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GOVERNOR



MATTHEW RODRIGUEZ  
SECRETARY FOR  
ENVIRONMENTAL PROTECTION

## Los Angeles Regional Water Quality Control Board

September 27, 2012

Ms. Janet Wagner  
BP  
201 Helios Way, 6<sup>th</sup> Floor  
Houston, TX 77079

**GENERAL WASTE DISCHARGE REQUIREMENTS FOR GROUNDWATER CLEANUP AT  
PETROLEUM HYDROCARBON FUEL, VOLATILE ORGANIC COMPOUND AND/OR  
HEXAVALENT CHROMIUM IMPACTED SITES  
ARCO STATION NO. 1235 (B-2 SITE)  
1800 ARTESIA BOULEVARD, TORRANCE, CA (CASE NO. 905040034A)  
(ORDER NO. R4-2007-0019, SERIES NO. 196; CI NO. 9847)**

Dear Ms. Wagner:

We have completed our review of your application for coverage under the General Waste Discharge Requirements for sodium persulfate application at the site referenced above in Los Angeles, California, for groundwater cleanup and remediation.

The site is currently a gasoline service station located at the southwest corner of Artesia Boulevard and Western Boulevard in Torrance, California (Site) (Figure 1) (Latitude: N 33° 52' 20.72", Longitude: W 118° 18' 33.96").

In February 1987, three underground storage tanks were removed from the Site. Several site assessments were conducted between 1986 and 2010. Site investigations found soil and groundwater contamination beneath the site. A periodic groundwater monitoring program was initiated in 1987. The most recent monitoring data showed the maximum total petroleum hydrocarbon as gasoline (TPHg) concentration at 38,000 µg/L, benzene concentration at 8,500 µg/L, methyl tertiary butyl ether (MTBE) concentrations at 10,000 µg/L, and tertiary butyl alcohol (TBA) concentration at 19,000 µg/L.

Your consultant, Arcadis, submitted a "Remedial Action Plan" (the RAP) dated March 30, 2012, for the subject site and proposed to inject sodium persulfate into the saturation zone to enhance intrinsic bioremediation of residual fuel constituents in the groundwater (See Figure 2 for injection locations). A Regional Board staff directive letter dated May 17, 2012 approved the RAP.

Regional Board staff has determined that the proposed discharge of sodium persulfate 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 WDR)*," adopted by the Los Angeles Regional Water Quality Control Board on March 1, 2007.

MARIA MEHRANIAN, CHAIR | SAMUEL UNGER, EXECUTIVE OFFICER

320 West 4th St., Suite 200, Los Angeles, CA 90013 | [www.waterboards.ca.gov/losangeles](http://www.waterboards.ca.gov/losangeles)


Ms. Janet Wagner  
Arco Station No. 1235

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If you have any questions, please contact Mr. Eric Wu at (213) 620-6683 or ewu@waterboards.ca.gov. Questions regarding the UST issues should be forwarded to Mr. Jimmie Woo at (213) 576-6698 or jwoo@waterboards.ca.gov.

Sincerely,

  
Samuel Unger, P.E.  
Executive Officer

Enclosures: 1. Board Order No. R4-2007-0019  
2. Monitoring and Reporting Program No. CI-9847  
3. Standard Provisions

cc: Kathy Jundt, State Water Resources Control Board, Underground Storage Tank Cleanup Fund  
Phuong Ly, Water Replenishment District of Southern California  
Kenneth Lew, City of Torrance Fire Department  
Bobby Lu, Arcadis US, Inc.  
Mark O'Neil, Arcadis US, Inc.

STATE OF CALIFORNIA  
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
LOS ANGELES REGION  
MONITORING AND REPORTING PROGRAM NO. CI-9847  
for  
ARCO STATION NO. 1235  
1800 ARTESIA BOULEVARD, TORRANCE, CA  
(SODIUM PERSULFATE FOR GROUNDWATER CLEANUP)  
(ORDER NO. R4-2007-0019, SERIES NO. 196)

I. REPORTING REQUIREMENTS

- A. British Petroleum (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 shall be received at the Regional Board by **January 15, 2013**. Subsequent monitoring reports shall be received at the Regional Board according to the following schedule:

<u>Monitoring Period</u>	<u>Report Due</u>
January – June	July 15 <sup>th</sup>
July – December	January 15 <sup>th</sup>

The Discharger shall comply with the Electronic Submittal of Information (ESI) requirements by submitting all reports required under the Monitoring and Reporting Program, including groundwater monitoring data, discharge location data, and pdf monitoring reports to the State Water Resources Control Board GeoTracker database under Global ID WDR100006276.

