ATT

Aqua Terra Technologies
Consulting Engineers
& Scientists

2950 Buskirk Avenue
Suite 120
Walnut Creek, CA
94596-2079
FAX 934-0418
510 934-4884

April 30, 1993

Ms. Jennifer Eberle
Hazardous Materials Specialist
Alameda County Health Care Services Agency
80 Swan Way, Room 200
Oakland, CA 94621

1287

Subject: **First Quarter 1993**
Groundwater Monitoring Report & Subsurface Investigation
Dreyer's Grand Ice Cream
5929 College Avenue, Oakland, California
(Project No. 919313)

Dear Ms. Eberle:

Aqua Terra Technologies, Inc. (ATT) is pleased to present the results for groundwater monitoring activities conducted by ATT during the first quarter, 1993 (January 1 through March 31, 1993) for the subject site. Monitoring activities during the first quarter included monthly recording of groundwater level measurements, groundwater sample collection, and laboratory sample analysis.

This report also summarizes activities associated with the subsurface investigation performed by ATT at the subject site during the first quarter 1993. The investigation was performed to comply with the requirements of the Alameda County Health Care Services Agency (ACHCSA) in their letter dated March 27, 1992. The work was performed in accordance with the June 18, 1992 ATT Workplan approved by the ACHCSA, and subsequent telephone conversations and written correspondence. The investigation included soil borings using Powercore equipment, collection of soil and grab groundwater samples, and laboratory sample analysis. The results of the routine quarterly monitoring and the subsurface investigation are presented below.

INTRODUCTION

The subject site is located in the city of Oakland, California, approximately 0.25 miles north of California Highway 24 and approximately 0.25 miles south of the Berkeley City limits (Plate 1, Attachment A). The property is bounded by Claremont Avenue to the northwest, College Avenue to the east, and Chabot Road to the south.

"HP" Soil

	mg/kg		µg/kg				
	gas	die	B	T	E	X	
PC1-13.5	ND	ND	ND	ND	ND	ND	
2-19.5'							
3-14	ND	ND	ND				
4-12	ND	6.4	ND	ND	ND	ND	
5-9	ND						
5-15'	ND						
6-9.5	ND						
6-16.5	ND						
7-9.5	ND						
7-16							
8-9.5	1.1	ND	ND	ND	5.7	9.9	
8-15'	12.	ND	7.6	23	97	70	
9-9.5	ND						

= discolored soil and/or HC odors bet 14-18' bgs.

ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
DAVID J. KEARS, Agency Director

RAFAT A. SHAHID, ASST. AGENCY DIRECTOR

DEPARTMENT OF ENVIRONMENTAL HEALTH
State Water Resources Control Board
Division of Clean Water Programs
UST Local Oversight Program
80 Swan Way, Rm 200
Oakland, CA 94621
(510) 271-4530

April 29, 1993
STID 1585

Alice, Edward, and May Lim
c/o Russell Lim
601 Brush St.
Oakland CA 94607

RE: Former Exxon Station
250-8th St.
Oakland CA 94607

Dear Lim Family,

As you know, overexcavation of affected soils and confirmatory soil sampling was conducted in my presence on 2/3/93. Preliminary laboratory results were faxed to me on 2/11/93 and 2/15/93 by your consultant, All Environmental, Inc. On 2/16/93, permission was given by Tom Peacock of this office to backfill the excavation.

A report summarizing the overexcavation and resampling work needs to be submitted to this office. This report should contain documentation for the offhaul of soil, as well as original laboratory reports, chains-of-custody, a map with sampling locations, and a narrative description of field activities. Please submit this report **within 45 days or by June 13, 1993.**

In addition, we request a workplan for a groundwater investigation, which would include at least 3 groundwater monitoring wells. Please submit this workplan **within 45 days or by June 13, 1993.**

All work should adhere to a) the Tri-Regional Board Staff Recommendations for Preliminary Evaluation and Investigation of Underground Tank Sites, dated 8/10/90; b) the State WAter Resources Control Board LUFT Field Manual; and c) Article 11 of Title 23, California Code of Regulations. Reports and proposals must be submitted **under seal** of a California-Registered Geologist, -Certified Engineering Geologist, or -Registered Civil Engineer. All reports and documents pertaining to this investigation should also be sent to:

Rich Hiett
San Francisco Bay Region
Regional Water Quality Control Board
2101 Webster St., Ste 500
Oakland CA 94612

	grab water gas	die	B	T	E	X
PC1	ND	→				
2	no water					
3	ND	→				
4	ND	→				
5	ND	→				
6	ND	→				
7	no water					
8	no water					
9	ND	→				

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT PACIFIC O.C.S. OFFICE

ENVIRONMENTAL IMPACT STATEMENT LEASE SALE NO. 53

OFFSHORE CENTRAL AND NORTHERN CALIFORNIA

SPORTFISHING

Visual No. 4

OREGON
CALIFORNIA
DEL NORTE CO.
TRINIDAD HEAD
HUMBOLDT CO.
MENDOCINO CO.
SONOMA CO.
NAPA CO.
SOLANO CO.
MARIN CO.
CONTRA COSTA CO.
ALAMEDA CO.
SANTA CLARA CO.
SANTA CRUZ CO.
MONTEREY CO.
SAN LUIS OBISPO CO.
SANTA BARBARA CO.

LEGEND

- Clam Digging
- General Salmon Trolling Areas
- Prime Salmon Fishing Areas
- Salmon/Steelhead Streams
- Party Boat Fishing Areas
- General Party Boat Limits
- Skiff Fishing Areas
- General Skiff Limits
- Shoreline Fishing Areas

One 1,000-gallon and one 8,000-gallon gasoline tank, two 4,000-gallon diesel tanks and one 2,000-gallon diesel tank were removed from the southeast corner of the property during December, 1989 (before construction of the current office building at the site). Two 1,000-gallon waste oil tanks were also removed from the southwest portions of the property in December, 1989.

The approximate locations of the former underground tank excavations are shown on Plate 2.

QUARTERLY GROUNDWATER MONITORING

Groundwater Elevations and Flow Direction

Groundwater level measurements were recorded on January 18, February 10, and March 10, 1993. Groundwater elevation contours and flow directions for the monitoring events above are shown on Plates 2, 3, and 4, Attachment A. Historic groundwater elevations are summarized in Table 1 (Attachment B).

During the first quarter 1993, groundwater table elevations ranged from approximately 174.49 feet above mean sea level (msl) to 181.29 feet above msl. Groundwater gradients ranged from 0.015 feet per foot (ft/ft) to 0.022 ft/ft. Groundwater flow direction was predominantly towards the southeast. Groundwater flow directions ranged from southwest and west, to northwest during the two preceding quarters (3rd and 4th quarter, 1992).

Groundwater Sample Collection & Analytical Methods

On March 10, 1993 ATT field personnel collected a set of groundwater samples from monitoring wells MW1, MW2, and MW3. The samples were transported with ATT chain-of-custody documentation to a California Department of Health Services (DHS) certified laboratory for analysis of total petroleum hydrocarbons as diesel (TPH/d) and gasoline (TPH/g) using U.S. Environmental Protection Agency (EPA) Test Method 3510/8015 and EPA Test Method 5030/8015, respectively. The samples were also analyzed for benzene, toluene, ethylbenzene, and total xylenes (BTEX) using EPA Test Method 602.

Groundwater Sample Analytical Results

The recent and historic analytical results for groundwater samples collected from monitoring wells MW1, MW2, and MW3, are summarized in Table 2, Attachment B. Copies of the signed laboratory reports, chain-of-custody documentation and sample collection records are presented in Attachment C. With one exception, the recent analytical results were within historic ranges. Historic ranges included non-detect (ND) to 1900 ug/L TPH/d (MW2), ND to 91,000 ug/L TPH/g (MW2), and ND to 8,300 ug/L benzene (MW2). A concentration of 85 ug/L (equal to parts per billion or ppb) TPH/d was detected in sample MW1; TPH/d had not previously been detected in MW1.

Planned Activities

Monthly groundwater level measurements will be recorded during the second quarter 1993. Groundwater samples will be collected quarterly from the existing monitoring wells and submitted for laboratory analysis. Quarterly groundwater monitoring reports will be compiled and submitted to the appropriate regulatory agencies.

