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July 7, 2010

Mr. Paresh C. Khatri
Hazardous Materials Specialist
Alameda County Health Care Services Agency
Department of Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502

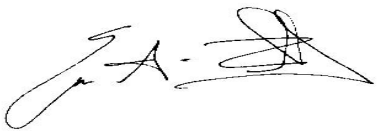
Re: **Request for Case Closure**
76 Service Station Facility No. 2611270
3255 Mecartney Road
Alameda, California

Dear Mr. Khatri:

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

If you have any questions or need additional information, please call me at (916) 558-7604.

Sincerely,



Eric G. Hetrick
Site Manager
Risk Management & Remediation

July 07, 2010

Mr. Paresh C. Khatri
Hazardous Materials Specialist
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502

Subject: **Request for Case Closure**
76 Service Station No. 11270
3255 Mecartney Road
Alameda, California
Fuel Leak Case No. RO0000511

DELTA

Dear Mr. Khatri,

Delta Consultants (Delta) has prepared this *Request for Case Closure* for the site at 3255 Mecartney Road in Alameda, California (**Figure 1**). The *Request for Closure* summarizes and evaluates site soil, groundwater, and soil vapor data. The report also evaluates the risk posed to any potential receptors by residual petroleum hydrocarbons. This closure request has been prepared in support of the recommendation for "no further action" (NFA) made in Delta's *Site Assessment Report* dated February 16, 2010.

SITE DESCRIPTION:

The site is an operational 76 service station located within a shopping center located on the northwest corner of the intersection of Mecartney Road and Island Drive in Alameda, California. The site is located in a mixed commercial and residential neighborhood (**Figure 1**).

Site features include three gasoline underground storage tanks (USTs), two fuel dispenser islands, and a station building with a service bay containing two hoists. The capacity of the three fiberglass fuel USTs are 12,000-gallon, 10,000-gallon, and 6,000-gallons. Currently, there are two onsite (MW-5, MW-6)) and four offsite active groundwater monitoring wells (MW-7, XW-1 through XW-3), and five onsite soil vapor monitoring wells (SV-1 through SV-5). Pertinent site features are shown on **Figure 2**.

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BACKGROUND

Sampling and boring/well locations are shown on **Figure 3**.

May 1990 - During a routine dispenser modification, hydrocarbon contaminated soils were reported in samples P-1 and P-2 from a depth of 4.5 feet below ground surface (bgs). The dispenser area, including sample locations, was subsequently over-excavated to 4.5 feet bgs and confirmation soil samples SW1 through SW9 were collected at sample points shown on **Figure 3**. Total petroleum hydrocarbons as gasoline (TPH-G) and benzene were reported at maximum concentrations in sidewall samples SW1 and SW3 at concentrations of 2,000 milligrams per kilogram (mg/kg) and 18 mg/kg in SW1, and 860 mg/kg and 5 mg/kg in SW3, respectively at a depth of 8 feet bgs. SW3 could not be over-excavated to the southwest due to proximity to fuel USTs (KEI 1990). Additional excavation to 8.5 feet bgs was reported to have taken place to the south of SW-1, but it appears that additional excavation to the north of the sample was not conducted. Soil south of SW1 was excavated to 8.5 feet bgs, and soil to the north was excavated to 4.5 feet bgs, the same depth as SW1. Approximately 195 cubic yards of soil were excavated and disposed of at Class I and Class III facilities (KEI 1990). Historical soil analytical results are presented in **Attachment A**. Soil sample locations and excavation limits are shown on **Figure 3**.

August 1992 - A preliminary site assessment was conducted at the site including the sampling of two pre-existing Mobil groundwater monitoring wells MW-2 and MW-4 (**Figure 3**). Groundwater flow direction was reportedly to the west. Groundwater samples could not be collected from monitoring wells MW-1 and MW-3 due to insufficient recharge. Product sheen was observed in the purge water from all of the monitoring wells. TPH-G, benzene and total petroleum hydrocarbons as diesel (TPH-D) were reported at maximum concentrations of 2,600 micrograms per liter (µg/l) and 250 µg/l in MW-4 and 3,900 µg/l in MW-2 (Hydro 1993). Locations of monitoring wells are shown on **Figures 2 and 3**, historic groundwater data and elevation is presented in **Attachment B**.

May 4, 1993 – In a correspondence letter from the BP Oil Company, the recent installation of three monitoring wells (XW-1 through XW-3) surrounding the site on Harbor Bay Landing shopping center property was acknowledged. No information to the wells installation, ownership or purpose was known. The wells were included into the site's quarterly monitoring program in June of 1993 (BP 1993). Well locations are shown on **Figures 2** and **3**.

June 1993 - One 4-inch diameter groundwater monitoring well, MW-5, was installed in the western corner of the property to a depth of 15 feet bgs (**Figure 2, 3**). TPH-D was reported at a concentration of 11,000 mg/kg at a depth of five feet bgs (Hydro 1995). Borings logs are presented as **Attachment C**. The first groundwater sample collected from the well was reported to only contain TPH-D above the laboratory reporting limit (LRL), at a concentration of 100 ppb.

October 1994 - Two exploratory borings (TB-1 and TB-2) were advanced to a depth of 11.5 feet bgs (**Figure 3**) as part of a baseline property assessment. No analytes were reported above their respective laboratory reporting limits (LRLs) in any soil samples. Groundwater samples collected from borings, TB-1 and TB-2, contained 1,500 µg/l and 310 µg/l TPH-G, respectively. Historical soil and groundwater analytical results from the soil borings are summarized in **Attachment A**.

January 1995 - Monitoring wells, MW-1 through MW-4, were destroyed in January 1995. Additionally, one 4-inch diameter monitoring well, MW-6, was installed on-site and one 2-inch diameter monitoring well, MW-7, was installed approximately five feet to the northwest of the site (**Figures 2 and 3**). Monitoring well MW-6 was constructed to a depth of 15 feet bgs and MW-7 was constructed to a depth of 16.5 feet bgs. TPH-D, TPH-G, ethylbenzene, xylenes and toluene were reported in the soil sample from MW-6 at a depth of 5 feet bgs at concentrations of 480mg/kg, 89mg/kg, 0.63 mg/kg, 4.8 mg/kg and 0.21 mg/kg, respectively. In a soil sample from MW-7 from a depth of five feet, TPH-D was reported at a concentration of 110 mg/kg. Groundwater was encountered in the monitoring wells at depths ranging from 5 to 7.5 feet bgs (Hydro 1995). Borings logs are presented as **Attachment C**. Soil sample data is included in **Attachment A**.

November 1996 - The oil/water separator located in the floor of the vehicle service bay on the west side of the service station building was removed. Two soil samples (OWS-1, 0.5' and OWS-1, 2') were collected from beneath the former oil/water separator (**Figure 3**). Total recoverable petroleum hydrocarbons (TRPH) were present in the both soil samples with a maximum concentration of 49 mg/kg. All other analytes were below LRLs (EMCON 1998). Soil analytical data is included in **Attachment A**. Details regarding the sampling event were obtained through EMCON's Baseline Assessment Report dated July 28, 1998.

August 1997 - Samples of pea gravel base material (S-1, through S-4) were collected from below each fuel dispenser. Only toluene and xylenes were reported above the LRLs in the samples. The original report for the sampling could not be located. Details regarding the

sampling event were obtained through URS's Case Closure Summary dated October 27, 2004. Soil analytical data is included in **Attachment A**.

July 9, 1998 - One 1,000-gallon single-walled fiberglass used-oil UST was removed from the site. The UST was noted to be intact with no visible holes or cracks. One native soil sample (S-6-T1E) was collected from the eastern sidewall of the UST cavity at a depth of approximately 7 feet bgs (**Figure 3**). No analytes were detected above the LRL in the soil sample (ERI 1998). Soil analytical data is included in **Attachment A**.

August 2000 - Site fuel dispensers and product lines were removed and replaced. A total of four pea gravel samples (PD-1-2', PD-2-1.5', PD-3-1.5', and PD-4-1.5') were collected from beneath each of the four fuel dispensers, and four pea gravel samples (PL-3-1.5', PL-4-1.5', PL-6-1.5', and PL-7-1.5') were collected from beneath the product lines. Three pea gravel samples were also collected at each of the ends of the fuel USTs (F-1-4', F-2-4', and F-5-3'). No analytes were reported above LRLs in any of the samples submitted for laboratory analysis (SECOR 2000). Historical soil analytical results are summarized in **Attachment A.** Soil sample locations are shown on **Figure 3**.

October 31, 2001: the Alameda County Environmental Health (ACEH) Department issued a letter of intent to make a determination that no further action (NFA) would be required, or to issue a closure letter for the site's environmental case (ACEH 2001). In a letter dated November 7, 2001, BP Oil notified the ACEH that monitoring and sampling of the site's monitoring wells would cease pending case closure/ the issue of an NFA (BP 2001).

October 21, 2004: URS submitted a Case Closure Summary (URS 2004).

August 21, 2008: The ACEH denied URS case closure. The ACEH stated that it was unclear whether sample SW1 was over-excavated. The sample was collected from a depth of 4.5 feet bgs, and appeared to be a sidewall sample for the 8 foot deep excavation to the south. The ACEH then stated that concentrations reported in SW1 would require additional investigation (ACEH 2008).

February 2009: Broadbent & Associates, Inc (BAI) attempted to advance soil boring B-4 to assess the presence of residual petroleum hydrocarbon-impacted soil onsite in the vicinity of the UST complex and the pump islands. Field activities were stopped in accordance with BP's safety protocol after encountering. According to the manager who has operated the facility for 24 years, during original construction, a large area of the subsurface soil was excavated from the site and backfilled with pea gravel (BAI 2009). The approximate extent of the pea gravel is shown on **Figure 2**. BAI also conducted a preferential pathway study,

but stated that results of the study were inconclusive. BAI recommended case closure based on historically low hydrocarbon concentrations.

May 8, 2009: The ACEH denied BAI's closure request and stated that investigation had not been performed to confirm or repudiate concentrations in SW1. Further, the ACEH stated that since pea gravel covers much of the subsurface at the site, that vapor intrusion should be investigated.

December 10, 2009: Delta installed five soil vapor wells at the site at locations shown on **Figures 2 and 3**. One soil sample was collected from 4.5 feet bgs in each well, and soil vapor samples were collected on January 10, 2010. TPH-D and methyl tertiary butyl ether (MTBE) were reported in soil sample SV-5 at concentrations of 50.9 mg/kg and 0.022 mg/kg, respectively. TPH-G was reported in soil vapor samples from wells SV-2, SV-4 and SV-5 at concentrations of 1,400 micrograms per cubic meter (µg/m^3), 35,000 µg/m^3 and 16,000 µg/m^3, respectively. MTBE was reported in the same wells at concentrations of 60 µg/m^3, 92 µg/m^3 and 4,700 µg/m^3 respectively. Benzene was reported in all wells at concentrations ranging from 9.9 µg/m^3 in well SV-1 to 33 µg/m^3 in well SV-2 (Delta 2010). Soil vapor analytical data is included in **Attachment A**. Based on the distance from the station building and the soil vapor TPH-G concentrations in wells SV-1 (<920 µg/m^3) and SV-2 (1,400 µg/m^3) adjacent to the station building, Delta concluded that intrusion of soil vapor into the service station building is not a concern at the site, and that the site is capped with asphalt and concrete, impeding the upward movement of soil vapor towards potential receptors. Therefore, Delta recommended suspension of additional soil vapor sampling events.

SITE GEOLOGY AND HYDROGEOLOGY

The site is situated approximately 4,500 feet south of San Leandro Bay, and approximately 3,500 feet northeast of the present shoreline of San Francisco Bay, and approximately 600 feet south of a channel. Sediments beneath the site have been classified as Holocene beach sands and dune deposits (Brabb et al. 2006). Sediments encountered at the site generally consisted of silty to gravelly sand and sandy gravel to the maximum explored depth of 16.5 feet bgs. Lean clay was encountered in boring MW-5 from 13 to 15 feet bgs, and gravelly clay (possibly fill) from 3.5 to 5 feet bgs in boring MW-7.

Approximate Scale (miles)

Source:R.W. Graymer, B.C. Moring, G.J. Saucedo, C.M. Wentworth, E.E. Brabb, and K.L. Knudsen (U. S. Geological Survey),Geologic Map of the San Francisco Bay Region, 2006

The site overlies the Alameda East Plain Subbasin, which is part of the larger Santa Clara Valley Groundwater Basin. Deposits that makeup the East Bay Plain Subbasin consist of Pliocene through Holocene age tidal deposits including bay mud, sand and gravel beach deposits, and silts and clays from channel and swamp deposits. The East Bay Plain Subbasin is estimated to be 1,000 feet thick, with depth to water varying from sea level to 140 feet below mean seal level. Since 2000, water in the East Bay Plain Aquifer has been at sea level (RWQCB 1999). Groundwater was encountered during drilling at a depths ranging from 5 to 7.5 feet bgs (Hydro 1995), and historically groundwater in site wells has ranged in elevation from 1.26 feet below sea level (MW-7 10/12/1995) to 2.25 feet above mean sea level (XW-1 on 4/19/1998). Groundwater at the site has typically been directed to the northwest, with north and northeast horizontal components and an average hydraulic

gradient of 0.029 feet per foot. Historic groundwater elevation data including a groundwater flow rose diagram are presented in **Attachment B**.

On May 30, 2000, BP submitted a letter to the ACEH documenting total dissolved solids (TDS) readings in groundwater samples from site wells which exceeded the 3,000 mg/L ceiling limit for groundwater as potential drinking resource (BP 2000). TDS is not currently analyzed as part of the sites monitoring and sampling program, but high TDS readings are believed to be due to salinity caused by sea water intrusion into the subsurface. Based on this, groundwater beneath the site should not be assessed in terms of a potential drinking water resource.

SENSITIVE RECEPTORS

November 1992 - A sensitive receptor survey and existing well search were conducted. No public water supply wells were identified within approximately 2,500 feet of the site. No private water supply wells were identified within 1,000 feet of the site. Additionally, no subways, basements, and schools were identified within 1,000 feet of the site.

The one-page checklist survey identified a surface water body located approximately 500 feet from the site, but did not name it (Hydro 1993). As observed during a site visit by URS, this surface water body is a channel excavated as part of a residential development. The channel appears to connect to the San Francisco Bay which is located, at its closest, approximately 600 feet to the north of the site (URS 2004).