- B. If there is no discharge or injection during any reporting period, the report shall so state.
- C. 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.
- D. 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.
- E. 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.
- F. 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

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must be followed and a copy of the completed chain of custody form shall be submitted with the report.

- G. 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.
- H. 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.
- I. 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.
- J. 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.
- K. The Discharger should not implement any changes to the Monitoring and Reporting Program prior to receiving Executive Officer's written approval.

## II. DISCHARGE MONITORING REQUIREMENTS

The reports shall contain the following information regarding injection activities:

1. Location map showing application area.
2. Written summary defining:
  - Depth of insertion and depth to groundwater;
  - Quantity of sodium persulfate per area; and
  - Total amount of sodium persulfate applied at site.
3. Groundwater monitoring wells shall not be used as sodium persulfate injection points.

## III. GROUNDWATER MONITORING PROGRAM

A groundwater-monitoring program shall be designed to detect and evaluate impacts associated with the sodium persulfate application. The monitoring program shall consist of

upgradient well W5, source well GW10, and downgradient wells GW-12 and GW-13 (See Figure 2). A baseline monitoring and sampling shall be conducted prior to the proposed sodium persulfate application. Baseline monitoring will establish the initial conditions with respect to the contaminant levels. These sampling stations shall not be changed and any proposed change of monitoring locations shall be identified and approved by the Executive Office. The Discharger shall conduct baseline sampling one or two weeks prior to sodium persulfate application and regular sampling with the required frequencies from the up-gradient, down-gradient, and source monitoring wells for the following constituents:

<u>CONSTITUENT</u>	<u>UNITS</u> <sup>1</sup>	<u>TYPE OF SAMPLE</u>	<u>MINIMUM FREQUENCY OF ANALYSIS</u>
pH <sup>2</sup>	PH units	Grab	Semi-Annually
Temperature <sup>2</sup>	<sup>o</sup> F	grab	Semi-Annually
Oxidation-reduction potential <sup>2</sup>	Milivolts	grab	Semi-Annually
Specific conductivity <sup>2</sup>	µmhos/cm	grab	Semi-Annually
Ferrous iron	µg/L	grab	Semi-Annually
Dissolved Oxygen <sup>2</sup>	µg/L	grab	Semi-Annually
MTBE	µg/L	grab	Semi-Annually
Tert-Butyl Alcohol (TBA)	µg/L	grab	Semi-Annually
Di-isopropyl Ether (DIPE)	µg/L	grab	Semi-Annually
Ethyl-t-Butyl Ether (ETBE)	µg/L	grab	Semi-Annually
Tert-Amyl-Methyl Ether (TAME)	µg/L	grab	Semi-Annually
Acetone	µg/L	grab	Semi-Annually
Formaldehyde	µg/L	grab	Semi-Annually
Total Petroleum Hydrocarbons as gasoline (TPHg)	µg/L	grab	Semi-Annually
Carbon tetrachloride	µg/L	grab	Semi-Annually
Benzene	µg/L	grab	Semi-Annually
Ethylbenzene	µg/L	grab	Semi-Annually
Toluene	µg/L	grab	Semi-Annually
Total xylenes	µg/L	grab	Semi-Annually
Methane	µg/L	grab	Semi-Annually
Total organic carbon	µg/L	grab	Semi-Annually

Total dissolved solids	mg/L	grab	Semi-Annually
Sulfate	mg/l	grab	Semi-Annually
Chloride	mg/L	grab	Semi-Annually
Boron	mg/L	grab	Semi-Annually
Carbon dioxide	mg/L	grab	Semi-Annually
Manganese	µg/L	grab	Semi-Annually
Total iron	µg/L	grab	Semi-Annually
Alkalinity	µg/L	grab	Semi-Annually
Chromium (VI) <sup>3</sup>	mg/L	grab	Semi-Annually <sup>3</sup>
Total Chromium <sup>3</sup>	mg/L	grab	Semi-Annually <sup>3</sup>

<sup>1</sup> mg/L: milligrams per liter; µg/L: micrograms per liter; µmhos/cm: microohms per centimeter; °F: degree Fahrenheit.

