

## Los Angeles Regional Water Quality Control Board

March 8, 2017

Ms. Jo-Anne Alvarez  
Tesoro Refining & Marketing Company LLC  
400 Oceangate, Suite 600  
Long Beach, CA 90802-4692

CERTIFIED MAIL  
RETURN RECEIPT REQUESTED  
CLAIM NO.: 7016 0750 0000 8035 3179

### GENERAL WASTE DISCHARGE REQUIREMENTS FOR IN-SITU GROUNDWATER REMEDIATION AND GROUNDWATER RE-INJECTION

**TESORO SERVICE STATION NO. 42055 (FORMER ARCO STATION NO. 5028)  
124 WEST PACIFIC COAST HIGHWAY, LONG BEACH  
(CASE NO. 908060116, GLOBAL ID NO. T0603701830, ORDER NO. R4-2014-0187, SERIES NO. 093, CI-10303)**

Dear Ms. Alvarez:

We are in receipt of your application for coverage under the General Waste Discharge Requirements to apply chemical oxidants and aerobic bioremediation enhancement compounds for groundwater cleanup and remediation. The application was prepared by your consultant Stantec Consulting Services, Inc. (Stantec), on behalf of Tesoro Refining & Marketing Company LLC (the Discharger).

The site is the Tesoro Station #42055 facility located at the southeast corner of Pacific Avenue and Pacific Coast Highway in Long Beach, California (Latitude: 33.789576, Longitude: -118.193348). The site currently contains three 12,000-gallon underground storage tanks (USTs), two dispenser islands, and a food mart building.

In October 1987, a total of three USTs were removed from the site. Several site assessments were conducted between 1987 and 2015. Site investigations found soil and groundwater contamination beneath the site. Groundwater contamination at the site has been mitigated by using different remedial technologies between 1987 and 2012, including light non-aqueous phase liquid (LNAPL) recovery, soil vapor extraction and groundwater overpurgings.

Groundwater monitoring was initiated in January 1987 and continued through August 2016. According to the latest groundwater monitoring report conducted on August 15, 2016, maximum concentrations of 52,000 micrograms per liter ( $\mu\text{g/L}$ ) total petroleum hydrocarbon as gasoline ( $\text{TPH}_G$ ), 2,700  $\mu\text{g/L}$  benzene, 2,000  $\mu\text{g/L}$  toluene, 3,800  $\mu\text{g/L}$  ethylbenzene, 12,000  $\mu\text{g/L}$  xylenes, 1,700  $\mu\text{g/L}$  naphthalene, and 6.6J tertiary butyl alcohol (TBA) were detected in the groundwater samples. Methyl tertiary butyl ether (MTBE) was not detected.

On September 9, 2016, the Los Angeles Regional Water Quality Control Board (Regional Board) received the document entitled "Remedial Action Plan" (RAP), dated September 1, 2016, submitted by Stantec, on behalf of the Discharger. Stantec proposed in the RAP to conduct

active in-situ chemical oxidation (ISCO) consisting of subsurface injection with sodium persulfate with silica activator, calcium oxy-hydroxide, and sodium percarbonate. Preliminary injection design indicates that two injection events targeting the northern portion of the former USTs (Area 1) and dispenser islands (Area 2) are required. Direct-push injection points are proposed to be spaced at approximately 10-foot grids in the target areas and the chemicals will be placed at approximately 10-20 feet below ground surface (bgs) and 25-30 feet bgs. Stantec anticipates that multiple injection events will be required to achieve the desired reduction in dissolve-phase hydrocarbons in groundwater. Treatment of Area 1 will consist of two injection events separated four weeks apart. The first injection event will consist of only sodium persulfate with silica activator and the second injection event will consist of a combination of sodium persulfate with silica activator and calcium oxy-hydroxide. Area 2 will consist of one injection event with both calcium oxy-hydroxide and sodium percarbonate. The chemical treatment design for Area 2 differentiates from Area 1 to partly mitigate corrosion of subsurface infrastructures. Application volumes will be dependent upon formation permeability at the injection point. The Regional Board approved the RAP in a directive letter dated October 28, 2016.

