R0097

URS

November 18, 2003

Mr. Don Hwang
Alameda County Health Care Services Agency
Environmental Health Services
Environmental Protection
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-9335

Re: Work Plan for Soil Investigation for Site Closure
ARCO Service Station #6148
5131 Shattuck Avenue
Oakland, California

Dear Mr. Hwang:

At the request of Atlantic Richfield Company (ARCO - a BP affiliated company), URS Corporation (URS) is pleased to submit this Work Plan to conduct a soil investigation (SI) at ARCO Service Station #6148 located at 5131 Shattuck Avenue in Oakland, California (site). This Work Plan has been prepared in response to a directive letter from the Alameda County Health Care Services Agency (ACHCSA), dated October 20, 2003 (Attachment A). ACHCSA requested that ARCO collect confirmation soil samples to evaluate the effectiveness of the site work and investigate the vertical extent of soil contamination near soil boringsVW-6 and DP-5. Soil borings VW-6 and DP-5 have historical total petroleum hydrocarbon as gasoline (TPH-g) soil concentrations of 3,100 mg/kg and 2,390 mg/kg, respectively. Historical soil results are summarized in Table 1.

As requested in the ACHCSA letter dated October 20, 2003, the soil confirmation results, the fourth quarter 2003 groundwater sampling data, and the first quarter 2004 groundwater sampling data will be presented in a Soil and Water Investigation Report (SWI). If the SWI results confirm insignificant hydrocarbon impaction at the site as indicated by the historical site groundwater and soil data, ARCO will request site closure.

1.0 BACKGROUND

The site is an active ARCO retail service station located at the southwestern corner of the intersection of 52nd Street and Shattuck Avenue in Oakland, California (Figure 1). The current underground storage tank (UST) complex consists of three 12,000-gallon USTs installed in November 2000. Groundwater monitoring and sampling at the site was initiated in December 1991.

The site is located west of the East Bay Hills. This lies within the Berkeley Alluvial Plain, which is a subarea of the East Bay Alluvial Plain. Soil encountered beneath the site consists

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of primarily silty clay to clayey sand and sandy gravel. Groundwater is measured at a depth ranging from 12 to 18 feet below ground surface (bgs) with seasonal fluctuations of 2 to 3 feet. Historical groundwater data indicates groundwater flows generally south-southwest. The sediment immediately below and above the groundwater surface ranges from silty clay to sandy gravel. Above the groundwater surface the thickness of the sand and gravel based unit is limited to approximately 4 feet. A unit comprising of lower permeability sediments ranging from sandy clay to sandy silt overlies the aquifer sediments to near surface grade.

On June 1, 1987, Crosby and Oberton, and Erico Construction removed a waste-oil tank from the site (Figure 2). During tank removal, one soil sample was collected from the bottom of the waste-oil tank pit for characterization. Results indicated petroleum impacted soil was encountered in the tank pit so the pit was over excavated and the soil was disposed at a landfill.

In December 1991, Rehabilitation Engineering and Assistive Technology Society of North America (RESNA) conducted the first phase of subsurface environmental investigation related to the former waste-oil tank. The investigation included drilling four on-site soil borings, B-1 through B-4, in the immediate vicinity of the tank pit, and subsequently converting three of the borings to groundwater monitoring wells MW-1, MW-2, and MW-3 (Figure 2). Results of the investigation indicated the presence of petroleum hydrocarbons in subsurface soil and groundwater beneath the site (Table 1).

In October 1992, RESNA conducted the second phase of investigation to further assess the extent of petroleum hydrocarbons in the subsurface soils and groundwater beneath the site. The investigation included drilling four on-site soil borings, B-5 through B-8, and converting the borings to groundwater monitoring wells, MW-4 through MW-7 (Figure 2). Results of the soil samples are included in Table 1.

In April 1993, RESNA conducted the third phase of investigation to further assess the extent of petroleum hydrocarbons in the subsurface soils and groundwater beneath the site and install remediation wells for pilot testing. The investigation included drilling eleven test borings, TB-1 through TB-11, and installing an air sparge (AS) well, AS-1, in test boring TB-6 (Figure 2). Results of the soil samples are included in Table 1.

RESNA concluded from the three phases of investigation that petroleum hydrocarbons in the subsurface soil were limited to three general areas:

1. Immediate vicinity of the operating service station islands,
2. Along the northern and south-southwestern edges of the former USTs,
3. Immediate vicinity of MW-1, MW-2 and MW-3 in the southern section of the site.

Additionally, RESNA concluded the contamination is limited to the capillary-fringe zone and petroleum hydrocarbon impact to groundwater was greatest in the south-southwestern portion of the site (Figure 2).

In July 1993, RESNA drilled three soil borings, B-9, B-10 and B-11, and installed one combination AS/vapor extraction well, AS-2/VW-2, and two vapor extraction wells, VW-1 and VW-3, in the borings. All three wells were installed in the southern portion of the site in the vicinity of the former waste-oil tank (Figure 2).

In June 1995, EMCON submitted a remedial action plan (RAP) to the Regional Water Quality Control Board (RWQCB) and ACHCSA. The RAP detailed the results of the SVE and AS pilot test conducted by RESNA in February 1995, and proposed an integrated in situ soil and groundwater treatment approach that included: 1) an SVE system for treating petroleum hydrocarbon impacted vadose-zone and capillary-fringe soils and 2) AS and air-bubbling system for treating petroleum hydrocarbons in saturated soils and groundwater.

