



20190

June 4, 2004

Ms. eva chu
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502

**Re: Request for Case Closure
Atlantic Richfield Company Service Station #2162
15135 Hesperian Boulevard
San Leandro, California**

Dear Ms. chu:

On behalf of Atlantic Richfield Company (RM) – a BP affiliated company, URS Corporation (URS) is requesting Case Closure for Atlantic Richfield Company Service Station #2162 located at 15135 Hesperian Boulevard, San Leandro, California (the Site- Figure 1). Remediation activities at the Site have been successful in reducing the constituents of concern (COC) in soil and groundwater (See Attachment A for Site Closure Summary). This letter includes a brief Site history and addresses the six points defining a Low Risk Groundwater Case as laid out in *Supplemental Instructions to State Water Board, December 8, 1995, Interim Guidance on Required Cleanup at Low Risk Fuel Sites* (California Regional Water Quality Control Board (CRWQCB), January 5, 1996).

SITE HISTORY AND EXISTING CONDITIONS

The Site is an active gasoline retail station that consists of a station building, four 10,000 gallon double wall fiberglass tanks, four islands, and 8 dispensers. The Site is predominantly covered with concrete and asphalt. It is bound by Ruth Court to the north, Hesperian Boulevard to the east, and commercial buildings to the south and west. Shallow subsurface deposits in the region generally consist of a heterogeneous mixture of moderately to poorly sorted clay, silt, sand, and gravel (Helley, et al, 1979). Geologic data derived on-site from soil borings indicate unconsolidated sediments consisting of interbedded silt and silty clay from 1 to 9 feet below ground surface (bgs). A sand and gravel unit underlie these silts and silty clays. A silt unit encountered at 13 feet below ground surface (bgs) underlies the sand and gravel unit.

An underground storage tank (UST) leak was reported in September of 1991. The tanks were removed and replaced with four, double-wall fiberglass, 10,000 gallon tanks in the first quarter of 1992. Environmental investigations at the Site began in 1992, when four monitoring wells were installed. Product lines and dispensers were again replaced in January 2003.

A Limited Soil Performance Test was completed in the third quarter of 1991 to determine if Soil Vapor Extraction (SVE) was feasible at the Site. Two vapor wells were installed and the results of the test showed that SVE was not an effective remediation technique due to an insufficient radius of influence by the system. This was likely controlled by the Site lithology, which is predominantly silt and clay with subordinate sandy silt and sand in discontinuous lenses.

CRITERIA FOR CLOSURE AS A LOW-RISK GROUNDWATER SITE

Supplemental Instructions to State Water Board, December 8, 1995, Interim Guidance on Required Cleanup at Low Risk Fuel Sites (CRWQCB, January 5, 1996) lists six criteria for closure of a low-risk groundwater Site. These six criteria are addressed in the following paragraphs.

1. *Leak has been stopped and ongoing sources, including free product, have been removed or remediated.*

An underground storage tank (UST) leak was reported in September of 1991. During January and February of 1992, the tanks and product lines were excavated, removed and replaced. The USTs were replaced with four, double-wall fiberglass, 10,000 gallon tanks. Approximately 50,000 gallons of water was removed from the tank pit and approximately 100 cubic yards (approximately 130 tons) of contaminated soil were excavated & removed during these activities (Attachment D).

The product lines and dispensers were replaced again in January 2003. Twelve soil samples were taken during the line upgrade performed in 2003 (Attachment D). One sample (S-L4-3.5) yielded a Total petroleum hydrocarbons as gasoline (TPH-g) concentration (200 milligrams per kilogram [mg/kg]) that exceeded the Environmental Screening Levels (ESL) for shallow soils (> 3m) that are a current or potential source of drinking water (100 mg/kg)(Attachment B). One sample (S-L1-3.5) yielded a benzene concentration (0.072 mg/kg) that exceeds the ESL (0.044 mg/kg). One sample (S-L4-3.5) yielded a total xylenes concentration (0.072 mg/kg) that meets the ESL (1.5 mg/kg). 3 samples (S-L1-3.5, S-L3-3.5, and S-D5-3) yielded Methyl-tert butyl ether (MTBE) concentrations (0.14 mg/kg, 0.55 mg/kg, and 0.093 mg/kg, respectively) that exceed the ESL (0.023mg/kg). Approximately 140 cubic yards (183 tons) of soil were excavated and removed from the Site during this upgrade of the product lines and dispensers.

2. *The Site has been adequately characterized*

The *Preliminary Tank Replacement Assessment Report* prepared by Roux Associates documents the geologic data derived from seven boreholes drilled onsite. Borings logs from the installation of the four monitoring wells and cross sections A-A', B-B', and C-C' provide further geologic information (Attachments E and F, respectively).

Groundwater at this Site has been monitored since 1992 through a network of four monitoring wells. Wells MW-1 and MW-2 are adjacent to the underground storage tanks (UST). Wells MW-3 and MW-4 are located downgradient at the southern boundary of the Site (Figure 1).

3. *The dissolved hydrocarbon plume is not migrating*

Groundwater monitoring occurred from 1992 to the most recent sampling event in April 2004. Groundwater monitoring data from June 2000 through the most recent sampling event is included as Table 1. Historical groundwater monitoring data exists from February 1996 through February 2000 (Attachment C).

The constituents of concern at the Site are TPH-g/gasoline range organics (GRO), benzene, toluene, ethylbenzene, xylenes (BTEX), and MTBE. TPH-g/GRO have been non-detect and/or below ESLs for groundwater that is a current or potential drinking water resource in all wells since March 2002 (Table 1). The ESL's for groundwater that is a current or potential drinking water resource are included as Attachment B. The ESL for TPH-g in this case is 100 micrograms per liter ($\mu\text{g/L}$), 1 $\mu\text{g/L}$ for benzene, and 5 $\mu\text{g/L}$ for MTBE (Attachment B). The maximum TPH-g/GRO concentration was detected in well MW-2 at a concentration of 2,100 $\mu\text{g/L}$ in October 1999. All wells have shown an overall decreasing trend in GRO concentrations since 1996 (Figures 2, 3, 4 and 5). Table 1 lists groundwater analytical results for the Site from June 20, 2000 to April 5, 2004. Historic groundwater data is included as Attachment C.

BTEX has been non-detect and/or below ESLs in all wells since December 2000. The maximum benzene concentration was detected in well MW-3 at a concentration of 12 $\mu\text{g/L}$ in May 1996. Maximum concentrations for toluene, ethylbenzene and xylenes were 3.2 $\mu\text{g/L}$ (MW-3), 45 $\mu\text{g/L}$ (MW-2) and 28 $\mu\text{g/L}$ (MW-2), respectively.

Wells MW-1, MW-2, MW-3, and MW-4 have shown a decreasing trend in MTBE concentrations since 1996 (Figures 2 through 5). MTBE has not been detected in well MW-1 since April 2003, or well MW-2 since September 2000. The maximum MTBE concentration was detected in well MW-3 at a concentration of 1,900 $\mu\text{g/L}$ in June 1997. Concentrations have shown a decreasing trend from June 1997 to 15 $\mu\text{g/L}$ in April 2004 (Figure 4). The MTBE concentration trend in well MW-4 has shown a decreasing trend from July 2002 (30 $\mu\text{g/L}$) to 1.3 $\mu\text{g/L}$ in April 2004, thus below the ESL (Figure 5).

Figure 1 shows the most recent monitoring results and the distribution of analyte detections. Constituent concentrations are discussed further with respect to the ESLs in the discussion of criterion 5.

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

Contamination at Site 2162 is restricted to the shallow groundwater zone, which is not likely to be used as a drinking water source. The lateral extent of contamination is limited to the immediate station area. The nearest domestic water well is located cross-gradient, 878 feet south-southeast of the Site, and the nearest surface water body is Lake Chabot which is 1.4 miles northeast of the Site. Sensitive receptors are therefore unlikely to be impacted.

5. *The Site presents no significant threat to human health*

As indicated by the analytical results, the current GRO and BTEX concentrations in the four on-site monitoring wells do not exceed the ESLs for groundwater that is a current or potential source of drinking water (Attachment B). In addition, MTBE concentrations in MW-1 and MW-2 do not exceed the ESLs. MTBE exceeds the ESL (5 $\mu\text{g/L}$) in well MW-3 with a concentrations of 15 $\mu\text{g/L}$. Considering the downward trend of MTBE concentrations in MW-3 since 1997, it appears that this strong decreasing trend will continue. Thus, the future impairment of off-site receptors due to MTBE migration does not appear to be a significant risk.



In addition to the residual COC's in soil impact on groundwater, direct exposure to human receptors from Site soils was considered. Human receptors that may potentially come in direct contact with soils include construction/trench workers. A comparison of ESLs protective of construction workers was used to evaluate potential health risk to direct exposure from soil. ESLs from Table K-3, *Direct Exposure Screening Levels Construction/Trench Worker Exposure*, in Volume 2 of the ESL document (Regional Water Quality Control Board, 2003) were compared with concentrations in Site soil (Attachment B). There were no exceedances of the selected direct exposure ESL.

6. *The Site presents no significant risk to the environment*

Surface waters, wetlands and other sensitive receptors are not likely to be impacted by contamination at Site 2162, as the extent of contamination is limited both vertically and laterally to the immediate station area, and is attenuating significantly. Also, there are no Site specific exposure pathways likely to cause impacts off site. The Site therefore presents no significant risk to the environment.

RECOMMENDATIONS

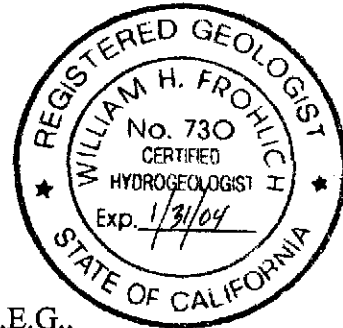
Based on the forgoing information, Atlantic Richfield Company Service Station No. 2162 meets the criteria for closure of a Low Risk Groundwater Case Site and URS respectfully requests closure of the Site. Should you have any questions or concerns, please contact me at (510) 874-3280.

Sincerely,

URS CORPORATION

Scott Robinson
Project Manager

William Frohlich, C.Hg., C.E.G..
Senior Geologist

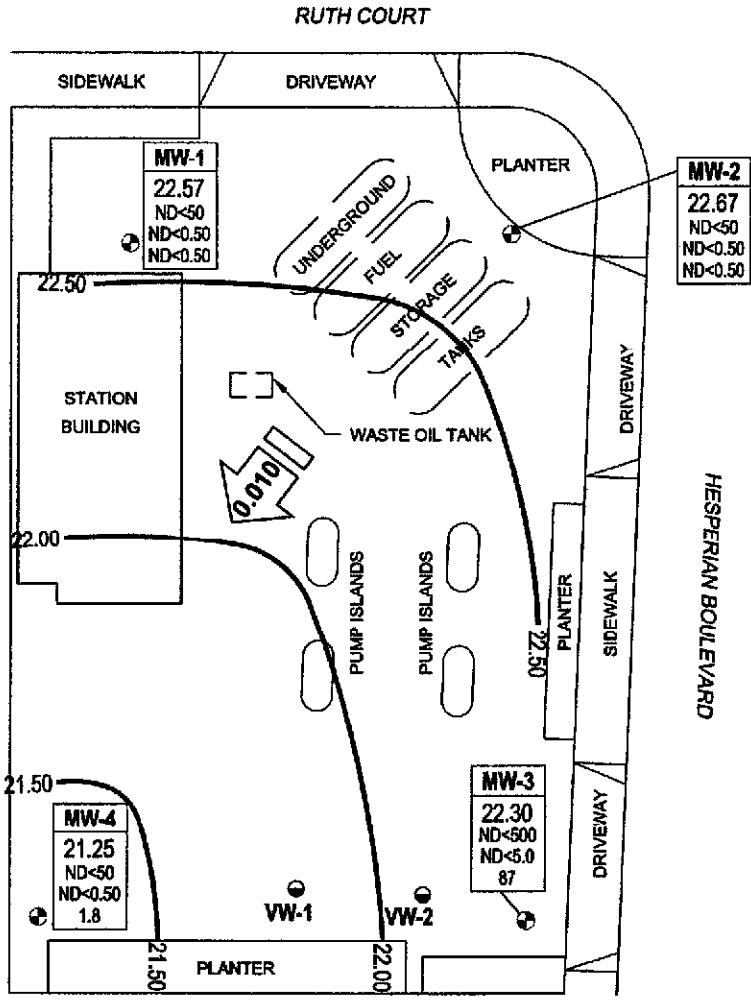


cc: Mr. Paul V. Supple, RM (electronic copy uploaded to ENFOS)

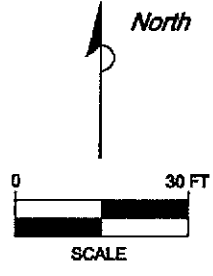
ATTACHMENTS:

- Figure 1 – Groundwater Elevation Contour and Analytical Summary Map – July 9, 2003
- Figure 2 – Concentration and Groundwater Elevation Trends for well MW-1
- Figure 3 – Concentration and Groundwater Elevation Trends for well MW-2
- Figure 4 – Concentration and Groundwater Elevation Trends for well MW-3
- Figure 5 – Concentration and Groundwater Elevation Trends for well MW-4
- Table 1 – Groundwater Elevation and Analytical Data
- Table 2 – Fuel Oxygenate Analytical Data
- Table 3 – Groundwater Flow Direction and Gradient
- Attachment A – Site Closure Summary Form
- Attachment B – ESLs for Groundwater that is Current or Potential Source of Drinking Water.
- Attachment C – Historical Groundwater Data
- Attachment D – Historical Soil Data
- Attachment E – Boring Logs
- Attachment F – Site plan and Cross Sections

X:\x-env1_waste\BP_GEM\Site\Scott_Robinson\Paul_Suppel\2162\Monitoring\Clr_3_2003\Drawings\GWEC-MS_7-9.dwg, 08/05/2003 03:54:47 PM, JKMT, URS



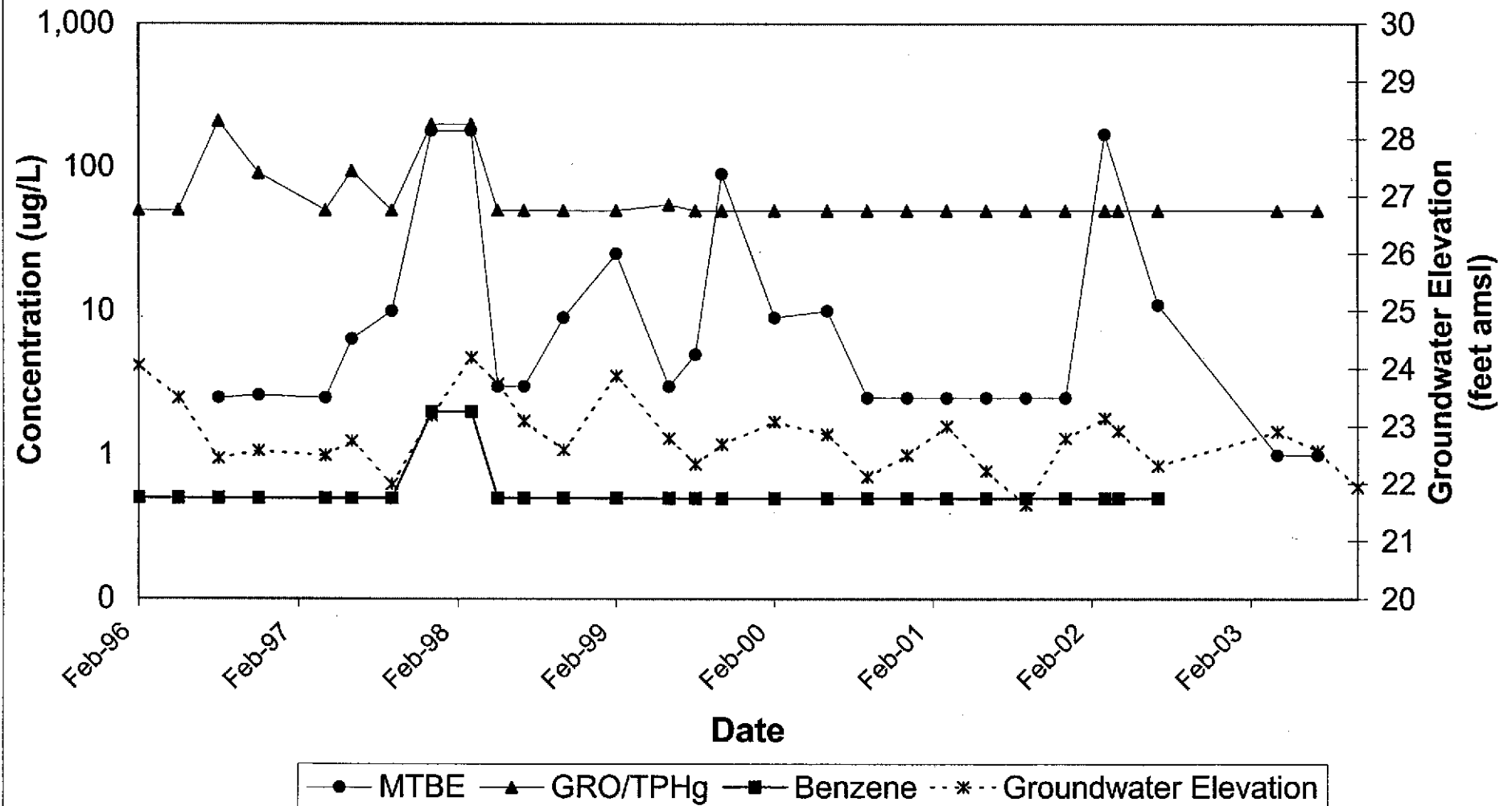
- LEGEND**
- MONITORING WELL
 - SOIL VAPOR EXTRACTION WELL
 - WATER TABLE CONTOUR (FT ABOVE MSL)
 - APPROXIMATE GROUNDWATER FLOW GRADIENT AND DIRECTION (FT/FT)
 - WELL DESIGNATION
 - GROUNDWATER ELEVATION (FT ABOVE MSL)
TPH-g, BENZENE AND MTBE CONCENTRATION IN MICROGRAMS PER LITER (µg/L)
 - ND< NOT DETECTED AT OR ABOVE LABORATORY REPORTING LIMITS



NOTE: SITE MAP ADAPTED FROM IT CORPORATION FIGURES. SITE DIMENSIONS AND FACILITY LOCATIONS NOT VERIFIED.

