

## State Water Resources Control Board

### UST CASE CLOSURE REVIEW SUMMARY REPORT

#### Agency Information

Agency Name: Regional Water Quality Control Board – Los Angeles (Regional Water Board)	Address: 320 West 4 <sup>th</sup> Street, Suite 200, Los Angeles, CA 90013
Agency Caseworker: Nhan Bao	Case No.: 908070243

#### Case Information

USTCF Claim No.: 5388	Global ID: T0603701872
Site Name: Former Exxon #7-3256	Site Address: 2002 Del Amo Blvd., Long Beach, CA 90807
Responsible Party (RP): Nick Pulg; Exxon Mobil Oil Corp.	Address: 981 West Arrow Highway, #473 San Dimas, CA 91773
USTCF Expenditures to Date: \$924,589	Number of Years Case Open: 21

URL: [https://geotracker.waterboards.ca.gov/regulators/screens/menu.asp?global\\_id=T0603701872](https://geotracker.waterboards.ca.gov/regulators/screens/menu.asp?global_id=T0603701872)

#### Summary

The Low-Threat Underground Storage Tank Case Closure Policy (Policy) contains general and media-specific criteria, and cases that meet those criteria are appropriate for closure pursuant to the Policy. This case meets all of the required criteria of the Policy. A summary evaluation of compliance with the Policy is shown in **Attachment 1: Compliance with State Water Board Policies and State Law**. The Conceptual Site Model upon which the evaluation of the case has been made is described in **Attachment 2: Summary of Basic Case Information (Conceptual Site Model)**. Highlights of the case follow:

An unauthorized leak was reported in October 1991. Four USTs (three gasoline and one waste oil) were removed between 1990 and 1992. Soil vapor extraction has been conducted from April 1998 to May 2009 which has resulted in the removal of a calculated 15,935 pounds of TPH(g). Groundwater dewatering and soil vapor extraction have been performed since May 2011 and are on-going. Since 1991, thirteen groundwater monitoring wells have been installed and monitored regularly. According to groundwater data, water quality objectives have been achieved or nearly achieved for all constituents except for benzene and toluene in monitoring wells B14 and PW1.

The petroleum release is limited to the shallow soil and groundwater. According to data available in GeoTracker, there are no California Department of Public Health (CDPH) regulated supply wells or surface water bodies within 1,000 feet of the defined plume boundary. No other water supply wells have been identified within 1,000 feet of the defined plume boundary in files reviewed. Water is provided to water users near the Site by the City of Long Beach Water Department. The affected groundwater is not currently being used as a source of drinking water, and it is highly unlikely that the

affected groundwater will be used as a source of drinking water in the foreseeable future. Other designated beneficial uses of impacted groundwater are not threatened and it is highly unlikely that they will be considering these factors in the context of the site setting. Remaining petroleum hydrocarbon constituents are limited, stable and concentrations declining gradually over time. Corrective actions have been implemented and additional corrective actions are not necessary in the future. Any remaining petroleum hydrocarbon constituents do not pose a significant risk to human health, safety or the environment.

#### **Rationale for Closure under the Policy**

- General Criteria – The case meets all eight Policy general criteria.
- Groundwater Specific Criteria – The case meets Policy Criterion 1 by Class 1. The contaminant plume that exceeds water quality objectives is less than 100 feet in length. There is no free product. The nearest water supply well or surface water body is greater than 250 feet from the defined plume boundary.
- Vapor Intrusion to Indoor Air – Active Station Exclusion – Soil Vapor is not required because the site is an active commercial petroleum fueling facility.
- Direct Contact and Outdoor Air Exposure – The case meets Policy Criterion 3a. Maximum concentrations in soil are less than those in Table 1 for Commercial/Industrial sites and the concentration limits for a Utility Worker are not exceeded. There are no soil sample results in the case record for naphthalene. However, the relative concentration of naphthalene in soil can be conservatively estimated using the published relative concentrations of naphthalene and benzene in gasoline. Taken from Potter and Simmons (1998), gasoline mixtures contain approximately 2% benzene and 0.25% naphthalene. Therefore, benzene can be directly substituted for naphthalene concentrations with a safety factor of eight. Benzene concentrations from the Site are below the naphthalene thresholds in Table 1 of the Policy. Therefore, the estimated naphthalene concentrations meet the thresholds in Table 1 and the Policy criteria for direct contact by a factor of eight. It is highly unlikely that naphthalene concentrations in the soil, if any, exceed the threshold.

#### **Objections to Closure and Responses**


The Regional Water Board does not have any objections to UST case closure for this case.

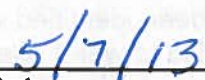
#### **Determination**

Based on the review performed in accordance with Health & Safety Code Section 25299.39.2 subdivision (a), the Fund Manager has determined that closure of the case is appropriate.

#### **Recommendation for Closure**

Based on available information, residual petroleum hydrocarbons at the Site do not pose a significant risk to human health, safety, or the environment, and the case meets the requirements of the Policy. Accordingly, the Fund Manager recommends that the case be closed. The State Water Board is conducting public notification as required by the Policy. Regional Water Quality Control Board – Los Angeles has the regulatory responsibility to supervise the abandonment of monitoring wells.

  
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Lisa Babcock, P.G. 3939, C.E.G. 1235

  
\_\_\_\_\_  
Date

Prepared by: Hari Patel

**ATTACHMENT 1: COMPLIANCE WITH STATE WATER BOARD POLICIES AND STATE LAW**

The case complies with the State Water Resources Control Board policies and state law. Section 25296.10 of the Health and Safety Code requires that sites be cleaned up to protect human health, safety, and the environment. Based on available information, any residual petroleum constituents at the site do not pose significant risk to human health, safety, or the environment.

**The case complies with the requirements of the Low-Threat Underground Storage Tank (UST) Case Closure Policy as described below.<sup>1</sup>**

<p><b>Is corrective action consistent with Chapter 6.7 of the Health and Safety Code and implementing regulations?</b>                  The corrective action provisions contained in Chapter 6.7 of the Health and Safety Code and the implementing regulations govern the entire corrective action process at leaking UST sites. If it is determined, at any stage in the corrective action process, that UST site closure is appropriate, further compliance with corrective action requirements is not necessary. Corrective action at this site has been consistent with Chapter 6.7 of the Health and Safety Code and implementing regulations and, since this case meets applicable case-closure requirements, further corrective action is not necessary, unless the activity is necessary for case closure.</p>	<p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>
<p><b>Have waste discharge requirements or any other orders issued pursuant to Division 7 of the Water Code been issued at this case?</b></p>	<p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>
<p><b>If so, was the corrective action performed consistent with any order?</b></p>	<p><input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA</p>
<p><b><u>General Criteria</u></b>                  General criteria that must be satisfied by all candidate sites:</p> <p><b>Is the unauthorized release located within the service area of a public water system?</b></p> <p><b>Does the unauthorized release consist only of petroleum?</b></p> <p><b>Has the unauthorized (“primary”) release from the UST system been stopped?</b></p> <p><b>Has free product been removed to the maximum extent practicable?</b></p> <p><b>Has a conceptual site model that assesses the nature, extent, and mobility of the release been developed?</b></p>	<p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA</p> <p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>

<sup>1</sup> Refer to the Low-Threat Underground Storage Tank Case Closure Policy for closure criteria for low-threat petroleum UST sites.  
[http://www.waterboards.ca.gov/board\\_decisions/adopted\\_orders/resolutions/2012/rs2012\\_0016atta.pdf](http://www.waterboards.ca.gov/board_decisions/adopted_orders/resolutions/2012/rs2012_0016atta.pdf)

