UST CASE CLOSURE SUMMARY

Agency Information

Agency Name: County of Orange Health Care Agency (County)	Address: 1241 E. Dyer Road, Suite 120 Santa Ana, CA 92705-5611
Agency Caseworker: Tamara Escobedo	Case No.: 97UT036

Case Information

USTCF Claim No.: 14179	Global ID: T0605900848
Site Name: Thrifty Oil #380	Site Address: 15501 Edwards Street, Huntington Beach, CA 92647 (Site)
Petitioner: Best California Gas, Ltd., Attention: Mr. Barry Berkett	Address: 13116 Imperial Highway, Santa Fe Springs, CA 90670
USTCF Expenditures to Date: $900,317	Number of Years Case Open: 16

URL: http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=T0605900848

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

The release at the Site was discovered when the former underground storage tanks (UST) and fuel system were removed from the Site in October 1997. During the 1997 UST removal, approximately 1,200 cubic yards of impacted soil were excavated and disposed. Also during the excavation, approximately 6,500 gallons of shallow groundwater and free product was purged from the excavation pit. Free product existed in two monitoring wells only in 1999. A potential receptor survey did not identify any supply well within 2,000 feet of the Site. Numerous remedial activities have been performed at the Site between 1997 and 2012 including soil excavation, high-vacuum dual-phase extraction (HVDPE), ozone sparging, mobile HVDPE, vacuum truck extraction, and application of slow-release oxygen compounds. Approximately 628,000 gallons of groundwater have been extracted and approximately 24,000 pounds of hydrocarbons have been removed through the remediation activities. The responsible party terminated remediation in May 2012. The contamination plume is stable since termination of the remediation system in 2012.

The petroleum release is limited to the shallow soil and groundwater within the Site boundary. The affected groundwater beneath the Site 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 intake screens that are in deeper more protected aquifers. Remaining petroleum constituents are limited, stable and declining. Remedial actions have been implemented and further remediation is not necessary. Additional assessment/monitoring will not likely 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 4**. The contaminant plume is less than 1,000 feet in length, there is no free product, the nearest receptor is greater than 1,000 feet from the plume boundary, and the dissolved concentration of benzene and methyl tert-butyl ether (MTBE) are both below 1,000 micrograms per liter (µg/L).

- Petroleum Vapor Intrusion to Indoor Air – Site meets **EXCEPTION**. The Site is an active commercial petroleum fueling facility and release characteristics do not pose an unacceptable health risk.

- Direct Contact and Outdoor Air Exposure – Site meets **CRITERIA (3) a**. Maximum concentrations of petroleum constituents in soil are less than or equal to those listed in Table 1 of the Policy.

Objections to Closure

County staff objected to UST case closure because:

1. Delineation of the tertiary butyl alcohol (TBA) plume has not been completed to the west of the Site (downgradient of well MW-14), thus the length of the plume cannot be sufficiently determined.
   RESPONSE: The TBA plume boundary (defined by California Department of Public Health [CDPH] Notification Level of 12 µg/L) can be conservatively estimated to be less than 500 feet from the source. For the purpose of this Closure Summary, the State Water Board has evaluated the plume length to be less than 1,000 feet and meet Class 4 of the Policy. This provides a 200 percent safety factor for the Site.

2. The County does not agree that the TBA concentrations in downgradient well MW-14 reflect a stable trend or a shrinking plume as defined by the Policy. It should be noted that well MW-14 is immediately adjacent to a residential development, and while soil vapor sampling data has shown that vapor intrusion risks are unlikely, downgradient groundwater plume stability must be established.
   RESPONSE: The County provided objections to closure in September 2012 after only one post-remediation sampling event had been conducted. Currently, four groundwater sampling events have been conducted for the Site since termination of the remediation system in May 2012. Post-remediation TBA concentrations in MW-14 show a stable to decreasing trend and concentrations have reduced from 350 to 93 µg/L.

3. The County requests remediation actions continue at the Site until the TBA concentrations stabilize in downgradient well MW-14 and the leading edge of the plume can be defined at concentration approaching the health-based California Department of Public Health Notification Level of 12 µg/L.
   RESPONSE: The Policy allows low risk cases to be closed with remaining contaminants allowing natural attenuation to finish the remediation process. Additionally, further remediation is costly and not necessary for a site that does not pose a risk to public health or the environment. The constituents that posed the greatest risk to public health or the environment have successfully been remediated. In addition, it is not necessary for a downgradient well be present at or outside of the plume boundary, so long as there is sufficient data in a downgradient well in proximity to the plume boundary that demonstrates stability. A plume boundary can be conservatively estimated with existing well data and the Policy provides flexibility with the different classes that can increase the safety factor.

4. The current form of Site remediation (oxygen releasing socks and over purging) has been in progress since May 2011 and post remedial groundwater monitoring has not been conducted. Post remedial monitoring must be conducted to appropriately determine plume stability.
   RESPONSE: See response to number 2 above.

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: _____ 7/22/2013
Steve McMasters, PG No. 8054 — Date
Engineering Geologist

Reviewed By: _____ 7/22/13
Benjamin Heningburg, PG No. 8130 — Date
Senior Engineering Geologist

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]

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.	☒ Yes ☐ No
Have waste discharge requirements or any other orders issued pursuant to Division 7 of the Water Code been issued at this Site?	☐ Yes ☒ No
If so, was the corrective action performed consistent with any order?	☐ Yes ☐ No ☒ NA
General Criteria General criteria that must be satisfied by all candidate sites:	
Is the unauthorized release located within the service area of a public water system?	☒ Yes ☐ No
Does the unauthorized release consist only of petroleum?	☒ Yes ☐ No
Has the unauthorized ("primary") release from the UST system been stopped?	☒ Yes ☐ No
Has free product been removed to the maximum extent practicable?	☒ Yes ☐ No ☐ NA
Has a conceptual site model that assesses the nature, extent, and mobility of the release been developed?	☒ Yes ☐ No

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

Has secondary source been removed to the extent practicable?	☒ Yes ☐ No
Has soil or groundwater been tested for MTBE and results reported in accordance with Health and Safety Code, Section 25296.15?	☒ Yes ☐ No
Does nuisance as defined by Water Code, section 13050 exist at the Site?	☐ Yes ☒ No
Are there unique Site attributes or Site-specific conditions that demonstrably increase the risk associated with residual petroleum constituents?	☐ Yes ☒ No
Media-Specific Criteria Candidate sites must satisfy all three of these media-specific criteria: **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:	
Is the contaminant plume that exceeds water quality objectives stable or decreasing in areal extent?	☒ Yes ☐ No ☐ NA
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: ☐ **1** ☐ **2** ☐ **3** ☒ **4** ☐ **5**	☒ Yes ☐ No ☐ NA
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?	☐ Yes ☐ No ☒ NA
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.	
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.	☒ Yes ☐ No
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: ☐ **1** ☐ **2** ☐ **3** ☐ **4**	☐Yes ☒ No ☐ NA
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?	☒ Yes ☐ No ☐ NA

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?	☐ Yes ☐ No ☒ NA
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).	
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)?	☒ Yes ☐ No ☐ NA
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?	☐ Yes ☐ No ☒ NA
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?	☐ Yes ☐ No ☒ NA

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

Site Location/ History

- The Site is located at the southwest intersection of McFadden Avenue and Edwards Street in Huntington Beach, California. The Site is used as a commercial fueling facility.
- The Site is bounded by commercial to the west and residential to the north, east, and south.
- Nature of Contaminants of Concern: Petroleum hydrocarbons only.
- Primary Source of Release: UST system
- Discovery Date: 1997
- Release Type: Petroleum[2]
- Free Product: Free product was removed from the UST excavation pit in 1997. Free product was also present once in both MW-2 and MW-6 in 1999. Free product has not been observed after 1999 at the Site.

Table A. USTs:

Tank No.	Size	Contents	Status	Date
1	15,000 gallon	Gasoline	Removed	1997
2	12,000 gallon	Gasoline	Removed	1997
3	8,000 gallon	Gasoline	Removed	1997
4	8,000 gallon	Gasoline	Removed	1997
5	20,000 gallon	Gasoline	New	1997
6	20,000 gallon (Partitioned)	Gasoline/diesel	New	1997

Receptors

- Groundwater Basin: Coastal Plain of Orange County (8-1)
- Groundwater Beneficial Uses: Municipal and domestic supply (MUN); agricultural supply (AGR); industrial service supply (IND); and industrial process supply (PRO).
- Designated Land Use: General commercial (GC)
- Public Water System: City of Huntington Beach
- Distance to Nearest Surface Waters: Nga Xuong Duong Park Lake is located greater than 2,000 feet to the east; Westminister Channel is located greater than 2,500 feet to the west of the Site.
- Distance to Nearest Supply Wells: Irrigation and domestic wells are located greater than 2,200 feet southeast of the Site; City of Huntington Beach Well 01 is located greater than 2,800 feet northwest of the Site.

