CET Environmental Services, Inc.

3033 Richmond Parkway, Suite 300
Richmond, California 94806
Telephone: (510) 243-9500
Facsimile: (510) 243-9501

October 27, 1998

Ms. Juliet Shin
Hazardous Materials Specialist
Alameda County Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502

Subject: Response to September 29, 1998 Letter Regarding Dreyer's Grand Ice Cream Site 5929 College Avenue, Oakland, California CET Project No. 3987

Dear Ms. Shin:

Per your letter dated September 29, 1998 and our telephone discussions, CET Environmental Services, Inc. (CET) is pleased to submit the following responses to the issues raised in your letter:

1. Groundwater monitoring will resume at the site today. CET will observe and evaluate the condition of the wells, measure the depth of the wells, measure depth to groundwater, purge the wells, and collect groundwater samples from each well. The samples will be sent to Chromalab and analyzed for the parameters listed in your letter and CET's letter dated October 22, 1998. CET also plans to have the well head elevations surveyed this week to evaluate whether settling has occurred at any of the wells and to ensure valid groundwater elevation data. CET will submit a report describing the field activities and analytical results to Alameda County Environmental Health by November 26, 1998.

2. CET has obtained maps showing storm drainage conduits and sewer lines near the site from the City of Oakland Public Works Agency, as well as maps showing water supply lines from East Bay Municipal Utilities District. These maps show water supply lines and sewer lines running along Chabot Road, south of the site. The Harwood Branch of Temescal Creek is routed underground east of the site into a storm drainage conduit, which continues underground along Chabot Road to College Avenue, veering southward after the intersection of College Avenue and Chabot Road. Copies of the maps are provided in Attachment A.

   Elevations of the drainage conduit and the storm sewer line range from approximately 179 feet to 166 feet along Chabot Road adjacent to the site. These elevations are equivalent to groundwater elevations historically found on the site.

   Since groundwater monitoring began in 1991, the predominant groundwater flow direction has been west, tangent to Chabot Road. However, the groundwater flow direction has periodically changed to south to south-southeast, indicating that it is possible that contaminated groundwater has reached the storm drainage conduits under Chabot Road. In

1993, Aqua Terra Technologies (ATT) conducted a subsurface investigation at the site, which included installing several borings around the site. Two borings (PC1 and PC3) were installed in Chabot Road, south of the site. Soil and groundwater samples from these borings were analyzed for total petroleum hydrocarbons as diesel (TPH-D); total petroleum hydrocarbons as gasoline (TPH-G); and benzene, toluene, ethyl benzene, and xylenes (BTEX compounds). No analytes were detected in the soil or groundwater samples from these borings. A copy of the report (*First Quarter 1993 Groundwater Monitoring Report and Subsurface Investigation*, April 30, 1993) documenting these analyses is provided as Attachment B. These results indicate that contamination from the site had not impacted the area of the storm drains in 1993.

Because the current extent of the groundwater contamination at the site has not been well defined, CET will review data collected during the current monitoring and, if warranted, will prepare a work plan for a subsurface investigation to assess the extent of contamination at the site. CET proposes that this evaluation and work plan development be done in consultation with you at a meeting to be scheduled after receipt of the analytical results. The work plan, if warranted, will be submitted to Alameda County Environmental Health along with the monitoring report by November 26, 1998.

3. CET does not have the ATT reports describing the overexcavation of the underground storage tank locations. CET has asked Dreyer's Grand Ice Cream (Dreyer's) to retrieve the reports from their archives. Upon receipt of these reports, CET will forward copies to you. Anecdotal accounts indicate that the depth of the excavation was approximately twenty feet below ground surface (bgs), and that confirmation samples were collected, which showed that contaminated soil had been removed.

4. CET does not have information from ATT regarding the disposal of excavated soil from the ~~waste oil tank~~ pit. CET has asked Dreyer's for this information from their archives and will forward it to you when it is received.

No UST → gas pit

5. Documentation of the installation of wells MW-5 and MW-6 and boring B-1 is included in the *Third Quarterly Report for 1993,* provided in Attachment C.

You requested copies of quarterly groundwater monitoring reports for 1992. We have reports dated September 9, 1992 and January 20, 1993 describing the groundwater elevation measurements taken during 1992, but no reports that discuss groundwater sample collection or analysis occurring in 1992. Subsequent reports list groundwater elevations from 1992 but not sample results from 1992, so apparently no groundwater samples were collected or analyzed during 1992.

ok

You requested copies of any quarterly reports between the 1st Quarter 1994 report and the April 25, 1995 Summary Report. We have no copies of any reports between these two reports. The April 25, 1995 report describes monitoring activities conducted during each

ok

quarter of 1994.

6. Regarding utilization of Oxygen Releasing Compounds (ORCs) at the site, a Cost Estimate and Contract for Groundwater Monitoring for 1996 which provides a cost estimate for use of ORC at the site is provided as Attachment D. ORC socks were installed in wells MW-2, MW-3 and MW-6 on February 8, 1996. During this time the dissolved oxygen in water in these wells was measured using a titration kit. No significant increase in dissolved oxygen was detected, and the socks were removed about thirty days after their installation.

7. CET obtained a list of the wells within one-half mile of the site from the Alameda County Public Works Agency. There are fifty-two records in the list of results, including destroyed/abandoned wells, test pits, borings, cathodic protection wells, monitoring wells, and one domestic well. The only domestic well on the list is located at 5809 Ivanhoe Road, approximately 1,500 feet east of the site. Historically the groundwater flow direction at the site has varied from west to southeast, and so it does not appear that this well is down-gradient from the site with respect to groundwater flow direction. The search results are provided in Attachment E.

As stated above, CET will submit a report describing today's groundwater sampling and analytical results and, if warranted, a work plan for delineating the extent of contamination at the site, by October 26, 1998.

If you have any questions or comments, please do not hesitate to contact me at (510) 243-9500

Sincerely,
CET ENVIRONMENTAL SERVICES, INC.

Grover S. Buhr, R.G.
Senior Hydrogeologist

Attachments

cc: Gwen Brannan, Dreyer's Grand Ice Cream

Attachment A

Storm Drain, Sewer, and Water Supply Pipeline Maps

496,000

(TELEGRAPH ROAD) AVENUE

CLAREMONT

F

18/47

841.35'

50-211-50

FL. 184'

1590

33'

CC'

AVENUE

720.90'

50-321-27

FL. 182.6

24"

80

WHITE

(ARMANINO CT.)

15'

Private Rd.

TRACT

1/86

246.9'

324.24'

AVENUE

(CHERRY ST.)

AUBURN

1614

4

AVENUE

10'

167'

37'

27'

36'

50-321-29

FL. 202.75

(171.14' CREEK)

R=310.73'

R=260.73' A=182.11'

50-321-22

FL 206.0

FL 310.3

(85320)

50-321-30

R=310.73

R=260.73' A=144.07'

C"

C"14

A=275.49

50-3

26/8

BROUGHE

1

1724

2

3

360.66'

16/4

BROOD

65.6'

50-321-28

240.66'

HARWOOD

400'

419.50'

OF TEMESCAL

HARWOOD BRANCH

105/2

16/4

473.39'

FL. 197.

(FA-419

100'

50-321-08

FL. 183.05

2114

1

8481 (P.C.)

8470

(P 9229 65)

10' R/W

(VERNON AVE.)

333.72'

50-321-07

FL. 195.2

(85310)

12"

452.95'

12"

(85310)

50-321-06

FL. 182.3

FL. 187.2

54G'

358.11'

300.9'

33'

18'

15'

1723

FL. 179.74

FL. 180.5

FL. 178

FL. 177.6

50-321-01

FL. 178.65

FL. 178.19

RESUBDIVISION OF A PORTION OF BLOCK 4 VERNON PARK

79/1

PM 3507

COURT

50-321-04

FL. 185.5

350'

333'

16'

PARK

6/40

21/59

TRACT

21/59

830.79'

30'

30'

CHABOT

50-211-48

FL. 166.41

911.39'

351.5'

5 x 4.6'

FL. 164.54

1723

FL. 169.42

1635

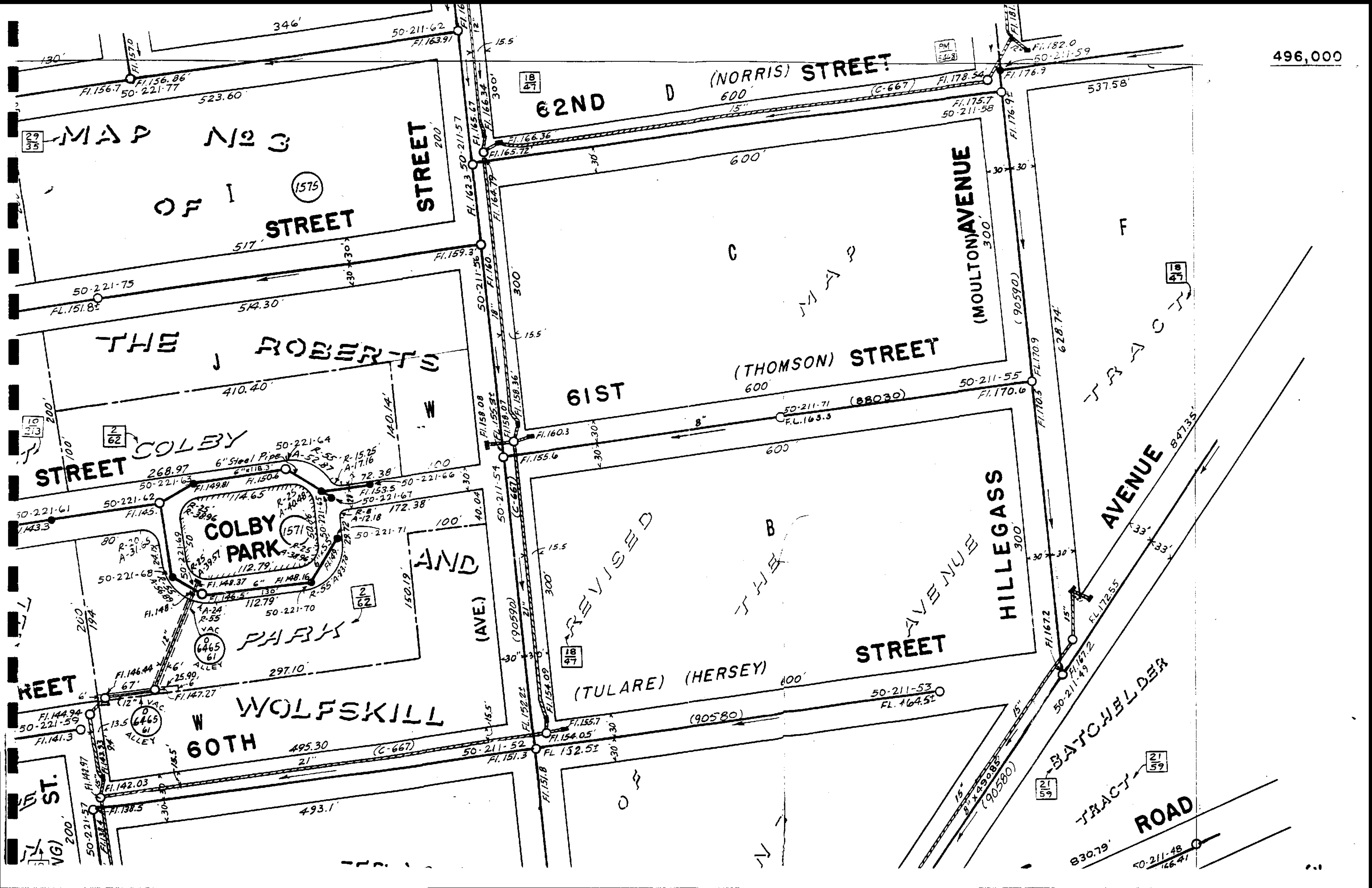
FL. 172.54

7/49

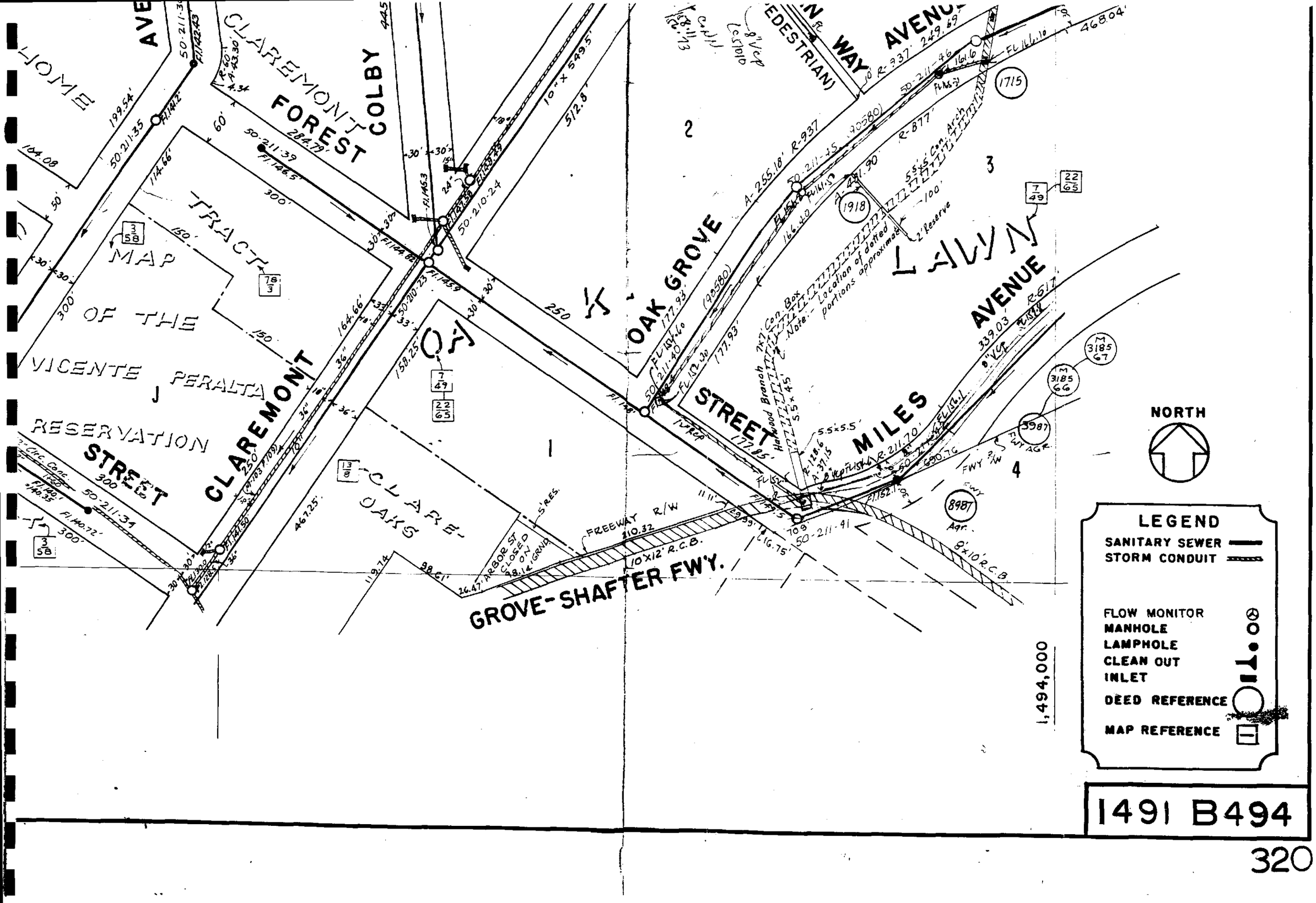
22/65

IVERSITY)

AGODA AVE.)



496,000
MAP № 3
OF
1575
THE ROBERTS
MAP
TRACT
REVISED
THE
OF
62ND (NORRIS) STREET
61ST (THOMSON) STREET
60TH WOLFSKILL (TULARE) (HERSEY) STREET
STREET
COLBY STREET
COLBY PARK
1571
AND PARK
(MOULTON) AVENUE
HILLEGASS AVENUE
(AVE.)
BATCHELDER AVENUE
ROAD
TRACT
50-211-62
50-211-59
50-211-58
50-211-57
50-211-56
50-211-55
50-211-54
50-211-53
50-211-52
50-211-49
50-211-48
50-211-71
50-221-77
50-221-75
50-221-64
50-221-63
50-221-62
50-221-61
50-221-66
50-221-67
50-221-65
50-221-68
50-221-69
50-221-70
50-221-71
50-221-59
50-221-57
(88030)
(90590)
(90580)
(C-667)
6" Steel Pipe
VAC. ALLEY
6465
61


CLAREMONT FOREST COLBY
OAK GROVE
AVENUE
MILES AVENUE
STREET
CLAREMONT OAKS
GROVE-SHAFTER FW'Y.
FREEWAY R/W
MAP OF THE VICENTE PERALTA RESERVATION
TRACT
NORTH
LEGEND
SANITARY SEWER
STORM CONDUIT
FLOW MONITOR
MANHOLE
LAMPHOLE
CLEAN OUT
INLET
DEED REFERENCE
MAP REFERENCE
1,494,000
1491 B494
320

1491 B 496

1494 B 496

1488 B 494

1495 B 494

1488B492

1491 B 492

LITTLEFIELD TRACT

SANTA FE TRACT NO. 2210

HOMAN HOME TRACT

REVISED MAP OF THE CLAREMONT TRACT

ROBERTS & WOLTERS SUBDIVISION

PARK AVENUE TRACT

LLOYD'S KEY ROUTE ADDITION

BRUMAGIM TRACT

MARIPOSA PLOT

CENTRAL SQ.

WASHINGTON SCHOOL

BUSHROD PARK

CLAREMONT PERPETUAL PRESERVATION TRUST

OAKLAWN

NORTH ST

POIRIER LN

TELEGRAPH AVE

CANNING

HOWELL

COLBY

MC AULEY

HERMANN

VICENTE

AYALA

CARBERRY AVE

HILLGASS

CLAREMONT AVE

CHABOT RD

DAKGROVE AVE

MILES AVE

FOREST AVE

61 st

60 th

59 th

58 th

MARTIN ST

496 000

495 000

494 000

1 491 000

1 492 000

1 493 000

1 494 000

NOTE
WHERE THE YEAR OF MAIN INSTALLATION IS NOT INCLUDED WITH PIPE DESIGNATION, THE KIND, SIZE AND LOCATION ARE NOT TO BE RELIED UPON

0 100 200 300 400 500 600 700 800 900 1000 FEET

TAP LEGEND
TAP IS ON MAIN (1)
TAP IS ON MAIN (2)
TAP IS ON MAIN (3)

1491 B 492 Only those maps on which this legend appears identify the main taped

1494 B 496

POSTED REVISIONS
NO. 03 DATE 9 80 1994

EAST BAY MUNICIPAL UTILITY DISTRICT

CITY OAKLAND	STRUCTURE DESIGNATION - NAME	ELEV.	CAP IN M.G.	PRESSURE ZONE	ELEV.
COUNTY ALAMEDA				GIAd CLAREMONT	705
U.S.G.S. OAKLAND WEST				GIAa AQUEDUCT	355

DATE ISSUED: JUN 81

1491 B 494

1494 B 496

DETAIL A

REVISED MAP OF THE CLAREMONT AVENUE TRACT A.D.S

DELL C. WOODWARD'S SUBDIV. OF PAGODA HILL

LEROY TRACT A.D.S

MCKILLOP HEIGHTS

1491 B 494

1497 B 494

1494 B 492

OAKLAWN A21,22

WOODLAWN PARK A20,48

BROADWAY VILLA TRACT A24,46

CLAREMONT JUNIOR HIGH SCHOOL

COLLEGE OF ST ALBERT THE GREAT

ROSELAWN

ROCKRIDGE STATION

FREEWAY

494 000 | 495 000 | 496 000 | 497 000

0 100 200 300 400 500 600 700 800 900 1000 FEET

TAP LEGEND

TAP IS ON MAIN ①
TAP IS ON MAIN ②
TAP IS ON MAIN ③

Only those maps on which this legend appears identify the mains tapped.

HIGH VOLTAGE - EBMUD

Phone East Bay Municipal Utility District, M & E Design Section, before excavating in streets where this symbol appears.

POSTED REVISIONS
NO. 05 DATE NOV 1992

EAST BAY MUNICIPAL UTILITY DISTRICT

CITY	OAKLAND	STRUCTURE	DESIGNATION	NAME	ELEV.	CAP. IN M.G.
COUNTY	ALAMEDA					
U.S.G.S.	OAKLAND EAST, OAKLAND WEST					

PRESSURE ZONE	ELEV.
G1AB CLAREMONT	300
G1AB ADAMS HT	335
A2A BERKELEY	508
B4AB BROADWAY TERR. RES	550

DATE ISSUED MAR 81

1494 B 494

Attachment B

First Quarter 1993 Groundwater Monitoring Report and Subsurface Investigation

April 30, 1993

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

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
Consulting Engineers
& Scientists

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

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.

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.

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

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)

