

State Water Resources Control Board

UST CASE CLOSURE REVIEW SUMMARY REPORT

Agency Information

Agency Name: Central Valley Regional Water Quality Control Board (Regional Water Board)	Address: 11020 Sun Center Drive # 200 Rancho Cordova, CA 95670
Agency Caseworker: David Stavarek	Case No.: 570310

Case Information

USTCF Claim No.: 16851	Global ID: T0611391888
Site Name: Davis Texaco	Site Address: 2002 Lyndell Terrace Davis, CA 95616
Responsible Party (RP): Mass Enterprises, Inc., Assignee	Address: 837 Shaw Road Stockton, CA 95215
USTCF Expenditures to Date: \$405,569	Number of Years Case Open: 12

URL: http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=T0611391888

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 release was reported in September 2001 following the discovery of soil and groundwater contamination as part of an environmental assessment. Site remediation consisted of a hydrogen peroxide injection pilot test performed in July/August 2010. Since 2002 a total of 17 monitoring and injection wells have been installed and monitored. According to groundwater data, water quality objectives have been achieved or nearly achieved for all petroleum hydrocarbon constituents of concern, except for MTBE in monitoring well MW-6. In addition, recent analysis identified concentrations of general minerals, not from petroleum hydrocarbon USTs, that are well above water quality objectives (WQO's) for public water supply.

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 within 1,000 feet of the defined plume boundary. No other water supply wells or surface water bodies have been identified within 1,000 feet of the defined plume boundary in files reviewed. A roadside stormwater side ditch is located east and south of the Site. Water is provided to water users near the Site by the City of Davis. 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 5. A stormwater drainage is located south and east of the Site. However, the shallowest groundwater recorded at the Site is 15 feet bgs and the ditch does not extend to that depth. Therefore, the stormwater ditch will never receive impacted groundwater. The nearest public water supply well is approximately 1,000 feet from the defined plume boundary. The regulatory agency determines, based on an analysis of site specific conditions, which under current and reasonably anticipated near-term future scenarios, the contaminant plume poses a low threat to human health and safety and to the environment and water quality objectives will be achieved within a reasonable time frame.
- 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 both Commercial/Industrial and 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.

Objections to Closure and Responses

The Regional Water Board objects to UST case closure (April 4, 2013 e-mail) because:

- Additional sampling is required to confirm MTBE is stable.
RESPONSE: Data show that the MTBE plume is stable. The case meets all Policy criteria, and does not pose a significant risk to human health, safety or the environment.

Davis Texaco
2002 Lyndell Terrace, Davis
Claim No: 16851

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

Lisa Babcock

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

8/16/13

Date

Prepared by: Mark Owens, P.E. C66804

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><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>Has secondary source been removed to the extent practicable?</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.
http://www.waterboards.ca.gov/board_decisions/adopted_orders/resolutions/2012/rs2012_0016atta.pdf

<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 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 type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input checked="" 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

- This case is located at the intersection of Lyndell Terrace and John Jones Road in northwest Davis.
- The Site is an active Union 76 service station with three USTs, two dispenser islands covered by a canopy, and a service station building.
- 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 (Advanced GeoEnvironmental, 2009).
- Nature of Contaminants of Concern: Petroleum hydrocarbons only.
- Source: UST system.
- Date reported: September 2001.
- Status of Release: Subsequent to discovery of contamination, integrity testing showed that the USTs were not leaking.
- Free Product: None reported.

Tank Information

Tank No.	Size in Gallons	Contents	Closed in Place/Removed/Active	Date
1	15,000	Gasoline	Active	-
2	9,000/6,000	Gasoline/Diesel	Active	-

Receptors

- GW Basin: Sacramento Valley - Yolo.
- Beneficial Uses: Regional Water Board Basin Plan lists agricultural supply, industrial process, and groundwater recharge.
- Land Use Designation: Aerial photograph available on GeoTracker suggests mixed residential and commercial land use in the vicinity of the Site.
- Public Water System: City of Davis.
- 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.
- Distance to Nearest Surface Water: A roadside stormwater side ditch located approximately 140 feet south and east of the defined plume boundary.

