3S	GP-3M	GP-3D
GP-4	SW Landfill Perimeter	GP-4S	GP-4M	GP-4D

Soil gas monitoring points shall also include any future or replacement LFG monitoring wells and/or probes installed at the site.

b. Monitoring parameters and Schedule -- Same as for LFG (see Table E.1.b)

c. If COC Monitoring Parameter Detected -- If a constituent (i.e., VOC) is detected in soil gas and/or LFG that is a COC monitoring parameter under either the unsaturated zone or groundwater monitoring programs, the monitoring lists for those programs shall be updated accordingly. See WDR Monitoring Specification E.25.b.

F. UNSATURATED ZONE MONITORING (20415(d))

The Discharger shall implement field parameter, background, and compliance monitoring programs for the unsaturated zone consistent with WDR Monitoring Specifications E.4 through E.30, as applicable to soil pore water. A sufficient number of monitoring points (i.e., suction lysimeters) shall be established and maintained at appropriate background locations and depths to yield samples that represent the quality of soil pore liquid unaffected by a release from the Unit.

1. Monitoring Points

Lysimeter	Program	Type	Location[1, 2]
LYS-1	Background	Suction	NE corner of site
LYS -2	Compliance	Suction	NE landfill perimeter near GW-1
LYS -3	Compliance	Suction	NW landfill perimeter near GW-2
LYS -4	Compliance	Suction	SW landfill perimeter near GW-3

1. See Attachment B for lysimeter locations.
2. Shall also include future or replacement lysimeters installed, as necessary, for corrective action monitoring.

Moisture block sensors shall be checked and repaired as necessary (as part of facility monitoring) to ensure they are in good working order. Sampling shall be attempted at any lysimeter where the moisture block resistivity reading indicates there is pore fluid.

2. Monitoring List -- The unsaturated zone monitoring list shall include the following:
   a. Volume of liquid recovered (in cubic inches or other appropriate units);
   b. All Table J.1 monitoring parameters, except as follows:
      i. Elevation -- Report lysimeter elevation or depth below ground surface
      ii. Redox potential not required
3. Monitoring Schedule – Same as for groundwater compliance monitoring, except as follows:
   a. Field parameter monitoring shall be conducted **semiannually**;
   b. All monitoring events shall be conducted during the wet season. No lysimeter sampling is required during the dry season.

   See Table G.3.a.iii for detection and corrective action monitoring schedule and Section G.3.c.iii for COC monitoring schedule.
4. If Exceedance Detected –

   If tentatively indicated, the Discharger shall proceed with applicable notification and retest procedures per WDR Monitoring Specification E.10.a, except as follows:
   a. Retesting shall be conducted as soon as feasible if a sufficient liquid sample cannot be collected from the lysimeter within 30-days; and
   b. Only one sample need be collected for the retest.
5. If Exceedance Confirmed:
   a. Proceed with notification and response to release procedures in WDR Monitoring Specification E.10.b.
   b. Update the unsaturated zone monitoring list, as warranted, per WDR Monitoring Specification E.25.a.; and
   c. If a groundwater COC monitoring parameter, update the groundwater monitoring list per WDR Monitoring Specification E.25.b.

G. GROUNDWATER MONITORING

The Discharger shall implement concurrent field parameter, background, and compliance (including detection; corrective action; and COC) monitoring programs for groundwater consistent with WDR Monitoring Specifications E.1 through E.30.

1. Field Parameter Monitoring (Section 20415(e))

   The Discharger shall implement field parameter monitoring, including, but not limited to, groundwater elevation monitoring, consistent with WDR Monitoring Specification E.4.[6] Field Parameter monitoring shall be conducted concurrent with the other groundwater monitoring programs under this MRP, as follows:

   a. Monitoring Point(s) – All wells (presently GWs-1 through 6). See Section C.3.a.ii and Attachment B.

   b. Monitoring List – All Table J.1.A field parameters.

   c. Monitoring Schedule -- **Quarterly**

   See Section I.1.f.ii for field parameter reporting.

2. Background Monitoring (Section 20415(b)(1)(A))

   The Discharger shall develop and implement a background monitoring program for groundwater consistent with WDR Monitoring Specifications E.5 through E.7. The Discharger shall install and operate a sufficient number of background monitoring wells at appropriate locations and depths to yield ground water samples from the uppermost aquifer that represent the quality of ground water that has not been affected by a release from the unit.

   a. Monitoring Point(s) – Upgradient well GW-4 and/or as otherwise proposed and approved consistent with Title 27 requirements.

   b. Monitoring List – All Table J.1 monitoring parameters.

   c. Monitoring Schedule -- As specified for compliance monitoring programs (detection, corrective action, and COC) in Section G.3 herein, subject to Section 20415(e)(6), which requires **quarterly** background monitoring, as necessary, until enough historical data points have been collected for determination of CLs.

3. Compliance Monitoring

   a. Detection Monitoring (Section 20420)

      The Discharger shall establish and implement a groundwater detection monitoring program that complies with WDR Monitoring Specifications E.8 through E.12, as applicable. The Detection monitoring system shall be designed and installed at appropriate locations and depths to yield groundwater samples that represent the quality of ground water passing the Point of Compliance and to allow for the earliest detection of a release from the unit.

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6. Groundwater elevation measurements shall be taken within a period of time short enough to avoid temporal variations in groundwater flow to enable accurate determination of gradient and direction. Groundwater elevations may be taken prior to purging the well and sampling.

i. Monitoring Points – All background and Point of Compliance wells (presently GWs-1 through 6). See Sections G.2.a, C.3.b.i, and Attachment B.

ii. Monitoring List – All Table J.1.B.a monitoring parameters, as specified below or as updated per WDR Monitoring Specification E.25.

1) General Parameters -- Dissolved oxygen
2) General Minerals
   ⇒ Major anions – nitrate
   ⇒ Major cations -- magnesium and potassium
3) Dissolved Metals
   ⇒ Common – iron and manganese
   ⇒ Heavy – arsenic
4) VOCs – alcohols; BTEX; common halogenated; common industrial solvents; and common interferences

iii. Monitoring Schedule

Table G.3.a.iii

Parameter[1]	Units	Frequency[2]	Data Analysis
General Parameters	%	Semiannually	---
General Minerals	mg/L	Annually	Statistical
Dissolved Metals	µg/L	Annually	Statistical/Nonstatistical
VOCs	µg/L	Semiannually	Nonstatistical

1. See Tables J.1 and 2 for full list of constituents and EPA test methods.
2. More frequent monitoring may be required to establish CLs for inorganic COCs or in response to a release. See Sections C.2.b and G.3.a.iv.

iv. If Release Detected – In the event that verification testing of groundwater samples results in confirmation of a release (or new constituent of a release) to the saturated zone, the Discharger shall follow the notice, response to release, and monitoring list update procedures referenced in WDR Monitoring Specification E.10.b.

b. Corrective Action Monitoring (Section 20430)

The Discharger shall establish and implement a groundwater corrective action monitoring Program that complies with WDR Monitoring Specifications E.13 through E.15, as applicable. The corrective action monitoring system shall be designed and installed so as to monitor the nature and extent of the release and the progress of corrective action measures in returning groundwater to compliance with the WQPS. All samples shall be collected and analyzed in accordance with WDR Monitoring Specifications E.26 through E.30.

i. Monitoring Points – All background and compliance wells (presently GWs-1 through 6). See Sections G.2.a, C.3.b, and Attachment B.

ii. Monitoring List – All Table J.1.B.b monitoring parameters, as specified below or as updated consistent with WDR Monitoring Specification E.25.

