

STATE OF CALIFORNIA  
STATE WATER RESOURCES CONTROL BOARD  
**ORDER WQ 2014-0164-UST**

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**In the Matter of Underground Storage Tank Case Closure  
Pursuant to Health and Safety Code Section 25296.40 and the  
Low-Threat Underground Storage Tank Case Closure Policy**

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**BY THE EXECUTIVE DIRECTOR:<sup>1</sup>**

By this order, the Executive Director directs closure of the underground storage tank (UST) case at the site listed below, pursuant to subdivision (a) of section 25296.40 of the Health and Safety Code.<sup>2</sup> The name of the petitioner, the site name, the site address, the Underground Storage Tank Cleanup Fund (Fund) claim number if applicable, current and former lead agencies, and case number are as follows:

**Phillips 66 Company (Petitioner)**

**Super 7 (76 Service Station No. 7331)**

**901 Ashby Avenue, Berkeley, CA 94704**

**Fund Claim Nos. 14930, 15984, 1637**

**State Water Resources Control Board, Division of Water Quality, Case No. N/A (Current)**

**City of Berkeley Local Agency, Case No. 01-1444 (Former)**

**I. STATUTORY AND PROCEDURAL BACKGROUND**

Upon receipt of a petition from a UST owner, operator, or other responsible party, section 25296.40 authorizes the State Water Resources Control Board (State Water Board) to close or require closure of a UST case where an unauthorized release has occurred, if the State Water Board determines that corrective action at the site is in compliance with all of the requirements of subdivisions (a) and (b) of section 25296.10. The State Water Board, or in

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<sup>1</sup> State Water Board Resolution No. 2012-0061 delegates to the Executive Director the authority to close or require the closure of any UST case if the case meets the criteria found in the State Water Board's Low-Threat Underground Storage Tank Case Closure Policy adopted by State Water Board Resolution No. 2012-0016.

<sup>2</sup> Unless otherwise noted, all references are to the California Health and Safety Code.

certain cases the State Water Board Executive Director, may close a case or require the closure of a UST case. Closure of a UST case is appropriate where the corrective action ensures the protection of human health, safety, and the environment and where the corrective action is consistent with: 1) Chapter 6.7 of division 20 of the Health and Safety Code and implementing regulations; 2) Any applicable waste discharge requirements or other orders issued pursuant to division 7 of the Water Code; 3) All applicable state policies for water quality control; and 4) All applicable water quality control plans.

State Water Board staff has completed a review of the UST case identified above, and recommends that this case be closed. The recommendation is based upon the facts and circumstances of this particular UST case. A UST Case Closure Summary has been prepared for the case identified above and the bases for determining compliance with the Water Quality Control Policy for Low-Threat Underground Storage Tank Case Closures (Low-Threat Closure Policy or Policy) are explained in the Case Closure Summary.

### **Low-Threat Closure Policy**

In State Water Board Resolution No. 2012-0016, the State Water Board adopted the Low-Threat Closure Policy. The Policy became effective on August 17, 2012. The Policy establishes consistent statewide case closure criteria for certain low-threat petroleum UST sites. In the absence of unique attributes or site-specific conditions that demonstrably increase the risk associated with residual petroleum constituents, cases that meet the general and media-specific criteria in the Low-Threat Closure Policy pose a low threat to human health, safety, and the environment and are appropriate for closure under Health and Safety Code section 25296.10. The Policy provides that if a regulatory agency determines that a case meets the general and media-specific criteria of the Policy, then the regulatory agency shall notify responsible parties and other specified interested persons that the case is eligible for case closure. Unless the regulatory agency revises its determination based on comments received on the proposed case closure, the Policy provides that the agency shall issue a uniform closure letter as specified in Health and Safety Code section 25296.10. The uniform closure letter may only be issued after the expiration of the 60-day comment period, proper destruction or maintenance of monitoring wells or borings, and removal of waste associated with investigation and remediation of the site.

Health and Safety Code section 25299.57, subdivision (I)(1) provides that claims for reimbursement of corrective action costs that are received by the Fund more than 365 days after the date of a uniform closure letter or a letter of commitment, whichever occurs later, shall not be reimbursed unless specified conditions are satisfied.

## II. FINDINGS

Based upon the UST Case Closure Summary prepared for the case attached hereto, the State Water Board finds that corrective action taken to address the unauthorized release of petroleum at the UST release site identified as:

**Phillips 66 Company (Petitioner)**

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**City of Berkeley Local Agency, Case No. 01-1444 (Former)**

ensures protection of human health, safety, and the environment and is consistent with Chapter 6.7 of division 20 of the Health and Safety Code, and implementing regulations, the Low-Threat Closure Policy and with other water quality control policies and plans.