<sup>2</sup> Field instrument will be used to test for this constituent.

<sup>3</sup> The Discharger is required to monitor for total chromium and chromium six in the baseline, second and fourth semi-annual sampling. If detected at any of these sampling events, the total chromium and chromium six must be monitored semi-annually thereafter.

All groundwater monitoring reports must include, at 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

Specifications in this monitoring program are subject to periodic revisions. Monitoring requirements may be modified or revised by the Executive Officer based on review of monitoring data submitted pursuant to this Order. Monitoring frequencies may be adjusted to a less frequent basis or parameters and locations dropped by the Executive Officer if the Discharger makes a request and the request is backed 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

Arco Station No. 1235  
Monitoring & Reporting Program No. CI-9847

Order No. R4-2007-0019

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)"

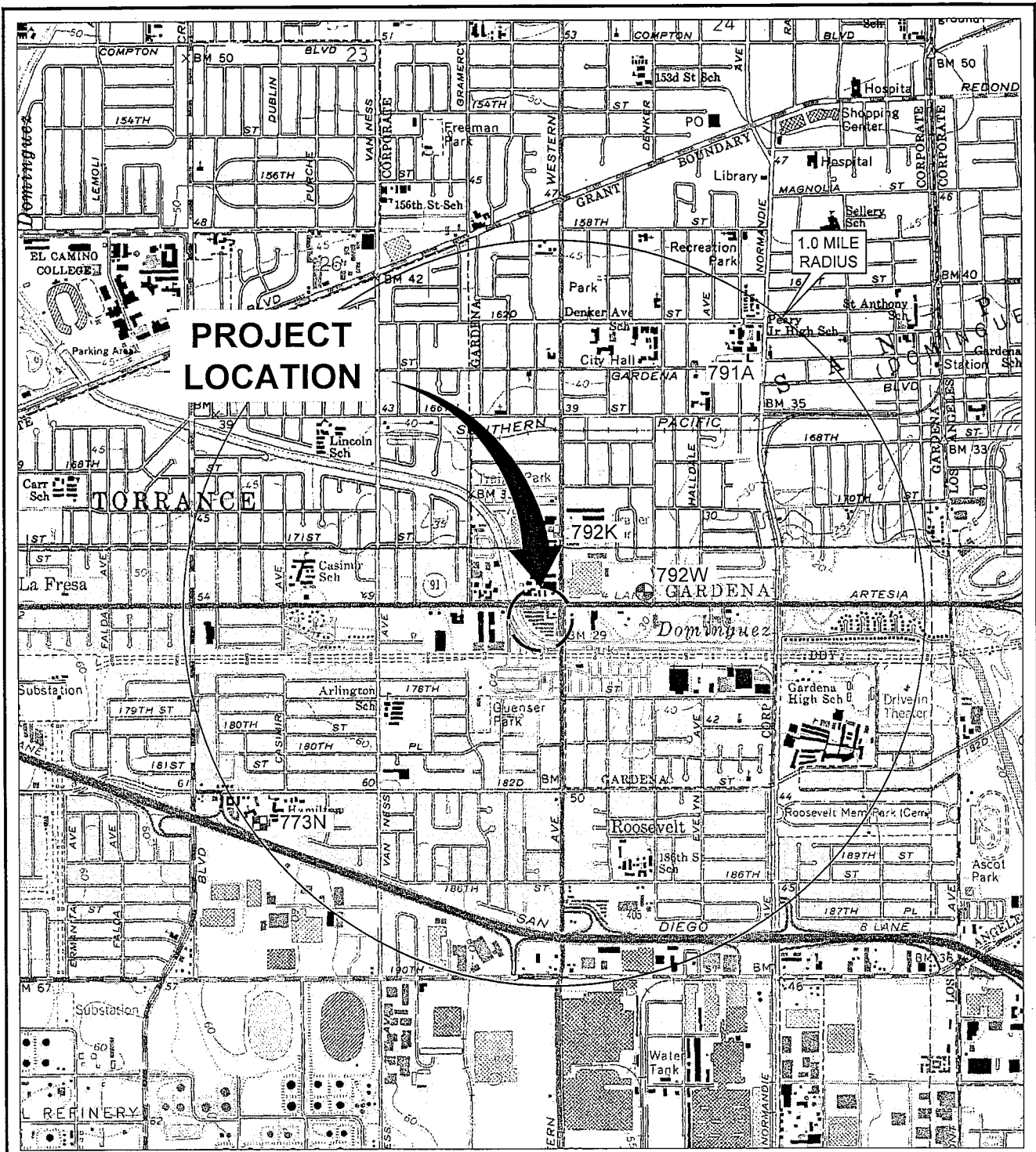
VI. PUBLIC DOCUMENTS

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.

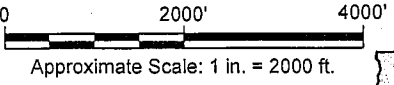
Ordered by:

Samuel Unger  
Samuel Unger, P.E.  
Executive Officer

Date: September 27, 2012

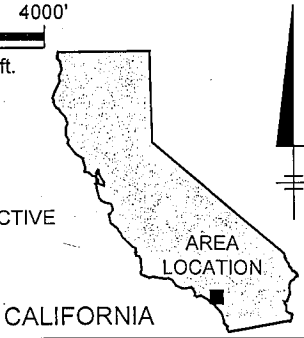


REFERENCE: BASE MAP USGS 7.5. MIN. TOPO. QUAD., INGLEWOOD AND TORRANCE, CALIFORNIA, 1981.



