

## State Water Resources Control Board

### UST CASE CLOSURE REVIEW SUMMARY REPORT

#### Agency Information

Agency Name: Sacramento County Environmental Health Department (County)	Address: 10590 Armstrong Avenue, Suite A, Mather, CA 95655
Agency Caseworker: Jack Bellan	Case No.: D563

#### Case Information

USTCF Claim No.: 18618	Global ID: T0606701087
Site Name: Del Paso Exploration	Site Address: 2631 Riverside Boulevard, Sacramento, CA 95818
Responsible Party (RP): Jeane Wilson	Address: Private address
USTCF Expenditures to Date: \$82,639	Number of Years Case Open: 24

URL: [http://geotracker.waterboards.ca.gov/profile\\_report.asp?global\\_id=T0606701087](http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=T0606701087)

#### 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 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 Case Information (Conceptual Site Model)**. Highlights of the case follow:

In July 1988, soil contamination was identified during an environmental investigation. The UST system was removed in 1998. In 2008, several groundwater extraction events removed approximately 20,000 gallons of contaminated groundwater. To date, three monitoring wells have been installed and monitored irregularly. The latest soil and groundwater assessment conducted in May 2012 showed that water quality objectives have been achieved or nearly achieved for all petroleum constituents except total petroleum hydrocarbons as gasoline (TPHg) in one monitoring well.

The petroleum release is limited to the shallow soil and groundwater. According to data available in GeoTracker, there are no California Department of Public Health regulated supply wells or surface water bodies within 1,000 feet of the projected plume boundary. No other water supply wells have been identified within 1,000 feet of the projected plume boundary in files reviewed. Water is provided to water users near the Site by the city of Sacramento. 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. 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 4. The contaminant plume that exceeds water quality objectives is projected to be less than 1,000 feet in length. The projected plume length is based on a study referenced in the *Technical Justification for Groundwater Media-Specific Criteria* prepared to support the Policy. This peer reviewed study of plume lengths at 500 petroleum UST sites in the Los Angeles Area is widely accepted as representative of plume lengths at California UST sites. According to the study, the average TPHg plume length was found to be approximately 248 feet, and 90% of the TPHg plume lengths were less than 413 feet (Shih *et al.*, 2004). Based on the past TPHg monitoring data at the Site and the May 2012 site assessment results, the remaining TPHg plume at the Site is projected to be less than 1,000 feet in length. There is no free product. The nearest water supply well or surface water body is greater than 1,000 feet from the projected plume boundary. The dissolved concentrations of benzene and methyl tertiary butyl ether (MTBE) are each less than 1,000 µg/L. In addition, the remaining TPHg mass in groundwater has been estimated to be less than four pounds (Environmental Compliance Group, June 2012).
- **Vapor Intrusion to Indoor Air:** The case meets both Policy Criterion 2a by Scenario 3a and Policy Criterion 2b. For compliance with Policy Criterion 2a by Scenario 3a, the maximum benzene concentration in groundwater is less than 100 µg/L. Also, the minimum depth to groundwater is greater than 5 feet, overlain by soil containing less than 100 mg/kg of TPH. For compliance with Policy Criterion 2b, a site-specific risk assessment for the vapor intrusion pathways was conducted and demonstrated that human health is protected to the satisfaction of the regulatory agency (Apex Envirotech Inc, 2007).
- **Direct Contact and Outdoor Air Exposure:** The case meets Policy Criterion 3a. Maximum concentrations in soil are less than those in Policy Table 1 for Commercial 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 requested further definition of soil and groundwater impact down-gradient from the site.  
**RESPONSE:** A down-gradient assessment was conducted in May 2012. The assessment showed groundwater TPHg impact in the down-gradient soil boring locations, but dissolved benzene, toluene, ethylbenzene, xylenes, MTBE and tertiary butyl alcohol impacts were below or near laboratory detection limits. In addition, all soil samples showed that petroleum constituents were below laboratory detection limits.

**Determination**

Based on the review performed in accordance with Health & Safety Code Section 25299.39.2 subdivision (a), the Fund Manager has determined that closure of the case is appropriate.

