

## State Water Resources Control Board

### UST CASE CLOSURE REVIEW SUMMARY REPORT

#### Agency Information

Agency Name: Orange County Health Care Agency (County)	Address: 1241 East Dyer Road, Suite 120 Santa Ana, CA 92705-5611
Agency Caseworker: Kevin Lambert	Case No.: 86UT200

#### Case Information

USTCF Claim No.: 6179	GeoTracker Global ID: T0605900582
Site Name: Texaco Station	Site Address: 11250 Los Alamitos Blvd Los Alamitos, CA 90720
Responsible Party: Marvin Katz c/o: Shell Oil Products US	Address: 20945 Wilmington Avenue S Carson, CA 90810
USTCF Expenditures to Date: \$721,950	Number of Years Case Open: 26

URL: [http://geotracker.waterboards.ca.gov/profile\\_report.asp?global\\_id=T0605900582](http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=T0605900582)

#### 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 a former Texaco-branded Service Station that operated from 1987 until 2002. Currently, the Site is redeveloped as a Jack-in-the Box Restaurant and is no longer an active commercial petroleum fueling facility. An unauthorized release was reported in November 1986 following the removal and replacement of six petroleum fuel USTs. Mobile dual phase extraction was operated from 1992 to 1994 that extracted an estimated 1,943 pounds of soil hydrocarbon vapor and an unknown volume of impacted groundwater. Approximately 350 gallons of hydrogen peroxide solution were injected into groundwater during 1992 and 1994. Approximately 108 pounds of an Oxygen Release Compound (ORC) were injected through boreholes drilled adjacent to the northwestern dispenser island in 1999. Approximately 1,223 tons of petroleum impacted soil were excavated and removed, including 7,500 gallons of water in 2002 during the Texaco UST System removal including four USTs. An unknown amount of ORC was applied to the excavation prior to backfilling with clean imported soil.

There are 10 years of regular groundwater monitoring data collected for this case from the seven existing groundwater monitoring wells at the Site. Water quality objectives have been achieved or nearly achieved for all constituents. Benzene, MTBE, and TBA plumes are defined, stable and decreasing in areal extent.

The petroleum release is limited to the soil and shallow 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 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 Golden State Water Company. 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 decreasing. 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 2. The contaminant plume that exceeds water quality objectives is less than 250 feet in length. There is no free product. The nearest supply well regulated by the California Department of Public Health or surface water body is greater than 1,000 feet from the defined plume boundary. No other water supply wells have been identified within 1,000 feet of the defined plume boundary. The dissolved concentration of benzene is less than 3,000 µg/L, and the dissolved concentration of MTBE is less than 1,000 µg/L.
- **Vapor Intrusion to Indoor Air:** The case meets Policy Criterion 2a by Scenario 3a. The maximum benzene concentration in groundwater is less than 100 µg/L. The minimum depth to groundwater is greater than 5 feet, overlain by soil containing less than 100 mg/kg of TPH.
- **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 Residential 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 County considers the Site ready for closure (February 25, 2013, telephone communication).

Texaco Station  
11250 Los Alamitos Blvd, Los Alamitos  
Claim No: 6179

August 2013

**Determination**

Based on the review performed in accordance with Health and 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. Orange County has the regulatory responsibility to supervise the abandonment of monitoring wells.

*Lisa Babcock*

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

*8/16/13*

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Date

Prepared by: Mohammed Khan, P.E. License # CH 4550

**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> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p><b>Does the unauthorized release consist only of petroleum?</b> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p><b>Has the unauthorized (“primary”) release from the UST system been stopped?</b> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p><b>Has free product been removed to the maximum extent practicable?</b> <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA</p> <p><b>Has a conceptual site model that assesses the nature, extent, and mobility of the release been developed?</b> <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 type="checkbox"/> 1 <input checked="" 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>        If YES, check applicable scenarios: <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input checked="" type="checkbox"/> 3 <input type="checkbox"/> 4</p>	<p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA</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 Site is located on the southeastern corner of the intersection of Los Alamitos Boulevard and Farquhar Avenue in Los Alamitos, California. The Site is a former Texaco-branded Service Station that operated from 1987 until 2002. It most recently consisted of four dispensers, four underground storage tanks, a station building, and a carwash. Currently, the Site is a Jack-in-the Box Restaurant and is no longer an active commercial petroleum fueling facility.
- The Site is bounded to the east and south by commercial properties and the associated parking lot. To the north beyond Farquhar Avenue are commercial properties. The Site is bounded by Los Alamitos Boulevard to the west with single-family residences across the street.
- A Site map showing the location of the former USTs, current monitoring wells, groundwater level contours, and petroleum constituent concentrations is provided at the end of this closure review summary (Conestoga-Rovers & Associates, 2012).
- Nature of Contaminants of Concern: Petroleum hydrocarbons only.
- Source of Release: UST system.
- Date Release Reported: November 1986.
- Status of Release: USTs removed.
- Free Product: None reported.

**Tank Information**

Tank No.	Size in Gallons	Contents	Closed in Place/Removed/Active	Date
1	6,000	Gasoline	Removed	September 1986
2	4,000	Gasoline	Removed	September 1986
3	4,000	Gasoline	Removed	September 1986
4	4,000	Gasoline	Removed	September 1986
5	4,000	Gasoline	Removed	September 1986
6	550	Waste Oil	Removed	September 1986
7*	10,000	Motor Vehicle Fuel	Removed	2002
8*	10,000	Motor Vehicle Fuel	Removed	2002
9*	10,000	Motor Vehicle Fuel	Removed	2002
10*	10,000	Motor Vehicle Fuel	Removed	2002

\*: Tanks 7,8,9 &10 were removed when the Site was being redeveloped as a Jack-in-the-Box restaurant

**Receptors**

- GW Basin: Coastal Plain of Orange County
- Beneficial Uses: The Regional Water Quality Control Board, Santa Ana Region (Regional Water Board) Basin Plan lists Municipal and Domestic Supply.
- Land Use Designation: Commercial
- Public Water System: Golden State Water Company.
- 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 1,000 feet of the defined plume boundary. No other water supply wells were identified within 1,000 feet of the defined plume boundary in the files reviewed.
- Distance to Nearest Surface Water: There is no identified surface water within 1,000 feet of the defined plume boundary.

**Geology/Hydrogeology**

- Stratigraphy: The Site is underlain by gravelly sands, sands, silty sands, silts, clayey silts, silty clays, and clays to the total depth explored of about 45 feet below ground surface (bgs).
- Maximum Sample Depth: 45 feet bgs.
- Minimum Groundwater Depth: 6.82 feet bgs at monitoring well MW-2.
- Maximum Groundwater Depth: 14.70 feet bgs at monitoring well AGW-9.
- Current Average Depth to Groundwater: Approximately 10 feet bgs.
- Saturated Zones(s) Studied: Approximately 5 - 40 feet bgs.
- Appropriate Screen Interval: Yes.
- Groundwater Flow Direction: Northwest with an average gradient of 0.028 feet/foot (June 11, 2012). However, the Rose Diagram (Delta, 2010) based on available historical data indicates the flow direction is predominantly to the west-southwest.

**Monitoring Well Information**

Well Designation	Date Installed	Screen Interval (feet bgs)	Depth to Water (feet bgs) (6/11/2012)
AGW-9	February 1987	15 - 45	9.81
CGW-1	March 1988	10 - 40	10.92
MW-1	January 2003	5 - 25	10.20
MW-2	January 2003	5 - 25	9.39
MW-3	January 2003	5 - 25	10.72
MW-4	January 2003	5 - 25	11.22
MW-5	January 2003	5 - 25	10.25

**Remediation Summary**

- Free Product: None reported in GeoTracker.
- Soil Excavation: Approximately 1,223 tons of petroleum impacted soil were excavated (to 17 feet bgs) and removed, including 7,500 gallons of water in 2002 during UST System removal. Oxygen Release Compound (ORC) was applied to the excavation.
- In-Situ Soil Remediation: Mobile dual phase extraction was operated from 1992 to 1994 that extracted about 1,943 pounds of hydrocarbon vapor.
- Groundwater Remediation: Mobile dual phase extraction was operated from 1992 to 1994. About 350 gallons of hydrogen peroxide solution were injected into a number of wells during 1992 and 1994. About 108 pounds of ORC were injected through boreholes drilled adjacent to the northwestern dispenser island in 1999.

