UST CASE CLOSURE SUMMARY

Agency Information

Agency Name: County of Santa Clara	Address: 1555 Berger Drive, Suite 300 San Jose, CA 95112-2716
Agency Caseworker: Gerald O'Regan	Case No.: 07S1E05F03f

Case Information

USTCF Claim No.: 14203	Global ID: T0608502375
Site Name: Spartan Gas	Site Address: 444 East Taylor Street San Jose, CA 95112 (Site)
Petitioner: Western States Oil Attention: Mr. Steve Lopes	Address: 1790 South Tenth Street San Jose, CA 95112
USTCF Expenditures to Date: $1,449,000	Number of Years Case Open: 14

URL: http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=T0608502375

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 thirteen underground storage tanks (UST) were removed in 1998 and 1999 and replaced with three USTs. During the UST removals and over-excavation activities, approximately 2,080 cubic yards of soil, 28 gallons of free product, and 40,000 gallons of impacted groundwater were removed from the excavations, and processed for disposal. During 2005 and 2006 a dual phase extraction (DPE) system removed approximately 346 pounds of total petroleum hydrocarbons as gasoline (TPHg), 6 pounds of benzene, and 3 pounds of methyl tert-butyl ether (MTBE). The system was shut down because contaminant levels decreased to below cleanup goals. A Tier 2 Risk-Based Corrective Action (RBCA) closure evaluation was completed in 2008. The report concluded that residual petroleum contaminant concentrations in soil and groundwater at the Site pose no significant risk to human health and the environment.

The petroleum release is limited to the shallow soil and groundwater. The nearest public supply well regulated by the California Department of Public Health is located approximately 2,900 feet southwest (generally downgradient) of the Site. Water is provided to water users near the Site by the San Jose Water Company.

The affected groundwater 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 would be ineffective and expensive. 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**. 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 Criteria – Site meets the **EXCEPTION**. The Site is an active petroleum fueling facility and has no release characteristics that can be reasonably believed to pose an unacceptable health risk. A Tier 2 RBCA closure evaluation was completed in 2008. The report concluded that residual contaminant concentrations in soil and groundwater at the Site pose no significant risk to human health or the environment.

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

Santa Clara County staff objected to UST case closure because:

1. The contaminant source has not been removed to the extent practicable.
   Response: Site conditions demonstrate that the residual petroleum constituents in soil and groundwater are protective of human health. (See Attachments 1 and Attachment 2 for further discussion.) During the 1998 and 1999 UST removals and over-excavation, approximately 2,080 cubic yards of soil, 28 gallons of free product, and 40,000 gallons of impacted groundwater were removed from the excavations, and disposed off-Site. A DPE remediation system operated from 2005 to 2006; approximately 346 pounds of TPHg, 6 pounds of benzene, and 3 pounds of MTBE was removed. The system was shut down because contaminant levels decreased to below cleanup goals. A Tier 2 RBCA closure evaluation was completed in 2008. The report concluded that residual contaminant concentrations in soil and groundwater at the Site pose no significant risk to human health and the environment.

2. The groundwater plume is not stable or decreasing.
   Response: The Site has been sufficiently assessed/monitored and additional assessment/monitoring won't likely change the conceptual model. Remedial actions have been

implemented and remaining petroleum constituents are limited, stable and declining. To the extent limited areas of groundwater may exceed WQOs for certain petroleum constituents, the impact will not unreasonably impair beneficial uses even if the period of impairment is decades to hundreds of years. Shallow affected groundwater is not currently being used as a source of drinking water or for any other designated beneficial use and it is highly unlikely, in part due to standard supply well construction practices, that the affected groundwater will be used as a source of drinking water or for any other beneficial use in the foreseeable future.

3. Remaining petroleum constituents pose a potential risk to human health and the environment. Response: Site-specific conditions satisfy all eight general criteria, groundwater media-specific criteria, petroleum vapor intrusion to Indoor air criteria, and direct contact and outdoor air exposure criteria under the Policy. TPHg, TPH as diesel, benzene, MTBE, and tert-butyl alcohol (TBA) currently exist in groundwater at the Site above WQOs. However, based on an analysis of Site-specific conditions that under current and reasonably anticipated near-term future scenarios, the residual contaminant plume poses a low-threat to human health, safety and the environment and WQOs will be achieved within a reasonable time frame.

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: Ben Wright _____ 7/1/2013
Ben Wright, PG No. 9003 Date
Engineering Geologist

Reviewed By: Benjamin R Heningburg _____ 7/2/2013
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 intersection of East Taylor Street and North 10th Street in San Jose. The Site is an operating service station and convenience store.
- The Site is bounded by residential properties in the southwest to northeast directions and commercial properties in all other directions.
- Nature of Contaminants of Concern: Petroleum hydrocarbons only.
- Primary Source of Release: UST system
- Discovery Date: 1998
- Release Type: Petroleum[2]
- Sixteen Geoprobe® soil borings have been drilled and sampled.
- Eleven monitoring wells and four remediation wells have been installed.
- Free Product: 28 gallons removed in 1999, during the removal of 13 USTs. No free product in Site wells since 1999.

Table A: USTs

Tank No.	Size	Contents	Status	Date
1	12,000-gallon	Gasoline	Removed	1998
2	12,000-gallon	Gasoline	Removed	1998
3	12,000-gallon	Gasoline	Removed	1998
4	8,000-gallon	Gasoline	Removed	1998
5	12,000-gallon	Gasoline	Removed	1998
6	12,000-gallon	Diesel	Removed	1998
7	8,000-gallon	Gasoline and/or Diesel	Removed	1998
8	8,000-gallon	Gasoline and/or Diesel	Removed	1998
9	8,000-gallon	Gasoline and/or Diesel	Removed	1999
10	280-gallon	Gasoline and/or Diesel	Removed	1999
11	280-gallon	Gasoline and/or Diesel	Removed	1999
12	360-gallon	Gasoline and/or Diesel	Removed	1999
13	580-gallon	Gasoline and/or Diesel	Removed	1999
1	12,000-gallon	Diesel	Active	-
2	10,000-gallon	Gasoline	Active	-
3	10,000-gallon	Gasoline	Active	-

Receptors

- Groundwater Basin: Santa Clara Valley
- Groundwater Beneficial Uses: Municipal and domestic water supply (MUN), industrial service water supply (IND), industrial process water supply (PRO), and agricultural water supply (AGR)
- Designated Land Use: Light Industrial (LI)
- Public Water System: San Jose Water Company
- Distance to Nearest Surface Waters: Guadalupe River ~4,800 feet southwest

[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 & Safety Code, § 25299.2)

- Distance to Nearest Supply Wells: Public supply well ~2,900 feet southwest

Geology/ Hydrogeology

- Average Groundwater Depth: ~8.4 feet
- Minimum Groundwater Depth: ~5.3 feet
- Groundwater Flow Direction: Southwest
- Geology: Silty clay with interbedded layers of clayey silt to approximately 20 feet below ground surface (bgs), medium stiff to stiff clay to approximately 37 feet bgs, clayey silt with interbedded layer of silty clay to 50 feet bgs.
- Hydrogeology: Semi-confined zones from ~7 to ~27 feet bgs. The average groundwater flow velocity was determined ~0.019 feet per day (7.1 feet per year).

Corrective Actions

- Thirteen USTs were removed in 1998 and 1999 and replaced with three USTs.
- During the 1998 and 1999 USTs removal and over-excavation, approximately 2,080 cubic yards of soil, 28 gallons of free product, and 40,000 gallons of impacted groundwater were removed from the excavations, and disposed off-Site.
- A DPE remediation system operated from 2005 to 2006; approximately 346 pounds of TPHg, 6 pounds of benzene, and 3 pounds of MTBE was removed. The system was shut down because contaminant levels decreased to below cleanup goals.
- A Tier 2 RBCA closure evaluation was completed in 2008. The report concluded that residual contaminant concentrations in soil and groundwater at the Site pose no significant risk to human health or the environment.

Table B: Concentrations of Petroleum Constituents in Soil

Constituent	Maximum 0-5 ft. bgs (mg/kg)	Maximum 5-10 ft. bgs (mg/kg)
Benzene	<0.005	0.83
Ethylbenzene	<0.005	0.51
Naphthalene	Not Analyzed	Not Analyzed
PAHs*	Not Analyzed	Not Analyzed

mg/kg – milligram per kilogram
*Poly-aromatic hydrocarbons as benzo(a)pyrene toxicity equivalent