URS	Project No. 38486326	GROUNDWATER ELEVATION CONTOUR AND ANALYTICAL SUMMARY MAP Third Quarter 2003 (July 9, 2003)	FIGURE 1
	Arco Service Station 2162 15135 Hesperian Boulevard San Leandro, California		

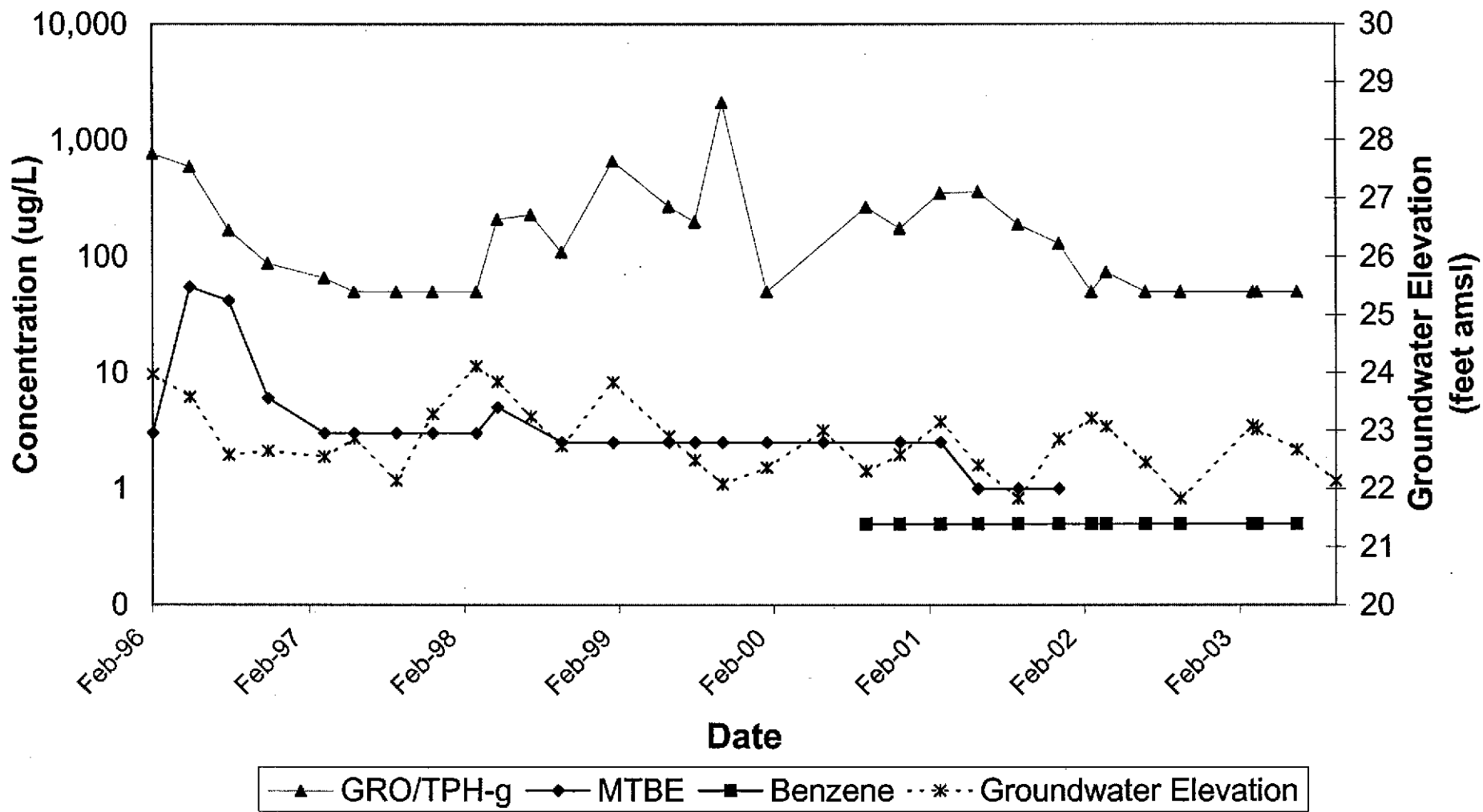
Concentration and Groundwater Elevation Trends Well MW-1



Atlantic Richfield Company
 Service Station #2162
 15135 Hesperian Boulevard
 San Leandro, California

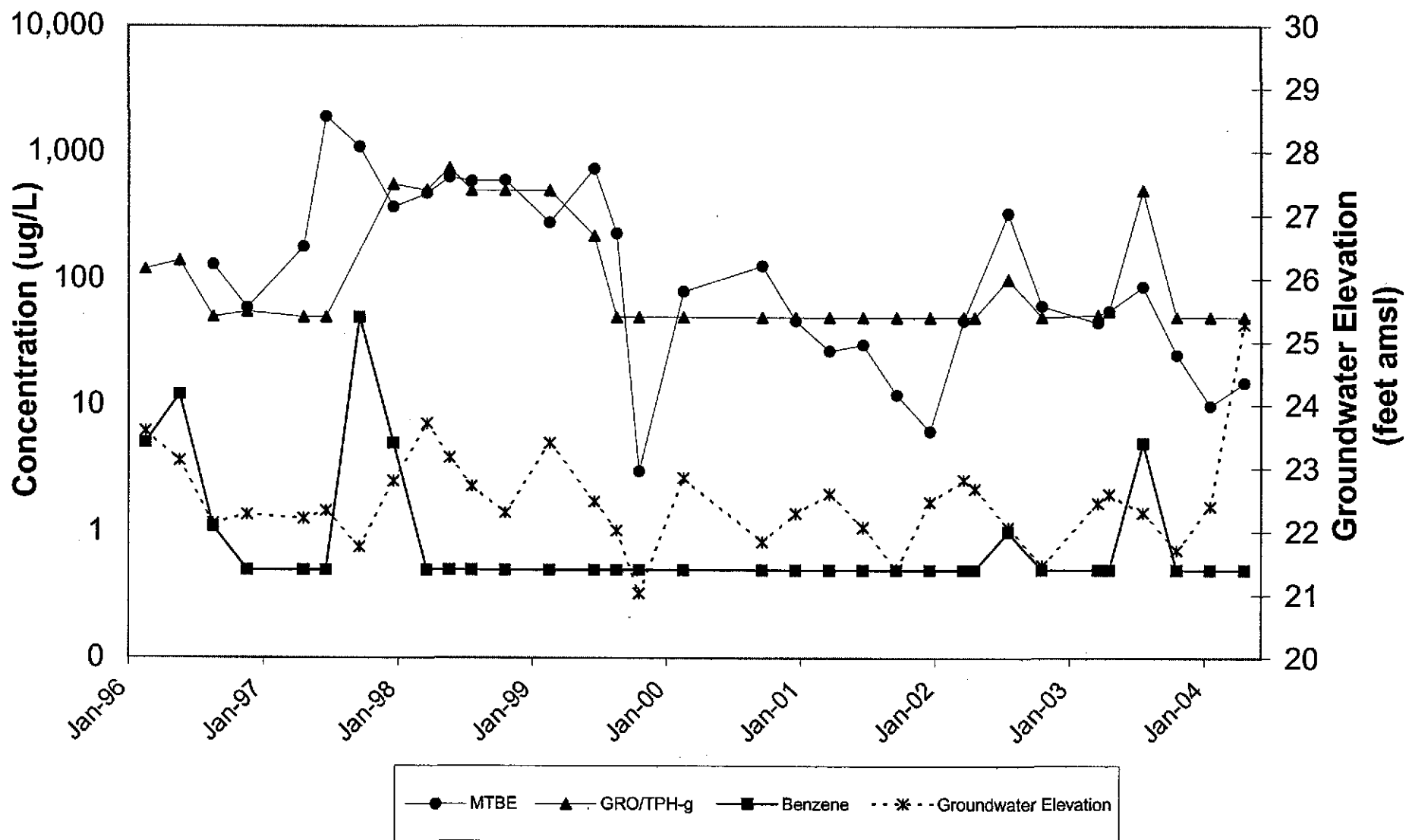
Concentration and Groundwater Elevation Trends

Well MW-2



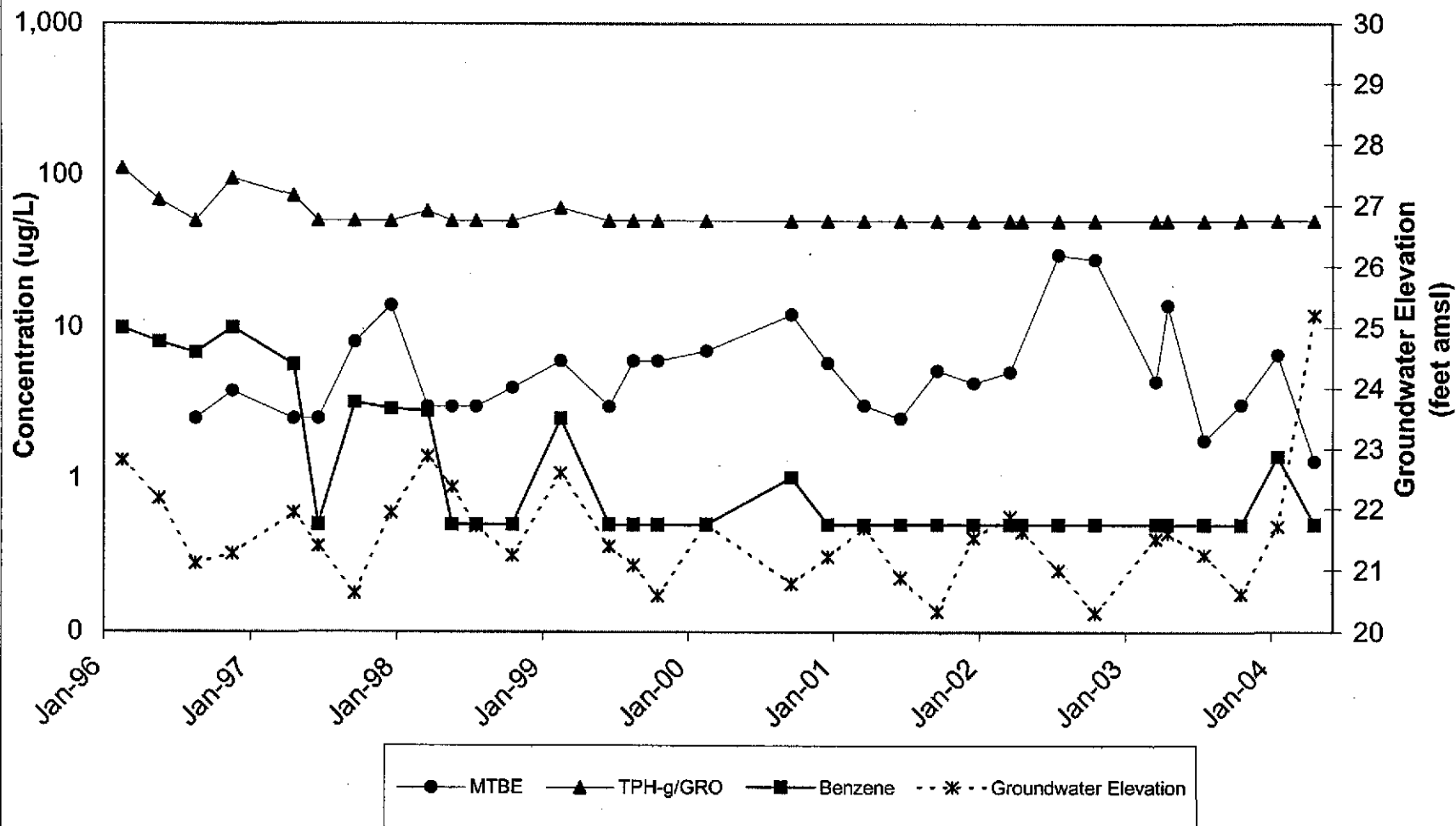
Atlantic Richfield Company Service Station #2162
 15135 Hesperian Boulevard
 San Leandro, California

Concentration and Groundwater Elevation Trends Well MW-3



Atlantic Richfield Company Service Station #2162
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San Leandro, California

Concentration and Groundwater Elevation Trends Well MW-4



Atlantic Richfield Company Service Station #2162
15135 Hesperian Boulevard
San Leandro, CA

Table 1
Groundwater Elevation and Analytical Data

ARCO Service Station #2162
15135 Hesperian Boulevard
San Leandro, California

Well Number	Date Sampled	Purge /No Purge	Top of Riser Elevation (ft., MSL)	Top of Screen (ft., bgs)	Bottom of Casing (ft., bgs)	Depth to Groundwater (ft., TOC)	Groundwater Elevation (ft., MSL)	GRO ^{chl} /TPH-g (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)	Dissolved Oxygen (mg/L)	pH	
			Environmental Screening Levels for shallow soils (> 3m) where groundwater is a potential or current drinking water resource.						100 µg/L	1 µg/L	40 µg/L	30 µg/L	13 µg/L	5 µg/L		
MW-1	06/20/00		31.19	8.0	15.9	8.33	22.86	ND<50	ND<0.5	0.8	ND<0.5	ND<1.0	ND<10	NA	NA	
	09/29/00					9.07	22.12	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	NA	NA	
	12/17/00	oils (> 3m) where groundwater is a potential or curr				8.69	22.50	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	NA	NA	
	03/23/01					8.19	23.00	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	NA	NA	
	06/20/01					8.97	22.22	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	NA	NA	
	09/22/01					9.56	21.63	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	NA	NA	
	12/28/01					8.40	22.79	ND<50	ND<0.5	ND<0.5	ND<0.5	0.63	ND<2.5	NA	NA	
	03/14/02					8.05	23.14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	170	NA	NA	
	04/18/02					8.27	22.92	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	NS	NA	NA	
	07/19/02	NP				8.88	22.31	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	11	1.0	8.2	
	10/09/02 ^a					NM	NM	NS	NS	NS	NS	NS	NS	NS	NS	
	03/28/03 ^{ac}					NM	NM	NS	NS	NS	NS	NS	NS	NS	NS	
	04/07/03	NP				8.28	22.91	ND<50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	1.6	6.9	
	07/09/03	NP				8.62	22.57	ND<50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	1.1	7.2	
	10/08/03		31.13 ^e			9.19 ^d	21.94	Sampled Annually During the 3rd Quarter-----								
	01/15/04 ^f					8.35	22.78	Sampled Annually During the 3rd Quarter-----								
	04/05/04 ^{gh}		33.70			8.10	25.60	Sampled Annually During the 3rd Quarter-----								
MW-2	06/20/00		30.38	8.0	15.9	7.38	23.00	NS	NS	NS	NS	NS	NS	NA	NA	
	09/29/00					8.08	22.30	266	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	NA	NA	
	12/17/00					7.80	22.58	175	ND<0.5	ND<0.5	0.659	ND<0.5	ND<2.5	NA	NA	
	03/23/01					7.23	23.15	351	ND<0.5	ND<0.5	0.912	ND<0.5	ND<2.5	NA	NA	
	06/20/01					7.98	22.40	360	ND<0.5	ND<0.5	0.74	ND<0.5	ND<2.5	NA	NA	
	09/22/01					8.55	21.83	190	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	NA	NA	
	12/28/01					7.53	22.85	130	ND<0.5	0.93	ND<0.5	0.51	ND<2.5	NA	NA	
	03/14/02					7.17	23.21	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	NA	NA	
	04/18/02					7.31	23.07	74	ND<0.5	ND<0.5	ND<0.5	ND<0.5	NS	NA	NA	
	07/19/02	P				7.93	22.45	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	1.1	7.6	
	10/09/02	P				8.55	21.83	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	0.7	7.3	
	03/28/03 ^c	P				7.30	23.08	ND<50	ND<0.50	0.83	ND<0.50	ND<0.50	ND<0.50	1.48	7.7	
	04/07/03	P				7.36	23.02	ND<50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	1.4	7.0	
	07/09/03	P				7.71	22.67	ND<50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	2.5	7.6	
	10/08/03					8.25	22.13	Sampled Annually During the 3rd Quarter-----								
	01/15/04 ^f					7.55	22.83	Sampled Annually During the 3rd Quarter-----								
	04/05/04 ^{gh}		32.97			7.29	25.68	Sampled Annually During the 3rd Quarter-----								