Pursuant to the Low-Threat Closure Policy, notification has been provided to all entities that are required to receive notice of the proposed case closure, a 60-day comment period has been provided to notified parties, and any comments received have been considered by the State Water Board in determining that the case should be closed.

Pursuant to section 21080.5 of the Public Resources Code, environmental impacts associated with the adoption of this Order were analyzed in the substitute environmental document (SED) the State Water Board approved on May 1, 2012. The SED concludes that all environmental effects of adopting and implementing the Low Threat Closure Policy are less than significant, and environmental impacts as a result of adopting this Order in compliance with the Policy are no different from the impacts that are reasonably foreseen as a result of the Policy itself. A Notice of Decision was filed August 17, 2012. No new environmental impacts or any additional reasonably foreseeable impacts beyond those that were addressed in the SED will result from adopting this Order.

The UST case identified above may be the subject of orders issued by the Regional Water Quality Control Board (Regional Water Board) pursuant to division 7 of the Water Code. Any orders that have been issued by the Regional Water Board pursuant to division 7 of the Water Code, or directives issued by a Local Oversight Program (LOP) agency for this case should be rescinded to the extent they are inconsistent with this Order.

## III. ORDER

**IT IS THEREFORE ORDERED** that:

A. The UST case identified in Section II of this Order, meeting the general and media-specific criteria established in the Low-Threat Closure Policy, be closed in accordance with the following conditions and after the following actions are complete. Prior to the issuance of a uniform closure letter, the Petitioner is ordered to:

1. Properly destroy monitoring wells and borings unless the owner of real property on which the well or boring is located certifies that the wells or borings will be maintained in accordance with local or state requirements;

2. Properly remove from the site and manage all waste piles, drums, debris, and other investigation and remediation derived materials in accordance with local or state requirements; and

3. Within six months of the date of this Order, submit documentation to the State Water Board that the tasks in subparagraphs (1) and (2) have been completed.

B. The tasks in subparagraphs (1) and (2) of Paragraph (A) are ordered pursuant to Health and Safety Code section 25296.10, and failure to comply with these requirements may result in the imposition of civil penalties pursuant to Health and Safety Code section 25299, subdivision (d)(1). Penalties may be imposed administratively by the State Water Board or Regional Water Board.

C. Within 30 days of notification that the tasks are complete pursuant to Paragraph (A), the Deputy Director of the Division of Water Quality shall issue a uniform closure letter consistent with Health and Safety Code section 25296.10, subdivision (g) and upload the uniform closure letter and UST Case Closure Summary to GeoTracker.

D. Pursuant to section 25299.57, subdivision (l)(1), and except in specified circumstances, all claims for reimbursement of corrective action costs must be received by the Fund within 365 days of issuance of the uniform closure letter in order for the costs to be considered.

E. Any Regional Water Board or LOP agency directive or order that directs corrective action or other action inconsistent with case closure for the UST case identified in

E. Any Regional Water Board or LOP agency directive or order that directs corrective action or other action inconsistent with case closure for the UST case identified in Section II is rescinded, but only to the extent the Regional Water Board order or LOP agency directive is inconsistent with this Order.

  
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Executive Director

10/08/14  
\_\_\_\_\_  
Date

## State Water Resources Control Board

### UST CASE CLOSURE SUMMARY

#### Agency Information

Current Agency Name: State Water Resources Control Board (State Water Board)	Address: 1001 I Street, P.O. Box 2231 Sacramento, CA 95812
Current Agency Caseworker: Mr. Matthew Cohen	Case No.: N/A

Former Agency Name: City of Berkeley (Prior to 7/1/2013)	Address: 2118 Milvia Street, Suite 300 Berkeley, CA 94704
Former Agency Caseworker: Mr. Geoffery Fiedler	Case No.: 01-1444

#### Case Information

USTCF Claim Nos.: 14930,15984,1637	Global ID: T0600101333
Site Name: Super 7 (76 Service Station No. 7331)	Site Address: 901 Ashby Avenue Berkeley, CA 94704 (Site)
Petitioner: Phillips 66 Company Attention: Mr. Edward Ralston	Address: 76 Broadway Sacramento, CA 95818
USTCF Expenditures to Date: \$1,045,930	Number of Years Case Open: 28

URL: [http://geotracker.waterboards.ca.gov/profile\\_report.asp?global\\_id=T0600101333](http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=T0600101333)

#### 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 (CSM) upon which the evaluation of the Case has been made is described in **Attachment 2: Summary of Basic Site Information**. Highlights of the CSM of the Case are as follows:

The release at the Site was discovered when the underground storage tanks (UST) product delivery system failed a precision test in 1986. Free product from the on-site release existed in monitoring wells from 1986 to 1994. Between 1986 and 2005, soil and groundwater remediation activities included: operation of groundwater extraction (GWE) and excavation of soil, air-sparging (AS); and dual-phase extraction (DPE) systems.