Geology/Hydrogeology

- Stratigraphy: The Site is underlain by interbedded and intermixed sand, silt, and clay.
- Maximum Sample Depth: 104 feet below ground surface (bgs).
- Minimum Groundwater Depth: 15.17 feet bgs at monitoring well MW-4B.
- Maximum Groundwater Depth: 38.90 feet bgs at monitoring well MW-7.
- Current Average Depth to Groundwater: Approximately 31 feet bgs.
- Saturated Zones(s) Studied: Approximately 15 - 50 feet bgs.
- Appropriate Screen Interval: Yes.

- Groundwater Flow Direction: The 2nd Quarter 2013 monitoring report has a rose diagram showing historic flow directions of NW-SE, NNE-NE and slight W-NW. Gradient is 0.001 feet/foot.

Monitoring Well Information

Well Designation	Date Installed	Screen Interval (feet bgs)	Depth to Water (feet bgs) (4/10/2013)
MW-1	December 2002	25-40	23.81
MW-2	December 2002	35-50	22.39
MW-3	December 2002	25-40	22.38
MW-4A	December 2002	25-40	23.13
MW-4B	December 2002	64-69	21.85
MW-5	June 2004	15-40	22.68
MW-6	June 2004	25-40	22.44
MW-7	June 2004	25-40	25.28
MW-8	March 2006	15-35	22.56
MW-9A	March 2006	14-34	23.00
MW-9B	March 2006	65-70	23.14
IW1	June 2010	20-50	NM
IW2	June 2010	20-50	NM
IW3	June 2010	20-50	NM
IW4	June 2010	20-50	NM
IW5	June 2010	20-50	NM

NM: Not Measured

Remediation Summary

- Free Product: None identified in GeoTracker.
- Soil Excavation: None identified in GeoTracker.
- In-Situ Soil Remediation: None identified in GeoTracker.
- Groundwater Remediation: Hydrogen peroxide injection pilot test performed in July/August 2010.

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 (11/21/02)	<0.005 (06/10/04)
Ethylbenzene	<0.005 (11/21/02)	<0.005 (06/10/04)
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)	MTBE (µg/L)	TBA (µg/L)
MW-1	11/11/2010	NA	NA	NA
MW-2	11/11/2010	NA	<1	NA
MW-3	11/11/2010	NA	<1	NA
MW-4A	4/10/2013	NA	<0.5	<10
MW-4B	11/11/2010	<50	<1	<10
MW-5	11/11/2010	NA	NA	NA
MW-6	4/10/2013	NA	670	NA
MW-7	4/10/2013	NA	<0.5	<10
MW-8	4/10/2013	NA	<0.5	NA
MW-9A	11/11/2010	NA	NA	NA
MW-9B	11/11/2010	NA	NA	NA
IW1	11/11/2010	NA	NA	NA
IW2	11/11/2010	NA	NA	NA
IW3	11/11/2010	NA	NA	NA
IW4	11/11/2010	NA	<1	<10
IW5	11/11/2010	NA	NA	NA
WQOs	11/11/2010	5	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

MTBE: Methyl tert-butyl ether

TBA: Tert-butyl alcohol

WQOs: Water Quality Objectives, Regional Water Board Basin Plan

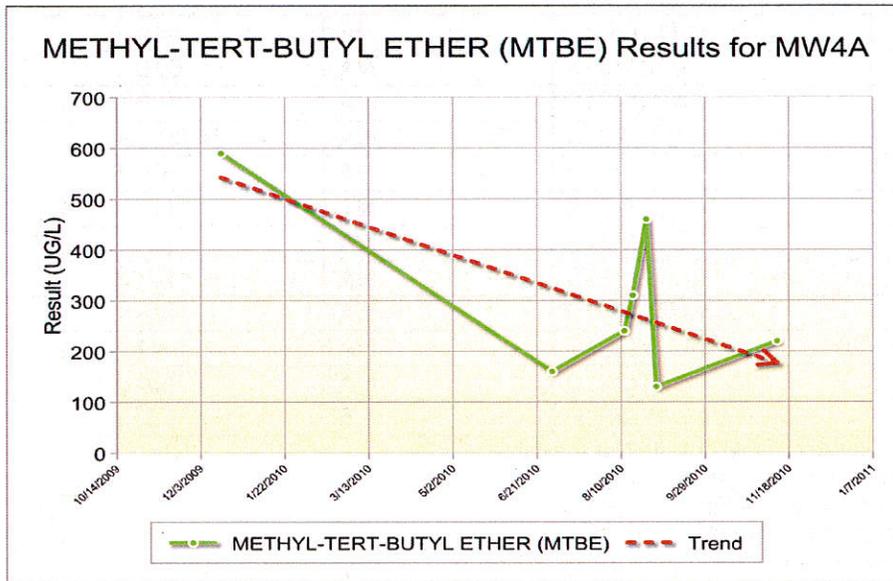
^a: Secondary maximum contaminant level (MCL)

