

State Water Resources Control Board

UST CASE CLOSURE REVIEW SUMMARY REPORT

Agency Information

Agency Name: Los Angeles Regional Water Quality Control Board (Regional Water Board)	Address: 320 West 4 th Street, Suite 200 Los Angeles, CA 90013
Agency Caseworker: Ahmad J. Lamma	Case No.: 908050498

Case Information

USTCF Claim No.: 14134	Global ID: T0603701798
Site Name: United Oil Station #41	Site Address: 5170 Long Beach Boulevard Long Beach, CA 90805
Responsible Party: United Oil Company, Attn: Jeff Appel	Address: 17311 S. Main St. Gardena, CA 90248
USTCF Expenditures to Date: \$854,317	Number of Years Case Open: 21

URL: http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=T0603701798

Summary

The Low-Threat Underground Storage Tank (UST) 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:

This case is an active commercial petroleum fueling facility. An unauthorized leak was reported in July 1991 following the removal of five 10,000-gallon gasoline USTs. Soil vapor extraction and air sparging, intermittently conducted from October 2006 through April 2012, removed approximately 877 pounds of total petroleum hydrocarbon as gasoline (TPHg). Since 2000, 22 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, ethylbenzene, xylenes, and methyl tert-butyl ether (MTBE) in on-Site monitoring wells.

The petroleum release is limited to the shallow soil and groundwater. According to data available in GeoTracker, there are no supply wells regulated by the California Department of Public Health or surface water bodies within 250 feet of the defined plume boundary. No other water supply wells have been identified within 250 feet of the defined plume boundary in files reviewed. Water is provided to water users near the Site by the City of Long Beach and the Metropolitan Water District of Southern California. 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 and stable, and concentrations are declining. Corrective actions have been implemented and additional corrective actions are not necessary. 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 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:** The case meets the Policy Exclusion for Active Station. Soil vapor evaluation 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 Policy Table 1 for Commercial/Industrial use 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 percent benzene and 0.25 percent 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 Policy Table 1. 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 objected to UST case closure for this case in 2009.

- **Groundwater has been impacted above the TPHg cleanup goal.**
RESPONSE: The contaminant plume is defined to water quality objectives for petroleum hydrocarbon constituents of concern, and is stable and decreasing. The case meets all Policy criteria and does not pose a significant risk to human health.

United Oil Co. Station #41
5170 Long Beach Blvd., Long Beach
Claim No: 14134

June 2013

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. Los Angeles County has the regulatory responsibility to supervise the abandonment of monitoring wells.

Lisa Babcock

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

Date

6/26/13

Prepared by: Roger Hoffmore, P.G. 7660

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.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 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>Have waste discharge requirements or any other orders issued pursuant to Division 7 of the Water Code been issued at this case?</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 checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA</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.
http://www.waterboards.ca.gov/board_decisions/adopted_orders/resolutions/2012/rs2012_0016atta.pdf

<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>Nuisance as defined by Water Code section 13050 does not 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 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><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?</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>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><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>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>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><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 CASE INFORMATION (Conceptual Site Model)

Site Location/History

- The Site is an active commercial petroleum fueling facility, in Long Beach.
- The Site is bounded by retail businesses beyond North Long Beach Blvd. to the west, a car wash and a residence to the north, residences to the east and a restaurant beyond East Morningside Street to the south. The surrounding land use is mixed commercial and residential.
- In July 1991, soil contamination was identified by an environmental investigation. To date, 22 monitoring wells have been installed and monitored regularly.
- A 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 (Frey Environmental, Inc., 2012).
- Nature of Contaminants of Concern: Petroleum hydrocarbons and other solvent or non-petroleum hydrocarbons.
- Source: UST system.
- Date reported: July 1991.
- Status of Release: USTs removed.
- Free Product: Historically noted in MW-2 (up to 0.01 feet) and MW-12 (up to 0.35 feet); but not reported since 2003.