Super 7 (76 Service Station No. 7331)  
901 Ashby Avenue, Berkeley

During 2006, AS and DPE systems were terminated due to low influent concentrations and operational issues. A sensitive receptor survey identified one water supply well located within 2,000 feet of the Site. The water supply well is located 1,360 feet southwest (crossgradient) from the Site. The petroleum constituent plume has been stable or decreasing since 2008.

Off-site soil investigations conducted during 1997 identified concentrations of trichloroethene (TCE) at 9,500 micro gram per cubic meter in a soil vapor sample collected beneath the Former West Marine property located west of the Site. Groundwater samples collected during on-site assessment and groundwater remediation activities completed between 1993 and 2005 indicate that the off-site source of TCE did not originate from the Petitioners Site. The Regional Water Board is aware of this, and is considering opening a Site Cleanup Program case to further investigate the TCE.

The petroleum release is limited to the shallow soil and groundwater. 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 5**. Based on an analysis of Site-specific conditions that 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 (WQOs) will be achieved within a reasonable time frame.
- Petroleum Vapor Intrusion to Indoor Air – Site meets the **EXCEPTION**. Exposures to petroleum vapors associated with historical fuel system releases are comparatively insignificant relative to exposures from small surface spills and fugitive vapor releases that typically occur at active fueling facilities.
- Direct Contact and Outdoor Air Exposure – Site meets **CRITERIA (3) a**. Maximum concentrations of petroleum constituents in soil from confirmation soil samples are less than or equal to those listed in Table 1 of the Policy. The estimated naphthalene concentrations are less than the thresholds in Table 1 of the Policy for direct contact. 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% benzene and 0.25% naphthalene. Therefore, benzene concentrations can be used as a surrogate for naphthalene concentrations with a safety factor of eight. Benzene concentrations from the Site are below the naphthalene thresholds in Table 1 of the Policy. Therefore, estimated naphthalene concentrations meet the thresholds in Table 1 of the Policy criteria for direct contact with a safety factor of eight. It is highly unlikely that naphthalene concentrations in the soil, if any, exceed the threshold.

## Objections to Closure

City of Berkeley staff objected to UST case closure because:

1. The City of Berkeley staff believes the case may be suitable for closure when the CSM is amended to reflect appropriate beneficial use designation, groundwater flow and quality, and demonstrated mitigation of vapor intrusion to indoor air.

RESPONSES: Amending the CSM to include a description of designated beneficial uses for affected and unaffected groundwater beneath the Site would result in a more accurate CSM, however supporting data and analysis used to develop the CSM are not required to be contained in a single report and may be contained in multiple reports submitted to the regulatory agency over a period of time.

Information pertaining to groundwater flow and quality has been reported for over 25 years. Groundwater flow direction beneath the Site is west-northwest and the quality of groundwater affected by the on-site release has greatly improved as a result of active remediation.

Mitigation of petroleum vapors related to the on-site release is unnecessary. The Site meets the Policy exception for active fueling facilities. Additionally, soil and groundwater conditions beneath the commercial building located west of the Site meets CRITERIA (2) a, Scenario 3 of the Policy.

2. Ground water flow representations are somewhat subjective. Fuel impacts in monitoring well MW-5 may have increased due to migration toward extraction wells. Confirmation sampling from the extraction wells would provide appropriate information regarding rebound or residual product as may be present after discontinuing treatment at these locations.

RESPONSE: Samples from secondary source area wells MW-1 and MW-2 contained the highest concentrations of petroleum constituents (primarily total petroleum hydrocarbons (TPH) as gasoline and methyl tertiary butyl ether (MTBE)) during 1998 and 1999. Concentrations of TPH as gasoline and MTBE have been near or below WQOs in both of these wells since 2009. Since the secondary source area has been remediated and the plume is stable or decreasing, it is highly unlikely that petroleum constituents in well MW-5 would increase.

3. Vapor intrusion, suspected from groundwater migration from the Site, has been identified in off-site buildings west of the Site. There has been no evaluation that remedial measures have corrected the vapor migration concern.

RESPONSE: Soil and groundwater conditions beneath the commercial building located west of the Site meets the Media-Specific Criteria for Petroleum Vapor Intrusion to Indoor Air CRITERIA (2) a, Scenario 3, of the Policy.