**Table 1
Groundwater Elevation and Analytical Data**

ARCO Service Station #2162
15135 Hesperian Boulevard
San Leandro, California

Well Number	Date Sampled	Purge /No Purge	Top of Riser Elevation (ft., MSL)	Top of Screen (ft., bgs)	Bottom of Casing (ft., bgs)	Depth to Groundwater (ft., TOC)	Groundwater Elevation (ft., MSL)	GRO ^{ch} /TPH-g (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)	Dissolved Oxygen (mg/L)	pH	
			Environmental Screening Levels for shallow soils (> 3m) where groundwater is a potential or current drinking water resource.					<i>100 µg/L</i>	<i>1 µg/L</i>	<i>40 µg/L</i>	<i>30 µg/L</i>	<i>13 µg/L</i>	<i>5 µg/L</i>			
MW-3	06/20/00		30.30	9.0	14.8	7.75	22.55	NS	NS	NS	NS	NS	NS	NA	NA	
	09/29/00					8.46	21.84	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	128	NA	NA	
	12/17/00					8.01	22.29	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	46.7	NA	NA	
	03/23/01					7.70	22.60	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	26.8	NA	NA	
	06/20/01					8.23	22.07	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	30	NA	NA	
	09/22/01					8.89	21.41	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	12	NA	NA	
	12/28/01					7.83	22.47	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	6.2	NA	NA	
	03/14/02					7.48	22.82	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	47	NA	NA
	04/18/02					7.62	22.68	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	NS	NA	NA	
	07/19/02	P				8.23	22.07	100 ^b	ND<1.0	ND<1.0	ND<1.0	ND<1.0	330	0.9	7.6	
	10/09/02	P				8.83	21.47	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	61	0.5	7.4	
	03/28/03 ^c	P				7.85	22.45	52	ND<0.50	1.2	ND<0.50	ND<0.50	45	1.42	7.6	
	04/07/03	P				7.71	22.59	56	ND<0.50	ND<0.50	ND<0.50	ND<0.50	56	1.1	6.8	
	07/09/03	P				8.00	22.30	ND<500	ND<5.0	ND<5.0	ND<5.0	ND<5.0	87	1.6	7.4	
	10/08/03	P				8.59	21.71	ND<50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	25	0.9	7.0	
01/15/04 ^f	P				7.90	22.40	ND<50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	9.8	2.9	7.3		
04/05/04 ^{g,h}	P		32.89		7.61	25.28	ND<50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	15	1.5	7.0		
MW-4	06/20/00		30.39	8.0	17.5	8.87	21.52	NS	NS	NS	NS	NS	NS	NA	NA	
	09/29/00					9.61	20.78	ND<50	1.02	ND<0.5	ND<0.5	ND<0.5	12.2	NA	NA	
	12/17/00					9.17	21.22	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	5.81	NA	NA	
	03/23/01					8.70	21.69	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	3.04	NA	NA	
	06/20/01					9.51	20.88	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	NA	NA	
	09/22/01					10.06	20.33	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	5.2	NA	NA	
	12/28/01					8.86	21.53	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	4.3	NA	NA	
	03/14/02					8.52	21.87	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	5.1	NA	NA	
	04/18/02					8.76	21.63	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	NS	NA	NA	
	07/19/02	NP				9.39	21.00	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	30	1.8	7.8	
	10/09/02	NP				10.08	20.31	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	28	1.0	8.0	
	03/28/03 ^c	NP				8.88	21.51	ND<50	ND<0.50	1.3	ND<0.50	ND<0.50	4.4	0.98	7.2	
	04/07/03	NP				8.78	21.61	ND<50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	14	1.1	7.0	
	07/09/03	NP				9.14	21.25	ND<50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	1.8	1.6	7.4	
	10/08/03	NP				9.77 ^d	20.62	ND<50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	3.1	2.6	6.4	
01/15/04 ^f	P				8.68	21.71	ND<50	1.4	0.84	ND<0.50	1.5	6.6	2.9	7.1		
04/05/04 ^{g,h}	NP		33.97		8.77	25.20	ND<50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	1.3	1.2	7.0		

Table 1
Groundwater Elevation and Analytical Data

ARCO Service Station #2162
15135 Hesperian Boulevard
San Leandro, California

bgs	= below ground surface
ft.	= feet
GRO	= Gasoline Range Organics (C4-C12)
mg/L	= Milligrams per liter equivalent to parts per million (ppm)
MSL	= Mean sea level
MTBE	= Methyl tertiary butyl ether
ND<	= Not detected at or above specified laboratory reporting limit
NP	= No Purge
NS	= Not sampled
P	= Purge
TOC	= Top of casing
TPH	= Total petroleum hydrocarbons
µg/L	= Micrograms per liter equivalent to parts per billion (ppb)
a	= Well not accessible - car parked over.
b	= Hydrocarbon pattern is present in the requested fuel quantitation range but does not represent the pattern of the requested fuel
c	=TPH-g, BTEX and MTBE analyzed by EPA method 8260 beginning on 1st Quarter 2003 sampling event (3/28/03)
d	= Guaged with stinger in well
e	= Well casing lowered 0.06 feet during well repairs on 9/17/03
f	= Please note that beginning in the Fourth Quarter 2003, the laboratory modified the reported analyte list. Total Petroleum Hydrocarbons as Gasoline (TPH-g) has been changed to Gasoline Range Organics (GRO). The resulting sata may be impacted by the potential inclusion of non-TPH-g analytes within requested fuel range resulting in a higher concentration being reported.
g	= Wells surveyed to NAVD'88 datum by URS Corporation on February 23, 2004.
h	= Beginning Second Quarter 2004, the carbon range for GRO has been changed from C6-C10 to C4-C12.

Source: The data within this table collected prior to July 2002 was provided to URS by Atlantic Richfield Company and their previous consultants. URS has not verified the accuracy of this information.

Table 2
Fuel Oxygenate Analytical Data

ARCO Service Station #2162
15135 Hesperian Boulevard
San Leandro, California

Well Number	Date Sampled	Ethanol (µg/L)	TBA (µg/L)	MTBE (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)	1,2-DCA (µg/L)	EDB (µg/L)
MW-1	04/07/03	ND<100	ND<20	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50
	07/09/03	ND<100	ND<20	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50
MW-2	03/28/03	ND<100	ND<20	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50
	04/07/03	ND<100	ND<20	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50
	07/09/03	ND<100	ND<20	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50
MW-3	03/28/03	ND<100	ND<20	45	ND<0.50	ND<0.50	0.73	ND<0.50	ND<0.50
	04/07/03	ND<100	ND<20	56	ND<0.50	ND<0.50	0.72	ND<0.50	ND<0.50
	07/09/03	ND<1,000	ND<200	87	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0
	10/08/03	ND<100	ND<20	25	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50
	01/15/04	ND<100	ND<20 ^a	9.8	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50 ^a
	04/05/04	ND<100	ND<20	15	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50
MW-4	03/28/03	ND<100	ND<20	4.4	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50
	04/07/03	ND<100	ND<20	14	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50
	07/09/03	ND<100	ND<20	1.8	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50
	10/08/03	ND<100	ND<20	3.1	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50
	01/15/04	ND<100	ND<20 ^a	6.6	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50 ^a
	04/05/04	ND<100	ND<20	1.3	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50

Notes:

All fuel oxygenate compounds analyzed using EPA Method 8260B

1,2-DCA = 1,2-Dichloroethane

DIPE = Di-isopropyl ether

EDB = 1,2-Dibromoethane

ETBE = Ethyl tert-butyl ether

MTBE = Methyl tert-butyl ether

ND< = Not detected at or above specified laboratory reporting limit

TAME = Tert-amyl methyl ether

TBA = Tert-butyl alcohol

µg/L = Micrograms per liter

^a = The result was reported with a possible high bias due to the continuing calibration verification falling outside acceptance criteria.

**Table 3
Groundwater Flow Direction and Gradient**

ARCO Service Station #2162
15135 Hesperian Boulevard
San Leandro, California

Date Measured	Average Flow Direction	Average Hydraulic Gradient
06/20/00	Southwest	0.010
09/29/00	Southwest	0.010
12/17/00	Southwest	0.010
03/23/01	Southwest	0.011
06/20/01	Southwest	0.013
09/22/01	Southwest	0.012
12/28/01	Southwest	0.010
03/14/02	Southwest	0.011
04/18/02	Southwest	0.012
07/19/02	Southwest	0.012
10/09/02	Southwest	0.013
03/28/03	Southwest	0.013
04/07/03	Southwest	0.011
07/09/03	Southwest	0.010
10/08/03	Southwest	0.010
01/15/04	Southwest	0.008
04/05/04	South-Southwest	0.004

Source: The data within this table collected prior to July 2002 was provided to URS by Atlantic Richfield Company and their previous consultants. URS has not verified the accuracy of this information.

ATTACHMENT A
SITE CLOSURE SUMMARY FORM

SITE INFORMATION SUMMARY

I. SITE INFORMATION

Site Facility Name: ARCO Service Station No. 2162				
Site Facility Address: 15135 Hesperian Boulevard, San Leandro, California				
RWQCB LUST Case No: 01-0091		URF Filing Date:		
Responsible Parties (include addresses and phone numbers)				
owner: Atlantic Richfield Company		operator: Same		
PO Box 6549				
Moraga, CA 94570				
Tank No.	Size in Gallons	Contents	Closed In-Place/Removed?	Date
1	10,000	Gasoline	Currently In Use	3/27/92
2	10,000	Gasoline	Currently In Use	3/27/92
3	10,000	Gasoline	Currently In Use	3/27/92
4	10,000	Gasoline	Currently In Use	3/27/92

II. INITIAL SITE ASSESSMENT (Information from previous investigations at nearby sites and other available sources may be used for applicable items if necessary)

Cause and Estimated Quantity of Release:		
Nearest Surface Water Bodies (including any unnamed creeks, tributaries, canals, etc.): Lake Chabot	Their Geographical Distances From the Site: 1.4 miles NE of site	
Nearest domestic Water Wells (both public and private) within 2000 ft.: None	Their Geographical Distances From the Site: 878 feet south-southeast of site	
Minimum Groundwater Depth: 6.60 ft	Max Depth: 10.08 ft	Flow Direction: Southwest
Site Ground Surface Elevation and Geology: Approximately 30 ft above mean sea level		
Current Site and Surrounding Land Use: Active Service Station. Surrounding site use is mixed residential and commercial.		
Preferential Pathways Such as Subsurface Utilities?	Yes No	If Yes, Describe:
Number of Soil Borings: 12	Number of Monitoring Wells: 4	

III. REMEDIATION

Material	Amount (Include Units)	Action (Treatment or Disposal w/ Destination)	Date				
Free Product	NA						
Soil	NA						
Groundwater	NA						
Vapor	NA						
Comments:							
MAXIMUM DOCUMENTED SOIL POLLUTANT CONCENTRATIONS							
POLLUTANT	Location	Soil (ppm)		POLLUTANT	Location	Soil (ppm)	
	Date(s) 6/5/91	Initial	Residual		Date(s) 6/5/91	Initial	Residual
TPH (Gas)	B4-7.5	2400		Xylene	B4-7.5	260	
TPH (Diesel)	N/A			Ethylbenzene	B4-7.5	41	
Benzene	B4-7.5	17		Oil & Grease	N/A		
Toluene	B4-7.5	62		Heavy Metals	N/A		
MTBE	S-L3-3.5	0.55	(1/03/03)	Motor Oil	N/A		
Chlorinated Solvents	N/A			Other	B4 located @E corner of UST Pad		

GROUNDWATER CONCENTRATION (ppb) TRENDS AT SOURCE AREAS & PLUME/SITE BOUNDARIES											
Date	location	Benzene	MTBE	GRO	DRO	Toluene	Ethyl benzene	Xylenes	Chlor. VOCs	Other	DTW (feet)
9/30/92	MW-1	6.2	180 (3/25/98)	1,100	NA	ND<0.5	6.9	ND<0.5	NA	NA	10.68
7/09/03	MW-1	ND<0.5	ND<0.5	ND<50	NA	ND<0.5	ND<0.5	ND<0.5	NA	NA	8.62
1/14/93	MW-2	9.6	33 (4/1/97)	7,800	NA	5	340	920	NA	NA	6.56
7/09/03	MW-2	ND<0.5	ND<0.5	ND<50	NA	ND<0.5	ND<0.5	ND<0.5	NA	NA	7.71
4/14/93	MW-3	86	1900(6/10/97)	360	NA	2.1	5.1	4.0	NA	NA	7.41
4/05/04	MW-3	ND<0.5	15	ND<50	NA	ND<0.5	ND<0.5	ND<0.5	NA	NA	7.61
9/30/92	MW-4	81	3.8 (11/20/96)	330	NA	ND<0.5	ND<0.5	ND<0.5	NA	NA	11.15
4/05/04	MW-4	ND<0.5	1.3	ND<50	NA	ND<0.5	ND<0.5	ND<0.5	NA	NA	8.77

IV. LIST TECHNICAL REPORTS, CORRESPONDENCE, ETC. IN CHRONOLOGICAL ORDER

TITLE / SUBJECT	DATE
Preliminary Tank Assessment	8/28/91
Limited Soil Performance Test/ SVE Feasibility Study	7/16/91
UST Replacement and Soil Sampling	7/7/92
Well Installation Report	3/30/95
Product Line Removal and Upgrade Soil Sampling Report	4/28/03
Quarterly Monitoring	1992-present

V. ENCLOSE FOLLOWING FIGURES AND TABLES

1. Site maps showing locations of existing buildings, former/current UST areas, subsurface utilities and other pathways, groundwater flow direction etc.
2. Summary tables of all soil sampling results available, including any tank/excavation pit samples and confirmation samples, with sampling dates, location-identifications and depths (if applicable).
3. Summary tables of all groundwater sampling results available, including depth to water/product measurements, with sampling dates and location-identifications.
4. Figures showing all soil and groundwater sampling locations and monitoring well locations.

Additional Comments:

See attached reports described above.

ATTACHMENT B

TABLE A. ENVIRONMENTAL SCREENING LEVELS (ESLs) Shallow Soils (<3m bgs) Where Groundwater IS Current or Potential Source of Drinking Water.

TABLE K-3. ENVIRONMENTAL SCREENING LEVELS (ESLs) Direct Exposure Screening Levels Construction/Trench Worker Exposure Scenerio.

