PORT OF OAKLAND

rec'd 2-15-94

February 14, 1994

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3777

Ms. Jennifer Eberle
Hazardous Materials Division
Department of Environmental Health
Alameda County Health Services Agency
80 Swan Way, Room 200
Oakland, CA 94621

SUBJECT: American President Lines (APL), Berth 60-63, Port of Oakland, Oakland, California

Dear Ms. Eberle:

Enclosed, you will find a copy of the letter report of the fourth quarterly groundwater sampling, American President Lines Terminal, 1395 Middle Harbor Road, Port of Oakland, Oakland, California. The fourth quarterly sampling took place on 24 November 1993. The report was completed by Geomatrix Consultants for the Port of Oakland. This report also includes our recommendations for further work.

Four Underground Storage Tanks (USTs), two diesel, one gasoline and one waste oil, were removed from this site between 6 January and 4 March 1992. The sampling and analysis for this report was conducted in accordance with the workplan prepared by Geomatrix dated October 1992.

Please call me at (510)-272-1184 if you have any comments or questions.

Sincerely,

Jon Amdur
Environmental Scientist

cc w/report: Mr. Rich Hiett, SFRWQCB, 2101 Webster Street, 5th Floor, Oakland, CA 94612

cc w/o report: Neil Werner (Environmental Department)

enclosure\

530 Water Street ■ Jack London's Waterfront ■ P.O. Box 2064 ■ Oakland, California 94604-2064
Telephone (510) 272-1100 ■ Fax (510) 272-1172 ■ Cable address, PORTOFOAK, Oakland

4721 Tidewater Avenue, Suite C
Oakland, CA 94614
(510) 535-2445 • FAX (510) 535-2408

GEOMATRIX

7 February 1994
Project No. 2026

Mr. Jon Amdur
Port of Oakland
530 Water Street
Oakland, California 94607

Subject: Groundwater Sampling
American President Lines Terminal
1395 Middle Harbor Road
Port of Oakland
Oakland, California

Dear Mr. Amdur:

This letter report presents the results of the fourth quarterly groundwater sampling event performed by Geomatrix Consultants, Inc. (Geomatrix) on 24 November 1993 at the American President Lines Terminal (APL), 1395 Middle Harbor Road, at the Port of Oakland (Port; Figure 1). The work was conducted in accordance with our October 1992 Work Plan and in response to the 13 November 1992 Alameda County Health Care Services Agency letter to the Port.

For the quarterly monitoring program, Geomatrix performed water-level measurements and groundwater sampling. These activities and the results are described below.

WATER-LEVEL MEASUREMENTS

Geomatrix measured water levels in the three shallow groundwater monitoring wells (Figure 2) on 24 November 1993 before groundwater was sampled. Water levels were measured to the nearest 0.01 foot using a steel tape. The measurements were used to calculate water-level elevations at each of the wells; the elevations are shown on Figure 2 and are presented in Table 1.

Water-level elevations measured on 24 November 1993 ranged from 5.89 to 6.05 feet Mean Lower Low Water (MLLW; Port datum). The water-level elevations are slightly lower than those measured during the previous quarter. The horizontal gradient, as in previous quarters, is very flat; horizontal flow direction was northwesterly, away from the Oakland Inner Harbor. This gradient direction is consistent with that of last quarter; however, a gradient direction to the southwest had been measured during the first two quarters of monitoring.

GROUNDWATER SAMPLING

Geomatrix collected groundwater samples from the three on-site monitoring wells on 24 November 1993 (Figure 2). All equipment used in the wells was washed with a laboratory-grade detergent (Alconox) and rinsed with deionized water. Before being sampled, the wells were purged using a stainless steel bailer. To obtain groundwater representative of the aquifer screened by the well, the wells were purged until the temperature, pH, and specific conductance of the purged groundwater stabilized and at least four casing volumes were removed. Groundwater purged from the site was contained in a labeled 55-gallon drum which is being temporarily stored on site.

After the wells were purged, groundwater samples were collected from the approximate mid-point of the screened interval using a disposable bailer. The samples were decanted from the bailer directly into the appropriate containers. The samples were labeled and placed in an ice-cooled chest for delivery under Geomatrix chain-of-custody to Clayton Environmental Consultants, Inc. (Clayton) of Pleasanton, California, a state-certified analytical laboratory retained by the Port. A copy of the chain-of-custody record is included in Attachment A.

Groundwater samples were analyzed by Clayton for total petroleum hydrocarbons as gasoline (TPHg) by modified U.S. Environmental Protection Agency (EPA) Method 8015; total petroleum hydrocarbons as diesel (TPHd) by EPA Method 8015; total oil and grease (TOG) by Standard Method 5520C and F; halogenated volatile organic compounds (VOCs) by EPA Method 8010; benzene, toluene, ethylbenzene, and total xylenes (BTEX) by EPA Method 8020; and total dissolved solids (TDS) by EPA Method 160.1. A copy of the analytical laboratory report is included in Attachment A.

ANALYTICAL RESULTS

The analytical results for the groundwater samples are summarized in Tables 2 and 3 (attached). TPHd was detected in the groundwater samples from monitoring wells MW-1, MW-2, and MW-3 at concentrations of 280, 80, and 100 micrograms per liter (μg/l), respectively. TPHg was detected only in the sample from well MW-1 at a concentration of 50 μg/l. Benzene, toluene, and total xylenes were detected only in the groundwater sample from MW-1 at concentrations of 8.8, 1.5, and 3.0 μg/l, respectively. 1,1-dichloroethane (1,1-DCA), the only VOC reported, was detected in the groundwater sample from MW-1 at a concentration of 0.7 μg/l. TOG were not detected in any of the samples analyzed. TDS

were reported at concentrations of 12,000, 23,000, and 20,000 milligrams per liter (mg/l) in the groundwater samples from wells MW-1, MW-2, and MW-3, respectively.

SUMMARY OF ANNUAL RESULTS AND RECOMMENDATIONS

One year of quarterly water level and water quality data have been collected in the three wells in the vicinity the former underground storage tanks. Water-level elevations have been relatively consistent, with two of the three wells (MW-2 and MW-3) having elevation changes of less than 0.9 feet over the past year and the third well (MW-1) having an elevation change of less than 1.2 feet. Horizontal gradient is relatively flat and the flow directions had been southwesterly toward the Oakland Inner Harbor during the first two quarters, changing to a northwesterly direction away from the Oakland Inner Harbor over the past two quarters.

Groundwater samples have been analyzed for TPHd, TPHg, TOG, BTEX, VOCs, and TDS for four quarters. A steady decrease in the concentrations of TPHd has been observed in all three wells over the last three quarters. TPHg has been detected in only one of the wells (MW-1) at decreasing concentrations over the four quarters. TOG has decreased to non-detectable levels in all three wells. Of the volatile and aromatic compounds detected, only benzene has been reported at concentrations consistently exceeding the California maximum contaminant level (MCL) of 1 μg/l in one well (MW-1); concentrations of benzene have decreased to non-detectable levels in the other two wells. Several other volatile organic compounds have been detected sporadically at low concentrations in all three wells. TDS concentrations have varied significantly in all three wells.

The water-level elevations indicate the hydraulic gradient at the site is flat. TDS concentrations have varied; however, generally the TDS results indicate that the water is brackish and not a potential drinking water source. Concentrations of TPHg and TPHd have decreased significantly, likely a result of source removal and natural biodegradation. Only benzene has been detected at concentrations slightly above its MCL. Based on these results, it appears that groundwater has not been significantly impacted as a result of leakage from the USTs. We recommend continued quarterly monitoring of the groundwater; however, we propose TOG and TDS analyses be eliminated from the quarterly sampling program. After the second year of sampling has been completed, we recommend the groundwater monitoring program be re-evaluated and recommendations for additional work, if required, will developed.

We appreciate the opportunity to continue working with you on this project. Please contact either of the undersigned if you have any questions.

Sincerely yours,

GEOMATRIX CONSULTANTS, INC.

Elizabeth K. Wells, P.E.
Project Engineer

Sally E. Goodin, R.G.
Senior Geologist

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EKW/SEG/lam

Attachments: Tables (2)
Figures (2)
Attachment A - Chain-of-Custody Record and Analytical Laboratory Reports

GEOMATRIX

TABLE 1

WATER-LEVEL ELEVATIONS
American President Lines Terminal
1395 Middle Harbor Road
Port of Oakland
Oakland, California

Water-Level Elevations in Feet (MLLW)

Measuring Date	MW-1	MW-2	MW-3
8 March 1993	7.07	6.58	6.76
11 May 1993	7.08	6.79	6.95
19 August 1993	6.27	6.30	6.34
24 November 1993	5.89	6.02	6.05

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TABLE 2

SUMMARY OF COMPOUNDS DETECTED IN GROUNDWATER SAMPLES

American President Lines Terminal
1395 Middle Harbor Road
Port of Oakland
Oakland, California

Concentrations in parts per billion (µg/l)

Well No.	Date	TPH as Gasoline	TPH as Diesel	Total Oil and Grease	Benzene	Toluene	Ethylbenzene	Total Xylenes	EPA Method 8010
MW-1	2/5/93	1,800	4,700	5,000	9.2	1.6	8.9	2.7	1,1-DCA 0.8
	5/11/93	260	4,800	7,000	3.2	2.3	0.7	0.5	1,1-DCA 0.6
	8/19/93	60	2,300	ND	9.0	ND	ND	ND	1,1-DCA 2.0 1,1-DCE 2.0
	11/24/93	50	280 *	ND	8.8	1.5	ND	3.0	1,1-DCA 0.7
MW-2	2/5/93	~~ND~~	840	2,000	ND	ND	ND	ND	ND
	5/11/93	ND	3,700 **	ND	ND	ND	ND	ND	ND
	8/19/93	ND	620	ND	ND	ND	ND	ND	1,4-DCB 3.0 1,2-DCB 1.0
	11/24/93	ND	80 *	ND	ND	ND	ND	ND	ND
MW-3	2/5/93	ND	3,400	2,000	2.1	0.9	1.7	3.1	Cis-1,2-DCE 0.4
	5/11/93	ND	3,300 **	ND	ND	ND	ND	ND	ND
	8/19/93	ND	~~ND~~ 840	~~840~~ ND	ND	ND	ND	ND	1,4-DCB 1.0
	11/24/93	ND	100	ND	ND	ND	ND	ND	ND

Notes:

1 Samples collected by Geomatrix Consultants, Inc. and analyzed by Curtis & Tomkins, Ltd., of Berkeley, California, and Clayton Environmental, Consultants, Inc. of Pleasanton, California, for TPH as gasoline by modified EPA Method 8015; TPH as diesel by EPA Method 8015; total oil and grease by Standard Method 5520 C and F; benzene, toluene, ethylbenzene, and total xylenes by EPA Method 8020; and halogenated volatile organic compounds by EPA Method 8010.

2 TPH = total petroleum hydrocarbons
ND = not detected at or above detection limit
DCA = dichloroethane
DCE = dichloroethene
DCB = dichlorobenzene

* sample appears to be oil.
** heavier HCs.

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TABLE 3

TOTAL DISSOLVED SOLIDS IN GROUNDWATER SAMPLES

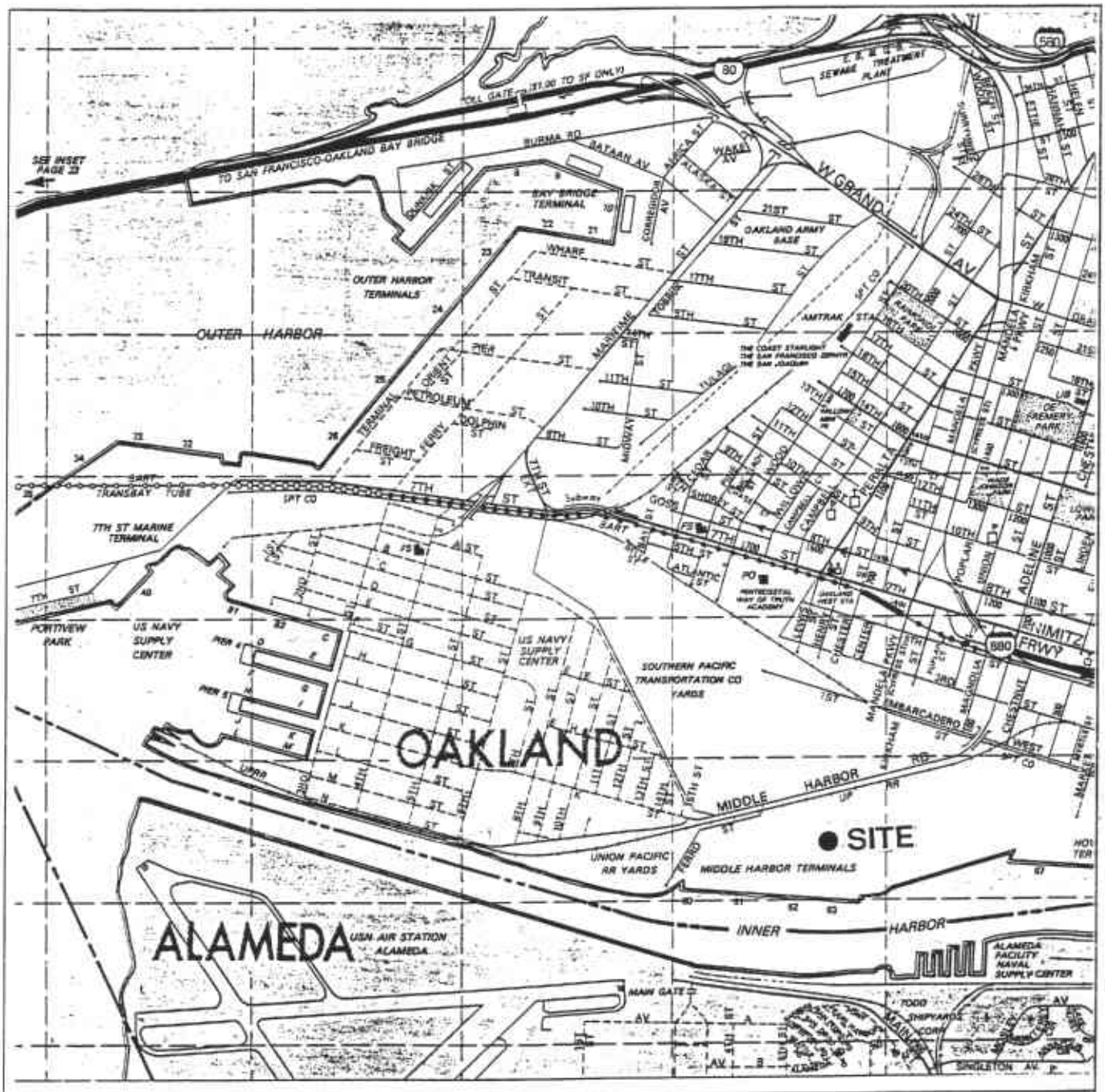
American President Lines Terminal
1395 Middle Harbor Road
Port of Oakland
Oakland, California

Concentrations in parts per million (mg/l)

Well No.	Date	Total Dissolved Solids
MW-1	2/5/93	3,000
	5/11/93	12,000
	8/19/93	2,680
	11/24/93	12,000
MW-2	2/5/93	23,000
	5/11/93	12,000
	8/19/93	18,880
	11/24/93	23,000
MW-3	2/5/93	1,600
	5/11/93	7,200
	8/19/93	20,300
	11/24/93	20,000

Note:

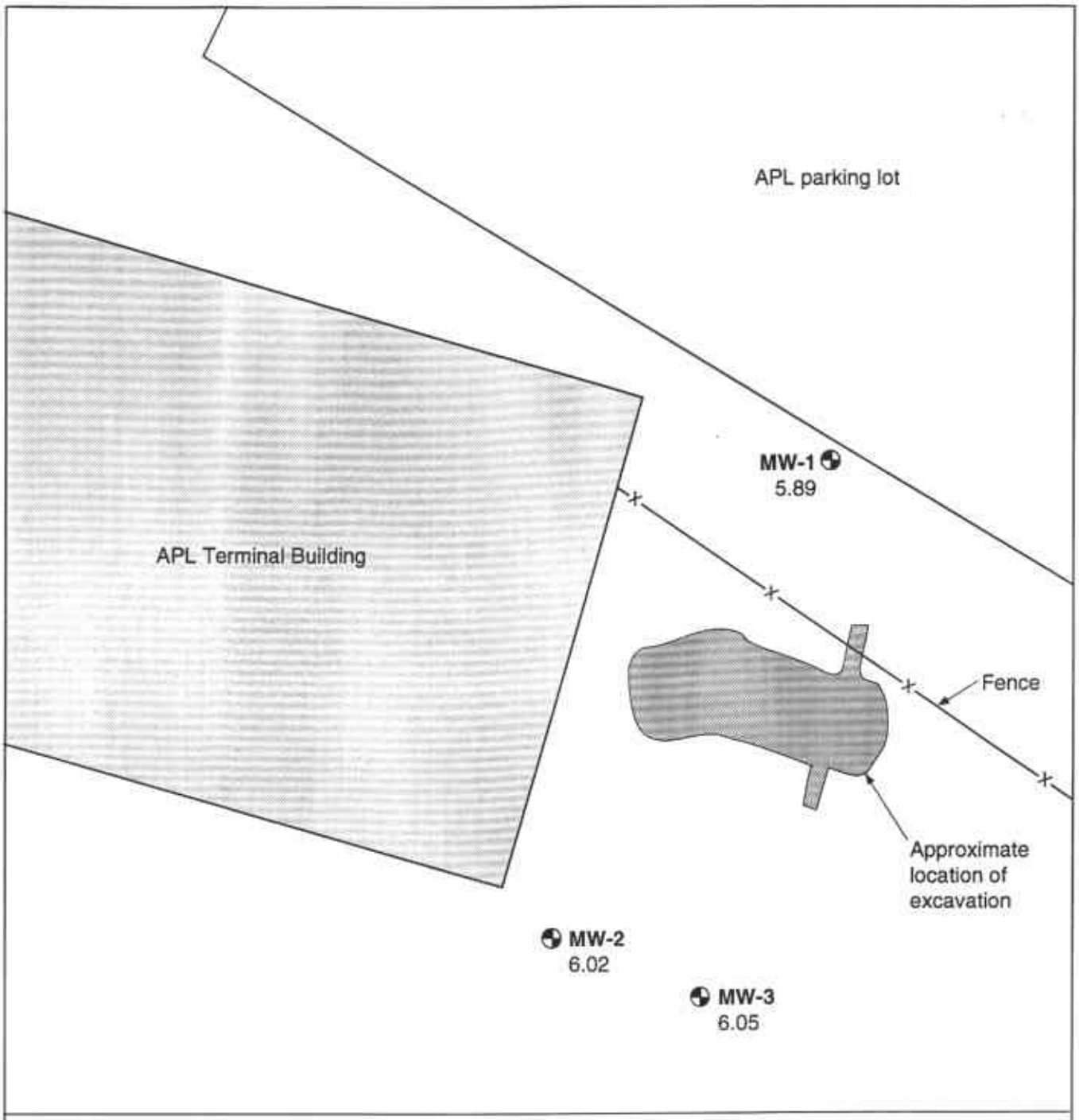
1. Samples collected by Geomatrix Consultants, Inc., and analyzed by Curtis & Tomkins, Ltd. and Clayton Environmental Consultants, Inc. of Pleasanton, California, for total dissolved solids (TDS) by EPA Method 160.1.



Reference: Thomas Brothers Maps
Alameda County
1990

0 2200 Feet

GEOMATRIX	SITE LOCATION MAP American President Lines Terminal 1395 Middle Harbor Road Oakland, California	Figure 1 Project No. 2026



EXPLANATION

MW-2 Monitoring well

6.02 Water-level elevation, in feet

0 50 Feet

Based on figure provided by the Port of Oakland.

Elevations referenced to Mean Lower Low Water Port Datum.

GEOMATRIX

WATER-LEVEL ELEVATIONS – 24 NOVEMBER 1993
American President Lines Terminal
1395 Middle Harbor Road
Oakland, California

Figure 2

Project No. 2026

GEOMATRIX

ATTACHMENT A

Chain-of-Custody Record
and
Analytical Laboratory Report

Western Operations

1252 Quarry Lane
P.O. Box 9019
Pleasanton, CA 94566
(510) 426-2600
Fax (510) 426-0106

Clayton
ENVIRONMENTAL
CONSULTANTS

December 9, 1993

Ms. Elizabeth Wells
GEOMATRIX CONSULTANTS
100 Pine Street, 10th Floor
San Francisco, CA 94111

Client Ref.: 2026I
Clayton Project No.: 93112.37

Dear Ms. Wells:

Attached is our analytical laboratory report for the samples received on November 24, 1993. A copy of the Chain-of-Custody form acknowledging receipt of these samples is attached.

Please note that any unused portion of the samples will be disposed of after January 8, 1994, unless you have requested otherwise.

We appreciate the opportunity to be of assistance to you. If you have any questions, please contact Suzanne Silvera, Client Services Supervisor, at (510) 426-2657.

Sincerely,

Harriotte A. Hurley, CIH
Manager, Laboratory Services
Western Operations

HAH/tjb

Attachments

Analytical Results
for
Geomatrix Consultants
Client Reference: 2026I
Clayton Project No. 93112.37

Sample Identification:	MW-2	Date Sampled:	11/24/93
Lab Number:	9311237-01A	Date Received:	11/24/93
Sample Matrix/Media:	WATER	Date Prepared:	11/30/93
Preparation Method:	EPA 5030	Date Analyzed:	11/30/93
Method Reference:	EPA 8010	Analyst:	MJL

Analyte	CAS #	Concentration (ug/L)	Method Detection Limit (ug/L)
Purgeable Halocarbons			
Bromodichloromethane	75-27-4	ND	0.7
Bromoform	75-25-2	ND	0.7
Bromomethane	74-83-9	ND	0.7
Carbon tetrachloride	56-23-5	ND	0.6
Chlorobenzene	108-90-7	ND	0.7
Chloroethane	75-00-3	ND	0.5
2-Chloroethylvinyl ether	110-75-8	ND	1
Chloroform	67-66-3	ND	0.5
Chloromethane	74-87-3	ND	0.6
Dibromochloromethane	124-48-1	ND	0.6
1,2-Dichlorobenzene	95-50-1	ND	4
1,3-Dichlorobenzene	541-73-1	ND	2
1,4-Dichlorobenzene	106-46-7	ND	4
Dichlorodifluoromethane	75-71-8	ND	1
1,1-Dichloroethane	75-34-3	ND	0.4
1,2-Dichloroethane	107-06-2	ND	0.3
1,1-Dichloroethene	75-35-4	ND	0.2
cis-1,2-Dichloroethene	156-59-2	ND	0.4
trans-1,2-Dichloroethene	156-60-5	ND	0.4
1,2-Dichloropropane	78-87-5	ND	0.5
cis-1,3-Dichloropropene	10061-01-5	ND	0.5
trans-1,3-dichloropropene	10061-02-6	ND	0.6
Freon 113	76-13-1	ND	0.6
Methylene chloride	75-09-2	ND	2
1,1,2,2-Tetrachloroethane	79-34-5	ND	0.5
Tetrachloroethene	127-18-4	ND	0.5
1,1,1-Trichloroethane	71-55-6	ND	0.5
1,1,2-Trichloroethane	79-00-5	ND	0.6
Trichloroethene	79-01-6	ND	0.3
Trichlorofluoromethane	75-69-4	ND	0.4

Analytical Results
for
Geomatrix Consultants
Client Reference: 2026I
Clayton Project No. 93112.37

Sample Identification:	MW-2	Date Sampled:	11/24/93
Lab Number:	9311237-01A	Date Received:	11/24/93
Sample Matrix/Media:	WATER	Date Prepared:	11/30/93
Preparation Method:	EPA 5030	Date Analyzed:	11/30/93
Method Reference:	EPA 8010	Analyst:	MJL

Analyte	CAS #	Concentration (ug/L)	Method Detection Limit (ug/L)
Purgeable Halocarbons (Continued)			
Vinyl chloride	75-01-4	ND	0.5
Surrogates		Recovery (%)	QC Limits (%)
1-Chloro-2-methylpropene	513-37-1	88	50 - 150

ND: Not detected at or above limit of detection
--: Information not available or not applicable

Analytical Results
for
Geomatrix Consultants
Client Reference: 2026I
Clayton Project No. 93112.37

Sample Identification:	MW-3	Date Sampled:	11/24/93
Lab Number:	9311237-02A	Date Received:	11/24/93
Sample Matrix/Media:	WATER	Date Prepared:	11/30/93
Preparation Method:	EPA 5030	Date Analyzed:	11/30/93
Method Reference:	EPA 8010	Analyst:	MJL

Analyte	CAS #	Concentration (ug/L)	Method Detection Limit (ug/L)
Purgeable Halocarbons			
Bromodichloromethane	75-27-4	ND	0.7
Bromoform	75-25-2	ND	0.7
Bromomethane	74-83-9	ND	0.7
Carbon tetrachloride	56-23-5	ND	0.6
Chlorobenzene	108-90-7	ND	0.7
Chloroethane	75-00-3	ND	0.5
2-Chloroethylvinyl ether	110-75-8	ND	1
Chloroform	67-66-3	ND	0.5
Chloromethane	74-87-3	ND	0.6
Dibromochloromethane	124-48-1	ND	0.6
1,2-Dichlorobenzene	95-50-1	ND	4
1,3-Dichlorobenzene	541-73-1	ND	2
1,4-Dichlorobenzene	106-46-7	ND	4
Dichlorodifluoromethane	75-71-8	ND	1
1,1-Dichloroethane	75-34-3	ND	0.4
1,2-Dichloroethane	107-06-2	ND	0.3
1,1-Dichloroethene	75-35-4	ND	0.2
cis-1,2-Dichloroethene	156-59-2	ND	0.4
trans-1,2-Dichloroethene	156-60-5	ND	0.4
1,2-Dichloropropane	78-87-5	ND	0.5
cis-1,3-Dichloropropene	10061-01-5	ND	0.5
trans-1,3-dichloropropene	10061-02-6	ND	0.6
Freon 113	76-13-1	ND	0.6
Methylene chloride	75-09-2	ND	2
1,1,2,2-Tetrachloroethane	79-34-5	ND	0.5
Tetrachloroethene	127-18-4	ND	0.5
1,1,1-Trichloroethane	71-55-6	ND	0.5
1,1,2-Trichloroethane	79-00-5	ND	0.6
Trichloroethene	79-01-6	ND	0.3
Trichlorofluoromethane	75-69-4	ND	0.4

Analytical Results
for
Geomatrix Consultants
Client Reference: 2026I
Clayton Project No. 93112.37

Sample Identification:	MW-3	Date Sampled:	11/24/93
Lab Number:	9311237-02A	Date Received:	11/24/93
Sample Matrix/Media:	WATER	Date Prepared:	11/30/93
Preparation Method:	EPA 5030	Date Analyzed:	11/30/93
Method Reference:	EPA 8010	Analyst:	MJL

Analyte	CAS #	Concentration (ug/L)	Method Detection Limit (ug/L)
Purgeable Halocarbons (Continued)			
Vinyl chloride	75-01-4	ND	0.5
Surrogates		Recovery (%)	QC Limits (%)
1-Chloro-2-methylpropene	513-37-1	100	50 - 150

ND: Not detected at or above limit of detection
--: Information not available or not applicable

Analytical Results
for
Geomatrix Consultants
Client Reference: 2026I
Clayton Project No. 93112.37

Sample Identification:	MW-1	Date Sampled:	11/24/93
Lab Number:	9311237-03A	Date Received:	11/24/93
Sample Matrix/Media:	WATER	Date Prepared:	11/30/93
Preparation Method:	EPA 5030	Date Analyzed:	11/30/93
Method Reference:	EPA 8010	Analyst:	MJL

Analyte	CAS #	Concentration (ug/L)	Method Detection Limit (ug/L)
Purgeable Halocarbons			
Bromodichloromethane	75-27-4	ND	0.7
Bromoform	75-25-2	ND	0.7
Bromomethane	74-83-9	ND	0.7
Carbon tetrachloride	56-23-5	ND	0.6
Chlorobenzene	108-90-7	ND	0.7
Chloroethane	75-00-3	ND	0.5
2-Chloroethylvinyl ether	110-75-8	ND	1
Chloroform	67-66-3	ND	0.5
Chloromethane	74-87-3	ND	0.6
Dibromochloromethane	124-48-1	ND	0.6
1,2-Dichlorobenzene	95-50-1	ND	4
1,3-Dichlorobenzene	541-73-1	ND	2
1,4-Dichlorobenzene	106-46-7	ND	4
Dichlorodifluoromethane	75-71-8	ND	1
1,1-Dichloroethane	75-34-3	0.7	0.4
1,2-Dichloroethane	107-06-2	ND	0.3
1,1-Dichloroethene	75-35-4	ND	0.2
cis-1,2-Dichloroethene	156-59-2	ND	0.4
trans-1,2-Dichloroethene	156-60-5	ND	0.4
1,2-Dichloropropane	78-87-5	ND	0.5
cis-1,3-Dichloropropene	10061-01-5	ND	0.5
trans-1,3-dichloropropene	10061-02-6	ND	0.6
Freon 113	76-13-1	ND	0.6
Methylene chloride	75-09-2	ND	2
1,1,2,2-Tetrachloroethane	79-34-5	ND	0.5
Tetrachloroethene	127-18-4	ND	0.5
1,1,1-Trichloroethane	71-55-6	ND	0.5
1,1,2-Trichloroethane	79-00-5	ND	0.6
Trichloroethene	79-01-6	ND	0.3
Trichlorofluoromethane	75-69-4	ND	0.4

Analytical Results
for
Geomatrix Consultants
Client Reference: 2026I
Clayton Project No. 93112.37

Sample Identification:	MW-1	Date Sampled:	11/24/93
Lab Number:	9311237-03A	Date Received:	11/24/93
Sample Matrix/Media:	WATER	Date Prepared:	11/30/93
Preparation Method:	EPA 5030	Date Analyzed:	11/30/93
Method Reference:	EPA 8010	Analyst:	MJL

Analyte	CAS #	Concentration (ug/L)	Method Detection Limit (ug/L)
Purgeable Halocarbons (Continued)			
Vinyl chloride	75-01-4	ND	0.5
Surrogates		Recovery (%)	QC Limits (%)
1-Chloro-2-methylpropene	513-37-1	108	50 - 150

ND: Not detected at or above limit of detection
--: Information not available or not applicable

Analytical Results
for
Geomatrix Consultants
Client Reference: 2026I
Clayton Project No. 93112.37

Sample Identification:	METHOD BLANK	Date Sampled:	--
Lab Number:	9311237-04A	Date Received:	--
Sample Matrix/Media:	WATER	Date Prepared:	11/30/93
Preparation Method:	EPA 5030	Date Analyzed:	11/30/93
Method Reference:	EPA 8010	Analyst:	MJL

Analyte	CAS #	Concentration (ug/L)	Method Detection Limit (ug/L)
Purgeable Halocarbons			
Bromodichloromethane	75-27-4	ND	0.7
Bromoform	75-25-2	ND	0.7
Bromomethane	74-83-9	ND	0.7
Carbon tetrachloride	56-23-5	ND	0.6
Chlorobenzene	108-90-7	ND	0.7
Chloroethane	75-00-3	ND	0.5
2-Chloroethylvinyl ether	110-75-8	ND	1
Chloroform	67-66-3	ND	0.5
Chloromethane	74-87-3	ND	0.6
Dibromochloromethane	124-48-1	ND	0.6
1,2-Dichlorobenzene	95-50-1	ND	4
1,3-Dichlorobenzene	541-73-1	ND	2
1,4-Dichlorobenzene	106-46-7	ND	4
Dichlorodifluoromethane	75-71-8	ND	1
1,1-Dichloroethane	75-34-3	ND	0.4
1,2-Dichloroethane	107-06-2	ND	0.3
1,1-Dichloroethene	75-35-4	ND	0.2
cis-1,2-Dichloroethene	156-59-2	ND	0.4
trans-1,2-Dichloroethene	156-60-5	ND	0.4
1,2-Dichloropropane	78-87-5	ND	0.5
cis-1,3-Dichloropropene	10061-01-5	ND	0.5
trans-1,3-dichloropropene	10061-02-6	ND	0.6
Freon 113	76-13-1	ND	0.6
Methylene chloride	75-09-2	ND	2
1,1,2,2-Tetrachloroethane	79-34-5	ND	0.5
Tetrachloroethene	127-18-4	ND	0.5
1,1,1-Trichloroethane	71-55-6	ND	0.5
1,1,2-Trichloroethane	79-00-5	ND	0.6
Trichloroethene	79-01-6	ND	0.3
Trichlorofluoromethane	75-69-4	ND	0.4

Analytical Results
for
Geomatrix Consultants
Client Reference: 2026I
Clayton Project No. 93112.37

Sample Identification:	METHOD BLANK	Date Sampled:	--
Lab Number:	9311237-04A	Date Received:	--
Sample Matrix/Media:	WATER	Date Prepared:	11/30/93
Preparation Method:	EPA 5030	Date Analyzed:	11/30/93
Method Reference:	EPA 8010	Analyst:	MJL

Analyte	CAS #	Concentration (ug/L)	Method Detection Limit (ug/L)
Purgeable Halocarbons (Continued)			
Vinyl chloride	75-01-4	ND	0.5
Surrogates		Recovery (%)	QC Limits (%)
1-Chloro-2-methylpropene	513-37-1	102	50 - 150

ND: Not detected at or above limit of detection
--: Information not available or not applicable

Analytical Results
for
Geomatrix Consultants
Client Reference: 2026I
Clayton Project No. 93112.37

Sample Identification:	MW-2	Date Sampled:	11/24/93
Lab Number:	9311237-01D	Date Received:	11/24/93
Sample Matrix/Media:	WATER	Date Prepared:	11/30/93
Preparation Method:	EPA 5030	Date Analyzed:	11/30/93
Method Reference:	EPA 8015/8020	Analyst:	WAS

Analyte	CAS #	Concentration (ug/L)	Method Detection Limit (ug/L)
BTEX/Gasoline			
Benzene	71-43-2	ND	0.4
Ethylbenzene	100-41-4	ND	0.3
Toluene	108-88-3	ND	0.3
o-Xylene	95-47-6	ND	0.4
p,m-Xylenes	--	ND	0.4
Gasoline	--	ND	50
Surrogates		Recovery (%)	QC Limits (%)
a,a,a-Trifluorotoluene	98-08-8	117	50 - 150

ND: Not detected at or above limit of detection
--: Information not available or not applicable

Analytical Results
for
Geomatrix Consultants
Client Reference: 2026I
Clayton Project No. 93112.37

Sample Identification:	MW-3	Date Sampled:	11/24/93
Lab Number:	9311237-02D	Date Received:	11/24/93
Sample Matrix/Media:	WATER	Date Prepared:	11/30/93
Preparation Method:	EPA 5030	Date Analyzed:	11/30/93
Method Reference:	EPA 8015/8020	Analyst:	WAS

Analyte	CAS #	Concentration (ug/L)	Method Detection Limit (ug/L)
BTEX/Gasoline			
Benzene	71-43-2	ND	0.4
Ethylbenzene	100-41-4	ND	0.3
Toluene	108-88-3	ND	0.3
o-Xylene	95-47-6	ND	0.4
p,m-Xylenes	--	ND	0.4
Gasoline	--	ND	50
Surrogates		Recovery (%)	QC Limits (%)
a,a,a-Trifluorotoluene	98-08-8	118	50 - 150

ND: Not detected at or above limit of detection
--: Information not available or not applicable

Analytical Results
for
Geomatrix Consultants
Client Reference: 2026I
Clayton Project No. 93112.37

Sample Identification:	MW-1	Date Sampled:	11/24/93
Lab Number:	9311237-03D	Date Received:	11/24/93
Sample Matrix/Media:	WATER	Date Prepared:	11/30/93
Preparation Method:	EPA 5030	Date Analyzed:	11/30/93
Method Reference:	EPA 8015/8020	Analyst:	WAS

Analyte	CAS #	Concentration (ug/L)	Method Detection Limit (ug/L)
BTEX/Gasoline			
Benzene	71-43-2	8.8	0.4
Ethylbenzene	100-41-4	ND	0.3
Toluene	108-88-3	1.5	0.3
o-Xylene	95-47-6	1.1	0.4
p,m-Xylenes	--	1.9	0.4
Gasoline	--	50	50
Surrogates		Recovery (%)	QC Limits (%)
a,a,a-Trifluorotoluene	98-08-8	115	50 - 150

ND: Not detected at or above limit of detection
--: Information not available or not applicable

Analytical Results
for
Geomatrix Consultants
Client Reference: 2026I
Clayton Project No. 93112.37

Sample Identification:	METHOD BLANK	Date Sampled:	--
Lab Number:	9311237-04A	Date Received:	--
Sample Matrix/Media:	WATER	Date Prepared:	11/30/93
Preparation Method:	EPA 5030	Date Analyzed:	11/30/93
Method Reference:	EPA 8015/8020	Analyst:	WAS

Analyte	CAS #	Concentration (ug/L)	Method Detection Limit (ug/L)
BTEX/Gasoline			
Benzene	71-43-2	ND	0.4
Ethylbenzene	100-41-4	ND	0.3
Toluene	108-88-3	ND	0.3
o-Xylene	95-47-6	ND	0.4
p,m-Xylenes	--	ND	0.4
Gasoline	--	ND	50
Surrogates		Recovery (%)	QC Limits (%)
a,a,a-Trifluorotoluene	98-08-8	117	50 - 150

ND: Not detected at or above limit of detection
--: Information not available or not applicable

Analytical Results
for
Geomatrix Consultants
Client Reference: 2026I
Clayton Project No. 93112.37

Sample Identification: See Below
Lab Number: 9311237
Sample Matrix/Media: ~~WATER~~
Extraction Method: SM 5520C
Method Reference: SM 5520F

Date Received: 11/24/93
Date Extracted: 12/01/93
Date Analyzed: 12/07/93

Lab Number	Sample Identification	Date Sampled	Hydrocarbons (mg/L)	Method Detection Limit (mg/L)
-01	MW-2	11/24/93	ND	5
-02	MW-3	11/24/93	ND	5
-03	MW-1	11/24/93	ND	5
-04	METHOD BLANK	--	ND	5

ND: Not detected at or above limit of detection
--: Information not available or not applicable

Analytical Results
for
Geomatrix Consultants
Client Reference: 2026I
Clayton Project No. 93112.37

Sample Identification: See Below
Lab Number: 9311237
Sample Matrix/Media: WATER
Extraction Method: EPA 3510
Method Reference: EPA 8015 (Modified)

Date Received: 11/24/93
Date Extracted: 11/30/93
Date Analyzed: 12/01/93

Lab Number	Sample Identification	Date Sampled	TPH-D (ug/L)		Method Detection Limit (ug/L)
-01	MW-2	11/24/93	80	a	50
-02	MW-3	11/24/93	100	a	50
-03	MW-1	11/24/93	280	a	50
-04	METHOD BLANK	--	ND		50

ND: Not detected at or above limit of detection
--: Information not available or not applicable

TPH-D = Extractable petroleum hydrocarbons from C10 to C42 quantitated as diesel.
a ~~Sample does not match~~ the typical diesel pattern.
Sample appears to be oil.

Analytical Results
for
Geomatrix Consultants
Client Reference: 2026I
Clayton Project No. 93112.37

Sample Identification: See Below
Lab Number: 9311237
Sample Matrix/Media: WATER
Method Reference: EPA 160.1

Date Received: 11/24/93
Date Analyzed: 12/07/93

Lab Number	Sample Identification	Date Sampled	Total Dissolved Solids (mg/L)	Method Detection Limit (mg/L)
-01	MW-2	11/24/93	23000	10
-02	MW-3	11/24/93	20000	10
-03	MW-1	11/24/93	12000	10
-04	METHOD BLANK	--	<10	10

ND: Not detected at or above limit of detection
--: Information not available or not applicable

Chain-of-Custody Record

No. 4005

Date: 11/24/93

Page 1 of 1

Project No.: 2026 I

Samplers (Signatures): James M Carolan

Date	Time	Sample Number	EPA Method 8010	EPA Method 8020	EPA Method 8240	EPA Method 8270	TPH as gasoline	TPH as diesel 8015	TPH as BTEX by 8020	Total Oil and Grease	Total Dissolved Solids	Cooled	Soil (S) or water (W)	Acidified	Number of containers
11/24	12:00	mw-2	X				X	X	X	X	X	X	W	X	14
11/24	13:00	mw-3	X				X	X	X	X	X	X	W	X	14
11/24	14:00	mw-1	X				X	X	X	X	X	X	W	X	14

ANALYSES

REMARKS

Additional comments

Bill Port of Oakland directly

Total Oil and Grease by Standard Method 5520 C and F

Turnaround time: Standard

Results to: Elizabeth Wells

Total No. of containers: 42

Relinquished by:	Date:	Relinquished by:	Date:	Relinquished by:	Date:
Signature: James M Carolan	11/24/93	Signature: Jim Mitchell	11/24/93	Signature:	
Printed name: Jim Carolan		Printed name: JIM MITCHELL		Printed name:	
Company: Geomatrix		Company: CLAYTON		Company:	
Received by:	**Time:**	**Received by:**	**Time:**	**Received by:**	**Time:**
Signature: Jim Mitchell	14:55	Signature: TAMMY ALTON	1640	Signature:	
Printed name: JIM MITCHELL		Printed name: TAMMY ALTON		Printed name:	
Company: Clayton Env.		Company: CLAYTON		Company:	

Method of shipment: Lab Pickup

Laboratory comments and Log No.:

9311[illegible]

cond OK

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