

October 30, 1995

INITIAL
10/14

SECOR
International Incorporated

Ms. Madhulla Logan
Hazardous Materials Specialist
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

11 9:05

QUARTERLY GROUNDWATER MONITORING REPORT, THIRD QUARTER 1995, GRAND STREET AND FORTMANN WAY PROPERTY, ALAMEDA, CALIFORNIA

Dear Ms. Logan:

SECOR International Incorporated (*SECOR*) is pleased to submit this Quarterly Groundwater Monitoring Report for the Grand Street and Fortmann Way property located in Alameda, California (the site, see Figure 1, site Location Map). This report presents monitoring well sounding and groundwater elevation from ten site wells, and groundwater quality data collected from six site wells during the third quarter of 1995. This report also summarizes all site-related activities conducted during the third quarter of 1995.

INTRODUCTION

The site located north of the intersection of Grand Street and Fortmann Way, Alameda, California is presently used as a marina with docking, repair and office facilities. Above ground tanks (AGT's) were formerly located in the central portion of the site. The tanks have since been demolished, although the concrete-floored and-bermed containment structure for the AGT farm remains, along with various underground conveyance pipelines.

On March 30, 1993, the Alameda County Health Care Services Agency (ACHCS) requested that a Plan of Corrective Action be submitted for the former AGT farm area, including related pipelines, and former underground storage tank (UST) location (collectively referred to as the "site"). Since 1987, a total of sixteen groundwater monitoring wells have been installed at the site. Three of the earliest installed wells were abandoned in 1994 (W-1, W-2, and W-5) and three others are covered by asphalt or buildings, were removed at an earlier time, and/or currently cannot be located (W-3, W-4, and B-7, see Figure 2).

A tidal influence study was conducted in December 1995. Results of the tidal study indicated that the shallow water-bearing zone beneath the site appears to be at least partially influenced by tidal fluctuations. The relatively sharp groundwater level increases observed in the former AGT farm vicinity during sea level drop and similarly sharp groundwater level decreases associated with a rise in sea level indicate the possibility of significant groundwater withdrawal nearby.

In October 1994, quarterly groundwater monitoring activities were initiated at the site. The site currently has ten groundwater monitoring wells, six of which are maintained and sampled by *SECOR* (Figure 2).

The following activities were performed for the site during the third quarter of 1995

- Sounded ten monitoring wells (MW-1, MW-2, MW-3, MW-4, MW-5, MW-6, MW-7, MW-8, MW5a, and MW6a) in July, August, and September 1995

- Performed quarterly groundwater monitoring in August 1995 including purging and sampling six on-site wells and chemically analyzing the collected samples.

MONITORING WELL SOUNDING

All ten monitoring wells located at the site were sounded monthly. Groundwater elevation contour maps based on the July through September 1995 groundwater elevation data are presented as Figures 3 through 5. During this monitoring period, groundwater was measured at depths between 1.89 and 5.74 feet below the top of PVC casing. Groundwater elevations have generally decreased by 0.1 to one foot during the monitored period when compared with the second quarter 1995 data. Interpretation of the groundwater elevation data displayed as Figures 3 through 5 indicates a general groundwater flow direction to the east and northeast under gradients ranging from 0.002 to 0.004.

GROUNDWATER MONITORING PROCEDURES

On August 22, 1995, SECOR sounded ten on-site wells using an electronic water-level indicator. The depth to groundwater and total depth were measured for each well and recorded on Groundwater Sample Field Data Sheets included in Appendix A with detailed groundwater monitoring procedures. Monitoring wells MW-2, MW-3, MW-5a, and MW-6a were not sampled as these wells are not included in the SECOR sampling plan. A total of six primary water samples were submitted to Superior Precision Analytical, Inc. (Superior) of Martinez, California, for chemical analysis. Analytes included total petroleum hydrocarbons as gasoline (TPHg), as diesel (TPHd), as total oil and grease (TOG), and benzene, toluene, ethylbenzene, and xylenes (BTEX) by EPA Methods 5030/8015, modified and 8020, respectively. Laboratory analytical reports and chain-of-custody records are included in Appendix B.

SUMMARY OF RESULTS

Results of historic groundwater monitoring well sounding data including the third quarter 1995 event are summarized on Table 1. Groundwater chemical data collected since November 1994 are included on Table 2.

Groundwater Chemical Results

Groundwater samples exhibited pH values ranging from 6.45 to 7.12 pH units; temperatures ranging from 65.1 to 75.5 degrees Fahrenheit; specific conductivities ranging from 1517 to more than 20,000 micromhos per centimeter ($\mu\text{mhos/cm}$); and appearance ranging from tan to black. Groundwater chemical results for the third quarter 1995 are displayed graphically on Figure 9. Laboratory analytical reports and chain-of-custody records are included in Appendix B.

During this sampling event, groundwater samples collected from wells MW-1, MW-4, MW-5, MW-6, MW-7, and MW-8 contained TPHd at concentrations of 1.1, 0.62, 0.79, 2.2, and 1.5 milligrams per liter (mg/l), respectively. These concentrations are generally higher than those reported during the prior sampling events. According to the laboratory, hydrocarbons detected in the C-10 to C-25 range for diesel analyses do not resemble a diesel fuel fingerprint. The analyte detected within this range instead appears

Attachments:

Table 1	Well Construction Details and Groundwater Elevations
Table 2	Groundwater Chemical Analytical Data
Figure 1	Site Location Map
Figure 2	Site Plan
Figure 3	Groundwater Elevation Contours - July 21, 1995
Figure 4	Groundwater Elevation Contours - August 22, 1995
Figure 5	Groundwater Elevation Contours - September 8, 1995
Figure 6	Groundwater Chemical Analytical Results - August 22, 1995
Appendix A	Groundwater Sample Field Data Sheets and Groundwater Monitoring Procedures
Appendix B	Laboratory Analytical Reports and Chain-of-Custody Records

to be heavy oil. The analyzed samples did not yield reportable concentrations of TPHg, BTEX, and TOG compounds.

Groundwater elevations decreased during the third quarter after a general rise in the first two quarters of the year. The water level rise and fall may be attributed to heavy rainfall during the first six months of 1995 followed by a lack of rainfall during the third quarter.

PLANNED/PROPOSED ACTIVITIES FOR FOURTH QUARTER 1995

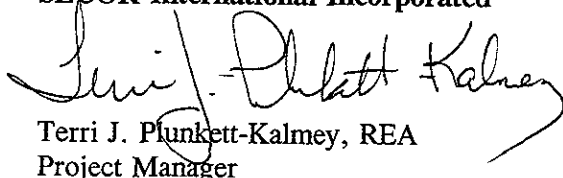
Based on the historic data presented in this report, *SECOR* proposes to implement a modified groundwater monitoring program. The program would include:

- Monthly well sounding.
- Quarterly purging and sampling of wells MW-1, and MW-4 through MW-8.
- Analysis of TPHd on a quarterly basis and of TPHg/BTEX on an annual basis.
- Elimination of TOG as an analyte, based on its absence in the samples analyzed during the past year.

Please do not hesitate to contact us at (415) 882-1548 with any questions or comments regarding this document.