Delta has identified one (circa 1910) irrigation well located less than a mile west of the site. The well was reported by the California Regional Water Quality Control Board, San Francisco Bay Region (RWQCB) to be less than 100 feet deep, and was allegedly abandoned in the 1930s when development of Sierra Nevada reservoirs provided an alternate water supply. Four additional irrigation wells deeper than 100 feet were identified within a mile to the north and northeast of the site in the same report (RWQCB 1999). Maps showing irrigation well locations and the 1992 sensitive receptor survey are included in **Attachment D**.

PREFERENTIAL PATHWAYS

BAI conducted a preferential pathway study at the site in 2009. Depth to water at the site generally varies between 5 and 9 feet bgs, and typical utility trenching at the site was determined to vary from 2 feet bgs to 7 feet bgs. BAI stated that since trenching was generally higher than the depth of shallowest groundwater, it was unlikely that utility trenches could be used as preferential pathways. BAI went on to state that it was

inconclusive whether sewer and storm drain utilities on and offsite could be used as preferential pathways for contaminant migration (BAI 2009). Analyte concentrations at the site are below RWQCB Environmental Screening Levels (ESLs) for groundwater as a potential drinking water resource. Based on this, Delta does not believe that contaminants will be transported from the site through preferential pathways now or in the future.

In their May 2009 letter, the ACEH expressed concern regarding the pea gravel layer which extends over much of the site as shown in **Figure 3** as a potential vapor pathway. During Delta's 2010 soil vapor investigation, the pea gravel layer was encountered in borings for wells SV-1, SV-2 and SV-5, and was reportedly 3-inches thick (boring logs are presented in **Attachment C**) at a depth of approximately 1 foot bgs. Results of the soil vapor sampling compared with residential and commercial land use ELSs are shown below.

Sample ID	Date	TPH-G (µg/m^3)	MTBE (µg/m^3)	Benzene (µg/m^3)
SV-1	1/8/2010	<920	<8.1	**9.9**
SV-2	1/8/2010	**1,400**	**60**	**33**
SV-3	1/8/2010	<770	<6.7	**12**
SV-4	1/8/2010	**35,000**	**92**	**13**
SV-5	1/8/2010	**16,000**	**4,700**	**14**
ESL (residential)	--	**10,000**	**9,400**	**84**
ESL (commercial)	--	**29,000**	**31,000**	**280**

Soil vapor samples collected from SV-1, SV-2 and SV-3 did not contain analytes above the residential or commercial ESL for TPH-G. MTBE and benzene detections in all samples were below their residential and commercial ESLs. The residential ESL for TPH-G was exceeded in samples SV-4 and SV-5; however the TPH-G detection in SV-5 is below the commercial ESL. These sample locations are not near the station building, and contamination in their vicinity does not pose a risk to indoor air quality.

CONTAMINANTS OF CONCERN (COCs)

Contaminants of concern (COCs) at the site are TPH-G, BTEX compounds and MTBE. The following sections provide an analysis of historical COC concentrations and trends in soil, groundwater and soil vapor data. Historic soil and soil vapor analytical data, as well as grab groundwater samples from soil borings are presented in **Attachment A**. Historic groundwater data is presented in **Attachment B**.

COCs in Soil

Highest reported concentrations of TPH-G and BTEX compounds have been reported in the area of the fuel USTs and dispensers. The highest concentrations of TPH-G and benzene were reported in samples P1 (6,900 mg/kg and 70 mg/kg) and SW1 (2,000 mg/kg and 18 mg/kg) located below the westernmost fuel dispenser. These soil sample locations were subsequently over-excavated, and a confirmation soil sample (P1 @ 8') was reported to contain TPH-G and benzene at concentrations of 7.0 mg/kg and 1.0, respectively.

Soil sample SW3 collected near the eastern side of the fuel UST pit, and on the western edge of the dispenser excavation was reported to contain TPH-G and benzene at concentrations of 860 mg/kg and 5 mg/kg, respectively at a depth of 8 feet. Reported concentrations in SW3 exceed RWQCB ESLs for leaching of 83 mg/kg and 0.044 mg/kg, respectively. Sample SW3 could not be over excavated due to proximity of the fuel USTs to the southwest and the presence of groundwater at 8 feet bgs. Since sample SW3 was collected within groundwater, and thus high concentrations probably reflect elevated concentrations in groundwater during the time of the excavation. No other confirmation soil samples in the excavation were collected from 8 feet bgs. Soil samples SW6 and SW4 located to the south and east of SW3 were reported to contain TPH-G concentrations of 1.0 and 1.5 mg/kg TPH-G. The extent of remaining impacted soil at the site appears to be limited to the area of SW3.

Concentrations of TPH-D were reported above the ESL of 83 mg/kg in soil samples from MW-6 and MW-7 at a depth of 5 feet bgs at concentrations of 480 mg/kg and 110 mg/kg, respectively. In the soil sample from MW-6, TPH-G was reported at a concentration of 89 mg/kg, which is slightly above the ESL of 83 mg/kg. Since wells MW-6 and MW-7 are screened from approximately 3 feet bgs to 15 feet bgs, groundwater samples from the wells are a direct reflection of the potential for hydrocarbon leaching from the five-foot samples. In the most recent sampling event, no analytes were reported above the laboratory reporting limits (with the exception of MTBE below ESLs) in MW-6 or MW-7, indicating that sorbed phase hydrocarbons are not leaching to groundwater.

COCs in Groundwater

The site has been on a groundwater monitoring program since October 1992. The program was suspended from November 2001 to September 2008 pending a response to a case closure request. TPH-G, benzene and MTBE reached maximum concentrations in well MW-6

of 47,000 µg/l, 350 µg/l and 38,000 µg/l, respectively on January 27, 1998. Since these detections, concentrations in all site wells have consistently decreased.

On the July 28, 2009 sampling event, TPH-G was not reported above the LRL in any sampled monitoring wells. Benzene was only detected in well XW-2 at a concentration of 1.5 µg/l, which is slightly above the ESL of 1.0 µg/l. MTBE was detected in wells MW-6, MW-7 and XW-3 at concentrations of 2.6 µg/l, 1.2 µg/l and 1.4 µg/l, respectively. All reported MTBE concentrations are below the ESL of 5.0 µg/l.

TPH-G was reported above the ESL of 100 µg/l in two grab groundwater samples collected from borings TB-1 and TB-2, at concentrations of 1,500 µg/l and 310 µg/l, respectively in October 1994. The groundwater concentrations reported in the TB-1 and TB-2 were consistent with concentrations in monitoring wells in 1994. These borings were advanced north of the fuel dispensers, and near the southwest corner of the fuel UST pit.

COCs in Soil Vapor:

At the request of the ACEH, Delta performed a soil vapor study at the site in January of 2010. Reported concentrations of BTEX compounds and MTBE were all below ESLs. TPH-G was reported in three of the five soil vapor wells, with a maximum concentration of 35,000 µg/m^3 in well SV-4, which exceeds the commercial ESL for vapor intrusion of 29,000 µg/m^3. SV-4 is located southwest of the fuel USTs. All analyte concentrations were below ESLs in SV-1 and SV-2 located at the northwest side of the station building, on the end closest the fuel UST complex.

The soil vapor sample from well SV-5, located approximately 20 feet northeast of soil samples SW1 and SW3, was not reported to contain hydrocarbon concentrations above ESLs.

Further, the beneath the station building and the overlying rest of the station property is a concrete/asphalt slab which acts as a physical vapor barrier. As such, Delta does not believe that soil vapor beneath the site poses a threat to human health.

SUMMARY AND CONCLUSIONS

Delta provides the following conclusions:

- Groundwater at the site varies between 9.15 feet below top of casing (btoc) (MW-5 on 10/12/1995) to 5.24 feet btoc (XW-1 on 4/19/1998), and generally flows to the northwest.

- Shallow groundwater beneath the site is not a drinking water resource due high salinity from saltwater intrusion.
- Wells MW-5, MW-6 and MW-7 were installed to a maximum depth of 16.5 feet bgs, and are screened from 5 to 15 feet in MW-5, and from 3 feet btoc to total depth in MW-6 and MW-7.
- Soils beneath the site consist primarily of sand and gravels with some silt and clay layers. A thin layer of pea gravel exists under the pavement across most of the site.
- A recent soil vapor survey concluded that vapor intrusion does not endanger human health inside the station building.
- Residual hydrocarbons may remain in soils in the northwest portion of the site near the fuel dispensers and USTs. Soils in the southern and eastern portions of the site do not appear to be impacted.

REQUEST FOR CASE CLOSURE

Delta requests that this site be considered for regulatory case closure based upon the following:

1. **The leak has been stopped and ongoing sources, including free product, removed or remediated.**
    - A release of hydrocarbons occurred at the site, probably in the vicinity of the fuel dispensers sometime prior to the discovery of hydrocarbon impacted soil and groundwater in the fuel dispenser vicinity in May of 1990. Subsequent to its discovery, approximately 195 cubic yards of soil were excavated below the dispensers and disposed of offsite. Only a small amount of impacted soil is believed to remain in the dispenser vicinity, which could not be removed due to proximity to the fuel USTs.
    - Free product has not been reported at the site.
    - The impacted soil in the western dispenser area does not appear to be a source of significant leaching to groundwater. Impacted soils were reported within the capillary fringe, and are regularly submerged beneath groundwater. Recent groundwater data shows that analyte concentrations are at or below ESLs for a potential drinking water resource, indicating that leaching from impacted soils is minimal.

2. The extent of soil and groundwater impact has been defined.

- During the recent soil vapor installations, soil from 4.5 feet bgs was not reported to contain petroleum hydrocarbons or constituents above ESLs for leaching to a potential drinking water resource.
- Analytes in groundwater are only reported in concentrations above LRLs in wells MW-6, MW-7, XW-2 and XW-3. TPH-G was not reported above the LRL in the last sampling period in any wells. Benzene was only reported in well XW-2 at a concentration of 1.5 µg/l, which is slightly above the ESL of 1.0 µg/l. MTBE was reported in MW-6, MW-7 and XW-3 at concentrations below the ESL of 5.0 µg/l. Toluene, ethylbenzene and xylenes were reported in well XW-2 at concentrations below their respective ESLs. Tertiary butyl alcohol (TBA), di-isopropyl ether (DIPE), ethyl tertiary butyl ether (ETBE), tertiary amyl methyl ether (TAME), ethanol, 1,2 dichloroethane (1,2 DCA) and 1,2 dichloroethene (EDB) have not been reported above LRLs in any sampled wells.

3. The dissolved hydrocarbon plume is not migrating.

- Since 2000, concentrations of TPH-G and MTBE in downgradient well MW-7 have remained below 100 µg/l and BTEX compounds and oxygenates have not been reported above the LRLs. If the plume were migrating, concentrations in MW-7 would be expected to rise as the core of the plume moved downgradient. It appears that the limited hydrocarbon plume onsite is stable.

4. No water wells, deeper drinking water aquifers, surface water, or other sensitive receptors are likely to be impacted.

- Groundwater beneath the site is not a drinking water resource due to high salinity.
- Dissolved phase analyte concentrations downgradient of the site in wells MW-7 and XW-3 are below ESLs for a potential drinking water resource. The identified irrigation wells in the area are cross gradient of the site, and considering the low analyte concentrations, distance to the wells and groundwater flow direction, there appears to be no threat of contamination to supplied water. A channel exists approximately 600 feet to the north of the site, and approximately 1000 feet to the northwest (downgradient) of the site. Due to concentrations in

downgradient well MW-7 below ESLs, contamination sourced from the site does not appear to be a potential threat to ecology in the channel.

5. The site conditions do not present a significant risk to human health.

- Soil vapor from the vicinity of hydrocarbon impacted area was reported to contain analytes with the exception of TPH-G below ESLs. TPH-G was reported above the residential ESL of 10,000 µg/m^3 in SV-4 and SV-5, located southwest of the fuel USTs and to the northeast of the fuel dispensers, but TPH-G was not reported above the residential ESL in SV-1, SV-2 and SV-3 located at the northwestern side of the station building and to the northeast of the fuel dispensers. This indicates that soil contamination in the northeast portion of the property does not pose a risk to human health inside the station building.
- Data shows that only one analyte (TPH-G) in one sample (SV-4) exceeded the commercial ESL. Further, the station is paved with at least six-inches of asphalt or concrete, which acts as a physical vapor barrier and vapor concentrations are expected to decrease over time.
- The thin pea gravel layer beneath much of the site is not a preferential pathway. Concerns regarding the layer were brought up in a May 2009 letter from the ACEH, at which time thickness of the layer was unknown. During Delta's 2010 soil vapor study, three-inch pea gravel layers were reported in three soil vapor well borings, all of which contained analyte vapor concentrations below residential ESLs.

REMARKS

The descriptions, conclusions, and recommendations contained in this report represent Delta's professional opinions based upon the currently available information and are arrived at in accordance with currently acceptable professional standards. For any reports cited that were not generated by Delta, the data from those reports is used "as is" and is assumed to be accurate. Delta does not guarantee the accuracy of this data for the referenced work performed nor the inferences or conclusions stated in these reports. This report is based upon a specific scope of work requested by the client. The Contract between Delta and its client outlines the scope of work, and only those tasks specifically authorized by that contract or outlined in this report were conducted. This report is intended only for the use of Delta's Client and anyone else specifically listed on this report. Delta will not and

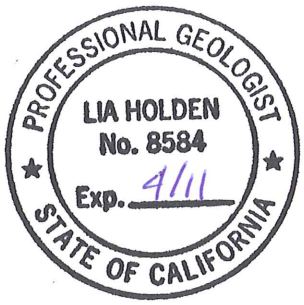
cannot be liable for unauthorized reliance by any other third party. Other than as contained in this paragraph, Delta makes no express or implied warranty as to the contents of this report.

If you have any questions regarding this work plan or need and additional information about this Site, please do not hesitate to contact the undersigned at (408) 826-1863.

Sincerely,

DELTA CONSULTANTS

Nadine Periat
Senior Staff Geologist



Lia Holden, PG #8584
Geologist – Project Manager

Figures:

Figure 1: Site Vicinity Map
Figure 2: Site Map
Figure 3: Site Map with Historic Sample Locations and Excavations

Attachments:

Attachment A Historic Soil, Grab Groundwater, and Soil Vapor Data
Attachment B Historic Groundwater Data and Rose Diagram
Attachment C Soil Boring Logs
Attachment D Sensitive Receptor Documents

CONSULTANT: Delta Consultants

REFERENCES CITED

Kapreallian Engineering Inc., *Stockpiled Soil Sampling for BP Service Station 3255 McCartney Road, Alameda, California,* July 13, 1990.

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Hydro-Environmental Technologies, Inc., *Preliminary Site Assessment Report, BP Oil Company, U.S.A., BP Oil Service Station No. 11270, 3255 McCartney Road, Alameda, California,* January 7, 1993.

