RO-494

URS

July 15, 2003

Alameda County

JUL 17 2003

Environmental Health

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

Re: Remedial Action Plan Addendum, ARCO Service Station #2111
1156 Davis Street, San Leandro, California

Dear Ms. chu:

At the request of Atlantic Richfield Company (ARCO - an affiliated company of the Group Environmental Management Company), URS Corporation (URS) is pleased to submit this *Remedial Action Plan (RAP) Addendum* to conduct a subsurface investigation (SI) at the above-referenced site (the Site, Figure 1). This RAP Addendum has been prepared in response to an Alameda County Health Care Services Agency (ACHCSA) email dated June 25, 2003 (Attachment A). ACHCSA requested that ARCO advance Hydropunch® borings at downgradient locations to further delineate the vertical and horizontal extent of the plume in groundwater.

1.0 BACKGROUND

The Site is an active ARCO service station located at the northwest corner of the intersection of Preda Street and Davis Street (Figure 2). The majority of the property is concrete and asphalt paved. Current Site structures include: two double-walled fiberglass gasoline underground storage tanks (USTs), two pump islands with dispensers, and a convenience store. The area surrounding the Site consists primarily of commercial and residential properties. The Site is bordered: to the southeast by Davis Street, to the northeast by Preda Street, to the southwest by First Christian Church and Community Center, and to the northwest by residential homes. Based on the information provided by the County of Alameda Public Works Agency (EMCON 1996), there are several irrigation, monitoring, and industrial wells located downgradient of the Site. The nearest domestic supply well (#2S/3W 27R-7) is located approximately 650 feet west-southwest of the Site. EMCON determined that wells located hydraulically downgradient of the Site are not impacted by the ARCO facility.

Site investigations, source removal, and interim remedial activities have been conducted at the Site since 1995 (References). Previous investigations have identified the source of petroleum hydrocarbons to be in the vicinity of the former USTs and fuel dispensers and are limited to the capillary fringe zone (EMCON 1996).

URS Corporation
500 12th Street, Suite 200
Oakland, CA 94607-4014
Tel: 510.893.3600
Fax: 510.874.3268

A groundwater monitoring program has been implemented at the Site since 1995. The current groundwater monitoring well network consists of five on-Site groundwater monitoring wells (MW-1 to MW-4 and MW-7), three on-Site vapor extraction wells (VW-1 to VW-3), and two off-Site groundwater monitoring wells (MW-5 and MW-6). The groundwater monitoring wells are typically screened from 12 to 26 and 10 to 25 feet below ground surface (bgs), and the vapor extraction wells are screened from 5 to 20 feet bgs. Well construction data is provided in Attachment B. The groundwater monitoring program consists of quarterly monitoring of free product and groundwater levels and sampling for total petroleum hydrocarbons as gasoline (TPH-g), benzene, toluene, ethyl benzene, total xylenes (BTEX), and methyl-tertiary butyl ether (MTBE). Historical hydrocarbon and MTBE groundwater quality data shows generally decreasing concentration trends from the historical high detections (Attachment C). Historically, levels of free product have been found in MW-1, MW-2, and MW-7. Since June 2000 monitoring well MW-2 is the only well which contains free product.

2.0 PROPOSED SUBSURFACE INVESTIGATION

The purpose of the proposed SI, as requested in the ACHCSA letter, is to collect depth discrete groundwater samples in locations to delineate the vertical and horizontal extent of the plume.

URS proposes advancing five borings (H-1 through H-5, Figure 2) and one continuous core (immediately adjacent to H-4) at the Site using Direct Push Technology (DPT). The continuous core will be advanced to approximately 40 feet bgs to determine off-Site lithology and groundwater conditions. Five soil borings will then be advanced as determined by a URS geologist to a maximum depth of 40 feet bgs. Three depth discrete groundwater samples will be collected from each boring using Hydropunch® technology and submitted for chemical analysis. One sample will be collected at first encountered groundwater. The second groundwater sample will be collected from the sand and gravel layer expected at approximately 25 feet bgs. The third sample will be collected in the clay layer below the sand and gravel layer.

The hydropunch locations were selected based on ACHCSA's request, existing groundwater flow data, site layout limitations, and known historical product/vapor line piping and dispenser locations. The proposed sampling locations are shown on Figure 2.

2.1 Preliminary Field Activities

Before initiating field activities, URS will obtain necessary permits and access agreements, prepare a 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 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. A pre-drilling/subsurface checklist for intrusive fieldwork (Attachment D) will be completed before any drilling is performed.

2.2 Groundwater Sampling

Five Hydropunch® borings will be advanced to approximately 40 feet bgs under the supervision of a URS field geologist using a hand auger and a Geoprobe® rig. The proposed locations are illustrated on Figure 2. Borings will be backfilled with neat cement grout. A tremmie pipe will be used to fill the hole from the bottom up.

The collected samples will be transported under chain-of-custody protocol to Sequoia Analytical (Sequoia), a California State-certified analytical laboratory. Samples will be analyzed for the following:

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

3.0 GROUNDWATER WELL INSTALLATION

The results of the Hydropunch® samples will be submitted to the ACHCSA with proposed location(s) for new downgradient monitoring well(s). Upon approval from ACHCSA, URS will begin well installation activities.

URS will obtain necessary permits, prepare a Site Health and Safety Plan (HASP) for the proposed work, conduct a subsurface utility clearance, and complete the URS borehole checklist (Appendix D). The utility clearance will include notifying Underground Service Alert (USA) of the pending work a minimum of 48 hours prior to 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.

After it has been installed, the well will be surveyed as part of a Site wide re-surveying project, which will included finding the top of casing elevation with respect to mean sea level, and for lateral position using latitude and longitude.

3.1 Well Construction

The soil boring(s) will be advanced by hand auger and a drill rig equipped with hollow-stem augers, under the supervision of a URS field geologist, to a depth of approximately 25 ft bgs. The boring(s) will be converted to a 4-inch monitoring well and screened from approximately

10 to 25 ft bgs. The exact depth and length of screen of the new well(s) will be determined based on lithology of the boring and by a registered geologist. The well(s) will be installed using Schedule 40 PVC 0.010-inch slotted well screen and #2/12 sand filter pack one to two feet above the top of the well screen. The filter pack will be overlain by one to two feet of bentonite and neat cement grout to the surface. A traffic rated well box will be installed to grade.

3.2 Well Development

Within 48 hours after well installation, the new monitoring well will be developed. The process will consist of surging and bailing the well to remove fine-grained sediments from the well and sand pack. A minimum of three and a maximum of ten casing volumes of groundwater will be removed until water quality parameters have stabilized. Periodic measurements of pH, conductivity, temperature, and turbidity will be recorded during development to establish baseline values for groundwater. The groundwater well will be added to the quarterly monitoring scheme.

3.3 Well Sampling

The well will be sampled no sooner then 48 hours after well development. The sampling procedure for the well consists first of measuring the water level and depth to bottom, and checking for the presence of free phase petroleum product (free product) using either an electronic oil-water interface probe or a clear Teflon™ bailer. If the well does not contain free product, it will be purged approximately three casing volumes of water (or until dewatered) using a centrifugal pump, gas displacement pump, or bailer. During purging, temperature, pH, and electrical conductivity will be monitored to document that these parameters are stable prior to collecting samples. After purging, water levels will be allowed to partially (at least 80%) recover. Groundwater samples (both purge and no purge) will be collected using a Teflon bailer, placed into appropriate Environmental Protection Agency (EPA) approved containers, labeled, logged onto chain-of-custody records, and transported on ice to Sequoia. Sample labels will include sample name, sampling time and date, analytical methods and sampler's initials. If the well contains free product, it will not sampled and free product will be removed according to California Code of Regulation, Title 23, Div. 3, Chap. 16, Section 2655, UST Regulations.

Equipment typically used for groundwater sampling includes:

- Electric water level sounder
- Disposable Teflon™ bailers
- pH meter, specific conductance meter, thermometer, turbidity meter
- VOA's preserved with HCl, sample labels and chain-of-custody records

- Cooler with ice to transport samples
- Drum to hold wastewater

Groundwater samples will be analyzed for the following:

- TPH-g using EPA Method 8015M
- BTEX, MTBE, DIPE, TAME, ETBE, and TBA using EPA Method 8260B

4.0 DECONTAMINATION PROCEDURES AND WASTE DISPOSAL

Well materials and drilling, development, and sampling equipment will be decontaminated. Decontamination of all sampling equipment will be performed to prevent cross-contamination of samples. Decontamination will be performed before, between, and after each use of the sampling equipment unless disposable or dedicated sampling equipment is used.

The first phase of decontamination will consist of a thorough cleaning of the drill rig, downhole drilling and sampling equipment, and other associated equipment prior to arrival at the Site. The second phase of decontamination will consist of cleaning well construction materials, and development and sampling equipment during the field activities. The third phase of decontamination will consist of cleaning equipment prior to leaving the Site. Decontamination fluids will be contained for subsequent treatment and/or 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 and groundwater at a California regulated facility.

5.0 PROPOSED SCHEDULE

URS will proceed with the proposed work within 60 days upon receiving written approval of this RAP Addendum from the ACHCSA. URS will obtain all necessary permits to complete the proposed work. URS anticipates submitting the SI and Well Installation report to the ACHCSA within 60 days of receipt of all laboratory analytical results from drilling and well installation activities. URS has begun designing the dual phase extraction system for the Site.

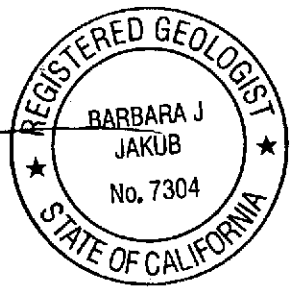
We appreciate the opportunity to submit this RAP Addendum to ACHCSA and trust that this document meets with your approval. Please notify us of your approval as soon as practicable. If you have any questions or concerns, feel free to contact Scott Robinson at (510) 874-3280.

Sincerely,

URS CORPORATION

Scott Robinson
Project Manager

Barbara J. Jakub, R.G.
Senior Geologist



Attachments:

	Figure 1	Site Location Map
	Figure 2	Site Plan
	Attachment A	Alameda County Health Care Services Agency Letter
	Attachment B	Geologic Cross Sections and Boring Logs
	Attachment C	Current and Historical Data Tables
	Attachment D	Pre-Drilling / Subsurface Checklist for Intrusive Fieldwork

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

References:

Alameda County Health Care Services Agency. 2000. Letter to Mr. Paul Supple of ARCO Product Company, Re: ARCO Service Station No. 2111, 1156 Davis Street, San Leandro, California. October 12.

Alameda County Health Care Services Agency. 2002. Letter to Mr. Paul Supple of ARCO Product Company, Re: ARCO Service Station No. 2111, 1156 Davis Street, San Leandro, California. June 26.

Alameda County Health Care Services Agency. 2003. Letter to Mr. Paul Supple of ARCO Product Company, Re: Mitigation Control at ARCO Station 2111 at 1156 Davis St, San Leandro, CA. April 25.

Delta Environmental Consultants, Inc. 2001a. *Well Destruction Report,* ARCO Service Station No. 2111, 1156 Davis Street, San Leandro, California. March 17.

Delta Environmental Consultants, Inc. 2001b. *Tank Basin, Product Line and Dispenser Island Sampling Results,* ARCO Service Station No. 2111, 1156 Davis Street, San Leandro, California. February 2.

Delta Environmental Consultants, Inc. 2001c. *Sump Sampling Results,* ARCO Service Station No. 2111, 1156 Davis Street, San Leandro, California. August 21.

Delta Environmental Consultants, Inc. 2002. *Results of Dual Phase Extraction Pilot Test* ARCO Service Station No. 2111, 1156 Davis Street, San Leandro, California. July 16.

EMCON. 1996. *Soil and Groundwater Assessment Report*, ARCO Service Station 2111, San Leandro, California. September 19.

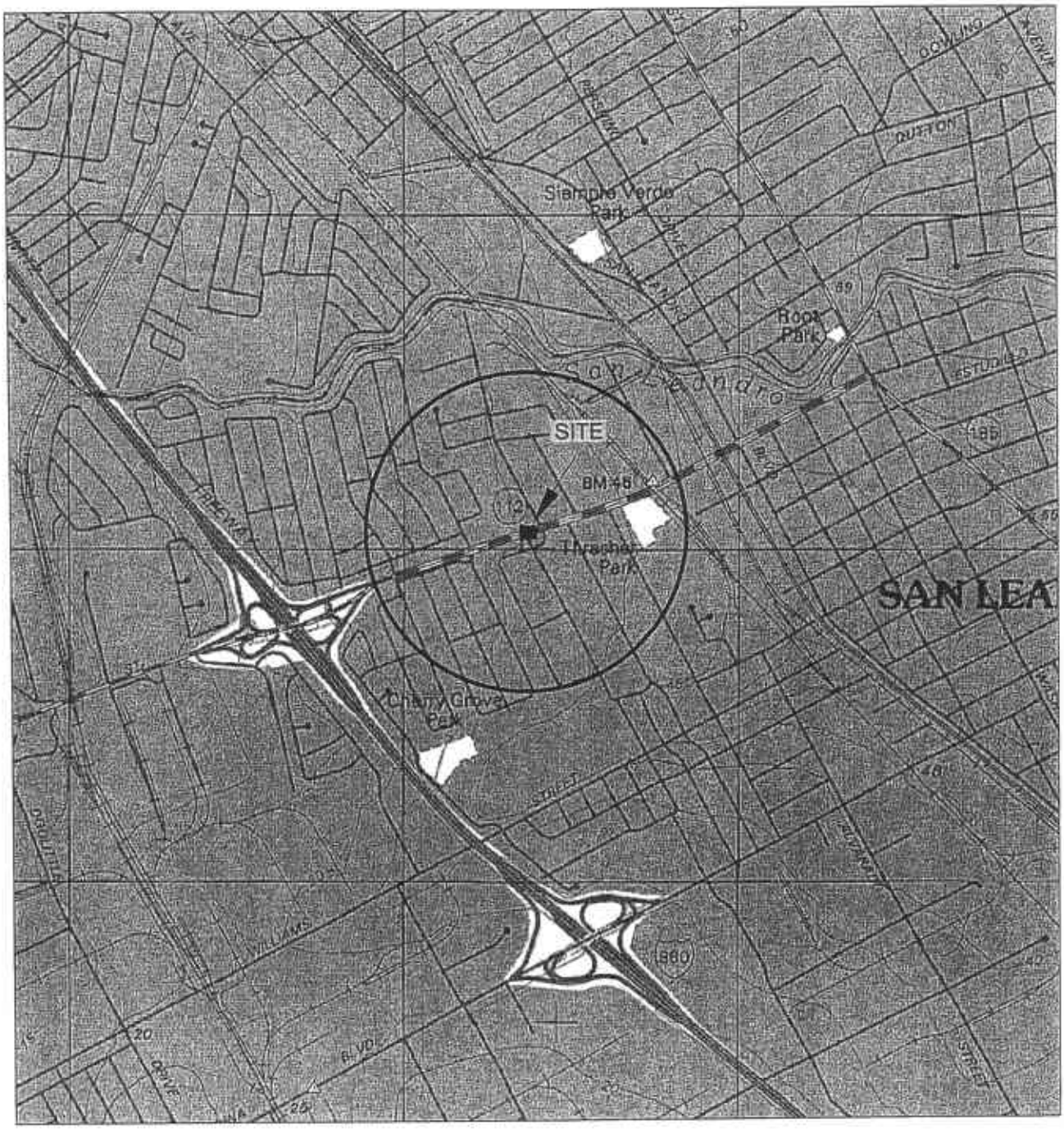
EMCON. 1997. *Resubmittal of Tier 1, Tier 2 Risk-based Corrective Action Evaluation,* ARCO Service Station 2111, 1156 Davis Street, San Leandro, California. May 23

IT Group. 2000. *High Vacuum Extraction Pilot Test Report*, ARCO Service Station No. 2111, 1156 Davis Street, San Leandro, California. May 3.

SFBRWQCB. 1995. Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan). San Francisco Bay Regional Water Quality Control Board. Region 2. June 21.

URS Corporation. 2002. Corrective Action Plan, ARCO Service Station No. 2111, 1156 Davis Street, San Leandro, California for Atlantic Richfield Company. October 7.

URS Corporation. 2003. Remedial Action Plan, ARCO Service Station No. 2111, 1156 Davis Street, San Leandro, California for Atlantic Richfield Company. June 19.



REFERENCE:
BASE MAP FROM TOPO MAP
NORTH REGION 7

7.5 MINUTE TOPOGRAPHIC
PHOTOREVISED 1998

QUADRANGLE LOCATION

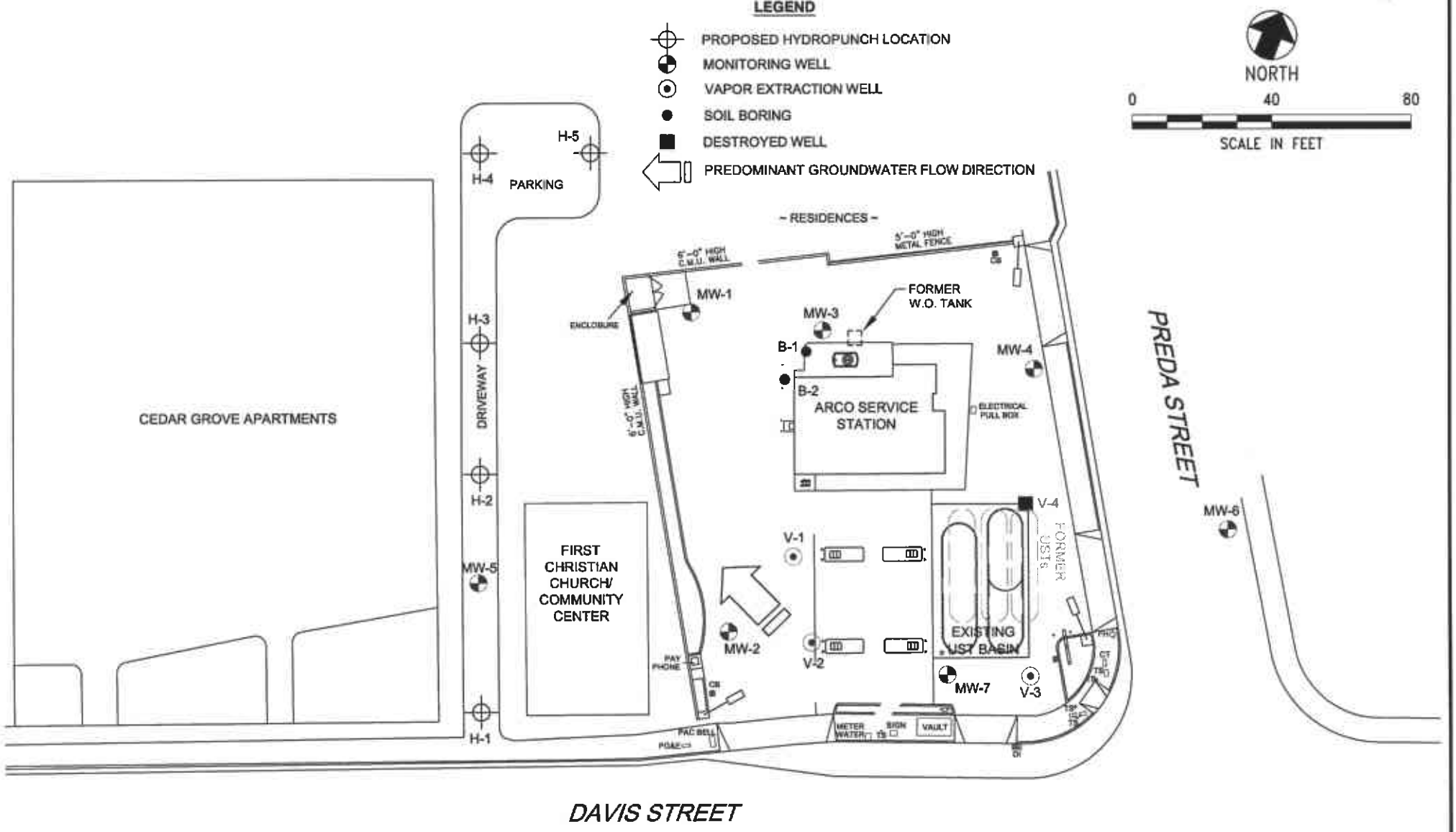
0 1000 FT

APPROXIMATE SCALE

URS	Project No. 38486093 Arco Service Station #2153 1156 Davis Street San Leandro, California	SITE LOCATION MAP	FIGURE 1

C:\x_env\wasto\BP GEM\Sites\Scott Robinson\Paul Supple\2111RAPSLM.dwg

X:\x_env_waste\BP GEM\Sites\Scott Robinson\Paul Supple\2111\RAP\Drawings\NEW-2_SP.dwg, 07/14/2003 03:07:27 PM, JKMT, URS



NOTE: SITE MAP ADAPTED FROM DELTA ENVIRONMENTAL FIGURES.
SITE DIMESIONS AND FACILITY LOCATIONS NOT VERIFIED.

