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## Central Valley Regional Water Quality Control Board

September 2, 2020

The Davis Center, LLC  
c/o Brett Stover  
713 Bayview Drive  
Manhattan Beach, CA 90266

***NOTICE OF APPLICABILITY OF GENERAL ORDER NO. R5-2015-0012-064,  
FORMER LEWIS CLEANERS, THE DAVIS CENTER, 670 G STREET, DAVIS,  
YOLO COUNTY***

Terraphase Engineering Inc. submitted a completed Notice of Intent, dated February 27, 2020, requesting coverage for the Davis Center in Davis under Order No. R5-2015-0012, *Waste Discharge Requirements General Order for In-situ Groundwater Remediation and Discharge of Treated Groundwater to Land*. Based on information in the submittal, it is our determination that this project meets the required conditions to be approved under Order No. 2015-0012. All of the requirements contained in the general order are applicable to this project. The project is assigned Order No. R5-2015-0012-064.

**Project Location:**

The project is in Yolo County, Township 8N, Range 2E, Section 10, Mount Diablo Baseline & Meridian. Assessor's Parcel Number 070-169-03; Latitude 38°33'2" N, Longitude 121°44'25" W.

**Project Description:**

The Davis Center property is located at 670 G Street in Davis. Between the 1960s and 2000s, dry cleaning businesses including the Lewis Cleaners operated at 670 G Street in Davis (the "Site"). It is believed that previous use of tetrachloroethene at the Site has resulted in pollution of soil and groundwater.

The Davis Center Source Area Remediation Plan includes enhancement and operation of the Site soil vapor extraction (SVE) system and in-situ remediation of the underlying groundwater.

The Davis Center will use pneumatic fracturing to increase permeability of both the vadose zone and the saturated zone for improving the effectiveness of SVE and

increasing the distribution of injected amendments into low permeable saturated zone soils. Pneumatic fracturing in 12 borings will be conducted between eight and 90 feet below ground surface (bgs) using a sonic drill rig. The borings will be fractured in 3.5-foot intervals using inflatable packers to seal off the intervals. At each interval, compressed nitrogen will be injected to pneumatically fracture the surrounding formation for about 30 seconds at pressures between 150 to 200 pounds per square inch (psi). Within the saturated zone between 35 and 90 feet bgs, the compressed nitrogen will be followed by approximately 500 gallons of the in-situ groundwater remediation amendment mixture (described below) at each interval. The biological cultures will be added to the formula after the first 250 gallons are injected at each interval.

Within the vadose zone between eight and 35 feet bgs, a proppant consisting of 400 pounds of sand with guar and enzyme breaker will be injected following the compressed nitrogen into the new fractures within each 3.5-foot interval. The enzyme breaker liquifies the guar after a few hours allowing recovery of the thinned liquid and leaving the sand filled fractures in place. Five of the pneumatic fracture/injection boreholes will be completed as injection wells to allow for future additional injection events, if needed. The injection wells will be constructed with well screens between 35 and 50 feet and with sand packs between eight and 90 feet. The remaining injection boreholes will be backfilled with sand between eight and 90 feet to maintain increased air and fluid permeability. Cement grout will be placed between zero and eight feet deep.

Based on the results of a bench study, the Davis Center plans to inject up to 200,000 gallons of an in-situ groundwater remediation amendment mixture consisting of the following commercially available amendments:

- Newman Zone QR™, which contains 30% potassium lactate, 17% simple and complex carbohydrates, 3% Microblend™ (yeast extract and vitamin B12), 1% diammonium phosphate, and other micronutrients.
- Newman Zone®, which contains 50% emulsified soybean oil and 4% sodium lactate.
- Z-Loy™ MicroMetal, which contains 50% zero valent iron with a particle size of ~1µm and 50% propylene glycol.
- Bacterial cultures containing bacteria that can fully degrade PCE and its daughter products.

After completion of the injection program, a Remedial Action Implementation Report will be submitted documenting the completion of the groundwater remediation injection activities, first quarter of groundwater monitoring and progress of the SVE system. Additional monitoring will be conducted and reported as described in the attached Groundwater Monitoring and Reporting Program.

The Central Valley Water Board circulated a fact sheet describing the project for public to review. All public comments and concerns from the neighboring residents were satisfactorily addressed by the Central Valley water Board staff.

**General Information:**

1. The project will be operated in accordance with the requirements contained in the General Order and in accordance with the information submitted in the completed Notice of Intent.
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 Notice of Applicability is officially revoked.
3. Injection of materials other than Newman Zone QR™, Newman Zone®, Z-Loy™ MicroMetal, bacterial cultures, sand, guar, enzyme breaker, compressed nitrogen, and water into the subsurface is prohibited.
4. 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 Davis Center shall comply with the attached Monitoring and Reporting Program, Order No. R5-2015-0012-064 and any revisions thereto as ordered by the Executive Officer.

If you have any questions regarding this matter, please call Sid Sewalia at (916) 464-4658.



For PATRICK PULUPA,  
Executive Officer

Attachment

cc: Ms. Margie Saldana, Regional Water Quality Control Board, Rancho Cordova  
Mr. Chris Alger, Terraphase Engineering, Inc., Oakland