Geology/ Hydrogeology

- Average Groundwater Depth: ~4 feet below ground surface (bgs)
- Minimum Groundwater Depth: ~2 feet bgs
- Groundwater Flow Direction: West to northwest (Site); southwest (region)
- Geology: Site overlies alluvial deposits predominately of clay with minor amounts of sand units at a depth of 30 feet bgs.

[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.)

- Hydrogeology: Groundwater beneath the Site is unconfined.

Corrective Actions

- Four USTs and dispenser system were removed and replaced in 1997.
- During the 1997 UST system removal, approximately 1,200 cubic yards of impacted soil were removed and disposed. Additionally, approximately 6,500 gallons of impacted groundwater in UST excavation was removed.
- Numerous remedial activities have been performed at the Site between 1997 and 2012 including soil excavation, high-vacuum dual-phase extraction (HVDPE), ozone sparging, mobile HVDPE, vacuum truck extraction, and application of slow-release oxygen compounds.
- Approximately 628,000 gallons of groundwater have been extracted and approximately 24,000 pounds of hydrocarbons have been removed through the remediation activities.
- The responsible party terminated remediation in May 2012.

Table B. Concentrations of Petroleum Constituents in Soil

Constituent	Maximum 0-5 feet bgs (mg/kg)	Maximum 5-10 feet bgs (mg/kg)
Benzene	<0.039	0.961
Ethylbenzene	5.48	17
Naphthalene	0.660	0.012
PAHs*	Not Analyzed	Not Analyzed

*Poly-aromatic hydrocarbons as benzo(a)pyrene toxicity equivalent
Results are from post/during-remediation soil samples collected after 2003

Table C. Concentrations of Petroleum Constituents in Groundwater (March 2013)

Well ID	DTW (feet)	TPHg (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	TBA (µg/L)
TDD-1	4.44	145	<0.18	<0.24	<0.21	<0.45	<0.19	**28**
TDD-2	3.90	<6.6	<0.18	<0.24	<0.21	<0.45	4.8	<5.2
MW-1	4.40	141	<0.18	<0.24	<0.21	<0.45	<0.19	**16**
MW-2	4.57	1,820	**8.3**	1.0	94	23	<0.19	<5.2
MW-3	3.94	<6.6	<0.18	<0.24	<0.21	<0.45	<0.19	<5.2
MW-4	4.37	<6.6	<0.18	<0.24	<0.21	<0.45	1.9	<5.2
MW-5	4.45	<6.6	<0.18	<0.24	<0.21	<0.45	<0.19	**20**
MW-6	5.08	58.7	<0.9	<1.2	<1.05	<2.25	<0.95	**1,900**
MW-7	4.05	<6.6	<0.18	<0.24	<0.21	<0.45	<0.19	<5.2
MW-8	4.55	<6.6	<0.18	<0.24	<0.21	<0.45	<0.19	<5.2
MW-9	5.31	<6.6	<0.18	<0.24	<0.21	<0.45	<0.19	**910**
MW-10	5.40	<6.6	**<1.8**	<2.4	<2.1	<4.5	<1.9	**7,500**
WQOs[1]		--	--	--	--	--	--	--
MCL			**1**	**150**	**300**	**1,750**	**13**[2]	**12**[2]