URS	Project No. 38486093 Arco Service Station #2111 1156 Davis Street San Leandro, California	SITE PLAN	FIGURE 2

Attachment A

Alameda County Health Care Services Agency Email

Dated June 25, 2003

"Chu, Eva, Env. Health" <EChu@co.alameda.ca.us>

To: "Paul Supple (E-mail) (E-mail)" <supplpv@bp.com>, "Scott_Robinson (E-mail)" <Scott_Robinson@urscorp.com>
cc:
Subject: RAP for ARCO #2111 at 1156 Davis St. San Leandro

06/25/2003 10:06 AM

Hi Paul and Scott.

I reviewed URS' June 19, 2003 RAP prepared for the above referenced site. The proposal to design and implement DPE at the site is acceptable.

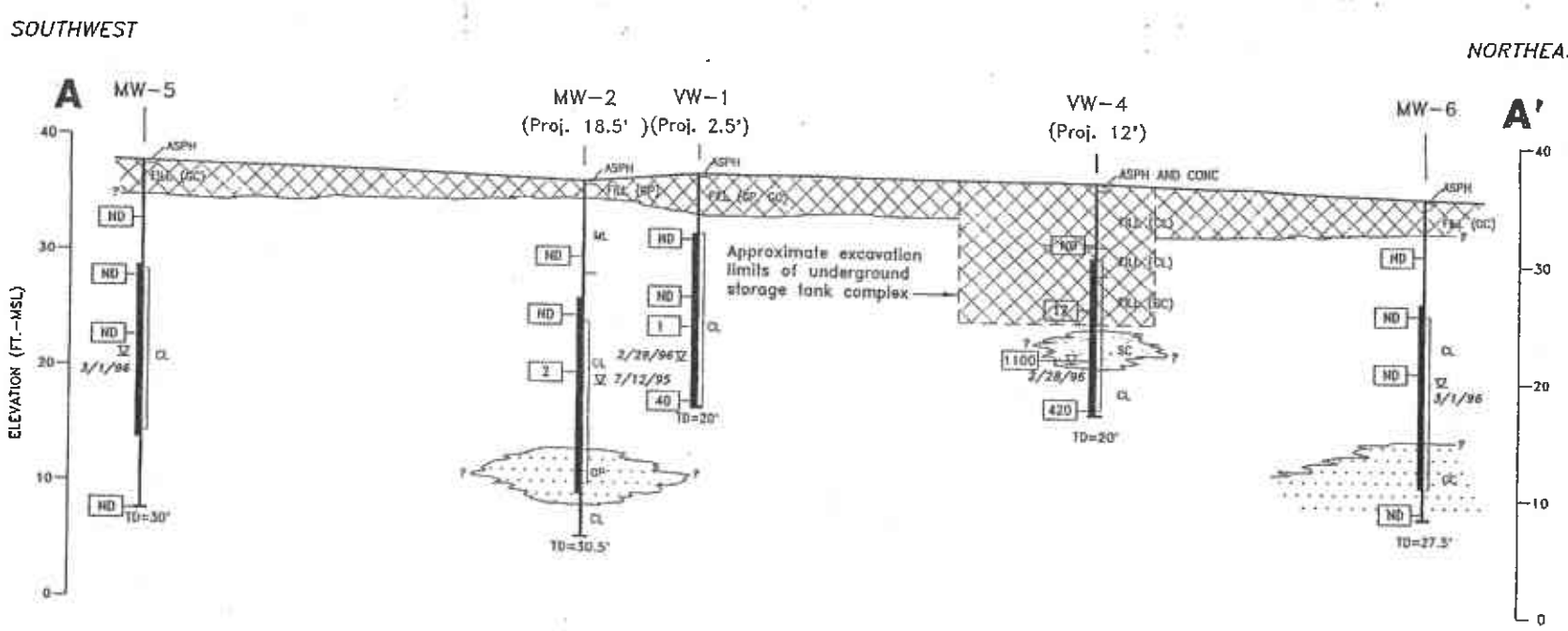
One additional groundwater monitoring well is proposed. I'm not convinced this is the best location for a well. GW has flowed from SW to NW. I want to suggest that you have a number of hydropunches advanced and groundwater collected at various depths and at changes in lithology. Data from the HPs will delineate the vertical and horizontal extent of the plume. Then permanent groundwater monitoring well(s) can be sited and an appropriate screen length determined for the well(s).

The design of the DPE and implementation of the RAP can commence now, does not need to wait until after the offsite wells are completed. Please amend the RAP to address my concerns for plume delineation.

eva chu
Alameda County Environmental Health
Hazardous Materials Specialist
1131 Harbor Bay Parkway
(510) 567-6762
(510) 337-9335 (fax)

Appendix B

Geologic Cross Sections and Boring Logs



EXPLANATION

- FILL
- SILTS AND CLAYS (ML, CL)
- SANDS, SILTY AND CLAYEY SANDS (SP, SM, SC)
- GRAVELS, SILTY AND CLAYEY GRAVELS (GP, GM, GC)
- ? — Geologic contact; dashed where approximate, queried where uncertain

VW-4 — Well/boring designation
Borehole
<1.0 — TPH as gasoline (ppm)
Sand pack interval
▽ — First encountered groundwater (showing date measured)
Screened interval
TD=23.5' — Total depth of boring

NOTES:

1. See Figure 2 for location of cross section.
2. See Appendix F for soil symbol explanation.

EMCON

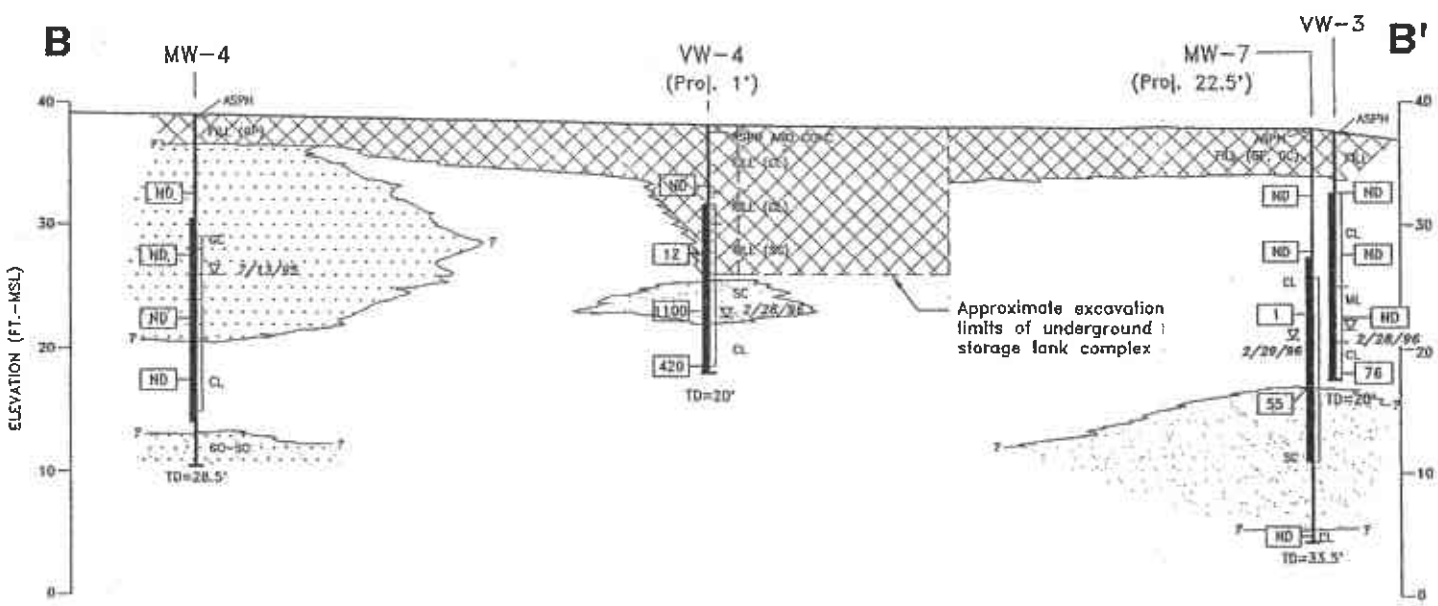
SCALE: 0 20 40 FEET
(Horizontal)

ARCO PRODUCTS COMPANY
SERVICE STATION 2111, 1156 DAVIS STREET
SOIL AND GROUNDWATER ASSESSMENT
SAN LEANDRO, CALIFORNIA

GEOLOGIC CROSS SECTION A-A'

FIGURE NO. 3

PROJECT NO. 805-127.001



EXPLANATION

- FILL
- SILTS AND CLAYS (ML, CL)
- SANDS, SILTY AND CLAYEY SANDS (SP, SM, SC)
- GRAVELS, SILTY AND CLAYEY GRAVELS (GP, GM, GC)
- ? Geologic contact; dashed where approximate, queried where uncertain

- VW-4 Well/boring designation
- Borehole
- <1.0 TPH as gasoline (ppm)
- Sand pack interval
- ▽ First encountered groundwater (showing date measured)
- Screened interval
- TD=23.5' Total depth of boring

NOTES:

1. See Figure 2 for location of cross section.
2. See Appendix F for soil symbol explanation.

EMCON

SCALE: 0 10 20 FEET
(Horizontal)

ARCO PRODUCTS COMPANY
SERVICE STATION 2111, 1156 DAVIS STREET
SOIL AND GROUNDWATER ASSESSMENT
OAKLAND, CALIFORNIA

GEOLOGIC CROSS SECTION B-B'

FIGURE NO. 4

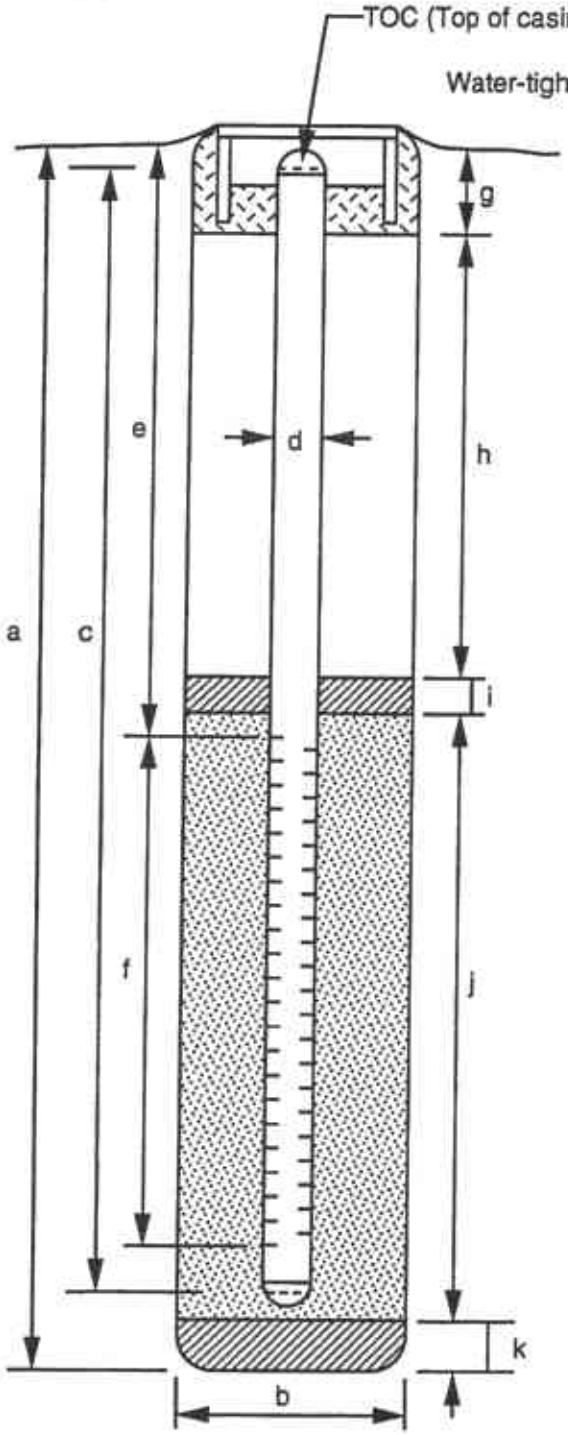
PROJECT NO. 805-127.001

WELL DETAILS

EMCON ASSOCIATES

PROJECT NUMBER 0805-127.01
PROJECT NAME ARCO 2111
LOCATION 1156 Davis Street, San Leandro
WELL PERMIT NO. na

BORING / WELL NO. MW-1
TOP OF CASING ELEV. 39.60
GROUND SURFACE ELEV. 38.84
DATUM M.S.L.
INSTALLATION DATE 7/12/95



EXPLORATORY BORING

a. Total depth 30.0 ft.
b. Diameter 10.0 in.
Drilling method Hollow Stem Auger

WELL CONSTRUCTION

c. Total casing length na ft.
Material Schedule 40 PVC
d. Diameter 4.0 in.
e. Depth to top perforations 12.5 ft.
f. Perforated length 13.7 ft.
Perforated interval from 12.5 to 26.2 ft.
Perforation type Machine Slotted
Perforation size 0.020 inch
g. Surface seal 1.0 ft.
Material Concrete
h. Backfill 9.5 ft.
Material Cement
i. Seal 1.5 ft.
Material Bentonite
j. Gravel pack 16.5 ft.
Gravel pack interval from 10.5 to 27.0 ft.
Material 2/12 Sand
k. Bottom seal/fill 3.0 ft.
Material Bentonite

Form prepared by R. Davis

LOG OF EXPLORATORY BORING

PROJECT NUMBER: **0805-127.001**

BORING NO.: **MW-1**

PROJECT NAME: **ARCO Service Station 2111**

PAGE: **1 of 2**

BY: **R. Davis**

DATE: **7/12/95**

SURFACE ELEVATION: **39.84 ft.**

RECOVERY (ft/ft)		PENETRATION (blws/ft)	GROUND WATER LEVELS	DEPTH IN FEET	SAMPLES	LITHOGRAPHIC COLUMN	DESCRIPTION	WELL DETAIL
				0			ASPHALT	
							FILL - SANDY GRAVEL (GP).	
							@3.2': cobbles to 5".	
80%	0	22		5			CLAYEY GRAVEL (GC), dark brown (7.5YR, 4/4); 20-25% medium plasticity fines; 30% fine to coarse sand; 45-50% fine to coarse gravel to 1.5"; medium dense; damp; no product odor. SILTY CLAY (CL), dark brown (10YR, 3/3); 95-100% low to medium plasticity fines; trace to 5% fine sand; stiff to very stiff;damp; no product odor.	
100%	0	27		10			@10.0-11.5': dark grayish brown (2.5Y, 4/2); increased silt content; trace dark brown organic fragments (0.5-2.0mm); very stiff; damp; no product odor.	
							@15.0-16.5': SILTY CLAY (CL) and CLAYEY SILT (ML)- Interbedded, 70/30:	
90%	0	29	▽	15			SILTY CLAY (CL), dark brown (10YR, 3/3); 95-100% low to medium plasticity fines; trace to 5% fine sand; stiff to very stiff;damp; no product odor. CLAYEY SILT (ML), light olive brown (2.5Y, 5/4); 95-100% low plasticity fines; trace to 5% fine sand; very stiff to hard; damp; no product odor.	
							@17.5': driller noted easier drilling in looser material.	
				20				

EMCON ASSOCIATES

REMARKS

Boring drilled with 8" diameter hollow-stem augers and reamed with 10" diameter augers. Samples were taken using a 2" diameter modified-California split spoon sampler. Boring converted into a 4" diameter polyvinyl chloride (PVC) groundwater monitoring well. See explanation sheet for definition of symbols used in well detail and sample columns of this log. See explanation sheet for definition of symbols on this log.

LOG OF EXPLORATORY BORING

PROJECT NUMBER: **0805-127.001**

BORING NO.: **MW-1**

PROJECT NAME: **ARCO Service Station 2111**

PAGE: **2** of **2**

BY: **R. Davis**

DATE: **7/12/95**

SURFACE ELEVATION: **38.84 ft.**

RECOVERY (ft/ft)		PENETRATION (blws/ft)	GROUND WATER LEVELS	DEPTH IN FEET	SAMPLES	LITHOGRAPHIC COLUMN	DESCRIPTION	WELL DETAIL
100%	0	24					CLAYEY SANDY SILT (ML), light olive brown (2.5Y, 5/4) with yellowish brown (10YR, 5/6) mottling; 85-90% low to medium plasticity fines; 10-15% fine to coarse sand; firm; wet; no product odor. @22': driller noted harder drilling in more competant material.	
60%	0	15		25			@25.0-26.5': 5-10% fine sand; very stiff; damp to wet (moisture visible in voids); no odor.	
40%	0	8		30			SILTY CLAY (CL), dark greyish brown (2.5Y, 4/2); 90-95% low- to medium-plasticity fines; 5-10% fine sand; soft to firm; very moist, wet in void spaces; no product odor. BORING TERMINATED AT 30.0 FEET BGS.	
				35				
				40				

EMCON ASSOCIATES

REMARKS

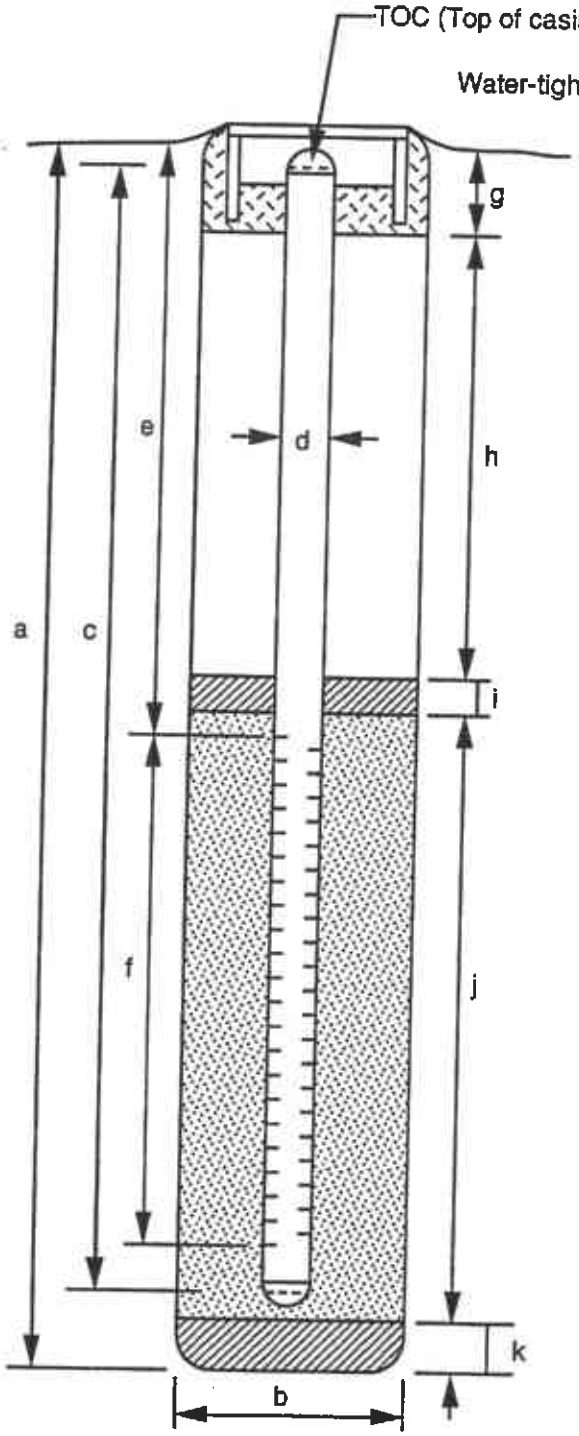
Boring drilled with 8" diameter hollow-stem augers and reamed with 10" diameter augers. Samples were taken using a 2" diameter modified-California split spoon sampler. Boring converted into a 4" diameter polyvinyl chloride (PVC) groundwater monitoring well. See explanation sheet for definition of symbols used in well detail and sample columns of this log. See explanation sheet for definition of symbols on this log.

