

State Water Resources Control Board

UST CASE CLOSURE SUMMARY

Agency Information

Agency Name: Orange County Local Oversight Program	Address: 1241 E. Dyer Road, STE. 120 Santa Ana, CA 92705
Agency Caseworker: Mrs. Denamarie Baker	Case No.: 01UT019

Case Information

USTCF Claim No.: 10193	Global ID: T0605971490
Site Name: Texaco	Site Address: 25561 Jeronimo Mission Viejo, CA 92691 (Site)
Responsible Party: Mr. Marvin Katz Shell Oil Products US	Address: 20945 South Wilmington Avenue Carson, CA 90810
USTCF Expenditures to Date: \$0	Number of Years Case Open: 12

URL: http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=T0605971490

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 Low-Threat 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 Site Information**. Highlights of the Conceptual Site Model of the Case are as follows:

The unauthorized release was discovered during dispenser and product line upgrades in December 2000. Between 2000 and 2008, 9 monitoring wells were installed and 18 soil borings were drilled and sampled. The residual contaminate mass is well defined horizontally and vertically. Soil and groundwater analytical data demonstrate that residual contamination is stable and remains in a localized area within 200 feet of the source area. Wayne Perry Inc. conducted an extraction/air sparge pilot study in 2008, and concluded that extraction technologies were ineffective due to Site lithology with low permeability resulting in limited contaminant and groundwater mobility in the subsurface. The Site is currently an active petroleum fueling facility surrounded by commercial and residential developments.

The petroleum release is limited to the shallow soil and groundwater. The affected groundwater is not currently being used as a source of drinking water or for any other designated beneficial use, and it is highly unlikely that the affected groundwater will be used as a source of drinking water or for any other beneficial use in the foreseeable future. Public supply wells are usually constructed with competent sanitary seals and screens that are in deeper more protected aquifers. Remaining petroleum constituents are limited, stable and declining. Remedial actions have been implemented and further remediation would be ineffective and expensive. Additional assessment/monitoring will not likely

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change the conceptual model. Any remaining petroleum constituents do not pose significant risk to human health, safety, or the environment.

Rationale for Closure under the Policy

- General Criteria – Site **MEETS ALL EIGHT GENERAL CRITERIA** under the Policy.
- Groundwater Media-Specific Criteria – Site meets the criterion in **CLASS 2**. Based on an analysis of Site-specific conditions the plume length that exceeds water quality objectives is less than 250'. There is no free product. The nearest existing water supply well or surface water body is greater than 1,000 feet from the estimated plume boundary. The dissolved concentration of benzene is less than 3,000 micrograms per liter ($\mu\text{g/l}$), and the dissolved concentration of MTBE is less than 1,000 $\mu\text{g/l}$.
- Petroleum Vapor Intrusion to Indoor Air – Site meets the **ACTIVE FUELING FACILITY** exception for vapor intrusion to indoor air, and has no release characteristics that can be reasonably believed to pose an unacceptable health risk.
- Direct Contact and Outdoor Air Exposure – Site meets **CRITERIA (3) a**. Maximum concentrations of benzene and ethylbenzene in soil are less than or equal to those listed in Table 1. The estimated naphthalene concentrations in soil meet the thresholds in Table 1 and the Policy criteria for direct contact by a factor of ten. It is highly unlikely that naphthalene concentrations in the soil, if any, exceed the threshold.

Objections to Closure

Orange County Local Oversight Program (Orange County LOP) staff objects to UST case closure because:

1. The elevated concentrations dissolved phase Tert-Butyl Alcohol (TBA) indicate that the secondary source has not been removed to the maximum extent practicable.
RESPONSE: The 2008 extraction/air sparge pilot test conceded that the underlying siltstone and fine-grained silty sandstone would be not well suited for extraction or injection remedial alternatives.

Given that the site meets all of the Policy criteria and the fact that the geology is not conducive to extraction or injection, further remediation is not practicable.

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Recommendation for Closure

The corrective action performed at this Site ensures the protection of human health, safety, the environment and is consistent with Chapter 6.7 of the Health and Safety Code and implementing regulations, applicable state policies for water quality control and the applicable water quality control plan, and case closure is recommended.

