

**STATE OF CALIFORNIA  
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
LOS ANGELES REGION**

**RESOLUTION NO. R04-012**

**APPROVING THE INITIAL STUDY AND ADOPTING  
A MITIGATED NEGATIVE DECLARATION FOR  
LARRY CANCHOLA AND MOJDEH DANESHRAH  
(VENICE MCLAUGHLIN CENTER)  
(OZONE INJECTION FOR GROUNDWATER CLEANUP)  
(FILE NO. 900660170)**

**WHEREAS, the California Regional Water Quality Control Board, Los Angeles Region (Regional Board) finds that:**

1. Larry Canchola owns and operates a strip mall commonly known as Venice McLaughlin Center (hereinafter Center) located at 11614 Venice Boulevard, Los Angeles, California. Mojdeh Daneshrad owns the land. Mr. Canchola and Mr. Daneshrad are collectively hereinafter identified as the Discharger. The Center is located at the intersection of Venice Boulevard and McLaughlin Avenue (figure 1) at 118°25'58" latitude and 34°00'12" longitude. Prior to redevelopment as a strip mall, an ARCO gasoline service station operated at the site from 1959 to 1986. The surrounding land uses are a mixture of commercial and residential.
2. On March 1, 2004, the Discharger filed a Report of Waste Discharge for injecting gaseous ozone into the shallow aquifer to remediate the contaminated groundwater at the site.
3. In 1997 a Phase II environmental assessment was conducted at the site. During the assessment detectable levels of hydrocarbon products were found in the soil and groundwater. Since 1997 several phases of assessments have been conducted on and offsite. These assessments include:
  - Twenty exploratory borings (AEI-1 through AEI-6, B-1, B-2, B-4, B-10, B-11, and B-12b through B-16b, B-19, B-20, B-22, and B-25b) were drilled and sampled from the ground surface to a maximum depth of 180 feet below ground surface (bgs).
  - Fifteen groundwater monitoring wells (B-6 through B9, and B-12 through B-18, B-20, B-23, B-24, and B-26) were installed and screened from approximately 60 to 75 or 80 feet bgs.
  - Three groundwater-monitoring wells installed in the Upper Silverado Aquifer (B-21, B-25, and B-27) and screened from approximately 120 to 130 feet bgs.
4. Petroleum hydrocarbons were detected in soil samples collected from borings (AEI-6, B-4, B-11, B-13) in the vicinity of the southwest and southeast corners of the main parking lot. The maximum hydrocarbon concentrations as gasoline (TPHg) detected in

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soil samples were 12,000 milligrams per kilogram (mg/Kg) in boring B-11 at 10 feet, 8,800 mg/kg in boring B-11 at 25 feet, 16,000 mg/Kg in boring B-6 at 45 feet, and 6,400 mg/Kg in boring B-13 at 65 feet.

