ES
ENGINEERING-SCIENCE, INC.

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May 11, 1993

Ms. Susan Hugo
Alameda County Department of
Environmental Health
80 Swan Way, Room 200
Oakland, California 94621

Re: Greyhound Terminal
Location #8934
Oakland, California
Quarterly Report

Dear Ms. Hugo:

Engineering-Science, Inc. (ES) is pleased to present, on behalf of Greyhound Lines, Inc. (GLI), the fourth quarterly groundwater monitoring report for the GLI terminal in Oakland, California. The report also serves as the April 1993 monthly monitoring report.

The information contained in this Quarterly Status Report is presented in the format shown in "Appendix A" of the "Tri-Regional Board Staff Recommendations for Preliminary Evaluation and Investigation of Underground Tank Sites" (August 1990). GLI has reviewed and approved this report and has assigned ES to be their designated representative for preparation and submittal of the quarterly status reports. The enclosed quarterly report has been completed accurately, and in accordance with all applicable LUFT and Tri-Regional requirements. GLI agrees with the conclusions and recommendations outlined in this cover letter and the attached report.

Groundwater samples were collected at the Oakland facility on April 6, and analyzed for total petroleum hydrocarbons as diesel (TPH-D), total petroleum hydrocarbons as gasoline (TPH-G) (DHS/LUFT Method Modified EPA 8015/3510), and BTEX (EPA Method 602). A site map showing the monitoring well locations is included as Figure 1. The detection limits specified in the 1989 LUFT Manual (Appendix D, Table 3-5) were met by the analytical laboratory. All physical data for the monitoring wells sampled on April 6, 1993 are summarized on Table 1. The analytical results are summarized on Table 2. Previous groundwater analytical data have been summarized on Table 3.

The next groundwater sampling event will be conducted during the month of July 1993. The Alameda County Department of Environmental Health (ACDEH) will be notified at least one week prior to the sampling event so that a representative of ACDEH may be on site. The fifth quarterly status report will be prepared and submitted to your department on or before August 16, 1993.

As requested in ACDEH's letter to Greyhound dated October 23, 1992, Greyhound prepared and submitted (April 2, 1993) a work plan to conduct a supplemental site assessment for the purpose of defining the extent of the dissolved-phase contamination at this location. Greyhound awaits ACDEH's review and approval of the work plan.

If you have any questions or require additional information, please call us at (315) 451-9560.

Sincerely,

ENGINEERING-SCIENCE, INC.

D. Nickerson/lnl

David A. Nickerson
Project Manager

D. Chaffin

David L. Chaffin, R.G.
California Registered Geologist
(No. 4885)

DLC/DAN/EJS

cc: T. Portele, GLI, Dallas, TX
Richard Hiett, Regional Water Quality Control Board

APRIL 1993
QUARTERLY STATUS REPORT
GREYHOUND TERMINAL
OAKLAND, CALIFORNIA

- **Status of investigation and cleanup activities:**

  A preliminary site investigation was completed by Engineering-Science, Inc. (ES) in January 1992. The Preliminary Site Investigation report was submitted to the Alameda County Department of Environmental Health (ACDEH) on January 27, 1992.

  Based on the results of the preliminary investigation, a groundwater monitoring program consisting of monthly groundwater level measurements and quarterly groundwater sampling and reporting was initiated by Greyhound in June 1992 to better define the impact of former UST operations to groundwater.

  Based on measurable thicknesses of free product discovered in four existing monitoring wells on-site, Greyhound subsequently proposed the installation of an automated free product recovery system. Upon ACDEH approval in October 1992, Greyhound obtained the required permits and installed a recovery system on-site during the week of November 9, 1992. A report detailing recovery system installation was submitted to ACDEH on December 18, 1992. The recovery system was placed in operation during the week of January 4, 1993 after discharge permit conditions were finalized with the East Bay Municipal Utility District (EBMUD).

  ACDEH requested that Greyhound provide documentation regarding the underground fuel storage tank system (UST) removal, including disposal documentation in a letter to Greyhound dated October 23, 1992. Greyhound subsequently prepared a Tank Closure Documentation Report for this facility. The report was submitted to ACDEH on December 15, 1992. Greyhound awaits any comments ACDEH may have regarding the current groundwater monitoring program, free product recovery operations, and tank closure documentation submitted for this location.

- **Proposed continuing or next phase of investigation:**

  In response to ACDEH's letter to Greyhound dated October 23, 1992, Greyhound proposed to conduct a supplemental site assessment investigation at the site. The purpose of the supplemental site assessment is to completely define the lateral extent of the dissolved contaminant plume. Greyhound prepared a work plan for this investigation and submitted the work plan to ACDEH for review on April 2, 1993. Upon review and approval of the work plan by ACDEH, Greyhound will obtain the required permits and implement the supplemental site assessment at this location.

  Results of the supplemental assessment will be presented in a report that will be submitted to ACDEH. The report will also include an evaluation of clean-up standards and additional remedial action.

- **Method of cleanup proposed or implemented to date:**

  In October 1992, Greyhound proposed a free product recovery system for the removal of free product in four wells. A hydrocarbon recovery system was installed in November 1992 after receiving approval from Ms. Susan Hugo (ACDEH). Recovery operations were initiated during the week of January 4, 1993. To date, 510 gallons of free product and contaminated groundwater have been recovered and properly disposed off-site by Evergreen Vacuum Services, a State of California-certified waste hauler.

- **Time schedules for the completion of the investigation of the site and remediation:**

  A work plan for the supplemental site assessment was prepared and submitted to ACDEH on April 2, 1993. After review and approval of the work plan by ACDEH, Greyhound will implement the supplemental site assessment in accordance with the schedule provided in the work plan.

  The monthly monitoring, quarterly groundwater sampling, and hydrocarbon recovery programs should continue until free product has been removed from the groundwater.

- **Method and location of disposal of the released hazardous substance and any contaminated soil, groundwater or surface water:**

  Approximately 510 gallons of free product and contaminated groundwater have been recovered to date. Recovered diesel fuel and contaminated groundwater have been properly recycled off-site by Evergreen Vacuum Services, a State of California-certified waste hauler.

- **Manifest required for transport of hazardous substances:**

  All disposal/transport manifests for recovered diesel fuel and contaminated groundwater to date were included in Appendix A of the January 1993 Quarterly Status Report. Future manifests will be included in future quarterly status reports.

- **Monitoring well data:**

  The physical data obtained from the monitoring wells on April 6, 1993 are presented in Table 1. A site map showing the monitoring well locations is included as Figure 1. Physical data obtained during previous monthly monitoring visits are given in Table 5. Free product thicknesses have been eliminated or significantly reduced in the four recovery wells on-site (ES-1, ES-2, ES-5, and BC-1) since installation of the recovery system in November 1992. A groundwater contour map (Figure 2) was constructed from groundwater level elevations measured in April 1993. Note that groundwater

levels in the area of the recovery wells (ES-1, ES-2, ES-5, and BC-1) are depressed due to recovery operations which have created a cone of depression toward the recovery wells, preventing further migration of contaminants off-site.

- **Analytical results of groundwater or soil sampling:**

  Results of the most recent quarterly groundwater sampling event (April 1993) are summarized in Table 2. Four of the eight monitoring wells were sampled. Monitoring wells ES-1, ES-2, ES-5 and BC-1 were not sampled due to the presence of free product or hydrocarcon sheens.

  TPH-D concentrations ranged between non-detect and 0.51 mg/l in the groundwater samples collected. TPH-G concentrations ranged from non-detect to 4.5 mg/l in the groundwater samples. Benzene was detected in only two samples: ES-3 at a concentration of 53.0 µg/l and ES-4 at a concentration of 33.0 µg/l. Ethylbenzene was also detected in ES-3 and ES-4 at concentrations of 67.0 and 1.9 µg/l respectively.