^b: California Department of Public Health, Response Level

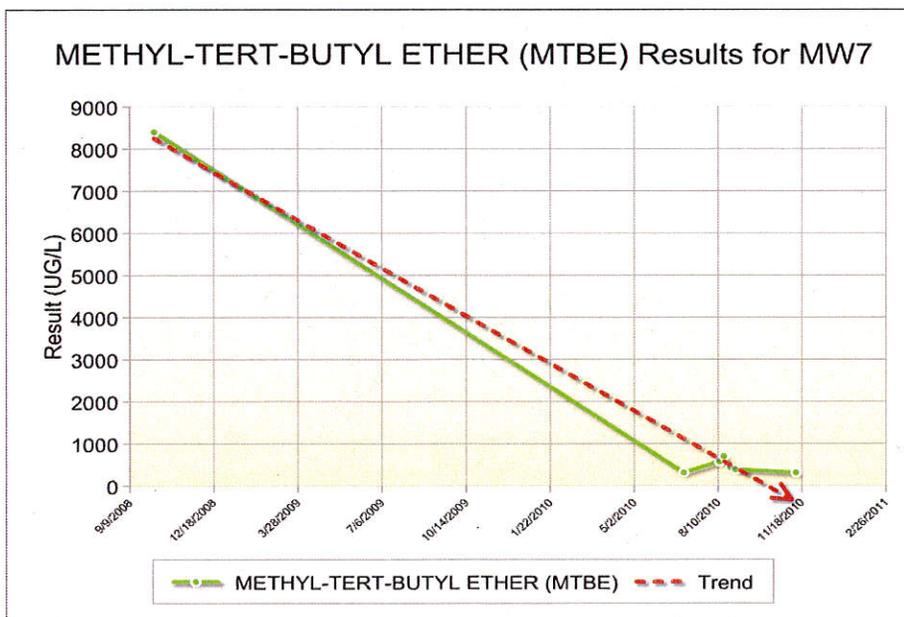
Groundwater Trends

- There are approximately 8 years of groundwater monitoring data for this case. MTBE trends are shown below. Well MW-6 is the only well remaining with concentrations above WQOs for MTBE and it is isolated and detached from the Site. In addition, concentrations of general minerals in the shallow groundwater are higher than the maximum contaminant levels for drinking water.

Source Area



Downgradient



Evaluation of Current Risk

- Estimate of Hydrocarbon Mass in Soil: 267 pounds or 43 gallons of total petroleum hydrocarbons (Advanced GeoEnvironmental, Inc., 2012).
- Soil/Groundwater tested for methyl tert-butyl ether (MTBE): Yes, see table above.
- Oxygen Concentrations in Soil Vapor: None reported.
- Plume Length: Is detached and located in the area of monitoring well MW-4A.
- Plume Stable or Decreasing: Yes.
- Contaminated Zone(s) Used for Drinking Water: No.
- Groundwater Specific Criteria: The case meets Policy Criterion 1 by Class 5. A stormwater drainage is present adjacent to the property's southern boundary and east of the Site. However, the shallowest groundwater recorded at the Site is 15 feet bgs and the ditch does not extend to that depth. Therefore, the stormwater ditch will never receive impacted groundwater. The nearest public water supply well is approximately 1,000 feet from the defined plume boundary. The regulatory agency determines, based on an analysis of site specific conditions, which under current and reasonably anticipated near-term future scenarios, the contaminant plume poses a low threat to human health and safety and to the environment and water quality objectives will be achieved within a reasonable time frame.
- 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 Risk from Residual Petroleum Hydrocarbons: The case meets Policy Criterion 3a. Maximum concentrations in soil are less than those in Policy Table 1 for both Commercial/Industrial and 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.