CRWQCB, 2003. Screening for Environmental Concerns at Sites with Contaminated Soils and Groundwater, Volume 2: Background Documentation for the Development of Tier 1 Environmental Screening Levels

TABLE A. ENVIRONMENTAL SCREENING LEVELS (ESLs)
Shallow Soils (<3m bgs)
Groundwater IS Current or Potential Source of Drinking Water

CHEMICAL PARAMETER	¹ Shallow Soil		³ Groundwater (ug/L)
	² Residential Land Use (mg/kg)	Commercial/Industrial Land Use Only (mg/kg)	
ACENAPHTHENE	1.6E+01	1.6E+01	2.0E+01
ACENAPHTHYLENE	1.3E+01	1.3E+01	3.0E+01
ACETONE	2.4E-01	2.4E-01	7.0E+02
ALDRIN	2.9E-02	1.0E-01	2.0E-03
ANTHRACENE	2.8E+00	2.8E+00	7.3E-01
ANTIMONY	6.3E+00	4.0E+01	6.0E+00
ARSENIC	5.5E+00	5.5E+00	3.6E+01
BARIUM	7.5E+02	1.5E+03	1.0E+03
BENZENE	4.4E-02	4.4E-02	1.0E+00
BENZO(a)ANTHRACENE	3.8E-01	1.3E+00	2.7E-02
BENZO(b)FLUORANTHENE	3.8E-01	1.3E+00	2.9E-02
BENZO(k)FLUORANTHENE	3.8E-01	1.3E+00	2.9E-02
BENZO(g,h,i)PERYLENE	2.7E+01	2.7E+01	1.0E-01
BENZO(a)PYRENE	3.8E-02	1.3E-01	1.4E-02
BERYLLIUM	4.0E+00	8.0E+00	2.7E+00
BIPHENYL, 1,1-	6.5E-01	6.5E-01	5.0E-01
BIS(2-CHLOROETHYL)ETHER	1.8E-04	1.8E-04	1.4E-02
BIS(2-CHLOROISOPROPYL)ETHER	5.4E-03	5.4E-03	5.0E-01
BIS(2-ETHYLHEXYL)PHTHALATE	1.6E+02	5.7E+02	4.0E+00
BORON	1.6E+00	2.0E+00	1.6E+00
BROMODICHLOROMETHANE	1.2E-02	3.9E-02	1.0E+02
BROMOFORM	2.2E+00	2.2E+00	1.0E+02
BROMOMETHANE	2.2E-01	3.9E-01	9.8E+00
CADMIUM	1.7E+00	7.4E+00	2.2E+00
CARBON TETRACHLORIDE	1.2E-02	3.5E-02	5.0E-01
CHLORDANE	4.4E-01	1.7E+00	4.0E-03
CHLOROANILINE, p-	5.3E-02	5.3E-02	5.0E+00
CHLOROBENZENE	1.5E+00	1.5E+00	2.5E+01
CHLOROETHANE	6.3E-01	8.5E-01	1.2E+01
CHLOROFORM	9.8E-02	2.7E-01	1.0E+02
CHLOROMETHANE	2.9E-01	4.2E-01	2.7E+00
CHLOROPHENOL, 2-	1.2E-02	1.2E-02	1.8E-01
CHROMIUM (Total)	5.8E+01	5.8E+01	5.0E+01
CHROMIUM III	7.5E+02	7.5E+02	1.8E+02
CHROMIUM VI	1.8E+00	1.8E+00	1.1E+01
CHRYSENE	3.8E+00	1.3E+01	2.9E-01
COBALT	4.0E+01	8.0E+01	3.0E+00
COPPER	2.3E+02	2.3E+02	3.1E+00
CYANIDE (Free)	1.0E+02	5.0E+02	1.0E+00
DIBENZO(a,h)ANTHRACENE	1.1E-01	3.8E-01	8.5E-03
DIBROMOCHLOROMETHANE	1.9E-02	5.8E-02	1.0E+02
1,2-DIBROMO-3-CHLOROPROPANE	1.1E-03	1.1E-03	2.0E-01
DIBROMOETHANE, 1,2-	3.3E-04	3.3E-04	5.0E-02
DICHLOROBENZENE, 1,2-	1.1E+00	1.1E+00	1.0E+01

**TABLE A. ENVIRONMENTAL SCREENING LEVELS (ESLs)
Shallow Soils (<3m bgs)
Groundwater IS Current or Potential Source of Drinking Water**

CHEMICAL PARAMETER	¹ Shallow Soil		³ Groundwater (ug/L)
	² Residential Land Use (mg/kg)	Commercial/ Industrial Land Use Only (mg/kg)	
DICHLOROBENZENE, 1,3-	7.2E-01	7.2E-01	6.3E+00
DICHLOROBENZENE, 1,4-	4.7E-02	1.3E-01	5.0E+00
DICHLOROBENZIDINE, 3,3-	7.7E-03	7.7E-03	2.9E-02
DICHLORODIPHENYLDICHLOROETHANE (DDD)	2.4E+00	1.0E+01	1.0E-03
DICHLORODIPHENYLDICHLOROETHYLENE (DDE)	1.7E+00	4.0E+00	1.0E-03
DICHLORODIPHENYLTRICHLOROETHANE (DDT)	1.7E+00	4.0E+00	1.0E-03
DICHLOROETHANE, 1,1-	2.0E-01	2.0E-01	5.0E+00
DICHLOROETHANE, 1,2-	4.5E-03	4.5E-03	5.0E-01
DICHLOROETHYLENE, 1,1-	1.0E+00	1.0E+00	6.0E+00
DICHLOROETHYLENE, Cis 1,2-	1.9E-01	1.9E-01	6.0E+00
DICHLOROETHYLENE, Trans 1,2-	6.7E-01	6.7E-01	1.0E+01
DICHLOROPHENOL, 2,4-	3.0E-01	3.0E-01	3.0E-01
DICHLOROPROPANE, 1,2-	5.2E-02	1.2E-01	5.0E+00
DICHLOROPROPENE, 1,3-	3.3E-02	5.9E-02	5.0E-01
DIELDRIN	2.3E-03	2.3E-03	1.9E-03
DIETHYLPHTHALATE	3.5E-02	3.5E-02	1.5E+00
DIMETHYLPHTHALATE	3.5E-02	3.5E-02	1.5E+00
DIMETHYLPHENOL, 2,4-	6.7E-01	6.7E-01	1.0E+02
DINITROPHENOL, 2,4-	4.0E-02	4.0E-02	1.4E+01
DINITROTOLUENE, 2,4-	8.5E-04	8.5E-04	1.1E-01
1,4 DIOXANE	1.8E-03	1.8E-03	3.0E+00
DIOXIN (2,3,7,8-TCDD)	4.5E-06	1.8E-05	5.0E-06
ENDOSULFAN	4.6E-03	4.6E-03	8.7E-03
ENDRIN	6.5E-04	6.5E-04	2.3E-03
ETHYLBENZENE	3.3E+00	3.3E+00	3.0E+01
FLUORANTHENE	4.0E+01	4.0E+01	8.0E+00
FLUORENE	8.9E+00	8.9E+00	3.9E+00
HEPTACHLOR	1.4E-02	1.4E-02	3.8E-03
HEPTACHLOR EPOXIDE	1.5E-02	1.5E-02	3.8E-03
HEXACHLOROBENZENE	2.7E-01	9.6E-01	1.0E+00
HEXACHLOROBUTADIENE	1.0E+00	1.0E+00	2.1E-01
HEXACHLOROCYCLOHEXANE (gamma) LINDANE	4.9E-02	4.9E-02	8.0E-02
HEXACHLOROETHANE	2.4E+00	2.4E+00	7.0E-01
INDENO(1,2,3-cd)PYRENE	3.8E-01	1.3E+00	2.9E-02
LEAD	2.0E+02	7.5E+02	2.5E+00
MERCURY	2.5E+00	1.0E+01	1.2E-02
METHOXYCHLOR	1.9E+01	1.9E+01	1.9E-02
METHYLENE CHLORIDE	7.7E-02	7.7E-02	5.0E+00
METHYL ETHYL KETONE	3.9E+00	3.9E+00	4.2E+03
METHYL ISOBUTYL KETONE	2.8E+00	2.8E+00	1.2E+02
METHYL MERCURY	1.2E+00	1.0E+01	3.0E-03
METHYLNAPHTHALENE (total 1- & 2-)	2.5E-01	2.5E-01	2.1E+00
METHYL TERT BUTYL ETHER	2.3E-02	2.3E-02	5.0E+00
MOLYBDENUM	4.0E+01	4.0E+01	3.5E+01

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Groundwater IS Current or Potential Source of Drinking Water**

CHEMICAL PARAMETER	¹ Shallow Soil		³ Groundwater (ug/L)
	² Residential Land Use (mg/kg)	Commercial/ Industrial Land Use Only (mg/kg)	
NAPHTHALENE	4.2E+00	4.2E+00	2.1E+01
NICKEL	1.5E+02	1.5E+02	8.2E+00
PENTACHLOROPHENOL	4.4E+00	5.0E+00	1.0E+00
PERCHLORATE	1.6E+00	2.0E+01	7.0E-01
PHENANTHRENE	1.1E+01	1.1E+01	4.6E+00
PHENOL	7.6E-02	7.6E-02	5.0E+00
POLYCHLORINATED BIPHENYLS (PCBs)	2.2E-01	7.4E-01	1.4E-02
PYRENE	8.5E+01	8.5E+01	2.0E+00
SELENIUM	1.0E+01	1.0E+01	5.0E+00
SILVER	2.0E+01	4.0E+01	1.9E-01
STYRENE	1.5E+00	1.5E+00	1.0E+01
tert-BUTYL ALCOHOL	7.3E-02	7.3E-02	1.2E+01
TETRACHLOROETHANE, 1,1,1,2-	2.4E-02	2.4E-02	1.3E+00
TETRACHLOROETHANE, 1,1,2,2-	9.0E-03	1.8E-02	1.0E+00
TETRACHLOROETHYLENE	8.8E-02	2.5E-01	5.0E+00
THALLIUM	1.0E+00	1.3E+01	2.0E+00
TOLUENE	2.9E+00	2.9E+00	4.0E+01
TOXAPHENE	4.2E-04	4.2E-04	2.0E-04
TPH (gasolines)	1.0E+02	1.0E+02	1.0E+02
TPH (middle distillates)	1.0E+02	1.0E+02	1.0E+02
TPH (residual fuels)	5.0E+02	1.0E+03	1.0E+02
TRICHLOROBENZENE, 1,2,4-	7.6E+00	7.6E+00	2.5E+01
TRICHLOROETHANE, 1,1,1-	7.8E+00	7.8E+00	6.2E+01
TRICHLOROETHANE, 1,1,2-	3.3E-02	7.0E-02	5.0E+00
TRICHLOROETHYLENE	2.6E-01	4.6E-01	5.0E+00
TRICHLOROPHENOL, 2,4,5-	1.8E-01	1.8E-01	1.1E+01
TRICHLOROPHENOL, 2,4,6-	1.7E-01	1.7E-01	5.0E-01
VANADIUM	1.1E+02	2.0E+02	1.5E+01
VINYL CHLORIDE	6.7E-03	1.9E-02	5.0E-01
XYLENES	1.5E+00	1.5E+00	1.3E+01
ZINC	6.0E+02	6.0E+02	8.1E+01

**TABLE A. ENVIRONMENTAL SCREENING LEVELS (ESLs)
Shallow Soils (<3m bgs)
Groundwater IS Current or Potential Source of Drinking Water**

CHEMICAL PARAMETER	¹ Shallow Soil		³ Groundwater (ug/L)
	² Residential Land Use (mg/kg)	Commercial/ Industrial Land Use Only (mg/kg)	
Electrical Conductivity (mS/cm, USEPA Method 120.1 MOD)	2.0	4.0	not applicable
Sodium Adsorption Ratio	5.0	12	not applicable

Notes:

1. Shallow soils defined as soils less than or equal to 3 meters (approximately 10 feet) below ground surface.
2. Category "Residential Land Use" generally considered adequate for other sensitive uses (e.g., day-care centers, hospitals, etc.)
3. Assumes potential discharge of groundwater into a freshwater, marine or estuary surface water system.

Source of soil ESLs: Refer to Appendix 1, Tables A-1 and A-2.

Source of groundwater ESLs: Refer to Appendix 1, Table F-1a.

Soil data should be reported on dry-weight basis (see Appendix 1, Section 6.2).

Soil ESLs intended to address direct-exposure, groundwater protection, ecologic (urban areas) and nuisance concerns under noted land-use scenarios. **Soil gas data should be collected for additional evaluation of potential indoor-air impacts at sites with significant areas of VOC-impacted soil. See Section 2.6 and Table E.**

Groundwater ESLs intended to be address drinking water, surface water, indoor-air and nuisance concerns. **Use in conjunction with soil gas screening levels to more closely evaluate potential impacts to indoor-air if groundwater screening levels for this concern approached or exceeded (refer to Section 2.6 and Appendix 1, Table F-1a).**

Aquatic habitat goals for bioaccumulation concerns not considered in selection of groundwater goals (refer to Section 2.7).

Refer to appendices for summary of ESL components.

TPH -Total Petroleum Hydrocarbons. TPH ESLs must be used in conjunction with ESLs for related chemicals (e.g., BTEX, PAHs, oxidizers, etc.). See Volume 1, Section 2.2 and Appendix 1, Chapter 5.

**TABLE K-3. DIRECT-EXPOSURE SCREENING LEVELS
CONSTRUCTION/TRENCH WORKER EXPOSURE SCENARIO**

CHEMICAL	Final Screening Level (mg/kg)	Basis	Carcinogens (Risk = 10 ⁻⁶) (mg/kg)	Noncarcinogens HQ = 0.2 (mg/kg)	Noncarcinogens (HQ = 1.0) (mg/kg)	Saturation (mg/kg)
ACENAPHTHENE	3.5E+04	noncarcinogenic effects	-	3.5E+04	1.7E+05	NA
ACENAPHTHYLENE	2.6E+04	fluorene	-	2.6E+04	1.3E+05	NA
ACETONE	1.3E+04	noncarcinogenic effects	-	1.3E+04	6.6E+04	1.0E+05
*ALDRIN	1.2E+00	carcinogenic effects	1.2E+00	1.2E+01	6.0E+01	NA
ANTHRACENE	2.1E+05	noncarcinogenic effects	-	2.1E+05	1.1E+06	NA
ANTIMONY	3.1E+02	noncarcinogenic effects	-	3.1E+02	1.5E+03	NA
*ARSENIC	1.6E+01	carcinogenic effects	1.6E+01	1.8E+02	9.2E+02	NA
BARIUM	2.5E+03	noncarcinogenic effects	-	2.5E+03	1.2E+04	NA
*BENZENE	1.7E+01	carcinogenic effects	1.7E+01	5.7E+01	2.9E+02	8.7E+02
*BENZO(a)ANTHRACENE	1.5E+01	carcinogenic effects	1.5E+01	-	-	NA
*BENZO(b)FLUORANTHENE	1.5E+01	carcinogenic effects	1.5E+01	-	-	NA
*BENZO(k)FLUORANTHENE	1.6E+01	carcinogenic effects	1.6E+01	-	-	NA
BENZO(g,h,i)PERYLENE	1.4E+04	noncarcinogenic effects	-	1.4E+04	7.0E+04	NA
*BENZO(a)PYRENE	1.5E+00	carcinogenic effects	1.5E+00	-	-	NA
*BERYLLIUM	9.8E+01	noncarcinogenic effects	1.1E+02	9.8E+01	4.9E+02	NA
BIPHENYL, 1,1-	2.8E+04	noncarcinogenic effects	-	2.8E+04	1.4E+05	NA
*BIS(2-CHLOROETHYL)ETHER	7.4E+00	carcinogenic effects	7.4E+00	-	-	9.8E+03
BIS(2-CHLOROISOPROPYL)ETHER	2.3E+02	carcinogenic effects	2.3E+02	8.2E+03	4.1E+04	7.9E+02
*BIS(2-ETHYLHEXYL)PHTHALATE	6.4E+03	carcinogenic effects	6.4E+03	8.0E+03	4.0E+04	NA
BORON	4.6E+04	noncarcinogenic effects	-	4.6E+04	2.3E+05	NA
*BROMODICHLOROMETHANE	3.5E+01	carcinogenic effects	3.5E+01	1.8E+03	9.2E+03	3.0E+03
BROMOFORM	2.6E+03	carcinogenic effects	2.6E+03	8.0E+03	4.0E+04	NA
BROMOMETHANE	3.1E+01	noncarcinogenic effects	-	3.1E+01	1.6E+02	3.1E+03
*CADMIUM	3.8E+01	carcinogenic effects	3.8E+01	3.8E+02	1.9E+03	NA
*CARBON TETRACHLORIDE	8.4E+00	carcinogenic effects	8.4E+00	1.8E+01	8.8E+01	1.1E+03
*CHLORDANE	2.1E+01	carcinogenic effects	2.1E+01	2.8E+02	1.3E+03	NA
CHLOROANILINE, p-	1.6E+03	noncarcinogenic effects	-	1.6E+03	8.0E+03	NA
CHLOROBENZENE	6.8E+02	saturation limit	-	1.2E+03	6.2E+03	6.8E+02
CHLOROETHANE	2.8E+02	carcinogenic effects	2.8E+02	4.2E+04	2.1E+05	1.6E+03
*CHLOROFORM	2.9E+01	noncarcinogenic effects	8.3E+01	2.9E+01	1.4E+02	2.9E+03
CHLOROMETHANE	1.1E+02	carcinogenic effects	1.1E+02	1.3E+03	6.4E+03	4.1E+03
CHLOROPHENOL, 2-	5.3E+02	noncarcinogenic effects	-	5.3E+02	2.6E+03	5.6E+04
CHROMIUM (Total)	-	-	-	-	-	NA
CHROMIUM III	1.2E+06	noncarcinogenic effects	-	1.2E+06	5.8E+06	NA
*CHROMIUM VI	1.8E+00	carcinogenic effects	1.8E+00	2.3E+03	1.2E+04	NA
*CHRYSENE	1.5E+02	carcinogenic effects	1.5E+02	-	-	NA