5. Petroleum hydrocarbons including benzene, toluene, ethylbenzene, and xylene, (BTEX) were detected in groundwater. As of July 2003, the highest concentrations were 69,000 micrograms per liter ( $\mu\text{g/L}$ ) of TPHg and 2,700  $\mu\text{g/L}$  of benzene in well B-13. Tertiary butyl alcohol (TBA) was detected in groundwater samples collected from most wells within the site. The highest concentration of TBA was 1,800  $\mu\text{g/L}$  from well B-13. Di-isopropyl ether (DIPE) was also detected in groundwater samples collected from well B-15 at concentrations up to 3.4  $\mu\text{g/L}$ .
6. Quarterly groundwater monitoring and sampling activities started in January 2002 at the site and continue to the present. The first quarter 2004 monitoring report indicated elevated TPHg, benzene, toluene, ethylbenzene, total xylenes (BTEX), and tertiary butyl alcohol (TBA) concentrations in groundwater monitoring wells B-6 and B-13. The maximum TPHg, benzene, toluene, ethylbenzene, xylenes, and TBA concentrations of 57,000  $\mu\text{g/L}$  (TPHg), 2,000  $\mu\text{g/L}$  (benzene), 5,900  $\mu\text{g/L}$  (toluene), 4,300  $\mu\text{g/L}$  (ethylbenzene), 19,000  $\mu\text{g/L}$  (xylenes), and 1,900  $\mu\text{g/L}$  (TBA) were detected in groundwater monitoring well B-13.
7. The site is located in the City of Los Angeles in the West Coast Basin. Static water levels were measured in groundwater monitoring wells at depths ranging from 64.35 feet to 69.39 feet below ground surface elevation from January 3, 2002 to July 14, 2003. Groundwater beneath the area flows to the east-southeast.
8. In August 2003, soil vapor extraction pilot tests were performed on three triple nested wells (V-28, V-29, and V-30). The test results were used to assess the potential remedial alternatives for the site and develop a remedial action plan (RAP). The Discharger submitted to the Regional Board a RAP dated September 19, 2003. In the RAP the Discharger proposed to use C-Sparge<sup>TM</sup> technology for remediation of dissolved-phase fuel constituents in groundwater beneath the site. Four C-Sparge<sup>TM</sup> injection wells (IW-1, IW-2, IW-3, and IW-4) were proposed to remediate hydrocarbon-impacted groundwater at the site. The RAP was conditionally approved by the Regional Board in a letter dated January 15, 2004. The conditional approval required that the Discharger submit a RAP Addendum by February 27, 2004 and an ozone-injection Pilot Test Report by September 30, 2004. The Regional Board approved the Discharger's proposal to utilize ozone-injection technology to remediate petroleum hydrocarbon and oxygenate-impacted groundwater on-site. However, the ozone-injection technology was only approved on a pilot basis.
9. If the pilot test is determined to be successful and a full-scale treatment system is proposed for the site cleanup, the Discharger is required to submit a final RAP to the Regional Board for review and approval by the Regional Board Executive Officer (Executive Officer). Upon approval of the final RAP, the monitoring and Reporting Program may be revised to incorporate the approved full-scale treatment plan.
10. The Discharger proposes to install and operate a C-Sparge<sup>TM</sup> system to conduct the pilot test and to remediate the dissolved-phase plume beneath the site. The C-Sparge<sup>TM</sup>

technology combines low-flow [3 to 5 cubic feet per minute (cfm)] air sparging with ozonation to oxidize petroleum hydrocarbons into benign byproducts, carbon dioxide and water. Ozone is generated onsite using a control panel with a built-in compressor and ozone generator. Using perforated sparge points, microbubbles [10 to 50 micrometer (µm)] of encapsulated ozone are introduced below the water table, where the oxidation reactions take place. Up to four C-Sparge points will be installed onsite within and around the dissolved-phase plume, where highest concentrations of dissolved-phase benzene and TPHg are detected, and down gradient from the former USTs and dispenser island (Figure 2). The C-Sparge™ wells will be installed so that the bottom of the 30-inch long sparge tips are set at depths between 76.5 and 79 feet. During sparging, no groundwater or vapors will be extracted. Sparging will be performed on a cycled basis.

11. Ozone will chemically react with hydrocarbons in the immediate vicinity of each injection point to form intermediate by-products of various smaller chain hydrocarbons and oxygenates. The following table shows the laboratory-isolated breakdown by-products that could be produced during the ozone oxidation process with the hydrocarbons:

Constituent	Breakdown Products
TPH	acetate, butyrate, formate, propionate
BTEX	Carboxylic acids
MTBE	TBA (tertiary butyl alcohol), TBF (tertiary butyl formate), formate, oxygen, hydrogen peroxide
ETBE	TBA, TBF, acetate, oxygen, hydrogen peroxide
TBA	Formaldehyde, acetate, carbon dioxide, water

Finally, the residual oxygen formed from the initial ozone reduction reaction encourages bioremediation which consumes the listed by-products and converts them to carbon dioxide and water, thereby completing the remediation process.

