

**California Regional Water Quality Control Board  
Santa Ana Region**

**Staff Report**

**December 9, 2010**

**ITEM:           \*6**

**SUBJECT:** Amendment to Waste Discharge Requirements Order No. 91-125, as amended by Order No. 98-99, for Badlands Landfill, Riverside County Waste Management Department, Order No. R8-2010-0051

**DISCUSSION:**

The Riverside County Waste Management Department (RCWMD, hereinafter discharger) owns and operates the Badlands Sanitary Landfill (BSL), located at 31125 Ironwood Avenue in Moreno Valley.

The applicable regulations governing municipal solid waste landfills (MSWLFs) are contained in Title 27, Division 2, Subdivision 1 of the California Code of Regulations (Title 27). On July 19, 1991, Order No. 91-105 was adopted by the Regional Board for landfill operations at the BSL. Order No. 91-105 has subsequently been amended by three other orders, including Order No. 98-99, a blanket permit that required all MSWLFs to comply with federal regulations (Subtitle D), and with precipitation drainage and erosion control requirements contained in Title 27.

Provision C.2. of Order No. 98-99 stipulates that for waste containment or liner systems installed beyond the October 3, 1993 waste footprint, a prescriptive composite liner must be used. However, the Regional Board may approve engineered alternatives to the prescriptive liner design provided that certain conditions can be met.

The discharger has submitted an amended Report of Waste Discharge (ROWD), in the form of Joint Technical Document (JTD) Addendum No. 5, requesting the Regional Board's approval for the use of new engineered alternatives to the prescriptive standard design (PSD) for the base liner system for future expansions at BSL. Waste containment system construction for the upcoming Canyon 4, Phase 3 (C4P3), as shown in Attachment A of this Order, is scheduled to begin in Spring 2011.

Regional Board staff have evaluated JTD Addendum No. 5, including the performance equivalency demonstration report, and have concluded that the proposed engineered alternative designs (EADs) for the base liner system will satisfy the performance criteria as required under Provision C.2 of Order No. 98-99 by providing superior waste containment capability and water quality protection. In addition, the discharger has demonstrated potential cost saving by using the proposed EADs while also providing superior water quality protection.

It is necessary to amend the existing waste discharge requirements for BSL to allow new engineered alternatives to the prescriptive liner system design, and to require the

discharger to comply with relevant sections of Title 27 for the design and construction of the waste containment system for each area expansion using the approved EADs.

**RECOMMENDATION:**

Adopt Order No. R8-2010-0051 as presented.

Comments were solicited from the following agencies:

U. S. Environmental Protection Agency, Region 9 – Eileen Sheehan  
State Water Resources Control Board, Division of Clean Water Program – Leslie Graves  
State Water Resources Control Board, Office of Chief Counsel – David Rice  
California Integrated Waste Management Board, Sacramento – Susan Markie  
South Coast Air Quality Management District – Charlie Tupac  
California Department of Public Health, Drinking Water Program, District 20 – Riverside – Steve Williams  
Riverside County Department of Environmental Health Services, LEA – Sam Martinez  
Riverside County Waste Management Department – Joseph McCann

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
SANTA ANA REGION

ORDER NO. R8-2010-0051

AMENDING WASTE DISCHARGE REQUIREMENTS  
FOR  
BADLANDS SANITARY LANDFILL  
RIVERSIDE COUNTY WASTE MANAGEMENT DEPARTMENT

Tentative

The California Regional Water Quality Control Board, Santa Ana Region (hereinafter Regional Board), finds that:

