

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION
CEASE AND DESIST ORDER NO. R5-2006-0100

CONCERNING VIOLATION OF
CLOSURE AND CORRECTIVE ACTION WASTE DISCHARGE REQUIREMENTS
ORDER NO. R5-2002-0173
FOR
THE COUNTY OF TUOLUMNE AND THE COUNTY OF TUOLUMNE DEPARTMENT
OF PUBLIC WORKS DIVISION OF SOLID WASTE
JAMESTOWN MUNICIPAL SOLID WASTE LANDFILL FACILITY
TUOLUMNE COUNTY

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

1. Tuolumne County (hereafter referred to as Discharger) owns the Jamestown Landfill which is approximately one-half mile southeast of Jamestown, California. The facility occupies a 54-acre parcel and consists of one 15.5 acre unlined waste management unit. The landfill footprint extends across the top of a north-south trending ridge as well as into the adjoining ravines.
2. The facility received municipal waste from 1974 to 1995. On 6 September 2002, the Regional Board adopted Waste Discharge Requirements (WDRs) Order No. R5-2002-0173 for the closure of the landfill.
3. The beneficial uses of groundwater, as specified in the Basin Plan, are domestic, municipal, agricultural, industrial supply and industrial process supply.
4. Groundwater has been polluted by the landfill. Analytical samples from groundwater monitoring wells TM-1R, TM-3, TM-4RR, TM-5, TM-6, TM-7 and DM-2 contain detectable levels of volatile organic compounds.
5. Because of the groundwater pollution, the Discharger submitted an amended report of waste discharge to address groundwater pollution in compliance with Title 27 California Code of Regulations, Division 2 (Title 27). Staff concurred with the proposed corrective action for the groundwater release in a letter dated 10 September 1997. The proposed corrective action had three components: 1) to close the Unit with a low-permeability cap, 2) continued management of the LCRS, and 3) monitoring of leachate monitoring point LM-1. The subsequent Corrective Action WDRs Order No. R5-2002-0173 required all three components be implemented.
6. Provision No. 12 of the WDRs requires that the Discharger complete the final closure of the landfill by 31 December 2003.

7. On 25 November 2003, the Discharger officially requested an extension to the closure date due to its limited number of Solid Waste staff and lack of budgetary resources that prevented compliance with the time schedule adopted in the WDRs. In response, Regional Board staff prepared a Cease and Desist Order for the Regional Board's consideration that would extend the deadline.
8. On 19 March 2004, the Regional Board adopted uncontested Cease and Desist Order (CDO) No. R5-2004-0030. CDO No. R5-2004-0030 requires that (a) construction of the final cover shall begin by 1 June 2004, (b) the cover shall be constructed and all corrective action measure shall be operational by 31 December 2004, and (c) a report documenting the final construction activities shall be submitted by 1 April 2005.
9. Because the refuse fills in a ravine, the engineer of record for the engineered cover had to address the irregular topography of the landfill. While the eastern slope of the landfill has a gentle slope, the western slope is inclined at approximately 1.4H to 1V and is buttressed by an earthen berm that was constructed in a drainage swale located at the base of the slope. The buttress is approximately 20 to 40 feet in height and was constructed using soil fill. At the base of the slope a leachate collection and removal system (LCRS) was installed. The LCRS was reported to be buried by a landslide in 1980 and access to the LCRS was lost.
10. Title 27 Section 21090 states: "Final cover slopes shall not be steeper than a horizontal to vertical ratio of one and three quarters to one, and shall have a minimum of one fifteen-foot wide bench for every fifty feet of vertical height. Designs having any slopes steeper than a horizontal to vertical ratio of three to one, or having a geosynthetic component [under ¶(a)(2)], shall have these aspects of their design specifically supported in the slope stability report required under §21750(f)(5). The RWQCB can require flatter slopes or more benches where necessary to ensure preservation of the integrity of the final cover under static and dynamic conditions." The Jamestown Landfill closure plan included slopes steeper than a horizontal to vertical ratio of three to one and benches less than fifteen-foot wide for every fifty feet of vertical height. Because the closure design included engineered alternatives, the Discharger was required by Title 27 Section 21750(f)(5) to prepare a slope stability report.