**TABLE K-3. DIRECT-EXPOSURE SCREENING LEVELS
CONSTRUCTION/TRENCH WORKER EXPOSURE SCENARIO**

CHEMICAL	Final Screening Level (mg/kg)	Basis	Carcinogens (Risk = 10 ⁻⁶) (mg/kg)	Noncarcinogens HQ = 0.2 (mg/kg)	Noncarcinogens (HQ = 1.0) (mg/kg)	Saturation (mg/kg)
COBALT	9.4E+01	carcinogenic effects	9.4E+01	1.0E+02	5.2E+02	NA
COPPER	3.1E+04	noncarcinogenic effects	-	3.1E+04	1.5E+05	NA
CYANIDE (Free)	8.2E+03	noncarcinogenic effects	-	8.2E+03	4.1E+04	NA
*DIBENZO(a,h)ANTHTRACENE	4.3E+00	carcinogenic effects	4.3E+00	-	-	NA
*DIBROMOCHLOROMETHANE	8.6E+01	carcinogenic effects	8.6E+01	3.2E+03	1.6E+04	NA
*1,2-DIBROMO-3-CHLOROPROPANE	1.6E+00	carcinogenic effects	1.6E+00	1.3E+01	6.4E+01	3.3E+02
*DIBROMOETHANE, 1,2-	5.8E+00	noncarcinogenic effects	7.4E+00	5.8E+00	2.9E+01	NA
DICHLOROENZENE, 1,2-	6.0E+02	saturation limit	-	9.1E+03	4.6E+04	6.0E+02
DICHLOROENZENE, 1,3-	1.3E+02	noncarcinogenic effects	-	1.3E+02	6.7E+02	6.0E+02
*DICHLOROENZENE, 1,4-	2.0E+02	carcinogenic effects	2.0E+02	4.0E+03	2.0E+04	NA
*DICHLOROENZIDINE, 3,3-	1.7E+01	carcinogenic effects	1.7E+01	-	-	NA
*DICHLORODIPHENYLDICHLOROETHANE (DDD)	1.2E+02	carcinogenic effects	1.2E+02	-	-	NA
*DICHLORODIPHENYLDICHLOROETHYLENE (DDE)	8.7E+01	carcinogenic effects	8.7E+01	-	-	NA
*DICHLORODIPHENYLTRICHLOROETHANE (DDT)	8.7E+01	carcinogenic effects	8.7E+01	-	-	NA
*DICHLOROETHANE, 1,1-	2.6E+02	carcinogenic effects	2.6E+02	4.1E+03	2.0E+04	1.7E+03
*DICHLOROETHANE, 1,2-	3.3E+01	carcinogenic effects	3.3E+01	6.9E+01	3.4E+02	1.8E+03
DICHLOROETHYLENE, 1,1-	1.0E+03	noncarcinogenic effects	-	1.0E+03	5.0E+03	1.5E+03
DICHLOROETHYLENE, Cis 1,2-	3.5E+02	noncarcinogenic effects	-	3.5E+02	1.8E+03	1.2E+03
DICHLOROETHYLENE, Trans 1,2-	5.7E+02	noncarcinogenic effects	-	5.7E+02	2.8E+03	3.1E+03
DICHLOROPHENOL, 2,4-	1.2E+03	noncarcinogenic effects	-	1.2E+03	6.0E+03	NA
*DICHLOROPROPANE, 1,2-	4.7E+01	noncarcinogenic effects	5.9E+01	4.7E+01	2.4E+02	1.1E+03
*DICHLOROPROPENE, 1,3-	2.0E+01	carcinogenic effects	2.0E+01	1.3E+02	6.6E+02	1.4E+03
*DIELDRIN	1.2E+00	carcinogenic effects	1.2E+00	2.0E+01	1.0E+02	NA
DIETHYLPHTHALATE	3.2E+05	noncarcinogenic effects	-	3.2E+05	1.6E+06	NA
DIMETHYLPHTHALATE	4.0E+06	noncarcinogenic effects	-	4.0E+06	2.0E+07	NA
DIMETHYLPHENOL, 2,4-	4.9E+03	noncarcinogenic effects	-	4.9E+03	2.5E+04	NA
DINITROPHENOL, 2,4-	8.0E+02	noncarcinogenic effects	-	8.0E+02	4.0E+03	NA
*DINITROTOLUENE, 2,4-	6.4E+01	carcinogenic effects	6.4E+01	8.0E+02	4.0E+03	NA
*1,4 DIOXANE	7.4E+02	carcinogenic effects	7.4E+02	-	-	NA
*DIOXIN (2,3,7,8-TCDD)	2.3E-04	carcinogenic effects	2.3E-04	-	-	NA
ENDOSULFAN	2.4E+03	noncarcinogenic effects	-	2.4E+03	1.2E+04	NA
ENDRIN	1.2E+02	noncarcinogenic effects	-	1.2E+02	6.0E+02	NA
ETHYLBENZENE	4.0E+02	saturation limit	8.0E+02	1.6E+04	7.9E+04	4.0E+02
FLUORANTHENE	1.4E+04	noncarcinogenic effects	-	1.4E+04	7.0E+04	NA
FLUORENE	2.6E+04	noncarcinogenic effects	-	2.6E+04	1.3E+05	NA
*HEPTACHLOR	4.9E+00	carcinogenic effects	4.9E+00	2.0E+02	1.0E+03	NA

**TABLE K-3. DIRECT-EXPOSURE SCREENING LEVELS
CONSTRUCTION/TRENCH WORKER EXPOSURE SCENARIO**

CHEMICAL	Final Screening Level (mg/kg)	Basis	Carcinogens (Risk = 10 ⁻⁴) (mg/kg)	Noncarcinogens HQ = 0.2 (mg/kg)	Noncarcinogens (HQ = 1.0) (mg/kg)	Saturation (mg/kg)
*HEPTACHLOR EPOXIDE	3.6E+00	carcinogenic effects	3.6E+00	5.2E+00	2.6E+01	NA
*HEXACHLORO BENZENE	1.1E+01	carcinogenic effects	1.1E+01	3.2E+02	1.6E+03	NA
HEXACHLOROBUTADIENE	1.2E+02	noncarcinogenic effects	2.6E+02	1.2E+02	6.0E+02	NA
*HEXACHLOROCYCLOHEXANE (gamma) LINDANE	2.5E+01	carcinogenic effects	2.5E+01	1.7E+02	8.3E+02	NA
*HEXACHLOROETHANE	4.0E+02	noncarcinogenic effects	5.1E+02	4.0E+02	2.0E+03	NA
*INDENO(1,2,3-cd)PYRENE	1.5E+01	carcinogenic effects	1.6E+01	-	-	NA
LEAD	7.5E+02	=occupational	-	-	-	NA
MERCURY	1.1E+02	noncarcinogenic effects	-	1.1E+02	5.7E+02	NA
METHOXYCHLOR	2.0E+03	noncarcinogenic effects	-	2.0E+03	1.0E+04	NA
*METHYLENE CHLORIDE	3.8E+02	carcinogenic effects	3.8E+02	1.7E+04	8.5E+04	2.4E+03
METHYL ETHYL KETONE	3.4E+04	saturation limit	-	6.2E+04	3.1E+05	3.4E+04
METHYL ISOBUTYL KETONE	6.5E+03	noncarcinogenic effects	-	6.6E+03	3.3E+04	1.7E+04
METHYL MERCURY	4.1E+01	noncarcinogenic effects	-	4.1E+01	2.0E+02	NA
METHYLNAPHTHALENE (total 1- & 2-)	1.3E+04	noncarcinogenic effects	-	1.3E+04	6.4E+04	NA
*METHYL TERT BUTYL ETHER	2.8E+03	carcinogenic effects	2.8E+03	4.7E+04	2.4E+05	2.1E+04
MOLYBDENUM	3.9E+03	noncarcinogenic effects	-	3.9E+03	1.9E+04	NA
NAPHTHALENE	4.6E+02	noncarcinogenic effects	-	4.6E+02	2.3E+03	NA
*NICKEL	1.0E+03	carcinogenic effects	1.0E+03	1.5E+04	7.7E+04	NA
*PENTACHLOROPHENOL	1.6E+02	carcinogenic effects	1.5E+02	7.1E+03	3.5E+04	NA
PERCHLORATE	7.7E+01	noncarcinogenic effects	-	7.7E+01	3.9E+02	NA
PHENANTHRENE	2.6E+04	=fluorene	-	2.6E+04	1.3E+05	NA
PHENOL	2.4E+05	noncarcinogenic effects	-	2.4E+05	1.2E+06	NA
*POLYCHLORINATED BIPHENYLS (PCBs)	6.7E+00	noncarcinogenic effects	8.4E+00	6.7E+00	3.4E+01	NA
PYRENE	2.3E+04	noncarcinogenic effects	-	2.3E+04	1.1E+05	NA
SELENIUM	3.9E+03	noncarcinogenic effects	-	3.9E+03	1.9E+04	NA
SILVER	3.9E+03	noncarcinogenic effects	-	3.9E+03	1.9E+04	NA
STYRENE	1.5E+03	saturation limit	-	3.7E+04	1.9E+05	1.5E+03
tert-BUTYL ALCOHOL	1.3E+04	carcinogenic effects	1.3E+04	-	-	3.2E+05
TETRACHLOROETHANE, 1,1,1,2-	2.8E+02	carcinogenic effects	2.8E+02	4.3E+03	2.2E+04	2.0E+03
TETRACHLOROETHANE, 1,1,2,2-	3.4E+01	carcinogenic effects	3.4E+01	8.7E+03	4.3E+04	2.0E+03
*TETRACHLOROETHYLENE	3.7E+01	carcinogenic effects	3.7E+01	3.2E+03	1.6E+04	2.3E+02
THALLIUM	5.1E+01	noncarcinogenic effects	-	5.1E+01	2.6E+02	NA
TOLUENE	6.5E+02	saturation limit	-	5.3E+03	2.7E+04	6.5E+02
TOXAPHENE	1.7E+01	carcinogenic effects	1.7E+01	-	-	NA
TPH (gasolines)	2.3E+04	=pyrene	-	2.3E+04	1.1E+05	NA
TPH (middle distillates)	2.3E+04	=pyrene	-	2.3E+04	1.1E+05	NA

**TABLE K-3. DIRECT-EXPOSURE SCREENING LEVELS
CONSTRUCTION/TRENCH WORKER EXPOSURE SCENARIO**

CHEMICAL	Final Screening Level (mg/kg)	Basis	Carcinogens (Risk = 10 ⁻⁶) (mg/kg)	Noncarcinogens HQ = 0.2 (mg/kg)	Noncarcinogens (HQ = 1.0) (mg/kg)	Saturation (mg/kg)
TPH (residual fuels)	2.3E+04	=pyrene	-	2.3E+04	1.1E+05	NA
TRICHLOROBENZENE, 1,2,4-	6.2E+03	noncarcinogenic effects	1.1E+04	6.2E+03	3.1E+04	NA
TRICHLOROETHANE, 1,1,1-	1.2E+03	saturation limit	-	1.7E+03	8.7E+03	1.2E+03
TRICHLOROETHANE, 1,1,2-	6.3E+01	carcinogenic effects	6.3E+01	3.0E+02	1.5E+03	1.8E+03
TRICHLOROETHYLENE	1.5E+02	noncarcinogenic effects	2.6E+02	1.5E+02	7.4E+02	1.3E+03
TRICHLOROPHENOL, 2,4,5-	1.9E+04	noncarcinogenic effects	-	1.9E+04	9.3E+04	NA
TRICHLOROPHENOL, 2,4,6-	2.9E+02	carcinogenic effects	2.9E+02	-	-	NA
VANADIUM	5.4E+03	noncarcinogenic effects	-	5.4E+03	2.7E+04	NA
VINYL CHLORIDE	2.4E+00	carcinogenic effects	2.4E+00	-	-	1.2E+03
XYLENES	4.2E+02	saturation limit	-	2.2E+03	1.1E+04	4.2E+02
ZINC	2.3E+05	noncarcinogenic effects	-	2.3E+05	1.2E+06	NA

Primary source: USEPA Region IX Preliminary Remediation Goals (PRGs, USEPA 2002), modified as noted below. See text for discussion.

Notes:

See text for equations and assumptions used in models.

Final screening level is lowest of individual screening levels for carcinogenic effects and noncarcinogenic effects (based on HQ=0.2) or screening level for construction/trench workers if lower (see Table K-3). Saturation limit used as upper limit for volatile organic compounds that are liquid at ambient conditions (see text).

Carcinogens: Based on target cancer risk of 10⁻⁶; modified with respect to CalEPA/OEHHA slope factors when available (marked by ***). Screening levels for PCBs based on updated USEPA slope factors as presented in USEPA Region IX Preliminary Remediation Goals document (USEPA 2002).

Noncarcinogens: Adjusted to target hazard quotient of 0.2 for use in tables. Screening levels based on hazard quotient of 1.0 provided for reference.

Saturation: Theoretical soil saturation level in the absence of free product; calculated for volatile organic compounds that are liquids under ambient conditions (refer to Table J).

TPH: Total Petroleum Hydrocarbons. See text for discussion of different TPH categories. Direct exposure screening levels after Massachusetts Department of Environmental Protection (see text).

Residential screening level for lead from Interim Guidance for Evaluating Lead-Based Paint and Asbestos Containing Materials at Proposed School Sites (DTSC 2001).

ATTACHMENT C
HISTORICAL GROUNDWATER DATA

Table 1
Groundwater Elevation and Analytical Data
Total Purgeable Petroleum Hydrocarbons
(TPPH as Gasoline, BTEX Compounds, and MTBE)

ARCO Service Station 2162
15135 Hesperian Boulevard, San Leandro, California

Well Number	Date Gauged/ Sampled	Well Elevation (feet, MSL)	Depth to Water (feet, TOC)	Groundwater Elevation (feet, MSL)	TPPH as Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl- benzene (ppb)	Xylenes (ppb)	MTBE 8021B* (ppb)	MTBE 8260 (ppb)	Dissolved Oxygen (ppm)	Purged/ Not Purged (P/NP)
MW-1	02/26/96	31.19	7.14	24.05	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	NA	
MW-1	05/23/96	31.19	7.70	23.49	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	NA	
MW-1	08/21/96	31.19	8.75	22.44	210	<0.5	<0.5	<0.5	<0.5	<2.5	NA	NA	
MW-1	11/20/96	31.19	8.62	22.57	91	<0.5	<0.5	<0.5	<0.5	2.6	NA	NA	
MW-1	04/01/97	31.19	8.70	22.49	<50	<0.5	<0.5	<0.5	<0.5	<2.5	NA	NA	NP
MW-1	06/10/97	31.19	8.45	22.74	94	<0.5	<0.5	0.68	0.56	6.4	NA	NA	NP
MW-1	09/17/97	31.19	9.20	21.99	<50	<0.5	<0.5	<0.5	<0.5	10	NA	1.0	NP
MW-1	12/12/97	31.19	8.00	23.19	<200	<2	<2	<2	<2	180	NA	2.0	NP
MW-1	03/25/98	31.19	7.00	24.19	<200	<2	<2	3	<2	180	NA	2.0	
MW-1	05/14/98	31.19	7.46	23.73	<50	<0.5	<0.5	<0.5	<0.5	<3	NA	1.17	P
MW-1	07/31/98	31.19	8.10	23.09	<50	<0.5	<0.5	<0.5	<0.5	<3	NA	2.0	NP
MW-1	10/12/98	31.19	8.60	22.59	<50	<0.5	<0.5	<0.5	<0.5	9	NA	2.5	NP
MW-1	02/11/99	31.19	7.32	23.87	<50	<0.5	<0.5	<0.5	<0.5	25	NA	1.0	P
MW-1	06/23/99	31.19	8.40	22.79	55	<0.5	<0.5	<0.5	<0.5	<3	NA	1.36	NP
MW-1	08/23/99	31.19	8.85	22.34	<50	<0.5	0.6	<0.5	<0.5	5	NA	1.42	NP
MW-1	10/27/99	31.19	8.50	22.69	<50	<0.5	<0.5	<0.5	<1	90	NA	0.83	NP
MW-1	02/09/00	31.19	8.11	23.08	<50	<0.5	<0.5	<0.5	<1	9	NA	0.77	NP
MW-2	02/26/96	30.38	6.41	23.97	770	<0.5	<0.5	45	28	NA	NA	NA	
MW-2	05/23/96	30.38	6.80	23.58	590	0.50	<0.5	35	18	NA	NA	NA	
MW-2	08/21/96	30.38	7.80	22.58	170	<0.5	<0.5	21	6.3	<2.5	NA	NA	
MW-2	11/20/96	30.38	7.73	22.65	88	<0.5	<0.5	7.9	1.1	<2.5	NA	NA	
MW-2	04/01/97	30.38	7.83	22.55	66	<0.5	<0.5	3.6	0.56	33	NA	NA	
MW-2	06/10/97	30.38	7.52	22.86	<50	<0.5	<0.5	<0.5	<0.5	<2.5	NA	NA	NP
MW-2	09/17/97	30.38	8.24	22.14	<50	<0.5	<0.5	<0.5	<0.5	<3.0	NA	0.6	NP
MW-2	12/12/97	30.38	7.10	23.28	<50	<0.5	<0.5	<0.5	<0.5	<3.0	NA	1.2	NP
MW-2	03/25/98	30.38	6.27	24.11	<50	<0.5	<0.5	0.7	0.5	55	NA	1.0	
MW-2	05/14/98	30.38	6.54	23.84	210	<0.5	<0.5	3.3	<0.5	42	NA	1.47	P
MW-2	07/31/98	30.38	7.14	23.24	230	<0.5	<0.5	3.9	<0.5	6	NA	1.0	P