On August 14, 1995, ARCO commenced construction activities for the installation of the remediation system. On August 15, 1995, during excavation of a trench approximately 4 feet south of the southern pump island, Balch Petroleum, Inc. (Balch), damaged a gasoline product line at approximately 26 inched below grade. Less than 4 ounces of gasoline leaked from the product line before it was fixed (EMCON 1995). The remediation system was started during September 1995.

In February 1996, EMCON submitted a remedial well installation report for the destruction of one combination AS/SVE well and the installation of eight SVE wells and four AS wells.

The SVE/AS system was used at the site from September 1995 through February 2000. Approximately 1,894 pounds of total petroleum hydrocarbons as gasoline (TPH-g) and 0.0131 pounds of benzene were removed from the site using the remediation system.

2.0 PROPOSED SOIL INVESTIGATION

The purpose of the proposed SWI is to collect confirmation soil samples as requested in the ACHCSA letter dated October 20, 2003 (Attachment A) to evaluate the effectiveness of site work and investigate the vertical extent of soil contamination near soil borings VW-6 and DP-5.

To evaluate the effectiveness of site work, which includes remediation by the SVE/AS system, URS will collect twenty soil confirmation samples at nine locations in the immediate vicinity of historical soil borings (B-1, B-2, B-3, B-6, TB-4, TB-7, T1-N, T1-C, VW-6, DP-2, and DP-5) that exceeded the July 2003 California RWQCB Environmental Screening Levels (ESLs) for TPH-g of 100 mg/kg. Historical soil analytical results are summarized on Table 1. Pertinent soil sample locations and the proposed confirmation borings are illustrated in Figure 3. The proposed sampling locations and rationale are outlined in Table 2. As a safety precaution, soil confirmation samples will not be taken in areas within 4 feet of product/vapor lines or dispensers.

2.1 Preliminary Field Activities

Before initiating field activities, URS will obtain necessary permits, prepare a site specific Health and Safety Plan (HASP) for the proposed work, clear the site for subsurface utilities, and complete the URS borehole checklist. The utility clearance will include notifying Underground Service Alert (USA) of the pending work a minimum of 48 hours before initiating the field investigation and securing the services of a private utility locating company to confirm the absence of underground utilities at each boring location.

A site-specific HASP will be prepared for personnel implementing the Work Plan. The HASP will address the proposed soil borings. A copy of the HASP will be available on-site at all times. The subcontractor(s) performing field activities will be provided with a copy of the HASP before initiating work. A safety tailgate meeting will also be conducted daily to review the Site hazards and drilling work scope.

2.2 Soil Boring Sampling

Nine soil borings will be advanced to approximately 20 to 30 feet bgs under the supervision of a URS field geologist using a hand auger and a Geoprobe® rig. The proposed soil boring locations are illustrated on Figure 3. Soils will be classified by a URS field geologist according to the Unified Soil Classification System (USCS) and examined using visual and manual methods for parameters including odor, staining, color, grain size, and moisture content. Soil samples for analysis will be collected as described on Table 2. URS health and safety protocol requires the boring be hand augered to 5 feet bgs. Soil samples taken at 2 to 5 feet bgs will be collected from hand auger cuttings, and placed in brass tubes.

Each soil sample collected for possible chemical analysis will be covered at each end with Teflon™ sheeting, capped with plastic end caps, labeled, and placed in an ice-filled cooler for preservation. The samples will be labeled with boring identification, sampling depth, analytical methods, date and time of collection, and the sampler's initials. The samples will be transported under chain-of-custody protocol to a California State-certified analytical laboratory. Soil samples will be analyzed for the following:

- TPH-g, BTEX compounds and MTBE using EPA Method 8260B

2.3 Waste Disposal

Investigation-derived residuals will be temporarily stored on-site in 55-gallon, Department of Transportation-approved 17H drums pending characterization and disposal. URS will coordinate the transportation and disposal of the soil at a California regulated facility.

3.0 SOIL AND WATER INVESTIGATION REPORT

Upon completion of field activities, and receipt of all laboratory analytical data, URS will provide the ACHCSA with a SWI report. The report will document the results of this investigation and include the fourth quarter 2003 and first quarter 2004 quarterly groundwater monitoring data. If the results confirm insignificant hydrocarbon impaction at the site as indicated by historic site groundwater and soil data, ARCO will request Site closure.

4.0 PROPOSED SCHEDULE

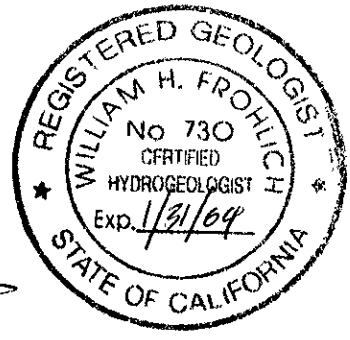
URS will proceed with the proposed work upon receiving written approval of this Work Plan from the ACHCSA. URS will obtain all necessary permits to complete the proposed work. URS anticipates submitting the SWI report to the ACHCSA within 60 days of approval of this Work Plan.