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Figures

North

0 900 1800 FT

SCALE

SOURCE: USGS 7.5 MINUTE TOPOGRAPHIC MAP, SAN LEANDRO & HUNTERS POINTE QUADRANGLES (1973

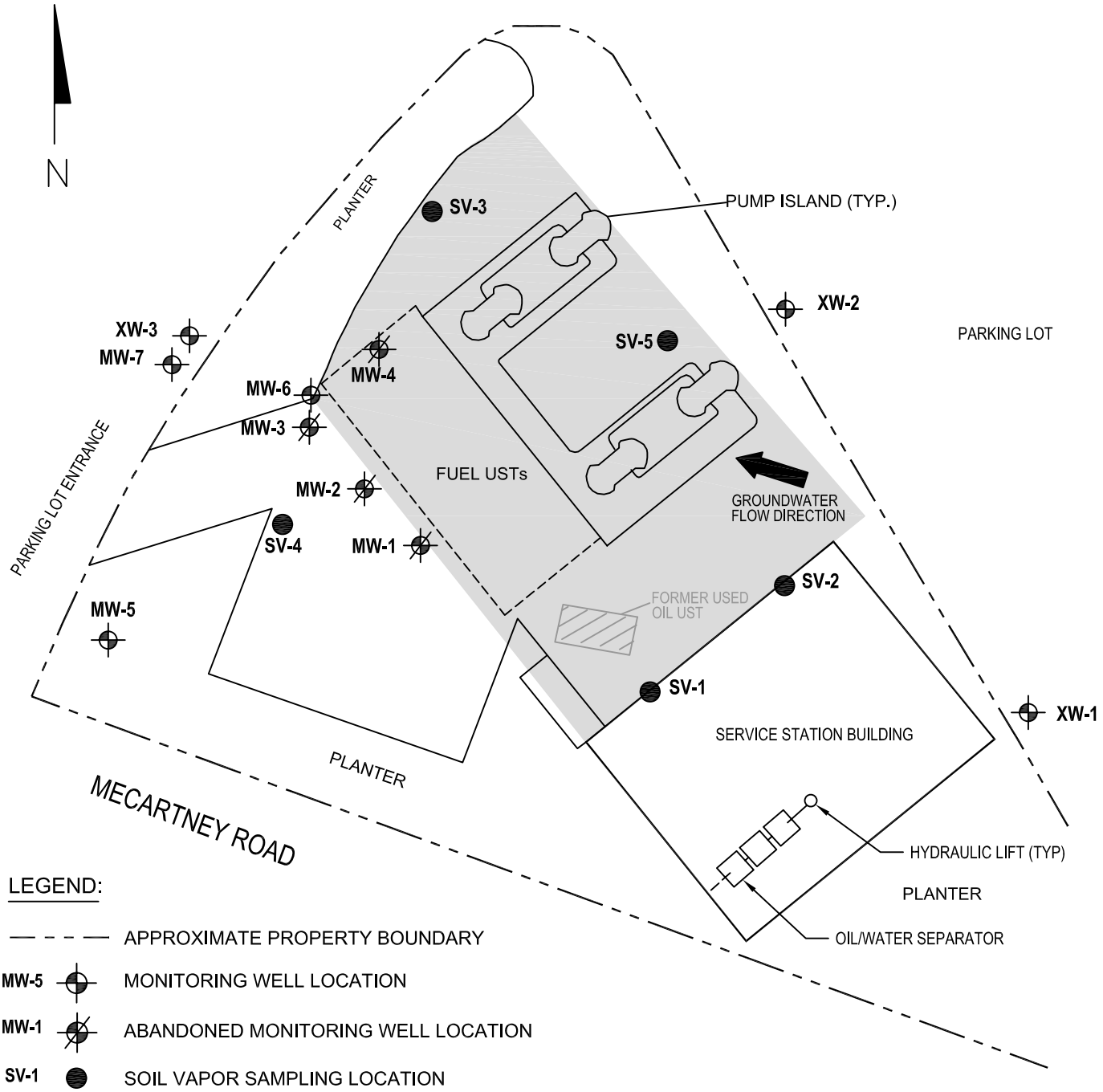
FIGURE 1

SITE LOCATION MAP

76 STATION NO. 11270
3255 MECARTNEY ROAD
ALAMEDA, CALIFORNIA

PROJECT NO. I42611270	DRAWN BY JH 06/02/09
FILE NO. 11270-SiteLocator	PREPARED BY DD
REVISION NO.	REVIEWED BY

DELTA®



LEGEND:

- APPROXIMATE PROPERTY BOUNDARY
- MW-5 — MONITORING WELL LOCATION
- MW-1 — ABANDONED MONITORING WELL LOCATION
- SV-1 — SOIL VAPOR SAMPLING LOCATION
- APPROXIMATE AREA FILLED WITH PEA GRAVEL IN THE SHALLOW SUB-SURFACE PER FACILITY OPERATOR

0 20 FT

SCALE

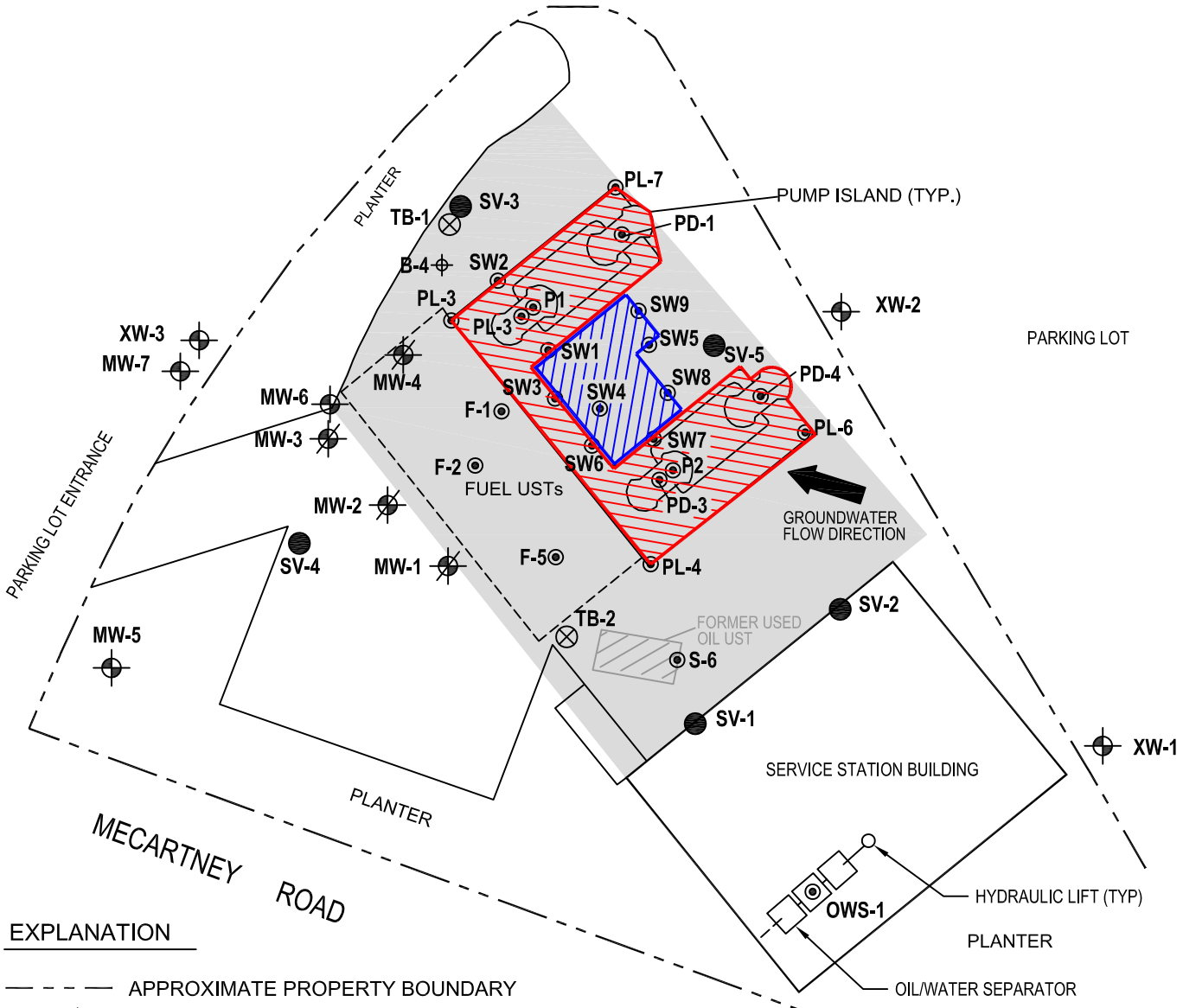
MAP ADAPTED FROM A MAP DATED 10/14/08 BY BROADBENT & ASSOCIATES, INC ENTITLED "SITE MAP".

FIGURE 2
SITE PLAN

BP STATION NO. 11270
3255 MECARTNEY ROAD
ALAMEDA, CALIFORNIA

PROJECT NO.	PREPARED BY	DRAWN BY
142611270	TP	JH
DATE	REVIEWED BY	FILE NAME
02/09/10	DD	11270-Site

DELTA®



EXPLANATION

- APPROXIMATE PROPERTY BOUNDARY
- MW-5 — MONITORING WELL LOCATION
- MW-1 — ABANDONED MONITORING WELL LOCATION
- SV-1 — SOIL VAPOR SAMPLING LOCATION
- APPROXIMATE AREA FILLED WITH PEA GRAVEL IN THE SHALLOW SUB-SURFACE PER FACILITY OPERATOR
- TB-2 — TOSCO BORING LOCATION
- S-6 — SOIL SAMPLE LOCATION
- B-4 — ATTEMPTED SOIL BORING LOCATION (2009)
- EXCAVATION AREA TO 8.5 FT bgs
- EXCAVATION AREA TO 4.5 FT bgs

N

0 20'

SCALE

NOTE:
MAP ADAPTED FROM A MAP DATED 10/14/08 BY BROADBENT & ASSOCIATES, INC ENTITLED "SITE MAP".

FIGURE 3
SITE PLAN WITH HISTORICAL SAMPLE LOCATIONS
BP STATION NO. 11270
3255 MECARTNEY ROAD
ALAMEDA, CALIFORNIA

PROJECT NO.	PREPARED BY	DRAWN BY
142611270	NP	JH/KYM
DATE	REVIEWED BY	FILE NAME
06/14/10	DD	11270-Site

DELTA®

Attachment A

Historic Soil, Grab Groundwater
and Soil Vapor Data

HISTORICAL SOIL ANALYTICAL RESULTS
76 Station No.11270
Alameda, California

Sample ID	Date	Sample Depth (feet)	TPH-G (mg/kg)	TPH-D (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl-benzene (mg/kg)	Total Xylenes (mg/kg)	MTBE (mg/kg)	TBA (mg/kg)	ETBE (mg/kg)	TAME (mg/kg)	DIPE (mg/kg)	1,2-DCA (mg/kg)	EDB (mg/kg)	Ethanol (mg/kg)	Total Lead (mg/kg)
SW1	5/22/90	4.5	**2,000**	--	**18**	**56**	**39**	**270**	--	--	--	--	--	--	--	--	**6.5**
SW2	5/22/90	4.5	**8.0**	--	**0.31**	**0.084**	**0.26**	**1.2**	--	--	--	--	--	--	--	--	**1.7**
SW3	5/30/90	8	**860**	--	**5**	**2.8**	**7.5**	**13**	--	--	--	--	--	--	--	--	**5.7**
SW4	5/30/90	4.5	**1.0**	--	**0.009**	**0.017**	**0.0099**	**0.03**	--	--	--	--	--	--	--	--	**0.071**
SW5	5/30/90	4.5	**15**	--	**0.035**	**0.26**	**0.14**	**0.49**	--	--	--	--	--	--	--	--	**2.1**
SW6	5/30/90	4.5	**1.5**	--	**0.0079**	**0.0052**	**0.023**	**0.069**	--	--	--	--	--	--	--	--	**2.9**
SW7	5/30/90	4.5	<1.0	--	**0.034**	**0.0073**	**0.042**	**0.076**	--	--	--	--	--	--	--	--	**36**
SW8	5/30/90	4.5	<1.0	--	**0.01**	**0.0098**	**0.016**	**0.035**	--	--	--	--	--	--	--	--	**5.8**
SW9	5/30/90	4.5	<1.0	--	**0.024**	<0.005	**0.02**	**0.026**	--	--	--	--	--	--	--	--	**11**
P1	5/22/90	4.5	**6,900**	--	**70**	**260**	**120**	**700**	--	--	--	--	--	--	--	--	**0.91**
P1(8)	5/22/90	8	**7.0**	--	**1**	**0.025**	**0.19**	**0.47**	--	--	--	--	--	--	--	--	**1.7**
P2	5/22/90	4.5	<1.0	--	**0.0058**	**0.005**	**0.01**	**0.023**	--	--	--	--	--	--	--	--	**1.6**
TB1-S, 2.5-3	10/26/94	2.5-3	<0.1	<1	<0.005	<0.005	<0.005	<0.005	--	--	--	--	--	--	--	--	--
TB1-S, 5.5-6	10/26/94	5.5-6	<0.1	<1	<0.005	<0.005	<0.005	<0.005	--	--	--	--	--	--	--	--	--
TB2-S, 2.5-3	10/26/94	2.5-3	<0.1	<1	<0.005	<0.005	<0.005	<0.005	--	--	--	--	--	--	--	--	--
TB2-S, 6.5-7	10/26/94	6.5-7	<0.1	<1	<0.005	<0.005	<0.005	<0.005	--	--	--	--	--	--	--	--	--
MW-5-5	6/17/93	5	<1	**11**	<.0050	<.0050	<.0050	<.0050	--	--	--	--	--	--	--	--	--
MW-6-5	1/19/95	5	**89**	**480**	<.050	**0.21**	**0.63**	**4.8**	--	--	--	--	--	--	--	--	--
MW-7-5	1/18/95	5	<0.050	**110**	<0.0005	<0.0005	<0.0005	<.0010	--	--	--	--	--	--	--	--	--
OWS-1-0.5	12/12/96	0.5	ND*	--	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--
OWS-1-2	12/12/96	2	ND**	--	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--
S-1	8/15/97	0.5-1	<0.1	--	<0.001	**0.085**	<0.002	**0.0047**	<0.1	--	--	--	--	--	--	--	--
S-2	8/15/97	0.5-1	<0.1	--	<0.001	**0.047**	<0.002	<0.002	<0.1	--	--	--	--	--	--	--	--
S-3	8/15/97	0.5-1	<0.1	--	<0.001	**0.058**	<0.002	<0.002	<0.1	--	--	--	--	--	--	--	--
S-4	8/15/97	0.5-1	<0.1	--	<0.001	**0.049**	<0.002	<0.002	<0.1	--	--	--	--	--	--	--	--
S-6-T1E	7/9/98	6	<1.0	<1.0	<0.005	<0.005	<0.005	<0.005	--	--	--	--	--	--	--	--	ND
PD-1-2	8/7/00	2	<1.0	--	<0.005	<0.005	<0.005	<0.005	<0.005	--	--	--	--	--	--	--	<10
PD-2-1.5	8/7/00	1.5	<1.0	--	<0.005	<0.005	<0.005	<0.005	<0.005	--	--	--	--	--	--	--	<10
PD-3-1.5	8/7/00	1.5	<1.0	--	<0.005	<0.005	<0.005	<0.005	<0.005	--	--	--	--	--	--	--	<10
PD-4-1.5	8/7/00	1.5	<1.0	--	<0.005	<0.005	<0.005	<0.005	**0.0582**	--	--	--	--	--	--	--	<10
PL-3-1.5	8/7/00	1.5	<1.0	--	<0.005	<0.005	<0.005	<0.005	<0.005	--	--	--	--	--	--	--	<10
PL-6-.15	8/7/00	1.5	<1.0	--	<0.005	<0.005	<0.005	<0.005	<0.005	--	--	--	--	--	--	--	<10
PL-7-1.5	8/7/00	1.5	<1.0	--	<0.005	<0.005	<0.005	<0.005	<0.005	--	--	--	--	--	--	--	<10
F-1-4	8/7/00	4	<1.0	--	<0.005	<0.005	<0.005	<0.005	<0.005	--	--	--	--	--	--	--	<10
F-2-4	8/7/00	4	<1.0	--	<0.005	<0.005	<0.005	<0.005	<0.005	--	--	--	--	--	--	--	<10
F-5-3	8/7/00	4	<1.0	--	<0.005	<0.005	<0.005	<0.005	<0.005	--	--	--	--	--	--	--	<10
SV-1	12/10/09	4.5	<0.23	<5.9	<0.0027	<0.0027	<0.0027	<0.0055	<0.0027	<0.014	<0.0027	<0.0027	<0.0027	<0.0027	<0.0027	<0.37	--
SV-2	12/10/09	4.5	<0.22	<5.8	<0.0027	<0.0027	<0.0027	<0.0054	<0.0027	<0.013	<0.0027	<0.0027	<0.0027	<0.0027	<0.0027	<0.36	--
SV-3	12/10/09	4.5	<0.23	<5.8	<0.0028	<0.0028	<0.0028	<0.0055	<0.0028	<0.014	<0.0028	<0.0028	<0.0028	<0.0028	<0.0028	<0.37	--
SV-4	12/10/09	4.5	<0.24	<6.0	<0.0028	<0.0028	<0.0028	<0.0056	<0.0028	<0.014	<0.0028	<0.0028	<0.0028	<0.0028	<0.0028	<0.38	--
SV-5	12/10/09	4.5	<0.24	51	<0.0029	<0.0029	<0.0029	<0.0058	0.022	0.032	<0.0029	<0.0029	<0.0029	<0.0029	<0.0029	<0.38	--
COMP ABCD	12/11/09	--	<0.25	<5.9	<0.003	<0.003	<0.003	<0.0059	<0.003	<0.015	<0.003	<0.003	<0.003	<0.003	<0.003	<0.39	9.9