We have completed our review of your application and determined that the proposed injections meet the conditions specified in Order No. R4-2014-0187, "General Waste Discharge Requirements for In-Situ Groundwater Remediation and Groundwater Re-Injection" adopted by the Regional Board on September 11, 2014.

Sodium persulfate, calcium oxy-hydroxide and sodium percarbonate are permitted as oxidation and/or aerobic bioremediation enhancement compounds in the General WDRs, Order No. R4-2014-0187. To avoid material surfacing, you can go to [http://www.waterboards.ca.gov/losangeles/water\\_issues/programs/ust/guidelines/Subsurface\\_injection\\_of\\_ISR.pdf](http://www.waterboards.ca.gov/losangeles/water_issues/programs/ust/guidelines/Subsurface_injection_of_ISR.pdf) for guidance.

Enclosed are your WDRs, consisting of Regional Board Order No. R4-2014-0187 (Series No. 093) and Standard Provisions Applicable to Waste Discharge Requirements, and Monitoring and Report Program (MRP) No. CI-10303. The proposed discharge shall not cause the mineral constituents of the receiving groundwater at the compliance point, downgradient outside the application area, to exceed applicable limits (West Coast Basin of the Los Angeles Coastal Plain Groundwater Basin) given in Attachment B of Order No. R4-2014-0187.

The MRP No. CI-10303 requires you to implement the monitoring program on the effective date of this enrollment under Regional Board Order No. R4-2014-0187. When submitting monitoring or technical reports to the Regional Board per these requirements, please do not combine other reports with your monitoring reports. Submit each type of report as a separate document.

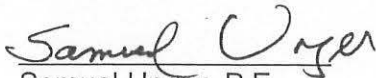
In accordance with regulations adopted by the State Water Resources Control Board regarding electronic submittal of information, UST Program monitoring reports have been electronically submitted to the State Board GeoTracker system under the UST Global ID T0603701830. To comply with the MRP under this WDR, the Discharger shall upload the WDR monitoring reports to GeoTracker under both Global IDs T0603701830 (continuing) and WDR100039633 (new).

For all parties who upload electronic documents to the State GeoTracker Database, the Regional Board will no longer accept documents (submitted by either hard copy or email) that already have been uploaded to GeoTracker.

To avoid paying future annual fees, please submit a 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 1st and ending June 30th, the following year. You will pay the full annual fee if your request for termination is made after the beginning of the new fiscal year beginning July 1st.

If you have any questions, please contact Dr. Eric Wu at (213) 576-6683 or via email at [ewu@waterboards.ca.gov](mailto:ewu@waterboards.ca.gov) for issues regarding the WDRs and Mr. Adam Taing at (213) 576-6752 or via email at [adam.taing@waterboards.ca.gov](mailto:adam.taing@waterboards.ca.gov) for issues regarding the USTs.

Sincerely,



Samuel Unger, P.E.  
Executive Officer

- Enclosures: 1. General WDR Order No. R4-2014-0187  
2. Monitoring and Reporting Program No. CI-10303

cc: Micah Reich, State Water Resources Control Board, UST Cleanup Fund  
Tim Smith, Los Angeles County Department of Public Works,  
Environmental Program Division  
Brian Partington, Water Replenishment District of Southern California  
Lusi Mkhitarian, County of Los Angeles, Department of Public Health  
Gareth Roberts, Stantec Consulting Services, Inc.

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

MONITORING AND REPORTING PROGRAM NO. CI-10303  
FOR  
TESORO SERVICE STATION NO. 42055  
124 WEST PACIFIC COAST HIGHWAY, LONG BEACH, CA  
(CALCIUM OXY-HYDROXIDE, SODIUM PERSULFATE WITH SILICA ACTIVATOR, AND  
SODIUM PERCARBONATE FOR GROUNDWATER CLEANUP)  
ENROLLMENT UNDER REGIONAL BOARD  
(ORDER NO. R4-2014-0187, SERIES NO. 093)

I. REPORTING REQUIREMENTS

- A. Tesoro Refining and Marketing Company LLC (hereinafter Discharger) shall implement this monitoring program on the effective date of this Monitoring and Reporting Program (MRP). The first monitoring report under this program shall be received at the Regional Board by **July 15, 2017**. 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 MRP to the State Water Resources Control Board (SWRCB) GeoTracker database, Attention: Information Technology Unit.