This report is based on data, site conditions, and other information that are generally applicable as of the date of the report, and the conclusions and recommendations herein are therefore applicable only to that time frame. Background information, including but not limited to previous field measurements, analytical results, site plans, and other data has been furnished to URS by ARCO, its previous consultants, and/or third parties that URS has used in preparing this report. URS has relied on this information as furnished. URS is not responsible for nor has it confirmed the accuracy of this information. The analytical data provided by the laboratory approved by ARCO have been reviewed and verified by that laboratory. URS has not performed an independent review of the data and is neither responsible for nor has confirmed the accuracy of these data.

We appreciate the opportunity to submit this Work Plan to ACHCSA and trust that this document meets with your approval. Please notify us of your approval as soon as practicable. If you have any questions or concerns, feel free to contact me at (510) 874-3280.

Sincerely,

URS CORPORATION

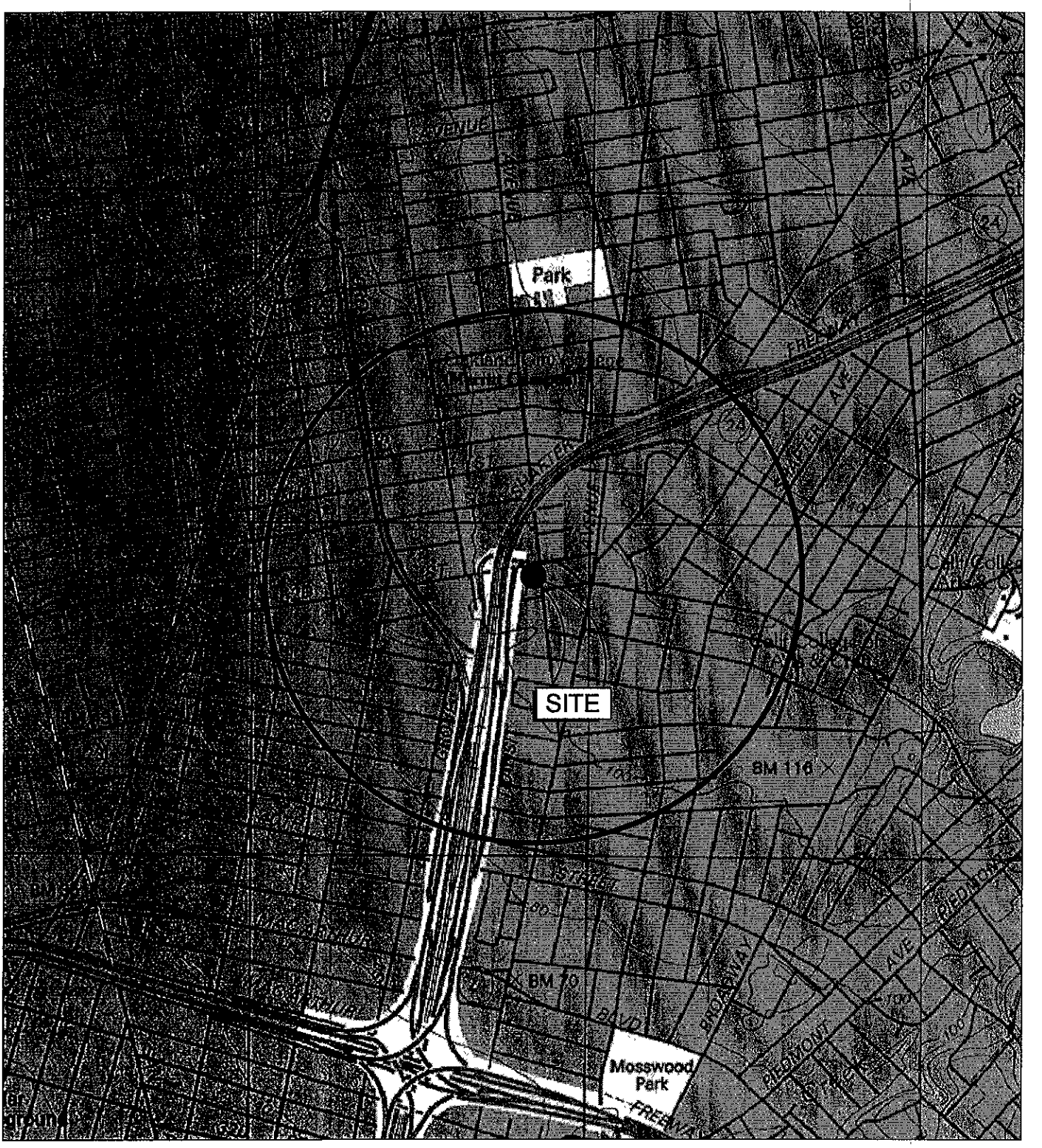


Scott Robinson
Project Manager

Bill Frohlich, R.G., C.HG., C.E.G.
Project Geologist

Attachments:	Figure 1	Site Location
	Figure 2	Site Map with Historical Soil Boring Locations
	Figure 3	Proposed Confirmation Soil Boring Locations
	Table 1	Historical Soil Sample Analytical Results
	Table 2	Proposed Confirmation Soil Samples and Rational
	Attachment A	Alameda County Health Care Services Agency letter, October 20, 2003

cc: Mr. Paul Supple, Atlantic Richfield Company (electronic copy uploaded to ENFOS)



REFERENCE:
BASE MAP FROM TOPO MAP
NORTH REGION 7

7.5 MINUTE TOPOGRAPHIC
PHOTOREVISED 1998

QUADRANGLE LOCATION

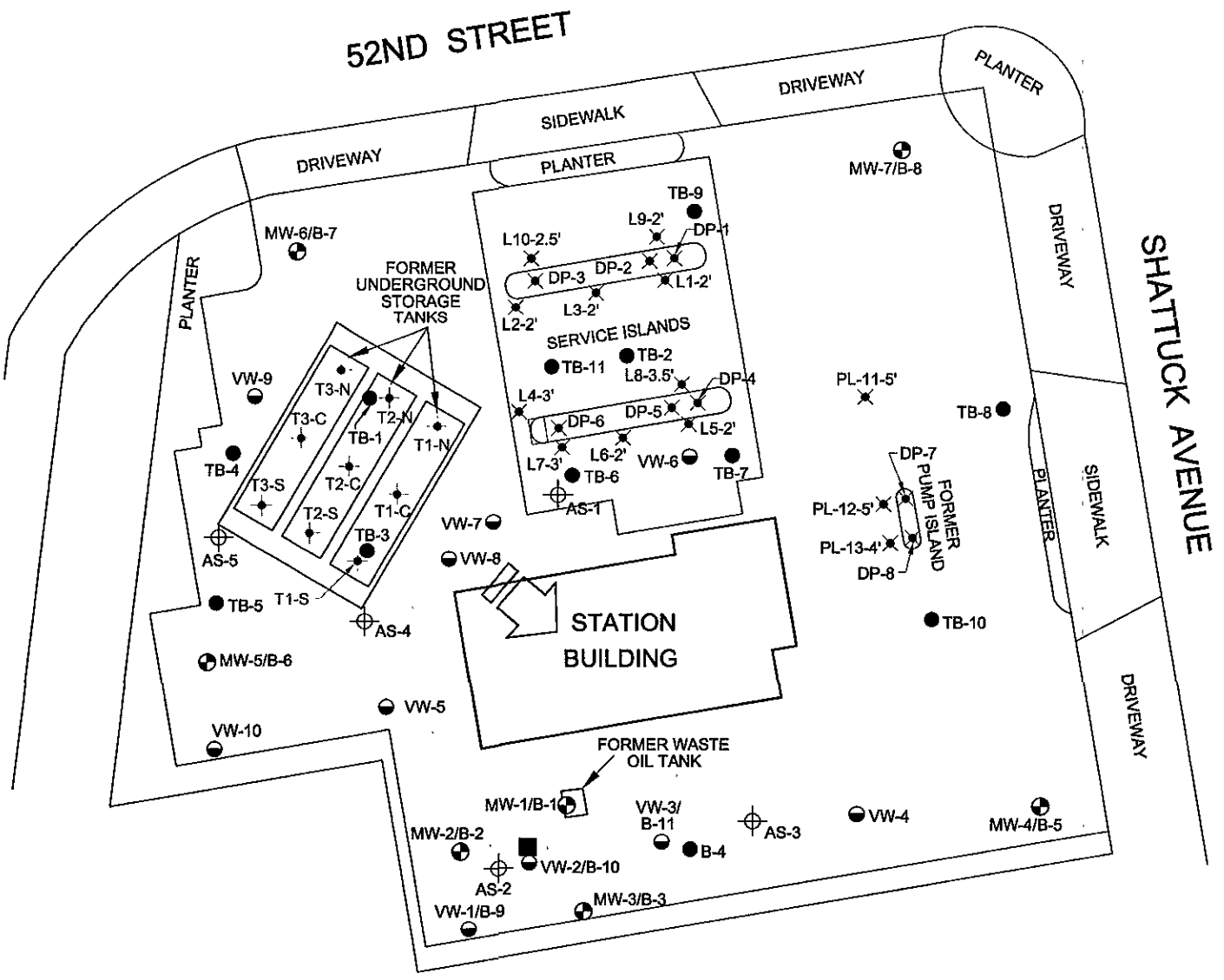
NORTH

0 1400 FT

APPROXIMATE SCALE

URS	Project No. 38486133 Arco Service Station 6148 5131 Shattuck Avenue Oakland, California	SITE LOCATION MAP	FIGURE 1

X:\x_env_waste\BP GEMSites\Scott Robinson\Paul Supple\61481_SLM.dwg, 11/05/2003 12:17:32 PM, JKMT, URS



LEGEND:

- SOIL BORING
- MONITORING WELL
- AIR SPARGING WELL
- SOIL VAPOR EXTRACTION WELL
- DESTROYED WELL
- TANK BASIN SOIL SAMPLE
- FORMER PRODUCT LINE/ DISPENSER PUMP SOIL SAMPLE
- HISTORIC GROUNDWATER FLOW DIRECTION

