

INFORMATION SHEET

ORDER NO. R5-2008-_____
COUNTY OF TUOLUMNE
JAMESTOWN LANDFILL
CLOSURE, POST-CLOSURE MAINTENANCE, AND CORRECTIVE ACTION
TUOLUMNE COUNTY

The Jamestown Landfill is owned and operated by the County of Tuolumne (Discharger) and is located approximately one-half mile southeast of Jamestown, California. The Landfill is on a 54-acre parcel and consists of one existing unlined waste management Unit covering 15.5 acres. The landfill began accepting waste in 1974 and stopped accepting waste in 1995, and closure was completed in 2005. The landfill contains approximately 522,000 tons of in-place refuse. The landfill essentially occupies the top of a north-south trending ridge as well as ravines to the north and west. Groundwater moves radially away from the facility in all four directions. The nearest water well is reported to be 1,500 feet west of the landfill.

Previous Waste Discharge Requirements Order No. R5-2002-0173 required closure of the landfill in accordance with the Discharger's February 2003 Final Closure Plan. Closure was completed in 2005; however, the clay portions of the final cover experienced significant desiccation by October 2005, and the steeper portions of the landfill's side slopes experienced significant erosion and shallow slide failures over that winter. The western side slope, which is inclined as steep as 1.4 horizontal to 1 vertical (1.4H:1V), was subsequently covered with anchored plastic sheeting prior to the 2006-07 winter rains. The Regional Water Board issued Cease and Desist Order No. R5-2006-0100 requiring a revised closure plan for the western side slope by 2 January 2007. The revised closure plan was submitted; however, prior to its implementation, additional failures occurred on the eastern side of the landfill on the 2H:1V side slopes. These additional slope failures, as well as tension cracks observed near the outboard edges of the benches above the 2H:1V slopes, caused the Discharger to re-evaluate the long-term stability of the clay final cover on all of the side slopes. The Discharger determined that the clay cover needed to be replaced and that the steepness of the side slopes would need to be significantly reduced. The Discharger also determined that this would require the re-closure of the entire landfill due to the need to relocate large amounts of the landfill waste from the side slopes to the top deck.

The Discharger submitted an April 2008 *Revised Final Closure Plan* that includes the plan for re-closing the landfill. The purpose of re-closing the landfill is to replace the existing clay cover that is desiccated and unstable, and to significantly reduce the steepness of the landfill side slopes from the current 1.4H:1V and 2H:1V slopes, to slopes no steeper than 2.75H:1V. The Discharger will construct 15-foot wide benches every 50 vertical feet.

The closure design includes constructing a stabilization buttress on the eastern side of the landfill, regarding the existing side slopes to meet stability criteria, relocating excavated refuse within the existing landfill footprint, reconstructing the final cover system, reconstructing the existing landfill gas system, reconstructing the existing surface water drainage system, and providing erosion control.

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The proposed final cover is an engineered alternative consisting of, from top to bottom, the following:

- a. A two-foot thick soil vegetative/erosion resistant layer.
- b. A geosynthetic layer consisting of either:
 - i. A double sided geocomposite over a 40-mil linear low-density polyethylene (LLDPE) textured geomembrane, or
 - ii. An 8-oz/yd² non-woven filter fabric over a 60-mil Agru Super Gripnet high-density polyethylene (HDPE) textured geomembrane.
- c. A 12-oz/yd² cushion geotextile (only if required by the Engineer or CQA Officer to protect the geomembrane from rocks in the underlying foundation layer soil).
- d. An 18-inch compacted soil foundation layer.

The Discharger provided demonstrations required by Title 27 for the proposed engineered alternative final cover design in the April 2008 *Revised Final Closure Plan*. The Discharger stated that a portion of the original final cover was constructed with compacted clay, and that although the clay had a hydraulic conductivity of lower than 1×10^{-6} cm/s, site observations indicated the clay is highly desiccated and cracked and does not meet the performance standard. The Discharger also stated that the low permeability layer for the proposed closure consists of a geomembrane that is essentially impermeable to through-flow of water and therefore exceeds the performance standard. Additionally, the final cover system will include an internal drainage layer to remove water from the cover system before it potentially could flow through the underlying barrier. The Discharger states that therefore the proposed barrier layer is consistent with the performance goal and provides better protection against water quality impairment than the prescriptive standard.

There are eleven groundwater wells installed at the landfill facility. Three of these wells, DM-1, DM-2, and DM-3, are located about 2,600 feet south of the landfill and were installed to monitor a new landfill that was not constructed. Monitoring well DM-2 has since been designated as a background monitoring well for the landfill, although the Discharger uses intrawell statistical analysis for detection monitoring. The remaining wells, DM-4, TM-1R, TM-2R, TM-3, TM-4RR, TM-5, TM-6, and TM-7 are either in detection monitoring or corrective action monitoring. Wells DM-1 and DM-3 do not serve any useful purpose, and are no longer monitored at the request of the Discharger.

Volatile organic compounds have been detected in monitoring wells TM-1R, TM-2R, TM-3, TM-4RR, TM-5, TM-6, and TM-7. The Discharger submitted an August 2001 amended RWD for corrective action concluding that the source of the VOCs was from landfill gas and proposed the installation of a final cover and passive landfill gas vents. The Discharger also concluded that groundwater extraction would be costly and ineffective for remediation due to the very low yield of the onsite wells, the low concentrations of the VOCs, and the fractured rock hydrogeology.

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In 2002, the Regional Water Board issued WDRs approving the closure and corrective action plan, and the Discharger completed closure and installation of the passive landfill gas vents during 2005. The Regional Water Board concurred that for this site, a groundwater extraction and treatment system is economically infeasible because the low concentrations of the VOCs in groundwater that do not pose a substantial present or potential hazard to human health or the environment, the low transmissivity of the fractured bedrock, and that the additional cost to the citizens of Tuolumne County was not justified. Given the need to re-close the landfill, the Discharger proposes to re-install the passive landfill gas vents, wells, and trenches as part of the closure activities. Additional vents will be included on the benches of the side slopes, and at the east perimeter of the landfill where VOCs are most prevalent.

Surface drainage is toward (New) Don Pedro Reservoir in the Sonora Hydrologic Area (536.31) of the San Joaquin hydrologic Basin.

WLB