Prepared By: Matthew Cohen
Matthew Cohen
Engineering Geologist

5/10/2013
Date

Reviewed By: George Lockwood
George Lockwood, PE No. 59556
Senior Water Resource Control Engineer

5/10/2013
Date



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

The site complies with 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 site complies with the requirements of the Low-Threat Underground Storage Tank (UST) Case Closure Policy as described below.¹

<p>Is corrective action consistent with Chapter 6.7 of the Health and Safety Code and implementing regulations? 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 case 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>Have waste discharge requirements or any other orders issued pursuant to Division 7 of the Water Code been issued at this site?</p>	<p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>
<p>If so, was the corrective action performed consistent with any order?</p>	<p><input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA</p>
<p><u>General Criteria</u> General criteria that must be satisfied by all candidate sites:</p> <p>Is the unauthorized release located within the service area of a public water system?</p> <p>Does the unauthorized release consist only of petroleum?</p> <p>Has the unauthorized (“primary”) release from the UST system been stopped?</p> <p>Has free product been removed to the maximum extent practicable?</p> <p>Has a conceptual site model that assesses the nature, extent, and mobility of the release been developed?</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 type="checkbox"/> No <input checked="" type="checkbox"/> NA</p> <p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>

¹ Refer to the Low-Threat Underground Storage Tank Case Closure Policy for closure criteria for low-threat petroleum UST sites.

<p>Has secondary source been removed to the extent practicable?</p> <p>Has soil or groundwater been tested for MTBE and results reported in accordance with Health and Safety Code Section 25296.15?</p> <p>Does nuisance as defined by Water Code section 13050 exist at the site?</p> <p>Are there unique site attributes or site-specific conditions that demonstrably increase the risk associated with residual petroleum constituents?</p>	<p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>
<p><u>Media-Specific Criteria</u> Candidate sites must satisfy all three of these media-specific criteria:</p> <p>1. Groundwater: 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>Is the contaminant plume that exceeds water quality objectives stable or decreasing in areal extent?</p> <p>Does the contaminant plume that exceeds water quality objectives meet all of the additional characteristics of one of the five classes of sites? If YES, check applicable class: <input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5</p> <p>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?</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>2. Petroleum Vapor Intrusion to Indoor Air: 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>Is the site an active commercial petroleum fueling facility? 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>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? If YES, check applicable scenarios: <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4</p> <p>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?</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><input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA</p>

<p>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?</p>	<p><input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA</p>
<p>3. Direct Contact and Outdoor Air Exposure: 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>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)?</p> <p>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?</p> <p>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?</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 INFORMATION (Conceptual Site Model)

Site Location/ History

- The Site is located at the east corner of the intersection of Jeronimo Road and Los Alisos Boulevard in Mission Viejo, California.
- The Site is an active petroleum fueling facility.
- The Site is bounded by residential to the north; commercial to the east and south, and a park to the west.
- The contaminants of concern are petroleum hydrocarbons only.
- The primary source of the release was the UST system.
- The leak discovery date was December 2000.
- The release type was petroleum².
- No free product has ever been detected at the Site.

Table A. USTs:

Tank No.	Size	Contents	Status	Date
1	10,000 gallon	Gasoline	Active	-
2	10,000 gallon	Gasoline	Active	-
3	10,000 gallon	Gasoline	Active	-
4	10,000 gallon	Diesel	Active	-

Receptors

- Groundwater Basin: San Juan Valley(9-1).
- Groundwater Beneficial Uses: Municipal and domestic supply (MUN); agricultural supply (AGR); Contact Water Recreation (REC-1); Non-contact Water Recreation (REC-2); Warm Freshwater Habitat (WARM); and Wildlife Habitat (WILD).
- Designated Land Use: Commercial Neighborhood.
- Public Water System: Moulton Niguel Water District.
- Distance to Nearest Surface Waters: Aliso Creek, located 1,200 feet upgradient.
- Distance to Nearest Supply Wells: Greater than one mile.

Geology/ Hydrogeology

- Average Groundwater Depth: ~12 feet bgs
- Minimum Groundwater Depth: ~4.5 feet bgs
- Groundwater Flow Direction: Southwest
- Geology: Siltstone and fine-grained silty sandstone of the Niguel Formation underlay the Site to the total explored depth of approximately 40 feet
- Hydrogeology: Hydraulic conductivity is very low.

² "Petroleum" means crude oil, or any fraction thereof, which is liquid at standard conditions of temperature and pressure, which means at 60 degrees Fahrenheit and 14.7 pounds per square inch absolute.
(Health & Saf. Code, § 25299.2.)

Corrective Actions

- 2000 – 2008 Site assessment
- 2008 Extraction/Injection Pilot Study

Table B: Concentrations of Petroleum Constituents in Soil

Constituent	Maximum 0-5 ft. bgs (mg/kg)	Maximum 5-10 ft. bgs (mg/kg)
Benzene	0.008	ND
Ethylbenzene	0.011	ND
Naphthalene	NA	NA
PAHs	NA	NA

ND = Not detected

NA = Not analyzed

PAH = poly-aromatic hydrocarbons

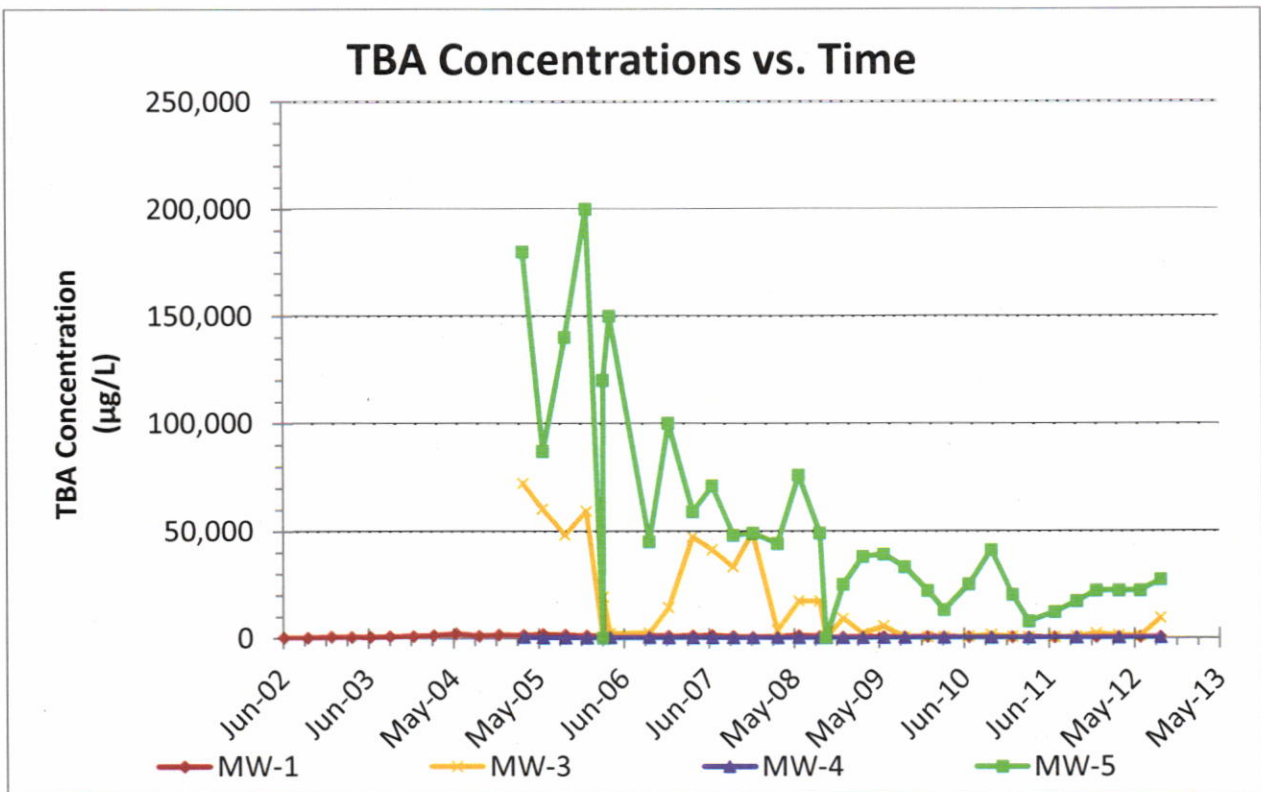
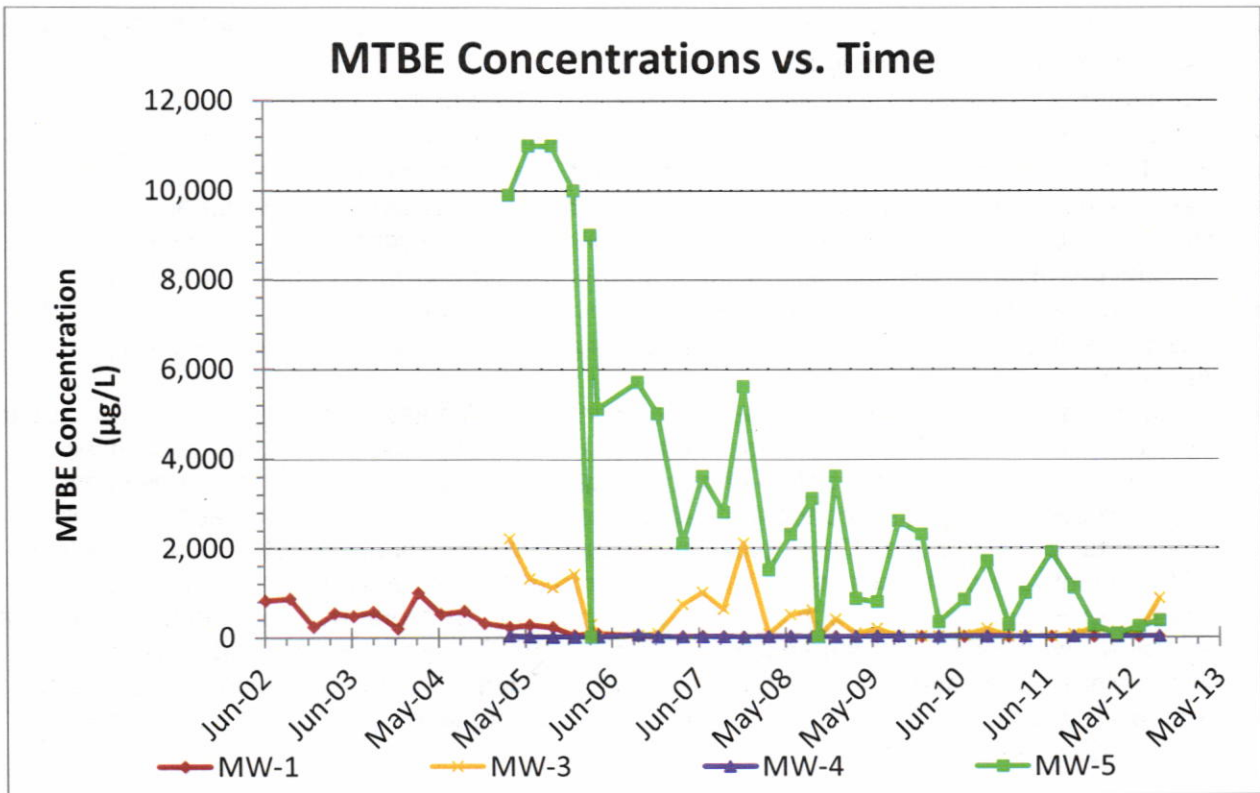
Table C: Concentrations of Petroleum Constituents of Concern in Groundwater

Sample	Sample Date	TPHg (ppb)	Benzene (ppb)	Toluene (ppb)	Ethylbenzene (ppb)	Xylenes (ppb)	MTBE (ppb)	TBA (ppb)
MW-1	9/24/2012	<50	<0.50	<0.50	<0.50	<1.0	1	190
MW-2	9/24/2012	<50	<0.50	<0.50	<0.50	<1.0	0.69	<10
MW-3	9/24/2012	1,600	<10	<10	<10	<20	850	9,000
MW-4	9/24/2012	<50	<0.50	<0.50	<0.50	<1.0	5.2	<10
MW-5	9/24/2012	<2,000	<20	<20	<20	<40	360	27,000
MW-6	9/24/2012	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<10
MW-7	9/24/2012	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<10
MW-8	9/24/2012	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<10
MW-9	9/24/2012	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<10
WQOs	-	50	1	150	300	1750	5	12*

WQOs - Water Quality Objectives

* California Notification Level

Groundwater Trends



Evaluation of Risk Criteria

- Maximum Petroleum Constituent Plume Length above WQOs: The dissolved MTBE plume is approximately 200 feet in length.
- Petroleum Constituent Plume Determined Stable or Decreasing: Yes.
- Soil/Groundwater Sampled for MTBE: Yes, see Table C above.
- Residual Petroleum Constituents Pose Significant Risk to the Environment: No .
- Residual Petroleum Constituents Pose Significant Vapor Intrusion Risk to Human Health: Site meets exception for active petroleum fueling facility. Site conditions demonstrate that the residual petroleum constituents in soil and groundwater are protective of human health.
- Residual Petroleum Constituents Pose a Nuisance³ at the Site: No.
- Residual Petroleum Constituents in Soil Pose Significant Risk of Adversely Affecting Human Health: No.
- Residual Petroleum Constituents Pose Significant Direct Contact and Outdoor Air Exposure to Human Health: No – There are no soil samples 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 concentrations 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, 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.

³ Nuisance as defined in California Water Code, section 13050, subdivision (m).

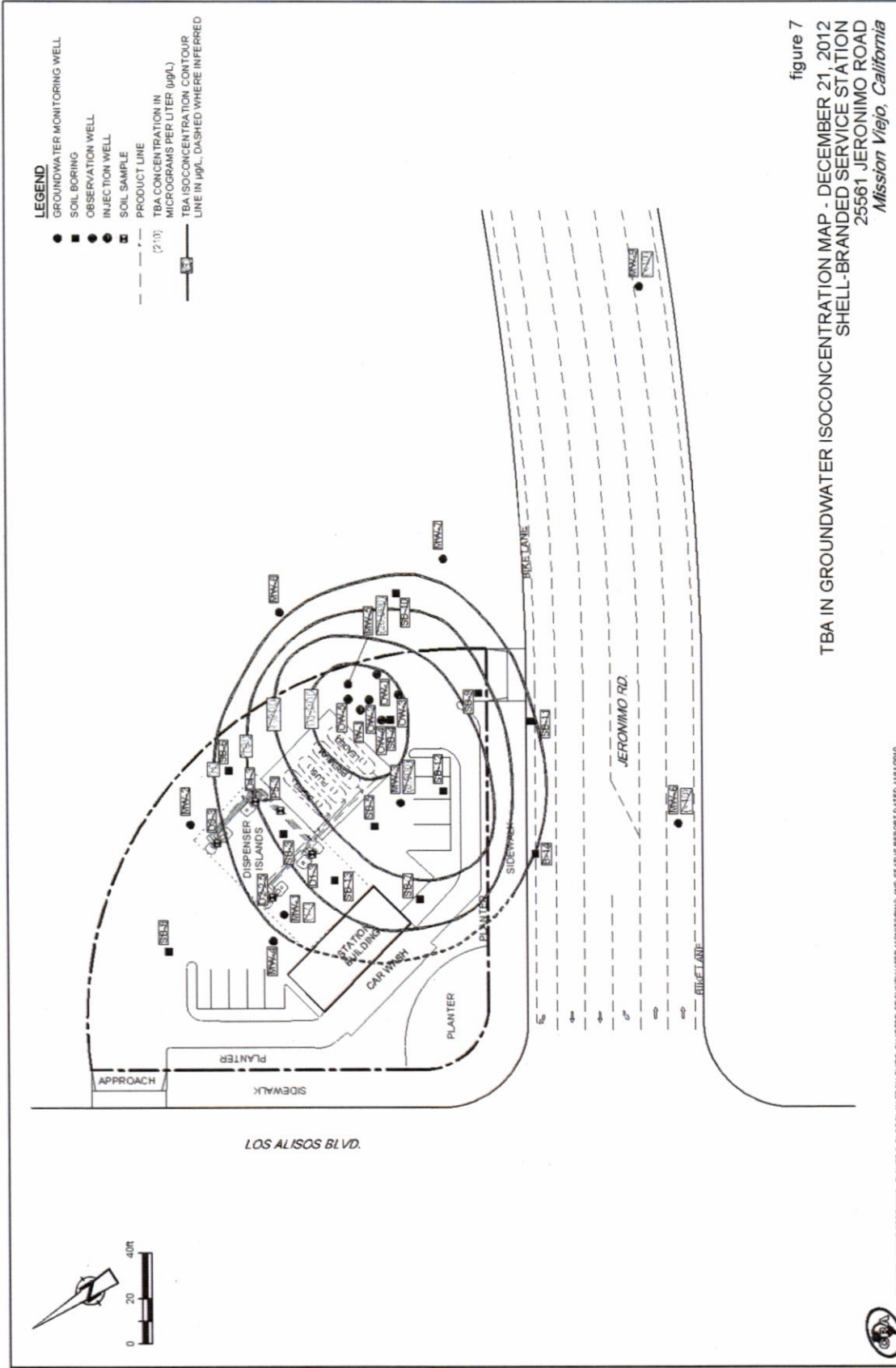


figure 7
TBA IN GROUNDWATER ISOCONCENTRATION MAP - DECEMBER 21, 2012
SHELL-BRANDED SERVICE STATION
25561 JERONIMO ROAD
Mission Viejo, California

60693-96(01)GN-WA007 FEB 1/2013
SOURCE: WAYNE PERRY INC., FIGURE 2, PLOT PLAN FROM THIRD QUARTER GROUNDWATER MONITORING AND STATUS REPORT DATED 11/11/2010

