



**FIRST QUARTER, 1994
GROUNDWATER MONITORING REPORT**

**DREYER'S GRAND ICE CREAM
5929 College Avenue
Oakland, California**

Prepared for:

**Dreyer's Grand Ice Cream
Oakland, California**

April 26, 1994

**5845 Doyle Street, #104
Emeryville, California**



**FIRST QUARTER, 1994
GROUNDWATER MONITORING REPORT**

**DREYER'S GRAND ICE CREAM
5929 College Avenue
Oakland, California
Project Number 3534**

Prepared for:

**Dreyer's Grand Ice Cream
Oakland, California**

Prepared by:

**CET Environmental Services, Inc.
5845 Doyle Street, #104
Emeryville, California**

April 26, 1994

By: *Terrance E. Carter for*
**John McHugh
Staff Geologist**

By: *Grover S. Buhr*
**Grover S. Buhr
California Registered Geologist No. 5596**

By: *Terrance E. Carter*
**Terrance E. Carter
Senior Environmental Engineer
Project Manager**



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INTRODUCTION

This report presents the results of groundwater monitoring and remedial activities conducted by CET Environmental Services, Inc. (CET) during the first quarter 1994, at the Dreyer's Grand Ice Cream facility in Oakland, California.

The location of the facility is presented on Plate 1, a site plan showing current groundwater monitoring and extraction well locations is provided on Plate 2.

QUARTERLY SUMMARY

Activities relevant to the Dreyer's facility which have occurred since the Fourth Quarter 1993 report include:

- Groundwater level measurements were taken from site wells on January 21, February 2, and March 25, 1994.
- Groundwater samples were taken from site wells on March 25, 1994.

GROUNDWATER MONITORING SUMMARY

Groundwater Elevation Monitoring

Groundwater level measurements were recorded on January 21, February 2, and March 25, 1994. Groundwater elevation contours and flow directions for these dates are shown on Plates 3, 4, and 5, respectively. Historic groundwater elevations are summarized in Table 1.

During the first quarter 1994, the depth to water below the subject site ranged from 14.30 feet below ground surface (bgs) (MW1) to 7.72 feet bgs (MW6). The groundwater flow for January 21, 1994 appears to be in two directions; southwesterly (S65W) near MW4 and due west near MW1 (see Plate 3). The groundwater gradient calculated for the January 21, 1994 event is approximately 0.06 ft/ft.

The potentiometric surface for the February 2, 1994 event is similar to that generated from the January 21, 1994 water level data. The groundwater flow directions are southwesterly (S60W) near MW4 and westerly (S80W) near MW1 (see Plate 4) gradient calculated for November 10, 1993 is approximately 0.07 ft/ft.

The potentiometric surface for the March 25, 1994 event is similar to that generated from the January 21, 1994 water level data. The groundwater flow directions are southwesterly (S65W) near MW4 and westerly (S80W) near MW1 (see Plate 5). The calculated gradient in approximately 0.002 ft/ft.



According to the Alameda County Flood Control and Water Conservation District (ACFCWCD), 1988, 205 (J) report: *Geohydrology and Groundwater - Quality Overview, East Bay Plain Area, Alameda County, California* the regional groundwater flow direction is toward the west-southwest.

Groundwater Sample Collection, Analysis, and Analytical Results

On March 25, 1994 CET field personnel collected groundwater samples from all site monitoring wells (MW1 through MW6). The samples were transported and submitted in accordance with CET chain-of-custody protocol to Chromalab of San Ramon, California. Chromalab is accredited under the Environmental Laboratory Accreditation Program (ELAP) by the California Environmental Protection Agency (Cal-EPA) Department of Toxic Substance Control. Copies of the sample collection records and chain-of-custody documents, for the groundwater samples, are presented in Appendix A.

The samples were analyzed for total petroleum hydrocarbons as diesel and as gasoline (TPH/d and TPH/g, respectively), and for benzene, toluene, ethylbenzene, and total xylenes (BTEX). U.S. Environmental Protection Agency (EPA) Test Methods 3510/8015, 5030/8015, and 602 were used for TPH/d, range hydrocarbons, TPH/g, and BTEX analyses, respectively.

Groundwater Sample Analytical Results

Historical analytical data for groundwater samples collected from site monitoring wells from August 5, 1991 to March 25, 1994, are summarized in Table 2 (Appendix B). The results from the first quarter 1994 monitoring program (March 25, 1994) are discussed below.

TPH/d was not detected in any of the groundwater samples collected from the monitoring wells. MW1 sample results were all below the individual test method detection limits. The ranges of TPH/g and BTEX concentrations in samples from MW2, MW3, MW4, MW5, and MW6 are discussed below.

TPH/g concentrations in the groundwater samples ranged from 460 ug/L in MW6, to 91,000 ug/L in MW2. Benzene concentrations in the groundwater samples ranged from 9.6 ug/L in MW6 to 2,400 ug/L in MW5. Toluene concentrations in the groundwater samples ranged from 1.7 ug/L in MW4 to 1,500 ug/L in MW2. Ethylbenzene concentrations in the groundwater samples ranged from 4.4 ug/L in MW4 to 2,100 ug/L in MW2. Total xylenes concentrations in the groundwater samples ranged from 5.6 ug/L in MW4 to 8,100 ug/L in MW2.

CONCLUSIONS AND RECOMMENDATIONS

Based on the first quarter 1994 results the highest concentrations of TPH/g and benzene remain associated with wells MW2 and MW5. Wells MW2 and MW5 are in close proximity and downgradient of the former waste oil UST (Plate 2). The western extent of the groundwater



plume in the vicinity of MW5 is not defined. MW1 water samples have not resulted in detectable petroleum hydrocarbons for the last four quarters.

Based on the existing data, CET recommends that the additional characterization work be performed at the site as outlined in the CET report dated December 15, 1993. A summary of those recommendations follows:

- CET recommends that two additional monitoring wells be installed at the subject site. One well should be installed west of MW5 to determine the limit of affected groundwater in this direction; and one well be placed in the parking lot of the adjacent parcel (west of Dreyer's) in order to monitor groundwater in the westerly direction (downgradient based on regional groundwater flow patterns). An additional well should be placed east of MW6 on the east side of College Avenue.
- CET recommends that a pilot vapor extraction test be performed at the subject site to determine the feasibility of this remedial technology at the subject site. Based on the analytical results, it appears that the majority of contamination is due to volatile, gasoline-range hydrocarbons. Vapor extraction may be effective in the removal of petroleum hydrocarbons from affected soils in the vicinity of the former underground tanks, and from areas overlain by structures where soil excavation is not feasible. The vapor extraction pilot test will involve extraction of petroleum hydrocarbon vapors from proposed and existing wells using either a regenerative blower and vapor phase, activated carbon filtration or an internal combustion engine (ICE) unit for vapor recovery and treatment.
- CET recommends that monthly groundwater level measurements be recorded for the second quarter of 1994 and that groundwater samples be collected on a quarterly basis from the six existing monitoring wells and proposed monitoring wells and submitted for laboratory analysis.

PLANNED ACTIVITIES

The following routine activities are planned for the second quarter 1994.

- Collect groundwater level measurements monthly from all site wells and collect groundwater samples from all site wells during May, 1994. Groundwater samples will be analyzed for TPH/d, TPH,g and BTEX using EPA Methods 3510/8015, 5030/8015 and 602, respectively.
- At the request of Dreyer's Grand Ice Cream, Inc CET will prepare a proposal and cost estimate for the recommended work.

Limitations and uncertainties to this report are in Appendix B.



Table 1

Groundwater Elevation Summary
Dreyer's Grand Ice Cream
5929 College Avenue
Oakland, California

Well No.	TOC Elevation (feet)	Date	Groundwater Depth ^a (feet)	Groundwater Elevation ^b (feet)	
MW1		08/12/91	14.86	174.28	
		12/04/91	16.16	172.98	
		04/24/92	11.93	177.21	
		05/04/92	12.15	176.99	
		06/17/92	13.17	175.97	
		07/15/92	13.66	175.48	
		08/31/92	14.91	174.23	
		09/14/92	15.18	173.96	
		10/22/92	15.34	173.80	
		11/20/92	15.27	173.87	
		12/03/92	14.44	174.70	
		01/18/93	7.85	181.29	
		02/10/93	9.29	179.85	
		03/10/93	9.88	179.26	
		04/20/93	10.13	179.01	
		05/01/93	----	----	
		06/02/93	10.82	171.40	
		07/09/93	11.62	170.60	
		08/10/93	12.31	169.91	
		189.12 ^c	09/28/93	----	----
			10/08/93	13.68	175.44
			11/10/93	14.72	174.40
			12/08/93	14.28	174.84
			01/21/94	14.30	174.82
			02/02/94	13.06	176.06
			03/25/94	12.26	176.86



Table 1 (continued)

Groundwater Elevation Summary
Dreyer's Grand Ice Cream
5929 College Avenue
Oakland, California

Well No.	TOC Elevation (feet)	Date	Groundwater Depth ^a (feet)	Groundwater Elevation ^b (feet)	
MW2		08/12/92	12.26	172.97	
		12/04/91	12.30	172.93	
		04/24/92	10.00	175.23	
		05/04/92	10.29	174.94	
		06/17/92	10.86	174.37	
		07/15/92	11.48	173.75	
		08/31/92	12.02	173.21	
		09/14/92	12.34	172.89	
		10/22/92	12.37	172.86	
		11/20/92	11.64	173.59	
		12/03/92	11.95	173.28	
		01/18/93	5.86	179.37	
		02/10/93	8.20	177.03	
		03/10/93	8.57	176.66	
		04/20/93	8.95	176.28	
		05/01/93	---	---	
		06/02/93	9.10	176.74	
		07/09/93	8.35	177.49	
		08/10/93	8.45	177.39	
		185.74 ^c	09/28/93	---	---
			10/08/93	10.19	175.55
			11/10/93	11.15	174.59
			12/08/93	11.13	174.61
			01/21/94	11.40	174.34
		02/02/94	9.85	175.89	
		03/25/94	10.05	175.69	



Table 1 (continued)

Groundwater Elevation Summary
Dreyer's Grand Ice Cream
5929 College Avenue
Oakland, California

Well No.	TOC Elevation (feet)	Date	Groundwater Depth ^a (feet)	Groundwater Elevation ^b (feet)	
MW3		08/12/91	11.73	172.95	
		12/04/91	11.65	173.03	
		04/24/92	11.00	173.68	
		05/04/92	11.09	173.59	
		06/17/92	11.51	173.17	
		07/15/92	11.84	172.84	
		08/31/92	11.70	172.98	
		09/14/92	11.74	172.94	
		10/22/92	11.33	173.35	
		11/20/92	10.58	174.10	
		12/03/92	10.12	174.56	
		01/18/93	8.42	176.26	
		02/10/93	9.94	174.74	
		03/10/93	10.19	174.49	
		04/20/93	10.22	174.46	
		05/01/93	----	----	
		06/02/93	10.73	174.56	
		07/09/93	10.03	175.26	
		08/10/93	8.32	176.97	
		185.21 ^c	09/28/93	----	----
			10/08/93	10.53	174.68
			11/10/93	11.22	173.99
			12/08/93	11.79	173.42
			01/21/94	12.02	174.19
			02/02/94	11.48	173.73
			03/25/94	11.26	173.95



Table 1 (continued)

Groundwater Elevation Summary
Dreyer's Grand Ice Cream
5929 College Avenue
Oakland, California

Well No.	TOC Elevation (feet)	Date	Groundwater Depth ^a (feet)	Groundwater Elevation ^b (feet)
MW4		09/28/93	----	----
		10/08/93	10.29	174.45
		11/10/93	11.14	173.60
		12/08/93	11.82	172.92
		01/21/94	12.07	172.67
		02/02/94	11.41	173.33
		03/25/94	11.03	173.71
MW5		09/28/93	----	----
		10/08/93	9.84	174.91
		11/10/93	10.53	174.22
		12/08/93	10.69	174.06
		01/21/94	11.22	173.53
		02/02/94	8.80	175.95
		03/25/94	9.75	175.00
MW6	187.20 ^c	09/28/93	----	----
		10/08/93	8.23	178.97
		11/10/93	7.74	179.46
		12/08/93	8.53	178.67
		01/21/94	8.46	178.74
		02/01/94	7.84	179.36
		03/25/94	7.72	179.48

- a. Depth to groundwater measured from the TOC.
b. Groundwater elevation is equal to the difference between the TOC elevation and groundwater depth.
c. Top of casing surveyed by a California licensed surveyor.



Table 2

Summary of Laboratory Analytical Results
Groundwater Samples
5929 College Avenue, Oakland, California

Well No./ Sample I.D.	Sample Collection Date	Concentration ($\mu\text{g/L}$)							
		TPH/d ^a	TPH/g ^b	B ^c	T ^c	E ^c	X ^c	Kerosene	Motor Oil
MW1	08/05/91	NA ^d	<50 ^e	1.1	<0.5 ^e	<0.5 ^e	<0.5 ^e	NA	NA
	12/04/91	<50 ^e	<50 ^e	<0.5 ^e	<0.5	<0.5	<0.5	NA	NA
	03/10/93	85	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
	06/02/93	<50	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
	10/08/93	<50	<50	<0.5	<0.5	<0.5	<0.5	<50	<50
	12/08/93	<50	<50	<0.5	<0.5	<0.5	<0.5	<50	<50
	03/25/94	<50	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
MW2	08/05/91	1,900 ^f	38,000	8,300	8,200	2,300	13,000	NA	NA
	12/04/91	<50	91,000	6,900	6,800	3,200	25,000	NA	NA
	03/10/93	89	59,000	5,800	5,300	3,100	15,000	NA	NA
	06/02/93	<50	58,000	50	68	70	170	NA	NA
	10/08/93	110	56,000	2,800	2,400	2,900	12,000	<50	<50
	12/08/93	<50	54,000	2,400	1,700	2,900	10,000	<50	<50
	03/25/94	<50	91,000	1,900	1,500	2,100	8,100	NA	NA
MW3	08/05/91	800 ^f	3,300	3,900	160	95	150	NA	NA
	12/04/91	<50	10,000	3,300	88	80	130	NA	NA
	03/10/93	<50	8,100	2,000	31	240	30	NA	NA
	06/02/93	<50	14,000	11	13	16	49	NA	NA
	10/08/93	<50	7,600	2,400	<10	49	<10	<50	<50
	12/08/93	<50	3,800	340	3.9	29	13	<50	<50
	03/25/94	<50	5,700	500	10	21	25	NA	NA

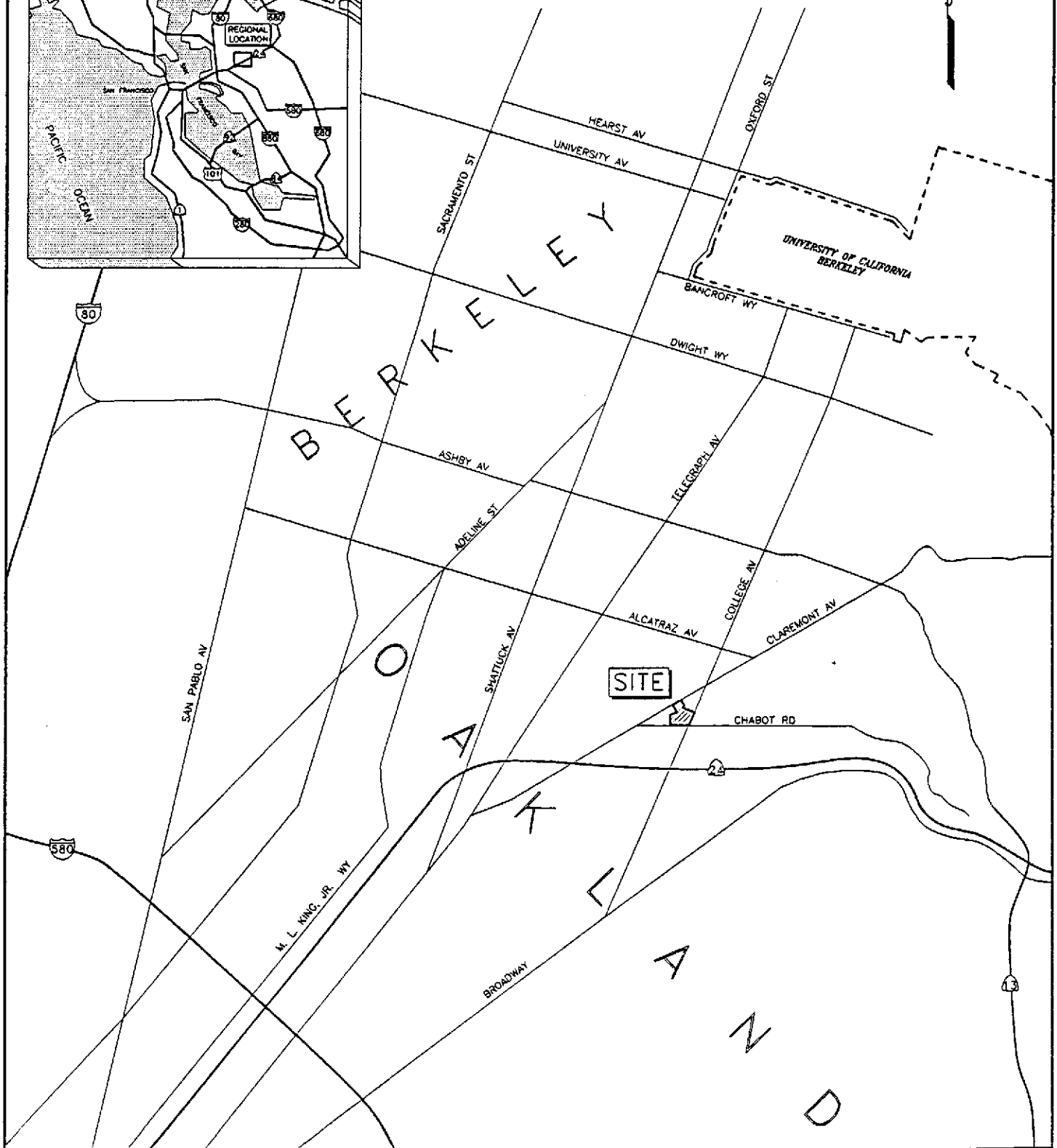
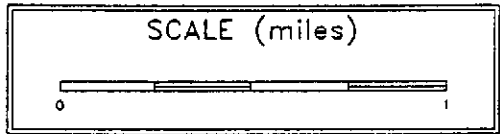
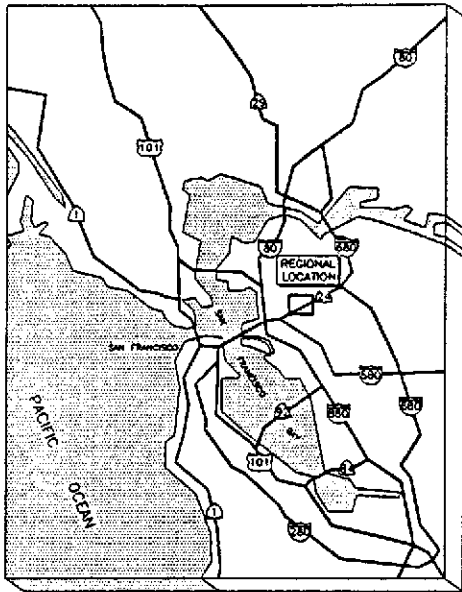


Table 2 (continue)

Summary of Laboratory Analytical Results
Groundwater Samples
5929 College Avenue, Oakland, California

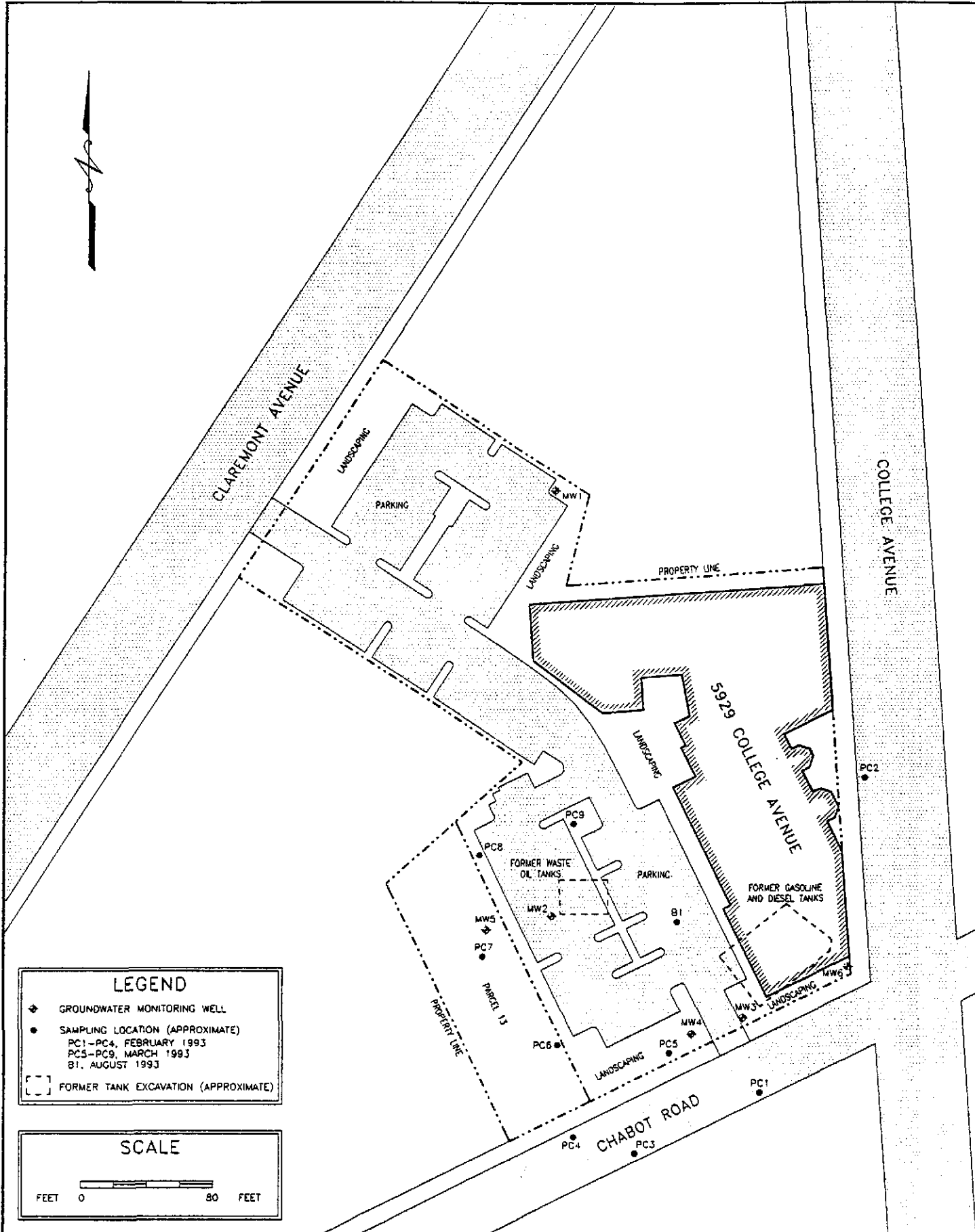
Well No./ Sample LD.	Sample Collection Date	Concentration ($\mu\text{g/L}$)							
		TPH/d ^a	TPH/g ^b	B ^c	T ^c	E ^c	X ^c	Kerosene	Motor Oil
MW4	10/08/93	<50	1,400	<0.5	<0.5	2.9	3.1	<50	<50
	12/08/93	<50	2,800	460	<0.5	3.8	3.8	<50	<50
	03/25/94	<50	1,600	94	1.7	4.4	5.6	NA	NA
MW5	10/08/93	<50	31,000	4,000	1,200	1,800	5,100	<50	<50
	12/08/93	<50	25,000	2,600	110	1,700	2,400	<50	<50
	03/25/94	<50	41,000	2,400	500	1,400	2,800	NA	NA
MW6	10/08/93	<50	2,100	85	<0.5	70	190	<50	<50
	12/08/93	<50	3,800	74	<0.5	210	150	<50	<50
	03/25/94	<50	460	9.6	27	15	11	NA	NA

- a. TPH/d = total petroleum hydrocarbons as diesel
- b. TPH/g = total petroleum hydrocarbons as gasoline
- c. BTEX: B = benzene, T = toluene, E = ethylbenzene, X = total xylenes
- d. NA = not analyzed
- e. <50 and <0.5 = not detected at or above the test method detection limits
- f. Petroleum hydrocarbons quantified as diesel are due to hydrocarbons that are lighter than diesel



CET Environmental Services, Inc.

SITE LOCATION					PLATE
DREYER'S GRAND ICE CREAM, INC. 5929 COLLEGE AVENUE OAKLAND, CALIFORNIA					1
JOB NUMBER	DATE	DRAWING	BY	REVISED	
3534	04/94	LOC	J LONG	04/22	



LEGEND

- ◆ GROUNDWATER MONITORING WELL
- SAMPLING LOCATION (APPROXIMATE)
PC1-PC4, FEBRUARY 1993
PC5-PC9, MARCH 1993
B1, AUGUST 1993
- [---] FORMER TANK EXCAVATION (APPROXIMATE)

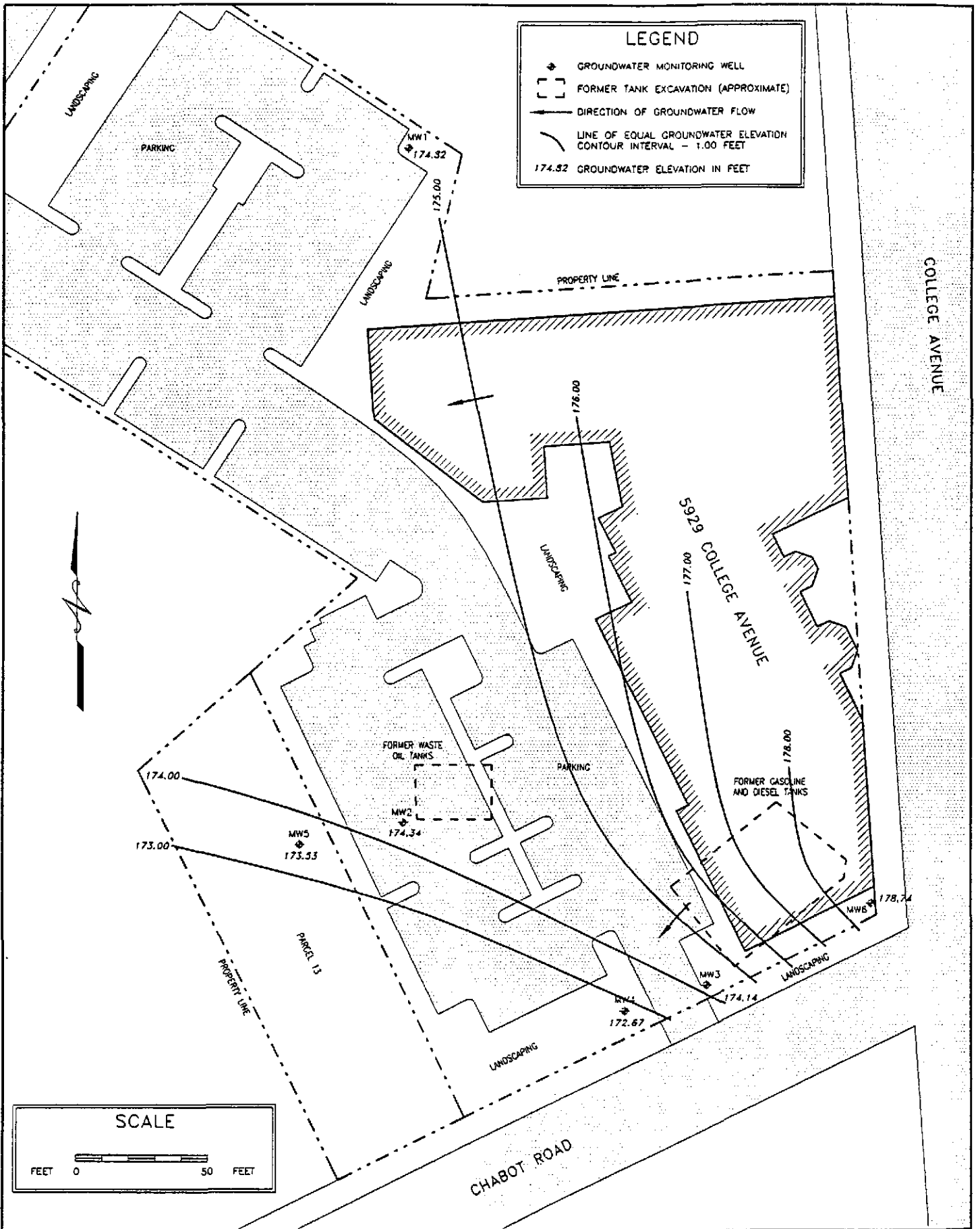
SCALE

FEET 0 80 FEET



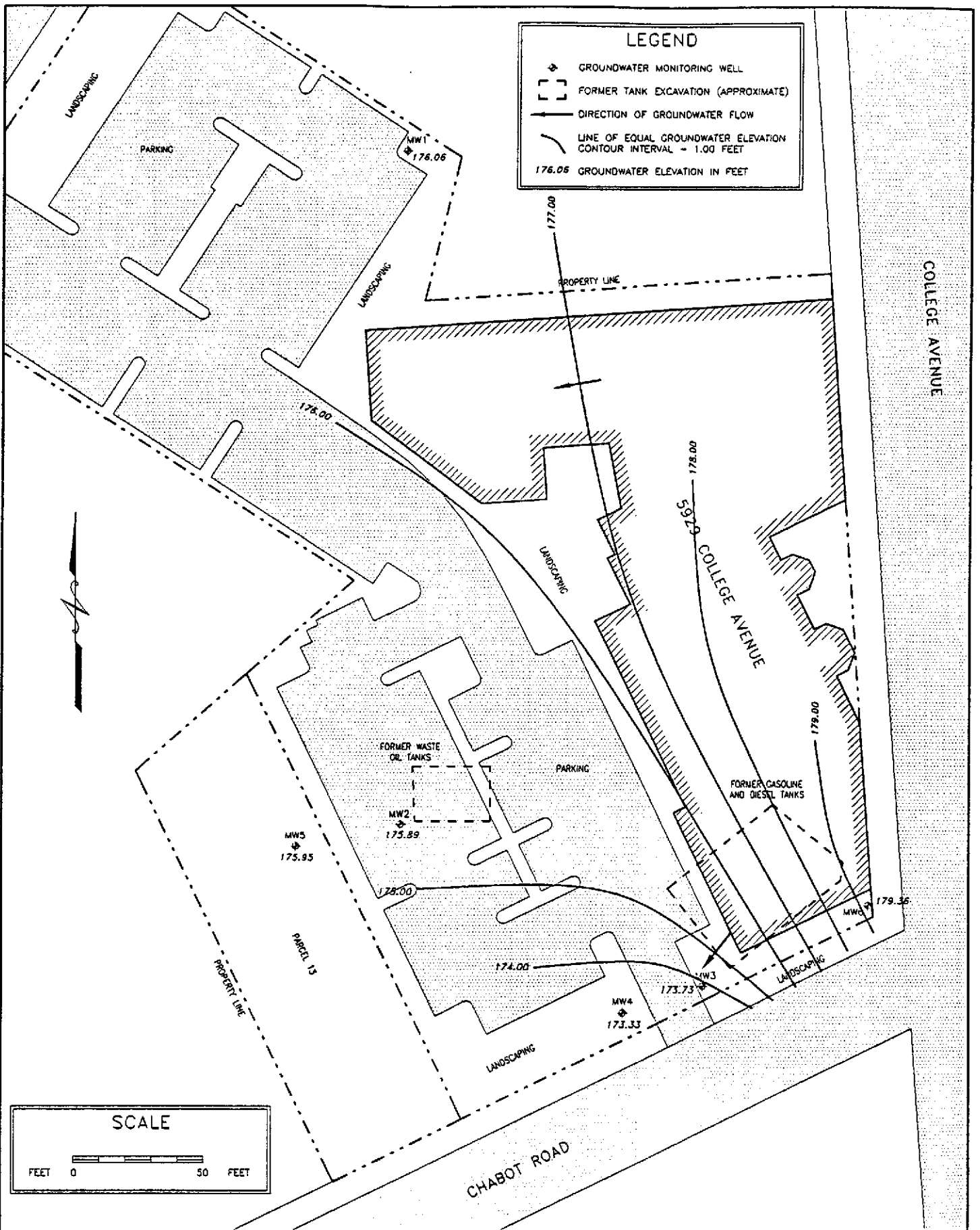
CET Environmental Services, Inc.


SITE PLAN					PLATE
DREYER'S GRAND ICE CREAM, INC. 5929 COLLEGE AVENUE OAKLAND, CALIFORNIA					2
JOB NUMBER	DATE	DRAWING	BY	REVISED	
3534	04/94	PLAN	J LONG	04/15	

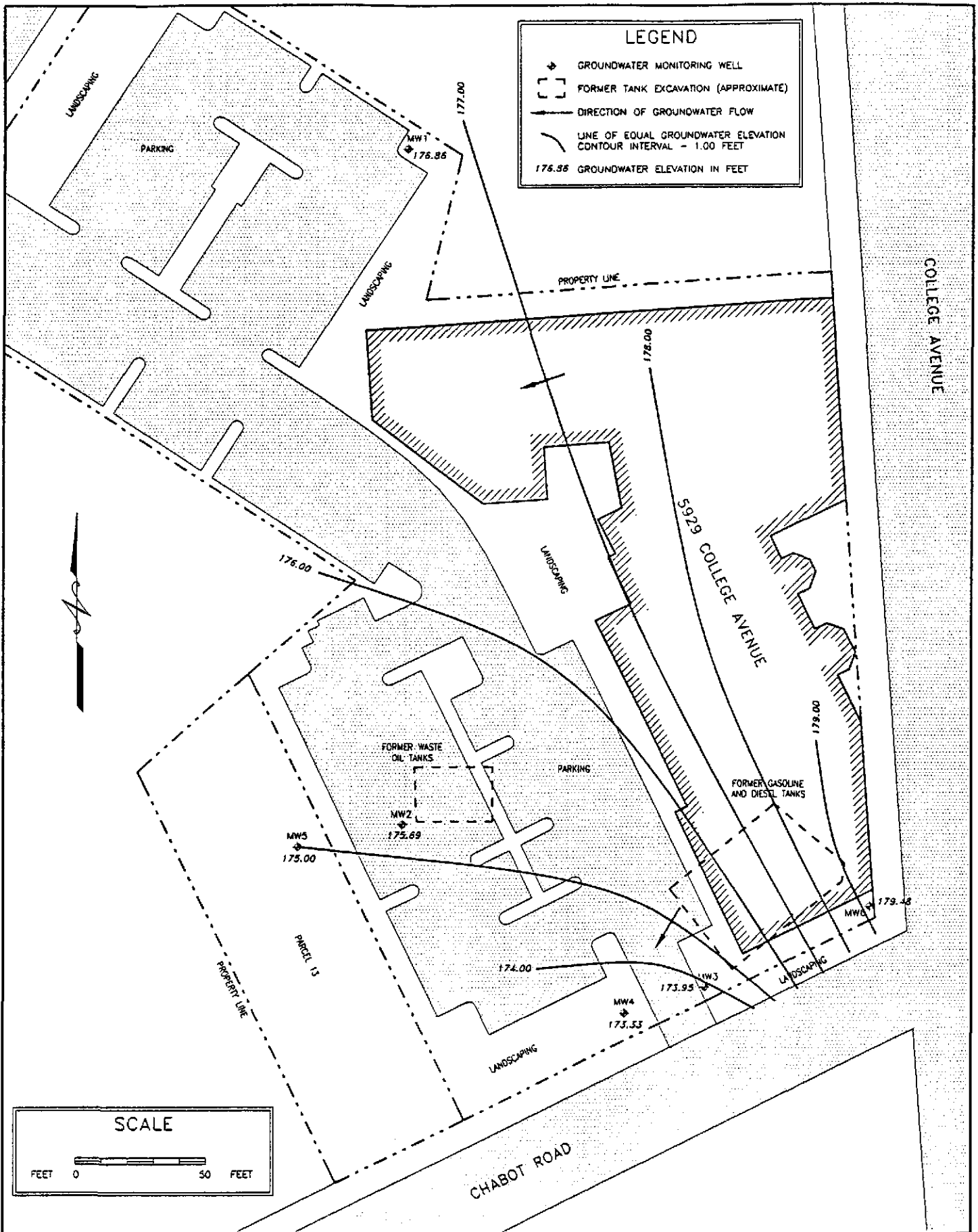



CET Environmental Services, Inc.

GROUNDWATER ELEVATIONS AND CONTOURS					PLATE 3
01/21/94					
DREYER'S GRAND ICE CREAM, INC. 5929 COLLEGE AVENUE OAKLAND, CALIFORNIA					
JOB NUMBER	DATE	DRAWING	BY	REVISED	
3534	04/94	GWL01	J LONG	04/27	



	CET Environmental Services, Inc.				GROUNDWATER ELEVATIONS AND CONTOURS 02/02/94 DREYER'S GRAND ICE CREAM, INC. 5929 COLLEGE AVENUE OAKLAND, CALIFORNIA	PLATE 4
	JOB NUMBER 3534	DATE 04/94	DRAWING GWL02	BY J LONG		



 CET Environmental Services, Inc.	GROUNDWATER ELEVATIONS AND CONTOURS 03/25/94 DREYER'S GRAND ICE CREAM, INC. 5929 COLLEGE AVENUE OAKLAND, CALIFORNIA				PLATE 5
	JOB NUMBER 3534	DATE 04/94	DRAWING GWL03	BY J LONG	REVISED 04/22



APPENDIX A

**Laboratory Analytical Reports
Chain of Custody Documentation
Sample Collection Records
Groundwater Level Measurement Records**

CHROMALAB, INC.

Environmental Services (SDB)

April 4, 1994

ChromaLab File#: 9403390

CET ENVIRONMENTAL SERVICES, INC

Atten: Terry Carter

Project: DREYERS GRAND ICE CREAM

Project#: 3534-239

Received: March 28, 1994

re: 6 samples for Gasoline and BTEX analysis.

Matrix: WATER

Sampled on: March 25, 1994

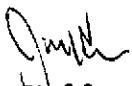
Analyzed on: April 1, 1994


Method: EPA 5030/8015/602

Run#: 2578

Lab #	SAMPLE ID	Gasoline (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethyl Benzene (ug/L)	Total Xylenes (ug/L)
47683	MW1	N.D.	N.D.	N.D.	N.D.	N.D.
47684	MW2	91000	1900	1500	2100	8100
47685	MW3	5700	500	10	21	25
47686	MW4	1600	94	1.7	4.4	5.6
47687	MW5	41000	2400	500	1400	2800
47688	MW6	460	9.6	27	15	11
DETECTION LIMITS		50	0.5	0.5	0.5	0.5
BLANK		N.D.	N.D.	N.D.	2.70	16.43
BLANK SPIKE RECOVERY(%)		101	80	93	88	88

ChromaLab, Inc.


Jack Kelly
Chemist


Eric Tam
Laboratory Director

CHROMALAB, INC.

Environmental Services (SDB)

April 4, 1994

ChromaLab File No.: 9403390

CET ENVIRONMENTAL SERVICES, INC

Attn: Terry Carter

RE: Six water samples for Diesel analysis

Project Name: DREYERS GRAND ICE CREAM

Project Number: 3534-239

Date Sampled: March 25, 1994

Date Submitted: March 28, 1994

Date Extracted: April 1, 1994

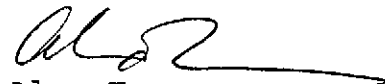
Date Analyzed: April 1, 1994

RESULTS:

<u>Sample I.D.</u>	<u>Diesel ($\mu\text{g/L}$)</u>
MW 1	N.D.
MW 2	N.D.
MW 3	N.D.
MW 4	N.D.
MW 5	N.D.
MW 6	N.D.

BLANK	N.D.
SPIKE RECOVERY	100%
DUP SPIKE RECOVERY	106%
DETECTION LIMIT	50
METHOD OF ANALYSIS	3510/8015

ChromaLab, Inc.



Alex Tam
Analytical Chemist



Eric Tam
Laboratory Director

CHROMALAB, INC.

DOHS 1094

SUBM #: 9403390
 CLIENT: CET
 DUE: 04/04/94
 REF: 15768

Order # 15768
 390/47683-47688

Chain of Custody

DATE 3-25-94 PAGE 1 OF 1

PROJ MGR <u>TERRY CARTER</u> COMPANY <u>CET ENVIRO SERVICES</u> ADDRESS <u>EMERYVILLE CA.</u>					ANALYSIS REPORT																
SAMPLERS (SIGNATURE) <u>[Signature]</u> (PHONE NO.) <u>652-7001</u>					TPH - Gasoline (EPA 5030, 8015)	TPH - Gasoline (5030, 8015) w/BTEX (EPA 602, 8020)	TPH - Diesel (EPA 3510/3550, 8015)	PURGEABLE AROMATICS BTEX (EPA 602, 8020)	PURGEABLE HALOCARBONS (EPA 601, 8010)	VOLATILE ORGANICS (EPA 624, 8240, 5242)	BASE/NEUTRALS, ACIDS (EPA 625/627, 8270, 525)	TOTAL OIL & GREASE (EPA 5520, B+F, E+F)	PCB (EPA 608, 8080)	PESTICIDES (EPA 608, 8080)	TOTAL RECOVERABLE HYDROCARBONS (EPA 418.1)	METALS: Cd, Cr, Pb, Zn, Ni	CAM METALS (17)	PRIORITY POLLUTANT METALS (13)	TOTAL LEAD	EXTRACTION (TCLP, STLC)	NUMBER OF CONTAINERS
SAMPLE ID.	DATE	TIME	MATRIX	PRESERV.																	
MW1	3-25-94	13:25	H ₂ O	HCl		✓	✓														4
MW2	"	15:30	"	"		✓	✓														4
MW3	"	14:10	"	"		✓	✓														4
MW4	"	14:40	"	"		✓	✓														4
MW5	"	16:00	"	"		✓	✓														4
MW6	"	12:45	"	"		✓	✓														4
PROJECT INFORMATION					SAMPLE RECEIPT					RELINQUISHED BY 1			RELINQUISHED BY 2			RELINQUISHED BY 3					
PROJECT NAME: <u>Driveway and Ice Cream</u>					TOTAL NO. OF CONTAINERS <u>24</u>					SIGNATURE: <u>[Signature]</u> (TIME)			SIGNATURE: _____ (TIME)			SIGNATURE: _____ (TIME)					
PROJECT NUMBER: <u>3534-239</u>					HEAD SPACE _____					PRINTED NAME: <u>DAVID BEARDSLEY</u> (DATE)			PRINTED NAME: _____ (DATE)			PRINTED NAME: _____ (DATE)					
P.O. # _____					REC'D GOOD CONDITION/COLD _____					COMPANY: <u>CET</u> (DATE) <u>3-28-94</u>			COMPANY: _____ (DATE)			COMPANY: _____ (DATE)					
TAT <u>STANDARD 5-DAY</u>					CONFORMS TO RECORD _____					RECEIVED BY 1			RECEIVED BY 2			RECEIVED BY (LABORATORY)					
SPECIAL INSTRUCTIONS/COMMENTS:										SIGNATURE: _____ (TIME)			SIGNATURE: _____ (TIME)			SIGNATURE: <u>[Signature]</u> 10:32 (TIME)					
										PRINTED NAME: _____ (DATE)			PRINTED NAME: _____ (DATE)			PRINTED NAME: <u>B. Morrow</u> 3-28-94 (DATE)					
										COMPANY: _____			COMPANY: _____			COMPANY: <u>Chromalab</u> (LAB)					

SAMPLE COLLECTION RECORD - MONITOR WELL

Date: 3-25-94 Sample I.D.: MW1 Job No.: 3534-239

Site Location: Dreyfus Grand Ice Cream Oakland

No. of Containers: 4 / (check one): Well Samples;
 Duplicates from well _____; Travel Blanks;
 Field Blanks; Other (explain) / _____

W.L. (1/100'): 12.26 Time: 10:51 B.O.W. (1/2'): 30.0

Method: Electric Well Sounder; Other / _____

Meters calibrated: Y / N Well Loc. Map: Y / N

Calculated Purge Volume (4 casing volumes): 11 gallons

Purging Method: Disposable Bailer; Teflon Bailer;
 Other / _____

Time Start Purging (24 hr): 13:01, Product: Y / N
 Sheen: Y / N, Odor: Y / N, Vapor: _____ ppm / %LEL
 Turbidity: 4.5, Color: CLEAR

Time Stop Purging (24 hr): 13:24, Product: Y / N
 Sheen: Y / N, Odor: Y / N, Vapor: _____ ppm / %LEL
 Turbidity: 62, Color: CLEAR

Time (24 hr)	Temp. (C)	pH	Cond. (uS)	H2O (Gal)	Turbid. (NTU)
<u>13:09</u>	<u>17°</u>	<u>7.01</u>	<u>0333</u>	<u>4</u>	<u>40</u>
<u>13:17</u>	<u>17°</u>	<u>6.93</u>	<u>0332</u>	<u>8</u>	<u>24</u>
<u>13:24</u>	<u>17°</u>	<u>6.90</u>	<u>0332</u>	<u>11</u>	<u>62</u>
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

Sample Collection Time (24 hr): 13:25

Notes: _____

Collected By (signature): [Signature]

SAMPLE COLLECTION RECORD - MONITOR WELL

Date: 3-25-94 Sample I.D.: MW2 Job No.: 3534-239

Site Location: DeVos Grand Ice Cream, Oakland

No. of Containers: 4 / (check one): Well Samples;
 Duplicates from well _____; Travel Blanks;
 Field Blanks; Other (explain) / _____

W.L. (1/100'): 10.05 Time: 11:19 B.O.W. (1/2'): 28.0

Method: Electric Well Sounder; Other / _____

Meters calibrated: Y / N Well Loc. Map: Y / N

Calculated Purge Volume (4 casing volumes): 46 gallons

Purging Method: Disposable Bailer; Teflon Bailer;

Other / _____

Time Start Purging (24 hr): 14:52, Product: Y / N
 Slight Sheen: Y / N, Odor: Y / N, Vapor: _____ ppm / %LEL
 Turbidity: 9, Color: CLEAR

Time Stop Purging (24 hr): 15:27, Product: Y / N
 Slight Sheen: Y / N, Odor: Y / N, Vapor: _____ ppm / %LEL
 Turbidity: 40, Color: CLEAR

Time (24 hr)	Temp. (C)	pH	Cond. (uS)	H2O (Gal)	Turbid. (NTU)
<u>15:07</u>	<u>18.1</u>	<u>7.11</u>	<u>1019</u>	<u>15</u>	<u>22</u>
<u>16:19</u>	<u>18.0</u>	<u>6.83</u>	<u>1024</u>	<u>30</u>	<u>31</u>
<u>15:27</u>	<u>17.9</u>	<u>6.91</u>	<u>1017</u>	<u>45</u>	<u>46</u>
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

Sample Collection Time (24 hr): 15:30

Notes: _____

Collected By (signature): [Signature]

SAMPLE COLLECTION RECORD - MONITOR WELL

Date: 3-25-94 Sample I.D.: MW3 Job No.: 3534-239

Site Location: Dryden Grand Ice Cream, OAKLAND

No. of Containers: 4 / (check one): Well Samples;
 Duplicates from well _____; Travel Blanks;
 Field Blanks; Other (explain)/ _____

W.L. (1/100'): 11.26 Time: 11:11 B.O.W. (1/2'): 27.0

Method: Electric Well Sounder; Other/ _____

Meters calibrated: / N Well Loc. Map: / N

Calculated Purge Volume (4 casing volumes): 38 gallons

Purging Method: Disposable Bailer; Teflon Bailer;
 Other/ _____

slights

Time Start Purging (24 hr): 13:34, Product: Y / N
 Sheen: / N, Odor: / N, Vapor: _____ ppm / %LEL
 Turbidity: 25.3, Color: clear

Time Stop Purging (24 hr): 14:05, Product: Y / N
 Sheen: / N, Odor: / N, Vapor: _____ ppm / %LEL
 Turbidity: 99.9, Color: gray

Time (24 hr)	Temp. (C)	pH	Cond. (uS)	H2O (Gal)	Turbid. (NTU)
<u>13:44</u>	<u>17.9</u>	<u>6.95</u>	<u>1300</u>	<u>13</u>	<u>27.1</u>
<u>13:54</u>	<u>17.0</u>	<u>6.98</u>	<u>1298</u>	<u>26</u>	<u>99.9</u>
<u>14:05</u>	<u>17.6</u>	<u>6.83</u>	<u>1296</u>	<u>38</u>	<u>99.9</u>
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

Sample Collection Time (24 hr): 14:10

Notes: _____

Collected By (signature): Dave Beardsley / B. Ben

SAMPLE COLLECTION RECORD - MONITOR WELL

Date: 3-25-94 Sample I.D.: MW4 Job No.: 3534-239

Site Location: DeLuzier GRAND TREE CLEAN, OAKLAND

No. of Containers: 4 / (check one): Well Samples;
 Duplicates from well _____; Travel Blanks;
 Field Blanks; Other (explain) / _____

W.L. (1/100'): 11.03 Time: 11:05 B.O.W. (1/2'): 27

Method: Electric Well Sounder; Other / _____

Meters calibrated: / N Well Loc. Map: / N

Calculated Purge Volume (4 casing volumes): 10 gallons

Purging Method: Disposable Bailer; Teflon Bailer;
 Other / _____

Time Start Purging (24 hr): 14:18, Product: Y / N
 Sheen: Y / N, Odor: Y / N, Vapor: _____ ppm / %LEL
 Turbidity: 36, Color: CLEAR

Time Stop Purging (24 hr): 14:37, Product: Y / N
 Sheen: Y / N, Odor: / N, Vapor: _____ ppm / %LEL
 Turbidity: > 1000, Color: Yellow

Time (24 hr)	Temp. (C)	pH	Cond. (uS)	H2O (Gal)	Turbid. (NTU)
<u>14:24</u>	<u>16.8</u>	<u>6.83</u>	<u>1221</u>	<u>3</u>	<u>> 1000</u>
<u>14:30</u>	<u>17.5</u>	<u>6.76</u>	<u>1284</u>	<u>6</u>	<u>> 1000</u>
<u>14:37</u>	<u>17.6</u>	<u>6.77</u>	<u>1316</u>	<u>10</u>	<u>> 1000</u>
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

Sample Collection Time (24 hr): 14:40

Notes: SLIGHT ODOR END OF PURGE

Collected By (signature): [Signature]

SAMPLE COLLECTION RECORD - MONITOR WELL

Date: 3-25-94 Sample I.D.: MWS Job No.: 3534-239

Site Location: Dreyer's Oakland

No. of Containers: 4 / (check one): Well Samples;

Duplicates from well _____; Travel Blanks;

Field Blanks; Other (explain) / _____

W.L. (1/100'): 9.75 Time: 11:29 B.O.W. (1/2'): 29

Method: Electric Well Sounder; Other / _____

Meters calibrated: N Well Loc. Map: N

Calculated Purge Volume (4 casing volumes): 12 gallons

Purging Method: Disposable Bailer; Teflon Bailer;