TPH-G = total purgeable petroleum hydrocarbons as gasoline by EPA Method 8260B
TPH-D = total purgeable petroleum hydrocarbons as diesel by EPA Method 8015
TPH-O = total purgeable petroleum hydrocarbons as oil by EPA Method 8015
BTEX = benzene, toluene, ethylbenzene, total xylenes by EPA Method 8020 or 8260B
MTBE = methyl tertiary butyl ether by EPA Method 8020 or 8260B
TBA = tertiary butyl alcohol by EPA Method 8260B
ETBE = ethyl tertiary butyl ether by EPA Method 8260B
TAME = tertiary amyl methyl ether by EPA Method 8260B
DIPE = di-isopropyl ether by EPA Method 8260B
* TRPH reported in sample at 49 mg/kg
**= TRPH reported in sample at 13 mg/kg
Soil sample overexcavated

1,2-DCA = 1,2-Dichloroethane (also known as ethylene dichloride) by EPA Method 8260B
EDB = ethylene dibromide (also known as 1,2-Dibromoethane) by EPA method 8260B
Ethanol was analyzed by EPA Method 8260B

mg/kg = milligrams per kilogram
ND = not detected above the laboratory detection limit (reporting limit unkown)
-- = not analyzed
Bold = detected compound concentration
EPA = US Environmental Protection Agency

HISTORICAL GRAB GROUNDWATER ANALYTICAL RESULTS
76 Station No. 1270
Alameda, California

Sample ID	Date	Sample Depth (feet)	TPH-G (µg/L)	TPH-D (µg/L)	TPH-O (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)	TBA (µg/L)	ETBE (µg/L)	TAME (µg/L)	DIPE (µg/L)	1,2-DCA (µg/L)	EDB (µg/L)	Ethanol (µg/L)
TB-1-W-11.5	10/26/94	11.5	**1,500**	<1	<1	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--
TB-2-W-11.5	10/26/94	11.5	**310**	<1	<1	<0.5	1.0	<0.5	1.0	--	--	--	--	--	--	--	--

TPH-G = total purgeable petroleum hydrocarbons as gasoline by EPA Method 8260B
TPH-D = total purgeable petroleum hydrocarbons as diesel by EPA Method 8015
TPH-O = total purgeable petroleum hydrocarbons as oil by EPA Method 8015
BTEX = benzene, toluene, ethylbenzene, total xylenes by EPA Method 8020 or 8260B
MTBE = methyl tertiary butyl ether by EPA Method 8260B
TBA = tertiary butyl alcohol by EPA Method 8260B
ETBE = ethyl tertiary butyl ether by EPA Method 8260B
TAME = tertiary amyl methyl ether by EPA Method 8260B
DIPE = di-isopropyl ether by EPA Method 8260B

1,2-DCA = 1,2-Dichloroethane (also known as ethylene dichloride) by EPA Method 8260B
EDB = ethylene dibromide (also known as 1,2-Dibromoethane) by EPA method 8260B
Ethanol was analyzed by EPA Method 8260B

mg/kg = milligrams per kilogram
ND = not detected above the laboratory detection limit (no reporting limit available)
-- = not analyzed
Bold = detected compound concentration
EPA = US Environmental Protection Agency

Soil Analytical Results (Fuel Oxygenates)
76 Service Station No.11270
3255 Mecartney Road, Alameda, CA

Sample ID	Date	TAME (mg/kg)	TBA (mg/kg)	EDB (mg/kg)	1,2-DCA (mg/kg)	DIPE (mg/kg)	Ethanol (mg/kg)	ETBE (mg/kg)
SV-1 @4.5 feet	**12/10/2010**	<0.0027	<0.014	<0.0027	<0.0027	<0.0027	<0.37	<0.0027
SV-2 @4.5 feet	**12/10/2010**	<0.0027	<0.013	<0.0027	<0.0027	<0.0027	<0.36	<0.0027
SV-3 @4.5 feet	**12/11/2010**	<0.0028	<0.014	<0.0028	<0.0028	<0.0028	<0.37	<0.0028
SV-4 @4.5 feet	**12/11/2010**	<0.0028	<0.014	<0.0028	<0.0028	<0.0028	<0.38	<0.0028
SV-5 @4.5 feet	**12/10/2010**	<0.0029	**0.032**	<0.0029	<0.0029	<0.0029	<0.38	<0.0029
comp ABCD	**12/11/2010**	<0.0030	<0.015	<0.0030	<0.0030	<0.0030	<0.39	<0.0030

Notes
TBA: Tertiary butyl alcohol
ETBE: Ethyl tertiary butyl ether
TAME: Tertiary amyl methyl ether
DIPE: Di-isopropyl ether
ETBE: Ethyl tertiary butyl ether

EDB: 1,2-Dibromoethane
1,2-DCA: 1,2-dichloroethane

mg/Kg: milligrams per kilogram
<: Below the laboratory indicated

Soil Gas Analytical Results (TPH-G, BTEX, MTBE, Fuel Oxygenates)
76 Service Station No.11270
3255 Mecartney Road, Alameda, CA

Sample ID	Date	TPH-G ($\mu g/m^3$)	MTBE ($\mu g/m^3$)	Benzene ($\mu g/m^3$)	Toluene ($\mu g/m^3$)	Ethyl-benzene ($\mu g/m^3$)	M,P-Xylenes ($\mu g/m^3$)	O-Xylenes ($\mu g/m^3$)	1,2-DCA ($\mu g/m^3$)	EDB ($\mu g/m^3$)	Ethanol ($\mu g/m^3$)	TAME ($\mu g/m^3$)
SV-1	**1/8/2010**	<920	<8.1	**9.9**	**40**	<9.7	<9.7	<9.7	<9.0	<17	<21	<47
SV-2	**1/8/2010**	**1,400**	**60**	**33**	**60**	<8.7	<8.7	**10**	<8.1	<16	<19	<42
SV-3	**1/8/2010**	<770	<6.7	**12**	**49**	<8.0	<8.0	**11**	<7.5	<14	<18	<39
SV-4	**1/8/2010**	**35,000**	**92**	**13**	**54**	<7.7	**8.2**	**12**	<7.2	<14	<17	<38
SV-5	**1/8/2010**	**16000**	**4,700**	**14**	**45**	<8.5	<8.5	**13**	<7.9	<15	<19	<42

notes:
<: below the laboratory reporting limit
$\mu g/m^3$: micrograms per cubic meter

MTBE: Methyl tertiary butyl ether
1,2-DCA: 1,2-dichloroethane
EDB: 1,2-dibromoethane
TAME: tertiary amyl methyl ether
TPH-G: total petroleum hydrocarbons as gasoline

Soil Gas Analytical Results (Expanded List & Fixed Gases)
76 Service Station No. 11270
3255 Mecartney Road, Alameda, CA

Sample ID	Date	Iso-propanol ($\mu g/m^3$)	t-butanol ($\mu g/m^3$)	Isopropyl ether ($\mu g/m^3$)	TBEE ($\mu g/m^3$)	Oxygen/ Argon (% v/v)	Nitrogen (% v/v)	Methane (% v/v)	CO_2 (% v/v)	CO (% v/v)
SV-1	**1/8/2010**	**1,200**	<34	<47	<47	**16**	**82**	<0.0022	**4.0**	<0.0022
SV-2	**1/8/2010**	**60**	<30	<42	<42	**1.6**	**35**	**55**	**10**	<0.0020
SV-3	**1/8/2010**	<22	<28	<39	<39	**12**	**78**	<0.0019	**8.6**	<0.0019
SV-4	**1/8/2010**	**6,200**	<27	<38	<38	**2.9**	**87**	**0.89**	**9.3**	<0.0018
SV-5	**1/8/2010**	**3,800**	<30	<42	<42	**5.1**	**76**	**10**	**9.0**	<0.0020

notes:
<: below the laboratory reporting limit
$\mu g/m^3$: micrograms per cubic meter
MTBE: Methyl tertiary butyl ether
1,2-DCA: 1,2-dichloroethane
(%) v/v: percent volume of gas per volume of air
TBEE: tertiary butyl ethyl ether
CO_2: Carbon Dioxide
CO: Carbon Monoxide

Attachment B

Historic Groundwater Data and
Rose Diagram

TABLE 1
Historical Groundwater Monitoring and Analytical Data
ConocoPhillips (Former BP) Station Number 2611270
3255 Mecartney Road, Alameda, CA

