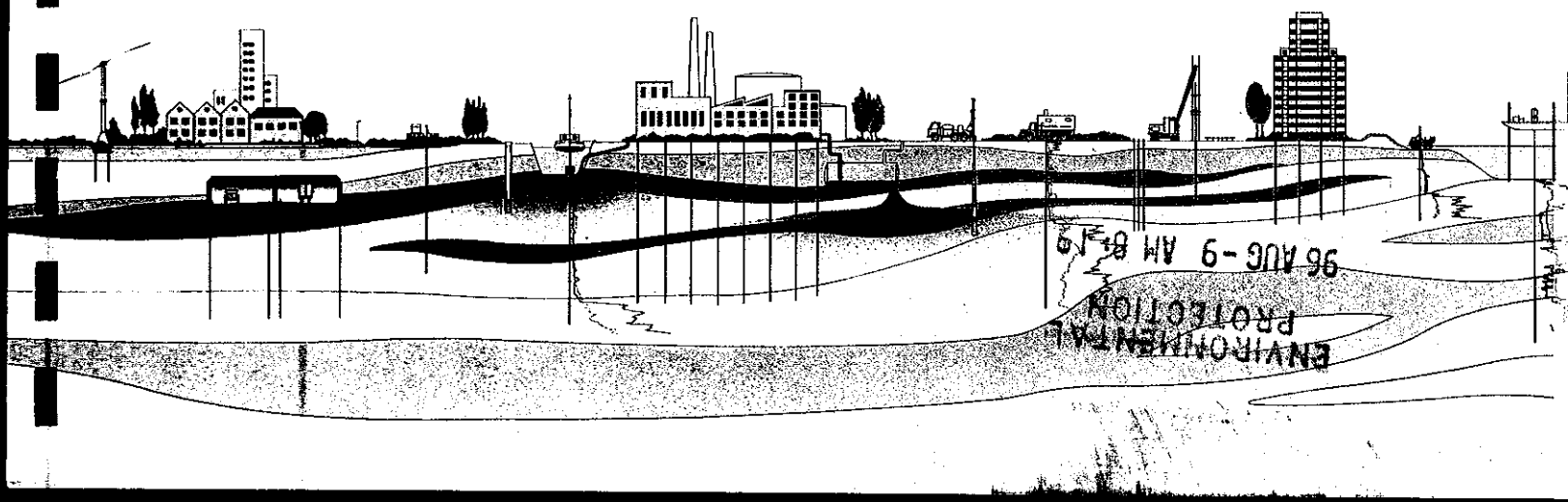
SECOND QUARTER 1996 GROUNDWATER MONITORING REPORT

HOUSING AUTHORITY OF THE CITY OF ALAMEDA FACILITY
1916 Webster Street
Alameda, California

Prepared for:
HOUSING AUTHORITY OF THE CITY OF ALAMEDA
701 Atlantic Avenue
Alameda, California

Prepared by:
FUGRO WEST, INC.
44 Montgomery Street, Suite 1010
San Francisco, California

Project No. 9437-7623
August 1996



FUGRO WEST, INC.

44 Montgomery Street, Suite 1010
San Francisco, California 94104

Phone : (415) 296-1041
Telefax : (415) 296-0944

LETTER OF TRANSMITTAL

To:	Alameda County Health Care Services	Project No.	9437-7623
	1131 Harbor Bay Parkway	Date	August 7, 1996
	Alameda, CA 94502-6577		
Attn:	Eva Chu		
Phone:		Fax No.	

From Peter Hudson

Subject Second Quarter 1996 Groundwater Monitoring Report

SENT BY:

☐ Messenger ☐ Overnight Mail ☐ Overnight (by 10 AM) ☐ Regular mail ☐ Hand Delivered

WE ARE TRANSMITTING:

☐ Draft Report
☐ Final Report
☐ Proposal
☐ Other:

THESE ARE TRANSMITTED:

☐ For Your Review
☒ For Your Information and Use
☐ Per Your Request
☐ Other:

Please find enclosed the above referenced material for your use. I welcome any questions or comments. Thank you.

Signature Date

96 AUG -9 AM 8:19

ENVIRONMENTAL PROTECTION

FOR OFFICE USE ONLY

Originator Please Initial Appropriate Box Prior to Sending

☐ Create typed transmittal	☐ Mail to Addressee	☐ Mail copy, then file original	☐ Mail copy, return original	☐ Mail to Addressee and cc, file copy

FUGRO WEST, INC.

44 Montgomery Street, Suite 1010
San Francisco, CA 94104
Tel: (415) 296-1041
Fax: (415) 296-0944

August 6, 1996
Project No. 9437-7623

Ms. Eileen Duffy
Project Administrator
Housing Authority of the City of Alameda
701 Atlantic Avenue
Alameda, California 94501

Second Quarter 1996 Groundwater Monitoring Report
Housing Authority of the City of Alameda
1916 Webster Street
Alameda, California

Dear Ms. Duffy:

This report presents the results of quarterly ground water monitoring and sampling conducted by Fugro West, Inc., (Fugro) on June 12, 1996, at the Housing Authority of the City of Alameda (AHA) facility located at 1916 Webster Street in Alameda, California (subject property), as shown on the Site Location Map, Figure 1.

Background

The subject property consists of a warehouse building and adjacent parking lot located at the southeast corner of Webster Street and Atlantic Avenue in a commercial area of Alameda, California (Figure 2). The AHA had a 280-gallon underground storage tank (UST) removed from the subject property in July 1986. Results of an environmental investigation conducted following the UST removal suggested that the UST released petroleum hydrocarbons in the soil and groundwater. Subsequent work included excavation of impacted soils and the installation of groundwater monitoring wells MW-1, MW-2 and MW-3 (Figure 2).

Fugro installed ground water monitoring wells MW-4, MW-5, and MW-6 (Figure 2). Groundwater monitoring and sampling at the subject property began in October 1992. In September 1995, the Alameda County Health Department advised the AHA to discontinue sampling monitoring well MW-6 and sample monitoring wells MW- 1, MW-2, and MW-3 once a year. Monitoring wells MW-4 and MW-5 are sampled quarterly. Ground water elevations in all wells are measured and recorded on a quarterly basis.

CURRENT GROUND WATER MONITORING

Field work documented in this report was conducted according to the Fugro standard operating procedures (SOPs) included in Attachment 1.

Ground Water Elevations

Since the last quarterly monitoring event, ground water elevations in wells MW-1 through MW-6 increased an average of 0.75 feet. No free product was detected in the wells. Based on field data, the calculated ground water flow direction on June 12, 1996, was north-northwest (Figure 2) at an approximate gradient of 0.006 foot per foot. Fugro based the groundwater flow direction and gradient on monitoring wells MW-2, MW-3, MW-5 and MW-6. The measured groundwater elevation for MW-1 is not valid due to damage to the casing and protective box. The groundwater elevation in MW-4 appears anomalous, possibly due to measurement error or hydrogeologic conditions in the former UST excavation. Groundwater elevation data is presented on Table 1.

Ground Water Sampling and Analysis

On June 12, 1996, Fugro personnel collected ground water samples from monitoring wells MW-4 and MW-5. The samples were submitted under chain-of-custody to American Environmental Network (AEN) laboratory in Pleasant Hill, California for analysis of total petroleum hydrocarbons as gasoline (TPH-g) by EPA Method 8015M and benzene, toluene, ethylbenzene, and total xylenes (BTEX) by EPA Method 602. The Alameda County Health Department recently determined that it is no longer necessary to conduct lead analysis on groundwater samples. AEN is a California state certified analytical laboratory.

The groundwater sample from monitoring well MW-4 contained 300 parts per billion (ppb) of TPH-g and benzene at 37 ppb. Toluene, ethylbenzene and xylenes were not detected above the method detection limit of 3 ppb. TPH-g and BTEX concentrations in MW-4 decreased since the first quarter of 1996 (March 1996). The groundwater sample from monitoring well MW-5 contained 2,100 ppb of TPH-g and benzene at 800 ppb. Toluene was not detected above the method detection limit of 3 ppb. Concentrations of ethylbenzene and xylenes were 3 ppb and 20 ppb, respectively. TPH-g and BTEX concentrations in MW-5 did not vary significantly since the first quarter of 1996 (March 1996).

Results of laboratory analysis are reported on Table 2. Benzene and TPH-g concentrations are shown on Figure 3. The laboratory analytical reports and chain-of-custody form are included in Attachment 2.

REMARKS

The interpretations contained within this report represent our professional opinions. These opinions are based on available information, and were developed in accordance with currently accepted geologic, hydrogeologic, and engineering practices.

This report has been prepared solely for the use of the AHA. Any reliance on this report by other parties shall be at such parties' own risk. This report was prepared under the review and supervision of the professional engineer, registered with the State of California, whose signature appears below.

The next sampling event will include each well at the subject property and is scheduled for the end of August, 1996. We appreciate the opportunity to provide the AHA with environmental consulting services, and trust this report meets your needs. If you have any questions about this or any other matter, please call us at (415) 296-1041.

Sincerely,

FUGRO WEST, INC.

Peter B. Hudson
Project Geologist

Stephen J. Boudreau
P.E. No. C055195

Attachments

cc: Eva Chu, Alameda County Environmental Health Department

TABLES

TABLE 1
GROUNDWATER ELEVATION DATA

Housing Authority of the City of Alameda Facility
1916 Webster Street
Alameda, California

Well No.	Date	Top of Casing Reference Elevation (feet above MSL)	Depth to Groundwater (feet)	Groundwater Elevation (feet above MSL)
MW-1	10/22/92	9.23(1)	4.94	4.29
	03/19/93		3.72	5.51
	04/19/93		3.91	4.92
	05/30/93		3.94	5.29
	06/29/93		4.36	4.87
	08/04/93		4.55	4.68
	01/26/94		4.14	5.09
	07/16/94		4.65	4.58
	10/10/94	6.51(2)	4.86	1.65
	03/29/95		3.54	2.97
	05/25/95		4.09	2.42
	08/16/95		4.41	2.10
	11/30/95		4.84	1.67
	03/07/96		3.44	3.07
	06/12/96		**4.18**	**2.33**
MW-2	10/22/92	10.00(1)	5.22	4.78
	03/19/93		3.39	6.61
	04/19/93		3.78	6.22
	05/30/93		3.86	6.14
	06/29/93		4.41	5.59
	08/04/93		4.72	5.28
	01/26/94		3.98	6.02
	07/16/94		4.86	5.14
	10/10/94	7.26(2)	5.02	2.24
	03/29/95		NA	NA
	05/25/95		N/A	N/A
	08/16/95		4.60	2.66
	11/30/95		5.03	2.23
	03/07/96		3.00	4.26
	06/12/96		**4.12**	**3.14**
MW-3	10/22/92	9.44(1)	4.66	4.78
	03/19/93		3.18	6.26
	04/19/93		3.44	4.65
	05/30/93		3.45	5.99
	06/29/93		3.95	5.49
	08/04/93		4.13	5.31
	01/26/94		3.7	5.74
	07/16/94		4.41	5.03
	10/10/94	6.71(2)	4.52	2.19
	03/29/95		3.02	3.69
	05/25/95		3.52	3.19
	08/16/95		4.09	2.62
	11/30/95		4.64	2.07
	03/07/96		3.39	3.32
	06/12/96		**3.57**	**3.14**
MW-4	10/10/94	7.55(2)	4.94	2.61
	03/29/95		3.00	4.55
	05/25/95		3.52	4.03
	08/16/95		4.18	3.37
	11/30/95		4.71	2.84
	03/07/96		3.04	4.51
	06/12/96		**3.66**	**3.89**

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TABLE 1

GROUNDWATER ELEVATION DATA
(cont'd)

Housing Authority of the City of Alameda Facility
1916 Webster Street
Alameda, California

Well No.	Date	Top of Casing Reference Elevation (feet above MSL)	Depth to Groundwater (feet)	Groundwater Elevation (feet above MSL)
MW-5	10/10/94	7.31(2)	4.91	2.40
	03/29/95		3.41	3.90
	05/25/95		3.65	3.66
	08/16/95		4.31	3.00
	11/30/95		4.59	2.72
	03/07/96		3.31	4.00
	06/12/96		**4.05**	**3.26**
MW-6	10/10/94	8.09(2)	4.37	3.72
	03/29/95		2.29	5.80
	05/25/95		3.52	4.57
	08/16/95		3.41	4.68
	11/30/95		4.45	3.64
	03/07/96		2.35	5.74
	06/12/96		**3.57**	**4.52**

NOTES:
MSL = mean sea level
(1) = Top of casing reference elevations surveyed using an assumed elevation of 10.00 feet above MSL for MW-2.
(2) = Top of casing reference elevations were resurveyed on September 12, 1994 using a cut square benchmark in the top of the concrete curb at a storm inlet on the south side of Atlantic Avenue approximately 75 feet east of the intersection of Atlantic Avenue and Constitution Way. Benchmark elevation 7.50 feet above MSL.
NA = Not available; well inaccessible due to construction debris.

TABLE 2

SUMMARY OF GROUNDWATER ANALYTICAL RESULTS

Housing Authority of the City of Alameda Facility
1916 Webster Street
Alameda, California

Sample I.D.	Date	TPH-G (µ/L)	Benzene (µ/L)	Toluene (µ/L)	Ethylbenzene (µ/L)	Xylenes (µ/L)	Organic Lead (mg/L)
MW-1	07/91	ND (50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (1.5)	NA
	11/91	ND (50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (1.5)	NA
	02/92	ND (50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (1.5)	NA
	07/92	ND (50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (1.5)	NA
	03/93	ND (50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (1.5)	NA
	04/93	NS	NS	NS	NS	NS	NA
	06/93	ND (50)	ND (0.30)	ND (0.30)	ND (0.30)	ND (0.50)	NA
	01/94	ND (50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (50)
	07/16/94	ND (50)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (20)
	10/10/94	ND (50)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	NA
	3/29/95	ND (50)	0.9	1.3	ND (0.5)	ND (0.5)	NA
	05/25/95	ND (50)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (25)*
	08/16/95	ND (50)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.01)
	11/30/95	NS	NS	NS	NS	NS	NS
	03/07/96	NS	NS	NS	NS	NS	NS
	06/12/96	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**
MW-2	07/91	ND (50)	3.7	ND (0.50)	0.50	5.1	NA
	11/91	ND (50)	1.1	ND (0.50)	ND (0.50)	4.5	NA
	02/92	ND (50)	ND (0.50)	ND (0.50)	ND (0.50)	1.6	NA
	07/92	ND (50)	ND (0.50)	0.59	ND (0.50)	ND (1.5)	NA
	03/93	ND(250)	ND (52)	ND (50)	ND (59)	ND (150)	NA
	04/93	ND (50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (1.5)	NA
	06/93	ND (50)	ND (0.30)	ND (0.30)	ND (0.30)	0.95	NA
	01/94	ND (50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (50)
	07/16/94	ND (50)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.50)	ND (20)
	10/10/94	NS	0.5	ND (0.5)	ND (0.5)	1.2	NA
	3/29/95	NS	NS	NS	NS	NS	NS
	05/25/95	NS	NS	NS	NS	NS	NS
	08/16/95	ND (50)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.01)
	11/30/95	NS	NS	NS	NS	NS	NS
	03/07/96	NS	NS	NS	NS	NS	NS
	06/12/96	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**

Table 2 notes on Page T2-3

TABLE 2

SUMMARY OF GROUNDWATER ANALYTICAL RESULTS
(cont'd)

Housing Authority of the City of Alameda Facility
1916 Webster Street
Alameda, California

Sample I.D.	Date	TPH-G (µ/L)	Benzene (µ/L)	Toluene (µ/L)	Ethylbenzene (µ/L)	Xylenes (µ/L)	Organic Lead (µ/L)
MW-3	07/91	ND (50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (1.5)	NA
	11/91	ND (50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (1.5)	NA
	02/92	ND (50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (1.5)	NA
	07/92	ND (50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (1.5)	NA
	03/93	ND	ND (52)	ND (50)	ND (59)	ND (152)	NA
	04/93	(250)	ND (0.50)	ND (0.50)	ND (0.50)	ND (1.5)	NA
	06/93	ND (50)	ND (0.30)	ND (0.30)	ND (0.30)	ND	NA
	01/94	ND (50)	ND (0.50)	ND (0.50)	ND (0.50)	(0.50)	ND (50)
	07/16/94	ND (50)	ND (0.5)	ND (0.5)	ND (0.5)	ND	ND (20)
	10/10/94	ND (50)	ND (0.5)	ND (0.5)	ND (0.5)	(0.50)	NA
	3/29/95	ND (50)	ND (0.5)	0.9	ND (0.5)	ND (0.5)	NA
	05/25/95	ND (50)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (25)*
	08/16/05	ND (50)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.01)
	11/30/95	NS	NS	NS	NS	NS	NS
	03/07/96	NS	NS	NS	NS	NS	NS
	06/12/96	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**
MW-4	10/10/94	2,400	900	44	12	80	NA
	3/29/95	1,500	580	4.9	4.3	7.0	NA
	05/25/95	1,100	260	6.0	5.5	3.3	ND (25)*
	08/16/95	650	230	2.6	23	1.9	ND (0.01)
	11/30/95	700	280	ND (3)	8	ND (10)	ND(0.04)
	03/07/96	1,800	600	4.3	15	ND (10)	NA
	06/12/96	**300**	**37**	**ND (3)**	**ND (3)**	**ND (10)**	**NA**
MW-5	10/10/94	2,000	840	4.8	0.6	110	NA
	3/29/95	4,900	1,600	61	20	76	NA
	05/25/95	2,500	680	6.5	3.5	110	ND (25)*
	08/16/95	2,200	930	6	6.5	100	ND (0.01)
	11/30/95	3,400	1,400	4	5	21	ND(0.04)
	03/07/96	2,200	920	3	ND (3)	25	NA
	06/12/96	**2,100**	**800**	**ND (3)**	**3 (3)**	**20**	**NA**

Table 2 notes on Page T2-3

TABLE 2

SUMMARY OF GROUNDWATER ANALYTICAL RESULTS
(cont'd)

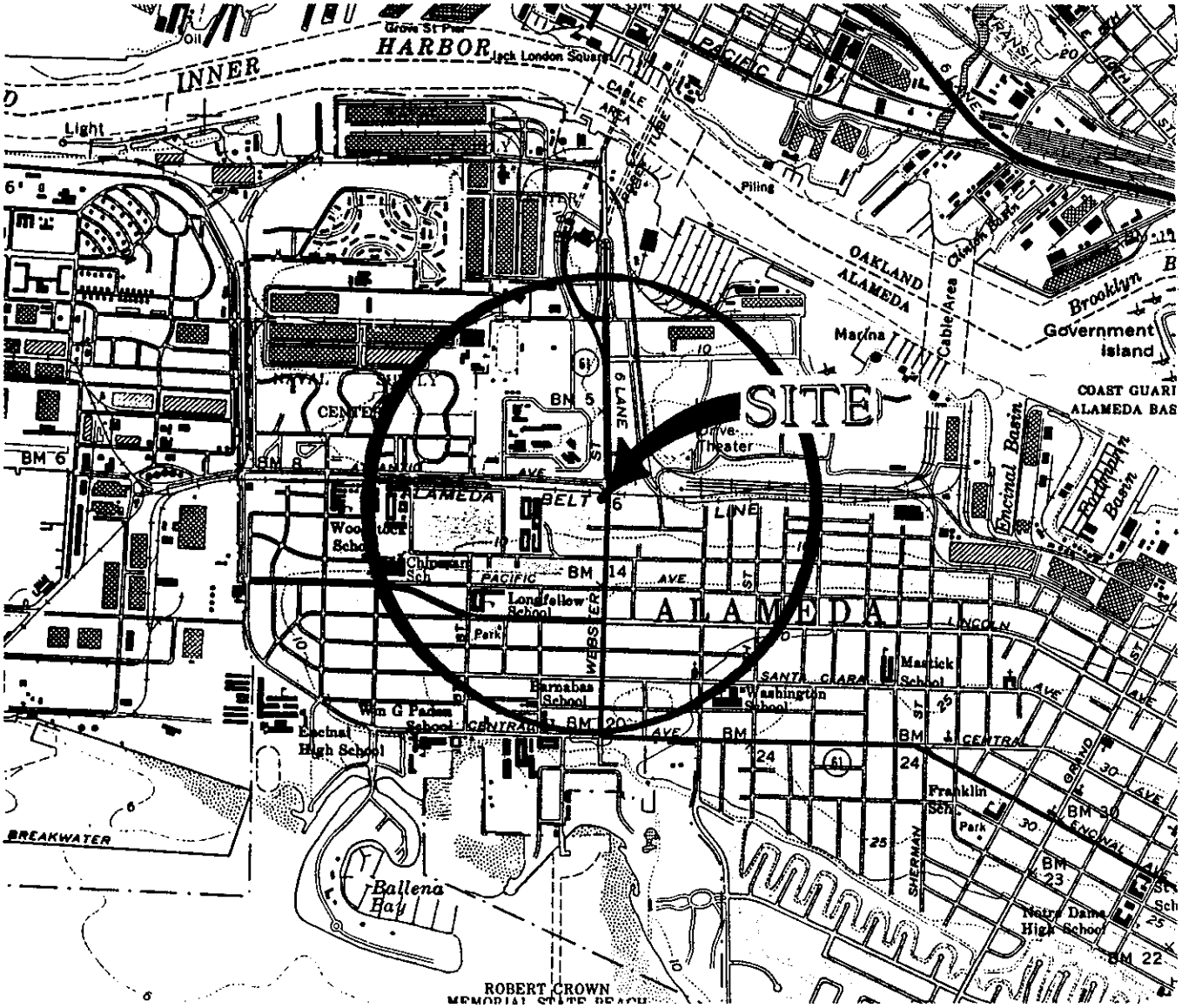
Housing Authority of the City of Alameda Facility
1916 Webster Street
Alameda, California

Sample I.D.	Date (µ/L)	TPH-G (µ/L)	Benzene (µ/L)	Toluene (µ/L)	Ethylbenzene (µ/L)	Xylenes (µ/L)	Organic Lead (µ/L)
MW-6	10/10/94	ND (50)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	NA
	3/29/95	ND (50)	0.5	0.9	ND (0.5)	ND (0.5)	NA
	05/25/95	ND (50)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (25)*
	08/16/95	ND (50)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND(0.01)
	11/30/95	NS	NS	NS	NS	NS	NS
	03/07/96	NS	NS	NS	NS	NS	NS
	06/12/96	NS	NS	NS	NS	NS	NS

NOTES:

mg/L = Milligrams per Liter (ppm)
µg/L = Micrograms per Liter (ppb)
ND (0.5)= Not detected at or above the method reporting limit shown in parenthesis
NA = Not analyzed
NS = No sample collected
Data prior to 1/94 reported by Versar, Inc.
* = Total lead

FIGURES

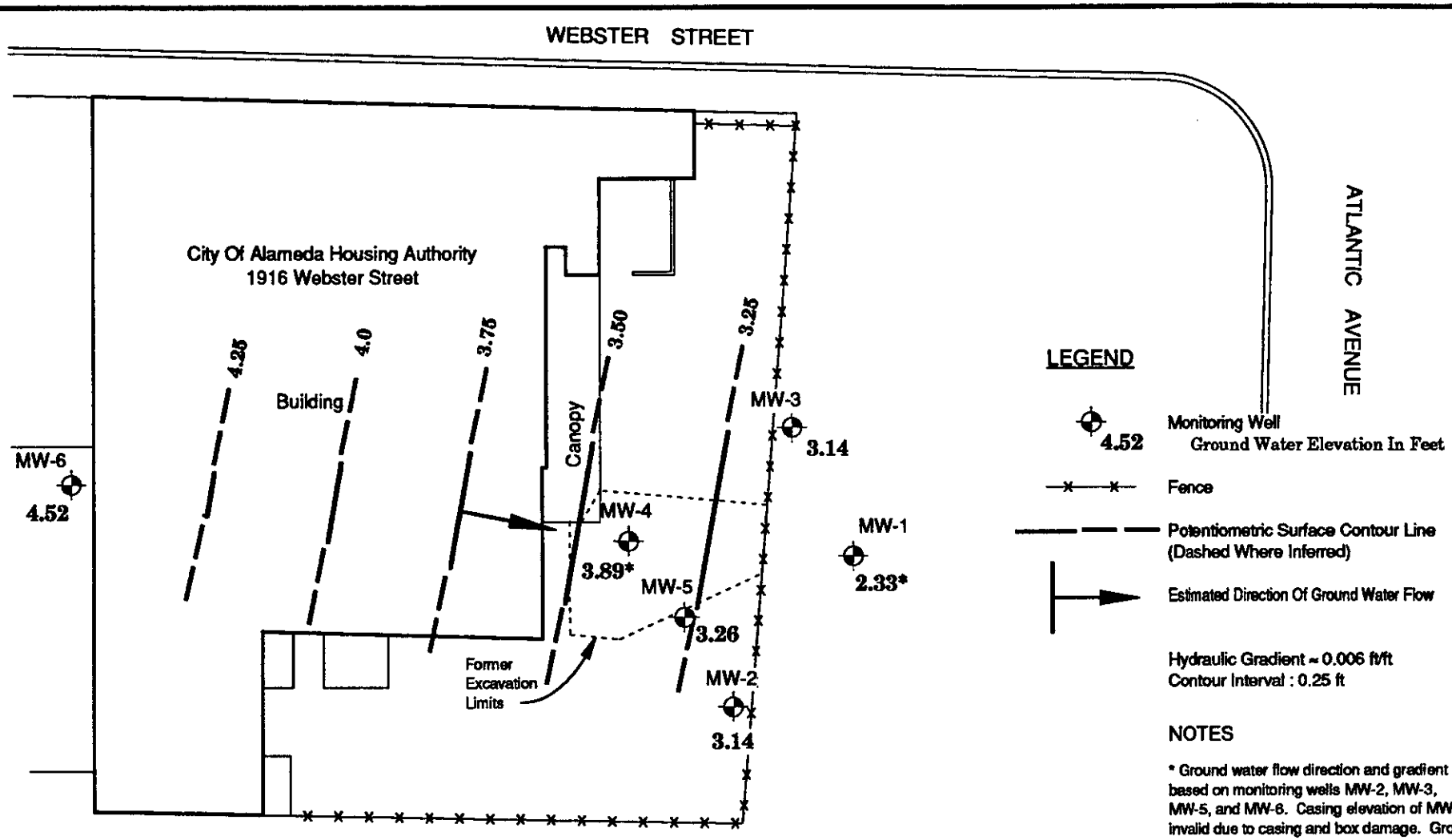


GENERAL NOTES:

BASE MAP FROM USGS
7.5 MINUTE TOPOGRAPHIC
OAKLAND WEST, CA

0 2000 4000
Approximate Scale in Feet

FUGRO	DRAWN BY: D. Hada DATE: September 19, 1994 REVISED BY: DATE:	SITE LOCATION MAP Alameda Housing 1916 Webster Street Alameda, CA	FIGURE 1 PROJECT NUMBER: 94-37-7623



FUGRO

DRAWN BY: D. Hada

DATE: April 17, 1996

REVISED BY: J. Paradis

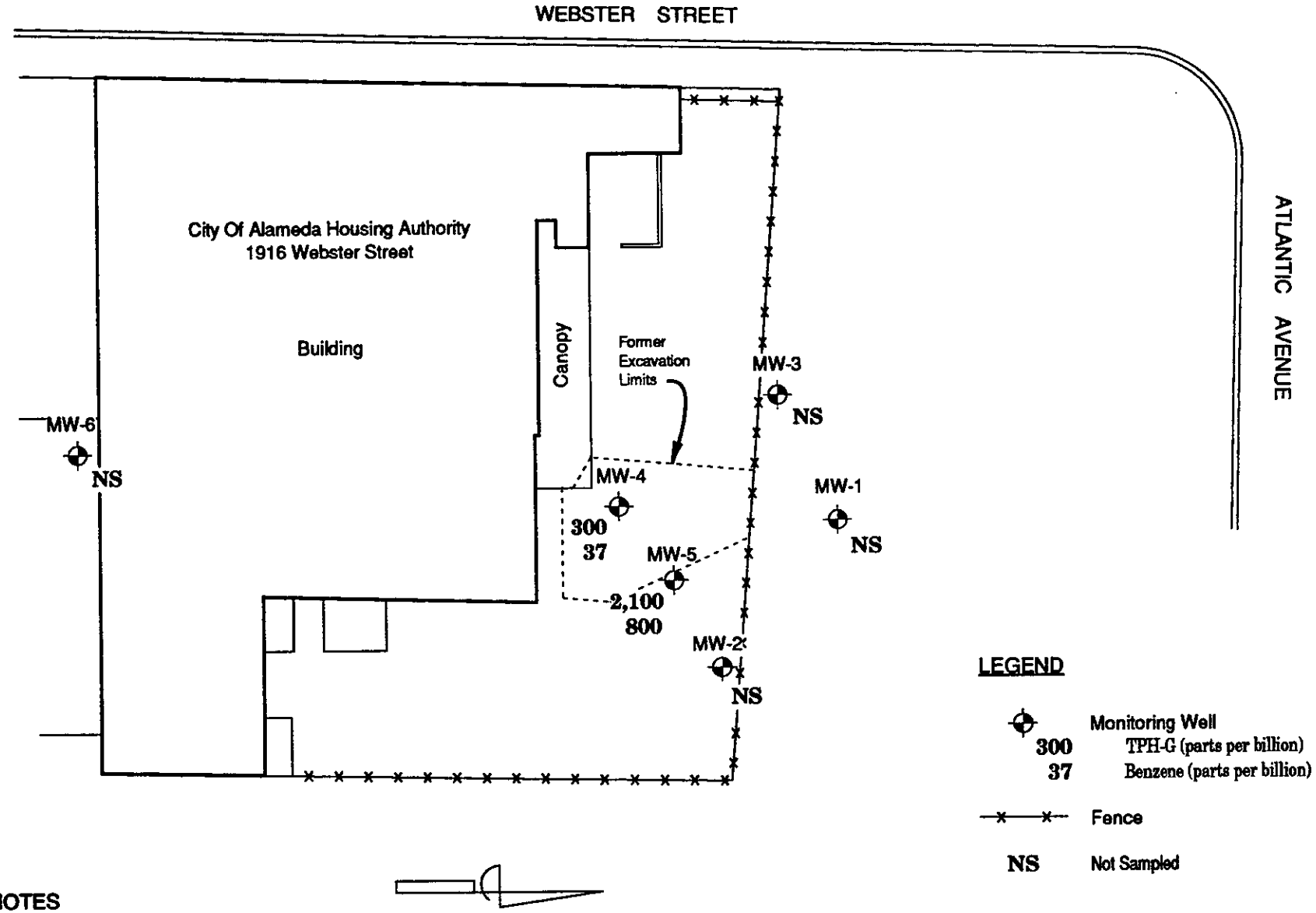
DATE: August 6, 1996

POTENTIOMETRIC SURFACE MAP
June 12, 1996

Alameda Housing
1916 Webster Street
Alameda, CA

FIGURE
2

PROJECT NUMBER:
94-37-7623



NOTES

Site Sketch After Map
By Ron Archer, Civil Engineer, Inc.

All Locations Are Approximate

0 50 100
Approximate Scale In Feet

FUGRO

DRAWN BY: D. Hada
DATE: April 17, 1996
REVISED BY: J. Paradia
DATE: August 6, 1996

DISTRIBUTION MAP OF TPH-G AND BENZENE IN GROUND WATER June 12, 1996

Alameda Housing
1916 Webster Street
Alameda, CA

FIGURE 3

PROJECT NUMBER: 94-37-7623

ATTACHMENT 1

STANDARD OPERATING PROCEDURES

SAMPLE IDENTIFICATION AND CHAIN-OF-CUSTODY PROCEDURES
SOP-4

Sample identification and chain-of-custody procedures ensure sample integrity, and document sample possession from the time of collection to its ultimate disposal. Each sample container submitted for analysis is labeled to identify the job number, date, time of sample collection, a sample number unique to the sample, any name(s) of on-site personnel and any other pertinent field observations also recorded on the field excavation or boring log.

Chain-of-custody forms are used to record possession of the sample from time of collection to its arrival at the laboratory. During shipment, the person with custody of the samples will relinquish them to the next person by signing the chain-of-custody form(s) and noting the date and time. The sample-control officer at the laboratory will verify sample integrity, correct preservation, confirm collection in the proper container(s), and ensure adequate volume for analysis.

If these conditions are met, the samples will be assigned unique laboratory log numbers for identification throughout analysis and reporting. The log numbers will be recorded on the chain-of-custody forms and in the legally-required log book maintained in the laboratory. The sample description, date received, client's name, and any other relevant information will also be recorded.

LABORATORY ANALYTICAL QUALITY ASSURANCE AND CONTROL
SOP-5

In addition to routine instrument calibration, replicates, spikes, blanks, spiked blanks, and certified reference materials are routinely analyzed at method-specific frequencies to monitor precision and bias. Additional components of the laboratory Quality Assurance/Quality Control program include:

1. Participation in state and federal laboratory accreditation/certification programs;
2. Participation in both U.S. EPA Performance Evaluation studies (WS and WP studies) and inter-laboratory performance evaluation programs;
3. Standard operating procedures describing routine and periodic instrument maintenance;
4. "Out-of-Control"/Corrective Action documentation procedures; and,
5. Multi-level review of raw data and client reports.

GROUNDWATER PURGING AND SAMPLING
SOP-7

Prior to water sampling, each well is purged by evacuating a minimum of three wetted well-casing volumes of groundwater. When required, purging will continue until either the discharge water temperature, conductivity, or pH stabilize to within 10% of previously measured values; and a maximum of ten wetted casing volumes of groundwater have been recovered, or the well is bailed dry. When practical, the groundwater sample should be collected when the water level in the well recovers to at least 80 percent of its static level. Field measurements, observations and procedures are noted.

The sampling equipment consists of a clean bailer, or stainless steel bladder pump with a "Teflon" bladder. If the sampling system is dedicated to the well, then the bailer is usually "Teflon," but the bladder pump may be PVC with a polypropylene bladder. Sample container type, preservation, and volume depends on the intended analyses.

The groundwater sample is decanted into each VOA vial in such a manner that there is no meniscus at the top of the vial. A cap is quickly secured to the top of the vial. The vial is then inverted and gently tapped to see if air bubbles are present. If none are present, the vial is labeled and refrigerated for delivery, under strict chain-of-custody, to the analytical laboratory. Label information should include a unique sample identification number, job identification number, date, time, and the sampler's initials.

For quality control purposes, a duplicate water sample may be collected from a well. When required, a trip blank is prepared at the laboratory and placed in the transport cooler. It is labeled similar to the well samples, remains in the cooler during transport, and is analyzed by the laboratory along with the groundwater samples. In addition, a field blank may be prepared in the field when sampling equipment is not dedicated. The field blank is prepared after a pump or bailer has been either steam cleaned or properly washed, prior to use in the next well, and is analyzed along with the other samples. The field blank analysis demonstrates the effectiveness of in-field cleaning procedures to prevent cross-contamination.

To minimize the potential for cross-contamination between wells, all well development and water sampling equipment not dedicated to a well is either steam cleaned or properly washed between use. As a second precautionary measure, wells are sampled in order of lowest to highest concentrations as established by available previous analytical data.

In the event the water samples cannot be submitted to the analytical laboratory on the same day they are collected (e.g., due to weekends or holidays), the samples are temporarily stored until the first opportunity for submittal either on ice in a cooler, such as when in the field, or in a refrigerator.

MEASURING LIQUID LEVELS USING A WATER LEVEL INDICATOR OR INTERFACE PROBE
SOP-12

Field equipment used for liquid-level gauging typically includes the measuring probe (water level or interface) and a clean product bailer(s). The field kit also includes cleaning supplies (buckets, TSP, spray bottles, and deionized water) to be used in cleaning the equipment between wells.

Prior to measurement, the probe tip is lowered into the well until it touches bottom. Using the previously established top-of-casing or top-of-box (i.e., wellhead vault) point, the probe cord (or halyard) is marked and a measuring tape (graduated in hundredths of a foot) is used to determine the distance between the probe end and the marking on the cord. This measurement is then recorded on the liquid-level data sheet as the "Measured Total Depth" of the well.

When necessary in using the interface probe to measure liquid levels, the probe is first electrically grounded to either the metal stove pipe or another metal object nearby. When no ground is available, reproducible measurements can be obtained by clipping the ground lead to the handle of the interface probe case.

The probe tip is then lowered into the well and submerged in the groundwater. An oscillating (beeping) tone indicates the probe is in water. The probe is slowly raised until either the oscillating tone ceases or becomes a steady tone. In either case, this is the depth-to-water (DTW) indicator and the DTW measurement is made accordingly. The steady tone indicates floating hydrocarbons. In this case, the probe is slowly raised until the steady tone ceases. This is the depth-to-product (DTP) indicator and the measurement of DTP is recorded. A corrected depth to groundwater to account for floating hydrocarbons can be calculated by using the following formula:

CDTW = DTW - (SP.G x LET).
CDTW = Corrected depth to groundwater.
DTW = Measured depth to groundwater.
SP.G = Specific gravity: unweathered gasoline = 0.75; diesel = 0.80
LET = Measured liquid hydrocarbon thickness.

The corresponding groundwater elevation is the difference between a previously determined well reference elevation and either the depth to groundwater or the corrected depth to groundwater.

The process of lowering and raising the probe must be repeated several times to ensure accurate measurements. The DTW and DTP measurements are recorded on the liquid-level data sheet. When floating product is indicated by the probe's response, a product bailer is lowered partially through the product-water interface to confirm the product on the water surface, and as further indication of product thickness, particularly in cases where the product layer is quite thin. Either this measurement or the difference between DTW and DTP is recorded on the data sheet as "product thickness."

In order to avoid cross-contamination of wells during the liquid-level measurement process, wells are measured in the order of "clean" to "dirty" (where such information is available). In addition, all measurement equipment is cleaned with TSP or similar solution and thoroughly rinsed with deionized water before use, between measurements in respective wells, and at the completion of the day's activities.

FUGRO

ATTACHMENT 2

LABORATORY ANALYTICAL REPORTS AND CHAIN-OF-CUSTODY FORMS

American Environmental Network

Certificate of Analysis

DOHS Certification: 1172

AIHA Accreditation: 11134

FUGRO WEST, INC.
44 MONTGOMERY ST. #1010
SAN FRANCISCO, CA 94104

ATTN: PETER HUDSON
CLIENT PROJ. ID: 9437-7623

REPORT DATE: 06/21/96

DATE(S) SAMPLED: 06/12/96

DATE RECEIVED: 06/13/96

AEN WORK ORDER: 9606169

PROJECT SUMMARY:

On June 13, 1996, this laboratory received 2 water sample(s).

Client requested sample(s) be analyzed for chemical parameters. Results of analysis are summarized on the following page(s). Please see quality control report for a summary of QC data pertaining to this project.

Samples will be stored for 30 days after completion of analysis, then disposed of in accordance with State and Federal regulations. Samples may be archived by prior arrangement.

If you have any questions, please contact Client Services at (510) 930-9090.

Larry Klein
Laboratory Director

FUGRO WEST, INC.

SAMPLE ID: MW-4
AEN LAB NO: 9606169-01
AEN WORK ORDER: 9606169
CLIENT PROJ. ID: 9437-7623

DATE SAMPLED: 06/12/96
DATE RECEIVED: 06/13/96
REPORT DATE: 06/21/96

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
BTEX & Gasoline HCs	EPA 8020				
Benzene	71-43-2	37 *	3	ug/L	06/17/96
Toluene	108-88-3	ND	3	ug/L	06/17/96
Ethylbenzene	100-41-4	ND	3	ug/L	06/17/96
Xylenes, Total	1330-20-7	ND	10	ug/L	06/17/96
Purgeable HCs as Gasoline	5030/GCFID	0.3 *	0.3	mg/L	06/17/96

Reporting limits elevated due to matrix interference.

ND = Not detected at or above the reporting limit
* = Value at or above reporting limit

FUGRO WEST, INC.

SAMPLE ID: MW-5
AEN LAB NO: 9606169-02
AEN WORK ORDER: 9606169
CLIENT PROJ. ID: 9437-7623

DATE SAMPLED: 06/12/96
DATE RECEIVED: 06/13/96
REPORT DATE: 06/21/96

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
BTEX & Gasoline HCs	EPA 8020				
Benzene	71-43-2	800 *	3	ug/L	06/17/96
Toluene	108-88-3	ND	3	ug/L	06/17/96
Ethylbenzene	100-41-4	3 *	3	ug/L	06/17/96
Xylenes, Total	1330-20-7	20 *	10	ug/L	06/17/96
Purgeable HCs as Gasoline	5030/GCFID	2.1 *	0.3	mg/L	06/17/96

Reporting limits elevated due to matrix interference.

ND = Not detected at or above the reporting limit
* = Value at or above reporting limit

AEN (CALIFORNIA)
QUALITY CONTROL REPORT

AEN JOB NUMBER: 9606169

CLIENT PROJECT ID: 9437-7623

Quality Control and Project Summary

All laboratory quality control parameters were found to be within established limits.

Definitions

Laboratory Control Sample (LCS)/Method Spike(s): Control samples of known composition. LCS and Method Spike data are used to validate batch analytical results.

Matrix Spike(s): Aliquot of a sample (aqueous or solid) with added quantities of specific compounds and subjected to the entire analytical procedure. Matrix spike and matrix spike duplicate QC data are advisory.

Method Blank: An analytical control consisting of all reagents, internal standards, and surrogate standards carried through the entire analytical process. Used to monitor laboratory background and reagent contamination.

Not Detected (ND): Not detected at or above the reporting limit.

Relative Percent Difference (RPD): An indication of method precision based on duplicate analysis.

Reporting Limit (RL): The lowest concentration routinely determined during laboratory operations. The RL is generally 1 to 10 times the Method Detection Limit (MDL). Reporting limits are matrix, method, and analyte dependent and take into account any dilutions performed as part of the analysis.

Surrogates: Organic compounds which are similar to analytes of interest in chemical behavior, but are not found in environmental samples. Surrogates are added to all blanks, calibration and check standards, samples, and spiked samples. Surrogate recovery is monitored as an indication of acceptable sample preparation and instrumental performance.

D: Surrogates diluted out.

#: Indicates result outside of established laboratory QC limits.

QUALITY CONTROL DATA

METHOD: EPA 8020, 5030 GCFID

AEN JOB NO: 9606169
INSTRUMENT: H
MATRIX: WATER

Surrogate Standard Recovery Summary

Date Analyzed	Client Id.	Lab Id.	Percent Recovery Fluorobenzene
06/17/96	MW-4	01	99
06/17/96	MW-5	02	116
QC Limits:			70-130

DATE ANALYZED: 06/14/96
SAMPLE SPIKED: 9606176-01
INSTRUMENT: H

Matrix Spike Recovery Summary

Analyte	Spike Added (ug/L)	Average Percent Recovery	RPD	QC Limits Percent Recovery	QC Limits RPD
Benzene	22.2	94	16	85-109	17
Toluene	73.9	91	7	87-111	16
Hydrocarbons as Gasoline	500	107	4	66-117	19

Daily method blanks for all associated analytical runs showed no contamination at or above the reporting limit.

*** END OF REPORT ***

Reporting Information:

1. Client: Alameda Housing Auth
Address: 1916 Webster St, Alameda, CA
Contact:
Alt. Contact:

American Environmental Network
3440 Vincent Road, Pleasant Hill, CA 94523
Phone (510) 930-9090
FAX (510) 930-0256

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REQUEST FOR ANALYSIS / CHAIN OF CUSTODY

Lab Job Number: 9606169
Lab Destination:
Date Samples Shipped:
Lab Contact:
Date Results Required: Normal TAT
Date Report Required:
Client Phone No.:
Client FAX No.:

Address Report To:

2. FugroWest, Inc.
44 Montgomery St. #1010
San Francisco, CA 94104

Send Invoice To:

3. #2

Send Report To: 1 or (2) (Circle one)

Client P.O. No.: Client Project I.D. No.: 9437-7623

Sample Team Member (s)

Lab Number	Client Sample Identification	Air Volume	Date/ Time Collected	Sample Type*	Pres.	No. of Cont.	Type of Cont.	ANALYSIS: G/BTEX
01AB	MW-4		6/12/96	H_2O	HCl	2	VOA	X
02AB	MW-5		6/12/96	H_2O	HCl	2	VOA	X

Comments / Hazards
collected w/no bubbles
some bubbles visible
upon arrival at lab

Relinquished by: (Signature)		DATE 6/13/96	TIME 9:26 AM	Received by: (Signature) Lai L Ruiti
Relinquished by: (Signature)		DATE	TIME	Received by: (Signature)
Relinquished by: (Signature)		DATE	TIME	Received by: (Signature)
Method of Shipment				Lab Comments

DATE 6-13-96 TIME 0926

*Sample type (Specify): 1) 37mm 0.8 µm MCEF 2) 25mm 0.8 µm MCEF 3) 25mm 0.4 µm polycarb. filter
4) PVC filter, diam. ____ pore size ____ 5) Charcoal tube 6) Silica gel tube 7) Water 8) Soil 9) Bulk Sample
10) Other ____ 11) Other ____

COPIES: WHITE - JOB FILE YEL PROJECT FILE PINK - CLIENT