1) General Parameters – COD, total alkalinity. specific conductance, TDS, and total hardness
2) General Minerals
   ⇒ Major anions – bicarbonate alkalinity, chloride, and sulfate
   ⇒ Major cations – calcium and sodium
3) VOCs
   ⇒ Benzene compounds, other – 1,4-DCB
   ⇒ CFCs – all;
   ⇒ Common halogenated -- cis-1,2 DCE

iii. Monitoring Schedule: Same as for detection monitoring (Section G.3.a.iii)

c. COC Monitoring (Sections 20420(g), 20425(e)(4))

Concurrent with the other required monitoring programs under this MRP, the Discharger shall develop and implement a groundwater COC monitoring program in accordance with WDR Monitoring Specifications E.16 and E.17.

i. Monitoring Points -- All background and compliance wells (presently GWs-1 through 6). See Sections G.2.a, C.3.b, and Attachment B.

ii. Monitoring List – All Table J.1.B.c monitoring parameters as updated consistent with WDR Monitoring Specification E.25.

iii. Monitoring Schedule – By **15 December 2011** and at least every five years thereafter. Additional or more frequent COC monitoring may be required to establish CLs or in response to a release. See Section G.1.cG.1.c.

iv. If Release Detected – Same as in Detection Monitoring Program. See MRP Section G.3.a.iv.

H. SURFACE WATER MONITORING (Section 20415(c))

The Discharger shall develop and implement background and compliance monitoring programs for surface water consistent with WDR Monitoring Specifications E.5 through E.7 (background); E.4 (field parameter); E.8 through E.12 (detection); and E.16 and E.17 (COC).

1. Onsite Stream

a. Monitoring Points

Surface water monitoring shall be conducted at the following locations in the intermittent stream (south branch, Pleasant Grove Creek) that traverses the site: S-1 (upstream), S-2 (onsite pond), and S-3 (outfall from pond). See Attachment B: Site Map.

b. Monitoring List – All Tables J.1.A field parameters and J.2 COCs, except as follows:

i. Elevation -- Monitor surface water (including pond) elevation (or depth from reference point) based on measurement or observation.

ii. Redox potential not required

c. Monitoring Schedule:

Table H.1.c

Parameter[1]	Units	Frequency[2]	Data Analysis
Field Parameters	See Table J.1.A	Semiannually	---
General Parameters	%	Semiannually	---
General Minerals	mg/L	Semiannually	Statistical
Dissolved Metals	µg/L	Annually	Statistical/Nonstatistical
VOCs	µg/L	Annually	Nonstatistical
Other Organic COCs	See Table J.2.B	Every 5 years	

1. See Tables J.1 and 2 for full list of constituents and EPA test methods.
2. More frequent monitoring may be required to establish CLs for inorganic COCs or in response to a release. See Sections C.2.c and G.3.a.iv.

2. Storm Water
   a. Monitoring Points

Sampling Point	Sampling Location	Portion of Landfill Drained	Sample Type
SW-1	Upstream of landfill[1]	----	Background
SW-2	Outfall to onsite pond[2]	NW half	Runoff
SW-3		SE half	
SW-4	Outfall from onsite pond[2]	----	Discharge

1. Discharger shall establish a representative background location for storm water monitoring.
2. Formerly referred to as a sedimentation basin.

   b. Monitoring List – All Table H.1.c monitoring parameters, except for elevation, Redox potential, and Other COCs.

   c. Monitoring Schedule: Same as for surface water monitoring (see Table H.1.c), except as follows:
      i. All sampling shall be conducted during the wet season;
      ii. 5-year COC monitoring not required.

   d. General Storm Water Permit

      The Discharger shall also maintain coverage under the SWRCB General Industrial Storm Water Permit, Water Quality Order No. 97-03-DWQ.

The results of surface water monitoring (including storm water monitoring under the General Storm Water Permit) shall be summarized in the monitoring reports submitted under this Order. If there was no water in the pond or stream during the monitoring period, or the Discharger did not obtain samples at one or more of the required monitoring points, the Discharger shall state the reasons and circumstances for not obtaining samples in the monitoring report.

I. REPORTING

1. Semiannual Reports

The Discharger shall report monitoring data and information as required in this MRP and as required under WDRs Order No. R5-2011-0048 and the SPRR. Reports shall be submitted **semiannually**. Each semiannual monitoring report shall contain the following information:

a. Compliance Summary

A compliance summary for the monitoring period as specified in the Standard Provisions. See Requirement 1, *Reports to be Filed with the Board*, *REPORTING REQUIREMENTS*, SPRR

b. Table of Contents

A table of contents that, at a minimum, identifies the major sections of the report that contain the information required under this Order (e.g., chapter and page numbers).

c. Standard Observations and Facility Monitoring

i. A summary and certification of the completion of all Standard Observations. See Requirement 2h, *Reports to be Filed with the Board*, *REPORTING REQUIREMENTS*, SPRR.

ii. A summary of the results of facility monitoring, including any significant damage noted and/or repairs conducted. If no inspection and/or repairs were conducted, the report shall so state, providing the reason and circumstances (e.g., no significant storm event during monitoring period).

Documentation of the above shall be provided in an appendix to the report, as specified in Section I.1.h.i.

d. Landfill Control Systems

Provide monitoring results for leachate, LFG, soil gas, and storm water control systems.

i. Tabular summary[7] and narrative discussion

ii. Flag detected COCs for which there are exceedances in any water-bearing media

e. Unsaturated Zone Monitoring Results

Same general reporting format as for groundwater, including:

i. Tabular summary[3] and narrative discussion

ii. Appropriate plots and graphs, as applicable

iii. Updated CLs and monitoring lists, as applicable

f. Groundwater Monitoring Results

i. Monitoring Points

1) Site map; and

---

7. Tables of water quality monitoring data shall include appropriate headers and show monitoring point, sampling date, chemical group, constituent, units, analytical result, laboratory limits (MDL and PQL), exceedance flag, data type (statistical or nonstatistical), and updated CL. Nondetect results shall be shown relative to detection limit (e.g., "<0.3").

2) Tabular summary; and/or
3) Geologic cross-section(s) based on installation logs, including well name or number; top casing elevation; total well depth; elevation and depth range of screened intervals/zones; water table elevation; and soil type within screened interval.

ii. Field Parameter Monitoring
1) Tabular summaries of the results of monitoring for the monitoring period.[3]
2) Groundwater elevation contour map(s) and/or flow net(s) showing gradient direction in the upper aquifer and any additional zone of saturation monitored;
3) A narrative discussion of the groundwater elevation monitoring results, including calculated gradient and flow velocity, times of highest and lowest elevations in the wells, and separation from wastes.

iii. Background Monitoring
1) Data Screening
⇒ Identify outliers
⇒ Identify trends or other data disparities
2) Tabular summary[3] and narrative discussion
3) Plots and Other Graphical Methods[8]
⇒ Time series plots
⇒ Other graphical methods
4) Updated CLs
⇒ Describe or reference procedure for determining/updating CLs
⇒ Provide or reference list of updated CLs

iv. Compliance Monitoring -- Detection
1) Tabular summary of results[3]
2) Narrative discussion of results
⇒ New exceedances and results of confirmation testing
⇒ Exceedances in other source media (e.g., LFG)
⇒ Potentially related exceedances (e.g., parent or daughter compounds)
3) Whether there was physically significant evidence of a release during monitoring period (e.g., sump leak)
4) Updated detection monitoring parameter list (e.g., based on detection and COC monitoring results)

v. Compliance Monitoring -- Corrective Action
1) Evaluate nature and extent of impacts

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8. Scale plots for the range of data shown after excluding outliers. All plotted lines and symbols should be clearly discernible and distinguishable.

- ⇒ Tabular summary of results[3]
- ⇒ Narrative discussion of results
  - – Continuing exceedances
  - – Exceedances in other source media (e.g., LFG)
- ⇒ Water chemistry analysis, including cation/anion balance and illustrative plots (e.g., Piper, Trilinear, Schueller, and/or Stiff plot)
- ⇒ Potential onsite and offsite source(s)
- ⇒ Contaminant contour maps for representative constituents

2) Evaluate corrective action progress and effectiveness
   - ⇒ Plots and graphs
     - – Time series plots for representative constituents at representative monitoring points[9]
     - – Trend evaluation using graphical methods (e.g., best fit, Mann-Kendall, Sen's Slope)[10]
   - ⇒ Narrative Discussion
     - – Concentration trends
     - – Changes in water quality chemistry
     - – Effectiveness of corrective action measures (e.g., landfill cover, LFG controls)
     - – Need for additional measures and/or monitoring wells.

g. Surface Water Monitoring Results

Same general reporting format as for groundwater

i. Tabular summary[3] and narrative discussion
ii. Plots and graphs, as applicable
iii. Updated CLs and monitoring lists, as applicable

h. Appendix Items

i. Standard Observations and Facility Monitoring Results
   1) Field logs,
   2) Site map showing location of area of concern
   3) Photos (e.g., before and after repairs)

ii. Field meter calibration logs;
iii. Field and laboratory test sheets;
iv. Copies of other relevant reports or data (e.g., results of soil gas/LFG monitoring required by Local Enforcement Agency); and
v. Compact disk (CD), including:
   1) Copy of monitoring report in (preferably combined) PDF format
   2) Excel spreadsheet of monitoring data for monitoring period

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9. Time series plot required for each constituent for which there are three or more data points, including nondetect values.
10. Trend evaluation required for each constituent with four or more data points above the PQL.

2. **Annual Monitoring Summary Report**
An Annual Monitoring Summary Report (Annual Report) summarizing monitoring results for the prior year shall also be prepared and submitted in accordance with this Order, including the MRP and Standard Provisions (Requirement 4*, Reports to be Filed with the Board, REPORTING REQUIREMENTS*, SPRR). The report may be submitted as part of the Second Semiannual Report for each year. The Annual Report shall include the following information:

a. A table of contents (as above) and a written summary of the monitoring results for the year, indicating any changes made or observed since the previous annual report.

b. A comprehensive discussion of the compliance record, including any necessary repairs, improvements, and/or corrective action measures implemented or planned to bring the Discharger into full compliance with the WDRs and WQPS.

c. Tabular and graphical summaries of the results of the prior year, including, representative time series plots.

d. A summary of the results of water chemistry analysis of water quality data collected during the prior year.

e. Appendix Items

i. A copy of the Sample Collection and Analysis Plan (updated as necessary, per WDR Monitoring Specification E.26 and the Standard Provisions (Requirement 1, *General*, *Provisions for Monitoring*, SPRR).

ii. A copy of the most recent aerial topographic survey map for the site. (First aerial survey required to be performed by **31 December 2011** per WDR Postclosure Specification C.5).

iii. Electronic copies of the following on CD

1) Historical monitoring data collected under this and previous MRPs

⇒ Provide in a tabular format necessary for statistical analysis (e.g., Excel) per Section 40420(h)

⇒ Provide for all control systems (i.e., leachate, LFG, and storm water); media (i.e., surface water, unsaturated zone, and groundwater); and monitoring programs (i.e., background, detection, and corrective action)

⇒ Provide for field parameter monitoring, including groundwater elevation and estimated flow direction and gradient);

⇒ Provide for at least previous 10 years (or for as long as monitoring has been conducted at a given monitoring point).

⇒ Organize tables as specified in Footnote 7.

2) The monitoring report in (preferably combined) PDF format.

iv. Evidence to the Regional Board's Executive Officer that acceptable financial assurance instrument(s) have been provided for closure, post-closure, and corrective action.

3. **COC Monitoring Report**
The five-year COC monitoring report shall be submitted in the semiannual report for the monitoring period in which five-year COC sampling was conducted. The COC monitoring report shall be submitted by the applicable due date specified in Table I.5 below. Consistent with Section G.3.c.iii above, the first COC Monitoring Report under this Order shall be submitted by **31 January 2012**.

4. **Other Reports**
   a. Notifications -- Required notifications under Title 27 (e.g., tentative release, leachate seep, extended repairs) shall be submitted within 7 days of event unless otherwise specified under this Order or the Standard Provisions.

   b. Updated WQPS Report -- shall be submitted concurrent with, or as part of, the next semiannual monitoring report due after submission of the five-year COC monitoring report above. The updated WQPS Report shall be submitted by the applicable due date specified in Table I.5 below. Per WDR Provision G.7.b, the first WQPS Report under this Order shall be submitted by **31 July 2012**.

5. **Reporting Schedule**
The semiannual and annual reports shall be submitted to the Board in accordance with the following schedule for the calendar period in which samples were taken or observations made:

Table I.5

Report	End of Reporting Period	Date Report Due
First Semiannual	30 June	**31 July**
Second Semiannual	31 December	**31 January**
Annual Report	31 December	**31 January**

Reports that do not comply with the above-required format will be **REJECTED** and the Discharger shall be deemed to be in noncompliance with the WDRs.

The Discharger shall implement the above monitoring program on the effective date of this Program. The transmittal letter accompanying monitoring reports submitted under this Order shall, as required under the SPRR (Provision 5*, General Requirements, REPORTING REQUIREMENTS*), contain a statement by the discharger, or the discharger's authorized agent, under penalty of perjury, that to the best of the signer's knowledge the report is true, accurate and complete.

Ordered by: _____
PAMELA C. CREEDON, Executive Officer
10 June 2011

Attachments
JDM

Table J.1
Groundwater Monitoring Schedules

A. Field Parameter Monitoring[1]

All Wells

Monitoring Parameter	Units	Frequency	Data Analysis
Dissolved Oxygen (DO)	%	Quarterly	n/a
Elevation, Groundwater	Feet MSL	Quarterly	n/a
Oxidation-Reduction (Redox) Potential	millivolts	Quarterly	n/a
pH	pH units	Quarterly	n/a
Specific Conductance	µMhos/cm	Quarterly	n/a
Temperature	^{O}C, ^{O}F	Quarterly	n/a
Turbidity	NTU	Quarterly	n/a

1. Field parameter monitoring shall be conducted concurrent with other required groundwater monitoring programs under this Order.

B. Compliance Monitoring

a. Detection[1,2]

Background and Point of Compliance Wells

Monitoring Parameter	Units	Frequency	Data Analysis
General Parameters:			
Dissolved Oxygen (DO)	%	Semiannually	Statistical
General Minerals:			
Major Anions:			
Nitrate – Nitrogen	mg/L	Annually	Statistical
Major Cations:			
Magnesium	mg/L	Annually	Statistical
Potassium	mg/L	Annually	Statistical
Dissolved Metals:[3]			
Common:			
Iron	µg/L	Annually	Nonstatistical
Manganese	µg/L	Annually	Nonstatistical
Heavy:			
Arsenic	µg/L	Annually	Nonstatistical

VOCs:[4]			
Alcohols:			
Tert-Amyl methyl ether	µg/L	Semiannually	Nonstatistical
Tert-Butyl alcohol	µg/L	Semiannually	Nonstatistical
tert-Butyl ethyl ether	µg/L	Semiannually	Nonstatistical
Isobutyl alcohol	µg/L	Semiannually	Nonstatistical
di-Isopropyl ether	µg/L	Semiannually	Nonstatistical
Methyl tert-butyl ether (MtBE)	µg/L	Semiannually	Nonstatistical
Benzene Compounds:			
BTEX			
Benzene	µg/L	Semiannually	Nonstatistical
Ethylbenzene	µg/L	Semiannually	Nonstatistical
Toluene	µg/L	Semiannually	Nonstatistical
Xylenes (total)	µg/L	Semiannually	Nonstatistical
Halogenated, Common:			
1,1-Dichloroethane (1,1-DCA)	µg/L	Semiannually	Nonstatistical
1,2-DCA	µg/L	Semiannually	Nonstatistical
1,1-DCE	µg/L	Semiannually	Nonstatistical
Tetrachloroethene (PCE)	µg/L	Semiannually	Nonstatistical
1,1,1-Trichloroethane (TCA)	µg/L	Semiannually	Nonstatistical
1,1,2-TCA	µg/L	Semiannually	Nonstatistical
Trichloroethene (TCE)	µg/L	Semiannually	Nonstatistical
1,1,1,2-Tetrachloroethane	µg/L	Semiannually	Nonstatistical
1,1.2,2-Tetrachloroethane	µg/L	Semiannually	Nonstatistical
Vinyl chloride	µg/L	Semiannually	Nonstatistical
Industrial Solvents,Common :			
Carbon disulfide	µg/L	Semiannually	Nonstatistical
Methyl ethyl ketone (MEK: 2-Butanone)	µg/L	Semiannually	Nonstatistical
Interferences, Common:			
Acetone	µg/L	Semiannually	Nonstatistical
Methyl bromide (Bromomethene)	µg/L	Semiannually	Nonstatistical
Methylene chloride	µg/L	Semiannually	Nonstatistical

1. Detection monitoring shall be conducted concurrent with other required groundwater monitoring programs under this Order.
2. Detection Monitoring Program shall include background monitoring required to meet detection monitoring goals/performance standards per WDR Monitoring Specification E.8.
3. Samples shall be filtered prior to performing dissolved inorganics analysis.
4. Unknown chromatographic peaks shall be reported, along with an estimate of the concentration of the unknown analyte per Provision 7, Sampling and Analytical Methods, Provisions For Monitoring, SPRR.

b. Corrective Action[1, 2]

Background and Compliance Wells

Monitoring Parameter	Units	Frequency	Data Analysis
General Parameters:			
Alkalinity, Total	mg/L	Semiannually	Statistical
Chemical Oxygen Demand (COD)	mg/L	Semiannually	Statistical
Specific Conductance	µMhos/cm	Semiannually	Statistical
Total Dissolved Solids (TDS)	mg/L	Semiannually	Statistical
Total Hardness	mg/L	Semiannually	Statistical
General Minerals:			
Major Anions:			
Bicarbonate Alkalinity	mg/L	Semiannually	Statistical
Chloride	mg/L	Semiannually	Statistical
Sulfate	mg/L	Semiannually	Statistical
Major Cations:			
Calcium	mg/L	Semiannually	Statistical
Sodium	mg/L	Semiannually	Statistical
VOCs:[3]			
Benzene Compounds, Other:	µg/L	Semiannually	Nonstatistical
p-Dichlorobenzene (1,4-DCB)	µg/L	Semiannually	Nonstatistical
CFCs:			
Carbon Tetrachloride (CFC-10)	µg/L	Semiannually	Nonstatistical
Chloroform (CFC-20)	µg/L	Semiannually	Nonstatistical
Dichlorodifluoromethane (CFC-12)	µg/L	Semiannually	Nonstatistical
Trichlorofluoromethane (CFC-11)	µg/L	Semiannually	Nonstatistical
Halogenated, Common:			
Cis-1,2- Dichloroethene (DCE)	µg/L	Semiannually	Nonstatistical

1. Corrective action monitoring shall be conducted concurrent with other required groundwater monitoring programs under this Order.
2. Corrective action monitoring program shall include background monitoring required to meet corrective action monitoring goals/performance standards per WDR Monitoring Specification E.13.
3. Unknown chromatographic peaks shall be reported, along with an estimate of the concentration of the unknown analyte per Provision 7, Sampling and Analytical Methods, Provisions For Monitoring, SPRR.

c. COC Monitoring[1, 2]

All Wells

Monitoring Parameter	Units	Frequency	Data Analysis
All Table J.2 COCs not listed In Tables J.1.B.a and J.1.B.b above.	See Table J.2	Every 5 years	Statistical/ Nonstatistical

1. COC monitoring shall be conducted concurrent with other required groundwater monitoring programs under this Order.
2. COC monitoring program shall include background monitoring required to meet COC monitoring goals/performance standards per WDR Monitoring Specification E.16.

Table J.2
Constituents of Concern (COCs),
Approved USEPA Analytical Methods, & Concentration Limits

Constituent of Concern	USEPA Test Method	Concentration Limit		
		Unsaturated Zone[3]	Ground-water	Surface Water[4]
A. Inorganic COCs				
General Parameters (mg/L, except as noted):				
Alkalinity, Total	2320B	----	290[2,3]	----
Chemical Oxygen Demand (COD)	410.4	----	16[1]	----
Dissolved Oxygen, %	360.1			
pH, pH units	150.1			
Specific Conductance, µMhos/cm	120.1			
Total Dissolved Solids (TDS)	2540C	----	443[2,3]	----
Total Hardness	2340B	----	----[3]	----
General Minerals, mg/L:				
Major Anions				
Alkalinity, Bicarbonate	2310B	----	290[2,3]	----
Chloride	300	----	86[1]	----
Sulfate	300	----	30[1]	----
Nitrate – Nitrogen	300	----	2[1]	----
Major Cations:				
Calcium	200.7/6010	----	----[3]	----
Sodium	200.7/6010	----	----[3]	----
Magnesium	200.7/6010	----	28[1]	----
Potassium	200.7/6010	----	----[3]	----
Dissolved Metals, µg/L*:*				
Common:				
Iron	200.9/200.8	----	PQL	----
Manganese	200.7/6010	----	PQL	----
Aluminum	200.7/6010	----	210[1]	----
Barium	200.7/6010	----	90[1]	----
Sulfide	9030	----	750[1]	----
Heavy:				
Arsenic	200.9/200.8	----	PQL	----
Cadmium	200.7/6010	----	PQL	----
Chromium	200.7/6010	----	PQL	----
Hexavalent Chromium	7199/1636	----	PQL	----
Lead	200.9/200.8	----	PQL	----

Mercury	7470A	----	PQL	----
Other:				
Antimony	200.7/6010	----	----[3]	----
Beryllium	200.7/6010	----	----[3]	----
Boron	200.7/6010	----	170[1]	----
Cobalt	200.7/6010	----	----[3]	----
Copper	200.7/6010	----	PQL	----
Cyanide	335.4/9010	----	----[3]	----
Molybdenum	200.7/6010	----	----[3]	----
Nickel	200.9/200.8	----	PQL	----
Selenium	200.9/200.8	----	PQL	----
Silver	200.7/6010	----	PQL	----
Thallium	200.7/6010	----	----[3]	----
Tin	200.7/6010	----	----[3]	----
Vanadium	200.7/6010	----	30[1]	----
Zinc	200.7/6010	----	PQL	----

B. Organic COCs

VOCs, µg/L	8260B	MDL	MDL	MDL
Alcohols:				
Tert-Amyl methyl ether				
Tert-Butyl alcohol				
tert-Butyl ethyl ether				
Isobutyl alcohol				
di-Isopropyl ether				
Methyl tert-butyl ether (MtBE)				
Benzene Compounds:				
BTEX:				
Benzene				
Ethylbenzene				
Toluene				
Xylenes (total)				
Other:				
n-Butlybenzene				
sec-Butlybenzene				
tert-Butlybenzene				
Bromobenzene				

Chlorobenzene
1,2,4-Trimethylbenzene
1,3,5-Trimethylbenzene
n-Propylbenzene
o-Dichlorobenzene (1,2-DCB)
m-Dichlorobenzene (1,3-DCB)
1,2,4-Trichlorobenzene
Bromochloromethane
Bromodichloromethane
Bromoform (Tribromomethane)
Chloroethane
1,2-Dibromoethane (Ethylene dibromide; EDB)
Dibromochloromethane (Chlorodibromomethane)
trans-1,2-DCEMethyl chloride (Chloromethane)
p-Dichlorobenzene (1,4-DCB)

CFCs:

Carbon Tetrachloride (CFC-10)
Chloroform (CFC-20)
Dichlorodifluoromethane (CFC-12)
Trichlorofluoromethane (CFC-11)

Hologenated:

Common:

Cis-1,2- Dichloroethene (DCE)
Trans-1,2-DCE
1,1-DCE
1,1-Dichloroethane (1,1-DCA)
1,2-DCA
Tetrachloroethene (PCE)
1,1,1-Trichloroethane (TCA)
1,1,2-TCA
Trichloroethene (TCE)
1,1,1,2-Tetrachloroethane
1,1.2,2-Tetrachloroethane
Vinyl chloride

Other:

Bromochloromethane

Bromodichloromethane

Bromoform (Tribromomethane)

Chloroethane

1,2-Dibromoethane (Ethylene dibromide; EDB)

Dibromochloromethane (Chlorodibromomethane)

Methyl chloride (Chloromethane)

Industrial Solvents, Common:

Carbon disulfide

Methyl ethyl ketMethyl ethyl ketone (MEK: 2-Butanone)one (MEK: 2-Butanone)

Interferences, Common:

Acetone

Methyl bromide (Bromomethene)

Methylene chloride

Miscellaneous:

Acetonitrile

Acrolein

Acrylonitrile

Chloroprene

trans-l,4-Dichloro-2-butene

Ethyl methacrylate

Hexachlorobutadiene

Hexachloroethane

2-Hexanone (Methyl butyl ketone)

Iodomethane (Methyl iodide)

Methacrylonitrile

Methylene bromide (Dibromomethane)

4-Methyl-2-pentanone (Methyl isobutylketone)

Naphthalene

2-Nitropropane

Propionitrile

Styrene

Props:

1,2-Dichloropropane
1,3-Dichloropropane
2,2-Dichloropropene
1,1-Dichloropropene
cis- 1,3-Dichloropropene
1,2,3-Trichloropropane
1,2-Dibromo-3-chloropropane
trans-1,3-Dichloropropene
3-Chloropropene (Allyl chloride)

Other Organic COCs:

Semi-VOCs, µg/L:	8270B[5]	MDL	MDL	MDL
Acenaphthene				
Acenaphthylene				
Acetophenone				
2-Acetylaminofluorene (2-AAF)				
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				
Bis(2-chloroethoxy)methane				
Bis(2-chloroethyl) ether (Dichloroethyl ether)				
Bis(2-chloro-1-methyethyl) ether (Bis(2-chloroisopropyl) ether; DCIP)				
4-Bromophenyl phenyl ether				
Butyl benzyl phthalate (Benzyl butyl phthalate)				
p-Chloroaniline				
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)				

Dibenz[a,h]anthracene
Dibenzofuran
Di-n-butyl phthalate
3,3'-Dichlorobenzidine
2,4-Dichlorophenol
2,6-Dichlorophenol
Diethyl phthalate
p-(Dimethylamino)azobenzene
7,12-Dimethylbenz[a]anthracene
3,3'-Dimethylbenzidine
2,4-Dimehtylphenol (m-Xylenol)
Dimethyl phthalate
m-Dinitrobenzene
4,6-Dinitro-o-cresol (4,6-Dinitro-2-methylphenol)
2,4-Dinitrophenol
2,4-Dinitrotoluene
2,6-Dinitrotoluene
Di-n-octyl phthalate
Diphenylamine
Ethyl methanesulfonate
Famphur
Fluoranthene
Fluorene
Hexachlorobenzene
Hexachloropropene
Indeno(1,2,3-c,d)pyrene
Isophorone
Isosafrole
Kepone
Methapyrilene
3-Methylcholanthrene
Methyl methanesulfonate
2-Methylnaphthalene
1,4-Naphthoquinone
1-Naphthylamine
2-Naphthylamine
o-Nitroaniline (2-Nitroaniline)
m-Nitroaniline (3-Nitroaniline)
p-Nitroaniline (4-Nitroaniline)
Nitrobenzene
o-Nitrophenol (2-Nitrophenol)
p-Nitrophenol (4-Nitrophenol)

N-Nitrosodi-n-butylamine (Di-n-butylnitrosamine)				
N-Nitrosodiethylamine (Diethylnitrosamine)				
N-Nitrosodimethylamine (Dimethylnitrosamine)				
N-Nitrosodiphenylamine (Diphenylnitrosamine)				
N-Nitrosodipropylamine (N-Nitroso-N-dipropylamine; Di-n-propylnitrosamine)				
N-Nitrosomethylethylamine (Methylethylnitrosamine)				
N-Nitrosopiperidine				
N-Nitrosospyrrolidine				
5-Nitro-o-toluidine				
Pentachlorobenzene				
Pentachloronitrobenzene (PCNB)				
Pentachlorophenol				
Phenacetin				
Phenanthrene				
Phenol				
p-Phenylenediamine				
Polychlorinated biphenyls (PCBs; Aroclors)				
Pronamide				
Pyrene				
Safrole				
1,2,4,5-Tetrachlorobenzene				
2,3,4,6-Tetrachlorophenol				
o-Toluidine				
2,4,5-Trichlorophenol				
0,0,0-Triethyl phosphorothioate				
sym-Trinitrobenzene				
Organochlorine Pesticides:	8081A	MDL	MDL	MDL
Aldrin				
α-BHC				
β-BHC				
γ-BHC (Lindane)				
δ-BHC				
Chlorobenzilate				
α-Chlordane				
γ-Chlordane				
Chlodane – not otherwise specified				
DBCP				
4,4'-DDD				
4,4'-DDE				
4,4'-DDT				
Diallate				

Dieldrin				
Endosulfan I				
Endosulfan II				
Endosulfan sulfate				
Endrin				
Endrin aldehyde				
Endrin ketone				
Heptachlor				
Heptachlor epoxide				
Hexachlorocyclopentadiene				
Isodrin				
Methoxychlor				
Toxaphene				
Polychlorinated Biphenols:	8082	MDL	MDL	MDL
Aroclor 1016				
Aroclor 1221				
Aroclor 1232				
Aroclor 1242				
Aroclor 1248				
Aroclor 1254				
Aroclor 1260				
Organophosphorus Pesticides:	8141A	MDL	MDL	MDL
Chlorpyrifos				
Diazinon				
Dimethioate				
Disulfoton				
Ethion				
Famphur				
Malathion				
Parathion				
Parathion-ethyl				
Parathion-methyl				
Phorate				
Chlorinated Herbicides:	8151A	MDL	MDL	MDL
2,4-D (2,4-Dichlorophenoxyacetic acid)				
Dicamba				
Dinoseb (DNBP; 2-sec-Butyl-4,6-dinitrophenol)				
MCPA				
MCPP				
Silvex (2,4,5-Trichlorophenoxypropionic acid; 2,4,5-TP)				

2,4,5-T (2,4,5-Trichlorophenoxyacetic acid)

Pentachlorophenol

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1. Interim statistical CLs calculated for this constituent.
2. Interim CL set equal to 1.5 x highest historical concentration, excluding outlier(s).
3. Insufficient historical monitoring data to calculate statistical CLs for this constituent.
4. Interim/default CL shall equal upstream monitoring result updated each monitoring period.
5. USEPA Method 8270 - base, neutral, & acid extractables

INFORMATION SHEET

ORDER NO. R5-2011-0048
A GREENER GLOBE CORPORATION
BERRY STREET MALL (AKA FINGER'S) LANDFILL
PLACER COUNTY

Background
The Berry Street Mall Landfill is a closed Class III landfill along Galleria Boulevard in the City of Roseville. The 26-acre site includes the closed landfill unit (13 acres) and associated facilities, including precipitation and drainage controls, landfill gas (LFG) controls, leachate sump, monitoring wells, pond, and access roads. The landfill operated from 1946 to November 1987, accepting primarily household wastes. William Finger, through Berry Street Mall, Inc., owned and operated the landfill for most of its active period, having acquired the property from its original owners, Leo Block and William Kaseberg, in 1952. The landfill ceased operations in November 1987 after reaching approximate capacity. In 1996, the Discharger acquired the property in foreclosure proceedings.

Approximately 15 tons per day (5,400 tons per year) of waste were discharged to the facility, consisting primarily household refuse (90%) and construction and demolition debris (8%). Approximately 225,000 tons of waste is estimated to have been discharged to the landfill. The average height of the waste column is estimated to be 35 feet and the minimum separation of wastes from groundwater is about 95 feet.

The landfill has a long history of noncompliance with Central Valley Water Board; CalRecycle; and LEA orders, both during and after its active period, as outlined in Attachment 1. Such issues included landfill fires; leachate seeps; cover erosion; exposed waste; site cleanup issues; failure to submit closure and postclosure plans; failure to conduct groundwater monitoring and reporting; and failure to implement corrective action. In 1991, under authority of a Notice and Order and Corrective Action Order, CalRecycle intervened for the limited purpose of implementing landfill closure and corrective action under Chapter 15 (now Title 27) regulations.

Landfill Closure
In 1993, CalRecycle closed the landfill in accordance with Title 27 regulations and an approved Final Closure Plan (FCP). The project included installation of clay cover, precipitation and drainage controls, a standby landfill gas (LFG) collection system, a perimeter leachate collection system and sump, soil gas and LFG monitoring wells, and a groundwater monitoring system. Closure was also implemented as a corrective action measure to mitigate potential leachate and LFG impacts to groundwater. The FCP included conceptual plans for converting the standby LFG collection system to an active LFG extraction system, if LFG monitoring indicated the need. In 1994, CalRecycle certified the landfill as closed, noting that the property owner remained liable for postclosure maintenance and monitoring.

A 1994 approved Final Postclosure Maintenance Plan developed by CalRecycle included plans for postclosure maintenance and monitoring of all of the landfill's environmental control and monitoring systems (e.g., standby LFG collection system, soil gas probes,

INFORMATION SHEET (CON'T)

leachate sump, lysimeters, groundwater monitoring wells, storm drains, and onsite stream,). Although CalRecycle conducted postclosure monitoring under the postclosure maintenance and monitoring plan during the first several months after landfill closure, neither the former owner/operator nor the current Discharger implemented monitoring under the plan, except for the soil gas perimeter probes and groundwater monitoring wells. As a result, historical data for most of the landfill's monitoring and control systems (i.e., lysimeters; standby LFG collection system; leachate sump; storm drains; and onsite stream) is lacking, except for during the first year after landfill closure. In addition, valid concentration limits (CLs) have not yet been developed for the site.

Groundwater

The upper water bearing zone (UWBZ) occurs in the Valley Springs formation, which is estimated to have an overall permeability of in the order of 1 x 10^{-3} cm/sec. The depth to groundwater at the site ranges from about 115 feet bgs (90 feet MSL) in the southeast corner of the site (i.e., upgradient) to about 133 feet bgs (57 feet MSL) on the northwest side of the site (i.e., downgradient). Groundwater generally flows from southeast to the northwest (or west-northwest) consistent with the local gradient. There are six groundwater monitoring wells at the site (GWs-1 through 6), including one upgradient well, four down gradient wells, and one side gradient well.

Historical groundwater monitoring data for the site is limited due to the failure of the Discharger and previous operator to comply with previous WDRs (see Attachment 1). Also, previous WDRs allowed a reduction in monitoring frequency to annual after 24 months (eight quarters) of monitoring. Historical monitoring data is thus limited as follows:

<u>Wells GW-1 through 4</u>

- Before 1993 – no sampling
- July through October, 1993 -- monthly sampling (by CalRecycle)
- 1994 through 1998 – no sampling (WDRs required quarterly)
- 1999 through 2001 -- annual sampling (WDRs required quarterly)
- 2002 through 2004 -- quarterly sampling
- 2005 through 2009 – annual sampling

<u>Wells GW-5 and 6</u>

- Second through Fourth Quarter, 2004 -- quarterly sampling
- 2005 through 2009 -- annual sampling

The above groundwater monitoring data shows the presence of low to trace concentrations of VOCs and elevated concentrations of inorganic salts indicative of impacts from the landfill. VOCs detected consist primarily of Freon compounds, including carbon tetrachloride (Freon 10), Trichlorofluoromethane (Freon 11), Dichlorodifluoro-methane (Freon 12), and Chloroform (Freon 20). Carbon tetrachloride (1.8 µg/L) continues to be detected above drinking water standards, which include the California Public Health goal (0.1 µg/L) and California Primary MCL (0.5 µg/L). Elevated salts historically detected in

INFORMATION SHEET (CON'T)

groundwater at the site include alkalinity, chloride, sulfate, total dissolved solids and specific conductance.

Revised WDRs

These revised WDRs prescribe requirements for postclosure maintenance and corrective action monitoring, including submitting and implementing an updated postclosure maintenance and monitoring plan, providing financial assurances, submission and implementation of evaluation monitoring and corrective action programs, monitoring and reporting, and other requirements. The monitoring specifications of the WDRs incorporate Title 27 prescriptive methods and performance standards for all prescribed monitoring programs (e.g., background, detection, and corrective action).

Required Technical Reports

Facility Investigation Report - Provision G.3 requires that the Discharger investigate and submit a report as to the condition and operational status all landfill monitoring and control facilities at the site, including plans and schedules, as necessary, for restoring such facilities to good working order.

Updated postclosure maintenance and monitoring plan - Provision G.4 requires that the Discharger submit for approval an updated postclosure maintenance and monitoring plan consistent with this Order, including updated financial assurance cost estimates for postclosure maintenance, monitoring and corrective action (known and reasonably foreseeable release).

Financial Assurance Demonstration - Provision G.5 and G.5, respectively, require that the Discharger obtain and maintain financial assurances in at least the amount of approved cost estimates, and submit a demonstration every two years as to the adequacy and ongoing viability of such financial assurance mechanisms.

Revised Evaluation Monitoring Program - Provision G.7.c requires that the Discharger submit a revised evaluation monitoring program under Title 27 to improve characterization of groundwater flow at the site and investigate the source and extent of groundwater impacts. The evaluation monitoring program must include plans and schedules for installation of additional wells; identification of potential conduits to groundwater; investigation of various media as potential sources (e.g., soil, soil pore fluid, soil gas, LFG, leachate, surface water, and storm water); and an evaluation as to whether discharges (e.g., storm water) to surface water from the site are in compliance with the WDRs. The evaluation monitoring program may include an investigation of potential offsite sources of onsite impacts.

Revised EFS/CAP - Provision G.8 requires that the Discharger submit a revised CAP under Title 27, including evaluation monitoring program report and engineering feasibility study (EFS). The revised CAP must include an evaluation of existing corrective action measures, a discussion of additional corrective action needs and options, and plans for

INFORMATION SHEET (CON'T)

additional corrective action measures, as necessary.

Other Reports -- WDR Provision G.7.a requires the Discharger to submit a technical report proposing data analysis methods for monitoring consistent with Title 27 requirements and the monitoring specifications of this Order. WDR Provision G.7.b specifies that the Discharger submit an updated Water Quality Protection Standard (WQPS) Report, including COCs, CLs, monitoring points, Point of Compliance, and compliance period consistent with Title 27, Section 20390.

Non-Prescriptive Data Analysis Methods

Monitoring Specifications in the WDRs specify that the Discharger may use certain non-prescriptive methods in lieu of the prescriptive data analysis methods specified in Title 27, as follows:

Statistical

- *Gamma 95 Percent Upper Prediction Limit* (Gamma 95% UPL) Method[1]
  - ⇒ Parametric statistical method
  - ⇒ Background data matched with a specific gamma distribution
  - ⇒ Method provides higher statistical power (e.g., lower triggering concentrations and lower risk of false positives)
- *Pass 1-in-3, 6-Month Statistical Retest*[2]
  - ⇒ Method more powerful than Title 27 prescriptive (Pass 2-in-3, 30-day) retest.
- *Paired Difference Analysis* (i.e., for surface water monitoring)
  - ⇒ Parametric statistical method
  - ⇒ Statistics run on differences between two monitoring points
  - ⇒ Used in surface water monitoring to screen out background variance

Nonstatistical

- *California Nonstatistical Data Analysis Method* (Pass 2-in-3)

  Nonstatistical Trigger -- For each monitoring point, identify each analyte (i.e., monitoring program or COC) in the current sample that exceeds its respective PQL and/or MDL. The Discharger shall conclude that the null hypothesis has been rejected if:

  - ⇒ The data contain two or more analytes that equal or exceed their respective MDLs; and/or
  - ⇒ The data contain one analyte that equals or exceeds its PQL.

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1. *Simultaneous Gamma Prediction Limits for Groundwater Monitoring Applications*, Gibbons and Bhaumik (2006); *One-Sided Approximate Prediction Intervals for at Least p of m Observations From a Gamma Population at Each of r Locations*, Bhaumik and Gibbons (2006).
2. Method requires that Discharger conduct initial sampling at start of monitoring period, first retest at mid-period, and second retest, if necessary, just prior to end of monitoring period.

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The method thus has both single constituent and multi-constituent release triggers.