Well No.	Date	TOC Elevation (ft-MSL)	Depth to Water (feet)	Measured SPH Thickness (feet)	Calc. GW Elev. (ft-MSL)	TPHg (µg/L)	TPPH (µg/L)	TPHd (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE (µg/L)	TBA (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)	Ethanol (µg/L)	1,2-DCA (µg/L)	EDB (µg/L)	D.O. (mg/L)	Comments
MW-1	10/29/92	7.49	7.28	-	0.21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
MW-1	06/21/93	7.49	5.4	-	2.09	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
MW-1	04/05/94	7.49	5.64	-	1.85	**1700**	-	-	**20**	**1.1**	**3.9**	**7.6**	-	-	-	-	-	-	-	-	-	
MW-1	07/28/94	7.49	6.22	-	1.27	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
MW-1	10/26/94	7.49	6.4	-	1.09	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
MW-1	02/05/95	7.49	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
MW-2	10/29/92	7.07	6.84	-	0.23	**2500**	-	**3900**	**140**	<10	**65**	**22**	-	-	-	-	-	-	-	-	-	
MW-2	06/21/93	7.07	5.49	-	1.58	**720**	-	**770**	**12**	**1.5**	**11**	**12**	-	-	-	-	-	-	-	-	-	
MW-2	04/05/94	7.07	5.4	-	1.67	**420**	-	**1300**	<0.50	<0.50	<0.50	**4**	**4500**	-	-	-	-	-	-	-	1.8	
MW-2	07/28/94	7.07	5.97	-	1.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
MW-2	10/26/94	7.07	6.1	-	0.97	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
MW-2	02/02/95	7.07	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
MW-3	10/29/92	7.08	7.14	-	-0.06	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
MW-3	06/21/93	7.08	5.84	-	1.24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
MW-3	04/05/94	7.08	5.83	-	1.25	**990**	**-**	**4300**	**3.2**	**<0.50**	**<0.50**	**1.3**	**790**	-	-	-	-	-	-	-	-	
MW-3	07/28/94	7.08	6.32	-	0.76	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
MW-3	10/26/94	7.08	6.42	-	0.66	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
MW-3	02/02/95	7.08	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
MW-4	10/29/92	7.13	6.9	-	0.23	**2600**	**-**	**-**	**250**	**2.5**	**74**	**6.6**	-	-	-	-	-	-	-	-	-	
MW-4	06/21/93	7.13	5.54	-	1.59	**1400**	**-**	**1100**	**24**	**2.9**	**2.6**	**7.9**	-	-	-	-	-	-	-	-	-	
MW-4	04/05/94	7.13	5.46	-	1.67	**930**	**-**	**940**	**33**	**0.8**	<0.50	**2.8**	**8700**	-	-	-	-	-	-	-	2.7	
MW-4	07/28/94	7.13	6.02	-	1.11	**2400**	**-**	**1400**	**19**	**1.8**	**0.5**	**8**	-	-	-	-	-	-	-	-	6.7	
QC-1	7/28/1994	-	-	-	-	**2300**	**-**	**-**	**19**	**1.7**	**0.5**	**7.4**	-	-	-	-	-	-	-	-	-	
MW-4	10/26/94	7.13	6.13	-	1.00	**-**	**-**	**-**	**-**	**-**	-	-	-	-	-	-	-	-	-	-	-	
MW-4	2/5/1995	7.13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
MW-5	06/21/93	8.36	7.44	-	0.92	<50	-	**100**	<0.50	<0.50	<0.50	<0.50	-	-	-	-	-	-	-	-	-	
MW-5	04/05/94	8.36	7.42	-	0.94	<50	-	**100**	<0.50	<0.50	<0.50	<0.50	-	-	-	-	-	-	-	-	2.5	
MW-5	07/28/94	8.36	7.88	-	0.48	<50	-	<50	<0.50	<0.50	<0.50	<0.50	-	-	-	-	-	-	-	-	7.4	
MW-5	10/26/94	8.36	7.92	-	0.44	<50	-	**160**	<0.50	<0.50	<0.50	<0.50	-	-	-	-	-	-	-	-	5.5	
MW-5	02/05/95	8.36	7.83	-	0.53	<50	-	<500	<0.25	<0.25	<0.25	<0.50	-	-	-	-	-	-	-	-	-	
MW-5	05/05/95	8.36	9.00	-	-0.64	<50	-	-	<0.50	<0.50	<0.50	<1.0	-	-	-	-	-	-	-	-	3.1	
MW-5	07/19/95	8.36	9.03	-	-0.67	<50	-	-	<0.50	<0.50	<0.50	<1.0	-	-	-	-	-	-	-	-	4.6	
MW-5	10/12/95	8.36	9.15	-	-0.79	<50	-	-	<0.50	<0.50	<0.50	<1.0	<5.0	-	-	-	-	-	-	-	4.3	
MW-5	01/08/96	8.36	9.04	-	-0.68	<50	-	-	<0.50	<0.50	<0.50	<1.0	<5.0	-	-	-	-	-	-	-	4.9	
MW-5	09/11/97	8.36	8.90	-	-0.54	<50	-	-	<0.50	<1.0	<1.0	<1.0	<10	-	-	-	-	-	-	-	4	
MW-5	01/27/98	8.36	8.27	-	0.09	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
MW-5	04/19/98	8.36	8.60	-	-0.24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
MW-5	09/27/00	8.36	8.68	-	-0.32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
MW-5	03/21/01	8.36	8.13	-	0.23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
MW-5	09/18/01	8.36	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
MW-5	09/19/08	8.36	8.93	-	-0.57	<50	-	-	<0.50	<0.50	<0.50	<0.50	<0.50	<10	<0.50	<0.50	<0.50	<300	<0.50	<0.50	-	
MW-5	**07/22/09**	8.36	8.85	-	-0.49	-	<50	-	<0.50	<0.50	<0.50	<0.50	<0.50	<10	<0.50	<0.50	<0.50	<300	<0.50	<0.50	-	
MW-6	02/05/95	6.88	6.39	-	0.49	**1000**	-	**1000**	**7.6**	**19**	**9.1**	**96**	-	-	-	-	-	-	-	-	5	
MW-6	05/05/95	6.88	6.85	-	0.03	**2300**	-	-	**49**	**9**	**130**	**46**	-	-	-	-	-	-	-	-	3.3	
MW-6	07/19/95	6.88	7.13	-	-0.25	**1500**	-	-	**84**	**3.3**	**28**	**24**	-	-	-	-	-	-	-	-	3.7	
MW-6	10/12/95	6.88	7.35	-	-0.47	**1800**	-	-	**38**	**13**	**38**	**86**	**2500**	-	-	-	-	-	-	-	4.1	
MW-6	01/08/96	6.88	7.04	-	-0.16	**1300**	-	-	**31**	**4.7**	**60**	**53**	**170**	-	-	-	-	-	-	-	4.2	
MW-6	09/11/97	6.88	7.29	-	-0.41	<250	-	-	**8.5**	<5.0	**11**	**6**	**1400**	-	-	-	-	-	-	-	3.5	
MW-6	01/27/98	6.88	6.2	-	0.68	**47000**	-	-	**350**	**150**	**360**	**690**	**38000**	-	-	-	-	-	-	-	4.6	
MW-6	04/19/98	6.88	6.64	-	0.24	**36000**	-	-	**40**	**510**	**140**	**10500**	**660**	-	-	-	-	-	-	-	4	
MW-6	09/27/00	6.88	6.99	-	-0.11	**1400**	-	-	**6.9**	**19**	**110**	**53**	**33**	-	-	-	-	-	-	-	-	
MW-6	03/21/01	6.88	6.36	-	0.52	**330**	-	-	**2.2**	**1.42**	**50.4**	**10.2**	**56.3**	-	-	-	-	-	-	-	-	
MW-6	09/18/01	6.88	7.11	-	-0.23	**290**	-	-	**0.957**	<5.0	**11.2**	**6.83**	**50.7**	-	-	-	-	-	-	-	-	
MW-6	09/19/08	6.88	7.31	-	-0.43	**83**	-	-	<0.50	**4.1**	**2**	**17**	**3.4**	<10	<0.50	<0.50	<0.50	<300	<0.50	<0.50	-	
MW-6	**07/22/09**	6.88	7.27	-	-0.39	-	<50	-	<0.50	<0.50	<0.50	<1.0	**2.6**	<10	<0.50	<0.50	<0.50	<250	<0.50	<0.50	-	
MW-7	02/05/95	6.62	7.62	-	-1.00	**280**	-	<500	<0.25	<0.25	<0.25	<0.50	-	-	-	-	-	-	-	-	5.1	
MW-7	05/05/95	6.62	7.64	-	-1.02	**290**	-	-	<0.50	<0.50	<0.50	<1.0	-	-	-	-	-	-	-	-	3.6	
MW-7	07/19/95	6.62	7.70	-	-1.08	**150**	-	-	<0.50	<0.50	<0.50	<1.0	-	-	-	-	-	-	-	-	4.6	
MW-7	10/12/95	6.62	7.88	-	-1.26	**110**	-	-	<0.50	<0.50	<0.50	<1.0	**390**	-	-	-	-	-	-	-	4.7	
MW-7	01/08/96	6.62	7.66	-	-1.04	**9**	-	-	<0.50	<0.50	<0.50	<1.0	**300**	-	-	-	-	-	-	-	4.9	
MW-7	09/11/97	6.62	7.78	-	-1.16	<50	-	-	<2.5	<5.0	<5.0	<5.0	**63**	-	-	-	-	-	-	-	3.8	
MW-7	01/27/98	6.62	7.30	-	-0.68	**1400**	-	-	**7.7**	<1.0	<1.0	<1.0	**920**	-	-	-	-	-	-	-	4.4	
MW-7	04/19/98	6.62	7.52	-	-0.90	**3500**	-	-	**15**	**7.7**	**11**	**19.3**	**3600**	-	-	-	-	-	-	-	4.7	
MW-7	09/27/00	6.62	7.71	-	-1.09	<50	-	-	<0.50	<0.50	<0.50	<0.50	**71**	-	-	-	-	-	-	-		
MW-7	03/21/01	6.62	7.62	-	-1.00		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
MW-7	03/29/01	6.62	7.57	-	-0.95	**80**	-	-	<0.50	<0.50	<0.50	<1.5	**88.2**	-	-	-	-	-	-	-	-	
MW-7	09/18/01	6.62	7.74	-	-1.12	<250	-	-	<2.5	<2.5	<2.5	<7.5	**36.6**	-	-	-	-	-	-	-	-	
MW-7	09/19/08	6.62	7.81	-	-1.19	<50	-	-	<0.50	<0.50	<0.50	<0.50	**1.6**	<10	<0.50	<0.50	<0.50	<300	<0.50	<0.50	-	
MW-7	**07/22/09**	6.62	7.7	-	-1.08	-	<50	-	<0.50	<0.50	<0.50	<1.0	**1.2**	<10	<0.50	<0.50	<0.50	<250	<0.50	<0.50	-	

TABLE 1
Historical Groundwater Monitoring and Analytical Data
ConocoPhillips (Former BP) Station Number 2611270
3255 Mecartney Road, Alameda, CA

Well No.	Date	TOC Elevation (ft-MSL)	Depth to Water (feet)	Measured SPH Thickness (feet)	Calc. GW Elev. (ft-MSL)	TPHg (µg/L)	TPPH (µg/L)	TPHd (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE (µg/L)	TBA (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)	Ethanol (µg/L)	1,2-DCA (µg/L)	EDB (µg/L)	D.O. (mg/L)	Comments
XW-1	06/21/93	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
XW-1	04/05/94	-	5.36	-	-	<50	-	**70**	<0.50	<0.50	<0.50	<0.50	-	-	-	-	-	-	-	-	3	
XW-1	07/28/94	-	5.92	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
XW-1	10/26/94	-	6.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
XW-1	02/05/95	7.49	5.82	-	1.67	<50	-	<500	<0.25	<0.25	<0.25	<0.50	-	-	-	-	-	-	-	-	4.9	
XW-1	05/05/95	7.49	5.57	-	1.92	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
XW-1	07/19/95	7.49	6.12	-	1.37	<50	-		<0.50	<0.50	<0.50	<1.0	-	-	-	-	-	-	-	-	4.3	
XW-1	10/12/95	7.49	6.82	-	0.67	<50	-		<0.50	<0.50	<0.50	<1.0	<5.0	-	-	-	-	-	-	-	3.8	
XW-1	01/08/96	7.49	6.11	-	1.38	<50	-		<0.50	<0.50	<0.50	<1.0	<5.0	-	-	-	-	-	-	-	4.7	
XW-1	09/11/97	7.49	6.57	-	0.92	<50	-		<0.50	<1.0	<1.0	<1.0	<10	-	-	-	-	-	-	-	3.3	
XW-1	01/27/98	7.49	5.27	-	2.22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
XW-1	04/19/98	7.49	5.24	-	2.25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
XW-1	09/27/00	7.49	6.13	-	1.36	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
XW-1	03/21/01	7.49	5.97	-	1.52	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
XW-1	09/18/01	7.49	6.59	-	0.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
XW-1	09/19/08	7.49	6.76	-	0.73	<50	-	-	<0.50	<0.50	<0.50	<0.50	<0.50	<10	<0.50	<0.50	<0.50	<300	<0.50	<0.50	-	
XW-1	**07/22/09**	7.49	6.65	-	0.84	-	<50	-	<0.50	<0.50	<0.50	<1.0	<0.50	<10	<0.50	<0.50	<0.50	<250	<0.50	<0.50	-	
XW-2	06/21/93	7.48	5.89	-	1.59	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
XW-2	04/05/94	7.48	5.77	-	1.71	<50	-	**160**	<0.50	<0.50	<0.50	<0.50	-	-	-	-	-	-	-	-	3	
XW-2	07/28/94	7.48	6.25	-	1.23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
XW-2	10/26/94	7.48	6.39	-	1.09	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
XW-2	02/05/95	7.48	5.62	-	1.86	<50	-	<500	<0.25	0.38	<0.25	<0.50		-	-	-	-	-	-	-	5.2	
XW-2	05/05/95	7.48	5.66	-	1.82	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
XW-2	07/19/95	7.48	6.80	-	0.68	<50	-	-	<0.50	<0.50	<0.50	<1.0		-	-	-	-	-	-	-	3.9	
XW-2	10/12/95	7.48	7.21	-	0.27	<50	-	-	<0.50	<0.50	<0.50	<1.0	<5.0	-	-	-	-	-	-	-	4.3	
XW-2	01/08/96	7.48	6.79	-	0.69	<50	-	-	<0.50	<0.50	<0.50	<1.0	<5.0	-	-	-	-	-	-	-	4.2	
XW-2	09/11/97	7.48	6.86	-	0.62	<50	-	-	<0.50	<1.0	<1.0	<1.0	<10	-	-	-	-	-	-	-	3.6	
XW-2	01/27/98	7.48	5.88	-	1.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
XW-2	04/19/98	7.48	5.42	-	2.06	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
XW-2	09/27/00	7.48	6.86	-	0.62	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
XW-2	03/21/01	7.48	6.60	-	0.88	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
XW-2	09/18/01	7.48	7.15	-	0.33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
XW-2	09/19/08	7.48	7.39	-	0.09	<50	-	-	<0.50	<0.50	<0.50	<0.50	<0.50	<10	<0.50	<0.50	<0.50	<300	<0.50	<0.50	-	
XW-2	**07/22/09**	7.48	7.23	-	0.25	-	<50	-	**1.5**	**11**	**1.9**	**12**	<0.50	<10	<0.50	<0.50	<0.50	<250	<0.50	<0.50	-	
XW-3	06/21/93	6.84	5.85	-	0.99	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
XW-3	04/05/94	6.84	5.85	-	0.99	<50	-	**150**	<0.50	**0.7**	<0.50	<0.50	-	-	-	-	-	-	-	-	3.1	
XW-3	07/28/94	6.84	6.28	-	0.56	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
XW-3	10/26/94	6.84	6.40	-	0.44	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
XW-3	02/05/95	6.84	7.23	-	-0.39	**280**	-	<500	<0.50	<0.50	**0.63**	<1.0	-	-	-	-	-	-	-	-	4.9	
XW-3	05/05/95	6.84	7.43	-	-0.59	**-**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
XW-3	07/19/95	6.84	7.60	-	-0.76	**400**	-	-	<0.50	<0.50	<0.50	<1.0	-	-	-	-	-	-	-	-	43	
XW-3	10/12/95	6.84	7.74	-	-0.90	**130**	-	-	<0.50	<0.50	<0.50	<1.0	**480**	-	-	-	-	-	-	-	4.7	
XW-3	01/08/96	6.84	7.58	-	-0.74	**320**	-	-	<2.5	<2.5	<2.5	<5.0	**1100**	-	-	-	-	-	-	-	4.4	
XW-3	01/27/98	6.84	7.01	-	-0.17	**1200**	-	-	**2.8**	<1.0	<1.0	<1.0	**990**	-	-	-	-	-	-	-	4.3	
XW-3	04/19/98	6.84	7.28	-	-0.44	**4500**	-	-	<2.5	<5.0	<5.0	<5.0	**4800**	-	-	-	-	-	-	-	4.3	
XW-3	09/27/00	6.84	7.59	-	-0.75	<50	-	-	<0.50	<0.50	<0.50	<0.50	**35**	-	-	-	-	-	-	-	-	
XW-3	03/21/01	6.84	7.35	-	-0.51	<250	-	-	<2.5	<2.5	<2.5	<7.5	**61.7**	-	-	-	-	-	-	-	-	
XW-3	09/18/01	6.84	7.70	-	-0.86	<250	-	-	<2.5	<2.5	<2.5	<7.5	**23.4**	-	-	-	-	-	-	-	-	
XW-3	09/19/08	6.84	7.90	-	-1.06	<50	-	-	<0.50	<0.50	<0.50	<0.50	**1.3**	<10	<0.50	<0.50	<0.50	<300	<0.50	<0.50	-	
XW-3	**07/22/09**	6.84	7.70	-	-0.86	-	<50	-	<0.50	<0.50	<0.50	<1.0	**1.4**	<10	<0.50	<0.50	<0.50	<250	<0.50	<0.50	-	
QC-2	04/05/94	-	-	-	-	<50	-	-	<0.50	<0.50	<0.50	<0.50	-	-	-	-	-	-	-	-	-	
QC-2	07/28/94	-	-	-	-	<50	-	-	<0.50	<0.50	<0.50	<0.50	-	-	-	-	-	-	-	-	-	
QC-2	10/26/94	-	-	-	-	<50	-	-	<0.50	<0.50	<0.50	<0.50	-	-	-	-	-	-	-	-	-	
QC-2	02/05/95	-	-	-	-	<50	-	-	<0.25	<0.25	<0.25	<0.50	-	-	-	-	-	-	-	-	-	
QC-2	05/05/95	-	-	-	-	<50	-	-	<0.50	<0.50	<0.50	<1.0	-	-	-	-	-	-	-	-	-	
QC-2	07/19/95	-	-	-	-	<50	-	-	<0.50	<0.50	<0.50	<1.0	-	-	-	-	-	-	-	-	-	
QC-2	10/12/95	-	-	-	-	<50	-	-	<0.50	<0.50	<0.50	<1.0	<5.0	-	-	-	-	-	-	-	-	
QC-2	01/08/96	-	-	-	-	<50	-	-	<0.50	<0.50	<0.50	<1.0	<5.0	-	-	-	-	-	-	-	-	