Table 1
Groundwater Elevation and Analytical Data
Total Purgeable Petroleum Hydrocarbons
(TPPH as Gasoline, BTEX Compounds, and MTBE)

ARCO Service Station 2162
15135 Hesperian Boulevard, San Leandro, California

Well Number	Date Gauged/ Sampled	Well Elevation (feet, MSL)	Depth to Water (feet, TOC)	Groundwater Elevation (feet, MSL)	TPPH as Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl- benzene (ppb)	Xylenes (ppb)	MTBE 8021B* (ppb)	MTBE 8260 (ppb)	Dissolved Oxygen (ppm)	Purged/ Not Purged (P/NP)
MW-2	10/12/98	30.38	7.65	22.73	110	<0.5	<0.5	1.5	<0.5	<3	NA	1.0	P
MW-2	02/11/99	30.38	6.55	23.83	660	<0.5	<0.5	6.7	0.7	3	NA	1.0	P
MW-2	06/23/99	30.38	7.48	22.90	270	<0.5	<0.5	2.2	0.8	<3	NA	NM	P
MW-2	08/23/99	30.38	7.89	22.49	200	<0.5	0.9	1.8	<0.5	<3	NA	1.17	P
MW-2	10/27/99	30.38	8.30	22.08	2,100	1.0	2.5	14	3	3	NA	0.75	NP
MW-2	02/09/00	30.38	8.02	22.36	<50	<0.5	<0.5	<0.5	<1	5	NA	0.69	NP
MW-3	02/26/96	30.30	6.72	23.58	120	5.0	<0.5	<0.5	<0.5	NA	NA	NA	
MW-3	05/23/96	30.30	7.18	23.12	140	12	<0.5	<0.5	<0.5	NA	NA	NA	
MW-3	08/21/96	30.30	8.17	22.13	<50	1.1	<0.5	<0.5	<0.5	130	NA	NA	
MW-3	11/20/96	30.30	8.03	22.27	55	<0.5	<0.5	<0.5	<0.5	59	NA	NA	
MW-3	04/01/97	30.30	8.09	22.21	<50	<0.5	<0.5	<0.5	<0.5	180	NA	NA	NP
MW-3	06/10/97	30.30	7.97	22.33	<50	<0.5	<0.5	<0.5	<0.5	1,900	NA	NA	NP
MW-3	09/17/97	30.30	8.54	21.76	<5,000	<50	<50	<50	<50	1,100	860	2.2	NP
MW-3	12/12/97	30.30	7.50	22.80	560	<5.0	<5.0	<5.0	5.0	370	NA	1.4	NP
MW-3	03/25/98	30.30	6.60	23.70	<500	<5	<5	<5	<5	470	NA	1.0	
MW-3	05/14/98	30.30	7.13	23.17	750	<5	<5	<5	<5	630	NA	1.97	P
MW-3	07/31/98	30.30	7.58	22.72	<500	<5	<5	<5	<5	590	NA	1.0	P
MW-3	10/12/98	30.30	8.00	22.30	<500	<5	<5	<5	<5	600	NA	2.0	P
MW-3	02/11/99	30.30	6.90	23.40	<500	<5	<5	<5	<5	280	NA	1.0	P
MW-3	06/23/99	30.30	7.82	22.48	220	<0.5	3.2	<0.5	<0.5	740	NA	1.98	P
MW-3	08/23/99	30.30	8.28	22.02	<50	<0.5	1.1	<0.5	<0.5	230	NA	1.20	P
MW-3	10/27/99	30.30	9.27	21.03	<50	<0.5	<0.5	<0.5	<1	<3	NA	0.81	NP
MW-3	02/09/00	30.30	7.45	22.85	<50	<0.5	<0.5	<0.5	<1	80	NA	0.81	P
MW-4	02/26/96	30.39	7.59	22.80	110	9.9	<0.5	<0.5	<0.5	NA	NA	NA	
MW-4	05/23/96	30.39	8.22	22.17	69	8.0	<0.5	<0.5	<0.5	NA	NA	NA	
MW-4	08/21/96	30.39	9.28	21.11	<50	6.8	<0.5	<0.5	<0.5	<2.5	NA	NA	
MW-4	11/20/96	30.39	9.12	21.27	95	10	0.59	<0.5	0.52	3.8	NA	NA	

Table 1
Groundwater Elevation and Analytical Data
Total Purgeable Petroleum Hydrocarbons
(TPPH as Gasoline, BTEX Compounds, and MTBE)

ARCO Service Station 2162
15135 Hesperian Boulevard, San Leandro, California

Well Number	Date Gauged/ Sampled	Well Elevation (feet, MSL)	Depth to Water (feet, TOC)	Groundwater Elevation (feet, MSL)	TPPH as Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl- benzene (ppb)	Xylenes (ppb)	MTBE 8021B* (ppb)	MTBE 8260 (ppb)	Dissolved Oxygen (ppm)	Purged/ Not Purged (P/NP)
MW-4	04/01/97	30.39	8.45	21.94	73	5.7	<0.5	<0.5	<0.5	<2.5	NA	NA	
MW-4	06/10/97	30.39	9.00	21.39	<50	<0.5	<0.5	<0.5	<0.5	<2.5	NA	NA	NP
MW-4	09/17/97	30.39	9.76	20.63	<50	3.2	<0.5	<0.5	<0.5	8.0	NA	0.2	NP
MW-4	12/12/97	30.39	8.45	21.94	<50	2.9	<0.5	<0.5	<0.5	14	NA	1.0	NP
MW-4	03/25/98	30.39	7.52	22.87	58	2.8	<0.5	<0.5	<0.5	<3	NA	3.0	
MW-4	05/14/98	30.39	8.03	22.36	<50	<0.5	<0.5	<0.5	<0.5	<3	NA	3.24	NP
MW-4	07/31/98	30.39	8.67	21.72	<50	<0.5	<0.5	<0.5	<0.5	<3	NA	2.0	NP
MW-4	10/12/98	30.39	9.15	21.24	<50	<0.5	<0.5	<0.5	<0.5	4	NA	1.5	NP
MW-4	02/11/99	30.39	7.80	22.59	61	2.5	<0.5	<0.5	<0.5	6	NA	1.0	P
MW-4	06/23/99	30.39	9.00	21.39	<50	<0.5	<0.5	<0.5	<0.5	<3	NA	1.42	NP
MW-4	08/23/99	30.39	9.31	21.08	<50	<0.5	<0.5	<0.5	<0.5	6	NA	1.53	NP
MW-4	10/27/99	30.39	9.80	20.59	<50	<0.5	<0.5	<0.5	<1	6	NA	0.98	NP
MW-4	02/09/00	30.39	8.63	21.76	<50	<0.5	<0.5	<0.5	<1	7	NA	0.74	NP

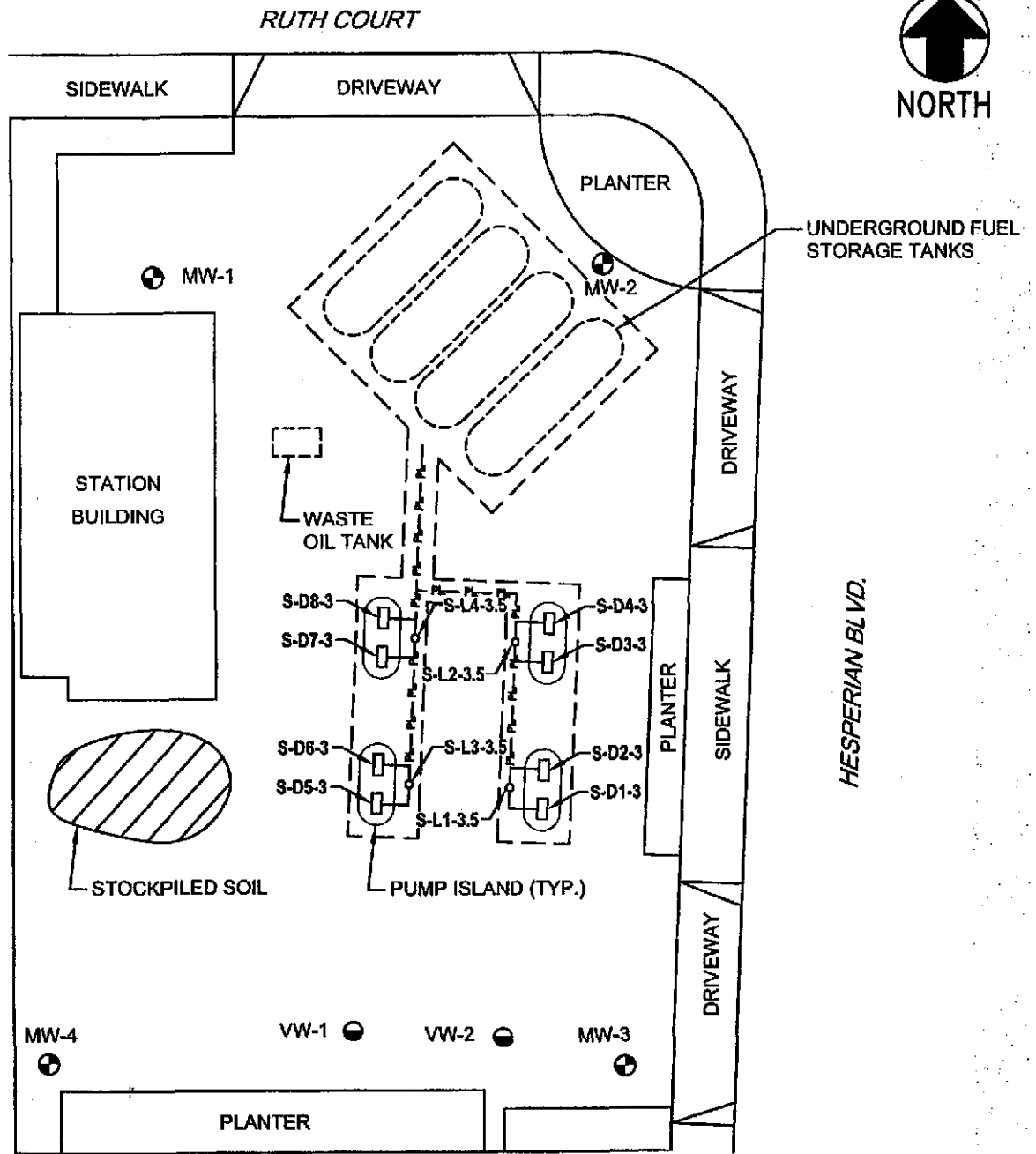
TPPH = Total purgeable petroleum hydrocarbons by modified EPA method 8015
BTEX = Benzene, toluene, ethylbenzene, total xylenes by EPA method 8021B. (EPA method 8020 prior to 10/27/99).
MTBE = Methyl tert -Butyl Ether
* = EPA method 8020 prior to 10/27/99
MSL = Mean sea level
TOC = Top of casing
ppb = Parts per billion
ppm = Parts per million
NA = Not analyzed
NM = Not measured
< = Denotes concentration not present above laboratory detection limited stated to the right

Table 2
Groundwater Flow Direction and Gradient

ARCO Service Station 2162
15135 Hesperian Boulevard, San Leandro, California

Date Measured	Average Flow Direction	Average Hydraulic Gradient
02/26/96	Southwest	0.009
05/23/96	South-Southwest	0.010
08/21/96	South-Southwest	0.01
11/20/96	South-Southwest	0.011
04/01/97	South-Southwest	0.004
06/10/97	South-Southwest	0.010
09/17/97	South-Southwest	0.01
12/12/97	Southwest	0.01
03/25/98	South-Southwest	0.008
05/14/98	Southwest	0.01
07/31/98	Southwest	0.01
10/12/98	Southwest	0.01
02/11/99	Southwest	0.008
06/23/99	Southwest	0.02
08/23/99	Southwest	0.013
10/27/99	South-Southwest	0.02
02/09/00	Southwest	0.01

ATTACHMENT D
HISTORICAL SOIL DATA



LEGEND

- MW-1 GROUNDWATER MONITORING WELL
- VW-1 SOIL VAPOR EXTRACTION WELL
- S-L1-3.5 FUEL LINE SAMPLING LOCATION
- S-D1-3 FUEL DISPENSER SAMPLING LOCATION
- EXPOSED PRODUCT LINE PIPING
- APPROXIMATE LIMITS OF EXCAVATION



Project No. 38486067
 Arco Service Station No. 2162
 15135 Hesperian Boulevard
 San Leandro, California

SOIL SAMPLING LOCATION PLAN
 January 10, 2003

FIGURE
 2

Soil Analytical Data
 ARCO Service Station No. 2162
 15135 Hesperian Boulevard
 San Leandro, California

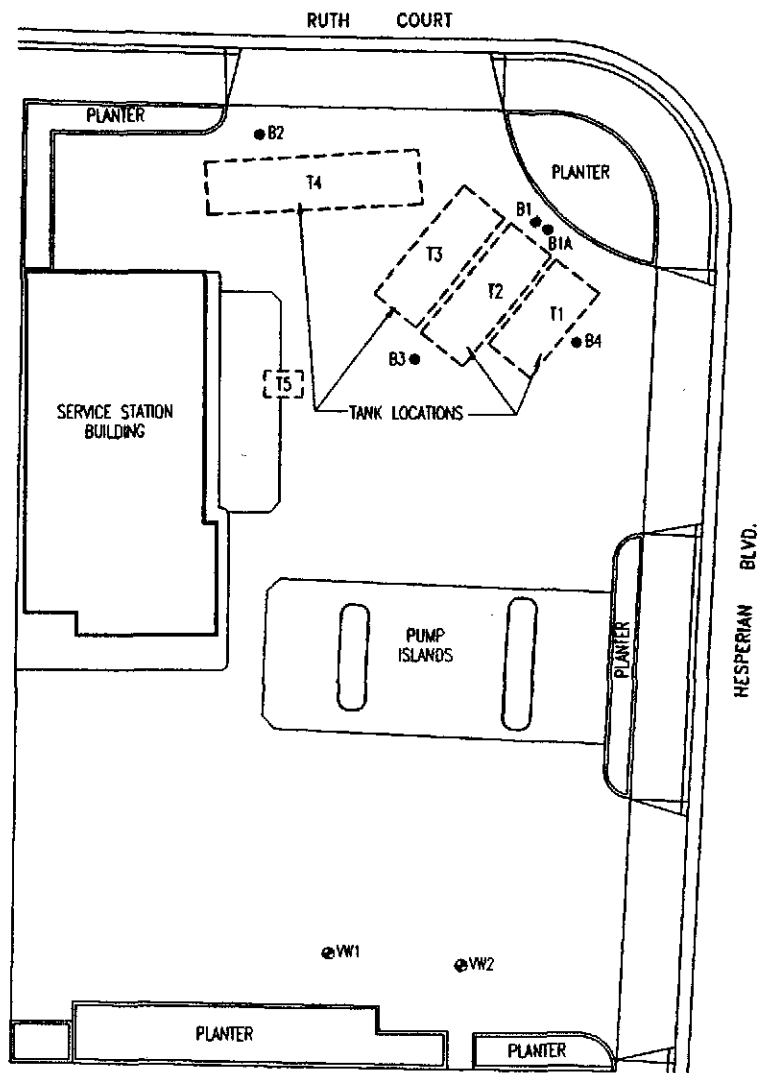
TABLE 1
Product Line/Dispenser Analytical Results

Soil Sample ID	Sample	Date	TPH as gasoline (ppm)	Benzene (ppm)	Toluene (ppm)	Ethylbenzene (ppm)	Total Xylenes (ppm)	MTBE (ppm)
S-D1-3	3	1/10/03	ND<0.5	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.025
S-D2-3	3	1/10/03	ND<0.5	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.025
S-D3-3	3	1/10/03	ND<0.5	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.025
S-D4-3	3	1/10/03	ND<0.5	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.025
S-D5-3	3	1/10/03	0.75	ND<0.005	ND<0.005	0.021	0.03	0.093
S-D6-3	3	1/10/03	ND<0.5	ND<0.005	ND<0.005	ND<0.005	ND<0.01	0.021
S-D7-3	3	1/10/03	5.7	ND<0.025	ND<0.025	0.1	0.49	ND<0.12
S-D8-3	3	1/10/03	46	ND<0.025	0.13	0.17	0.36	ND<0.25
S-L1-3.5	3.5	1/10/03	ND<0.5	0.072	0.0095	0.029	0.032	0.14
S-L2-3.5	3.5	1/10/03	ND<0.5	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.025
S-L3-3.5	3.5	1/10/03	ND<2.5	ND<0.025	ND<0.025	ND<0.025	ND<0.05	0.55
S-L4-3.5	3.5	1/10/03	200	ND<0.025	2.1	1.4	1.5	ND<0.25

TABLE 2
Soil Stockpile Analytical Results

Soil Sample ID	Sample	Date	TPH as gasoline (ppm)	Benzene (ppm)	Toluene (ppm)	Ethylbenzene (ppm)	Total Xylenes (ppm)	MTBE (ppm)	Total Lead (ppm)
SP (1-4) Composite	--	1/10/03	0.79	ND<0.025	ND<0.025	0.032	0.14	ND<0.12	19

TPH = Total purgeable petroleum hydrocarbons using EPA Method 8015B, modified.
 BTEX = Benzene, toluene, ethylbenzene, total xylenes using EPA Method 8021B.
 MTBE = Methyl Tertiary Butyl Ether.
 ppb = Parts per billion.
 ppm = Parts per million.
 ND< = Less than stated laboratory detection limit.