If there is no discharge or injection during any reporting period, the report shall so state.

- B. Laboratory analyses – all chemical, bacteriological, and toxicity analyses shall be conducted at a laboratory certified for such analyses by the State Water Resources Control Board (the State Board) Division of Drinking Water - 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.
- C. 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.
- D. 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.
- E. Each monitoring report must affirm in writing that "All analyses were conducted at a

laboratory certified for such analyses by the State Board ELAP and in accordance with current United States Environmental Protection Agency 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.

- F. 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.
- G. 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.
- H. If the Discharger performs analyses on any groundwater samples more frequently than required by this MRP using approved analytical methods, the results of those analyses shall be included in the report.
- I. 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.
- J. The Discharger should not implement any changes to the Monitoring and Reporting Program prior to receiving the Executive Officer's written approval.
- K. In accordance with regulations adopted by the SWRCB regarding ESI, Underground Storage Tank (UST) Program monitoring reports have been electronically submitted to the State Board GeoTracker system under UST Global ID T0603701830. To comply with the MRP under this WDR, the Discharger shall upload the WDR monitoring reports to the Geotracker under both Global ID T0603701830 (continuing) and Global ID WDR100039633 (new).

II. CALCIUM OXY-HYDROXIDE, SODIUM PERSULFATE WITH SILICA ACTIVATOR, AND SODIUM PERCARBONATE MONITORING REQUIREMENTS

The reports shall contain the following information regarding injection activities:

1. A location map showing placement locations used for the calcium oxy-hydroxide, sodium persulfate, and sodium percarbonate injection (refer to attached Figure 5 & 6 for site map).

2. Written and tabular summary defining the quantity of calcium oxy-hydroxide, sodium persulfate, and sodium percarbonate injected to the groundwater and a summary describing the days on which the injection system was in operation.

CONSTITUENT	UNITS	TYPE OF SAMPLE	MINIMUM FREQUENCY OF ANALYSIS <sup>1</sup>
Calcium Oxy-Hydroxide delivered per location	Gallons and Concentration	--	Semi-Annually
Sodium Persulfate delivered per location	Gallons and Concentration	--	Semi-Annually
Sodium Percarbonate delivered per location	Gallons and Concentration	--	Semi-Annually

### III. GROUNDWATER MONITORING PROGRAM

The Discharger shall conduct groundwater monitoring at the site to monitor the effectiveness and ensure no adverse impacts associated with the activated sodium persulfate with sodium hydroxide application at treatment area. Groundwater samples shall be collected from upgradient groundwater monitoring well E-14, source area groundwater monitoring wells E-3, E-5, E-11, E-10, and downgradient area groundwater monitoring well MW-16 (See Figure 5). A baseline monitoring and sampling shall be conducted prior to the proposed activated sodium persulfate with sodium hydroxide application. Baseline monitoring will establish the initial conditions with respect to the contaminant levels. The Discharger shall conduct baseline sampling one or two weeks prior to activated sodium persulfate and calcium oxy-hydroxide with sodium percarbonate application, and regular sampling with the required frequencies from the monitoring wells for the following constituents:

CONSTITUENT	UNITS	TYPE OF SAMPLE	MINIMUM FREQUENCY OF ANALYSIS <sup>1</sup>
Total petroleum hydrocarbons as gasoline (TPH <sub>G</sub> )	µg/L <sup>3</sup>	Grab	Semi-Annually
Benzene, Toluene, Ethylbenzene, Xylenes (BTEX)	µg/L	Grab	Semi-Annually
Methyl tertiary butyl ether (MTBE), Tertiary butyl ether (TBA), Tertiary amyl methyl ether (TAME), Di-isopropyl ether (DIPE), Ethyl tertiary butyl ether (ETBE),	µg/L	Grab	Semi-Annually
Naphthalene Ethanol	µg/L	Grab	Semi-Annually

Formaldehyde Acetone			
Total dissolved solids, Arsenic, Boron, Chloride, Bromide, Sulfate, Lead, Nickel, Cadmium, Manganese	mg/L <sup>4</sup>	Grab	Semi-Annually
Oxidation-reduction potential	millivolts	Grab	Semi-Annually
Dissolved Oxygen	µg/L	Grab	Semi-Annually
Dissolved ferrous iron	µg/L	Grab	Semi-Annually
Total Chromium and hexavalent chromium <sup>2</sup>	µg/L	Grab	Semi-Annually
pH	pH units	Grab	Semi-Annually
Temperature	<sup>0</sup> F/ <sup>0</sup> C	Grab	Semi-Annually
Groundwater Elevation	Feet, mean sea level, and below ground surface	In situ	Semi-Annually

<sup>1</sup> One week before injection and semi-annually thereafter.