Table C: Concentrations of Petroleum Constituents of Concern in Groundwater

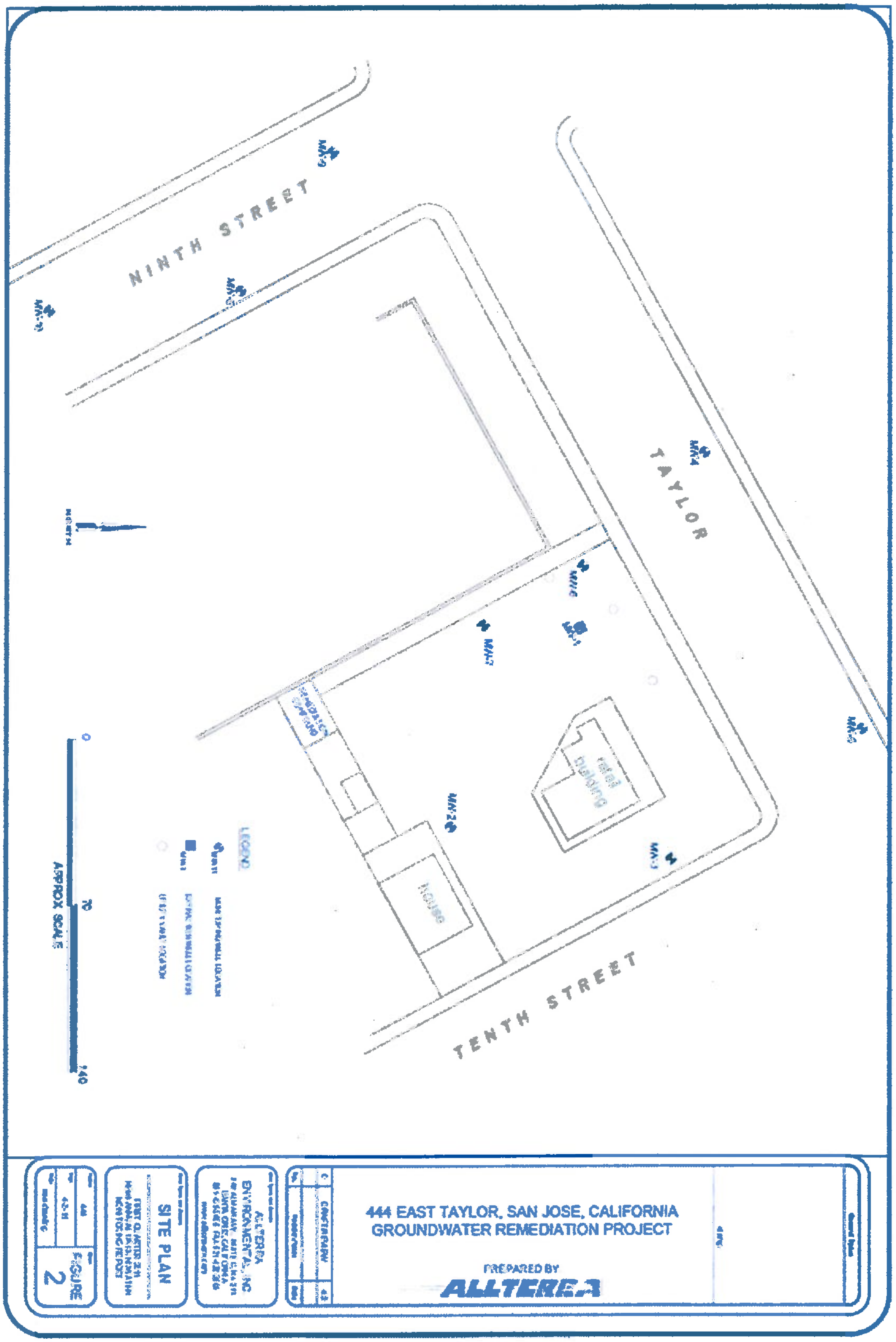
Sample	Sample Date	TPHg (µg/L)	TPHd (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	TBA (µg/L)
MW-1	2/21/13	**790**	**780**	**16**	5.5	<0.5	1.9	**20**	**46**
MW-2	2/22/13	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0
MW-3	2/21/13	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0
MW-4	2/21/13	**120**	**150**	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0
MW-5	2/21/13	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0
MW-6	2/22/13	**1,400**	**1,200**	**20**	5.0	0.72	2.7	**22**	**39**
MW-7	2/22/13	**69**	**110**	<0.5	0.73	<0.5	<0.5	3.3	**130**
MW-8	2/8/11	<50	<50	<0.5	<0.5	<0.5	<0.5	1.2	<2.0
MW-9	2/21/13	<50	<50	<0.5	<0.5	<0.5	<0.5	2.8	<2.0
MW-10	2/21/13	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0
MW-11	6/22/07	<50	<50	<0.5	<0.5	<0.5	<0.5	**5.3**	**62**
WQOs	-	**50**	**50**	**1**	**42**	**3.2**	**17**	**5**	**12**

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
TBA - tert-butyl alcohol
µg/L - micrograms per liter
WQOs - water quality objectives

Evaluation of Risk Criteria

- Maximum Petroleum Constituent Plume Length above WQOs: MTBE plume is ~300 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 – Site-specific conditions satisfy the Policy criteria for vapor intrusion to indoor air. 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 – A Site-specific risk assessment from exposure shows that maximum concentrations of petroleum constituents in soil will have no significant risk of adversely affecting human health.
- Residual Petroleum Constituents Pose Significant Direct Contact and Outdoor Air Exposure to Human Health: No – Maximum concentrations of petroleum constituents in soil are less than or equal to those listed in Table 1of the Policy. 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 concentrations can be directly substituted 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 Table1 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.

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


NINTH STREET
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444 EAST TAYLOR, SAN JOSE, CALIFORNIA
GROUNDWATER REMEDIATION PROJECT
PREPARED BY
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FIGURE
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