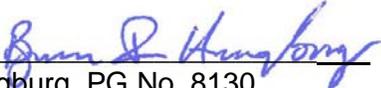
4. In the event the State Water Resources Control Board approves the closure petition, Toxics Management Division requests providing clear language or instruction regarding future restrictions for anticipated uses.

RESPONSE: A Site-specific analysis is used to form the basis of a CSM for a case that meets criteria of the Policy. This analysis includes assessments of potential future risks associated with residential and commercial uses of the property. If the use of the property changes, the Site may be re-evaluated using criteria contained of the Policy.

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901 Ashby Avenue, Berkeley

**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.

Reviewed By:   
Benjamin Heningburg, PG No. 8130  
Senior Engineering Geologist

6/4/14  
\_\_\_\_\_  
Date

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

The Site complies with State Water Resources Control Board policies and state law. Section 25296.10 of the Health and Safety Code requires that Sites be cleaned up to protect human health, safety, and the environment. Based on available information, any residual petroleum constituents at the site do not pose significant risk to human health, safety, or the environment.

**The Site complies with the requirements of the Low-Threat Underground Storage Tank (UST) Case Closure Policy as described below.<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 case closure is appropriate, further compliance with corrective action requirements is not necessary. Corrective action at this Site has been consistent with Chapter 6.7 of the Health and Safety Code and implementing regulations and, since this case meets applicable case-closure requirements, further corrective action is not necessary, unless the activity is necessary for case closure.</p>	<p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>
<p><b>Have waste discharge requirements or any other orders issued pursuant to Division 7 of the Water Code been issued at this Site?</b></p>	<p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>
<p><b>If so, was the corrective action performed consistent with any order?</b></p>	<p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input 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></p> <p><b>Does the unauthorized release consist only of petroleum?</b></p> <p><b>Has the unauthorized (“primary”) release from the UST system been stopped?</b></p> <p><b>Has free product been removed to the maximum extent practicable?</b></p> <p><b>Has a conceptual site model that assesses the nature, extent, and mobility of the release been developed?</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 checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA</p> <p><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.

<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>Does nuisance as defined by Water Code, section 13050 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 type="checkbox"/> Yes <input checked="" 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>        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><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 type="checkbox"/> 3 <input type="checkbox"/> 4</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><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p><input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA</p> <p><input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA</p>

<p><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><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 INFORMATION (Conceptual Site Model)**

**Site Location/ History**

- The Site is located at the intersection of Ashby Avenue, 7<sup>th</sup> Street and Potter Street in Berkeley.
- The Site is an operating petroleum fueling facility.
- The Site is bounded by commercial properties. A closed UST site is located to the southwest.
- Nature of Contaminants of Concern: Petroleum hydrocarbons only.
- Primary Source of Release: UST system
- Discovery Date: 1986
- Release Type: Petroleum<sup>2</sup>
- Free Product: Last observation was in well MW-6 during August 1998

**Table A. USTs:**

Tank No.	Size	Contents	Status	Date
1	12,000-gallon	Gasoline	Installed	1983
2	12,000-gallon	Gasoline	Installed	1983
3	12,000-gallon	Gasoline	Installed	1983
4	12,000-gallon	Diesel	Installed	1983
5	550-gallon	Remediation groundwater	Removed	1999

**Receptors**

- Groundwater Basin: Santa Clara Valley Basin, East Bay Plain (2-9.04)
- Groundwater Beneficial Uses: Municipal and domestic water supply (MUN), agricultural supply (AGR), industrial service supply (IND), and industrial process supply (PRO).
- Designated Land Use: General commercial (GC)
- Public Water System: East Bay Municipal Utility District
- Distance to Nearest Surface Waters: Berkeley Aquatic Park is located greater than 1,000 feet west
- Distance to Nearest Supply Wells: Well is located greater than 1,000 feet southwest (cross gradient)

**Geology/ Hydrogeology**

- Average Groundwater Depth: approximately 14 feet below grade surface (bgs)
- Minimum Groundwater Depth: approximately 13 feet bgs
- Groundwater Flow Direction: west-northwest
- Geology: Asphalt and concrete cap. Upper seven feet composed of coarse grained sands and gravels underlain by clayey with sand to approximately 12 feet bgs. Silty clay exists between approximately 12 feet and 16 feet bgs. Gravelly and poorly graded sands exists between approximately 16 feet and 27 feet bgs. Silty clay exists between approximately 27 feet and 32 feet bgs (total depth explored).
- Hydrogeology: Groundwater subbasin is confined and unconfined.