WELL DETAILS

EMCON ASSOCIATES

PROJECT NUMBER 0805-127.01
PROJECT NAME ARCO 2111
LOCATION 1156 Davis Street, San Leandro
WELL PERMIT NO. na

BORING / WELL NO. MW-2
TOP OF CASING ELEV. 37.99
GROUND SURFACE ELEV. 38.71
DATUM M.S.L.
INSTALLATION DATE 7/12/95



EXPLORATORY BORING

a. Total depth 30.5 ft.
b. Diameter 10.0 in.
Drilling method Hollow Stem Auger

WELL CONSTRUCTION

c. Total casing length na ft.
Material Schedule 40 PVC
d. Diameter 4.0 in.
e. Depth to top perforations 12.0 ft.
f. Perforated length 14.2 ft.
Perforated interval from 12.0 to 26.2 ft.
Perforation type Machine Slotted
Perforation size 0.020 inch
g. Surface seal 1.0 ft.
Material Concrete
h. Backfill 7.5 ft.
Material Cement
i. Seal 1.5 ft.
Material Bentonite
j. Gravel pack 17.0 ft.
Gravel pack interval from 10.0 to 27.0 ft.
Material 2/12 Sand
k. Bottom seal/fill 3.5 ft.
Material Bentonite & Native Slough

Form prepared by R. Davis

LOG OF EXPLORATORY BORING

PROJECT NUMBER: **805-127.01**

BORING NO.: **MW-2**

PROJECT NAME: **ARCO Service Station 2111**

PAGE: **1 of 2**

BY: **R. Davis**

DATE: **7/12/85**

SURFACE ELEVATION: **38.71 ft.**

RECOVERY (ft/ft)		PENETRATION (blws/ft)	GROUND WATER LEVELS	DEPTH IN FEET	SAMPLES	LITHOGRAPHIC COLUMN	DESCRIPTION	WELL DETAIL
							ASPHALT	
							FILL - SANDY GRAVEL (GP).	
100%	0	18		5			CLAYEY SILT (ML), very dark grayish brown (2.5Y, 3/2); 85-90% low- to medium-plasticity fines; 10-15% fine to coarse sand; stiff to very stiff; damp; no odor.; @5.5': trace fine gravel.	
100%	0	20		10			SILTY CLAY (CL), dark brown (2.5Y, 4/2); low- to medium- plasticity fines; trace coarse sand and fine gravel; stiff to very stiff; damp; no product odor.	
100%	0	20		15			@15.0-17.5': very dark grayish brown (2.5Y, 3/2) with yellowish brown mottling; 90-100% low- to medium-plasticity fines; trace to 10% fine to coarse sand; very stiff; damp to moist; no product odor.	
100%	6.2	26	▽					
100%	9.3	23					@18.0-19.5': as above with grayish mottling; low-to medium- plasticity fines, higher silt content than above; very stiff; moist to wet; product odor.	
				20				

REMARKS

Boring drilled with 8" diameter hollow-stem augers and reamed with 10" diameter augers. Samples were taken using a 2" diameter modified-California split spoon sampler. Boring converted into a 4" diameter polyvinyl chloride (PVC) groundwater monitoring well. See explanation sheet for definition of symbols used in well detail and sample columns of this log. See explanation sheet for definition of symbols on this log.

EMCON ASSOCIATES

LOG OF EXPLORATORY BORING

PROJECT NUMBER: **805-127.01**

BORING NO.: **MW-2**

PROJECT NAME: **ARCO Service Station 2111**

PAGE: **2 of 2**

BY: **R. Davis**

DATE: **7/12/95**

SURFACE ELEVATION: **38.71 ft.**

RECOVERY (ft/ft)		PENETRATION (blws/ft)	GROUND WATER LEVELS	DEPTH IN FEET	SAMPLES	LITHOGRAPHIC COLUMN	DESCRIPTION	WELL DETAIL
100%	183	22					SILTY CLAY (CL), continued.	
90%	44	35					SANDY CLAY (CL), light olive brown (2.5Y, 5/4); 70% medium- plasticity fines; 30% fine to coarse sand; very stiff to hard; moist; no odor.	
	78							
25%		14					GRAVEL (GP), dark grayish brown (2.5Y, 4/2); 5-10% low- plasticity fines; 35% fine to coarse sand; 55-60% fine gravel; medium dense; wet; product odor.	
30%		23		25			@25.0-27.2': 10% fines; 40% fine to coarse sand, f:m:c= 2:1:1; 50% fine to coarse gravel to 1.25"; wet; product odor.	
20%		13						
							@27.5-30.5': poor recovery of native material because of heaving sands inside augers.	
5%		16					CLAY to SANDY CLAY (CL), light olive brown (2.5Y, 5/4); 75-90% low- to medium-plasticity fines; 10-25% fine to coarse sand; trace fine gravel, rounded; stiff; wet; no product odor.	
10%		19		30			BORING TERMINATED AT 30.5 FEET BGS.	
				35				
				40				

EMCON ASSOCIATES

REMARKS

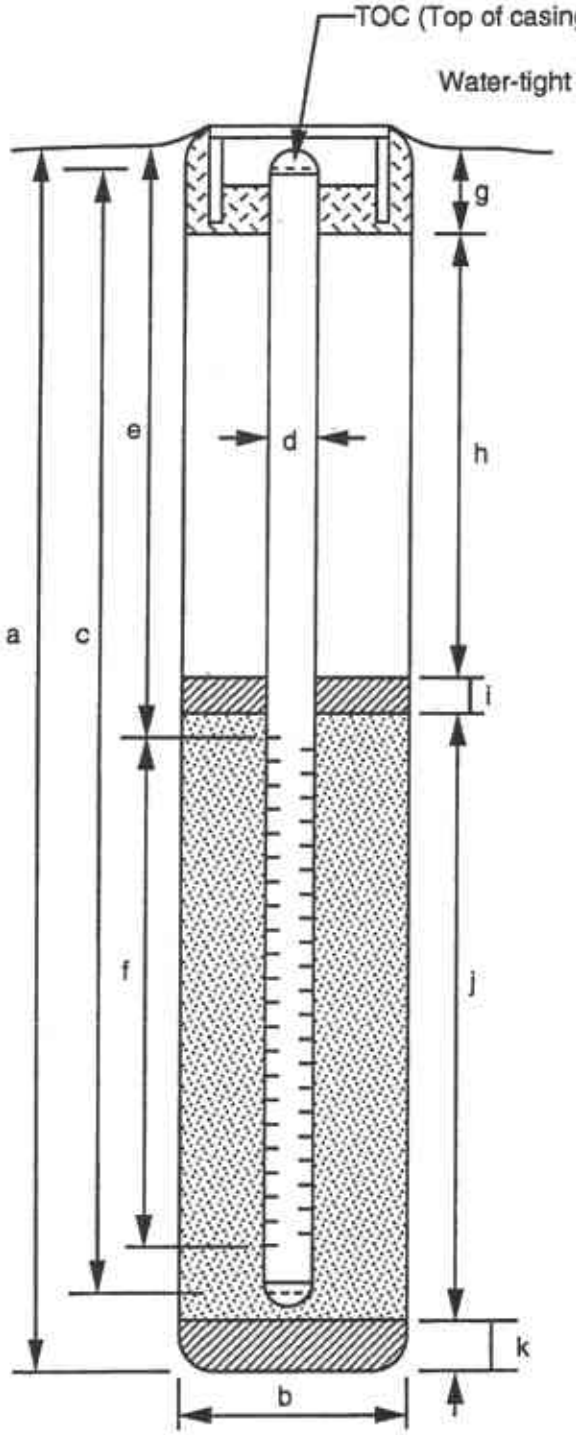
Boring drilled with 8" diameter hollow-stem augers and reamed with 10" diameter augers. Samples were taken using a 2" diameter modified-California split spoon sampler. Boring converted into a 4" diameter polyvinyl chloride (PVC) groundwater monitoring well. See explanation sheet for definition of symbols used in well detail and sample columns of this log. See explanation sheet for definition of symbols on this log.

WELL DETAILS

EMCON ASSOCIATES

PROJECT NUMBER 0805-127.01
PROJECT NAME ARCO 2111
LOCATION 1156 Davis Street, San Leandro
WELL PERMIT NO. na

BORING / WELL NO. MW-3
TOP OF CASING ELEV. 39.32
GROUND SURFACE ELEV. 40.01
DATUM M.S.L.
INSTALLATION DATE 7/13/95



EXPLORATORY BORING

a. Total depth 40.0 ft.
b. Diameter 10.0 in.
Drilling method Hollow Stem Auger

WELL CONSTRUCTION

c. Total casing length na ft.
Material Schedule 40 PVC
d. Diameter 4.0 in.
e. Depth to top perforations 11.9 ft.
f. Perforated length 14.3 ft.
Perforated interval from 11.9 to 26.2 ft.
Perforation type Machine Slotted
Perforation size 0.020 inch
g. Surface seal 1.0 ft.
Material Concrete
h. Backfill 8.5 ft.
Material Cement
i. Seal 1.5 ft.
Material Bentonite
j. Gravel pack 16.0 ft.
Gravel pack interval from 11.0 to 27.0 ft.
Material 2/12 Sand
k. Bottom seal/fill 13.0 ft.
Material Bentonite

Form prepared by R. Davis

LOG OF EXPLORATORY BORING

PROJECT NUMBER: **805-127.01**

BORING NO.: **MW-3**

PROJECT NAME: **ARCO Service Station 2111**

PAGE: **1 of 3**

BY: **R. Davis**

DATE: **7/12/95**

SURFACE ELEVATION: **40.01 ft.**

RECOVERY (ft/ft)		PENETRATION (blws/ft)	GROUND WATER LEVELS	DEPTH IN FEET	SAMPLES	LITHOGRAPHIC COLUMN	DESCRIPTION	WELL DETAIL
				0			ASPHALT	
							FILL - SANDY GRAVEL (GP).	
60%	0	27		5			SILTY CLAY (CL), very dark grayish brown (10YR, 3/2); 95-100% low- to medium-plasticity fines; trace to 5% fine sand; very stiff; damp; no odor.	
70%	6.0	21					@7.0': 10% fine to coarse sand; trace fine gravel.	
60%	0	32						
60%	0.9	26		10			@10.0-14.5': 95% medium-plasticity fines; 5% fine to medium sand; very stiff to hard; damp; no odor.	
100%	0	25						
100%	0	41						
60%	0	28					@14.5-15.5': mottled olive brown (2.5Y, 5/4) and dark olive gray (5Y, 3/2); moist; no odor.	
				15			CLAYEY SAND (SC) AND SANDY CLAY (CL) -Interbedded, 60/40:	
100%	0	25					CLAYEY SAND (SC), olive gray (5Y, 5/2); 40% low- to medium- plasticity fines; 60% fine to medium sand, f:m=3:1; medium dense; moist to wet; no odor.	
80%		33	▽				SANDY CLAY (CL), olive gray (5Y, 5/2); 60-70% low- to medium- plasticity fines; 30-40% fine to medium sand; moist; reddish brown veins; no odor.	
100%	0	18					@16.7-20.0': 80-85% low- to medium-plasticity fines; 15-20% fine to coarse sand; stiff; moist; no odor.	
				20				

EMCON ASSOCIATES

REMARKS

Boring drilled with 8" diameter hollow-stem augers and reamed with 10" diameter augers. Samples were taken using a 2" diameter modified-California split spoon sampler. Boring converted into a 4" diameter polyvinyl chloride (PVC) groundwater monitoring well. See explanation sheet for definition of symbols used in well detail and sample columns of this log. See explanation sheet for definition of symbols on this log.

LOG OF EXPLORATORY BORING

PROJECT NUMBER: **805-127.01**

BORING NO.: **MW-3**

PROJECT NAME: **ARCO Service Station 2111**

PAGE: **2** of **3**

BY: **R. Davis**

DATE: **7/12/95**

SURFACE ELEVATION: **40.01 ft.**

RECOVERY (ft/ft)		PENETRATION (blws/ft)	GROUND WATER LEVELS	DEPTH IN FEET	SAMPLES	LITHOGRAPHIC COLUMN	DESCRIPTION	WELL DETAIL
100%		25						
	0						SANDY CLAY (CL), continued.	
90%		39						
	0						@20.0-23.0': very stiff; moist to wet (moisture visible in voids).	
60%		17						
	0							
50%		37		25				
	0							
90%		33						
90%		27						
							SANDY SILT (ML), yellowish brown (10YR, 5/4) with light brownish gray (2.5Y, 6/2) mottling; 40% low- to medium-plasticity fines; medium dense; wet; no odor.	
100%		16						
	0							
60%		20		30				
60%		26						
	0						SILTY CLAY (CL), yellowish brown (10YR, 5/4); 75-80% low- to medium-plasticity fines; 20-25% fine to medium sand, f:m=5:1; stiff; wet (moisture visible in voids and fractures); no odor.	
100%		30						
	0						CLAYEY SAND (SC), yellowish brown (10YR, 5/4) with light brownish gray (2.5Y, 6/2) mottling; 40% low- to medium- plasticity fines; medium dense; wet; no odor.	
100%		24		35				
	0						SILTY CLAY (CL), yellowish brown (10YR, 5/4); 75-80% low- to medium-plasticity fines; 20-25% fine to medium sand, f:m=5:1; stiff; wet (moisture visible in voids and fractures); no odor.	
100%		37						
100%		76					@34.5-40.0': trace coarse sand and fine gravel.	
	0							
100%		61		40				

REMARKS

Boring drilled with 8" diameter hollow-stem augers and reamed with 10" diameter augers. Samples were taken using a 2" diameter modified-California split spoon sampler. Boring converted into a 4" diameter polyvinyl chloride (PVC) groundwater monitoring well. See explanation sheet for definition of symbols used in well detail and sample columns of this log. See explanation sheet for definition of symbols on this log.

EMCON ASSOCIATES

LOG OF EXPLORATORY BORING

PROJECT NUMBER: **805-127.01**

BORING NO.: **MW-3**

PROJECT NAME: **ARCO Service Station 2111**

PAGE: **3 of 3**

BY: **R. Davis**

DATE: **7/12/95**

SURFACE ELEVATION: **40.01 ft.**

RECOVERY (ft/ft)		PENETRATION (blws/ft)	GROUND WATER LEVELS	DEPTH IN FEET	SAMPLES	LITHOGRAPHIC COLUMN	DESCRIPTION	WELL DETAIL
							SILTY GRAVEL (GM), light olive brown (2.5Y, 5/4); 10-20% low- plasticity fines; 30% fine to coarse sand; 50-60% fine to coarse gravel; dense; wet; no odor. BORING TERMINATED AT 40.5 FEET.	

45

50

55

60

EMCON ASSOCIATES

REMARKS

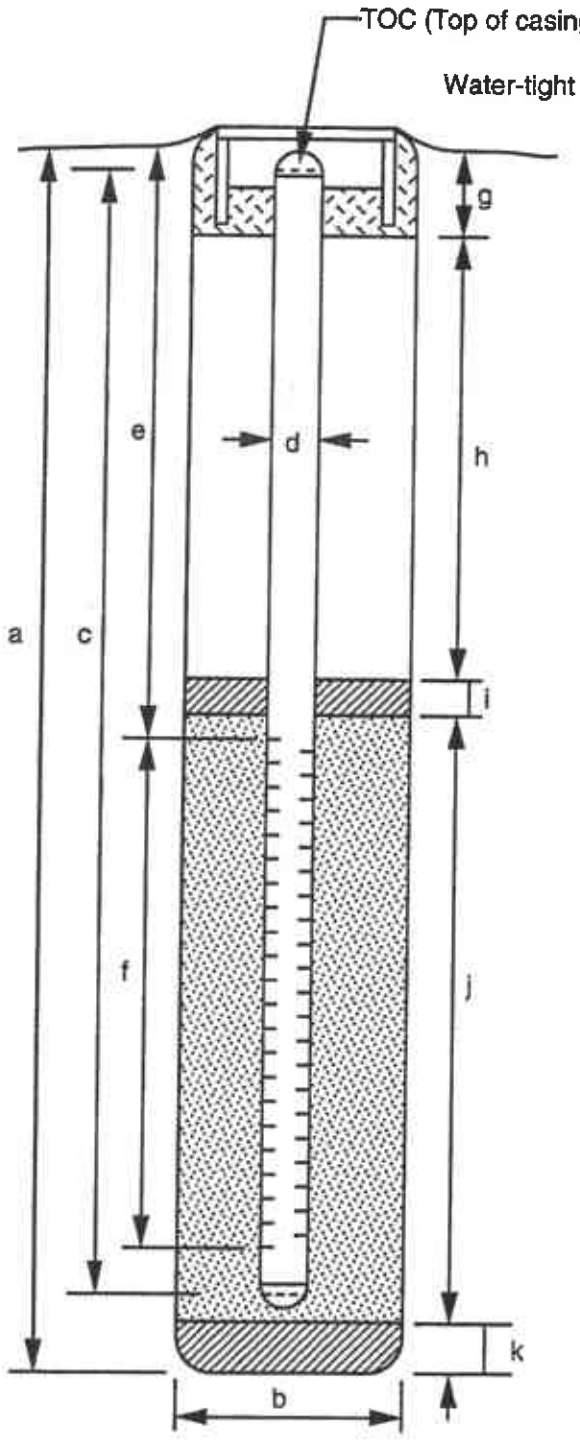
Boring drilled with 8" diameter hollow-stem augers and reamed with 10" diameter augers. Samples were taken using a 2" diameter modified-California split spoon sampler. Boring converted into a 4" diameter polyvinyl chloride (PVC) groundwater monitoring well. See explanation sheet for definition of symbols used in well detail and sample columns of this log. See explanation sheet for definition of symbols on this log.

WELL DETAILS

EMCON ASSOCIATES

PROJECT NUMBER 0805-127.01
PROJECT NAME ARCO 2111
LOCATION 1156 Davis Street, San Leandro
WELL PERMIT NO. na

BORING / WELL NO. MW-4
TOP OF CASING ELEV. 38.10
GROUND SURFACE ELEV. 38.88
DATUM M.S.L.
INSTALLATION DATE 7/13/95



EXPLORATORY BORING

a. Total depth 28.5 ft.
b. Diameter 10.0 in.
Drilling method Hollow Stem Auger

WELL CONSTRUCTION

c. Total casing length na ft.
Material Schedule 40 PVC
d. Diameter 4.0 in.
e. Depth to top perforations 10.0 ft.
f. Perforated length 14.0 ft.
Perforated interval from 10.0 to 24.0 ft.
Perforation type Machine Slotted
Perforation size 0.020 inch
g. Surface seal 1.0 ft.
Material Concrete
h. Backfill 6.0 ft.
Material Cement
i. Seal 1.5 ft.
Material Bentonite
j. Gravel pack 16.5 ft.
Gravel pack interval from 8.5 to 25.0 ft.
Material 2/12 Sand
k. Bottom seal/fill 3.5 ft.
Material Native Slough

Form prepared by R. Davis

LOG OF EXPLORATORY BORING

PROJECT NUMBER: **805-127.01**

BORING NO.: **MW-4**

PROJECT NAME: **ARCO Service Station 2111**

PAGE: **1 of 2**

BY: **R. Davis**

DATE: **7/13/95**

SURFACE ELEVATION: **38.88 ft.**

RECOVERY (ft/ft)		PENETRATION (blks/ft)	GROUND WATER LEVELS	DEPTH IN FEET	SAMPLES	LITHOGRAPHIC COLUMN	DESCRIPTION	WELL DETAIL
							ASPHALT	
							FILL, SANDY GRAVEL (GP).	
40%	0	16		5			CLAYEY GRAVEL (GC), very dark grayish brown (10YR, 3/2); 90-95% medium plasticity fines; 5-10% fine to medium sand; stiff; damp; no product odor.	
100%	0	20	▽	10			@10.0-11.5':very stiff; trace calcium carbonate fragments in small voids (0.1-0.25"); damp; no product odor.	
100%	0	28		15			@15.0-16.5':mottled light olive brown (2.5Y, 5/4) and light gray (2.5Y, 7/2); rootholes and small fractures visible.	
				20			SANDY CLAY (CL), mottled light olive brown (2.5Y, 5/4) and dark yellowish brown (10YR, 4/4); 65% medium-plasticity fines; 25% fine to coarse sand, f:m:c=2:1:1; 10% fine to coarse gravel; stiff to very stiff; wet (moisture visible in voids); no product odor.	

