
Central Valley Regional Water Quality Control Board

30 May 2022

Via e-mail only

Mr. Garrett Thornton
Department of Toxic Substances Control
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NOTICE OF APPLICABILITY OF GENERAL ORDER 2015-0012-074, IN-SITU GROUNDWATER REMEDIATION AND DISCHARGE OF TREATED GROUNDWATER TO LAND, ORLAND CLEANERS, GLENN COUNTY

On 7 September 2021, AECOM of Sacramento, California (AECOM) submitted on behalf of the California Department of Toxic Substances Control (DTSC or Discharger), a *Notice of Intent* (NOI) for the Orland Dry Cleaners Site (Site), requesting coverage under Central Valley Regional Water Quality Control Board (Central Valley Water Board) Order No. R5-2015-0012, *Waste Discharge Requirements General Order for In-Situ Groundwater Remediation and Discharge of Treated Groundwater to Land* (General Order). Based on information in the submittal, Central Valley Water Board staff (Staff) has determined that this project meets the required conditions to be covered under the General Order and that all the requirements contained in the General Order are applicable to this project. The project is assigned Order No. R5-2015-0012-074.

Project Location:

The project is located at 726 5th Street in the City of Orland, Glenn County. Township 22N, Range 03W, Section 22 Mount Diablo Baseline & Meridian. Assessor's Parcel Number (APN) 0401550070.

Project Description:

The Site has been operated as a dry-cleaning business since the 1940s. Dry-cleaning operations were conducted on-Site from the 1940s to 1988. From 1988 through 1992, the dry-cleaning operations were performed off-Site. In May 1992, dry-cleaning operations resumed on-Site using a fully self-contained dry-cleaning machine. Prior to 1988, spent solvent tetrachloroethene (PCE) was discharged into a sump located in the building, which has caused pollution of soil and groundwater beneath the Site.

There are at least four aquifer zones of relatively high permeability beneath the Site, designated by the letters A, B, C, and D. The A zone is the shallowest, and the D zone is the deepest. The A zone is unconfined and occurs between approximately 20 and

45 feet below ground surface (bgs). The B zone is partially confined and occurs between 60 and 85 feet bgs. The C zone occurs between approximately 100 to 140 feet bgs. The D zone well is screened between approximately 157 and 167 feet bgs. The most recent groundwater sampling was conducted in October 2019, which indicated groundwater flow direction in the A zone was toward the east-southeast, with a horizontal gradient of approximately 0.0019 foot per foot (ft/ft).

Elevated concentrations of PCE have been detected in the subsurface underneath the Site. In 1989, the Central Valley Water Board issued Cleanup and Abatement Order No. R5-1989-0717 requiring the Site's previous owner to submit a work plan with corrective measures to prevent the further discharge of PCE to the environment. However, that work plan was never finalized. In 1991, the Site was listed in the Resource Conservation and Recovery Act (RCRA) Database as a large-quantity hazardous waste generator. Subsequently, DTSC has been overseeing the cleanup activities at the Site.

In 2010, DTSC conducted in-situ groundwater treatment injections using emulsified soybean oil product (EOS) amendment under Central Valley Water Board's General Order No. R5-2008-0149-013, *General Waste Discharge Requirements (WDRs) for In-Situ Groundwater Remediation at Sites with Volatile Organic Compounds, Nitrogen Compounds, Perchlorate, Pesticides, Semi-Volatile Compounds, Hexavalent Chromium and/or Petroleum Hydrocarbons*. In March 2013, following the completion of the remediation project, Staff terminated the Discharger's coverage under General Order No. R5-2008-0149-013. Post-remediation data from the Site demonstrates that the 2010 in-situ enhanced anaerobic bioremediation of groundwater was successful and resulted in decreased PCE concentrations and reduced overall contaminant mass in the groundwater. However, elevated PCE concentrations in groundwater remain above maximum contaminant levels (MCLs) near the source area.

To address the remaining elevated PCE concentrations in groundwater, DTSC is proposing additional in-situ remediation to further reduce PCE mass at the Site through the injection of carbon substrates (electron donor), and the augmentation of *dehalococcoides* bacteria within the source area where PCE concentrations are believed to be greater than 20 micrograms per liter ($\mu\text{g/L}$). For this second round of injections, DTSC has proposed using a molasses and emulsified vegetable oil (EVO) mixture. The proposed amendment mixture contains approximately 70 percent molasses, 20 percent vegetable oil, 5 percent whey, and 5 percent water. Before injection, the molasses/EVO blend will be mixed with dilution water to prepare a 10 percent injection solution. In addition to containing carbon, hydrogen, and iron (energy and electron donors), molasses provides inorganic nutrients (e.g., potassium, calcium, sodium, and vitamins) essential for microbial growth. The final decay products of the carbon substrates will be carbon dioxide and water. After completing the molasses/EVO injections, a bioaugmentation culture, KB-1®, will be injected in the treatment intervals at each injection point using an anaerobic injection water preparation packet, KB-1® Primer.

Approximately 12 borings will be used to inject the amendment. DTSC proposes one array of injection points immediately south of Colusa Street along the northern side of

the commercial property currently occupied by North Valley Collision & Frame. The second array of injection points are proposed immediately east of the same commercial property. The proposed injection points will be spaced at 15 feet intervals. The target depth of amendment injection would be from 30 feet to 55 feet bgs. An amendment volume of 10 percent pore volume was determined for this round of injections. Based on the 12-injection-point configuration, this equals a total amendment volume of approximately 30,757 gallons for the Site and 2,563 gallons per borehole. DTSC proposes to inject 0.4 gallons of KB-1® culture along with 100 gallons of anaerobic KB-1® Primer water at each injection point.

To allow for dosing adjustments and amendment optimization, the amendments will be injected in two phases. The mobilization date of the second event would be determined after receiving the post-injection performance results of the first event.

As part of this Order, groundwater monitoring will be performed according to the attached Monitoring and Reporting Program (MRP) to confirm that in-situ injections are not adversely impacting groundwater quality and to monitor the progress of the remedy.

General Information:

1. The project will be operated in accordance with the requirements contained in General Order No. R5-2015-0012 and in accordance with the information submitted in the Work Plan, NOI, and specified in this Notice of Applicability (NOA).
2. The required annual fee (as specified in the annual billing you will receive from the State Water Resources Control Board) shall be submitted until this NOA is officially revoked.
3. Injection of materials other than molasses/20% EVO, KB-1® bioaugmentation culture and primer and tap water into the subsurface is prohibited.
4. The General Order requires a contingency plan for corrective actions should water quality exceed the requirements of the Order at the points of compliance. The General Order prohibits concentrations of metals, total dissolved solids (TDS), or electrical conductivity more than 20% greater than their respective baseline levels. Should corrective actions be necessary to revert the adverse effects of injections, DTSC shall immediately submit a contingency work plan for regulatory review and approval. Once approved by the Central Valley Water Board staff, the Discharger will immediately implement the regulatory approved contingency plan. Failure to abide by the conditions of the General Order could result in an enforcement action as authorized by provisions of the California Water Code.
5. The Discharger shall comply with the attached Monitoring and Reporting Program, Order No. R5-2015-0012-074, and any revisions thereto as ordered by the Executive Officer.

If you have any questions regarding this matter, you may contact Sid Sewalia by email at siddharth.sewalia@waterboards.ca.gov.

(for) PATRICK PULUPA, Executive Officer

Attachment: Monitoring and Reporting Program R5-2015-0012-074

Cc (via e-mail):

Ms. Venus Sadeghi, AECOM