NORTH

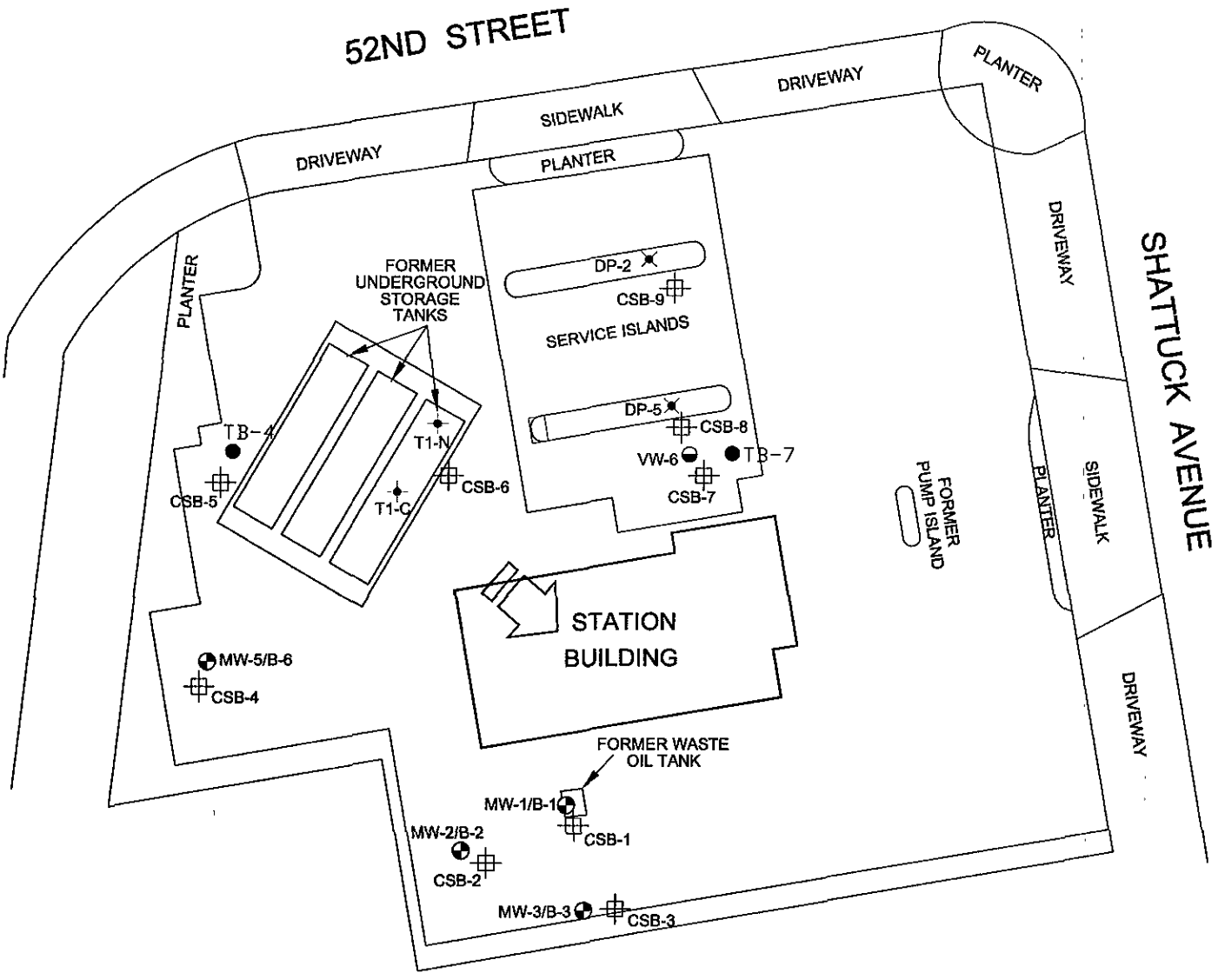
0 30 60

SCALE IN FEET

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

URS	Project No. 38486133 Arco Service Station 6148 5131 Shattuck Avenue Oakland, California	SITE MAP WITH HISTORICAL SOIL BORING LOCATIONS	FIGURE 2

X:\x_env_waste\BP GEM\Sites\Scott Robinson\Paul Supple\614812_SM-HSBL.dwg, 12/18/2003 11:29:50 AM, JKMT, URS



LEGEND:

- SOIL BORING
- MONITORING WELL
- PROPOSED BORING
- SOIL VAPOR EXTRACTION WELL
- TANK BASIN SOIL SAMPLE
- FORMER PRODUCT LINE/ DISPENSER PUMP SOIL SAMPLE
- HISTORIC GROUNDWATER FLOW DIRECTION

NORTH

0 30 60

SCALE IN FEET

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

URS	Project No. 38486133 Arco Service Station 6148 5131 Shattuck Avenue Oakland, California	PROPOSED CONFIRMATION SOIL BORING LOCATIONS	FIGURE 3

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Table 1
Historical Soil Sample
Laboratory Analytical Results

