W. A. CRAIG, INC.
Environmental Consulting and Contracting
P. O. Box 448
Napa, California 94559-0448
Contractor and Hazardous Substances License #455752
Cal/OSHA Statewide Annual Excavation Permit #599351
(800) 522-7244
Berkeley (510) 525-2780 Napa (707) 252-3353
Fax: (707) 252-3385

3/4/97

GROUNDWATER MONITORING REPORT
December 1996

DAMELE PROPERTY
4401 Market Street
Oakland, California

January 13, 1997
W.A. Craig, Inc.
Project No. 3365-D

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January 13, 1997

Mr. and Mrs. Casimiro Damele
3750 Victor Avenue
Oakland, California 94619
510/ 531-0778

Subject: **REPORT - Groundwater Monitoring** **Project No. 3365-D**
December 1996
Damele Property
4401 Market Street
Oakland, California

Dear Mr. and Mrs. Damele:

W. A. Craig, Inc. (WAC), is pleased to submit this Groundwater Monitoring Report for sampling conducted on December 20, 1996 at 4401 Market Street (site) in Oakland, California (**Figure 1**). This is the eighth quarter of groundwater monitoring since the installation of three groundwater monitoring wells at the site in October, 1994. This work was performed in accordance with the scope of work presented in WAC's Work Plan dated February 10, 1994.

Scope of Work

The scope of work conducted by WAC during this period included the following tasks:

- Measuring static water levels in three monitoring wells;
- Purging and sampling groundwater from the three monitoring wells at the site;
- Analyzing groundwater samples for total petroleum hydrocarbons as gasoline range organic compounds (TPH-g), and benzene, toluene, ethylbenzene, and xylenes (BTEX) and methyl tertiary butyl ether (MTBE); and
- Preparation of this report.

Groundwater Elevations

On December 20, 1996, WAC technical staff measured water levels in the monitoring wells using an electronic water level indicator. The monitoring wells were surveyed by a State-Licensed surveyor in November, 1994. The surveyed elevations and the field water level measurements were used to calculate the groundwater surface elevations at the site. The groundwater gradient and flow direction on December 23, 1996 were 0.019 ft/ft and S18°E, respectively. The average groundwater elevations were approximately 1.2-feet higher than were measured during the previous, June 1996, sampling event. Groundwater elevations for this and previous monitoring events are presented in **Table 1.** The locations of the monitoring wells and a depiction of the site groundwater elevation contours are shown in **Figure 2.**

Groundwater Sampling

Three well casing volumes were purged from each monitoring well prior to collecting groundwater samples. Field parameters including temperature, pH, conductivity, and turbidity were intermittently monitored during purging of the wells. Groundwater samples were collected using disposable polyethylene bailers. Field observations and well volume calculations were recorded on field groundwater sampling logs. Copies of the field logs are included as **Attachment A.**

Groundwater samples were submitted under chain-of-custody control to McCampbell Analytical, Inc. (MAI), of Pacheco, California. The purged groundwater is currently stored on-site in labeled, DOT approved, 55-gallon, steel drums.

Analytical Results

The groundwater samples were analyzed by MAI for TPH-g using EPA Method 8015 (modified) and purgeable aromatic hydrocarbons (BTEX) and MTBE using EPA Method 8020. MAI is certified by the State of California to perform the required analyses. The results of the analyses are summarized on **Table 2.** Copies of the laboratory analytical report and chain-of-custody documents are in **Attachment B.**

Groundwater samples from monitoring well MW-2 were reported to contain 13,000 micrograms per liter (μg/l) TPH-g, 830 μg/l benzene, 180 μg/l toluene, 410 μg/l ethylbenzene, and 2200 μg/l xylenes. MTBE was not detected above 16 μg/l. MTBE was reported at 28μg/l in monitoring well MW-1. TPH-g, BTEX and MTBE were not reported above the laboratory limits of detection in the groundwater samples collected from monitoring well MW-3. **Figure 3** is a plot of TPH-g and benzene concentrations in monitoring well MW-2 and TPH-g concentrations in monitoring well MW-1 for the monitoring period (11/94 to 12/96). **Figure 4** is a linear regression best fit plot of the same data plotted on a log-normal scale. These data suggest that the concentrations of TPH-g and benzene in the monitoring wells are relatively stable or decreasing.

Conclusions

Groundwater elevations were approximately 1.2-feet higher than previously measured during the June 1996 sampling event. The groundwater flow in the general site area is consistently toward the south.

Analytical results for monitoring well MW-1 have remained below the detectable reporting limits for benzene and toluene. All analytes in monitoring well MW-2 were reported at higher concentrations than were reported during the previous sampling period, although the concentrations are generally consistent with historical concentrations. Concentrations of all analytes in monitoring well MW-2 appear to increase with rising groundwater and decrease with falling groundwater. The groundwater sample analytical results for samples from MW-3 are consistent with previous monitoring periods and continue to be below the laboratory limits of detection for TPH-g, BTEX, and MTBE.

Primary drinking water quality standards have been exceeded for MTBE (monitoring well MW-1) and benzene (monitoring well MW-2). The upgradient monitoring well (MW-3) has had trace to non-detected concentrations of these constituents. Monitoring wells MW-1 and MW-2 are down gradient of the site. Based on regression analysis of the groundwater data, there appears to be a clear trend indicating that all constituents are decreasing over time.

Recommendations

On the basis of WAC's review of the groundwater quality results information from eight quarterly groundwater monitoring events and the results of previous investigations, WAC recommends expanding the current groundwater monitoring well network to include one, or more, down gradient monitoring wells. These wells would be used to assess and monitor the lateral extent of gasoline and related constituents. WAC further recommends that the existing groundwater monitoring program should be continued and expanded to include any new wells. WAC will submit a Risk Based Corrective Action Tier 1 Evaluation and Tier 2 Workplan to the Alameda County Environmental Health Department to present the details of the above recommendations.

→ What about soil data on site?

Professional Certification

This report has been prepared by the staff of W. A. Craig, Inc., under the professional supervision of the persons whose seals and signatures appear hereon. No warranty, either expressed or implied, is made as to the professional advice presented herein. The analysis, conclusions and recommendations contained in this report are based upon site conditions as they existed at the time of quarterly monitoring and sampling and they are subject to change.

The conclusions presented in this report are professional opinions based solely upon visual observations of the site and vicinity, and interpretation of available information as described in this report. W.A. Craig, Inc., recognizes that the limited scope of services performed in execution of this scope of work may not be appropriate to satisfy the needs, or

requirements of other state agencies, or of other users. Any use or reuse of this document or its findings, conclusions or recommendations presented herein is at the sole risk of said user. There is no other warranty, either expressed or implied.

Closing Statement

The next quarterly sampling event is tentatively scheduled for March, 1997. We appreciate this opportunity to be of service to you on this groundwater monitoring project. Should you have any questions regarding this report please give us a call at (707) 252-3353.

Sincerely,

W.A. Craig, Inc.,

REGISTERED PROFESSIONAL GEOLOGIST
GEOFFERY A. FIEDLER
No. 6340
Exp. 9/30/97
STATE OF CALIFORNIA

REGISTERED ENVIRONMENTAL ASSESSOR
WILLIAM A. CRAIG II
No. 01414
Expires 6-97
STATE OF CALIFORNIA

Geoffery A. Fiedler, R.G.
Principal Geologist

W.A. Craig II, R.E.A.
Owner

GAF:dec

Attachments:
Table 1 - Groundwater Elevations
Table 2 - Groundwater Sample Analytical Results
Figure 1 - Site Location Map
Figure 2 - Groundwater Contour Map
Figure 3 - TPH-g & Benzene vs Time Plot
Figure 4 - Linear Regression Log Plot
A - Groundwater Sampling Logs
B - Laboratory Analytical Reports

cc: Ms. Amy Leech, Alameda County Department of Environmental Management

A:\DAMELE8Q\QMR1296.WPD

TABLE 1

Groundwater Elevations
4401 Market Street
Oakland, California

Well Number	Date	Well Elevation	Depth to Water	Elevation
MW-1	02/14/95	71.12	12.65	58.47
	06/07/95	71.12	14.62	56.50
	08/29/95	71.12	15.04	56.08
	12/08/95	71.12	15.94	55.18
	03/07/96	71.12	12.36	58.76
	06/19/96	71.12	13.70	57.42
	12/20/96	**71.12**	**12.35**	**58.77**
MW-2	02/14/95	70.62	12.12	58.50
	06/07/95	70.62	14.38	56.24
	08/29/95	70.62	14.40	56.22
	12/08/95	70.62	15.22	55.40
	03/07/96	70.62	12.04	58.58
	06/19/96	70.62	13.38	57.24
	12/20/96	**70.62**	**12.22**	**58.40**
MW-3	02/14/95	71.79	13.45	58.34
	06/07/95	71.79	14.64	57.15
	08/29/95	71.79	14.94	56.85
	12/08/95	71.79	15.82	55.97
	03/07/96	71.79	12.89	58.90
	06/19/96	71.79	13.94	57.85
	12/20/96	**71.79**	**12.86**	**58.93**

Note: Groundwater elevations are referenced to Mean Sea Level.

TABLE 2

Groundwater Sample Analytical Results
4401 Market Street,
Oakland, California
(reported in μg/l)

Well Number	Sample Date	MTBE	TPH-g	Benzene	Toluene	Ethylbenzene	Xylenes
MW-1	11/08/94	NT	54	ND	ND	ND	1.2
	02/14/95	NT	71	ND	ND	ND	0.97
	06/07/95	NT	540	0.60	ND	1.7	1.3
	08/29/95	NT	440	ND	ND	1.3	1.1
	12/08/95	NT	ND	ND	ND	ND	ND
	03/07/96	44	77	ND	ND	ND	ND
	06/19/96	84	500	ND	ND	0.85	0.36
	12/20/96	**28**	**ND**	**ND**	**ND**	**ND**	**ND**
MW-2	11/08/94	NT	20,000	1,400	960	980	4,600
	02/14/95	NT	8600	380	210	410	2,000
	06/07/95	NT	6200	500	78	270	1,200
	08/29/95	NT	4100	330	61	210	980
	12/08/95	NT	9400	360	190	440	2,000
	03/07/96	18	12,000	790	170	440	2,000
	06/19/96	ND	9000	520	82	350	1,500
	12/20/96	**ND***	**13,000**	**830**	**180**	**410**	**2200**
MW-3	11/08/94	NT	ND	0.71	0.84	1.2	5.8
	02/14/95	NT	ND	ND	ND	ND	ND
	06/07/95	NT	ND	ND	ND	ND	1.6
	08/29/95	NT	ND	ND	ND	ND	ND
	12/08/95	NT	ND	ND	ND	ND	ND
	03/07/96	ND	ND	ND	ND	ND	ND
	06/19/96	ND	ND	ND	ND	ND	ND
	12/20/96	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**
California MCL		40	None Listed	1.0	150	700	1750

MCL = Maximum Contaminant Level Primary Drinking Water Standard
ND = Not detected above the laboratory limit of detection.
NT = Not Tested
μg/l= micrograms per liter
* = Not detected above 16 μg/l

Mag 14.00 — Scale 1:31,250 (at center)

Tue Jul 23 15:05 1996 — 2000 Feet

NORTH

Project No. 3609-2 July1996	**SITE LOCATION MAP** Damele Property 4401 Market Street Oakland, CA	**Figure 1**

Checked by: GAP 1/15/97

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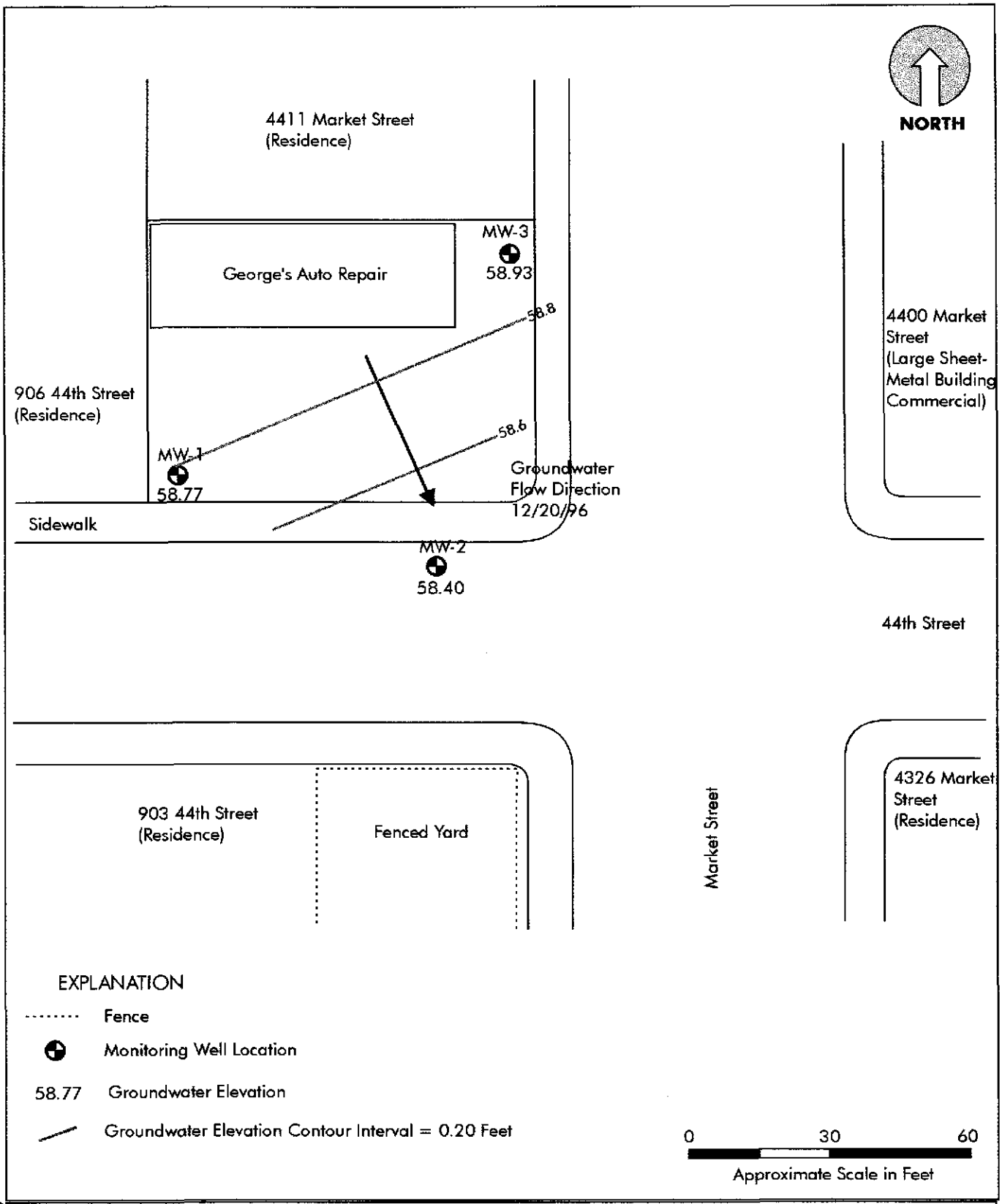

Project No. 3365-2

January 1997

GROUNDWATER ELEVATION CONTOURS

Damele Property
4401 Market Street
Oakland, CA

Figure 2

Checked by: Gaye 1/15/97

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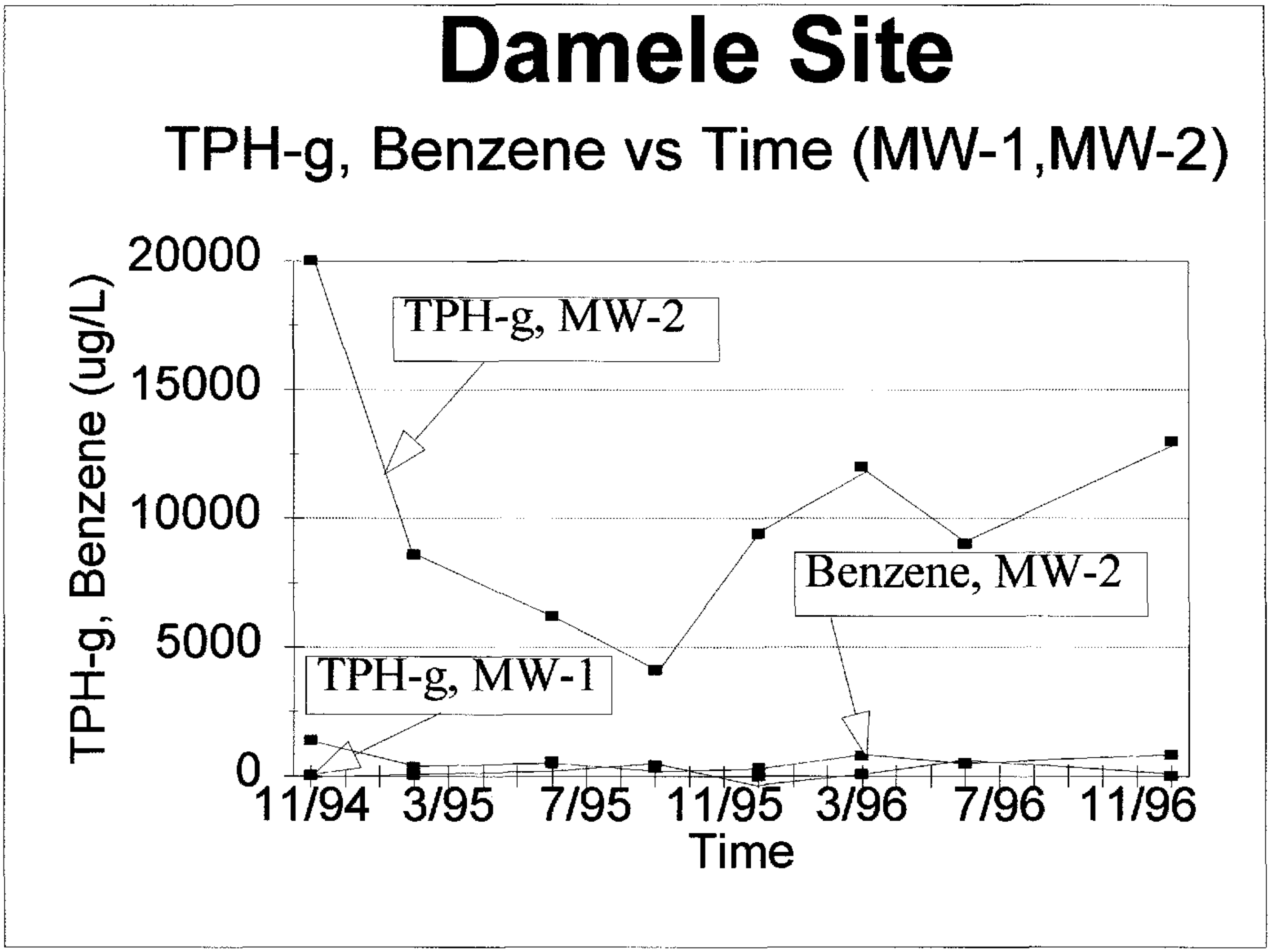

Project No. 3365-4 January 1997	**TPH-g, Benzene vs Time** Damele Site 4401 Market Stree Oakland, California	**Figure 3**

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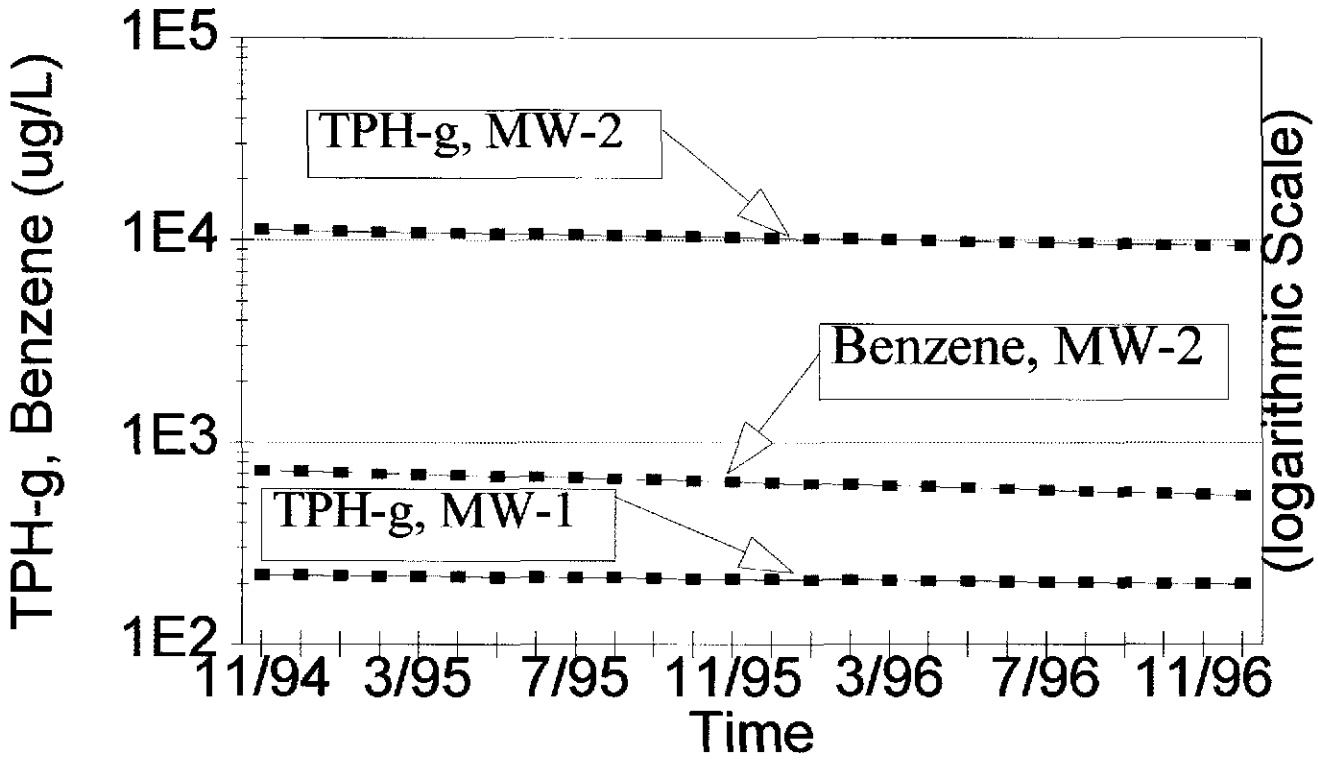
Checked by: ______

DAMELE SITE

TPH-g, Benzene in Groundwater



Project No. 3365-4

January 1997

LINEAR REGRESSION PLOT
Damele Site
4401 Market Stree
Oakland, California

Figure 4

Checked by: SAE 1/13/97

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ATTACHMENT A

GROUNDWATER SAMPLING LOGS

GROUNDWATER SAMPLING
WELL DEVELOPMENT LOG

WELL NUMBER: MW-1 FIELD PERSON(S): Russell Gentry

DATE STARTED: 12/20/96

TIME STARTED: JOB NUMBER: 3365-4

DATE COMPLETED: JOB NAME: Damele

TIME COMPLETED:

DEPTH TO BOTTOM OR CASING LENGTH								WELL INSIDE DIAMETER		
TOTAL DEPTH TO BOTTOM	24.58'	DEPTH - TO WATER	12.35'	= Δ(FT)	12.23'			VOLUME FACTOR V.F.= GAL/FT	1"=0.041 1-1/2"=0.092 2"=0.163 3"=0.367	4"=0.653 6"=1.469 8"=2.611 12"=5.875
Δ H (FT)	12.23'	X (V.F.) =	0.163	= WELL CASING VOLUME (GAL)	1.99					
DATE(S) PURGED:	—							WELL DEWATERED	[ ] YES	[X] NO
PURGE METHOD:	Disp. Bailer							DATE SAMPLED:	12/20/96	
INITIAL DEPTH TO WATER:	—							TIME SAMPLED:	11:00	
TOTAL VOLUME REMOVED (GAL):	6.0							SAMPLING METHOD:	Bailer	
CASING VOLUMES REMOVED:	3+							WEATHER CONDITIONS:	Fog, cold	
PURGE RATE (GPM):	—							PURGES/SAMPLED BY:	RG	

DEPTH TO WATER AFTER RECOVERY 13.50' (FT) = 90 % RECOVERED PRIOR TO SAMPLING

FIELD PARAMETERS;

TIME (24 HR CLOCK)	VOLUME REMOVED (GAL)	TEMPERATURE	(x100) ELECTRICAL CONDUCTIVITY	PH	TURBIDITY (NTU)
10:46	2.0	61.9	6.45	7.28	Clear
10:50	4.0	64.0	6.81	7.31	"
10:53	6.0	64.5	6.79	7.15	"

COMMENTS: No sheen or odor detected.

GROUNDWATER SAMPLING
WELL DEVELOPMENT LOG

WELL NUMBER: MW-2 FIELD PERSON(S): Russell Gentry

DATE STARTED: 12/20/96

TIME STARTED:

JOB NUMBER: 3365-4

DATE COMPLETED:

JOB NAME: Damele

TIME COMPLETED:

DEPTH TO BOTTOM OR CASING LENGTH

TOTAL DEPTH TO BOTTOM 24.54' - DEPTH TO WATER = 12.22' = Δ(FT) 12.32'

Δ H (FT) 12.32' X (V.F.) = 0.163 = WELL CASING VOLUME (GAL) 2.01

WELL INSIDE DIAMETER

VOLUME FACTOR V.F.= GAL/FT		
	1"=0.041	4"=0.653
	1-1/2"=0.092	6"=1.469
	2"=0.163	8"=2.611
	3"=0.367	12"=5.875

DATE(S) PURGED:

PURGE METHOD: Disp. Bailer

INITIAL DEPTH TO WATER:

TOTAL VOLUME REMOVED (GAL): 6.0

CASING VOLUMES REMOVED: 3

PURGE RATE (GPM):

WELL DEWATERED [ ] YES [✓] NO

DATE SAMPLED: 12/20/96

TIME SAMPLED: 12:06

SAMPLING METHOD: Bailer

WEATHER CONDITIONS: Fog, Cold

PURGES/SAMPLED BY: RG

DEPTH TO WATER AFTER RECOVERY 14.60 (FT) = 80 % RECOVERED PRIOR TO SAMPLING

FIELD PARAMETERS:

TIME (24 HR CLOCK)	VOLUME REMOVED (GAL)	TEMPERATURE	(X100) ELECTRICAL CONDUCTIVITY	PH	TURBIDITY (NTU)
11:48	2.0	60.7	11.15	6.73	Clear
11:54	4.0	63.4	11.82	6.49	Slight
11:58	6.0	65.5	11.49	6.51	"

COMMENTS: Medium to strong hydrocarbon odor present while purging. No sheen detected.

GROUNDWATER SAMPLING
WELL DEVELOPMENT LOG

WELL NUMBER: MW-3 FIELD PERSON(S): Russell Gentry

DATE STARTED: 12/20/96

TIME STARTED: JOB NUMBER: 3365-4

DATE COMPLETED: JOB NAME: Damele

TIME COMPLETED:

DEPTH TO BOTTOM OR CASING LENGTH		WELL INSIDE DIAMETER	
TOTAL DEPTH TO BOTTOM: 24.62' − DEPTH TO WATER: 12.86' = Δ(FT): 11.76'		VOLUME FACTOR V.F.= GAL/FT	1"=0.041 4"=0.653 1-1/2"=0.092 6"=1.469 2"=0.163 8"=2.611 3"=0.367 12"=5.875
Δ H (FT): 11.76' X (V.F.) = 0.163 = WELL CASING VOLUME (GAL): 1.92			
DATE(S) PURGED:		WELL DEWATERED	[ ] YES [V] NO
PURGE METHOD: Disp Bailer		DATE SAMPLED:	12/20/96
INITIAL DEPTH TO WATER:		TIME SAMPLED:	10:25
TOTAL VOLUME REMOVED (GAL): 6.0		SAMPLING METHOD:	Bailer
CASING VOLUMES REMOVED: 3+		WEATHER CONDITIONS:	Fog, Cold
PURGE RATE (GPM): —		PURGES/SAMPLED BY:	RG

DEPTH TO WATER AFTER RECOVERY 13.00' (FT) = 98 % RECOVERED PRIOR TO SAMPLING

FIELD PARAMETERS:

TIME (24 HR CLOCK)	VOLUME REMOVED (GAL)	TEMPERATURE	(x100) ELECTRICAL CONDUCTIVITY	PH	TURBIDITY (NTU)
10:09	2.0	60.1	5.27	8.34	Clear
10:12	4.0	62.0	5.12	7.99	Slight-
10:15	6.0	62.5	4.99	7.93	"

COMMENTS: No sheen or odor detected.

ATTACHMENT B

LABORATORY ANALYTICAL REPORTS

McCAMPBELL ANALYTICAL INC. | 110 2nd Avenue South, #D7, Pacheco, CA 94553
Tele: 510-798-1620 Fax: 510-798-1622

W.A. Craig, Inc. P.O. Box 448 Napa, CA 94559-0448	Client Project ID: # 3365-4; Danele	Date Sampled: 12/20/96
		Date Received: 12/20/96
	Client Contact: Leland Yialelis	Date Extracted: 12/21/96
	Client P.O:	Date Analyzed: 12/21/96

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	Ethylben-zene	Xylenes	% Rec. Surrogate
72337	MW-3	W	ND	ND	ND	ND	ND	ND	103
72338	MW-1	W	ND	28	ND	ND	ND	ND	101
72339	MW-2	W	13,000,a	ND< 16	830	180	410	2200	---#
72340	Trip Blank	W	ND	ND	ND	ND	ND	ND	118
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, soil and sludge samples in mg/kg, and all TCLP extracts in mg/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.

DHS Certification No. 1644

Edward Hamilton, Lab Director

McCAMPBELL ANALYTICAL INC.
110 2nd Avenue South, #D7, Pacheco, CA 94553
Tele: 510-798-1620 Fax: 510-798-1622

QC REPORT FOR HYDROCARBON ANALYSES

Date: 12/21/96 Matrix: Water

Analyte	Concentration (mg/L) Sample (#72119)	MS	MSD	Amount Spiked	% Recovery MS	MSD	RPD
TPH (gas)	0.0	104.8	95.8	100.0	104.8	95.8	9.0
Benzene	0.0	9.8	9.3	10.0	98.0	93.0	5.2
Toluene	0.0	9.7	9.2	10.0	97.0	92.0	5.3
Ethyl Benzene	0.0	9.4	9.1	10.0	94.0	91.0	3.2
Xylenes	0.0	27.6	26.4	30.0	92.0	88.0	4.4
TPH (diesel)	0	142	140	150	95	94	1.4
TRPH (oil & grease)	N/A	N/A	N/A	N/A	N/A	N/A	N/A

% Rec. = (MS - Sample) / amount spiked x 100

RPD = (MS - MSD) / (MS + MSD) x 2 x 100

W. A. CRAIG, INC.

CHAIN-OF-CUSTODY RECORD

PROJECT NO.	PROJECT NAME
3365-4	Daniels
PURCHASE ORDER NO.	SIGNATURE OF SAMPLER
	Runner Gretz

7844AWAC712

DATE 1996	TIME	W. A. CRAIG, INC.'S SAMPLE IDENTIFICATION	MATRIX: Soil, Water, Air, Sludge, Other	ANALYSIS: TPHgasoline (8015)	BTEX (602/8020)	TPHdiesel (8015)	TPHg & BTEX	MTBE				Preserved?	REMARKS	LABORATORY I. D. NUMBER
12/20	10:25	MW-3 (2 Vom)	W				✓	✓				ICE	Non preserved	72337
	11:00	MW-1					✓	✓						72338
	12:06	MW-2					✓	✓						72339
	12:04	Trip blank					✓	✓						72340

ICE/T ✓
GOOD CONDITION ✓
HEAD SPACE ABSENT ✓

PRESERVATIVE ✓
APPROPRIATE
CONTAINERS ✓

VOA | O&G | METALS | OTHER

RELINQUISHED BY (Signature):	DATE/TIME	RECEIVED BY (Signature):
Runner Gretz	12-20 4:10	
RELINQUISHED BY (Signature):	DATE/TIME	RECEIVED BY (Signature):
	12/20/96 1845	Heidi Ruiz
RELINQUISHED BY (Signature):	DATE/TIME	RECEIVED BY (Signature):

LABORATORY: McCampbell Analytical

TURNAROUND TIME: 5-day

PLEASE SEND RESULTS TO:

W. A. CRAIG, INC.
P.O. BOX 448
NAPA, CA 94559-0448
(707) 252-3353

ATTN: