State Water Resources Control Board

UST CASE CLOSURE REVIEW SUMMARY REPORT

Agency Information

Agency Name: Alameda County Environmental Health Department (Local Oversight Program (County)	Address: 1131 Harbor Bay Parkway, Alameda, CA 94502
Agency Caseworker: Mark Detterman	Case No. RO0000269

Case Information

USTCF Claim No.: 6001	Global ID: T0600101885
Site Name: Chevron #9-0329	Site Address: 340 Highland Avenue, Piedmont, CA 94611
Responsible Party: Chevron Environmental Management Company	Address: 6111 Bollinger Canyon Rd. San Ramon, CA 94583
USTCF Expenditures to Date: $214,832	Number of Years Case Open: 29

URL: http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=T0600101885

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 Low-Threat Policy. A summary evaluation of compliance with the Low-Threat Policy is shown in **Attachment 1: Closure of Underground Storage Tank Sites' Checklist for Compliance with State Water Board Policies and State Law**. The Conceptual Site Model upon which the evaluation of the case has been made is described in **Attachment 2: Summary of Basic Case Information.** Highlights of the Conceptual Site Model of the case follow:

An unauthorized release was reported in 1983. Since 1983, nine monitoring wells have been installed, and contaminated soil excavated. No active soil or groundwater corrective actions have been implemented. According to groundwater data, water quality objectives (WQOs) have been achieved for all constituents except for TPH-d and THP-g constituents in monitoring well C-2 and MTBE in monitoring well A.

The petroleum release is limited to shallow soil and groundwater. According to data available in GeoTracker, there are no California Department of Public Health (CDPH) regulated supply wells within 1,000 feet of the defined plume boundary. A seasonal creek is located approximately 700 feet downgradient of the defined plume boundary. One City of Piedmont irrigation well is located approximately 580 feet downgradient of the defined plume boundary in a city park. Water is provided to water users near the Site by the East Bay Municipal Utility District

(EBMUD). The affected groundwater is not currently being used as a source of drinking water, and it is highly unlikely that the affected groundwater will be used as a source of drinking water in the foreseeable future. Other designated beneficial uses of impacted groundwater are not threatened and it is highly unlikely that they will be considering these factors in the context of the site setting. Remaining petroleum hydrocarbon constituents are limited, stable and concentrations declining. 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 Low-Threat Policy

- General Criteria – The case meets all eight Policy general criteria.
- Groundwater – Class 5 – The regulatory agency determines, 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 the environment and WQOs will be achieved within a reasonable time frame. Concentrations of petroleum hydrocarbons that remain in the source area (on-site) are very limited in nature, stable and not migrating as evidenced by downgradient well MW-6 (~60 feet downgradient of the source area); this well has been at or below WQOs since 2002. Therefore, there is minimal potential risk of impacting the downgradient irrigation well and seasonal creek located 580 feet and 700 feet, respectively, from the defined plume boundary.
- Vapor Intrusion to Indoor Air – Active Station Exclusion - Soil vapor evaluation is not required because the Site is an active commercial petroleum fueling facility.
- Direct Contact and Outdoor Air Exposure – The case meets Policy Criterion 3a. Maximum concentrations in soil are less than those in Table 1 for Commercial/Industrial sites 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 3% benzene and 0.25% naphthalene. Therefore, benzene can be directly substituted for naphthalene concentrations with a safety factor of ten. Benzene concentrations from the Site are below the naphthalene thresholds in Table 1 of the Policy. Therefore, the estimated naphthalene concentrations meet the thresholds in Table 1 and the Policy criteria for direct contact by a factor of ten. It is highly unlikely that naphthalene concentrations in the soil, if any, exceed the threshold.

Objections to Closure and Response

The County provided their comments regarding closure of this case on November 5, 2012:

- Potential impacts to the public safety, the environment and wells in the area are not fully addressed.

  RESPONSE: Concentrations of petroleum hydrocarbons that remain in the source area (on-site) are very limited in nature, stable and not migrating as evidenced by downgradient monitoring well MW-6 (~60 feet downgradient of the source area) which has been at or below WQO's since 2002.