Tank Information

Tank No.	Size in Gallons	Contents	Closed in Place/ Removed/Active	Date
1-5	10,000	Gasoline	Removed	November 1998
6-10	12,000	Gasoline	Active	-

Receptors

- GW Basin: Coastal Plain of Los Angeles – Central.
- Beneficial Uses: Municipal, Industrial, Industrial Process, Agricultural and Domestic Supply (Basin Plan).
- Land Use Designation: Aerial photograph available on GeoTracker suggests mixed commercial and residential land use in the vicinity of the Site.
- 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 public supply wells regulated by the California Department of Public Health within 250 feet of the defined plume boundary. No other water supply wells were identified within 250 feet of the defined plume boundary in the files reviewed.
- Distance to Nearest Surface Water: There is no identified surface water within 250 feet of the defined plume boundary.

Geology/Hydrogeology

- Stratigraphy: The Site is underlain by interbedded and intermixed sand, silt, clay and gravel.
- Maximum Sample Depth: 40 feet below ground surface (bgs).
- Minimum Groundwater Depth: 24.06 feet bgs at monitoring well MW-16.
- Maximum Groundwater Depth: 29.85 feet bgs at monitoring wells MW-10 and MW-15.

- Current Average Depth to Groundwater: Approximately 27 feet bgs.
- Saturated Zones(s) Studied: Approximately 24 – 45, 52 – 55, and 62 – 65 feet bgs.
- Appropriate Screen Interval: Yes.
- Groundwater Flow Direction: Generally south with an average gradient of 0.0015 feet/foot (September 2012).

Monitoring Well Information

Well Designation	Date Installed	Screen Interval (feet bgs)	Depth to Water (feet bgs) (09/26/2012)
MW-1	January 2000	15-40	27.41
MW-2	March 2000	15-40	NM
MW-3	March 2000	15-40	27.80
MW-4	March 2000	15-40	NM
MW-5	March 2000	15-40	NM
MW-6	October 2000	15-40	26.87
MW-7	October 2000	15-40	27.25
MW-8	October 2000	15-40	NM
MW-9	August 2002	15-45	26.38
MW9-55	March 2006	52-55	NM
MW9-65	March 2006	62-65	NM
MW-10	September 2001	15-40	27.61
MW-11	September 2001	15-40	27.20
MW-12	September 2001	15-40	26.75
MW-13	August 2002	15-45	28.21
MW-14	September 2001	15-40	27.06
MW-15	August 2002	15-40	28.10
MW-16	August 2002	15-45	NM
MW-18	July 2004	15-40	NM
MW-19	July 2004	15-40	NM
MW-20	July 2004	15-40	NM

NM: Not Measured

Remediation Summary

- Free Product: Historically noted in MW-2 (up to 0.01 feet) and MW-12 (up to 0.35 feet); but not reported since 2003.
- Soil Excavation: Unknown.
- In-Situ Soil/Groundwater Remediation: Soil vapor extraction and air sparging, intermittently conducted from October 2006 through April 2012, a total of 26,900 hours, removed approximately 877 pounds of TPHg.

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	0.098 (11/09/98)	<0.005 (01/12/00)
Ethylbenzene	0.679 (11/09/98)	<0.005 (01/12/00)
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

*: Contaminated soil associated with sample D2-2.5 was excavated to a depth of 15 feet (Frey Environmental, Inc., 2006).