Other / _____

Time Start Purging (24 hr): 15:40, Product: ~~Y~~ / N
 Sheen: Y / N, Odor: Y / N, Vapor: _____ ppm / %LEL
 Turbidity: 17, Color: CLEAR

Time Stop Purging (24 hr): 15:55, Product: Y / N
 Sheen: Y / N, Odor: Y / N, Vapor: _____ ppm / %LEL
 Turbidity: 99.9, Color: CLEAR

Time (24 hr)	Temp. (C)	pH	Cond. (uS)	H2O (Gal)	Turbid. (NTU)
<u>15:45</u>	<u>16.2</u>	<u>7.04</u>	<u>834</u>	<u>4</u>	<u>12</u>
<u>15:50</u>	<u>16.4</u>	<u>6.91</u>	<u>853</u>	<u>8</u>	<u>99.9</u>
<u>15:55</u>	<u>16.7</u>	<u>6.86</u>	<u>861</u>	<u>12</u>	<u>99.9</u>
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

Sample Collection Time (24 hr): 16:00

Notes: _____

Collected By (signature):

[Handwritten Signature]

SAMPLE COLLECTION RECORD - MONITOR WELL

Date: 3-25-94 Sample I.D.: MW6 Job No.: 3584-239

Site Location: Dreyer's Grand Ice Cream

No. of Containers: 4 / (check one): Well Samples;
 Duplicates from well _____; Travel Blanks;
 Field Blanks; Other (explain) / _____

W.L. (1/100'): 7.72 Time: 10:55 B.O.W. (1/2'): 29.0

Method: Electric Well Sounder; Other / _____

Meters calibrated: / N Well Loc. Map: / N

Calculated Purge Volume (4 casing volumes): 50 gallons

Purging Method: Disposable Bailer; Teflon Bailer;
 Other / _____

Time Start Purging (24 hr): 12:00, Product: Y / N
 Sheen: Y / N Odor: / N, Vapor: _____ ppm / %LEL
 Turbidity: 2.1 NTU, Color: clear

Time Stop Purging (24 hr): 12:45, Product: Y / N
 Sheen: Y / N, Odor: / N, Vapor: _____ ppm / %LEL
 Turbidity: 87.1, Color: cloud

Time (24 hr)	Temp. (C)	pH	Cond. (uS)	H2O (Gall)	Turbid. (NTU)
<u>12:15</u>	<u>18.2</u>	<u>6.69</u>	<u>944</u>	<u>15</u>	<u>28.5</u>
<u>12:30</u>	<u>18.1</u>	<u>6.70</u>	<u>951</u>	<u>35</u>	<u>54.6</u>
<u>12:45</u>	<u>18.1</u>	<u>6.78</u>	<u>966</u>	<u>50</u>	<u>87.1</u>
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

Sample Collection Time (24 hr): 12:45

Notes: _____

Collected By (signature): Dave Beardsley, B. Ben

RECORD OF GROUNDWATER LEVEL MEASUREMENTS

Page ___ of ___

Date Measured: 1 - 21 - 94

Job No.: 3534

Site Location: Devines Grand Ice Cream Oakland

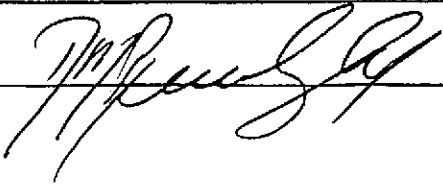
Well location map attached? Yes No

Method of Measurement: Electric well sounder,
 Other: _____

Weather/Visibility: _____

Notes: _____

Well I.D.	Time (24 hr)	G.W.L. (1/100 ft)	G.W.L. 3x's?	B.O.W. (1/2ft)	Remarks
MW1	15:12	14.30	✓		
MW10	15:19	8.40	✓		FRONT OF STORE
MW3	15:23	12.02	✓		STRAIN GAUGE
MW4	15:29	12.07	✓		UNDER GATE
MW2	15:35	11.40	✓		STRONG OPD
MW5	15:43	11.22	✓	2	EAST LOT.

Measured by (Signature): 

RECORD OF GROUNDWATER LEVEL MEASUREMENTS

Page 1 of 1

Date Measured: 2 - 2 - 94

Job No.: 3534

Site Location: DEYERS GRAND ICE CREAM OAKLAND

Well location map attached? Yes No


Method of Measurement: Electric well sounder,

Other: _____

Weather/Visibility: OVERCAST COOL

Notes: _____

Well I.D.	Time (24 hr)	G.W.L. (1/100 ft)	G.W.L. 3x's?	B.O.W. (1/2ft)	Remarks
MW1	13:23	13.06	✓		
MW2	13:47	9.85	✓		
MW3	13:36	11.48	✓		
MW4	13:41	11.41	✓		
MW5	13:55	8.80	✓		
MW6	13:30	7.84	✓		

Measured by (Signature): 

RECORD OF GROUNDWATER LEVEL MEASUREMENTS

Page 1 of 1

Date Measured: 3 - 25 - 94

Job No.: 3534-239

Site Location: Develco Grand Ice Cream, Oakland

Well location map attached? Yes No

Method of Measurement: Electric well sounder,
 Other: _____

Weather/Visibility: CLOUDY w/showers

Notes: _____

Well I.D.	Time (24 hr)	G.W.L. (1/100 ft)	G.W.L. 3x's?	B.O.W. (1/2ft)	Remarks
MW1	10:51	12.26	✓	30.0	
MW2	11:19	10.50 10.05	✓	28.0	
MW3	11:11	11.26	✓	27.0	
MW4	11:05	11.03	✓	27.0	
MW5	11:29	9.75	✓	29.0	
MW6	10:55	7.72	✓	29.0	

Measured by (Signature): David Beardsley



APPENDIX B

Limitations and Uncertainty



LIMITATIONS AND UNCERTAINTY

This report was prepared in general accordance with the accepted standard of practice which exists in northern California at the time the investigation was conducted and within the scope of services outlined in our proposal. It should be recognized that the definition and evaluation of surface and subsurface environmental conditions is a difficult and inexact science. Judgements leading to conclusions and recommendations generally are made with an incomplete knowledge of the conditions present. It is possible that variations in the soil and/or groundwater conditions could exist beyond the points explored for this investigation. Also changes in groundwater conditions could exist beyond the points explored for this investigation. Also changes in groundwater conditions could occur sometime in the future due to variations in tides, rainfall, temperature, local or regional water use or other factors. If the client wishes to reduce the uncertainty beyond the level associated with this study, CET Environmental Services, Inc. should be notified for additional consultation.

The discussion and recommendations presented in this report are based on: 1) information and data provided by third party consultants, 2) the exploratory test borings drilled at the site, 3) the observations of field personnel, 4) the results of laboratory analysis by a California Department of Health Services (DHS) accredited laboratory, and 5) interpretations of federal, state, and local regulations and/or ordinances.

Chemical analytical data included in this report have been obtained from state certified laboratories. The analytical methods employed by the laboratories were in accordance with procedures suggested by the U. S. Environmental Protection Agency and State of California. CET Environmental Services, Inc. is not responsible for laboratory errors in procedures or reporting.

CET has conducted this investigation in a manner consistent with the level of care and skill ordinarily exercised by members of the environmental consulting profession currently practicing under similar conditions in northern California. CET has prepared this report for the client's (and assigned parties) exclusive use for this particular project. No other warranties, expressed or implied, as to the professional advice provided are made.



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