EXPLANATION

●B1 SOIL BORING LOCATIONS AND DESIGNATIONS.

⊙VW1 VAPOR EXTRACTION TEST WELL LOCATIONS AND DESIGNATIONS.

--- FORMER UNDERGROUND STORAGE TANK LOCATION.

- T1 6,000 GAL. STEEL TANK.
- T2 8,000 GAL. STEEL TANK.
- T3 8,000 GAL. STEEL TANK.
- T4 12,000 GAL. FIBERGLASS TANK.
- T5 560 GAL. WASTE OIL TANK.



COMPILED BY:	T.R.
PREPARED BY:	R.P.
PROJECT MNGR.	G.M.
DATE:	06/92
SCALE:	AS SHOWN
PROJECT NO.	A117W01
FILE NAME:	AR216201

PREPARED FOR:	ARCO PRODUCTS COMPANY
TITLE:	SITE PLAN
	ARCO FACILITY NO. 2162

FIGURE
2

**Table 1. Summary of Soil Analyses: Pre-drill Soil Borings (Roux, 1991a)
ARCO Facility No. 2162, San Leandro, California**

Sample Number	Date Sampled	Depth (feet bgs)	TPH-G (1)	BTEX Distinction (1)			
				Benzene	Toluene	Ethylbenzene	Xylenes
B1-5	6/5/91	5	ND	ND	ND	ND	0.016
B1A-7.5	6/5/91	7.5	43	0.14	0.93	1.1	7.8
B2-5	6/5/91	5	1.3	ND	ND	ND	0.018
B2-9	6/5/91	9	ND	ND	ND	ND	ND
B3-4	6/5/91	4	26	0.024	0.029	0.16	1.1
B3-7.5	6/5/91	7.5	1400	2.5	4.4	29	190
B4-4.5	6/5/91	4.5	ND	0.025	0.013	0.0085	0.042
B4-7.5	6/5/91	7.5	2400	17	62	41	260
VW1-6	6/5/91	6	2.8	0.033	0.0073	0.079	0.055
VW1-9	6/5/91	9	100	0.48	1.4	2.7	4.1

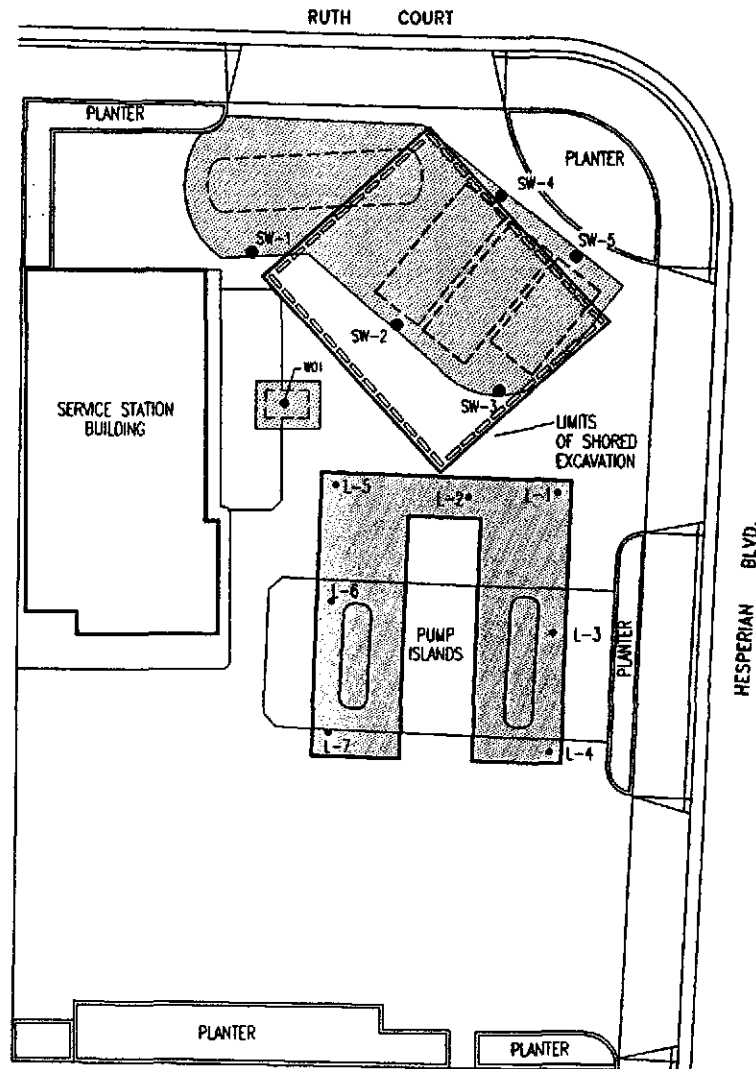
FOOTNOTES

(1) = Concentrations reported in mg/kg (= parts per million).




TPH-G = Total Petroleum Fuel Hydrocarbons as Low/Medium Boiling Point Hydrocarbons (USEPA Method 8015).

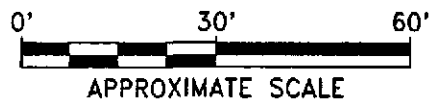
BTEX Distinction (USEPA Method 8020).


ND = Not Detected.



EXPLANATION

-  FORMER UNDERGROUND STORAGE TANK AND PRODUCT LINE EXCAVATIONS.
- L-1 PRODUCT LINE SAMPLE LOCATION AND DESIGNATION.
- SW-1 SIDEWALL SOIL SAMPLE LOCATION AND DESIGNATION.
-  SHEET PILES AT LIMITS OF NEW TANK CAVITY.
-  FORMER UNDERGROUND STORAGE TANK LOCATION.



 ROUX ASSOCIATES ENVIRONMENTAL CONSULTING & MANAGEMENT	COMPILED BY: T.R.	PREPARED FOR: ARCO PRODUCTS COMPANY	FIGURE <div style="font-size: 2em; text-align: center;">3</div>
	PREPARED BY: R.P.	TITLE:	
	PROJECT MNGR. G.M.	PRODUCT LINE AND SIDEWALL SOIL SAMPLE LOCATIONS	
	DATE: 07/91	ARCO FACILITY NO. 2162	
	SCALE: 01/92		
	PROJECT NO. A117W01		
FILE NAME: AR216201			

**Table 2. Summary of Soil Analyses: Sidewall and Product Lines
ARCO Facility No. 2162, San Leandro, California**

Sample Number	Date Sampled	Depth Sampled	TPH-G (1)	BTEX Distinction (1)			
				Benzene	Toluene	Ethylbenzene	Xylenes
<u>Excavation Sidewall Samples:</u>							
SW-1	12/5/91	9	500	ND	0.4	3.5	8.4
SW-2	12/5/91	10	140	0.1	0.38	3.0	7.2
SW-3	12/5/91	10	150	0.26	0.11	2.1	2.0
SW-4	12/5/91	10	610	0.47	7.1	11	82
SW-5	12/5/91	10	1,000	2.3	9.2	25	220
<u>Product Line Samples:</u>							
L-1	2/4/92	3	ND	ND	ND	ND	ND
L-2	2/4/92	3.5	4.4	0.082	0.013	0.21	0.3
L-3	2/4/92	3	ND	ND	ND	ND	ND
L-4	2/4/92	3	ND	0.0063	0.0076	ND	0.029
L-5	2/4/92	3	110	0.65	0.17	1.2	0.14
L-6	2/4/92	2.5	16	1.0	0.2	0.96	4.0
L-7	2/4/92	4	12	0.28	0.018	0.35	0.78

FOOTNOTES

(1) = Concentrations reported in mg/kg (= parts per million).

TPH-G = Total Petroleum Fuel Hydrocarbons as Low/Medium Boiling Point Hydrocarbons (USEPA Method 8015).

BTEX Distinction (USEPA Method 8020).

















ND = Not Detected.

ATTACHMENT E





BORING LOGS AND WELL COMPLETION REPORTS

SYMBOL KEY








LITHOLOGIC SYMBOL KEY (Unified Soil Classification System)

	<i>Fill</i>
	<i>SW Well Graded Sand</i>
	<i>SP Poorly Graded Sand</i>
	<i>SM Silty Sand</i>
	<i>SC Clayey Sand</i>
	<i>PT Peat</i>
	<i>OL Low Plasticity Organic Silt</i>
	<i>OH High Plasticity Organic Silt</i>
	<i>ML Low Plasticity Silt</i>
	<i>MH High Plasticity Silt</i>
	<i>GW Well Graded Gravel</i>
	<i>GP Poorly Graded Gravel</i>
	<i>GM Silty Gravel</i>
	<i>GC Clayey Gravel</i>
	<i>CL Low Plasticity Clay</i>
	<i>CH High Plasticity Clay</i>









SAMPLER SYMBOL KEY

	<i>Continuous Core Barrel</i>
	<i>Standard Penetration Test</i>
	<i>Modified California Sampler</i>
	<i>Shelby Sampler</i>

WELL CONSTRUCTION SYMBOL KEY

	<i>Sand Pack w/Slotted Casing</i>
	<i>Sand Pack</i>
	<i>Concrete Grout/Fill</i>
	<i>Bentonite Grout/Seal</i>
	<i>Cement/Bentonite Grout</i>
<i>NE</i>	<i>Ground Water Not Encountered</i>
	<i>Water Level at Time of Drilling.</i>
	<i>Stabilized Water Level.</i>







Project: ARCO FACILITY NUMBER 2162 15135 Hesperian Blvd, San Leandro, CA		Log of Soil Boring No. B1	
Logged By: Jon Florez	Checked By: L.E.	Date Started: 6/5/91	Date Completed: 6/5/91
Drilling Co: Gregg Drilling	Drill Bit Diameter: 6 inches	Total Depth: 11.5 ft	
Driller: S. Stone	Backfill Material: Bentonite Grout from 0 ft to 11.5 ft		
Drilling Method: Hollow Stem Auger	Sampler: CA Modified Split-spoon		
Drilling Equipment: Mobile B-53	Depth to Water at Time of Drilling: 9.5 ft		

Depth (feet)	LITHOLOGIC DESCRIPTION	Lithology	Sample	Blow Counts	OVM (ppm)	REMARKS
	Asphalt & baserock Pea gravel					
	<u>CLAY</u> , Silty, black-brown.		OL			
	<u>CLAY</u> , Silty, brown.		CL			
5	<u>CLAY</u> , Silty, green-grey, little medium(-) sand, slight hydrocarbon odor		OL	6-9-12		No Recovery For OVM
						
			SM			
10	<u>SAND</u> , medium Silty, green-brown, some fine gravel, wet, strong hydrocarbon odor.			2-3-4	3.3	
15						

Project: ARCO FACILITY NUMBER 2162 15135 Hesperian Blvd, San Leandro, CA		Log of Soil Boring No. B1A	
Logged By: Jon Florez	Checked By: L.E.	Date Started: 6/5/91	Date Completed: 6/5/91
Drilling Co: Gregg Drilling	Drill Bit Diameter: 6 inches	Total Depth: 9.0 ft	
Driller: S. Stone	Backfill Material: Bentonite Grout from 0 ft to 9.0 ft ft		
Drilling Method: Hollow Stem Auger	Sampler: CA Modified Split-spoon		
Drilling Equipment: Mobile B-53	Depth to Water at Time of Drilling:		

Depth (feet)	LITHOLOGIC DESCRIPTION	Lithology	Sample	Blow Counts	OVM (ppm)	REMARKS
	Asphalt & baserock					
	Pea gravel					
	<u>CLAY</u> , Silty, black-brown.	OL				
	<u>CLAY</u> , Silty, brown.	CL				
5	<u>CLAY</u> , Silty, green-grey, little medium(-) sand, slight hydrocarbon odor.	OL				
	<u>SILT</u> , clayey, dark brown, light brown mottling, moderate to strong hydrocarbon odor.	MH				
				6-9-12		OVM Malfunction
10						
15						

Project: ARCO FACILITY NUMBER 2162 15135 Hesperian Blvd, San Leandro, CA		Log of Soil Boring No. B2	
Logged By: Jon Florez	Checked By: L.E.	Date Started: 6/5/91	Date Completed: 6/5/91
Drilling Co: Gregg Drilling	Drill Bit Diameter: 6 inches	Total Depth: 9.5 ft	
Driller: S. Stone	Backfill Material: Bentonite Grout from 0 ft to 9.5 ft ft		
Drilling Method: Hollow Stem Auger	Sampler: CA Modified Split-spoon		
Drilling Equipment: Mobile B-53	Depth to Water at Time of Drilling: 9.0 ft		





Depth (feet)	LITHOLOGIC DESCRIPTION	Lithology	Sample	Blow Counts	OVM (ppm)	REMARKS
	Asphalt & baserock Pea gravel					
	<u>CLAY</u> , Silty, black.		OL			
5	<u>SILT</u> , Sandy, brown-green with orange mottling, damp, few rootlets, mild hydrocarbon odor.		ML	4-7-10	76.7	
			SP			
	<u>SAND</u> , medium to fine(+), green, and fine(-) gravel, moist, mild hydrocarbon odor.			5-4-10	10.5	
10						
15						

Project: ARCO FACILITY NUMBER 2162 15135 Hesperian Blvd, San Leandro, CA		Log of Soil Boring No. B3	
Logged By: Jon Florez	Checked By: L.E.	Date Started: 6/5/91	Date Completed: 6/5/91
Drilling Co: Gregg Drilling	Drill Bit Diameter: 6 inches	Total Depth: 10.5 ft	
Driller: S. Stone	Backfill Material: Bentonite Grout from 0 ft to 10.5 ft		
Drilling Method: Hollow Stem Auger	Sampler: CA Modified Split-spoon		
Drilling Equipment: Mobile B-53	Depth to Water at Time of Drilling: 10.0 ft		





Depth (feet)	LITHOLOGIC DESCRIPTION	Lithology	Sample	Blow Counts	OVM (ppm)	REMARKS
	Asphalt & baserock					
	<u>GRAVEL</u> , Sandy, with lens of white medium sand.					
	<u>SILT</u> , Clayey, black, organic odor? <u>SILT</u> , brown-orange, trace lenses of fine gravel. <u>SILT</u> , Clayey, black, with piece of glass.					
	<u>SILT</u> , greenish-black to dark brown, trace shell fragments, trace medium sand, very slight odor.		OL	4-7-12	10.5	
5						
	<u>CLAY</u> , silty, green-brown, 1-2 inch lense of green sand at top of sampler, moist, trace of separate phase petroleum hydrocarbon.		CL	3-6-8	207.5	
	<u>SAND</u> , medium(+), green, little silt, wet.		SW	4-6-10		No Recovery For OVM
10						
15						




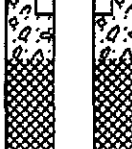

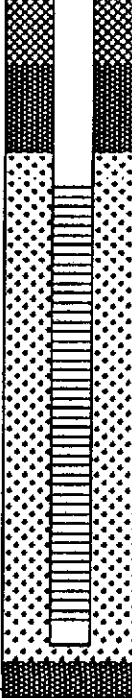


Project: ARCO FACILITY NUMBER 2162 15135 Hesperian Blvd, San Leandro, CA		Log of Soil Boring No. B4	
Logged By: Jon Florez	Checked By: L.E.	Date Started: 6/5/91	Date Completed: 6/5/91
Drilling Co: Gregg Drilling		Drill Bit Diameter: 6 inches	Total Depth: 15.0 ft
Driller: S. Stone		Backfill Material: Bentonite Grout from 0 ft to 15.0 ft	
Drilling Method: Hollow Stem Auger		Sampler: CA Modified Split-spoon	
Drilling Equipment: Mobile B-53		Depth to Water at Time of Drilling: 9.5 ft	