EMCON ASSOCIATES

REMARKS

Boring drilled with 8" diameter hollow-stem augers and reamed with 10" diameter augers. Samples were taken using a 2" diameter modified-California split spoon sampler. Boring converted into a 4" diameter polyvinyl chloride (PVC) groundwater monitoring well. See explanation sheet for definition of symbols used in well detail and sample columns of this log. See explanation sheet for definition of symbols on this log.

LOG OF EXPLORATORY BORING

PROJECT NUMBER: **805-127.01**

BORING NO.: **MW-4**

PROJECT NAME: **ARCO Service Station 2111**

PAGE: **2 of 2**

BY: **R. Davis**

DATE: **7/13/95**

SURFACE ELEVATION: **38.88 ft.**

RECOVERY (ft/ft)		PENETRATION (blws/ft)	GROUND WATER LEVELS	DEPTH IN FEET	SAMPLES	LITHOGRAPHIC COLUMN	DESCRIPTION	WELL DETAIL
100%	0	24					SANDY CLAY (CL), continued.	
90%	0	26		25			@25.0-27.7': 25% fine to medium sand; iron oxide staining; firm; wet; no product odor.; 70% medium-plasticity fines; 30% fine to coarse sand; very stiff; moist; no odor.	
60%		56					CLAYEY GRAVEL (GC) TO CLAYEY SAND (SC), light olive brown (2.5Y, 5/4); 10-20% medium plastic fines; 40-45% fine to coarse sand, f:m:c=1:2:4; 40-45% fine gravel; very dense; wet; no product odor.	
							BORING TERMINATED AT 28.5 FEET BGS.	
				30				
				35				
				40				

EMCON ASSOCIATES

REMARKS

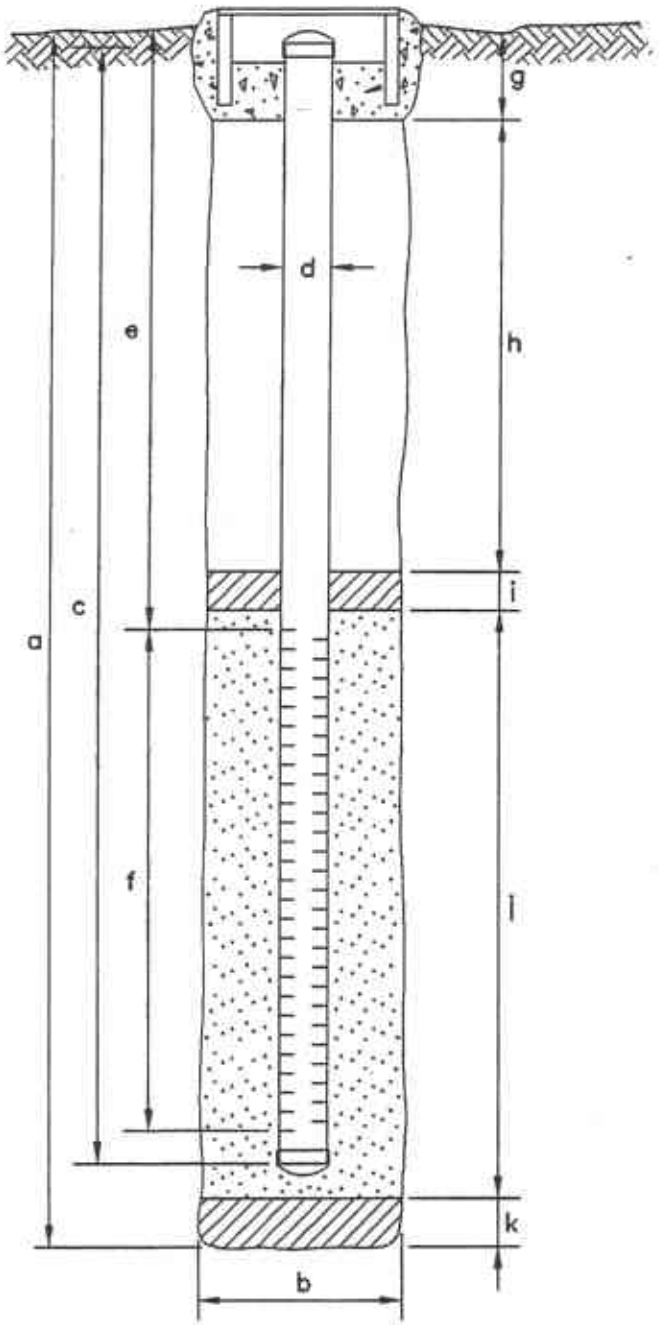
Boring drilled with 8" diameter hollow-stem augers and reamed with 10" diameter augers. Samples were taken using a 2" diameter modified-California split spoon sampler. Boring converted into a 4" diameter polyvinyl chloride (PVC) groundwater monitoring well. See explanation sheet for definition of symbols used in well detail and sample columns of this log. See explanation sheet for definition of symbols on this log.

WELL DETAILS

EMCON

PROJECT NUMBER 20805-127.001
PROJECT NAME Arco Station #2111
COUNTY San Leandro
WELL PERMIT NO. 96126 (ZONE 7)

BORING/WELL NO. MW-5
TOP OF CASING ELEV. 37.21
GROUND SURFACE ELEV. 37.66
DATUM MSL
INSTALLATION DATE 3/1/96



EXPLORATORY BORING

a. Total depth 30 ft.
b. Diameter 8 in.
Drilling method HOLLOW STEM AUGER

WELL CONSTRUCTION

c. Total casing length 24 ft.
Material SCH 40 PVC
d. Diameter 2 in.
e. Depth to top perforations 9.4 ft.
f. Perforated length 14.0 ft.
Perforated interval from 9.4 to 23.4 ft.
Perforation type MACHINE SLOTTED
Perforation size 0.010 INCH
g. Surface seal 0.5 ft.
Seal material CONCRETE
h. Backfill 6.5 ft.
Backfill material CEMENT
i. Seal 1.0 ft.
Seal material BENTONITE
j. Gravel pack 15.0 ft.
Pack material #2/12 SAND
k. Bottom seal 6.0 ft.
Seal material BENTONITE

DETAILCB.DWG

LOG OF EXPLORATORY BORING

PROJECT NUMBER **20805-127.001** BORING NO. **MW-5**

PROJECT NAME **Arco Service Station #2111, San Leandro, California** PAGE **1 OF 2**

BY **R. Davis** DATE **3/1/96** SURFACE ELEV. **37.66 ft.**

PID Reading (ppm)	Sample Recovery (ft./ft.)	Penetration (Blows per 6")	DEPTH IN FT.	LITHOGRAPHIC COLUMN	DESCRIPTION
					ASPHALT.
					ROADBASE FILL: CLAYEY GRAVEL, no product odor.
0.0	1.5/1.5	4 15 20	5		**SILTY CLAY (CL)**, dark grayish brown (10YR, 3/2); 100% low to medium-plasticity fines; trace fine sand; roots and rootholes common; hard; damp; no odor.
0.0	1.5/1.5	7 13 19	10		@9-10.5': very dark grayish brown (10YR, 3/2); rootholes common; hard; damp; no hydrocarbon odor.
0.0	1.5/1.5	5 11 12	15		@14-15.5': light olive brown (2.5Y, 5/4) with trace black mottling; 90% low to medium-plasticity fines; 10% fine-grained sand; hard; moist; no hydrocarbon odor.
					@17': Water visible inside augers.
0.0	1.5/1.5	15 18	20		@19-20.5': as above; grayish veins present; hard; wet; no hydrocarbon odor.

REMARKS

Boring drilled to a depth of 30 feet below grade (fbg) by West Hazmat using 8" dia. hollow-stem auger equipment. Boring completed as a 2" dia. PVC groundwater monitoring well screened from 9 to 24 fbg. Groundwater was first encountered at 17 fbg and stabilized at 13 fbg.

EMCON

LOG OF EXPLORATORY BORING

PROJECT NUMBER **20805-127.001** BORING NO. **MW-5**

PROJECT NAME **Arco Service Station #2111, San Leandro, California** PAGE **2 OF 2**

BY **R. Davis** DATE **3/1/96** SURFACE ELEV. **37.66 ft.**

PID Reading (ppm)	Sample Recovery (ft./ft.)	Penetration (Blows per 6")	DEPTH IN FT.	DESCRIPTION
		25		SILTY CLAY (CL), continued.
0.0	1.5/1.5	4 4 8	25	@24-25.5': as above; no hydrocarbon odor.
0.0	1.5/1.5	7 11 15	30	@28.5-30': as above; wet; no hydrocarbon odor.
				BORING TERMINATED AT 30 FBG.
			35	
			40	

GROUND WATER LEVELS

SAMPLES

LITHO-GRAPHIC COLUMN

WELL DETAIL

EMCON

REMARKS

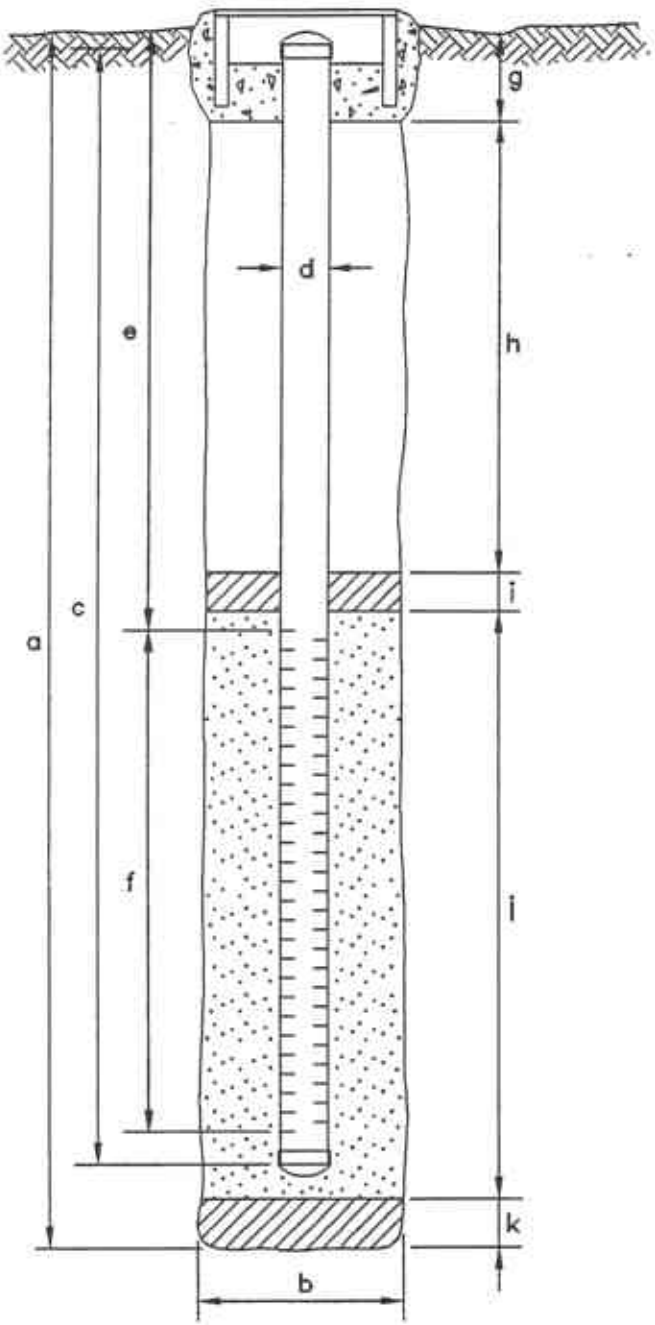
Boring drilled to a depth of 30 feet below grade (fbg) by West Hazmat using 8" dia. hollow-stem auger equipment. Boring completed as a 2" dia. PVC groundwater monitoring well screened from 9 to 24 fbg. Groundwater was first encountered at 17 fbg and stabilized at 13 fbg.

WELL DETAILS

EMCON

PROJECT NUMBER 20805-127.001
PROJECT NAME Arco Station #2111
COUNTY San Leandro
WELL PERMIT NO. 96126 (ZONE 7)

BORING/WELL NO. MW-6
TOP OF CASING ELEV. 37.11
GROUND SURFACE ELEV. 38.19
DATUM MSL
INSTALLATION DATE 3/1/96



EXPLORATORY BORING

a. Total depth 27.5 ft.
b. Diameter 8 in.
Drilling method HOLLOW STEM AUGER

WELL CONSTRUCTION

c. Total casing length 24 ft.
Material SCH 40 PVC
d. Diameter 2 in.
e. Depth to top perforations 10 ft.
f. Perforated length 15 ft.
Perforated interval from 10 to 25 ft.
Perforation type MACHINE SLOTTED
Perforation size 0.010 INCH
g. Surface seal 0.5 ft.
Seal material CONCRETE
h. Backfill 7.5 ft.
Backfill material CEMENT
i. Seal 1.0 ft.
Seal material BENTONITE
j. Gravel pack 16.0 ft.
Pack material #2/12 SAND
k. Bottom seal 2.5 ft.
Seal material NATIVE SLOUGH

DETAILCB.DWG

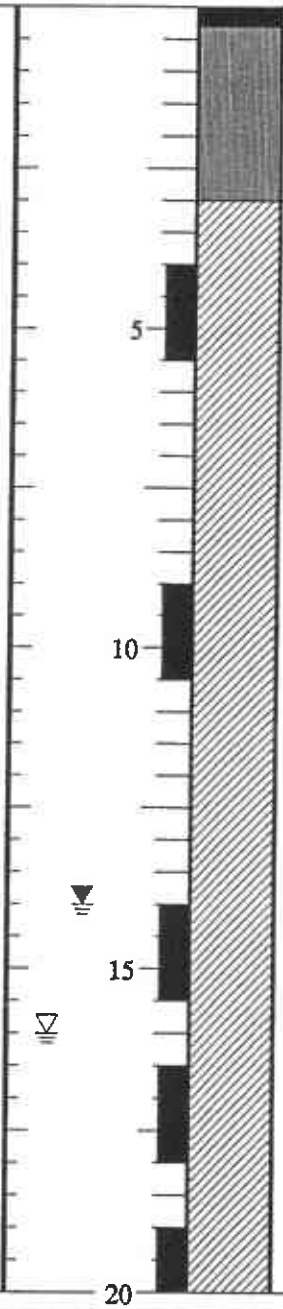
LOG OF EXPLORATORY BORING

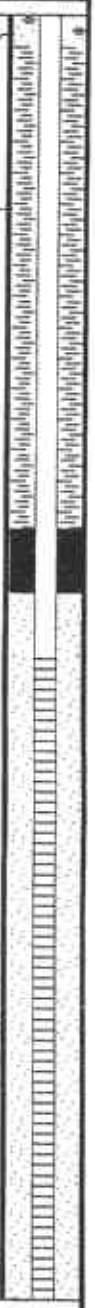
PROJECT NUMBER **20805-127.001** BORING NO. **MW-6**

PROJECT NAME **Arco Service Station #2111, San Leandro, California** PAGE **1 OF 2**

BY **R. Davis** DATE **3/1/96** SURFACE ELEV. **38.19 ft.**

PID Reading (ppm)	Sample Recovery (ft./ft.)	Penetration (Blows per 6")	DESCRIPTION
			ASPHALT.
			ROADBASE FILL: CLAYEY GRAVEL (GC), no hydrocarbon odor.
0.0	1.3/1.5	6 10 10	**CLAY (CL)**, dark grayish brown (10YR, 3/2); 100% medium-plasticity fines; trace fine sand; very stiff; damp; no hydrocarbon odor.
0.0	1.5/1.5	7 11 20	@9-10.5': as above; 10% fine gravel, angular; very stiff; damp; no hydrocarbon odor.
0.0	1.5/1.5	6 11 12	@14-15.5': light olive brown (2.5Y, 5/4) with trace black mottling; 100% low to medium-plasticity fines (high silt content); trace fine sand; very stiff; moist; no hydrocarbon odor.
0.0	1.5/1.5	7 12 15	@16.5-18': as above; wet; no product odor.
0.0	1.4/1.5	8 9	@19-20.5': as above; trace black mottling; 10-20% fine to coarse-grained sand; no hydrocarbon odor.





EMCON

REMARKS

Boring drilled to a depth of 27.5 feet below grade (fbg) by West Hazmat using 8" dia. hollow-stem auger equipment. Boring completed as a 2" dia. PVC groundwater monitoring well screened from 10 to 25 fbg. Groundwater was first encountered at 16 fbg and stabilized at 14 fbg.

LOG OF EXPLORATORY BORING

PROJECT NUMBER **20805-127.001** BORING NO. **MW-6**

PROJECT NAME **Arco Service Station #2111, San Leandro, California** PAGE **2 OF 2**

BY **R. Davis** DATE **3/1/96** SURFACE ELEV. **38.19 ft.**

PID Reading (ppm)	Sample Recovery (ft./ft.)	Penetration (Blows per 6")	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHOGRAPHIC COLUMN	DESCRIPTION	WELL DETAIL
		13					CLAY (CL), continued.	
0.0	0.9/1.5	15 19 25					**CLAYEY GRAVEL (GC)**, light olive brown (2.5Y, 5/4); 20-25% low to medium- plasticity fines; 20% fine to coarse-grained sand; 55-60% fine to coarse gravel (to 2" dia.); dense; wet; no hydrocarbon odor.	
0.0	1.0/1.5	25 28 50/5.5"		25			@24.5-27.5': as above; no hydrocarbon odor.	
0.0	0.8/1.5	10 25 45					**BORING TERMINATED AT 27.5 FBG.**	
				30				
				35				
				40				

REMARKS

Boring drilled to a depth of 27.5 feet below grade (fbg) by West Hazmat using 8" dia. hollow-stem auger equipment. Boring completed as a 2" dia. PVC groundwater monitoring well screened from 10 to 25 fbg. Groundwater was first encountered at 16 fbg and stabilized at 14 fbg.

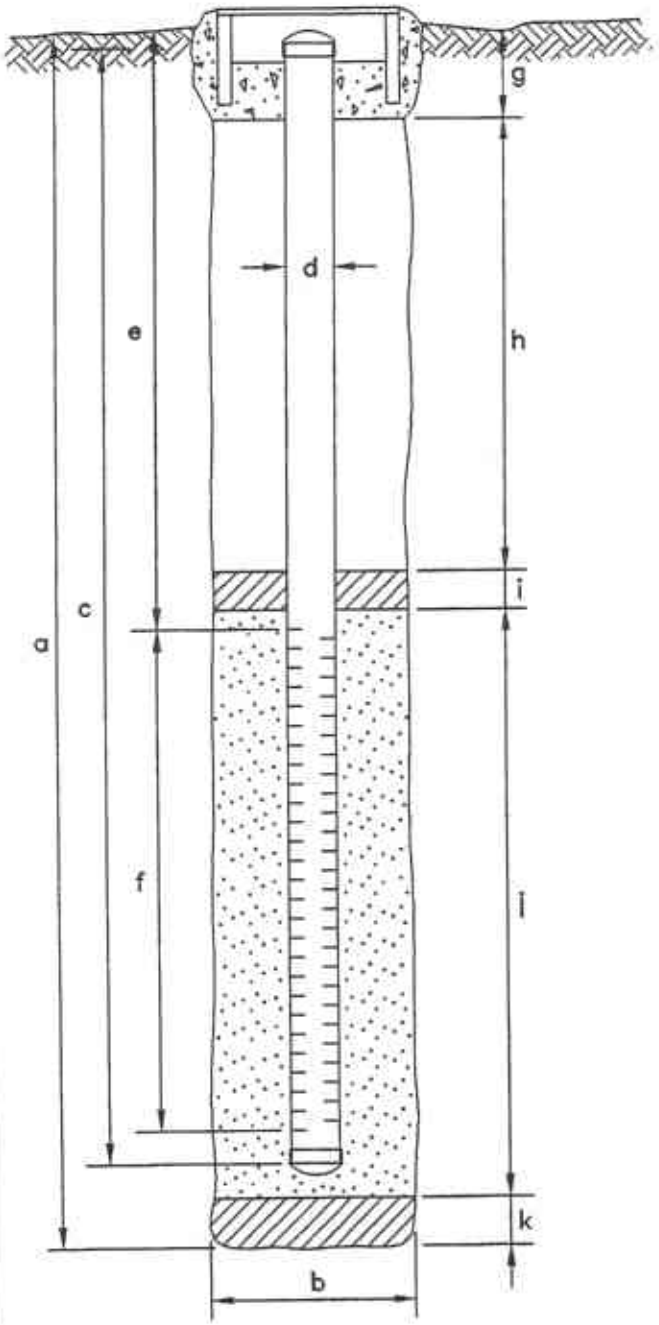
EMCON

WELL DETAILS

EMCON

PROJECT NUMBER 20805-127.001
PROJECT NAME Arco Station #2111
COUNTY San Leandro
WELL PERMIT NO. 96126 (ZONE 7)

BORING/WELL NO. MW-7
TOP OF CASING ELEV. 38.68
GROUND SURFACE ELEV. 38.99
DATUM MSL
INSTALLATION DATE 2/29/96



EXPLORATORY BORING

a. Total depth 33.5 ft.
b. Diameter 10 in.
Drilling method HOLLOW STEM AUGER

WELL CONSTRUCTION

c. Total casing length 27 ft.
Material SCH 40 PVC
d. Diameter 4 in.
e. Depth to top perforations 12 ft.
f. Perforated length 15 ft.
Perforated interval from 12 to 27 ft.
Perforation type MACHINE SLOTTED
Perforation size 0.010 INCH
g. Surface seal 0.5 ft.
Seal material CONCRETE
h. Backfill 9.0 ft.
Backfill material CEMENT
i. Seal 1.0 ft.
Seal material BENTONITE
j. Gravel pack 16.5 ft.
Pack material #2/12 SAND
k. Bottom seal 6.5 ft.
Seal material NATIVE SLOUGH

DETAILCB.DWG

LOG OF EXPLORATORY BORING

PROJECT NUMBER	20805-127.001	BORING NO.	MW-7
PROJECT NAME	Arco Service Station #2111, San Leandro, California	PAGE	1 OF 2
BY R. Davis	DATE 2/29/96	SURFACE ELEV.	38.99 ft.

PID Reading (ppm)	Sample Recovery (ft./ft.)	Penetration (Blows per 6")	DESCRIPTION
			ASPHALT.
			FILL: GRAVEL (GP) ROADBASE.
			FILL: CLAYEY GRAVEL (GC), brown; damp; no hydrocarbon odor.
2.8	1.0/1.5	16 20 26	**SILTY CLAY (CL)**, dark grayish brown (10YR, 4/2); 85-90% low to medium-plasticity fines; 10-15% fine to coarse-grained sand; trace iron oxide staining; hard; damp; no hydrocarbon odor.
7.9	1.2/1.5	5 8 18	@9.5-11': very dark grayish brown (10YR, 3/2); as above (high silt content); trace rootholes; very stiff; damp; no hydrocarbon odor.
--	0/1.5	--	@12-13.5': no recovery.
28.0	1.5/1.5	7 17 20	@14.5-15': as above; moist. @15-16': gray (5Y, 5/1) with yellowish brown (10YR, 5/4) mottling; rootholes common; hard; moist; hydrocarbon odor.
34.0	1.5/1.5	8 18 22	
77.0	1.0/1.5	9 12 20	@17.5-19': grayish veins present; 90% low to medium-plasticity fines; 10% fine-grained sand; trace fine gravel; hard; wet; hydrocarbon odor.
101.0	1.3/1.5	13 15	

GROUND WATER LEVELS ▽

DEPTH IN FT. 5 10 15 20

SAMPLES

LITHOGRAPHIC COLUMN

WELL DETAIL

EMCON

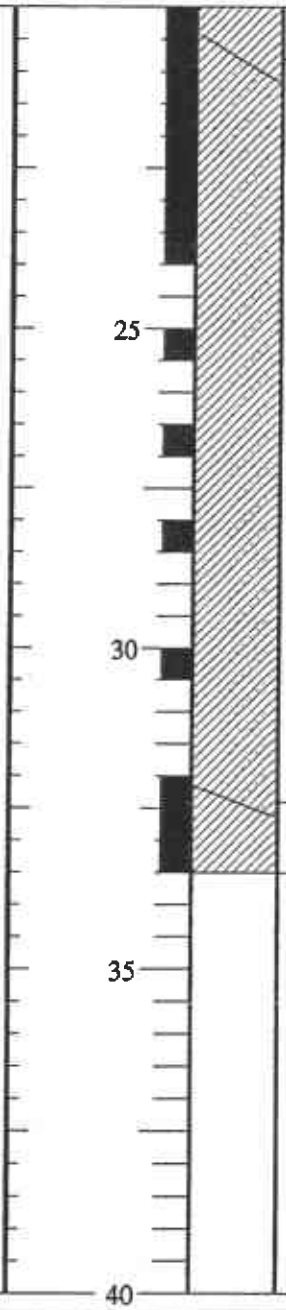
REMARKS

Boring drilled to a depth of 33.5 feet below grade (fbg) by West Hazmat using 10" dia. hollow-stem auger equipment. Boring completed as a 4" dia. PVC groundwater monitoring well screened from 12 to 27 fbg. Groundwater was encountered at 17 fbg.

LOG OF EXPLORATORY BORING

PROJECT NUMBER	**20805-127.001**	BORING NO.	**MW-7**
PROJECT NAME	**Arco Service Station #2111, San Leandro, California**	PAGE	**2 OF 2**
BY **R. Davis**	DATE **2/29/96**	SURFACE ELEV.	**38.99 ft.**

PID Reading (ppm)	Sample Recovery (ft./ft.)	Penetration (Blows per 6")	DESCRIPTION
--	1.3/1.5	20 8 15	**SANDY CLAY (CL)**, yellowish brown (10YR, 5/4) with gray (5Y, 5/1) mottling; 65-75% low to medium-plasticity fines; 25-30% fine to coarse-grained sand; 5% fine gravel; very stiff; wet; hydrocarbon odor.
--	0.5/1.5	15 20 22	**CLAYEY SAND (SC)**, mottled olive brown (2.5Y, 4/4) to yellowish brown (10YR, 5/4); 25-30% low to medium-plasticity fines; 45-50% fine to coarse-grained sand; 25% fine to coarse gravel; dense; wet; hydrocarbon odor.
--	0.2/1.5	30 50/6"	
--	0.2/0.5	50/6"	@22-23.5': very dense; wet; hydrocarbon odor.
--	0.1/0.5	50/6"	@23.5-25': no recovery; very dense.
--	0.2/0.5	50/6"	**From 25 to 32.5'**: Minimal recovery due to heaving sands.
--	0.2/0.5	50/6"	
--	0.5/0.5	50/6"	
1.4	0.6/1.0	50 50	**CLAY (CL)**, mottled yellowish brown (10YR, 5/4) to dark brown (10YR, 5/2); 85-95% medium-plasticity fines; 5-15% fine to coarse-grained sand; hard; wet; no hydrocarbon odor.
			BORING TERMINATED AT 33.5 FBG.



WELL DETAIL

EMCON

REMARKS

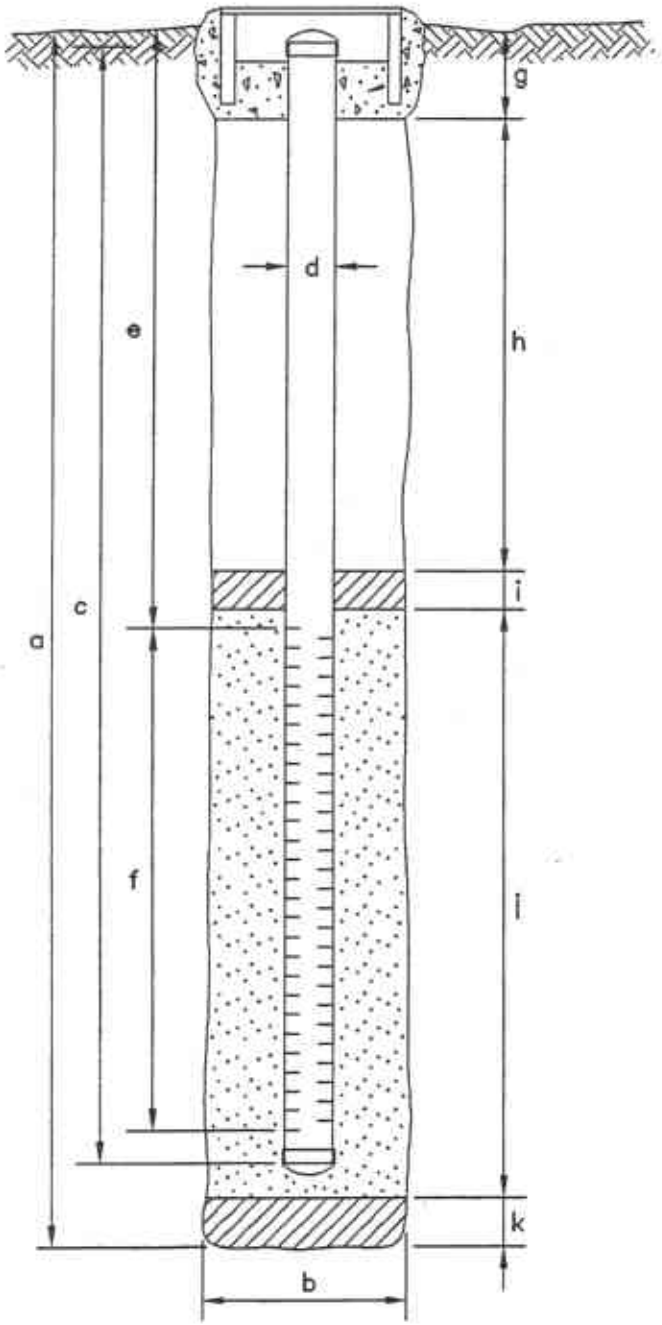
Boring drilled to a depth of 33.5 feet below grade (fbg) by West Hazmat using 10" dia. hollow-stem auger equipment. Boring completed as a 4" dia. PVC groundwater monitoring well screened from 12 to 27 fbg. Groundwater was encountered at 17 fbg.

WELL DETAILS

EMCON

PROJECT NUMBER 20805-127.001
PROJECT NAME Arco Station #2111
COUNTY San Leandro
WELL PERMIT NO. 96126 (ZONE 7)

BORING/WELL NO. VW-1
TOP OF CASING ELEV. 38.94
GROUND SURFACE ELEV. 39.39
DATUM MSL
INSTALLATION DATE 2/29/96



EXPLORATORY BORING

a. Total depth 20 ft.
b. Diameter 10 in.
Drilling method HOLLOW STEM AUGER

WELL CONSTRUCTION

c. Total casing length 19.5 ft.
Material SCH 40 PVC
d. Diameter 4 in.
e. Depth to top perforations 5 ft.
f. Perforated length 15 ft.
Perforated interval from 5 to 20 ft.
Perforation type MACHINE SLOTTED
Perforation size 0.020 INCH
g. Surface seal 0.5 ft.
Seal material CONCRETE
h. Backfill 3.0 ft.
Backfill material CEMENT
i. Seal 1.5 ft.
Seal material BENTONITE
j. Gravel pack 15.0 ft.
Pack material #2/12 SAND
k. Bottom seal NA ft.
Seal material NA

DETAILCB.DWG

LOG OF EXPLORATORY BORING

PROJECT NUMBER **20805-127.001** BORING NO. **VW-1**

PROJECT NAME **Arco Service Station #2111, San Leandro, California** PAGE **1 OF 1**

BY **R. Davis** DATE **2/29/96** SURFACE ELEV. **39.39 ft.**

PID Reading (ppm)	Sample Recovery (ft./ft.)	Penetration (Blows per 6")	DEPTH IN FT.	DESCRIPTION
				ASPHALT.
				ROADBASE FILL: GRAVEL (GP).
				FILL: CLAYEY GRAVEL (GC), light yellowish brown; no hydrocarbon odor.
2.7	1.0/1.5	8 16 17	5	**SILTY CLAY (CL)**, dark grayish brown (10YR, 3/2); 95-100% low to medium-plasticity fines; trace to 5% fine-grained sand; occassional rootholes and orange mottling; hard; damp; no hydrocarbon odor.
2.2	1.2/1.5	10 11 16	10	@9.5-11': light olive brown (2.5Y, 5/4) with occassional dark brown mottling; rootholes present; very stiff; damp; no hydrocarbon odor.
1.3	1.0/1.5	7 10 14		@12-13.5': mottled gray (5Y, 5/1) and light olive brown (2.5Y, 5/4); 90% low to medium-plasticity fines; 10% fine to medium-grained sand; rootholes present; very stiff; moist; hydrocarbon odor.
5.3	1.2/1.5	9 10 12	15	@14.5-16': as above; moist; hydrocarbon odor. @16': wet (moisture visible in voids); hydrocarbon odor.
16.0	1.3/1.5	4 9 12		@17-18.5': as above; wet; hydrocarbon odor.
210.0	1.3/1.5	7 7 17	20	@18.5-20': as above; 30% fine to coarse grained sand; wet; hydrocarbon odor. **BORING TERMINATED AT 20 FBG.**

REMARKS

Boring drilled to a depth of 20 feet below grade (fbg) by West Hazmat using 10" dia. hollow-stem auger equipment. Boring completed as a 4" dia. PVC vapor extraction well screened from 5 to 15 fbg. Groundwater was encountered at 16 fbg.

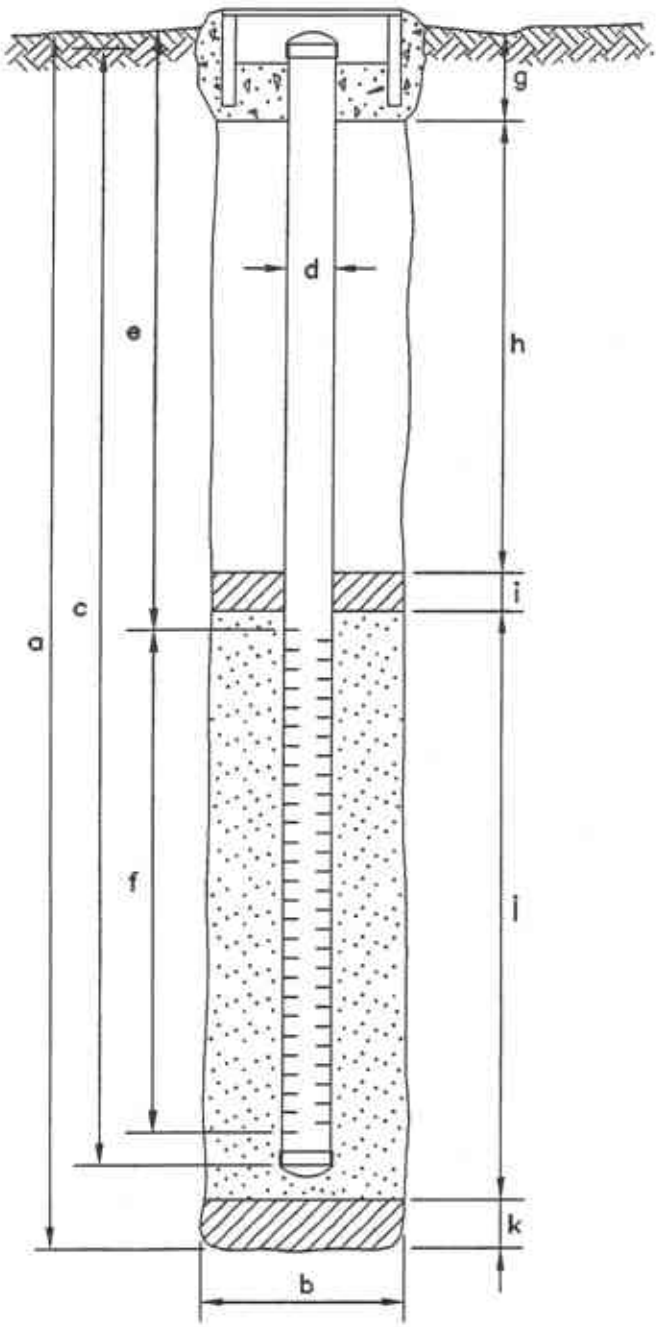
EMCON

WELL DETAILS

EMCON

PROJECT NUMBER 20805-127.001
PROJECT NAME Arco Station #2111
COUNTY San Leandro
WELL PERMIT NO. 96126 (ZONE 7)

BORING/WELL NO. VW-2
TOP OF CASING ELEV. 38.28
GROUND SURFACE ELEV. 38.99
DATUM MSL
INSTALLATION DATE 2/29/96



EXPLORATORY BORING

a. Total depth 20 ft.
b. Diameter 10 in.
Drilling method HOLLOW STEM AUGER

WELL CONSTRUCTION

c. Total casing length 19.5 ft.
Material SCH 40 PVC
d. Diameter 4 in.
e. Depth to top perforations 5 ft.
f. Perforated length 15 ft.
Perforated interval from 5 to 20 ft.
Perforation type MACHINE SLOTTED
Perforation size 0.020 INCH
g. Surface seal 0.5 ft.
Seal material CONCRETE
h. Backfill 3.5 ft.
Backfill material CEMENT
i. Seal 1.0 ft.
Seal material BENTONITE
j. Gravel pack 15.0 ft.
Pack material #2/12 SAND
k. Bottom seal NA ft.
Seal material NA

DETAILCB.DWG

LOG OF EXPLORATORY BORING

PROJECT NUMBER **20805-127.001** BORING NO. **VW-2**

PROJECT NAME **Arco Service Station #2111, San Leandro, California** PAGE **1 OF 2**

BY **R. Davis** DATE **2/29/96** SURFACE ELEV. **38.99 ft.**

PID Reading (ppm)	Sample Recovery (ft./ft.)	Penetration (Blows per 6")	DESCRIPTION
			ASPHALT.
			ROADBASE FILL.
			FILL: SANDY SILTY CLAY (CL), dark grayish brown (10YR, 3/2).
0.4	1.0/1.5	15 22 30	**SILTY CLAY (CL)**, light olive brown (2.5Y, 5/4) with grayish orange mottling; 90% low to medium-plasticity fines; 10% fine to medium-grained sand; hard; damp; no hydrocarbon odor.
2.2	1.5/1.5	7 8 14	@9.5-11': dark grayish brown (10YR, 3/2); damp; no hydrocarbon odor.
12.0	1.5/1.5	9 14 20	@12-13.5': as above; no hydrocarbon odor.
74.0	1.2/1.5	7 17 18	@14.5-16': olive gray (2.5Y, 5/1); increasing silt content; rootholes present; moist; hydrocarbon odor.
79.0	--	6 10 17	
159.0	--	6 12 17	**SANDY CLAY (CL)**, mottled yellowish brown (10YR, 5/4) to light olive brown (2.5Y, 5/4); 75-80% low to medium-plasticity fines; 15-20% fine to coarse-grained sand; 5% fine gravel; very

GROUND WATER LEVELS ▽

WELL DETAIL

EMCON

REMARKS

Boring drilled to a depth of 20 feet below grade (fbg) by West Hazmat using 10" dia. hollow-stem auger equipment. Boring completed as a 4" dia. PVC vapor extraction well screened from 5 to 20 fbg. Groundwater was encountered at 16 fbg.