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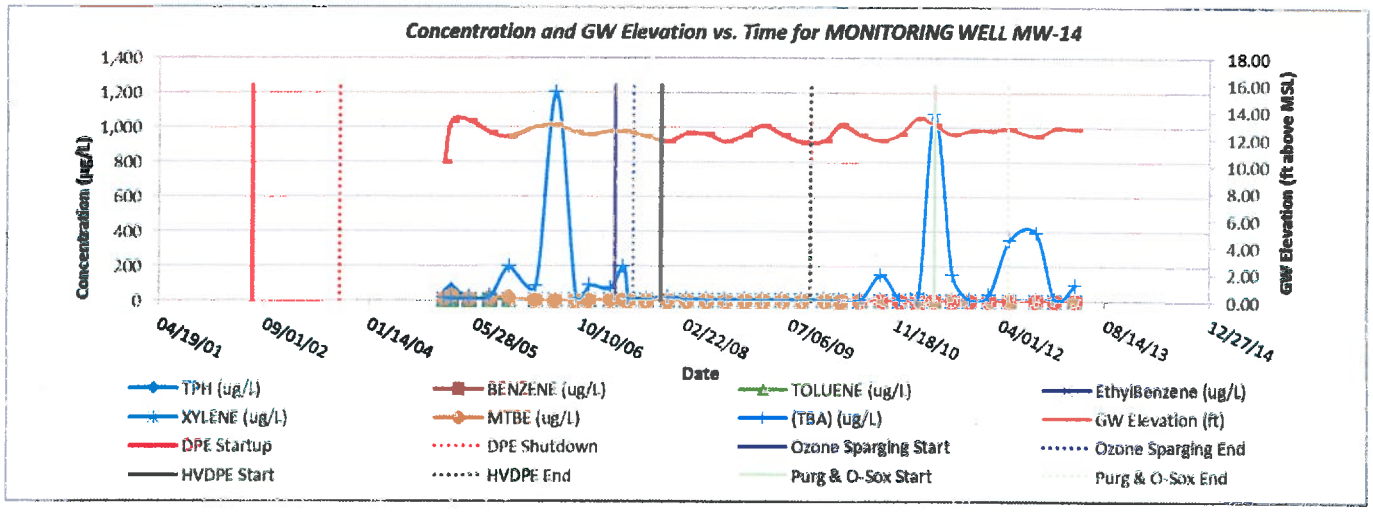
Table C. Concentrations of Petroleum Constituents in Groundwater (March 2013) (Cont.)

Well ID	DTW (feet)	TPHg (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	TBA (µg/L)
MW-11	5.56	<6.6	<0.18	<0.24	<0.21	<0.45	<0.19	**15**
MW-12	5.62	<6.6	<0.18	<0.24	<0.21	<0.45	2.3	**4,900**
MW-13	4.50	<6.6	<0.18	<0.24	<0.21	<0.45	<0.19	**360**
MW-14	5.75	<6.6	<0.18	<0.24	<0.21	<0.45	<0.19	**93**
MW-15	5.26	<6.6	<0.18	<0.24	<0.21	<0.45	<0.19	<5.2
WQOs[1]		--	--	--	--	--	--	--
MCL			**1**	**150**	**300**	**1,750**	**13**[2]	**12**[2]

Notes:
bold indicates that sample result exceeds MCL
WQO – Water Quality Objective
MCL – California Code of Regulations, Title 22 Maximum Contaminant Levels – Organic Chemicals
DTW – depth to water
TPHg – Total petroleum hydrocarbons as gasoline
MTBE- Methyl tert-butyl ether
TBA – tertiary butyl alcohol
µg/L – micrograms per liter
"<" – indicates result is below the laboratory reporting limit
"--" – constituent not analyzed
1 – Santa Ana Regional Water Quality Control Board Water Quality Control Plan does not list WQOs for petroleum hydrocarbon constituents listed.
2 – California Department of Public Health Notification Level

Groundwater Trends

Concentrations of TBA at downgradient well MW-14 have demonstrated stable or decreasing trends over time since remediation was ceased in May 2012.



Evaluation of Risk Criteria

- Maximum Petroleum Constituent Plume Length above WQOs: The groundwater plume is less than 500 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: No – Petroleum constituents most likely to pose a threat for vapor intrusion were removed during soil excavation and over-excavation. Site conditions demonstrate that the residual petroleum constituents in soil and groundwater are protective of human health.
- Residual Petroleum Constituents Pose a Nuisance[3] 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 – Soil concentrations for post-/current-remediation soil samples collected after 2000 meet Table 1 of the Policy.

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

Thrifty Oil #380
15501 Edwards Street, Huntington Beach, Orange County