SUBSURFACE INVESTIGATION

Soil and Groundwater Sampling Procedures

ATT was retained to investigate the lateral extent of petroleum hydrocarbons in soils and groundwater in the vicinity of the Dryer's Grand Ice Cream Corporate Headquarters building. Soil and water samples were collected from nine locations identified as PC1 through PC9. The sampling locations are shown on Plate 5, Attachment A.

Prior to sampling, the sampling locations were cleared for subsurface utilities by Underground Service Alert (USA). POWERCORE Soil Sampling Inc. of Antioch, California, was contracted to provide sampling services. POWERCORE is a California licensed C-57 contractor. Sample collection activities began on February 24 and were completed on March 8, 1993.

POWERCORE hydraulically-operated portable equipment was utilized for all soil and groundwater sample collection activities. POWERCORE equipment consists of an hydraulically actuated hammer/driver which is hoisted into place over an assembled string of 1.75 inch outside diameter (O.D.) steel AWML drill rod attached to 2.0 inch O.D., 24-inch-long standard penetration test, split-spoon samplers. The 70 pound hammer delivers strikes at a rate of approximately 1,000-12,000 per minute to drive the assembly into the subsurface. At each two-foot depth interval, the drive hammer is hoisted off the drill string and placed to the side. A hydraulically operated ram is used to pull the drill string out of the sample hole.

This continuous coring procedure is repeated in two-foot intervals down to the desired depth. A soil sample can be collected at any desired depth by lining the continuously driven core barrels/split spoon samplers with brass tubes. This process results in a two-inch O.D. sample hole and creates no drill cuttings. Sample holes PC1 through PC9 were driven to total depths of 18, 25, 20, 17, 25, 25, 17.5, 18, and 15 feet below surface grade (bsg), respectively. All subsurface equipment was steam-cleaned prior to coring at each sample hole.

Soil Sample Collection

Soil samples were collected using a standard penetration test split-spoon sampler. For each sample drive, the sampler was lined with four clean brass tubes. The sampler and tubes were cleaned before each sample drive by scrubbing in a solution of Alconox and potable water, followed by two purified water rinses. One soil sample was generally collected from each sample hole just above the first encountered groundwater, or near the bottom of the boring when groundwater was not encountered. Two soil samples were generally collected from borings within which groundwater was not initially encountered during coring. A total of 14 soil samples were collected.

Groundwater Sample Collection

Groundwater "grab" sample collection procedures consisted of the following: an assembly of Schedule 80, 1.0-inch inside diameter (I.D.) PVC casing and screen was placed in each open boring. The bottom five feet of the assembly consisted of screen with 0.02-inch slots. A 24-inch long by 0.75-inch O.D.

Teflon bailer was used to collect the groundwater samples. Three bailers of groundwater were purged from each sample hole before collecting the groundwater samples. Groundwater samples were collected from borings PC1, PC3, PC4, PC5, PC6, and PC9 (a total of six groundwater samples were collected). The Teflon bailer and PVC casing and screen was steam-cleaned prior to sampling and between each boring.

Site Geology/Hydrogeology

The following description of the shallow geology in the vicinity of borings PC1 through PC9 is based on ATT's soil boring logs (see Attachment D). Asphalt and gravel base fill was generally encountered from the surface to approximately 1.0 feet below surface grade (bsg). The asphalt and base was generally underlain by silty clay or sandy clay with a minor component of fine sand to the total depths of the borings. Most of the borings contained occasional sand and/or gravel lenses below 10 feet. Borings PC1, PC3, PC5, PC6, and PC9 contained thick layers of clayey sand with a major component of fine sand. Borings PC1, PC4, PC7, PC8, and PC9 contained clean sand or soil and gravel backfill materials ranging from approximate depths of 4.0 to 6.0 feet bsg. **Discolored soils and/or odors (suggestive of aged petroleum hydrocarbons) were encountered in the saturated zone depths ranging from approximately 14 to 18 feet bsg in borings PC1, PC5, PC6, and PC8.**

Groundwater was first encountered in borings PC1, PC3, PC4, and PC9, at approximately 15, 14.5, 12, and 11 feet bsg, respectively. No water was encountered during coring in borings PC2, PC5, PC6, PC7, and PC8. Within approximately four hours of reaching the bottom of borings PC5 and PC6, the equilibrated depth to groundwater was approximately 21 and 23 feet bsg, respectively. Borings PC2, PC7, and PC8 remained dry during the field assessment.

LABORATORY SAMPLE ANALYSIS

Copies of the signed laboratory analytical reports and chain-of-custody records are presented in Attachment C.

Ms. Jennifer Eberle
Hazardous Materials Specialist
Alameda County Health Care Services Agency

what about PC7?

Soil Sample Analytical Methods

A total of 12 soil samples were analyzed for total petroleum hydrocarbons as diesel (TPH/d) and gasoline (TPH/g) using U.S. Environmental Protection Agency (EPA) Test Method 3550/8015 and EPA Test Method 5030/8015, respectively. The soil samples were also analyzed for benzene, toluene, ethylbenzene, and total xylenes (BTEX) using EPA Test Method 8020.

Soil Sample Analytical Results no table?

Soil sample PC4-12 contained 6.4 mg/Kg (equal to parts per million or ppm) TPH/d. Soil sample PC8-9.5 contained 1.1 ppm TPH/g, 0.0057 ppm ethylbenzene, and 0.0099 ppm total xylenes. Soil sample PC8-15 contained 12 ppm TPH/g, 0.0076 ppm benzene, 0.023 ppm toluene, 0.029 ppm ethylbenzene, and 0.070 ppm total xylenes. All other soil samples contained no analytes at or above the test method detection limits.

Groundwater Sample Analytical Methods

A total of six groundwater grab samples (from borings PC1, PC3, PC4, PC5, PC6 and PC9) were analyzed for TPH/d, TPHg, and BTEX using EPA Test Method 3510/8015, 5030/8015, and 602, respectively.

Groundwater Sample Analytical Results

No analytes were detected in the groundwater samples at or above the test method detection limits. Due to refusal, however, groundwater quality could not be evaluated a several locations.

CONCLUSIONS & RECOMMENDATIONS

Petroleum hydrocarbons, including gasoline and diesel-range constituents, have been detected at relatively high concentrations in groundwater samples from MW1 and MW2. The results of the powercore soil and groundwater assessment indicate that soil contamination is present near the west site boundary (PC8) and offsite beneath Chabot Road near the southwest corner of the site (PC4). Here relatively low concentrations of petroleum hydrocarbons were detected in soils between approximate depths of nine and

fifteen feet bsg, immediately above the groundwater surface. No petroleum hydrocarbons were detected in groundwater grab samples collected as part of the powercore assessment program. Water samples could not be collected, due to core barrel refusal and/or absence of saturated soil conditions, from borings (PC7, PC8, and PC2). Hence, water quality west of MW2 and east of MW3 and PC9 has not been characterized. The presence of petroleum hydrocarbons in MW1 is perplexing, and may potentially be due to offsite, upgradient sources. Several service stations sites are present northeast of the site near the intersection of Claremont and College Avenues.

Based on the results of the soil and groundwater assessments to date, **ATT recommends that 2 to 3 additional monitoring wells be installed to define the extent of petroleum hydrocarbon contamination.** At least one of the wells should be installed east of existing monitoring well MW2, near the 5929 College Avenue building. In addition, we recommend that two to three geologic cross sections be prepared to determine potential migration pathways and the extent of the first water bearing zone. The potential for upgradient sources needs to be evaluated. ATT recommends that regulatory agency files be reviewed to assess potential ongoing monitoring and/or remediation activities at the nearby service station sites. At the request of Dreyers Grand Ice Cream, Inc., ATT will prepare a proposal and cost estimate for the additional characterization work.

Limitations and uncertainties to this report are in Attachment E.

Please call if you have any questions regarding this letter.

Sincerely,

AQUA TERRA TECHNOLOGIES, INC.

Benjamin Berman
Staff Scientist

Mark R. Lafferty, R.G.
Senior Hydrogeologist
California Registered Geologist #4701
(Expires 6/30/94)

For

Terrance E. Carter
Senior Environmental Engineer
Project Manager

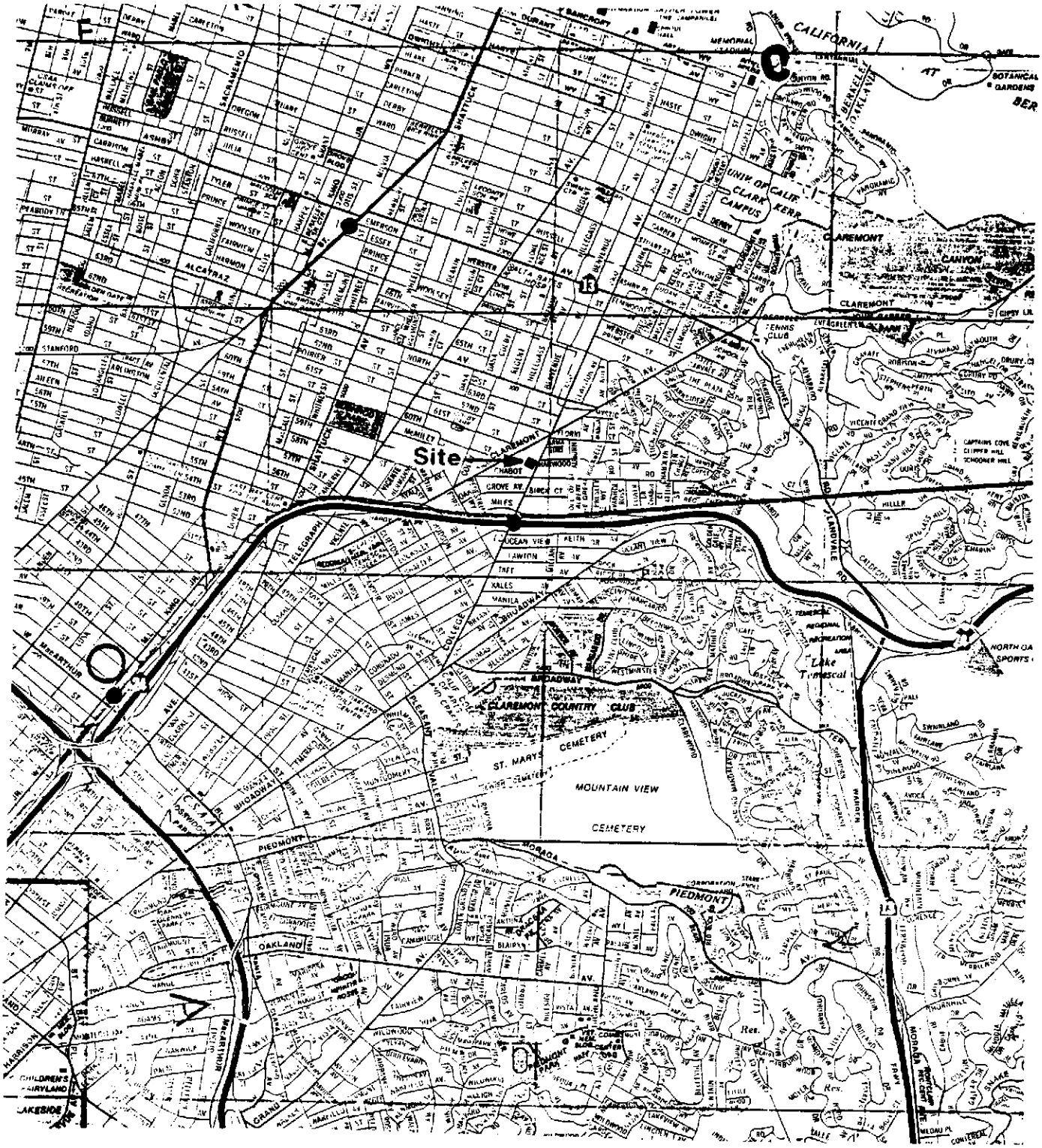
BB/MRL/TEC/:pd

Attachments

cc: William C. Collett, Dreyer's Grand Ice Cream

ATTACHMENT A

Plates



0 1/2 1 mile
SCALE

N

Property Location Map

ATT Aqua Terra Technologies
Consulting Engineers
& Scientists

Dreyer's Grand Ice Cream, Inc.

JOB NUMBER	DATE	PLATE
919313	05/93	1

LEGEND

- Property Boundary
- Building
- Groundwater Monitoring Well
- Groundwater Table Elevation Contour
- Direction of Shallow, Unconfined Groundwater Flow

Sidewalk

Chabot Road

Driveway

Planter

Parking

Claremont Avenue

Sidewalk

179.98 Parking

former waste oil tanks

MW2

Planter

179.26

~~181.37~~

MW1

181

179

Driveway

MW3
176.87

177

5929 College Avenue

former gasoline and diesel tanks

Sidewalk

College Avenue

N

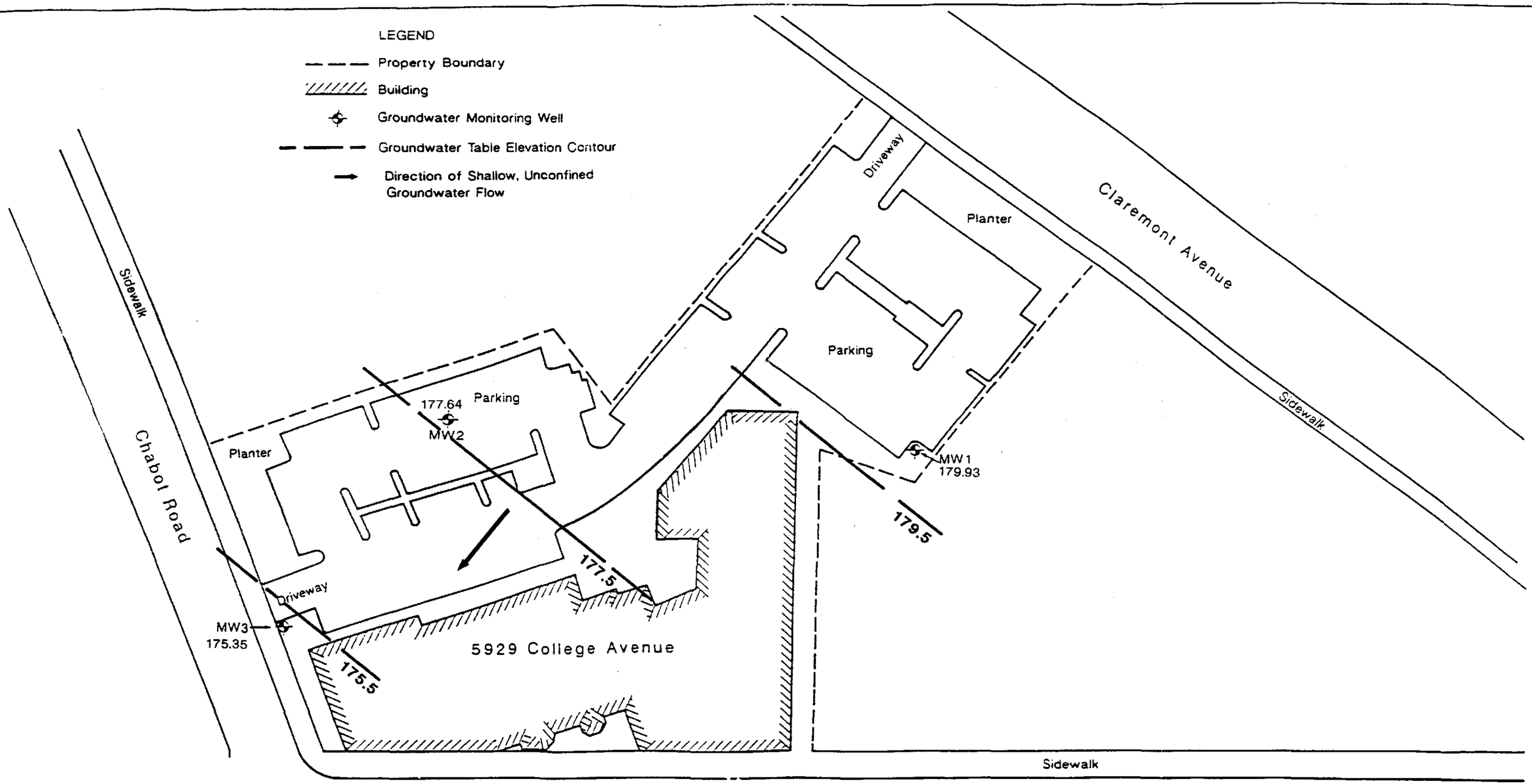
0 50 feet
SCALE

Groundwater Elevations and Contours
01/18/93

ATT Aqua Terra Technologies
Consulting Engineers
& Scientists

Dreyer's Grand Ice Cream, Inc.

JOB NUMBER	DATE	PLATE
919313	05/93	2



Groundwater Elevations and Contours
02/10/93

ATT Aqua Terra Technologies Consulting Engineers & Scientists

Dreyer's Grand Ice Cream, Inc.

JOB NUMBER	DATE	PLATE
919313	05/93	3

LEGEND

- Property Boundary
- Building
- Groundwater Monitoring Well
- Groundwater Table Elevation Contour
- Direction of Shallow, Unconfined Groundwater Flow

Claremont Avenue

Sidewalk

Chabol Road

Sidewalk

Driveway

Planter

Parking

Parking

Planter

MW1

179.34

179.26

MW2

177.27

177.19

MW3

175.10

175.02

179.25

177.25

175.25

Driveway

5929 College Avenue

Sidewalk

College Avenue

N

0 50 feet

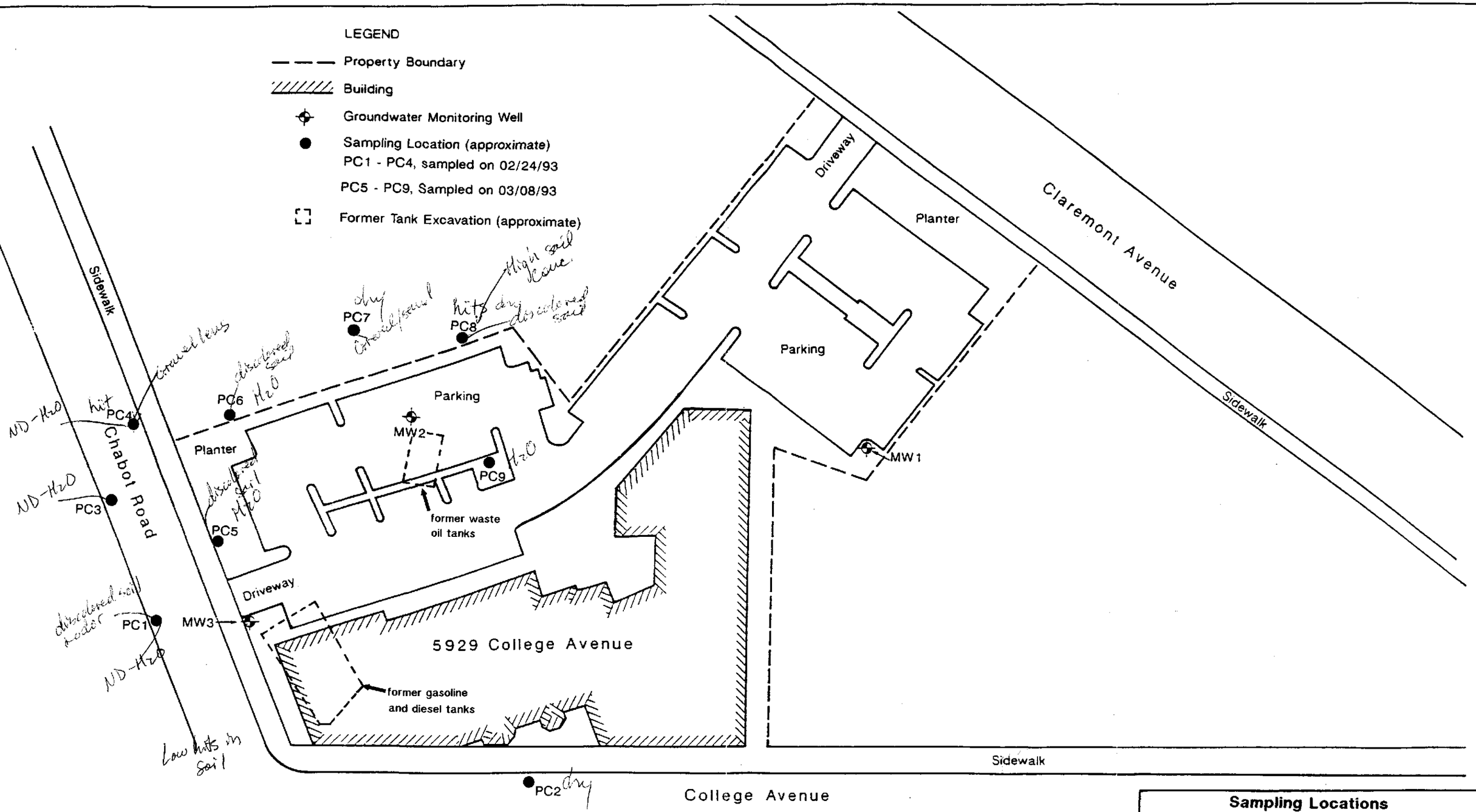
SCALE

Groundwater Elevations and Contours
03/10/93

ATT Aqua Terra Technologies Consulting Engineers & Scientists

Dreyer's Grand Ice Cream, Inc.

JOB NUMBER	DATE	PLATE
919313	05/93	4



Sampling Locations

ATT Aqua Terra Technologies Consulting Engineers & Scientists

Dreyer's Grand Ice Cream, Inc.

JOB NUMBER	DATE	PLATE
919313	04/93	5

ATTACHMENT B

Tables

ATT

Table 1

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

Well No.	TOC Elevation[a] (feet)	Date	Groundwater Depth[b] (feet)	Groundwater Elevation[c] (feet)
MW1	189.14	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
	189.13 ~~182.22~~[d]	01/18/93	7.85	181.29
		02/10/93	9.29	179.85
		03/10/93	9.88	179.26
MW2	185.23	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

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Table 1

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

Well No.	TOC Elevation[a] (feet)	Date	Groundwater Depth[b] (feet)	Groundwater Elevation[c] (feet)
	~~185.84~~[d] 185.76	01/18/93	5.86	179.37
		02/10/93	8.20	177.03
		03/10/93	8.57	~~176.66~~ 177.19
MW3	184.68	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
	~~185.29~~[d] 185.21	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~~ 175.02

a. TOC: top of well casing elevation measured relative to an arbitrary bench mark which was measured to mean sea level (MSL) by interpolation from the Oakland West, California, 7.5' Quadrangle Topographic Map (T.1S, R.3W).
b. Depth to groundwater measured from the TOC.
c. Groundwater elevation is equal to the difference between the TOC elevation and groundwater depth.
d. Top of casing resurveyed on May 1, 1993

ATT

Table 2

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

Well No./ Sample I.D.	Sample Collection Date	Concentration (µg/L) TPH/d[a]	TPH/g[b]	B[c]	T[c]	E[c]	X[c]
MW1	08/05/91	NA[d]	ND[e]	1.1	ND	ND	ND
	12/04/91	ND	ND	ND	ND	ND	ND
	03/10/93	85	ND	ND	ND	ND	ND
MW2 gw rose .1'	08/05/91	1,900[f]	38,000	8,300	8,200	2,300	13,000
	12/04/91	ND	91,000	6,900	6,800	3,200	25,000
gw rose 3.4'	03/10/93	89	59,000	5,800	5,300	3,100	15,000
MW3 gw rose .4'	08/05/91	800[f]	3,300	3,900	160	95	150
	12/04/91	ND	10,000	3,300	88	80	130
gw fell .1'	03/10/93	ND	8,100	2,000	31	240	30

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. ND = 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

ATTACHMENT C

Laboratory Analytical Reports
Chain-of-Custody Records
Sample Collection Records

ATTACHMENT C

Laboratory Analytical Reports
Chain-of-Custody Records
Sample Collection Records

CHROMALAB, INC.

Environmental Laboratory (1094)

5 DAYS TURNAROUND

March 18, 1993 ChromaLab File No.: 0393135

AQUA TERRA TECHNOLOGIES, INC.

Attn: Kimberly Lagomarsino

RE: Three water samples for Gasoline and BTEX analysis

Project Number: 919313
Date Sampled: Mar. 10, 1993 Date Submitted: Mar. 11, 1993
Date Analyzed: Mar. 16, 1993

RESULTS:

Sample I.D.	Gasoline (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl Benzene (µg/L)	Total Xylenes (µg/L)
MW1	N.D.	N.D.	N.D.	N.D.	N.D.
MW2	59000	5800	5300	3100	15000
MW3	8100	2000	31	240	30
BLANK	N.D.	N.D.	N.D.	N.D.	N.D.
SPIKE RECOVERY	94%	95%	105%	104%	103%
DUP SPIKE RECOVERY	----	100%	112%	107%	107%
DETECTION LIMIT	50	0.5	0.5	0.5	0.5
METHOD OF ANALYSIS	5030/8015	602	602	602	602

ChromaLab, Inc.

Billy Thach
Analytical Chemist

Eric Tam
Laboratory Director

cc

2239 Omega Road,#1 • San Ramon, California 94583
(510) 831-1788 • Facsimile (510) 831-8798
Federal ID #68-0140157

CHROMALAB, INC.

Environmental Laboratory (1094)

5 DAYS TURNAROUND

March 19, 1993 ChromaLab File No.: 0393135

AQUA TERRA TECHNOLOGIES, INC.

Attn: Kimberly Lagomarsino

RE: Three water samples for Diesel analysis

Project Number: 919313
Date Sampled: Mar. 10, 1993 Date Submitted: Mar. 11, 1993
Date Extracted: March 16, 1993 Date Analyzed: March 16, 1993

RESULTS:

Sample I.D.	Diesel (µg/L)
MW1	85
MW2	89
MW3	N.D.
BLANK	N.D.
SPIKE RECOVERY	87%
DUP SPIKE RECOVERY	89%
DETECTION LIMIT	50
METHOD OF ANALYSIS	3510/8015

ChromaLab, Inc.

Yiu Tam
Analytical Chemist

Eric Tam
Laboratory Director

do

2239 Omega Road,#1 • San Ramon, California 94583
(510) 831-1788 • Facsimile (510) 831-8798
Federal ID #68-0140157

Aqua Terra Technologies, Inc.
2950 Buskirk Avenue, Ste. 120
Walnut Creek, CA 94596
Tel. (415) 934-4884
Fax. (415) 934-0418

CHAIN OF SAMPLE CUSTODY RECORD

(original document, please return)

ATT

Page _____ of _____

Sampled By: DAVID BEARDSLEY
Signature: [signature]
Results To Be Sent To: KIMBERLY LAGOMARSINO
Results Needed By: STANDARD TURNAROUND
Fax Results ASAP ☐

Date Sampled: 3/10/93
ATT Job #: 919313
Lab Name: CHROMALAB
Contact:
Phone #: 831 1788
Lab Job #:

Sample Collection				Sample Preservation				Sample Containers				Analysis/EPA Method No.						
Sample I.D.	Time (24 hr)	Matrix (e.g. Water, Soil)	Number of Containers	Ice	HCL	Dry Ice		40 ML VOA's	1 Liter Amber			TPH D	TPH G	BTEX				Remarks
MW1	13:29	WATER	4	✓	✓			2	2			✓	✓	✓				
MW2	14:20	"	4	✓	✓			2	2			✓	✓	✓				
MW3	15:15	"	4	✓	✓			2	2			✓	✓	✓				

Notes:

Relinquished by/ Company Affiliation	Date	Time	Received by: Company Affiliation	Date	Time
[signature]	3-11-93	16:24 PDT	Gary Cook Chroma Lab	3/11/93	16:20

CHROMALAB FILE # 393135
ORDER # 10773

PRIORITY ENVIRONMENTAL LABS

Precision Environmental Analytical Laboratory

February 28, 1993 PEL # 9302063

AQUA TERRA TECHNOLOGIES, INC.

Attn: Benjamin Berman
Re: Three water and three soil samples for Gasoline/BTEX and Diesel analyses.

Project number: 919313

Date sampled: Feb 24, 1993 Date submitted: Feb 26, 1993
Date extracted: Feb 26-27, 1993 Date analyzed: Feb 26-27, 1993

RESULTS:

SAMPLE I.D.	Gasoline (ug/L)	Diesel (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethyl Benzene (ug/L)	Total Xylenes (ug/L)
PC 1	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
PC 3	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
PC 4	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Detection limit	50	50	0.5	0.5	0.5	0.5
Method of Analysis	5030 / 8015	3510 / 8015	602	602	602	602

water

SAMPLE I.D.	Gasoline (mg/Kg)	Diesel (mg/Kg)	Benzene (ug/Kg)	Toluene (ug/Kg)	Ethyl Benzene (ug/Kg)	Total Xylenes (ug/Kg)
PC 1-13.5	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
PC 3-14	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
PC 4-12	N.D.	6.4	N.D.	N.D.	N.D.	N.D.
Blank	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Spiked Recovery	101.4%	82.1%	94.6%	97.3%	92.0%	105.7%
Duplicate Spiked Recovery	86.8%	94.2%	85.0%	88.6%	90.2%	94.3%
Detection limit	1.0	1.0	5.0	5.0	5.0	5.0
Method of Analysis	5030 / 8015	3550 / 8015	8020	8020	8020	8020

soil

David Duong
Laboratory Director

1764 Houret Court Milpitas, CA. 95035 Tel: 408-946-9636 Fax: 408-946-9663

Aqua Terra Technologies, Inc.
2950 Buskirk Avenue, Ste. 120
Walnut Creek, CA 94596
Tel. (510) 934-4884
Fax. (510) 934-0418

PEL # 9302063

CHAIN **INV #** 23408

ATT

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Page 1 of 1

Sampled By: Benjamin Berman

Signature: B. Berman

Date Sampled: 2-24-93

ATT Job #: 919313

Lab Name: Priority Env. Labs

Contact: David Doung

Phone #: (408) 946-8636

Lab Job #:

Results To Be Sent To: Benjamin Berman

Results Needed By: standard 5-day turnaround

Fax Results ASAP ☒

Sample Collection				Sample Preservation				Sample Containers				Analysis/EPA Method No.						
Sample I.D.	Time (24 hr)	Matrix (e.g. Water, Soil)	Number of Containers	Ice	HCL	Dry Ice		Brass tube	1 Liter bottle	40 ml. VOA Vial		TPH-Diesel	TPH-Gasoline	BTEX				Remarks
PC1-13.5	9:35	Soil	1	X				X				X	X	X				
PC2-19.5	12:15	"	1	X				X										Hold
PC2-24.5	13:20	"	1	X				X										Hold
PC3-14	14:40	"	1	X				X				X	X	X				
PC4-12	16:20	"	1	X				X				X	X	X				
* PC1	10:45	Water	4	X					2	2		X	X	X				see notes.
PC3	16:00	"	4	X					2	2		X	X	X				
PC4	17:00	"	4	X					2	2		X	X	X				

Notes: * re-run sampler as per my telephone conversation with Victor at Priority Env. Labs, 3-9-93, @ 11:15 am.
— B. Berman

Relinquished by/ Company Affiliation	Date	Time	Received by: Company Affiliation	Date	Time
B. Berman	2-26-93	9:37 AM	[signature]	2/26/93	9:37 AM

PRIORITY ENVIRONMENTAL LABS

Precision Environmental Analytical Laboratory

March 12, 1993 PEL # 9302063

AQUA TERRA TECHNOLOGIES, INC.

Attn: Benjamin Berman
Re: One water sample for Gasoline/BTEX and Diesel analyses.

Project number: 919313

Date sampled: Feb 24, 1993 Date submitted: Feb 26, 1993
Date extracted: Mar 10-11, 1993 Date analyzed: Mar 10-11, 1993

RESULTS:

SAMPLE I.D.	Gasoline (ug/L)	Diesel (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethyl Benzene (ug/L)	Total Xylenes (ug/L)
PC 1	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Blank	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Spiked Recovery	105.4%	97.6%	101.3%	100.9%	98.2%	105.0%
Detection limit	50	50	0.5	0.5	0.5	0.5
Method of Analysis	5030 / 8015	3510 / 8015	602	602	602	602

David Duong
Laboratory Director

1764 Houret Court Milpitas, CA. 95035 Tel: 408-946-9636 Fax: 408-946-9663

Aqua Terra Technologies, Inc.
2950 Buskirk Avenue, Ste. 120
Walnut Creek, CA 94596
Tel. (510) 934-4884
Fax. (510) 934-0418

PEL # 9302063

INV # 23408

ATT

CHAIN

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Page 1 of 1

Sampled By: Benjamin Berman

Signature: B. Be

Date Sampled: 2-24-93

ATT Job #: 919313

Lab Name: Prioridy ENV. Labs

Contact: David Doung

Phone #: (408) 946-8656

Lab Job #:

Results To Be Sent To: Benjamin Berman

Results Needed By: standard 5-day turnaround

Fax Results ASAP ☒

Sample Collection				Sample Preservation				Sample Containers				Analysis/EPA Method No.						
Sample I.D.	Time (24 hr)	Matrix (e.g. Water, Soil)	Number of Containers	Ice	HCL	Dry Ice		Brass tube	1 Liter bottle	40 ml. VOA Vial		TPH-Diesel	TPH-Gasoline	BTEX				Remarks
PC1-13.5	9:35	Soil	1	X				X				X	X	X				
PC2-19.5	12:15	"	1	X				X										Hold
PC2-24.5	13:20	"	1	X				X										Hold
PC3-14	14:40	"	1	X				X				X	X	X				
PC4-12	16:20	"	1	X				X				X	X	X				
PC1	10:45	Water	4	X					2	2		X	X	X				
PC3	16:00	"	4	X					2	2		X	X	X				
PC4	17:00	"	4	X					2	2		X	X	X				

Notes:

Relinquished by/ Company Affiliation	Date	Time	Received by: Company Affiliation	Date	Time
B. Be	2-26-93	9:37AM		2/26/93	9:37 AM

PRIORITY ENVIRONMENTAL LABS

Precision Environmental Analytical Laboratory

March 11, 1993 PEL # 9303012

AQUA TERRA TECHNOLOGIES, INC. Attn: Benjamin Berman

Re:Three water and nine soil samples for Gasoline/BTEX and Diesel analyses.

Project number: 919313

Date sampled: Mar 08, 1993 Date submitted: Mar 09, 1993
Date extracted: Mar 09-10, 1993 Date analyzed: Mar 09-10, 1993

RESULTS:

SAMPLE I.D.	Gasoline (ug/L)	Diesel (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethyl Benzene (ug/L)	Total Xylenes (ug/L)
PC 5 water	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
PC 6	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
PC 9	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Detection Limit	50	50	0.5	0.5	0.5	0.5
Method of Analysis	5030/8015	3510/8015	602	602	602	602

SAMPLE I.D.	Gasoline (mg/Kg)	Diesel (mg/Kg)	Benzene (ug/Kg)	Toluene (ug/Kg)	Ethyl Benzene (ug/Kg)	Total Xylenes (ug/Kg)
PC 5-9 soil	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
PC 5-15	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
PC 6-9.5	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
PC 6-16.5	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
PC 7-9.5	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
PC 7-16	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
PC 8-9.5	1.1	N.D.	N.D.	N.D.	5.7	9.9
PC 8-15	12	N.D.	7.6	23	29	70
PC 9-9.5	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Blank	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Spiked Recovery	105.4%	97.6%	101.3%	100.9%	98.2%	105.3%
Duplicate Spiked Recovery	90.7%	94.3%	86.0%	88.9%	97.1%	95.3%
Detection limit	1.0	1.0	5.0	5.0	5.0	5.0
Method of Analysis	5030/8015	3550/8015	8020	8020	8020	8020

David Duong
Laboratory Director

1764 Houret Court Milpitas, CA. 95035 Tel: 408-946-9636 Fax: 408-946-9663

PEL # 9303012

INV # 23424

ATT

Aqua Terra Technologies, Inc.
2950 Buskirk Avenue, Ste. 120
Walnut Creek, CA 94596
Tel. (510) 934-4884
Fax. (510) 934-0418

CHAIN OF SAMI
(original document, please return)

Page 1 of ____

Sampled By: Benjamin Berman
Date Sampled: 3-8-93
Signature: B. Ber
ATT Job #: 919313
Lab Name: ~~Priority~~ Env. Labs
Results To Be Sent To: Benjamin Berman
Contact: Victor or David
*Results Needed By: 3-11-93 (48 hr turnaround)
Phone #: (408) 946-9636
Fax Results ASAP ☐
Lab Job #: ____

Sample Collection				Sample Preservation				Sample Containers				Analysis/EPA Method No.						
Sample I.D.	Time (24 hr)	Matrix (e.g. Water, Soil)	Number of Containers	Ice	HCL	Dry Ice		Glass tube	40 ml. VOA vial	1 liter Glass Bottle		TPH-Diesel	TPH-Gasoline	BTEX				Remarks
PC5-9	8:45	Soil	1	X				X				X	X	X				
PC5-15	8:55	"	1	X				X				X	X	X				
PC6-9.5	10:45	"	1	X				X				X	X	X				
PC6-16.5	10:55	"	1	X				X				X	X	X				
PC7-9.5	13:20	"	1	X				X				X	X	X				
PC7-16	13:35	"	1	X				X				X	X	X				
PC8-9.5	14:45	"	1	X				X				X	X	X				
PC8-15	14:55	"	1	X				X				X	X	X				
PC9-9.5	17:00	"	1	X				X				X	X	X				
PC5	14:30	Water	3	X					2	1		X	X	X				1 Liter only partially filled
PC6	15:45	"	3	X					2	1		X	X	X				1 Liter only partially filled
PC9	18:00	"	3	X					2	1		X	X	X				

Notes: Important: Return all unused samples to our office (including all unused portions of samples), sample identifications must be maintained on all returned samples.
* no extra charge, as per Victor, telephone conversation of 3-9-93 @ 11:15 am

Relinquished by/ Company Affiliation	Date	Time	Received by: Company Affiliation	Date	Time
B. Be	3-9-93	1:40 PM	[signature]	3/9/93	1:40 PM

SAMPLE COLLECTION RECORD - MONITOR WELL

ATT

Date: 3-10-93 Sample I.D.: MW1 Job No.: 919313

Site Location: Dreyers Grand Ice Cream, Oakland

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

___ Duplicates from well ____; ___ Travel Blanks;

___ Field Blanks; ___ Other (explain)/ ____

W.L.(1/100'): 9.88 Time : 13:01 B.O.W.(1/2'): 28.5'

Method: ✓ Electric Well Sounder; ___ Other/ ____

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

Calculated Purge Volume (4 casing volumes): 12 gallons

Purging Method: ✓ Disposable Bailer; ___ Teflon Bailer;

___ Other/ ____

Time Start Purging (24 hr): 13:08 , Product: Y / (N)
Sheen: Y / (N) , Odor: Y / (N) , Vapor: ___ ppm / %LEL
Turbidity: 75 , Color: CLEAR

Time Stop Purging (24 hr): 13:25 , Product: Y / (N)
Sheen: Y / (N) , Odor: Y / (N) , Vapor: ___ ppm / %LEL
Turbidity: 75 , Color: CLEAR

Time (24 hr)	Temp. (C)	pH	Cond. (uS)	H2O (Gal)	Turbid. (NTU)
13:14	18°	7.13	0400	4	109
13:20	18°	6.82	0390	8	87
13:25	18°	6.97	0350	12	75
:					
:					

Sample Collection Time (24 hr): 13:29

Notes: ____

Collected By (signature): ____

SAMPLE COLLECTION RECORD - MONITOR WELL

ATT

Date: 3-10-93 Sample I.D.: MW2 Job No.: 919313

Site Location: Dreyers 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'): 857 Time: 13:41 B.O.W. (1/2'): 26.5

Method: ✓ Electric Well Sounder; ___ Other/ _____

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

Calculated Purge Volume (4 casing volumes): 45 gallons

Purging Method: ✓ Disposable Bailer; ___ Teflon Bailer;

___ Other/ _____

Time Start Purging (24 hr): 13:45, Product: Y / (N)
Sheen: Y / (N), Odor: (Y) / N, Vapor: ___ ppm / %LEL
Turbidity: 33, Color: CLEAR

Time Stop Purging (24 hr): 14:18, Product: Y / (N)
Sheen: (Y) / N, Odor: (Y) / N, Vapor: ___ ppm / %LEL
Turbidity: 11, Color: CLEAR

Time (24 hr)	Temp. (C)	pH	Cond. (uS)	H2O (Gal)	Turbid. (NTU)
13:55	18°	6.48	0630	15	13
14:06	18°	6.56	0770	30	9
14:18	18°	6.55	0770	45	11
:					
:					

Sample Collection Time (24 hr): 14:20

Notes: STRONG PETROLEUM ODOR DURING PURGE - SHEEN DEVELOPED AFTER 20 GAL. PURGED TWO BAILERS USED 4" well

Collected By (signature): [signature]

SAMPLE COLLECTION RECORD - MONITOR WELL

Date: 3-10-93 Sample I.D.: MW3 Job No.: 919313

Site Location: Reyes 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'): 10.19 Time: 14:33 B.O.W.(1/2'): 26.5

Method: ✓ Electric Well Sounder; ___ Other/ _____

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

Calculated Purge Volume (4 casing volumes): 42 gallons

Purging Method: ✓ Disposable Bailer; ___ Teflon Bailer;

___ Other/ _____

Time Start Purging (24 hr): 14:39, Product: Y / (N)
Sheen: (Y) / N, Odor: (Y) / N, Vapor: ___ ppm / %LEL
Turbidity: 19, Color: CLEAR

Time Stop Purging (24 hr): 15:13, Product: Y / (N)
Sheen: (Y) / N, Odor: (Y) / N, Vapor: ___ ppm / %LEL
Turbidity: 111, Color: CLOUDY GREY

Time (24 hr)	Temp. (C)	pH	Cond. (uS)	H2O (Gal)	Turbid. (NTU)
14:50	18°	6.88	0670	14	43
15:02	18°	6.86	0690	28	72
15:13	18°	6.86	0730	42	111
:					
:					

Sample Collection Time (24 hr): 15:15

Notes: STRONG ODOR DURING PURGE, SHEEN IN WATER
TWO BAILERS USED 4" WELL, NEW CAP 4"

Collected By (signature): [signature]

ATTACHMENT D

Soil Boring Logs

ATT

AQUA TERRA TECHNOLOGIES INC.

Log of Exploratory Boring

Project: Dreyer's Grand Ice Cream Job No.: 919313

Location: 5929 College Ave., Oakland, Ca. Date: 2/24/93

Boring No.: PC1 Driller: Powercore Page 1 of 2

Logged By: BB Proj. Mgr. TEC Reviewed By: MRL

Penetration (Blows/ 6")	Depth (feet)	U.S.C.S. Soil Class.	Field Description	Remarks
	0	Asphalt Base	0'-1' Asphalt and gravel base	
	1		1'-5' Sand; backfill, fine, clean sand	
	2	Sand Backfill		
	3			
	4			
	5		5'-18' Clayey Sand; very dark grayish brown (2.5Y 3/2); 40% to 80% very fine sand; minor component of medium to coarse sand; slightly damp	
	6			
	7			
	8			
	9			
	10			
	11	SC		
	12		Soil moist to very moist below 12' with minor iron staining	
	13			
	14			13.5' Sample
	15		Aged hydrocarbon discoloring and odor in soil below 16'	15' First Water
	16			
	17			

919313/DK1/PC1.LOG

AQUA TERRA TECHNOLOGIES INC.

ATT

Field Drilling and Sampling Log

Job No: 919313

Penetration (Blows/ 6")	Depth	U.S.C.S. Soil Class.	PC1 Field Description	Remarks
	17			
	18		B.O.H. @ 18'	
	19			
	20			
	21			
	22			
	23			
	24			
	25			
	26			
	27			
	28			
	29			
	30			
	31			
	32			
	33			
	34			
	35			
	36			
	37			
	38			
	39			

ATT

AQUA TERRA TECHNOLOGIES INC.

Log of Exploratory Boring

Project: Dreyer's Grand Ice Cream Job No.: 919313

Location: 5929 College Ave., Oakland, Ca. Date: 2/24/93

Boring No.: PC2 Driller: Powercore Page 1 of 2

Logged By: BB Proj. Mgr. TEC Reviewed By: MKC

Penetration (Blows/ 6")	Depth (feet)	U.S.C.S. Soil Class.	Field Description	Remarks
	0	Asphalt & Gravel Base	0'-1' Asphalt and gravel base 1'-5' Silty Clay; very dark grayish brown (2.5Y 3/2); minor component of fine, medium, and coarse sand and fine gravel (poorly graded); medium plasticity; slightly damp	
	1			
	2			
	3	CL		
	4			
	5	--------	5'-25' Silty Clay; dark yellowish brown (10YR 4/4); very stiff to hard; medium plasticity; slightly damp to dry; very minor component of very fine sand	
	6			
	7			
	8			
	9		Increase in fine sand and moisture content below 9'(damp to moist)	
	10	CL		
	11			
	12			
	13		Minor component of fine to medium gravel below 16' (angular, varying composition) and intermittent thin lenses of very fine sand	
	14			
	15			
	16			
	17			

919313/DK1/PC2.LOG

AQUA TERRA TECHNOLOGIES INC.

ATT

Field Drilling and Sampling Log

Job No: 919313

Penetration (Blows/ 6")	Depth	U.S.C.S. Soil Class.	PC2 Field Description	Remarks
	17			
	18			
	19			
	20	CL		19.5' Sample
	21			
	22			
	23			
	24			24.5' Sample
	25		B.O.H. @ 25'	(Dry Hole)
	26			
	27			
	28			
	29			
	30			
	31			
	32			
	33			
	34			
	35			
	36			
	37			
	38			
	39			

ATT

AQUA TERRA TECHNOLOGIES INC.

Log of Exploratory Boring

Project: Dreyer's Grand Ice Cream Job No.: 919313

Location: 5929 College Ave., Oakland, Ca. Date: 2/24/93

Boring No.: PC3 Driller: Powercore Page 1 of 2

Logged By: BB Proj. Mgr. TEC Reviewed By: MRL

Penetration (Blows/ 6")	Depth (feet)	U.S.C.S. Soil Class.	Field Description	Remarks
	0	Asphalt Base	0'-1' Asphalt and gravel base 1'-10' Silty Clay; very dark grayish brown (2.5Y 4/2); medium plasticity; stiff; moist	
	1			
	2			
	3			
	4			
	5	CL		
	6			
	7			
	8			
	9			
	10		10'-20' Clayey Sand; olive brown (2.5Y 4/4); 40% to 80% fine sand; moist to very moist	
	11			
	12			
	13	SC	Varies to sandy clay with minor component of five to medium gravel below 12' (angular, varying composition)	14' Sample 14.5' First Water
	14			
	15		Color change below 15'; very dark grayish brown (2.5Y 3/2)	
	16			
	17			

919313/DK1/PC3.LOG

AQUA TERRA TECHNOLOGIES INC.

Field Drilling and Sampling Log

ATT

Job No: 919313

Penetration (Blows/ 6")	Depth	U.S.C.S. Soil Class.	PC3 Field Description	Remarks
	17			
	18	SC		
	19			
	20		B.O.H. @ 20'	
	21			
	22			
	23			
	24			
	25			
	26			
	27			
	28			
	29			
	30			
	31			
	32			
	33			
	34			
	35			
	36			
	37			
	38			
	39			

ATT

AQUA TERRA TECHNOLOGIES INC.

Log of Exploratory Boring

Project: Dreyer's Grand Ice Cream Job No.: 919313

Location: 5929 College Ave., Oakland, Ca. Date: 2/24/93

Boring No.: PC4 Driller: Powercore Page 1 of 1

Logged By: BB Proj. Mgr. TEC Reviewed By: MKL

Penetration (Blows/ 6")	Depth (feet)	U.S.C.S. Soil Class.	Field Description	Remarks
	0	Asphalt Base	Asphalt and gravel base	
	1		0'-6' Sand; backfill, clean, fine sand	
	2	Sand Backfill		
	3			
	4			
	5			
	6	CL	6'-9' Silty Clay; dark grayish brown (2.5Y 4/2); stiff to hard; medium to high plasticity; damp; minor component of fine sand to fine gravel, poorly graded; sand content increases with depth	
	7			
	8			
	9	SC	9'-17' Sandy Clay; dark yellowish brown (10YR 4/4); minor component of fine sand to fine gravel (as above); damp	
	10			
	11			
	12		Sand lens from 12' to 13'	12' Sample 12' First Water
	13			
	14			
	15			
	16		15.5'-16.5' Gravel lens	
	17		B.O.H. @ 17'	

919313/DK1/PC4

ATT

AQUA TERRA TECHNOLOGIES INC.