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

**Corrective Actions**

- November 1986 – Water table depression pump (GW extraction), a separate phase product recovery pump, and an air stripper were installed prior to groundwater discharge to storm drain.
- December 1994 – Remediation system expanded to include a vapor extraction system including a catalytic oxidizer and activated carbon. Approximately 591 gallons of gasoline removed between November 1994 and December 1995.
- November 1998 – 59 tons of soil removed from product line trenches.
- January 1999 – 5,000 gallons of impacted groundwater were extracted from dual-phase extraction test.
- January 1999 – AS and DPE test removed approximately 110 pounds of petroleum hydrocarbons.
- October 2000 – AS/DPE system started. System was shut down in 2006.

**Table B. Concentrations of Petroleum Constituents in Soil**

Constituent	Maximum 0-5 feet bgs (mg/kg)	Maximum 5-10 feet bgs (mg/kg)
Benzene	<0.0052	0.021
Ethylbenzene	<0.0038	0.11
Naphthalene	Not Analyzed	Not Analyzed
PAHs*	Not Analyzed	Not Analyzed

\*Poly-aromatic hydrocarbons as benzo(a)pyrene toxicity equivalent

**Table C. Concentrations of Petroleum Constituents in Groundwater**

Well ID	Sample Date	TPHg	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	TBA
		(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
MW-1	9/6/11	<50	<0.5	<0.5	<0.5	<1.5	<0.5	<5.0
MW-2	3/7/11	<50	<0.5	<0.5	<0.5	<1.5	1.5	<5.0
MW-3	3/7/11	<50	<0.5	<0.5	<0.5	<1.5	0.57	<5.0
MW-4	9/6/11	<b>2060</b>	<0.5	<0.5	1.1	<1.5	<b>13.1</b>	5.7
MW-5	9/6/11	<b>755</b>	<0.5	<0.5	<0.5	<1.5	<b>1730</b>	<b>109</b>
MW-7	3/7/11	<50	<0.5	<0.5	<0.5	<1.5	<0.5	<5.0
MW-8	3/2/09	<50	<0.5	<0.5	<0.5	<1.0	<0.50	<10
MW-9	3/2/09	<50	<0.5	<0.5	<0.5	<1.0	<0.50	<10
W-11	3/7/11	<50	<0.5	<0.5	<0.5	<1.5	4.4	<5.0
W-12	9/6/11	<50	<0.5	<0.5	<0.5	<1.5	<b>24.7</b>	<b>98.9</b>
<b>WQOs</b>		<b>50</b>	<b>1</b>	<b>42</b>	<b>3.2</b>	<b>17</b>	<b>5</b>	<b>12</b>

Notes:

**bold** indicates that sample result exceeds WQOs

TPHg – Total petroleum hydrocarbons as gasoline

TPHd – Total petroleum hydrocarbons as diesel

MTBE- Methyl tert-butyl ether

TbTBA – Tertiary butyl alcohol

µg/L – micrograms per liter

"<" – indicates result is below the laboratory reporting limit

1 – Sampled 12/18/1998

## Groundwater Trends

- Groundwater at the Site has demonstrated stable and decreasing trends over time.

## Evaluation of Risk Criteria

- Maximum Petroleum Constituent Plume Length above WQOs: The groundwater plume is approximately 200 feet in length.
- Petroleum Constituent Plume Determined Stable or Decreasing: Yes
- Soil/Groundwater Sampled for MTBE: Yes, see Table C above
- Residual Petroleum Constituents Pose Significant Risk to the Environment: No
- Residual Petroleum Constituents Pose Significant Vapor Intrusion Risk to Human Health: 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<sup>3</sup> at the Site: No
- Residual Petroleum Constituents in Soil Pose Significant Risk of Adversely Affecting Human Health: No.
- Residual Petroleum Constituents Pose Significant Direct Contact and Outdoor Air Exposure to Human Health: No – There are no soil samples results in the case record for naphthalene. However, the relative concentration of naphthalene in soil can be conservatively estimated using the published relative concentrations of naphthalene and benzene in gasoline. Taken from Potter and Simmons (1998), gasoline mixtures contain approximately 2% benzene and 0.25% naphthalene. Therefore, benzene concentrations can be used as a surrogate for naphthalene concentrations with a safety factor of eight. Benzene concentrations from the Site are below the naphthalene thresholds in Table 1 of the Policy. Therefore, estimated naphthalene concentrations meet the thresholds in Table 1 and the Policy criteria for direct contact with a safety factor of eight. It is highly unlikely that naphthalene concentrations in the soil, if any, exceed the threshold.

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