– *Pass 1-in-2, 3-month nonstatistical retest*[3]
  ⇒ More powerful than California Nonstatistical Data Trigger (Pass 2-in-3, 30-day) retest.

Because they have higher effectiveness in detecting a release, the above methods are deemed to be more stringent than Title 27 requirements per Section 20080(a)(1).

Monitoring and Reporting

The MRP requires monitoring of all Title 27 media to obtain necessary information as to the source of impacts and need for additional corrective action measures. As previously noted, most of this data is lacking due to the operator's historical failure to fully implement the 1994 postclosure maintenance and monitoring plan. Specifically, the MRP requires quarterly LFG and soil gas monitoring; and semiannual leachate, soil pore water, and groundwater monitoring. The groundwater monitoring program includes concurrent detection monitoring to detect any potential new release from the landfill. The MRP also requires semiannual surface and storm water monitoring. Five year monitoring for all other landfill COCs is also required for specified media. The MRP further requires that the Discharger obtain coverage under the General Industrial Storm Water Permit.

Water Quality Protection Standard (WQPS) -- Pending submission of a updated WQPS under the WDRs, the MRP establishes interim CLs where feasible based on available monitoring data, as follows:

⇒ Statistical CLs specified for all general minerals.
⇒ CLs set equal to the PQL for dissolved metals not generally detected in background (18).
⇒ CLs not specified for dissolved metals not included in historical monitoring (7).
⇒ CLs for organic COCs (including VOCs) set equal to the MDL.

Other Requirements

Postclosure Specification C.10 requires that the Discharger conduct an aerial site survey of the site every five years for the purpose of updating the topographic map for the site. MRP Section G.3.c.iii requires that COC monitoring be conducted by 15 December 2011 and at least every five years thereafter.

Surface drainage at the site is to an onsite intermittent stream tributary to the south branch of Pleasant Grove Creek, thence Pleasant Grove Creek; Verona Cross Canal; and the Sacramento River. (JDM)

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3. Method requires that Discharger conduct initial sampling at start of monitoring period and re-sampling just prior to end of monitoring period.

INFORMATION SHEET (CON'T)

ATTACHMENT 1

Violations of Previous Orders

a. WDR Order 72-17
   i. Improper disposal of solid wastes to unlined pits
   ii. Failure to control leachate

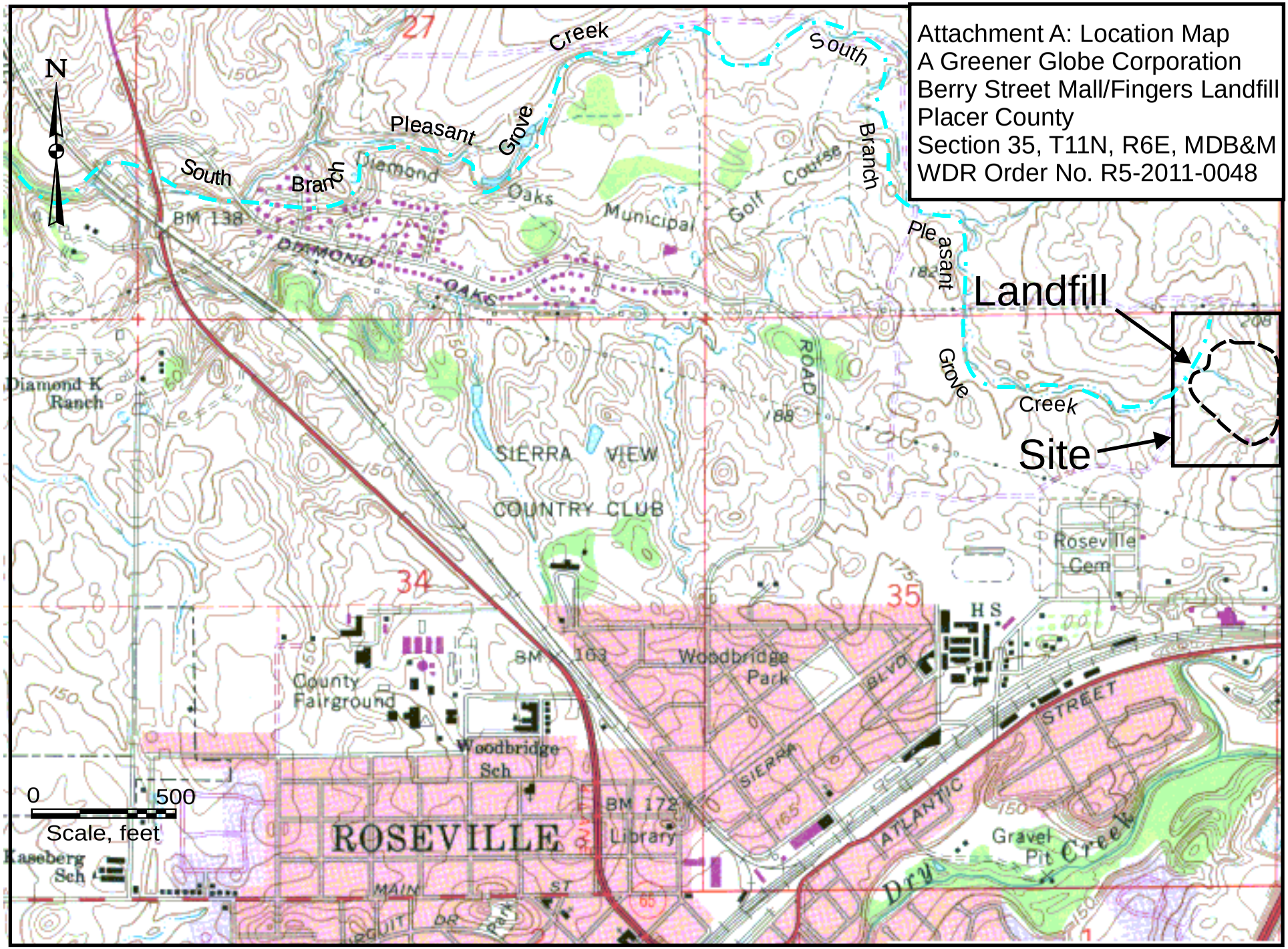
b. 1 December 1987 Section 13267 Order
   i. Failure to submit a Report of Waste Discharge (RWD)
   ii. Failure to submit Final Closure and Postclosure Maintenance Plan
   iii. Failure to submit Solid Waste Assessment Test (SWAT) Investigation report