Terrance E. Carter
Senior Environmental Engineer
Project Manager

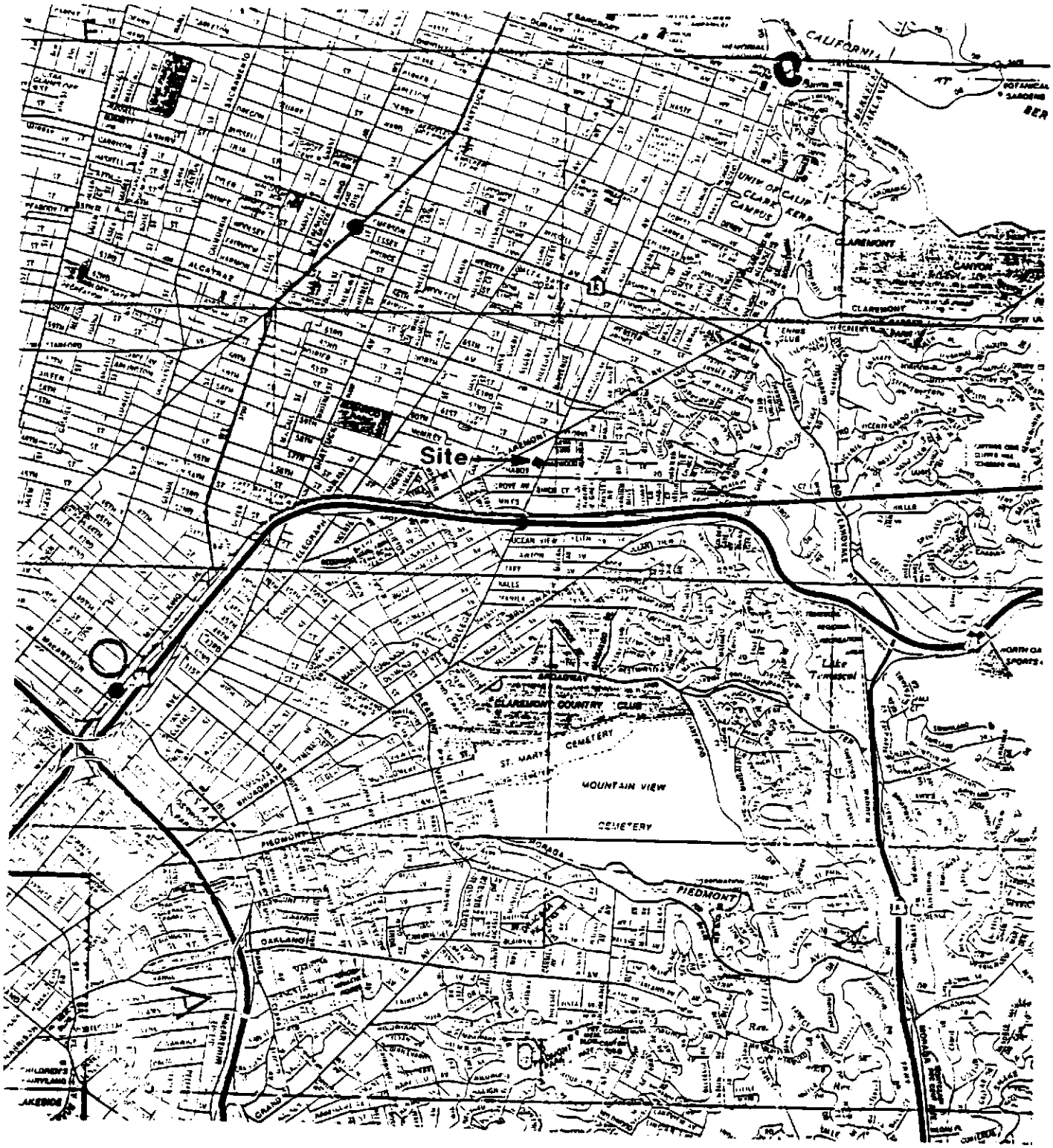
BB/MRL/TEC/:pd

Attachments

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

ATTACHMENT A

Plates



0 1/2 1 mile
SCALE

N

Property Location Map

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

Chabol Road

Sidewalk

Claremont Avenue

Sidewalk

Driveway

Planter

Parking

179.98

Parking

former waste oil tanks

MW2

Planter

181.37

MW1

181

179

Driveway

MW3

176.87

177

5929 College Avenue

former gasoline and diesel tanks

Sidewalk

College Avenue

N

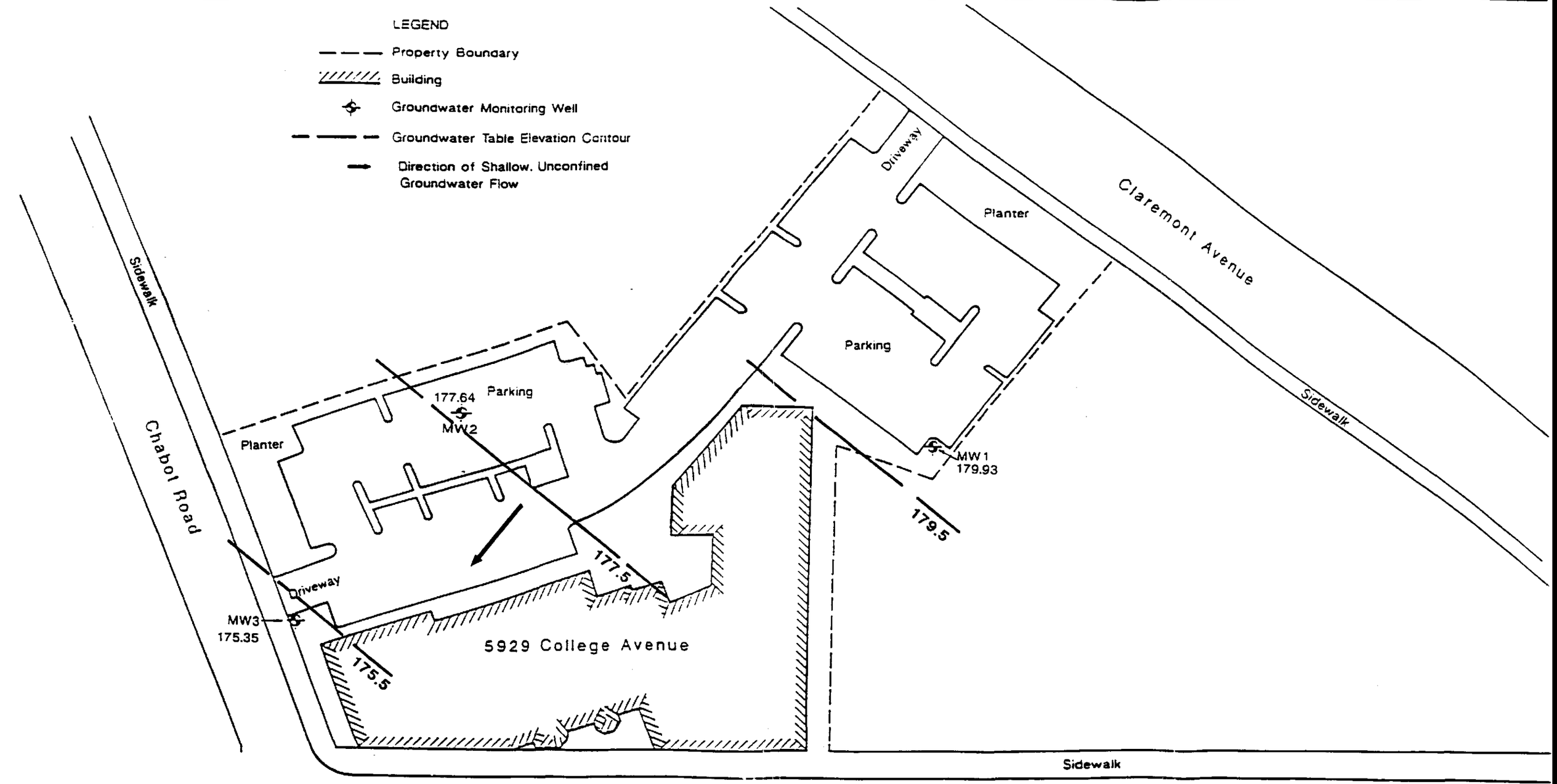
0 50 feet

SCALE

Groundwater Elevations and Contours
01/18/93

ATT Aqua Terra Technologies Consulting Engineers & Scientists

Dreyer's Grand Ice Cream, Inc.		PLATE
JOB NUMBER	DATE	
919313	05/93	2

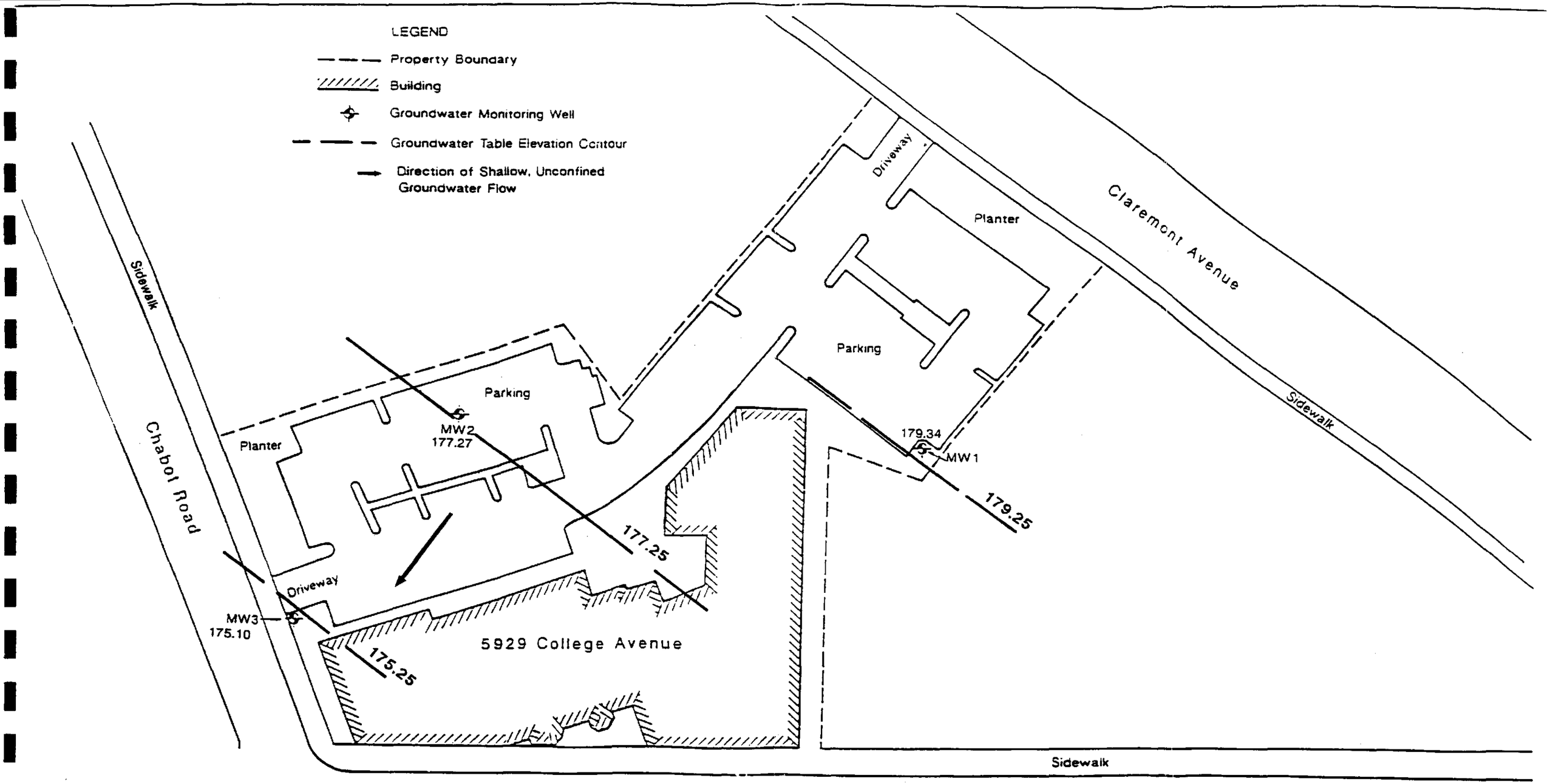


Groundwater Elevations and Contours
02/10/93

ATT Aqua Terra Technologies Consulting Engineers & Scientists

Dreyer's Grand Ice Cream, Inc.

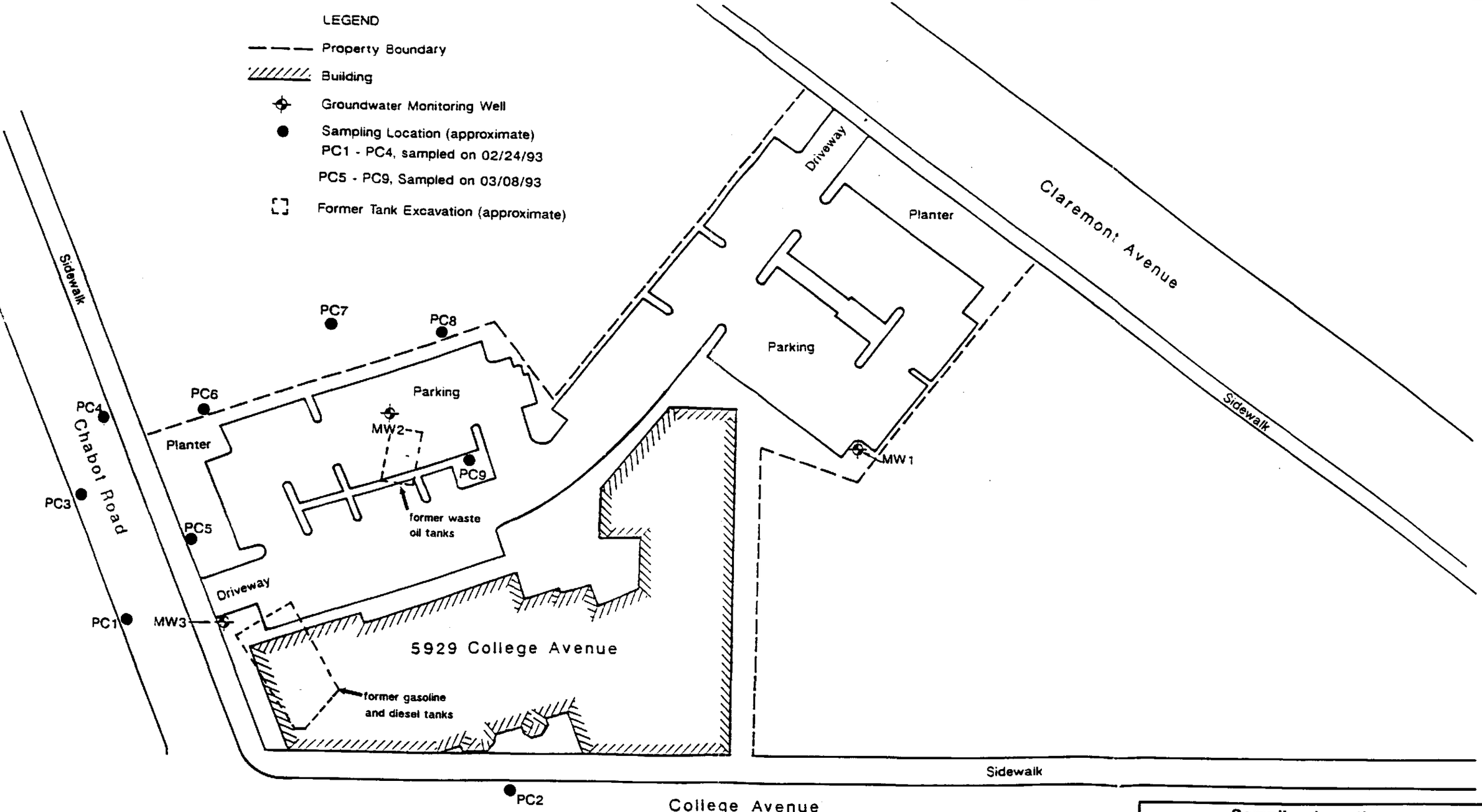
JOB NUMBER	DATE	PLATE
919313	05/93	3



Groundwater Elevations and Contours
03/10/93

ATT Aqua Terra Technologies Consulting Engineers & Scientists

Dreyer's Grand Ice Cream, Inc.		PLATE
JOB NUMBER	DATE	4
919313	05/93	



Sampling Locations

ATT Aqua Terra Technologies Consulting Engineers & Scientists

Dreyer's Grand Ice Cream, Inc.		PLATE
JOB NUMBER	DATE	5
919313	04/93	

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
	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

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)
	185.84[d]	01/18/93	5.86	179.37
		02/10/93	8.20	177.03
		03/10/93	8.57	176.66
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
		12/03/92	10.12	174.56
	185.29[d]	01/18/93	8.42	176.26
		02/10/93	9.94	174.74
		03/10/93	10.19	174.49

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	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
	03/10/93	89	59,000	5,800	5,300	3,100	15,000
MW3	08/05/91	800[f]	3,300	3,900	160	95	150
	12/04/91	ND	10,000	3,300	88	80	130
	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

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:

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			↓	↓	↓				

CHROMALAB FILE # 393135
ORDER # 10773

Notes:

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

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

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

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

(Original document, please return)

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 samples 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	David Doung	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

CHAIN

(Original document, please return)

ATT

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 Duong

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. Berman	2/26/93	9:37 AM	David Duong	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	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	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

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

PEL # 9303012

INV # 23424

ATT

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'): 8.57 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 30 GAL. PURGED TWO BAILERS USED 4" well

Collected By (signature): [signature]

SAMPLE COLLECTION RECORD - MONITOR WELL

ATT

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

Site Location: Dreyer 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 ODER 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		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	
	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.

Field Drilling and Sampling Log

ATT

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		1'-10' Silty Clay; very dark grayish brown (2.5Y 4/2); medium plasticity; stiff; moist	
	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	SC	B.O.H. @ 20'	
	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.: PC4 Driller: Powercore Page 1 of 1

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

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			
	7	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	
	8			
	9		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	SC		
	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: MRL

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.	PCS 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			
	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: 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			

AQUA TERRA TECHNOLOGIES INC.

Field Drilling and Sampling Log

ATT

Job No: 919313

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			
	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: 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	SW (Fill?)	2'-5' Sand; yellowish brown (10YR 5/4); fine sand, clean, compressed (crumbles under applied hand pressure); dry. (Possible Fill Material)	
	5	CL	5'-9' Silty Clay; very dark grayish brown (10YR 3/2); medium plasticity; damp	
	9	CL	9'-11.5 Silty Clay; brown (10YR 4/3); medium to high plasticity; slightly damp	9.5' Sample
	11.5	SC	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')	
	14	GC	14'-15' Clayey Gravel; fine to medium gravel (to 1" diameter); angular to semi-angular, varying composition; damp	
	15	CL	15'-16.5' Silty Clay; dark yellowish brown (10YR 4/4); medium plasticity; damp	
	16		16.5'-17.5' Clayey Sand/Gravel; fine to coarse sand and fine to medium gravel; compressed sand (crumbles under applied hand pressure)	16' Sample
	17	SC/GC	B.O.H. @ 17.5 (Refusal, dry hole)	

919313/DK1/PC7.LOG

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.: 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			
	10			9.5' Sample
	11		Beginning ~ 12.5'; minor iron staining, minor component of fine to medium gravel (to 3/4 inch diameter); angular to semi-angular, varying composition	
	12			
	13			
	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
	17		B.O.H. @ 18' (Refusal, dry hole)	18' Slight Odor

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.: 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	Fill	0'-4' Fill material (potting mix, gravel, etc.)	
	1			
	2			
	3			
	4	CL	4'-11' Silty Clay; black (5Y 2.5/2); medium plasticity; vary minor component of medium to coarse sand; damp	
	5			
	6			
	7			
	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	SC	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			
	14			
	15		B.O.H. @ 15'	
	16			
	17			

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.

Attachment C

Third Quarterly Report, 1993

CET Environmental Services, Inc.
5845 Doyle Street, Suite 104
Emeryville, CA 94608
Tel. (510) 652-7001
Fax. (510) 652-7002

LETTER OF TRANSMITTAL

DATE: December 15, 1993

TO: William C. Collett
Dreyer's Grand Ice Cream
5929 College Avenue
Oakland, CA 94618

FROM: Terrance C. Carter
Senior Environmental Engineer

RE: **Third Quarter Report 1993 Report**

Transmitted herewith is the Third Quarterly Report-1993 Groundwater Monitoring Report and Subsurface Investigation.

DRAFT?

CET Environmental Services, Inc.

5845 Doyle Street, Suite 104
Emeryville, California 94608
Telephone: (510) 652-7001
Fax: (510) 652-7002

December 15, 1993

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

Subject: **Third Quarterly Report - 1993**
Groundwater Monitoring Report and
Subsurface Investigation
Dreyer's Grand Ice Cream
5929 College Avenue, Oakland, California
CET Project No. 3534

Dear Ms. Eberle:

CET Environmental Services, Inc. is pleased to present the results of our recent site characterization and groundwater monitoring activities conducted by CET during the third quarter, 1993 at the subject site. A site location map is presented on Plate 1 (Attachment A). Characterization activities included borehole logging and sampling soil from 4 exploratory borings, 3 of which were completed as wells, soil and groundwater sample collection and laboratory sample analysis, the preparation of two hydrogeologic cross sections, and evaluation of the extent of affected soils and groundwater. Monitoring activities during the reporting period included recording of groundwater level measurements, groundwater sample collection, and laboratory sample analysis. In addition, this report presents the results of our review of regulatory records regarding potential off-site sources of petroleum hydrocarbons. The report presents our conclusions and recommendations regarding the extent of contamination and the need for additional site characterization and remediation feasibility testing.

BACKGROUND

On December 13, 1989, 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 by Petroleum Engineering, Inc. of Santa Rosa, CA (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 December, 1989. The approximate locations of the former underground tank excavations are shown on Plate 2. Subsequent soil sample analyses by Pace Laboratories, collected on December 14, 1989

indicated that Total Petroleum Hydrocarbon (TPH) gasoline or TPH/g concentrations in soil samples from the bottoms of the fuel tank excavations ranged from 30 milligrams per kilogram (mg/Kg), or parts per million (ppm) to 320 ppm. TPH diesel concentrations (TPH/d) ranged from 17 ppm to 350 ppm. Benzene concentrations in the same soil samples ranged from 46 ppb to 1,300 ppb.

On February 6, 1990, Aqua Terra Technologies (ATT) observed the excavation of about 100 cubic yards of soil from the waste oil tank excavation. Based on soil sample analytical results, maximum concentrations of oil and grease and diesel were 5,915 ppm and 1,800 ppm, respectively. Soil sample results for the tank pit, following overexcavation, indicated the presence of oil and grease in one confirmation sample at 120 ppm. Analysis for TPH/g and TPH/d were not performed on the confirmation samples. No benzene, toluene, ethylbenzene and total xylene (BTEX) constituents were detected in the tank excavation soil samples. All soils excavated from the waste oil tank pit were disposed of at a Class II landfill.

On February 12, 1990, the onsite contractor reportedly removed an additional 400 to 450 cubic yards of soil from the bottom of the fuel tank excavation. The removal was apparently required because the clayey soils could not be properly compacted. ATT was notified of the overexcavation activities after the excavation had been backfilled; Testing within the overexcavated area was apparently not performed. ATT was retained to test the stockpiled soils. The average TPH/g concentration was 170 ppm. The soils were aerated on site to concentrations below 100 ppm and were disposed of by others at the licensed landfill facility.

During the period July 16 through July 18, 1991, ATT installed three groundwater monitoring wells on the subject property ranging in depths from 27 to 30 feet below grand surface (bgs). Two of the wells, MW2 and MW3, were installed adjacent to the waste oil and fuel tank excavations, respectively, in the presumed downgradient groundwater flow direction. MW2 and MW3 were constructed using four inch diameter casing and screen. MW1, a 2-inch diameter well, was installed upgradient and west of both tank areas. Analytical results for the three wells have indicated relatively high levels of gasoline constituents in MW2 and MW3, and recently, minor diesel hydrocarbons in MW1. Since August, 1991, TPH/g concentrations have ranged from 38,000 micrograms per liter (ug/L) or parts per billion (ppb) to 91,000 ppb in MW2, and from 3,300 ppb to 14,000 ppb in MW3. The analytical results for the most recent

monitoring event indicated TPH/g concentrations of 58,000 ppm and 14,000 ppm (June 2, 1993 monitoring event) in MW2 and MW3, respectively. Benzene concentrations in the same wells during the period August, 1991 through June 2, 1993 ranged from 13 ppb to 8,200 ppb.

During the period February 24 through March 8, 1993, ATT conducted a Powercore soil and groundwater sampling program involving nine sampling locations with borings ranging in depth from 17 to 25 feet. Six groundwater samples were collected and submitted for analysis. Three of the borings were dry during drilling. None of the water samples contained detectable petroleum hydrocarbons. Gasoline constituents were detected in soil samples from boring PC8, located west of the former waste oil tank excavation and in soil samples from PC4, located offsite beneath Chabot Road. TPH concentrations were at or less than 12 ppm. Due to core refusal, groundwater and soil quality could not be evaluated at several locations.

RECORDS REVIEW

CET personnel conducted a review of the Leaking Underground Storage Tank (L.U.S.T.) List, and the North Bay Toxics List at the California Regional Water Quality Control Board, San Francisco Bay Region (RWQCB), on November 10, 1993. Two sites were found on the L.U.S.T. List within several blocks of the subject site. No sites were found on the North Bay Toxics List within one half-mile radius of the subject site.

Two gasoline service stations, Unocal (6201 Claremont Avenue) and Shell (6039 College Avenue) are located at the intersection of College and Claremont Avenues. The Shell service station is on the L.U.S.T. List. The Unocal service station is not on the L.U.S.T. list. The only other local service station found in the L.U.S.T. List is a former Chevron service station located at 5800 College Avenue (near the intersection of College Avenue and Oak Grove). The former Chevron service station is now occupied by commercial property.

The Shell service station site investigation reports prepared by Harding Lawson Associates of Concord, CA. (July 1990 to October 10, 1991) and by Weiss Associates (May 20, 1992 to Sept 14, 1992) are on file at the RWQCB. Based on groundwater sample analytical results presented by Weiss Associates for the period March 8, 1991

through May 28, 1992, the highest concentrations of total petroleum hydrocarbons (TPH) quantified as diesel (TPH/d), TPH as gasoline (TPH/g), and benzene, toluene, ethylbenzene and total xylenes (BTEX) were 6,100 ug/L, 2,600 ug/L, 630 ug/L, 33 ug/L, 270 ug/L, 38 ug/L, respectively. The Shell service station monitoring well which is closest to the subject site property (MW-5) has yielded samples with very low concentrations of TPH/d but no other detected petroleum compounds. The Shell service station monitoring well MW-4 located about 300 feet from the subject site, was identified by others as having measurable free product as recently as May 28, 1992 (our most recent information). The presence of historic low levels of TPH/d and benzene in MW1 groundwater samples may be related to the affected groundwater at the Shell facility.

The former Chevron service station site investigation reports prepared by Weiss Associates for the period January 27, 1989 through August 17, 1992 are on file at the RWQCB. Site clean up activities have included a groundwater remediation system and a soil vapor extraction system. Based on the results of groundwater sampling conducted by Weiss Associates during the period January 18, 1990 through July 14, 1992, the highest concentrations of TPH/g and BTEX were 51,100 ug/L; 5,100 ug/L; 4,500 ug/L; 2,600 ug/L and 9,000 ug/L, respectively.

SUBSURFACE INVESTIGATION

The subsurface investigation and monitoring well installation activities were conducted during the period August 20 through August 21, 1993. Development of the new monitoring wells was conducted on October 6, 1993.

Drilling Procedures & Monitoring Well Construction/Development

Prior to drilling, all soil boring locations were cleared for underground utilities by the on-site contractor and by Underground Service Alert (USA). West Hazmat Drilling Company of Newark, California was contracted to provide drilling services. Four exploratory borings were drilled, three of which were completed as monitoring wells. During drilling, the soils were logged and soil samples were collected. Following well development, the new wells and the existing wells were sampled during the October 8, 1993 sampling event.

DRAFT

A Mobile B-57 truck-mounted rig was utilized for all drilling, soil sampling, and monitoring well installation activities. Monitoring well borings were drilled using eight-inch or 10-inch outside diameter (O.D.) hollow-stem augers. All subsurface drilling equipment was steam-cleaned prior to use and between each borehole.

CET installed groundwater monitoring well MW5 to a completed depth of 29 feet below ground surface (bgs) using two-inch inside diameter (I.D.) PVC casing. Monitoring wells MW4 and MW6 were installed to completed depths of 27 feet bgs and 29 feet bgs, respectively using four-inch I.D. PVC casing and screen. The boring for well MW6 was initially drilled with six-inch O.D. augers, then over-drilled with 10-inch augers prior to installation of a four-inch diameter well.

Soil samples were collected during drilling operations, using a California modified split-spoon sampler. The two-inch I.D. by 18-inch-long sampler was driven, within the hollow-stem augers, using a 140 pound hammer with a 30-inch drop. For each sample drive, the sampler was lined with three, six-inch-long by two-inch O.D. brass tubes. The sampler and tubes were cleaned, before each sample drive, by scrubbing in a solution of trisodium phosphate (TSP) and purified water, followed by two purified water rinses. A total of 13 soil samples were collected.

The completed monitoring wells were developed on October 6, 1993. Monitoring well construction details and development records are presented in Attachment C. Drilling and groundwater monitoring well construction and development were performed in accordance with regulatory agency requirements and guidelines using the protocol presented in Attachment F.

On October 8, 1993 CET field personnel collected groundwater samples from all site monitoring wells (MW1 through MW6). A grab groundwater sample was not collected from B1 because the boring was dry at the time of drilling. The samples were transported with CET chain-of-custody documentation to Chromalab, Inc, a California Department of Health Services (DHS) certified laboratory, for analysis. Copies of the signed laboratory reports, chain-of-custody documentation, and sample collection records for the samples collected on October 8, 1993 are presented in Attachment C.

GEOLOGY AND HYDROGEOLOGY

The subject site is located in the Oakland Upland and Alluvial Plain which consists of alluvial fan deposits of clay, silt, and sand interbedded with coarser gravel. According to Nielson (1980) the surficial deposits are mapped as Quaternary alluvium or Qal.

Two hydrogeologic cross sections were constructed using information presented on the soil boring logs (See Attachment E). The locations of cross section lines A-A' and B-B' are shown on Plate 2, Attachment A. The cross sections A-A' and B-B' are presented on Plate 3 and Plate 4 in Attachment A.

The five lithologic units shown on Plates 3 and 4 have been identified based on similar hydrogeologic characteristics: 1) fill, 2) clay and silt, 3) sandy clay/clayey silt, 4) sand, 5) gravel. The fill is consists of gravel base, underlain at some locations by fine clean sand backfill. In the planter area, landscaping soil was encountered at the surface. The fill material/native soil contact appears to range in depth from about 0.5 feet to 7 feet below ground surface (bgs). The native soil below the fill is a thick, laterally continuous clay from about 7 feet to 15 feet depth bgs. An exception to the presence of this shallow clay is shown on cross section B-B' in the vicinity of PC1, MW3 and MW4. In this area, the first native material is sandy clay/clayey sand encountered from about 5 to 20 feet bgs and a moderately thick, but laterally discontinuous sand encountered from 5 to 9 feet bgs, as seen at the location of MW4. Another exception is shown near the south end of cross section A-A' (Plate 3), near PC4, where the shallow clay is thinner due to the presence of thicker fill and coarse grained lithologic units, which appear at depths between 10 to 17 feet bgs. These relatively coarse grained lithologic units are sandy clay/clayey sand, sand and gravel. Below these shallow clay and coarser grained units are interbedded 10 to 15-foot-thick layers of clay and sandy clay/clayey sand.

In summary, the two cross sections show that the fill/native soil contact is at about 0.5 to 7 feet bgs. The fill is predominantly underlain by clay or sandy clay/clayey sand to the bottom of the borings (25 to 30 feet bgs). The sediments appear to be coarser grained in the southern portions of the subject site, in the vicinity of Chabot Road, where sand and gravel are encountered between depths of about 5 feet and 15 feet bgs in MW4 and PC4.

Groundwater was first encountered in the borings and monitoring wells during drilling at depths ranging from about 12 to 23 feet bgs. The static water levels in the monitoring wells measured on November 10, 1993 ranged from about 8 to 15 feet bgs. The depth to water at the subject site has varied due to seasonal variations in groundwater recharge. A significant rise in water levels can be correlated with winter precipitation. The monitoring well MW2 depth to water measured December 1992 was about 12 feet while in January, 1993 the depth to water was about 6 feet (Table 1, Attachment B). Since January 1993, the depth to water in MW2 has increased. Similar water level fluctuations can also be observed for monitoring wells MW1 and MW3 (Table 1).

The thickness of the unsaturated zone will vary as a function of the depth to water at the subject site. The thickness of the unsaturated zone at the subject site will vary both as a function of time due to seasonal water level fluctuations, and spatially across the site, due primarily to differences in topography, as shown on Plate 4. The thickness of the unsaturated zone on November 10, 1993 ranged from about 8 feet bgs in the vicinity of MW6 to about 15 feet bgs in MW1.

On September 28, 1993, the site monitoring wells (MW1 through MW6) were surveyed to mean-sea-level (msl) by a California licensed surveyor (the survey data is provided in Table 2, Attached B). Groundwater level measurements were recorded on July 9, August 10, October 8, and November 10, 1993. Groundwater level and groundwater elevation data are summarized in Table 1 (Attachment B). Groundwater elevation contours and flow directions for the July, August and October dates are shown on Plates 5, 6, and 7, respectively (Attachment A).

The groundwater flow direction for the July 9, 1993 was easterly (S80E). The groundwater gradient calculated for July 9, 1993 was approximately 0.018 feet per foot (ft/ft). The groundwater flow direction for August 8, 1993 was easterly (N70E). The groundwater gradient calculated for the August 8, 1993 monitoring event was approximately 0.005 ft/ft.

The October 8, 1993 groundwater level data from all 6 wells was used to generate a groundwater elevation and contour map showing the groundwater flow direction. The groundwater flow appears to be in two directions; southwesterly (S35W) near MW4 and westerly (S85W) near MW1 (see Plate 7). The groundwater gradient calculated for the October 8, 1993 event is approximately 0.05 ft/ft. The potentiometric surface for the

November 10, 1993 event is similar to that generated from the October 8, 1993 water level data. The groundwater gradient calculated for November 10, 1993 is approximately 0.09 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. The groundwater flow directions have varied significantly at the subject site from May 1992 until the present. These changes in groundwater flow direction could be a function of seasonal recharge to the strata supplying water to the wells. Additionally, the groundwater pumping associated with the groundwater remediation system at the former Chevron gas station located approximately 600 feet from the subject site on Birch Ct. and Oak Grove Ave. could effect groundwater flow at the subject site. A general seasonal trend in groundwater flow direction is observed for the May 1992 through November 1993 water level data and water elevation contours. Groundwater flow directions during early spring to summer, (February to July) are typically southeasterly. Groundwater flow directions during late summer to winter, (August through December) are typically southwesterly. Exceptions are seen for the April, June, and August, 1993 water level measurement events at which time the groundwater flow direction is northeasterly to easterly.

ANALYTICAL METHODS AND RESULTS

Soil Sample Analytical Methods and Results

Soil samples were analyzed for kerosene, motor oil range hydrocarbons, and TPH/d by EPA Test Method 3550/8015, TPH/g and BTEX, by EPA test methods 5030/8015 and 8020, respectively.

Soil Sample Analytical Results

A summary of the soil sample analytical results is presented on Table 3 (Attachment B) and the signed laboratory analytical reports and chain of custody records are included in Attachment C. The ranges of TPH/d, TPH/g, BTEX concentrations detected in the soil boring samples are discussed below.

Motor oil and kerosene-range hydrocarbons were not detected in any of the soil samples collected from MW4, MW5, MW6 and B1. TPH/d concentrations ranged from < 1.0 mg/kg to 9.9 mg/kg in the B1, 10-foot sample. TPH/g concentrations ranged from < 1.0 mg/kg to 900 mg/kg in the MW5 10-foot sample. Benzene concentrations ranged from < 0.005 mg/kg to 0.64 mg/kg in the MW5 10-foot sample. Toluene concentrations ranged from < 0.005 mg/kg to 0.19 in the B1, 10-foot sample. Ethyl benzene concentrations ranged from < 0.005 mg/kg to 12.0 mg/kg in the MW5, 10-foot sample. Total xylenes concentrations ranged from < 0.005 mg/kg to 38.0 mg/kg in the MW5, 10-foot sample.

Groundwater Sample Analytical Methods and Results

The groundwater samples were analyzed for TPH/d, kerosene and motor oil range hydrocarbons, TPH/g, and for BTEX. U.S. Environmental Protection Agency (EPA) Test Methods 3510/8015, 3510/8015, 5030/8015, and 602 were used for TPH/d, kerosene and motor oil range hydrocarbons, TPH/g, and BTEX analyses, respectively.

Groundwater Sample Analytical Results

Analytical data for groundwater samples collected from site monitoring wells to date are summarized in Table 4 (Attachment B). Motor oil and kerosene range hydrocarbons were not detected in any of the groundwater samples collected from the monitoring wells. TPH/d results were below the test method detection limit in all groundwater samples except the sample collected from MW2, where 110 ug/L TPH/d was detected (detection limit is 50 ug/L). MW1 sample results were all below the individual test method detection limits. The ranges of TPH/g and BTEX concentrations (October 8, 1993 sampling event) in samples from MW2, MW3, MW4, MW5, and MW6 are discussed below.

TPH/g concentrations in the groundwater samples ranged from 2,100 ug/L in MW6, to 56,000 ug/L in MW2. Benzene concentrations in the groundwater samples ranged from < 0.05 ug/L in MW4 to 4,000 ug/L in MW5. Toluene concentrations in the groundwater samples ranged from < 0.05 ug/L in MW4, and MW6 to 2,400 ug/L in MW2. Ethylbenzene concentrations in the groundwater samples ranged from 2.9 ug/L in MW4, to 2,900 ug/L in MW2. Total xylenes concentrations in the groundwater samples ranged from < 10.0 ug/L in MW3 to 12,000 ug/L in MW2.

EXTENT OF AFFECTED SOIL AND GROUNDWATER

Soil

The extent of soil contamination at the subject site, based on existing data appears to be limited to the unsaturated zone soils in the immediate vicinity of the former fuel tank and waste oil tank pits, and to a band of unsaturated zone soils between approximate depths of about 10 to 12 feet bgs (within the zone of groundwater fluctuation) in the vicinity of the following borings: MW2, MW3, MW4, MW5, MW6, B1, PC4, and PC8 (see Plate 2). In general, the relative concentration of TPH/d in soil at the subject site is low when compared to TPH/g and BTEX (see Plates 3 and 4, Table 2).

The greatest thickness of affected unsaturated zone soils appears to be in the vicinity of MW3, adjacent to the former fuel tank pit, where soils affected by gasoline constituents were identified between about 5 and 10.5 feet bgs (110 mg/Kg gasoline was detected at 10 feet in the MW3 boring). The extent of soil contamination in the vicinity of the gasoline tank pit appears to be limited horizontally by the MW6 boring, where no detectable petroleum hydrocarbon constituents were detected at a depth of 5 feet bgs, and 60 mg/Kg TPH/g was detected at a depth of 10 feet bgs; by the MW4 boring, where 1.0 mg/Kg TPH/g was detected at a depth of 10 feet, and by PC1 located in Chabot Road where no detectable hydrocarbons were encountered.

Additionally, unsaturated zone soils have been affected by gasoline constituents and minor diesel in the vicinity of MW2, between depths of about 10 and 13 feet bgs.

Groundwater

The extent of affected groundwater, based on analytical data for the October 8, 1993 monitoring event is shown on Plate 8, Attachment A. As shown on Plate 8 and on Table 3, the highest concentrations of gasoline were detected in monitoring wells MW2 and MW5, near the southern portions of the site, south of the former waste oil tank. Relatively high concentrations of gasoline constituents were detected in monitoring wells MW3, MW6, and MW4, in order of decreasing TPH/g concentration. Diesel range hydrocarbons were reportedly detected in MW2 and MW3, however, according to the analytical laboratory, the hydrocarbons appear to be lighter than diesel. No diesel was

detected in the other monitoring wells in the October 8, 1993 groundwater samples, including samples from MW1.

Based on existing data, it appears that the gasoline plume extends from the northern end of the former gasoline tank pit west-northwesterly towards the former waste oil tanks and on to the Dreyer's Grand Ice Cream property west of the former waste oil tank pit. The extent of groundwater contamination appears to be limited to the north by the analytical results from PC9, and to the south by borings PC1, PC3, PC4, PC5, and PC6, where no petroleum hydrocarbon constituents were detected in grab groundwater samples. The extent of gasoline contamination in groundwater has not been defined in the vicinity of MW6 and west of MW5. Although low concentrations of gasoline constituents were detected in the 12.5 foot soil sample collected from PC4, no petroleum hydrocarbons were detected in the groundwater grab sample from PC4.

A grab groundwater sample was not collected from boring B1, located midway between the two former tank pits (see Plate 8), due to the absence of appreciable groundwater following drilling. Based on the presence of significant soil contamination between depths of 10 and 12 feet bgs in this boring and on the slow recovery of monitoring wells and the consistent water levels in wells at the site, it is likely that a monitoring well at this location would yield groundwater, and that the groundwater would contain petroleum hydrocarbons based on the concentrations of gasoline constituents detected in soils at this location.

It is currently unknown whether the former gasoline and diesel tank pit was the main source for gasoline detected in groundwater at the subject site, or whether the waste oil tank pit has contributed to the gasoline plume. Based on the analytical results for soil samples collected from boring B1 and MW4, the affected groundwater should be treated as one plume from a remediation standpoint.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

A review of records at the RWQCB yielded no sites within a 0.5 mile radius of the subject site on the North Bay Toxics List, and a total of eight sites located within a 0.5

mile radius of the subject site on the L.U.S.T. List. Two of the eight sites, the Shell and Chevron service stations, are located within several blocks of the subject site. The former Chevron service station appears to be down or cross gradient to the subject site. The Shell service station appears to be generally upgradient of the subject site. The presence of historic low levels of TPH/d and benzene in MW1 groundwater samples may be related to the affected groundwater at the Shell facility. Significant groundwater contamination from petroleum hydrocarbons has been detected at both sites.

Based on the two cross sections presented herein the fill/native soil contact is 0.5 to 7 feet bgs. The fill is predominantly underlain by clay or sandy clay/clayey sand to the bottom of the borings (25 to 30 feet bgs). The sediments appear to be coarser grained in the southern portions of the subject site, in the vicinity of Chabot Road, where sand and gravel are encountered between depths of about 5 feet and 15 feet bgs.

Static groundwater levels beneath the subject site ranged from about 8 to 15 feet bgs based on November 10, 1993 water level measurements. Significant changes in groundwater levels have been observed and are attributed to seasonal fluctuations in precipitation and resultant recharge to the first water bearing zone. The groundwater flow direction and gradient have changed through time at the subject site. In general, the direction of groundwater flow appears to be southeasterly in the early spring to summer, and southwesterly from late summer to winter. Future groundwater level measurements utilizing all 6 monitoring wells should enable determination of predominant groundwater flow directions beneath the subject site.

The extent of soil contamination at the subject site, based on existing data appears to be limited to the unsaturated zone soils in the immediate vicinity of the former fuel tank and waste oil tank pits, and to a band of unsaturated zone soils between approximate depths of about 10 to 12 feet bgs (within the zone of groundwater fluctuation) in the vicinity of the following borings: MW2, MW3, MW4, MW5, MW6, B1, PC4, and PC8. The greatest thickness of affected unsaturated zone appears to be in the vicinity of MW3. In general, the relative concentration of TPH/d in soil at the subject site is low when compared to TPH/g and BTEX.

Petroleum hydrocarbon compounds were detected in groundwater samples from monitoring wells MW2, MW3, MW4, MW5, and MW6. The two wells with the highest concentrations of TPH/g and BTEX are MW2 and MW5. The PC and groundwater

water samples results were all below the method detection limits. Based on these non-detect results, these PC boring locations appear (as of February and March 1993) to define the limits of the affected groundwater southwest of the former underground gasoline and diesel tank pit and both north and south of the former waste oil tank pit (see Plate 8). The extent of the petroleum hydrocarbon constituents in groundwater west of MW5 and in the vicinity of MW6 has not been defined.

Recommendations

Based on existing data, CET recommends that the following additional characterization work be performed at the subject site:

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. The presence of various buildings may limit placement of a monitoring well immediately west of MW5 on Dreyer's Grand Ice Cream property. CET recommends that one well be placed in the parking lot of the adjacent parcel (Yoshi'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. Due to the presence of deep utility trenches in this vicinity and the presence of active commercial businesses, care must be taken regarding the actual placement of the well, if feasible.

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. Similarly, vapor extraction has proven to be effective in removal of volatile petroleum hydrocarbon compounds from groundwater, particularly when used in combination with sparging (or the injection of air and/or nutrients below the groundwater table to enhance volatilization). The effectiveness of vapor extraction is highly dependant on the permeability of the affected soils to vapor migration. Based on existing hydrogeologic information, the permeability of site soils is likely to be low. Due to the typical low cost

DRAFT

of vapor extraction when compared with other remedial alternatives, CET recommends that this alternative be evaluated.

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. The vacuum blower or ICE unit will be connected to existing wells including MW2 and MW3 and vapors would be extracted over a two-day period. Vacuum pressure in nearby wells (monitoring wells MW4, MW5 and MW6) will be monitored using pressure gages installed at observation well heads. Air flow rate and extracted constituent concentrations will be monitored. Periodic Tedlar bag gas samples will be collected from a sampling port in the vapor extraction line and analyzed by a California DHS certified analytical laboratory for TPH/g and BTEX constituents. A minimum of four gas samples, two per day, will be collected and submitted for analysis. In addition, two groundwater samples will be collected and analyzed prior to the vapor extraction pilot test.

CET recommends that monthly groundwater level measurements be recorded for the first and second quarters 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.

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 Attachment D.

Please call if you have any questions regarding this quarterly report.

Sincerely,

C.E.T. Environmental Services Inc.

DRAFT

John A. McHugh
Hydrogeologist

DRAFT

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

DRAFT

Terrance E. Carter
Senior Environmental Engineer
Project Manager

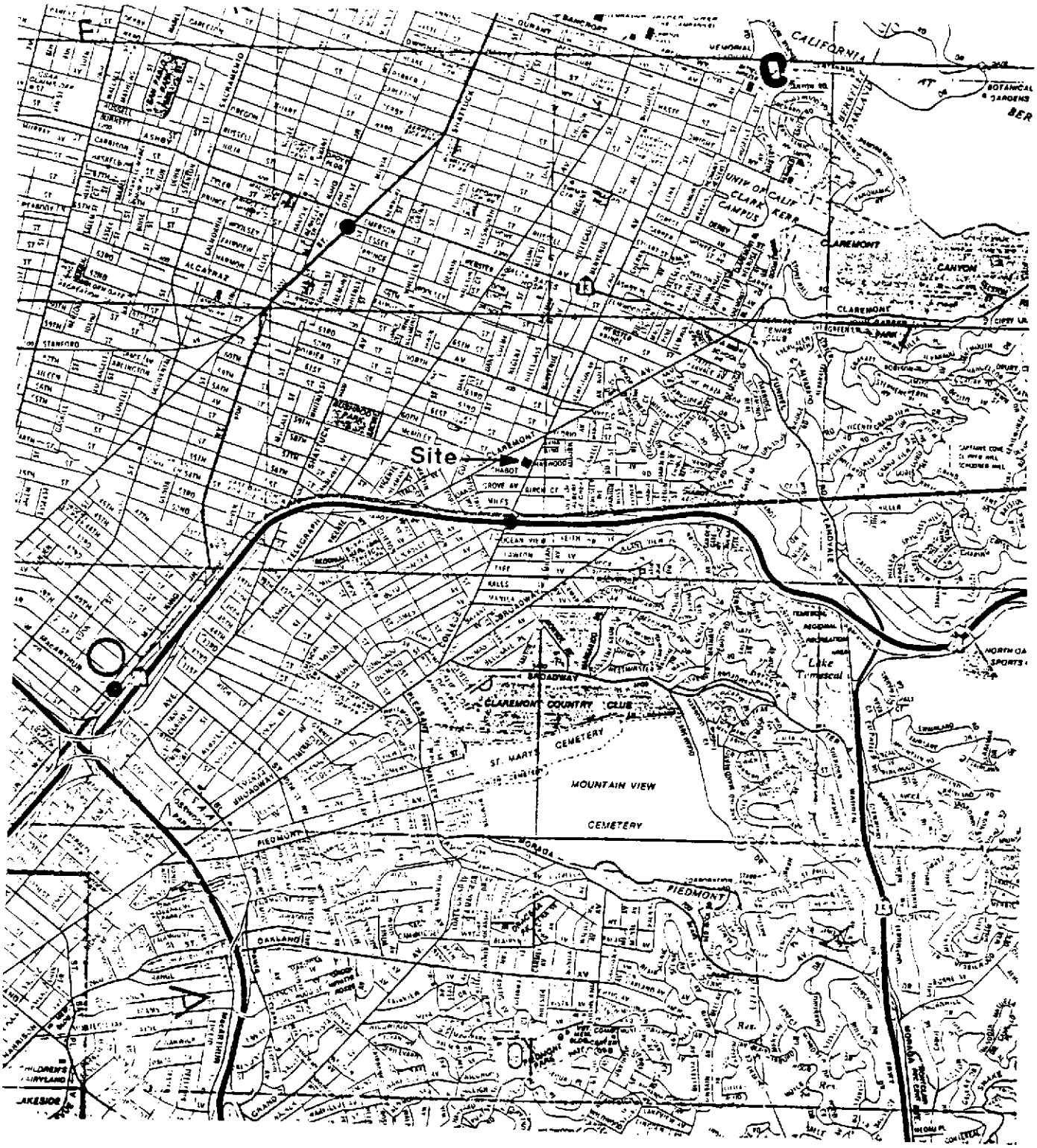
JAM/MRL/TEC/:kaa

Attachments

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

ATTACHMENT A

Plates



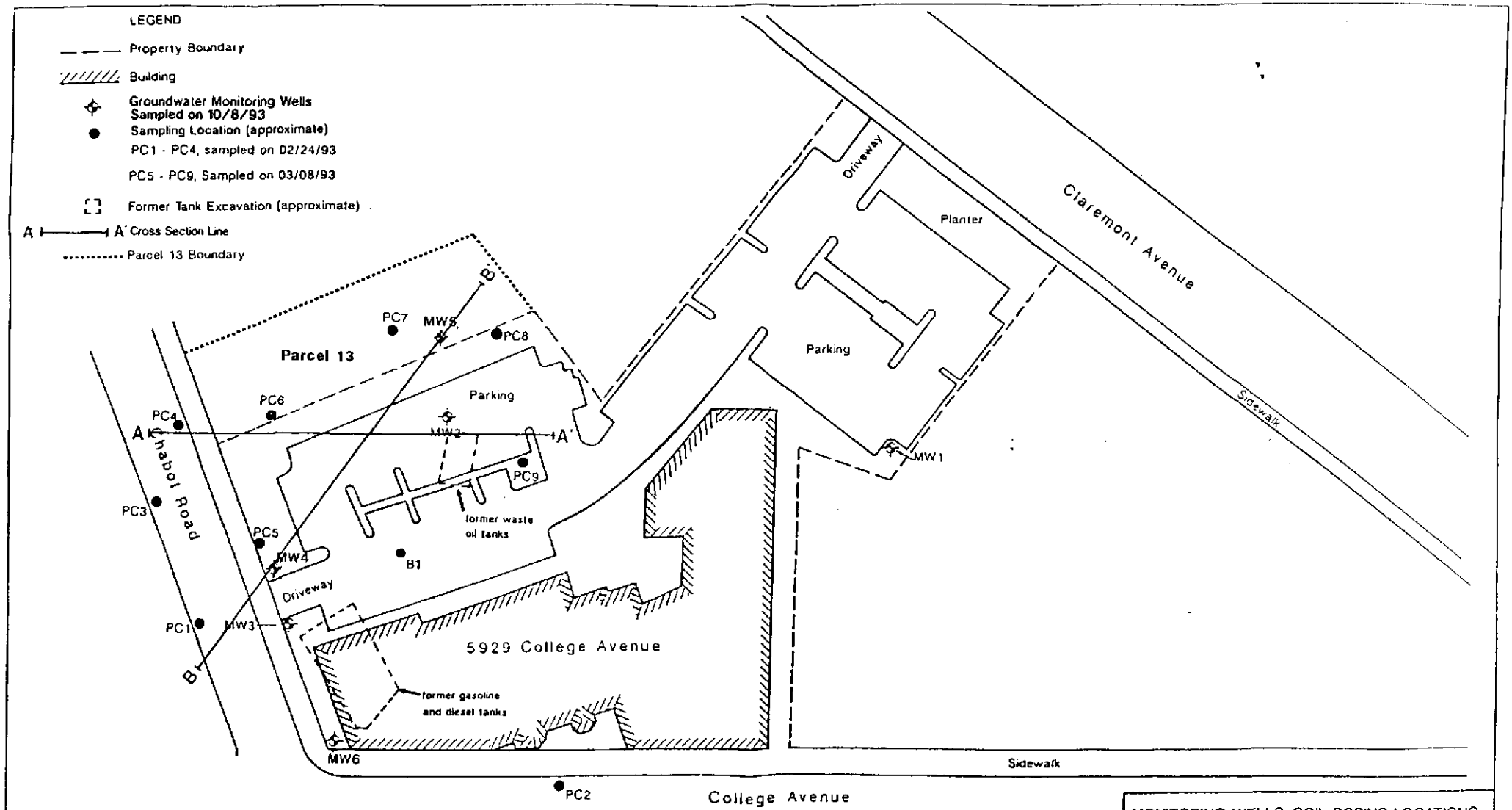
Site Location

5929 College Ave., Oakland, CA

CET Environmental Services, Inc.