  Toluene was detected only in ES-4 at a concentration of 2.3 µg/l. Xylenes were detected in two samples: ES-3 (78.0 µg/l) and ES-4 (4.7 µg/l).

  BTEX concentrations in groundwater samples collected from BC-2 and BC-3 were below the laboratory detection limits. Greyhound will resample these wells during the next quarterly sampling event in July 1993.

  Groundwater analytical data from previous quarterly sampling events are summarized on Table 3. Soil analytical data from the preliminary site investigation are shown on Table 4.

- **A site map showing the "zero line" of contamination, and changes in analyses and gradient measurements over the last quarter:**

  A "zero line" for groundwater contamination has not been mapped because the extent of dissolved contamination has not been completely defined. After the supplemental site assessment has been implemented, a zero line showing the extent of dissolved hydrocarbon contamination will be provided.

- **Tabulated data for all monitoring wells including groundwater elevations collected to date:**

  The physical data collected to date for all of the monitoring wells located at the facility are presented in Table 5.

- **A site map delineating groundwater elevation contours based on recent data:**

  Groundwater elevations determined by water level measurements made on April 6, 1993 suggested a northerly groundwater flow direction at the site with a cone of depression developed around the recovery wells (ES-1, ES-2, ES-5, and BC-1) (Figure 2).

- **Analytical results from all previous sampling events including laboratory reports for the most recent sampling event and chain-of-custody documentation:**

  A summary of the analytical results from previous groundwater sampling events is presented in Table 3. A summary of the analytical data for soil samples is presented in Table 4. The laboratory results from the most recent groundwater sampling event, including chain-of-custody documentation, are included in Appendix A.

- **Site map delineating contamination contours for soil and groundwater based on recent data:**

  A map delineating the extent of groundwater contamination has not been prepared due to lack of sufficient data points to construct the map. Figure 3 shows analytical data for groundwater samples collected on April 6, 1993 plotted on a site base map.

  Figure 4 is a site map indicating areas of soil contamination based on data obtained during the preliminary site investigation completed during November 1991. Soil contamination appears to be limited to the area near sample locations ES-1, ES-2, and ES-5. A 100 mg/kg TPHD contour has been included to illustrate the probable extent of TPHD contamination in this area. The extent of soil contamination at the site will be determined during the supplemental site assessment.

- **Tank owner commitment letter:**

  The cover letter submitted with this report is intended to serve as the tank owner commitment letter.

- **The quantity of groundwater and vapors removed during the reporting period and cumulative to date:**

  Approximately 510 gallons of recovered diesel fuel and contaminated groundwater have been removed to date. This represents an increase of an additional 15 gallons of free product recovered during the last quarter. As of April 6, 1993, 36,270 gallons of

carbon-treated groundwater have been processed through the recovery system on-site and discharged to the sanitary sewer.

- **Times and dates equipment was not operating, cause of shutdown, and a corrective action plan to insure similar shutdowns do not reoccur:**

  The system has been fully operational with no shutdown periods since February 22, 1993. The system is currently inspected by ES personnel during monthly monitoring visits and daily by facility personnel.

- **Timelines for activities currently underway or proposed:**

  Greyhound will continue the monthly groundwater monitoring, quarterly sampling, and hydrocarbon recovery program in accordance with all applicable LUFT and Tri-Regional requirements. The next quarterly status report will be prepared and submitted to ACDEH on or before August 16, 1993.

  Greyhound has submitted a work plan for the Supplemental Site Assessment for ACDEH review and approval. The supplemental site assessment activities and report preparation will follow the approved schedule included in the work plan.

- **Estimates of the quantity of contamination remaining in soil and groundwater, and time for completing remediation:**

  At the present time, there is insufficient data to make these estimates. The quantity of soil and groundwater contamination, and the time required to remediate the site will be carefully evaluated after the supplemental site assessment data are collected.

TABLE 1

MONITORING WELL DATA SUMMARY
GREYHOUND TERMINAL, OAKLAND, CALIFORNIA
April 6, 1993

Location	Elevation of PVC T.O.C (Ft.)	Depth to Water (Ft.)	Groundwater Elevation (*) (Ft. MSL)	Product Layer Thickness (ft.)
		3/5/93		(3/5/93)
ES-1	21.33	17.88	3.45	0
ES-2	21.83	18.31	3.52	(.06) .11
ES-3	22.33	15.92	6.41	0 0
ES-4	21.09	17.26	3.83	0 0
ES-5	21.24	17.28	3.96	0
BC-1	21.55	18.26	3.29	(.59) 0
BC-2	NA	15.20	NA	(.01) 0
BC-3	NA	15.44	NA	0

T.O.C. – Top of Casing

NA – Not Available (Well casings not vertical.)

(*) Elevations based on site surface vertical datum (97.50, on steel grate for storm sewer near wash rack) in the field and later converted to Mean Sea Level (MSL): 97.50 = 12.0 MSL.

TABLE 2

GROUNDWATER ANALYTICAL RESULTS
GREYHOUND TERMINAL, OAKLAND, CALIFORNIA
APRIL 6, 1993

Location	Date Collected	Parameter	Result	Detection Limit
ES–3	4/6	Benzene[1]	53.0 (52.0)	0.3 ug/L
	4/7	Ethylbenzene[1]	67.0 (100)	0.3 ug/L
		Toluene[1]	ND (49)	0.3 ug/L
		Xylenes (total)[1]	78 (250)	0.6 ug/L
		TPH–D[2]	0.51 (ND)	0.05 mg/L
	1st time analyzed →	TPH–G[2]	4.5	0.05 mg/L
ES–4	4/6	Benzene[1]	33.0 (30)	0.3 ug/L
		Ethylbenzene[1]	1.9 (7.7)	0.3 ug/L
		Toluene[1]	2.3 (6.7)	0.3 ug/L
		Xylenes (total)[1]	4.7 (16.0)	0.6 ug/L
		TPH–D[2]	ND (ND)	0.05 mg/L
		TPH–G[2]	0.36	0.05 mg/L
BC–2	4/6	Benzene[1]	ND (ND)	0.3 ug/L
		Ethylbenzene[1]	ND (1.5)	0.3 ug/L
		Toluene[1]	ND (1.1)	0.3 ug/L
		Xylenes (total)[1]	ND (9.5)	0.6 ug/L
		TPH–D[2]	0.13 (ND)	0.05 mg/L
		TPH–G[2]	ND	0.05 mg/L
BC–3	4/6	Benzene[1]	ND (ND)	0.3 ug/L
		Ethylbenzene[1]	ND (ND)	0.3 ug/L
		Toluene[1]	ND (ND)	0.3 ug/L
		Xylenes (total)[1]	ND (ND)	0.6 ug/L
		TPH–D[2]	0.12 (ND)	0.05 mg/L
		TPH–G[2]	ND	0.05 mg/L

ES 1 & ES 5 BC 1 – not analyzed for dissolved HC's why. no FP present during sampling event

[1] Analyzed by EPA Method 602. Concentrations in ug/l.

[2] Analyzed by DHS/LUFT Method Modified EPA 8015 (Note: TPH–G values converted to mg/l for comparison with TPH–D). Concentrations in mg/l.

Notes:

Wells ES–1, 2, 5, and BC–1 were not sampled due to the presence of free product or hydrocarbon sheens.

ND – Not detected above the analytical method detection limit.

LML/SY360.18/0012.WK3

TABLE 3

SUMMARY OF ANALYTICAL DATA
GROUNDWATER ANALYSIS
GREYHOUND TERMINAL, OAKLAND, CALIFORNIA

Sampling Date	Location	Benzene ug/l	Toluene ug/l	Ethylbenzene ug/l	Xylene ug/l	Total BTEX ug/l	TPH–D(*) mg/l	TPH–G(*) mg/l
07/08/92	ES–3	54	21	48	34	157	1.3	NA
	ES–4	31	5.6	ND	2.8	39.4	ND	NA
	BC–2	ND	ND	ND	8.4	8.4	2.1	NA
	BC–3	ND	2.5	ND	6.1	8.6	3.9	NA
10/06/92	ES–3	93	18	ND	11	122	ND	NA
	ES–4	100	8.2	ND	7.6	115.8	ND	NA
	BC–2	ND	1.1	0.9	7.2	9.2	ND	NA
	BC–3	ND	1.9	0.5	1.8	4.2	0.8	NA
01/07/93	ES–3	52	49	100	250	451	ND	NA
	ES–4	30	6.7	7.7	16	60.4	ND	NA
	BC–2	ND	1.1	1.5	9.5	12.1	ND	NA
	BC–3	ND	ND	ND	ND	ND	ND	NA
04/06/93	ES–3	53	ND	67	78	198	0.51	4.5
	ES–4	33	2.3	1.9	4.7	41.9	ND	0.36
	BC–2	ND	ND	ND	ND	ND	0.13	ND
	BC–3	ND	ND	ND	ND	ND	0.12	ND

ND – Parameter analyzed for but not detected above method detection limit.

NA – Parameter not analyzed.

(*) – Total petroleum hydrocarbons diesel (TPH–D) and total petroleum hydrocarbons as gasoline (TPH–G) were analyzed by GCFID by the DHS/LUFT method (modified EPA method 8015/solution preparation method 3510).

TABLE 4
SOIL ANALYTICAL DATA SUMMARY
GREYHOUND TERMINAL, OAKLAND, CALIFORNIA

Location Sample Depth*	Benzene ug/kg	Toluene ug/kg	Ethylbenzene ug/kg	Xylenes ug/kg	Total BTEX ug/kg	TPHD(a) mg/kg
ES-1 (16-18)	ND	3,000	3,400	22,000	28,400	ND
ES-2 (16-18)	ND	27,000	28,000	150,000	205,000	ND
ES-3 (18-19)	ND	ND	ND	ND	ND	ND
ES-4 (16-16.5)	ND	ND	ND	ND	ND	ND
ES-5 (15-17)	ND	80	65	330	475	160
California ARARs:	0.3-1(b) (mg/kg)	0.3-50(b) (mg/kg)	1-50(b) (mg/kg)	1-50(b) (mg/kg)	—	100(c), 1000(d) (mg/kg)

NOTES:

ARAR = Available Applicable or Relevant Appropriate Requirements.

ND = Parameter analyzed for but not detected above method detection limit.
* Depth given in feet below ground surface.
(a) Total petroleum hydrocarbons as diesel (TPHD) were analyzed and characterized by GCFID in accordance with DHS/LUFT Method (modified EPA Method 8015).
(b) California LUFT criteria. Note the ARARs are given in ppm, whereas the results are in ppb.
(c) RWQCB - Level that initiates a soil/groundwater characterization investigation.
(d) California Hazardous Waste based on ignitability.

oakland4.wq1
01/27/92

TABLE 5

MONITORING WELL DATA SUMMARY
GREYHOUND TERMINAL, OAKLAND, CALIFORNIA

Date	Well Location	Depth to Liquid (Feet)	Depth to Water (Feet)	Free Product Thickness (Feet)
		Screen(ft)		
6/16/92	ES-1 (10-32)	20.18	23.78	3.60
	ES-2 (10-30)	18.63	18.64	.01
	ES-3 (15-35)	19.41	19.41	0
	ES-4 (10-30)	18.40	18.40	0
	ES-5 (10-30)	15.32	15.65	.33
	BC-1 ?	20.64	20.84	.20
	BC-2 ?	16.25	16.25	0
	BC-3 ?	16.48	16.48	0
7/7/92	ES-1	18.60	18.60	0
	ES-2	20.02	19.62	.40
	ES-3	19.52	19.52	0
	ES-4	18.51	18.51	0
	ES-5	22.23	20.23	2.0
	BC-1	19.55	20.66	1.11
	BC-2	16.89	16.89	0
	BC-3	16.68	16.68	0
8/4/92	ES-1	18.80	18.81	.01
	ES-2	19.17	19.76	.59
	ES-3	19.68	19.68	0
	ES-4	18.66	18.66	0
	ES-5	18.16	20.43	2.27
	BC-1	18.47	20.90	2.43
	BC-2	18.46	18.46	0
	BC-3	19.24	19.24	0
9/31/92	ES-1	18.96	18.97	.01
	ES-2	19.29	19.90	.61
	ES-3	19.80	19.80	0
	ES-4	18.79	18.79	0
	ES-5	18.24	20.80	2.56
	BC-1	18.68	21.02	2.34
	BC-2	18.89	18.89	0
	BC-3	19.10	19.10	0

TABLE 5
(Continued)

MONITORING WELL DATA SUMMARY

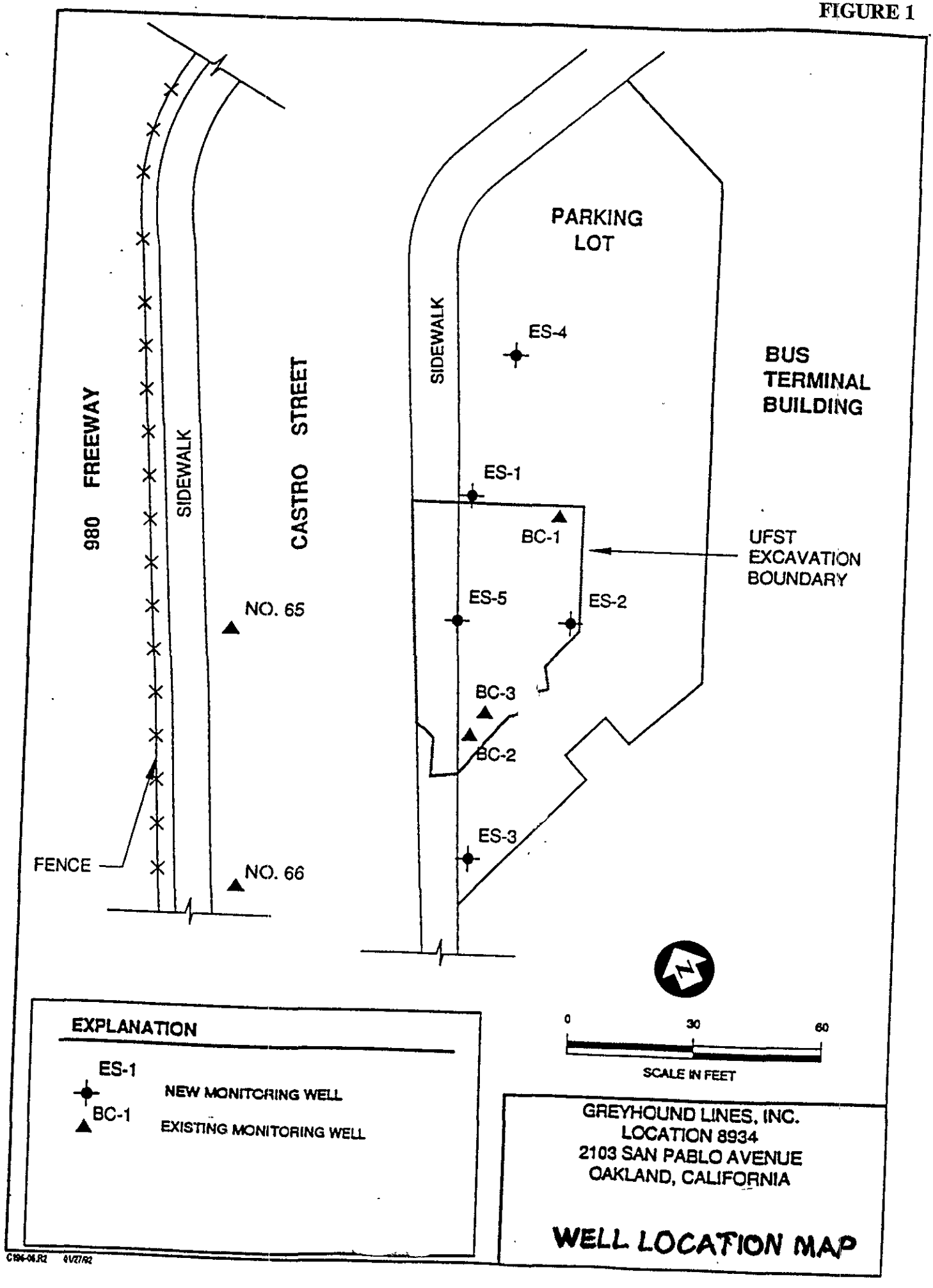
Date	Well Location	Depth to Liquid (Feet)	Depth to Water (Feet)	Free Product Thickness (Feet)
10/6/92	ES-1	19.08	19.10	.02
	ES-2	19.41	20.00	.59
	ES-3	19.96	19.96	0
	ES-4	18.92	18.92	0
	ES-5	18.24	21.37	3.13
	BC-1	18.82	21.14	2.32
	BC-2	18.50	18,50	0
	BC-3	18.93	18.93	0
11/6/92	ES-1	18.52	18.53	.01
	ES-2	18.84	19.44	.60
	ES-3	18.84	19.84	0
	ES-4	18.94	18.94	0
	ES-5	17.60	20.92	3.32
	BC-1	18.24	20.69	2.45
	BC-2	15.98	15.98	0
	BC-3	16.81	16.81	0
12/12/92	ES-1	18.55	18.55	0
	ES-2	18.75	19.10	.35
	ES-3	19.10	19.10	0
	ES-4	18.51	18.51	0
	ES-5	17.50	20.35	2.85
	BC-1	18.25	20.75	2.50
	BC-2	12.17	12.17	0
	BC-3	17.84	17.84	0
01/07/93	ES-1	20.25	20.26	.01
	ES-2	20.05	20.40	.35
	ES-3	19.20	19.20	0
	ES-4	18.76	18.76	0
	ES-5	19.35	22.00	2.65
	BC-1	19.60	21.76	2.16
	BC-2	13.50	13.50	0
	BC-3	16.55	16.55	0