Most Recent Concentrations of Petroleum Constituents in Groundwater*

Sample	Sample Date	TPHg (µg/L)	TPHd (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl- Benzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	TBA (µg/L)
MW-1	9/26/12	570	<1,000	<0.5	<1	2.9	<1	<1	<10
MW-2	10/14/09	<100	NA	0.53	<0.5	<0.5	<1	<2	<10
MW-3	9/26/12	13,000	7,300	<2.5	<5	2,100	2,220	<5	<50
MW-4	5/09/12	5,000	1,600	13	150	900	818	<40	<200
MW-5	10/25/11	1,700	330	<0.5	<0.5	7.7	1.3	<2	<10
MW-6	5/09/12	2,800	1,000	<0.5	<0.5	23	5.9	<2	<10
MW-7	9/26/12	4,800	2,600	<2.5	21	1,000	69	<5	<50
MW-8	5/09/12	110	<100	<0.5	<1	<1	<1	<2	<10
MW-9	9/26/12	<100	<1,000	<0.5	<1	<1	<1	<1	<10
MW9-55	6/22/09	<100	NA	<0.5	<1	<1	<1	<2	<10
MW9-65	6/22/09	<100	NA	<0.5	<1	<1	<1	<2	<10
MW-10	9/26/12	<100	<1,000	<0.5	<1	<1	<1	<1	<10
MW-11	9/26/12	<100	<1,000	<0.5	<1	<1	<1	<1	<10
MW-12	9/26/12	320	<1,000	<0.5	<1	<1	<1	<1	<10
MW-13	9/26/12	<100	<1,000	<0.5	<1	<1	<1	<1	<10
MW-14	9/26/12	13,000	6,400	<5	14	3,000	1,256	<10	<100
MW-15	9/26/12	6,100	3,300	<2.5	27	890	220	<5	<50
MW-16	5/08/12	<100	<100	0.6	<0.5	<0.5	<1	2.1	<10
MW-18	5/08/12	<100	<100	<0.5	<1	<1	<1	<2	<10
MW-19	5/08/12	<100	<100	<0.5	<1	<1	<1	<2	<10
MW-20	5/08/12	<100	<100	<0.5	<1	<1	<1	<2	<10
WQOs		--	--	1	150	300	1,750	5 ^a	1,200 ^b

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

--: Regional Water Board, Basin Plan does not have a numeric water quality objective for TPHg and TPHd

^a: Secondary maximum contaminant level (MCL)

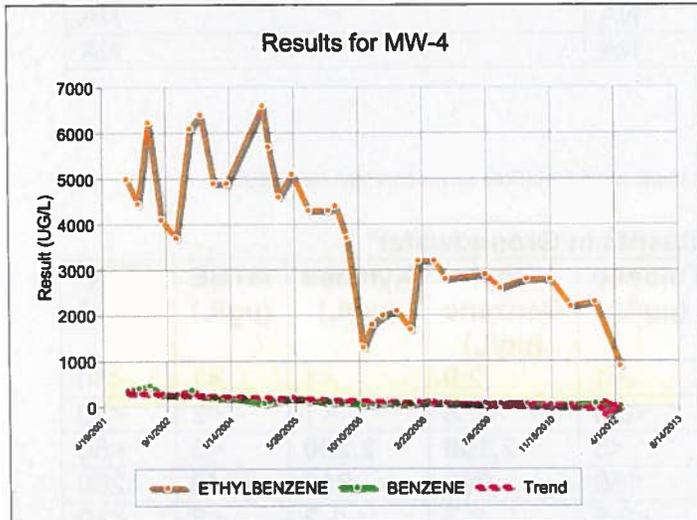
^b: California Department of Public Health, Response Level

* Additional volatile organic compounds (VOCs) detected in groundwater samples collected and analyzed from Site wells on September 26, 2012 include n-butylbenzene, sec-butylbenzene, isopropylbenzene, naphthalene, n-propylbenzene, 1,2,4-trimethylbenzene, and 1,3,5-trimethylbenzene. Each of these constituents can be found in gasoline.