Dreyer's Grand Ice Cream, Inc.

JOB NUMBER	DATE	PLATE
3534	11/93	1



MONITORING WELLS, SOIL BORING LOCATIONS, AND CROSS SECTION LINES

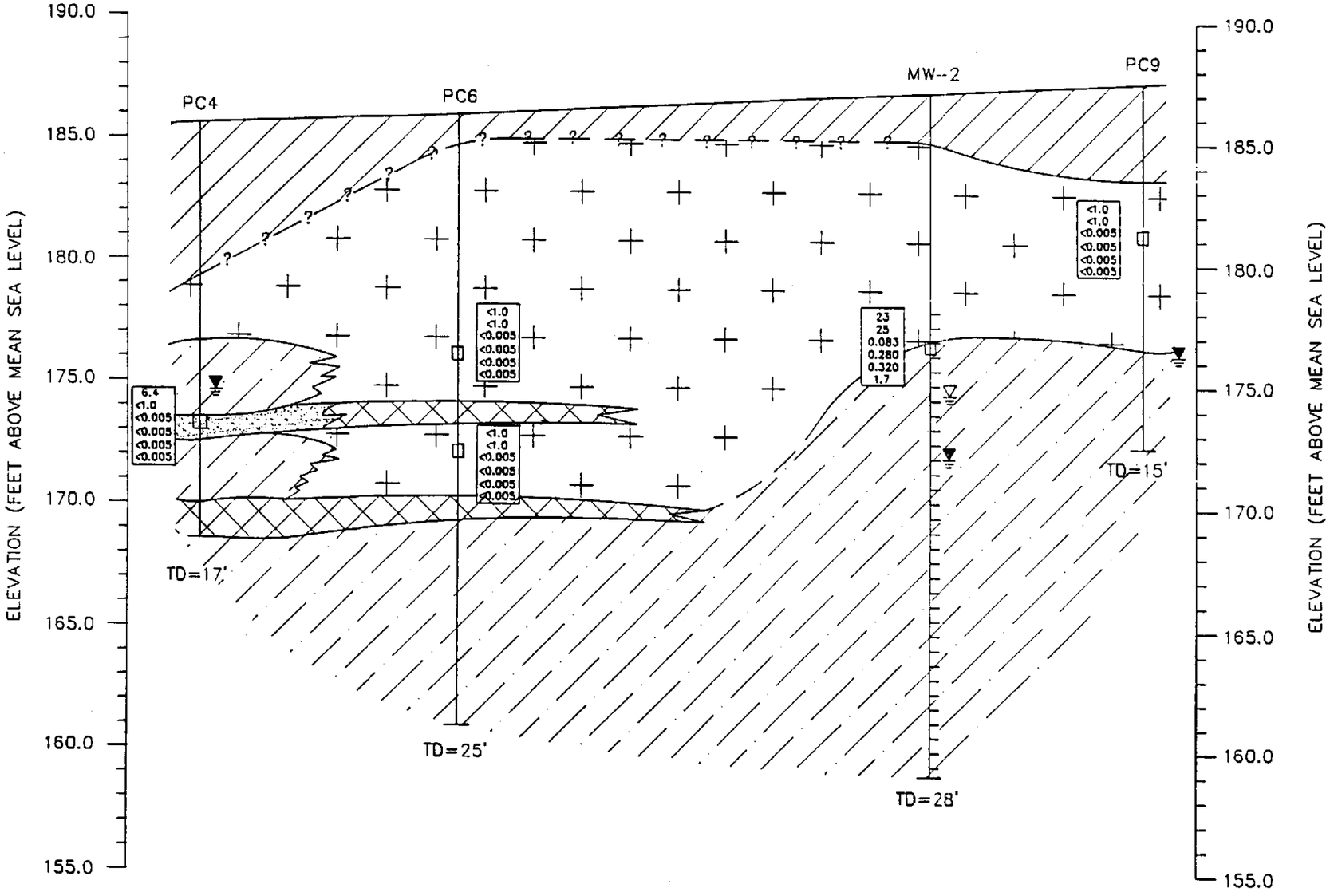
CET Environmental Services, Inc.

Dreyer's Grand Ice Cream, Inc.

JOB NUMBER	DATE	PLATE
3534	11/93	2

A (SOUTH)

A' (NORTH)



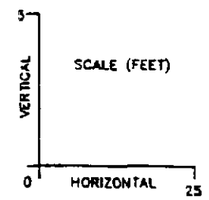
LEGEND:

- GROUNDWATER LEVEL FIRST ENCOUNTERED DURING DRILLING
- (IF NOT ON LOG, THE BORING WAS DRY)
- EQUILIBRATED DEPTH TO GROUNDWATER MEASURED ON 11/10/93

SOIL ANALYTICAL RESULTS (mg/kg)

23	TPH/DIESEL
25	TPH/GASOLINE
0.083	BENZENE
0.280	TOLUENE
0.320	ETHYLBENZENE
1.7	TOTAL XYLENES

- WELL SCREEN INTERVAL
- ANALYTICAL SAMPLE LOCATION
- TD=27' TOTAL DEPTH=27 FEET
- FILL
- CLAY
- SANDY CLAY TO CLAYEY SAND
- SAND
- CLAYEY GRAVEL TO GRAVEL



X5 VERTICAL EXAGERATION

CET Environmental Services, Inc.

DRAWING: 3534XAA

PROJECT NO. 3534

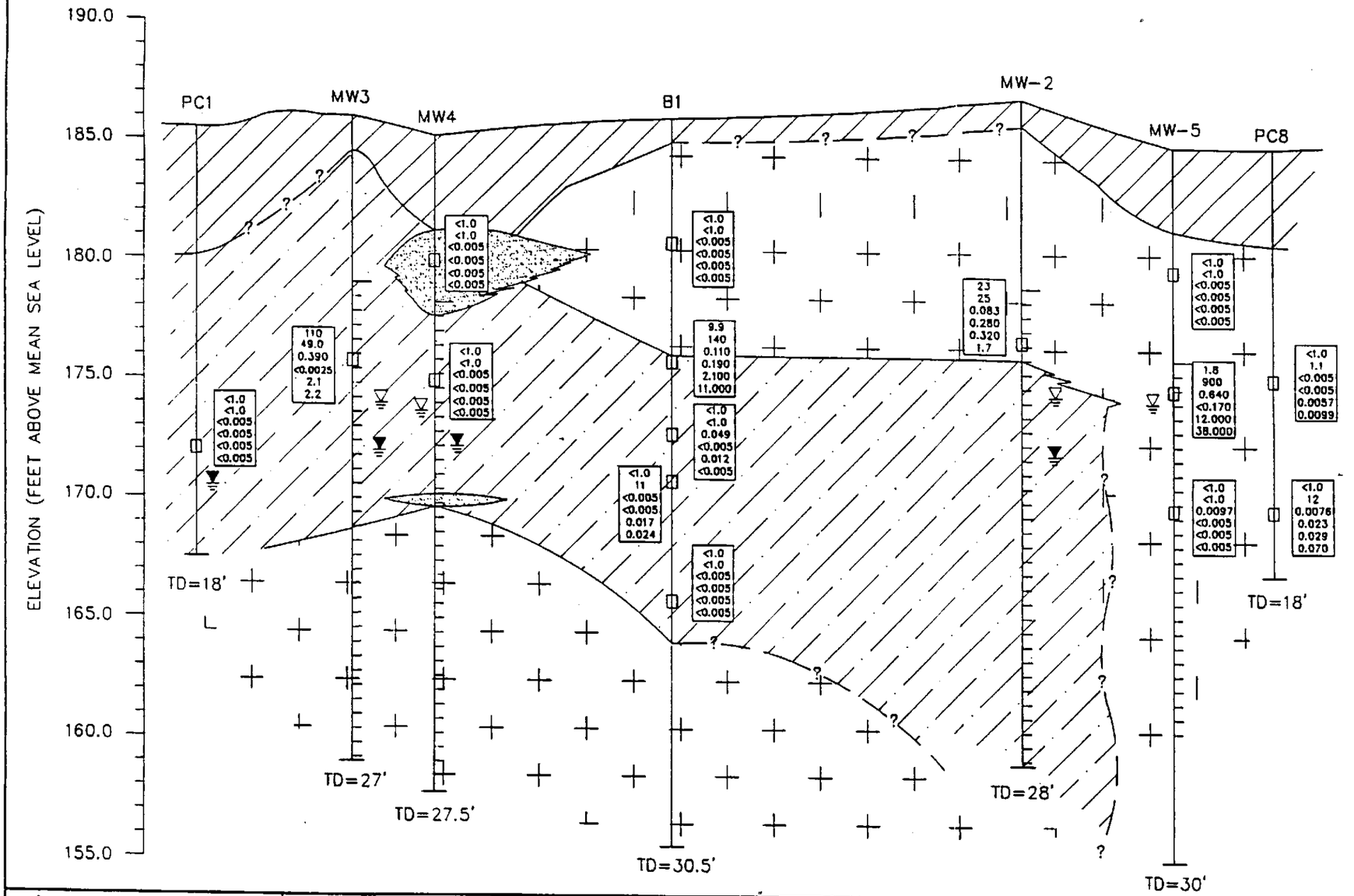
HYDROGEOLOGIC CROSS SECTION A–A'

DREYERS GRAND ICE CREAM
5929 COLLEGE AVENUE
OAKLAND, CALIFORNIA
DATE: 11–19–93

PLATE 3

B (SOUTHEAST)

B' (NORTHWEST)



LEGEND:

- GROUNDWATER LEVEL FIRST ENCOUNTERED DURING DRILLING
- (IF NOT ON LOG, THE BORING WAS DRY)
- EQUILIBRATED DEPTH TO GROUNDWATER MEASURED ON 11/10/93

SOIL ANALYTICAL RESULTS (mg/kg)

<1.0	TPH/DIESEL
1.1	TPH/GASOLINE
<0.005	BENZENE
<0.005	TOLUENE
0.0057	ETHYLBENZENE
0.0099	TOTAL XYLENES

- WELL SCREEN INTERVAL
- ANALYTICAL SAMPLE LOCATION
- TD=27' TOTAL DEPTH=27 FEET
- FILL
- CLAY
- SANDY CLAY TO CLAYEY SAND
- SAND

SCALE (FEET): VERTICAL 5, HORIZONTAL 0 25

XS VERTICAL EXAGERATION

CET Environmental Services, Inc.

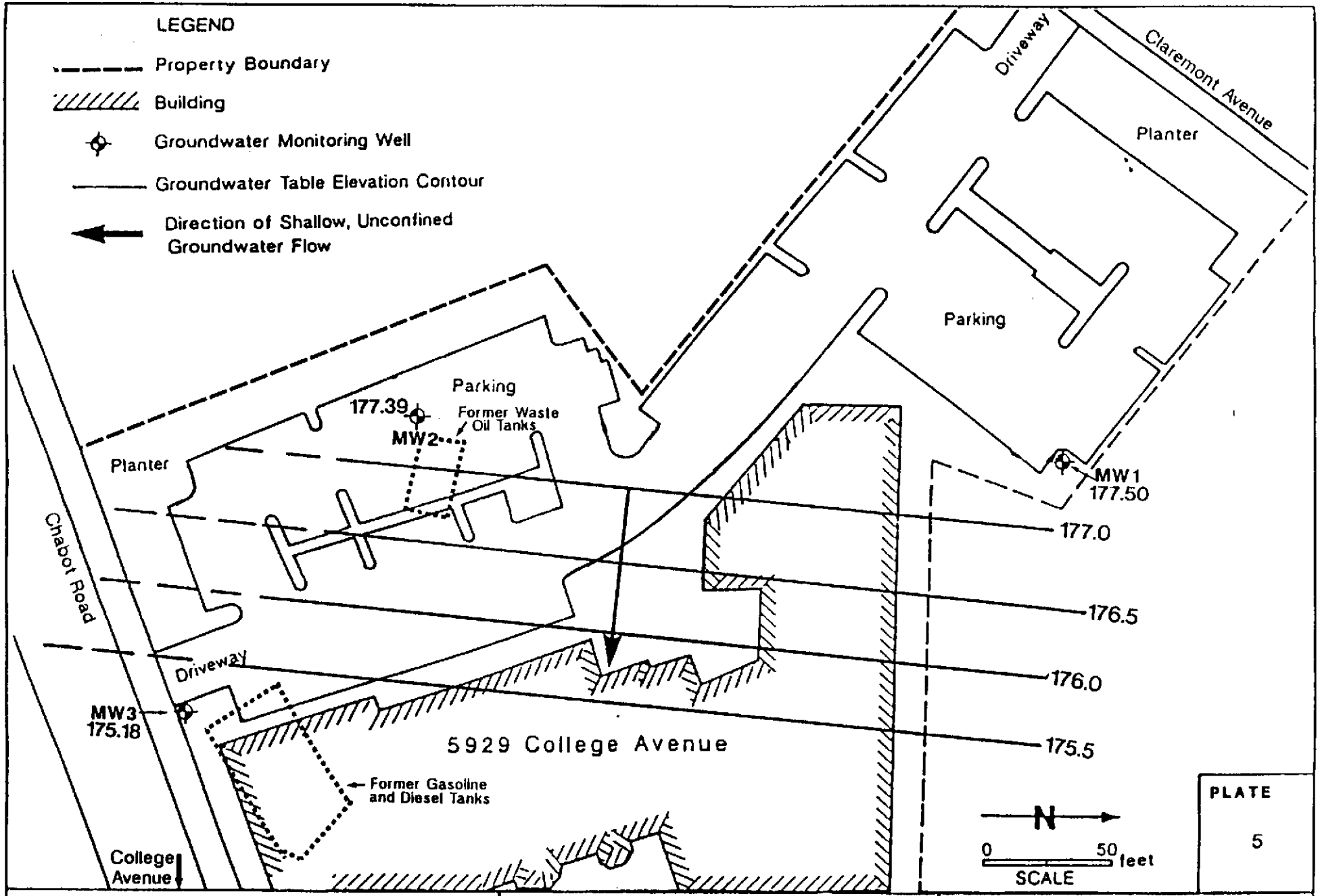
DRAWING: 3534XBB

PROJECT NO. 3534

HYDROGEOLOGIC CROSS SECTION B–B'

DREYERS GRAND ICE CREAM
5929 COLLEGE AVENUE
OAKLAND, CALIFORNIA
DATE: 11–19–93

PLATE 4

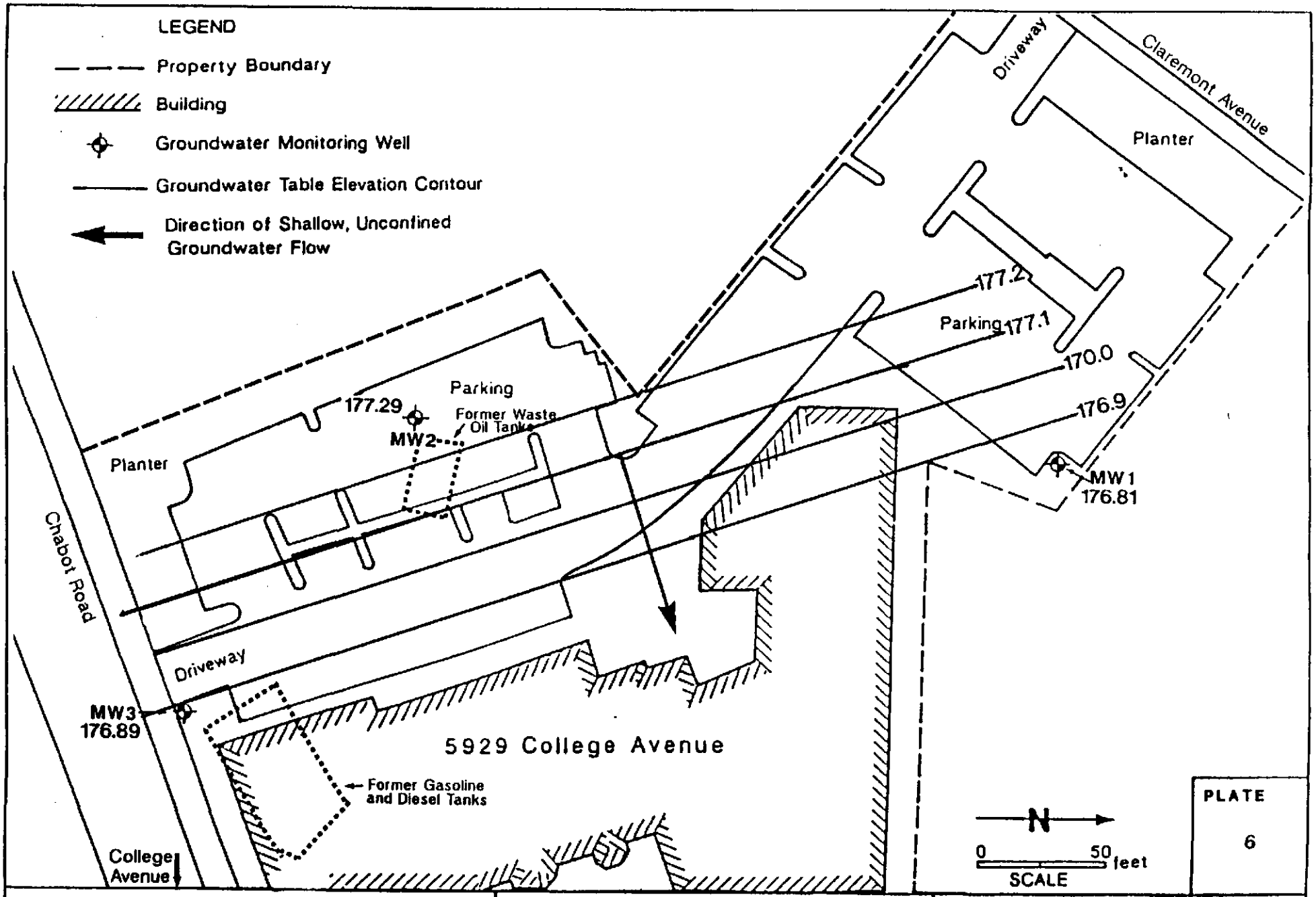


CET Environmental Services, Inc.

Groundwater Elevations and Contours
07/09/93
5929 College Ave., Oakland, CA

Dreyer's Grand Ice Cream, Inc.

JOB NUMBER	DATE
3534	11/93



CET Environmental Services, Inc.

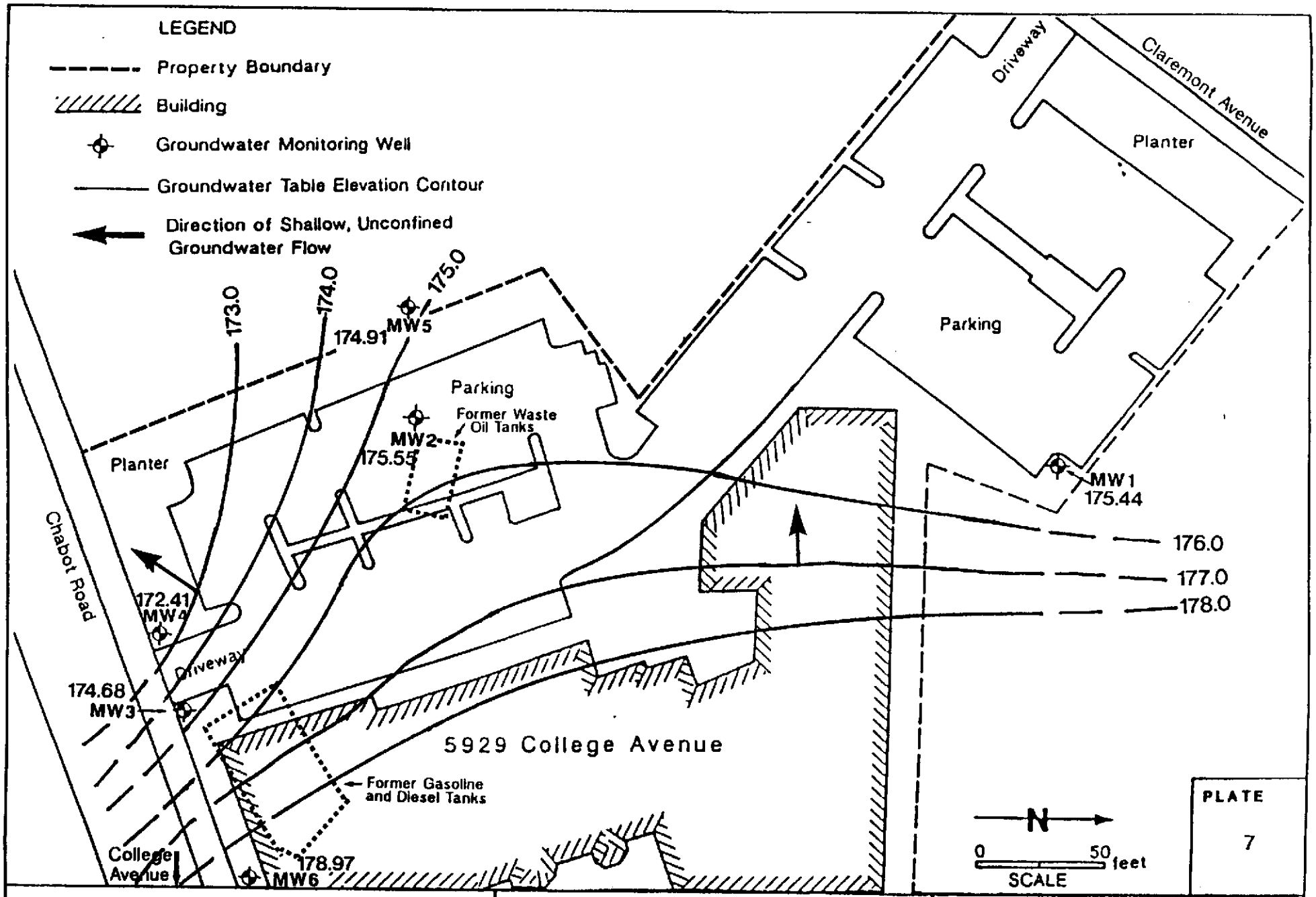
Groundwater Elevations and Contours

08/10/93

5929 College Ave., Oakland, CA

Dreyer's Grand Ice Cream, Inc.

JOB NUMBER	DATE
3534	11/93



CET Environmental Services, Inc.

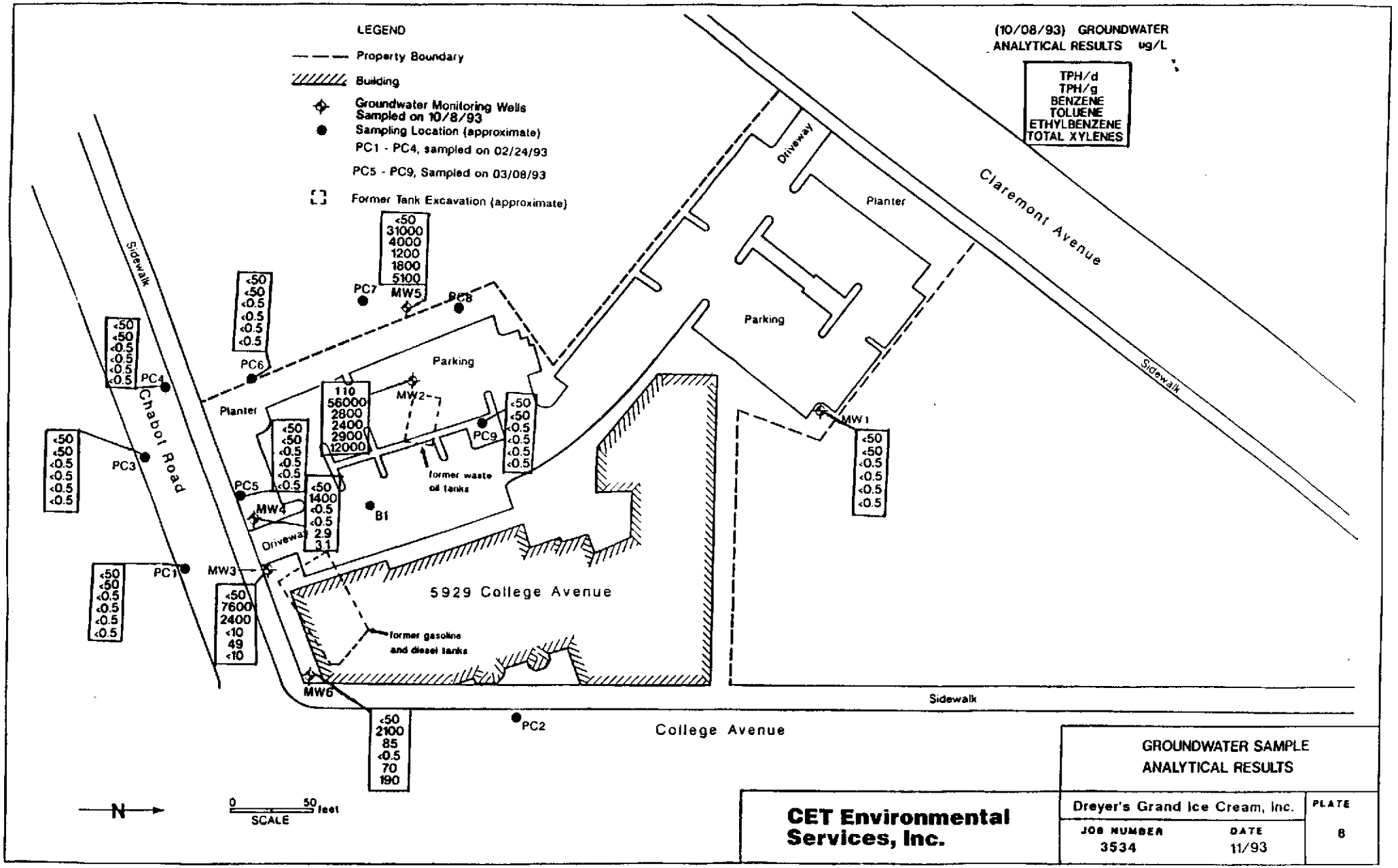
Groundwater Elevations and Contours

10/08/93

5929 College Ave., Oakland, CA

Dreyer's Grand Ice Cream, Inc.

JOB NUMBER	DATE
3534	11/93



CET Environmental Services, Inc.

GROUNDWATER SAMPLE ANALYTICAL RESULTS

Dreyer's Grand Ice Cream, Inc.

JOB NUMBER	DATE	PLATE
3534	11/93	8

ATTACHMENT B

Tables

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
	182.22[d]	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	172.09
		06/02/93	10.82	171.40
	189.12[e]	07/09/93	11.62	177.50
		08/10/93	12.31	176.81
		10/08/93	13.68	175.44
		11/10/93	14.72	174.40
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

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)
		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
	185.84[d]	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	176.89
		06/02/93	9.10	176.74
	185.74[e]	07/09/93	8.35	177.39
		08/10/93	8.45	177.29
		10/08/93	10.19	175.55
		11/10/93	11.15	174.59
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

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)
		11/20/92	10.58	174.10
		12/03/92	10.12	174.56
	185.29[d]	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	175.07
		06/02/93	10.73	174.56
	185.21[e]	07/09/93	10.03	175.18
		08/10/93	8.32	176.89
		10/08/93	10.53	174.68
		11/10/93	11.22	173.99
MW4	184.74[e]	10/07/93	12.27	172.47
		11/10/93	11.14	173.60
MW5	184.75[e]	10/08/93	9.84	174.91
		11/10/93	10.53	174.22
MW6	187.20[e]	10/07/93	8.23	178.97
		11/10/93	7.74	179.46

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
e. Top of casing surveyed by a California licensed surveyor on September 28, 1993.

CET-3534/DK2/TBL-1

Table 2
Well Survey Data
Dreyer's Grand Ice Cream
5929 College Avenue, Oakland, California

Well #	Lid	Top/PVC	Elevation
MW-1	190.23	189.12	Top/2" Rim
MW-2	186.90	185.74	Top/4" Rim
MW-3	186.14	185.21	Top/4" Rim
MW-4	185.33	184.74	Top/2" Rim
MW-5	185.09	184.75	Top/2" Rim
MW-6	187.50	187.20	Top/4" Rim

Bechmark - Standard brass disc in monument casing at the northeast corner of Chabot Road and College Avenue.

Elevation = 186.532 feet mean sea level.

Table 3

Chemical Data Summary - Soil
Dreyer's Grand Ice Cream, Inc.
5929 College Avenue, Oakland, California

Sample I.D.	Sample Depth (feet)[a]	TPH/g[c] (mg/Kg)[b]	Benzene (mg/Kg)	Toluene (mg/Kg)	Ethyl Benzene (mg/Kg)	Total Xylenes (mg/Kg)	Kerosene (mg/Kg)	TPH/d[d] (mg/Kg)	Motor Oil (mg/Kg)
MW4-5	5	<1.0	<0.005	<0.005	<0.005	<0.005	<1.0	<1.0	<10
MW4-10	10	1.0	<0.005	<0.005	<0.005	<0.005	<1.0	<1.0	<10
MW5-5	5	<1.0	<0.005	<0.005	<0.005	<0.005	<1.0	<1.0	<10
MW5-10	10	900	0.64	<0.170	12.0	38.0	<1.0	1.8	<10
MW5-15	15	<1.0	0.0097	<0.005	<0.005	<0.005	<1.0	<1.0	<10
MW6-5	5	<1.0	<0.005	<0.005	<0.005	<0.005	<1.0	<1.0	<10
MW6-10	10	60	<0.035	<0.035	0.60	0.200	<1.0	4.4	<10
MW6-15	15	<1.0	<0.005	<0.005	<0.005	<0.005	<1.0	<1.0	<10
B1-5	5	<1.0	<0.005	<0.005	<0.005	<0.005	<1.0	<1.0	<10
B1-10	10	140	0.11	0.19	2.1	11	<1.0	9.9	<10
B1-13	13	<1.0	0.049	<0.005	0.012	<0.005	<1.0	<1.0	<10
B1-15	15	11	<0.005	<0.005	0.017	0.024	<1.0	<1.0	<10
B1-20	20	<1.0	<0.005	<0.005	<0.005	<0.005	<1.0	<1.0	<10

a. Depth of sample collection below grade
b. mg/Kg = milligrams per kilogram, equal to parts per million (ppm)
c. TPH/g = total petroleum hydrocarbons as gasoline
d. TPH/d = total petroleum hydrocarbons as diesel

Table 4

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]	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
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
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
MW4	10/08/93	<50	1,400	<0.5	<0.5	2.9	3.1	<50	<50
MW5	10/08/93	<50	31,000	4,000	1,200	1,800	5,100	<50	<50
MW6	10/08/93	<50	2,100	85	<0.5	70	190	<50	<50

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

ATTACHMENT C

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

CHROMALAB, INC.

Environmental Laboratory (1094)

RECEIVED NOV 1 1993

5 DAYS TURNAROUND

October 22, 1993 ChromaLab File No.: 9310109

CET ENVIRONMENTAL SERVICES, INC

Attn: Mark Lafferty

RE: Six water samples for Gasoline and BTEX analysis

Project Name: DREYERS-OAKLAND
Project Number: 3534-209
Date Sampled: October 8, 1993 Date Submitted: October 11, 1993
Date Analyzed: October 12, 1993

RESULTS:

Sample I.D.	Gasoline (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl Benzene (µg/L)	Total Xylenes (µg/L)
MW 1	N.D.	N.D.	N.D.	N.D.	N.D.
MW 2	56000	2800	2400	2900	12000
MW 3	7600	2400	N.D.*	49	N.D.*
MW 4	1400	N.D.	N.D.	2.9	3.1
MW 5	31000	4000	1200	1800	5100
MW 6	2100	85	N.D.	70	190
BLANK	N.D.	N.D.	N.D.	N.D.	N.D.
SPIKE RECOVERY	98%	95%	99%	101%	99%
DUP SPIKE RECOVERY	----	92%	100%	102%	101%
DETECTION LIMIT	50	0.5	0.5	0.5	0.5
METHOD OF ANALYSIS	5030/8015	602	602	602	602

* Detection limit = 10 ug/l due to dilution needed

ChromaLab, Inc.

Jack Kelly
Analytical Chemist

Eric Tam
Laboratory Director

jm

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

October 18, 1993 ChromaLab File No.: 9310109

CET ENVIRONMENTAL SERVICES,INC

Attn: Mark Lafferty

RE: Six water samples for TEPH analysis

Project Name: DREYERS-OAKLAND
Project Number: 3534-209
Date Sampled: October 8, 1993 Date Submitted: October 11,1993
Date Extracted: October 13, 1993 Date Analyzed: October 13, 1993

RESULTS:

Sample I.D.	Kerosene (µg/L)	Diesel (µg/L)	Motor Oil (mg/L)
MW1	N.D.	N.D.	N.D.
MW2	N.D.	110	N.D.
MW3	N.D.	N.D.	N.D.
MW4	N.D.	N.D.	N.D.
MW5	N.D.	N.D.	N.D.
MW6	N.D.	N.D.	N.D.
BLANK	N.D.	N.D.	N.D.
SPIKE RECOVERY	----	103%	----
DUP SPIKE RECOVERY	----	99%	----
DETECTION LIMIT	50	50	0.5
METHOD OF ANALYSIS	3510/8015	3510/8015	3510/8015

ChromaLab, Inc.

Alex Tam
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.

DOHS 1094

2: SDG #: 9310109
CLIENT: CET
DUE: 10/25/93
REF: 13644

Chain of Custody

DATE 10/8/93 PAGE 1 OF 1

PROJ MGR: Mark Lafferty
COMPANY: CET Enviro. Serv.
ADDRESS: Walnut Cr Office

SAMPLERS (SIGNATURE): J Long
(PHONE NO.): 934-4884

ANALYSIS REPORT

SAMPLE ID.	DATE	TIME	MATRIX	PRESERV.	TPH - Gasoline (EPA 5030, 8015)	TPH - Gasoline (5030, 8015) w/BTEX (EPA 602, 8020)	TPH - Diesel TEPH (EPA 3510/3550, 8015)	PURGEABLE AROMATICS BTEX (EPA 602, 8020)	PURGEABLE HALOCARBONS (EPA 601, 8010)	VOLATILE ORGANICS (EPA 624, 8240, 524.2)	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
MW1	10/8/93	10:40	H_2O	HCl		X	X																		4
MW2	"	11:25	"	"		X	X																		4
MW3	"	12:00	"	"		X	X																		4
MW4	"	12:45	"	"		X	X																		4
MW5	"	13:15	"	"		X	X																		4
MW6	"	13:50	"	"		X	X																		4

PROJECT INFORMATION

PROJECT NAME: Dreyers - Oakland
PROJECT NUMBER: 3534-209
P.O. #:

SAMPLE RECEIPT

TOTAL NO. OF CONTAINERS	24
HEAD SPACE	
REC'D GOOD CONDITION/COLD	
CONFORMS TO RECORD	

TAT	STANDARD 5-DAY			24	48	72	OTHER

SPECIAL INSTRUCTIONS/COMMENTS:
TEPH for EPA 8015
10-day TAT

RELINQUISHED BY 1.	RELINQUISHED BY 2.	RELINQUISHED BY 3
(SIGNATURE) Jaysen Long (TIME) 10:25	(SIGNATURE) (TIME)	(SIGNATURE) (TIME)
(PRINTED NAME) Jaysen Long (DATE) 10/11/93	(PRINTED NAME) (DATE)	(PRINTED NAME) (DATE)
(COMPANY) CET	(COMPANY)	(COMPANY)
RECEIVED BY 1	**RECEIVED BY 2.**	**RECEIVED BY (LABORATORY) 3**
(SIGNATURE) (TIME)	(SIGNATURE) (TIME)	(SIGNATURE) (TIME)
(PRINTED NAME) (DATE)	(PRINTED NAME) (DATE)	(PRINTED NAME) (DATE)
(COMPANY)	(COMPANY)	(LAB)

CHROMALAB, INC.

Environmental Laboratory (1094)

5 DAYS TURNAROUND

September 27, 1993 ChromaLab File No.: 9309277

CET ENVIRONMENTAL SERVICES,INC

Attn: Mark Lafferty

RE: Thirteen soil samples for TEPH analysis

Project Name: DREYER'S OAKLAND
Project Number: 3534-206
Date Sampled: September 21, 1993 Date Submitted: September 21, 1993
Date Extracted: September 23, 1993 Date Analyzed: September 23, 1993

RESULTS:

Sample I.D.	Kerosene (mg/Kg)	Diesel (mg/Kg)	Motor Oil (mg/Kg)
MW4-5	N.D.	N.D.	N.D.
MW4-10	N.D.	N.D.	N.D.
MW5-5	N.D.	N.D.	N.D.
MW5-10	N.D.	1.8	N.D.
MW5-15	N.D.	N.D.	N.D.
MW6-5	N.D.	N.D.	N.D.
MW6-10	N.D.	4.4	N.D.
MW6-15	N.D.	N.D.	N.D.
B1-5	N.D.	N.D.	N.D.
B1-10	N.D.	9.9	N.D.
B1-13	N.D.	N.D.	N.D.
B1-15	N.D.	N.D.	N.D.
B1-20	N.D.	N.D.	N.D.
BLANK	N.D.	N.D.	N.D.
SPIKE RECOVERY	---	88%	---
DUP SPIKE RECOVERY	---	89%	---
DETECTION LIMIT	1.0	1.0	10
METHOD OF ANALYSIS	3550/8015	3550/8015	3550/8015

ChromaLab, Inc.

Alex Tam
Analytical Chemist

Eric Tam
Laboratory Director

jm

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

October 5, 1993

ChromaLab File No.: 9309277
(REVISED 11/10/93)

CET ENVIRONMENTAL SERVICES,INC

Attn: Mark Lafferty

RE: Thirteen soil samples for Gasoline and BTEX analysis

Project Name: DREYER'S OAKLAND
Project Number: 3534-206
Date Sampled: Sept. 21, 1993 Date Submitted: Sept. 21, 1993
Date Analyzed: Sept. 24, 1993

RESULTS:

Sample I.D.	Gasoline (mg/Kg)	Benzene (µg/Kg)	Toluene (µg/Kg)	Ethyl Benzene (µg/Kg)	Total Xylenes (µg/Kg)
MW4-5	N.D.	N.D.	N.D.	N.D.	N.D.
MW4-10	1.0	N.D.	N.D.	N.D.	N.D.
MW5-5	N.D.	N.D.	N.D.	N.D.	N.D.
MW5-10	900	640	N.D.*	12000	38000
MW5-15	N.D.	9.7	N.D.	N.D.	N.D.
MW6-5	N.D.	N.D.	N.D.	N.D.	N.D.
MW6-10	60	N.D.**	N.D.**	600	200
MW6-15	N.D.	N.D.	N.D.	N.D.	N.D.
B1-5	N.D.	N.D.	N.D.	N.D.	N.D.
B1-10	140	110	190	2100	11000
B1-13	N.D.	49	N.D.	12	N.D.
B1-15	11	N.D.	N.D.	17	24
B1-20	N.D.	N.D.	N.D.	N.D.	N.D.
BLANK	N.D.	N.D.	N.D.	N.D.	N.D.
SPIKE RECOVERY	98%	104%	106%	106%	104%
DUP SPIKE RECOVERY	----	103%	113%	106%	104%
DETECTION LIMIT	1.0	5.0	5.0	5.0	5.0
METHOD OF ANALYSIS	5030/8015	8020	8020	8020	8020

* Detection Limit = 170 µg/Kg due to dilution needed.
**Detection Limit = 35 µg/Kg due to dilution needed.

ChromaLab, Inc.

Jack Kelly
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

9309277

CHROMALAB, INC.

DOHS 1094

2239 Omega Road, #1 • San Ramon, California 94583
510/831-1788 • Facsimile 510/831-8798

Chain of Custody

DATE 9-20-93 PAGE 4 OF 4

PROJ MGR Mark Lafferty
COMPANY CET Env. Services
ADDRESS Walnut Creek office

SAMPLERS (SIGNATURE) (PHONE NO.)
S. Te 934-4884

SAMPLE ID.	DATE	TIME	MATRIX	PRESERV.	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, 524.2)	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
B1-5	9-20-93	11:05	Soil	ice		X	X																		1
B1-10	9-20-93	11:15	Soil	ice		X	X																		1
B1-13	9-20-93	11:20	Soil	ice		X	X																		1
B1-15	9-20-93	11:25	Soil	ice		X	X																		1
B1-20	9-20-93	11:30	Soil	ice		X	X																		1
B1-25	9-20-93	11:35	Soil	ice				Hold																	1
B1-30	9-20-93	11:40	Soil	ice				Hold																	1

PROJECT INFORMATION

PROJECT NAME: Dreyer's Oakland
PROJECT NUMBER: 3551-206
P.O. # TC666

TAT: STANDARD 5-DAY (10-Day) | 24 | 48 | 72 | OTHER

SPECIAL INSTRUCTIONS/COMMENTS:
10-Day TAT

SAMPLE RECEIPT

TOTAL NO. OF CONTAINERS	19
HEAD SPACE	
REC'D GOOD CONDITION/COLD	
CONFORMS TO RECORD	

RELINQUISHED BY	1.	RELINQUISHED BY	2.	RELINQUISHED BY	3
(SIGNATURE) S. Te	(TIME) 16:30 9-21-93	(SIGNATURE)	(TIME)	(SIGNATURE)	(TIME)
(PRINTED NAME) Benjamin Berman	(DATE)	(PRINTED NAME)	(DATE)	(PRINTED NAME)	(DATE)
(COMPANY) CET Env. Services		(COMPANY)		(COMPANY)	

RECEIVED BY	1	RECEIVED BY	2	RECEIVED BY (LABORATORY)	3
(SIGNATURE) Gary Cook	(TIME) 16:30	(SIGNATURE)	(TIME)	(SIGNATURE)	(TIME)
(PRINTED NAME) Gary Cook	(DATE) 9/21/93	(PRINTED NAME)	(DATE)	(PRINTED NAME)	(DATE)
(COMPANY) Chroma Lab		(COMPANY)		(LAB)	

CHROMALAB, INC.

DOHS 1094

SUBM #: 9309277
CLIENT: CET
2: DUE: 10/05/93
REF: 13393

013393

Chain of Custody

DATE 9-21-93 PAGE 1 OF 4

PROJ MGR Mark Lafferty
COMPANY CET Env-Services
ADDRESS Walnut Creek office

SAMPLERS (SIGNATURE) (PHONE NO.) 934-4884

SAMPLE ID.	DATE	TIME	MATRIX	PRESERV.	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, 524.2)	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
MW4-5	9-21-93	9:05	Soil	ice		X	X																		1
MW4-10	9-21-93	9:15	Soil	ice		X	X																		1

PROJECT INFORMATION

PROJECT NAME: Dreyer's Oakland
PROJECT NUMBER: 3359-206
P.O. #: 17866

SAMPLE RECEIPT

TOTAL NO. OF CONTAINERS	19
HEAD SPACE	
REC'D GOOD CONDITION/COLD	
CONFORMS TO RECORD	

TAT: STANDARD 5-DAY | (10 day) | 24 | 48 | 72 | OTHER

SPECIAL INSTRUCTIONS/COMMENTS:
10-day TAT, Analyze 13 Soil samples for TPH-Gas/BTEX & TEPH, Hold 6 samples.

RELINQUISHED BY 1.	RELINQUISHED BY 2.	RELINQUISHED BY 3
(SIGNATURE) 16:30 (TIME)	(SIGNATURE) (TIME)	(SIGNATURE) (TIME)
Benjamin Beiman 9-21-93 (PRINTED NAME) (DATE)	(PRINTED NAME) (DATE)	(PRINTED NAME) (DATE)
CET Env-Service (COMPANY)	(COMPANY)	(COMPANY)
RECEIVED BY 1	**RECEIVED BY 2**	**RECEIVED BY (LABORATORY) 3**
Gary Cook 16:30 (SIGNATURE) (TIME)	(SIGNATURE) (TIME)	(SIGNATURE) (TIME)
Gary Cook 9/21/93 (PRINTED NAME) (DATE)	(PRINTED NAME) (DATE)	(PRINTED NAME) (DATE)
Chromalab (COMPANY)	(COMPANY)	(LAB)

9309277

CHROMALAB, INC.

DOHS 1094

2239 Omega Road, #1 • San Ramon, California 94583
510/831-1788 • Facsimile 510/831-8798

Chain of Custody

DATE 9-20-93 PAGE 2 OF 4

PROJ MGR Mark LaHeity
COMPANY CET Env. Services
ADDRESS Walnut Creek office

SAMPLERS (SIGNATURE) (PHONE NO.) 934-4884

ANALYSIS REPORT

SAMPLE ID.	DATE	TIME	MATRIX	PRESERV.	TPH - Gasoline (EPA 5030, 8015)	TPH - Gasoline (5030, 8015) w/BTEX (EPA 602, 8020)	TPH - Diesel-TEPH (EPA 3510/3550, 8015)	PURGEABLE AROMATICS BTEX (EPA 602, 8020)	PURGEABLE HALOCARBONS (EPA 601, 8010)	VOLATILE ORGANICS (EPA 624, 8240, 524.2)	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
MW5-5	9-20-93	13:40	Soil	ice		X	X																		1
MW5-10	9-20-93	13:50	Soil	ice		X	X																		1
MW5-15	9-20-93	13:55	Soil	ice		X	X																		1
MW5-20	9-20-93	14:00	Soil	ice				Hold																	1
MW5-25	9-20-93	14:05	Soil	ice				Hold																	1
MW5-29.5	9-20-93	14:10	Soil	ice				Hold																	1

PROJECT INFORMATION

PROJECT NAME Dreyer's Oakland
PROJECT NUMBER 5534-.2C
P.O. # 7CEGG

TAT: STANDARD 5-DAY / 10-Day | 24 | 48 | 72 | OTHER

SPECIAL INSTRUCTIONS/COMMENTS
10-Day TAT

SAMPLE RECEIPT

TOTAL NO. OF CONTAINERS	19
HEAD SPACE	
REC'D GOOD CONDITION/COLD	
CONFORMS TO RECORD	

RELINQUISHED BY 1	RELINQUISHED BY 2	RELINQUISHED BY 3
(SIGNATURE) 16:30 9-22-93 (TIME)	(SIGNATURE) (TIME)	(SIGNATURE) (TIME)
Benjamin Berman (PRINTED NAME) (DATE)	(PRINTED NAME) (DATE)	(PRINTED NAME) (DATE)
CET Env. Services (COMPANY)	(COMPANY)	(COMPANY)
RECEIVED BY 1	**RECEIVED BY 2**	**RECEIVED BY (LABORATORY) 3**
(SIGNATURE) 16:30 (TIME)	(SIGNATURE) (TIME)	(SIGNATURE) (TIME)
Gary Cook 9/21/93 (PRINTED NAME) (DATE)	(PRINTED NAME) (DATE)	(PRINTED NAME) (DATE)
Chromalab (COMPANY)	(COMPANY)	(LAB)

9309277

CHROMALAB, INC.