1. The County of Riverside Waste Management Department (RCWMD, hereinafter discharger) has operated the Badlands Sanitary Landfill (BSL) since 1966. The site is located at 31125 Ironwood Avenue, Moreno Valley, in the San Timoteo Badlands, Section 32, T2S, R2W, and portions of Sections 4 and 5, T3S, R2W, SBB&M. The site consists of 1,168 acres and is designated as a Class III landfill. Currently, 246 acres, including the 150-acre area for non-hazardous municipal solid waste (MSW) disposal, are permitted for landfill operation-related activities. Out of the 150-acre permitted disposal area, approximately 38 acres are unlined, 85 acres are lined, and the remaining 27 areas are yet to be developed. The permitted landfill operation and disposal areas are shown on **Attachment A**, which is hereby made a part of this Order.
2. Prior to 1981, the discharger operated the BSL under the waste discharge requirements (WDRs) contained in Resolution No. 65-13. To reflect changes in the policies for the operations of sanitary landfills, Order No. 81-124 was adopted to revise and update Resolution No. 65-13. Order No. 81-124 was adopted by the Regional Board for landfill operations at the BSL on June 12, 1981.
3. On July 19, 1991, Order No. 91-105 was adopted by the Regional Board for landfill operations at the BSL. Order No. 91-105 replaced WDR Order No. 81-124 to include changes to the Water Quality Control Plan and to conform to Title 23, Division 3, Chapter 15 of the California Code of Regulations (CCRs). Order No. 91-105 has subsequently been amended by:
  - a. Orders No. 93-57 and 94-17, adopted by the Regional Board on September 10, 1993 and March 11, 1994, respectively, to comply with new federal regulations (Title 40, Code of Federal Regulations [40 CFR], Part 258, known as Subtitle D) and State Water Resources Control Board (SWRCB) Resolution No. 93-62<sup>1</sup>, and to prescribe uniform drainage and erosion control system requirements for MSW landfills.

<sup>1</sup> Resolution No. 93-62, entitled *Policy for Regulation of Discharges of Municipal Solid Waste*, directs each regional board to revise the WDRs of each MSW landfill in its respective region to comply with the federal Subtitle D regulations.

- b. Order No. 98-99, adopted by the Regional Board on November 20, 1998, which also replaces Orders No. 93-57 and 94-17. Order No. 98-99 is a blanket WDR amendment requiring all MSW landfills to comply with federal Subtitle D regulations and Title 27<sup>2</sup> precipitation drainage and erosion control requirements.
  - c. Order No. R8-2002-0085, adopted by the Regional Board on October 25, 2002, to allow the use of engineered alternatives to the prescriptive standard design for the base and sideslope liner systems, and to require the discharger to comply with certain provisions and monitoring requirements for construction of the liner systems.
  - d. Order No. R8-2006-0053, adopted by the Regional Board on July 14, 2006, to allow the acceptance of designated waste, including treated woodwaste, for disposal at composite-lined units of the landfill.
4. Provision C.2 of Order No. 98-99 stipulates that all MSW landfill waste containment or liner systems installed beyond the October 9, 1993 landfill footprint must include a composite liner<sup>3</sup> consisting of an upper synthetic flexible membrane liner (FML) that is at least 60-mils thick (if high density polyethylene is used), and a lower component of soil that is at least 2-feet thick and that has a hydraulic conductivity of no more than  $1 \times 10^{-7}$  cm/s. Provision C.2 of Order No. 98-99 also allows engineered alternative designs (EADs) to the prescriptive standard design (PSD), provided that the EAD satisfies the approval criteria specified under Title 27, §20080(b). These criteria include:
- a. The EAD must afford waste containment capability and water quality protection equal to or exceeding that provided by the PSD; and
  - b. The construction of the PSD is unreasonably and unnecessarily burdensome, or is impractical and will not promote attainment of applicable performance standards.
5. In accordance with Title 27, §21585(a)(4), On July 13, 2010, the discharger submitted Joint Technical Document (JTD) Addendum No. 5, requesting the Regional Board's approval for the use of new EADs for the base liner system. **Attachment B** to this Order describes the profiles of the PSD, the existing approved EAD base liner (B1) and sideslope (SS1) liner systems, and both proposed EAD base liner systems (B2 and B3). Specifically, the discharger has proposed to use a 9-inch leachate collection and removal system (LCRS) drainage gravel layer (with a hydraulic conductivity of 0.1 cm/s), instead of the prescribed 12-inch LCRS drainage gravel layer (with a hydraulic conductivity of 0.01 cm/s) for the base liner system.