<sup>2</sup> The Discharger is required to monitor for total chromium and hexavalent chromium in the baseline, second and fourth semi-annually sampling. If detected at any of these sampling events, the total chromium and chromium six must be monitored semi-annually thereafter.

<sup>3</sup> µg/L = microgram per liter.

<sup>4</sup> mg/L = milligram per liter.

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. Semi-annual observation of groundwater levels, recorded to 0.01 feet mean sea level, and groundwater flow direction.

IV. MONITORING FREQUENCIES

Specifications in the MRP are subject to periodic revisions. 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)"

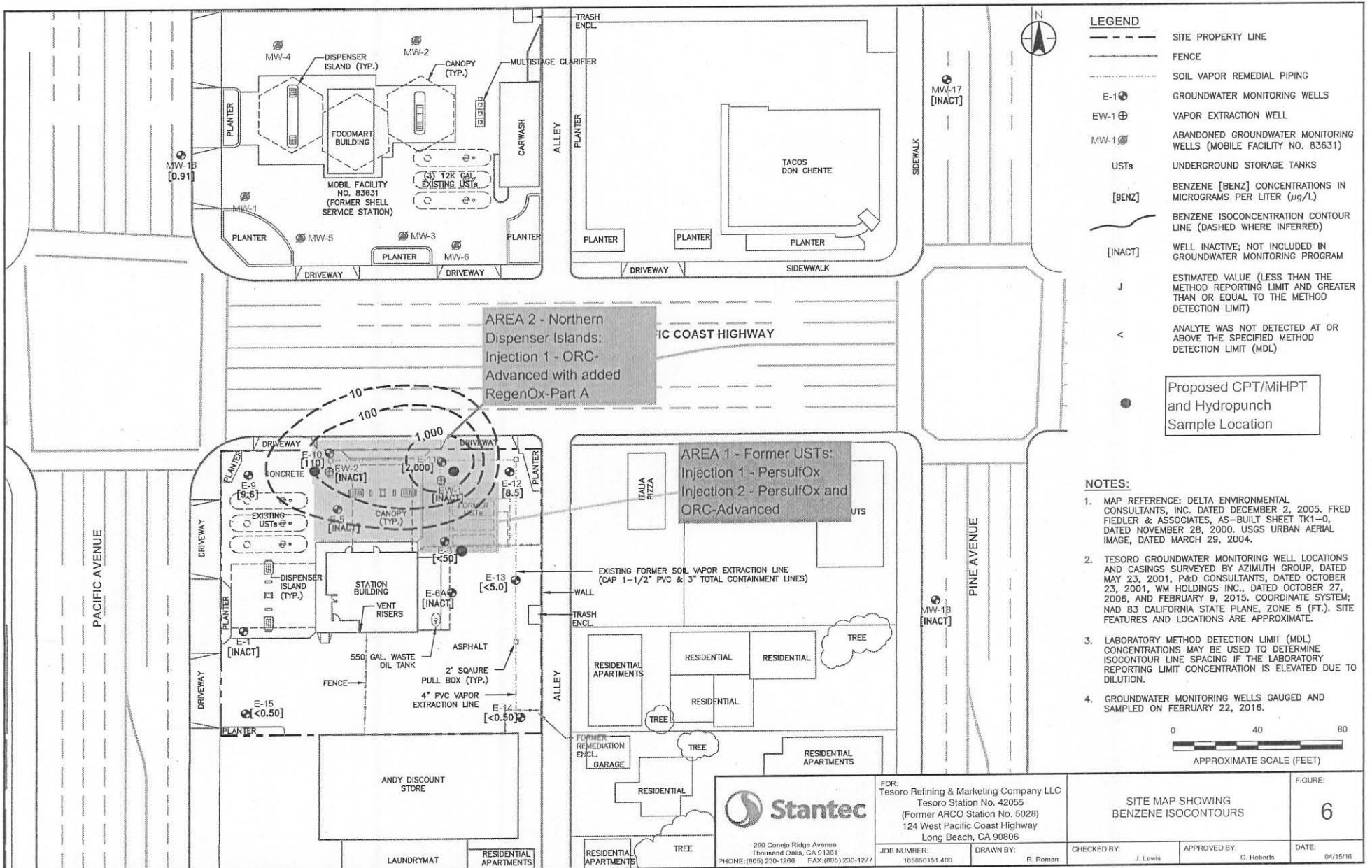
VI. PUBLIC DOCUMENTS

These records and reports are public documents and shall be made available for inspection during normal business hours at the office of the Regional Board, upon request by interested parties.

Ordered by: Samuel Unger  
Samuel Unger, P.E.  
Executive Officer

Date: March 8, 2017





**LEGEND**

- SITE PROPERTY LINE
- FENCE
- SOIL VAPOR REMEDIATION PIPING
- E-1 ● GROUNDWATER MONITORING WELLS
- EW-1 ⊕ VAPOR EXTRACTION WELL
- MW-1 ● ABANDONED GROUNDWATER MONITORING WELLS (MOBILE FACILITY NO. 83631)
- USTs UNDERGROUND STORAGE TANKS
- [BENZ] BENZENE [BENZ] CONCENTRATIONS IN MICROGRAMS PER LITER (µg/L)
- BENZENE ISOCONCENTRATION CONTOUR LINE (DASHED WHERE INFERRED)
- [INACT] WELL INACTIVE; NOT INCLUDED IN GROUNDWATER MONITORING PROGRAM