**LEGEND**

- MUNICIPAL SUPPLY WELL-ACTIVE
- IRRIGATION WELL-ACTIVE
- OBSERVATION WELL



FORMER ARCO SERVICE STATION NO. 1235  
 1800 ARTESIA BOULEVARD  
 TORRANCE, CALIFORNIA  
**REMEDIAL ACTION PLAN**

**SITE LOCATION MAP SHOWING WELLS IDENTIFIED WITHIN A ONE-MILE RADIUS**



FIGURE

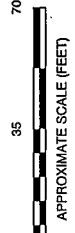
**1**



**LEGEND**

- APPROXIMATE PROPERTY BOUNDARY
- GROUNDWATER MONITORING WELL LOCATION
- DESTROYED GROUNDWATER MONITORING WELL LOCATION
- DESTROYED GROUNDWATER RECOVERY WELL LOCATION
- VADOSE MONITORING WELL LOCATION
- INFILTRATION WELL LOCATION
- SOIL BORING LOCATION
- SOIL SAMPLE LOCATION
- GROUNDWATER MONITORING WELL LOCATION (CHEVRON)
- SOIL VAPOR EXTRACTION/AIR SPARGE WELL LOCATION
- ABANDONED GROUNDWATER MONITORING WELL LOCATION (CHEVRON)
- PROPOSED INJECTION WELL LOCATION
- ESTIMATED RADIUS OF INFLUENCE

- NOTES**
- SOURCE OF MAP: SECOR INTERNATIONAL INCORPORATED, 2006.
  - ARCO MONITORING WELLS SURVEYED BY AZIMUTH GROUP ON JANUARY 14, 2003, AND BY WM HOLDINGS, INC. ON JANUARY 23, 2004. WELLS GW-11, GW-12 AND GW-13 SURVEYED BY CALPADS ON DECEMBER 23, 2010.
  - SITE FEATURES AND OFF SITE WELL LOCATIONS ARE APPROXIMATE.
  - TAKEN FROM SEMI-ANNUAL SITE CONCEPTUAL MODEL UPDATE THIRD QUARTER 2009 REPORT PREPARED BY THE SGI ENVIRONMENTAL THE SOURCE GROUP, INC.



FORMER ARCO SERVICE STATION NO. 1235  
1800 ARTESIA BOULEVARD  
TERRANCE, CALIFORNIA  
REMEDIAL ACTION PLAN

**INJECTION PLAN**



**WEST ARTESIA BOULEVARD**

**WESTERN AVENUE**