<p><b>Has secondary source been removed to the extent practicable?</b></p> <p><b>Has soil or groundwater been tested for MTBE and results reported in accordance with Health and Safety Code Section 25296.15?</b></p> <p><b>Nuisance as defined by Water Code section 13050 does not exist at the site?</b></p> <p><b>Are there unique site attributes or site-specific conditions that demonstrably increase the risk associated with residual petroleum constituents?</b></p>	<p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>
<p><b><u>Media-Specific Criteria</u></b>                  Candidate sites must satisfy all three of these media-specific criteria:</p> <p><b>1. Groundwater:</b>                  To satisfy the media-specific criteria for groundwater, the contaminant plume that exceeds water quality objectives must be stable or decreasing in areal extent, and meet all of the additional characteristics of one of the five classes of sites:</p> <p><b>Is the contaminant plume that exceeds water quality objectives stable or decreasing in areal extent?</b></p> <p><b>Does the contaminant plume that exceeds water quality objectives meet all of the additional characteristics of one of the five classes of sites?</b></p> <p>If YES, check applicable class: <input checked="" type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5</p> <p><b>For sites with releases that have not affected groundwater, do mobile constituents (leachate, vapors, or light non-aqueous phase liquids) contain sufficient mobile constituents to cause groundwater to exceed the groundwater criteria?</b></p>	<p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA</p> <p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA</p> <p><input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA</p>
<p><b>2. Petroleum Vapor Intrusion to Indoor Air:</b>                  The site is considered low-threat for vapor intrusion to indoor air if site-specific conditions satisfy all of the characteristics of one of the three classes of sites (a through c) or if the exception for active commercial fueling facilities applies.</p> <p><b>Is the site an active commercial petroleum fueling facility?</b>                  Exception: Satisfaction of the media-specific criteria for petroleum vapor intrusion to indoor air is not required at active commercial petroleum fueling facilities, except in cases where release characteristics can be reasonably believed to pose an unacceptable health risk.</p> <p><b>a. Do site-specific conditions at the release site satisfy all of the applicable characteristics and criteria of scenarios 1 through 3 or all of the applicable characteristics and criteria of scenario 4?</b></p>	<p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p><input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA</p>

<p>If YES, check applicable scenarios: <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4</p> <p><b>b. Has a site-specific risk assessment for the vapor intrusion pathway been conducted and demonstrates that human health is protected to the satisfaction of the regulatory agency?</b></p> <p><b>c. As a result of controlling exposure through the use of mitigation measures or through the use of institutional or engineering controls, has the regulatory agency determined that petroleum vapors migrating from soil or groundwater will have no significant risk of adversely affecting human health?</b></p>	<p><input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA</p> <p><input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA</p>
<p><b>3. Direct Contact and Outdoor Air Exposure:</b>                  The site is considered low-threat for direct contact and outdoor air exposure if site-specific conditions satisfy one of the three classes of sites (a through c).</p> <p><b>a. Are maximum concentrations of petroleum constituents in soil less than or equal to those listed in Table 1 for the specified depth below ground surface (bgs)?</b></p> <p><b>b. Are maximum concentrations of petroleum constituents in soil less than levels that a site specific risk assessment demonstrates will have no significant risk of adversely affecting human health?</b></p> <p><b>c. As a result of controlling exposure through the use of mitigation measures or through the use of institutional or engineering controls, has the regulatory agency determined that the concentrations of petroleum constituents in soil will have no significant risk of adversely affecting human health?</b></p>	<p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA</p> <p><input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA</p> <p><input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA</p>

**ATTACHMENT 2: SUMMARY OF BASIC CASE INFORMATION (Conceptual Site Model)**

**Site Location/History**

- This case is an active gasoline service station, located on the southeast corner of Del Amo Boulevard and Cherry Avenue and is a commercial fueling facility. The address of the case is 2002 Del Amo Boulevard, in the City of Long Beach.
- The Site is bound by Cherry Avenue to the west, East Del Amo Blvd. to the north. There is a ARCO Service Station across the street to the North, and a Shell Service Station across Cherry Avenue to the West. Beyond that are residential properties. The area surrounding the site is commercial to the East and South.
- Site map showing the location of the former USTs, monitoring wells and groundwater level contours is provided at the end of this closure review summary (Cardno ERI).
- Nature of Contaminants of Concern: Petroleum hydrocarbons only.
- Source: UST system.
- Date reported: October 1991.
- Status of Release: USTs removed.
- Free Product: Sheen was observed in the mid-1990s in monitoring wells B13, B14, B16 and PW1. In January 1997, measurable free product was observed in PW1 and was highest in May 1999 at approximately one-half foot. No free product has been reported since 1999.

**Tank Information**

Tank No.	Size in Gallons	Contents	Closed in Place/ Removed/Active	Date
1	1,000	Waste oil	Removed	1990
2	6,000	Gasoline	Removed	1992
3	8,000	Gasoline	Removed	1992
4	10,000	Gasoline	Removed	1992
5-8	15,000	Gasoline	Active	-

**Receptors**

- GW Basin: Coastal Plain of Los Angeles - Central.
- Beneficial Uses: Domestic and Public Supply.
- Land Use Designation: None Specified. Aerial photograph shows the site is commercial surrounded by mixed commercial and residential.
- Public Water System: Long Beach Water Department and Metropolitan Water District of Southern California
- Distance to Nearest Supply Well: According to data available in GeoTracker, there are no groundwater supply wells or any public supply wells regulated by CDPH within 1,000 feet of the defined plume boundary.
- Distance to Nearest Surface Water: There is no identified surface water within 1,000 feet of the defined plume.

**Geology/Hydrogeology**

- Stratigraphy: The Site is underlain by clayey silt and sandy silt to a depth of approximately 17 feet, silty fine-grained sand and clean sand to approximately 30 feet, clayey silt, silt and sandy silt to approximately 55 feet and clean sand with little to no fines to a depth of 70 feet.
- Maximum Sample Depth: 70 feet below ground surface (bgs).
- Minimum Groundwater Depth: 36.22 feet bgs at monitoring well MW-6.
- Maximum Groundwater Depth: 52.30 feet bgs at monitoring well B-14.

- Current Average Depth to Groundwater: 42 feet bgs.
- Saturated Zones(s) Studied: 40 to 80 bgs.
- Groundwater Flow Direction: Southeast at 0.04 feet per foot.
- Appropriate Screen Interval: Yes.

**Monitoring Well Information**

Well Designation	Date Installed	Screen Interval (feet bgs)	Depth to Water (feet bgs) (Oct. 2012)
MW-1	1991	50-70	45.68
MW-2	1994	50-80	46.01
MW-3R	2008	35-60	NA
MW-4R	2008	35-60	NA
MW-5	2004	30-60	40.31
MW-6	2004	30-60	40.55
MW-7	2004	30-60	41.81
B12	1995	20-55	42.93
B13	1995	30-55	40.93
B14	1995	20-55	40.25
B16R	2002	8-58	41.38
PW1	1995	35-65	47.28
PW3	1995	35-65	47.38

NA: Not available

**Remedial Summary**

- Free Product: Sheen was observed in the mid-1990s in wells B13, B14, B16 and PW1. In January 1997, measurable free product was observed in PW1 and was highest in May 1999 at approximately one-half a foot. None has been reported since 1999.
- Soil Excavation: None identified.
- In-Situ Soil Remediation: Soil vapor extraction and air sparging were conducted from April 1998 through May 2009 intermittently and the soil vapor extraction was restarted in May 2012. To date, 15,935 pounds of TPH(g) vapor, are reported to have been removed.
- Groundwater Remediation: Dual phase extraction pilot test, conducted June 2010, for 48 hours removed 4,977 gallons of contaminated groundwater. Groundwater pump and treat began again in May 2012, and has pumped 1800 gallons of groundwater as of June 22, 2012.

**Most Recent Concentrations of Petroleum Constituents in Soil**

Constituent	Maximum 0-5 feet bgs. [mg/kg and (date)]	Maximum 5-10 feet bgs [mg/kg and (date)]
Benzene	0.0023 (01/25/2008)	0.0105 (01/25/2008)
Ethylbenzene	<0.00183 (01/25/2008)	<0.00187(01/25/2008)
Naphthalene	NA	NA
PAHs	NA	NA

NA: Not Analyzed, Not Applicable or Data Not Available  
 mg/kg: milligrams per kilogram, parts per million  
 <: Not detected at or above stated reporting limit  
 PAHs: Polycyclic aromatic hydrocarbons

**Most Recent Concentrations of Petroleum Constituents in Groundwater**

Sample	Sample Date	TPHg (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	TBA (µg/L)
MW1	10/03/2012	988	0.890	0.603	14.3	13.8	<0.5	<10
MW2	10/03/2012	<50	<0.50	<0.50	<0.50	<0.50	<0.5	<10
MW3R	10/03/2012	NA	NA	NA	NA	NA	NA	NA
MW4R	10/03/2012	NA	NA	NA	NA	NA	NA	NA
MW5	10/03/2012	<50	<0.50	<0.50	<0.50	<0.50	<0.5	<10
MW6	10/03/2012	<50	<0.50	<0.50	<0.50	<0.50	<0.5	<10
MW7	10/03/2012	<50	<0.50	<0.50	<0.50	310	<0.5	<10
B12	10/03/2012	<50	<0.50	<0.50	<0.50	<0.50	<0.5	<10
B13	10/03/2012	250	<0.50	<0.50	2.01	0.666	<0.5	<10
B14	10/03/2012	4,130	150	171	140	500	2.53	<10
B16R	10/03/2012	<50	<0.50	<0.50	<0.50	<0.50	<0.5	<10
PW1	10/03/2012	68.2	1.4	0.545	0.262	1.50	<0.5	<10
PW3	10/03/2012	<50	<0.50	<0.50	<0.50	<0.50	0.274	<10
<b>WQOs</b>	-	-- <sup>a</sup>	1	150	300	1750	5	1,200 <sup>c</sup>

NA: Not Analyzed, Not Applicable or Data Not Available

µg/L: micrograms per liter, parts per billion

<: Not detected at or above stated reporting limit

TPHg: Total petroleum hydrocarbons as gasoline

TPHd: Total petroleum hydrocarbons as diesel

MTBE: Methyl tert-butyl ether

TBA: Tert-butyl alcohol

WQOs: Water Quality Objectives, Regional Water Board Basin Plan

a: The Regional Water Board Basin Plan does not have a numeric WQO for TPHg.

b: Taste and Odor threshold

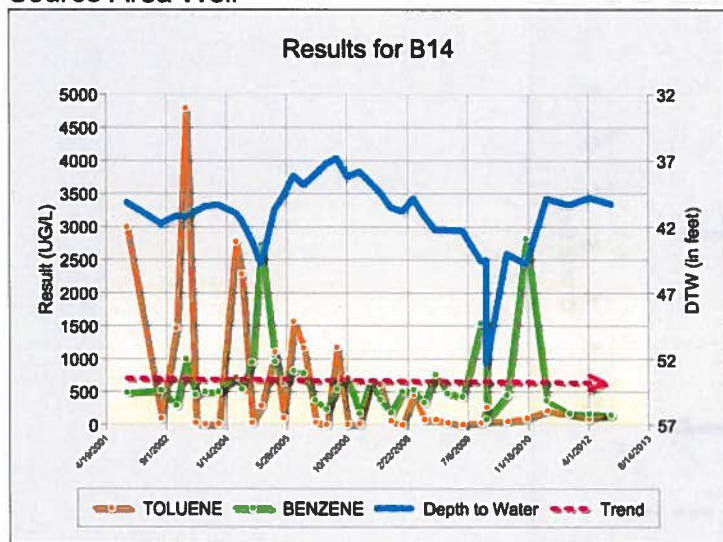
c: California Department of Public Health, Response Level

**Groundwater Trends**

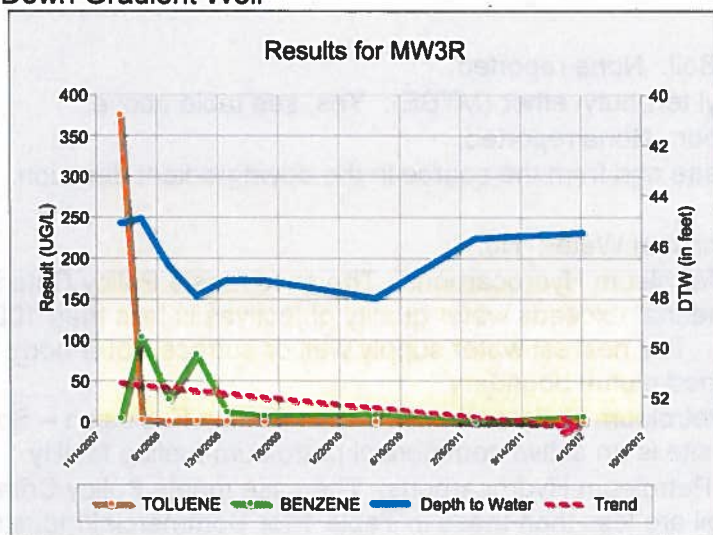
- There are 21 years of irregular groundwater monitoring data for this case. Benzene concentrations above WQO are reported in two monitoring wells with the higher in source area well B14. Toluene concentrations above the WQO are also present in onsite well B14. The downgradient extent of the plume appears to be stable and decreasing. There are two closed cases for commercial fueling facilities located on adjacent corners of the intersection and cross, and upgradient of the Site. These sites are likely sources of benzene in MW1, PW1 and MW4R (see Plume Map).



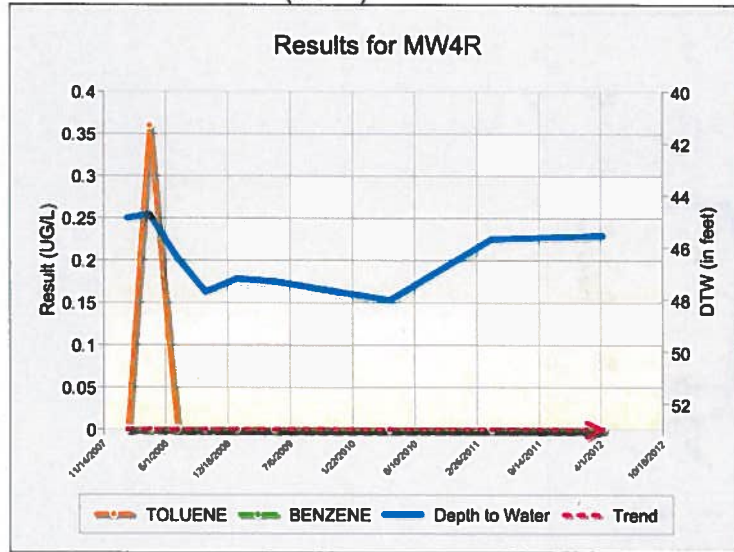
Source Area Well



Down Gradient Well

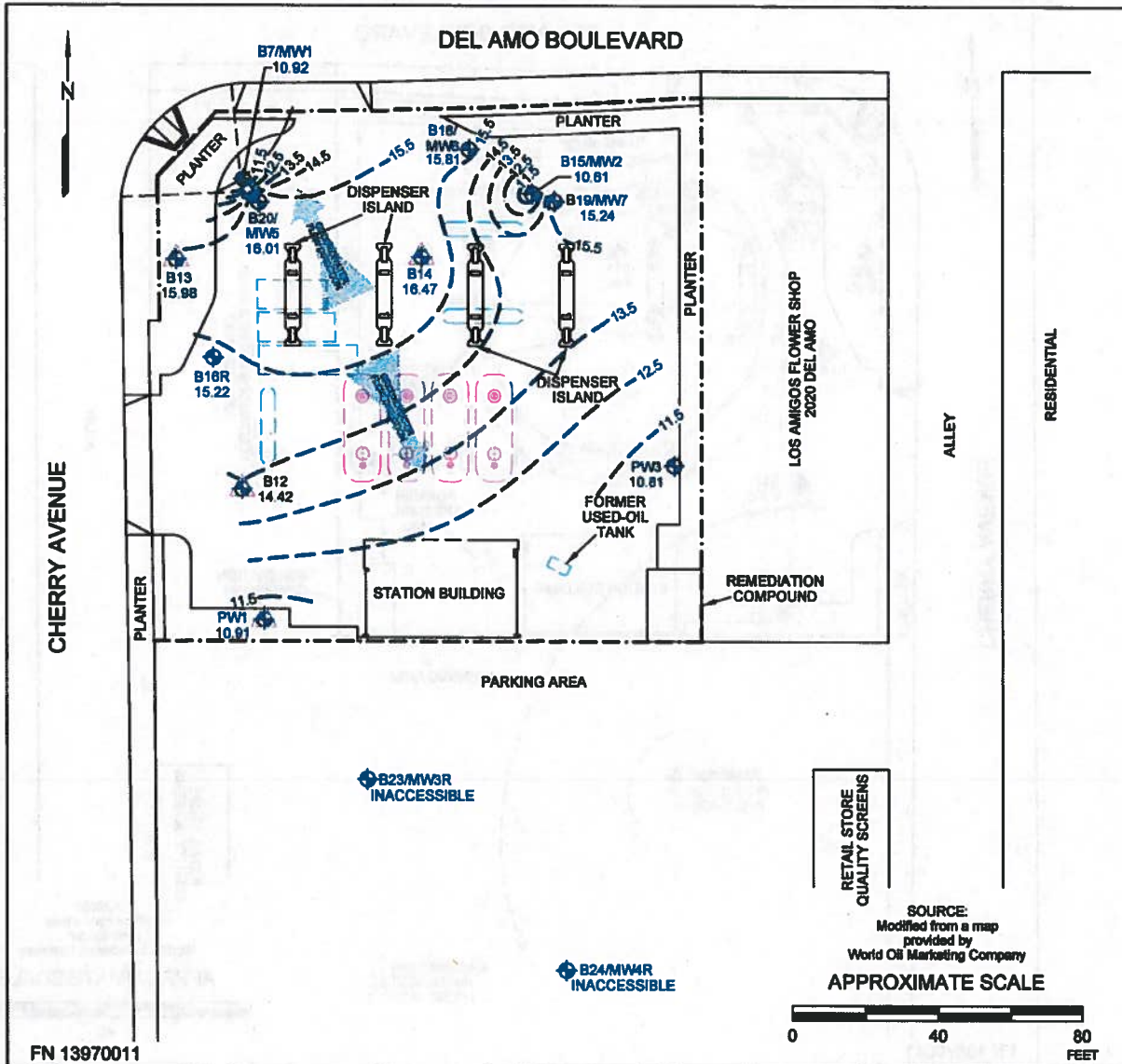


### Cross-Gradient Well (West)



### Evaluation of Current Risk

- Estimate of Hydrocarbon Mass in Soil: None reported.
- Soil/ Groundwater tested for methyl tert-butyl ether (MTBE): Yes, see table above.
- Oxygen Concentrations in Soil Vapor: None reported.
- Plume Length: <100 feet long on site and from the source in the downgradient direction.
- Plume Stable or Decreasing: Yes.
- Contaminated Zone(s) Used for Drinking Water: No.
- Groundwater Risk from Residual Petroleum Hydrocarbons: The case meets Policy Criterion 1 by Class 1. The contaminant plume that exceeds water quality objectives is less than 100 feet in length. There is no free product. The nearest water supply well or surface water body is greater than 250 feet from the defined plume boundary.
- Indoor Vapor Risk from Residual Petroleum Hydrocarbons: Active Station Exclusion – Soil Vapor is not required because the site is an active commercial petroleum fueling facility.
- Direct Contact Risk from Residual Petroleum Hydrocarbons: The case meets Policy Criterion 3a. Maximum concentrations in soil are less than those in Table 1 for Commercial/Industrial sites and the concentration limits for a Utility Worker are not exceeded. There are no soil sample results in the case record for naphthalene. However, the relative concentration of naphthalene in soil can be conservatively estimated using the published relative concentrations of naphthalene and benzene in gasoline. Taken from Potter and Simmons (1998), gasoline mixtures contain approximately 2% benzene and 0.25% naphthalene. Therefore, benzene can be directly substituted for naphthalene concentrations with a safety factor of eight. Benzene concentrations from the Site are below the naphthalene thresholds in Table 1 of the Policy. Therefore, the estimated naphthalene concentrations meet the thresholds in Table 1 and the Policy criteria for direct contact by a factor of eight. It is highly unlikely that naphthalene concentrations in the soil, if any, exceed the threshold.



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**EXPLANATION**

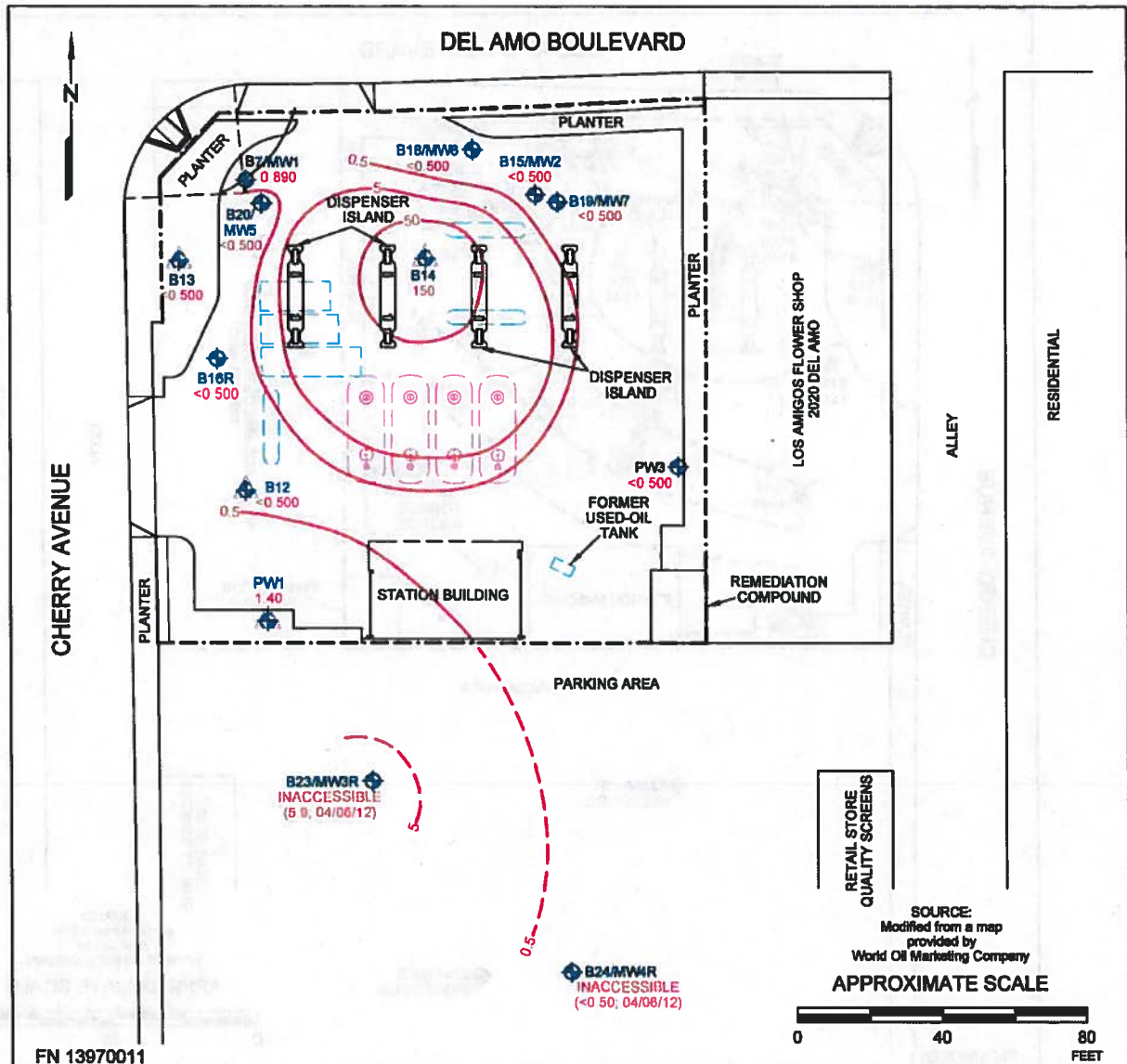
- B19/MW7 Groundwater monitoring well
- B14 Groundwater monitoring/vadose zone well
- Groundwater elevation in feet relative to mean sea level
- Line of equal groundwater elevation
- Underground storage tank
- Former dispenser island
- Former underground storage tank



**GROUNDWATER ELEVATION  
 CONTOUR MAP - 10/03/12**

FORMER EXXON STATION 73256  
 2002 Del Amo Boulevard  
 Long Beach, California

<b>PROJECT NO.</b>	1397
<b>PLATE</b>	3
<b>DATE:</b>	11/02/12



FN 13970011

**EXPLANATION**

- B19/MW7 Groundwater monitoring well
- B14 Groundwater monitoring/vadose zone well
- Benzene concentration in micrograms per liter
- Less than the stated laboratory reporting limit
- (5.9; 04/06/12) Data from most recent sampling event
- Line of equal benzene concentration (dashed where inferred)
- Underground storage tank
- Former dispenser island
- Former underground storage tank



**BENZENE GROUNDWATER ISOPLETH CONCENTRATION MAP - 10/03/12**

FORMER EXXON STATION 73256  
 2002 Del Amo Boulevard  
 Long Beach, California

**PROJECT NO.**  
1397

**PLATE**  
4  
DATE: 11/02/12

