



California Regional Water Quality Control Board

Los Angeles Region



Linda S. Adams
Cal/EPA Secretary

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Arnold Schwarzenegger
Governor

April 22, 2009

Ms. Holly Quasem
ConocoPhillips Company
P. O. Box 25376
Santa Ana, CA 92799-5376

GENERAL WASTE DISCHARGE REQUIREMENTS FOR GROUNDWATER CLEANUP AT PETROLEUM HYDROCARBON FUEL, VOLATILE ORGANIC COMPOUND And/OR HEXAVALENT CHROMIUM IMPACTED SITES - 76 SERVICE STATION #2705691, 3495 SOUTH STREET, LONG BEACH (FILE #908020116A, PRIORITY B-2) (ORDER NO. R4-2007-0019, SERIES NO. 073; CI NO. 9433)

Dear Ms. Quasem:

We have completed our review of your application for coverage under the General Waste Discharge Requirements to inject non-hazardous ozone at the site referenced above in Long Beach, California for groundwater cleanup and remediation.

The site is an active service station located on the northwest corner of South Street and Downey Avenue in Long Beach, California. There currently are two 12,000-gallon gasoline underground storage tanks (USTs) and four dispenser islands, a convenience store, and a car wash facility. The area immediately adjacent to the site is commercial. At the southwest corner of this intersection is Lakewood Regional Medical Hospital.

From August 2003 to November 2006, multiple site investigations were conducted at the site including the drilling and sampling of fourteen soil borings and eleven groundwater monitoring wells. Soil data indicates the subsurface at the facility has been impacted by petroleum hydrocarbons and the contaminant plume has begun to shift offsite.

The current groundwater monitoring program includes the sampling and analysis of 8 onsite wells and 3 offsite wells. During the most recent monitoring event, conducted in November 2008, depth to groundwater ranged from 11 to 14.9 ft bgs. The groundwater flow was to the west and southeast. Maximum concentrations of TPHg (16,000 µg/L), TBA (380,000 µg/L), and MTBE (6,200 µg/L) were detected.

To abate the impacted groundwater beneath the site, in May 2007, you submitted a work plan in which you proposed to conduct an ozone sparging feasibility study prior to implementing a full-scale remedial system. Conoco Phillips proposes to initiate ozone sparging (OS) and soil vapor extraction (SVE) utilizing five existing oxygen injection wells (OS-1 through OS-5) and three extraction wells (V1-V3) that were installed at the site in December 2008. Each sparging well will be set from grade to approximately 18.5 feet bgs. In addition, Conoco Phillips proposes to install a soil vapor extraction (SVE) system to remediate the vadose zone at the site. Each

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SVE well will be screened from 3-10 ft bgs. SVE testing was initiated in December 2008; up to 16,000 ppmv of TPH-G, 270 ppmv of benzene, and 270 ppmv of MTBE were collected during the initial feasibility testing. Oxygen sparging will continue until the proposed ozone-sparging groundwater remediation is initiated.

To abate hydrocarbon residual in the groundwater, Conoco Phillips proposes to conduct a pilot test to examine the feasibility of the ozone sparging technology. The test will be conducted using an Ozone Sparge System, provided by H2O Engineering. The Sparge system mainly consists of a master unit of ozone oxidation with a built-in compressor and an ozone generator.

Generated ozone microbubbles will be injected below the groundwater table through five sparge points (OS-1 through OS-5). Ozone is a highly reactive chemical that oxidizes organic chemicals into benign byproducts. These byproducts include acetate, butyrate, formate, propionate, carboxylic acids, tertiary butyl alcohol (TBA), tertiary butyl formate (TBF), formaldehyde, carbon dioxide, hydrogen peroxide, and oxygen. TBA, TBF, formaldehyde, and acetates will be further degraded by the C-Sparge to carbon dioxide and water. The release of oxygen and hydrogen peroxide to groundwater promotes aerobic bacterial growth that will consume final byproducts.

The workplan for conducting the test was approved on March 30, 2009.

Regional Board staff has determined that the proposed discharge meets the conditions specified in Order No. R4-2007-0019, "*Revised General Waste Discharge Requirements for Groundwater Remediation At Petroleum Hydrocarbon Fuel, Volatile Organic Compound and/or Hexavalent Chromium Impacted Sites (General WDRs)*," adopted by the State Water Resources Control Board on March 1, 2007.

Enclosed are your Waste Discharge Requirements, consisting of General WDRs Board Order No. 2007-0019 and Monitoring and Reporting Program No. CI-9433 and Standard Provisions.

The WDRs issued shall not be terminated until Regional Board staff determine the WDRs are no longer needed for the subject site.