TABLE 5
(Continued)

MONITORING WELL DATA SUMMARY

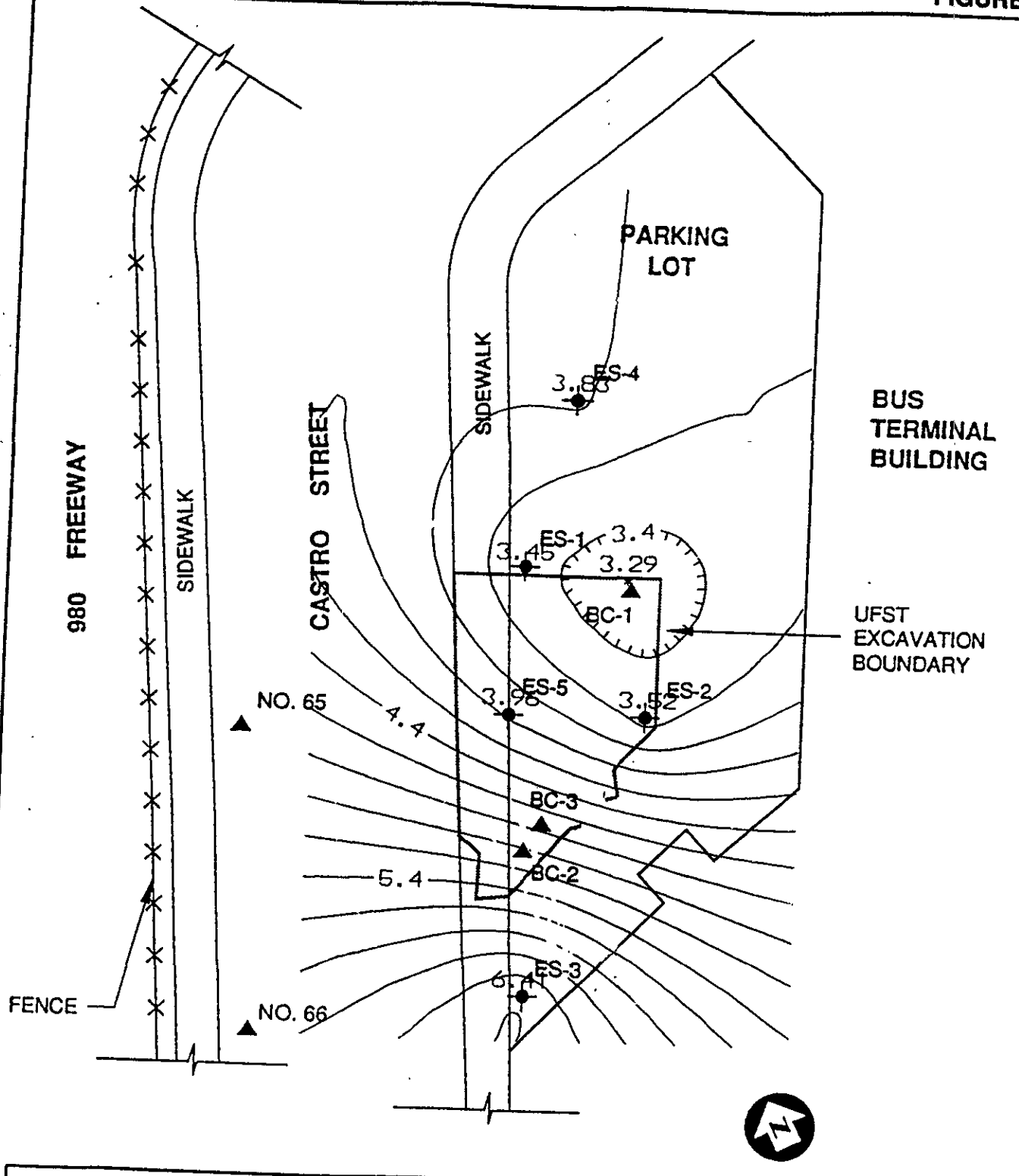
Date	Well Location	Depth to Liquid (Feet)	Depth to Water (Feet)	Free Product Thickness (Feet)
02/04/93	ES–1	17.56	17.56	0
	ES–2	18.12	18.19	0.07
	ES–3	18.32	18.32	0
	ES–4	17.56	17.56	0
	ES–5	17.34	17.95	0.61
	BC–1	17.81	17.96	0.15
	BC–2	15.46	15.46	0
	BC–3	16.16	16.16	0
03/05/93	ES–1	17.95	17.95	0
	ES–2	18.25	18.31	0.06
	ES–3	17.98	17.98	0
	ES–4	17.32	17.32	0
	ES–5	17.40	17.99	0.59
	BC–1	18.05	18.06	0.01
	BC–2	14.58	14.58	0
	BC–3	15.50	15.50	0
04/06/93	ES–1	17.88	17.88	0 (not analyzed for HC)
	ES–2	18.20	18.31	0.11
	ES–3	15.92	15.92	0
	ES–4	17.26	17.26	0
	ES–5	17.28	17.28	0 (not analyzed for HC)
	BC–1	18.26	18.26	0 (not analyzed for HC)
	BC–2	15.20	15.20	0
	BC–3	15.44	15.44	0