**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	<0.005 (04/17/08)	<0.005 (04/17/08)
Ethylbenzene	<0.005 (04/17/08)	<0.005 (04/17/08)
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)	Ethyl-Benzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	TBA (µg/L)
AGW-9	06/11/2012	<50	<0.50	<0.50	<0.50	<1.0	0.50	<10
CGW-1	06/11/2012	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<10
MW-1	06/11/2012	180	<0.50	<0.50	<0.50	<1.0	<0.50	<10
MW-2	06/11/2012	860	<b>4.4</b>	1.1	32	35	<0.50	<10
MW-3	06/11/2012	690	<b>2.7</b>	1.7	<1.0	<2.0	<b>32</b>	<b>1,800</b>
MW-4	06/11/2012	<50	<0.50	<0.50	<0.50	<1.0	1.0	<10
MW-5	06/11/2012	66	0.50	<0.50	<0.50	<1.0	<0.50	<10
<b>WQOs</b>		--	<b>1</b>	<b>150</b>	<b>300</b>	<b>1,750</b>	<b>5<sup>a</sup></b>	<b>1,200<sup>b</sup></b>

µg/L: Micrograms per liter, parts per billion

<: Not detected at or above stated reporting limit

TPHg: Total petroleum hydrocarbons as gasoline

MTBE: Methyl tert-butyl ether

TBA: Tert-butyl alcohol

WQOs: Water Quality Objectives, Regional Water Board Basin Plan

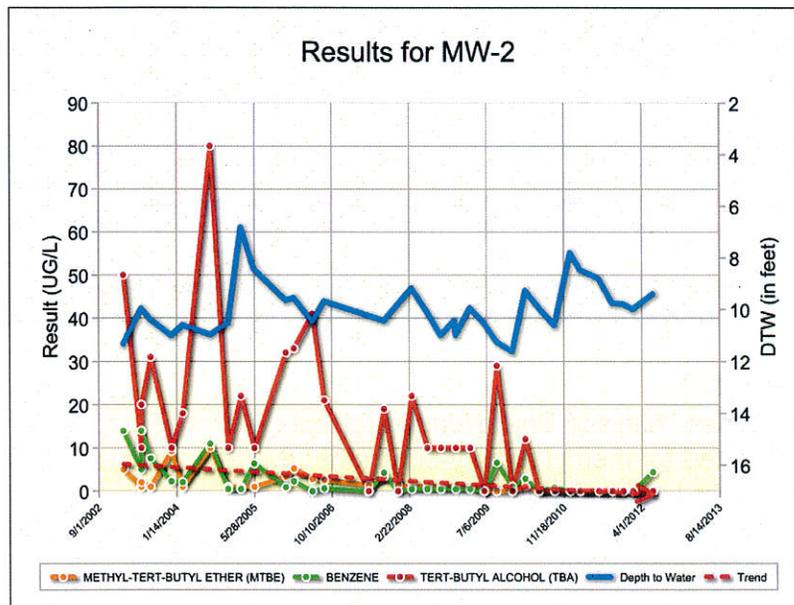
--: Regional Water Board Basin Plan does not have a numeric water quality objective for TPHg