The Monitoring and Reporting Program requires you to implement the monitoring program on the effective date of this enrollment under Regional Board Order No. R4-2007-0019. All monitoring reports shall be sent to the Regional Board, ATTN: Information Technology Unit.

When submitting monitoring or technical reports to the Regional Board per these requirements, please include a reference to Compliance File No. CI-9433, which will assure that the reports are directed to the appropriate file and staff. Do not combine other reports with your monitoring reports. Submit each type of report as a separate document.

To avoid paying future annual fees, please submit written request for termination of your enrollment under the general permit in a separate letter, when your project has been completed and the permit is no longer needed. Be aware that the annual fee covers the fiscal year billing period beginning July 1 and ending June 30, the following year. You will pay the full annual fee

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Ms. Holly Quasem
ConocoPhillips Company

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if your request for termination is made after the beginning of the new fiscal year beginning July 1.

We are sending a copy of Order No. R4-2007-0019 only to the applicant. A copy of the Order will be furnished to anyone who requests it, or on line at:

http://www.swrcb.ca.gov/rwqcb4/board_decisions/adopted_orders/general_orders/r4-2007-0019/r4-2007-0019.pdf

If you have any questions regarding the Waste Discharge Requirements, please contact Ms. Rebecca Chou at (213) 620-6156. Questions regarding underground storage tank issues should be forwarded to Mr. Joe Luera at 9213)576-6706.


Sincerely,


Tracy Egoscue
Executive Officer

Enclosures: 1. Board Order No. R4-2007-0019
2. Monitoring and Reporting Program No. CI-9433

cc: Ms. Yvonne Shanks, State Water Resources Control Board, UST Cleanup Fund
Ms. Nancy Matsumoto, Water Replenishment District of Southern California
Mr. Jeff Benedict, City of Long Beach CUPA / Health Department
Mr. Andrew Ewing, URS Corporation

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STATE OF CALIFORNIA
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION
MONITORING AND REPORTING PROGRAM NO. CI-9433
for
THRIFTY OIL COMPANY
76 STATION # 2705691, 3495 SOUTH STRRET, LONG BEACH
(OZONE INJECTION FOR GROUNDWATER CLEANUP)
(ORDER NO. R4-2007-0019, SERIES NO. 073)

I. REPORTING REQUIREMENTS

- A. Thrifty Oil Company (hereinafter Discharger) shall implement this monitoring program on the effective date of Regional Board Order No. R4-2007-0019. The first monitoring report under this program, for July-September 2007, shall be received at the Regional Board by **July 15, 2009**. Subsequent monitoring reports shall be received at the Regional Board according to the following schedule:

<u>Monitoring Period</u>	<u>Report Due</u>
January – March	April 15
April – June	July 15
July – September	October 15
October – December	January 15

Monitoring reports must be addressed to the regional Board, Attention: Information Technology Unit.

- B. If there is no discharge or injection during any reporting period, the report shall so state.
- C. By January 30 of each year, beginning January 30, 2010, the Discharger shall submit an annual summary report to the Regional Board. The report shall contain both tabular and graphical summaries of the monitoring data obtained during the previous calendar year. In addition, the Discharger shall explain the compliance record and the corrective actions taken, or planned, which may be needed to bring the discharge into full compliance with the waste discharge requirements (WDRs).
- D. Laboratory analyses – all chemical, bacteriological, and toxicity analyses shall be conducted at a laboratory certified for such analyses by the California Department of Health Services Environmental Laboratory Accreditation Program (ELAP). A copy of the laboratory certification shall be provided each time a new and/or renewal certification is obtained from ELAP.

April 22, 2009

- E. The method limits (MLs) employed for effluent analyses shall be lower than the permit limits established for a given parameter, unless the Discharger can demonstrate that a particular ML is not attainable and obtains approval for a higher ML from the Regional Board Executive Officer (Executive Officer). The Discharger shall submit a list of the analytical methods employed for each test and the associated laboratory quality assurance/quality control (QA/QC) procedures upon request by the Regional Board.
- F. Groundwater samples must be analyzed within allowable holding time limits as specified in 40 CFR Part 136. All QA/QC samples must be run on the same dates when samples were actually analyzed. The Discharger shall make available for inspection and/or submit the QA/QC documentation upon request by Regional Board staff.
- G. Each monitoring report must affirm in writing that "All analyses were conducted at a laboratory certified for such analyses by the California Department of Health Services, and in accordance with current United States Environmental Protection Agency (USEPA) guideline procedures or as specified in this Monitoring Program." Proper chain of custody procedures must be followed and a copy of the completed chain of custody form shall be submitted with the report.
- H. Each monitoring report shall contain a separate section titled "Summary of Non-Compliance" which discusses the compliance record and the corrective actions taken or planned that may be needed to bring the discharge into full compliance with WDRs. This section shall be located at the front of the report and shall clearly list all non-compliance with WDRs, as well as all excursions of effluent limitations.
- I. The Discharger shall maintain all sampling and analytical results: date, exact place, and time of sampling; dates analyses were performed; analyst's name; analytical techniques used; and results of all analyses. Such records shall be retained for a minimum of three years. This period of retention shall be extended during the course of any unresolved litigation regarding this discharge, or when requested by the Regional Board.
- J. If the Discharger performs analyses on any groundwater samples more frequently than required by this Order using approved analytical methods, the results of those analyses shall be included in the report.
- K. In reporting the monitoring data, the Discharger shall arrange the data in tabular form so that the date, the constituents, and the concentrations are readily discernible. The data shall be summarized to demonstrate compliance with the requirements and, where applicable, shall include results of receiving water observations.