Notes:

TOC: Top of casing
TPHg: Total petroleum hydrocarbons as gasoline
TPPH: Total purgeable petroleum hydrocarbons
TPHd: Total petroleum hydrocarbons as diesel
B: Benzene
T: Toluene
E: Ethylbenzene
X: Total xylenes
MTBE: Methyl tert butyl ether
TBA: Tert-butyl alcohol
DIPE: Diisopropyl ehter
ETBE: Ethyl-t-butyl ether
TAME: Tert-amyl-methyl ether
1,2-DCA: 1,2-dichloroethane
EDB: Dibromoethane
D.O: Dissolved oxygen
µg/L: Micrograms per liter
mg/L: Milligrams per liter
<: Below reporting limits
ft: Feet
msl: Mean sea level
SPH: Separate phase hydrocarbon

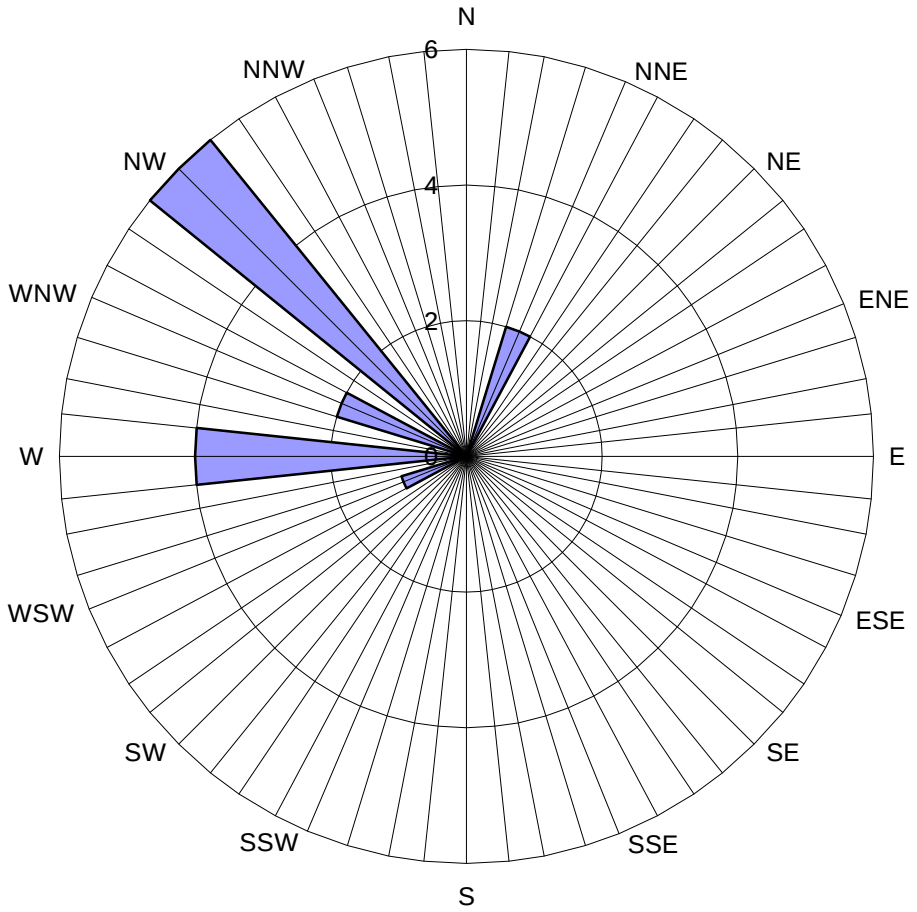
Well Destroyed

TABLE 2
Groundwater Gradient and Flow Direction
BP Station Number 11270
3255 Mecartney Road
Alameda, California

Site	Monitoring Date	Groundwater Gradient (feet per foot)	Groundwater Flow Direction															
			N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
11270	10/26/94	0.03	0	0	0	0	0	0	0	0	0	0	0	0	**1**	0	0	0
	02/05/95	0.02	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**	0	0
	05/05/95	0.03	0	0	0	0	0	0	0	0	0	0	0	**1**	0	0	0	0
	01/08/96	0.02	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**	0
	09/11/97	0.01	0	0	0	0	0	0	0	0	0	0	0	0	**1**	0	0	0
	01/27/98	0.02 ; 0.07	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**	0
	04/19/98	0.03	0	0	0	0	0	0	0	0	0	0	0	0	**1**	0	0	0
	07/29/99	0.06	0	**1**	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	10/18/99	0.06	0	**1**	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	01/12/00	0.07	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**	0
	09/27/00	0.02	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**	0
	03/21/01	0.02	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**	0
	09/18/01	0.01	0	0	0	0	0	0	0	0	0	0	0	0	**1**	0	0	0
	09/18/08	0.01	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**	0	0
	07/22/09	0.013	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**	0
			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0.029 Average	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**4**	**2**	**6**	**0**

Explanation
NA = Not available
Number of Events = 14

Historic Groundwater Flow Directions
BP Station No. 11270
3255 Mecartney Road
Alameda, California



Legend
Groundwater flow directions are based on data from the Fourth Quarter 1994 to the Third Quarter 2009. 15 data points shown.

11270 ROSE DIAGRAM.xls

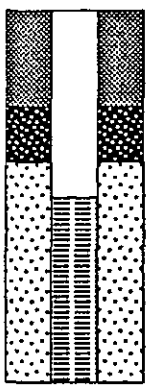
Attachment C

Soil Boring Logs

UNIFIED SOIL CLASSIFICATION SYSTEM - VISUAL CLASSIFICATION OF SOILS
(ASTM D-2488)

MAJOR DIVISIONS		GROUP SYMBOL	GROUP NAME	DESCRIPTION
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	GW	Well-graded gravel Well-graded gravel with sand	Well-graded gravels or gravel-sand mixtures, little or no fines.
		GP	Poorly-graded gravel Poorly-graded gravel with sand	Poorly-graded gravels or gravel sand mixture, little or no fines.
		GM	Silty gravel Silty gravel with sand	Silty gravels, gravel-sand-silt mixtures.
		GC	Clayey gravel Clayey gravel with sand	Clayey gravels, gravel-sand-clay mixtures.
	SAND AND SANDY SOILS	SW	Well-graded sand Well-graded sand with gravel	Well-graded sands or gravelly sands, little or no fines.
		SP	Poorly-graded sand Poorly-graded sand with gravel	Poorly-graded sands or gravelly sands, little or no fines.
		SM	Silty sand Silty sand with gravel	Silty sands, sand-silt mixtures.
		SC	Clayey sand Clayey sand with gravel	Clayey sands, sand-clay mixtures.
FINE GRAINED SOILS	SILTS AND CLAYS	ML	Silt; Silt with sand; Silt with gravel; Sandy silt; Sandy silt with gravel; Gravelly silt; Gravelly silt with sand	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity.
		CL	Lean clay; Lean clay with sand; Lean clay with gravel Sandy lean clay; Sandy lean clay with gravel Gravelly lean clay; Gravelly lean clay with sand	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
	ELASTIC SILTS AND CLAYS	MH	Elastic silt; Elastic silt with sand; Elastic silt with gravel Sandy elastic silt; Sandy elastic silt with gravel Gravelly elastic silt; Gravelly elastic silt with sand	Inorganic silts, micaceous or diatamaceous fine sandy or silty soils, elastic silts.
		CH	Fat clay; Fat clay with sand; Fat clay with gravel Sandy fat clay; Sandy fat clay with gravel Gravelly fat clay; Gravelly fat clay with sand	Inorganic clays of high plasticity, fat clays.
HIGHLY ORGANIC SOILS		OL/OH	Organic soil; Organic soil with sand; Organic soil with gravel Sandy organic soil; Sandy organic soil with gravel Gravelly organic soil; Gravelly organic soil with sand	Organic silts and organic silt-clays of low plasticity Organic clays of medium to high plasticity.
		Pt	Peat	Peat and other highly organic soils.
BEDROCK		Br	Bedrock	Igneous, metamorphic and sedimentary rocks

WELL CONSTRUCTION DETAILS



= Cement

= Bentonite

= Filter pack

= PVC Blank

= PVC Screen

Approximate first encountered water level

Approximate stabilized water level

Retained for Analysis { MW-1-7.5' } Sample Interval

NOTE: Blow count represents the number of blows of a 140-lb hammer falling 30 inches per blow required to drive a sampler through the last 12 inches of an 18-inch penetration.

No warranty is provided as to the continuity of soil strata between borings. Logs represent the soil section observed at the boring location on the date of drilling only.

S = Sampler sank into medium under the weight of the hammer (no blow count)
P = Sampler was pushed into medium by drilling rig (no blow count)
NR = No Recovery
S-3 = Denotes that sample was sent for laboratory analysis.

SANDS & GRAVELS	BLOWS/FT
VERY LOOSE	0 - 5
LOOSE	5 - 12
MED. DENSE	12 - 37
DENSE	37 - 62
VERY DENSE	OVER 62

SILTS & CLAYS	BLOWS/FT
SOFT	0 - 5
FIRM	5 - 10
STIFF	10 - 20
VERY STIFF	20 - 40
HARD	OVER 40

HYDRO-ENVIRONMENTAL TECHNOLOGIES, INC.

SOIL BORING AND WELL CONSTRUCTION LOG LEGEND

APPENDIX C

PLATE C-1

SITE/LOCATION	BEGUN	BORING DIAMETER	E/BEARING	BORING NO
3255 Mecartney Road, Alameda, C[redacted]	6/17/93	10 Inches	9[redacted] Degrees	MW-5
DRILLING CONTRACTOR	COMPLETED	FIRST ENCOUNTERED WATER DEPTH		BOTTOM OF BORING
Bayland Drilling	6/17/93	7.5 Feet		15 Feet
OPERATOR	LOGGED BY	STATIC WATER DEPTH/DATE		WELL NO.
Adam Higuaro	Tony Ramirez	7.0 Feet		MW-5
DRILL MAKE & MODEL	SAMPLING METHOD			BOTTOM OF WELL
CME 75	California modified split spoon			15 Feet
WELL MATERIAL	SLOT SIZE	FILTER PACK	WELL SEAL	PLANNED USE
4" SCH 40 PVC	0.010"	#2/16	Neat cement over hydrated bentonite pellets	Monitoring

BLOWS/FOOT	PID FIELD HEADSPACE (ppm)	DEPTH	SAMPLE	WATER LEVEL	WELL CONSTR.	GRAPHIC LOG	MATERIAL CLASSIFICATION & PHYSICAL DESCRIPTION
		1					PEAT(Pt); dark brown; covered with tanbark; moist.
		2					Poorly graded SAND with Gravel (SP); tan; fine angular to sub-rounded sand; 35% fine to coarse, sub-angular to sub-rounded gravel; trace fines; damp.
		3					
	14.0	4					Poorly graded SAND with Gravel (SP); medium brown; fine angular to sub-rounded sand; 25% fine, sub-angular to sub-rounded gravel; trace fines; damp.
12		5					
		6					Silty SAND (SM); grey- brown; fine to coarse sub-angular to sub-rounded sand; 20% silt; moist.
		7					
		8					
		9					Same as above, but wet.
		10					
		11					Poorly graded GRAVEL with Sand (GP); grey-brown; fine to coarse sub-angular to sub-rounded gravel; 35% fine to coarse, angular to sub-rounded sand; wet.
		12					
		13					Lean CLAY with Sand; grey-brown; fine sub-angular to sub-rounded sand; 40% clay; wet.
		14					
		15					

HYDR-ENVIRONMENTAL TECHNOLOGIES, INC.

DATE: June 18, 1993

APPROVED BY: Owen C. Ratchye, P.E.