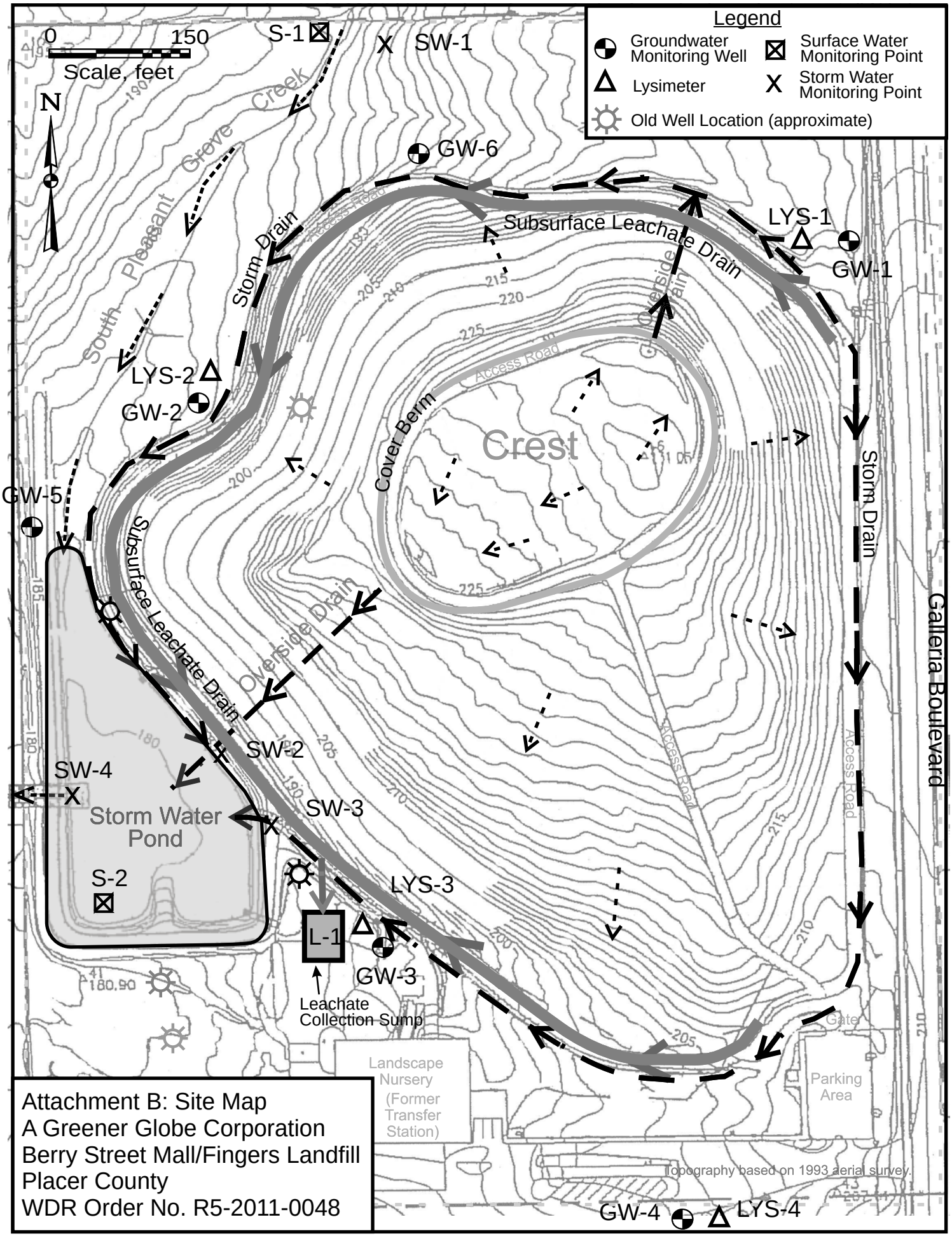
c. WDR Order 89-115
   i. Failure to complete landfill winterization
   ii. Failure to implement SWAT
   iii. Failure to submit final closure and post-closure maintenance plan
   iv. Failure to implement final closure and post-closure maintenance plan
   v. Failure to submit groundwater monitoring program
   vi. Failure to install groundwater monitoring wells
   vii. Failure to conduct groundwater monitoring.

d. CalRecycle Orders 91-01 (Notice and Order, Corrective Action Order)
   i. Failure to assess nature and extent of conditions requiring corrective action
   ii. Failure to extinguish landfill fire
   iii. Failure to maintain adequate site security
   iv. Receipt of unacceptable materials as landfill cover material

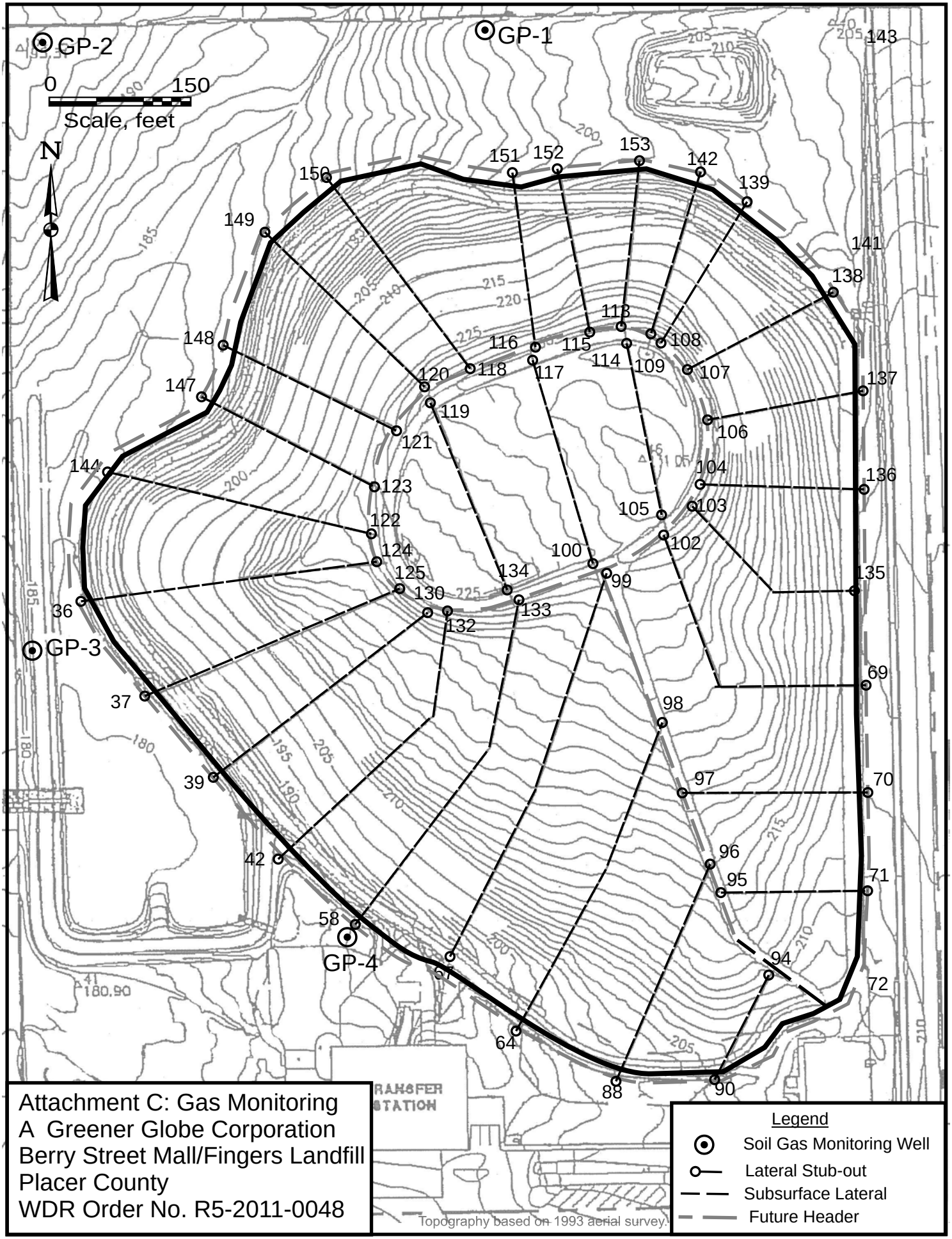
e. Cleanup and Abatement Order 99-724
   i. Failure to determine the lateral and vertical extent of groundwater pollution
   ii. Failure to conduct quarterly monitoring under WDRs
   iii. Failure to submit monitoring reports timely and completely under WDRs
   iv. Failure to pay annual WDR fees
   v. Failure to cleanup trash and debris at site
   vi. Failure to obtain coverage under General Storm Water Permit

f. Final Stipulated Judgment
   i. Failure to pay annual WDR fees


Attachment A: Location Map
A Greener Globe Corporation
Berry Street Mall/Fingers Landfill
Placer County
Section 35, T11N, R6E, MDB&M
WDR Order No. R5-2011-0048
N
Landfill
Site
South Branch Pleasant Grove Creek
South Branch Pleasant Grove Creek
Diamond Oaks
Municipal Golf Course
DIAMOND OAKS
Diamond K Ranch
SIERRA VIEW COUNTRY CLUB
Roseville Cem
County Fairground
Woodbridge Sch
Woodbridge Park
ROSEVILLE
Library
Kaseberg Sch
Gravel Pit
Dry Creek
ATLANTIC STREET
SIERRA BLVD
MAIN ST
H S
BM 138
BM 163
BM 172
27
34
35
0
500
Scale, feet



Attachment B: Site Map
A Greener Globe Corporation
Berry Street Mall/Fingers Landfill
Placer County
WDR Order No. R5-2011-0048



Attachment C: Gas Monitoring
A Greener Globe Corporation
Berry Street Mall/Fingers Landfill
Placer County
WDR Order No. R5-2011-0048