LOG OF EXPLORATORY BORING

PROJECT NUMBER **20805-127.001** BORING NO. **VW-2**

PROJECT NAME **Arco Service Station #2111, San Leandro, California** PAGE **2 OF 2**

BY **R. Davis** DATE **2/29/96** SURFACE ELEV. **38.99 ft.**

PID Reading (ppm)	Sample Recovery (ft./ft.)	Penetration (Blows per 6")	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHOGRAPHIC COLUMN	DESCRIPTION	WELL DETAIL
							stiff; wet; hydrocarbon odor. **BORING TERMINATED AT 20 FBG.**	

25

30

35

40

REMARKS

Boring drilled to a depth of 20 feet below grade (fbg) by West Hazmat using 10" dia. hollow-stem auger equipment. Boring completed as a 4" dia. PVC vapor extraction well screened from 5 to 20 fbg. Groundwater was encountered at 16 fbg.

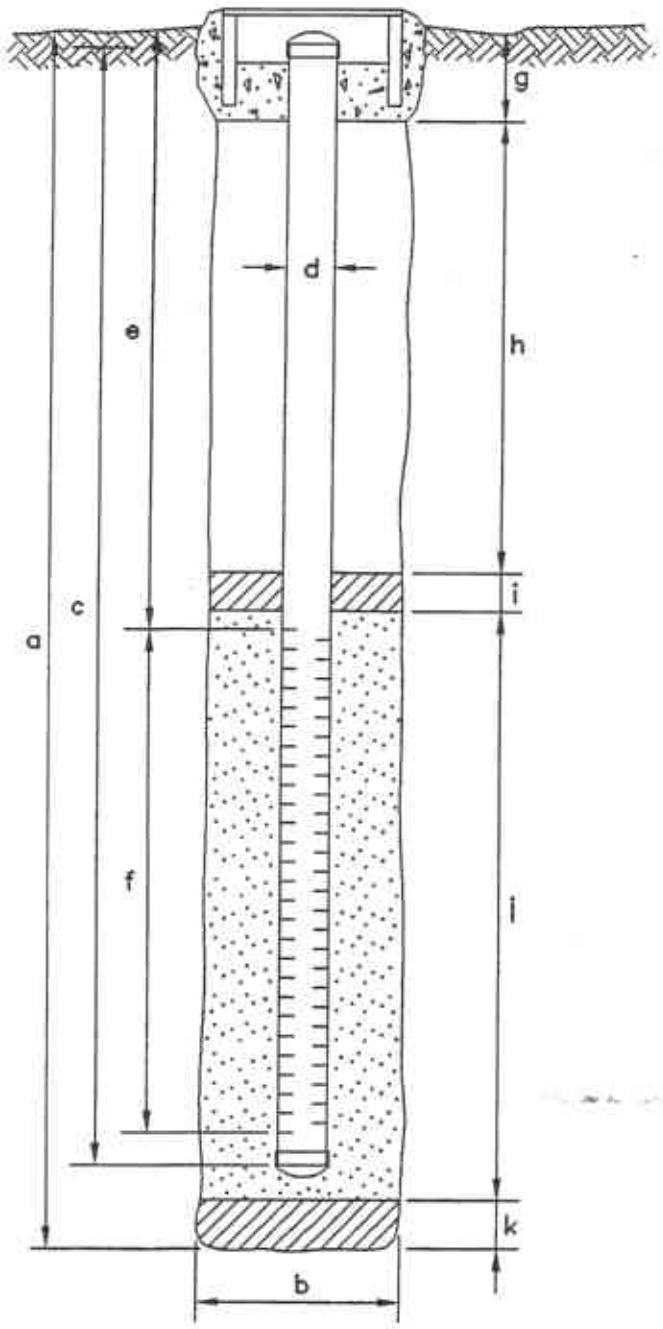
EMCON

WELL DETAILS

EMCON

PROJECT NUMBER 20805-127.001
PROJECT NAME Arco Station #2111
COUNTY San Leandro
WELL PERMIT NO. 96126 (ZONE 7)

BORING/WELL NO. VW-3
TOP OF CASING ELEV. 38.01
GROUND SURFACE ELEV. 38.71
DATUM MSL
INSTALLATION DATE 2/29/96



EXPLORATORY BORING

a. Total depth 20 ft.
b. Diameter 10 in.
Drilling method HOLLOW STEM AUGER

WELL CONSTRUCTION

c. Total casing length 19.5 ft.
Material SCH 40 PVC
d. Diameter 4 in.
e. Depth to top perforations 5 ft.
f. Perforated length 15 ft.
Perforated interval from 5 to 20 ft.
Perforation type MACHINE SLOTTED
Perforation size 0.020 INCH
g. Surface seal 0.5 ft.
Seal material CONCRETE
h. Backfill 3.0 ft.
Backfill material CEMENT
i. Seal 1.5 ft.
Seal material BENTONITE
j. Gravel pack 15.0 ft.
Pack material #2/12 SAND
k. Bottom seal NA ft.
Seal material NA

DETAILCB.DWG

LOG OF EXPLORATORY BORING

PROJECT NUMBER **20805-127.001** BORING NO. **VW-3**

PROJECT NAME **Arco Service Station #2111, San Leandro, California** PAGE **1 OF 1**

BY **R. Davis** DATE **2/28/96** SURFACE ELEV. **38.71 ft.**

PID Reading (ppm)	Sample Recovery (ft./ft.)	Penetration (Blows per 6")	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHOGRAPHIC COLUMN	DESCRIPTION	WELL DETAIL
							ASPHALT.	
							FILL MATERIAL.	
5.2	1.5/1.5	7 14 20		5			**CLAY (CL)**, dark grayish brown (10YR, 4/2); 90% medium-plasticity fines; 10% fine-grained sand; rootholes present; iron oxide staining in veins; damp; no hydrocarbon odor.	
6.6	1.5/1.5	7 17 20		10			@9.5-11': very dark grayish brown (10YR, 3/2) with occassional gray and orange-brown (iron oxide) mottling; 90% low to medium-plasticity fines; 10% fine-grained sand; increasing silt content; hard; damp; no hydrocarbon odor.	
15.5	--	8 14 22	▽	15			**CLAYEY, SANDY SILT (ML)**, gray (5Y, 5/1); 80-85% low-plasticity fines; 15-20% fine-grained sand; hard; moist; hydrocarbon odor. @16': wet; hydrocarbon odor.	
2.2	--	6 9 11		20			**SILTY SANDY CLAY (CL)**, mottled yellowish brown (10YR, 5/4) to light olive brown (2.5Y, 5/4); 75-80% low to medium-plasticity fines; 15-20% fine to coarse-grained sand; 5% fine gravel; very stiff; wet; hydrocarbon odor. **BORING TERMINATED AT 20 FBG.**	

REMARKS

Boring drilled to a depth of 20 feet below grade (fbg) by West Hazmat using 10" dia. hollow-stem auger equipment. Boring completed as a 4" dia. PVC vapor extraction well screened from 5 to 20 fbg. Groundwater was encountered at 16 fbg.

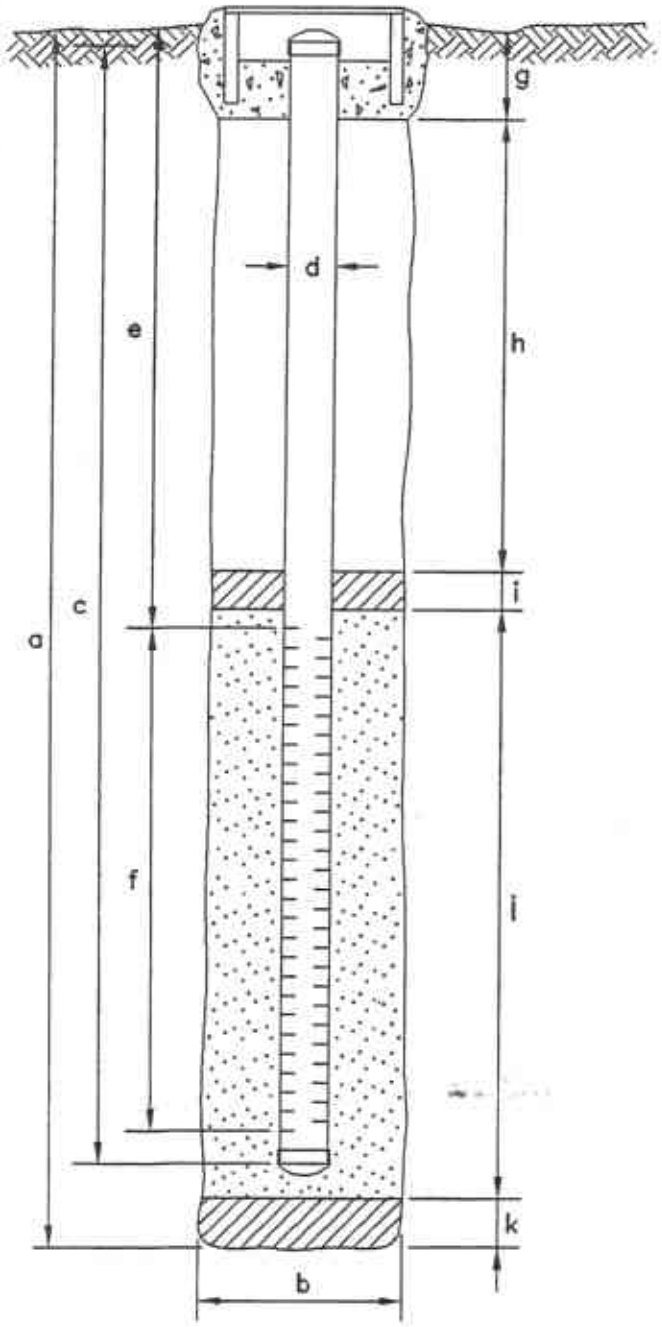
EMCON

WELL DETAILS

EMCON

PROJECT NUMBER 20805-127.001
PROJECT NAME Arco Station #2111
COUNTY San Leandro
WELL PERMIT NO. 96126 (ZONE 7)

BORING/WELL NO. VW-4
TOP OF CASING ELEV. 38.38
GROUND SURFACE ELEV. 39.23
DATUM MSL
INSTALLATION DATE 2/28/96



EXPLORATORY BORING

a. Total depth 20 ft.
b. Diameter 10 in.
Drilling method HOLLOW STEM AUGER

WELL CONSTRUCTION

c. Total casing length 19.5 ft.
Material SCH 40 PVC
d. Diameter 4 in.
e. Depth to top perforations 6.5 ft.
f. Perforated length 13 ft.
Perforated interval from 6.5 to 19.5 ft.
Perforation type MACHINE SLOTTED
Perforation size 0.020 INCH
g. Surface seal 0.5 ft.
Seal material CONCRETE
h. Backfill 4.5 ft.
Backfill material CEMENT
i. Seal 1.5 ft.
Seal material BENTONITE CHIPS
j. Gravel pack 13.5 ft.
Pack material #2/12 SAND
k. Bottom seal NA ft.
Seal material NA

DETAILCB.DWG

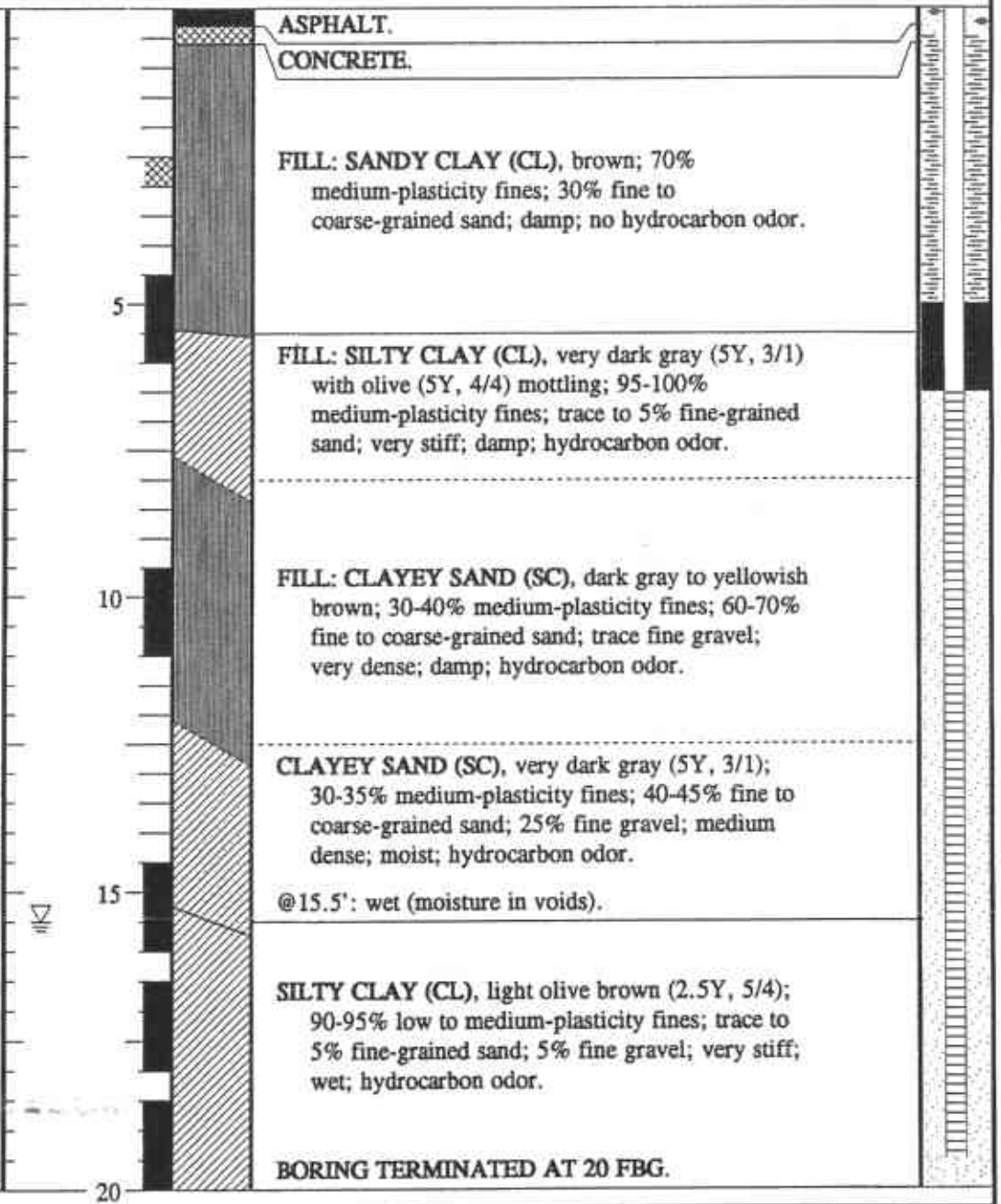
LOG OF EXPLORATORY BORING

PROJECT NUMBER **20805-127.001** BORING NO. **VW-4**

PROJECT NAME **Arco Service Station #2111, San Leandro, California** PAGE **1 OF 1**

BY **R. Davis** DATE **2/28/96** SURFACE ELEV. **39.23 ft.**

PID Reading (ppm)	Sample Recovery (ft./ft.)	Penetration (Blows per 6")	DESCRIPTION
			ASPHALT.
			CONCRETE.
0.5			FILL: SANDY CLAY (CL), brown; 70% medium-plasticity fines; 30% fine to coarse-grained sand; damp; no hydrocarbon odor.
7.0	1.2/1.5	9 15 16	FILL: SILTY CLAY (CL), very dark gray (5Y, 3/1) with olive (5Y, 4/4) mottling; 95-100% medium-plasticity fines; trace to 5% fine-grained sand; very stiff; damp; hydrocarbon odor.
23.1	0.8/1.5	22 25 29	FILL: CLAYEY SAND (SC), dark gray to yellowish brown; 30-40% medium-plasticity fines; 60-70% fine to coarse-grained sand; trace fine gravel; very dense; damp; hydrocarbon odor.
92.3	1.2/1.5	6 9 15	CLAYEY SAND (SC), very dark gray (5Y, 3/1); 30-35% medium-plasticity fines; 40-45% fine to coarse-grained sand; 25% fine gravel; medium dense; moist; hydrocarbon odor. @15.5': wet (moisture in voids).
281.0	1.5/1.5	9 12 16	SILTY CLAY (CL), light olive brown (2.5Y, 5/4); 90-95% low to medium-plasticity fines; trace to 5% fine-grained sand; 5% fine gravel; very stiff; wet; hydrocarbon odor.
878.0	1.5/1.5	6 7 15	BORING TERMINATED AT 20 FBG.



REMARKS

Boring drilled to a depth of 20 feet below grade (fbg) by West Hazmat using 10" dia. hollow-stem auger equipment. Boring completed as a 4" dia. PVC vapor extraction well screened from 6.5 to 19.5 fbg. Groundwater was encountered at 15.5 fbg.