SOIL BORING LOG AND WELL CONSTRUCTION DIAGRAM
MW-5

BP Service Station No. 11270
3255 Mecartney Road
Alameda, CA

PLATE B-2

SHEET 1 OF 1

JOB NO. 9-042.1

SITE/LOCATION	BEGUN	BORING DIAMETER	ANG[illegible] BEARING	BORING NO
3255 Mecartney Road, Alameda, CA	1/19/95	10 Inches	90 [illegible]rees	MW-6
DRILLING CONTRACTOR	**COMPLETED**	**FIRST ENCOUNTERED WATER DEPTH**		**BOTTOM OF BORING**
PC Exploration, Inc.	1/19/95	5.0 Feet		15.0 Feet
DRILL MAKE & MODEL	**OPERATOR**	**LOGGED BY**	**STATIC WATER DEPTH/DATE**	**WELL NO.**
CME 75	Frank Bartolovi	Frances Maroni	5.76 Feet (1/28/95)	MW-6
WELL MATERIAL	**SLOT SIZE**	**SAMPLING METHOD**		**BOTTOM OF WELL**
PVC SCH 40	0.010"	California modified split spoon		15.0 Feet
FILTER PACK	**WELL SEAL**			**PLANNED USE**
#2/12 SAND	Neat cement over hydrated bentonite pellets			Monitoring

BLOWS/FOOT	PID FIELD HEADSPACE (ppm)	DEPTH	SAMPLE	WATER LEVEL	WELL CONSTR.	GRAPHIC LOG	MATERIAL CLASSIFICATION & PHYSICAL DESCRIPTION
		1					Asphalt, Baserock
		2					SAND (SW); Brown with yellow mottling and iron oxide mottling, well graded, fine grained, subrounded to rounded, moist.
		3					
		4					
5	2.6	5		▽			As above; Dark gray, wet.
		6		▼			
		7					
		8					
		9					
29		10					Silty SAND (SM); Dark gray with black mottling,well graded, fine-grained, subrounded to rounded, some silt, wet.
		11					
		12					
		13					
		14					
		15					As above; Greenish-gray-blue, wet.
		16					
		17					
		18					
		19					
		20					

HYDRO-ENVIRONMENTAL TECHNOLOGIES, INC.

DATE: February 10, 1995

APPROVED BY: Gary Pischke C.E.G.

SOIL BORING LOG AND WELL CONSTRUCTION DIAGRAM
MW-6

BP Service Station No. 11270
3255 Mecartney Road
Alameda, CA

PLATE
B-3

SHEET 1 OF 1

JOB NO.
9-042.2

SITE/LOCATION	BEGUN	BORING DIAMETER	AN[redacted] BEARING	BORING NO
3255 Mecartney Road, Alameda, CA	1/18/95	10 Inches	90 Degrees	MW-7
DRILLING CONTRACTOR	COMPLETED	FIRST ENCOUNTERED WATER DEPTH		BOTTOM OF BORING
PC Exploration, Inc.	1/19/95	5.0 Feet		16.5 Feet
DRILL MAKE & MODEL	OPERATOR	LOGGED BY	STATIC WATER DEPTH/DATE	WELL NO.
CME 75	Frank Bartolovi	Frances Maroni	7.54 Feet	MW-7
WELL MATERIAL	SLOT SIZE	SAMPLING METHOD		BOTTOM OF WELL
PVC SCH 40	0.010"	California modified split spoon		15.0 Feet
FILTER PACK	WELL SEAL			PLANNED USE
#2/12 SAND	Neat cement over hydrated bentonite pellets			Monitoring

BLOWS/FOOT	PID FIELD HEADSPACE (ppm)	DEPTH	SAMPLE	WATER LEVEL	WELL CONSTR.	GRAPHIC LOG	MATERIAL CLASSIFICATION & PHYSICAL DESCRIPTION
		1					Asphalt, Baserock
		2					SAND (SP); Gray brown, poorly-graded, fine grained, rounded, medium dense, dry.
		3					
		4					
5	2.6	5		▼			Gravely Clay (CH); Dark reddish brown, high plasticity, some coarse to fine grained angular to subangular gravel, medium stiff, moist.
		6					
		7		▽			Silty SAND (SM); Dark brown with black organic mottling, well-graded, fine grained, occasional coarse to fine grained, angular to subangular gravel, some silt, moist to wet.
		8					
		9					
32		10					As above; Dark gray, some gravel, wet.
		11					Silty SAND (SM); Dark gray with yellow green mottling, well graded, fine-grained, subrounded to rounded, some silt, occasional subangular cobble, wet.
		12					
		13					
		14					
46		15					
		16					SAND (SW); Yellowish orange, well-graded fine-grained, subrounded, wet.
		17					Heaving sands 14.5-16.5 feet bgs.
		18					
		19					
		20					

HYDRO-ENVIRONMENTAL TECHNOLOGIES, INC.

DATE: February 10, 1995

APPROVED BY: Gary Pischke C.E.G.

SOIL BORING LOG AND WELL CONSTRUCTION DIAGRAM
MW-7

BP Service Station No. 11270
3255 Mecartney Road
Alameda, CA

PLATE
B-4

SHEET 1 OF 1

JOB NO.
9-042.2

Delta

Consultants, Inc.

Project No:	I42611270	Client:	ELT	Well No: SV-1
Logged By:	Joe Dumas	Location:	3255 Mecartney Rd, Alameda, CA	Page 1 of 1
Driller:	Gregg Drilling	Date Drilled:	12/10/2009	Location Map - See Site Map for Location
Drilling Method:	Hand Auger	Hole Diameter:	3"	
Sampling Method:	Hand Auger	Hole Depth:	5' 2"	
Casing Type:	1/4"OD, 0.17"ID Nylaflow	Well Diameter:	1/4"	
Slot Size:	Vapor Tip	Well Depth:	5'	
Gravel Pack:	-	Casing Stickup:	-	
Elevation		Northing		Easting

Well Completion: Backfill	Well Completion: Casing	Well Completion: Backfill	Well Details	Static Water Level	Moisture Content	PID Reading (ppm)	Penetration (blows/6")	Depth (feet)	Sample: Recovery	Sample: Interval	Soil Type	LITHOLOGY / DESCRIPTION
			7" diam vault									Concrete
			grout					1				Pea Gravel
			1/4"Nylaflow tubing					2			CL	**Lean Clay with Sand:** brown, 20% fine sand, medium plastic, medium stiff, moist
			bentonite					3				
			sand					4				
			vapor tip		MOIST	0.1						As above: becoming dark brown in color
								5				Boring terminated at 5 feet 2 inches below ground surface.
								6				
								7				
								8				
								9				
								10				
								11				
								12				
								13				
								14				
								15				
								16				
								17				
								18				
								19				
								20				
								21				
								22				
								23				
								24				
								25				

Delta

Consultants, Inc.

Project No:	I42611270	Client:	ELT	Well No: SV-2
Logged By:	Joe Dumas	Location:	3255 Mecartney Rd, Alameda, CA	Page 1 of 1
Driller:	Gregg Drilling	Date Drilled:	12/10/2009	Location Map - See Site Map for Location
Drilling Method:	Hand Auger	Hole Diameter:	3"	
Sampling Method:	Hand Auger	Hole Depth:	5' 2"	
Casing Type:	1/4"OD, 0.17"ID Nylaflow	Well Diameter:	1/4"	
Slot Size:	Vapor Tip	Well Depth:	5'	
Gravel Pack:	-	Casing Stickup:	-	
Elevation		Northing		Easting

Well Completion: Backfill	Well Completion: Casing	Well Completion: Backfill	Well Details	Static Water Level	Moisture Content	PID Reading (ppm)	Penetration (blows/6")	Depth (feet)	Sample: Recovery	Sample: Interval	Soil Type	LITHOLOGY / DESCRIPTION
			7" diam vault									9" Concrete
												3" Pea Gravel
			grout					1			CL	**Lean Clay with Sand:** dark brown, 20% fine sand,
			1/4"Nylaflow tubing					2				medium plastic, medium stiff, moist
			bentonite					3				
			sand									
			vapor tip		MOIST	0.4		4			ML	**Silt**: black, 10% fine sand, non-plastic, soft, moist
								5				Boring terminated at 5 feet 2 inches below ground surface.
								6				
								7				
								8				
								9				
								10				
								11				
								12				
								13				
								14				
								15				
								16				
								17				
								18				
								19				
								20				
								21				
								22				
								23				
								24				
								25				

Delta

Consultants, Inc.

Project No:	I42611270	Client:	ELT	Well No: SV-3
Logged By:	Joe Dumas	Location:	3255 Mecartney Rd, Alameda, CA	Page 1 of 1
Driller:	Gregg Drilling	Date Drilled:	12/11/2009	Location Map - See Site Map for Location
Drilling Method:	Hand Auger	Hole Diameter:	3"	
Sampling Method:	Hand Auger	Hole Depth:	5' 2"	
Casing Type:	1/4"OD, 0.17"ID Nylaflow	Well Diameter:	1/4"	
Slot Size:	Vapor Tip	Well Depth:	5'	
Gravel Pack:	-	Casing Stickup:	-	
Elevation		Northing		Easting

Well Completion: Backfill	Well Completion: Casing	Well Completion: Backfill	Well Details	Moisture Content	PID Reading (ppm)	Penetration (blows/6")	Depth (feet)	Sample: Recovery	Sample: Interval	Soil Type	LITHOLOGY / DESCRIPTION
			7" diam vault								4" Concrete; 2" Pea Gravel
			grout				1			SW-SC	**Well Graded Sand with Clay**: tan with white
			1/4"Nylaflow tubing				2			SW	(trace white substance has the consistency of clay) 10% fines, medium dense
			bentonite				3				**Well Graded Sand:** light brown, <5% fines, loose
			sand				4			SC	**Clayey Sand**: light brown-red with trace gray clay, 25% fines, 10% coarse gravel, dense
			vapor tip	MOIST			5			SM	**Silty Sand:** brown, 20% fines, 10% organic matter, medium dense
											Boring terminated at 5 feet 2 inches below ground surface.
							6				
							7				
							8				
							9				
							10				
							11				
							12				
							13				
							14				
							15				
							16				
							17				
							18				
							19				
							20				
							21				
							22				
							23				
							24				
							25				

Delta

Consultants, Inc.

Project No:	I42611270	Client:	ELT	Well No: SV-4
Logged By:	Joe Dumas	Location:	3255 Mecartney Rd, Alameda, CA	Page 1 of 1
Driller:	Gregg Drilling	Date Drilled:	12/11/2009	Location Map - See Site Map for Location
Drilling Method:	Hand Auger	Hole Diameter:	3"	
Sampling Method:	Hand Auger	Hole Depth:	5' 2"	
Casing Type:	1/4"OD, 0.17"ID Nylaflow	Well Diameter:	1/4"	
Slot Size:	Vapor Tip	Well Depth:	5'	
Gravel Pack:	-	Casing Stickup:	-	
Elevation		Northing		Easting

Well Completion: Backfill	Well Completion: Casing	Well Completion: Backfill	Well Details	Static Water Level	Moisture Content	PID Reading (ppm)	Penetration (blows/6")	Depth (feet)	Sample: Recovery	Sample: Interval	Soil Type	LITHOLOGY / DESCRIPTION
			7" diam vault									Concrete
			grout					1			SW	**Well Graded Sand:** tan, 85% fine sand, 15% medium sand, loose
			1/4"Nylaflow tubing					2			CL	**Lean Clay**: brown, 10% fine sand, medium plastic, moist
			bentonite					3			CL	**Lean Clay with Sand:** brown-red, 15% fine sand, medium plastic, moist
			sand					4			ML	**Silt:** black, 5% fine sand, low plastic, moist
			vapor tip		MOIST			5				Boring terminated at 5 feet 2 inches below ground surface.
								6				
								7				
								8				
								9				
								10				
								11				
								12				
								13				
								14				
								15				
								16				
								17				
								18				
								19				
								20				
								21				
								22				
								23				
								24				
								25				

Delta

Consultants, Inc.

Project No:	I42611270	Client:	ELT
Logged By:	Joe Dumas	Location:	3255 Mecartney Rd, Alameda, CA
Driller:	Gregg Drilling	Date Drilled:	12/10/2009
Drilling Method:	Hand Auger	Hole Diameter:	3"
Sampling Method:	Hand Auger	Hole Depth:	5' 2"
Casing Type:	1/4"OD, 0.17"ID Nylaflow	Well Diameter:	1/4"
Slot Size:	Vapor Tip	Well Depth:	5'
Gravel Pack:	-	Casing Stickup:	-
Elevation		Northing	Easting

Well No: SV-5
Page 1 of 1

Location Map - See Site Map for Location

Well Completion (Backfill / Casing / Backfill)	Well Details	Static Water Level	Moisture Content	PID Reading (ppm)	Penetration (blows/6")	Depth (feet)	Sample Recovery	Sample Interval	Soil Type	LITHOLOGY / DESCRIPTION
	7" diam vault									Concrete
	grout					1				Pea Gravel
	1/4"Nylaflow tubing					2			CL	**Lean Clay:** dark brown, 10% fine gravel, medium plastic, medium stiff, moist, trace sand
	bentonite					3				
	sand					4			ML	**Silt**: black, <5% fine sand, non-plastic, soft, moist
	vapor tip		MOIST	0.4		5				
										Boring terminated at 5 feet 2 inches below ground surface.
						6				
						7				
						8				
						9				
						10				
						11				
						12				
						13				
						14				
						15				
						16				
						17				
						18				
						19				
						20				
						21				
						22				
						23				
						24				
						25				

Attachment D

Sensitive Receptor Documents

SENSITIVE RECEPTORS SURVEY
Site Survey and Literature Research

Store No: 11270
Location: 3255 McCartney Rd.
City/State Alameda, CA

I. Provide answers to the following questions:

a. Is a public water supply well within 2500 ft? (y/(n))
If yes, Distance (ft)_____

b. Is a private water supply well within 1000 ft? (y/(n))
If yes, Distance (ft)_____

c. Is a subway within 1000 ft? (y/(n))
If yes, Distance (ft)_____

d. Is a basement within 1000 ft? (y/(n))
If yes, Distance (ft)_____

e. Is a School within 1000 ft? (y/(n))
If yes, Distance (ft)_____

f. Is a surface body of water within 1000 ft? ((y)/n)
If yes, Distance (ft) 500

II. Describe type of local water supply:

Public
*Supplier's Name East Bay Municipal District 891-0615
*Supplier's Source American/Mokulumne River - Folsom
*Distance to Site 90 mi
Private _____

III. Aquifer Classification, if available:

_____ Class I: Special Ground Waters
Irreplaceable Drinking Water Sources
N/A Ecologically Vital

_____ Class II: Current and Potential Drinking Water

_____ Class III: Not Potential Source of Drinking Water

IV. Describe observation wells, if any:

Number 4
Free Product _____ (y/(n))