Log of Exploratory Boring

Project: Dreyer's Grand Ice Cream Job No.: 919313

Location: 5929 College Ave., Oakland, CA Date: 3/08/93

Boring No.: PC5 Driller: Powercore Page 1 of 2

Logged By: BB Proj. Mgr. TC Reviewed By: MRC

Penetration (Blows/ 6")	Depth (feet)	U.S.C.S. Soil Class.	Field Description	Remarks
	0	Fill	0'-2' Landscaping soil, fill	
	1			
	2		2'-25' Clayey Sand; dark olive gray (5Y 3/2); 20% to 80% very fine sand; medium dense (crumbles under slight hand pressure); damp	
	3			
	4		Beginning at ~ 4', color change; dark yellowish brown (10YR4/4); minor component of coarse sand and fine gravel	
	5			
	6			
	7			
	8	SC/CL		
	9		Beginning at ~ 9', color change; dark olive gray (5Y 3/2); very moist	9' Sample
	10			
	11			
	12			
	13			
	14		Beginning at ~ 14', color change; bluish/greenish gray; possible aged hydrocarbon discoloring; changes to dark yellowish brown (as above) below 17'	
	15			15' Sample (slight odor)
	16			
	17			

AQUA TERRA TECHNOLOGIES INC.

Field Drilling and Sampling Log

ATT

Job No: 919313

Penetration (Blows/ 6")	Depth (feet)	U.S.C.S. Soil Class.	PC5 Field Description	Remarks
	17			
	18			
	19			Hole initially dry, small quantity of water after ~ 2 hours
	20	SC/CL		
	21			
	22			
	23			
	24			
	25		B.O.H. @ 25'	
	26			
	27			
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ATT

AQUA TERRA TECHNOLOGIES INC.

Log of Exploratory Boring

Project: Dreyer's Grand Ice Cream Job No.: 919313

Location: 5929 College Ave., Oakland, CA Date: 3/08/93

Boring No.: PC6 Driller: Powercore Page 1 of 2

Logged By: BB Proj. Mgr. TC Reviewed By: MKL

Penetration (Blows/ 6")	Depth (feet)	U.S.C.S. Soil Class.	Field Description	Remarks
	0	Asphalt		
			0'-0.5' asphalt and Gravel base	
	1		0.5'-8.5' Silty Clay; black (5Y 2.5/1); medium plasticity; stiff; slightly damp	
	2			
	3		2' Color change; very dark grayish brown (10YR 3/2); minor component of coarse sand to fine gravel (angular to semi-angular, varying composition; sightly damp	
	4			
	5	CL	Beginning at ~ 4', increase in moisture content; minor component of very fine sand	
	6			
	7			
	8			
		--------	8.5'-17.5' Silty Clay; olive brown (2.5Y 4/4); medium to high plasticity; damp to moist	9.5' Sample
	9			
	10			
	11			
	12	CL	12.5' minor component of fine to medium gravel (to ¼ inch diameter), angular to semi-angular, varying composition.	
	13			
	14		Increase in fine sand content, moisture content, below 13'	16'-17' odor
	15			
	16		16'-17' Clayey Gravel (as above); bluish greenish gray, possible aged hydrocarbon discoloring	16.5 Sample
	17			

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Field Drilling and Sampling Log

Job No: 919313 Page 2 of 2

Penetration (Blows/ 6")	Depth (feet)	U.S.C.S. Soil Class.	PC6 Field Description	Remarks
	17			
	18		17.5-25' Clayey Sand; dark yellowish brown (10YR 4/4); 15% to 40% very fine to fine sand; minor component of medium to coarse sand; poorly graded; medium plasticity; stiff; damp to moist 18' aged hydrocarbon discoloring	18' Slight Odor (hole initially dry, small quantity of gr. water after ~ 2 hours)
	19			
	20			
	21	SC		
	22			
	23			
	24			
	25		B.O.H. @ 25'	
	26			
	27			
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ATT

AQUA TERRA TECHNOLOGIES INC.

Log of Exploratory Boring

Project: Dreyer's Grand Ice Cream Job No.: 919313

Location: 5929 College Ave., Oakland, CA Date: 3/08/93

Boring No.: PC7 Driller: Powercore Page 1 of 1

Logged By: BB Proj. Mgr. TC Reviewed By: MKL

Penetration (Blows/ 6")	Depth (feet)	U.S.C.S. Soil Class.	Field Description	Remarks
	0	Asphalt Base	0'-0.5' Asphalt and gravel base rock	
	1	CL (Fill?)	0.5-2' Silty Clay; black (5Y 2.5/1); dry (crumbles under moderate hand pressure) (Possible Fill Material)	
	2			
	3	SW (Fill?)	2'-5' Sand; yellowish brown (10YR 5/4); fine sand, clean, compressed (crumbles under applied hand pressure); dry. (Possible Fill Material)	
	4			
	5		5'-9' Silty Clay; very dark grayish brown (10YR 3/2); medium plasticity; damp	
	6	CL		
	7		9'-11.5 Silty Clay; brown (10YR 4/3); medium to high plasticity; slightly damp	
	8		11.5'-14' Clayey Sand; dark brown (7.5YR 4/4); 20% to 60% very fine to fine sand; minor iron staining; damp to moist (increase in fine sand, moisture content below 13')	
	9			9.5' Sample
	10	CL		
	11		14'-15' Clayey Gravel; fine to medium gravel (to 1" diameter); angular to semi-angular, varying composition; damp	
	12			
	13	SC	15'-16.5' Silty Clay; dark yellowish brown (10YR 4/4); medium plasticity; damp	
	14			
	15	GC	16.5'-17.5' Clayey Sand/Gravel; fine to coarse sand and fine to medium gravel; compressed sand (crumbles under applied hand pressure)	
	16	CL		16' Sample
	17	SC/GC	B.O.H. @ 17.5 (Refusal, dry hole)	

919313/DK1/PC7.LOG

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AQUA TERRA TECHNOLOGIES INC.

Log of Exploratory Boring

Project: Dreyer's Grand Ice Cream Job No.: 919313

Location: 5929 College Ave., Oakland, CA Date: 3/08/93

Boring No.: PC8 Driller: Powercore Page 1 of 1

Logged By: BB Proj. Mgr. TC Reviewed By: MKL

Penetration (Blows/ 6")	Depth (feet)	U.S.C.S. Soil Class.	Field Description	Remarks
	0			
	1	Fill	0'-4' Fill material (potting soil, gravel)	
	2			
	3			
	4	CL	4'-8' Silty Clay; very dark grayish brown (10YR 3/2); medium plasticity; stiff; slightly damp	
	5			
	6			
	7			
	8		8'-18' Silty Clay; dark brown (10YR 4/2); medium to high plasticity; very stiff; slightly damp	
	9			9.5' Sample
	10			
	11		Beginning ~ 12.5'; minor iron staining, minor component of fine to	
	12		medium gravel (to 3/4 inch diameter); angular to semi-angular, varying	
	13		composition	
	14		14' blue-green hydrocarbon discoloring, increase in iron staining	14' Odor
	15		Very stiff to hard below 16.5'	15' Sample
	16		18' minor aged hydrocarbon discoloring	15.5' Odor 18' Slight
	17		B.O.H. @ 18' (Refusal, dry hole)	Odor

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AQUA TERRA TECHNOLOGIES INC.

Log of Exploratory Boring

Project: Dreyer's Grand Ice Cream Job No.: 919313

Location: 5929 College Ave., Oakland, CA Date: 3/08/93

Boring No.: PC9 Driller: Powercore Page 1 of 1

Logged By: BB Proj. Mgr. TC Reviewed By: MKL

Penetration (Blows/ 6")	Depth (feet)	U.S.C.S. Soil Class.	Field Description	Remarks
	0			
	1		0'-4' Fill material (potting mix, gravel, etc.)	
	2	Fill		
	3			
	4		4'-11' Silty Clay; black (5Y 2.5/2); medium plasticity; vary minor component of medium to coarse sand; damp	
	5			
	6			
	7	CL		
	8			
	9		9' Color change; dark grayish brown 2.5Y 4/2); medium to high plasticity; very stiff to hard	9.5' Sample
	10			
	11		11'-15' Sandy Clay; dark grayish brown (2.5Y 4/2); 15% to 40% very fine sand; medium plasticity; minor rust staining; damp	11' First Water
	12			
	13	SC		
	14			
	15		B.O.H. @ 15'	
	16			
	17			

919313/DK1/PC9.LOG

ATTACHMENT E

Limitations & 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 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 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, ATT 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 the State of California. ATT is not responsible for laboratory errors in procedures or reporting.

ATT 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. ATT 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.