**Recommendation for Closure**

Based on available information, residual petroleum hydrocarbons at the Site do not pose a significant risk to human health, safety, or the environment, and the case meets the requirements of the Policy. Accordingly, the Fund Manager recommends that the case be closed. The State Water Board is conducting public notification as required by the Policy. Sacramento 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

*11/14/13*

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Date

Prepared by: Ramesh Sundareswaran



**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></p>	<p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>
<p><b>Does the unauthorized release consist only of petroleum?</b></p>	<p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>
<p><b>Has the unauthorized (“primary”) release from the UST system been stopped?</b></p>	<p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>
<p><b>Has free product been removed to the maximum extent practicable?</b></p>	<p><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></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.  
[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 type="checkbox"/> 2 <input type="checkbox"/> 3 <input checked="" 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 type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" 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></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>If YES, check applicable scenarios: <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input checked="" 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><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 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>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

- The Site is located at 2631 Riverside Boulevard in Sacramento, California. A thrift store and individual offices for an investment banker and an attorney are located at the Site.
- The Site is bounded by Riverside Boulevard and a cemetery to the west, a business to the north, a residence to the east and a restaurant across Beverly Way to the south.
- 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 (Environmental Compliance Group, June 2011).
- Nature of Contaminants of Concern: Petroleum hydrocarbons only.
- Source: UST system.
- Date reported: July 1988.
- Status of Release: USTs removed.
- Free Product: None reported.

### Tank Information

Tank No.	Size in Gallons	Contents	Closed in Place/ Removed/Active	Date
1	10,000	Gasoline	Removed	July 1998
2	10,000	Gasoline	Removed	December 1998

### Receptors

- GW Basin: Sacramento Valley.
- Beneficial Uses: Municipal and Domestic Supply.
- Land Use Designation: Commercial.
- Public Water System: City of Sacramento.
- 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 projected plume boundary. No other water supply wells were identified within 1,000 feet of the projected plume boundary in the files reviewed.
- Distance to Nearest Surface Water: There is no identified surface water within 1,000 feet of the projected plume boundary.

### Geology/Hydrogeology

- Stratigraphy: The Site is underlain by interbedded and intermixed gravel, sand, silt and clay.
- Maximum Sample Depth: 16 feet below ground surface (bgs).
- Minimum Groundwater Depth: 10.58 feet bgs at monitoring well MW-3.
- Maximum Groundwater Depth: 14.02 feet bgs at monitoring well MW-1.
- Current Average Depth to Groundwater: 11 feet bgs.
- Saturated Zones(s) Studied: Approximately 5 – 25 feet bgs.
- Appropriate Screen Interval: Yes.
- Groundwater Flow Direction: Predominately to the southwest with an average gradient of 0.0068 feet/foot (September, 2011).

**Monitoring Well Information**

Well Designation	Date Installed	Screen Interval (feet bgs)	Depth to Water (feet bgs) (September 2011)
MW-1	April 07	5-25	11.52
MW-2	April 07	5-25	11.02
MW-3	April 07	5-25	10.83

**Remedial Summary**

- Free Product: None reported in GeoTracker.
- Soil Excavation: Soils removed to unearth USTs in 1998 were reused as backfill.
- In-Situ Soil Remediation: None reported.
- Groundwater Remediation: Batch groundwater extraction conducted from March through April 2008 removed 20,000 gallons of contaminated groundwater.

**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	NA*	<0.005 (09/2011)
Ethylbenzene	NA*	<0.005 (09/2011)
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

\*: Although soil samples were not collected between 0 - 5 feet bgs, past assessments demonstrated that site soils were not impacted at 7.5 feet bgs in the source area.

**Most Recent Concentrations of Petroleum Constituents in Groundwater**

Sample	Sample Date	TPHg (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	TBA (µg/L)
MW-1	9/5/2011	<50	<0.5	<0.5	<0.5	<1.0	<1.0	<5.0
MW-2	9/5/2011	<b>280</b>	<0.5	<0.5	<0.5	<1.0	<1.0	<5.0
MW-3	9/5/2011	<50	<0.5	<0.5	<0.5	<1.0	<1.0	<5.0
<b>WQOs</b>	-	<b>5</b>	<b>0.15</b>	<b>42</b>	<b>29</b>	<b>17</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 Quality Control Board Basin Plan