II. OZONE INJECTION MONITORING REQUIREMENTS

The quarterly reports shall contain the following information regarding injection activities:

1. Location map showing injection points used for the ozone injection.
2. Written and tabular summary defining the quantity of ozone injected per month to the groundwater and a summary describing the days on which the injection system was in operation.
3. Monthly visual inspection at each injection point shall be conducted to evaluate the well casing integrity for a period of three month after each injection. The quarterly report shall include a summary of the visual inspection.
4. To avoid groundwater monitoring network reduction, data bias, and well screen clogging or alteration, no groundwater monitoring wells shall be used as injection points during the proposed ozone injection. Separate injection points/wells must be installed at the site for the injection.

III. GROUNDWATER MONITORING PROGRAM

The Discharger shall conduct groundwater monitoring at the site. Groundwater samples shall be collected from upgradient well MW-8, source area wells MW-3, MW-6, MW-7, and downgradient well MW-9 to monitor the effectiveness of the in-situ groundwater remediation (refer to attached Figure). Ozone injection points shall not be used as monitoring points. Groundwater shall be monitored for the duration of the remediation in accordance with the following discharge monitoring program:

CONSTITUENT	UNITS	TYPE OF SAMPLE	MINIMUM FREQUENCY OF ANALYSIS ¹
Total petroleum hydrocarbons as gasoline (TPHg) and as diesel (TPHd)	µg/L	Grab	• Quarterly
Benzene, Toluene, Ethylbenzene, Xylenes (BTEX)	µg/L	Grab	• Quarterly
Methyl tertiary butyl ether (MTBE), Tertiary butyl alcohol (TBA), Tertiary amyl methyl ether (TAME), Di-isopropyl ether (DIPE), ether (ETBE)	µg/L	Grab	• Quarterly

Ethanol Formaldehyde Acetone	µg/L	Grab	• Quarterly
Total dissolved solids Boron Chloride Sulfate	mg/L	Grab	• Quarterly
Oxidation-reduction potential	millivolts		• Quarterly
Dissolved Oxygen	µg/L	Grab	• Quarterly
Dissolved ferrous iron	µg/L	Grab	• Quarterly
Total Chromium and chromium six ²	µg/L	Grab	• Quarterly
PH	pH units	Grab	• Quarterly
Temperature	⁰ F/ ⁰ C	Grab	• Quarterly
Groundwater Elevation	Feet, mean sea level and below ground surface	In situ	• Quarterly
¹ The first sampling event must be conducted one week before the ozone injection. ² The Discharger is required to monitor for total chromium and chromium six in the baseline, second, and fourth quarterly sampling. If detected at any of these sampling events, the total chromium and chromium six must be monitored quarterly thereafter.			

All groundwater monitoring reports must include, at a minimum, the following:

- a. Well identification, date and time of sampling;
- b. Sampler identification, and laboratory identification;
- c. Quarterly observation of groundwater levels, recorded to 0.01 feet mean sea level and groundwater flow direction.

IV. MONITORING FREQUENCIES

Monitoring frequencies may be adjusted to a less frequent basis or parameters dropped by the Executive Officer if the Discharger makes a request and the Executive Officer determines that the request is adequately supported by statistical trends of monitoring data submitted.

V. CERTIFICATION STATEMENT

Each report shall contain the following declaration:

"I certify under penalty of law that this document, including all attachments and supplemental information, was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of a fine and imprisonment.

Executed on the _____ day of _____ at _____.

(Signature)

(Title)"

VI. PUBLIC DOCUMENTS

These records and reports are public documents and shall be made available for inspection during normal business hours at the office of the California Regional Water Quality Control Board, Los Angeles Region.

