

INFORMATION SHEET

ORDER R5-2014-XXXX
COUNTY OF TULARE
OPERATIONS AND CORRECTIVE ACTION
TEAPOT DOME MUNICIPAL SOLID WASTE LANDFILL
TULARE COUNTY

The County of Tulare (hereafter Discharger) owns and operates an unlined, municipal solid waste landfill (facility) about four miles southwest of the City of Porterville in Tulare County. The California Regional Water Quality Control Board (Central Valley Water Board) adopted Waste Discharge Requirements (WDRs) Order No. R5-2003-0115 on 11 July 2003, which classified the waste management unit (Unit) as a Class III landfill as defined in Title 27, California Code of Regulations, section 20005 et seq. (hereafter Title 27), that accepts or accepted municipal solid waste. The facility contains one unlined Unit that covers 71 acres. The Discharger does not propose expansion. The facility originally started as a burn dump in 1950 and was converted to a landfill in the early 1970's. The proposed Order revises the existing WDRs to implement a corrective action program.

The facility is underlain by unconsolidated geologic material comprised of younger alluvium of moderately to highly permeable, interbedded fluvial deposits of gravelly-sand, silty-sand, silt, and clay. The measured hydraulic conductivity of the native soils underlying the Unit ranges from approximately 1×10^{-4} cm/sec and 1.7×10^{-3} cm/sec.

There are three groundwater zones beneath the site – an unconfined zone, an upper semi-confined zone, and a lower semi-confined zone. A leaky confining layer (approximately 40 feet thick) separates the unconfined zone and the upper semi-confined zone. Groundwater depth ranges between 75 and 98 feet below ground surface (depending on location) and seasonally fluctuates approximately 5 to 10 feet. Background, detection, and corrective action groundwater monitoring wells are screened in the unconfined and the upper semi-confined groundwater zones.

Volatile organic compounds (VOCs) have been detected in all three groundwater zones. The results of detection and evaluation monitoring indicate that the nature of the release consists predominantly of low-concentrations of chlorinated VOCs including: tetrachloroethylene (PCE); trichloroethylene (TCE); cis-1,2-dichloroethylene (1,2-DCE); ~~trans-1,2-DCE~~; 1,1-DCE; 1,1-dichloroethane (1,1-DCA); ~~1,2-dichloroethane (1,2-DCA)~~; chloroethane; vinyl chloride; trichlorofluoromethane (CFC-11); dichlorodifluoromethane (CFC-12); and chlorodifluoromethane (CFC-22); ~~1,4-dichlorobenzene (1,4-DCB); 1,2-dichloropropane; chlorobenzene; and iodomethane~~. Inorganic waste constituents (barium, cobalt, manganese, calcium, potassium, and bicarbonate) have also previously been detected at concentrations that appeared to statistically exceed their respective background levels in groundwater samples.

The Discharger submitted an Evaluation Monitoring Program (EMP) report that delineated the extent of impacted groundwater with a concentration of total chlorinated VOCs exceeding 1 µg/L and the magnitude of contamination near the Unit. The Discharger determined that the lateral extent of the VOC plume in the unconfined zone extended approximately 1.7 miles southwest of the point of compliance and approximately 1.1 miles west of the point of compliance. The lateral extent of the VOC plume in the upper semi-confined zone extended approximately 2.0 miles southwest of the point of compliance and approximately 1.1 miles west of the point of compliance. Sampling of the lower semi-confined zone was conducted using private off-site

wells and chlorinated VOCs were detected in approximately one-third of the samples. The lateral extent of the VOC plume in this zone was estimated to extend 1.4 miles to the southwest. Trihalomethanes and dibromochloropropane were found in upgradient background wells and were determined to have originated from sources other than the Unit. Based on statistical analysis, the plume of inorganic constituents (barium, cobalt, manganese, calcium, potassium, and bicarbonate) did not appear to extend laterally west of the facility boundary.

Following completion of the EMP, the Discharger submitted an Engineering Feasibility Study (EFS) for corrective action. Several other updated feasibility studies were subsequently submitted. Central Valley Water Board staff approved the final EFS to establish a corrective action program (CAP) on 6 September 2006.

Data in the EFS suggested that groundwater elevations along the eastern edge of the Unit were potentially affected by infiltration from the effluent from the City of Porterville's waste water treatment plant. Until June 2002, the City of Porterville discharged sewage sludge and effluent from the wastewater treatment plant to the property immediately east and hydraulically upgradient of the landfill. Subsequent to the EFS, Central Valley Water Board staff required that the Discharger submit a report verifying that the five-foot separation of groundwater from the base of the waste, as required by Section 20240(c) of Title 27, was being maintained. It was determined that a portion of the buried waste had been historically impacted by groundwater but that the required groundwater-waste separation had been maintained since the first quarter of 2003.

The Discharger submitted a Groundwater-Waste Separation Mitigation Plan (GWSM Plan), which after subsequent addendums, was approved by Central Valley Water Board staff on 28 February 2008. The GWSM Plan established a groundwater elevation trigger of 340 feet MSL and identified proactive mitigation measures to be implemented in the event that groundwater levels exceed the trigger in monitoring wells M-1A, M-1S, or M-9.

Due to the low-levels and decreasing trend in VOC concentrations in groundwater, monitored natural attenuation (MNA) was approved as a CAP measure in lieu of a pump and treat system. This approval was conditioned on the requirement that the sum of total chlorinated VOCs, excluding trihalomethanes and dibromochloropropane, does not exceed 10 µg/L for two consecutive monitoring periods. The CAP also included the following measures: mitigation of groundwater-waste separation, destruction of the existing water supply well to prevent the ongoing downward movements of waste constituents by eliminating a vertical conduit between the unconfined zone and the upper semi-confined zone, MNA of chlorinated VOCs downgradient of the Unit, performance monitoring of affected downgradient water supply wells, relocating the onsite landfill water supply well to a location within the plume and pumping the new well for facility operations. Treatment of water from the new supply well is not provided prior to use as dust control over the existing waste footprint because the chlorinated VOC concentrations are low (less than 10 micrograms per liter). However, any other use of the water requires treatment.