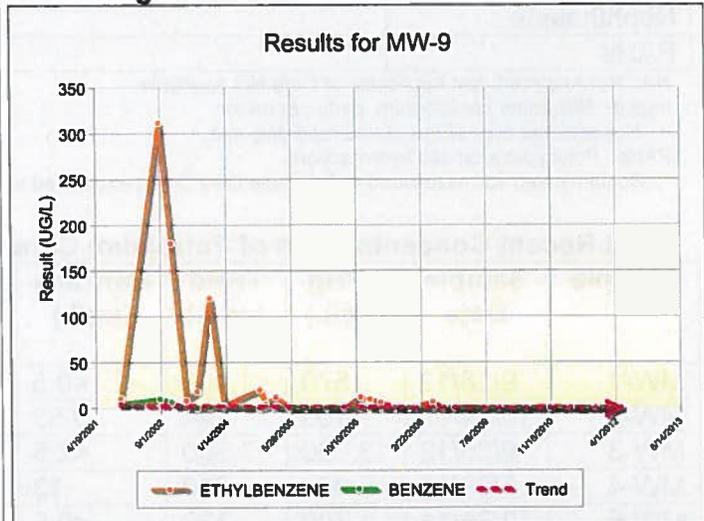
Groundwater Trends

- There are 13 years of regular groundwater monitoring data for this case. Benzene and ethylbenzene trends are shown below:

Source Area Well

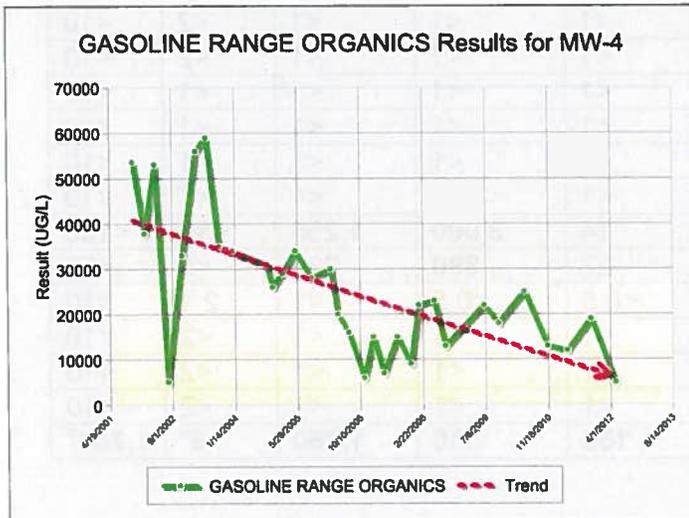


Downgradient Well

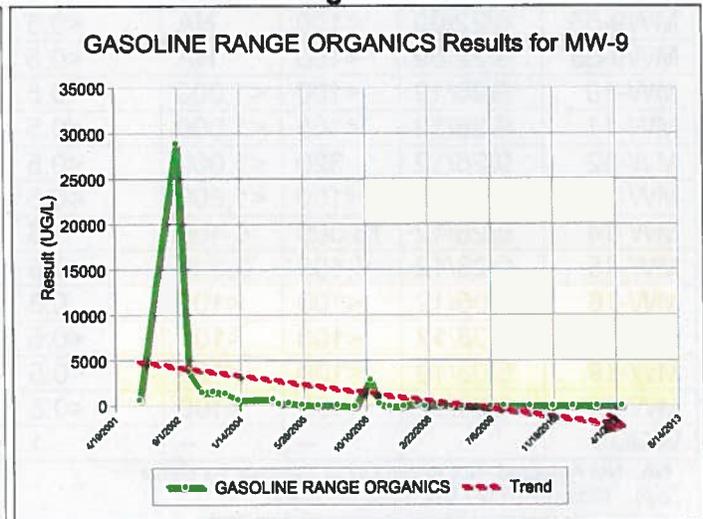


- TPHg is a constituent that Region 4 has expressed concern about. TPHg trends are shown below:

Source Area Well



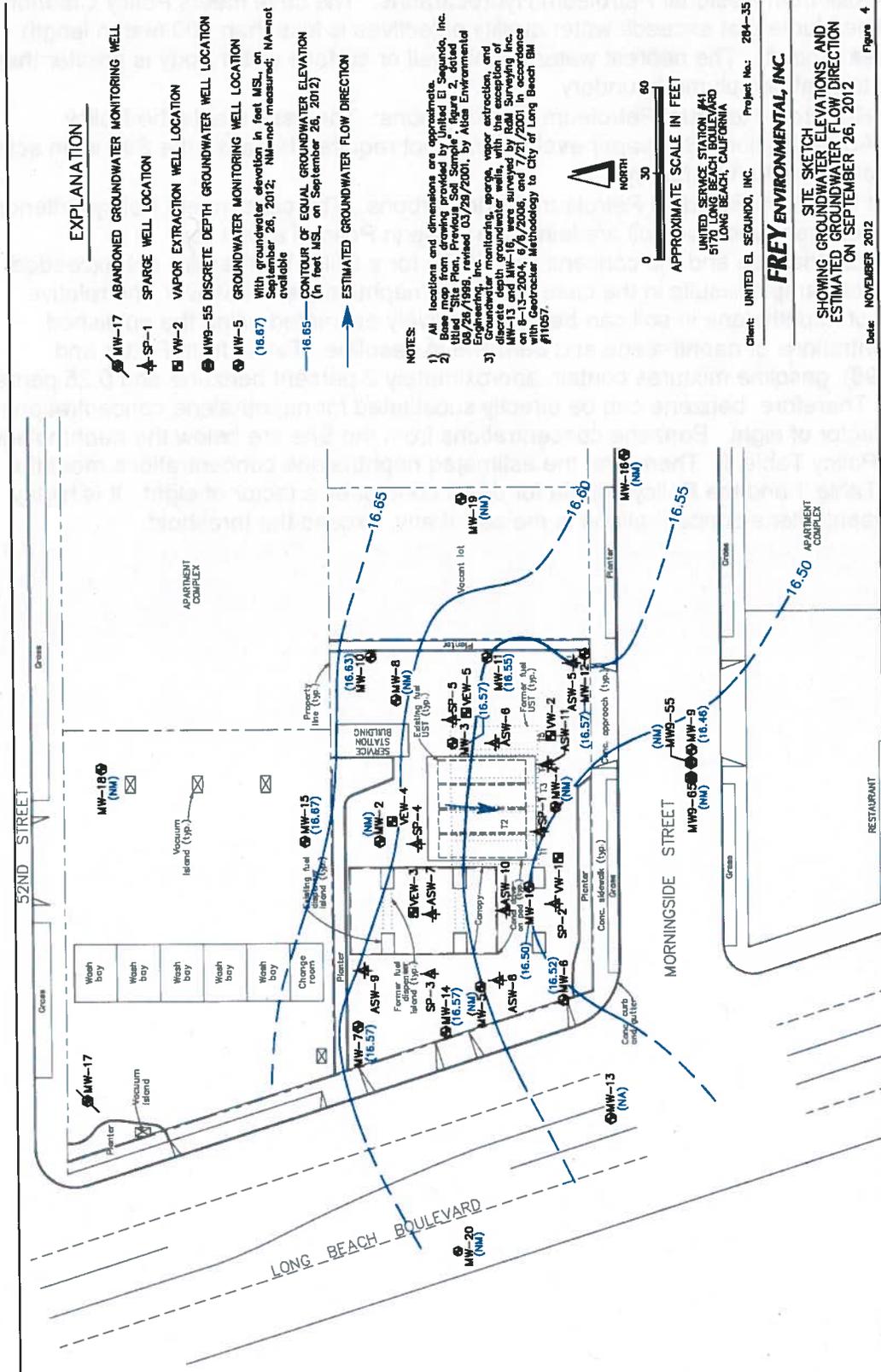
Downgradient Well



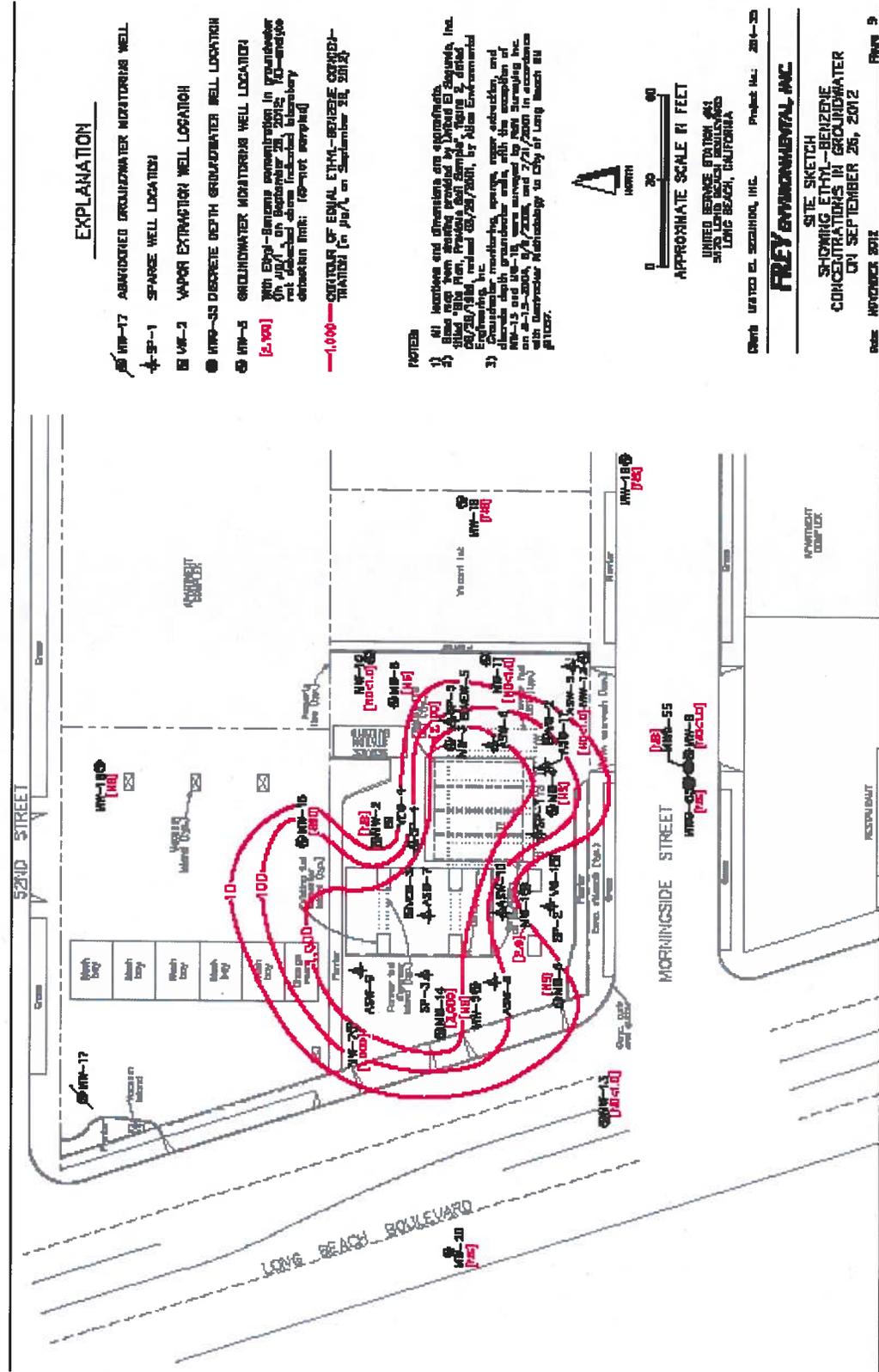
Evaluation of Current Risk

- 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.
- 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 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:** The case meets the Policy Exclusion for Active Station. Soil vapor evaluation 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 Policy Table 1 for Commercial/Industrial use 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 percent benzene and 0.25 percent 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 Policy Table 1. 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.



284-35-04-12



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