V. Signature of Preparer Henry Hurdmans Date 11-4-92

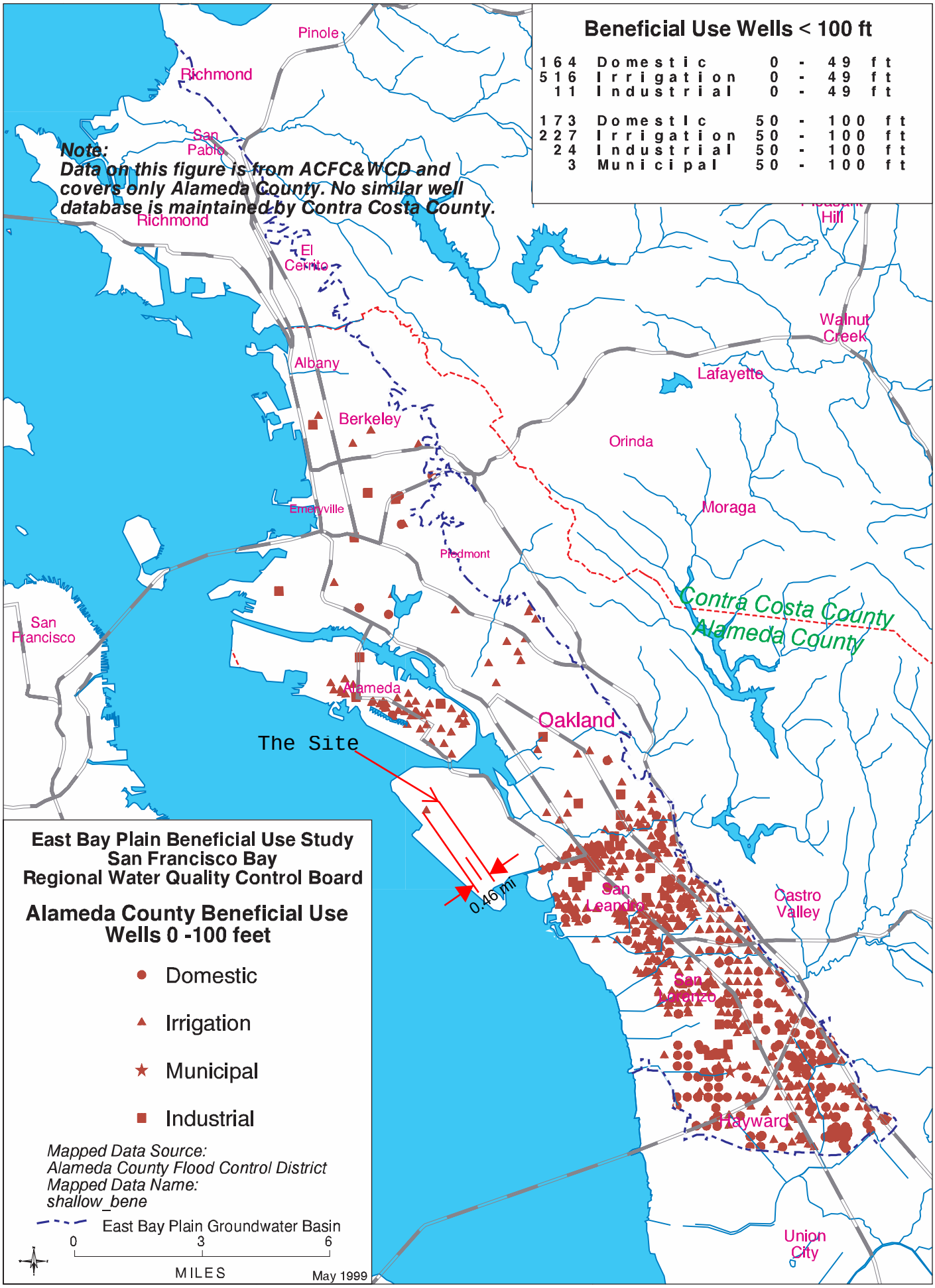

Beneficial Use Wells < 100 ft
164 Domestic 0 - 49 ft
516 Irrigation 0 - 49 ft
11 Industrial 0 - 49 ft
173 Domestic 50 - 100 ft
227 Irrigation 50 - 100 ft
24 Industrial 50 - 100 ft
3 Municipal 50 - 100 ft
Note:
Data on this figure is from ACFC&WCD and covers only Alameda County. No similar well database is maintained by Contra Costa County.
Pinole
Richmond
San Pablo
Richmond
El Cerrito
Albany
Berkeley
Emeryville
Piedmont
Oakland
Alameda
San Francisco
The Site
0.46 mi
Hill
Walnut Creek
Lafayette
Orinda
Moraga
Contra Costa County
Alameda County
San Leandro
Castro Valley
San Lorenzo
Hayward
Union City
East Bay Plain Beneficial Use Study
San Francisco Bay
Regional Water Quality Control Board
Alameda County Beneficial Use Wells 0 -100 feet
Domestic
Irrigation
Municipal
Industrial
Mapped Data Source:
Alameda County Flood Control District
Mapped Data Name:
shallow_bene
East Bay Plain Groundwater Basin
0 3 6
MILES
May 1999

Figure 16

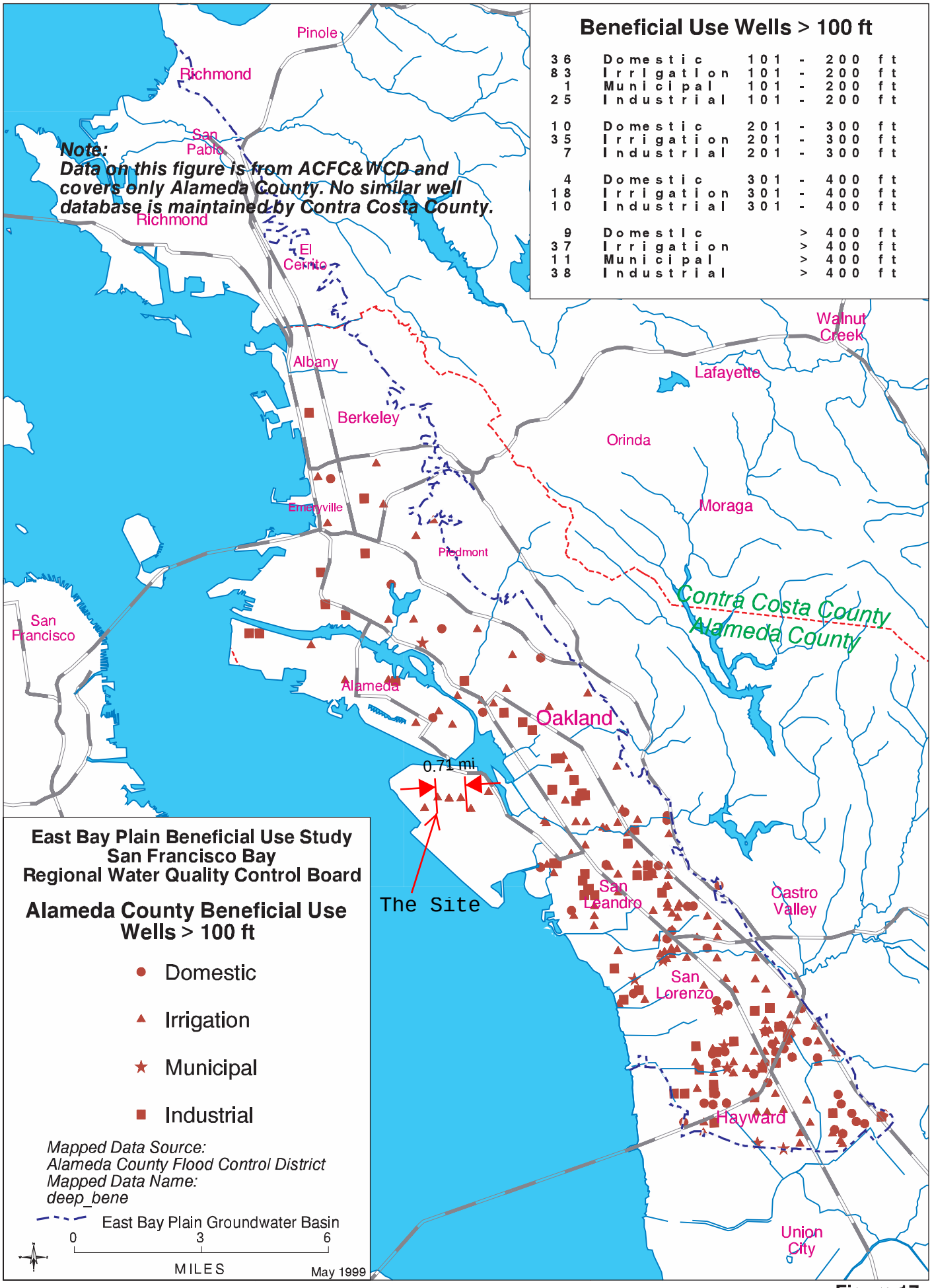

Beneficial Use Wells > 100 ft
36 Domestic 101 - 200 ft
83 Irrigation 101 - 200 ft
1 Municipal 101 - 200 ft
25 Industrial 101 - 200 ft
10 Domestic 201 - 300 ft
35 Irrigation 201 - 300 ft
7 Industrial 201 - 300 ft
4 Domestic 301 - 400 ft
18 Irrigation 301 - 400 ft
10 Industrial 301 - 400 ft
9 Domestic > 400 ft
37 Irrigation > 400 ft
11 Municipal > 400 ft
38 Industrial > 400 ft
Note:
Data on this figure is from ACFC&WCD and covers only Alameda County. No similar well database is maintained by Contra Costa County.
Pinole
Richmond
San Pablo
Richmond
El Cerrito
Albany
Berkeley
Emeryville
Piedmont
Walnut Creek
Lafayette
Orinda
Moraga
Contra Costa County
Alameda County
San Francisco
Alameda
Oakland
0.71 mi
The Site
San Leandro
Castro Valley
San Lorenzo
Hayward
Union City
East Bay Plain Beneficial Use Study
San Francisco Bay
Regional Water Quality Control Board
Alameda County Beneficial Use Wells > 100 ft
Domestic
Irrigation
Municipal
Industrial
Mapped Data Source:
Alameda County Flood Control District
Mapped Data Name:
deep_bene
East Bay Plain Groundwater Basin
0
3
6
MILES
May 1999

Figure 17

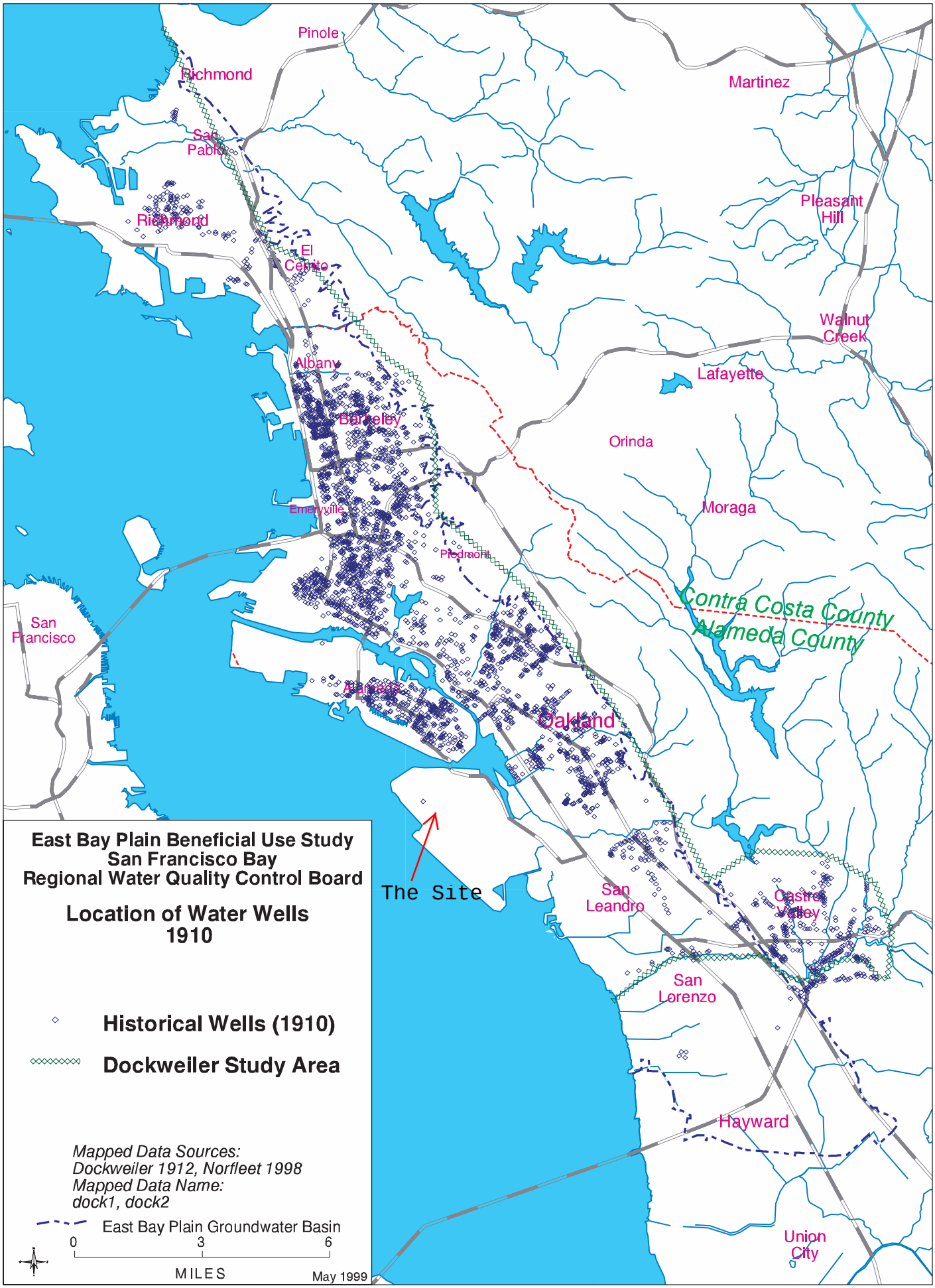

Pinole
Richmond
Martinez
San Pablo
Pleasant Hill
Richmond
El Cerrito
Walnut Creek
Albany
Lafayette
Berkeley
Orinda
Moraga
Emeryville
Piedmont
Contra Costa County
Alameda County
San Francisco
Alameda
Oakland
The Site
San Leandro
Castro Valley
San Lorenzo
Hayward
Union City
East Bay Plain Beneficial Use Study
San Francisco Bay
Regional Water Quality Control Board
Location of Water Wells
1910
Historical Wells (1910)
Dockweiler Study Area
Mapped Data Sources:
Dockweiler 1912, Norfleet 1998
Mapped Data Name:
dock1, dock2
East Bay Plain Groundwater Basin
0
3
6
MILES
May 1999

Figure 2