EMCON

Attachment C

Table 1: Well Construction Data

Table 2: Historical Groundwater Elevation and Analytical Data

Table 3: Recent Groundwater Elevation and Analytical Data

Table 4: Groundwater Flow Direction and Gradient

ole 1
Well Construction Data

ARCO Service Station #2111
1156 Davis Street
San Leandro, California

Well No.	Installation Date	Boring Diameter (inch)	Well Diameter (inch)	Screen Size (inch)	TOC Elevation (ft-msl)	Boring Depth (feet bgs)	Surface Seal (feet bgs)	Sand Pack Interval (feet bgs)	Screened Interval (feet bgs)
MW-1	7/12/1995	10	4	0.020	39.60	30.0	0-12	10.5-27.0	12.5-26.2
MW-2	7/12/1995	10	4	0.020	37.99	30.5	0-10	10.0-27.0	12.0-26.2
MW-3	7/13/1995	10	4	0.020	39.32	40.0	0-11	11.0-27.0	11.9-26.2
MW-4	7/13/1995	10	4	0.020	38.10	28.5	0-8.5	8.5-25.0	10.0-24.0
MW-5	3/1/1996	8	2	0.010	37.21	30.0	0-8.0	8.0-23.0	9.4-23.4
MW-6	3/1/1996	8	2	0.010	37.11	27.5	0-9.0	9.0-25.0	10.0-25.0
MW-7	2/29/1996	10	4	0.010	38.68	33.5	0-10.5	10.5-27.0	12.0-27.0
VW-1	2/29/1996	10	4	0.020	38.94	20.0	0-5.0	5.0-20.0	5.0-20.0
VW-2	2/29/1996	10	4	0.020	38.28	20.0	0-5.0	5.0-20.0	5.0-20.0
VW-3	2/29/1996	10	4	0.020	38.01	20.0	0-5.0	5.0-20.0	5.0-20.0
VW-4	2/28/1996	10	4	0.020	38.38	20.0	0-6.5	6.5-20.0	6.5-19.5

Abbreviations and Notes:

feet bgs = feet below ground surface
ft-msl = feet above mean sea level

Table 2
Historical Groundwater Elevation and Analytical Data
Petroleum Hydrocarbons and Their Constituents

ARCO Service Station 2111
1156 Davis Street, San Leandro, California

Well Designation	Water Level Field Date	Top of Casing Elevation ft-MSL	Depth to Water feet	Free Product Thickness feet	Groundwater Elevation ft-MSL	Water Sample Field Date	**TPHG** LUFT Method µg/L	**Benzene** EPA 8021B* µg/L	**Toluene** EPA 8021B* µg/L	**Ethylbenzene** EPA 8021B* µg/L	**Total Xylenes** EPA 8021B* µg/L	**MTBE** EPA 8021B* µg/L	**MTBE** EPA 8260 µg/L	**TRPH** EPA 418.1 µg/L	**TPHD** LUFT Method µg/L	Dissolved Oxygen mg/L	Purged/ Not Purged P/NP
MW-1	08-01-95	39.60	17.45	ND	22.15	08-01-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--		
MW-1	12-14-95	39.60	17.09	ND	22.51	12-14-95	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-1	03-21-96	39.60	14.72	ND	24.88	03-21-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-1	05-24-96	39.60	15.94	ND	23.66	05-24-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-1	08-09-96	39.60	17.89	ND	21.71	08-09-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-1	11-06-96	39.60	18.66	ND	20.94	11-06-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-1	03-24-97	39.60	16.13	ND	23.47	03-24-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-1	05-27-97	39.60	17.23	ND	22.37	05-28-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-1	08-07-97	39.60	18.68	ND	20.92	08-07-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-1	11-10-97	39.60	19.19	ND	20.41	11-10-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-1	02-16-98	39.60	12.61	ND	26.99	02-16-98	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-1	04-15-98	39.60	14.30	ND	25.30	04-15-98	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-1	07-24-98	39.60	16.40	ND	23.20	07-24-98	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-1	10-19-98	39.60	17.90	ND	21.70	10-19-98	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-1	01-28-99	39.60	16.85	ND	22.75	01-28-99	<20,000	580	<200	<200	320	14,000	--	--	--		
MW-1	06-25-99	39.60	17.35	ND	22.25	06-25-99	730	140	5	3	2	7,700	--	--	--	0.79	NP
MW-1	08-25-99	39.60	18.20	ND	21.40	08-25-99	390	66	8.5	<2.5	8.6	3,700	--	--	--	1.56	NP
MW-1	11-10-99	39.60	17.77	ND	21.83	11-10-99	360	70	13	2.2	13	980	--	--	--	0.30	NP
MW-1	02-09-00	39.60	16.25	ND	23.35	02-09-00	190	4.5	0.9	<0.5	12	3,500	--	--	--	0.53	NP
MW-2	08-01-95	37.99	15.67	ND	22.32	08-01-95	23,000	1,300	310	500	3,500	--	--	--	--		
MW-2	12-14-95	37.99	15.36	ND	22.63	12-14-95	7,300	900	25	180	1,000	<200	--	--	--		
MW-2	03-21-96	37.99	12.84	ND	25.15	03-21-96	9,600	850	30	280	1,400	250	--	--	--		
MW-2	05-24-96	37.99	14.03	ND	23.96	05-24-96	2,300	300	<5	73	310	<25	--	--	--		
MW-2	08-09-96	37.99	16.10	ND	21.89	08-09-96	2,800	290	6	75	320	50	--	--	--		

Table 2
Historical Groundwater Elevation and Analytical Data
Petroleum Hydrocarbons and Their Constituents

ARCO Service Station 2111
1156 Davis Street, San Leandro, California

Well Designation	Water Level Field Date	Top of Casing Elevation ft-MSL	Depth to Water feet	Free Product Thickness feet	Groundwater Elevation ft-MSL	Water Sample Field Date	TPHG LUFT Method µg/L	Benzene EPA 8021B* µg/L	Toluene EPA 8021B* µg/L	Ethylbenzene EPA 8021B* µg/L	Total Xylenes EPA 8021B* µg/L	MTBE EPA 8021B* µg/L	MTBE EPA 8260 µg/L	TRPH EPA 418.1 µg/L	TPHD LUFT Method µg/L	Dissolved Oxygen mg/L	Purged/ Not Purged P/NP
MW-2	11-06-96	37.99	16.98	ND	21.01	11-06-96	750	76	<1	15	51	110	--	--	--		
MW-2	03-24-97	37.99	14.22	ND	23.77	03-24-97	790	18	<1	2	6	280	--	--	--		
MW-2	05-27-97	37.99	15.42	ND	22.57	05-28-97	750	14	<1	<1	10	150	--	--	--		
MW-2	08-07-97	37.99	16.92	ND	21.07	08-07-97	360	31	<2.5	<2.5	15	260	--	--	--		
MW-2	11-10-97	37.99	17.52	ND	20.47	11-10-97	1,300	82	<5	14	49	550	--	--	--		
MW-2	02-16-98	37.99	12.04	ND	25.95	02-16-98	<2,500	<25	<25	<25	<25	4,200	--	--	--		
MW-2	04-15-98	37.99	12.34	ND	25.65	04-15-98	<10,000	<100	<100	<100	<100	7,300	--	--	--		
MW-2	07-24-98	37.99	14.45	ND	23.54	07-24-98	<2,500	<25	<25	<25	<25	1,500	--	--	--		
MW-2	10-19-98	37.99	16.08	ND	21.91	10-19-98	<1,000	18	<10	<10	<10	1,100	--	--	--		
MW-2	01-28-99	37.99	15.59	0.02	22.41 [1]	01-28-99	160,000	3,000	24,000	4,400	31,000	23,000	--	--	--		
MW-2	06-25-99	37.99	19.20	3.73[4]	21.51 [1]	06-25-99	120,000	6,900	21,000	2,600	19,000	18,000	17,000[3]	--	--	0.49	NP
MW-2	08-25-99	37.99	16.49	0.02	21.51 [1]	08-25-99	92,000	2,200	16,000	3,200	19,000	11,000	9,400[3]	--	--	0.84	NP
MW-2	11-10-99	37.99	16.08	ND	21.91	11-10-99	56,000	2,400	5,900	1,500	10,000	17,000	21,000[3]	--	--	0.41	NP
MW-2	02-09-00	37.99	14.85	ND	23.14	02-09-00	1,700	270	14	17	21	70,000	55,000[3]	--	--	0.97	NP
MW-3	08-01-95	39.32	17.00	ND	22.32	08-01-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	600	76[2]		
MW-3	12-14-95	39.32	16.70	ND	22.62	12-14-95	<50	<0.5	<0.5	<0.5	<0.5	<3	--	<500	<50		
MW-3	03-21-96	39.32	14.17	ND	25.15	03-21-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	<500	<50		
MW-3	05-24-96	39.32	15.30	ND	24.02	05-24-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	<500	<50		
MW-3	08-09-96	39.32	17.58	ND	21.74	08-09-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	<500	--		
MW-3	11-06-96	39.32	18.33	ND	20.99	11-06-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-3	03-24-97	39.32	15.44	ND	23.88	03-24-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-3	05-27-97	39.32	16.75	ND	22.57	05-28-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-3	08-07-97	39.32	18.35	ND	20.97	08-07-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-3	11-10-97	39.32	18.83	ND	20.49	11-10-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		

Table 2
Historical Groundwater Elevation and Analytical Data
Petroleum Hydrocarbons and Their Constituents

ARCO Service Station 2111
1156 Davis Street, San Leandro, California

Well Designation	Water Level Field Date	Top of Casing Elevation ft-MSL	Depth to Water feet	Free Product Thickness feet	Groundwater Elevation ft-MSL	Water Sample Field Date	**TPHG** LUFT Method µg/L	**Benzene** EPA 8021B* µg/L	**Toluene** EPA 8021B* µg/L	**Ethylbenzene** EPA 8021B* µg/L	**Total Xylenes** EPA 8021B* µg/L	**MTBE** EPA 8021B* µg/L	**MTBE** EPA 8260 µg/L	**TRPH** EPA 418.1 µg/L	**TPHD** LUFT Method µg/L	Dissolved Oxygen mg/L	Purged/ Not Purged P/NP
MW-3	02-16-98	39.32	11.99	ND	27.33	02-16-98	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-3	04-15-98	39.32	13.75	ND	25.57	04-15-98	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-3	07-24-98	39.32	15.90	ND	23.42	07-24-98	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-3	10-19-98	39.32	17.45	ND	21.87	10-19-98	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-3	01-28-99	39.32	16.40	ND	22.92	01-28-99	<100	14	4	<1	6	100	--	--	--		
MW-3	06-25-99	39.32	17.92	ND	21.40	06-25-99	83	9.0	1.4	<0.5	2.5	220	--	--	--	1.11	NP
MW-3	08-25-99	39.32	17.79	ND	21.53	08-25-99	240	41	12	3.7	9.9	160	--	--	--	1.13	NP
MW-3	11-10-99	39.32	17.37	ND	21.95	11-10-99	620	100	9.7	4.1	21	150	--	--	--	0.24	NP
MW-3	02-09-00	39.32	15.77	ND	23.55	02-09-00	<50	<0.5	0.7	<0.5	<1	180	--	--	--	0.62	NP
MW-4	08-01-95	38.10	15.65	ND	22.45	08-01-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--		
MW-4	12-14-95	38.10	15.35	ND	22.75	12-14-95	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-4	03-21-96	38.10	12.74	ND	25.36	03-21-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-4	05-24-96	38.10	14.03	ND	24.07	05-24-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-4	08-09-96	38.10	16.10	ND	22.00	08-09-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-4	11-06-96	38.10	17.00	ND	21.10	11-06-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-4	03-24-97	38.10	14.21	ND	23.89	03-24-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-4	05-27-97	38.10	15.38	ND	22.72	05-28-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-4	08-07-97	38.10	16.95	ND	21.15	08-07-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-4	11-10-97	38.10	17.53	ND	20.57	11-10-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-4	02-16-98	38.10	10.65	ND	27.45	02-16-98	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-4	04-15-98	38.10	12.20	ND	25.90	04-15-98	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-4	07-24-98	38.10	14.47	ND	23.63	07-24-98	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-4	10-19-98	38.10	16.20	ND	21.90	10-19-98	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-4	01-28-99	38.10	15.02	ND	23.08	01-28-99	340	52	5.5	<0.5	74	31	--	--	--		

Table 2
Historical Groundwater Elevation and Analytical Data
Petroleum Hydrocarbons and Their Constituents

ARCO Service Station 2111
1156 Davis Street, San Leandro, California

Well Designation	Water Level Field Date	Top of Casing Elevation ft-MSL	Depth to Water feet	Free Product Thickness feet	Groundwater Elevation ft-MSL	Water Sample Field Date	**TPHG** LUFT Method µg/L	**Benzene** EPA 8021B* µg/L	**Toluene** EPA 8021B* µg/L	**Ethylbenzene** EPA 8021B* µg/L	**Total Xylenes** EPA 8021B* µg/L	**MTBE** EPA 8021B* µg/L	**MTBE** EPA 8260 µg/L	**TRPH** EPA 418.1 µg/L	**TPHD** LUFT Method µg/L	Dissolved Oxygen mg/L	Purged/ Not Purged P/NP
MW-4	06-25-99	38.10	15.57	ND	22.53	06-25-99	510	78	4.1	0.5	18	94	--	--	--	0.90	NP
MW-4	08-25-99	38.10	16.43	ND	21.67	08-25-99	660	130	21	6.4	39	110	--	--	--	1.01	NP
MW-4	11-10-99	38.10	16.02	ND	22.08	11-10-99	510	98	5.1	3.1	15	69	--	--	--	0.28	NP
MW-4	02-09-00	38.10	14.30	ND	23.80	02-09-00	<50	<0.5	0.9	<0.5	<1	55	--	--	--	0.67	NP
MW-5	03-21-96	37.21	12.60	ND	24.61	03-22-96	<50	<0.5	<0.5	<0.5	<0.5	82	--	--	--		
MW-5	05-24-96	37.21	13.71	ND	23.50	05-24-96	<50	<0.5	<0.5	<0.5	<0.5	7	--	--	--		
MW-5	08-09-96	37.21	15.60	ND	21.61	08-09-96	<50	<0.5	<0.5	<0.5	<0.5	8	--	--	--		
MW-5	11-06-96	37.21	16.36	ND	20.85	11-06-96	<50	<0.5	<0.5	<0.5	<0.5	100	--	--	--		
MW-5	03-24-97	37.21	13.87	ND	23.34	03-24-97	<50	<0.5	<0.5	<0.5	<0.5	460	--	--	--		
MW-5	05-27-97	37.21	14.71	ND	22.50	05-28-97	<100	<1	<1	<1	<1	120	--	--	--		
MW-5	08-07-97	37.21	16.90	ND	20.31	08-07-97	<250	<2.5	<2.5	<2.5	<2.5	250	--	--	--		
MW-5	11-10-97	37.21	16.88	ND	20.33	11-10-97	<1,000	<10	<10	<10	<10	770	--	--	--		
MW-5	02-16-98	37.21	10.56	ND	26.65	02-16-98	<200	<2	<2	<2	<2	230	--	--	--		
MW-5	04-15-98	37.21	12.20	ND	25.01	04-15-98	<500	<5	<5	<5	<5	900	--	--	--		
MW-5	07-24-98	37.21	14.20	ND	23.01	07-24-98	<500	<5	<5	<5	<5	570	--	--	--		
MW-5	10-19-98	37.21	15.74	ND	21.47	10-19-98	<250	<2.5	<2.5	<2.5	<2.5	300	--	--	--		
MW-5	01-28-99	37.21	14.60	ND	22.61	01-28-99	<500	8	<5	<5	<5	290	--	--	--		
MW-5	06-25-99	37.21	15.10	ND	22.11	06-25-99	<50	<0.5	<0.5	<0.5	<0.5	1,300	--	--	--	0.76	NP
MW-5	08-25-99	37.21	15.91	ND	21.30	08-25-99	<50	<0.5	<0.5	<0.5	<0.5	6,700	--	--	--	0.98	NP
MW-5	11-10-99	37.21	15.52	ND	21.69	11-10-99	130	2.0	7.0	1.3	21	5,000	--	--	--	0.21	NP
MW-5	02-09-00	37.21	14.03	ND	23.18	02-09-00	92	<0.5	0.8	<0.5	1.0	7,900	--	--	--	0.51	NP
MW-6	03-21-96	37.11	11.55	ND	25.56	03-22-96	<50	<0.5	1.9	<0.5	<0.5	<3	--	--	--		
MW-6	05-24-96	37.11	12.80	ND	24.31	05-24-96	<50	<0.5	<0.5	<0.5	<0.5	6	--	--	--		

Table 2
Historical Groundwater Elevation and Analytical Data
Petroleum Hydrocarbons and Their Constituents

ARCO Service Station 2111
1156 Davis Street, San Leandro, California

Well Designation	Water Level Field Date	Top of Casing Elevation ft-MSL	Depth to Water feet	Free Product Thickness feet	Groundwater Elevation ft-MSL	Water Sample Field Date	**TPHG** LUFT Method µg/L	**Benzene** EPA 8021B* µg/L	**Toluene** EPA 8021B* µg/L	**Ethylbenzene** EPA 8021B* µg/L	**Total Xylenes** EPA 8021B* µg/L	**MTBE** EPA 8021B* µg/L	**MTBE** EPA 8260 µg/L	**TRPH** EPA 418.1 µg/L	**TPHD** LUFT Method µg/L	Dissolved Oxygen mg/L	Purged/ Not Purged P/NP
MW-6	08-09-96	37.11	Not surveyed			08-09-96	Not sampled: Car parked on well										
MW-6	11-06-96	37.11	Not surveyed			11-06-96	Not sampled: Car parked on well										
MW-6	03-24-97	37.11	13.06	ND	24.05	03-24-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-6	05-27-97	37.11	14.30	ND	22.81	05-28-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-6	08-07-97	37.11	16.40	ND	20.71	08-07-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-6	11-10-97	37.11	16.53	ND	20.58	11-10-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-6	02-16-98	37.11	Not surveyed			02-16-98	Not sampled: Car parked on well										
MW-6	04-15-98	37.11	10.95	ND	26.16	04-15-98	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-6	07-24-98	37.11	13.30	ND	23.81	07-24-98	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-6	10-19-98	37.11	Not surveyed			10-19-98	Not sampled: Car parked on well										
MW-6	01-28-99	37.11	13.92	ND	23.19	01-28-99	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-6	06-25-99	37.11	15.47	ND	21.64	06-25-99	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--	0.74	NP
MW-6	08-25-99	37.11	15.39	ND	21.72	08-25-99	<50	<0.5	3.4	0.6	3.7	<3	--	--	--	0.92	NP
MW-6	11-10-99	37.11	14.92	ND	22.19	11-10-99	<50	<0.5	<0.5	<0.5	<1	<3	--	--	--	0.31	NP
MW-6	02-09-00	37.11	13.30	ND	23.81	02-09-00	<50	<0.5	0.9	<0.5	1.3	<3	--	--	--	0.79	NP
MW-7	03-21-96	38.68	13.32	ND	25.36	03-22-96	32,000	870	450	970	4,900	280	--	--	--		
MW-7	05-24-96	38.68	14.58	ND	24.10	05-24-96	22,000	570	40	42	1,900	<200[2]	--	--	--		
MW-7	08-09-96	38.68	15.33	ND	23.35	08-09-96	14,000	390	<10	180	470	<200[2]	--	--	--		
MW-7	11-06-96	38.68	16.95	ND	21.73	11-06-96	9,500	440	<10	210	150	<100[2]	--	--	--		
MW-7	03-24-97	38.68	14.65	ND	24.03	03-24-97	6,400	420	<10	260	13	480	--	--	--		
MW-7	05-27-97	38.68	15.58	ND	23.10	05-28-97	5,000	420	<5	230	10	460	--	--	--		
MW-7	08-07-97	38.68	17.10	ND	21.58	08-07-97	3,900	350	<5	200	10	330	--	--	--		
MW-7	11-10-97	38.68	18.05	ND	20.63	11-10-97	5,600	590	10	370	43	540	--	--	--		
MW-7	02-16-98	38.68	12.03	ND	26.65	02-16-98	<5,000	390	<50	<50	61	4,300	--	--	--		

Table 2
Historical Groundwater Elevation and Analytical Data
Petroleum Hydrocarbons and Their Constituents

ARCO Service Station 2111
1156 Davis Street, San Leandro, California

Well Designation	Water Level Field Date	Top of Casing Elevation	Depth to Water	Free Product Thickness	Groundwater Elevation	Water Sample Field Date	**TPHG** LUFT Method	**Benzene** EPA 8021B*	**Toluene** EPA 8021B*	**Ethylbenzene** EPA 8021B*	**Total Xylenes** EPA 8021B*	**MTBE** EPA 8021B*	**MTBE** EPA 8260	**TRPH** EPA 418.1	**TPHD** LUFT Method	Dissolved Oxygen	Purged/ Not Purged
		ft-MSL	feet	feet	ft-MSL		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	P/NP
MW-7	04-15-98	38.68	13.02	ND	25.66	04-15-98	<10,000	<100	<100	<100	<100	8,900	--	--	--		
MW-7	07-24-98	38.68	14.18	ND	24.50	07-24-98	5,800	180	<50	74	<50	4,200	--	--	--		
MW-7	10-19-98	38.68	15.99	ND	22.69	10-19-98	<2,500	54	<25	72	<25	3,000	--	--	--		
MW-7	01-28-99	38.68	15.69	ND	22.99	01-28-99	4,500	560	250	<50	94	6,200	--	--	--		
MW-7	06-25-99	38.68	15.36	ND	23.32	06-25-99	3,900	520	160	46	100	45,000	63,000[3]	--	--	0.56	NP
MW-7	08-25-99	38.68	16.71	ND	21.97	08-25-99	3,400	730	77	51	110	62,000	76,000[3]	--	--	0.90	NP
MW-7	11-10-99	38.68	16.76	ND	21.92	11-10-99	15,000	340	19	13	20	55,000	91,000[3]	--	--	0.37	NP
MW-7	02-09-00	38.68	14.45	0.03	24.25 [1]	02-09-00	Not sampled: free product present										

ft-MSL: elevation in feet, relative to mean sea level
TPHG: total petroleum hydrocarbons as gasoline, California DHS LUFT Method
MTBE: Methyl tert-butyl ether
TRPH: total recoverable petroleum hydrocarbons
TPHD: total petroleum hydrocarbons as diesel, California DHS LUFT Method
*: EPA method 8020 prior to 11/10/99
EPA: United States Environmental Protection Agency
µg/L: micrograms per liter
mg/L: milligrams per liter
ND: none detected
--: not available or not analyzed
<: less than laboratory detection limit stated to the right
[1]: [corrected elevation (Z')] = Z + (h * 0.73) where: Z = measured elevation, h = floating product thickness, 0.73 = density ratio of oil to water
[2]: chromatogram fingerprint is not characteristic of diesel
[3]: also analyzed for fuel oxygenates
[4]: this value is suspected to be erroneous based on subsequent check by bailer (following day). See discussion