11. Title 27 Section 21750 states: "(C) The stability analysis shall be prepared by a registered civil engineer or certified engineering geologist. Except as otherwise provided in (f)(5)(D), the report must indicate a factor of safety for the critical slope of at least 1.5 under dynamic conditions." The Discharger submitted a revised Final Closure Postclosure Maintenance Plan dated November 1997 that included a slope sensitivity and stability analysis dated September 1995 for the Jamestown Landfill. The slope analysis stated: "Calculated factor of safety for the dynamic analysis range from 0.63 to 1.42 indicating that the landfill does not meet the required factor of safety under dynamic conditions for even the most favorable conditions."
12. The Discharger submitted the "West Slope Sensitivity and Supplemental Stability Analysis Report" dated December 1995 and "East Slope Stability Analysis" dated April 1996. The Department of Water Resources, under contract with the State Water Board, reviewed the slope stability reports. The Department of Water Resources had three closing comments and recommendations: "1) The landfill does not appear to meet the CIWMB requirements for static or pseudostatic stability, 2) The seismic deformation analysis was performed by methods not familiar to the DWR, and 3) If a pseudostatic factor of safety is allowed below the 1.5 requirement, then a contingency plan should be developed in the event of a failure, or the slope should be modified to provide additional stability."
13. The Final Closure and Post-Closure Maintenance Plan states: "The final cover design for the slope area consists of the following: a two-foot foundation layer comprised of random soils, a minimum one-foot low permeability layer of compacted fine grained soils, which will yield a permeability of 1×10^{-6} cm/sec or less and a minimum one-foot vegetative layer comprised of random soils. In areas of active leachate seeps an additional one foot of foundation material will be placed to establish a firm unyielding subgrade for application of the low-permeability layer." The Discharger used bentonite clay as both the low permeability layer and vegetative cover material on the 1.4H to 1V western slope.
14. Prior to accepting Tuolumne County's closure plan, the stability of the western slope was already in question. Some of the factors indicating uncertainty were: the western slope had a landslide in 1980, the calculated slope stability analysis did not meet the minimum factor of safety, there were uncertainties about the buttress stability at the base of the western slope, and the crushing of leachate monitoring well LM-1 indicated slope movement.

15. Title 27 Section 21750 (f)(5)(D) states: "In lieu of achieving a factor of safety of 1.5 under dynamic conditions, pursuant to (f)(5)(C), the discharger can utilize a more rigorous analytical method that provides a quantified estimate of the magnitude of movement. In this case, the report shall demonstrate that this amount of movement can be accommodated without jeopardizing the integrity of the Unit's foundation or the structures which control leachate, surface drainage, erosion, or gas."
16. Matthew M. Hickey a Registered Professional Engineer in the State of California (No. 49179), working for Bryan A. Stirrat & Associates, submitted a report on 10 August 2000 for the Discharger stating: 1) "...the three-dimensional analysis did not meet the minimum factor of safety of 1.5 under dynamic conditions..."; 2) "...the landfill structures (foundation, leachate control berm, final cover system, drainage and erosion control structures, future gas wells (if installed) etc.) of the landfill will not be in jeopardy of damage from seismic deformations..."; and 3) "... The slope stability report presents the required analyses that supports the conclusion that the existing west slope of the landfill and the proposed final cover systems are stable under both static and dynamic conditions for the current slope conditions, as required by Section 21750(f)(5). Given the supporting analysis included in the subject report completed by BAS/CET, the western slope of the Jamestown Landfill meets the slope stability requirements of 27 CCR." Based on the engineer's certification statement that the slope systems were to be stable under both static and dynamic conditions for the current slope conditions, the above statement met the minimum requirements of Title 27 Section 21750(f)(5)(D).
17. Staff inspected the landfill on 19 October 2005 with Tuolumne County to visually evaluate the stability of the western slope and the final cover. Prior to the winter storms, it was evident that the entire cover had already experienced a significant amount of desiccation. Prolonged exposure to sunlight and high temperatures dried the clay cover material. The greatest density of desiccation cracks occurred on the western slope. Another problem was that many areas on the western slope were void of vegetation. This is critical because the root systems of the vegetation provide some additional strength to the soil cover and the vegetation provides erosion control along the slope.
18. On 31 January 2006 staff again inspected the western slope of the landfill. At that time, the clay cover material on the western slope was completely saturated, and it appeared that a small slide had occurred on the upper western slope. Also, a small pile of approximately six-inch average diameter "clay balls" had accumulated at the base of the western slope. Adjacent to the clay pile, the leachate collection header pipe was broken. It appears that the "clay-balls" had rolled down the slope and struck the pipe before settling in a pile.