ARCO Service Station #6148
5131 Shattuck Boulevard
Oakland, California

Investigation Phase	Sample ID	Sample Date	Sample Depth (feet bgs)	TPH-g (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethlybenzene (mg/kg)	Xylene (mg/kg)
1st Phase of Investigation	S-17.5-B1	1991	17.5	**470**	2.3	5 1	5.1	24
	S-22.5-B1	1991	22 5	<1 0	0.010	<0.0050	<0.0050	<0.0050
	S-26.5-B1	1991	26.5	2.0	0.026	0.014	0.011	0.049
	S-12-B2	1991	12	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
	S-17-B2	1991	14	**740**	2.3	13	7.7	41
	S-25.5-B2	1991	25 5	<1 0	0 015	0.016	<0.0050	0.019
	S-30 5-B2	1991	30.5	<1.0	0.015	0.0080	<0.0050	<0.0050
	S-10.5-B3	1991	10.5	<1 0	<0.0050	0.0070	<0.0050	<0.0050
	S-17.5-B3	1991	17 5	**320**	0.65	0.65	2 3	5.9
	S-26.5-B3	1991	26.5	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
	S-10.5-B4	1991	10.5	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
	S-15.5-B4	1991	15.5	<1.0	0.010	<0.0050	<0.0050	<0.0050
	S-18.5-B4	1991	18.5	65	0.42	0.22	0.54	0 77
	S-20-B4	1991	20	<1.0	0.0070	<0.0050	<0.0050	<0.0050
2nd Phase of Investigation	S-9.5-B5	1992	9.5	<1.0	<0.0050	<0.0050	<0 0050	<0.0050
	S-14.5-B5	1992	14.5	<1.0	0.13	<0.0050	<0.0050	0.0050
	S-31.5-B5	1992	31.5	<1.0	<0.0050	<0 0050	<0.0050	<0.0050
	S-9.5-B6	1992	9.5	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
	S-16.5-B6	1992	16.5	**190**	0.24	0.55	1.0	1.3
	S-27.5-B6	1992	27.5	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
	S-10-B7	1992	10	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
	S-15-B7	1992	15	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
	S-29.5-B7	1992	29 5	<1.0	<0.0050	<0.0050	<0.0050	0.025
	S-9.5-B8	1992	9.5	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
	S-14.5-B8	1992	14.5	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
	S-33.5-B8	1992	33.5	<1 0	<0.0050	<0.0050	<0.0050	<0.0050
3rd Phase of Investigation	S-6-TB1	4/26/1993	6	<1.0	<0.0050	0.014	<0.0050	0.018
	S-9.5-TB1	4/26/1993	9.5	<1.0	<0.0050	0.011	<0.0050	0.029
	S-15-TB1	4/26/1993	15	2.5	0.12	0 042	0.014	0.027
	S-5.5-TB2	4/26/1993	5.5	<1.0	<0.0050	0.014	<0.0050	0.011
	S-9.5-TB2	4/26/1993	9.5	<1.0	<0.0050	0 015	<0 0050	0.012
	S-15-TB2	4/26/1993	15	5.3	0.84	0.062	0.13	0.21
	S-6.5-TB3	4/27/1993	6.5	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
	S-9.5-TB3	4/27/1993	9.5	<1.0	<0 0050	<0.0050	<0.0050	0.013
	S-15-TB3	4/27/1993	15	3.2	0.11	0.079	0.023	0.12
	S-6.5-TB4	4/27/1993	6.5	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
	S-9.5-TB4	4/27/1993	9.5	<1.0	<0.0050	<0.0050	<0.0050	<0 0050
	S-15-TB4	4/27/1993	15	**470**	0.76	0.17	4.7	15
	S-6.5-TB5	4/27/1993	6.5	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
	S-9.5-TB5	4/27/1993	9.5	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
	S-15-TB5	4/27/1993	15	<1 0	<0.0050	<0.0050	<0.0050	<0.0050
	S-6.5-TB6	4/27/1993	6.5	<1 0	<0.0050	<0.0050	<0 0050	<0.0050
	S-9 5-TB6	4/27/1993	9.5	20	<0.0050	<0.0050	0.074	0.61
	S-15-TB6	4/27/1993	15	25	0.30	2.4	1.0	6.3
	S-28-TB6	4/27/1993	28	<1 0	0.0054	0.025	<0.0050	0.016
	S-5-TB7	4/26/1993	5	<1.0	<0.0050	<0.0050	<0.0050	0.032
	S-12-TB7	4/26/1993	12	3.9	0.23	0.35	0.054	0.50
	S-15-TB7	4/26/1993	15	28	1.4	3.9	0.80	4.7
	S-16.5-TB7	4/26/1993	16 5	**610**	4.1	36	15	91
	S-4.5-TB8	4/26/1993	4.5	<1.0	0.014	0.036	<0.0050	0 019
	S-9.5-TB8	4/26/1993	9.5	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
	S-15-TB8	4/26/1993	15	<1.0	0.009	0.034	0.0072	0 029
	S-18-TB8	4/26/1993	18	<1.0	0.0095	0.020	<0.0050	0.015
	S-3.5-TB9	4/26/1993	3.5	<1.0	<0.0050	0.0087	<0.0050	0.0069
	S-9.5-TB9	4/26/1993	9.5	6.7	0.019	0.024	0.049	0.45
	S-15-TB9	4/26/1993	15	3 9	0 092	0.020	0 014	0.51
	S-5-TB10	4/26/1993	5	<1.0	<0.0050	<0.0050	<0.0050	0.0080
	S-9.5-TB10	4/26/1993	9.5	<1.0	0.011	0.020	<0.0050	0.0071
	S-14.5-TB10	4/26/1993	14.5	<1.0	0.011	0.016	<0 0050	0.0078
	S-6.5-TB11	4/27/1993	6 5	<1.0	0.020	0.016	<0.0050	0.011
	S-9.5-TB11	4/27/1993	9.5	<1 0	0 080	0 012	<0 0050	0.028
	S-15-TB11	4/27/1993	15	19	1.9	0.080	0.51	0.83