FIGURE 1



C194-06.R2 6/27/92

FIGURE 2



EXPLANATION

ES-1 — NEW MONITORING WELL

BC-1 — EXISTING MONITORING WELL

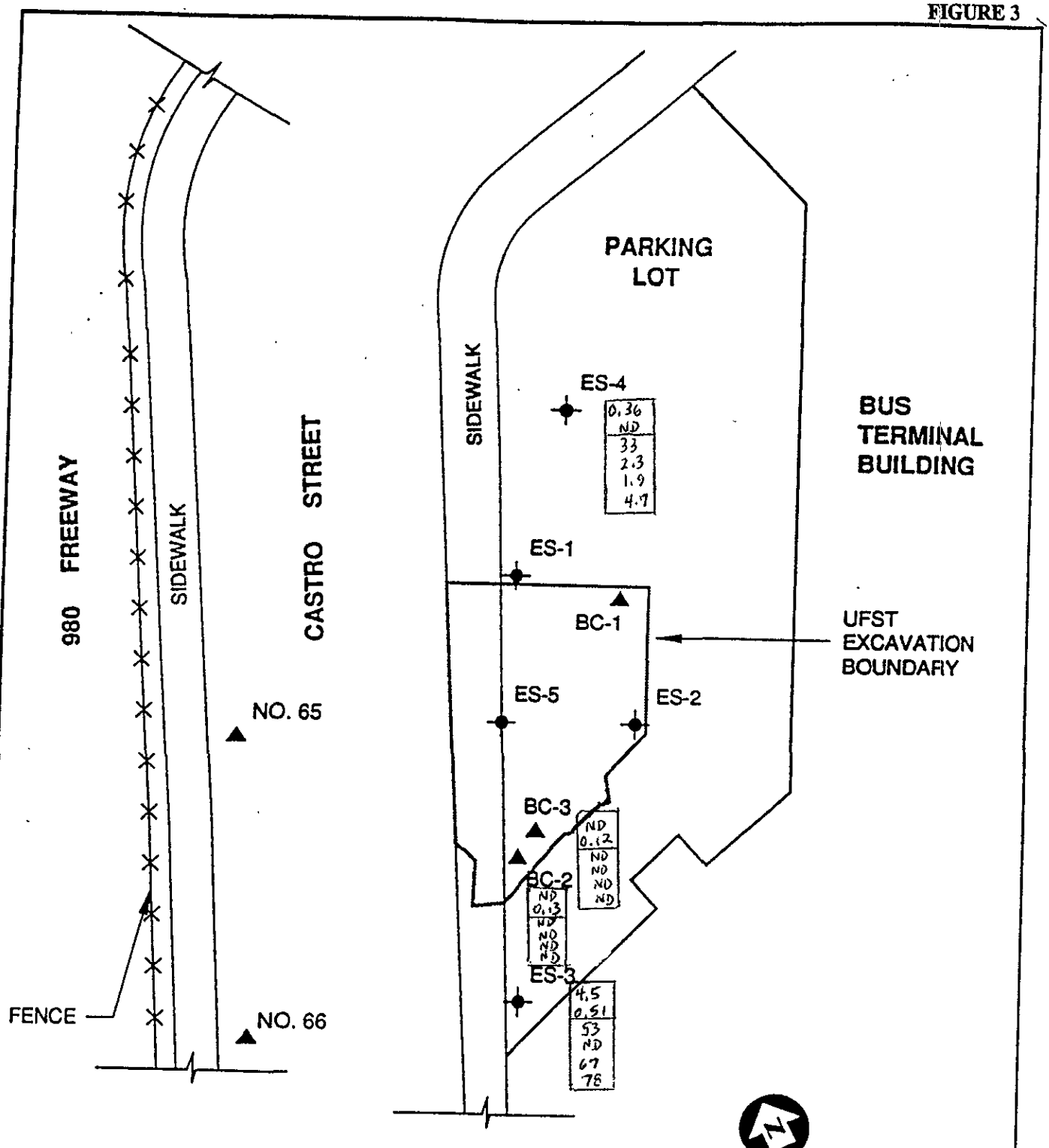
5.4 — Groundwater Elevation (Mean Sea Level) Contour Interval : 0.2 feet

GREYHOUND LINES, INC.
LOCATION 8934
2103 SAN PABLO AVENUE
OAKLAND, CALIFORNIA

GROUNDWATER CONTOUR MAP

C196-06.R2 01/27/92

FIGURE 3



EXPLANATION

ES-1 — NEW MONITORING WELL

BC-1 — EXISTING MONITORING WELL

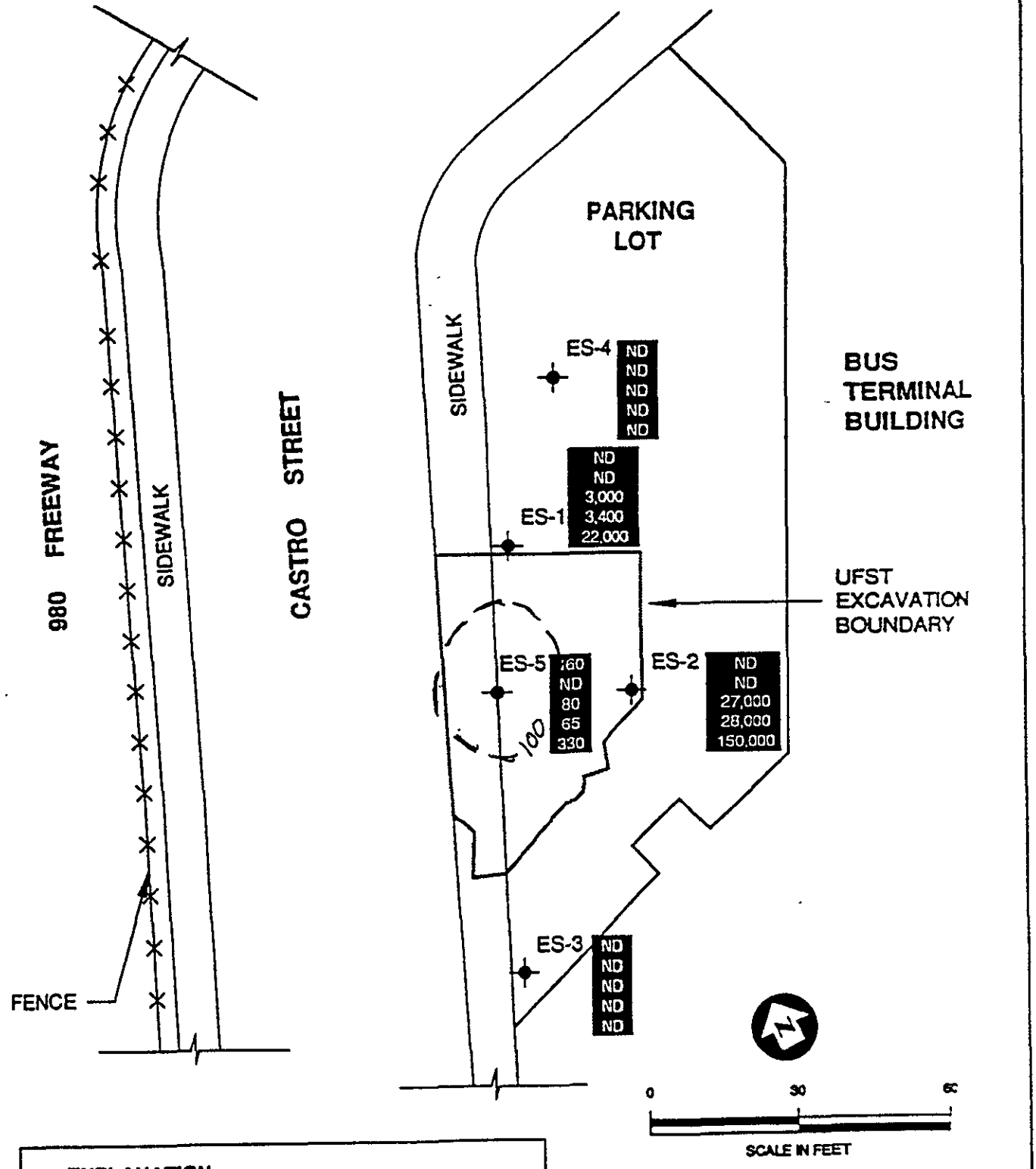
ND
0.12
ND
ND
ND
ND

TPHG CONCENTRATION (mg/l)
TPHD CONCENTRATION (mg/l)
BENZENE CONCENTRATION (µg/l)
TOLUENE CONCENTRATION (µg/l)
ETHYLBENZENE CONCENTRATION (µg/l)
XYLENE CONCENTRATION (µg/l)