- J ESTIMATED VALUE (LESS THAN THE METHOD REPORTING LIMIT AND GREATER THAN OR EQUAL TO THE METHOD DETECTION LIMIT)
- < ANALYTE WAS NOT DETECTED AT OR ABOVE THE SPECIFIED METHOD DETECTION LIMIT (MDL)
- Proposed CPT/MiHPT and Hydropunch Sample Location

- NOTES:**
- MAP REFERENCE: DELTA ENVIRONMENTAL CONSULTANTS, INC. DATED DECEMBER 2, 2005. FRED FIEDLER & ASSOCIATES, AS-BUILT SHEET TK1-0, DATED NOVEMBER 28, 2000. USGS URBAN AERIAL IMAGE, DATED MARCH 29, 2004.
  - TESORO GROUNDWATER MONITORING WELL LOCATIONS AND CASINGS SURVEYED BY AZIMUTH GROUP, DATED MAY 23, 2001, P&D CONSULTANTS, DATED OCTOBER 23, 2001, WM HOLDINGS INC., DATED OCTOBER 27, 2006, AND FEBRUARY 9, 2015. COORDINATE SYSTEM: NAD 83 CALIFORNIA STATE PLANE, ZONE 5 (FT.). SITE FEATURES AND LOCATIONS ARE APPROXIMATE.
  - LABORATORY METHOD DETECTION LIMIT (MDL) CONCENTRATIONS MAY BE USED TO DETERMINE ISOCONTOUR LINE SPACING IF THE LABORATORY REPORTING LIMIT CONCENTRATION IS ELEVATED DUE TO DILUTION.
  - GROUNDWATER MONITORING WELLS GAUGED AND SAMPLED ON FEBRUARY 22, 2016.
- 0 40 80  
APPROXIMATE SCALE (FEET)

<p>290 Conejo Ridge Avenue Thousand Oaks, CA 91321 PHONE: (805) 230-1266 FAX: (805) 230-1277</p>	<p>FOR: Tesoro Refining &amp; Marketing Company LLC Tesoro Station No. 42055 (Former ARCO Station No. 5028) 124 West Pacific Coast Highway Long Beach, CA 90806</p>	<p>SITE MAP SHOWING BENZENE ISOCONTOURS</p>		<p>FIGURE: <b>6</b></p>
	<p>JOB NUMBER: 165850151.400</p>	<p>DRAWN BY: R. Roman</p>	<p>CHECKED BY: J. Lewis</p>	<p>APPROVED BY: G. Roberts</p>