Table 1
Historical Soil Sample
Laboratory Analytical Results

ARCO Service Station #6148
5131 Shattuck Boulevard
Oakland, California

Investigation Phase	Sample ID	Sample Date	Sample Depth (feet bgs)	TPH-g (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethlybenzene (mg/kg)	Xylene (mg/kg)
Additional Investigation	B9-1-5	7/1993	5	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
	B9-2-9.5	7/1993	9.5	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
	B9-3-14.5	7/1993	14.5	<1 0	<0.0050	<0.0050	<0.0050	<0.0050
	B9-5-25	7/1993	25	<1.0	0.0060	<0.0050	<0 0050	<0.0050
	B10-3-16	7/1993	16	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
	B10-6-28	7/1993	28	<1.0	<0.0050	<0.0050	<0 0050	<0.0050
	B11-3-14.5	7/1993	14.5	<1.0	<0.0050	<0.0050	<0.0050	<0 0050
	B11-5-24.5	7/1993	24.5	4.1	0.20	0.52	0.13	0.66
AS/SVE Well Installations	AS-3	8/2/1995	16	<1	0.35	<0 005	<0 005	<0.005
	AS-3	8/2/1995	26.5	<1	<0.005	<0.005	<0.005	0.007
	AS-4	8/2/1995	14	<1	0.009	<0.005	<0.005	0.0045
	AS-4	8/2/1995	26.5	<1	<0.005	<0.005	<0.005	<0.005
	AS-5	8/2/1995	28.5	<1	<0.005	<0.005	<0.005	<0.005
	VW-2	7/31/1995	16.5	<1	<0.005	<0.005	<0.005	<0.005
	VW-4	7/31/1995	16	<1	<0.005	<0.005	<0.005	<0 005
	VW-5	7/31/1995	21.5	<1	<0.005	<0.005	<0.005	<0.005
	VW-5	8/1/1995	16	74	0.7	<0.2	0.9	1.0
	VW-6	8/1/1995	6	**3,100**	<5	86	63	430
	VW-6	8/3/1995	8	**2,300**	<5	51	48	310
	VW-6	8/3/1995	11.5	**2,100**	<2	7.3	16	110
	VW-6	8/3/1995	16	**1,700**	5.9	94	44	240
	VW-7	8/3/1995	17	30	0.3	0.5	0.6	2.8
	VW-8	8/1/1995	26	<1	<0.005	<0.005	<0.005	<0.005
	VW-9	8/1/1995	16.5	6	<0.025	<0.025	<0.025	<0.025
	VW-9	8/1/1995	26	<1	<0.005	<0.005	<0.005	<0.005
	VW-10	8/1/1995	16	<1	<0.005	<0.005	<0.005	<0.005
	VW-10	8/1/1995	21	<1	<0.005	<0.005	<0.005	<0.005
Tank and Piping Removal and Replacemnt	DP-1	11/14/2000	2.0	5.32	0.014	0.0638	0.011	0 318
	DP-2	11/14/2000	2.0	**132**	<0.1	0.265	0.86	14.5
	DP-3	11/14/2000	2.0	<1.0	<0.005	<0.005	<0.005	0.0203
	DP-4	11/14/2000	2.0	5.16	0.0226	0.134	0.0564	0 7999
	DP-5	11/14/2000	2.0	**2,390**	<1.0	1.18	8.86	140
	DP-6	11/14/2000	2 0	<2 0	<0.01	<0.01	<0.01	0.0165
	DP-7	12/22/2000	4 0	<1 0	<0.005	<0 005	<0.005	0.00581
	DP-8	12/22/2000	4.0	<1.0	<0.005	<0.005	<0.005	0.00834
	L-1	11/14/2000	2.0	3.55	<0 005	<0.005	<0.005	0.0135
	L-2	11/14/2000	2.0	<2.0	<0.005	<0 005	<0.005	<0.005
	L-3	11/14/2000	2.0	<2.0	<0.01	<0.01	<0.01	<0 01
	L-4	11/14/2000	3 0	<2 0	<0.01	<0.01	<0.01	<0.01
	L-5	11/14/2000	2.0	<1.0	<0.005	<0.005	<0.005	0.0102
	L-6	11/14/2000	2.0	5.8	<0.005	0.0106	0.0184	0.0207
	L-7	11/14/2000	3.0	<2.0	<0.01	<0.01	<0.01	0.0237
	L-8	11/14/2000	3.5	<1.0	<0.005	<0.005	<0 005	<0.005
	L-9	11/14/2000	2 0	13 2	<0.005	0.00757	0 118	0.123
	L-10	11/14/2000	2.5	1.15	<0.005	<0.005	<0 005	<0.005
	PL-11	11/14/2000	5.0	<1.0	<0.005	<0.005	<0.005	0.00667
	PL-12	12/22/2000	4.0	<1.0	<0.005	<0.005	<0.005	0 0056
	PL-13	12/22/2000	4.0	<1.0	<0.005	<0.005	<0.005	<0.005
	T1-N	11/14/2000	16.0	**4,470**	<2.0	105	73	404
	T1-C	11/14/2000	16.0	**961**	<1.0	<1.0	<1 0	<1.0
	T1-S	11/14/2000	16.0	<200	<1.0	<1.0	<1.0	<1.0
	T2-N	11/14/2000	16.0	14.8	0.0299	0.025	0.2	0.655
	T2-C	11/14/2000	16.0	33.1	0.0175	<0.01	<0.01	2.1
	T2-S	11/14/2000	16.0	<2 0	<0.01	<0.01	<0.01	0.0188
	T3-N	11/14/2000	16.0	<2 0	<0.01	<0.01	<0.01	0.0264
	T3-C	11/14/2000	16.0	<2.0	<0.01	<0.01	<0.01	0.0102
	T3-S	11/14/2000	16.0	<2.0	<0.01	<0.01	<0.01	<0.01