GREYHOUND LINES, INC.
LOCATION 8934
2103 SAN PABLO AVENUE
OAKLAND, CALIFORNIA
APRIL 6, 1993

ANALYTICAL RESULTS GROUNDWATER SAMPLES

FIGURE 4



EXPLANATION

ES-1 — NEW MONITORING WELL

100 — TPHD ISOCONCENTRATION

ND	TPHD CONCENTRATION (mg/kg)
ND	BENZENE CONCENTRATION (µg/kg)
ND	TOLUENE CONCENTRATION (µg/kg)
ND	ETHYLBENZENE CONCENTRATION (µg/kg)
ND	XYLENE CONCENTRATION (µg/kg)

GREYHOUND LINES, INC.
LOCATION 8934
2103 SAN PABLO AVENUE
OAKLAND, CALIFORNIA
NOVEMBER 1991

ANALYTICAL RESULTS SOIL SAMPLES

APPENDIX A

ANALYTICAL LABORATORY REPORT AND CHAIN-OF-CUSTODY

Mr. David Nickerson
Page 7

April 22, 1993
PACE Project Number: 430407521

Client Reference: GLI Oakland/S4360.18

PACE Sample Number:			70 0043930	
Date Collected:			04/06/93	
Date Received:			04/07/93	
Client Sample ID:			ES-4	
Parameter	Units	MDL		DATE ANALYZED
ORGANIC ANALYSIS				
PURGEABLE FUELS AND AROMATICS				
TOTAL FUEL HYDROCARBONS, (LIGHT):			-	04/17/93
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/L	50	360	04/17/93
PURGEABLE AROMATICS (BTXE BY EPA 602):			-	04/17/93
Benzene	ug/L	0.3	33	04/17/93
Toluene	ug/L	0.3	2.3	04/17/93
Ethylbenzene	ug/L	0.3	1.9	04/17/93
Xylenes, Total	ug/L	0.6	4.7	04/17/93
TPHD - GCFID (3510)				
Extractable Fuels, as Diesel (8015M)	mg/L	0.05	ND	04/14/93
Date Extracted			04/13/93	

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REPORT OF LABORATORY ANALYSIS

April 22, 1993
PACE Project Number: 430407521

Client Reference: GLI Oakland/S4360.18

PACE Sample Number:			70 0043948	
Date Collected:			04/06/93	
Date Received:			04/07/93	
Client Sample ID:			ES-3	
Parameter	Units	MDL		DATE ANALYZED
ORGANIC ANALYSIS				
PURGEABLE FUELS AND AROMATICS				
TOTAL FUEL HYDROCARBONS, (LIGHT):			-	04/17/93
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/L	50	4500	04/17/93
PURGEABLE AROMATICS (BTXE BY EPA 602):			-	04/17/93
Benzene	ug/L	0.3	53	04/17/93
Toluene	ug/L	0.3	ND	04/17/93
Ethylbenzene	ug/L	0.3	67	04/17/93
Xylenes, Total	ug/L	0.6	78	04/17/93
TPHD - GCFID (3510)				
Extractable Fuels, as Diesel (8015M)	mg/L	0.05	0.51	04/14/93
Date Extracted			04/13/93	

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REPORT OF LABORATORY ANALYSIS

April 22, 1993
PACE Project Number: 430407521

Client Reference: GLI Oakland/S4360.18

PACE Sample Number:			70 0043956	
Date Collected:			04/06/93	
Date Received:			04/07/93	
Client Sample ID:			BC-3	
Parameter	Units	MDL		DATE ANALYZED
ORGANIC ANALYSIS				
PURGEABLE FUELS AND AROMATICS				
TOTAL FUEL HYDROCARBONS, (LIGHT):			-	04/17/93
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/L	50	ND	04/17/93
PURGEABLE AROMATICS (BTXE BY EPA 602):			-	04/17/93
Benzene	ug/L	0.3	ND	04/17/93
Toluene	ug/L	0.3	ND	04/17/93
Ethylbenzene	ug/L	0.3	ND	04/17/93
Xylenes, Total	ug/L	0.6	ND	04/17/93
TPHD - GCFID (3510)				
Extractable Fuels, as Diesel (8015M)	mg/L	0.05	0.12	04/14/93
Date Extracted			04/13/93	

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REPORT OF LABORATORY ANALYSIS

April 22, 1993
PACE Project Number: 43040752I

Client Reference: GLI Oakland/S4360.18

PACE Sample Number:			70 0043964	
Date Collected:			04/06/93	
Date Received:			04/07/93	
Client Sample ID:			BC2	
Parameter	Units	MDL		DATE ANALYZED
ORGANIC ANALYSIS				
PURGEABLE FUELS AND AROMATICS				
TOTAL FUEL HYDROCARBONS, (LIGHT):			-	04/17/93
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/L	50	ND	04/17/93
PURGEABLE AROMATICS (BTXE BY EPA 602):			-	04/17/93
Benzene	ug/L	0.3	ND	04/17/93
Toluene	ug/L	0.3	ND	04/17/93
Ethylbenzene	ug/L	0.3	ND	04/17/93
Xylenes, Total	ug/L	0.6	ND	04/17/93
TPHD - GCFID (3510)				
Extractable Fuels, as Diesel (8015M)	mg/L	0.05	0.13	04/14/93
Date Extracted			04/13/93	

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REPORT OF LABORATORY ANALYSIS

April 22, 1993
PACE Project Number: 430407521

Client Reference: GLI Oakland/S4360.18

PACE Sample Number:			70 0044006	
Date Collected:			04/06/93	
Date Received:			04/07/93	
Client Sample ID:			Trip Blank	
Parameter	Units	MDL		DATE ANALYZED
ORGANIC ANALYSIS				
VOLATILE ORGANICS, EPA METHOD 624 GC/MS				
Chloromethane	ug/L	2.0	ND	04/15/93
Vinyl Chloride	ug/L	2.0	ND	04/15/93
Bromomethane	ug/L	2.0	ND	04/15/93
Chloroethane	ug/L	2.0	ND	04/15/93
Trichlorofluoromethane	ug/L	2.0	ND	04/15/93
2-Chloroethyl vinyl ether	ug/L	10	ND	04/15/93
2-Butanone (MEK)	ug/L	10	ND	04/15/93
1,1-Dichloroethene	ug/L	2.0	ND	04/15/93
Carbon Disulfide	ug/L	2.0	ND	04/15/93
Acetone	ug/L	10	ND	04/15/93
Methylene Chloride	ug/L	5.0	ND	04/15/93
trans-1,2-Dichloroethene	ug/L	2.0	ND	04/15/93
1,1-Dichloroethane	ug/L	2.0	ND	04/15/93
Chloroform	ug/L	2.0	ND	04/15/93
1,1,1-Trichloroethane	ug/L	2.0	ND	04/15/93
1,2-Dichloroethane	ug/L	2.0	ND	04/15/93
cis-1,2-Dichlorethene	ug/L	2.0	ND	04/15/93
Carbon Tetrachloride	ug/L	2.0	ND	04/15/93
Benzene	ug/L	2.0	ND	04/15/93
1,2-Dichloropropane	ug/L	2.0	ND	04/15/93
Trichloroethene (TCE)	ug/L	2.0	ND	04/15/93
Bromodichloromethane	ug/L	2.0	ND	04/15/93
trans-1,3-Dichloropropene	ug/L	2.0	ND	04/15/93
4-Methyl-2-pentanone (MIBK)	ug/L	10	ND	04/15/93
Toluene	ug/L	2.0	ND	04/15/93
cis-1,3-Dichloropropene	ug/L	2.0	ND	04/15/93
1,1,2-Trichloroethane	ug/L	2.0	ND	04/15/93
Dibromochloromethane	ug/L	2.0	ND	04/15/93
2-Hexanone	ug/L	10	ND	04/15/93
Tetrachloroethene	ug/L	2.0	ND	04/15/93
Chlorobenzene	ug/L	2.0	ND	04/15/93

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THE ASSURANCE OF QUALITY

REPORT OF LABORATORY ANALYSIS

April 22, 1993
PACE Project Number: 430407521

Client Reference: GLI Oakland/S4360.18

PACE Sample Number:			70 0044006	
Date Collected:			04/06/93	
Date Received:			04/07/93	
Client Sample ID:			Trip Blank	
Parameter	Units	MDL		DATE ANALYZED
ORGANIC ANALYSIS				
VOLATILE ORGANICS, EPA METHOD 624 GC/MS				
Ethylbenzene	ug/L	2.0	ND	04/15/93
Bromoform	ug/L	2.0	ND	04/15/93
Xylene(s) Total	ug/L	2.0	ND	04/15/93
Styrene	ug/L	2.0	ND	04/15/93
1,1,2,2,-Tetrachloroethane	ug/L	2.0	ND	04/15/93
1,3-Dichlorobenzene	ug/L	2.0	ND	04/15/93
Vinyl acetate	ug/L	2.0	ND	04/15/93
1,4-Dichlorobenzene	ug/L	2.0	ND	04/15/93
1,2-Dichlorobenzene	ug/L	2.0	ND	04/15/93
1,2-Dichloroethane-d4 (Surrog. Recovery)			101%	04/15/93
Toluene-d8 (Surrogate Recovery)			120%	04/15/93
4-Bromofluorobenzene (Surrog.Recovery)			94%	04/15/93

These data have been reviewed and are approved for release.

Mark A. Valentini

Darrell C. Cain
Regional Director

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Mr. David Nickerson | FOOTNOTES | April 22, 1993
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Client Reference: GLI Oakland/S4360.18

MDL	Method Detection Limit
ND	Not detected at or above the MDL.
(BL)	Compounds also present in method blank
(DL)	Sample diluted to bring analyte within linear calibration range.

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Mr. David Nickerson
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QUALITY CONTROL DATA

April 22, 1993
PACE Project Number: 430407521

Client Reference: GLI Oakland/S4360.18

TPHD - GCFID (3510)
Batch: 70 20275
Samples: 70 0043930, 70 0043948, 70 0043956, 70 0043964

METHOD BLANK:

Parameter	Units	MDL	Method Blank
Extractable Fuels, as Diesel(8015M)	mg/L	0.05	ND

LABORATORY CONTROL SAMPLE AND CONTROL SAMPLE DUPLICATE:

Parameter	Units	MDL	Reference Value	Recv	Dupl Recv	RPD
Extractable Fuels, as Diesel	mg/L	0.05	1.00	68%	67%	1%

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QUALITY CONTROL DATA

April 22, 1993
PACE Project Number: 430407521

Client Reference: GLI Oakland/S4360.18

PURGEABLE FUELS AND AROMATICS
Batch: 70 20429
Samples: 70 0043964

METHOD BLANK:

Parameter	Units	MDL	Method Blank
INDIVIDUAL PARAMETERS			
PURGEABLE FUELS AND AROMATICS			
TOTAL FUEL HYDROCARBONS, (LIGHT):			-
Purgeable Fuels, as Gasoline (EPA 8015M	ug/L	50	ND
PURGEABLE AROMATICS (BTXE BY EPA 602)			-
Benzene	ug/L	0.5	ND
Toluene	ug/L	0.5	ND
Ethylbenzene	ug/L	0.5	ND
Xylenes, Total	ug/L	0.5	ND

LABORATORY CONTROL SAMPLE AND CONTROL SAMPLE DUPLICATE:

Parameter	Units	MDL	Reference Value	Recv	Dupl Recv	RPD
INDIVIDUAL PARAMETERS						
PURGEABLE FUELS AND AROMATICS						
Purgeable Fuels, as Gasoline (EPA 8015M	ug/L	50	1000	93%	90%	3%
Benzene	ug/L	0.5	40.0	100%	93%	7%
Toluene	ug/L	0.5	40.0	99%	96%	3%
Ethylbenzene	ug/L	0.5	40.0	99%	96%	3%
Xylenes, Total	ug/L	0.5	120	98%	95%	3%

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QUALITY CONTROL DATA

April 22, 1993
PACE Project Number: 430407521

Client Reference: GLI Oakland/S4360.18

PURGEABLE FUELS AND AROMATICS
Batch: 70 20436
Samples: 70 0043930, 70 0043948, 70 0043956

METHOD BLANK:

Parameter	Units	MDL	Method Blank
TOTAL FUEL HYDROCARBONS, (LIGHT):			-
Purgeable Fuels, as Gasoline (EPA 8015M	ug/L	50	ND
PURGEABLE AROMATICS (BTXE BY EPA 602)			-
Benzene	ug/L	0.5	ND
Toluene	ug/L	0.5	ND
Ethylbenzene	ug/L	0.5	ND
Xylenes, Total	ug/L	0.5	ND

LABORATORY CONTROL SAMPLE AND CONTROL SAMPLE DUPLICATE:

Parameter	Units	MDL	Reference Value	Recv	Dupl Recv	RPD
Purgeable Fuels, as Gasoline (EPA 8015M	ug/L	50	1000	106%	110%	3%
Benzene	ug/L	0.5	40.0	88%	88%	0%
Toluene	ug/L	0.5	40.0	88%	86%	2%
Ethylbenzene	ug/L	0.5	40.0	90%	87%	3%
Xylenes, Total	ug/L	0.5	120	88%	87%	1%

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Client Reference: GLI Oakland/S4360.18

VOLATILE ORGANICS, EPA METHOD 624 GC/MS
Batch: 70 20368
Samples: 70 0043913, 70 0043921, 70 0044006

METHOD BLANK:

Parameter	Units	MDL	Method Blank
Chloromethane	ug/L	10	ND
Vinyl Chloride	ug/L	10	ND
Bromomethane	ug/L	10	ND
Chloroethane	ug/L	10	ND
Trichlorofluoromethane	ug/L	5	ND
1,1,2-Trichlor-1,2,2-trifluoroethane	ug/L	5	ND
2-Butanone (MEK)	ug/L	50	ND
1,1-Dichloroethene	ug/L	5	ND
Carbon Disulfide	ug/L	5	ND
Acetone	ug/L	50	ND
Methylene Chloride	ug/L	10	ND
trans-1,2-Dichloroethene	ug/L	5	ND
1,1-Dichloroethane	ug/L	5	ND
Chloroform	ug/L	5	ND
1,1,1-Trichloroethane	ug/L	5	ND
1,2-Dichloroethane	ug/L	5	ND
cis-1,2-Dichlorethene	ug/L	5	ND
Carbon Tetrachloride	ug/L	5	ND
Benzene	ug/L	5	ND
1,2-Dichloropropane	ug/L	5	ND
Trichloroethene (TCE)	ug/L	5	ND
Bromodichloromethane	ug/L	5	ND
trans-1,3-Dichloropropene	ug/L	5	ND
4-Methyl-2-pentanone (MIBK)	ug/L	50	ND
Toluene	ug/L	5	ND
cis-1,3-Dichloropropene	ug/L	5	ND
1,1,2-Trichloroethane	ug/L	5	ND
Dibromochloromethane	ug/L	5	ND
2-Hexanone	ug/L	50	ND
Tetrachloroethene	ug/L	5	ND
Chlorobenzene	ug/L	5	ND
Ethylbenzene	ug/L	5	ND

Mr. David Nickerson
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QUALITY CONTROL DATA

April 22, 1993
PACE Project Number: 430407521

Client Reference: GLI Oakland/S4360.18

VOLATILE ORGANICS, EPA METHOD 624 GC/MS
Batch: 70 20368
Samples: 70 0043913, 70 0043921, 70 0044006

METHOD BLANK:

Parameter	Units	MDL	Method Blank
Bromoform	ug/L	5	ND
Xylene(s) Total	ug/L	5	ND
Styrene	ug/L	5	ND
1,1,2,2,-Tetrachloroethane	ug/L	5	ND
1,3-Dichlorobenzene	ug/L	5	ND
1,4-Dichlorobenzene	ug/L	5	ND
1,2-Dichlorobenzene	ug/L	5	ND
1,2-Dichloroethane-d4 (Surrog. Recovery			102%
Toluene-d8 (Surrogate Recovery)			98%
4-Bromofluorobenzene (Surrog.Recovery)			99%

SPIKE AND SPIKE DUPLICATE:

Parameter	Units	MDL	700043018	Spike	Spike Recv	Spike Dupl Recv	RPD
1,1-Dichloroethene	ug/L	5	ND	50.00	58%	62%	6%
Benzene	ug/L	5	ND	50.00	100%	98%	2%
Trichloroethene (TCE)	ug/L	5	ND	50.00	76%	78%	2%
Toluene	ug/L	5	87	50.00	84%	86%	2%
Chlorobenzene	ug/L	5	ND	50.00	84%	86%	2%

LABORATORY CONTROL SAMPLE AND CONTROL SAMPLE DUPLICATE:

Parameter	Units	MDL	Reference Value	Recv	Dupl Recv	RPD
1,1-Dichloroethene	ug/L	5	50	68%	66%	2%
Benzene	ug/L	5	50	76%	76%	0%
Trichloroethene (TCE)	ug/L	5	50	76%	76%	0%
Toluene	ug/L	5	50	78%	78%	0%
Chlorobenzene	ug/L	5	50	82%	82%	0%

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QUALITY CONTROL DATA

April 22, 1993
PACE Project Number: 430407521

Client Reference: GLI Oakland/S4360.18

VOLATILE ORGANICS, EPA METHOD 624 GC/MS
Batch: 70 20425
Samples: 70 0043905

METHOD BLANK:

Parameter	Units	MDL	Method Blank
Chloromethane	ug/L	2.0	ND
Vinyl Chloride	ug/L	2.0	ND
Bromomethane	ug/L	2.0	ND
Chloroethane	ug/L	2.0	ND
Trichlorofluoromethane	ug/L	2.0	ND
2-Butanone (MEK)	ug/L	10	ND
1,1-Dichloroethene	ug/L	2.0	ND
Carbon Disulfide	ug/L	2.0	ND
Acetone	ug/L	10	ND
Methylene Chloride	ug/L	5.0	11
trans-1,2-Dichloroethene	ug/L	2.0	ND
1,1-Dichloroethane	ug/L	2.0	ND
Chloroform	ug/L	2.0	ND
1,1,1-Trichloroethane	ug/L	2.0	ND
1,2-Dichloroethane	ug/L	2.0	ND
cis-1,2-Dichlorethene	ug/L	2.0	ND
Carbon Tetrachloride	ug/L	2.0	ND
Benzene	ug/L	2.0	ND
1,2-Dichloropropane	ug/L	2.0	ND
Trichloroethene (TCE)	ug/L	2.0	ND
Bromodichloromethane	ug/L	2.0	ND
trans-1,3-Dichloropropene	ug/L	2.0	ND
4-Methyl-2-pentanone (MIBK)	ug/L	10	ND
Toluene	ug/L	2.0	ND
cis-1,3-Dichloropropene	ug/L	2.0	ND
1,1,2-Trichloroethane	ug/L	2.0	ND
Dibromochloromethane	ug/L	2.0	ND
2-Hexanone	ug/L	10	ND
Tetrachloroethene	ug/L	2.0	ND
Chlorobenzene	ug/L	2.0	ND
Ethylbenzene	ug/L	2.0	ND
Bromoform	ug/L	2.0	ND

Mr. David Nickerson
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QUALITY CONTROL DATA

April 22, 1993
PACE Project Number: 430407521

Client Reference: GLI Oakland/S4360.18

VOLATILE ORGANICS, EPA METHOD 624 GC/MS
Batch: 70 20425
Samples: 70 0043905

METHOD BLANK:

Parameter	Units	MDL	Method Blank
Xylene(s) Total	ug/L	2.0	ND
Styrene	ug/L	2.0	ND
1,1,2,2,-Tetrachloroethane	ug/L	2.0	ND
1,3-Dichlorobenzene	ug/L	2.0	ND
1,4-Dichlorobenzene	ug/L	2.0	ND
1,2-Dichlorobenzene	ug/L	2.0	ND
1,2-Dichloroethane-d4 (Surrog. Recovery			103%
Toluene-d8 (Surrogate Recovery)			96%
4-Bromofluorobenzene (Surrog.Recovery)			95%

Mr. David Nickerson
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FOOTNOTES
for pages 14 through 20

April 22, 1993
PACE Project Number: 430407521

Client Reference: GLI Oakland/S4360.18

MDL	Method Detection Limit
ND	Not detected at or above the MDL.
RPD	Relative Percent Difference

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430 407.521

ENGINEERING-SCIENCE

CHAIN OF CUSTODY RECORD FOR WATER SAMPLES

ES JOB NO.	PROJECT NAME/LOCATION
54360.18	GLI Oakland

PRESERVATIVES REQUIRED: HCl; 4°C

FIELD CONTACT: Dave Nickerson

ANALYSES REQUIRED: TPH-D; BTEX 1605; G24 (per 624 + 625)

SAMPLERS NAMES & SIGNATURES

MARTIN N. MILLER

Martin N. Miller

SHIP TO:
EFREN SABLAN,
SAMPLE CUSTODIAN

ENGINEERING-SCIENCE
BERKELEY LABORATORY
600 BANCROFT WAY
BERKELEY, CA 94710

VOICE: 415/841-7353
OR 415/548-7970
FAX: 415/548-7635

DATE	TIME	FIELD SAMPLE IDENTIFIER	TPH-D	BTEX 1605	G24	# of containers	REMARKS
4/6/93	1600	Before Carbon - C			X	2	4390.5
	1605	Between - B			X	3	91.3
	1610	After - A			X	3	92.1
	1640	ES-4	X	X		4	93.0
	1650	ES-3	X	X		5	94.8
	1700	BC-3	X	X		3	95.6
	1710	BC2	X	X		4	96.4
		TRIP BLANKS					4400.6
							ALL VOAS HCl PRESERVED - PER CONTAINERS - cc 4/8/93
		14/1, c/2					LOGGED ON HOLD - LOGIN 8240 - PER D.C. - cc 4/8

FIELD CUSTODY RELINQUISHED BY: Martin N. Miller DATE: 4/6/93 TIME: 1720

SHIPPED VIA: Federal | AIRBILL #821487446 | ON RECEIPT: CUSTODY SEALS? _____; TEMP: 5 °C

RECEIVED FOR LABORATORY BY: Efren A. Sablan DATE: 4/7/93 TIME: 0930

received & Pace by A. Ortiz / Pace 4/7/93 5:00 pm