12. Prior to initiating the C-Sparge™ technology, baseline samples will be collected from monitoring wells B-6, B-8, B-9, B-13, B-17, B-18, and B-24 and analyzed for the following parameters: TPHg, BTEX, MTBE, TBA, tertiary amyl methyl ether (TAME), di-isopropyl ether (DIPE), ethyl tertiary butyl ether (ETBE), ethanol, pH, temperature, dissolved oxygen (DO), oxidation-reduction potential (ORP), and dissolved ferrous iron. These samples will also be collected bi-weekly during the first month of system operation. Data collected during the testing period will be used to evaluate the C-Sparge™ effectiveness at this site. Measurements will also be taken to determine depth to groundwater in each of the wells.
13. On June 13, 1994, the Regional Board adopted a revised *Water Quality Control Plan for Coastal Watersheds of Los Angeles and Ventura Counties* (Basin Plan) which was amended on January 27, 1997 by Regional Board Resolution No. 97-02. The Basin Plan (i) designates beneficial uses for surface waters and groundwater, (ii) sets narrative and numerical objectives that must be attained or maintained to protect the designated beneficial uses and conform to the State anti-degradation policy (*Statement*

*of Policy with Respect to Maintaining High Quality Waters in California*, State Water Resources Control Board (State Board) Resolution No. 68-16, October 28, 1968), and (iii) describes implementation programs to protect all waters in the Region. In addition, the Basin Plan incorporates by reference applicable State and Regional Board plans and policies and other pertinent water quality policies and regulations. The Regional Board prepared the 1994 update of the Basin Plan to be consistent with previously adopted State and Regional Board plans and policies. This project implements the plans, policies and provisions of the Regional Board's Basin Plan.

14. The Basin Plan designated beneficial uses and water quality objectives for groundwater within the Santa Monica Basin as follows:  
  
Existing:       municipal and domestic supply; industrial service supply; industrial process supply, and agricultural supply.
15. The requirements contained in the waste discharge requirements Order for this project are based on the basin Plan, and as they are met, will be in conformance with the goals of the aforementioned water quality control plans and will project and maintain existing beneficial uses of the groundwater.
16. The permitted discharge is consistent with the anti-degradation provisions of State Board Resolution No. 68-16 (Anti-degradation Policy). The discharge may result in some localized temporary exceedance of background concentrations of dissolved oxygen, dissolved ferrous iron, total dissolved solids, sulfate, chloride, and boron. However, any parameter change resulting from the discharge:
  - a. will be consistent with maximum benefit to the people of the State,
  - b. will not unreasonably affect present and anticipated beneficial uses of such waters, and
  - c. will not result in water quality less than that prescribed in the Water Quality Control Plan for groundwater within the Santa Monica Basin of the Los Angeles Coastal Plain.
17. This Regional Board has assumed lead-agency role for this project under the California Environmental Quality Act (CEQA) (Public Resources Code section 21000 et seq.) and has conducted an Initial Study in accordance with section 15063 of the "State CEQA Guidelines" at California Code of Regulations, title 14, section 15000 et seq. Based upon the Initial Study, Regional Board staff prepared a Mitigated Negative Declaration that the project, as mitigated, will not have a significant adverse effect on the environment.
18. The Regional Board has notified the Discharger and interested agencies and persons of its intent to prescribe Waste Discharge Requirements for this discharge and has provided them with an opportunity to submit their written views and recommendations.
19. Copies of the Initial Study, the proposed Mitigated Negative Declaration, and Tentative Waste Discharge Requirements were transmitted to all agencies and persons known to be interested in the matter.

20. All comments received have been addressed by Regional Board staff. The Regional Board considered all testimony and evidence at a public hearing held on August 5, 2004, and good cause was found to approve the Initial Study and adopt a Mitigated Negative Declaration.

**THEREFORE BE IT RESOLVED BY THE REGIONAL BOARD THAT:**

1. The Regional Board hereby approves the Environmental Checklist and adopts the Mitigated Negative Declaration for the Larry Canchola and Mojdeh Daneshrad, project known as Injection of Gaseous Ozone for the Remediation of Groundwater.
2. A copy of this Resolution shall be forwarded to the State Water Resources Control Board.
3. A copy of this Resolution shall be forwarded to all interested parties.
4. The discharge of ozone into the shallow aquifer shall conform to all the requirements, conditions, and provisions set forth in *A. "Discharge Specifications," B. "Discharge Prohibitions,"* and *C. "Provisions"* of ORDER NO. R4-2004-0125.

**CERTIFICATION**

I, Jonathan Bishop, Interim Executive Officer, do hereby certify that the foregoing is a full, true and correct copy of a Resolution adopted by the California Regional Water Quality Control Board, Los Angeles Region on August 5, 2004.

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JONATHAN BISHOP  
Interim Executive Officer

August 5, 2004  
Date