19. In December 2005, the County implemented a maintenance program to keep the western slope drainage channels free of clay. Because of the saturated conditions on the western slope and the inability to access the area until the clay material has dried out, staff requested that the Discharger provide a weekly status report on the condition of the western slope.
20. In the 2005 annual groundwater monitoring report, the Discharger stated: "Visual monitoring of the West Slope on December 29, 2005, following a significant rain event, revealed that the uppermost clay was eroding from the surface and that clay slimes were accumulating in the upper concreted drainage bench. Clay slimes were removed from the bench to preserve flow of storm water runoff along the bench."
21. On 7 March 2006, the Discharger's consultant reported that "three substantial storm events occurred during the previous month: February 27-28 (2.07 inches in Sonora), March 3 (1.17 inches in Sonora) and March 5-6 (0.68 inches in Sonora). A second near surface slide located above the lower drainage ditch remobilized following the second rainfall event and deposited a large quantity of clay into the lower drainage bench. This slide is just south of the previous slide area. Also a new near surface slide mobilized following the third storm event and deposited a significant quantity of clay into the upper drainage bench This slide is on the south side of the upper slope area, and within the area where wet clays were noted following a 10-day dry period". It should be noted that February 2006 was dryer than normal and only 0.84 inches of rain fell, excluding rainfall on 27th and 28th of February.
22. On 28 March 2006, the Discharger's consultant reported that a new larger slide had occurred on the western slope.
23. On 6 April 2006, the Discharger's consultant reported:
 - The total rainfall at Sonora for the last seven-day reporting period was 10.41 inches;
 - Total Sonora rainfall since 1 October 2006 has been 43.53 inches, or 136% above the normal annual rainfall. Normal annual rainfall is approximately 32 inches;
 - Numerous near surface slides occurred on the middle and lower sections of the west slope following the heavy rains that occurred during this period. Little movement of near surface clays was observed on the upper section of the west slope;
 - On 31 March 2006 enough clay was removed from the outside of the lower drainage bench to permit runoff to flow to the down drain. It is likely that

- additional sliding following heavy rains early 1 April 2006 resulted in blocking the flow of runoff in the lower drainage bench behind the slides.
- A substantial quantity of clay from the middle and lower slopes slid to the bottom of the slope. Mounded clay at the base of the slope caused runoff flow to be diverted to the north and under the storage tank. Water flow estimated at 25 gpm was observed coming from a pipe-like spring near the contact with native bedrock at the northern base of the slope. Similar, but slower, discharge estimated at 5 gpm was observed coming from near bedrock surface seeps on the south side the embankment. Numerous near surface seeps were observed in the bedrock area along the access road leading to the bottom of the embankment and these seeps combined to create a flow of approximately 10 gpm flowing down the access road; and
 - It is unlikely that hand crews can remove all the clays from the drainage benches during this wet season. With the large quantity of clays that have accumulated in the lower ditch it may not be possible to re-establish flow to the downdrain using hand excavation methods. The County intended to continue to remove clays from the outside of the upper drainage bench to maintain runoff flow to the concrete down drain.
24. On 19 May 2006, staff inspected the western slope. The western slope had failed from the second bench from the top to the base. A significant amount of clay had slid. Clay covered the drainage channels / benches, thus any rainfall would flow directly across the clay surface rather than being diverted. Large desiccation cracks were evident on the exposed clay. One-foot below the clay surface, the material was still saturated. The creek at the base of the western slope appeared to have had clay from the western slope deposited in it. The leachate collection piping at the base of the western slope was still inoperable. The condition of the final cover, the runoff/run on structures, the lack of vegetation, the instability of the cover, and the lack of leachate in the collection system are violations of WDRs Order No R5-2002-0173 and Title 27.
25. Title 27, Section 21090(b)(2) states: "Steeper-Sloped Portions — Areas with slopes greater than ten percent, areas having surface drainage courses, and areas subject to erosion by water or wind shall be protected from erosion or shall be designed and constructed to prevent erosion."
26. Title 27, Section 20365(a) states: "Precipitation and Drainage Controls — Units and their respective containment structures shall be designed and constructed to limit, to the greatest extent possible, ponding, infiltration, inundation, erosion, slope failure, washout, and overtopping under the precipitation conditions specified in Table 4.1."