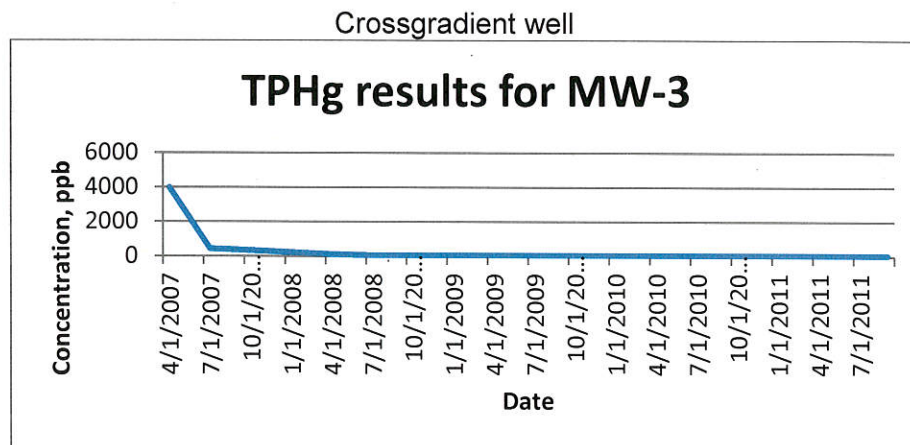
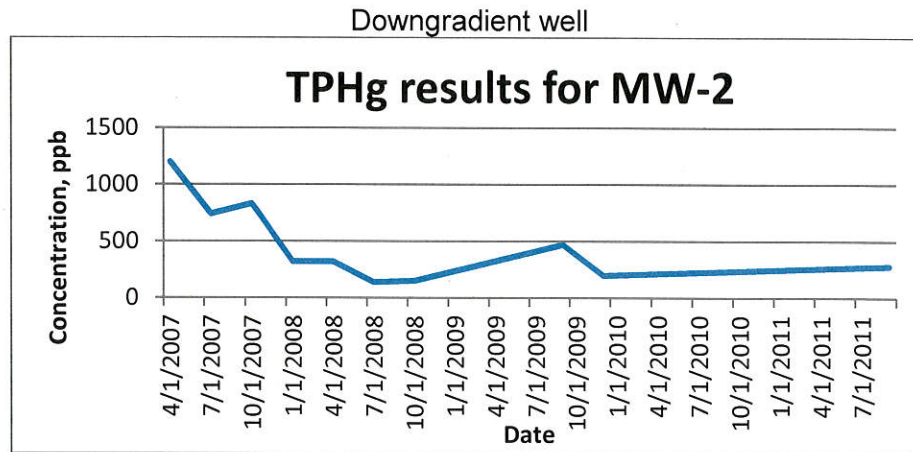
<sup>a</sup>: Secondary maximum contaminant level (MCL)

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



### Groundwater Trends

There are six years of irregular groundwater monitoring data for this Site. Groundwater TPHg concentration has been below laboratory detection limits since 2007 in the source area well MW-1. The TPHg trends are shown below in the downgradient well (MW-2) and crossgradient well (MW-3) locations.



### Evaluation of Current Risk

- Estimate of Hydrocarbon Mass in Soil: Approximately 1,700 pounds of TPHg remain in soil, and less than 4 pounds of TPHg are present in groundwater (Environmental Compliance Group, June 2012).
- Soil/ Groundwater tested for methyl tert-butyl ether (MTBE): Yes, see table above.
- Oxygen Concentrations in Soil Vapor: None reported.
- Plume Length: <1,000 feet.
- Plume Stable or Decreasing: Yes.
- Contaminated Zone(s) Used for Drinking Water: No.
- Groundwater Specific Criteria: The case meets Policy Criterion 1 by Class 4. The contaminant plume that exceeds water quality objectives is projected to be less than 1,000 feet in length. The projected plume length is based on a study referenced in the Technical Justification for Groundwater Media-Specific Criteria prepared to support the Policy. This peer reviewed study of plume lengths at 500 petroleum UST sites in the Los Angeles Area is widely accepted as representative of plume lengths at California UST sites. According to the study, the average

TPHg plume length was found to be approximately 248 feet, and 90% of the TPHg plume lengths were less than 413 feet (Shih *et al.*, 2004). Based on the past TPHg monitoring data at the Site and the May 2012 site assessment results, the remaining TPHg plume at the Site is projected to be less than 1,000 feet in length. There is no free product. The nearest water supply well or surface water body is greater than 1,000 feet from the projected plume boundary. The dissolved concentrations of benzene and methyl tertiary butyl ether (MTBE) are each less than 1,000 µg/L. In addition, the remaining TPHg mass in groundwater has been estimated to be less than four pounds (Environmental Compliance Group, June 2012).

- Indoor Vapor Risk from Residual Petroleum Hydrocarbons: The case meets both Policy Criterion 2a by Scenario 3a and Policy Criterion 2b. For compliance with Policy Criterion 2a by Scenario 3a, the maximum benzene concentration in groundwater is less than 100 µg/L. Also, the minimum depth to groundwater is greater than 5 feet, overlain by soil containing less than 100 mg/kg of TPH. For compliance with Policy Criterion 2b, a site-specific risk assessment for the vapor intrusion pathway was conducted and demonstrated that human health was protected to the satisfaction of the regulatory agency (Apex Envirotech Inc, 2007).
- Direct Contact and Outdoor Air Exposure: The case meets Policy Criterion 3a. Maximum concentrations in soil are less than those in Policy Table 1 for Commercial 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.

