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September 26, 2013

Karel Detterman
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1131Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

Subject: **Alameda Gas**
1310 Central Avenue, Alameda
Fuel Leak Case No. RO0000022

Dear Ms. Detterman:

Enclosed is the *Request for No Further Action* for the subject LUFT site. In compliance with state and local regulations, electronic submittals of this report have been uploaded to the Geotracker database and the Alameda County ftp website.

I declare under penalty of perjury that the information and/or recommendations contained in the attached report are true and correct to the best of my knowledge.

Please call Tim Cook at Cook Environmental Services at (925) 478-8390 if you have questions or comments in regards to the technical content of this report.

Very truly yours,

Alameda Gas

Nissan Saidian Joseph Zadik Leon Zekster

cc: Tim Cook, Cook Environmental Services, Inc.

REQUEST FOR NO FURTHER ACTION

PROJECT SITE:
Alameda Gas
1310 Central Avenue
Alameda, California 94501

PREPARED FOR:
Nissan Saidian
5733 Medallion Ct.
Castro Valley, CA 94522

SUBMITTED TO:
Karel Detterman
Alameda County Environmental Health
1131 Harbor Bay Parkway
Alameda, CA 94602

PREPARED BY:
Cook Environmental Services, Inc.
1485 Treat Boulevard, Suite 203A
Walnut Creek, California 94597

Project No. 1035

September 26, 2013

PROFESSIONAL CERTIFICATION

REQUEST FOR NO FURTHER ACTION

Alameda Gas
1310 Central Avenue
Alameda, California 94501

By: Cook Environmental Services, Inc.
Project No. 1034

September 26, 2013

Cook Environmental Services, Inc. prepared this document under the professional supervision of the person whose seal and signature appears hereon. No warranty, either expressed or implied, is made as to the professional advice presented herein. The analysis, conclusions and recommendations contained in this document are based upon site conditions as they existed at the time of the investigation and they are subject to change.

The conclusions presented in this document are professional opinions based solely upon visual observations of the site and vicinity, and interpretation of available information as described in this document. Cook Environmental Services, Inc. recognizes that the limited scope of services performed in execution of this investigation may not be appropriate to satisfy the needs, or requirements of other regulatory agencies or of other users. Any use or reuse of this document or its findings, conclusions or recommendations presented herein is at the sole risk of said user.

Tim Cook, P.E.
Project Manager

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1.0 Introduction

This Request for No further Action addresses Alameda Gas located at 1310 Central Avenue in Alameda, California ("the Site"). The Site meets all requirements for closure under the Low-Threat Underground Storage Tank Case Closure Policy ("Policy"). The Water Quality Control Policy for Low-Threat Underground Storage Tank Case Closure was adopted by the State Water Board on May 1, 2012 via Resolution No. 2012-0016 and became effective August 17, 2012. The Site meets the following general requirements for closure included in the Policy:

1. The Site is located in a public water system (See Section 2.1).
2. The unauthorized release consists only of petroleum (See Section 2.2).
3. The primary release has been stopped (See Section 2.3).
4. The free product has been eliminated (See Section 2.4).
5. A conceptual site model (CSM) has been prepared according to standards from the California State LUFT Manual Guidance and Alameda County Low Threat Closure Checklist (see Section 2.5).
6. The secondary source of contamination (contaminated soil) has been excavated and removed from the Site (see Section 2.6).
7. Soil and groundwater samples were tested for MtBE and current concentrations are below Environmental Screen Levels (See Section 2.7).
8. Nuisance as defined by Water Code section 13050 does not exist at the site (See Section 2.8)

The Site also meets the following media-specific requirements for closure included in the Policy:

1. Groundwater (See Section 3.1)
2. Vapor Intrusion to Indoor Air (See Section 3.2)
3. Direct Contact and Outdoor Air Exposure (See Section 3.3)

The Alameda County Environmental Health Low Threat UST Closure Checklist is included in **Appendix A**.

1.1 Site Description and Physical Setting

1.1.1 Site Location

The Site is currently a automobile service and gas station. The Site has been in operation since the 1960s. The surrounding area is comprised of mixed commercial and residential properties. The Site is located in the south-central part of Alameda at the intersection of Encinal Avenue, Sherman Street, and Central Avenue. A Site location map is shown on **Figure 1** and a site plan showing physical features (i.e., buildings and UST locations) is shown on **Figure 2**.

1.1.2 Site Geology

The Site is relatively flat and the investigation area has a surface elevation of approximately 25 feet amsl. San Francisco Bay and the Alameda Estuary are located approximately one half mile from the Site.

Based on interpretation of historical boring logs, the site is underlain by sandy fill to a depth of approximately 3.5 feet. Fine sandy silt and poorly graded sand is present beneath the fill to approximately 26 feet below ground surface (bgs), the maximum depth explored. Groundwater was encountered in the borings between 6 and 13 feet bgs. The depth to water in Site monitoring wells ranges from 2 to 6 feet bgs and groundwater flow is to the northwest.

1.1.3 Site Groundwater

Groundwater varies between 2 and 7 feet bgs in Site monitoring wells, and is seasonally influenced. In general, groundwater flows northwesterly toward the Oakland Inner Harbor. The groundwater gradient for the Site has been very consistent since the installation of well MW-4 and MW-5. A groundwater elevation contour map prepared from data collected March 29, 2012 is shown on **Figure 3**. Monitoring well construction details are provided in **Table 1**. A complete summary of groundwater elevation measurements is provided in **Table 2**.

1.1.4 Utility Conduit Survey

In December 2002, ASE conducted a utility survey for the site and vicinity. East Bay Municipal Utility District supplies water to the site, Pacific Gas & Electric (PG&E) supplies natural gas and electricity (electric lines are overhead), and the City of Alameda provides sanitary and storm sewer utilities. Sewer, gas and water lines run under Central Avenue, down gradient of the site. Soil and water samples were collected adjacent to the main sewer line, and water samples were collected from the sewer line. Very low concentrations of TPH-g were found, but no other hydrocarbon constituents. The source for the TPH-g was never positively identified. Results of the conduit study indicate that while it is likely hydrocarbons are present in some utility trenches; it does not appear that utility lines act as a conduit for the movement of groundwater. This conclusion was based on the reasonable assumption that the backfill of the utility trenches is the exact same sandy material as the native material. Locations of buried utility trenches are shown on **Figure 4**.

1.1.5 Well Survey

In July 2013, CES reviewed data from Alameda County Public Works and the California Department of Water Resources to locate water wells located within 2,000 feet of the site. A total of 15 wells were located in this area. The closest well was located over 1,200 feet east of the site. No downgradient wells were located within 2,000 feet of the Site.

1.2 Project Background and Data Summary

1.2.1 Tank Removal and Over-Excavation

May 1996 - Petrotek removed four underground storage tanks from the Site. One 10,000-gallon, one 7,500-gallon, and one 5,000-gallon USTs formerly containing gasoline were removed from the western corner of the Site. A 500-gallon waste oil tank was removed from next to the building in the southern portion of the Site. Pump dispensers and related product piping were also removed.

Free product was observed floating on the groundwater in the gasoline UST excavation. A water sample from the gasoline UST excavation yielded 2,800 micrograms per liter (µg/L) of total petroleum hydrocarbons as gasoline (TPH-g) and 100 µg/L benzene. Soil samples collected from this same excavation yielded up to 5,000 milligrams per kilogram (mg/Kg of THP-g and 31 mg/Kg benzene. Soil samples collected from beneath the pump island yielded up to 6,800 mg/Kg TPH-g and 63 mg/Kg benzene. A water sample from the waste oil excavation yielded 35,000 µg/L of diesel and motor oil range hydrocarbons, and 1,300 µg/L of TPH-g. These results are documented in a *UST Closure Report* submitted by Petrotek in May 1996.

Petrotek reportedly excavated and disposed of approximately 600 cubic yards of contaminated soil from both UST excavations. Approximately 15,000 gallons of water were pumped from the excavations, treated and discharged to the sanitary sewer. Two new USTs, dispensers, and product piping were installed after the excavation work was completed in approximately the same locations as the removed apparatus.

1.2.2 Site Investigation

November 1998 - All Environmental, Inc. (AEI) drilled 14 soil borings at the Site and collected soil and groundwater samples for analysis. Up to 5,900 mg/Kg of TPH-g was detected in soil samples collected from the borings. Up to 120,000 µg/L TPH-g and 7,200 µg/L benzene were detected in groundwater samples from the borings.

October 1999 - HerSchy Environmental installed three monitoring wells at the Site. Up to 43,000 µg/L TPH-g, 8,700 µg/L total petroleum hydrocarbons as diesel (TPH-d), 1,300 µg/L benzene, and 120,000 µg/L methyl tert-butyl ether (MtBE) were detected in groundwater samples from the borings. The groundwater flow direction was southwesterly under a gradient of 0.0085. Well construction details are presented in **Table 1**.

May 2000 - Aqua Science Engineers, Inc. (ASE) began quarterly monitoring at the Site. Groundwater samples collected from MW-1 contained 2,000 µg/L TPH-g, 38 µg/L benzene, 6.3 µg/L toluene, 740 µg/L ethyl benzene, and 1,600 µg/L total xylenes. No MtBE or other oxygenates were detected in the sample from MW-1. No hydrocarbons were detected in the groundwater sample taken from MW-2. The groundwater sample from MW-3 contained 17,000 µg/L TPH-g, 2,800 µg/L benzene, 60 µg/L toluene, 380 µg/L ethyl benzene, 190 µg/L total xylenes, 990 µg/L MtBE, 9.1 µg/L tert-amyl methyl ether (tAME), and 350 µg/L tert butyl alcohol (tBA).

July 2000 - ASE collected soil and groundwater samples from 12 Geoprobe borings (borings BH-1 through BH-L) to delineate the extent of down gradient contamination. The soil samples collected from 3.0 feet bgs in boring BH-K contained 0.00061 µg/L of MtBE. There were no hydrocarbons or oxygenates detected in soil samples from the remaining borings. The groundwater samples collected boring BH-A contained 0.7 µg/L toluene and 0.9 µg/L total xylenes. The groundwater samples collected from boring BH-B contained 1,800 µg/L TPH-g, 270 µg/L benzene, 8.8 µg/L toluene, 18 µg/L ethyl benzene, 13 µg/L total xylenes, 4,100 µg/L MtBE, 5.6 µg/L tAME, and 440 µg/L tBA. The groundwater samples collected from boring BH-C contained 230 µg/L TPH-g, 11 µg/L benzene, 1.2 µg/L toluene, 0.96 µg/L total µg/L, 760

µg/L MtBE, 6.6 µg/L TAME, and 130 µg/L TBA. The groundwater sample collected from boring BH-D contained 72 µg/L TPH-d, and 1.7 µg/L MtBE. The groundwater sample collected from boring BH-I contained 0.55 µg/L MtBE. The ground water sample collected from boring BH-J contained 200 µg/L TPH-d. The groundwater sample collected from boring BH-K contained 520 µg/L TPH-d and 0.77 µg/L MtBE. The groundwater sample collected from boring BH-L contained 2.5 µg/L MtBE. Analytical results for soil and groundwater samples are presented in **Table 3** and **Table 4**, respectively.

December 2002 - ASE performed a conduit study to investigate whether subsurface utility lines could provide a pathway for the movement of groundwater. ASE requested USA to mark underground utilities in the Site vicinity as well as reviewed sewer line maps at the Alameda City Public Works Agency. ASE also called other agencies whose marks were not visible in the street areas to confirm that no lines were present in those areas. Although ASE concluded that the utility lines did not provide a pathway for the movement of groundwater, the ACEHS requested that water samples be collected from the sewer to determine whether contaminated groundwater may have entered the sewer line through seams or cracks.

January 2004 - ASE drilled four soil borings at the Site, BH-M through BH-P. The soil samples from all four borings contained very low concentrations of TPH-d, with the highest concentration from BH-M being 68 µg/L. No TPH-d, benzene, toluene, ethyl-benzene, xylenes (BTEX) or oxygenates were detected in any of the other soil samples. The groundwater samples collected from all four borings contained TPH-d at concentrations up to 170 µg/L. The groundwater sample collected from boring BH-O contained 19 µg/L MtBE. None of the other samples contained detectable concentrations of TPH-g, BTEX or oxygenates.

Groundwater samples were also collected from the sewer line beneath Central Avenue, both upgradient and down gradient of the Site. Low concentrations of TPH-g were detected in both samples. No BTEX or oxygenates were detected in either of these samples.

December 2005 - ASE conducted a records search at the Alameda City Public Works Agency and the California Department of Water Resources to identify water wells with ½ mile radius of the Site. A total of 25 wells were located in the search area. The results include three domestic wells, 10 irrigation wells, one industrial, two cathodic protection wells, four monitoring wells, and 5 vapor extraction wells. The closest well is located more than 1,000 feet east of the Site. The closest, potentially down gradient, well is located approximately 1,260 feet northwest of the Site. ASE proposed additional soil and groundwater assessment for the Site.

April 2006 - ASE installed two additional borings and two monitoring wells at the Site. Borings BH-Q, BH-R and monitoring wells MW-4 and MW-5 were installed using a drill rig equipped with an 8-inch hollow-stem auger. The only hydrocarbons detected were 11 mg/Kg TPH-d in the sample from BH-Q and 1.7 mg/Kg TPH-d from the boring for MW-5. For both samples, the laboratory noted that the hydrocarbons reported as TPH-D did not exhibit a typical diesel chromatogram pattern. None of the soil samples contained detectable concentrations of TPH-g, BTEX, or oxygenates.

Groundwater samples collected during this phase of the investigation detected hydrocarbon concentrations in samples taken from BH-Q and BH-R. BH-Q yielded 220 µg/L TPH-d and BH-R yielded 770 µg/L TPH-d. Similar to the soil samples, the laboratory noted the hydrocarbons reported as TPH-d did not exhibit a typical diesel chromatogram pattern. Based on the results of there investigation, ASE did not recommend further definition of the extent of hydrocarbons.

November 2010 – Matriks installed four borings adjacent to the existing USTs. High levels of TPH-d were observed in several borings adjacent and down gradient to the existing USTs. TPH-d in groundwater was observed to 1,100,000 µg/L and to 4,400 mg/Kg in soil indicating a second release at the site. Groundwater samples collected from monitoring wells MW-1, MW-3 and MW-5 reported elevated TPH-d concentrations starting in June 2008. The site stopped selling diesel in 2006. Elevated concentrations of TPH-g and BTEX were also reported. Free product was observed in several borings. Historical analytical results for soil and groundwater are presented in **Tables 3 and 4**, respectively.

March 2012 - Cook Environmental Services, Inc. (CES) began monitoring the Site on March 29, 2012. CES has collected semi-annual groundwater sampling since that time and is presently the consultant of record.

2.0 General Site Closure Criteria

This section gives site specific data for each of the eight general criteria listed in the Low-Threat Underground Storage Tank Case Closure Policy.

2.1 Public Water System

The East Bay Municipal Utility District (EBMUD) maintains the public water system to the Site and surrounding area. EBMUD services an area of 332 square miles in Alameda County and Contra Costa County.

The area surround the Site is primarily commercial and residential. The nearest residence is approximately 60 feet north of the Site. Land use is not likely to change in the near future. In December 2002, ASE conducted a utility survey for the site and vicinity and ruled out subsurface utility conduits as likely pathways for contaminant migration.

2.2 Unauthorized Release Consists Only of Petroleum Products

The unauthorized release is comprised strictly of petroleum products (primarily diesel, gasoline and waste oil). Diesel fuel was sold at the Site until approximately 2006. Gasoline is currently the only liquid stored in USTs at the Site. Waste oil is temporarily stored above ground in 55-gallon drums.

2.3 Unauthorized Release from the UST System Has Stopped

In May 1996, four underground storage tanks were removed from the Site. One 10,000-gallon, one 7,500-gallon, and one 5,000-gallon USTs containing gasoline were removed from the

western corner of the Site. A 500-gallon waste oil tank was removed from next to the building in the southern portion of the Site. Pump dispensers and related product piping were also removed.

Free product was observed floating on the groundwater in the gasoline UST excavation. A water sample from the gasoline UST excavation yielded 2,800 micrograms per liter (µg/L) of total petroleum hydrocarbons as gasoline (TPH-g) and 100 µg/L benzene. Soil samples collected from this same excavation yielded up to 5,000 milligrams per kilogram (mg/Kg of THP-g and 31 mg/Kg benzene. Soil samples collected from beneath the pump island yielded up to 6,800 mg/Kg TPH-g and 63 mg/Kg benzene. A water sample from the waste oil excavation yielded 35,000 µg/L of diesel and motor oil range hydrocarbons, and 1,300 µg/L of TPH-g. These results are documented in a *UST Closure Report* submitted by Petrotek in May 1996.

Approximately 600 cubic yards of contaminated soil from both UST excavations was excavated and disposed of offsite. Approximately 15,000 gallons of water were pumped from the excavations, treated and discharged to the sanitary sewer. Two new double-walled USTs, new containment sumps, new dispensers, double-walled product piping and a continuous monitoring system were installed to prevent further hydrocarbon releases onsite.

2.4 Free Product Removed to the Maximum Extent Practicable

In May 1996, free product was observed in the gasoline UST excavation. A water sample from this excavation yielded TPH-g at 2,800 micrograms per liter (µg/L) and benzene at 100 µg/L. Soil samples collected from this same excavation yielded TPH-g at up to 5,000 milligrams per kilogram (mg/kg) and benzene at 31 mg/kg. Free product was not observed in the waste oil UST excavation; however a water sample from this excavation yielded TPH-mo at 35,000 µg/L and TPH-g at 1,300 µg/L. The UST removal contractor removed approximately 600 cubic yards of contaminated soil from both UST excavations and approximately 15,000 gallons of water from the gasoline UST excavation. The water was treated and discharged to the sanitary sewer under a permit from EBMUD.

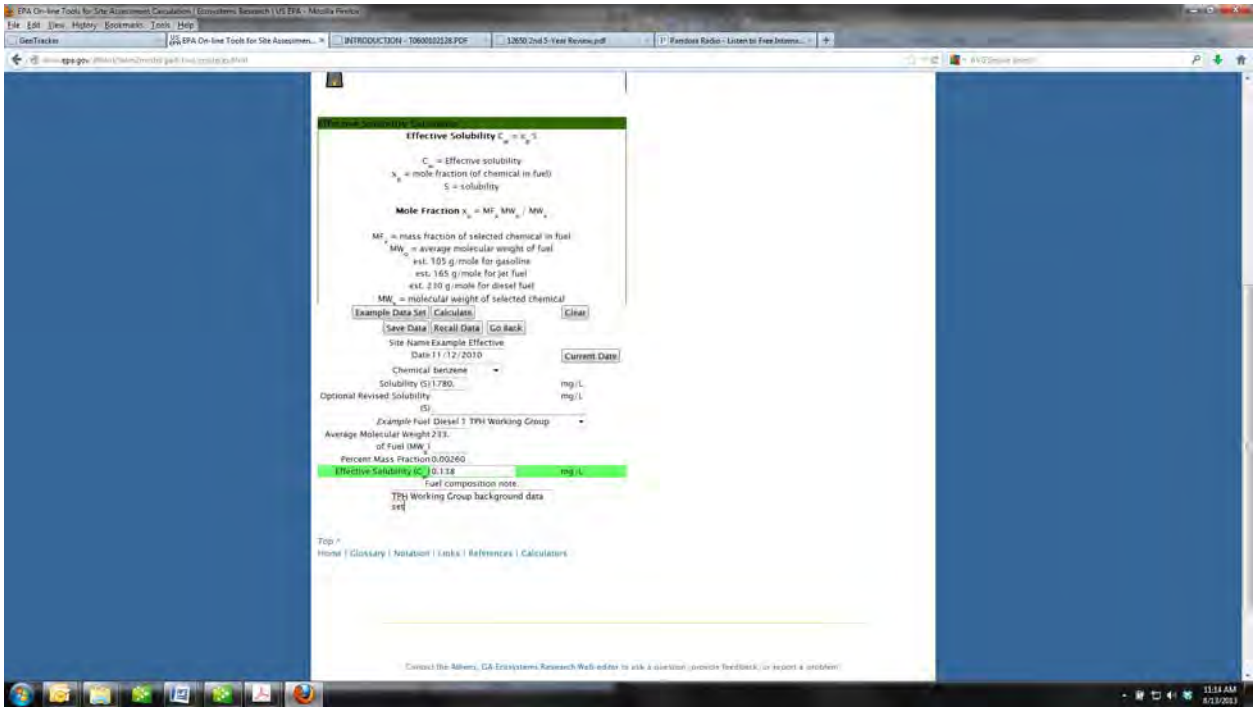
Thirty six soil borings and five monitoring wells were installed at the Site from October 1999 to November 2010. The only borings or monitoring wells where free product was observed were borings BX-1 and BX-3, which were drilled on November 12, 2010. These borings were located adjacent to the former gasoline UST excavation.

Matriks Corporation reported free product from 13 to 15 fbg in the boring log for BX-1. The soil sample from 6 fbg in this boring yielded TPH-d at 100 mg/kg TPH-g at 860 mg/kg and benzene at 0.27 mg/kg. The groundwater sample from this boring yielded TPH-d at 360,000 ug/l, TPH-g at 40,000 ug/l and benzene at 6,300 ug/L. The effective solubility of benzene in water (diesel fuel source) is 138 ug/l (see U.S. EPA effective solubility model calculations below). Based on the effective solubility calculations for benzene, free product was present in the water sample from BX-1.

Matriks Corporation reported free product from 6 to 8 fbg in the boring log for BX-3. The soil sample from 5.5 fbg yielded TPH-d at 4,400 mg/kg, TPH-g at 26,000 mg/kg and benzene at 54 mg/kg. The groundwater sample from this boring yielded TPH-d at 370,000 ug/l, TPH-g at

120,000 ug/l and benzene at 1,400 ug/l. Based on the effective solubility calculations for benzene, free product was present in the water sample from BX-3.

Matrix Corporation reported a "strong petroleum odor" at 9 to 10 fbg in the boring log for BX-4. The soil sample from 10 fbg yielded TPH-d at 170 mg/kg, TPH-g at 5,000 mg/kg and benzene at 3.8 mg/kg. The groundwater sample from this boring yielded TPH-d at 1,100,000 ug/l, TPH-g at 81,000 ug/l and benzene at 950 ug/l. Based on the effective solubility calculations for benzene, free product was present in the water sample from BX-4.



All three boring where free product was detected were located within 15 feet of the former gasoline UST excavation (i.e., source area). It is interesting to note that TPH-d concentrations are much higher than TPH-g concentrations in groundwater samples from all three borings.

Monitoring well MW-3 is located within 15 feet of the former gasoline UST excavation. This well was installed by Herschy Environmental on October 11, 1999. Free product was not observed in this well. No soil sample was collected from this boring prior to constructing the monitoring well. A groundwater sample was collected from this well on November 6, 1999 yielded TPH-d at 870 ug/l, TPH-g at 5,800 ug/l and benzene at 480 ug/l. Based on the effective solubility of benzene, free product could have been present in this well on October 11, 1999. An examination of the historical concentration of benzene concentrations in MW-3 summarized in **Table 4** shows that benzene concentrations in MW-3 have been less than the effective solubility for benzene (138 ug/l) since September 30, 2010. It is worth noting that the last time free product or sheen was observed in MW-3 was December 15, 2011, however a strong petroleum odor was observed during the most recent monitoring event on May 16, 2012.

We conclude that the presence of free product and the overall decrease in petroleum hydrocarbon concentrations has been abated through natural attenuation. No free product has been observed

in Site monitoring wells since December 15, 2011 and it is likely that free product in borings BX-1, BX-3 and BX-4 have abated through the natural attenuation process.

2.5 Conceptual Site Model Prepared

This Conceptual Site Model (CSM) is submitted in compliance with guidelines established in Chapter 14 of the California Leaking Underground Fuel Tank Guidance Manual, September 2012 and the Alameda County Low Threat Closure Checklist.

This CSM characterizes the Site in diagrammatic and narrative form to show the possible and confirmed relationships between the source(s) of contamination, pathways and receptors. The supporting data and analyses used to develop this CSM were derived from multiple reports submitted to the Alameda County Environmental Health Department (ACEH) and the San Francisco Bay Regional Water Quality Control Board (RWQCB) from 1998 to 2012.

The objectives of this CSM are:

- To convey an understanding of the origin, nature, and lateral and vertical extent of contamination;
- To identify potential contaminant fate-and-transport processes and pathways;
- To identify potential human and environmental receptors that may be impacted by contamination associated with the Site;
- To guide site investigation activities and identify additional data needed (if any) to draw reasonable conclusions regarding the source(s), pathways, and receptors; and
- To frame the evaluation of risk to human health, safety, and the environment posed by releases from the Site.

The initial sources of contamination were leaking underground storage tanks (USTs): one 10,000 gal UST, one 7,500 gallon UST and one 5,000 gallon UST, all containing gasoline UST and located in the same excavation were the first source area. One 500 gal, located in an excavation next to the service station in the southern portion of the Site was the second source area. Pump dispensers located on a concrete island beneath a canopy in the central portion of the Site were the third source area. The USTs and pump island were removed in May of 1996. A new fueling system with double-wall USTs and piping and a continuous monitoring system were installed at that same time. Documentation of UST removal and remedial activities is contained in the *Tank Closure Report for 1310 Central Avenue, Alameda, CA.,* by Petrotek dated November 7, 1996.

The main contaminants of concern (COCs) are TPH-mo, TPH-d, TPH-g, BTEX and MtBE. These COCs have impacted the soil and groundwater at the Site. The water table beneath the Site is typically between 2 and 7 feet deep and varies seasonally with higher water levels in the wet winter months and lower levels in the dry summer and autumn season.

There was initially a large amount of free product in the UST excavation containing the gasoline USTs. Approximately 600 cubic yards of contaminated soil and 15,000 gallons of contaminated groundwater were removed from the UST excavations. The soil was disposed offsite and the groundwater was treated with granular activated carbon prior to discharge to the sanitary sewer under a permit from EBMUD.

Several phases of site investigation were described previously in Section 1.2.2. Five monitoring wells and 36 soil borings have been installed and sampled. The location of these borings and wells is shown on **Figure 5**.

At this point, the lateral and vertical extent of the hydrocarbon plume from the Site has been delineated.

A Sensitive Receptor Survey was conducted by CES in July 2013. A search of records from the Alameda County Public Works Agency and the California Department of Water Resources found a total of 15 wells within 2,000 feet of the Site. The owner and location of these wells is summarized in **Table 5**. All of these wells are listed as irrigation wells. The closest well is located approximately 1,200 feet east of the Site. The downgradient direction is northeast. There are no downgradient wells within 2,000 feet of the Site. **Figure 6** shows the location of these wells with respect to the Site.

The most likely receptors are workers at the Site and potentially construction workers trenching through or otherwise coming in direct contact with contaminated soil and groundwater at some future time. As demonstrated in the Sensitive Receptor Survey, groundwater in the vicinity of the Site is not currently being used as a drinking water resource. There are no aquatic receptors as the nearest surface water is approximately ½ mile from the Site. The highest hydrocarbons in offsite wells were detected in well MW-5. This well is located within 40 feet of a residence. The most recent hydrocarbon concentrations from this well (May 16, 2012) are compared with groundwater screening levels for evaluation of potential vapor intrusion (Table E-1 of the SFRWQCB ESL manual) in the following table.

Constituent	Concentration in MW-5 on May 16, 2012 (ug/L)	ESL for Groundwater for Evaluation of Potential Soil Vapor Intrusion (ug/L)
TPH-d	350	NE
TPH-g	760	NE
benzene	15	27
toluene	3.1	95,000
ethylbenzene	0.57	310
xylenes	4.3	37,000
MtBE	220	9,900

All hydrocarbon concentrations are below ESLs for evaluation of soil vapor intrusion. Land use at the Site (i.e., gas station) has not changed in the last fifty years and is not likely to change in

the foreseeable future. The consideration of soil vapor exposure at an active gas station site is exempt from evaluation as ambient hydrocarbon vapors from operations at an active service station are likely to be vastly greater than exposures from soil vapors emanating from beneath the service station.

The lateral extent of TPH-g contamination in groundwater is shown on **Figure 7**. The lateral extent of TPH-d contamination in groundwater is shown on **Figure 8** and the lateral extent of benzene contamination in groundwater is shown on **Figure 9**. Elevated concentrations are confined to the areas in the immediate vicinity of the UST excavations (borings BX-1, BX-3 and BX-4). The vertical and lateral extent of TPH-g in groundwater in the north-south direction is shown in the geologic cross-section on **Figure 10**. The vertical and lateral extent of TPH-g in groundwater in the east-west direction is shown in the geologic cross-section on **Figure 11**.

The highest hydrocarbon concentrations in Site monitoring wells are in MW-1, located within 15 feet of the former gasoline USTs, and MW-3, located within 5 feet of the former waste oil UST.

The most recent groundwater sample from MW-3 was collected on May 18, 2012 and yielded TPH-g at 5,300 ug/l and benzene at 41 ug/l. The most recent groundwater sample from MW-1 was collected on this same date and yielded TPH-g at 2,700 ug/l and benzene at 2.2 ug/l. The plume is less than 100 feet long and is thus a Class 1 plume.

The concentration trends of TPH-g, TPH-d and benzene in well MW-1 are shown on **Figure 12**. The concentration trends for these same constituents in well MW-3 are shown on **Figure 13**. These figures clearly show a decreasing trend for all three constituents, indicating that natural attenuation is occurring.

The direction of contaminant transport is northwesterly which is identical to the hydraulic gradient. The potential for buried utility trenches providing preferential pathways for offsite migration of contaminants was discussed in Section 1.1.4.

Figure 14 shows the maximum and most current TPH-g, TPH-d, and benzene concentrations in groundwater. This comparison shows the attenuation of contaminant concentrations over time.

2.6 Secondary Source of Contamination Excavated and Removed

As mentioned previously in Section 1.2.1, approximately 600 tons of hydrocarbon contaminated soil and 1,500 gallons of contaminated groundwater were removed from the former UST excavation in May 1996. A description of the UST removal and remediation activities are included in the *UST Closure Report* submitted by Petrotek in May 1996.

2.7 Soil and Groundwater Samples Tested for MtBE

Soil and groundwater samples were tested for MtBE and current groundwater concentrations are below ESLs or will reach ESLs within a reasonable period of time. The only wells with MtBE concentrations higher that the MtBE ESL (5.0 μg/L) during the most recent monitoring event (May 18, 2012) was MW-5 at 220 μg/L. Well MW-5 has shown a steady decrease in MtBE concentrations since February 6, 2007 when it was 1,600 μg/L. Similar downward trends are

observed in remaining four monitoring wells. Based on these trends, we fully expect MtBE concentrations to continue to drop.

The most recent soil data from the Site were 14 samples collected from four soil borings (BX-1 through BX-4) on November 12, 2010. These borings were located immediately downgradient of the former UST excavation and represent the worst case scenario for this Site. MtBE was not detected in any of these samples.

2.8 Nuisance as Defined by Water Code Section 13050 Does Not Exist at Site

Based on the LTCP Water Code section 13050, the site does not qualify as a water nuisance. Land use at the Site and the surrounding area will remain commercial-residential for the foreseeable future.

3.0 Media Specific Site Closure Criteria

Releases from USTs can impact human health and the environment through contact with any or all of the following contaminated media: groundwater, surface water, soil, and soil vapor. Although this contact can occur through ingestion, dermal contact, or inhalation of the various media, the most common drivers of health risk are ingestion of groundwater from drinking water wells, inhalation of vapors accumulated in buildings, contact with near surface contaminated soil, and inhalation of vapors in the outdoor environment. To simplify the analysis under the Low Threat Underground Storage Tank Case Closure Policy, these media and pathways are evaluated and the most common exposure scenarios are combined into three media-specific criteria:

1. Groundwater
2. Vapor Intrusion to Indoor Air
3. Direct Contact and Outdoor Air Exposure

Each of these media-specific criteria for the Site is discussed below.

3.1 Groundwater

The San Francisco Bay RWQCB evaluated the beneficial uses of groundwater within the East Bay Plain (East Bay Plain Groundwater Basin Beneficial Use Report, SFBRWQCB, June 1999) and stated the following:

> "Within the East Bay Plain, there are groundwater pollution plumes that may warrant less aggressive remediation on a case-by-case basis. In certain cases, aggressive cleanup may not be warranted when the plume is shallow, concentrations are declining and no beneficial uses are threatened. The requirement for aggressive cleanup can pose a serious obstacle to redevelopment of blighted urban areas in the East Bay. This report outlines "basin specific" situations where less aggressive remediation may be warranted. Ultimately, the remedial options that would be part of a less aggressive strategy depend on site specific conditions. However, likely options would include

restricting groundwater remediation to the source area only, allowing monitored natural attenuation, or implementing pump-and-treat solely to limit plume migration."

Based on an analysis of historical groundwater data summarized in **Table 4** and an examination of the lateral extent of contamination shown on **Figures 7, 8 and 9**, and the vertical extent of contamination shown on **Figures 10 and 11**, the contaminant plume is confined to shallow depths and is stable or decreasing in aerial extent. Remedial measures such as the removal of grossly contaminated soil and free product from the water table have been completed.

Based on the Groundwater-Specific Criteria listed in the Low Threat UST Case Closure Policy, the Site meets all four of the characteristics of a Class 2 site in the Low Threat Underground Storage Tank Case Closure Policy in that the following criteria are met:

1. The contaminant plume that exceeds water quality objectives is less than 250 feet in length.
2. Free product has been removed to the maximum extent practicable, may still be present below the Site where the release originated, but does not extend off-site.
3. The plume has been stable or decreasing for a minimum of five years.
4. The nearest existing water supply well is greater than 1,000 feet from the defined plume boundary.

Based on the relatively low concentrations of hydrocarbons in monitoring wells and the fact that the plume has stabilized or is shrinking, the Site qualifies for closure as a Class 2 site.

3.2 Vapor Intrusion to Indoor Air

The Site is an active commercial petroleum fueling facility as meets the requirements for exemption under this media specific criterion.

3.3 Direct Contact and Outdoor Air Exposure

As shown in **Table 3**, hydrocarbon concentrations in all but one of the 65 soil samples collected on November 12, 2010 will have no significant risk of adversely affecting human health (ref: Table 1 of the Low Threat Underground Storage Tank Case Closure Policy). Soil sample BX-3 collected from 5.5 fbg yielded benzene at 54 mg/kg and ethylbenzene at 520 mg/kg. Boring BX-3 was located approximately three feet south of the former UST excavation that was the source area. This area is paved with AC concrete and it is unlikely that benzene or ethylbenzene in outdoor in the vicinity of BX-1 air would pose a risk to human health due to volatilization. It is conceivable that utility or construction workers trenching through this area could be exposed to benzene and ethylbenzene concentrations in excess or health advisories.

We recommend that a deed restriction be recorded with Alameda County that would restrict excavation in this area. A construction or utility company proposing to trench through this area would be required to prepare a site specific health and safety plan and implement administrative and engineering controls to limit worker exposure to contaminants.

4.0 CONCLUSIONS

Based on the data presented in this Request for No Further Action, the Site meets the General and Media Specific Criteria for case closure under the Low Threat Underground Storage Tank Case Closure Policy. The case should be closed given that the recommendations in the following section are followed.

5.0 RECOMMENDATIONS

Per California Health and Safety Code Section 25296.20(a) and Division 7, the Porter Cologne Water Quality Control Act under AB 681, we recommend notification of all current fee title holders within 200 feet of the Site be notified that this Site is being considered for case closure. The RWQCB will take reasonable steps necessary to accommodate responsible landowner participation in the site closure process and will consider all input and recommendations from any responsible landowner wishing to participate.

Upon written certification that all appropriate notifications have been made, the RWQCB may wait thirty days before making a final determination or issuing a closure letter to allow the fee title holders the opportunity to comment. After the 30-day public comment period has expired, we recommend that the RWQCB grant conditional closure to this LUST case contingent on the proper destruction of seventeen monitoring wells and ten ozone sparge wells associated with this Site. Well destruction permits will be obtained from the Alameda County Department of Public Works. The wells will be drilled out to their full depth and grouted with neat cement. A Well Closure Report documenting the proper destruction of all monitoring and sparge wells will be prepared by CES and submitted to the RWQCB.

Once the RWQCB reviews the Well Closure Report, we recommend that a No Further Action (NFA) letter be issued to the Responsible Party.

TABLES

Table 1. Well Construction Details
Alameda Gas, 1310 Cental Ave., Alameda

Well ID	Date Installed	Total Depth (feet bg)	Screened Interval (feet bg)	Water-Bearing Zone	Screen Slot Size (inches)	Filter Pack Interval (feet bg)	Bentonite Interval (feet bg)	Grout Interval (feet bg)	TOC Elevation (feet amsl)	Northing Coordinates (feet)	Westing Coordinates (feet)
MW-1	10/11/99	18	17.35-2.5	Silty Sand	0.02	18-1.5	1.5-0.5	0.5-0	29.18	15.20394	46.13606
MW-2	10/11/99	18	18-4	Silty Sand	0.02	18-3	3-1.5	1.5-0	29.55	14.93558	45.97882
MW-3	10/11/99	20	19-4	Silty Sand	0.02	20-3	3-1.5	1.5-0	27.74	15.28672	47.24157
MW-4	04/03/06	16	15-5	Sand-Clayey Sand	0.02	15-4.5	4.5-4	4-0.5	26.23	17.12115	48.05243
MW-5	04/04/06	17	15-5	Sand-Clayey Sand	0.02	15-4.5	4.5-4	4-0.5	26.78	16.21022	47.48996

Table 2. Historical Groundwater Elevations
Alameda Gas, 1310 Central Avenue, Alameda

Well ID	Date	Top of Casing Elevation (msl)	Depth to Water (feet)	Groundwater Elevation
MW-1	11/06/99	26.85	5.16	21.69
	05/16/00		3.24	23.61
	08/03/00		4.15	22.70
	12/05/00		4.90	21.95
	03/05/01		3.04	23.81
	06/04/01		4.01	22.84
	06/05/02		3.73	23.12
	09/09/02		5.06	21.79
	12/19/02		4.09	22.76
	03/10/03		3.50	23.35
	06/03/03		3.66	23.19
	09/19/03		4.91	21.94
	12/22/03		4.30	22.55
	03/12/04		2.93	23.92
	06/11/04		4.23	22.62
	09/13/04		5.02	21.83
	12/16/04		3.76	23.09
	03/21/05		2.81	24.04
	06/23/05		3.66	23.19
	09/30/05		4.55	22.30
	12/08/05		4.21	22.64
	03/01/06		2.90	23.95
	05/25/06	29.18	2.84	26.34
	08/10/06		4.35	24.83
	11/21/06		4.22	24.96
	02/06/07		4.39	24.79
	05/08/07		3.88	25.30
	08/06/07		5.02	24.16
	12/26/07		4.87	24.31
	06/28/08		4.77	24.41
	09/27/08		6.29	22.89
	12/30/08		6.04	23.14
	03/28/09		3.78	25.40
	09/12/09		6.59	22.59
	03/30/10		3.52	25.66
	09/30/10		5.61	23.57
	01/20/11		3.61	25.57
	12/15/11		5.12	24.06
	03/29/12		3.80	25.38

Table 2. Historical Groundwater Elevations
Alameda Gas, 1310 Central Avenue, Alameda

Well ID	Date	Top of Casing Elevation (msl)	Depth to Water (feet)	Groundwater Elevation
MW-2	11/06/99	27.18	5.56	21.62
	05/16/00		3.54	23.64
	08/03/00		4.44	22.74
	12/05/00		5.24	21.94
	03/05/01		3.28	23.90
	06/04/01		4.33	22.85
	06/05/02		3.98	23.20
	09/09/02		5.34	21.84
	12/19/02		4.33	22.85
	03/10/03		3.58	23.60
	06/03/03		3.87	23.31
	09/19/03		5.24	21.94
	12/22/03		4.47	22.71
	03/12/04		3.40	23.78
	06/11/04		4.51	22.67
	09/13/04		5.35	21.83
	12/16/04		4.09	23.09
	03/21/05		3.01	24.17
	06/23/05		3.91	23.27
	09/30/05		4.86	22.32
	12/08/05		4.49	22.69
	03/01/06		3.09	24.09
	05/25/06	29.55	3.16	26.39
	08/10/06		4.98	24.57
	11/21/06		4.81	24.74
	02/06/07		4.37	25.18
	05/08/07		4.12	25.43
	08/06/07		5.36	24.19
	12/26/07		5.03	24.52
	06/28/08		5.06	24.49
	09/27/08		6.64	22.91
	12/30/08		6.28	23.27
	03/28/09		4.03	25.52
	09/12/09		6.24	23.31
	03/30/10		3.80	25.75
	09/30/10		6.00	23.55
	01/20/11		4.17	25.38
	12/15/11		5.46	24.09
	03/29/12		4.00	25.55

Table 2. Historical Groundwater Elevations
Alameda Gas, 1310 Central Avenue, Alameda

Well ID	Date	Top of Casing Elevation (msl)	Depth to Water (feet)	Groundwater Elevation
MW-3	11/06/99	25.3	4.02	21.28
	05/16/00		2.06	23.24
	08/03/00		3.20	22.10
	12/05/00		3.71	21.59
	03/05/01		1.90	23.40
	06/04/01		2.72	22.58
	06/05/02		2.75	22.55
	09/09/02		3.88	21.42
	12/19/02		2.79	22.51
	03/10/03		2.36	22.94
	06/03/03		2.65	22.65
	09/19/03		3.15	22.15
	12/22/03		2.83	22.47
	03/12/04		2.00	23.30
	06/11/04		3.11	22.19
	09/13/04		3.90	21.40
	12/16/04		2.89	22.41
	03/21/05		1.93	23.37
	06/23/05		2.69	22.61
	09/30/05		4.54	20.76
	12/08/05		3.05	22.25
	03/01/06		1.95	23.35
	05/25/06	27.74	2.11	25.63
	08/10/06		3.25	24.49
	11/21/06		3.35	24.39
	02/06/07		3.34	24.40
	05/08/07		3.53	24.21
	08/06/07		3.91	23.83
	12/26/07		3.57	24.17
	06/28/08		3.66	24.08
	09/27/08		4.98	22.76
	12/30/08		4.63	23.11
	03/28/09		2.73	25.01
	09/12/09		4.80	22.94
	03/30/10		2.62	25.12
	09/30/10		4.38	23.36
	01/20/11		2.58	25.16
	12/15/11		3.93	23.81
	03/29/12		2.35	25.39

Table 2. Historical Groundwater Elevations
Alameda Gas, 1310 Central Avenue, Alameda

Well ID	Date	Top of Casing Elevation (msl)	Depth to Water (feet)	Groundwater Elevation
MW-4	05/25/06	26.23	2.54	23.69
	08/10/06		4.65	21.58
	11/21/06		4.63	21.60
	02/06/07		3.87	22.36
	05/08/07		4.21	22.02
	08/06/07		4.54	21.69
	12/26/07		2.90	23.33
	06/28/08		3.02	23.21
	09/27/08		4.78	21.45
	12/30/08		3.91	22.32
	03/28/09		2.50	23.73
	09/12/09		4.93	21.30
	03/30/10		3.43	22.80
	09/30/10		3.79	22.44
	01/20/11		2.19	24.04
	12/15/11		3.64	22.59
	03/29/12		2.35	23.88
MW-5	05/25/06	26.78	2.60	24.18
	08/10/06		3.40	23.38
	11/21/06		3.27	23.51
	02/06/07		3.10	23.68
	05/08/07		3.00	23.78
	08/06/07		3.79	22.99
	12/26/07		3.38	23.40
	06/28/08		3.70	23.08
	09/27/08		4.65	22.13
	12/30/08		4.04	22.74
	03/28/09		2.85	23.93
	09/12/09		4.48	22.30
	03/30/10		2.80	23.98
	09/30/10		4.11	22.67
	01/20/11		2.69	24.09
	12/15/11		3.67	23.11
	03/29/12		2.49	24.29

Notes: All measurements are in feet. DTW = Depth to water below top of PVC casing.
TOC = Top of casing. ELEV = Elevation above mean sea level.
Wells resurveyed on April 27, 2006

Table 3. Historical Soil Analytical Results
Alameda Gas, 1310 Central Avenue, Alameda

Boring	Depth(ft)/Location	Date	TPH-g	TPH-d	benzene	toluene	ethyl-benzene	xylenes	MtBE	tAME	tBA	Other Oxygenates	Iron
1	Fuel Tank Ex.	05/02/96	5,000	NA	31	250	74	560	<5.0	NA	NA	NA	NA
2	Fuel Tank Ex.	05/02/96	2,900	NA	<2.0	16	8.3	190	<5.0	NA	NA	NA	NA
3	Fuel Tank Ex.	05/02/96	4,400	NA	25	190	75	400	<5.0	NA	NA	NA	NA
4	Fuel Tank Ex.	05/02/96	3,600	NA	2.6	34	21	250	<5.0	NA	NA	NA	NA
5	N. Waste Oil Tank	05/02/96	<5.0	<200	<0.05	<0.05	<0.05	<0.05	<0.10	NA	NA	NA	NA
6	Waste Oil Tank	05/08/96	470	<1,000	<0.25	<0.25	0.3	0.85	<0.50	NA	NA	NA	NA
D1	Beneath Dispenser	05/09/96	6,800	NA	63	370	120	680	<40	NA	NA	NA	NA
D2	Beneath Dispenser	05/09/96	3,700	NA	<10	20	9.7	280	<20	NA	NA	NA	NA
D3	Beneath Dispenser	05/09/96	1,500	NA	<4.0	<4.0	<4.0	20	<8.0	NA	NA	NA	NA
D5	Beneath Dispenser	05/09/96	2,600	NA	<8.0	28	12	200	<16	NA	NA	NA	NA
D6	Beneath Dispenser	05/09/96	<5.0	NA	<0.05	<0.05	<0.05	<0.05	<0.10	NA	NA	NA	NA
T1	Unknown Trench	05/09/96	2,100	NA	<4.0	5.7	<4.0	140	<8.0	NA	NA	NA	NA
T2	Unknown Trench	05/09/96	1,400	NA	<2.0	5.1	<2.0	20	<5.0	NA	NA	NA	NA
BH-1 4'	4	11/12/98	810	<1	27	170	110	560	<0.02	NA	NA	NA	NA
BH-1 8'	8	11/12/98	1,100	<1	9.8	33	11	64	<0.02	NA	NA	NA	NA
BH-2 4'	4	11/12/98	5,900	<1	2.9	76	57	410	1.8	NA	NA	NA	NA
BH-3 4'	4	11/12/98	570	<1	<0.005	0.065	0.073	0.38	<0.02	NA	NA	NA	NA
BH-4 3'	3	11/12/98	4,600	<1	<0.005	13	47	310	<0.02	NA	NA	NA	NA
BH-5 4'	4	11/12/98	3,700	<1	<0.005	3.2	29	190	<0.02	NA	NA	NA	NA
BH-6 4'	4	11/11/98	<0.05	<1	<0.005	<0.005	<0.005	<0.015	<0.02	NA	NA	NA	NA
BH-7 4'	4	11/12/98	2,600	<1	<0.005	<0.005	6.9	68	<0.02	NA	NA	NA	NA
BH-8 6'	6	11/11/98	270	<1	0.18	0.11	0.45	1.2	<0.02	NA	NA	NA	NA
BH-8.1 5'	5	11/11/98	<0.05	<1	<0.005	0.008	<0.005	<0.015	<0.02	NA	NA	NA	NA
BH-9 5'	5	11/11/98	<0.05	<1	<0.005	0.02	<0.005	<0.015	<0.02	NA	NA	NA	NA
BH-10 8'	8	11/11/98	250	300	<0.005	<0.005	0.19	1.4	<0.02	NA	NA	NA	NA
BH-11 5'	5	11/11/98	<0.05	<1	<0.005	<0.005	<0.005	<0.015	<0.02	NA	NA	NA	NA
BH-11.1 7	7	11/11/98	<0.05	<1	<0.005	<0.005	<0.005	<0.015	<0.02	NA	NA	NA	NA
BH-12 5'	5	11/11/98	<0.05	<1	<0.005	<0.005	<0.005	<0.015	<0.02	NA	NA	NA	NA
BH-13 5'	5	11/11/98	<0.05	<1	<0.005	<0.005	<0.005	<0.015	<0.02	NA	NA	NA	NA
BH-14 5'	5	11/11/98	<0.05	<1	<0.005	<0.005	<0.005	<0.015	<0.02	NA	NA	NA	NA
MW-1	4	10/11/99	<1.0	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.010	NA	NA	NA	NA
MW-2	5	10/11/99	<1.0	6.8	<0.0050	<0.0050	<0.0050	<0.0050	<0.010	NA	NA	NA	NA
BH-A	3.5	07/28/00	<1.0	<1.0	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	NA
BH-B	2.5	07/28/00	<1.0	<1.0	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	NA
BH-C	3	07/28/00	<1.0	<1.0	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	NA
BH-D	3	07/28/00	<1.0	<1.0	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	NA
BH-E	3	07/28/00	<1.0	<1.0	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	NA
BH-F	3	07/28/00	<1.0	<1.0	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	NA
BH-G	3	07/28/00	<1.0	<1.0	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	NA
BH-H	3	07/28/00	<1.0	<1.0	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	NA
BH-I	3	07/28/00	<1.0	<1.0	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	NA
BH-J	3	07/28/00	<1.0	<1.0	<0.005	<0.005	<0.005	<0.005	0.006	<0.005	<0.005	<0.005	NA
BH-K	3	07/28/00	<1.0	<1.0	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	NA
BH-L	3.5	07/28/00	<1.0	<1.0	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	NA
BH-M	2.5	01/14/04	<1.0	68	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	NA
BH-N	2.5	01/14/04	<1.0	7.2	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	NA
BH-O	2	01/14/04	<1.0	2.2	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	NA
BH-P	2	01/14/04	<1.0	4.9	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	NA
BH-Q	2	04/03/06	<1.0	11	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	NA
BH-R	2	04/03/06	<1.0	<1.0	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	NA