27. Table 4.1 of Title 27 defines the design storm event for a Class III landfill as a 100 year-24-hour storm. The Department of Water Resources at Sonora Ranger Station defines the 100 year-24-hour storm as 5.35-inches and the 100 year-season as 58.79-inches. The longest 24-hour storm event for 2005-2006 rain season was 3.38 inches on 4 April 2006. From 1 July 2005 through 30 June 2006, the season rainfall was recorded at 49.69-inches. This amount falls between 45.72 and 51.38 inches, which are the 10-year and 25-year season rainfall return periods.
28. The monitoring system and leachate recovery system were damaged during the construction. The Discharger's 2005 Annual Monitoring Report states: "Landfill closure construction activities appear to have caused blockage of the discharge from the French drain outfall (JS-2) near the base of the western embankment. The French drain collection system and outfall piping for spring JS-2 should be repaired." Failure to maintain the monitoring system is a violation of the Discharger's WDRs. Failure to remove liquid from the French drain is also a violation of Title 27.
29. Title 27 Section 20365(e) states: "Internal site drainage from surface or subsurface sources shall not contact or percolate through wastes. Surface and subsurface drainage from outside of a waste management unit shall be diverted from the Unit."
30. Prior to 28 July 2006, the Discharger failed to submit its certified final construction documentation for the closure of the landfill that was complete in June 2005.
31. The current cover does not comply with the performance standards outlined in Title 27. Therefore, the Discharger may elect to clean-close the facility or install a re-engineered final cover that complies with Title 27.
32. Title 27, Section 21090(f), states in part: "a discharger proposing to clean-close a landfill shall submit a clean closure plan meeting the requirements of this subsection. *[Note: see also CIWMB's additional landfill clean closure requirements under §21810.]* The purpose of clean-closure is to render the landfill (including all surrounding environs contaminated by waste released from the landfill) no longer capable of posing a threat to water quality. The purpose of a clean-closure plan is to propose a series of actions, including an accurate estimate of the cost of each such action that will meet the requirements of this paragraph. Upon the RWQCB's finding that the discharger has successfully completed clean-closure under this paragraph, the landfill shall no longer be subject to the SWRCB-promulgated requirements of this title. ..."

33. California Water Code Section 13301 states, in part, that:

"When a regional board finds that a discharge of waste is taking place or threatening to take place in violation of requirements or discharge prohibitions prescribed by the regional board or state board, the board may issue an order to cease and desist and direct that those persons not complying with the requirements or discharge prohibitions (a) comply forthwith, (b) comply in accordance with a time schedule set by the board, or (c) in the event of a threatened violation, take appropriate remedial or preventive action."

34. California Water Code Section 13267 states, in part, that:

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

The Discharger owns and operates the facility subject to this Order. The reports required by this Order are necessary to assess compliance with this Order, the Waste Discharge Requirements, CCR Title 27 and Subtitle D of 40CFR of the Federal Code of Regulations.

35. California Water Code Section 13268 states, in part, that:

"(a) Any person failing or refusing to furnish technical or monitoring program reports as required by subdivision (b) of Section 13267, or failing or refusing to furnish a statement of compliance as required by subdivision (b) of Section 13399.2, or falsifying any information provided therein, is guilty of a misdemeanor and may be liable civilly in accordance with subdivision (b).

(b)(1) Civil liability may be administratively imposed by a regional board in accordance with Article 2.5 (commencing with Section 13323) of Chapter 5 for a violation of subdivision (a) in an amount which shall not exceed one thousand dollars (\$1,000) for each day in which the violation occurs."

36. Issuance of this Order is exempt from the provisions of the California Environmental Quality Act (Public Resources Code Section 21000, et seq.), in accordance with Title 14, California Code of Regulations, Section 15321(a)(2).
37. Any person adversely affected by the action of the Regional Water Board may petition the State Water Resources Control Board (State Water Board) to review the action. The petition must be received by the State Water Board within 30 days of the date the Regional Water Board adopted this Cease and Desist Order. Copies of the law and regulations applicable to filing petitions will be provided on request.

IT IS HEREBY ORDERED that Cease and Desist Order No. R5-2004-0030 is rescinded and pursuant to the California Water Code, Sections 13301 and Section 13267, Tuolumne County shall:

1. Cease and desist, forthwith, from violating the requirements of WDRs Order No. R5-2002-0173.
2. Immediately implement controls to prevent any material from eroding from the cover and entering any surface water drainages draining the facility.
3. No later than **15 October** of each year, the landfill shall have all storm water management controls in place for the forthcoming wet season.
4. No later than **15 October 2006**, the Discharger shall continually maintain all runoff/run-on drains on the final cover such that they are able to freely divert all storm water away from the cover.
5. No later than **15 October 2006**, the Discharger shall submit a plan to repair the leachate collection piping at the base of the west slope. The repair of the leachate collection piping shall be completed no later than **31 December 2006**.
6. Beginning **1 December 2006**, and by the first day of the second month following each calendar quarter (i.e., by 1 February, 1 May, 1 August, and 1 November each year), the Discharger shall submit a progress report describing the work completed to date regarding each of the reporting requirements described above.
7. No later than **31 December 2006**, the Discharger shall submit a report that provides evidence that the leachate drainage system is operational. The report must include a plan for monitoring the performance of the LCRS.

8. No later than **2 January 2007**, the Discharger shall submit a revised closure plan that complies with California Code of Regulations Title 27. If the Discharger elects to clean close the landfill, the clean closure plan must include a closure date for completion of the clean closure for approval by the Executive Officer.
9. No later than **1 July 2007**, the Discharger shall initiate construction of the final cover. The Discharger shall notify the Regional Water Board in writing 48 hours prior to initiating fieldwork. All components of the final cover (including the landfill gas system) shall be installed and operating at their design specification no later than **31 December 2007**.
10. No later than **1 February 2008**, the Discharger shall submit the final construction documentation in compliance with Section 20324(d) of Title 27 CCR.

In addition to the above, the Discharger shall comply with all applicable provisions of the California Water Code that are not specifically referred to in this Order. As required by the California Business and Professions Code Sections 6735, 7835, and 7835.1, all technical reports shall be prepared by, or under the supervision of, a California Registered Engineer or Professional Geologist and signed/stamped by the registered professional.

If, in the opinion of the Executive Officer, the Discharger fails to comply with the provisions of this Order, the Executive Officer may refer this matter to the Attorney General for judicial enforcement or may issue a complaint for administrative civil liability.

Failure to comply with this Order or with the WDRs may result in the assessment of Administrative Civil Liability of \$1,000 to \$10,000 per day of violation, depending on the violation, pursuant to the California Water Code, including sections 13268, 13350 and 13385. The Regional Water Board reserves its right to take any enforcement actions authorized by law.

I, PAMELA C. CREEDON, Executive Officer, do hereby certify 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 22 September 2006.

PAMELA C. CREEDON
Executive Officer