Depth (feet)	LITHOLOGIC DESCRIPTION	Lithology	Sample	Blow Counts	OVM (ppm)	REMARKS
	Asphalt & baserock SAND , medium, yellow. SILT , Clayey, black. SILT , Sandy, brown-green, and gravel.	[Pattern]				
	SILT , black, trace fine gravel.	[Pattern]				
5	SILT , green with brown mottling, trace fine sand, trace rootlets, slight hydrocarbon odor.	OL	[Symbol]	4-6-8	10.5	
	SILT , green-grey, moist, strong hydrocarbon odor, trace dark brown to black separate phase petroleum hydrocarbon.	[Pattern]	[Symbol]	4-8-8	992	
	1/2-inch thick lens of medium to fine, green-grey gravel SAND , fine, green-grey, wet.	SM	[Symbol]	4-3-8		
10	GRAVEL , medium to fine, green-grey, and fine sand, wet, trace brown separate phase petroleum hydrocarbon. GRAVEL , medium, green-grey, wet, trace brown separate phase petroleum hydrocarbon.	GP	[Symbol]			
	SAND , fine, wet, separate phase petroleum hydrocarbon noted. GRAVEL , fine, green, wet, separate phase petroleum hydrocarbon noted.	SM GP	[Symbol]	7-17-5		
	SAND , medium, brown, and fine gravel, wet, separate phase petroleum hydrocarbon noted.	SP	[Symbol]			
	GRAVEL , medium to fine, green-grey, and fine sand, wet, slight hydrocarbon odor. SILT , brown-orange with dark brown mottling, moist, no odor noted.	GM ML	[Symbol]	2-3-5		
	SILT , brown, trace medium flecks of black organic matter, damp.	[Pattern]	[Symbol]	3-4-6		
15						

Project: ARCO FACILITY NUMBER 2162 15135 Hesperian Blvd, San Leandro, CA		Log of Well No. VW1	
Date Started: 6/5/91	Completed: 6/5/91	Measuring Point Elevation: 30 ft	Total Depth: 10.5 ft
Logged By: Jonathan Florez	Checked By: L.E.	Water Level During Drilling: 10.0 ft	Stabilized: ft
Drilling Co: Gregg Drilling	Driller: S. Stone	Casing: 2" sched. 40 PVC	Drill Bit Diameter: 6 inches
Drilling Method: Hollow Stem Auger		Perforation: 0.020 Slotted PVC	 from 8.7 ft to 3.7 ft
Drilling Equipment: Mobile B-53		Pack: #3 Monterey Sand	 from 9.0 ft to 3.3 ft
Sampler: CA Modified Split-spoon		Seal: Bentonite Chips	 from 3.3 ft to 2.3 ft
		Cement/Bentonite Grout	 from 2.3 ft to 0 ft

Depth (feet)	LITHOLOGIC DESCRIPTION	Lithology	Monitoring Well Construction	Sample	Blow Counts	OVM (ppm)	REMARKS
	Asphalt & baserock						
	SAND , medium to fine, brown, and medium to fine(+) gravel.						
	SILT , Clayey, black, trace fine sand.	OL					
	SILT , Clayey, black, trace 2mm. brown needles.				5-13-16		OVM Malfunction
5	SILT , Sandy, green, moist, rootlet fragments.						
	SAND , coarse to fine(+), green, little fine gravel, moist.	SW			6-8-7		OVM Malfunction
	SAND , Silty(+) to clayey, green, moist.	SM					
10					3-6-8		OVM Malfunction 1.5-foot thick bentonite seal below vapor extraction well
15							

Project: ARCO FACILITY NUMBER 2162 15135 Hesperian Blvd, San Leandro, CA		Log of Well No. VW2	
Date Started: 6/5/91	Completed: 6/5/91	Measuring Point Elevation: 30 ft	Total Depth: 9.8 ft
Logged By: Jonathan Florez	Checked By: L.E.	Water Level During Drilling: 9.8 ft	Stabilized: ft
Drilling Co: Gregg Drilling	Driller: S. Stone	Casing: 2" sched. 40 PVC	Drill Bit Diameter: 6 inches
Drilling Method: Hollow Stem Auger		Perforation: 0.020 Slotted PVC	 from 9 ft to 4 ft
Drilling Equipment: Mobile B-53		Pack: #3 Monterey Sand	 from 9.3 ft to 3.7 ft
Sampler: Cuttings		Seal: Bentonite Chips	 from 3.7 ft to 2.7 ft
		Cement/Bentonite Grout	 from 2.7 ft to 0 ft

Depth (feet)	LITHOLOGIC DESCRIPTION	Lithology	Monitoring Well Construction	Sample	Blow Counts	OVM (ppm)	REMARKS
0	Asphalt & baserock						
0 - 3.7	SAND , medium to fine, brown, and fine gravel.						
3.7 - 9.8	SILT , Clayey, black.						
5							
5 - 9.8	SILT , Clayey, green.						
10							0.5-foot thick bentonite seal below vapor extraction well
15							

CONFIDENTIAL

STATE OF CALIFORNIA DWR
WELL COMPLETION REPORT
(WELL LOGS)

REMOVED

CONFIDENTIAL

STATE OF CALIFORNIA DWR
WELL COMPLETION REPORT
(WELL LOGS)

REMOVED

CONFIDENTIAL

STATE OF CALIFORNIA DWR
WELL COMPLETION REPORT
(WELL LOGS)

REMOVED

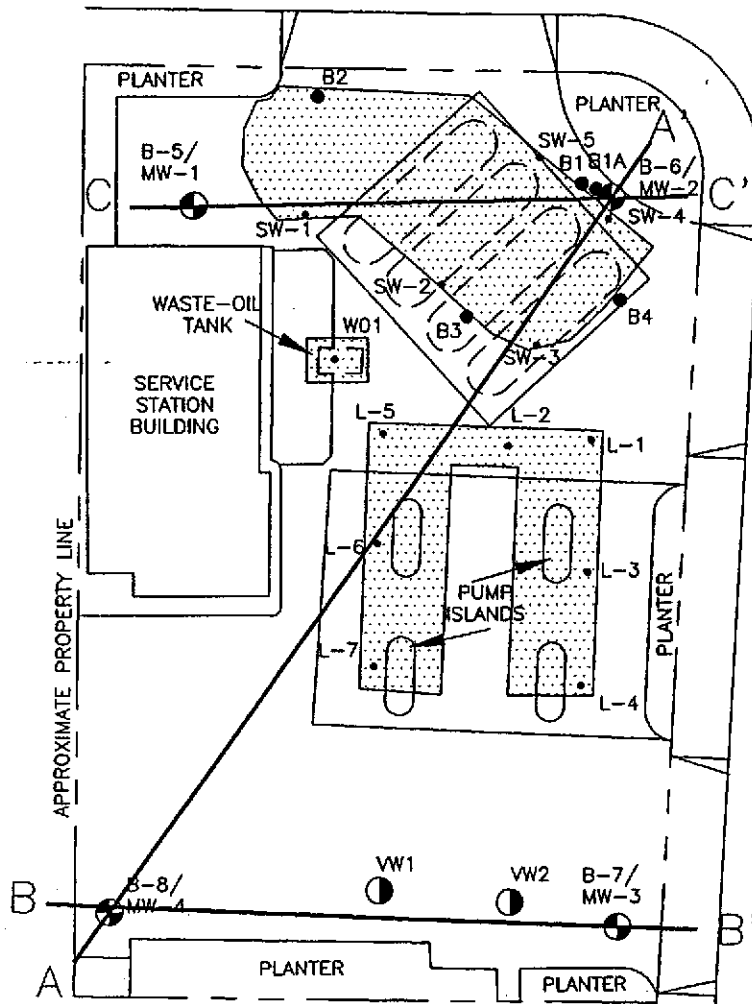
CONFIDENTIAL

STATE OF CALIFORNIA DWR
WELL COMPLETION REPORT
(WELL LOGS)

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
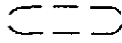
ATTACHMENT F
SITE MAP AND CROSS SECTIONS

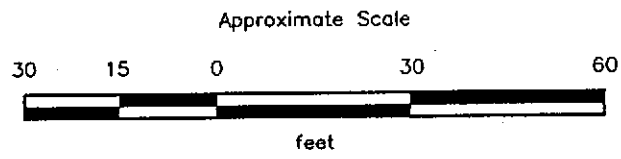
RUTH COURT



HESPERIAN BOULEVARD

EXPLANATION

- B-8/
MW-4  = Monitoring well RESNA September 1992
- WV2  = Vapor extraction well
(Roux Associates, Inc., 1991)
- B4  = Soil boring
(Roux Associates, Inc., 1991)
- L-7 • = Product line sample
- SW-5• = Sidewall soil sample
-  = Former underground storage tank
and product line excavations
-  = Existing underground storage tank



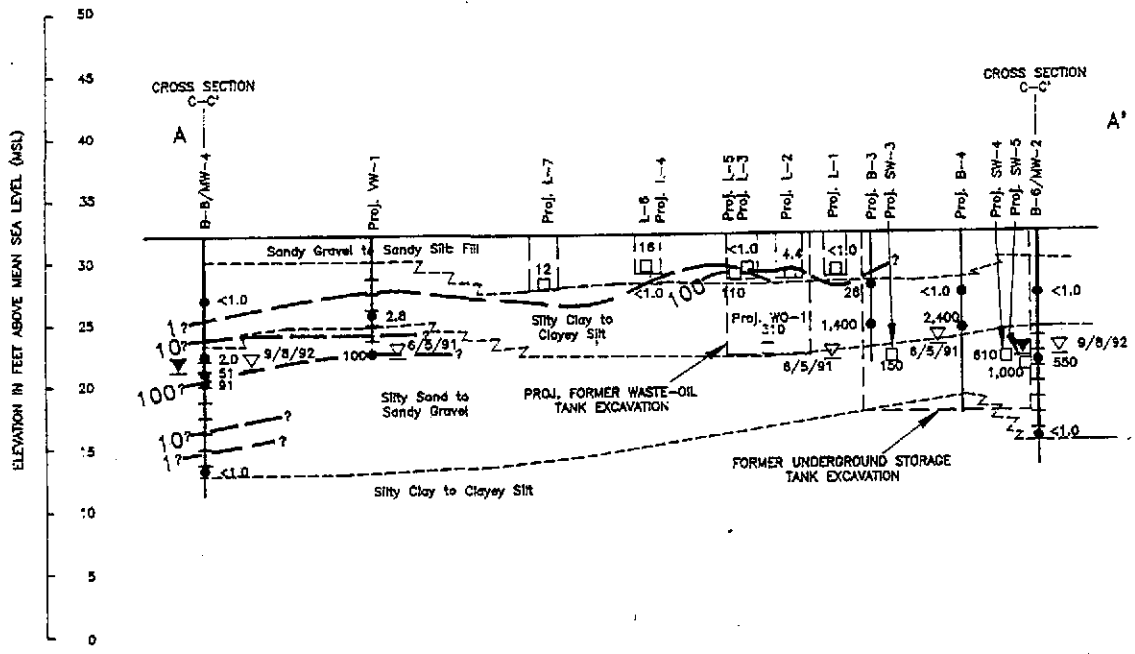
Source: Modified from site plan provided by Roux Associates.
and survey data from John Koch, licensed
land surveyor (9/16/92)



PROJECT 62019.02

GENERALIZED SITE PLAN
ARCO Station 2162
15135 Hesperian Boulevard
San Leandro, California

PLATE
2



EXPLANATION

- Product line and tank excavations
- Line of equal concentration of TPHg in soil, in parts per million (ppm)
- Laboratory analyzed product line excavation soil sample showing TPHg concentration in ppm
- Laboratory analyzed soil sample showing TPHg concentration in ppm
- Well casing
- Well screen
- Boring
- Initial water level
- Static water level (10/18/92)

Approximate Vertical Scale
 20 10 0 20 40
 feet

Approximate Horizontal Scale
 10 5 0 10 20
 feet

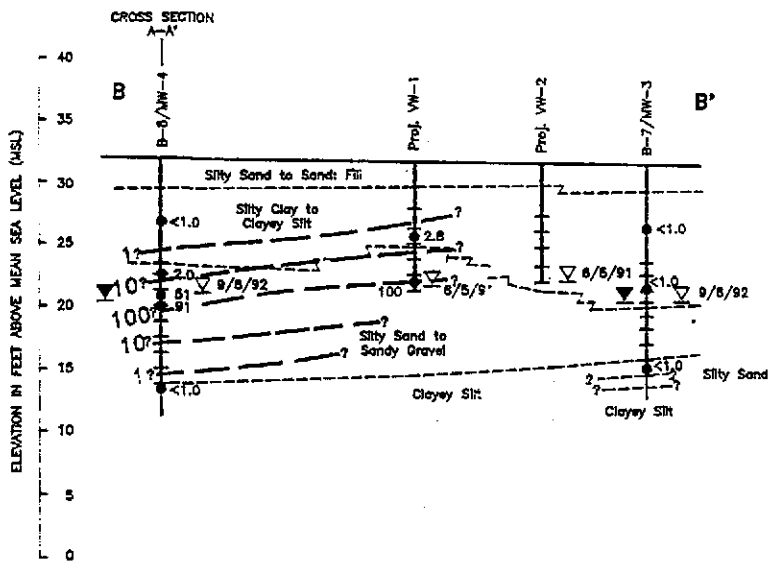
RESNA
 Working to Restore Nature

PROJECT 02019.C2

GEOLOGIC CROSS SECTION A-A'
 ARCO Station 2102
 15135 Hesperian Boulevard
 San Leandro, California

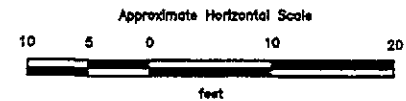
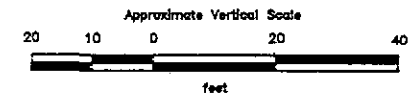
PLATE

8



EXPLANATION

- 100 — Line of equal concentration of TPHg in soil, in parts per million (ppm)
- 2,400 — Laboratory analyzed soil sample showing TPHg concentration in ppm
- Well casing
- Well screen
- Boring
- ▽ — Initial water level
- ▽ — Static water level (10/18/92)



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Working to Restore Nature

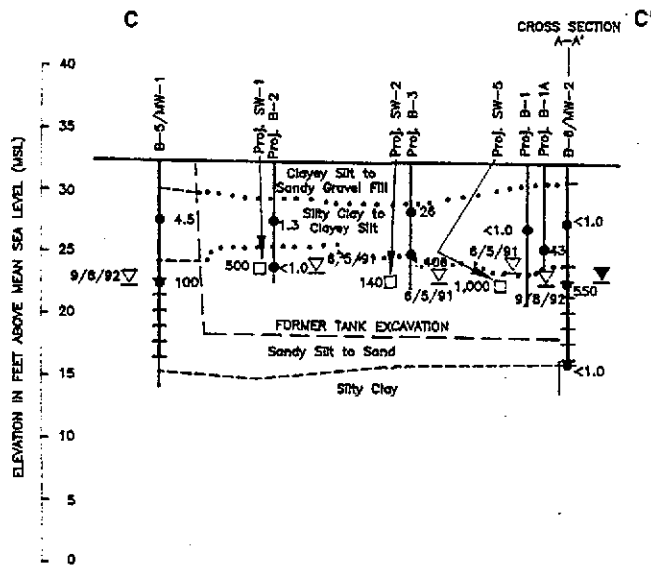
PROJECT

82019.02

GEOLOGIC CROSS SECTION B-B'
ARCO Station 2162
15135 Hesperian Boulevard
San Leandro, California

PLATE

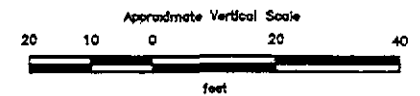
9



EXPLANATION

- = Product line and tank excavations
- 100 = Line of equal concentration of TPHg in soil, in parts per million (ppm)
- 1,000 = Laboratory analyzed tank excavation sidewall soil sample showing TPHg concentration in ppm
- 2,400 = Laboratory analyzed soil sample showing TPHg concentration in ppm
- = Well casing
- = Well screen
- = Boring
- = Initial water level
- = Static water level (10/16/92)

NOTE: Dotted line denotes inferred stratigraphic contact through former excavation tank.



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PROJECT 62019.02

GEOLOGIC CROSS SECTION C-C'
ARCO Station 2182
15135 Heepertan Boulevard
San Leandro, California

PLATE

10