Table 3. Historical Soil Analytical Results
Alameda Gas, 1310 Central Avenue, Alameda

Boring	Depth(ft)/Location	Date	TPH-g	TPH-d	benzene	toluene	ethyl-benzene	xylenes	MtBE	tAME	tBA	Other Oxygenates	Iron
MW-4	2	04/03/06	<1.0	<1.0	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	NA
MW-5	2	04/03/06	<1.0	1.7	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	NA
BX-1	6	11/12/10	860	100	2.5	1.1	11	2.2	<0.20	<0.20	<2.0	<0.20[+]	26000
BX-1	10	11/12/10	920	52	3.9	<1.0	5.3	8.5	<0.20	<0.20	<2.0	<0.20[+]	NA
BX-1	15	11/12/10	56	10	0.27	0.042	0.37	0.34	<0.050	<0.050	<0.50	<0.050[+]	NA
BX-1	20	11/12/10	6	<1.0	0.02	0.0065	0.041	0.032	0.007	<0.005	<0.05	<0.005[+]	NA
BX-2	5	11/12/10	<1.0	<1.0	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05	<0.005[+]	NA
BX-2	10	11/12/10	<1.0	<1.0	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05	<0.005[+]	9400
BX-2	14	11/12/10	<1.0	<1.0	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05	<0.005[+]	NA
BX-3	5.5	11/12/10	26,000	4400	54	630	520	3400	<2.0	<2.0	<20	<2.0[+]	NA
BX-3	12	11/12/10	1	<1.0	<0.005	0.012	0.014	0.084	<0.005	<0.005	<0.05	<0.005[+]	NA
BX-3	15	11/12/10	12	<1.0	0.0068	0.23	0.19	1	<0.005	<0.005	<0.05	<0.005[+]	12000
BX-4	5	11/12/10	5,000	730	3.8	15	48	54	<0.50	<0.50	<5.0	<0.50[+]	NA
BX-4	10	11/12/10	1,400	170	<0.50	2.6	14	38	<0.20	<0.20	<2.0	<0.20[+]	18000
BX-4	15	11/12/10	1,100	53	<1.0	1.3	3	5.8	<0.20	<0.20	<2.0	<0.20[+]	NA
BX-4	20	11/12/10	1,300	73	<0.17	1.7	10	30	<0.20	<0.20	<2.0	<0.20[+]	NA

All Concentrations are in mg/kg

Table 4. Historical Groundwater Analytical Results
Alameda Gas, 1310 Central Avenue, Alameda

Well ID	Date	TPH-g	TPH-d	benzene	toluene	ethyl-benzene	xylenes	MtBE	tAME	tBA	Other Oxygenates
MW-1	11/06/99	**5,700**	**8,700**	**170**	**59**	22	**85**	**20,000**	NA	NA	NA
	05/16/00	**20,000**	<7,500	**38**	6.3	**740**	**1,600**	<5.0	<5.0	<50	<5.0
	08/03/00	**20,000**	<6,000	**56**	9.7	**920**	**1,600**	<0.5	<0.5	<50	<0.5
	12/05/00	**31,000**	<4,000	**64**	27	**820**	**2,200**	<10	<5.0	<50	<5.0
	03/05/01	**20,000**	<4,000	**19**	<5.0	**480**	**870**	<5	<5.0	<50	<5.0
	06/04/01	**23,000**	<7,000	**58**	50	**710**	**2,100**	**5.1**	<5.0	<50	<5.0
	06/05/02	**7,400**	<1,500	**9.3**	6.7	**180**	**230**	<1.0	<1.0	<10	<1.0
	09/09/02	**8,300**	<3500	**32**	20	**390**	**670**	<2.0	<2.0	<20	<2.0
	12/19/02	**5,100**	NS	**7.9**	2.5	**56**	**93**	<1.0	<1.0	<10	<1.0
	03/10/03	**2,000**	<2,000	**3.4**	2.9	**80**	**98**	<0.5	<0.5	<5.0	<0.5
	06/03/03	**7,300**	<4,000	**6.8**	9.9	**300**	**1,000**	2.3	<0.5	<5.0	<0.5
	09/19/03	**9,000**	<3,000	**26**	22	**420**	**1,200**	4.5	<1.5	<20	<1.5
	12/22/03	**4,300**	<2,000	**12**	6.7	**200**	**290**	**9.1**	<1.0	<10	<1.0
	03/12/04	**7,000**	<3,000	**8.3**	8.2	**250**	**760**	3.9	<2.0	<20	<2.0
	06/11/04	**13,000**	<4,000	**26**	27	**530**	**1,700**	<2.5	<2.5	<15	<2.5
	09/13/04	**17,000**	<4,000	**37**	**42**	**840**	**2,000**	<5.0	<5.0	<50	<5.0
	12/16/04	**1,800**	<1,000	**5.9**	1.9	**100**	**35**	**16**	<0.5	<5.0	<0.5
	03/21/05	**7,500**	<3,000	**3.4**	4.2	**290**	**760**	<1.5	<1.5	<20	<1.5
	06/23/05	**11,000**	<8,000	**15**	11	**370**	**910**	2.4	<1.5	<7.0	<1.5
	09/30/05	**9,800**	<4,000	**32**	25	**540**	**680**	1.6	<1.5	<7.0	<1.5
	12/08/05	**9,200**	<4,000	**27**	21	**500**	**490**	2.2	<1.5	<7.0	<1.5
	03/01/06	**6,500**	<4,000	**8.1**	9.4	**370**	**660**	**18**	<1.5	<6.0	<1.5
	05/25/06	**10,000**	<3,000	**19**	14	**900**	**620**	<1.5	<1.5	<7.0	<1.5
	08/10/06	**9,800**	<1,500	**16**	8.1	**640**	**180**	<1.5	<1.5	<7.0	<1.5
	11/21/06	**2,900**	<1,000	**7.8**	2.5	**160**	12	2.5	2.5	<5.0	<0.5
	02/06/07	**4,600**	<1,500	**9.4**	6	**380**	**220**	1	<0.50	<5.0	<0.50
	05/08/07	**3,700**	<800	**10**	4.6	**320**	**86**	1.5	<0.50	<5.0	<0.50
	08/06/07	**8,200**	<2,000	**14**	8.8	**730**	**180**	<0.50	<0.50	<5.0	<0.50
	12/26/07	**1,200**	<300	**2.3**	1.1	**89**	21	4.8	<0.50	<5.0	<0.50
	03/31/08	**2,000**	<800	**2.2**	1.6	**99**	**75**	1.8	<0.50	<5.0	<0.50
	06/28/08	**8,400**	**3900***	**18**	26	**670**	**1,100**	<2.5	<2.5	<10	<2.5
	09/27/08	**12,000**	**4600***	**32**	**49**	**1,200**	**680**	<25	<25	<100	<25
	12/30/08	**5,300**	**3,700**	**12**	31	**300**	**27**	**7.1**	<5.0	<20	<5.0
	03/28/09	**1,900**	**920***	<1.7	<1.7	**77**	**58**	**22**	<1.7	<6.7	<1.7
	09/12/09	**7,800**	**9,400**	**34**	**110**	**690**	**200**	3.0	<0.5	140	<0.5
	03/30/10	**1,700**	**700***	**2.1**	14	**40**	9.5	**14**	<0.5	7.8	<0.5
	09/30/10	**2,300**	**6,500***	**8.5**	23	**150**	**29**	4	<0.5	2.2	<0.5
	01/20/11	**1,100**	**590**	0.85	6.6	**34**	**42**	**7.7**	<0.5	<2.0	<0.5
	12/15/11	**3,000**	**1,700**	**12**	16	**230**	**120**	**<50**	NA	NA	NA
	03/29/12	**1,500**	**1,300**	**2.5**	17	20	17	<10	NA	NA	NA
	05/18/12	**2,700**	**1,500**	**2.2**	**18**	**41**	**41**	ND	NA	NA	NA

Table 4. Historical Groundwater Analytical Results
Alameda Gas, 1310 Central Avenue, Alameda

Well ID	Date	TPH-g	TPH-d	benzene	toluene	ethyl-benzene	xylenes	MtBE	tAME	tBA	Other Oxygenates
MW-2	11/06/99	**6,000**	70	**1,300**	92	50	400	**6,800**	NA	NA	NA
	05/16/00	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0	<0.5
	08/03/00	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0	<0.5
	12/05/00	<50	**1,400**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0	<0.5
	03/05/01	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0	<0.5
	06/04/01	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0	<0.5
	06/05/02	<50	**2,300**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0	<0.5
	09/09/02	<50	**1,300**	<0.5	<0.5	<0.5	<0.5	1.4	<0.5	<5.0	<0.5
	12/19/02	<50	--	<0.5	<0.5	<0.5	<0.5	**16**	<0.5	<5.0	<0.5
	03/10/03	<50	**3,000**	<0.5	<0.5	<0.5	<0.5	1	<0.5	<5.0	<0.5
	06/03/03	<50	**700**	<0.5	<0.5	<0.5	<0.5	2	<0.5	<5.0	<0.5
	09/19/03	<50	**1,400**	<0.5	<0.5	<0.5	<0.5	4.7	<0.5	<5.0	<0.5
	12/22/03	<50	**1,000**	<0.5	<0.5	<0.5	<0.5	**39**	<0.5	<5.0	<0.5
	03/12/04	<50	**250**	<0.5	<0.5	<0.5	<0.5	2.1	<0.5	<5.0	<0.5
	06/11/04	<50	**920**	<0.5	<0.5	<0.5	<0.5	0.75	<0.5	<5.0	<0.5
	09/13/04	<50	**140**	<0.5	<0.5	<0.5	<0.5	1.5	<0.5	<5.0	<0.5
	12/16/04	<50	**150**	<0.5	<0.5	<0.5	<0.5	**12**	<0.5	<5.0	<0.5
	03/21/05	<50	**130**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0	<0.5
	06/23/05	<50	**1,100**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0	<0.5
	09/30/05	<50	**300**	<0.5	<0.5	<0.5	<0.5	1.6	<0.5	<5.0	<0.5
	12/08/05	<50	**600**	<0.5	<0.5	<0.5	<0.5	1.9	<0.5	<5.0	<0.5
	03/01/06	<50	**920**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0	<0.5
	05/25/06	<50	**160**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0	<0.5
	08/10/06	<50	**870**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0	<0.5
	11/21/06	<50	**130**	<0.5	<0.5	<0.5	<0.5	1.8	<0.5	<5.0	<0.5
	02/06/07	<50	**450**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0	<0.5
	05/08/07	<50	**160**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0	<0.5
	08/06/07	<50	**180**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0	<0.5
	12/26/07	<50	**190**	<0.5	<0.5	<0.5	<0.5	2.9	<0.5	<5.0	<0.5
	03/31/08	Inaccessable Not Sampled									
	06/28/08	<50	**180**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0	<2.0
	09/27/08	<50	78	<0.5	<0.5	<0.5	<0.5	**7**	<0.5	<2.0	<0.5
	12/30/08	<50	**100**	<0.5	<0.5	<0.5	<0.5	**13**	<0.5	<0.5	<0.5
	03/28/09	<50	60	<0.5	<0.5	<0.5	<0.5	**5.4**	<0.5	<0.5	<0.5
	09/12/09	<50	91	<0.5	<0.5	<0.5	<0.5	4.7	<0.5	<2.0	<0.5
	03/30/10	<50	**150**	<0.5	<0.5	<0.5	<0.5	2.5	<0.5	<2.0	<0.5
	09/30/10	<50	**310**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	<0.5
	01/20/11	<50	90	<0.5	<0.5	<0.5	<0.5	1.4	<0.5	<2.0	<0.5
	12/15/11	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	NA	NA	NA
	03/29/12	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	NA	NA	NA
	05/18/12	<50	94	<0.5	<0.5	<0.5	<0.5	<5.0	NA	NA	NA

Table 4. Historical Groundwater Analytical Results
Alameda Gas, 1310 Central Avenue, Alameda

Well ID	Date	TPH-g	TPH-d	benzene	toluene	ethyl-benzene	xylenes	MtBE	tAME	tBA	Other Oxygenates
MW-3	11/06/99	**43,000**	**870**	**860**	**70**	<0.5	65	**120,000**	NA	NA	NA
	05/16/00	**17,000**	<5,000	**2,800**	**60**	380	190	**990**	9.1	**350**	<5.0
	08/03/00	**16,000**	<2,000	**1,600**	29	210	53	**1,200**	21	**260**	<2.0
	12/05/00	**17,000**	**5800**	**1,700**	**45**	460	240	**1,100**	21	**230**	<5.0
	03/05/01	**29,000**	<1,300	**2,100**	**68**	280	100	**180**	<8.0	<80	<8.0
	06/04/01	**17,000**	<6,000	**2,000**	**56**	340	230	**300**	<10	**130**	<10
	06/05/02	**11,000**	<2,000	**1,600**	**46**	**210**	**47**	**790**	<10	**220**	<10
	09/09/02	**12,000**	<800	**1,400**	**44**	**130**	**27**	**760**	<10	**160**	<5.0
	12/19/02	**10,000**	NS	**740**	32	**180**	**38**	**86**	<5.0	<50	<5.0
	03/10/03	**13,000**	<6,000	**1,200**	**42**	**240**	**35**	**470**	5.3	**140**	<2.5
	06/03/03	**6,500**	<3,000	**750**	21	**46**	15	**1,300**	<50	**280**	<10
	09/19/03	**9,800**	<3,000	**1,500**	38	**170**	**32**	**420**	<10	**150**	<5.0
	12/22/03	**8,800**	<2,000	**1,100**	32	**82**	20	**330**	5.8	**52**	<2.5
	03/12/04	**7,600**	<3,000	**590**	23	**69**	17	**470**	9.2	**63**	<1.5
	06/11/04	**7,800**	<2,000	**840**	19	**58**	15	**710**	12	**140**	<2.5
	09/13/04	**7,500**	<1,500	**840**	17	23	7.8	**730**	15	**93**	<2.5
	12/16/04	**9,300**	<2,000	**1,100**	26	**76**	13	**600**	12	**130**	<2.5
	03/21/05	**11,000**	<3,000	**1,200**	37	**190**	**24**	**460**	9.3	**100**	<2.5
	06/23/05	**9,600**	<4,000	**1,100**	28	**93**	**23**	**370**	8.2	**67**	<1.5
	09/30/05	**9,000**	<3,000	**690**	18	**32**	14	**380**	8.4	**72**	<1.5
	12/08/05	**8,700**	<3,000	**560**	23	**38**	12	**350**	6.9	**82**	<1.5
	03/01/06	**8,400**	<2,000	**410**	24	**42**	13	**360**	8	**58**	<1.5
	05/25/06	**9,900**	<2,000	**630**	25	13	13	**190**	5.3	**59**	<1.5
	08/10/06	**14,000**	<3,000	**690**	**43**	**130**	**26**	**200**	5.4	**70**	<1.5
	11/21/06	**10,000**	<3,000	**580**	37	**96**	**25**	**240**	6.3	**72**	<1.5
	02/06/07	**7,700**	<1,000	**520**	36	**90**	**23**	**260**	7.4	**54**	<1.5
	05/08/07	**4,700**	<800	**150**	0.86	<0.5	<0.5	**170**	5	**52**	<0.5
	08/06/07	**6,000**	<1,000	**240**	26	34	17	**180**	5	**55**	<0.5
	12/26/07	**8,100**	<1,500	**76**	14	17	12	**150**	4.3	**37**	<0.9
	03/31/08	**7,900**	<1,500	**250**	30	**62**	20	**140**	4.5	**47**	<0.90
	06/28/08	**6,400**	**3,100***	**97**	17	19	13	**200**	5.6	**38**	<5.0
	09/27/08	**11,000**	**15,000***	**190**	24	29	16	**160**	<5.0	**40**	<5.0
	12/30/08	**9,100**	**2,300***	**160**	24	**31**	18	**150**	5	**100**	<5.0
	03/28/09	**9,200**	**4,300***	**150**	25	**34**	**22**	**120**	<5.0	**38**	<5.0
	09/12/09	**6,100**	**2,700***	**110**	21	14	18	**170**	<5.0	**38**	<0.5
	03/30/10	**12,000**	**12,000***	**200**	25	**35**	**23**	**96**	<5.0	**58**	<5.0
	09/30/10	**6,300**	**5,100**	**110**	14	6.2	16	**110**	3.8	**16**	<2.5
	01/20/11	**7,700**	**3,500**	**100**	20	20	16	**85**	3.4	**41**	<1.7
	12/15/11	**6,800**	**2,500**	**58**	16	18	12	<150	NA	NA	NA
	03/29/12	**6,900**	**2,500**	**84**	16	14	15	<90	NA	NA	NA
	05/18/12	**5,300**	**2,000**	**41**	21	14	24	ND<80	NA	NA	NA

Table 4. Historical Groundwater Analytical Results
Alameda Gas, 1310 Central Avenue, Alameda

Well ID	Date	TPH-g	TPH-d	benzene	toluene	ethyl-benzene	xylenes	MtBE	tAME	tBA	Other Oxygenates
MW-4	05/25/06	**410**	<80	<2.5	<2.5	<2.5	<2.5	**1800**	28	44	<2.5
	08/10/06	<50	<50	<0.5	<0.5	<0.5	<0.5	1.2	<0.5	<5.0	<0.5
	11/21/06	<50	<50	<0.5	<0.5	<0.5	<0.5	0.59	<0.5	<5.0	<0.5
	02/06/07	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0	<0.5
	05/08/07	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0	<0.5
	08/06/07	<50	<50	<0.5	<0.5	<0.5	<0.5	0.82	<0.5	<5.0	<0.5
	12/26/07	<50	<50	<0.5	<0.5	<0.5	<0.5	1.3	<0.5	<5.0	<0.5
	03/31/08	<50	<50	<0.5	<0.5	<0.5	<0.5	1.4	<0.5	<5.0	<0.5
	06/28/08	<50	88	<0.5	<0.5	<0.5	<0.5	1.1	<0.5	<2.0	<0.5
	09/27/08	<50	<50	<0.5	<0.5	<0.5	<0.5	1.3	<0.5	<5.0	<0.5
	12/30/08	<50	<50	<0.5	<0.5	<0.5	<0.5	1.2	<0.5	<0.5	<0.5
	03/28/09	<50	<50	<0.5	<0.5	<0.5	<0.5	0.9	<0.5	<0.5	<0.5
	09/12/09	<50	**240**	<0.5	<0.5	<0.5	<0.5	1.0	<0.5	<2.0	<0.5
	03/30/10	<50	<50	<0.5	<0.5	<0.5	<0.5	0.58	<0.5	<2.0	<0.5
	09/30/10	<50	<50	<0.5	<0.5	<0.5	<0.5	0.76	<0.5	<2.0	<0.5
	01/20/11	<50	**210**	<0.5	<0.5	<0.5	<0.5	0.70	<0.5	<2.0	<0.5
	12/15/11	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	NA	NA	NA
	03/29/12	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	NA	NA	NA
	05/18/12	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	NA	NA	NA
MW-5	05/25/06	<50	86	<0.5	<0.5	<0.5	<0.5	1.2	<0.5	<5.0	<0.5
	08/10/06	55	<50	<0.5	<0.5	<0.5	<0.5	**1,100**	19	9.1	<0.5
	11/21/06	<250	<50	<2.5	<2.5	<2.5	<2.5	**1,500**	25	**28**	<2.5
	02/06/07	**430**	<50	**6.9**	<2.5	<2.5	<2.5	**1,600**	26	**34**	<2.5
	05/08/07	<250	<50	<2.5	<2.5	<2.5	<2.5	**1,200**	20	**38**	<2.5
	08/06/07	**330**	<80	<2.5	<2.5	<2.5	<2.5	**1,000**	20	**39**	<2.5
	12/26/07	**490**	<50	<2.5	<2.5	<2.5	<2.5	**1,000**	18	**28**	<2.5
	03/31/08	**520**	<100	6.0	1.9	<1.5	2.5	**520**	16	**33**	<1.5
	06/28/08	**510**	**290***	**6.2**	1.0	<0.5	2.3	**550**	11	<40	<10
	09/27/08	**670**	**320***	<17	<17	<17	<17	**650**	<17	**95**	<17
	12/30/08	**210**	**130***	<0.5	0.8	0.99	<0.5	**610**	12	<40	<10
	03/28/09	**200**	**100***	<17	<17	<17	<17	**610**	<17	<67	<17
	09/12/09	**230**	**130***	**1.6**	1.3	<0.5	1.4	**540**	11	<40	<10
	03/30/10	**360**	**170***	**2.0**	1.7	<0.5	1.3	**490**	13	<40	<10
	09/30/10	**710**	**310**	**10**	2.6	<1.0	3.1	**400**	<10	<40	<10
	01/19/11	**340**	**280**	**3.0**	2.0	<0.5	1.2	**450**	<10	**100**	<10
	12/15/11	**180**	87	0.93	0.72	<0.5	0.54	**220**	NA	NA	NA
	03/29/12	**250**	61	**2.2**	1.3	<0.5	0.95	**250**	NA	NA	NA
	05/18/12	**760**	350	15.00	3.10	0.57	4.3	**220**	NA	NA	NA
ESL		100	100	1.0	40	30	20	5	NE	12	NA

Notes:

Units are micrograms per liter (ug/L).