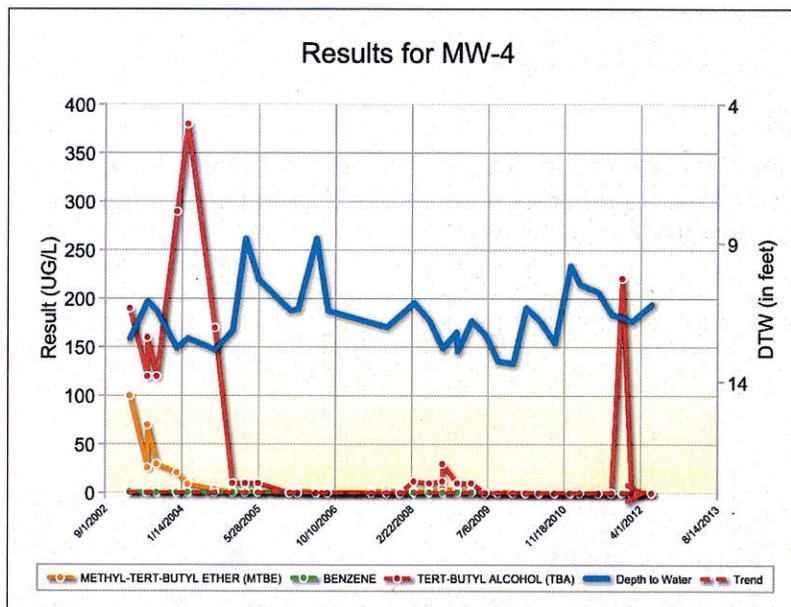
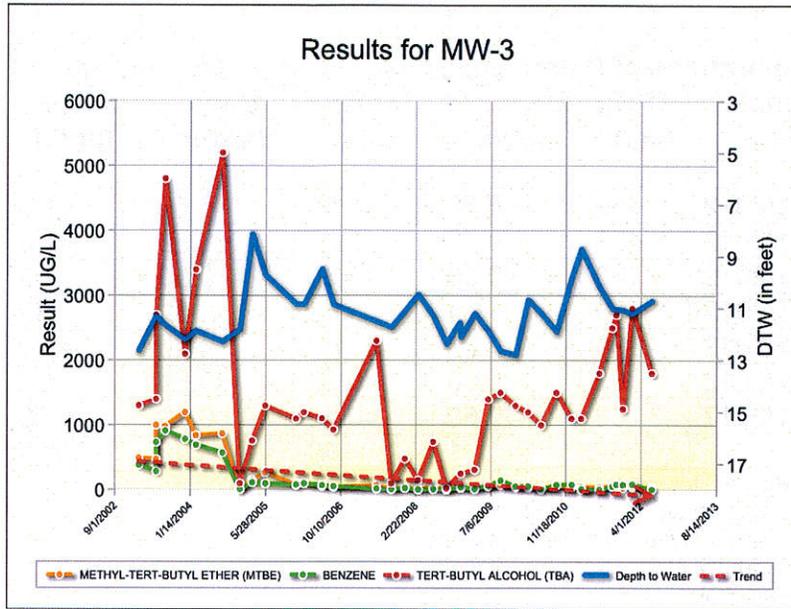
<sup>a</sup>: Secondary maximum contaminant level (MCL)

<sup>b</sup>: California Department of Public Health, Response Level

**Groundwater Trends**

- There are 10 years of regular groundwater monitoring data for this case. Groundwater benzene, MTBE and TBA concentration trends are shown below in the source wells, MW-2 and MW-3, and in the downgradient well MW-4:





**Evaluation of Current Risk**

- Estimate of Hydrocarbon Mass in Soil: None reported.
- Soil/Groundwater tested for methyl tertiary-butyl ether (MTBE): Yes, see table above.
- Oxygen Concentrations in Soil Vapor: None reported.
- Plume Length: <250 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 2. The contaminant plume that exceeds water quality objectives is less than 250 feet in length. There is no free product. The nearest supply well regulated by the California Department of Public Health or surface water body is greater than 1,000 feet from the defined plume boundary. No other water supply wells have been identified within 1,000 feet of the defined plume boundary. The dissolved concentration of benzene is less than 3,000 µg/L, and the dissolved concentration of MTBE is less than 1,000 µg/L.
- Indoor Vapor Risk from Residual Petroleum Hydrocarbons: The case meets Policy Criterion 2a by Scenario 3a. The maximum benzene concentration in groundwater is less than 100 µg/L. The minimum depth to groundwater is greater than 5 feet, overlain by soil containing less than 100 mg/kg of TPH.
- Direct Contact and Outdoor Air Exposure Risk from Residual Petroleum Hydrocarbons: The case meets Policy Criterion 3a. Maximum concentrations in soil are less than those in Policy Table 1 for Residential land 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.