Table 3

Recent Groundwater Elevation and Analytical Data

ARCO Service Station # 2111
1156 Davis Street
San Leandro, California

Well Number	Date Sampled		Top of Riser Elevation (feet, MSL)	Depth to Groundwater (feet, TOC)	Groundwater Elevation (feet, MSL)	TPH as Gasoline (µg/L)	Benzene (µg/L)	Toluene (µg/L	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE (8020) (µg/L)	MTBE (8260) (µg/L)	Dissolved Oxygen (mg/L)
MW-1	06/26/00		39.60	16.46	23.14	NA	NA	NA	NA	NA	NA	NA	NA
	07/20/00			16.89	22.71	360	110	<0.5	<0.5	2.7	2,100	NA	NA
	09/19/00			17.62	21.98	290	76	<0.5	<0.5	2.3	1,500	NA	NA
	12/21/00			17.39	22.21	257	64	2.89	1.31	4.57	1,080	1,060	NA
	03/13/01			15.7	23.90	<500	52.5	<5.0	<5.0	<5.0	1,430	1,370	NA
	09/18/01			18.24	21.36	<500	64	7.3	<5.0	52	810	1,100	NA
	12/28/01			15.95	23.65	<500	<5.0	<5.0	5.00	22	1,200	1,100	NA
	03/14/02			16.01	23.59	<50	<0.5	<0.5	<0.5	<0.5	34	40	NA
	04/23/02			15.43	24.17	<50	<0.5	<0.5	<0.5	<0.5	30	NA	NA
	07/17/02	NP		17.50	22.10	<50	1.2	<0.50	<0.50	<0.50	29	NA	1.6
	10/09/02			18.27	21.33	240[c]	4.9	<1.0	4.1	7.0	290	310	1.2
	01/13/03			15.37	24.23	760[c]	34	11	17	56	300	NA	1.0
	04/07/03[n]			16.61	22.99	ND<50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	NA	22	1.5
MW-2	06/26/00		37.99	14.60	23.39[a]	NA	NA	NA	NA	NA	NA	NA	NA
	07/20/00			15.14	22.85	95,000	2,300	18,000	2,500	19,000	13,000	NA	NA
	09/19/00			15.95	22.04	63,000	1,200	6,300	2,000	14,000	19,000	NA	NA
	12/21/00			15.60	22.39	45,900		2,130	1,160	9,460	22,400	24,700	NA
	12/21/00[b]			NM	NC	5,010	360	189	213	626	54,300	89,200	NA
	03/13/01			13.77	23.9	3,650	98.1	<5.0	<5.0	6.42	3,590	3,260	NA
	3/13/2001[b]			NM	NC	<20,000	525	466	408	1,460	91,700	76,000	NA
	9/18/2001[n]			16.86	21.13	NS	NS	NS	NS	NS	NS	NS	NA
	12/28/01			14.28	23.71	31,000	1,500	3,800	1,300	4,800	9,300	8,800	NA
	03/14/02			14.15	23.84	1,800	25	43	43	270	990	960	NA
	04/23/02			13.60	24.39	9,000	220	110	470	2,500	8,500	NA	NA
	07/17/02	NP	SHEEN	15.75	22.24	74,000[c]	280	290	820	10,000	19,000	NA	0.4
	10/9/02[g]	NP		16.69	21.30	NS	NS	NS	NS	NS	NS	NS	NA
	01/13/03[g]		FREE PRODUCT	13.59	24.61[h]	NS	NS	NS	NS	NS	NS	NA	NA
	04/07/03[g]		FREE PRODUCT	14.70	23.69[h]	NS	NS	NS	NS	NS	NA	NS	NA

Table 3
Recent Groundwater Elevation and Analytical Data

ARCO Service Station # 2111
1156 Davis Street
San Leandro, California

Well Number	Date Sampled		Top of Riser Elevation (feet, MSL)	Depth to Groundwater (feet, TOC)	Groundwater Elevation (feet, MSL)	TPH as Gasoline (µg/L)	Benzene (µg/L)	Toluene (µg/L	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE (8020) (µg/L)	MTBE (8260) (µg/L)	Dissolved Oxygen (mg/L)
MW-3	06/26/00		39.32	15.96	23.36	NA	NA	NA	NA	NA	NA	NA	NA
	07/20/00			16.42	22.90	<50	<0.5	<0.5	<0.5	<1.0	130	NA	NA
	09/19/00			17.18	22.14	190	17	<0.5	1.4	2.4	160	NA	NA
	12/21/00			16.97	22.35	187	17.8	<0.5	2.47	2.5	143	125	NA
	03/13/01			15.17	24.15	72.4	2.83	<0.5	<0.5	<0.5	126	122	NA
	09/18/01			17.81	21.51	140	6.4	<0.5	3.5	1.6	110	75	NA
	12/28/01			15.44	23.88	130	5.9	<0.5	0.99	0.55	90	63	NA
	03/14/02			15.50	23.82	<50	<0.5	<0.5	<0.5	<0.5	100	88	NA
	04/23/02			14.96	24.36	<50	<0.5	<0.5	<0.5	<0.5	77	NA	NA
	07/17/02	NP		17.09	22.23	<50	<0.50	<0.50	<0.50	<0.50	47	NA	0.8
	10/09/02	NP		17.87	21.45	<50	<0.50	<0.50	<0.50	<0.50	26	29	1.3
	01/13/03	NP		14.78	24.54	ND<50	ND<0.50	ND<0.50 [j]	ND<0.50	ND<0.50	59 [m]	NA	0.8
	04/07/03 [n]	NP		16.15	23.17	88	ND<0.50	ND<0.50	ND<0.50	ND<0.50	NA	75	1.1
MW-4	06/26/00		38.10	14.59	23.51	NA	NA	NA	NA	NA	NA	NA	NA
	07/20/00			15.04	23.06	97	7.9	<0.5	<0.5	1.1	51	NA	NA
	09/19/00			15.83	22.27	110	7.0	<0.5	<0.5	<1.0	60	NA	NA
	12/21/00			15.59	22.51	120	5.6	<0.5	1.72	<0.5	46.3	48.6	NA
	03/13/01			13.73	24.37	76	0.796	<0.5	<0.5	<0.5	53.7	50.0	NA
	09/18/01			16.50	21.60	<50	<0.5	<0.5	<0.5	<0.5	25	26.0	NA
	12/28/01			14.03	24.07	<50	<0.5	<0.5	<0.5	<0.5	15	11.0	NA
	03/14/02			14.10	24.00	<50	<0.5	<0.5	<0.5	<0.5	31	28	NA
	04/23/02			13.57	24.53	<50	3	<0.5	<0.5	<0.5	42	NA	NA
	07/17/02	NP		15.76	22.34	<50	<0.50	<0.50	<0.50	<0.50	16	NA	1.2
	10/09/02	NP		16.59	21.51	<50	2.2	<0.50	<0.50	<0.50	20	23	0.8
	01/13/03	NP		13.43	24.67	52 [d]	ND<0.50	1.6	ND<0.50	ND<0.50	22	NA	0.6
	04/07/03 [n]	NP		14.74	23.36	65	ND<0.50	ND<0.50	ND<0.50	ND<0.50	NA	24	0.7

Table 3

Recent Groundwater Elevation and Analytical Data

ARCO Service Station # 2111
1156 Davis Street
San Leandro, California

Well Number	Date Sampled		Top of Riser Elevation (feet, MSL)	Depth to Groundwater (feet, TOC)	Groundwater Elevation (feet, MSL)	TPH as Gasoline (µg/L)	Benzene (µg/L)	Toluene (µg/L	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE (8020) (µg/L)	MTBE (8260) (µg/L)	Dissolved Oxygen (mg/L)
MW-5	06/26/00		37.21	14.27	22.94	NA	NA	NA	NA	NA	NA	NA	NA
	07/20/00			14.69	22.52	55	<0.5	<0.5	<0.5	<1.0	14,000	NA	NA
	09/19/00			15.36	21.85	54	<0.5	<0.5	<0.5	<1.0	13,000	NA	NA
	12/21/00			15.15	22.06	72.9	2.51	<0.5	<0.5	0.961	19,200	21,200	NA
	03/13/01			13.5	23.71	<500	<5	<5	<5	<5	15,900	20,000	NA
	09/18/01			15.94	21.27	<10,000	<100	<100	<100	<1,000	22,000	20,000	NA
	12/28/01			13.45	23.76	<10,000	<100	<100	<100	<100	10,000	10,000	NA
	03/14/02			13.82	23.39	<5,000	<50	<50	<50	<50	7,100	7,700	NA
	04/23/02			13.25	23.96	<5,000	<50	<50	<50	<50	8,900	NA	NA
	07/17/02	NP		15.27	21.94	7,900 [d]	<50	<50	<50	<50	13,000	NA	1.1
	10/09/02	NP		16.02	21.19	2,400 [e]	<20	<20	<20	<20	7,300	7,500	1.2
	01/13/03	NP		13.20	24.01	6,400 [e]	ND<50 [j]	ND<50	ND<50	ND<50 [j]	8,900 [k]	NA	1.3
	04/07/03 [n]	NP		14.42	22.79	ND<10,000	ND<100	ND<100	ND<100	ND<100	NA	3,700	0.9
MW-6	06/26/00		37.11	13.46	23.65	NA	NA	NA	NA	NA	NA	NA	NA
	07/20/00			13.94	23.17	<50	<0.5	<0.5	<0.5	<1.0	<3.0	NA	NA
	09/19/00			14.41	22.70	<50	<0.5	<0.5	<0.5	<1.0	<3.0	NA	NA
	12/21/00			14.53	22.58	<50	<0.5	<0.5	<0.5	<0.5	<2.5	NA	NA
	03/13/01			12.67	24.44	<50	<0.5	<0.5	<0.5	<0.5	<2.5	NA	NA
	09/18/01			15.42	21.69	<50	<0.5	<0.5	<0.5	<0.5	<2.5	<2.0	NA
	12/28/01			12.96	24.15	<50	<0.5	<0.5	<0.5	<0.5	12	<0.5	NA
	03/14/02			12.98	24.13	<50	<0.5	<0.5	<0.5	<0.5	<2.5	NA	NA
	04/23/02			12.44	24.67	<50	<0.5	<0.5	<0.5	<0.5	3	NA	NA
	07/17/02	NP		14.65	22.46	<50	<0.50	<0.50	<0.50	<0.50	<2.5	NA	1.3
	10/09/02	NP		15.51	21.60	<50	<0.50	<0.50	<0.50	<0.50	<2.5	NA	1.3
	01/13/03	NP		12.27	24.84	ND<50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<2.5	NA	1.1
	04/07/03 [n]	NP		13.61	23.50	ND<50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	NA	ND<0.50	2.0

Table 3
Recent Groundwater Elevation and Analytical Data

ARCO Service Station # 2111
1156 Davis Street
San Leandro, California

Well Number	Date Sampled		Top of Riser Elevation (feet, MSL)	Depth to Groundwater (feet, TOC)	Groundwater Elevation (feet, MSL)	TPH as Gasoline (µg/L)	Benzene (µg/L)	Toluene (µg/L	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE (8020) (µg/L)	MTBE (8260) (µg/L)	Dissolved Oxygen (mg/L)
MW-7	06/26/00		38.68	14.34	24.34	NA	NA	NA	NA	NA	NA	NA	NA
	07/20/00			15.26	23.42	14,000	5.4	<0.5	2.8	5.9	71,000	NA	NA
	09/19/00			15.70	22.98	8,400	420	38	470	220	5,600	NA	NA
	12/21/00			16.02	22.66	NS[a]	NS[a]	NS[a]	NS[a]	NS[a]	NS[a]	NS[a]	NA
	03/13/01			14.18	24.50	<2,000	154	63	46.3	127	175,000	160,000	NA
	09/18/01			17.02	21.66	<100,000	1,900	<1,000	<1,000	2,800	190,000	370,000	NA
	12/28/01			14.81	23.87	<20,000	<200	<200	<200	<200	84,000	72,000	NA
	03/14/02			14.60	24.08	<50,000	<500	<500	<500	<500	85,000	85,000	NA
	04/23/02			13.94	24.74	<20,000	530	200	220	800	67,000	NA	NA
	07/17/02	NP		16.27	22.41	26,000 [d]	720	<250	<250	860	120,000	NA	1.0
	10/09/02	NP		17.16	21.52	110,000[d]	1,500	4,400	820	5,400	97,000	120,000	0.9
	01/13/03	NP		13.82	24.86	ND<50,000 [f]	ND<500 [f]	ND<500 [f]	ND<500 [f]	2,200 [f]	33,000 [f]	NA	0.8
	04/07/03 [n]	NP		14.52	24.16	ND<2,500	30	ND<25	ND<25	ND<25	NA	710	1.0

Recent Groundwater Elevation and Analytical Data

ARCO Service Station # 2111
1156 Davis Street
San Leandro, California

Well Number	Date Sampled	Top of Riser Elevation (feet, MSL)	Depth to Groundwater (feet, TOC)	Groundwater Elevation (feet, MSL)	TPH as Gasoline (µg/L)	Benzene (µg/L)	Toluene (µg/L	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE (8020) (µg/L)	MTBE (8260) (µg/L)	Dissolved Oxygen (mg/L)

Notes:

TPH = Total Petroleum Hydrocarbons analyzed by EPA method 8260B. (Prior to 04/07/03, analyzed by EPA method 8015 modified.)
BTEX = Benzene, Toluene, Ethyl-benzene, and Total Xylenes analyzed by EPA method 8260B. (Prior to 04/07/03, analyzed by EPA method 8021B.)
MTBE = Methyl tertiary butyl ether analyzed by EPA Method 8260B. (Prior to 04/07/03, analyzed by EPA method 8021B unless otherwise noted.)
µg/L = Micrograms per liter
mg/L = Milligrams per liter
NA = Not available
NM = Not measured
NC = Not calculated
NP = Well not purged before sampling
MSL = Mean sea level
TOC = Top of casing
ND< = Not detected at or above specified laboratory method detection limit
a = Product sheen noted
b = Well was sampled after batch extraction event.
c = Chromatogram Pattern: Gasoline C6-C10
d = Hydrocarbon pattern is present in the requested fuel quantitation range but does not resemble the pattern of the requested fuel
e = Discrete peak @C6-C7
f = This sample was analyzed beyond the EPA recommended holding time. The results may still be useful for their intended purpose.
g = Well not sampled due to the detection of free product.
h = Groundwater elevation adjusted for free product: (thickness of free product x 0.8) + measured groundwater elevation
j = The closing calibration was outside acceptance limits by 1%. This should be considered in evaluating the result. The average % difference for all analytes met the 15% requirement and the QC suggests that calibration linearity is not a factor.
k = The closing calibration was outside acceptance limits by 6%. This should be considered in evaluating the result. The average % difference for all analytes met the 15% requirement and the QC suggests that calibration linearity is not a factor.
l = This analyse was not confirmed using a secondary column in accordance to client contract.
m = This analyze was not confirmed using a secondary column in accordance to client contract.
n = TPH-g, BTEX, and MTBE analyzed by EPA method 8260B beginning on the second quarter 2003 sampling event (04/07/03).
Source : The data within this table collected prior to July 2002 was provided to URS by Group Environmental Management Company and their previous consultants. URS has not verified the accuracy of this information.

Table 4

Groundwater Flow Direction and Gradient

ARCO Service Station # 2111
1156 Davis Street
San Leandro, California

Date Measured	Average Flow Direction	Average Hydraulic Gradient
07/20/00	West-Northwest	0.006
09/19/00	West-Northwest	0.004
12/21/00	West-Northwest	0.004
03/13/01	West-Northwest	0.005
05/30/01	West-Northwest	0.004
09/18/01	West-Northwest	0.003
12/28/01	West-Northwest	0.003
03/14/02	West	0.004
04/23/02	West	0.006
07/17/02	West	0.003
10/09/02	West	0.002
01/13/03	Southwest	0.004
04/07/03	Northwest	0.009

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

Appendix D

Pre-Drilling / Subsurface Checklist for Intrusive Fieldwork

PREDRILLING/SUBSURFACE CHECKLIST FOR INTRUSIVE FIELDWORK

Site Name _____ Job # _____

Site Phone Number: _____ _____

Site Address _____ County _____

BP EBM: _____ Phone _____

BP Site Manager Contacted On: _____ By: _____

Site Drawings (yes / no / NA) _____ (please attach) Historical Drawings (yes / no / NA) _____

As-Build Drawings (yes/no/NA) _____ (please attach)

Third Party Construction/Redevelopment Plans (yes/no/NA) (please attach)

***ATTACH SITE FIGURE WITH PROPOSED BORING LOCATIONS

Subcontractor's (drillers, concrete, etc...) Company _____

Subcontractor's Name / Contact Person _____ Phone _____

Meeting / Start Date _____ Time _____

1) Health and Safety Form Completed: Y / N Date _____

2) Mandatory Utility Protection Services Minimum 48 Hrs. Advance Notice (State Specific Notification Period Supercedes)

Called: Date _____ Time _____ Initials _____

Reference # _____

Proposed Drilling Locations Premarked for Locating Service. Y / N

3) Mandatory Private or In-House Utility Locating Service Performed? Y / N _____

Called: Date _____ Time _____ Initials _____

Name of Locating Service: _____

Telephone #/ contact: _____

Supplier Locating Technician: _____

Type of sensing equipment used: _____

Proposed Drilling Locations Premarked Y / N

4) Other Potential Underground Structures

Name of City Engineer/Utility Representative: _____

Telephone #: _____

Date Notified _____ Maps: Y / N

Cleared: Y / N

5) COMPLETED SITE WALKOVER W/ SITE MANAGER/DESIGNEE OR OWNER/TENANT REP. Y / N

Name of Site Manager: _____

Name of Property Owner/Tenant Representative: _____

Cleared: Yes / No

Building Utility Service Line Connections Identified: Y / N

Utility Service Line Points of Entry to the Property from Utility Mains identified: Y / N

(Hand sketch on site map w/proposed boring locations and most likely utility trench locations)

6) Utility Inventory: Y / N

Utility	Name	Depth (ft)	Phone	Notified - Date	Marked
Above Ground Services:					
Electric		NA		Y / N	Y / N
Telephone		NA		Y / N	Y / N
Cable		NA		Y / N	Y / N
Overhead Supports		NA		Y / N	Y / N
Traffic light cables		NA		Y / N	Y / N

6) Utility Inventory Continued:

Below Ground Services:

Electric				Y / N		Y / N
Telephone				Y / N		Y / N
Cable				Y / N		Y / N
Gas				Y / N		Y / N
Water				Y / N		Y / N
UST System				Y / N		Y / N
Storm				Y / N		Y / N
Sanitary				Y / N		Y / N
Steam				Y / N		Y / N
Pipeline Companies				Y / N		Y / N

Other:

				Y / N		Y / N
				Y / N		Y / N
				Y / N		Y / N

7) Site-Specific Emergency Contingency Plan Incorporated in Health & Safety Plan Y / N

8) Signature of Supplier Project Mgr. (required to begin fieldwork):

High Risk Drilling Locations Approved by EBM Date: Y / N

(Predrilling Checklist and supporting information to be included with the site H&S Plan, present on-site during all intrusive investigations and available upon request.)

NAME OF PROJ. MGR. (PRINTED OR TYPED)

SIGNATURE OF PROJ. MGR.

Name of Supplier Field Personnel

Signature of Field Personnel

NOTE: Primary Contractor Signature is verification that Field Personnel have reviewed, adhered to and received the necessary supplier training to implement precautionary drilling standards for performing work at GEM Marketing Retail properties as defined in BP's PRECAUTIONARY PROCEDURES AND GUIDELINES FOR DRILLING, SUBSURFACE INVESTIGATIONS AND REMEDIAL CONSTRUCTION ACTIVITIES. Any questions or concerns should be elevated to the Primary Contractor Project Manager or EBM prior to initiating field work.

ADDITIONAL COMMENTS / NOTES: