

**GROUNDWATER MONITORING REPORT
SECOND QUARTER, 1998
ALCOPARK FUELING FACILITY
OAKLAND, CALIFORNIA**

prepared for

ALAMEDA COUNTY GENERAL SERVICES AGENCY
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Oakland, California

prepared by

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August 12, 1998
575-8G004

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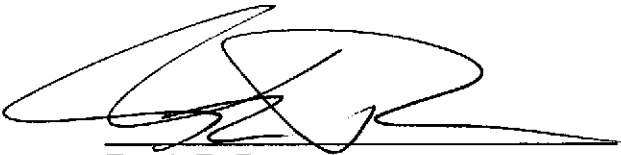
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STATEMENT OF LIMITATIONS AND PROFESSIONAL CERTIFICATION

Information provided in this report, prepared by Professional Service Industries, Inc. (PSI), is intended exclusively for the use of Alameda County General Services Agency (AGSA), for the evaluation of subsurface conditions as it pertains to the subject site. The professional services provided have been performed in accordance with practices generally accepted by other geologists, hydrologists, hydrogeologists, engineers, and environmental scientists practicing in this field. No other warranty, either expressed or implied, is made. As with all subsurface investigations, there is no guarantee that the work conducted will identify any or all sources or locations of contamination.

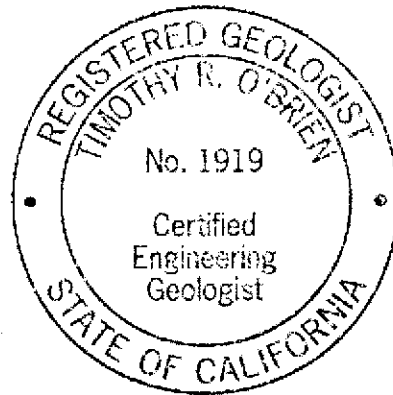
This report is issued with the understanding that AGSA is responsible for ensuring that the information contained herein is brought to the attention of the appropriate regulatory agency. This report has been reviewed by a geologist who is registered in the State of California and whose signature and license number appear below.



Frank R. Poss
Senior Hydrogeologist



Timothy R. O'Brien, RG/CEG/CHG
Senior Geologist



1. INTRODUCTION

Professional Service Industries, Inc. (PSI) was retained by the Alameda County General Services Agency (AGSA) to perform groundwater monitoring at the AGSA Alcopark Fueling Facility located at 165 13th Street, Oakland, California. The site location is presented on Figure 1.

The groundwater monitoring was prompted by a request by the Alameda County Health Care Services Agency (HCSA) which requested additional information on the extent of petroleum hydrocarbon impacted groundwater (HCSA, 1997a).

1.1 SCOPE OF WORK

The scope of work consisted of the following tasks:

- Measure the depth to water in the site wells and prepare a groundwater elevation map.
- Determine the groundwater flow direction and gradient.
- Collect and chemically analyze groundwater samples from the wells.
- Prepare a report documenting the field procedures, analytical results, and conclusions regarding the site condition.

1.2 SITE BACKGROUND

Three groundwater monitoring wells were installed at the Alcopark fueling station in March, 1989 to assess environmental conditions subsequent to the repair of a line leak at Dispenser No.1. Initial sample results indicated the presence of BTEX in the groundwater. Subsequent sample results indicated the presence of TPH-G. Based on the analytical data, it was surmised that contaminants detected on-site were emanating from a source area located upgradient of the site. Sampling activities were halted in 1992 pending investigation of upgradient source (GSA, 1997).

By letter dated May 30, 1997 the Alameda County Health Care Services Agency (HCSA) instructed GSA to resume groundwater monitoring at Alcopark (HCSA, 1997b). Sampling resumed in July, 1997. Analytical data from that sampling event indicated elevated TPH-G and BTEX concentrations in the downgradient well. MTBE was also detected. Additional samples collected in October, 1997 provided similar results (GSA, 1997). By

letter dated September 11, 1997, the HCSA directed GSA to investigate the extent and stability of the plume.

To better define groundwater conditions downgradient of the UST, two borings were drilled on March 23, 1998. A grab groundwater sample was collected from one of the borings, and Well MW-6 was installed in the other boring.

1.2.1 Storage Tank System Upgrades

In September of 1992, overfill protection, spill containment, and automatic tank gauging were installed on the two underground tanks. In July and August of 1996, additional upgrade work was done to comply with Title 23 of the California Code of Regulations. This included replacement of underground single-walled steel piping with double-wall fiberglass piping, and installation of dispenser sumps, piping sumps and sump leak sensors (GSA, 1997).

2. GROUNDWATER MONITORING ACTIVITIES

Groundwater monitoring activities were performed by a PSI technician on July 15, 1998. The activities were performed in accordance with PSI standard procedures presented in Appendix A, and procedures described in a HCSA letter describing collection of samples without purging the wells (HCSA, 1997a).

2.1 Groundwater Elevation and Flow Direction

Prior to groundwater sampling, depth to groundwater was measured from the top of the well casings in each monitoring well. The groundwater measurements were converted to groundwater elevation and the data plotted on a groundwater elevation map. A groundwater elevation map was prepared for July 15, 1998. The map is presented as Figure 2. Chart 1, Appendix C presents groundwater elevation over time.

Interpretation of the groundwater elevation map indicates the groundwater is flowing to the east under a hydraulic gradient of 0.013 foot per foot. Interpretation of Chart 1, Appendix C reveals the groundwater elevation is lower than last quarter. The groundwater flow direction and gradient are consistent with previous monitoring events.

2.2 Groundwater Sampling

The monitoring wells were sampled without purging as requested in the HCSA letter dated September 11, 1997. Groundwater samples were collected with disposable Teflon bailers. Groundwater samples were collected according to PSI's standard protocol, included in Appendix A and were stored in an ice cooler at 4 degrees Celsius and maintained under chain of custody protocol.

To minimize the possibility of cross-contamination between sampling locations, most of the sampling equipment used is disposable. To further minimize the possibility of cross-contamination, the water sounder and all other reusable sampling equipment were cleaned with a non-phosphate detergent and rinsed twice with deionized water prior to use in the next well.

3. LABORATORY ANALYSIS PROGRAM

The groundwater samples collected during this investigation were submitted to McCampbell Analytical, Inc. of Pacheco, California. McCampbell Analytical is a State of California Department of Health Services certified hazardous waste laboratory (Environmental Laboratory Accreditation Program [ELAP] #1644). A summary of the analytical methods is presented below.

All groundwater samples collected at the site were analyzed for the following constituents by the indicated methods:

- Total Petroleum Hydrocarbons as Gasoline (TPH-G) in accordance with Environmental Protection Agency (EPA) Method 8015-m.
- BTEX and MTBE by EPA Method 8020.
- MTBE and Oxygenates by EPA Method 8260 (only run on the sample with the highest MTBE concentration).

The samples were transported to the laboratory under chain of custody protocol. Copies of the chain of custody forms are included in Appendix B.

3.1 ANALYTICAL RESULTS

Groundwater samples were collected and chemically analyzed in accordance with the analytical method requirements. The analytical data is summarized in Table 1. Laboratory reports are presented in Appendix B.

Analytical results reported measurable concentrations of TPH-G, BTEX, and MTBE in groundwater samples from Wells MW-1 and MW-6. This is consistent with analytical results from the last sampling event performed in April, 1998 (PSI, 1998).

3.1.1 Analytical Results Discussion

Groundwater samples were collected and chemically analyzed in accordance with the HCSA guidelines for groundwater sampling (HCSA, 1997b).

TPH-G, BTEX, and MTBE were detected in groundwater samples from Wells MW-1 and MW-6 this quarter. The concentrations are consistent with concentrations measured in samples from the wells last quarter (PSI, 1998).

- TPH-G was detected in Wells MW-1 (71 ug/l) and MW-6 (6,200 ug/l). The concentration of TPH-G over time is presented on Chart 2, Appendix C.
- MTBE was detected in Wells MW-1 (57 ug/l) and MW-6 (11,000 ug/l). Confirmation of the MTBE concentration was performed using EPA method 8260. The EPA method 8260 analysis reported a concentration of 13,000 ug/l). Insufficient data exists for MTBE to be charted at this time.
- Benzene was detected in Wells MW-1 (31 ug/l) and MW-6 (280 ug/l). The concentration of benzene over time is presented on Chart 3, Appendix C.
- The oxygenate Tert-Amyl Methyl Ether (TAME) was detected in the EPA method 8260 analysis of samples from Well MW-6 (730 ug/l).

4. CONCLUSIONS

Based on the information presented in this report, the following conclusions have been reached:

- Groundwater exists at approximately 16.5 feet below the ground surface.
- Groundwater flow direction is to the east.
- Groundwater samples collected at the site contained measurable concentrations of TPH-G, BTEX, or MTBE in Wells MW-1 and MW-6.
- TAME was detected in a sample from Well MW-6.

Based on the results presented in this report, PSI recommends additional groundwater monitoring be performed to determine contaminant trends. Evaluation of the trends will assist in differentiating between a one time leak event (such as might have happened during piping upgrade work) and an ongoing source. It is noted that the Alcopark tank leak monitoring system has not indicated the occurrence of a tank or piping leak (Freitag, personal communication, 1998). At this time, PSI does not recommend further drilling to investigate the extent of the groundwater plume.

REFERENCES

GSA, 1997, Request For Proposal (RFP) for Groundwater Services, December 2.

HCSA, 1997a, Workplan Request Letter to Mr. Rodman Freitag, September 11.

HCSA, 1997b, Continuation of Groundwater Monitoring Request, Letter to Mr. Jim DeVos, May 20.

HCSA, 1998, Quarterly Groundwater Monitoring Report Approval Letter, June 22.

Lawrence Livermore National Laboratory, 1995a, *Recommendations to Improve the Cleanup Process for California's Leaking Underground Fuel Tanks*, prepared for California State Water Resources Control Board, October 16.

Lawrence Livermore National Laboratory, 1995b, *California Leaking Underground Fuel Tank Historical Case Analyses*, prepared for California State Water Resources Control Board, November 16.

Personal Communication, 1998, Mr. Rod Freitag of the Alameda General Services Agency, Discussion of the leak detection system at the Alcopark facility, April 15.

PSI 1998, Soil and Groundwater Investigation, Alcopark Fueling Facility, prepared for Alameda GSA, April 17.

USGS, 1980, Oakland West, California, topographic map.

TABLE 1
GROUNDWATER ELEVATION AND ANALYTICAL DATA
ALCOPARK FUELING FACILITY
OAKLAND, CALIFORNIA

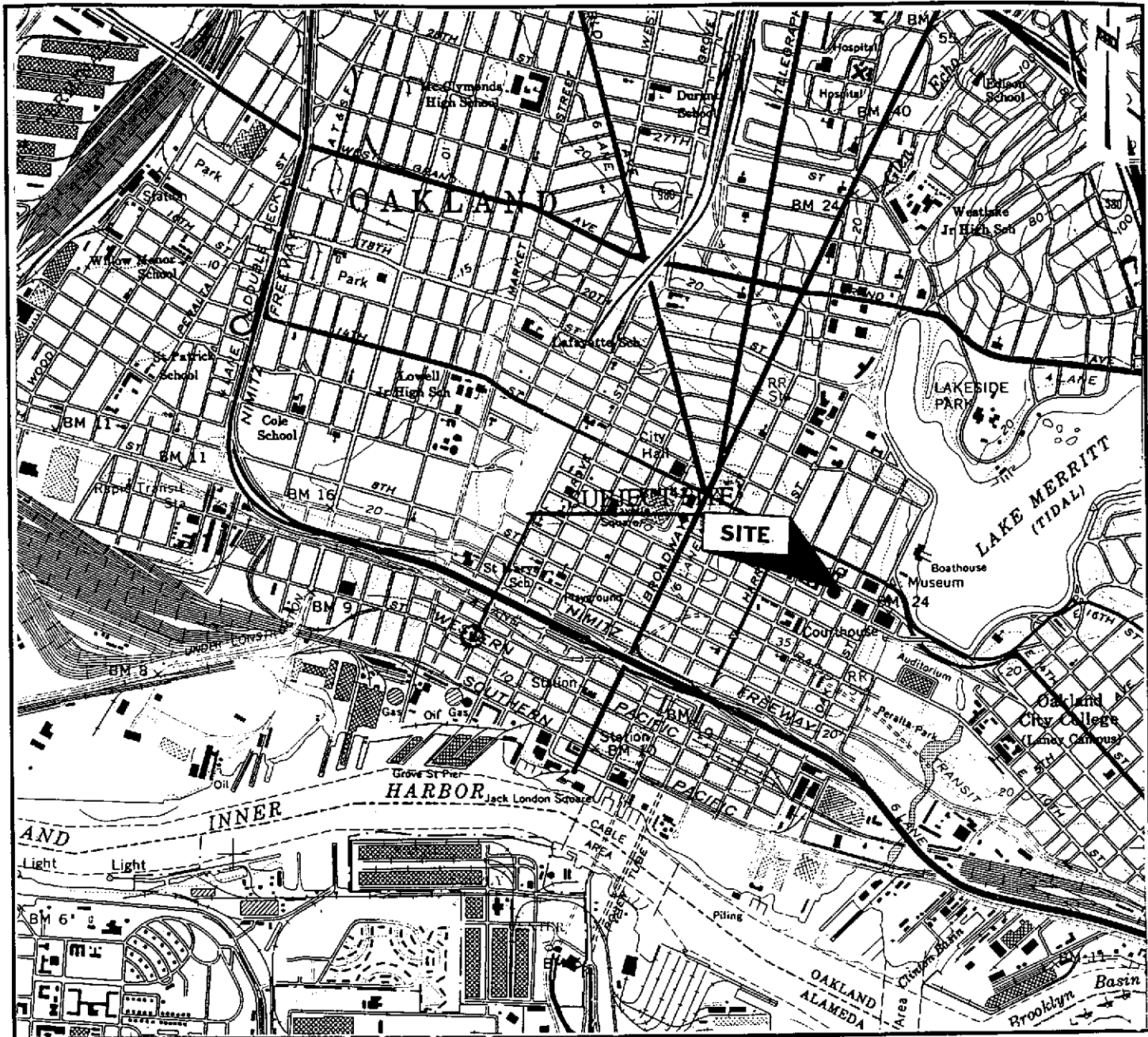
<i>All concentrations in ug/l (PPB).</i>								
Well	Date	Groundwater Elevation	TPH-G	MTBE	Benzene	Toluene	Ethylbenzene	Xylenes
W-MW1	3/21/89	12.2	ND	NA	21	3.9	0.4	4.5
W-MW1	7/26/90	12.3	1,400	NA	200	45	ND	53
W-MW1	10/25/90	12.1	1,200	NA	ND	7.3	2.2	46
W-MW1	1/25/91	11.9	270	NA	23	1.5	ND	3.1
W-MW1	4/25/91	11.8	230	NA	ND	ND	ND	ND
W-MW1	8/27/91	11.8	8,300	NA	370	64	ND	120
W-MW1	11/25/91	11.7	810	NA	9.3	ND	7.8	32
W-MW1	6/11/92	12.85	2,600	NA	810	16	21	42
W-MW1	7/16/97	14.36	19,000	ND (150)	1,400	2,800	500	2,600
W-MW1	10/21/97	13.92	14,000	29	1,200	1,000	590	2,800
W-MW1	3/11/98	17.14	NS	NS	NS	NS	NS	NS
W-MW1	4/1/98	17.14	ND (50)	6.3	5.4	ND (0.5)	ND (0.5)	0.82
W-MW1	7/15/98	16.41	71	57	31	ND (0.5)	ND (0.5)	3.1
W-MW4	3/21/89	12.4	ND	NA	13	1.4	1.0	ND
W-MW4	7/26/90	12.5	NA	NA	0.8	ND	ND	ND
W-MW4	10/25/90	12.2	NA	NA	120	1.2	1.1	0.9
W-MW4	1/25/91	12.0	NA	NA	230	2.8	1.2	2.0
W-MW4	4/25/91	13.0	170	NA	12	ND	ND	2.3
W-MW4	8/27/91	11.8	ND	NA	87	1.3	0.8	0.8
W-MW4	11/25/91	11.8	1,400	NA	ND	1.7	8.6	3.6
W-MW4	6/11/92	12.93	560	NA	150	1.8	1.8	1.1
W-MW4	7/16/97	14.46	50	ND	ND	ND	ND	ND
W-MW4	10/21/97	14.10	ND	ND	ND	ND	ND	ND
W-MW4	3/11/98	17.39	NS	NS	NS	NS	NS	NS
W-MW4	4/1/98	17.40	ND (50)	ND (5.0)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
W-MW4	7/15/98	16.92	ND (50)	ND (5.0)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
W-MW5	3/21/89	12.2	ND	NA	ND	ND	ND	ND
W-MW5	7/26/90	12.4	670	NA	0.8	ND	ND	ND
W-MW5	10/25/90	12.1	120	NA	13	ND	ND	ND
W-MW5	1/25/91	11.9	120	NA	3.2	ND	ND	ND
W-MW5	4/25/91	12.3	ND	NA	ND	ND	ND	ND
W-MW5	8/27/91	11.5	ND	NA	20	ND	0.5	ND
W-MW5	11/25/91	11.7	190	NA	2.7	ND	0.8	2.5
W-MW5	6/11/92	12.85	150	NA	37	ND	ND	ND
W-MW5	7/16/97	14.33	ND	22	ND	ND	ND	ND
W-MW5	10/21/97	13.88	ND	14	ND	ND	ND	ND
W-MW5	3/11/98	17.14	NS	NS	NS	NS	NS	NS
W-MW5	4/1/98	17.14	ND (50)	11	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
W-MW5	7/15/98	16.43	ND (50)	ND (5.0)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)

**TABLE 1
GROUNDWATER ELEVATION AND ANALYTICAL DATA
ALCOPARK FUELING FACILITY
OAKLAND, CALIFORNIA**

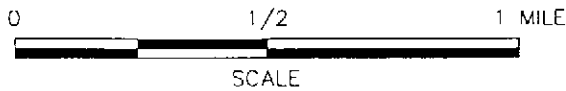
<i>All concentrations in ug/l (PPB).</i>								
Well	Date	Groundwater Elevation	TPH-G	MTBE	Benzene	Toluene	Ethylbenzene	Xylenes
W-MW6	4/1/98	NA	740	4,600	9.8	3.2	3.0	15
W-MW6	7/15/98	NA	6,200	11,000	280	43	180.0	350
W-B1	3/23/98	NA	3,100	4,200	250	18	160	290

Notes:

TPH-G denotes Total Petroleum Hydrocarbons as Gasoline. MTBE denotes Methyl tert-Butyl Ether.
 NA denotes Not Analyzed. NS denotes Not Sampled. ND denotes Not Detected. () denotes detection limit.
 Data collected prior to 1998 was reported in Alameda County Request for Proposal dated December 2, 1997.



NORTH

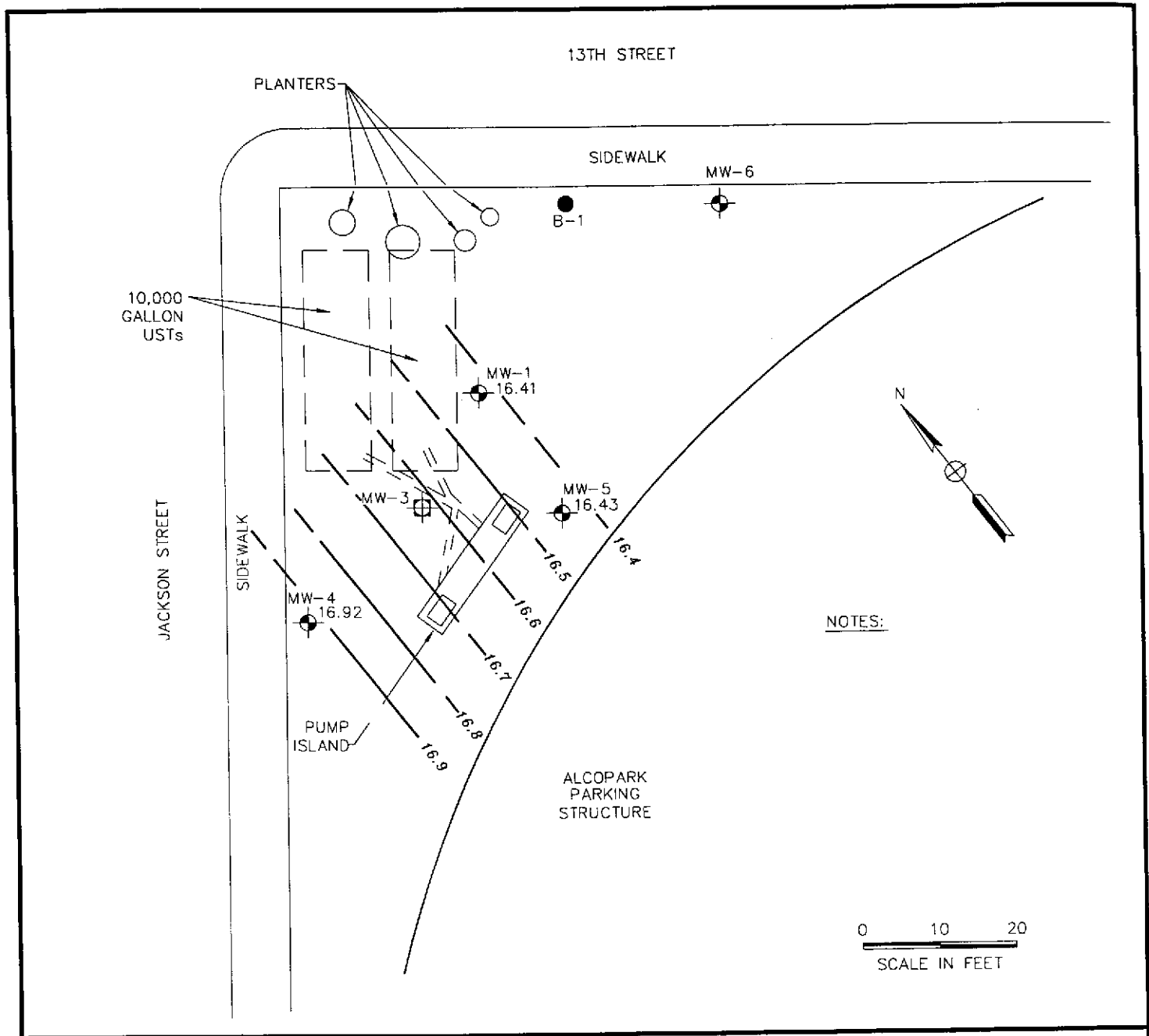


REFERENCE:
 U.S.G.S. OAKLANDWEST, CALIFORNIA, 1959
 PHOTOREVISED 1980






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 GEOTECHNICAL
 CONSTRUCTION
 CONSULTING • ENGINEERING • TESTING

SITE LOCATION
 ALCOPARK FUELING STATION
 165 13TH STREET
 OAKLAND, CALIFORNIA
 PROJECT NUMBER: 575-8C004

DATE: 1/14/98	CKD BY: <i>AD</i>	FIGURE NO: 1
FILE NO: 8C004 -1		DRAWN BY: S.BOWERS



LEGEND

- MW-1  GROUNDWATER MONITORING WELL
- MW-3  VADOSE MONITORING WELL LOCATION
- B-1  SOIL BORING
-  UNDERGROUND PIPING
-  LINE OF EQUAL GROUNDWATER ELEVATION

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GROUNDWATER ELEVATION MAP - 7/15/98
ALCOPARK FUELING STATION
165 13TH STREET
OAKLAND, CALIFORNIA
PROJECT NUMBER: 575-8G004

DATE: 1/13/98

CKD BY:

FIGURE NO.: 2

FILE NO: 8G004-2

10
DRAWN BY: S.BOWERS

APPENDIX A

GROUNDWATER SAMPLING FIELD PROCEDURES

APPENDIX A

GROUND-WATER SAMPLING

The following procedures will be used for ground water sampling:

1. All equipment shall be washed prior to entering the well with an Alconox solution, followed by two tap water rinses and a deionized water rinse.
2. Prior to purging wells, depth-to-water will be measured using an electronic sounder with an accuracy of approximately 0.01 foot. The measurements will be made to the top of the well casing on the north side.
4. Free floating product thickness and depth-to-ground water will be measured in wells containing free floating product using a Solinst oil-water interface probe to an accuracy of approximately 0.003 meters (0.01 foot). The measurements will be made to the top of the well casing on the north side.
5. Water samples will be collected with a Teflon disposable bailer. In the case of grab groundwater sampling, samples will be collected with a disposable Teflon lined plastic tube equipped with a check valve. The water collected will be immediately decanted into laboratory-supplied vials and bottles. The containers will be overfilled, capped, labeled, and placed in a chilled cooler, prior to delivery to the laboratory for analysis.
6. Chain of custody procedures, including chain of custody forms, will be used to document water sample handling and transport from collection to delivery to the laboratory for analysis.
7. Ground-water samples will be delivered to a State-certified hazardous waste laboratory within approximately 24 hours of collection.

APPENDIX B

LABORATORY REPORT AND CHAIN OF CUSTODY



McCAMPBELL ANALYTICAL INC.

110 Second Avenue South, #D7, Pacheco, CA 94553
Telephone : 925-798-1620 Fax : 925-798-1622
<http://www.mccampbell.com> E-mail: main@mccampbell.com

Professional Service Industries 1320 West Winton Avenue Hayward, CA 94545	Client Project ID: ALCO Park	Date Sampled: 07/15/98
		Date Received: 07/15/98
	Client Contact: Chris Merritt/ Rod Freitag	Date Extracted: 07/15/98
	Client P.O: 8G004	Date Analyzed: 07/15/98

07/22/98

Dear Chris/Rod:

Enclosed are:

- 1). the results of 4 samples from your **ALCO Park** project,
- 2). a QC report for the above samples
- 3). a copy of the chain of custody, and
- 4). a bill for analytical services.

All analyses were completed satisfactorily and all QC samples were found to be within our control limits. If you have any questions please contact me. McCampbell Analytical Laboratories strives for excellence in quality, service and cost. Thank you for your business and I look forward to working with you again.

Yours truly,

Edward Hamilton, Lab Director



McCAMPBELL ANALYTICAL INC.

110 Second Avenue South, #D7, Pacheco, CA 94553
 Telephone : 925-798-1620 Fax : 925-798-1622
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	Client Contact: Chris Merritt/ Rod Freitag	Date Extracted: 07/16/98
	Client P.O: 8G004	Date Analyzed: 07/16/98

Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline*, with Methyl tert-Butyl Ether* & BTEX*

EPA methods 5030, modified 8015, and 8020 or 602; California RWQCB (SF Bay Region) method GCFID(5030)

Lab ID	Client ID	Matrix	TPH(g) ⁺	MTBE	Benzene	Toluene	Ethylbenzene	Xylenes	% Recovery Surrogate
92190	MW-4	W	ND	ND	ND	ND	ND	ND	98
92191	MW-5	W	ND	ND	ND	ND	ND	ND	96
92192	MW-1	W	71, a	57	31	ND	ND	3.1	95
92193	MW-6	W	6200, a	11,000	280	43	180	350	106
Reporting Limit unless otherwise stated; ND means not detected above the reporting limit	W		50 ug/L	5.0	0.5	0.5	0.5	0.5	
	S		1.0 mg/kg	0.05	0.005	0.005	0.005	0.005	

* water and vapor samples are reported in ug/L, wipe samples in ug/wipe, soil and sludge samples in mg/kg, and all TCLP and SPLP extracts in ug/L

* cluttered chromatogram; sample peak coelutes with surrogate peak

*The following descriptions of the TPH chromatogram are cursory in nature and McCampbell Analytical is not responsible for their interpretation: a) unmodified or weakly modified gasoline is significant; b) heavier gasoline range compounds are significant(aged gasoline?); c) lighter gasoline range compounds (the most mobile fraction) are significant; d) gasoline range compounds having broad chromatographic peaks are significant; biologically altered gasoline?; e) TPH pattern that does not appear to be derived from gasoline (?); f) one to a few isolated peaks present; g) strongly aged gasoline or diesel range compounds are significant; h) lighter than water immiscible sheen is present; i) liquid sample that contains greater than ~5 vol. % sediment; j) no recognizable pattern.



McCAMPBELL ANALYTICAL INC.

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 Telephone : 925-798-1620 Fax : 925-798-1622
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Professional Service Industries 1320 West Winton Avenue Hayward, CA 94545	Client Project ID: ALCO Park	Date Sampled: 07/15/98
	Client Contact: Chris Merritt/ Rod Freitag	Date Received: 07/15/98
	Client P.O.: 8G004	Date Extracted: 07/17/98
		Date Analyzed: 07/17/98

Volatile Organics By GC/MS

EPA method 8260

Lab ID	92193		
Client ID	MW-6		
Matrix	W		
Compound	Concentration*	Compound	Concentration*
Acetone ^(b)	ND<1400	Ethylbenzene	ND<500
Benzene	ND<500	Hexachlorobutadiene	ND<500
Bromobenzene	ND<500	Iodomethane	ND<500
Bromochloromethane	ND<500	Isopropylbenzene	ND<500
Bromodichloromethane	ND<500	p-Isopropyl toluene	ND<500
Bromoform	ND<500	Methyl butyl ketone ^(d)	ND<500
Bromomethane	ND<500	Methylene Chloride ^(e)	ND<800
n-Butyl benzene	ND<500	Methyl ethyl ketone ^(f)	ND<500
sec-Butyl benzene	ND<500	Methyl isobutyl ketone ^(g)	ND<500
tert-Butyl benzene	ND<500	Methyl tert-Butyl Ether (MTBE)	---
Carbon Disulfide	ND<500	Napthalene	ND<500
Carbon Tetrachloride	ND<500	n-Propyl benzene	ND<500
Chlorobenzene	ND<500	Styrene ^(k)	ND<500
Chloroethane	ND<500	1,1,1,2-Tetrachloroethane	ND<500
2-Chloroethyl Vinyl Ether ^(g)	ND<500	1,1,2,2-Tetrachloroethane	ND<500
Chloroform	ND<500	Tetrachloroethene	ND<500
Chloromethane	ND<500	Toluene ^(l)	ND<500
2-Chlorotoluene	ND<500	1,2,3-Trichlorobenzene	ND<500
4-Chlorotoluene	ND<500	1,2,4-Trichlorobenzene	ND<500
Dibromochloromethane	ND<500	1,1,1-Trichloroethane	ND<500
1,2-Dibromo-3-chloropropane	ND<500	1,1,2-Trichloroethane	ND<500
Dibromomethane	ND<500	Trichloroethene	ND<500
1,2-Dichlorobenzene	ND<500	Trichlorofluoromethane	ND<500
1,3-Dichlorobenzene	ND<500	1,2,3-Trichloropropane	ND<500
1,4-Dichlorobenzene	ND<500	1,2,4-Trimethylbenzene	ND<500
Dichlorodifluoromethane	ND<500	1,3,5-Trimethylbenzene	ND<500
1,1-Dichloroethane	ND<500	Vinyl Acetate ^(m)	ND<500
1,2-Dichloroethane	ND<500	Vinyl Chloride ⁽ⁿ⁾	ND<500
1,1-Dichloroethene	ND<500	Xylenes, total ^(o)	ND<500
cis-1,2-Dichloroethene	ND<500		
trans-1,2-Dichloroethene	ND<500		
1,2-Dichloropropane	ND<500		
1,3-Dichloropropane	ND<500		
2,2-Dichloropropane	ND<500		
1,1-Dichloropropene	ND<500		
cis-1,3-Dichloropropene	ND<500		
trans-1,3-Dichloropropene	ND<500		
Ethylene dibromide	ND<500		
		Comments:	
		Surrogate Recoveries (%)	
		Dibromofluoromethane	91
		Toluene-d8	99
		4-Bromofluorobenzene	96

* water and vapor samples are reported in ug/L, soil and sludge samples in ug/kg, wipes in ug/wipe and all TCLP / SPLP extracts in ug/L
 Reporting limits unless otherwise stated: water samples 1.0 ug/L; vapor samples 0.5 ug/L; solid and sludge samples 5 ug/kg; wipes 0.2ug/wipe ND means not detected above the reporting limit; N/A means analyte not applicable to this analysis
 (b) 2-propanone or dimethyl ketone; (c) (2-chloroethoxy) ethene; (d) 2-hexanone; (e) dichloromethane; (f) 2-butanone; (g) 4-methyl-2-pentanone or isopropylacetone; (h) lighter than water immiscible sheen is present; (i) liquid sample that contains greater than ~5 vol. % sediment; (j) sample diluted due to high organic content; (k) peaks present in this carbon range do not match the pattern of our standard for this analyte; (l) methylbenzene; (m) acetic acid ethenyl ester; (n) chloroethene; (o) dimethylbenzenes.



McCAMPBELL ANALYTICAL INC.

110 Second Avenue South, #D7, Pacheco, CA 94553
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<http://www.mccampbell.com> E-mail: main@mccampbell.com

Professional Service Industries 1320 West Winton Avenue Hayward, CA 94545	Client Project ID: ALCO Park	Date Sampled: 07/15/98
	Client Contact: Chris Merritt/ Rod Freitag	Date Received: 07/15/98
	Client P.O: 8G004	Date Extracted: 07/17/98
		Date Analyzed: 07/17/98

Oxygenated Volatile Organics By GC/MS

EPA method 8260 modified

Lab ID	92193	Reporting Limit				
Client ID	MW-6					
Matrix	W	S	W			
Compound	Concentration*				ug/kg	ug/L
Di-isopropyl Ether (DIPE)	ND<250				5.0	1.0
Ethyl tert-Butyl Ether (ETBE)	ND<250				5.0	1.0
Methyl-tert Butyl Ether (MTBE)	13,000				5.0	1.0
tert-Amyl Methyl Ether (TAME)	730				5.0	1.0
tert-Butanol	ND<2500				25	5.0

Surrogate Recoveries (%)

Dibromofluoromethane	91				
Comments:					

* water samples are reported in ug/L, soil and sludge samples in ug/kg, wipes in ug/wipe and all TCLP / STLC / SPLP extracts in ug/L

ND means not detected above the reporting limit; N/A means surrogate not applicable to this analysis

(h) lighter than water immiscible sheen is present; (i) liquid sample that contains greater than ~5 vol. % sediment; (j) sample diluted due to high organic content

DHS Certification No. 1644

EH Edward Hamilton, Lab Director

QC REPORT FOR HYDROCARBON ANALYSES

Date: 07/16/98-07/17/98

Matrix: WATER

Analyte	Concentration (mg/L)			Amount Spiked	% Recovery		RPD
	Sample (#92222)	MS	MSD		MS	MSD	
TPH (gas)	0.0	102.1	102.0	100.0	102.1	102.0	0.1
Benzene	0.0	10.0	10.1	10.0	100.0	101.0	1.0
Toluene	0.0	10.2	10.2	10.0	102.0	102.0	0.0
Ethyl Benzene	0.0	10.4	10.4	10.0	104.0	104.0	0.0
Xylenes	0.0	31.7	31.6	30.0	105.7	105.3	0.3
TPH(diesel)	0.0	159	154	150	106	103	3.0
TRPH (oil & grease)	N/A	N/A	N/A	N/A	N/A	N/A	N/A

$$\% \text{ Rec.} = (\text{MS} - \text{Sample}) / \text{amount spiked} \times 100$$

$$\text{RPD} = (\text{MS} - \text{MSD}) / (\text{MS} + \text{MSD}) \times 2 \times 100$$

QC REPORT FOR VOCs (EPA 8240/8260)

Date: 07/16/98-07/17/98

Matrix: WATER

Analyte	Concentration (ug/kg, u Sample (#91999)			Amount Spiked	% Recovery		RPD
	MS	MSD			MS	MSD	
1,1-Dichloroethe	0	108	104	100	108	104	3.8
Trichloroethene	0	94	90	100	94	90	4.3
EDB	0	110	109	100	110	109	0.9
Chlorobenzene	0	92	90	100	92	90	2.2
Benzene	0	97	94	100	97	94	3.1
Toluene	0	108	102	100	108	102	5.7

$$\% \text{ Rec.} = (\text{MS} - \text{Sample}) / \text{amount spiked} \times 100$$

$$\text{RPD} = (\text{MS} - \text{MSD}) / (\text{MS} + \text{MSD}) \times 2 \times 100$$

Pace Analytical

11748 xps18.doc

396397

CHAIN-OF-CUSTODY RECORD Analytical Request

Client: PSI \ ALAMEDA GSA	Report To: CHRIS MERRITT - PSI RODRIGUETAG - GSA	Turn around Time <input type="checkbox"/> 24 Hours <input type="checkbox"/> 48 Hours <input type="checkbox"/> 3-5 Days <input type="checkbox"/> 1 Week 2 Weeks <input type="checkbox"/> Normal 14 Days	Pace Client No.
Address: 1320 W. WINTON AVE HAYWARD CA 94545	Bill To: ROD. FRIETAG - ALAMEDA GSA		Pace Project Manager
Phone: 510-785-1111 FAX 510-785-1192	P.O. # / Billing Reference: 86004		Pace Project No.
	Project Name / No.: ALCO PARK		*Requested Due Date:

Sampled By (PRINT): **CHRIS MERRITT**
 Sampler Signature: **CHRIS MERRITT** Date Sampled: **7/15/98**

ITEM NO.	SAMPLE DESCRIPTION	TIME	MATRIX	PACE NO.	NO. OF CONTAINERS	PRESERVATIVES					ANALYSES REQUEST	REMARKS
						UNPRESERVED	H ₂ SO ₄	HNO ₃	VOA (HCL)	NaOH		
1	MW-4	1111	H ₂ O								X	* SEE COMMENTS
2	MW-5	1142									X	*
3	MW-1	1128									X	*
4	MW-6	1210									X	* 92190
5												92191
6												92192
7												92193
8												

ICE/GOOD CONDITION HEAD SPACE ABSENT ✓
 PRESERVATION APPROPRIATE CONTAINERS ✓
 VOAS/O> METALS/OTHER ✓

SHIPMENT METHOD	AIR BILL NO.	SHIPPING DATE	NUMBER OF COOLERS	ITEM NUMBER	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
					CHRIS MERRITT	7/15/98	4:00	[Signature]	7/15	2:00
					[Signature]	7/15	4:00	[Signature]	7/15	4:00

Additional Comments
 RUN 8260W OXYGENATES ON SAMPLE WHICH HAS HIGHEST MTBE BY 8015 \ 8020

SAMPLE CONDITION
 Temp: _____ °C Received on Ice: Y/N Sealed Cooler: Y/N Samples Intact: Y/N

SEE REVERSE SIDE FOR INSTRUCTIONS

APPENDIX C

ANALYTICAL DATA CHARTS

CHART 1
GROUNDWATER ELEVATION
ALCOPARK FUELING FACILITY
OAKLAND, CALIFORNIA

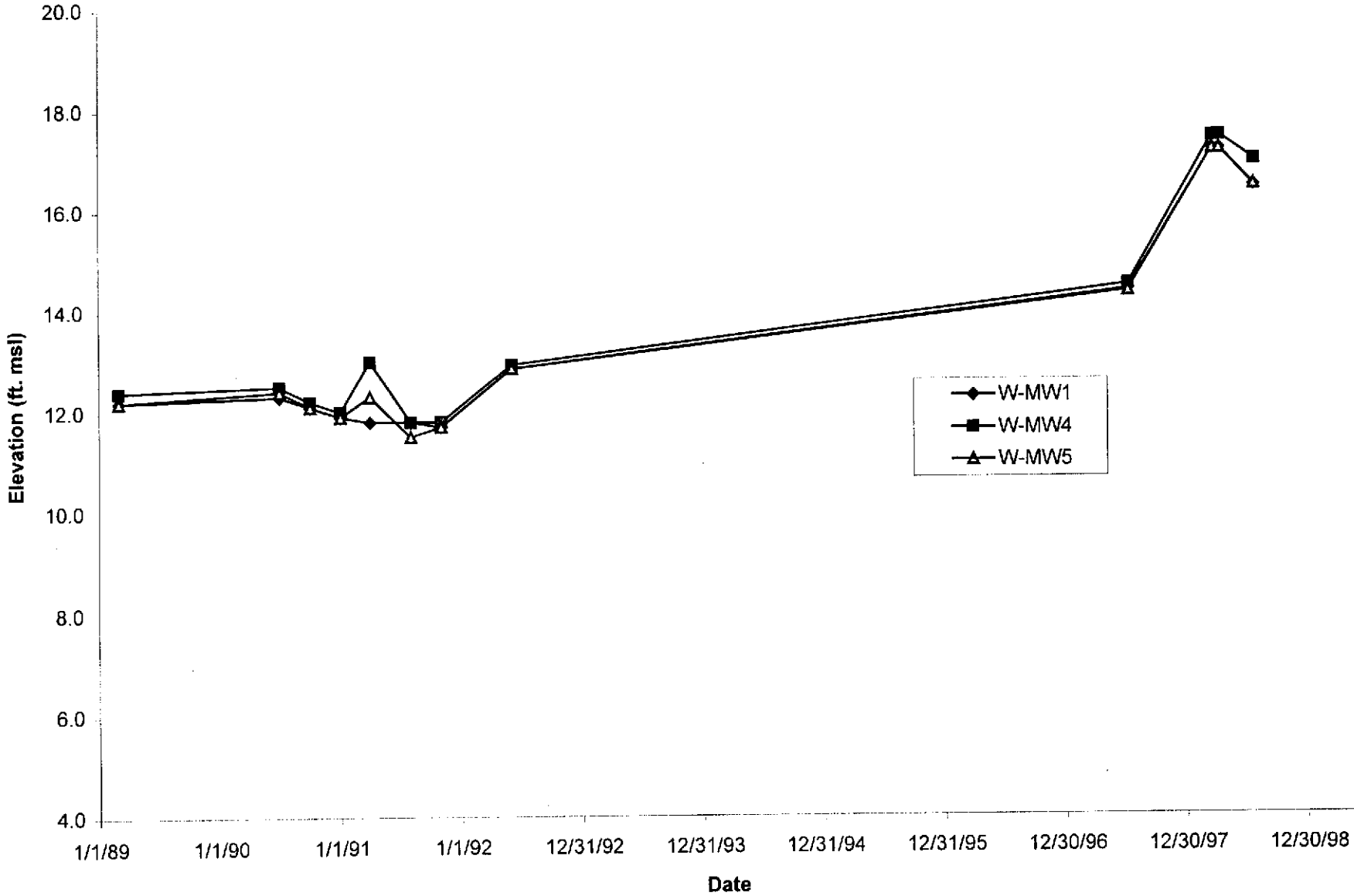


CHART 2
 TOTAL PETROLEUM CONCENTRATIONS
 ALCOPARK FUELING FACILITY
 OAKLAND, CALIFORNIA

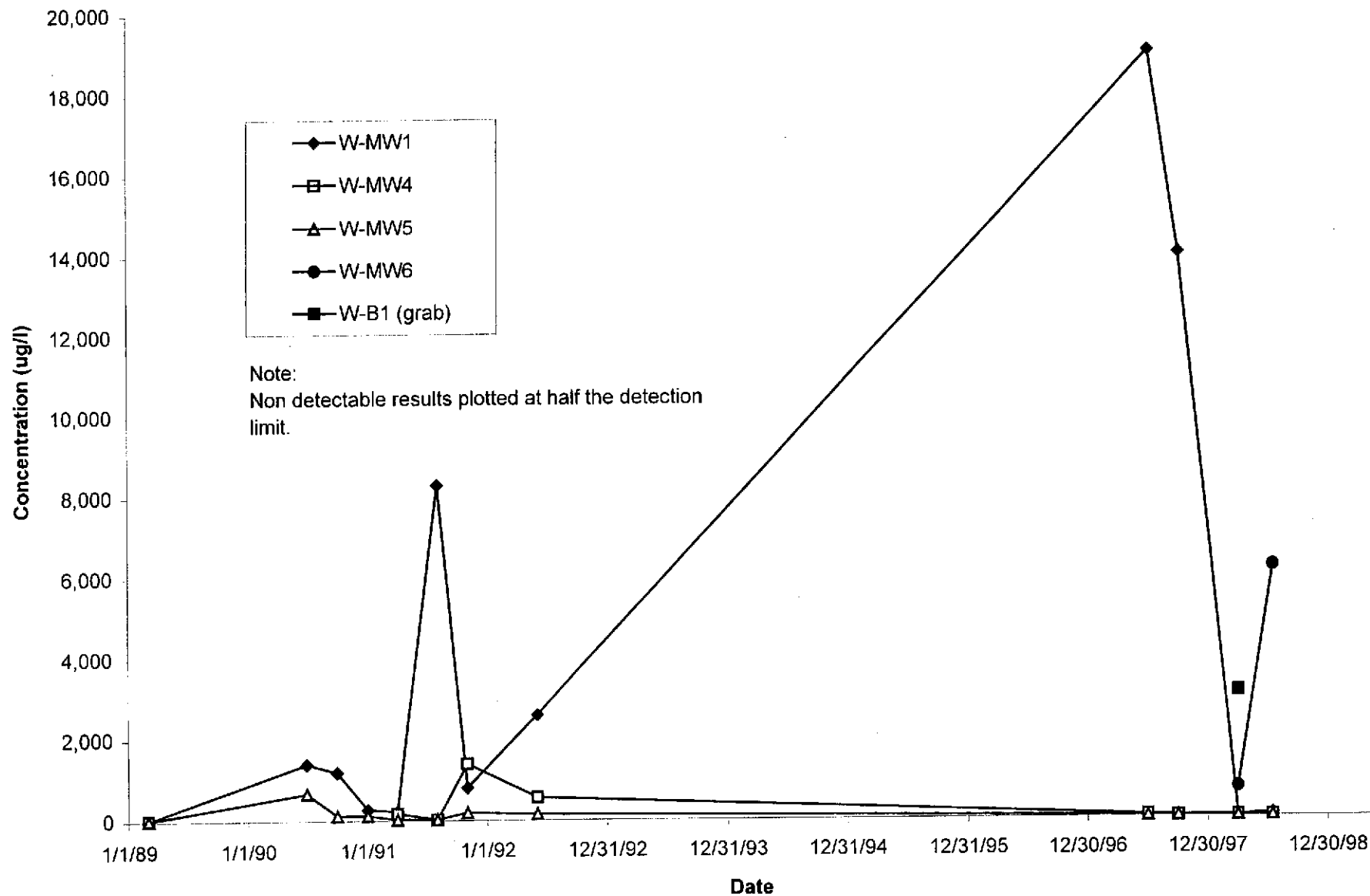


CHART 3
 BENZENE CONCENTRATIONS
 ALCOPARK FUELING FACILITY
 OAKLAND, CALIFORNIA