DOHS 1094

2239 Omega Road, #1 • San Ramon, California 94583
510/831-1788 • Facsimile 510/831-8798

Chain of Custody

DATE 9-20-93 PAGE 3 OF 4

PROJ MGR Mark Lafferty
COMPANY CET Env. Services
ADDRESS Walnut Creek, CA

SAMPLERS (SIGNATURE) (PHONE NO.)
S. De 934-4884

ANALYSIS REPORT

SAMPLE ID.	DATE	TIME	MATRIX	PRESERV.	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, 324.2)	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
MW6-5	9-20-93	7:35	Soil	ice		X	X																		1
MW6-10	9-20-93	7:45	Soil	ice		X	X																		1
MW6-15	9-20-93	7:55	Soil	ice		X	X																		1
MW6-20	9-20-93	8:05	Soil	ice				Hold																	1

PROJECT INFORMATION

PROJECT NAME: Chevron Oakland
PROJECT NUMBER: 2254-206
P.O. # 76866

TAT: STANDARD 5-DAY (10-Day) | 24 | 48 | 72 | OTHER

SPECIAL INSTRUCTIONS/COMMENTS:
10-day TAT

SAMPLE RECEIPT

TOTAL NO. OF CONTAINERS	19
HEAD SPACE	
REC'D GOOD CONDITION/COLD	
CONFORMS TO RECORD	

RELINQUISHED BY 1.	RELINQUISHED BY 2.	RELINQUISHED BY 3
S. De 16:30 9-21-93 (SIGNATURE) (TIME)	(SIGNATURE) (TIME)	(SIGNATURE) (TIME)
Brigitte Bernal (PRINTED NAME) (DATE)	(PRINTED NAME) (DATE)	(PRINTED NAME) (DATE)
CET Env. Services (COMPANY)	(COMPANY)	(COMPANY)
RECEIVED BY 1.	**RECEIVED BY 2.**	**RECEIVED BY (LABORATORY) 3**
Gary Cook 16:30 (SIGNATURE) (TIME)	(SIGNATURE) (TIME)	(SIGNATURE) (TIME)
Gary Cook 9/21/93 (PRINTED NAME) (DATE)	(PRINTED NAME) (DATE)	(PRINTED NAME) (DATE)
Chromalab (COMPANY)	(COMPANY)	(LAB)

WELL DEVELOPMENT RECORD

Date: 10 . 6 . 93 Well I.D.: MW 4 Project No.: 3534-207

Project Name: Dreyers - Oakland Project Manager: _____

Site location/address: Oakland, CA

Pre-development data

W.L (1/100'): 10.27 /Time: 14:40 B.O.W. (1/2'): 29.0

W.L method: ✓ electric well sounder, ____ other/_____

Calculated purge volume (minimum 10 casing volumes): 15 gallons

Floating product: Y / (N) (if yes, record thickness here: _____)

Sheen: Y / (N) Odor: (Y) / N Vapor: _____ ppm / % LEL

Water description: ____ clear, ____ slightly cloudy, ____ moderate sediment (color: _____),

X very muddy (color: brown)

Development data

Development method: ____ hand pump, ✓ bailer, ____ other/_____

Development began: date 10 . 6 . 93 time 14:45

	Purge Volume	Time	Temp.	pH	Cond.	Turb.	Yield (GPM)
FIRST:	5	15:00	22	4.07 *	1250		
SECOND:	10	15:20	20	3.90 *	1190		
THIRD:	15						

Development ended: date 10 . 6 . 93 time 16:00

Total water removed during development: 15 gallons

Purged water discharged to: ✓ drums, ____ tank truck, ____ other/_____

Post development data

W.L (1/100'): 12.04 /time: 16:05 B.O.W. (1/2'): 25.0

Floating product: Y / (N) (if yes, record thickness here: _____)

Sheen: Y / (N) Odor: (Y) / N Vapor: _____ ppm / % LEL

Water description: ✓ clear, ____ slightly cloudy, ____ moderate sediment (color: _____),

____ very muddy (color: brown)

Notes: * Low values could be due to Ph meter Low battery

Developed by (signature): _____

WELLDVRD.PM3

WELL DEVELOPMENT RECORD

Date: 10 . 1 . 93 Well I.D.: MW5 Project No.: _____

Project Name: Dreyers - Oakland Project Manager: _____

Site location/address: Oakland, CA

Pre-development data

W.L (1/100"): 9.63 /Time: 16:00 B.O.W. (1/2'): 29.0

W.L method: ✓ electric well sounder, ____ other/_____

Calculated purge volume (minimum 10 casing volumes): 30 gallons

Floating product: Y / (N) (if yes, record thickness here: _____)

Sheen: Y / (N) Odor: (Y) / N Vapor: _____ ppm / % LEL

Water description: ____ clear, ✓ slightly cloudy, ____ moderate sediment (color: _____),

____ very muddy (color: brown)

Development data

Development method: ____ hand pump, ✓ bailer, ____ other/_____

Development began: date 10 . 1 . 93 time 16:05

Purge Volume	Time	Temp.	pH	Cond.	Turb.	Yield (GPM)
FIRST:	16:25	21	5.88	1140	—	7
SECOND:	16:45	21	5.89	980		20
THIRD:						

Development ended: date 10 . 1 . 93 time 17:00

Total water removed during development: 25 gallons

Purged water discharged to: ✓ drums, ____ tank truck, ____ other/_____

Post development data

W.L (1/100"): 15.42 + rising /time: 17:00 B.O.W. (1/2'): _____

Floating product: (N) / (N) (if yes, record thickness here: _____)

Sheen: Y / (N) Odor: (Y) / N Vapor: _____ ppm / % LEL

Water description: ____ clear, ____ slightly cloudy, ✓ moderate sediment (color: brown),

____ very muddy (color: _____)

Notes: within first purge volume
strong odor noticeable

Developed by (signature): J. Log

WELLDVRD.PM3

WELL DEVELOPMENT RECORD

Date: 10 . 7 . 93 Well I.D.: MW6 Project No.: 3534-207

Project Name: Dreyers - Oakland Project Manager: _____

Site location/address: Oakland, CA

Pre-development data

W.L (1/100'): 7.82 /Time: 13:50 B.O.W. (1/2): 29'

W.L method: ✓ electric well sounder, _____ other/_____

Calculated purge volume (minimum 10 casing volumes): 135 gallons

Floating product: Y / (N) (if yes, record thickness here: _____)

Sheen: Y / ~~N~~ Odor: (Y) / N Vapor: _____ ppm / % LEL

Water description: ✓ clear, _____ slightly cloudy, _____ moderate sediment (color: _____),

_____ very muddy (color: _____)

Development data

Development method: ✓ hand pump, _____ bailer, _____ other/_____

Development began: date 10 . 7 . 93 time 14:00

Purge Volume	Time	Temp.	pH	Cond.	Turb.	Yield (GPM)
FIRST:						
SECOND:						
THIRD:						

Development ended: date 10 . 7 . 93 time 15:55

Total water removed during development: 40-45 gallons

Purged water discharged to: ✓ drums, _____ tank truck, _____ other/_____

Post development data

W.L (1/100'): 22.76 /time: 15:54 B.O.W. (1/2): 29'

Floating product: Y / (N) (if yes, record thickness here: _____)

Sheen: Y / (N) Odor: (Y) / N Vapor: _____ ppm / % LEL

Water description: ✓ clear, _____ slightly cloudy, _____ moderate sediment (color: _____),

_____ very muddy (color: _____)

Notes: Ph meter malfunction - Low battery

Developed by (signature): J. Long

WELLDVRD.PM3

SAMPLE COLLECTION RECORD - MONITOR WELL

Date: 10 - 8 - 93 Sample I.D.: MW1 Job No.: 3534-209

Site Location: Dreyers Oakland

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

___Duplicates from well_____; ___Travel Blanks;

___Field Blanks; ___Other (explain)/_____

W.L.(1/100'): 13.68 Time : 10:15 B.O.W.(1/2'): 30

Method: ✓ Electric Well Sounder; ___Other/_____

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

Calculated Purge Volume (4 casing volumes): 10 gallons

Purging Method: ✓ Disposable Bailer; ___Teflon Bailer;

___Other/_____

Time Start Purging (24 hr): 10:20, Product: Y / (N)
Sheen: Y / (N), Odor: Y / (N), Vapor:____ ppm / %LEL
Turbidity: slight, Color: —

Time Stop Purging (24 hr): 10:30, Product: Y / (N)
Sheen: Y / (N), Odor: Y / (N), Vapor:____ ppm / %LEL
Turbidity: slight, Color: —

Time (24 hr)	Temp. (C)	pH	Cond. (uS)	H2O (Gal)	Turbid. (NTU)
10:25	20	—	—	2.5	—
10:30					
:					
:					
:				5 total gal	

Sample Collection Time (24 hr): 10:40

Notes: ph meter malfunction

Collected By (signature): _____

SAMPLE COLLECTION RECORD - MONITOR WELL

Date: 10-8-93 Sample I.D.: MW2 Job No.: 3534-209

Site Location: Dreyers - 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: 11:07 B.O.W.(1/2'): 28

Method: ✓ Electric Well Sounder; ___ Other/ _____

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

Calculated Purge Volume (4 casing volumes): 40 gallons

Purging Method: ✓ Disposable Bailer; ___ Teflon Bailer;

___ Other/ _____

Time Start Purging (24 hr): 11:10, Product: Y / (N)
Sheen: Y / (N), Odor: (Y) / N, Vapor: ___ ppm / %LEL
Turbidity: none, Color: —

Time Stop Purging (24 hr): 11:20, Product: Y / (N)
Sheen: Y / (N), Odor: (Y) / N, Vapor: ___ ppm / %LEL
Turbidity: none, Color: —

Time (24 hr)	Temp. (C)	pH	Cond. (uS)	H2O (Gal)	Turbid. (NTU)
:					
:					
:					
:					
:				10 total gal	

Sample Collection Time (24 hr): 11:25

Notes: 11:15 - Lose bailer in well

Collected By (signature): _____

SAMPLE COLLECTION RECORD - MONITOR WELL

Date: 10-8-93 Sample I.D.: MW3 Job No.: 3534-209

Site Location: Dreyers - Oakland

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

___Duplicates from well_____; ___Travel Blanks;

___Field Blanks; ___Other (explain)/_____

W.L.(1/100'): 10.53 Time: 11:46 B.O.W.(1/2'): 27

Method: ✓Electric Well Sounder; ___Other/_____

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

Calculated Purge Volume (4 casing volumes):_____ gallons

Purging Method: ✓Disposable Bailer; ___Teflon Bailer;

___Other/_____

Time Start Purging (24 hr): 11:48, Product: Y / (N)
Sheen: Y / (N), Odor: (Y) / N, Vapor:____ ppm / %LEL
Turbidity: slight, Color: gray

Time Stop Purging (24 hr): 11:57, Product: Y / (N)
Sheen: Y / (N), Odor: (Y) / N, Vapor:____ ppm / %LEL
Turbidity: slight, Color: gray

Time (24 hr)	Temp. (C)	pH	Cond. (uS)	H2O (Gal)	Turbid. (NTU)
:____					
:____					
:____					
:____					
:____				10 gal total	

Sample Collection Time (24 hr): 12:00

Notes:_____

_____

_____

Collected By (signature):_____

SAMPLE COLLECTION RECORD - MONITOR WELL

Date: 10 - 8 - 93 Sample I.D.: MW4 Job No.: 3534-209

Site Location: Dreyers - Oakland

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

___ Duplicates from well_____; ___ Travel Blanks;

___ Field Blanks; ___ Other (explain)/_____

W.L.(1/100'): 12.27 Time : 10.29 B.O.W.(1/2'): 27

Method: ✓ Electric Well Sounder; ___ Other/_____

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

Calculated Purge Volume (4 casing volumes):_____ gallons

Purging Method: ✓ Disposable Bailer; ___ Teflon Bailer;

___ Other/_____

Time Start Purging (24 hr): 12:30, Product: Y / (N)
Sheen: Y / (N), Odor: (Y) / N, Vapor:____ ppm / %LEL
Turbidity: Very muddy, Color: brown

Time Stop Purging (24 hr): 12:40, Product: Y / (N)
Sheen: Y / (N), Odor: (Y) / N, Vapor:____ ppm / %LEL
Turbidity: Very muddy, Color: brown

Time (24 hr)	Temp. (C)	pH	Cond. (uS)	H2O (Gal)	Turbid. (NTU)
:____					
:____					
:____					
:____					
:____			10	gal	total

Sample Collection Time (24 hr): 12:45

Notes:_____

_____

_____

Collected By (signature):_____

SAMPLE COLLECTION RECORD - MONITOR WELL

Date: 10-8-93 Sample I.D.: MW5 Job No.: 3534-209

Site Location: Dreyers - Oakland

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

___Duplicates from well_____; ___Travel Blanks;

___Field Blanks; ___Other (explain)/_____

W.L.(1/100'): 9.84 Time: 13:04 B.O.W.(1/2'): 29

Method: ✓ Electric Well Sounder; ___Other/_____

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

Calculated Purge Volume (4 casing volumes):_____ gallons

Purging Method: ✓ Disposable Bailer; ___Teflon Bailer;

___Other/_____

Time Start Purging (24 hr): 13:06, Product: Y / (N)
Sheen: Y / (N), Odor: (Y) / N, Vapor:____ ppm / %LEL
Turbidity: slight - moderate, Color: brown

Time Stop Purging (24 hr): 13:11, Product: Y / (N)
Sheen: Y / (N), Odor: (Y) / N, Vapor:____ ppm / %LEL
Turbidity: moderate, Color: brown

Time (24 hr)	Temp. (C)	pH	Cond. (uS)	H2O (Gal)	Turbid. (NTU)
:____					
:____					
:____					
:____					
:____				5 gal total	

Sample Collection Time (24 hr): 13:15

Notes:_____

_____

_____

Collected By (signature):_____

SAMPLE COLLECTION RECORD - MONITOR WELL

Date: 10-3-93 Sample I.D.: MW 6 Job No.: 3534-209

Site Location: Dreyers - Oakland

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

___Duplicates from well_____; ___Travel Blanks;

___Field Blanks; ___Other (explain)/_____

W.L.(1/100'): 8.23 Time: 13:27 B.O.W.(1/2'): 29

Method: ✓ Electric Well Sounder; ___Other/_____

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

Calculated Purge Volume (4 casing volumes):_____ gallons

Purging Method: ✓ Disposable Bailer; ___Teflon Bailer;

___Other/_____

Time Start Purging (24 hr): 13:30, Product: Y / (N)
Sheen: Y / (N), Odor: (Y) / N, Vapor:____ ppm / %LEL
Turbidity: none, Color: —

Time Stop Purging (24 hr): 13:43, Product: Y / (N)
Sheen: Y / (N), Odor: (Y) / N, Vapor:____ ppm / %LEL
Turbidity: slight, Color: —

Time (24 hr)	Temp. (C)	pH	Cond. (uS)	H2O (Gal)	Turbid. (NTU)
:					
:					
:					
:					
:			10	gal	total

Sample Collection Time (24 hr): 13:50

Notes:_____

_____

_____

Collected By (signature): _____

RECORD OF GROUNDWATER LEVEL MEASUREMENTS

Date Measured: 10 - 8 - 93 Job No.: 3534-209

Site Location: Dreyers - 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	10:15	13.68	✓	30	
MW2	11:07	10.19	✓	28	
MW3	11:46	10.53	✓	27	
MW4	12:27	10.29	✓	27	
MW5	13:04	9.84	✓	29	
MW6	13:27	8.23	✓	29	

Measured by (Signature): J. Long

rev.2/13/90

ATTACHMENT D

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 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.

ATTACHMENT E

Soil Boring Logs

WELL CONSTRUCTION	CHEMICAL ANALYSES Laboratory	CHEMICAL ANALYSES Field OVM (ppm)	BLOW COUNT	DEPTH (feet)	SAMPLE INTERVAL	SAMPLE NUMBER	LITHOLOGY SYMBOL	U.S.C.S. DESIGN.	SOIL DESCRIPTION
				0					0'-0.25' Asphalt. 0.25'-1' Gravel base rock and soil fill.
								ML	1'-5' CLAYEY SILT: Dark brown(7.5YR 3/2), medium plasticity, minor organic content, dry.
		0	7 10 14	5				CL	5'-10' SILTY CLAY: Dark brown(10YR 4/3), medium plasticity, very stiff, slightly damp.
		200	5 7 16	10				CL	10'-22' SANDY CLAY: Yellowish brown(10YR 5/4), 10% to 30% fine sand, minor component of fine to medium gravel(semi-angular to semi-round, varying composition, to 1-inch diameter), minor component of medium to coarse sand, poorly sorted, minor iron staining from 15' to 30', damp. 10'-15' aged hydrocarbon discoloring, odor.
		5	6 14 16						
		10	12 20 22	15					
		0	12 21 32	20				CL	22'-30.5' SILTY CLAY: Dark yellowish brown(10YR 4/4), medium plasticity, very stiff, minor component of very fine sand, damp.
			15	25					

Surface Elevation: feet
Total Depth: 30.5 feet
Date Drilled: September 20, 1993

Logged By: BB
Supervised By: MRL
Diameter of Boring: 8 inches
Water Encountered at: feet

CET Environmental Services, Inc.

Project Number 3534-206 November 1993

Dreyer's Grand Ice Cream
5929 College Avenue
LOG of BORING
B1

PLATE
1

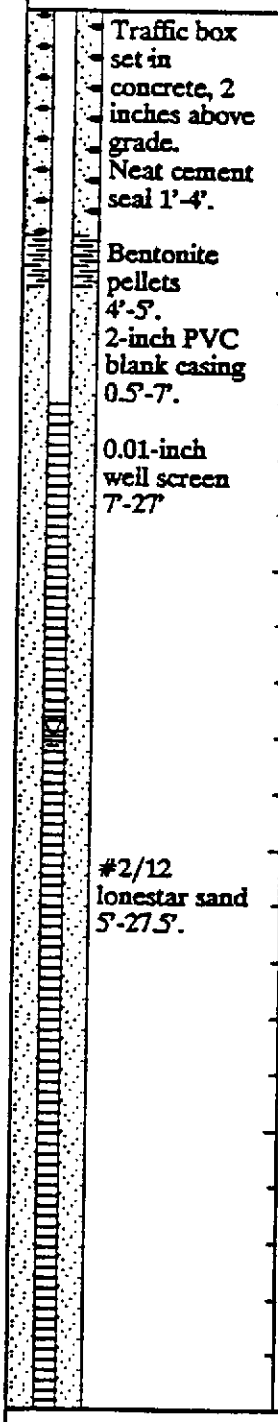
WELL CONSTRUCTION	CHEMICAL ANALYSES Laboratory	CHEMICAL ANALYSES Field OVM (ppm)	BLOW COUNT	DEPTH (feet)	SAMPLE INTERVAL	SAMPLE NUMBER	LITHOLOGY SYMBOL	U.S.C.S. DESIGN.	SOIL DESCRIPTION
		0	23 29						Possible thin gravel or sand lens between 23' and 27'.
			12 20	30					
		0	26						Total Depth = 30.5' bgs. No Groundwater Encountered.
				35					
				40					
				45					
				50					

CET Environmental Services, Inc.

Project Number 3534-206 November 1993

Dreyer's Grand Ice Cream
5929 College Avenue
LOG of BORING
B1

PLATE
1



WELL CONSTRUCTION	CHEMICAL ANALYSES Laboratory	CHEMICAL ANALYSES Field OVM (ppm)	BLOW COUNT	DEPTH (Feet)	SAMPLE INTERVAL	SAMPLE NUMBER	LITHOLOGY SYMBOL	U.S.C.S. DESIGN.	SOIL DESCRIPTION
				0					0'-4' FILL: Very dark brown(10YR 2/3), landscaping-planter mix(rusted metal tie at 2.5').
		0	7 12 14	5				SW	4'-8' SAND: Yellowish brown(10YR 5/8), 90% very fine to fine sand(minor lithification, crumbles easily under slight hand pressure), interbedded, with silty clay, high iron content(orange-red color), dry.
		0	7 6 5	10				SC	8'-16' CLAYEY SAND: Very dark gray(5Y 3/1) to black, 50% very fine sand in a silty clay matrix, very moist to saturated.
		5	18 25 27	15				SW SC CL	15'-15.5' SAND/GRAVEL LENS: 80% coarse sand to fine gravel. CLAYEY SAND: Semi-round to well rounded, saturated. 16'-27.5' SILTY CLAY: Dark brown(10YR 4/3), minor component of very fine sand (content varies), intermittent thin stringers (<3-inches thick) of clayey fine sand, medium plasticity, very stiff to hard, slightly damp.
	Analytical Sample Not Collected	0	11 20 20	20					
	Analytical Sample Not Collected		10	25					

Surface Elevation: 185.3 feet
Total Depth: 27.5 feet
Date Drilled: September 21, 1993

Logged By: BB
Supervised By: MRL
Diameter of Boring: 8 inches
Water Encountered at: 13.0 feet

CET Environmental Services, Inc.

Project Number 3534-206 November 1993

Dreyer's Grand Ice Cream
5929 College Avenue

LOG of BORING

MW4

PLATE 4

WELL CONSTRUCTION	CHEMICAL ANALYSES Laboratory	CHEMICAL ANALYSES Field OVM (ppm)	BLOW COUNT	DEPTH (Feet)	SAMPLE INTERVAL	SAMPLE NUMBER	LITHOLOGY SYMBOL	U.S.C.S. DESIGN.	SOIL DESCRIPTION
		0	12 14						

30

35

40

45

50

Total Depth = 27.5' bgs.

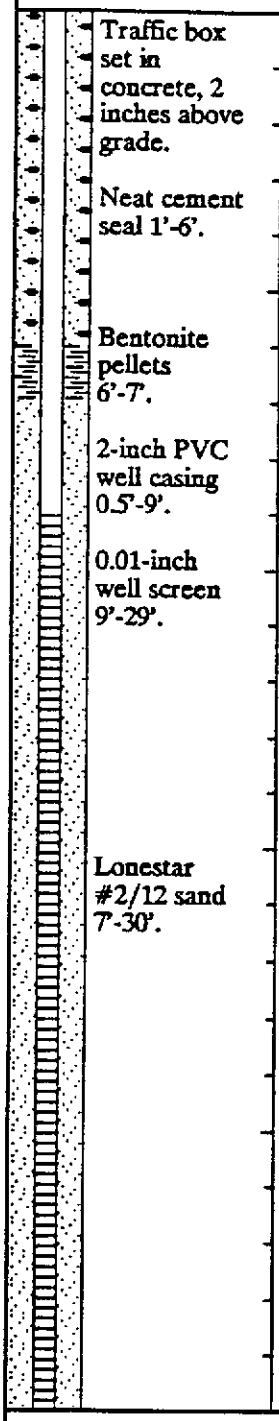
Groundwater Encountered at 13' bgs.

CET Environmental Services, Inc.

Project Number 3534-206 November 1993

Dreyer's Grand Ice Cream
5929 College Avenue
LOG of BORING
MW4

PLATE
4



WELL CONSTRUCTION	CHEMICAL ANALYSES Laboratory	CHEMICAL ANALYSES Field OVM (ppm)	BLOW COUNT	DEPTH (feet)	SAMPLE INTERVAL	SAMPLE NUMBER	LITHOLOGY SYMBOL	U.S.C.S. DESIGN.	SOIL DESCRIPTION
				0					0'-3.5' FILL: 0'-0.25' Asphalt, gravel base rock and soil fill material.
			10					ML	3.5'-5' CLAYEY SILT: Dark brown(7.5YR 3/2), medium plasticity, minor organic content, rootlets, slightly damp.
		0	10	5				CL	
			12						5'-30' SILTY CLAY: Dark yellowish brown(10YR 4/3), minor component at very fine sand to fine sand below 15', medium plasticity, very stiff(very hard below 14'), slightly damp, distinct bedding(gray with blue tint), minor iron staining from 10' to 30'. Minor aged hydrocarbon discoloring odor at 10'.
			4						
		100	9	10					
			11						
			15						
		0	22	15					
			29						
			16						
		0	23	20					
			32						
			18	25					

Surface Elevation: 185.1 feet
Total Depth: 30.0 feet
Date Drilled: September 20, 1993

Logged By: BB
Supervised By: MRL
Diameter of Boring: 8 inches
Water Encountered at: feet

CET Environmental Services, Inc.

Project Number 3534-206 November 1993

Dreyer's Grand Ice Cream
5929 College Avenue

LOG of BORING

MW5

PLATE 5

WELL CONSTRUCTION	CHEMICAL ANALYSES Laboratory	CHEMICAL ANALYSES Field OVM (ppm)	BLOW COUNT	DEPTH (feet)	SAMPLE INTERVAL	SAMPLE NUMBER	LITHOLOGY SYMBOL	U.S.C.S. DESIGN.	SOIL DESCRIPTION
		0	30 30						
			20 22						
		0	34	30					Total Depth = 30' bgs. No Groundwater Encountered.
				35					
				40					
				45					
				50					

CET Environmental Services, Inc.

Project Number 3534-206 November 1993

Dreyer's Grand Ice Cream
5929 College Avenue
LOG of BORING
MW5

PLATE
5

WELL CONSTRUCTION	CHEMICAL ANALYSES Laboratory	CHEMICAL ANALYSES Field OVM (ppm)	BLOW COUNT	DEPTH (feet)	SAMPLE INTERVAL	SAMPLE NUMBER	LITHOLOGY SYMBOL	U.S.C.S. DESIGN.	SOIL DESCRIPTION
Traffic box set in concrete, 2-inches above grade.				0					0'-1.5' FILL: Landscaping-planter mix.
								CL	1.5'-14' SILTY CLAY: Dark brown(10YR 4/3), medium plasticity, very stiff, homogeneous material, slightly damp.
Neat cement seal 1'-6'.			7						
		0	9	5					
Bentonite pellets 6'-7'.			14						
4-inch PVC blank casing 0.5'-9'.									
0.01-inch well screen 9'-29'.		10		10					10'-12' aged hydrocarbon discoloring(gray-blue), odor.
								CL	14'-23' SANDY CLAY: Yellowish brown(10YR 5/4), 10% to 30% very fine sand, minor component of fine to medium gravel(semi-angular to semi-round, varying composition), minor component of medium to coarse sand, poorly sorted, minor iron staining, wood chip at 15', well preserved, damp.
Lonestar #2/12 sand 7'-30'.		0	6	15					
			9						
			14						
			6	20					
		0	12						
			28						
									Moist zone at 23', possible thin sand/gravel lens.
								CL	23'-30' SILTY CLAY: Dark yellowish brown(10YR 4/4), medium plasticity, very stiff, minor component of very fine sand, homogeneous material.
			6	25					

Surface Elevation: 187.5 feet
Total Depth: 30.0 feet
Date Drilled: September 20, 1993

Logged By: BB
Supervised By: MRL
Diameter of Boring: 10 inches
Water Encountered at: feet

CET Environmental Services, Inc.