NT analyte not tested

TPH-g total petroleum hydrocarbons as gasoline

TPH-d total petroleum hydrocarbons as diesel

* Laboratory noted that TPH-g range is significant

ESL Environmental Screening Limits

MtBE methyl tert-butyl ether

tAME tert-amyl methyl ether

tBA tert-butanol

Table 5. Wells within 2,000 Feet of the Site
Alameda Gas, 1310 Central Ave., Alameda

Owner Name	Well Address	Type
Arthur and Jane Nealson	1012 Grand St.	Irrigation
Central West Homeowners Association	1401F Cottage St.	Irrigation
Frank Weeder	1236 St. Charles Ave	Irrigation
Grover A Chessmore	1036 San Antonio Ave.	Irrigation
Jeptha and Valerie Boone	1000 Grand St.	Irrigation
Jerome B Healy	1016 Grand St	Irrigation
Jones, Ashley	1040 Fair Oaks Drive	Irrigation
Picetti, Lawrence	920 Centenial Ave	Irrigation
Richard Bartelim	1224 Bay St.	Irrigation
Risling	1261 St. Charles Ave	Irrigation
Wie Lyons	1205 Bay St	Irrigation
Craig Coombs & Tricia Emerson	1193 Sherman Street	Irrigation
Gloria Jackson	1200 San Antonio Ave	Irrigation
James M.R.	1251 Bay ST.	Irrigation
Paul Pederson	1024 Grand ST	Irrigation

Table 6. Mass of Remaining Contaminants in Groundwater and Soil
Alameda Gas, 1310 Central Avenue, Alameda

Top of plume	5
Bottom of plume	20
Porosity	0.3
Liters/ft3	28.317

Areas of Influence Volumes

Well ID	Radius of influence (ft)	Area of Influence (ft^2)	Volume of Influence (ft^3)	Pore Volume (ft^3)	Pore Volume (L)
MW-1	27.99	2.46E+03	4.92E+04	1.48E+04	4.18E+05
MW-2	19.32	1.17E+03	2.34E+04	7.03E+03	1.99E+05
MW-3	47.75	7.16E+03	1.43E+05	4.30E+04	1.22E+06
MW-4	69.26	1.51E+04	3.01E+05	9.04E+04	2.56E+06
MW-5	42.23	5.60E+03	1.12E+05	3.36E+04	9.52E+05

Groundwater Concentrations, May 16, 2012 (µg/L)

Well ID	TPH-g	TPH-d	benzene	toluene	ethyl-benzene	xylenes	MtBE
MW-1	**2,700**	**1,500**	**2.2**	18	41	41	0
MW-2	0	94	0	0	0	0	0
MW-3	**5,300**	**2,000**	**41**	21	14	24	0
MW-4	0	**0**	0	0	0	0	0
MW-5	**760**	**350**	**15.0**	3.1	0.57	4.3	**220**
ESL	100	100	1.0	40	30	20	5

Residual Contaminant Mass in Groundwater May 16, 2012 (ug)

Well ID	TPH-g	TPH-d	benzene	toluene	ethyl-benzene	xylenes	MtBE
MW-1	1.13E+09	6.27E+08	9.20E+05	7.53E+06	1.71E+07	1.71E+07	0.00E+00
MW-2	0.00E+00	1.87E+07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MW-3	6.45E+09	2.43E+09	4.99E+07	2.56E+07	1.70E+07	2.92E+07	0.00E+00
MW-4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MW-5	7.23E+08	3.33E+08	1.43E+07	2.95E+06	5.43E+05	4.09E+06	2.09E+08
Total mass (ug)	8.30E+09	3.41E+09	6.51E+07	3.60E+07	3.47E+07	5.04E+07	2.09E+08
Total mass (kg)	8.30E+00	3.41E+00	6.51E-02	3.60E-02	3.47E-02	5.04E-02	2.09E-01

Table 6. Mass of Remaining Contaminants in Groundwater and Soil
Alameda Gas, 1310 Central Avenue, Alameda

Groundwater Concentrations January 20, 2011 (ug/L)

Well ID	TPH-g	TPH-d	benzene	toluene	ethyl-benzene	xylenes	MtBE
MW-1	**1,100**	**590**	0.85	6.6	**34**	**42**	**7.7**
MW-2	0	90	0	0	0	0	1.4
MW-3	**7,700**	**3500**	**100**	20	20	16	**85**
MW-4	0	**210**	0	0	0	0	0.7
MW-5	**340**	**280**	**3.0**	2.0	0	1.2	**450**
ESL	100	100	1.0	40	30	20	5.0

Residual Mass in Groundwater January 20, 2011 (ug)

Well ID	TPH-g	TPH-d	benzene	toluene	ethyl - benzene	xylenes	MtBE
MW-1	4.60E+08	2.47E+08	3.55E+05	2.76E+06	1.42E+07	1.76E+07	3.22E+06
MW-2	0.00E+00	1.79E+07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.79E+05
MW-3	9.37E+09	4.26E+09	1.22E+08	2.43E+07	2.43E+07	1.95E+07	1.03E+08
MW-4	0.00E+00	5.38E+08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.79E+06
MW-5	3.24E+08	2.67E+08	2.86E+06	1.90E+06	0.00E+00	1.14E+06	4.28E+08
Total mass (ug)	1.02E+10	5.33E+09	1.25E+08	2.90E+07	3.86E+07	3.82E+07	5.37E+08
Total mass (kg)	1.02E+04	5.33E+03	1.25E+02	2.90E+01	3.86E+01	3.82E+01	5.37E+02

Residual Mass Ratio May 2012/January 2011

Date Ratio	TPH-g	TPH-d	benzene	toluene	ethyl - benzene	xylenes	MtBE
2012/2011	8.18E-04	6.41E-04	5.21E-04	1.24E-03	9.01E-04	1.32E-03	3.90E-04

Table 6. Mass of Remaining Contaminants in Groundwater and Soil
Alameda Gas, 1310 Central Avenue, Alameda

Soil Mass (tons)	587
Soil Volume (c. yard deck)	600
Soil Volume (c. yard ground)	540
Soil Density ton/cubic yd	1.087037
Soil Density kg/yd	988.2155
Soil Density kg/L	1.292545

Areas of influence/Volumes

Boring ID	Radius of influence (ft)	Area of Influence (ft^2)	Volume of Influence (ft^3)	Pore Volume (ft^3)	Soil Volume (ft^3)	Soil Volume (L)	Soil Mass (kg)
BX-1	7.53	1.78E+02	2.67E+03	8.02E+02	1.87E+03	5.30E+04	6.85E+04
BX-2	9.78	3.00E+02	4.51E+03	1.35E+03	3.16E+03	8.93E+04	1.15E+05
BX-3	17.659	9.80E+02	1.47E+04	4.41E+03	1.03E+04	2.91E+05	3.76E+05
BX-4	7.93	1.98E+02	2.96E+03	8.89E+02	2.07E+03	5.87E+04	7.59E+04

Soil Concentrations (5-10 fbg) November 12, 2010

Boring ID	TPH-g	TPH-d	benzene	toluene	ethyl-benzene	xylenes	MtBE	tAME	tBA	Other Oxygenates
BX-1	860	100	2.5	1.1	11	2.2	0.2	0.2	2	0.2
BX-2	1	1	0.005	0.005	0.005	0.005	0.005	0.005	0.05	0.005
BX-3	26,000	4,400	54	630	520	3,400	2	2	20	2
BX-4	5,000	730	3.8	15	48	54	0.5	0.5	5	0.5

Soil Concentrations (10-15 fbg) November 12, 2010

Boring ID	TPH-g	TPH-d	benzene	toluene	ethyl-benzene	xylenes	MtBE	tAME	tBA	Other Oxygenates
BX-1	920	52	3.9	1	5.3	8.5	0.2	0.2	2.0	0.2
BX-2	1.0	1.0	0.005	0.005	0.005	0.005	0.005	0.005	0.05	0.005
BX-3	1.2	1.0	0.005	0.012	0.014	0.084	0.005	0.005	0.05	0.005
BX-4	1,400	170	0.5	2.6	14	38	0.2	0.2	2.0	0.2

Soil Concentrations (15-20 fbg) November 12, 2010

Boring ID	TPH-g	TPH-d	benzene	toluene	ethyl-benzene	xylenes	MtBE	tAME	tBA	Other Oxygenates
BX-1	56	10	0.27	0.042	0.37	0.34	0.05	0.05	0.5	0.05
BX-2	1.0	1.0	0.005	0.005	0.005	0.005	0.005	0.005	0.05	0.005
BX-3	12	1.0	0.0068	0.23	0.19	1.0	0.005	0.005	0.05	0.005
BX-4	1,100	53	1.0	1.3	3.0	5.8	0.2	0.2	2.0	0.2

Table 6. Mass of Remaining Contaminants in Groundwater and Soil
Alameda Gas, 1310 Central Avenue, Alameda

Residual Mass in Soil (5-10 fbg) November 12, 2010 (mg)

Boring ID	TPH-g	TPH-d	benzene	toluene	ethyl-benzene	xylenes	MtBE	tAME	tBA	Other Oxygenates
BX-1	5.89E+07	6.85E+06	1.71E+05	7.53E+04	7.53E+05	1.51E+05	1.37E+04	1.37E+04	1.37E+05	1.37E+04
BX-2	1.15E+05	1.15E+05	5.77E+02	5.77E+02	5.77E+02	5.77E+02	5.77E+02	5.77E+02	5.77E+03	5.77E+02
BX-3	9.79E+09	1.66E+09	2.03E+07	2.37E+08	1.96E+08	1.28E+09	7.53E+05	7.53E+05	7.53E+06	7.53E+05
BX-4	3.80E+08	5.54E+07	2.89E+05	1.14E+06	3.64E+06	4.10E+06	3.80E+04	3.80E+04	3.80E+05	3.80E+04

Residual Mass in Soil (10-15 fbg) November 12, 2010 (mg)

Boring ID	TPH-g	TPH-d	benzene	toluene	ethyl-benzene	xylenes	MtBE	tAME	tBA	Other Oxygenates
BX-1	6.30E+07	3.56E+06	2.67E+05	6.85E+04	3.63E+05	5.82E+05	1.37E+04	1.37E+04	1.37E+05	1.37E+04
BX-2	1.15E+05	1.15E+05	5.77E+02	5.77E+02	5.77E+02	5.77E+02	5.77E+02	5.77E+02	5.77E+03	5.77E+02
BX-3	4.52E+05	3.76E+05	1.88E+03	4.52E+03	5.27E+03	3.16E+04	1.88E+03	1.88E+03	1.88E+04	1.88E+03
BX-4	1.06E+08	1.29E+07	3.80E+04	1.97E+05	1.06E+06	2.89E+06	1.52E+04	1.52E+04	1.52E+05	1.52E+04

Residual Mass in Soil (15-20 fbg) November 12,.2010 (mg)

Boring ID	TPH-g	TPH-d	benzene	toluene	ethyl-benzene	xylenes	MtBE	tAME	tBA	Other Oxygenates
BX-1	3.83E+06	6.85E+05	1.85E+04	2.88E+03	2.53E+04	2.33E+04	3.42E+03	3.42E+03	3.42E+04	3.42E+03
BX-2	1.15E+05	1.15E+05	5.77E+02	5.77E+02	5.77E+02	5.77E+02	5.77E+02	5.77E+02	5.77E+03	5.77E+02
BX-3	4.52E+06	3.76E+05	2.56E+03	8.66E+04	7.15E+04	3.76E+05	1.88E+03	1.88E+03	1.88E+04	1.88E+03
BX-4	8.35E+07	4.02E+06	7.59E+04	9.87E+04	2.28E+05	4.40E+05	1.52E+04	1.52E+04	1.52E+05	1.52E+04

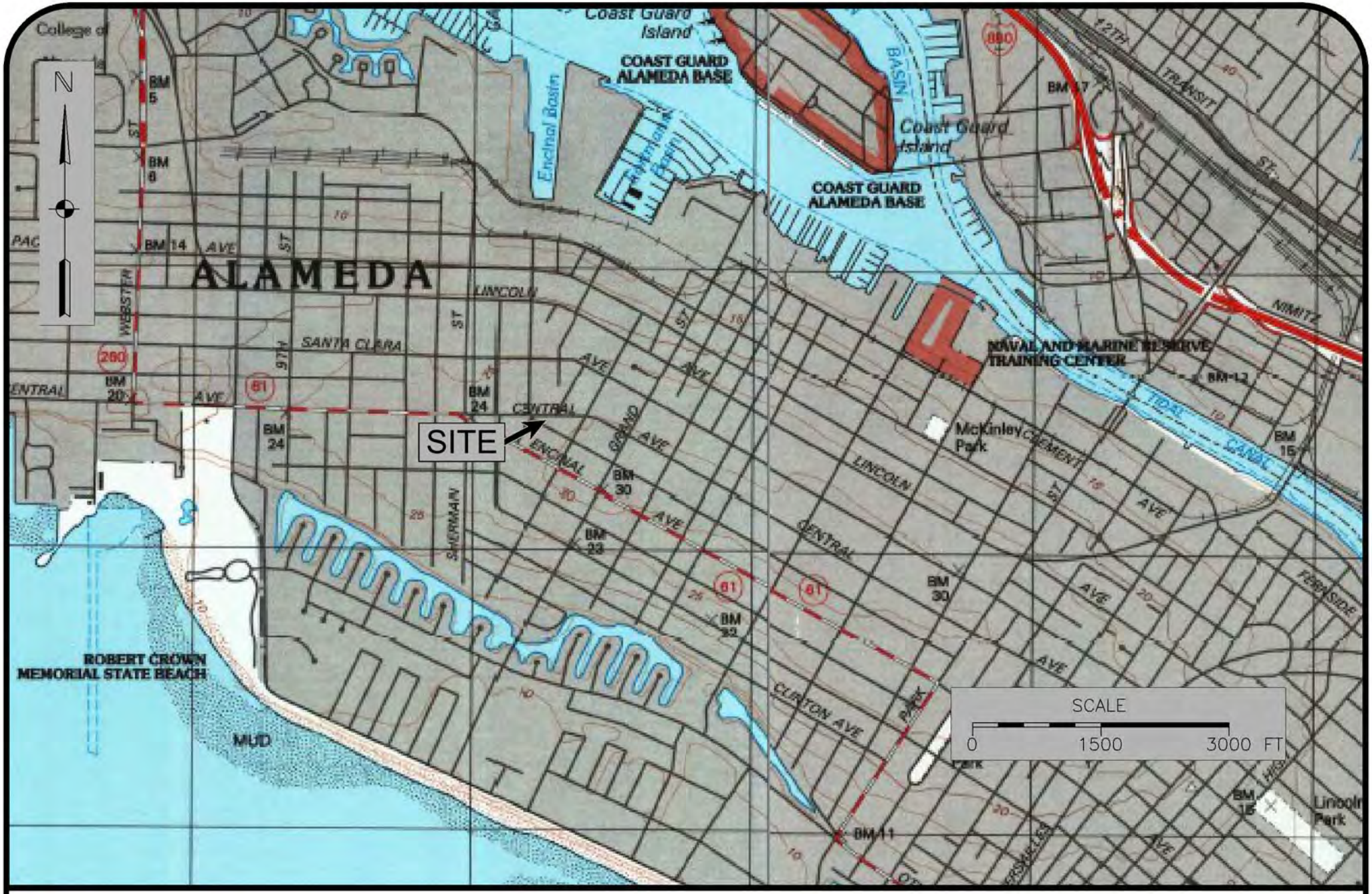
Total Residual Mass in Soil November 12, 2010 (mg)

Dept Interval	TPH-g	TPH-d	benzene	toluene	ethyl-benzene	xylenes	MtBE	tAME	tBA	Other Oxygenates
5-10	1.02E+10	1.72E+09	2.08E+07	2.38E+08	2.00E+08	1.28E+09	8.05E+05	8.05E+05	8.05E+06	8.05E+05
10-15	1.70E+08	1.70E+07	3.07E+05	2.71E+05	1.43E+06	3.50E+06	3.13E+04	3.13E+04	3.13E+05	3.13E+04
15-20	9.20E+07	5.20E+06	9.75E+04	1.89E+05	3.25E+05	8.41E+05	2.11E+04	2.11E+04	2.11E+05	2.11E+04
Total (mg)	1.05E+10	1.74E+09	2.12E+07	2.39E+08	2.02E+08	1.29E+09	8.58E+05	8.58E+05	8.58E+06	8.58E+05
Total (kg)	1.05E+04	1.74E+03	2.12E+01	2.39E+02	2.02E+02	1.29E+03	8.58E-01	8.58E-01	8.58E+00	8.58E-01

Total Residual Mass in Soil in January 2012 (mg)

Date Ratio	TPH-g	TPH-d	benzene	toluene	ethyl-benzene	xylenes	MtBE	tAME	tBA	Other Oxygenates
2012/2010	9.13E-01	7.10E-01	8.45E-01	9.61E-01	6.74E-01	6.99E-01	6.80E-01	NA	NA	NA
2012 Residual Mass (kg)	9.58E+03	1.24E+03	1.79E+01	2.30E+02	1.36E+02	9.01E+02	5.84E-01	NA	NA	NA

FIGURES



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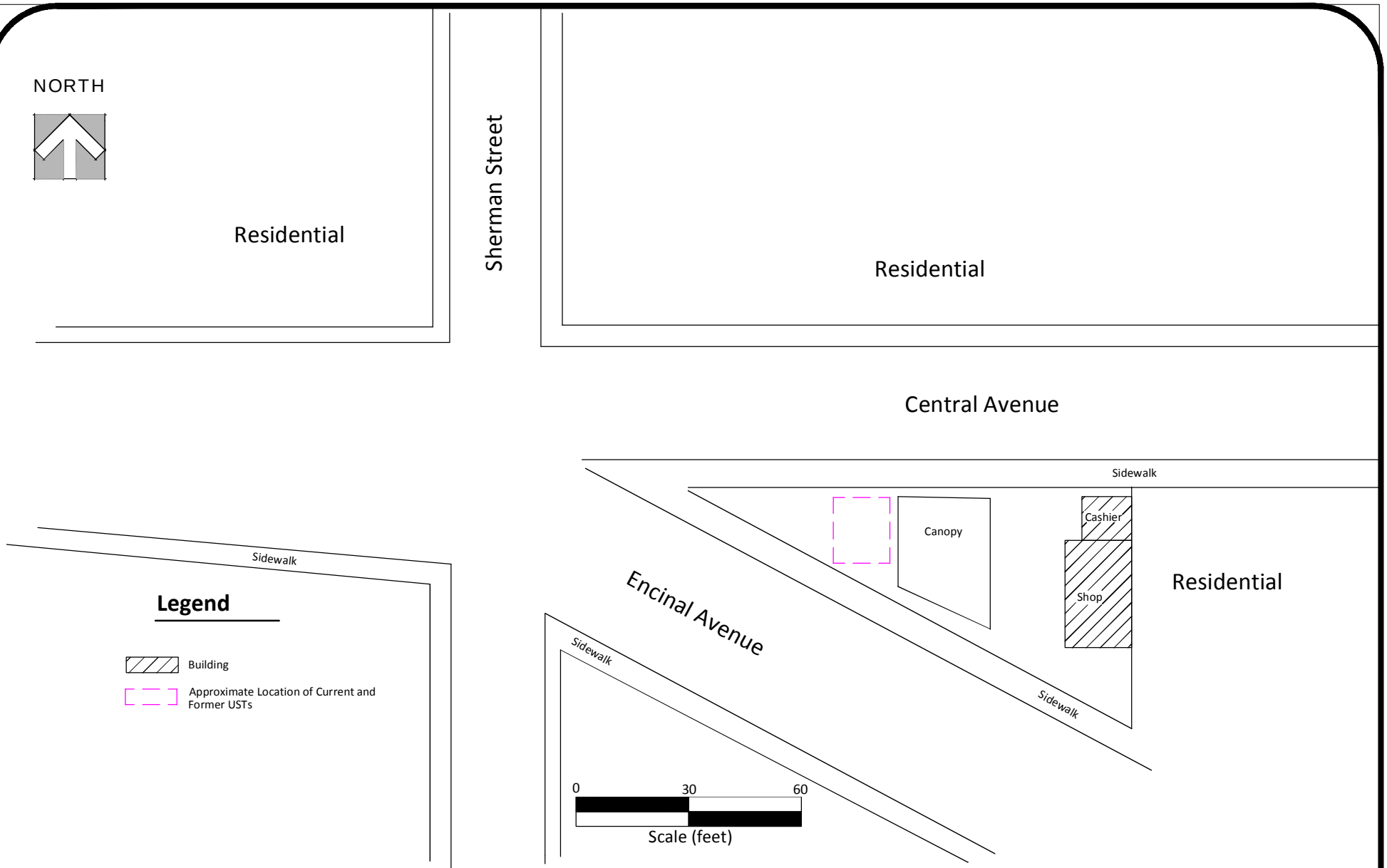
Site Location Map

1031 Central Avenue
Alameda, CA 94501

Project 1:035	Figure: 1
Date: 8/30/13	
Scale:1"=1500'	



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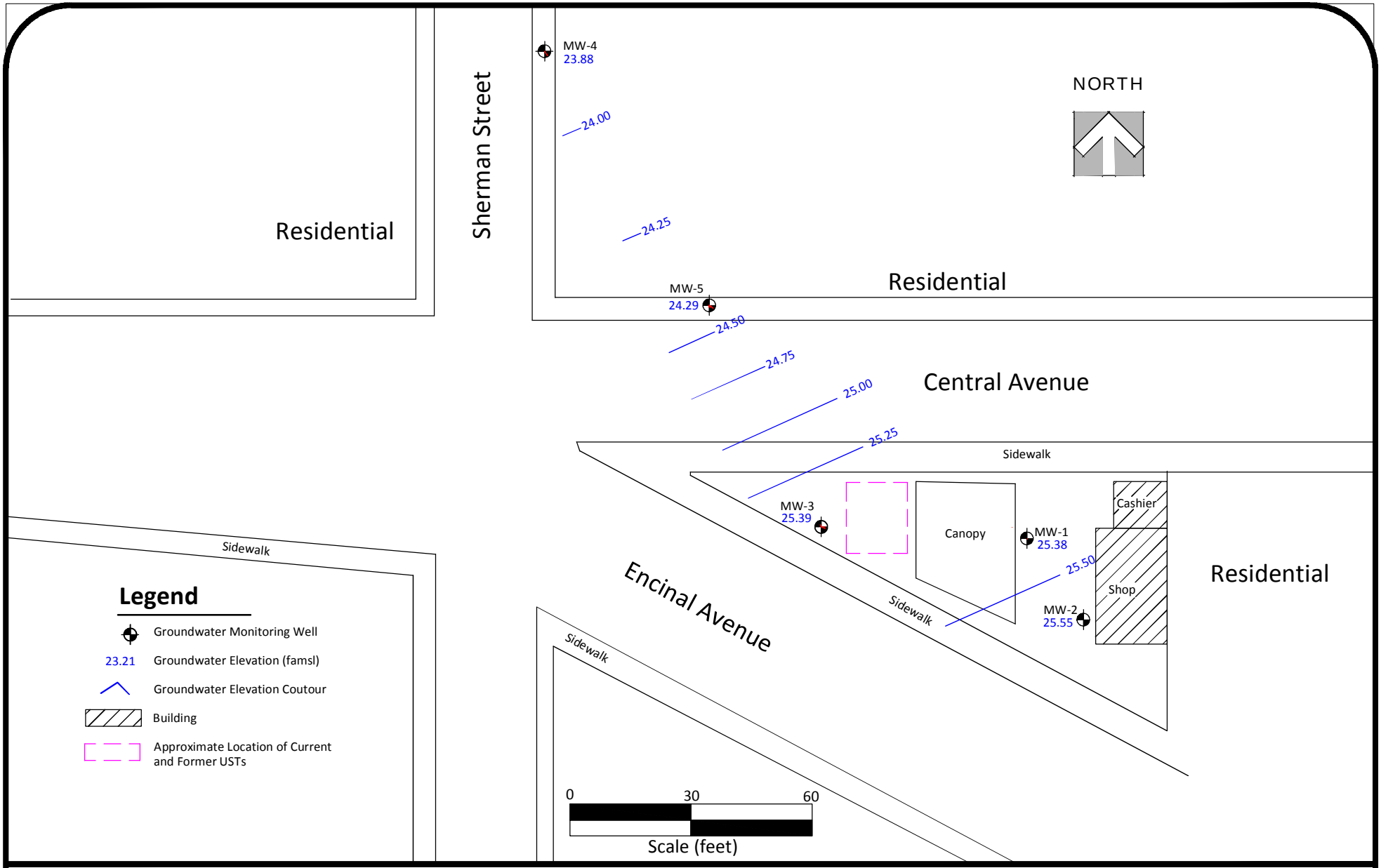
Site Plan

Alameda Gas
1310 Central Avenue
Alameda, California

Project #: 1035	Figure: 2
Date: 8/30/13	
Scale: as shown	



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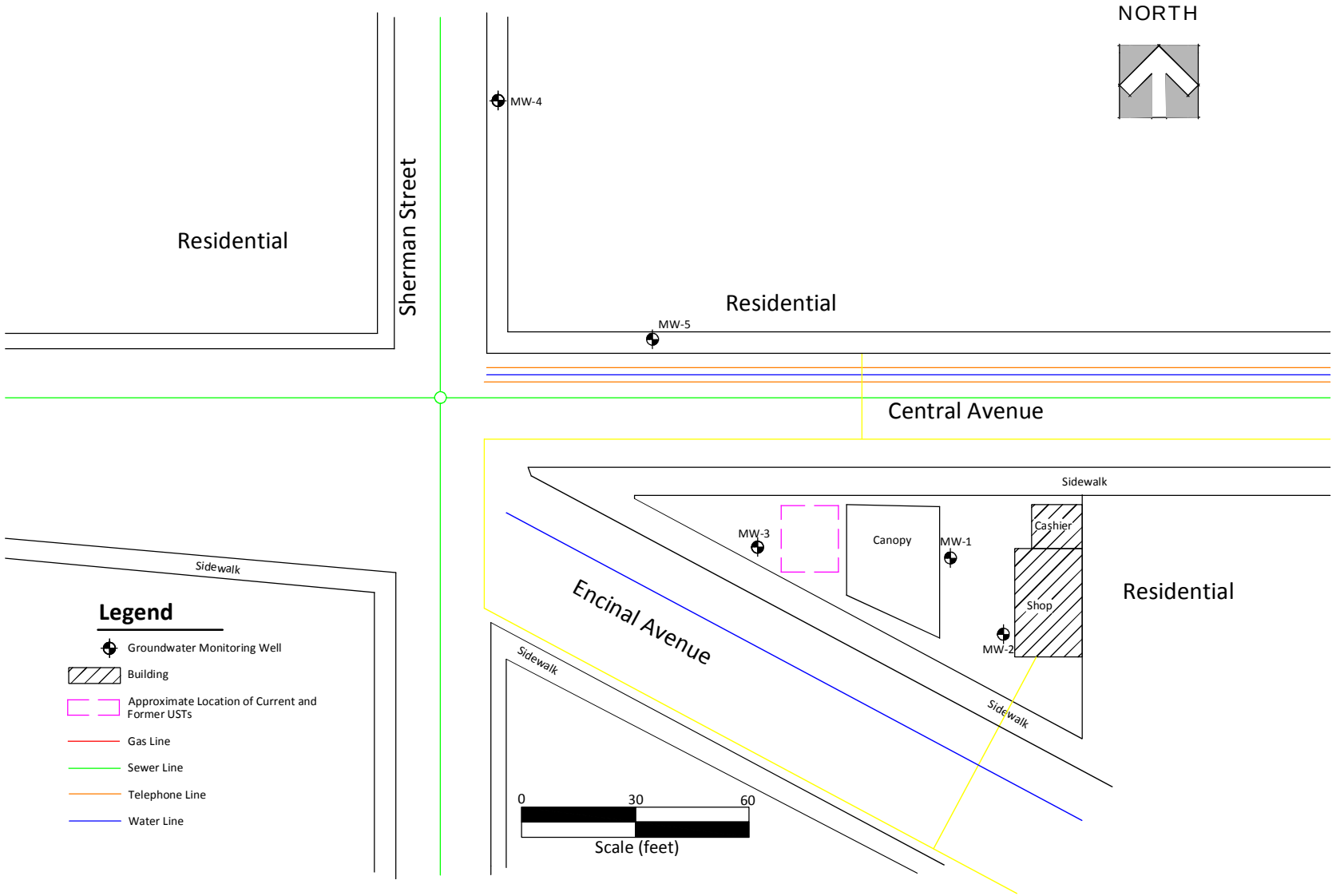
Groundwater Elevations
March 29, 2012
Alameda Gas
1310 Central Avenue
Alameda, California