- Other sources of petroleum hydrocarbons exist.
  RESPONSE: All former USTs were removed from the Site. The only petroleum hydrocarbon concentrations remaining are in monitoring well C-2. The recent geophysical survey demonstrates no other USTs were located the Site.
- Lack of characterization of secondary sources.
  RESPONSE: The "secondary Source" is defined in the Policy as that soil at or immediately beneath the point of release. Impacted soil (secondary source) was removed at the time of the UST replacement. Additionally, the site is underlain by very shallow bedrock which limits the extent of any remaining residual petroleum hydrocarbons to a very small basin excavated to install the USTs prior to their subsequent removal. A geophysical survey was recently completed (early 2012) to investigate if there were additional USTs or UST cavities at the Site. The survey confirmed that no other USTs or UST cavities were present at the Site. Further assessment is not warranted.
- Notification Process Incomplete.
  RESPONSE: The Fund inadvertently failed to notify the current fee title owner. The Fund has since re-noticed all parties required by the Policy.
- Incomplete Application of the Low-Threat Closure Policy Checklist.
  RESPONSE: The State Water Board Low-Threat Policy Checklist was used appropriately as a tool to assist in determining if a site meets the criteria in the Policy. The application of the Policy and the Checklist at this Site was reviewed by multiple registered professional staff.

Fund Manager Recommendation for Closure
Based on available information, residual petroleum hydrocarbons at the Site do not pose significant risks 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. The County has the regulatory responsibility to supervise the abandonment of monitoring wells.

Lisa Babcock — 12/18/12

Lisa Babcock, P.G. 3939, C.E.G. 1235 — **Date**

Prepared by: Pat G. Cullen P.G.

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

The site 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 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? There was an order issued for this site. The corrective action performed in the past is consistent with that order. Since this case meets applicable case-closure requirements, further corrective action under the order that is not necessary, unless the activity is necessary for case closure.	☐ 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

[1] Refer to the Low-Threat Underground Storage Tank Case Closure Policy for closure criteria for low-threat petroleum UST sites.
http://www.waterboards.ca.gov/board_decisions/adopted_orders/resolutions/2012/rs2012_0016atta.pdf

Has a conceptual site model that assesses the nature, extent, and mobility of the release been developed?	☒ Yes ☐ No
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
Nuisance as defined by Water Code section 13050 does not 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
<u>Media-Specific Criteria</u> 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
Do site soils contain insufficient mobile constituents (leachate, vapors, or light non-aqueous phase liquids) to threaten groundwater?	☒ 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?	☐Yes ☐ No ☒ NA

If YES, check applicable scenarios: ☐ **1** ☐ **2** ☐ **3** ☐ **4**	
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 CASE INFORMATION (Conceptual Site Model)

Site Location/History

- The Site is currently an active service station operating at the corner of Highland Avenue and Highland Way in the City of Piedmont. The Site was formerly owned and operated by Chevron but was sold in 1990 to the Hoffman Investment Company.
- The land use in the immediate vicinity of the Site is commercial.
- In June 1983, soil contamination was identified.
- Nine monitoring wells have been installed and eight monitored regularly.
- Site map showing the location of the Site facilities, monitoring wells, and groundwater level contours is included at the end of this summary.
- Nature of Contaminants of Concern: Petroleum hydrocarbons only.
- Source: UST system.
- Date reported: January 1983.
- Status of Release: USTs removed in 1989.
- Free-Phase Hydrocarbons: Noted in monitoring well C-2 (up to 0.75 inches) in 1987, however, it has not been detected since.

Tank Information

Tank No.	Size in Gallons	Contents	Closed in Place/ Removed/Active	Date
1	550	Used Oil	Removed	September 1999
2	Unknown	Unknown	Removed	Unknown
3-5	Unknown	Gasoline	Active	--

Receptors

- GW Basin: Santa Clara Valley - South Bay - East Bay Cities.
- Beneficial Uses: Municipal and Domestic Supply.
- Land Use Designation: Commercial.
- Public Water System: East Bay Municipal Utility District.
- Distance to Nearest Supply Well: According to data available in GeoTracker, there are no CDPH regulated supply wells within 1,000 feet of the defined plume boundary. A seasonal creek is located approximately 700 feet downgradient of the defined plume boundary. One City of Piedmont irrigation well is located approximately 580 feet downgradient of the defined plume boundary in a city park.
- Distance to Nearest Surface Water: A seasonal creek is located in Piedmont Park approximately 700 feet (south) downgradient of the defined plume boundary.

Geology/Hydrogeology

- Stratigraphy: A thin 2.5 to 5.0 foot-thick veneer of silts and sands is underlain by shallow bedrock, sandstone.
- Maximum Sample Depth: 18 feet bgs.
- Minimum Groundwater Depth: Artesian at monitoring well MW-6.
- Maximum Groundwater Depth: 6.4 feet (bgs) at monitoring well C-4.
- Current Average Depth to Groundwater: 1.5 feet bgs.
- Saturated Zones(s) Studied: Surface to 18 feet bgs.
- Appropriate Screen Interval: Yes, due to natural artesian conditions the monitoring wells have submerged screens.

- Groundwater Flow Direction: Consistently southerly with an average gradient of 0.04 feet/foot (ft/ft) (September 2012).

Monitoring Well Information

Well Designation	Date Installed	Screen Interval (feet bgs)	Depth to Water (feet bgs) (9/7/2012)
A	1983	Open bottom	1.27
B	1983	Open bottom	3.47
C-1	1983	7-17	Abandoned 1991
C-2[a]	1983	7-17	1.07
C-3	1983	7-17	1.04
C-4	1983	3-13	3.12
C-5	1996	3-18	0.52
C-6	1996	2.5-17.5	0.72
MW-6	1996	Unknown	Destroyed soon after installation due to artisan flow

[a]: Note C-2 had 0.75 inches of free product last reported in 1987

Remediation Summary (Secondary Source Removal)

- Free Product: Noted in C-2 (up to 0.75 inches) in 1987, none reported since.
- Soil Excavation: Impacted soil was removed from the Site.
- In-Situ Soil and Groundwater Remediation: No active corrective actions were implemented.

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 @ 5.5' in U-6[a] 3/21/2001
Ethylbenzene	NA	<0.005 @ 5.5' in U-6[a] 3/21/2001
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
[a]: Boring located just downgradient of source area (UST cavity)

Most Recent Concentrations of Petroleum Constituents in Groundwater

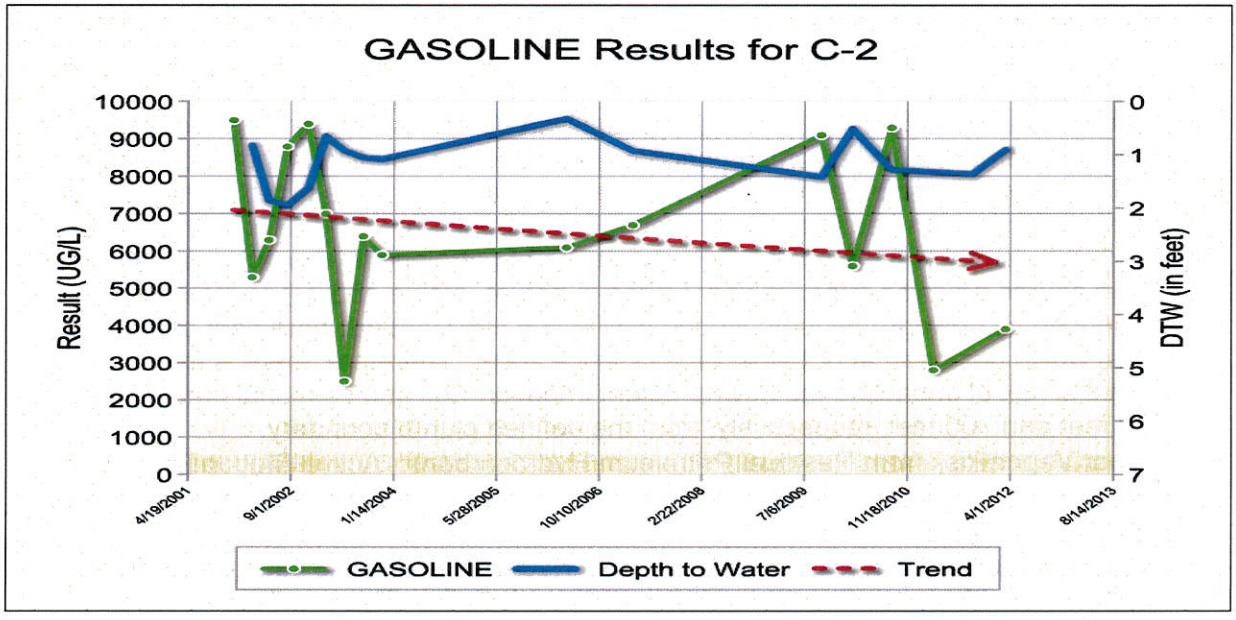
Sample	Sample Date	TPHg (µg/L)	TPHd (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	TBA (µg/L)
A	9/7/2012	<100	<100	<1	<1	<1	<1	**6**	NA
B	9/7/2012	<100	<100	<1	<1	<1	<1	<1	NA
C-2[a]	9/7/2012	**7,800**	**11,000**	**270**	11	88	33	**110**	NA
C-3	9/7/2012	<100	<100	<1	<1	<1	<1	<1	NA
C-4	9/7/2012	<100	<100	<1	<1	<1	<1	<1	NA
C-5	9/7/2012	<100	<100	<1	<1	<1	<1	<1	NA
C-6	9/7/2012	<100	<100	<1	<1	<1	<1	<1	NA
MW-6	9/7/2012	<100	<100	<1	<1	<1	<1	<1	NA
WQOs	-	**50**	**50**	**1**	**150**	**300**	**1,750**	**5**	**1,200[b]**

NA: Not Analyzed, Not Applicable or Data Not Available
µg/L: micrograms per liter, parts per billion
<: Not detected at or above stated reporting limit
TPHg: Total petroleum hydrocarbons as gasoline
TPHd: Total petroleum hydrocarbons as diesel
MTBE: Methyl tert-butyl ether
WQO: Taken from the Region 2 Basin Plan
[a]: Note C-2 had 0.75 inches of free product last reported in 1987
[b]: CDPH, Response Level

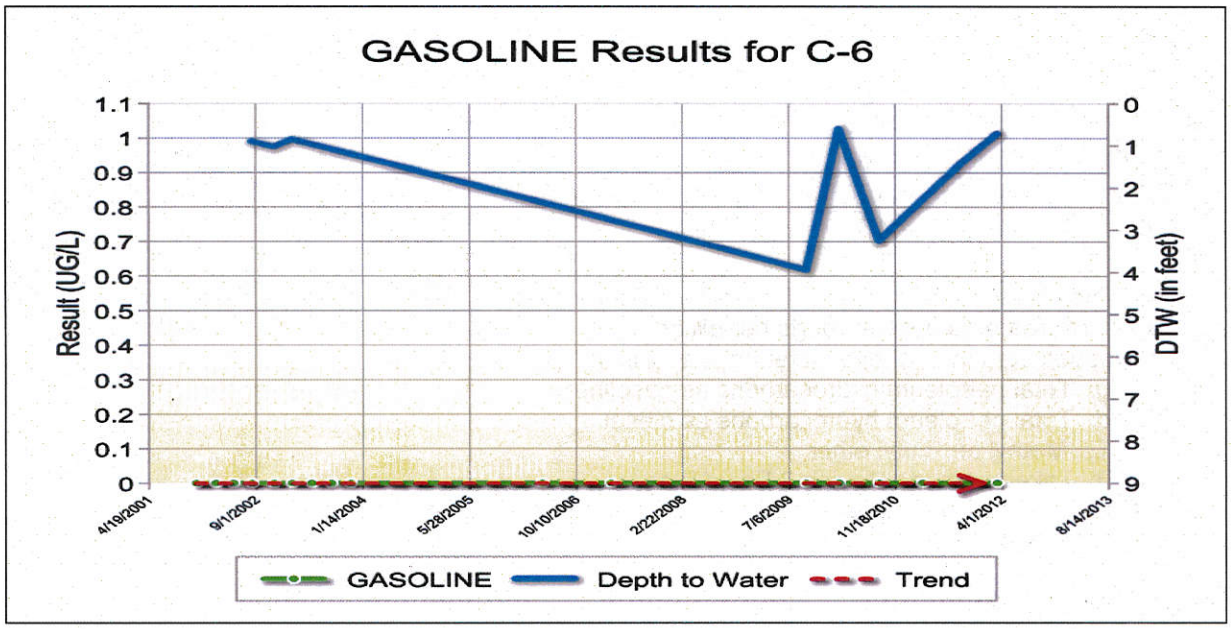
Groundwater Trends:

- There are 29 years of groundwater monitoring data for this Site that demonstrate the concentrations are decreasing and the plume is stable. Well C-2 is in the source area and well C-6 is 90 feet downgradient.

Source Area Well



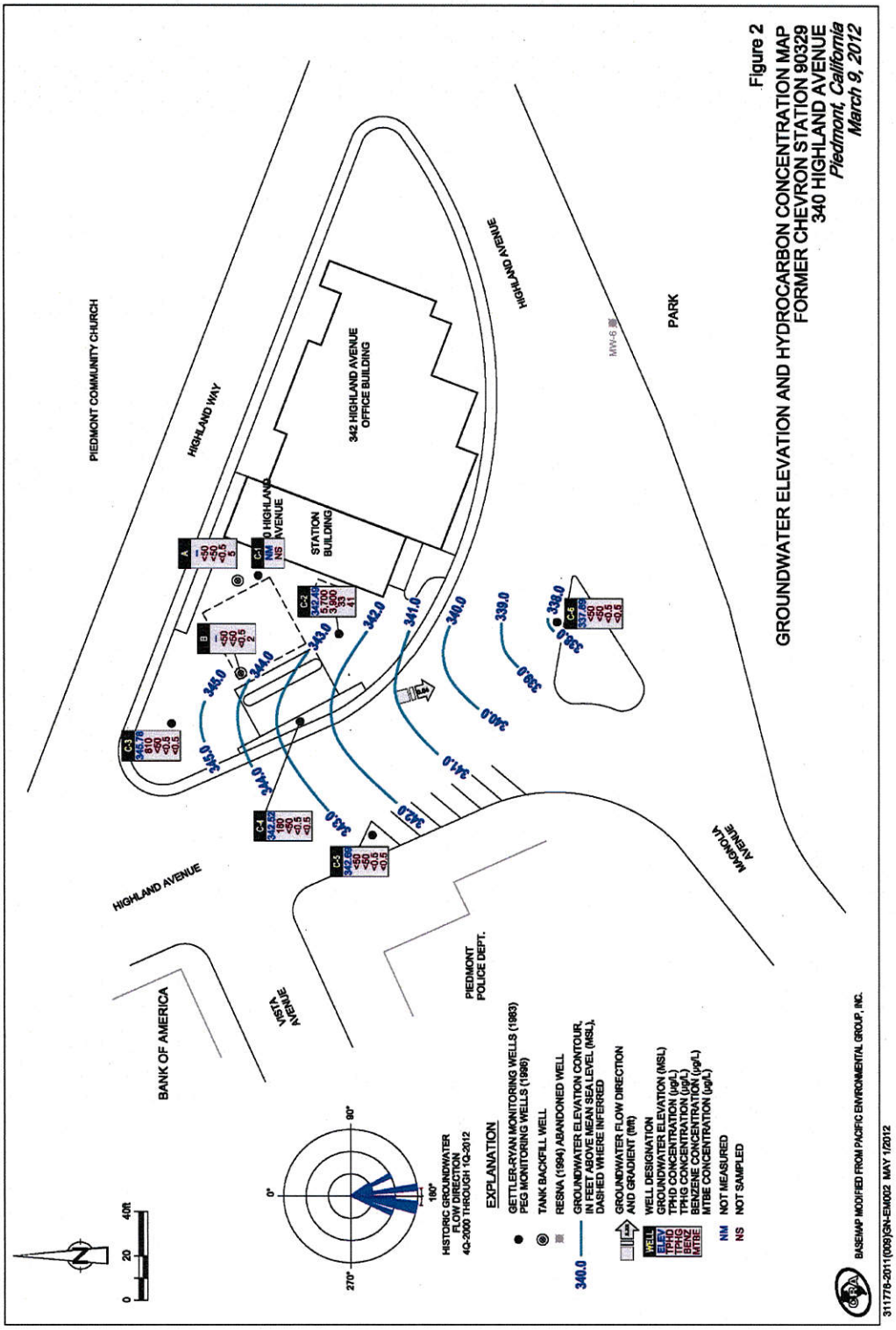
Downgradient Well



Evaluation of Current Risk

- Estimate of Hydrocarbon Mass in Soil: None reported.
- Soil/ Groundwater tested for methyl tert-butyl ether (MTBE): Yes, see table above.
- Oxygen Concentrations in Soil Vapor: None reported.
- Plume Length: <100 feet long.
- Plume Stable or Degrading: Yes.
- Contaminated Zone(s) Used for Drinking Water: No.
- Groundwater Risk from Residual Petroleum Hydrocarbons: Class 5 – The regulatory agency determines, 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 the environment and WQOs will be achieved within a reasonable time frame. Concentrations of petroleum hydrocarbons that remain in the source area (on-site) are very limited in nature, stable and not migrating as evidenced by downgradient monitoring well MW-6 (~60 feet downgradient of the source area) which has been at or below WQO's since 2002. Therefore, there is minimal potential risk of impacting the downgradient irrigation well and seasonal creek located 580 feet and 700 feet, respectively, from the defined plume boundary.
- Indoor Vapor Risk from Residual Petroleum Hydrocarbons: Active Station Exclusion - Soil vapor evaluation is not required by the Policy because site is an active commercial petroleum fueling facility.
- Direct Contact Risk from Residual Petroleum Hydrocarbons: The case meets Policy Criterion 3a. Maximum concentrations in soil are less than those in Table 1 for Commercial/Industrial sites and the concentration limits for Utility Worker are satisfied. 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 3% benzene and 0.25% naphthalene. Therefore, benzene can be directly substituted for naphthalene concentrations with a safety factor of ten. Benzene concentrations from the Site are below the naphthalene thresholds in Table 1 of the Policy. Therefore, the estimated naphthalene concentrations meet the thresholds in Table 1 and the Policy criteria for direct contact by a factor of ten. It is highly unlikely that naphthalene concentrations in the soil, if any, exceed the threshold.


GROUNDWATER ELEVATION AND HYDROCARBON CONCENTRATION MAP
FORMER CHEVRON STATION 90329
340 HIGHLAND AVENUE
Piedmont, California
March 9, 2012
Figure 2
PIEDMONT COMMUNITY CHURCH
HIGHLAND WAY
342 HIGHLAND AVENUE OFFICE BUILDING
340 HIGHLAND AVENUE STATION BUILDING
HIGHLAND AVENUE
PARK
MAGNOLIA AVENUE
HIGHLAND AVENUE
BANK OF AMERICA
VISTA AVENUE
PIEDMONT POLICE DEPT.
MW-6
EXPLANATION
GETTLER-RYAN MONITORING WELLS (1983)
PEG MONITORING WELLS (1986)
TANK BACKFILL WELL
RESNA (1994) ABANDONED WELL
GROUNDWATER ELEVATION CONTOUR, IN FEET ABOVE MEAN SEA LEVEL (MSL), DASHED WHERE INFERRED
GROUNDWATER FLOW DIRECTION AND GRADIENT (ft/ft)
WELL DESIGNATION
GROUNDWATER ELEVATION (MSL)
TPHD CONCENTRATION (µg/L)
TPHG CONCENTRATION (µg/L)
BENZENE CONCENTRATION (µg/L)
MTBE CONCENTRATION (µg/L)
NM NOT MEASURED
NS NOT SAMPLED
HISTORIC GROUNDWATER FLOW DIRECTION 4Q-2000 THROUGH 1Q-2012
BASEMAP MODIFIED FROM PACIFIC ENVIRONMENTAL GROUP, INC.
311778-2011(009)GH-EM002 MAY 1/2012