Project Number 3534-206 November 1993

Dreyer's Grand Ice Cream
5929 College Avenue

LOG of BORING

MW6

PLATE 6

WELL CONSTRUCTION	CHEMICAL ANALYSES Laboratory	CHEMICAL ANALYSES Field OVM (ppm)	BLOW COUNT	DEPTH (feet)	SAMPLE INTERVAL	SAMPLE NUMBER	LITHOLOGY SYMBOL	U.S.C.S. DESIGN.	SOIL DESCRIPTION
			12 14						damp, minor iron staining.
			8 12 25	30					Total Depth = 30' bgs. No Groundwater Encountered.
				35					
				40					
				45					
				50					

CET Environmental Services, Inc.

Project Number 3534-206 November 1993

Dreyer's Grand Ice Cream
5929 College Avenue
LOG of BORING
MW6

PLATE
6

ATTACHMENT F

Procedures and Protocol

DRILLING PROCEDURES & GROUNDWATER MONITORING WELL CONSTRUCTION/DESIGN

DRILLING AND SAMPLING PROCEDURES

All borings for well construction will be drilled using eight-inch diameter or larger hollow stem auger equipment. A California Registered Geologist or Professional Engineer will direct or supervise the collection of undisturbed samples of the soils encountered and the preparation of detailed logs for each boring.

Soil sampling will be conducted using a modified California split-spoon sampler, a standard penetration sampler, or a five-foot continuous sampler. Samples will be retained in two-inch to three-inch diameter, six-inch long, clean brass or stainless steel tubes. The samples will be retained for verification of soil classification and for chemical laboratory analytical testing, as appropriate. Teflon sheeting will be placed between the soil sample and the cap, and the cap will be sealed with PVC tape.

Where access limitations do not allow drilling with truck mounted equipment, either a trailer mounted drilling rig, portable power driven, or manually operated soil sampling equipment will be utilized. If soil samples will be retained for analysis, they will be collected in clean brass tubes fitted within a thin walled drive sampler. The soil samples will be capped and sealed as described above.

All down hole sampling, drilling, and well construction equipment and materials, including augers, casing, and screens will be steam cleaned prior to their initial use. The sampling equipment will be cleaned prior to their initial use. The sampling equipment will be cleaned prior to each assembly by washing with a solution of Alconox and potable water, rinsing with purified water, and allowing to air dry. The auger flights, drill bit, and sampler will be steam cleaned at each boring location.

MONITORING WELL CONSTRUCTION

Monitoring wells will be constructed in accordance with applicable local water district or California Department of Water Resources guidelines. The specific completion details for each well will be determined in the field at the time of drilling by a California Registered Geologist or Professional Engineer experienced in groundwater monitoring system design and installation.

Monitoring wells consist of two or four-inch diameter, Schedule 40 PVC casing and screens with flush, threaded joints. No PVC glue will be used. The screened sections are machine slotted with either 0.010-inch (0.255 mm) or 0.020-inch (0.51 mm) openings. The smaller slot size will be used where the wells are screened within fine-grained sandy soils, and the larger slots will be used where coarse sand or gravels are encountered. The slotted sections will be fitted with a slip-on cap and placed opposite the water-bearing strata in the boring. The blank pipe will be connected to the perforated pipe to extend to just below the ground surface.

The annulus between the side of the borehole and the slotted section will be filled with a clean sand pack to variable depths, but not less than one or two feet above the perforated pipe. The annulus will be packed with either Lonestar No. 1/20 (where 0.010-inch slotted pipe is used) or No. 3 (where 0.020-inch slotted pipe is used), or equivalent, washed sand filter material. The gradation of the filter material is summarized below:

U.S. Sieve No.	Opening (mm)	Percent Passing (No. 3)	Percent Passing (No. 1/20)
6	3.35	100	
8	2.36	99 - 100	
12	1.70	62 - 78	
16	1.18	15 - 33	100
20	0.85	0 - 8	90 - 100
30	0.60	0 - 4	14 - 40
40	0.425		0 - 5

A seal of bentonite pellets approximately 0.5 to 1.0 foot thick will be placed above the sand pack to reduce the risk of grout penetration into the sand. The bentonite pellets will be hydrated with purified water to form a tight plug. A cement/bentonite grout will be placed above the bentonite plug to a depth of approximately 0.5 to 2.0 feet below the ground surface. The grout will be pumped into the boreholes using a tremie pipe when required by local guidelines or regulations. A flush mounted traffic box or aboveground security enclosure will be set in concrete above the cement/bentonite mixture.

At most sites in sedimentary formations, it is not practical to "rationally design" a filter pack based on sieve analyses. From experience, Lonestar No. 1/20 or No. 3 washed sand as a filter material is selected for use in wells. The 0.010-inch and 0.020-inch slot sizes are selected to retain 100 percent of the filter material.

The completed wells will be enclosed in a traffic rated enclosure placed flush with grade or in an above-ground metal enclosure, and fitted with a locking cap. Well head elevations will be determined by a level survey, and well coordinates will be determined by a traverse survey. The level/traverse survey will be referenced to a bench mark or known or assigned elevation, and known coordinates. Once water levels stabilize, water levels in all wells will be measured.

Soil cuttings generated during drilling will be stored in 55-gallon drums or wrapped in plastic sheeting, and water generated during well development and sampling will be retained in secured 55-gallon drums until chemical analytical data from samples will be received.

MONITORING WELL DEVELOPMENT

After the wells are completed, they will be developed by pumping and surging to clean and stabilize the soils around the screens. A manually operated, positive displacement surge pump and teflon bailer, surge block, and/or centrifugal pump will be used for development. A minimum of 10 well casing volumes of water will be removed during development; however, development will continue until turbidity or sediment content have stabilized. All development equipment will be steam cleaned or triple rinsed in a solution of purified water and Alconox prior to its initial use in each well. A well development record will be maintained which includes 1) a description of development water characteristics at frequent intervals, and 2) the quantity of water removed during development.

SOIL & GROUNDWATER SAMPLE COLLECTION & HANDLING PROTOCOL

INTRODUCTION & PURPOSE

Because reliable and representative test results must be generated from soil and groundwater samples, it is essential to establish a sampling procedure which assures that all samples are:

- Collected by approved and repeatable methods
- Representative of the materials(s) at the desired location and depth
- Uncontaminated by container and sampling equipment

The following sampling protocol is designed to be a guide to the sampling and handling procedures for soil and groundwater samples to be collected. Based on conditions which may be encountered in the field, some modifications to this protocol may be required to fit the needs of an individual site.

SAMPLING PROCEDURES

Groundwater Sampling

Prior to collecting groundwater samples, monitoring wells will be purged by bailing until pH, conductivity, and temperature levels stabilize. A minimum of four well casing volumes will be purged from each well. Wells will be purged and groundwater samples will be obtained using a teflon bailer or disposable polyethelene bailer, and nylon rope. New nylon rope will be used for each well.

The appropriate number and type of sample containers will be used for each sample collected, in accordance with the analytical laboratory requirements and EPA protocol. The bottles will be filled using the bailer. All sample bottles will be pre-cleaned by the supplier according to EPA protocols.

To prevent cross contamination of groundwater samples by the sampling equipment, all reusable equipment used in sampling will be washed with a trisodium phosphate solution (TSP), triple rinsed with purified water, and allowed to air dry prior to each use. A sample of the purified water will be retained for analysis as part of sample quality assurance.

Soil Sampling

After the soil sampler is driven to the desired depth and the samples are retrieved, each end of the tube containing the soil sample to be retained for laboratory analysis, will be sealed with teflon sheeting, covered with plastic end caps, and sealed with PVC tape. All sample containers (tubes) will be steam cleaned (or washed with TSP, as above) and air dried prior to use. The soil sample recovered in the tube just above the sample retained for chemical analysis will be examined in the field for visual and olfactory indications of chemical contamination and used for lithologic description.

The Unified Soil Classification System (USCS) was used to log and describe the soil by the onsite geologist. These logs also include details of the sampling process such as depth, apparent odors, discoloration, and any other factors which may be required to evaluate the presence of contamination at the site.

POST SAMPLING PROCEDURES

One field/travel blank consisting of one sample bottle filled with purified water accompanied soil and groundwater sample containers at all times, including during transport to and from the site. Purified water field/travel blanks were analyzed according to the appropriate EPA Methods corresponding to the soil/groundwater sample analyses.

Sample containers were labeled with sample number, project number, date, and the initials of the person collecting the sample. A separate sample collection record was maintained for each groundwater sample collected.

Soil and groundwater samples collected were analyzed by an analytical laboratory certified by the California Department of Health Services (DHS). Quality assurance documentation accompanied all analytical reports generated by the laboratory.

The samples were placed in a cooler with dry ice (for soil samples) or bagged ice (for water samples) immediately following collection, and remained in the cooler until refrigerated at the analytical laboratory. The samples were delivered to the laboratory direct by courier or overnight freight within 48 hours of time of collection. Appropriate chain of custody forms were used for all samples.

Attachment D

Cost Estimate for Groundwater Monitoring for 1996

CET Environmental Services, Inc.

5845 Doyle Street, Suite 104
Emeryville, California 94608
Telephone: (510) 652-7001
Fax: (510) 652-7002

January 10, 1995

Ms. Gwen Brennan
Dreyer's Grand Ice Cream
5929 College Avenue
Oakland, CA 94618

Subject: Cost Estimate and Contract for Groundwater Monitoring for 1996 at 5929 College Avenue, Oakland, California
CET Proposal No. 7904-177

Dear Ms. Brennan:

CET Environmental Services, Inc. (CET) is pleased to present this cost estimate in response to our recent conversation. This proposal covers activities for 1996. The proposal provides two options: Option 1 is for four quarters of groundwater monitoring and reporting, and represents a continuation of the current groundwater monitoring program. Option 2 proposes groundwater monitoring in addition to installing Oxygen Release Compounds (ORC) socks to stimulate biological degradation of contaminants in groundwater. Under Option 2, CET will provide quarterly groundwater sample collection and analysis, groundwater sample analysis, and semi-annual reporting. Reports will be prepared in a format suitable for submission to the Alameda County Health Care Services Agency (ACHCSA) and other regulatory agencies, if required. A proposed Scope of Work and estimated costs are summarized below.

OPTION 1 - QUARTERLY GROUNDWATER MONITORING

Task 1 - Groundwater Monitoring and Laboratory Analyses

Under this task, CET will collect monthly groundwater level and quarterly groundwater samples from wells MW1, MW2, MW3, MW4, and MW5. Samples retained analysis will be submitted to a California Department of Health Services (DHS) certified laboratory under CET's chain of custody protocols. The samples will be analyzed for total petroleum hydrocarbons as diesel (TPH-D), as gasoline (TPH-G), and concentrations of benzene, toluene, ethyl benzene, and total xylenes in accordance with U.S. Environmental Protection Agency (EPA) Test Method Nos. 3510/8015 and 5030/8015 & 8020, respectively.

The costs also include disposal of purge water (450 gallons).

Task 2 - Quarterly Report Preparation

Information obtained from Task 1 will be incorporated into quarterly reports suitable for submittal to the ACHCSA and the Regional Water Quality Control Board - San Francisco Bay Region (RWQCB), outlining the activities associated with the site. Sample collection activities, signed laboratory analytical reports, and a review of the laboratory analytical results

will be included in the report. The report will be signed by a California Registered Geologist (R.G.) or Professional Engineer (P.E.).

OPTION 2 - GROUNDWATER MONITORING AND BIOSTIMULATION

Task 1 - Install ORC Bioremediation System

ORC socks will be installed in the saturated zone at the three 4-inch diameter monitoring wells (MW2, MW3, and MW6) in an effort to stimulate natural bioremediation. The ORC system releases oxygen to the water and, assuming other nutrients are in sufficient supply, has shown to be effective in reducing petroleum hydrocarbon concentrations in groundwater.

Task 2 - Groundwater Monitoring and Laboratory Analyses

Under this task, CET will collect monthly groundwater level and dissolved oxygen measurements from wells MW1, MW4, and MW5. These measurements, in addition to groundwater concentration data, will be used to estimate the effect of ORC on contaminants in groundwater. Groundwater samples for dissolved oxygen (DO) and petroleum hydrocarbon laboratory analyses will be collected from MW1, MW4, and MW5 during the first and third quarter; wells MW2, MW3, and MW6 during the second quarter and from all six wells during the fourth quarter.

Samples retained analysis will be submitted to a California Department of Health Services (DHS) certified laboratory under CET's chain of custody protocols. The samples will be analyzed for total petroleum hydrocarbons as gasoline (TPH-G), and concentrations of benzene, toluene, ethyl benzene, and total xylenes in accordance with U.S. Environmental Protection Agency (EPA) Test Method Nos. 5030/8015 & 8020.

The costs also include disposal of purge water (300 gallons) and disposal of the ORC socks.

Task 3 - Report Preparation

Information obtained from Tasks 1 and 2 outlined above, will be incorporated into semi-annual reports suitable for submittal to the ACHCSA and the Regional Water Quality Control Board - San Francisco Bay Region (RWQCB), outlining the activities associated with the site. Sample collection activities, signed laboratory analytical reports, and a review of the laboratory analytical results will be included in the report. The report will be signed by a California Registered Geologist (R.G.) or Professional Engineer (P.E.).

CET believes that the use of ORC at this site is a positive step to mitigating contaminants in groundwater at Dreyer's and we look forward to performing the tasks outlined above for you.

Attached please find the proposed costs for the Option 1 and 2 described above (Table 1). Since the proposed work represents a continuation of our previous contract, the attached

Change Order document is for your signature. CET will begin immediately upon your authorization.

Please review the above and lets discuss. If you have any questions or comments, please do not hesitate to contact me at (510) 652-7001.

Sincerely,

CET ENVIRONMENTAL SERVICES, INC.

Terrance E. Carter
Senior Environmental Engineer

Wojciech (Voytek) Bajsarowicz, REA
Regional Manager

TABLE 1 - ESTIMATED COSTS FOR SUBSURFACE INVESTIGATION

OPTION 1 - quarterly ATER MONITORING

Task 1 - Groundwater Monitoring and Laboratory Analyses	*$5,480*
Task 2 - Quarterly Report Preparation ($2,500/quarter)	*$10,000*
TOTAL OPTION 1 TASKS	*$15,480*

OPTION 2 - GROUNDWATER MONITORING AND BIOSTIMULATION

Task 1 - Install ORC Bioremediation System	*$4,500*
Task 2 - Groundwater Monitoring and Laboratory Analyses	*$7,810*
Task 3 - Report Preparation	*$4,400*
TOTAL OPTION 2 TASKS	*$16,710*

REGENESIS

Bioremediation Products

OXYGEN RELEASE COMPOUND (ORC®)

ORC RELEASES

OXYGEN SLOWLY

TO ENHANCE

BIOREMEDIATION.

OXYGEN RELEASE COMPOUND (ORC®)

BIOREMEDIATION – A NATURAL PROCESS

Bioremediation is a process by which microorganisms degrade certain hazardous substances. REGENESIS' products enhance the supply of oxygen to naturally occurring microbes which metabolically transform toxic organic compounds into harmless by-products. This carefully designed process can help to cleanup sites and inhibit the flow of polluted groundwater by creating permeable oxygen barriers.

A bioremediation system offers several advantages over other technologies. Other remediation methods may simply transfer the contaminants to another medium which requires removal, transportation, and possibly additional clean up. Bioremediation degrades contaminants on-site and has been shown to be more cost effective than other treatment technologies. The EPA actively promotes bioremediation as an ecologically sound, natural process.

Oxygen is often the limiting factor in aerobic bioremediation. Moisture and nutrients (such as phosphorus and nitrogen) are generally present in sufficient quantities, however, oxygen is rapidly consumed by microbes which thrive in an oxygen rich environment. Without adequate oxygen, contaminant degradation will either cease or may proceed by highly inefficient anaerobic processes. Thus, additional oxygen is needed to stimulate further aerobic microbial growth and activity.

OXYGEN RELEASE COMPOUND, ORC®

Oxygen Release Compound (ORC®) and methods of its application are innovative technologies which enhance bioremediation. ORC is a patented formulation of a very fine, insoluble peroxygen that releases oxygen at a slow, controlled rate when hydrated. Its use has been demonstrated to increase the remediation of hydrocarbon contamination in soil and groundwater.

FEATURES

- Magnesium peroxide compound is activated by moisture
- Patented technology controls and prolongs the release of oxygen
- Moderate pH levels are maintained
- Fine particle size has stable, long shelf life
- No external coating of product is required to control rate of oxygen release
- Generates higher dissolved oxygen levels than possible with air

BENEFITS

- Provides a passive, cost-effective, long-term oxygen source
- Does not generate harmful residue; environmentally safe
- Ideal for *in-situ* remediation where other methods are impractical
- Will not disturb the flow pattern of the contaminated plume
- Does not volatilize pollutants
- Can be used as a redox control agent

ORC TECHNOLOGY

The product releases oxygen when it comes in contact with water as shown by the following equation:

$$MgO_2 + H_2O \rightarrow {}^1/_2O_2 \uparrow + Mg(OH)_2$$

ORC will stop releasing oxygen when dry and will again release when rehydrated. The by-products of the reaction are oxygen and ordinary magnesium hydroxide, which make ORC environmentally safe to use.

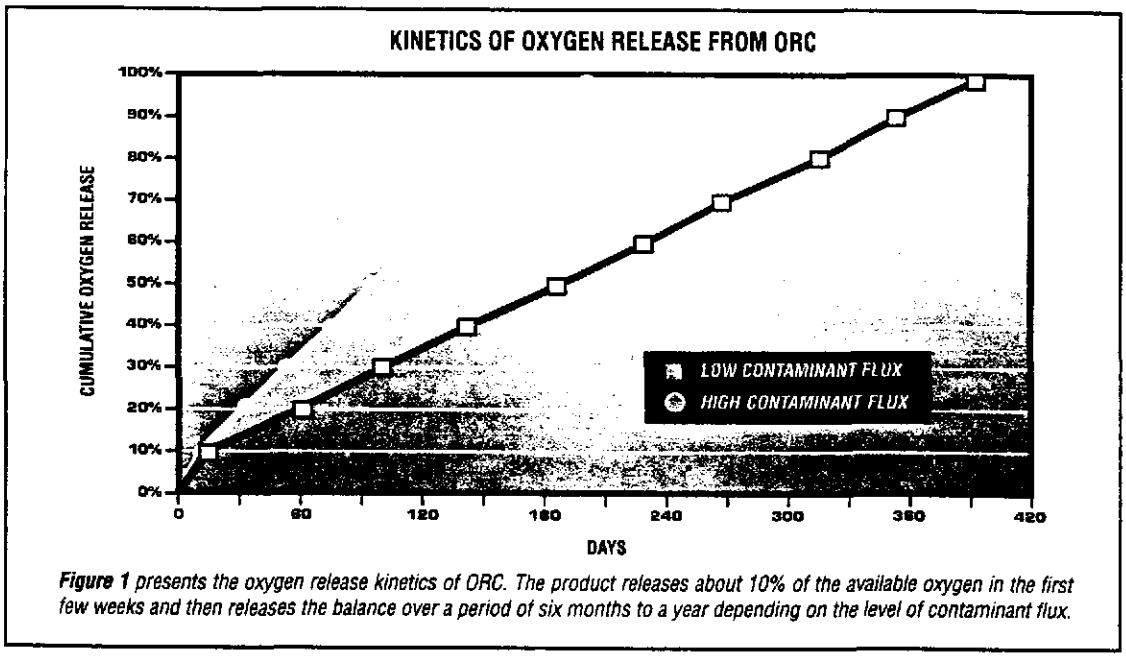


Figure 1 *presents the oxygen release kinetics of ORC. The product releases about 10% of the available oxygen in the first few weeks and then releases the balance over a period of six months to a year depending on the level of contaminant flux.*

GROUNDWATER APPLICATION – THE "OXYGEN BARRIER"

ORC should be considered for contaminated groundwater sites where aerobic bioremediation is the appropriate treatment technology. For application, ORC powder is mixed in a carrier matrix and contained in inert filter socks. A string of ORC Filter Socks is laced together and lowered into a well through the length of the contaminated saturated zone where contact with groundwater will initiate the release of oxygen. ORC Filter Socks are configured for two-, four-, and six-inch diameter wells (see Figure 2). When the oxygen returns to background levels, the socks containing ORC are removed from the well and, if necessary, new charges of ORC are added.

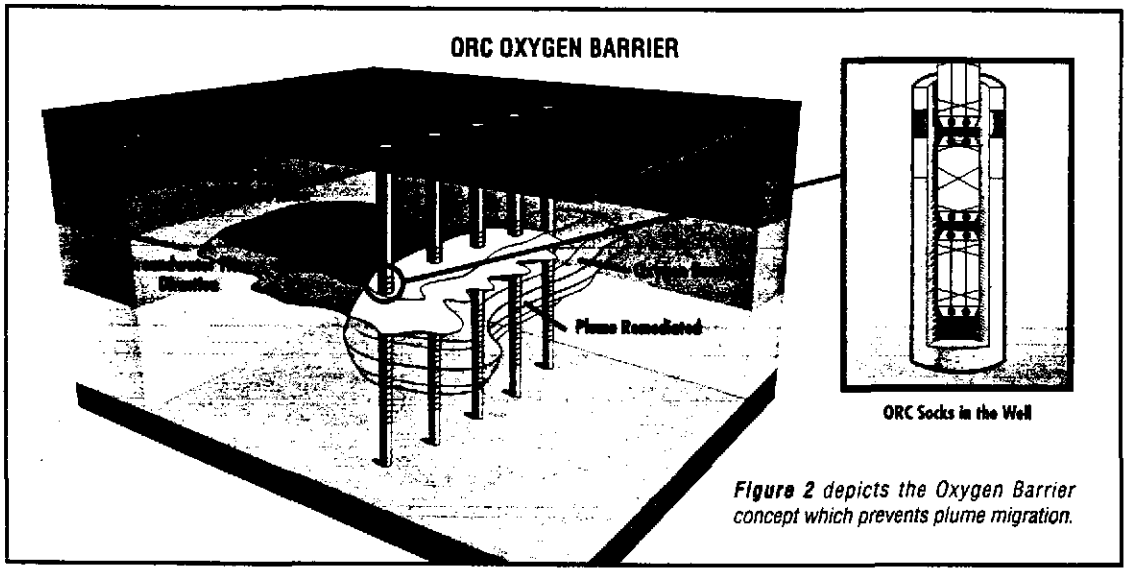


Figure 2 *depicts the Oxygen Barrier concept which prevents plume migration.*

CUSTOMER SERVICE

As part of our customer and product service, **REGENESIS** offers the following technical support at no additional charge:

- Analysis of your site for an ORC application to meet your remediation objectives
- Recommendation of ORC well placement and product replenishment
- Economic analysis and comparison of ORC to other remediation technologies
- Assistance with regulatory approval
- Technical Bulletins are available on a range of subjects

SAFETY, STORAGE AND HANDLING

ORC is an oxidizer. ORC should not come into contact with combustible materials. Though the material itself is not flammable, it can release oxygen to feed a fire. In the event of a fire, the area should be flooded with large volumes of water.

Since ORC can be mildly hazardous to human health, certain precautions should be taken when handling the material. Direct contact with the skin and eyes should be avoided, as irritation may occur. Rubber gloves and protective goggles should be worn as a preventative measure. Should contact with skin occur, wash immediately with soap and water. Flush eyes thoroughly and repeatedly for 15 minutes and contact a physician, if necessary.

Inhalation may also cause mild irritation to the lungs, nose, and throat, but should not result in significant, long-term hazard. When ORC is packaged in filter socks for use in wells or trenches, the free-powder related hazards are significantly limited. A proper dust mask or breathing apparatus should be used when the product is handled in the powder form. If inhalation irritation occurs, move to a well ventilated space, or outside to fresh air.

ORC is a very stable compound. Though it is designed to release oxygen when in contact with water, it will remain stable at up to 3% moisture which facilitates storage. Storage areas should remain dry. Avoid areas with high humidity. Store the product away from combustible material. Keep containers closed when not in use.

An MSDS is shipped with every order and copies are available upon request.

REGENESIS – THE COMPANY

REGENESIS Bioremediation Products was formed to continue the development and marketing of ORC®. Oxygen Release Compound was first sold commercially in 1994 after three years of development. The inventors originally began working on a similar product used to facilitate the growth of plants in oxygen-poor soils. Formulations of ORC more appropriate to bioremediation applications were successfully tested in the laboratory and followed by several field demonstrations. The company is now in the commercialization phase, working with clients to meet their specific remediation needs.

The Scientific Advisory Board and Board of Directors of **REGENESIS** Bioremediation Products [illegible] leaders from industry, academia and government.

For further information or technical assistance, please contact:

REGENESIS Bioremediation Products

27130A Paseo Espada ■ Suite 1407 ■ San Juan Capistrano ■ CA 92675 ■ Voice: (714) 443-3136 ■ Fax: (714) 443-3140

ORC – PROVEN EFFECTIVENESS

In the early development of bioremediation formulations of ORC, several independent laboratories and universities participated in proof-of-concept studies indicating that ORC releases oxygen, enhances microbial activity, and promotes remediation. Subsequently, field applications demonstrated that ORC was effective in promoting bioremediation under "real world" conditions.

- **University of Waterloo** (published, *Groundwater Monitoring and Remediation,* Winter 1994) – Conducted at the widely studied Borden Aquifer in Ontario, Canada, the study indicates that an Oxygen Barrier generated by ORC released significant amounts of dissolved oxygen (DO). It concluded that the enhancement of DO by ORC led to the biodegradation of at least 4 mg/L each of benzene and toluene.

- **North Carolina Site** (published, *Proceedings from the Second International Symposium on In Situ and On-Site Bioreclamation,* San Diego, CA, 1993) – This study demonstrated that the use of ORC in an Oxygen Barrier dramatically reduced BTEX compounds downgradient from a UST generated gasoline spill.

- **Alaska Site** (presented at the I&EC Special Symposium, American Chemical Society, Atlanta, GA, 1995) – A pilot study showed the effectiveness of an ORC remediation compared to air sparging. Sparge points fouled in the high iron environment and there was evidence of channeling – a problem common with this technology. ORC was effective in remediation and a full barrier was installed. Benzene levels were reduced from 320 ppb to 9.8 ppb and total BTEX went from 1361 ppb to 17 ppb. Gasoline range organics went to ND (not detected) from 7.4 ppm. Diesel range organics rose from ND to .55 ppm, indicating there may have been an influx of hydrocarbons during the test.

- **New Mexico Site** (presented at The New Mexico Environment Department UST Bureau Bioremediation Conference, Santa Fe, NM 1995) – At this site, ORC was installed in 20 wells to form an Oxygen Barrier. There was a high contaminant flux at the site (5-15 ppm at 1-2 feet per day). DO increased from inadequate levels and was maintained at 10 ppm and greater for the first 30 days. After 93 days the estimates of the remaining oxygen indicated that a change out of ORC would not be required for six months. During this 93 day period, a significant reduction of BTEX mass was achieved in the treatment zone, such that concentrations of total BTEX in samples from the most downgradient well (measured at 120 feet from the barrier) declined to ND. At this well, assays of aerobic microbial degraders were two orders of magnitude higher than background, thus indicating the presence of oxygen from the ORC installation was driving bioremediation.

- **16-Site ORC Performance Evaluation** – ORC was placed in 41 existing wells on 16 sites and monitored for a 7 to 12 week period. The average dissolved oxygen levels were significantly increased; two-thirds of the readings were between 20 and 30 ppm, even while in the presence of dissolved phase BTEX. As expected, the BTEX levels dropped dramatically - between 80 and 100 percent in 75% of the wells - a third of those being fully remediated (see Figure 4).

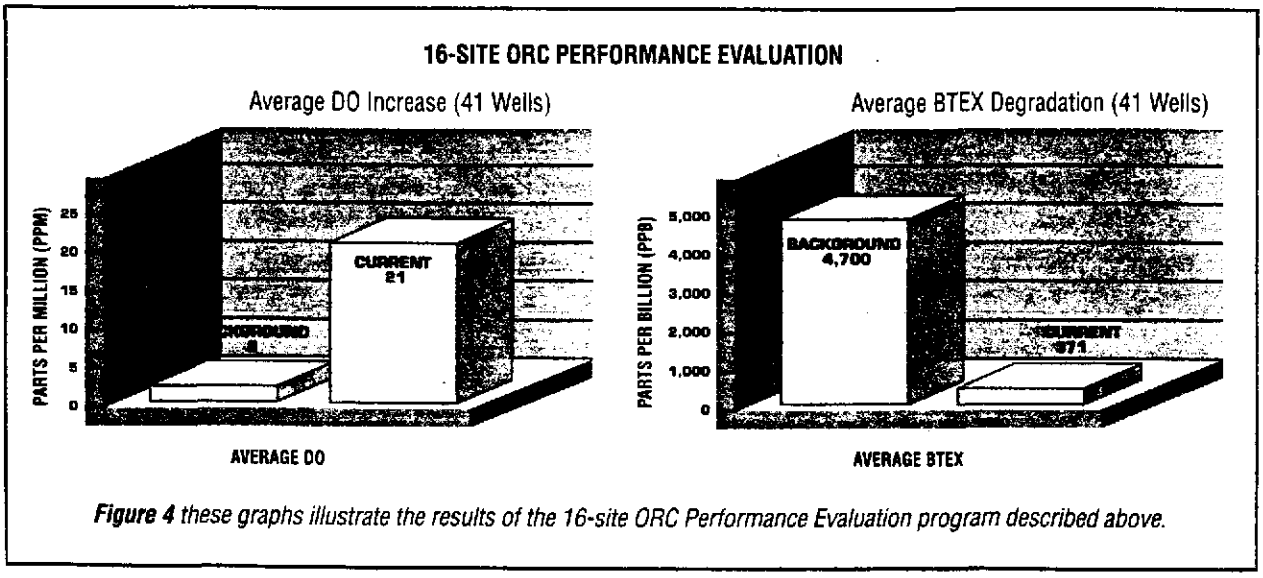


Figure 4 *these graphs illustrate the results of the 16-site ORC Performance Evaluation program described above.*

Primary Treatment – ORC can meet a wide range of remediation objectives. As a primary treatment system in groundwater applications, ORC can be configured to form an **Oxygen Barrier** across a contaminated plume. A properly placed row of wells or a trench containing ORC will slowly release oxygen, enhance bioremediation, and cut off the plume in the oxygenated zone (see Figures 2 and 3). The **Oxygen Barrier** concept was successfully demonstrated by the University of Waterloo in Canada and at sites in North Carolina, Alaska and New Mexico. BTEX compounds were significantly remediated at points downgradient from the **Oxygen Barrier.**

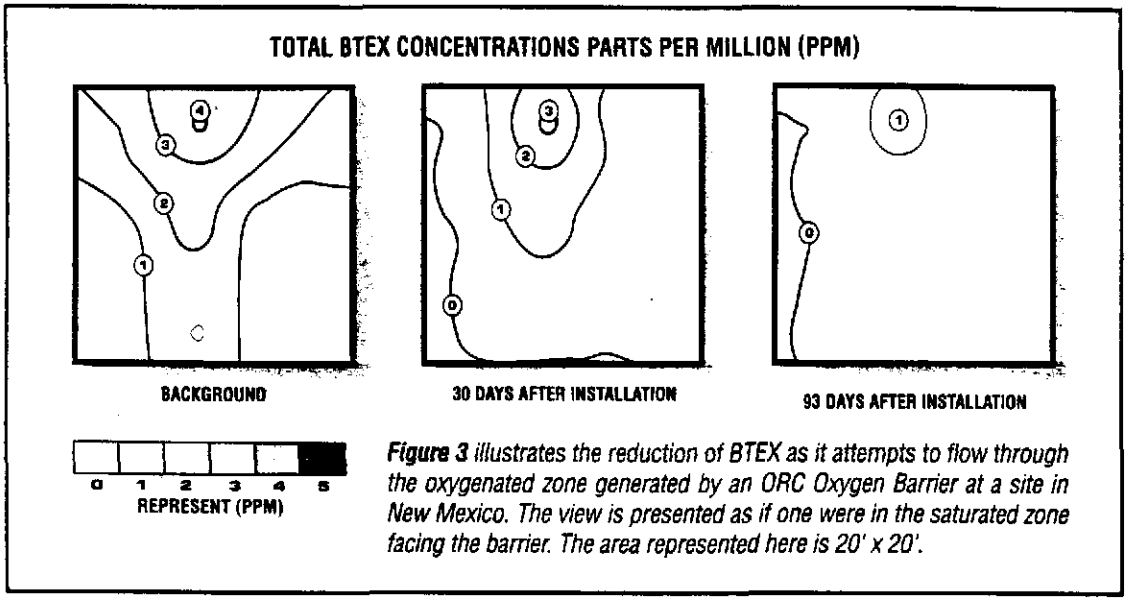


Figure 3 illustrates the reduction of BTEX as it attempts to flow through the oxygenated zone generated by an ORC Oxygen Barrier at a site in New Mexico. The view is presented as if one were in the saturated zone facing the barrier. The area represented here is 20' x 20'.

GROUNDWATER APPLICATION OPTIONS

Primary Treatment – ORC can be used as the primary treatment method at sites where groundwater contamination concentrations require active remediation. The goal is prevention of plume migration off-site.

Concurrent Treatment – At sites where another technology such as pump and treat is already installed, or planned for installation, ORC can be used to concurrently improve remediation results.

Follow-on Treatment – ORC can be used to continue groundwater remediation at sites where the primary technology is no longer cost effective – as when pump and treat operations reach an inefficient plateau.

Monitoring/Risk Reduction – This includes introducing ORC into existing monitoring wells at sites with groundwater contamination. ORC may reduce the required frequency and duration of monitoring by promoting degradation of low levels of contaminants and in certain situations may reduce source area contaminants enough to meet risk reduction objectives. Also this can be a cost effective method of performing a pilot study to determine how well ORC will work on a particular site before more extensive ORC treatment.

OTHER REMEDIATION OPTIONS

Soil Treatment – ORC can be mixed directly in soil to supply oxygen for remediation in biopiles and landfarming applications. This is particularly useful when soil conditions and/or physical location contraindicate mechanical aeration strategies. In some cases, ORC can be mixed into soil on the floor of an excavation, as clean fill is added, to prevent recontamination by groundwater as the table rises.

Odor Control – ORC has been successfully demonstrated to control odor in anaerobic impoundments.

Attachment E

Well Search Results

COUNTY OF ALAMEDA
PUBLIC WORKS AGENCY
951 Turner Court, Hayward, CA 94545
(510) 670-5543

DATE: 10/26/98

No of Pages (including cover): 2

FAX TRANSMITTAL

TO	FROM
VICKI	ALVIN KAN
FAX: 243-9501	FAX: (510) 670-5262

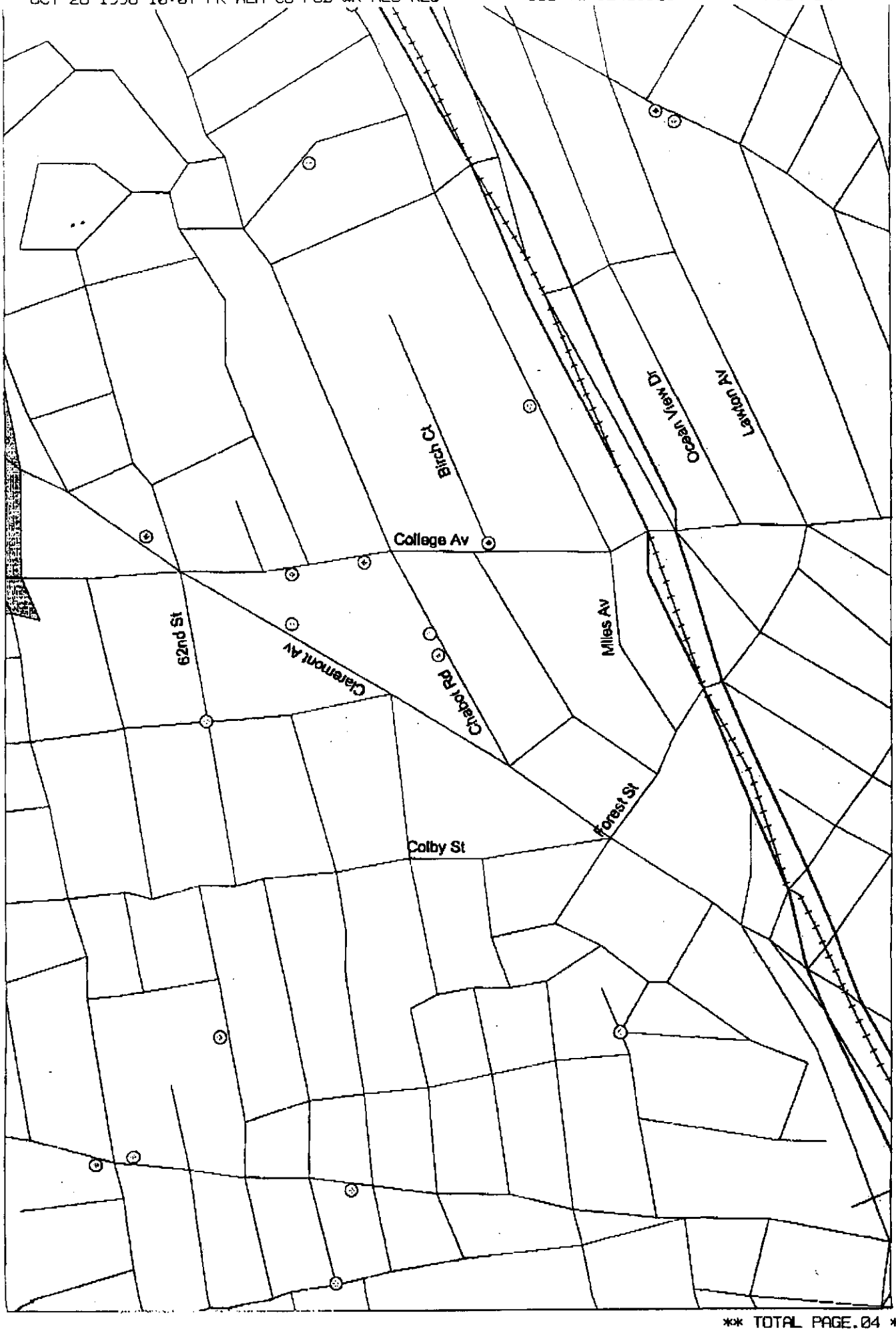
Should you have problems receiving this FAX transmittal, please call: (510) 670-5248

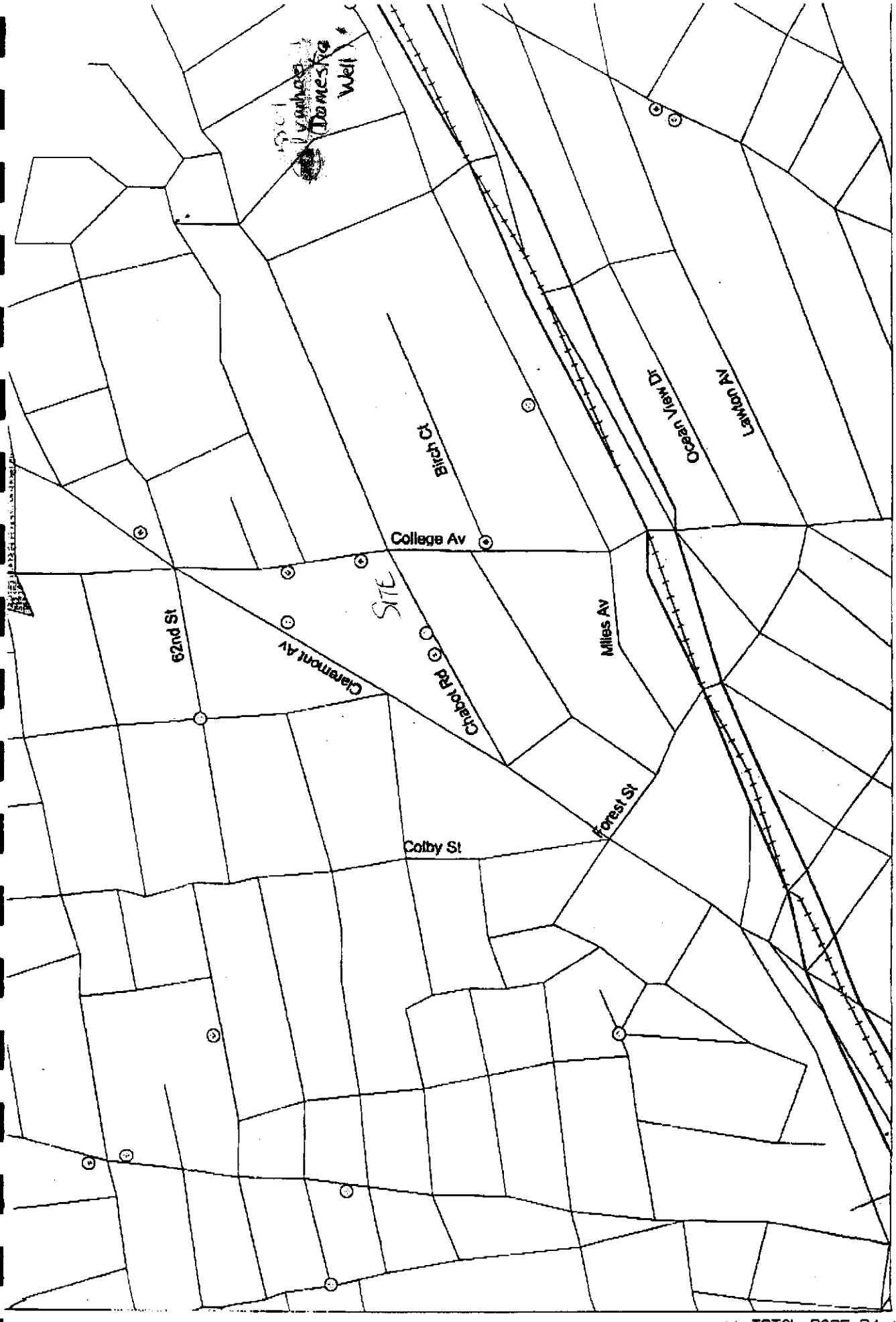
SUBJECT: WELL SURVEY ~~WELL PERMIT APPLICATION~~

TRANSMITTING THE FOLLOWING:

Tr	Section	Owner	Address	City	Drildate	Elevation	Totaldepth	Waterdepth	Diameter	Use	Yield
1S/4W	13H 2	Shell Oil Company	5755 Broadway	OAK	9/89	0	10	4	4	MON	0
1S/4W	13H 3	Shell Oil Company	5755 Broadway	OAK	9/89	0	10	4	4	MON	0
1S/4W	13G 6	Chevron, USA, Inc.	5800 College Avenue	OAK	12/89	0	17	10	4	MON	0
1S/4W	13G 7	Chevron, USA, Inc.	5800 College Avenue	OAK	12/89	0	17	10	4	MON	0
1S/4W	13D 8	Thrifty Oil Company	6125 Telegraph Avenue	OAK	10/89	0	30	15	6	MON	0
1S/4W	13G 8	Chevron USA	5800 College Avenue	OAK	7/90	0	48	0	2	MON	0
1S/4W	13G 9	Chevron, USA	5800 College Avenue	OAK	8/90	179	28	16	2	MON	0
1S/4W	13B	Shell Oil Company	6039 College Ave	OAK	9/90	0	0	0	8	DES	0
1S/4W	13B 1	Shell Oil Company	6039 College Ave	OAK	7/90	0	0	8	0	BOR	0
1S/4W	13B 2	Shell Oil Company	6039 College Ave	OAK	1/90	0	0	0	10	BOR	0
1S/4W	13B 3	Shell Oil Company	6039 College Ave	OAK	1/90	186	25	0	4	MON	0
1S/4W	13B 4	Shell Oil Company	6039 College Ave	OAK	1/90	194	25	0	4	MON	0
1S/3W	18B 1	EBMUD	5909 CHABOT RD	OAK	7/81	0	27	0	0	CAT	0
1S/3W	18D 1	H.L. SORENSON	5809 IVANHOE RD	OAK	?	0	80	20	15	DOM	0
1S/4W	12N 1	GIVENS INVESTMENT CO.	6392 TELEGRAPH AVE.	OAK	7/88	0	29	11	2	MON	0
1S/4W	13C 1	PG&E	62 & HILLEGASS	OAK	7/75	0	81	0	0	DES	0
1S/4W	13D 1	PERALTA ELEMENTARY SCHOOI	460 63RD ST	OAK	8/74	0	0	0	0	GEO	0
1S/4W	13D 2	ARCO PETROLEUM	6125 TELEGRAPH AVE	OAK	6/86	0	30	16	2	TES	0
1S/4W	13D 3	ARCO PETROLEUM	6125 TELEGRAPH AVE	OAK	6/86	0	30	16	2	TES	0
1S/4W	13D 4	ARCO PETROLEUM	6125 TELEGRAPH AVE	OAK	6/86	0	30	16	2	TES	0
1S/4W	13D 5	THRIFTY OIL	6125 TELEGRAPH AVE	OAK	11/86	0	30	16	4	MON	0
1S/4W	13D 6	THRIFTY OIL	6125 TELEGRAPH AVE	OAK	11/86	0	27	16	4	MON	0
1S/4W	13D 7	THRIFTY OIL	6125 TELEGRAPH AVE	OAK	11/86	0	27	13	4	MON	0
1S/4W	13E 1	PG&E	MARTIN & HERMANN S	OAK	7/74	0	78	17	0	CAT	0
1S/4W	13G 1	CHEVRON USA	5800 COLLEGE AVE	BER	07/89	0	0	0	0	DES	0
1S/4W	13G 2	CHEVRON USA	5800 COLLEGE AVE	BER	07/89	0	0	0	0	DES	0
1S/4W	13G 3	CHEVRON USA	5800 COLLEGE AVE	BER	07/89	0	0	0	0	DES	0
1S/4W	13G 4	CHEVRON USA	5800 COLLEGE AVE	BER	07/89	0	0	0	0	DES	0
1S/4W	13G 5	CHEVRON USA	5800 COLLEGE AVE	BER	07/89	0	0	0	0	DES	0
1S/4W	13H 1	PG&E	LAWTON & MENDOCIN	OAK	12/73	0	120	0	0	CAT	0
1S/4W	13L 1	CARY	5370 SHAFTER	OAK	/00	0	60	11	0	ABN	0
1S/4W	13L 2	EBMUD	MILES AV	OAK	5/75	0	50	0	0	CAT	0
1S/4W	13N 2	EBMUD	MILES AV	OAK	5/75	0	50	0	0	CAT	0
1S/4W	13G 6	CITY OF OAKLAND	5776 MILES AVE	OAK	04/89	100	28	16	0	PIE	0
1S/4W	13G 7	CITY OF OAKLAND	5776 MILES AVE	OAK	04/89	101	28	23	0	PIE	0
1S/4W	13G 8	CITY OF OAKLAND	5776 MILES AVE	OAK	04/89	99	33	16	2	MON	0
1S/4W	13C 2	Shell Oil Co	6066 Claremont Ave	OAK	8/91	0	32	17	4	MON	0
1S/4W	13C 3	Dryer's Ice Cream MW1	5929 College Ave	OAK	7/91	0	30	18	2	MON	0
1S/4W	13C 4	Dryer's Ice Cream MW@	5929 College Ave	OAK	7/91	0	28	15	4	MON	0
1S/4W	13C 5	Dryer's Ice Cream MW3	5929 College Ave	OAK	7/91	0	27	14	4	MON	0
1S/4W	13H 4	Chevron USA - MW - 3	5775 Broadway	OAK	8/92	0	43	0	2	MON	0
1S/4W	13H 5	Chevron USA - MW - 1	5775 Broadway	OAK	8/92	0	43	41	2	MON	0

Tr	Section	Owner	Address	City	Drilldate	Elevation	Totaldepth	Waterdepth	Diameter	Use	Yield
1S/4W	13H 6	Chevron USA - MW - 2	5775 Broadway	OAK	8/92	0	38	27	2	MON	0
1S/4W	13B 5	Blood Bank of the ACCMA	6230 Claremont Av	OAK	4/93	0	24	23	1	PIE	0
1S/4W	13B 6	Blood Bank of the ACCMA	6230 Claremont Av	OAK	4/93	0	24	23	1	PIE	0
1S/4W	13B 7	Blood Bank of the ACCMA	6230 Claremont Av	OAK	4/93	0	24	0	1	PIE	0
1S/4W	13C 6	Shell Service Station	6039 College Ave	OAK	9/93	193	25	15	2	MON	0
1S/4W	13G10	Chevron Products Co	5800 College Av	OAK	7/96	0	30	22	2	MON	0
1S/4W	13C 7	Dreyer's Grand Ice Cream	5929 College Av	OAK	9/93	185	28	13	2	MON	0
1S/4W	13C 8	Dreyer's Grand Ice Cream	5929 College Av	OAK	9/93	185	30	0	2	MON	0
1S/4W	13C 9	Dreyer's Grand Ice Cream	5929 College Av	OAK	9/93	188	30	0	2	MON	0
1S/4W	13C10	Shell Oil Company	6039 College Av	OAK	9/93	0	25	14	2	MON	0


Birch Ct
Ocean View Dr
Lawton Av
College Av
62nd St
Claremont Av
Chabot Rd
Miles Av
Forest St
Colby St


Well
Birch Ct
Ocean View Dr
Lawton Av
College Av
SITE
62nd St
Claremont Av
Chabot Rd
Miles Av
Forest St
Colby St