Project #: 1035	Figure: 3
Date: 8/30/13	
Scale: as shown	



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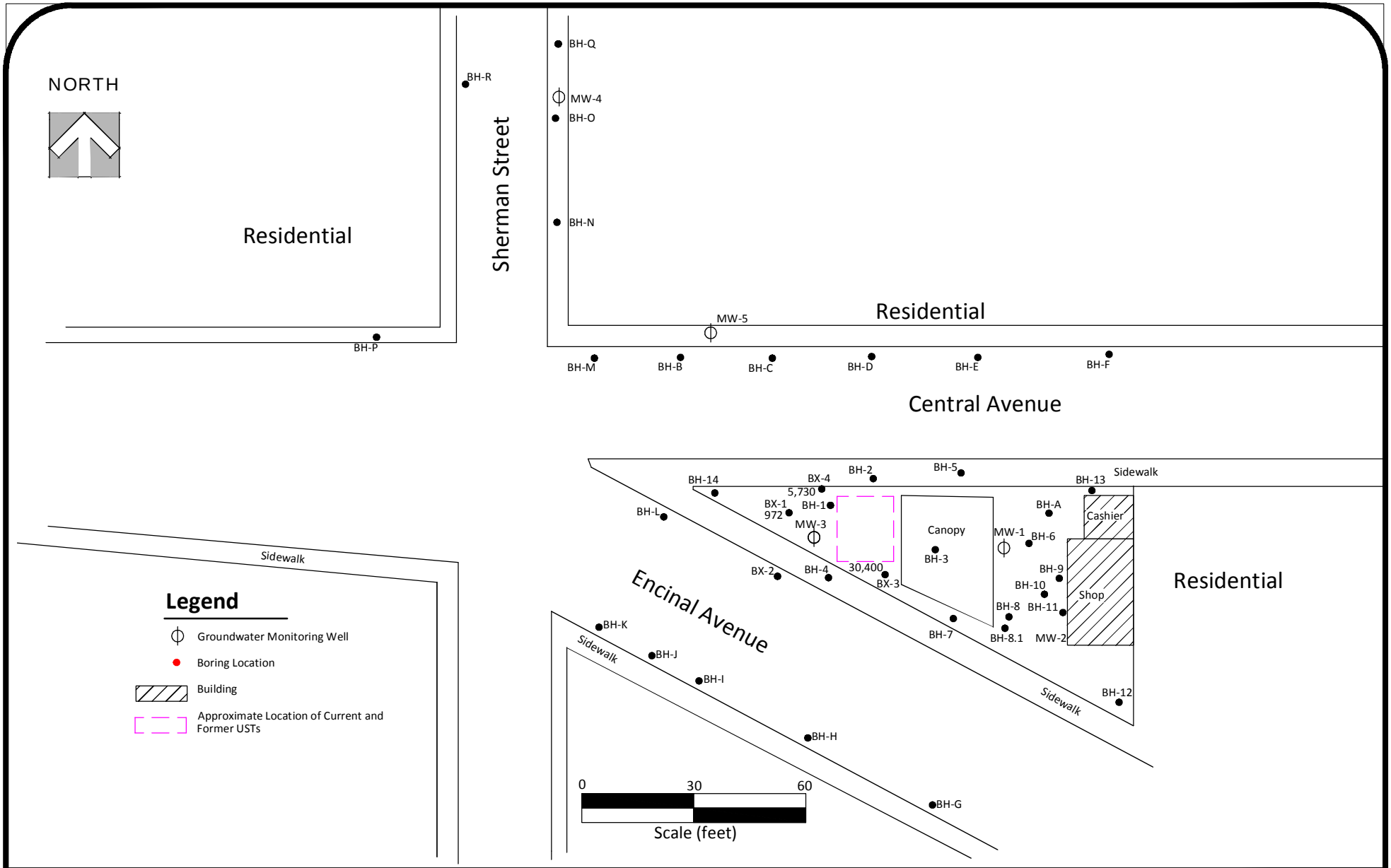
Utility Line Locations

Alameda Gas
1310 Central Avenue
Alameda, California

Project #: 1035	Figure: 4
Date: 8/30/13	
Scale: as shown	



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Soil Boring and Monitoring Well Locations

Alameda Gas
1310 Central Avenue
Alameda, California

Project #: 1035	Figure: 5
Date: 8/30/13	
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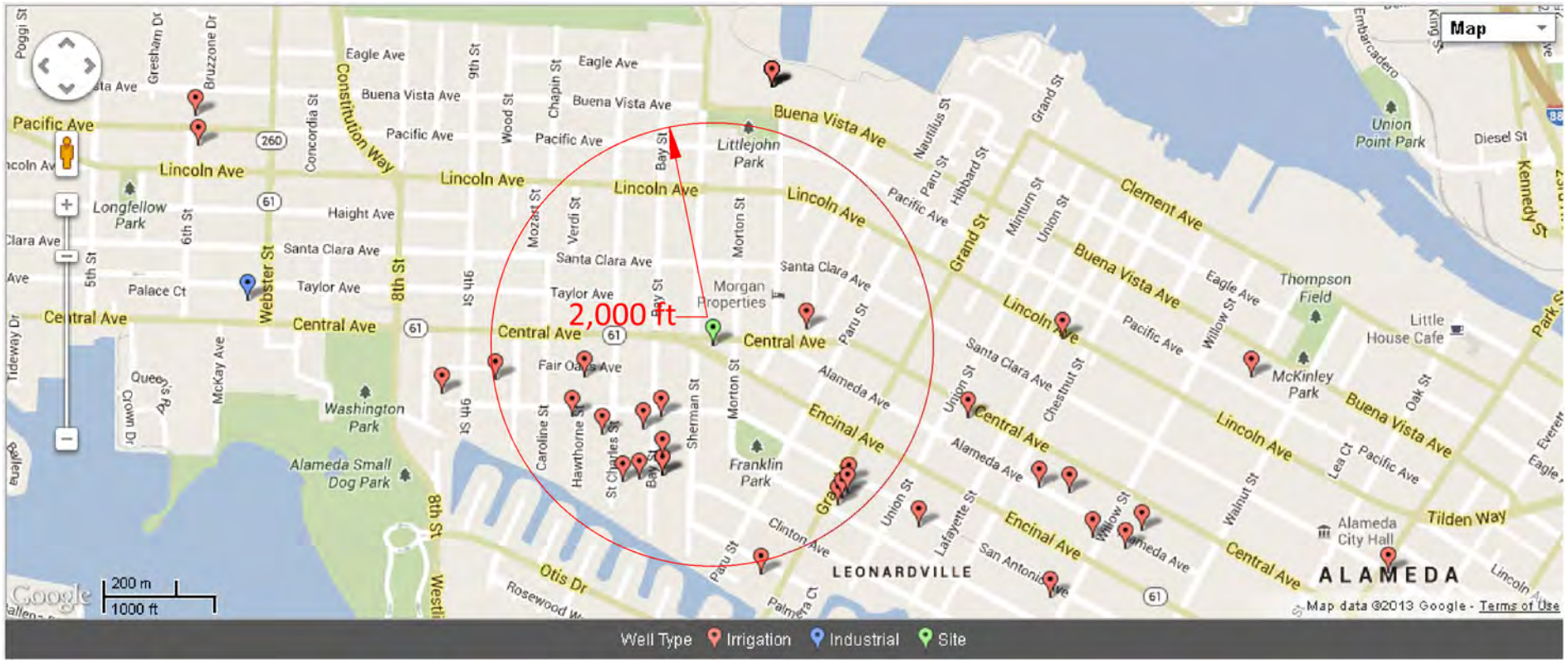

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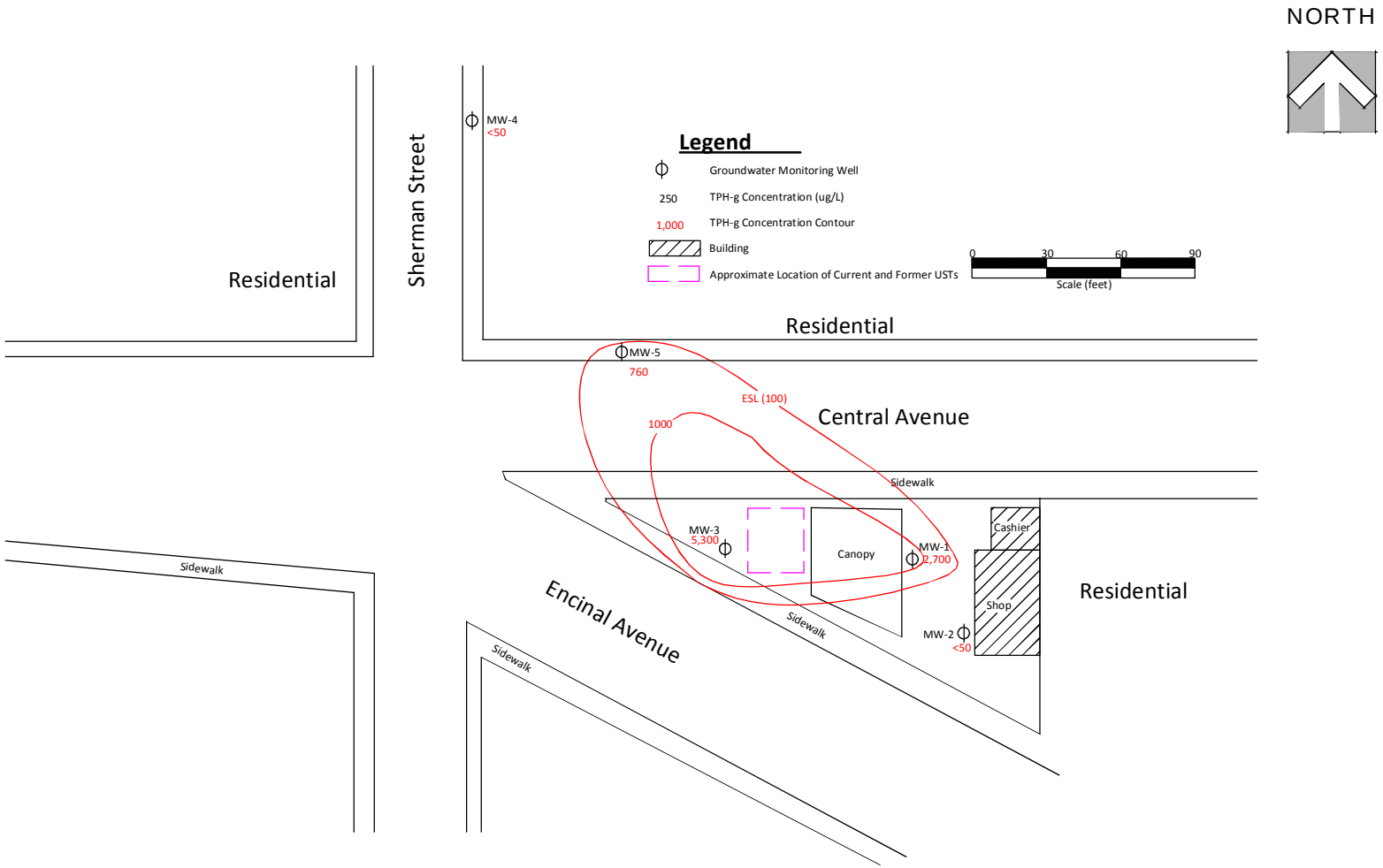
Potential Sensitive Receptors

Alameda Gas
1310 Central Avenue
Alameda, California

Project #: 1035	Figure: 6
Date: 8/30/13	
Scale: as shown	



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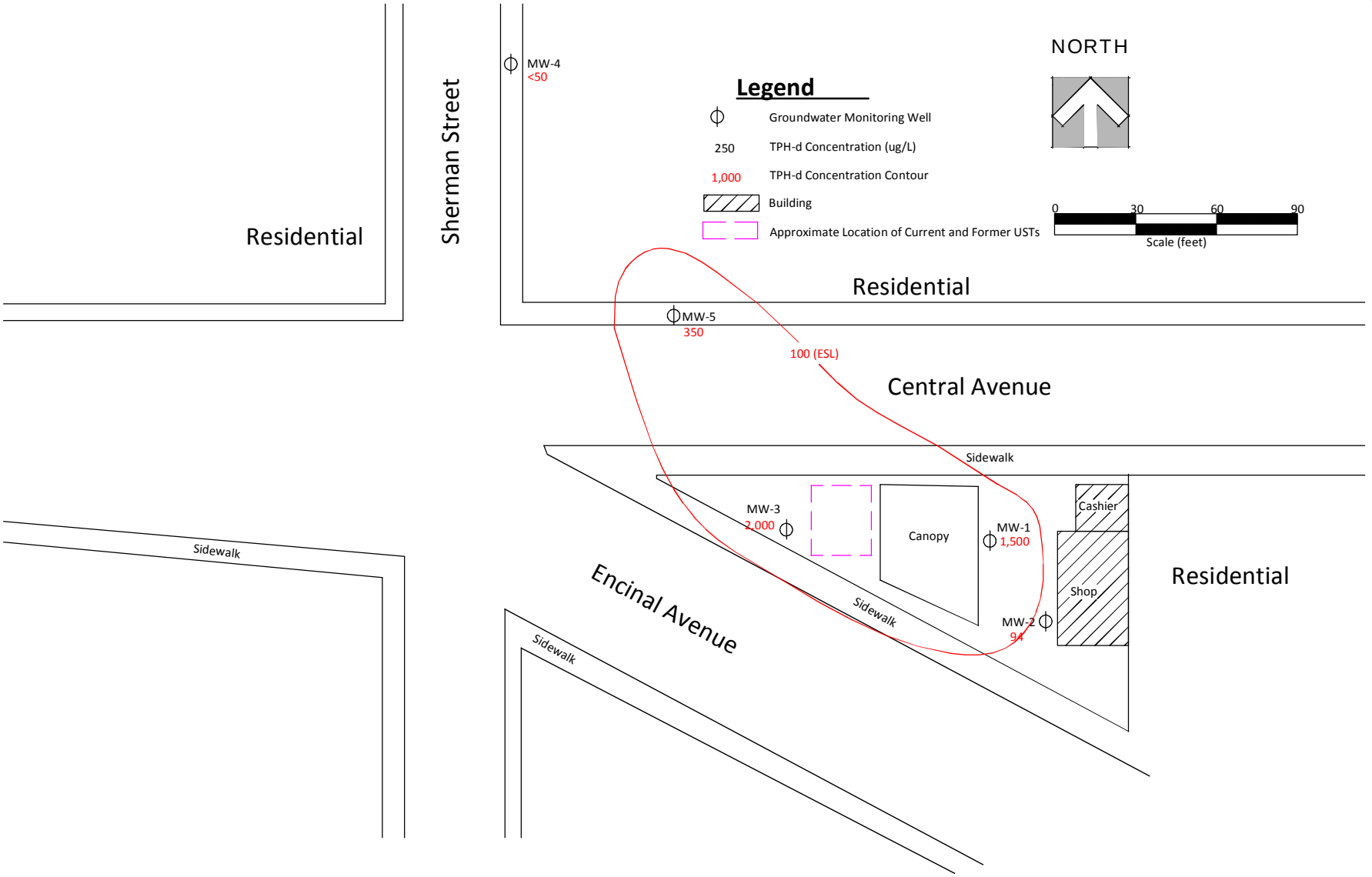
TPH-g Concentrations in Groundwater
May 18, 2012
Alameda Gas
1310 Central Avenue
Alameda, California

Project #: 1035	Figure: 7
Date: 8/30/13	
Scale: as shown	



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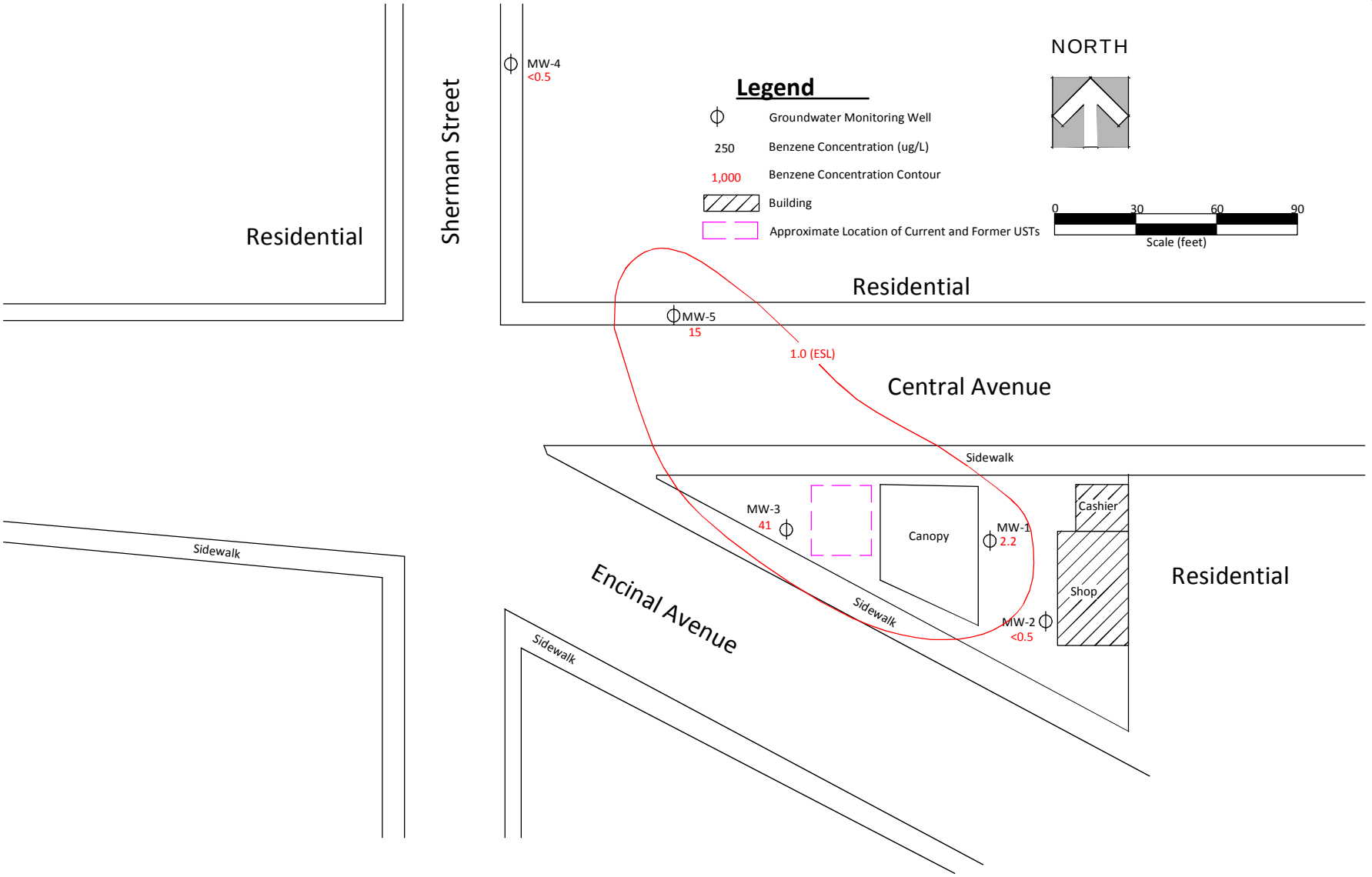
TPH-d Concentrations in Groundwater
May 18, 2012

Alameda Gas
1310 Central Avenue
Alameda, California

Project #: 1035	Figure: 8
Date: 8/30/13	
Scale: as shown	



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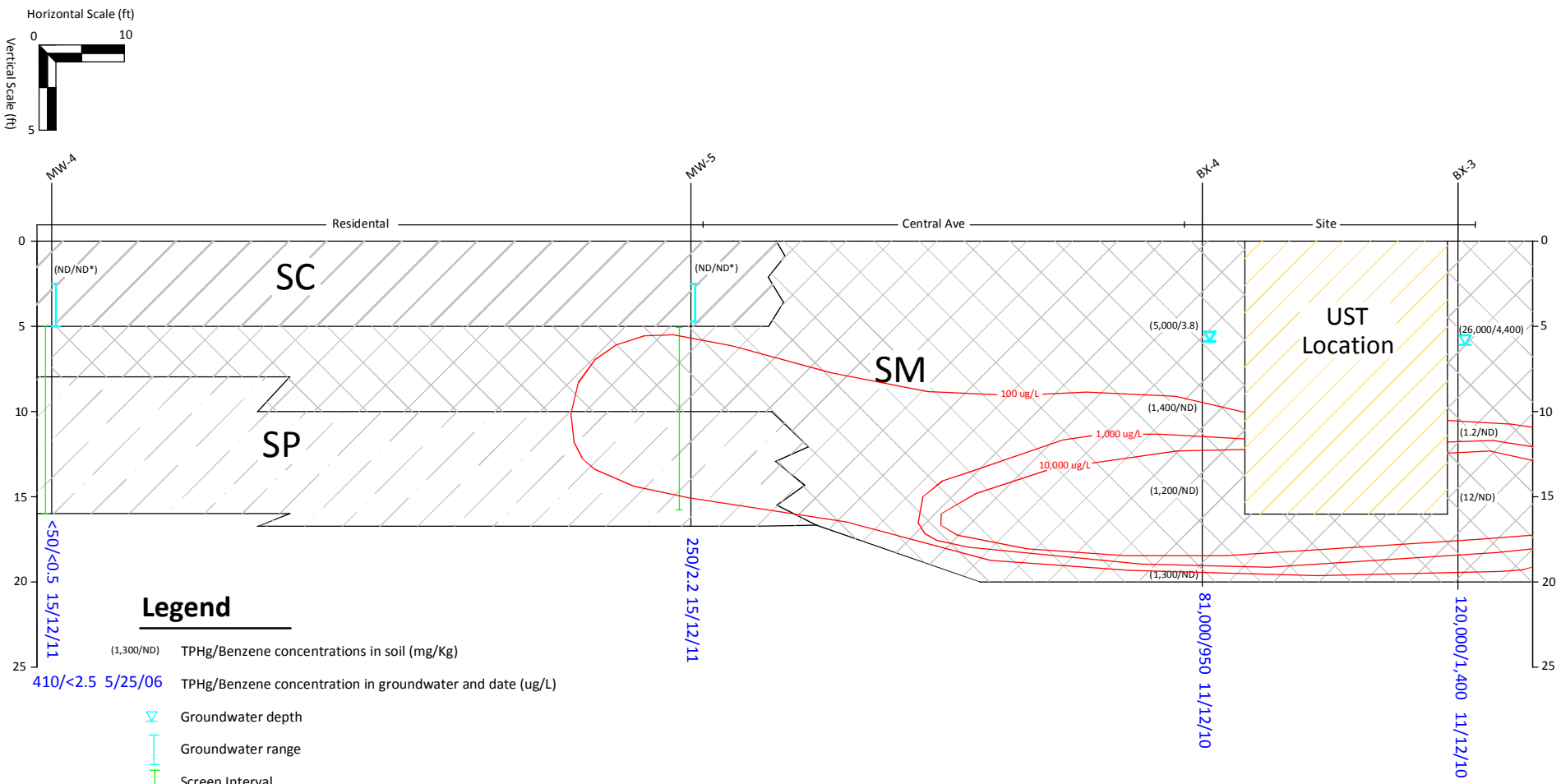
Benzene Concentrations in Groundwater
May 18, 2012

Alameda Gas
1310 Central Avenue
Alameda, California

Project #: 1035	Figure: 9
Date: 8/30/13	
Scale: as shown	



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North-South Geologic Cross Section

Alameda Gas
1310 Central Avenue
Alameda, California

Project #: 1035	Figure: 10
Date: 8/30/13	
Scale: as shown	

Legend

(1,300/ND) TPHg/Benzene concentrations in soil (mg/Kg)

410/<2.5 5/25/06 TPHg/Benzene concentration in groundwater and date (ug/L)