Ordered by:

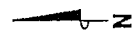
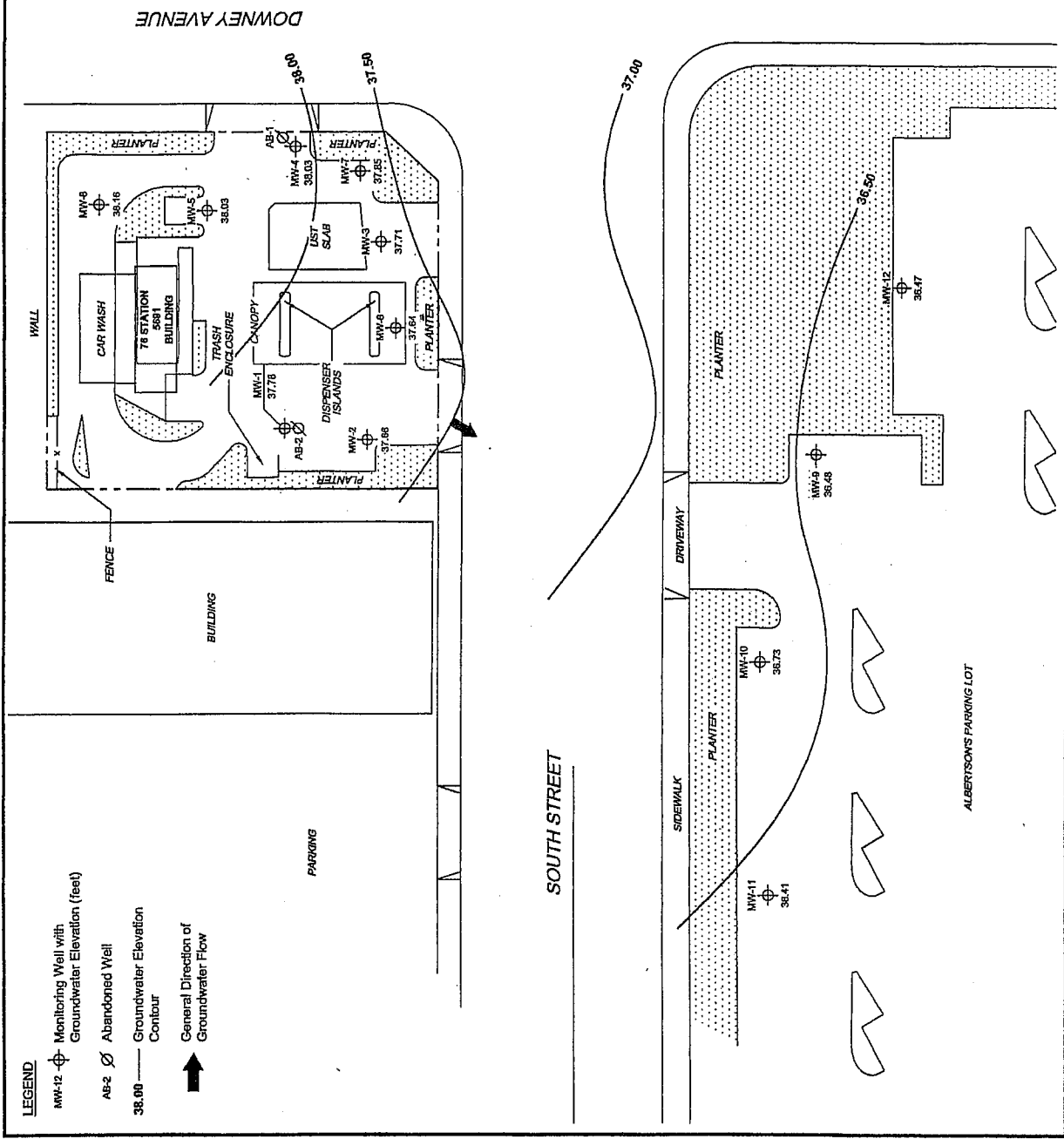


Tracy Egoscue
Executive Officer

Date: April 22, 2009

LEGEND

- MW-12 Monitoring Well with Groundwater Elevation (feet)
- AB-2 Abandoned Well
- 38.00 Groundwater Elevation Contour
- General Direction of Groundwater Flow



NOTES:

Contours lines are interpretive and based on field levels measured in monitoring wells. Elevations are in feet above mean sea level. LIST = underground storage tank.

PROJECT: 165520

FACILITY:
78 STATION 5881
3495 SOUTH STREET
LONG BEACH, CALIFORNIA

GROUNDWATER ELEVATION
CONTOUR MAP
February 2, 2009

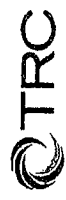


FIGURE 2