Notes:
Results in **BOLD** exceed California RWQCB ESLs for TPHg of 100 mg/kg during initial investigations
TPH-g total petroleum hydrocarbons as gasoline
bgs below ground surface
mg/kg milligrams per kilograms

Table 2
Proposed Confirmation Soil Samples and Rational

ARCO Service Station #6148
5131 Shattuck Boulevard
Oakland, California

Sample ID	Rational for Soil Boring Location
CSB-1-17.5	Approximate location of soil boring B1/MW-1 (TPH-g = 470 mg/kg at 17.5 feet bgs). Soil confirmation sample to evaluate effectiveness of site work.
CSB-2-14.0	Approximate location of soil boring B2/MW-2 (TPH-g = 740 mg/kg at 14 feet bgs). Soil confirmation sample to evaluate effectiveness of site work.
CSB-3-17.5	Approximate location of soil boring B3/MW-3 (TPH-g = 320 mg/kg at 17.5 feet bgs). Soil confirmation sample to evaluate effectiveness of site work.
CSB-4-16.5	Approximate location of soil boring B6/MW-5 (TPH-g = 190 mg/kg at 16.5 feet bgs). Soil confirmation sample to evaluate effectiveness of site work.
CSB-5-15.0	Approximate location of soil boring TB-4 (TPH-g = 470 mg/kg at 15 feet bgs). Soil confirmation sample to evaluate effectiveness of site work.
CSB-6-16.0	Approximate downgradient/cross-gradient location of soil borings TN-1 and T1-C (TPH-g = 4,470 mg/kg and 961mg/kg, respectively at 16 feet bgs). Soil confirmation sample to evaluate effectiveness of site work.
CSB-7-6.0	Approximate median location of soil borings TB-7 and VW-6 (TPH-g = 610 mg/kg at 16.5 feet bgs and 3,100 mg/kg at 6 feet bgs, respectively). Soil confirmation sample to evaluate effectiveness of site work and investigate vertical extent of soil contamination in VW-6.
CSB-7-11.5	
CSB-7-16.5	
CSB-7-21.5	
CSB-7-26.5	
CSB-7-31.5	
CSB-8-2.0	Approximate location of soil boring DP-5 (TPH-g = 2,390 mg/kg at 2 feet bgs). Soil confirmation sample to investigate vertical extent of soil contamination in DP-5.
CSB-7-6.0	
CSB-7-11.0	
CSB-7-16.0	
CSB-7-21.0	
CSB-7-26.0	
CSB-7-31.0	
CSB-9-2.0	Approximate location of soil boring DP-2 (TPH-g = 132 mg/kg at 2 feet bgs). Soil confirmation sample to evaluate effectiveness of site work.

Key:

XXX-X-17.5	= XXX-X is Sample Location
CSB-1-**XX.X**	= XX.X is Sample Depth in feet bgs
bgs	= below ground surface

Attachment A

Alameda County Health Care Services Agency Letter,

October 20, 2003

ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
DAVID J. KEARS, Agency Director

ENVIRONMENTAL HEALTH SERVICES
ENVIRONMENTAL PROTECTION
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577
(510) 567-6700
FAX (510) 337-9335

October 20, 2003

Paul Supple
Atlantic Richfield Co.
P.O. Box 6549
Moraga, CA 94570

Dear Mr. Supple:

Subject: Fuel Leak Case No. RO0000077, Arco #6148, 5131 Shattuck Ave., Oakland, CA

Alameda County Environmental Health (ACEH) staff has reviewed the Leaking Underground Storage Tank Oversight Program file including "3rd Quarter 2003 Groundwater Monitoring Report" dated August 30, 2003 prepared by URS Corp. The case appears to be close to closure. We request that you address the following technical comments and send us the technical reports requested below.

TECHNICAL COMMENTS

Verification Monitoring

a) Soil - Soil concentrations of concern were 2,390 mg/kg Total Petroleum Hydrocarbons as Gasoline (TPH-G) detected in DP-5 on February 1, 2001, 3,100 mg/kg TPH-G in VW-6 on August 3, 1995. DP-5 does not appear to have been over excavated. However, Soil-Vapor Extraction (SVE) and Air-Sparge (AS) systems were used at the site from September 1995 until January 2000 to remediate impacted groundwater and saturated soils beneath the site. Please submit a work plan to sample soil to evaluate the effectiveness of the site work and to investigate the vertical extent of soil contamination at DP-5 and VW-6.

b) Groundwater - Please continue groundwater monitoring for two more quarters. Then evaluate the effectiveness of the site work.

TECHNICAL REPORT REQUEST

Please submit technical reports to Alameda County Environmental Health (Attention: Don Hwang), according to the following schedule:

December 20, 2003 – Work Plan
60 days after Work Plan approval – Soil and Water Investigation Report

These reports are being requested pursuant to the Regional Water Quality Control Board's (Regional Board) authority under Section 13267 of the California Water Code. If you have any questions, please call me at (510) 567-6746.

Sincerely,

Don Hwang
Hazardous Materials Specialist
Local Oversight Program

C: Scott Robinson, URS Corp., 500 12th St., Suite 200, Oakland, CA 94607-4014
Donna Drogos
file