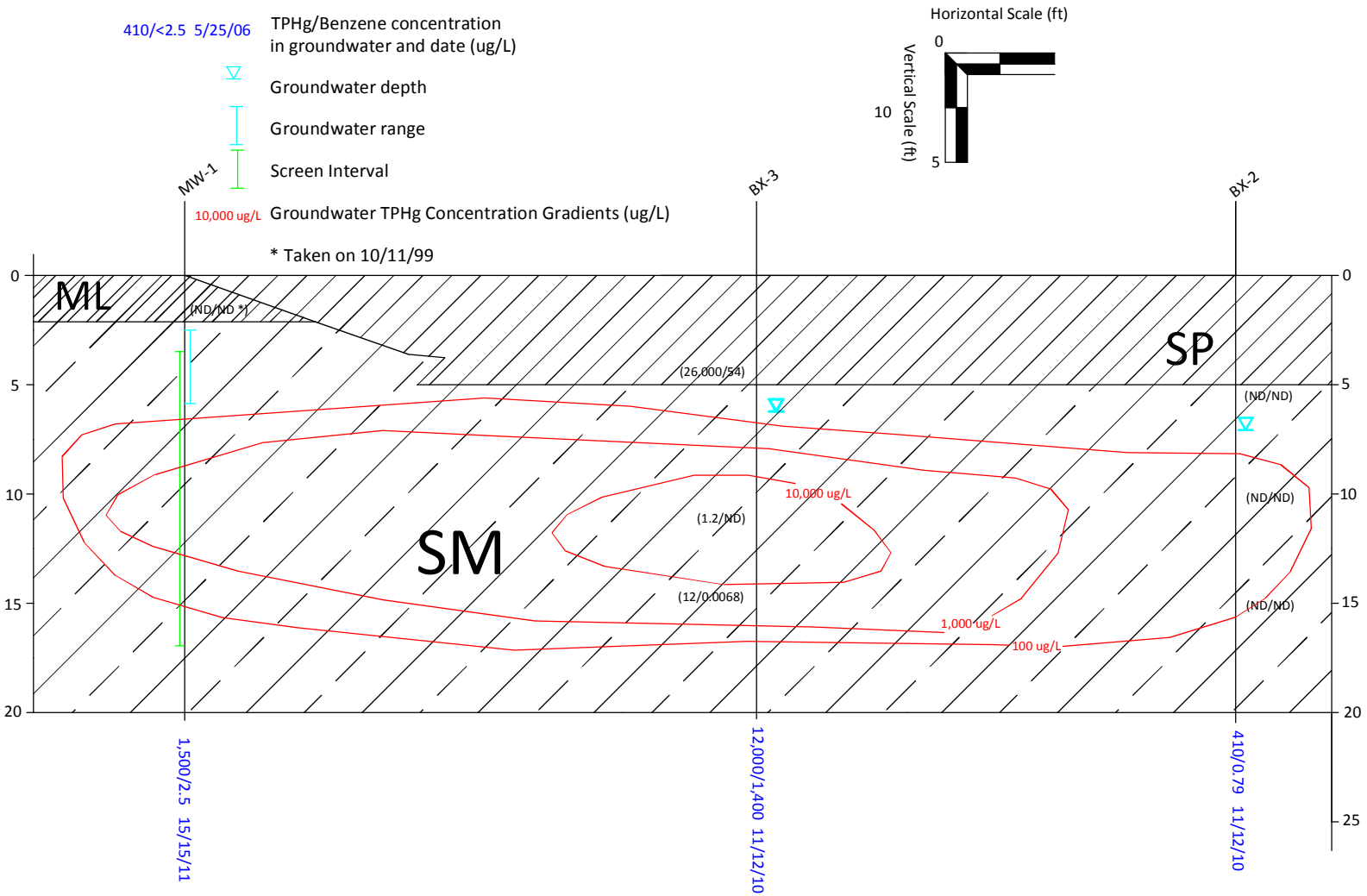
Groundwater depth

Groundwater range

Screen Interval

10,000 ug/L Groundwater TPHg Concentration Gradients (ug/L)

* Taken on 10/11/99



Cook Environmental Services, Inc.
1485 Treat Blvd. Ste 203A
Walnut Creek, CA 94597
(925) 478-8390
tcook@cookenvironmental.com

East-West Geologic Cross Section

Alameda Gas
1310 Central Avenue
Alameda, California

Project #: 1035	Figure: 11
Date: 8/30/13	
Scale: as shown	

Figure 12. TPH and Benzene Trends in Well MW-1
Alameda Gas , 1310 Central Avenue, Alameda

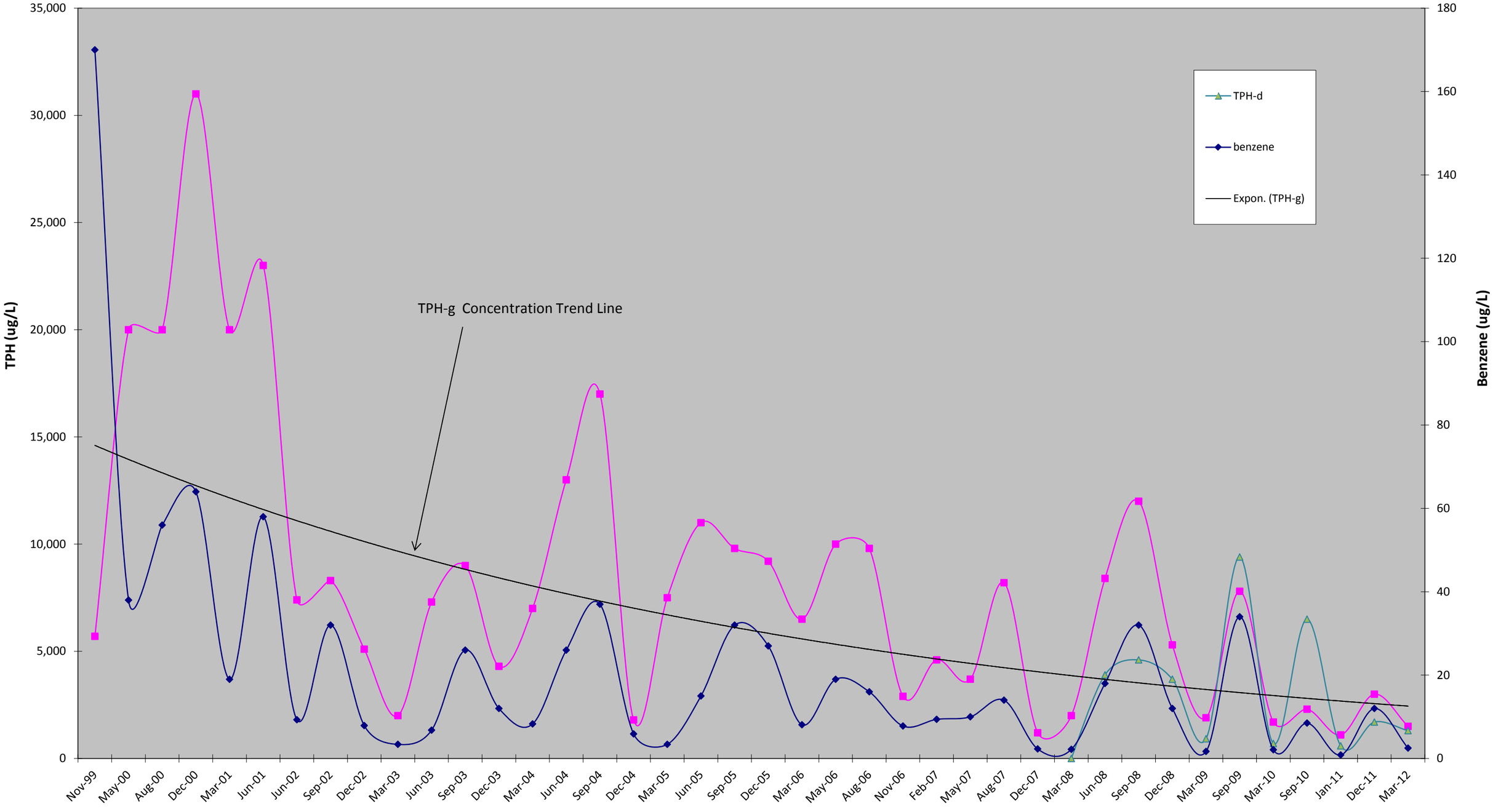
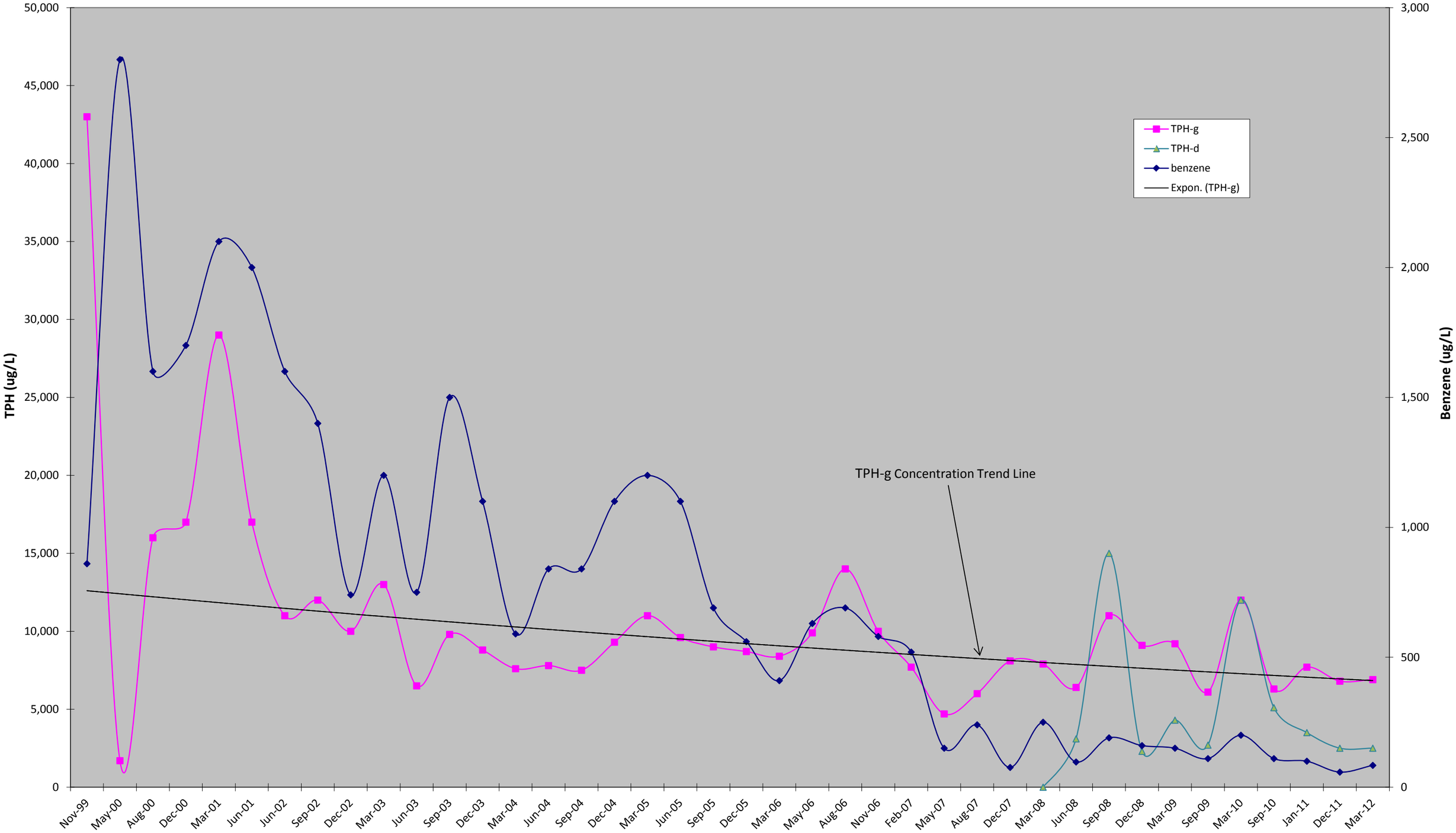
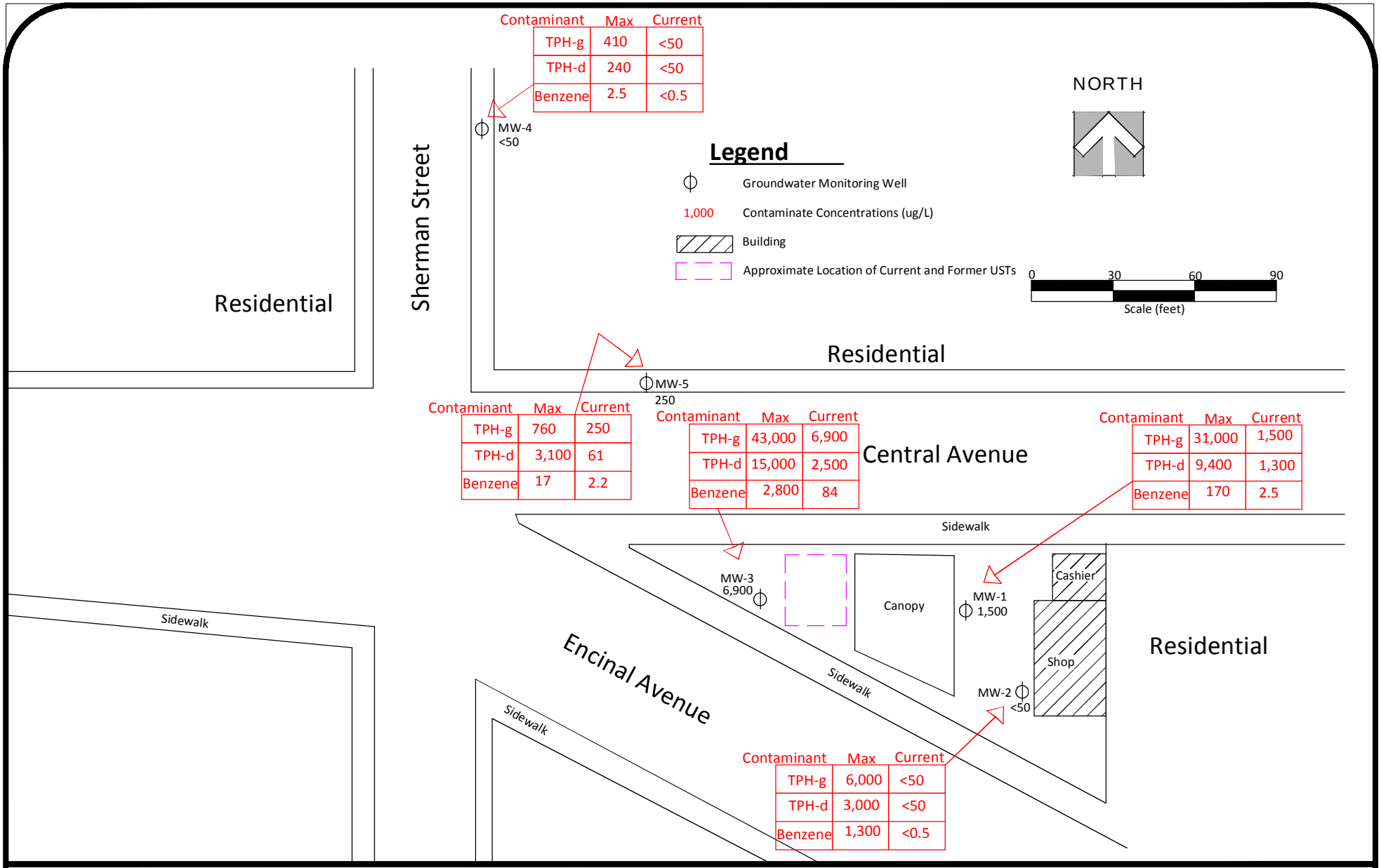


Figure 13. TPH and Benzene Trends in Well MW-3
Alameda Gas, 1310 Central Avenue, Alameda





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Maximum and Current Concentrations in Groundwater
TPH-d, TPH-g, Benzene

Alameda Gas
1310 Central Avenue
Alameda, California

Project #: 1035
Date: 8/30/13
Scale: as shown
Figure: 14

APPENDIX A

SWRCB Checklist for Low Threat UST Case Closure Sites

Site Name: Alameda Gas
Site Address: 1310 Central Avenue, Alameda, CA

Site meets the criteria of the Low-Threat Underground Storage Tank (UST) Case Closure Policy as described below.[1]

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
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

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

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. **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** **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?** **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 ☐ Yes ☐ No ☑ NA ☐ Yes ☐ No ☑ NA ☐ 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)?** **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?** **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 ☐ Yes ☑ No ☐ NA ☑ Yes ☐ No ☐ NA

APPENDIX B

Alameda County Environmental Health Low Threat UST Case Closure Checklist

ALAMEDA COUNTY ENVIRONMENTAL HEALTH
LOW THREAT UST CASE CLOSURE POLICY COMPLIANCE AND IDENTIFICATION OF IMPEDIMENTS TO CASE CLOSURE CHECKLIST

Agency Name : Alameda County Environmental Health	Date: 9/12/13
ACEH Case Worker: Karel Detterman	Fuel Leak Case No: RO000 0022
Site Name: Alaska Gasoline	GeoTracker Global ID: T0600102128
Site Address: 1310 Central Avenue, Alameda, CA 94501	USTCF Claim No: 12650

Karel Detterman has reviewed the above listed site for consideration of case closure using the framewotk provided by the State Water Resources Control Board Low-Threat Underground Storage Tank Case Closure Policy (LTCP), adopted on May 1, 2012, and effective August 17, 2012. The results of our review indicate that the site ☒ PASSES ☐ FAILS the LTCP criteria.

Section 25296.10 of the California Health and Safety Code (H&SC) requires that sites be cleaned up to protect human health, safety, and the environment. The current conceptual site model ☒ is ☐ is not adequate to determine that residual petroleum constituents at the site do not pose a significant risk to human health, safety, or the environment.

Professional Seal and Signature Requirements

Pursuant to sections 6735, 7835, and 7835.1 of the California Business and Professions Code, all work and reports which require geologic or engineering evaluations or technical judgments must be performed under the direction of a California Professional Engineer, Certified Engineering Geologist, Professional Geologist, or Certified Hydrogeologist.

Licensee Name: Timothy D. Cook

Licensee Number: EG 1444

Licensee Signature:

Licensee Professional Seal:

Perjury Statement:

"I declare under penalty of perjury, that the information and/or recommendations contained in the attached document is true and correct to the best of my knowledge".

Responsible Party Name: Nissan Saidian

Responsible Party Signature:

LOW THREAT CLOSURE POLICY - GENERAL CRITERIA A

General Criteria a: **Is the Unauthorized Release Located within the Service Area of a Public Water System?**	☒ YES	☐ NO	☐ NE

LTCP Statement: "This policy is protective of existing water supply wells. New water supply wells are unlikely to be installed in the shallow groundwater near former UST release sites. However, it is difficult to predict, on a statewide basis, where new wells will be installed, particularly in rural areas that are undergoing new development. This policy is limited to areas with available public water systems to reduce the likelihood that new wells in developing areas will be inadvertently impacted by residual petroleum in groundwater. Case closure outside of areas with a public water system should be evaluated based upon the fundamental principles in this policy and a site specific evaluation of developing water supplies in the area. For purposes of this policy, a public water system is a system for the provision of water for human consumption through pipes or other constructed conveyances that has 15 or more service connections or regularly serves at least 25 individuals daily at least 60 days out of the year."

Does the public water system have 15 or more service connection or regularly serves at least 25 individuals daily at least 60 days of the year?	☒ Yes	☐ No	
Name of public water system agency?			
East Bay Municipal Utility District	☒ Yes		
Zone 7 Water Agency	☐ Yes		
City of Hayward Water	☐ Yes		
Alameda County Water District	☐ Yes		

Has the minimum required information listed below been provided in the CSM for evaluation of case compliance with General Criteria a?	☒ Yes	☐ No	
Has confirmation that the property has a hook-up and uses the public water system been provided?	☒ Yes	☐ NE	☐ NA
Has a well search been conducted to identify wells located within 2,000 feet of the site?	☒ Yes	☐ NE	☐ NA
Are there existing water supply wells or other sources of water in the vicinity of the site?	☒ Yes	☐ NE	☐ NA
Domestic Water Supply Wells	☐ Yes	☒ No	☐ NA
Irrigation Wells	☒ Yes	☐ No	☐ NA
Other Capture Systems	☐ Yes	☒ No	☐ NA
Are existing supply wells or other sources of water used by property owners/tenants in the vicinity of the site?	☐ Yes	☒ NE	☐ NA
Have existing supply wells or other sources of water been sampled for chemicals of concern associated with the release site?	☐ Yes	☐ NE	☒ NA
Have existing supply wells or other sources of water been properly abandoned and well destruction records been provided?	☐ Yes	☐ NE	☒ NA

(Refer to Att. 1 - CSM Detailed Evaluation Checklist for Identification of Data Gaps)

KEY: NE = Identified Data Gap - Needs Further Evaluation NA = Not Applicable

Case Notes

CSM is found in Section 2.5 of the Request for No Further Action, by Cook Environmental Services, Inc.

*****End of General Criteria a Evaluation*****

KEY: NE = Identified Data Gap - Needs Further Evaluation NA = Not Applicable

General Criteria b: Does the Unauthorized Release Consist only of Petroleum?	☒ YES	☐ NO	☐ NE

LTCP Statement: "For purposes of this policy, petroleum is defined as crude oil, or any fraction thereof, which is liquid at standard conditions and temperature and pressure, which means 60 degrees Fahrenheit and 14.7 pounds per square inch absolute including the following substances: motor fuels, jet fuels, distillate fuel oils, residual fuel oils, lubricants, petroleum solvents and used oils, including any additives and blending agents such as oxygenates contained in the formulation of the substances."

Site Contaminants Dectected in Soil, Soil Gas, Groundwater, and Surface Water				☒ Yes	☐ No	☐ NE
Petroleum						
Motor fuels	☒ Yes	☐ No	☐ NE			
TPH middle distillates	☒ Yes	☐ No	☐ NE			
Residual fuels	☒ Yes	☐ No	☐ NE			
Fuel oxygenates	☒ Yes	☐ No	☐ NE			
Lead scavengers	☐ Yes	☒ No	☐ NE			
Aromatic compounds	☐ Yes	☒ No	☐ NE			
TPH middle distillates	☒ Yes	☐ No	☐ NE			
Non Petroleum Contaminants				☐ Yes	☒ No	☐ NE
VOCs	☐ Yes	☒ No	☐ NE			
SVOCs	☐ Yes	☒ No	☐ NE			
Dioxans & Furans	☐ Yes	☒ No	☐ NE			
Other PAHs	☐ Yes	☒ No	☐ NE			
PCBs	☐ Yes	☒ No	☐ NE			
Phenols	☐ Yes	☒ No	☐ NE			
Metals	☐ Yes	☒ No	☐ NE			

Has the minimum required information listed below been provided in the CSM for evaluation of case compliance with General Criteria b?	☒ Yes	☐ No	
Description of the site history?	☒ Yes	☐ No	☐ NA
Types of products or chemicals used at the site?	☒ Yes	☐ No	☐ NA
History of types of releases other than petroleum?	☒ Yes	☐ No	☐ NA
Presentation of sampling results for all chemicals other than petroleum such as volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), metals, polychlorinated biphenyls (PCBs), phenol, 1,4-dioxane, dibenzofurans, or dioxins?	☐ Yes	☐ No	☒ NA
	☐ Yes	☐ No	☐ NA
	☐ Yes	☐ No	☐ NA
	☐ Yes	☐ No	☐ NA

(Refer to Att. 1 - CSM Detailed Evaluation Checklist for Identification of Data Gaps)

KEY: NE = Identified Data Gap - Needs Further Evaluation NA = Not Applicable

Case Notes

Site is, and was throughout its developed history, a automobile service station and gas station.

*****End of General Criteria b Evaluation*****

KEY: NE = Identified Data Gap - Needs Further Evaluation NA = Not Applicable

LOW THREAT CLOSURE POLICY - GENERAL CRITERIA C

General Criteria c: Has the Unauthorized ("Primary") Release from the UST System been Stopped?	☒ YES	☐ NO	☐ NE

LTCP Statement: "The tank, pipe, or other appurtenant structure that released petroleum into the environment (i.e. the primary source) has been removed, repaired or replaced. It is not the intent of this policy to allow sites with ongoing leaks from the UST system to qualify for low-threat closure."

Have the tank(s), piping, dispenser islands, or other appurtenant structures that released petroleum into the environment been removed, repaired or replaced?	☒ Yes	☐ No	☐ NE
Tanks?	☒ Yes	☐ No	☐ NE
Product piping?	☒ Yes	☐ No	☐ NE
Dispenser islands?	☒ Yes	☐ No	☐ NE
Other structures?	☒ Yes	☐ No	☐ NE
Have the tanks, piping, and/or dispenser islands been moved to a different location at the site?	☐ Yes	☒ No	☐ NE
Were/are the tanks permitted by a local regulatory agency having jurisdiction over USTs?	☒ Yes	☐ No	☐ NE
Have the operating records been reviewed (i.e., operating permit, types of products dispensed, tanks construction, tank capacity, tank tightness tests, etc)?	☒ Yes	☐ No	☐ NE
Was a tank removal permit issued by the local regulatory agency?	☒ Yes	☐ No	☐ NE
Was a tank removal report submitted?	☒ Yes	☐ No	☐ NE
Is there indication that new release(s) have occurred subsequent to the initial release?	☐ Yes	☒ No	☐ NE
Are there spikes or increasing concentration trends in historic data subsequent to the initial release?	☐ Yes	☒ No	☐ NE
Are there new detections of free product subsequent to the initial release in historic data?	☐ Yes	☒ No	☐ NE
Have new contaminants been detected in historic data subsequent to the initial release?	☐ Yes	☒ No	☐ NE
Have new petroleum hydrocarbons or other hazardous products been dispensed of at the site since the initial release occurred?	☒ Yes	☐ No	☐ NE
Is there indication of new impacts from offsite sources?	☐ Yes	☒ No	☐ NE

KEY: NE = Identified Data Gap - Needs Further Evaluation NA = Not Applicable

CSM Minimum Requirements

Has the minimum required information listed below been provided in the CSM for evaluation of case compliance with General Criteria c?	☒ Yes	☐ No	
Description of the history of releases and the actions taken to stop each release?	☒ Yes	☐ No	☐ NA
Evaluation and accounting for changing contaminant concentrations over the full time period of site investigations?	☒ Yes	☐ No	☐ NA
Data from other sites in the vicinity with unauthorized releases of petroleum hydrocarbons or other hazardous materials	☐ Yes	☒ No	☐ NA
Hazardous Materials Business Plans (historic and current)	☒ Yes	☐ No	☐ NA
CUPA UST permits and inspection reports	☒ Yes	☐ No	☐ NA

(Refer to Att. 1 - CSM Detailed Evaluation Checklist for Identification of Data Gaps)

Case Notes:

A search of the files at ACEH did not find a record of a haz mat business plan

*****End of General Criteria c Evaluation*****

KEY: NE = Identified Data Gap - Needs Further Evaluation NA = Not Applicable

General Criteria d: Has Free Product been Removed to the Maximum Extent Practicable?	☒ YES	☐ NO	☐ NE	☐ NA

LTCP Statement: "At petroleum unauthorized release sites where investigations indicate the presence of free product, free product shall be removed to the maximum extent practicable. In meeting the requirements of this section:

(a) Free product shall be removed in a manner that minimizes the spread of the unauthorized release into previously uncontaminated zones by using recovery and disposal techniques appropriate to the hydrogeologic conditions at the site, and that properly treats, discharges or disposes of recovery byproducts in compliance with applicable laws;

(b) Abatement of free product migration shall be used as a minimum objective for the design of any free product removal system; and

(c) Flammable products shall be stored for disposal in a safe and competent manner to prevent fires or explosions."

Has the minimum required information listed below been provided in the CSM for evaluation of case compliance with General Criteria d?	☒ Yes	☐ No	
Has the presence of free product been evaluated?	☒ Yes	☐ No	☐ NA
Has a description of investigation and monitoring activities that have been undertaken to assess whether free product is present been provided?	☒ Yes	☐ No	☐ NA
Has a preferential pathway study been conducted to determine the probability of free product encountering geologic and anthropogenic preferential pathways and conduits that can act as contaminant migration pathways to or from the site?	☒ Yes	☐ No	☐ NA
Has tabulation and an evaluation of historic groundwater levels and flow direction and identification of a smear zone been provided?	☒ Yes	☐ No	☐ NA
Has data including tables and figures showing any observation and measurements of free product been provided?	☐ Yes	☐ No	☒ NA
Has an evaluation of the adequacy of the monitoring well network and appropriateness of screen interval to detect free product been conducted?	☒ Yes	☐ No	☐ NA
Has an evaluation of whether free product removal is practicable, or if not practicable, a description of the conditions that prevent free product removal been conducted?	☒	☐	☐
Has free product removal been implemented?	☐ Yes	☐ No	☒ NA
Absorbent Materials	☐ Yes	☒ No	
Bailing	☐ Yes	☒ No	
Skimmer	☐ Yes	☒ No	
HVDPE	☐ Yes	☒ No	
Other Methods: 1,500 gallons of contaminated gw removed 5/96	☐ Yes	☒ No	
Has a description of corrective action(s) that were taken to remove product, dates of removal actions, and volumes removed been provided?	☐ Yes	☐ No	☒ NA
Is free product removal still being conducted?	☐ Yes	☐ No	☒ NA
Does data indicate rebound of free product subsequent to product removal?	☐ Yes	☐ No	☒ NA

(Refer to Att. 1 - CSM Detailed Evaluation Checklist for Identification of Data Gaps)

KEY: NE = Identified Data Gap - Needs Further Evaluation NA = Not Applicable

Case Notes

1,500 gallons of hydrocarbon contaminated groundwater were removed from the former UST excavation in May 1996. There is no mention of floating product. The groundwater was treated and disposed of.

*****End of General Criteria d Evaluation*****

KEY: NE = Identified Data Gap - Needs Further Evaluation NA = Not Applicable

General Criteria e: Has a Conceptual Site Model that Adequately Assesses the Nature, Extent, and Mobility of the Release been Developed?	☒ YES	☐ NO	☐ NE

LTCP Statement: "The Conceptual Site Model (CSM) is a fundamental element of a comprehensive site investigation. The CSM establishes the source and attributes of the unauthorized release, describes all affected media (including soil, groundwater, and soil vapor as appropriate), describes local geology, hydrogeology and other physical site characteristics that affect contaminant environmental transport and fate, and identifies all confirmed and potential contaminant receptors (including water supply wells, surface water bodies, structures and their inhabitants). The CSM is relied upon by practitioners as a guide for investigative design and data collection. Petroleum release sites in California occur in a wide variety of hydrogeologic settings. As a result, contaminant fate and transport and mechanisms by which receptors may be impacted by contaminants vary greatly from location to location. Therefore, the CSM is unique to each individual release site. All relevant site characteristics identified by the CSM shall be assessed and supported by data so that the nature, extent and mobility of the release have been established to determine conformance with applicable criteria in this policy. The 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."

Has a CSM that adequately assesses the nature, extent, and mobility of the release in affected media in the vicinity of the site been developed?			☒ Yes	☐ No
Groundwater assessment?	☒ Yes	☐ No	☐ NA	
Surface water assessment?	☐ Yes	☐ No	☒ NA	
Soil assessment?	☒ Yes	☐ No	☐ NA	
Soil vapor assessment?	☐ Yes	☐ No	☒ NA	
Indoor Air assessment?	☐ Yes	☐ No	☒ NA	
Has the CSM been developed in accordance with industry standards?			☒ Yes	☐ No ☐ NA
SWRCB CA LUFT Manual, September 2012	☒ Yes	☐ No	☐ NA	
ITRC Vapor Intrusion Pathway: A Practical Guideline (ITRC 2007)	☐ Yes	☐ No	☐ NA	
ASTM Method 1689-95 - Standard Guide for Developing Conceptual Site Models for Contaminated Sites	☒ Yes	☐ No	☐ NA	
ASTM Method 2531-6 - Standard Guide for Development of Conceptual Models for Light Nonaqueous-Phase Liquids Released to the Subsurface	☒ Yes	☐ No	☐ NA	
DTSC Final Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air (October 2011)	☐ Yes	☐ No	☒ NA	
Is the CSM presented in one comprehensive document or has a summary document been submitted that identifies the documents where the requisite CSM elements are located? Section 2.5 of Request for No Further Action			☒ Yes	☐ No ☐ NA
Is the CSM representative of current site conditions?			☒ Yes	☐ No ☐ NA
Does the final closure review validate the CSM?			☒ Yes	☐ No ☐ NA

KEY: NE = Identified Data Gap - Needs Further Evaluation NA = Not Applicable

Case Notes

Has the minimum required information listed below been provided in the CSM for evaluation of case compliance with General Criteria e?	☒ Yes	☐ No	
Site history?	☒ Yes	☐ No	☐ NA
Receptor survey?	☒ Yes	☐ No	☐ NA
Description of releases?	☒ Yes	☐ No	☐ NA
Geologic and hydrogeologic assessment?	☒ Yes	☐ No	☐ NA
Identified stratigraphic and manmade migration pathways?	☒ Yes	☐ No	☐ NA
Identified controls on contaminant migration?	☒ Yes	☐ No	☐ NA
Delineation of the lateral and vertical extent of contamination in all affected media?	☒ Yes	☐ No	☐ NA
Assessment of vapor intrusion pathways?	☒ Yes	☐ No	☐ NA
Groundwater monitoring and evaluation of plume stability?	☒ Yes	☐ No	☐ NA
Description of the type and effectiveness of corrective actions?	☒ Yes	☐ No	☐ NA
Identification of data gaps?	☒ Yes	☐ No	☐ NA

(Refer to Att. 1 - CSM Detailed Evaluation Checklist for Identification of Data Gaps)

Case Notes:

*****End of General Criteria e Evaluation*****

KEY: NE = Identified Data Gap - Needs Further Evaluation NA = Not Applicable

General Criteria f: **Has Secondary Source been Removed to the Extent Practicable?**	☒ YES	☐ NO	☐ NE

LTCP Statement: "Secondary source" is defined as petroleum-impacted soil or groundwater located at or immediately beneath the point of release from the primary source. Unless site attributes prevent secondary source removal (e.g. physical or infrastructural constraints exist whose removal or relocation would be technically or economically infeasible), petroleum-release sites are required to undergo secondary source removal to the extent practicable as described herein. "To the extent practicable" means implementing a cost-effective corrective action which removes or destroys-in-place the most readily recoverable fraction of source-area mass. It is expected that most secondary mass removal efforts will be completed in one year or less. Following removal or destruction of the secondary source, additional removal or active remedial actions shall not be required by regulatory agencies unless (1) necessary to abate a demonstrated threat to human health or (2) the groundwater plume does not meet the definition of low threat as described in this policy."

				☒ Yes	☐ No	☐ NE
Has secondary source been removed to the extent practicable?						
	Petroleum-impacted soil?	☒ Yes	☐ No	☐ NE		
	Petroleum-impacted groundwater?	☒ Yes	☐ No	☐ NE		
Is corrective action currently in progress to remove or destroy-in-place the most readily recoverable fraction of source-area mass?				☐ Yes	☒ No	☐ NE
	Petroleum-impacted soil remediation?	☐ Yes	☒ No	☐		
	Petroleum-impacted groundwater remediation?	☐ Yes	☒ No	☐		
	Have the current site remediation efforts been in progress for more than one year?	☐ Yes	☐ No	☒		
	Petroleum-impacted soil?	☐ Yes	☐ No			
	Petroleum-impacted groundwater?	☐ Yes	☐ No			
	Is site remediation cost effective?	☐ Yes	☒ No	☐ NE		
	Is site remediation progressing adequately?	☒ Yes	☐ No	☐ NE		
Are additional removal or active remedial actions necessary to remove or abate a demonstrated threat to human health?				☐ Yes	☒ No	☐ NE
	Petroleum-impacted soil?	☐ Yes	☒ No	☐ NE		
	Petroleum-impacted groundwater?	☐ Yes	☒ No	☐ NE		

Has the minimum required information listed below been provided in the CSM for evaluation of case compliance with General Criteria f?	☒ **Yes**	☐ **No**	
History of corrective actions for the site including the types of cleanup actions taken, dates of the actions, and mass removed?	☒ Yes	☐ No	☐ NA
Figures depicting the location(s) of the removal action?	☒ Yes	☐ No	☐ NA
Confirmation sampling results which demonstrate the effectiveness of secondary source removal?	☒ Yes	☐ No	☐ NA
Narrative description of the actions and areas of success or infeasibility of actions?	☒ Yes	☐ No	☐ NA
For in-situ corrective actions, presentation of long-term monitoring data that demonstrate that concentration have not rebounded following the cessation of corrective action?	☒ Yes	☐ No	☐ NA

(Refer to Att. 1 - CSM Detailed Evaluation Checklist for Identification of Data Gaps)

KEY: NE = Identified Data Gap - Needs Further Evaluation NA = Not Applicable

Case Notes

End of General Criteria f Evaluation

KEY: NE = Identified Data Gap - Needs Further Evaluation NA = Not Applicable

General Criteria g: **Has Soil or Groundwater been Tested for MTBE and Results Reported in Accordance with Health and Safety Code Section 25296.15?**	☒ YES	☐ NO	☐ NE

LTCP Statement: "Health and Safety Code section 25296.15 prohibits closing a UST case unless the soil, groundwater, or both, as applicable have been tested for MTBE and the results of that testing are known to the Regional Water Board. The exception to this requirement is where a regulatory agency determines that the UST that leaked has only contained diesel or jet fuel. Before closing a UST case pursuant to this policy, the requirements of section 25296.15, if applicable, shall be satisfied."

Has the minimum required information listed below been provided in the CSM for evaluation of case compliance with General Criteria g?	☒ **Yes**	☐ **No**	
Presentation of sufficient data to assess whether MTBE is or was present in soil at or in the vicinity of the site?	☒ Yes	☐ No	☐ NE
Presentation of sufficient data to assess whether MTBE is or was present in groundwater at or in the vicinity of the site?	☒ Yes	☐ No	☐ NE

(Refer to Att. 1 - CSM Detailed Evaluation Checklist for Identification of Data Gaps)

Case Notes:

MtBE has not been detected at the site.

*****End of General Criteria g Evaluation*****

KEY: NE = Identified Data Gap - Needs Further Evaluation NA = Not Applicable

General Criteria h: **Does a Nuisance as Defined by Water Code Section 13050 Exist at the Site?**	☐ YES	☒ NO	☐ NE

LTCP Statement: "Water Code section 13050 defines "nuisance" as anything which meets all of the following requirements:

(1) Is injurious to health, or is indecent or offensive to the senses, or an obstruction to the free use of property, so as to interfere with the comfortable enjoyment of life or property.

(2) Affects at the same time an entire community or neighborhood, or any considerable number of persons, although the extent of the annoyance or damage inflicted upon individuals may be unequal.

(3) Occurs during, or as a result of, the treatment or disposal of wastes.

For the purpose of this policy, waste means a petroleum release."

Does a nuisance condition currently exist (or potentially could exist) as defined by the LTCP above?	☐ **Yes**	☒ **No**	☐ **NE**
Is injurious to health?	☐ Yes	☒ No	☐ NE
Is indecent or offensive to the senses?	☐ Yes	☒ No	☐ NE
Is an obstruction to the free use of property so as to interfere with the comfortable enjoyment of life or property?	☐ Yes	☒ No	☐ NE
Affects at the same time an entire community or neighborhood, or any considerable number of persons, although the extent of the annoyance or damage inflicted upon individuals may be unequal?	☐ Yes	☒ No	☐ NE
Is a result of the treatment or disposal of waste?	☐ Yes	☒ No	☐ NE

Has the minimum required information listed below been provided in the CSM for evaluation of case compliance with General Criteria h?	☒ **Yes**	☐ **No**	
Description of whether site contamination is present in locations that have the potential to pose nuisance conditions during common or reasonably expected site activities?	☐ Yes	☐ No	☐ NA
Surface soils?	☐ Yes	☒ No	☐ NE
Near surface soils?	☒ Yes	☐ No	☐ NE
Utility corridors?	☐ Yes	☒ No	☐ NE
Groundwater?	☐ Yes	☒ No	☐ NE
Surface water?	☐ Yes	☒ No	☐ NE
Soil gas?	☐ Yes	☒ No	☐ NE
Basements or other subsurface structures?	☐ Yes	☒ No	☐ NE
Descriptions of the type and vertical and lateral extent of shallow soil?	☒ Yes	☐ No	☐ NE
Descriptions of the lateral extent of surface soil contamination, and depths to contamination?	☒ Yes	☐ No	☐ NE
Presentation of analytical results for surface soil, shallow soil, soil gas, groundwater, and surface water samples?	☒ Yes	☐ No	☐ NE
Discussion of odors or visual evidence of contamination?	☒ Yes	☐ No	☐ NE
Presentation of preferential pathway and utility conduit surveys?	☒ Yes	☐ No	☐ NE
Evaluation of potential points for exposure such as groundwater or free product seeps into basements or surface water bodies or conveyances?	☒ Yes	☐ No	☐ NE
Description of surface water runoff from the property to storm drains, other sites, or other surface water body receptors?	☒ Yes	☐ No	☐ NE
Description of the current and expected future use of the site and impacted or potentially impacted property in the site vicinity?	☒ Yes	☐ No	☐ NE

(Refer to Att. 1 - CSM Detailed Evaluation Checklist for Identification of Data Gaps)

KEY: NE = Identified Data Gap - Needs Further Evaluation NA = Not Applicable

Case Notes

End of General Criteria h Evaluation

KEY: NE = Identified Data Gap - Needs Further Evaluation NA = Not Applicable

LOW THREAT CLOSURE POLICY
MEDIA SPECIFIC CRITERIA - GROUNDWATER

Does the site meet the LTCP criteria for groundwater, or does the site qualify for the Soil Only Case exemption?	☒ YES	☐ NO

LTCP Statement: "This policy describes criteria on which to base a determination that threats to existing and anticipated beneficial uses of groundwater have been mitigated or are de minimis, including cases that have not affected groundwater.

State Water Board Resolution 92-49, *Policies and Procedures for Investigation and Cleanup and Abatement of Discharges Under Water Code Section 13304* is a state policy for water quality control and applies to petroleum UST cases. Resolution 92-49 directs that water affected by an unauthorized release attain either background water quality or the best water quality that is reasonable if background water quality cannot be restored. Any alternative level of water quality less stringent than background must be consistent with the maximum benefit to the people of the state, not unreasonably affect current and anticipated beneficial use of affected water, and not result in water quality less than that prescribed in the water quality control plan for the basin within which the site is located. Resolution No. 92-49 does not require that the requisite level of water quality be met at the time of case closure; it specifies compliance with cleanup goals and objectives within a reasonable time frame.

Water quality control plans (Basin Plans) generally establish "background" water quality as a restorative endpoint. This policy recognizes the regulatory authority of the Basin Plans but underscores the flexibility contained in Resolution 92-49.

It is a fundamental tenet of this low-threat closure policy that if the closure criteria described in this policy are satisfied at a petroleum unauthorized release site, attaining background water quality is not feasible, establishing an alternate level of water quality not to exceed that prescribed in the applicable Basin Plan is appropriate, and that water quality objectives will be attained through natural attenuation within a reasonable time, prior to the expected need for use of any affected groundwater.

If groundwater with a designated beneficial use is affected by an unauthorized release, 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 listed below. A plume that is "stable or decreasing" is a contaminant mass that has expanded to its maximum extent: the distance from the release where attenuation exceeds migration."

"Sites with Releases that Have Not Affected Groundwater - Sites with soil that does not contain sufficient mobile constituents [leachate, vapors, or light non-aqueous-phase liquids (LNAPL)] to cause groundwater to exceed the groundwater criteria in this policy shall be considered low-threat sites for the groundwater medium. Provided the general criteria and criteria for other media are also met, those sites are eligible for case closure. For older releases, the absence of current groundwater impact is often a good indication that residual concentrations present in the soil are not a source for groundwater pollution."

Does the site qualify for the Soil Only Case EXEMPTION?	☐ Yes	☒ No
If the site does not qualify for the soil only exemption, then, is the contaminant plume stable or decreasing in areal extent?	☒ Yes	☐ No
If the contaminant plume is stable or decreasing, then does it meet all of the additional characteristics of one of the five (5) LTCP classes?	☒ Yes	☐ No

Class 1	☐ Yes	☐ No
Class 2	☒ Yes	☐ No
Class 3	☐ Yes	☐ No
Class 4	☐ Yes	☐ No
Class 5	☐ Yes	☐ No

(Refer to Next Page for Contaminant Plume Classification Characteristics)

(Media Specific Criteria for Groundwater Evaluation Continued on Next Page)

KEY: **NE = Identified Data Gap - Needs Further Evaluation** **NA = Not Applicable**

Groundwater Contaminant Plume Classification Characteristics

If the Contaminant Plume is Stable or Decreasing, then Does the contaminant plume meet all of the additional characteristics of one of the five (5) LTCP classes listed below?	☐ Yes	☐ No	☐ NE
Class 1	☐ **Yes**	☐ **No**	☐ **NE**
Is < 100 feet in length	☐ Yes	☐ No	☐ NE
There is no free product	☐ Yes	☐ No	☐ NE
The nearest existing water supply well is > 250 feet from the defined plume boundary	☐ Yes	☐ No	☐ NE
The nearest existing surface water body is > 250 feet from the defined plume boundary	☐ Yes	☐ No	☐ NE
Class 2	☒ **Yes**	☐ **No**	☐ **NE**
Is < 250 feet in length	☒ Yes	☐ No	☐ NE
There is no free product	☒ Yes	☐ No	☐ NE
The nearest existing water supply well is > 1,000 feet from the defined plume boundary	☒ Yes	☐ No	☐ NE
The nearest existing surface water body is > 1,000 feet from the defined plume boundary	☒ Yes	☐ No	☐ NE
The dissolved concentration of benzene is <3,000 µg/L	☒ Yes	☐ No	☐ NE
The dissolved concentration of MTBE is <1,000 µg/L	☒ Yes	☐ No	☐ NE
Class 3	☐ **Yes**	☐ **No**	☐ **NE**
Is < 250 feet in length	☐ Yes	☐ No	☐ NE
Free product has been removed to the maximum extent practicable, may still be present below the site where the release originated, but does not extend off-site	☐ Yes	☐ No	☐ NE
The plume has been stable or decreasing for a minimum of 5 years	☐ Yes	☐ No	☐ NE
The nearest existing water supply well is > 1,000 feet from the defined plume boundary	☐ Yes	☐ No	☐ NE
The nearest existing surface water body is > 1,000 feet from the defined plume boundary	☐ Yes	☐ No	☐ NE
The property owner is willing to accept a land use restriction if the regulatory agency requires a land use restriction as a condition for closure	☐ Yes	☐ No	☐ NE
Class 4	☐ **Yes**	☐ **No**	☐ **NE**
Is < 1,000 feet in length	☐ Yes	☐ No	☐ NE
There is no free product	☐ Yes	☐ No	☐ NE
The nearest existing water supply well or surface water body is > 1,000 feet from the defined plume boundary	☐ Yes	☐ No	☐ NE
The nearest existing surface water body is > 1,000 feet from the defined plume boundary	☐ Yes	☐ No	☐ NE
The dissolved concentration of benzene is <1,000 µg/L	☐ Yes	☐ No	☐ NE
The dissolved concentration of MTBE is <1,000 µg/L	☐ Yes	☐ No	☐ NE
Class 5	☐ **Yes**	☐ **No**	☐ **NE**
Based on an analysis of site specific conditions at the site under current and reasonable 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 will be achieved within a reasonable time frame	☐ Yes	☐ No	☐ NE

(Media Specific Criteria for Groundwater Evaluation Continued on Next Page)

KEY: NE = Identified Data Gap - Needs Further Evaluation NA = Not Applicable

Sites Not Meeting the Characteristics of the Five Groundwater Plume Classes

Indicate those conditions that do not meet the characteristics of one of the five classes of sites listed in the LTCP.

Plume Length (That Exceeds Water Quality Objectives)			
≥ 100 feet and < 250 feet	☐ Yes		
≥ 250 feet and < 1,000 feet	☐ Yes		
≥ 1,000 feet	☐ Yes		
Unknown	☐ Yes		
For Sites with Free Product			
Free product in groundwater	☐ Yes	☐ No	☐ UNK
Free product has been removed to the maximum extent practicable	☐	☐ No	☐ UNK
The plume has been stable or decreasing for 5-Years	☐	☐ No	☐ UNK
The owner is willing to accept a Land Use Restriction (if required)	☐	☐ No	☐ UNK
Free product extends offsite	☐ Yes	☐	☐ UNK
Benzene Concentration			
≥ 1,000 µg/L and < 3,000 µg/L	☐ Yes		
≥ 3,000 µg/L	☐ Yes		
Unknown	☐ Yes		
MTBE Concentration			
≥ 1,000 µg/L	☐ Yes		
Unknown	☐ Yes		
Nearest Supply Well (From Plume Boundary)			
≤ 250 Feet	☐ Yes		
> 250 Feet and ≤ 1,000 Feet	☐ Yes		
Unknown	☐ Yes		
Nearest Surface Water Body (From Plume Boundary)			
≤ 250 Feet	☐ Yes		
> 250 Feet and ≤ 1,000 Feet	☐ Yes		
Unknown	☐ Yes		

KEY: NE = Identified Data Gap - Needs Further Evaluation NA = Not Applicable

CSM Minimum Required Information

Has the minimum required information listed below been provided in the CSM for evaluation of case compliance with Media Specific Criteria for Groundwater?	☒ Yes	☐ No	
Sufficient data been presented to demonstrate that site characterization activities have defined the horizontal and vertical extent of the plume?	☒ Yes	☐ No	☐ NA
Demonstration of plume stability using a valid technical analysis that considers the accuracy of data from the wells, well placement within the plum, and changes in horizontal and vertical extent of the plume?	☒ Yes	☐ No	☐ NA
Evaluation of factors such as seasonal variability, water level changes, sampling methods, well construction, and other factors that can affect data quality?	☒ Yes	☐ No	☐ NA
A recent well survey that uses all available well information from both the Department of Water Resources and local agencies (Zone 7 Water Agency of Alameda County Public Works as appropriate)?	☒ Yes	☐ No	☐ NA
The location of surface water bodies and water supply wells located within 2,000 feet of the site presented on a site figure with benzene and MTBE isoconcentration contours?	☒ Yes	☐ No	☐ NA
A table identifying each water supply well along with the well construction details?	☒ Yes	☐ No	☐ NA
A discussion of surface water bodies within 2,000 feet of the site and details on hydraulic connection with the groundwater plume?	☒ Yes	☐ No	☐ NA
A discussion of current and reasonable anticipated near-term future scenarios at the site and in the vicinity of the site and possible Land Use Restrictions?	☒ Yes	☐ No	☐ NA
	☐ Yes	☐ No	☐ NA
	☐ Yes	☐ No	☐ NA
	☐ Yes	☐ No	☐ NA
	☐ Yes	☐ No	☐ NA
	☐ Yes	☐ No	☐ NA

(Refer to Att. 1 - CSM Detailed Evaluation Checklist for Identification of Data Gaps)

KEY: NE = Identified Data Gap - Needs Further Evaluation NA = Not Applicable

Case Notes

End of Groundwater Criteria Evaluation

KEY: NE = Identified Data Gap - Needs Further Evaluation NA = Not Applicable

Does the site meet one of the three petroleum vapor intrusion to indoor air specific criteria (a, b, or c), or qualify for the active commercial fueling facility exemption?	☒ YES	☐ NO

LTCP Statement: "Exposure to petroleum vapors migrating from soil or groundwater to indoor air may pose unacceptable human health risks. This policy describes conditions, including bioattenuation zones, which if met will assure that exposure to petroleum vapors in indoor air will not pose unacceptable health risks. In many petroleum release cases, potential human exposures to vapors are mitigated by bioattenuation processes as vapors migrate toward the ground surface. For the purposes of this section, the term "bioattenuation zone" means an area of soil with conditions that support biodegradation of petroleum hydrocarbon vapors.

The low-threat vapor-intrusion criteria described below apply to sites where the release originated and impacted or potentially impacted adjacent parcels when:

(1) existing buildings are occupied or may be reasonably expected to be occupied in the future, or

(2) buildings for human occupancy are reasonably expected to be constructed in the future.

Appendices 1 through 4 (attached) illustrate four potential exposure scenarios and describe characteristics and criteria associated with each scenario. Petroleum release sites shall satisfy the media-specific criteria for petroleum vapor intrusion to indoor air and be considered low-threat for the vapor-intrusion-to-indoor-air pathway if:

a. Site-specific conditions at the release site satisfy all of the characteristics and criteria of scenarios 1 through 3 as applicable, or all of the characteristics and criteria of scenario 4 as applicable; or

b. A site-specific risk assessment for the vapor intrusion pathway is conducted and demonstrates that human health is protected to the satisfaction of the regulatory agency; or

c. As a result of controlling exposure through the use of mitigation measures or through the use of institutional or engineering controls, the regulatory agency determines that petroleum vapors migrating from soil or groundwater will have no significant risk of adversely affecting human health.

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. Therefore, 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."

Does the site qualify for an EXEMPTION from the Petroleum Vapor Intrusion to Indoor Air criteria (i.e., the site is an active commercial petroleum fueling facility?				☒ Yes	☐ No
Are release characteristics reasonably believed to pose an unacceptable health risk to facility users or nearby facilities?	☐ Yes	☒ No	☐ NE		
a. Do site-specific conditions at the release site satisfy all of the characteristics and criteria of scenarios 1 through 3 as applicable, or all of the characteristics and criteria of scenario 4?				☐ Yes	☐ No
Scenario 1: Unweathered LNAPL in groundwater	☐ Yes	☐ No			
Scenario 2: Unweathered LNAPL in soil	☐ Yes	☐ No			
Scenario 3: Dissolved benzene concentrations in groundwater (oxygen ≥ 4%)	☐ Yes	☐ No			
Scenario 4: Dissolved phase benzene concentrations in groundwater (oxygen < 4%)	☐ Yes	☐ No			
(Refer to Next Page for Scenario 1 through 4 Characteristics)					
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
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

(Media Specific Criteria for Vapor Intrusion to Indoor Air Evaluation Continued on Next Page)

KEY: NE = Identified Data Gap - Needs Further Evaluation NA = Not Applicable

Scenarios 1 through 3: Bioattenuation Zone Characteristics

Scenario 1: Unweathered LNAPL in Groundwater				
The bioattenuation zone is a continuous zone provides a separation of at least 30 feet vertically between the LNAPL in groundwater and the foundation of existing or potential buildings; and	☐ Yes	☐ No	☐ NE	☒ NA
Total TPH (TPH-g and TPH-d combined) are less than 100 mg/kg throughout the entire depth of the bioattenuation zone	☐ Yes	☐ No	☐ NE	☒ NA

Scenario 2: Unweathered LNAPL in Soil				
The bioattenuation zone is a continuous zone that provides a separation of at least 30 feet vertically between the LNAPL in soil and the foundation of existing or potential buildings; and	☐ Yes	☐ No	☐ NE	☒ NA
Total TPH (TPH-g and TPH-d combined) are <100 mg/kg throughout the entire lateral and vertical extent of the bioattenuation zone	☐ Yes	☐ No	☐ NE	☒ NA

Scenario 3: Dissolved Phase Benzene Concentrations in Groundwater				
Sites without oxygen data or where oxygen is <4% and benzene concentrations < 100 µg/l (Figure A)	☒ **Yes**	☐ **No**	☐ **NE**	☐ **NA**
The bioattenuation zone is a continuous zone that provides a separation of at least 5 feet vertically between the dissolved phase benzene and the foundation of existing or potential buildings; and	☒ Yes	☐ No	☐ NE	☐ NA
Contains total TPH (TPH-g and TPH-d combined) < 100 mg/kg throughout the entire depth of the bioattenuation zone	☒ Yes	☐ No	☐ NE	☐ NA
Sites without oxygen data or where oxygen is <4% and benzene concentrations ≥ 100 µg/L but < 1,000 µg/L (Figure B)	☐ **Yes**	☐ **No**	☐ **NE**	☐ **NA**
The bioattenuation zone is a continuous zone that provides a separation of at least 10 feet vertically between the dissolved phase benzene and the foundation of existing or potential buildings	☐ Yes	☐ No	☐ NE	☐ NA
Sites with oxygen ≥ 4% and benzene concentrations < 1,000 µg/L (Figure C)	☐ **Yes**	☐ **No**	☐ **NE**	☐ **NA**
A continuous zone that provides a separation of at least 10 feet vertically between the dissolved phase benzene and the foundation of existing or potential buildings	☐ Yes	☐ No	☐ NE	☐ NA
Contains total TPH (TPH-g and TPH-d combined) < 100 mg/kg throughout the entire depth of the bioattenuation zone	☐ Yes	☐ No	☐ NE	☐ NA

(LTCP Media Specific Criteria for Vapor Intrusion to Indoor Air Evaluation Continued on Next Page)

KEY: NE = Identified Data Gap - Needs Further Evaluation NA = Not Applicable

Scenario 4 Characteristics: Direct Measurement of Soil Gas Concentrations (No Bioattenuation Zone)

Were soil gas samples obtained from the required locations?	☐ **Yes**	☐ **No**	☐ **NE**	☒ **NA**
Beneath or adjacent to an existing building: Soil gas samples collected at least 5 feet below the bottom of the building foundation	☐ Yes	☐ No	☐ NE	☒ NA
Future construction: Soil gas samples from at least five feet below ground surface	☐ Yes	☐ No	☐ NE	☒ NA
Were soil gas samples collected in accordance with DTSC Advisory with DTSC Advisory – Active Soil Gas Investigations (April 2012)?	☐ **Yes**	☐ **No**	☐ **NE**	☒ **NA**

Are all of the following criteria for a bioattenuation zone satisfied?	☐ **Yes**	☐ **No**	☐ **NE**	☒ **NA**
There is a minimum of five vertical feet of soil between the soil vapor measurements and the foundation of an existing building or ground surface of future construction; and	☐ Yes	☐ No	☐ NE	☒ NA
TPH (TPHg + TPHd) is less than 100 mg/kg (measured in at least two depths within the five-foot zone; and	☐ Yes	☐ No	☐ NE	☒ NA
Oxygen is ≥ 4% measured at the bottom of the five-foot zone	☐ Yes	☐ No	☐ NE	☒ NA

If the bioattenuation zone criteria are all satisfied, then do soil gas concentrations meet the following criteria?	☐ **Yes**	☐ **No**	☐ **NE**	☒ **NA**
Residential	☐ **Yes**	☐ **No**	☐ **NE**	☒ **NA**
Benzene <85,000 µg/m^3	☐ Yes	☐ No	☐ NE	☒ NA
Ethylbenzene <1,100,000 µg/m^3	☐ Yes	☐ No	☐ NE	☒ NA
Napthalene <93,000 µg/m^3	☐ Yes	☐ No	☐ NE	☒ NA
Commercial	☐ **Yes**	☐ **No**	☐ **NE**	☒ **NA**
Benzene <280,000 µg/m^3	☐ Yes	☐ No	☐ NE	☒ NA
Ethylbenzene <3,600,000 µg/m^3	☐ Yes	☐ No	☐ NE	☒ NA
Napthalene <310,000 µg/m^3	☐ Yes	☐ No	☐ NE	☒ NA

If the bioattenuation zone criteria are not satisfied, then do soil gas concentrations meet the following criteria?	☐ **Yes**	☐ **No**	☐ **NE**	☒ **NA**
Residential	☐ **Yes**	☐ **No**	☐ **NE**	☒ **NA**
Benzene <85 µg/m^3	☐ Yes	☐ No	☐ NE	☒ NA
Ethylbenzene <1,100 µg/m^3	☐ Yes	☐ No	☐ NE	☒ NA
Napthalene <93 µg/m^3	☐ Yes	☐ No	☐ NE	☒ NA
Commercial	☐ **Yes**	☐ **No**	☐ **NE**	☒ **NA**
Benzene <280 µg/m^3	☐ Yes	☐ No	☐ NE	☒ NA
Ethylbenzene <3,600 µg/m^3	☐ Yes	☐ No	☐ NE	☒ NA
Napthalene <310 µg/m^3	☐ Yes	☐ No	☐ NE	☒ NA

(LTCP Media Specific Criteria for Vapor Intrusion to Indoor Air Evaluation Continued on Next Page)

KEY: NE = Identified Data Gap - Needs Further Evaluation NA = Not Applicable

Additional questions for sites that do not meet the LTCP Criteria (a, b, or c):

Soil Gas Samples	
Insufficient number to be representative	☐ Yes
Temporal variability not evaluated	☐ Yes
No soil gas samples	☐ Yes
Taken incorrectly	☐ Yes
Not taken at two depths within 5 foot zone	☐ Yes
High spatial or temporal variability	☐ Yes
Insufficient analytes	☐ Yes
Exposure Type	
Residential	☐ Yes
Commercial	☐ Yes
Free Product	
In groundwater	☐ Yes
In soil	☐ Yes
Unknown	☐ Yes
TPH in the Bioattenuation Zone	
< 5 feet (No Biozone)	☐ Yes
≥ 5 feet and < 10 feet	☐ Yes
≥ 10 feet and < 30 feet	☐ Yes
≥ 30 Feet	☐ Yes
30 Feet BioZone compromised (TPH>100 µg/L)	☐ Yes
Unknown	☐ Yes
Oxygen Data in Bioattenuation Zone	
No oxygen data	☐ Yes
Oxygen < 4%	☐ Yes
Oxygen ≥ 4%	☐ Yes
Benzene in Groundwater	
≥ 100 µg/L and < 1,000 µg/L	☐ Yes
≥ 1,000 µg/L	☐ Yes
Unknown	☐ Yes
Soil Gas Benzene	
≥ 85 $\mu g/m^3$ and < 280 $\mu g/m^3$	☐ Yes
≥ 280 $\mu g/m^3$ and < 85,000 $\mu g/m^3$	☐ Yes
≥ 85,000 $\mu g/m^3$ and < 280,000 $\mu g/m^3$	☐ Yes
≥ 280,000 $\mu g/m^3$	☐
Unknown	☐ Yes
Soil Gas Ethylbenzene	
≥ 1,100 $\mu g/m^3$ and < 3,600 $\mu g/m^3$	☐ Yes
≥ 3,600 $\mu g/m^3$ and < 1,100,000 $\mu g/m^3$	☐ Yes
≥ 1,100,000 $\mu g/m^3$ and < 3,600,000	☐ Yes
≥ 3,600,000 $\mu g/m^3$	☐ Yes
Unknown	☐ Yes
Soil Gas Napthalene	
≥ 93 $\mu g/m^3$ and < 310 $\mu g/m^3$	☐ Yes
≥ 310 $\mu g/m^3$ and < 93,000 $\mu g/m^3$	☐ Yes
≥ 93,000 $\mu g/m^3$ and < 310,000 $\mu g/m^3$	☐ Yes
≥ 310,000 $\mu g/m^3$	☐ Yes
Unknown	☐

KEY: NE = Identified Data Gap - Needs Further Evaluation NA = Not Applicable

CSM Minimum Required Information

Has the minimum required information listed below been provided in the CSM for evaluation of case compliance with the Media Specific Criteria for Vapor Intrusion to Indoor Air?	**☒ Yes**	**☐ No**	
Sufficient data to demonstrate that site characterization is complete and that the data demonstrate that the site-specific conditions satisfy all the assumptions, characteristics, and screening criteria of scenarios 1 through 3, or all the assumptions, characteristics, and screening criteria of scenario 4?	☐ Yes	☐ No	☒ NA
Evidence of unweathered LNAPL in soil or groundwater?	☐ Yes	☐ No	☒ NA
Soil data to demonstrate that total TPH concentrations (TPH-g and TPH-d combined) in soil are < 100 mg/kg throughout the specified bioattenuation zone depth?	☐ Yes	☐ No	☒ NA
Depth of foundation of existing or potential buildings?	☐ Yes	☐ No	☒ NA
Soil gas data to demonstrate that a continuous bioattenuation zone is or is not present?	☐ Yes	☐ No	☒ NA
Concentrations of benzene in groundwater?	☐ Yes	☐ No	☒ NA
Oxygen data in the bioattenuation zone?	☐ Yes	☐ No	☒ NA
Results and evaluation of preferential pathway and utility conduit surveys to determine whether a continuous bioattenuation zone is present?	☐ Yes	☐ No	☒ NA
Evaluation of data representativeness, quality, spatial distribution, and temporal variability relative to current or potential receptors and sources?	☐ Yes	☐ No	☒ NA
Evaluation to assess whether nearby facilities potentially may be impacted by petroleum vapor intrusion?	☐ Yes	☐ No	☒ NA
Sufficient data to demonstrate that through the use of mitigation measures or institutional controls, exposure to petroleum vapors migrating from soil or groundwater will have no significant risk of adversely affecting human health?	☐ Yes	☐ No	☒ NA
	☐ Yes	☐ No	☐ NA
	☐ Yes	☐ No	☐ NA
	☐ Yes	☐ No	☐ NA
	☐ Yes	☐ No	☐ NA
	☐ Yes	☐ No	☐ NA

(Refer to Att. 1 - CSM Checklist for Identification of Data Gaps)

KEY: NE = Identified Data Gap - Needs Further Evaluation NA = Not Applicable

Case Notes

End of Vapor Intrusion to Indoor Air Evaluation

KEY: NE = Identified Data Gap - Needs Further Evaluation NA = Not Applicable

Does the site satisfy the Media-Specific Criteria for Direct Contact and Outdoor Air Exposure, or does the site qualify for the exemption?	☒ YES	☐ NO

LTCP Statement: "This policy describes conditions where direct contact with contaminated soil or inhalation of contaminants volatized to outdoor air poses a low threat to human health. Release sites where human exposure may occur satisfy the media-specific criteria for direct contact and outdoor air exposure and shall be considered low-threat if they meet any of the following:

a. Maximum concentrations of petroleum constituents in soil are less than or equal to those listed in Table 1 for the specified depth below ground surface (bgs). The concentration limits for 0 to 5 feet bgs protect from ingestion of soil, dermal contact with soil, and inhalation of volatile soil emissions and inhalation of particulate emissions. The 5 to 10 feet bgs concentration limits protect from inhalation of volatile soil emissions. Both the 0 to 5 feet bgs concentration limits and the 5 to 10 feet bgs concentration limits for the appropriate site classification (Residential or Commercial/Industrial) shall be satisfied. In addition, if exposure to construction workers or utility trench workers is reasonably anticipated, the concentration limits for Utility Worker shall also be satisfied; or

b. Maximum concentration of petroleum constituents in soil are less than levels that a site specific risk assessment demonstrates will have no significant risk of adversely affecting human health; or

c. As a result of controlling exposure through the use of mitigation measures or through the use of institutional or engineering controls, the regulatory agency determines that the concentrations of petroleum constituents in soil will have no significant risk of adversely affecting human health."

Does the site qualify for an EXEMPTION from Direct Contact and Outdoor Air Exposure Criteria (i.e., is the upper 10 feet of soil free of petroleum contamination)?	☐ Yes	☒ No
If the site does not qualify for the exemption, then does the site satisfy the media-specific criteria (a, b, or c) for direct contact and outdoor air exposure?	☐ Yes	☐ No

a. Are maximum concentrations of petroleum constituents in soil less than or equal to those listed in Table 1 for the specified depth bgs? (Refer to Next Page for Concentrations Limits Evaluation)	☐ Yes	☒ No
b. Are the 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
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

(Media Specific Criteria for Direct Contact and Outdoor Air Exposure Evaluation Continued on Next Page)

KEY: NE = Identified Data Gap - Needs Further Evaluation NA = Not Applicable

Maximum Concentrations of Petroleum Constituents in Soil (Scenario a)

Table 1 – Concentrations of Petroleum Constituents in Soil That will Have No Significant Risk of Adversely Affecting Human Health

Chemical	Residential		Commercial/Industrial		Utility Worker
	0 to 5 ft bgs (mg/kg)	5 to 10 ft bgs (mg/kg)	0 to 5 ft bgs (mg/kg)	5 to 10 ft bgs (mg/kg)	0 to 10 ft bgs (mg/kg)
Benzene	1.9	2.8	8.2	12	14
Max Soil Conc[1]	NA *Insert*	NA *Insert*	3.8 *Insert*	54 *Insert*	54 *Insert*
Ethylbenzene	21	32	89	134	314
Max Soil Conc[1]	NA *Insert*	NA *Insert*	48 *Insert*	520 *Insert*	520 *Insert*
Napthalene	9.7	9.7	45	45	219
Max Soil Conc[1]	NA *Insert*	NA *Insert*	NA *Insert*	NA *Insert*	NA *Insert*
PAH	0.063	NA	0.68	NA	4.5
Max Soil Conc[1]	NA *Insert*	NA *Insert*	NA *Insert*	NA *Insert*	NA *Insert*

Notes:

1. The maximum concentrations of petroleum constituents in soil should be compared to those listed in Table 1 (Technical Justification for Soil Screening Levels for Direct Contact and Outdoor Air Exposure Pathways, SWRCB)
2. Based on the seven carcinogenic poly-aromatic hydrocarbons (PAHs) as benzo(a)pyrene toxicity equivalent [BaPe]. Sampling and analysis for PAHs is only necessary where soil is affected by either waste oil or Bunker C oil.

Are both the 0 to 5 feet bgs concentration limits 5 to 10 feet bgs concentration limits for the appropriate site classification satisfied?	☐ Yes	☒ No	☐ NE
Residential: 0 to 5 feet bgs	☒ Yes	☐ No	☐ NE
Residential: 5 to 10 feet bgs	☒ Yes	☐ No	☐ NE
Commercial/Industrial: 0 to 5 feet bgs	☒ Yes	☐ No	☐ NE
Commercial/Industrial: 5 to 10 feet bgs	☐ Yes	☒ No	☐ NE
If exposure to construction or utility trench workers is reasonably anticipated, are the concentration limits for the Utility Worker satisfied?	☐ Yes	☒ No	☐ NE
Have the requirements for using the screening levels in Table 1 been satisfied (i.e., have the model assumptions presented in the SWRCB document entitled *"Technical Justification for Soil Screening Levels for Direct Contact and Outdoor Air Exposure Pathways"* been met?	☐ Yes	☒ No	☐ NE
Is the area of impacted soil where a particular exposure occurs ≤ 82 feet by 82 feet?	☒ Yes	☐ No	☐ NE
Is the receptor located at the downgradient edge for inhalation exposure?	☒ Yes	☐ No	☐ NE
Is the wind speed < 2.25 meters per second (7.38 feet per second) on average?	☒ Yes	☐ No	☐ NE
Are there different exposure scenarios than residential, commercial/industrial, utility worker) at the site?	☐ Yes	☒ No	☐ NE

(LTCP Media Specific Criteria for Direct Contact and Outdoor Air Exposure Evaluation Continued on Next Page)

KEY: NE = Identified Data Gap - Needs Further Evaluation NA = Not Applicable

Additional Questions FOR Sites That Do Not Meet the LTCP Criteria

Indicate only those conditions that do not meet the Direct Contact and Outdoor Air Exposure scenarios:

Exposure Type:	
Residential	☐ Yes
Commercial	☒ Yes
Utility Worker	☒ Yes
Petroleum Constituents in Soil:	
≤ 5 feet bgs	☐ Yes
> 5 feet bgs and ≤ 10 feet bgs	☒ Yes
Unknown	☐ Yes
Soil Concentrations of Benzene:	
> 1.9 mg/kg and ≤ 2.8 mg/kg	☐ Yes
> 2.8 mg/kg and ≤ 8.2 mg/kg	☐ Yes
> 8.2 mg/kg and ≤ 12 mg/kg	☐ Yes
> 12 mg/kg and ≤ 14 mg/kg	☐
> 14 mg/kg	☒ Yes
Unknown	☐ Yes
Soil Concentrations of Ethylbenzene:	
> 21 mg/kg and ≤ 32 mg/kg	☐ Yes
> 32 mg/kg and ≤ 89 mg/kg	☐ Yes
> 89 mg/kg and ≤ 134 mg/kg	☐ Yes
> 134 mg/kg and ≤ 314 mg/kg	☐ Yes
> 314 mg/kg	☒ Yes
Unknown	☐ Yes
Soil Concentrations of Naphthalene:	
> 9.7 mg/kg and ≤ 45 mg/kg	☐ Yes
> 45 mg/kg and ≤ 219 mg/kg	☐ Yes
> 219 mg/kg	☐ Yes
Unknown	☒ Yes
Soil Concentrations of PAH:	
> 0.063 mg/kg and ≤ 0,68 mg/kg	☐ Yes
> 0.68 mg/kg and ≤ 4.5 mg/kg	☐ Yes
> 4.5 mg/kg	☐ Yes
Unknown	☒
Area of Impacted Soil:	
Area of Impacted Soil > 82 by 82 Feet	☐ Yes
Unknown	☒ Yes

This case should be closed in spite of <u>not</u> meeting policy criteria: List Reasons: Four soil borings were advanced in the immediate vicinity of the former UST excavation in November 2010. One soil sample from 5.5 fbg in boring BX-3, located within 3 ft of the former UST excavation, yielded benzene at 54 mg/kg and ethylbenzene at 520 mg/kg. It is highly unlikely that workers will trench through this area before these concentrations drop below levels in Table 1. Natural attenuation will take care of this issue before the USTs are replaced again.	☒ Yes

KEY: NE = Identified Data Gap - Needs Further Evaluation NA = Not Applicable

CSM Minimum Required Information

Has the minimum required information listed below been provided in the CSM for evaluation of case compliance with following Media Specific Criteria for Direct Contact and Outdoor Air Exposure?	☑ **Yes**	☐ **No**	
Sufficient data to demonstrate that site characterization is complete for the prescribed depth ranges of 0 to 5 feet and 5 to 10 feet bgs in order to assess potential direct contact and outdoor air exposure?	☑ Yes	☐ No	☐ NA
Figures and tables showing the soil data for each of the prescribed depth ranges with a comparison to the screening levels for each exposure scenario?	☑ Yes	☐ No	☐ NA
Analytical data for all chemicals of concern including total petroleum hydrocarbons in order and an assessment of whether unique conditions not considered in the Policy may exist at the site?	☑ Yes	☐ No	☐ NA
Evaluation of data for data representativeness, quality, spatial distribution relative to current or potential receptors and sources, and temporal variability?	☑ Yes	☐ No	☐ NA
Description of the current and expected future land use, redevelopment, or construction for the site?	☑ Yes	☐ No	☐ NA
	☐ Yes	☐ No	☐ NA
	☐ Yes	☐ No	☐ NA
	☐ Yes	☐ No	☐ NA
	☐ Yes	☐ No	☐ NA
	☐ Yes	☐ No	☐ NA
	☐ Yes	☐ No	☐ NA
	☐ Yes	☐ No	☐ NA
	☐ Yes	☐ No	☐ NA
	☐ Yes	☐ No	☐ NA
	☐ Yes	☐ No	☐ NA
	☐ Yes	☐ No	☐ NA

(Refer to Att. 1 - CSM Detailed Evaluation Checklist for Identification of Data Gaps)

KEY: NE = Identified Data Gap - Needs Further Evaluation NA = Not Applicable

Direct Contact and Outdoor Air Exposure: Case Notes

End of Direct Contact and Outdoor Air Exposure Criteria Evaluation

KEY: NE = Identified Data Gap - Needs Further Evaluation NA = Not Applicable