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<sup>2</sup> Effective July 18, 1997, the provisions for MSW landfills in Title 23, Division 3, Chapter 15 were replaced by Title 27, Division 2, Subdivision 1 of the CCRs (Title 27), the combined State Water Resources Control Board / California Integrated Waste Management Board AB 1220 regulations for discharges of waste to land.

<sup>3</sup> Section III of SWRCB Resolution No. 93-62, *Policy for Regulation of Discharges of Municipal Solid Waste*.

6. Regional Board staff have evaluated JTD Addendum No. 5, which includes engineering analyses to demonstrate performance equivalency of the new EAD to the PSD for the LCRS of the base liner system. Based on the engineering analyses, Regional Board staff have concluded that:
  - a. The new EAD for the LCRS will afford leachate drainage capability exceeding that offered by the standard LCRS design, resulting in the reduction of leachate head over the composite liner through more rapid leachate flow in the drainage layer, and will therefore offer better water quality protection than the standard LCRS design; and
  - b. In recent years, the scarcity and cost increase of aggregate materials have made it burdensome for landfill owners and operators to purchase aggregate materials to construct the LCRS. A reduction in the thickness of the LCRS layer from 12 inches to 9 inches not only reduces the quantity of aggregate materials needed, but also offers superior water quality protection. The discharger has reported a cost saving of \$18,400 per acre at another landfill site using this LCRS EAD.

On October 27, 2010, JTD Addendum No. 5 was considered complete.

7. This order amends Order No. 98-99 for the BSL by adding a new provision allowing new engineered alternatives to the prescriptive liner system design, and requiring the discharger to comply with relevant sections of Title 27 for the design and construction of the waste containment system for each area expansion using the approved EADs.
8. This project involves the amendment of waste discharge requirements for an existing facility for which waste discharge requirements need to be revised, and as such, is exempt from the California Environmental Quality Act (Public Resources Code, Section 21100 et seq.) in accordance with Section 15301, Chapter 3, Title 14, California Code of Regulations.
9. The Regional Board has notified the discharger and interested agencies and persons of the Board's intent to amend the waste discharge requirements previously adopted for the discharger, and has provided all notified parties with an opportunity to submit their written views and recommendations.
10. The Regional Board, in a public meeting, heard and considered all comments pertaining to the proposed amendment to the existing waste discharge requirements for BSL.

IT IS HEREBY ORDERED THAT the discharger shall comply with the following:

1. Add the following waste discharge requirements as a new Provision, C.11, of Order No. 98-99 for the BSL:

**11. Engineered Alternatives (EAs) for Waste Containment Systems at the Badlands Sanitary Landfill (BSL)**

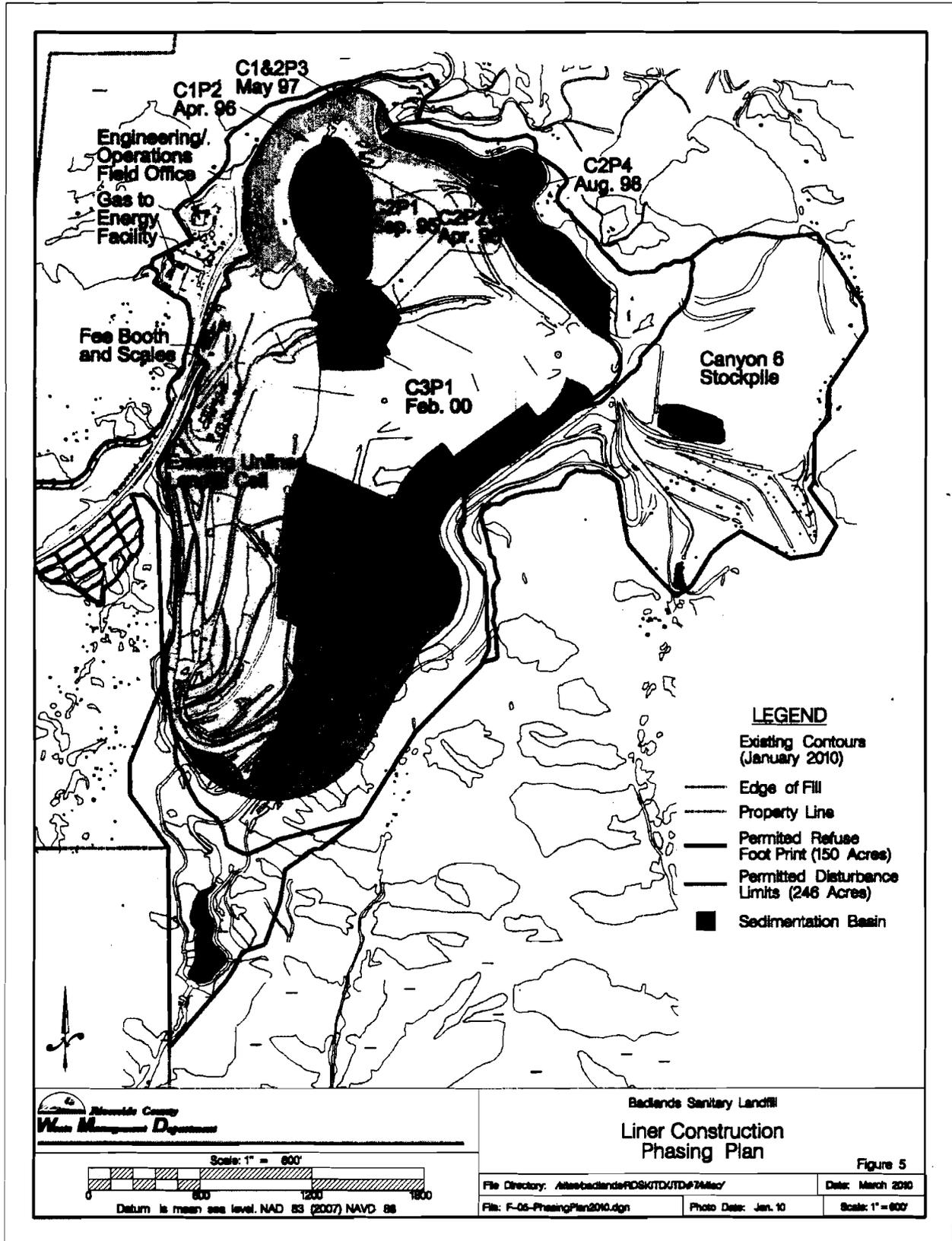
- a. The Riverside County Waste Management Department (RCWMD), shall use the approved engineered alternative designs (EADs) as listed in Attachment B to Order No. R8-2010-0051 for the construction of waste containment system at the BSL. The waste containment system shall be constructed in accordance with industry standards and the additional requirements of State Water Resources Control Board Resolution No. 93-62, Section III [Containment] and at least the following relevant sections of Title 27 (other sections may apply):
  - i. §20080(b) [Engineered Alternative Allowed];
  - ii. §20310 [General Construction Criteria];
  - iii. §20320 [General Criteria for Containment Structures];
  - iv. §20323 [CQA Plan];
  - v. §20324 [CQA requirements];
  - vi. §20330 [Liners];
  - vii. §20340 [Leachate Collection and Removal Systems (LCRS)];
  - viii. §20360 [Subsurface Barriers];
  - ix. §20365 [Precipitation and Drainage Controls]; and
  - x. §20370 [Seismic Design].
- b. Prior to waste containment system construction for each area expansion beyond the October 1993 waste footprint at the site, RCWMD shall submit technical design plans and construction documents for the proposed waste containment system that demonstrate compliance with C.11.a, above, for review and approval by Regional Board staff.
- c. **New EAD(s) proposed** - In accordance with Title 27, §21585(a)(4), an amended Report of Waste Discharge (ROWD), in the form of a numerically-sequential addendum to the Joint Technical Document (JTD), shall be submitted for any new EAD proposed for use at the landfill. A JTD addendum for any new EAD(s) shall demonstrate compliance with the approval criteria specified under Title 27, §20080(b). Upon review of the amended ROWD by Regional Board staff and approval of the newly proposed EAD(s) by the Regional Board, the RCWMD shall be permitted to use the newly-approved EAD(s) for future waste containment systems at BSL. Subsequent use of any of the approved EADs at BSL shall comply with C.11.a and .b, above.

2. All other terms and conditions contained in the existing waste discharge requirements for the BSL that are not amended by this order shall remain in effect and unchanged. Amended or revised requirements contained in this order supersede any conflicting provisions in the existing waste discharge requirements.

I, Kurt V. Berchtold, 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, Santa Ana Region, on December 9, 2010.

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Kurt V. Berchtold  
Executive Officer



**Attachment B**

PSD	EAD-B1 <sup>4</sup>	EAD-B2	EAD-B3	EAD-SS1
Prepared subgrade	Prepared subgrade	Prepared subgrade	Prepared subgrade	Prepared subgrade
Min. 24-in. low perm layer (permeability $\leq 10^{-7}$ cm/s) -- --	Min. 12-in. low perm layer (permeability $\leq 10^{-5}$ cm/s) Min. 40-mil HDPE liner (moisture barrier) GCL <sup>5</sup>	Min. 24-in. low perm layer (permeability $\leq 10^{-7}$ cm/s) -- --	Min. 12-in. low perm layer (permeability $\leq 10^{-5}$ cm/s) Min. 60-mil HPDE liner (moisture barrier) GCL	-- -- GCL
Min. 60-mil HDPE liner	Min. 60-mil HDPE liner	Min. 60-mil HDPE liner	Min. 60-mil HDPE liner	Min. 60-mil HDPE liner
Cushion geotextile	--	Min. 12-oz./ft <sup>2</sup> (non-woven needle-punched) cushion geotextile	Min. 12-oz./ft <sup>2</sup> (non-woven needle-punched) cushion geotextile	Min. 16-oz./ft <sup>2</sup> cushion and drainage geotextile
Min. 12-in. LCRS drainage layer	Min. 12-in. LCRS drainage layer with hydraulic conductivity $\geq 0.01$ cm/s (1-in. minus clean gravels with less than 2% fines and no angular or subangular particles > 3/8-in. size)	<b>Min. 9-in. LCRS drainage layer with hydraulic conductivity <math>\geq 0.1</math> cm/s</b>	<b>Min. 9-in. LCRS drainage layer with hydraulic conductivity <math>\geq 0.1</math> cm/s</b>	
Geotextile filter fabric	Min. 8-oz./ft <sup>2</sup> geotextile filter fabric	Min. 8-oz./ft <sup>2</sup> geotextile filter fabric	Min. 8-oz./ft <sup>2</sup> geotextile filter fabric	--
24-in. PCS <sup>6</sup> layer	Min. 24-in. PCS cover (3-in minus for the lower 12 inches and 6-in. minus for the upper 12 inches)	Min. 24-in. PCS cover (3-in minus for the lower 12 inches and 6-in. minus for the upper 12 inches)	Min. 24-in. PCS cover (3-in minus for the lower 12 inches and 6-in. minus for the upper 12 inches)	Min. 24-in. PCS cover (1-in. minus material)
Refuse	Refuse	Refuse	Refuse	Refuse

<sup>4</sup> This engineered alternative design was approved for use in Board Order No. R8-2002-0085. However, new geosynthetic information indicated that EAD-B1 is no longer appropriate and can no longer be used for liner system design.

<sup>5</sup> Geosynthetic Clay Liners are factory manufactured, hydraulic barriers typically consisting of bentonite clay or other very low permeability clay materials, supported by geotextiles and/or geomembranes that are held together by needling, stitching, and/or chemical adhesives.

<sup>6</sup> Protective Cover Soil.