Sincerely,

SECOR International Incorporated


Terri J. Plunkett-Kalmey, REA
Project Manager

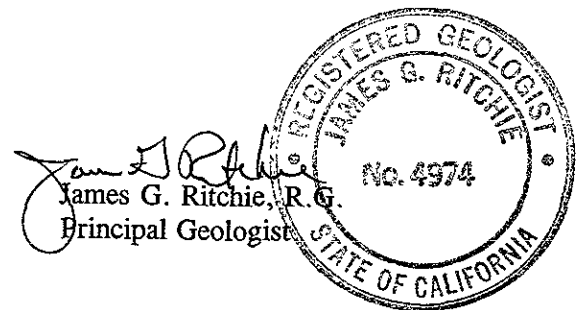


Table 1
Well Construction Details and Groundwater Elevations
Grand Street and Fortmann Way Property
Alameda, California

Well	Total Depth (ft)	Screened Interval (ft)	Top of Casing Elevation (ft. MSL)	Date Measured	Depth to Water (ft. bgs)	Groundwater Elevation (ft. MSL)
MW-1	15.00	3-15	6.77	10/31/94	3.70	3.07
				11/30/94	3.27	3.50
				12/29/94	3.31	3.46
				1/13/95	2.80	3.97
				2/6/95	3.20	3.57
				3/7/95	NR	NA
				4/10/95	NR	NA
				5/9/95	NR	NA
				6/19/95	NR	NA
				7/21/95	3.28	3.49
				8/22/95	3.59	3.18
MW-2	15.00	3-15	4.83	9/8/95	3.51	3.26
				10/31/94	2.60	2.23
				11/30/94	3.26	1.57
				12/29/94	2.28	2.55
				1/13/95	1.73	3.10
				2/6/95	2.31	2.52
				3/7/95	2.37	2.46
				4/10/95	2.23	2.60
				5/9/95	2.47	2.36
				6/19/95	1.64	3.19
				7/21/95	2.01	2.82
8/22/95	2.16	2.67				
MW-3	15.00	3-15	7.28	9/8/95	2.27	2.56
				10/31/94	4.76	2.52
				11/30/94	3.34	3.94
				12/29/94	3.63	3.65
				1/13/95	2.66	4.62
				2/6/95	3.44	3.84
				3/7/95	3.50	3.78
				4/10/95	3.66	3.62
				5/9/95	3.81	3.47
				6/19/95	3.77	3.51
				7/21/95	4.17	3.11
8/22/95	4.38	2.90				
MW-4	15.00	3-15	5.21	9/8/95	4.48	2.80
				10/31/94	3.00	2.21
				11/30/94	2.63	2.58
				12/29/94	3.03	2.18
				1/13/95	3.01	2.20
				2/6/95	3.12	2.09
				3/7/95	2.72	2.49
				4/10/95	2.35	2.86
				5/9/95	3.10	2.11
				6/19/95	3.13	2.08
				7/21/95	3.27	1.99
8/22/95	2.59	2.62				
9/8/95	3.29	1.92				

Table 1
Well Construction Details and Groundwater Elevations
Grand Street and Fortmann Way Property
Alameda, California

Well	Total Depth (ft)	Screened Interval (ft)	Top of Casing Elevation (ft. MSL)	Date Measured	Depth to Water (ft. bgs)	Groundwater Elevation (ft. MSL)
MW-5	13.75	3.5-13.5	8.26	10/31/94	5.76	2.50
				11/30/94	5.22	3.04
				12/29/94	5.16	3.10
				1/13/95	4.61	3.65
				2/6/95	5.25	3.01
				3/7/95	5.32	2.94
				4/10/95	5.47	2.79
				5/9/95	5.54	2.72
				6/19/95	5.48	2.78
				7/21/95	5.51	2.75
				8/22/95	5.56	2.70
MW-6	14.25	4-14	8.14	10/31/94	6.06	2.08
				11/30/94	5.45	2.69
				12/29/94	5.36	2.78
				1/13/95	5.01	3.13
				2/6/95	5.47	2.67
				3/7/95	4.05	4.09
				4/10/95	5.61	2.53
				5/9/95	5.67	2.47
				6/19/95	5.59	2.55
				7/21/95	5.66	2.48
				8/22/95	5.74	2.40
MW-7	13.55	3.5-13.5	5.91	10/31/94	3.86	2.05
				11/30/94	3.07	2.84
				12/29/94	2.76	3.15
				1/13/95	2.86	3.05
				2/6/95	3.04	2.87
				3/7/95	3.21	2.70
				4/10/95	3.67	2.24
				5/9/95	3.55	2.36
				6/19/95	3.50	2.41
				7/21/95	3.32	2.59
				8/22/95	3.26	2.65
MW-8	13.50	3.5-13.5	5.65	10/31/94	3.92	1.73
				11/30/94	2.21	3.44
				12/29/94	2.39	3.26
				1/13/95	2.62	3.03
				2/6/95	2.16	3.49
				3/7/95	2.77	2.88
				4/10/95	2.93	2.72
				5/9/95	2.97	2.68
				6/19/95	2.83	2.82
				7/21/95	2.99	2.66
				8/22/95	2.59	3.06
9/8/95	2.54	3.11				

Table 1
Well Construction Details and Groundwater Elevations
Grand Street and Fortmann Way Property
Alameda, California

Well	Total Depth (ft)	Screened Interval (ft)	Top of Casing Elevation (ft. MSL)	Date Measured	Depth to Water (ft. bgs)	Groundwater Elevation (ft. MSL)
MW-5a	12.25	3-13	5.01	10/31/94	3.00	2.01
				11/30/94	NR	NR
				12/29/94	1.99	3.02
				1/13/95	1.47	3.54
				2/6/95	2.15	2.86
				3/7/95	2.44	2.57
				4/10/95	2.02	2.99
				5/9/95	2.42	2.59
				6/19/95	1.26	3.75
				7/21/95	1.99	3.02
				8/22/95	2.43	2.58
MW-6a	12.36	3-13	4.96	9/8/95	2.30	2.71
				10/31/94	3.86	1.10
				11/30/94	NR	NR
				12/29/94	2.73	2.23
				1/13/95	0.45	4.51
				2/6/95	0.94	4.02
				3/7/95	1.42	3.54
				4/10/95	1.70	3.26
				5/9/95	1.40	3.56
				6/19/95	1.80	3.16
				7/21/95	1.89	3.07
8/22/95	2.35	2.61				
9/8/95	2.38	2.58				

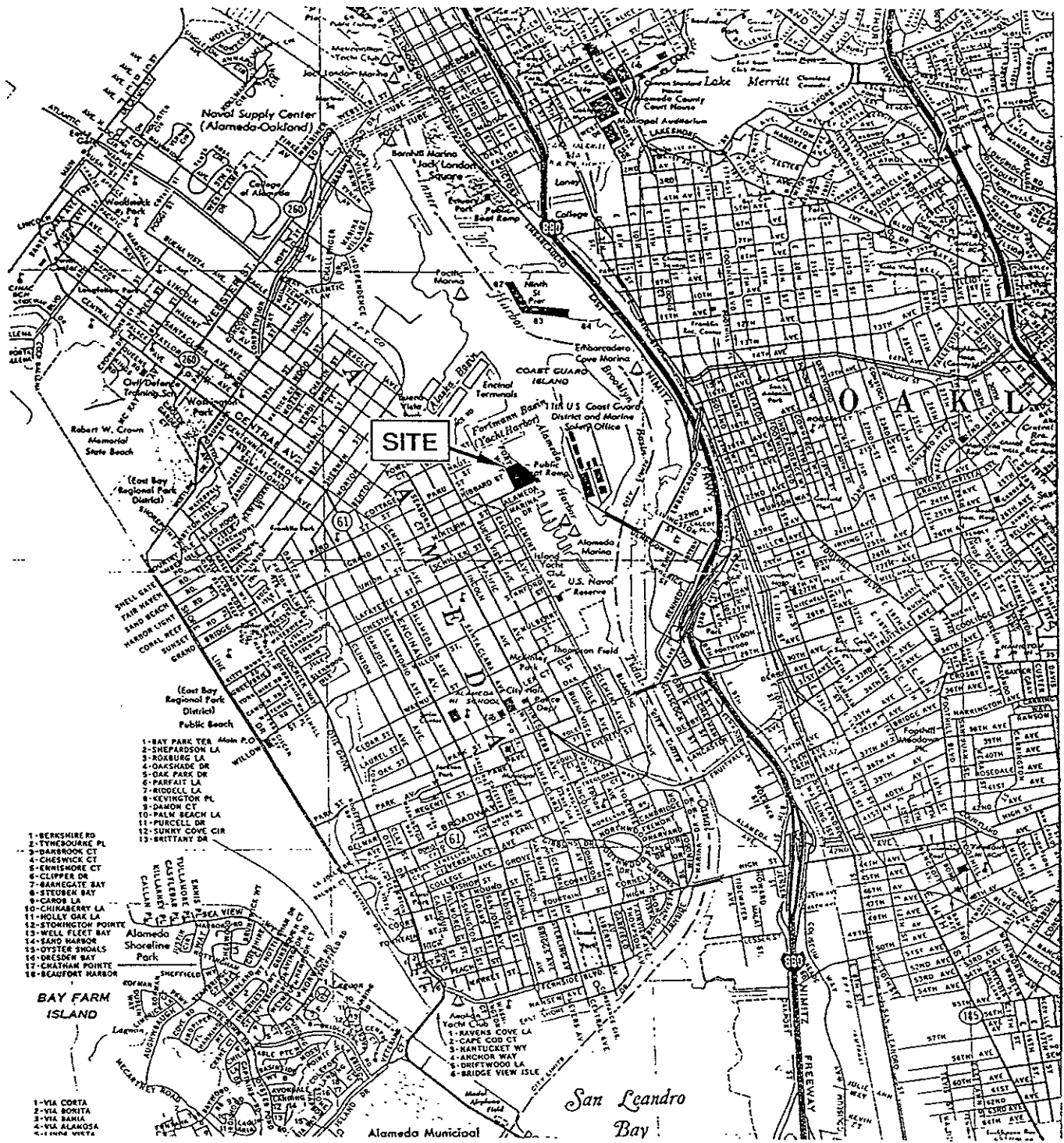
NR - No Reading Due to Inaccessibility of Well

NA - Not Available

Table 2
Groundwater Chemical Analysis Data
Grand Street and Fortmann Way Property
Alameda, California

Well	Date Sampled	TPH-g (mg/L)	TPH-d (mg/L)	TOC (mg/L)	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Xylenes (Total) (ug/L)
MW-1	11/1/94	0.08	0.4	<5.0	0.5	1.1	<0.05	1.4
	2/6/95	<0.05	1.3	<5.0	<0.05	<0.05	<0.05	<0.05
	5/9/95	NS	NS	NS	NS	NS	NS	NS
	8/22/95	<0.05	1.1*	<5.0	<0.05	<0.05	<0.05	<0.05
MW-4	11/1/94	<0.05	0.24	<5.0	<0.05	<0.05	<0.05	<0.05
	2/6/95	0.12	0.66	<5.0	<0.05	<0.05	<0.05	<0.05
	5/9/95	<0.05	<0.05	<5.0	<0.05	<0.05	<0.05	<0.05
	8/22/95	<0.05 (<0.05)	0.20(0.62)	<5.0 (<5.0)	<0.05 (<0.05)	<0.05 (<0.05)	<0.05 (<0.05)	<0.05 (<0.05)
MW-5	11/1/94	<0.05	0.56	<5.0	<0.05	<0.05	<0.05	<0.05
	2/6/95	1.0	0.46	<5.0	<0.05	<0.05	<0.05	<0.05
	5/9/95	<0.05	<0.05	<5.0	<0.05	<0.05	<0.05	<0.05
	8/22/95	<0.05	0.91	<5.0	<0.05	<0.05	<0.05	<0.05
MW-6	11/1/94	<0.05	0.5	<5.0	<0.05	<0.05	<0.05	<0.05
	2/6/95	<0.05	0.57	<5.0	<0.05	<0.05	<0.05	<0.05
	5/9/95	<0.05	<0.05	<5.0	<0.05	<0.05	<0.05	<0.05
	8/22/95	<0.05	0.79	<5.0	<0.05	<0.05	<0.05	<0.05
MW-7	11/1/94	<0.05	0.97	<5.0	<0.05	<0.05	<0.05	<0.05
	2/6/95	<0.05	1.3	<5.0	<0.05	<0.05	<0.05	<0.05
	5/9/95	<0.05	<0.05	<5.0	<0.05	<0.05	<0.05	<0.05
	8/22/95	<0.05	2.2	<5.0	<0.05	<0.05	<0.05	<0.05
MW-8	11/1/94	<0.05	1.0	<5.0	<0.05	<0.05	<0.05	<0.05
	2/6/95	<0.05 (<0.05)	0.93 (0.47)	<5.0 (<5.0)	<0.05 (<0.05)	<0.05 (<0.05)	<0.05 (<0.05)	<0.05 (<0.05)
	5/9/95	<0.05 (<0.05)	<0.05 (<0.05)	<5.0 (<5.0)	<0.05 (<0.05)	<0.05 (<0.05)	<0.05 (<0.05)	<0.05 (<0.05)
	8/22/95	<0.05	1.5	<5.0	<0.05	<0.05	<0.05	<0.05

TPH-g: Total Petroleum Hydrocarbons as gasoline
 TPH-d: Total Petroleum Hydrocarbons as diesel
 TOC: Total Petroleum Hydrocarbons as oil and grease
 NS: Not Sampled/well inaccessible
 <0.05: Below the Detection Limit
 mg/L: milligrams per liter
 ug/L: micrograms per liter
 (0.47): Duplicate sample result



SOURCE: BASE MAP FROM H.M. GOUSHA, 1988,
OAKLAND AND EAST BAY CITIES.



NORTH



SECOR
INTERNATIONAL
INCORPORATED

CCR

JGR

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FIGURE 1
GRAND MARINA EAST BY
PLAY ON CALIFORNIA

SITE LOCATION MAP

ALAMEDA

HARBOR

HARBOR OFFICE

FUEL DOCK

EXISTING CURB LINE

SHORELINE









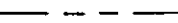
EXISTING CURB LINE

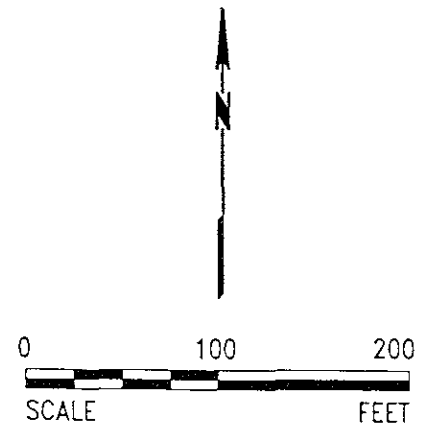
FORMER ABOVEGROUND TANK FARM

FORTMANN WAY

GRAND STREET

LEGEND

- MW-5a  MONITORING WELL (ACC, 10/94)
- MW-8  MONITORING WELL (SECOR, 10/94)
- TP-3A  BORING (SECOR, 10/94)
- PL-2  BORING (SECOR, 10/93)
- MW-1  MONITORING WELL (ZACCOR, 5/92)
- B-7  MONITORING WELL (HARDING-LAWSON, 6/87)
- W-3  ABANDONED MONITORING WELL (CROWLEY ENVIRONMENTAL SERVICES, 4/87)
- W-4  MONITORING WELL (CROWLEY, 4/87)
-  PROPERTY LINE



SOURCE: BASED ON SURVEY BY RON ARCHER, CIVIL ENGINEER INC., NOVEMBER 1994.

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INTERNATIONAL
INCORPORATED**

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DATE	21SEP95
JOB NO.	50085-001-01

FIGURE 2
GRAND STREET AND FORTMANN WAY PROPERTY
ALAMEDA, CALIFORNIA
SITE PLAN

ALAMEDA

HARBOR

HARBOR OFFICE

FUEL DOCK

SHORELINE

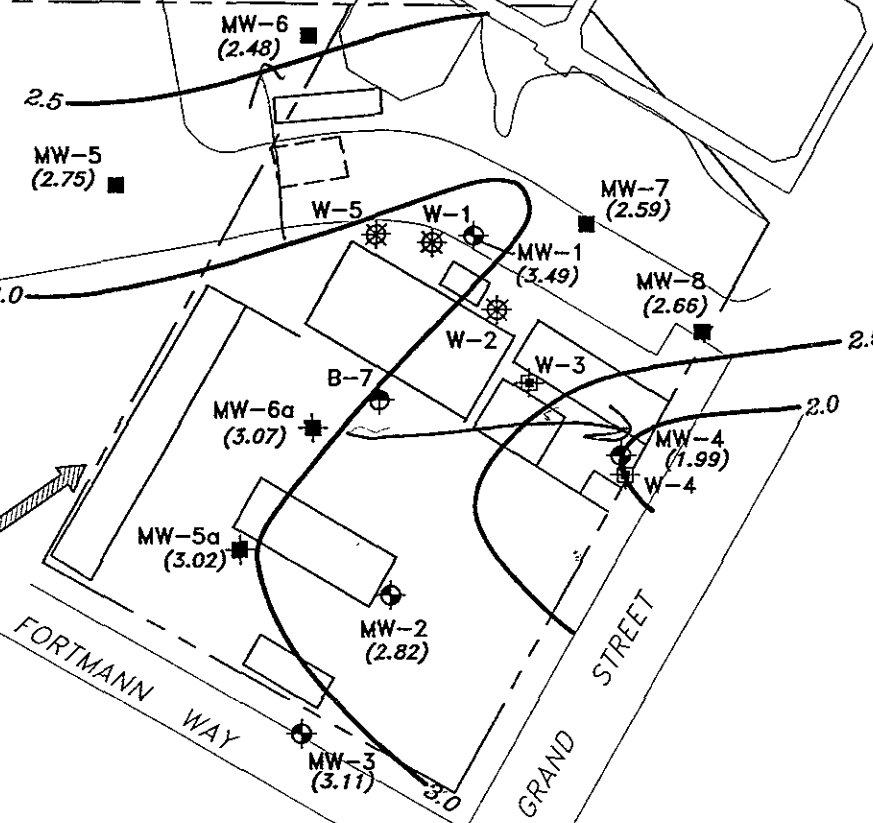
EXISTING CURB LINE

FORTMANN WAY

GRAND STREET

LEGEND

- MW-5a MONITORING WELL (ACC, 10/94)
- MW-8 MONITORING WELL (SECOR, 10/94)
- MW-1 MONITORING WELL (ZACCOR, 5/92)
- B-7 MONITORING WELL (HARDING-LAWSON, 6/87)
- W-3 ABANDONED MONITORING WELL (CROWLEY ENVIRONMENTAL SERVICES, 4/87)
- W-4 MONITORING WELL (CROWLEY, 4/87)
- (2.59) GROUNDWATER ELEVATION (FEET MSL)
- 3.0 GROUNDWATER ELEVATION CONTOUR (FEET MSL)
- PROPERTY LINE
- APPROXIMATE GROUNDWATER FLOW DIRECTION



SOURCE BASED ON SURVEY BY RON ARCHER, CML ENGINEER INC., NOVEMBER 1994

SECOR INTERNATIONAL INCORPORATED

DRAWN	KN
APPR	JGR
DATE	18SEP95
JOB NO	50085-001-01

FIGURE 3
 GRAND STREET AND FORTMANN WAY PROPERTY
 ALAMEDA, CALIFORNIA
**GROUNDWATER ELEVATION
 CONTOUR MAP - JULY 21, 1995**

ALAMEDA

HARBOR

HARBOR OFFICE

FUEL DOCK

SHORELINE

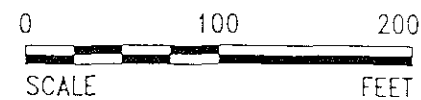
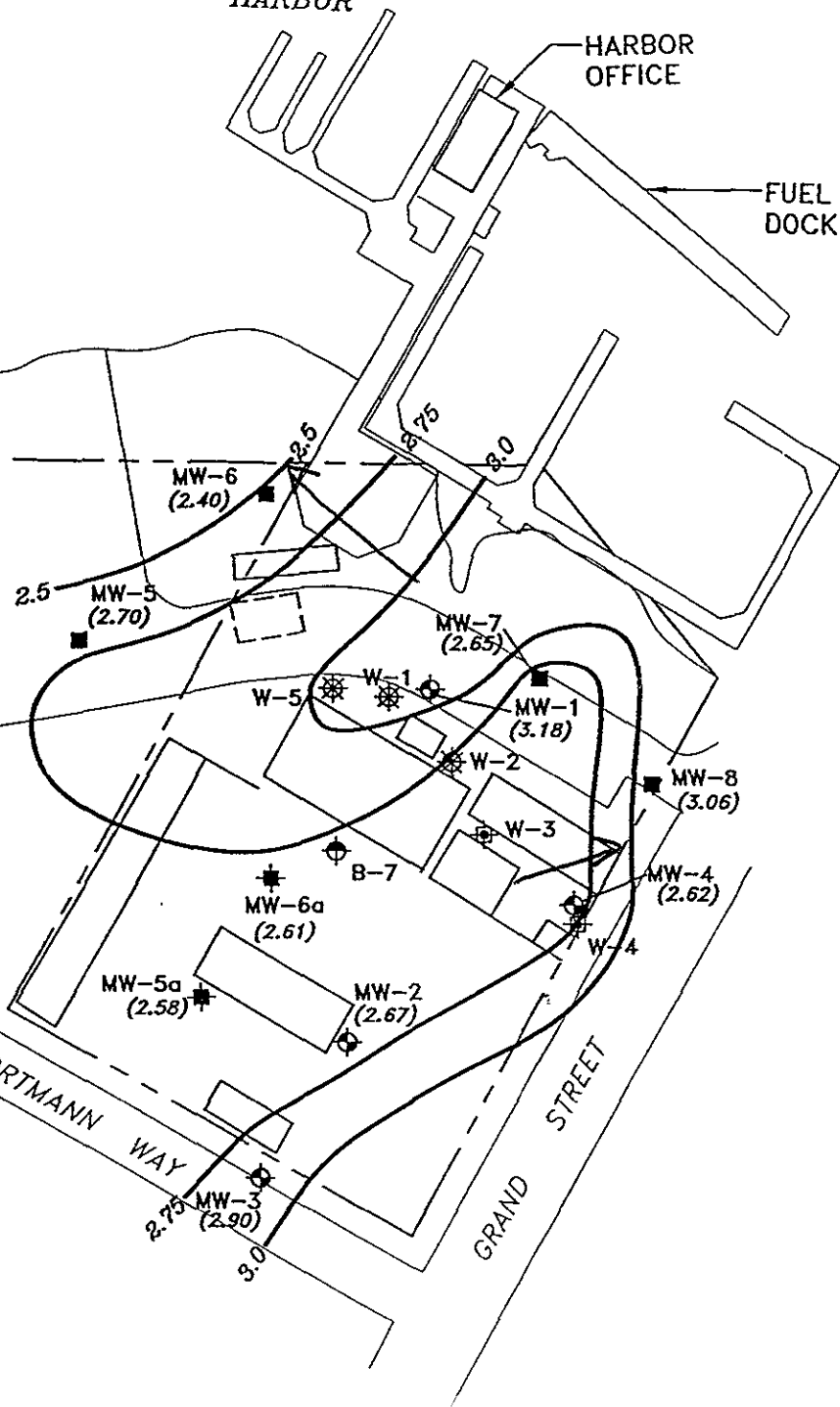
EXISTING CURB LINE

FORTMANN WAY

GRAND STREET

LEGEND

- MW-5a MONITORING WELL (ACC, 10/94)
- MW-8 MONITORING WELL (SECOR, 10/94)
- MW-1 MONITORING WELL (ZACCOR, 5/92)
- B-7 MONITORING WELL (HARDING-LAWSON, 6/87)
- W-3 ABANDONED MONITORING WELL (CROWLEY ENVIRONMENTAL SERVICES, 4/87)
- W-4 MONITORING WELL (CROWLEY, 4/87)
- (2.65) GROUNDWATER ELEVATION (FEET MSL)
- 3.0 GROUNDWATER ELEVATION CONTOUR (FEET MSL)
- - - - - PROPERTY LINE



SOURCE. BASED ON SURVEY BY RON ARCHER, CML ENGINEER INC., NOVEMBER 1994.

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INTERNATIONAL
INCORPORATED

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JOB NO	50085-001-01

FIGURE 4
GRAND STREET AND FORTMANN WAY PROPERTY
ALAMEDA, CALIFORNIA
**GROUNDWATER ELEVATION
CONTOUR MAP - AUGUST 22, 1995**

ALAMEDA

HARBOR

HARBOR OFFICE

FUEL DOCK









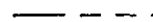
SHORELINE

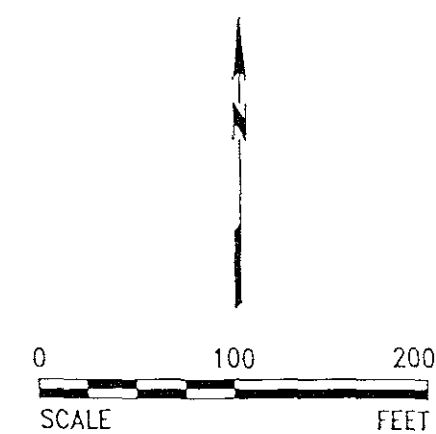
EXISTING CURB LINE

FORTMANN WAY

GRAND STREET

LEGEND

- MW-5a  MONITORING WELL (ACC, 10/94)
- MW-8  MONITORING WELL (SECOR, 10/94)
- MW-1  MONITORING WELL (ZACCOR, 5/92)
- B-7  MONITORING WELL (HARDING-LAWSON, 6/87)
- W-3  ABANDONED MONITORING WELL (CROWLEY ENVIRONMENTAL SERVICES, 4/87)
- W-4  MONITORING WELL (CROWLEY, 4/87)
- (2.81)  GROUNDWATER ELEVATION (FEET MSL)
- 3.0  GROUNDWATER ELEVATION CONTOUR (FEET MSL)
-  PROPERTY LINE



SOURCE: BASED ON SURVEY BY RON ARCHER, CML ENGINEER INC., NOVEMBER 1994.

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INCORPORATED

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JOB NO.	50085-001-01

FIGURE 5
GRAND STREET AND FORTMANN WAY PROPERTY
ALAMEDA, CALIFORNIA

**GROUNDWATER ELEVATION
CONTOUR MAP - SEPTEMBER 8, 1995**

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ALAMEDA

HARBOR

HARBOR OFFICE

FUEL DOCK

LEGEND

- MW-5a ■ MONITORING WELL (ACC, 10/94)
- MW-8 ■ MONITORING WELL (SECOR, 10/94)
- TP-3A ○ BORING (SECOR, 10/94)
- PL-2 ● BORING (SECOR, 10/93)
- MW-1 ⊕ MONITORING WELL (ZACCOR, 5/92)
- B-7 ⊕ MONITORING WELL (HARDING-LAWSON, 6/87)
- W-3 ⊕ ABANDONED MONITORING WELL (CROWLEY ENVIRONMENTAL SERVICES, 4/87)
- W-4 ⊕ MONITORING WELL (CROWLEY, 4/87)
- PROPERTY LINE

MW-5

TPHg	<0.05
TPHd	0.91
TOG	<5.0
B	<0.5
T	<0.5
E	<0.5
X	<0.5

MW-6

TPHg	<0.05
TPHd	0.79
TOG	<5.0
B	<0.5
T	<0.5
E	<0.5
X	<0.5

MW-1

TPHg	<0.05
TPHd	1.1
TOG	<5.0
B	<0.5
T	<0.5
E	<0.5
X	<0.5

MW-7

TPHg	<0.05
TPHd	2.2
TOG	<5.0
B	<0.5
T	<0.5
E	<0.5
X	<0.5

MW-8

TPHg	<0.05
TPHd	1.5
TOG	<5.0
B	<0.5
T	<0.5
E	<0.5
X	<0.5

MW-4

TPHg	<0.05 (<0.05)
TPHd	0.20 (0.62)
TOG	<5.0 (<5.0)
B	<0.5 (<0.5)
T	<0.5 (<0.5)
E	<0.5 (<0.5)
X	<0.5 (<0.5)

CHEMICAL ANALYTICAL RESULTS:

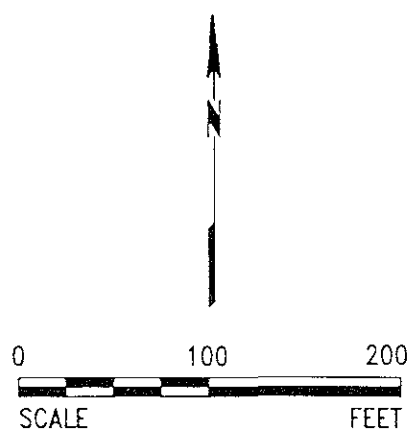
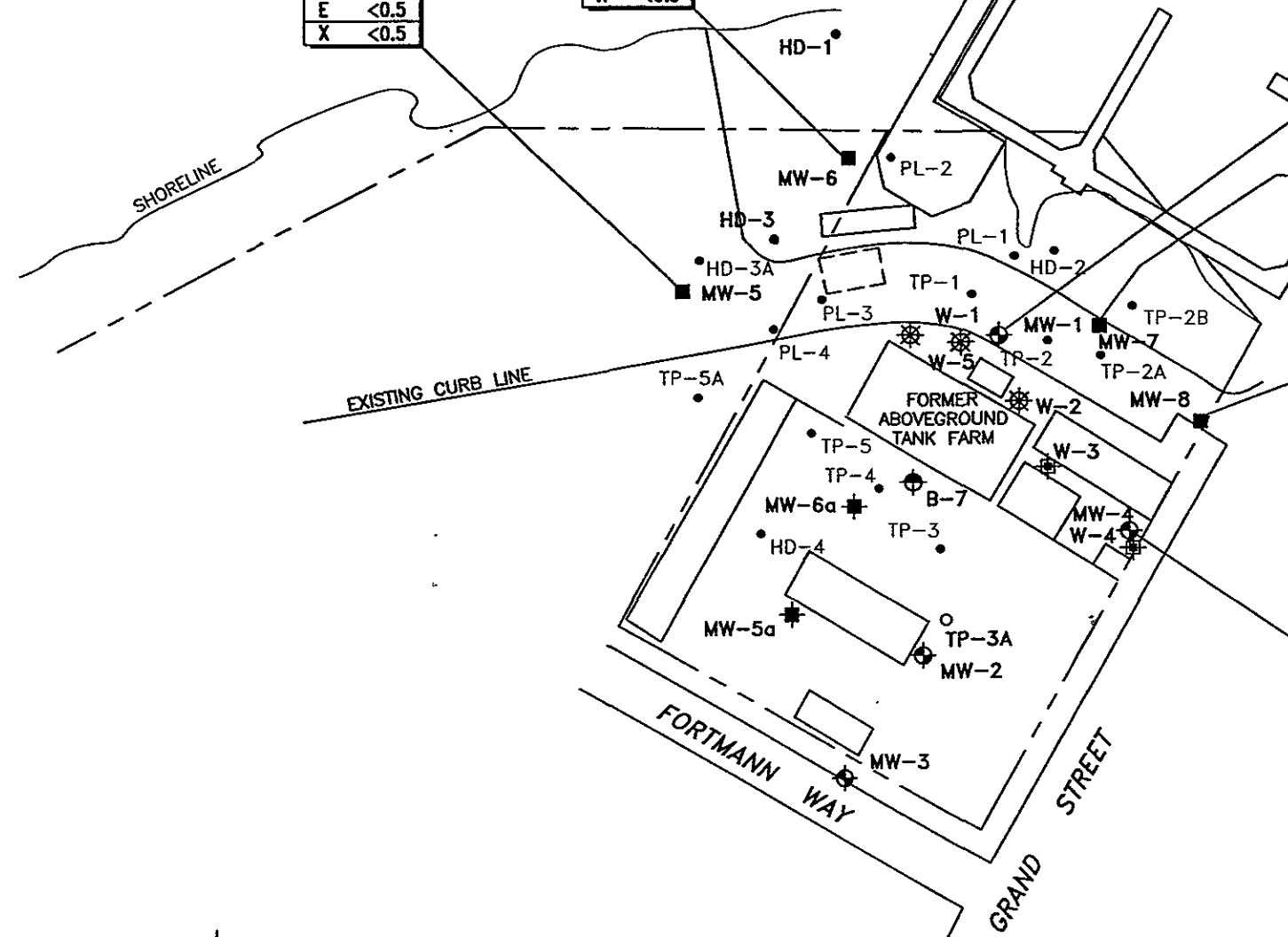
MW-8	Boring/Well Number	Analyte
TPHg 20		
TPHd 97 (98)		Duplicate Sample
TOG 390		
B <0.5		Not Detected Above Laboratory Detection Limit
T 5.7		
E 10		
X NA		Not Analyzed

ANALYTES:

- TPHg Total Petroleum Hydrocarbons as Gasoline
- TPHd Total Petroleum Hydrocarbons as Diesel
- TOG Total Oil and Grease
- B Benzene
- T Toluene
- E Ethylbenzene
- X Xylenes

NOTES:

BTEX RESULTS REPORTED IN MICROGRAMS PER LITER (ug/l), OTHER ANALYTE CONCENTRATIONS REPORTED IN MILLIGRAMS PER LITER (mg/l).



SOURCE: BASED ON SURVEY BY RON ARCHER, CIVIL ENGINEER INC., NOVEMBER 1994.

SECOR INTERNATIONAL INCORPORATED

DRAWN	CCR
APPR	JGR
DATE	18SEP95
JOB NO.	50085-001-01

FIGURE 6
GRAND STREET AND FORTMANN WAY PROPERTY
ALAMEDA, CALIFORNIA

GROUNDWATER CHEMICAL ANALYTICAL RESULTS - AUGUST 22, 1995

APPENDIX A

**Groundwater Sample Field Data Sheets and Groundwater
Monitoring Procedures**

SEACOR WATER SAMPLE FIELD DATA SHEET

PROJECT NO: So085-1-1
 PURGED BY: C TORRES
 SAMPLED BY: C TORRES

WELL ID: MU-1
 SAMPLE ID: MU-1
 CLIENT NAME: _____
 LOCATION: Alameda, CA

TYPE: Groundwater Surface Water _____ Treatment Effluent _____ Other _____
 CASING DIAMETER (inches): 2 3 _____ 4 _____ 4.5 _____ 6 _____ Other _____

CASING ELEVATION: (feet/MSL): <u>DTB 14.75</u>	VOLUME IN CASING (gal): <u>1.89</u>
DEPTH TO WATER (feet): <u>3.59</u>	CALCULATED PURGE (gal): <u>5.69</u>
DEPTH OF WELL (feet): <u>11.16</u>	ACTUAL PURGE VOL (gal): <u>7.5</u>

DATE PURGED: 8/22/95 Start (2400 Hr) 10:53 End (2400 Hr) 11:25
 DATE SAMPLED: 8/22/95 Start (2400 Hr) _____ End (2400 Hr) 15:05

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, X-DUP-1): _____

FIELD MEASUREMENTS

TIME (2400 Hr)	VOLUME (gal)	pH (units)	EC (microhm/cm @ 25°C)	TEMPERATURE (°F)	COLOR (Pt-Co)	TURBIDITY (NTU)
<u>10:59</u>	<u>2</u>	<u>6.67</u>	<u>> 20.000</u>	<u>69.0</u>	<u>GRAY/Brown/SP¹⁹</u>	<u>High</u>
<u>11:05</u>	<u>4</u>	<u>6.74</u>	<u>> 20.000</u>	<u>67.0</u>	<u>GRAY/Brown</u>	<u>High</u>
<u>11:09</u>	<u>6</u>	<u>6.81</u>	<u>> 20.000</u>	<u>65.1</u>	<u>Black</u>	<u>High</u>
<u>11:13</u>	<u>7</u>	<u>6.89</u>	<u>> 20.000</u>	<u>65.1</u>	<u>Black</u>	<u>High</u>

D.O. (ppm): _____ COLOR, COBALT (0-100): _____

- Clear
- Cloudy
- Yellow
- Brown
- Black

ODOR: Sour SMELL

PURGING EQUIPMENT

- 2" Bladder Pump
- Centrifugal Pump
- Submersible Pump
- Well Wizard™
- Bailor (Teflon®)
- Bailor (PVC)
- Bailor (Stainless Steel)
- Dedicated

Other: _____

SAMPLING EQUIPMENT

- 2" Bladder Pump
- DDL Sampler
- Submersible Pump
- Well Wizard™
- Bailor (Teflon®)
- Bailor (PVC/Disposable)
- Bailor (Stainless Steel)
- Dedicated

Other: _____

WELL INTEGRITY: Good

REMARKS: _____ LOCK #: DOLFIN

SIGNATURE: C. Torres

SEACOR WATER SAMPLE FIELD DATA SHEET

PROJECT NO: 50085-1-1
 PURGED BY: C TORRES
 SAMPLED BY: C TORRES

WELL ID: MW-4
 SAMPLE ID: MW-4B
 CLIENT NAME: GRAND MARINA
 LOCATION: ALAMEDA

TYPE: Groundwater Surface Water _____ Treatment Effluent _____ Other _____
 CASING DIAMETER (inches): 2 3 _____ 4 _____ 4.5 _____ 6 _____ Other _____

CASING ELEVATION: (feet/MSL): <u>DTB 1489</u>	VOLUME IN CASING (gal): <u>2.09</u>
DEPTH TO WATER (feet): <u>DTW 2.59</u>	CALCULATED PURGE (gal): <u>8.36</u>
DEPTH OF WELL (feet): <u>12.30</u>	ACTUAL PURGE VOL (gal): <u>8.5</u>

DATE PURGED: 8/22/95 Start (2400 Hr) 11:30 End (2400 Hr) 11:45
 DATE SAMPLED: 8/22/95 Start (2400 Hr) _____ End (2400 Hr) 14:40

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, X-DUP-1): 14:45 ON DUP-

FIELD MEASUREMENTS

TIME (2400 Hr)	VOLUME (gal)	pH (water)	E.C. (umho/cm @ 25°C)	TEMPERATURE (°F)	COLOR (pcu)	TURBIDITY (NTU)
<u>11:33</u>	<u>2</u>	<u>6.93</u>	<u>6740</u>	<u>75.1</u>	<u>GRAY</u>	<u>High</u>
<u>11:36</u>	<u>4</u>	<u>7.10</u>	<u>8960</u>	<u>73.0</u>	<u>11</u>	<u>11</u>
<u>11:38</u>	<u>5</u>	<u>7.12</u>	<u>9840</u>	<u>69.5</u>	<u>11</u>	<u>11</u>
<u>11:40</u>	<u>6</u>	<u>7.12</u>	<u>9750</u>	<u>68.5</u>	<u>11</u>	<u>11</u>
<u>11:43</u>	<u>7</u>	<u>7.12</u>	<u>9450</u>	<u>68.5</u>	<u>11</u>	<u>11</u>

D.O. (ppm): _____ COLOR, COBALT (0-100): _____

ODOR: MILD odor

- Clear
- Cloudy
- Yellow
- Brown

PURGING EQUIPMENT

- ___ 2" Bladder Pump
- ___ Centrifugal Pump
- ___ Submersible Pump
- ___ Well Wizard™
- ___ Baller (Teflon®)
- ___ Baller (PVC)
- ___ Baller (Stainless Steel)
- ___ Dedicated

Other: _____

SAMPLING EQUIPMENT

- ___ 2" Bladder Pump
- ___ DDL Sampler
- ___ Submersible Pump
- ___ Well Wizard™
- ___ Baller (Teflon®)
- ___ Baller (PVC/disposable)
- ___ Baller (Stainless Steel)
- ___ Dedicated

Other: _____

WELL INTEGRITY: Good

REMARKS: _____ LOCK #: 901KIN

SIGNATURE: Carroll J. ...

SEACOR WATER SAMPLE FIELD DATA SHEET

PROJECT NO: 50085-1-1
 PURGED BY: C. TORRES
 SAMPLED BY: C. TORRES

WELL ID: MW-5
 SAMPLE ID: MW-5
 CLIENT NAME: 6 MAIN ST
 LOCATION: ALB MED - ICA

TYPE: Groundwater Surface Water _____ Treatment Effluent _____ Other _____
 CASING DIAMETER (inches): 2 3 _____ 4 _____ 4.5 _____ 6 _____ Other _____

CASING ELEVATION: (feet/MSL): <u>DTB 13.57</u>	VOLUME IN CASING (gal): <u>1.35</u>
DEPTH TO WATER (feet): <u>DTW 5.53</u>	CALCULATED PURGE (gal): <u>4.07</u>
DEPTH OF WELL (feet): <u>7.99</u>	ACTUAL PURGE VOL. (gal): <u>4.5</u>

DATE PURGED: 8/22/95 Start (2400 Hr) 12:56 End (2400 Hr) 13:11
 DATE SAMPLED: 8/22/95 Start (2400 Hr) _____ End (2400 Hr) 16:40

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, X-DUP-1): _____

FIELD MEASUREMENTS

TIME (2400 Hr)	VOLUME (gal)	pH (unit)	E.C. (umho/cm @ 25°C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (NTU)
<u>13:02</u>	<u>1.5</u>	<u>6.45</u>	<u>1533</u>	<u>77.3</u>	<u>Thau.</u>	<u>High</u>
<u>13:05</u>	<u>3</u>	<u>6.49</u>	<u>1526</u>	<u>75.5</u>	<u>Black</u>	<u>High</u>
<u>13:08</u>	<u>4</u>	<u>6.55</u>	<u>1517</u>	<u>74.3</u>	<u>Black</u>	<u>High</u>
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____

D.O. (ppm): _____ COLOR, COBALT (0-100): _____

ODOR: Sour odor

- Clear
- Cloudy
- Yellow
- Brown

PURGING EQUIPMENT

- _____ 2" Bladder Pump _____ Bailer (Teflon®)
- _____ Centrifugal Pump Bailer (PVC)
- _____ Submersible Pump _____ Bailer (Stainless Steel)
- _____ Well Wizard™ _____ Dedicated

Other: _____

SAMPLING EQUIPMENT

- _____ 2" Bladder Pump _____ Bailer (Teflon®)
- _____ DDL Sampler Bailer (PVC/disposable)
- _____ Submersible Pump _____ Bailer (Stainless Steel)
- _____ Well Wizard™ _____ Dedicated

Other: _____

WELL INTEGRITY: Good LOCK #: DOLFIN
 REMARKS: _____

SIGNATURE: Carroll J. [Signature]

SEACOR WATER SAMPLE FIELD DATA SHEET

PROJECT NO: 50085-1-1
 PURGED BY: C TORRES
 SAMPLED BY: C TORRES

WELL ID: MW-6
 SAMPLE ID: MW-6
 CLIENT NAME: 16 Marina
 LOCATION: Alameda, CA

TYPE: Groundwater Surface Water _____ Treatment Effluent _____ Other _____
 CASING DIAMETER (inches): 2 3 _____ 4 _____ 4.5 _____ 6 _____ Other _____

CASING ELEVATION: (feet/MSL): <u>DIB 14.05</u>	VOLUME IN CASING (gal): <u>1.41</u>
DEPTH TO WATER (feet): <u>DTW 5.74</u>	CALCULATED PURGE (gal): <u>4.23</u>
DEPTH OF WELL (feet): <u>8.31</u>	ACTUAL PURGE VOL (gal): <u>4.5</u>

DATE PURGED: 8/22/95 Start (2400 Hr) 13:22 End (2400 Hr) 13:36
 DATE SAMPLED: 8/22/95 Start (2400 Hr) _____ End (2400 Hr) 17:10

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, X-DUP-1): _____

FIELD MEASUREMENTS

TIME (2400 Hr)	VOLUME (gal)	pH (water)	EC (umho/cm @ 25°C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (NTU)
<u>13:26</u>	<u>1.5</u>	<u>6.58</u>	<u>18040</u>	<u>71.4</u>	<u>THAN</u>	<u>Moderate</u>
<u>13:30</u>	<u>3</u>	<u>6.58</u>	<u>18200</u>	<u>68.6</u>	<u>THAN</u>	<u>11</u>
<u>13:34</u>	<u>4.5</u>	<u>6.63</u>	<u>18060</u>	<u>68.2</u>	<u>THAN</u>	<u>11</u>
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____

D.O. (ppm): _____ COLOR, COBALT (0-100): _____
 ODOR: _____

Clear
 Cloudy
 Yellow
 Brown THAN

PURGING EQUIPMENT

_____ 2" Bladder Pump	_____ Baller (Teflon®)
_____ Centrifugal Pump	<input checked="" type="checkbox"/> Baller (PVC)
_____ Submersible Pump	_____ Baller (Stainless Steel)
_____ Well Wizard™	_____ Dedicated

Other: _____

SAMPLING EQUIPMENT

_____ 2" Bladder Pump	_____ Baller (Teflon®)
_____ DDL Sampler	<input checked="" type="checkbox"/> Baller (PVC/disposable)
_____ Submersible Pump	_____ Baller (Stainless Steel)
_____ Well Wizard™	_____ Dedicated

Other: _____

WELL INTEGRITY: Good LOCK #: DOLFIN
 REMARKS: _____

SIGNATURE: C. Torres

SEACOR WATER SAMPLE FIELD DATA SHEET

PROJECT NO: 50085-1-1
 PURGED BY: C TORRES
 SAMPLED BY: C TORRES

WELL ID: MW-7
 SAMPLE ID: MW-7
 CLIENT NAME: 4 Grand Marina
 LOCATION: ALAMEDA CA

TYPE: Groundwater Surface Water _____ Treatment Effluent _____ Other _____
 CASING DIAMETER (inches): 2 A 3 _____ 4 _____ 4.5 _____ 6 _____ Other _____

CASING ELEVATION: (feet/MSL): <u>DTB 13:34</u>	VOLUME IN CASING (gal): <u>1.70</u>
DEPTH TO WATER (feet): <u>DTW 3:29</u>	CALCULATED PURGE (gal): <u>5.12</u>
DEPTH OF WELL (feet): <u>10:05</u>	ACTUAL PURGE VOL (gal): <u>10</u>

DATE PURGED: 8/22/95 Start (2400 Hr) 11:53 End (2400 Hr) 12:12
 DATE SAMPLED: 8/22/95 Start (2400 Hr) _____ End (2400 Hr) 15:35

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, X-DUP-1): _____

FIELD MEASUREMENTS						
TIME (2400 Hr)	VOLUME (gal)	pH (water)	EC (micro/cm @ 25°C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (NTU)
<u>11:57</u>	<u>2</u>	<u>6.52</u>	<u>> 20.000</u>	<u>74.4</u>	<u>Brown</u>	<u>High</u>
<u>11:59</u>	<u>4</u>	<u>6.57</u>	<u>> 20.000</u>	<u>72.8</u>	<u>Brown</u>	<u>High</u>
<u>12:04</u>	<u>5</u>	<u>6.62</u>	<u>> 20.000</u>	<u>71.2</u>	<u>Brown</u>	<u>High</u>
<u>12:09</u>	<u>6</u>	<u>6.65</u>	<u>> 20.000</u>	<u>70.6</u>	<u>Brown</u>	<u>High</u>
D.O. (ppm): _____		COLOR, COBALT (0-100): _____		<input type="checkbox"/> Clear <input type="checkbox"/> Cloudy <input type="checkbox"/> Yellow <input checked="" type="checkbox"/> Brown		
ODOR: <u>Sour SMELL</u>						
PURGING EQUIPMENT				SAMPLING EQUIPMENT		
<input type="checkbox"/> 2" Bladder Pump	<input type="checkbox"/> Baller (Teflon®)	<input type="checkbox"/> 2" Bladder Pump	<input type="checkbox"/> Baller (Teflon®)	<input type="checkbox"/> DDL Sampler	<input checked="" type="checkbox"/> Baller (PVC/Disposable)	<input type="checkbox"/> Submersible Pump
<input type="checkbox"/> Centrifugal Pump	<input checked="" type="checkbox"/> Baller (PVC)	<input type="checkbox"/> Submersible Pump	<input type="checkbox"/> Baller (Stainless Steel)	<input type="checkbox"/> Well Wizard™	<input type="checkbox"/> Baller (Stainless Steel)	<input type="checkbox"/> Dedicated
<input type="checkbox"/> Submersible Pump	<input type="checkbox"/> Dedicated	Other: _____				
<input type="checkbox"/> Well Wizard™		Other: _____				

WELL INTEGRITY: Good LOCK #: DOLFIN
 REMARKS: _____

SIGNATURE: [Signature]

SEACOR WATER SAMPLE FIELD DATA SHEET

PROJECT NO: 50085-1-1
 PURGED BY: C TORRES
 SAMPLED BY: C TORRES

WELL ID: MW-8
 SAMPLE ID: MW-8
 CLIENT NAME: ALAMEDA
 LOCATION: ALAMEDA

TYPE: Groundwater Surface Water _____ Treatment Effluent _____ Other _____
 CASING DIAMETER (inches): 2 1 3 _____ 4 _____ 4.5 _____ 6 _____ Other _____

CASING ELEVATION: (feet/MSL): <u>DTB 13.22</u>	VOLUME IN CASING (gal): <u>1.80</u>
DEPTH TO WATER (feet): <u>DTW 2.59</u>	CALCULATED PURGE (gal): <u>5.42</u>
DEPTH OF WELL (feet): <u>10.63</u>	ACTUAL PURGE VOL. (gal): <u>6</u>

DATE PURGED: 8/22/95 Start (2400 Hr) 12:20 End (2400 Hr) 12:39
 DATE SAMPLED: 8/22/95 Start (2400 Hr) _____ End (2400 Hr) 16:10

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, X-DUP-1): _____

FIELD MEASUREMENTS						
TIME (2400 Hr)	VOLUME (gal)	pH (units)	EC ($\mu\text{mhos/cm}@25^\circ\text{C}$)	TEMPERATURE ($^\circ\text{F}$)	COLOR (APHA)	TURBIDITY (NTU)
12:26	2	6.50	1546	74.4	Brown	HIGH
12:30	4	6.48	1616	72.7	11	HIGH
12:32	5	6.55	>20000	70.4	Black	HIGH
12:34	6	6.58	>200000	70.3	Black	HIGH

D.O. (ppm): _____ COLOR, COBALT (0-100): _____

ODOR: Sour odor

Clear
 Cloudy
 Yellow
 Brown
Black

PURGING EQUIPMENT		SAMPLING EQUIPMENT	
<input type="checkbox"/> 2" Bladder Pump	<input type="checkbox"/> Baller (Teflon®)	<input type="checkbox"/> 2" Bladder Pump	<input type="checkbox"/> Baller (Teflon®)
<input type="checkbox"/> Centrifugal Pump	<input checked="" type="checkbox"/> Baller (PVC)	<input type="checkbox"/> DDL Sampler	<input checked="" type="checkbox"/> Baller (PVC/disposable)
<input type="checkbox"/> Submersible Pump	<input type="checkbox"/> Baller (Stainless Steel)	<input type="checkbox"/> Submersible Pump	<input type="checkbox"/> Baller (Stainless Steel)
<input type="checkbox"/> Well Wizard™	<input type="checkbox"/> Dedicated	<input type="checkbox"/> Well Wizard™	<input type="checkbox"/> Dedicated
Other: _____		Other: _____	

WELL INTEGRITY: Good LOCK #: D-1 Firm

REMARKS: _____

SIGNATURE: [Signature]

APPENDIX B

Laboratory Analytical Reports and Chain-of-Custody Records



Superior Precision Analytical, Inc.

A member of ESSCON Environmental Support Service Consortium

SECOR
Attn: TERRY PLUNKETT

Project 50085-1-1
Reported on August 28, 1995

Gasoline Range Petroleum Hydrocarbons and BTXE
by EPA SW-846 5030/8015M/8020
Gasoline Range quantitated as all compounds from C6-C10

Chronology

Laboratory Number 20006

Sample ID	Sampled	Received	Extract.	Analyzed	QC Batch	LAB #
MW-4	08/22/95	08/23/95	08/23/95	08/23/95	BH231.04	01
MW-4B	08/22/95	08/23/95	08/23/95	08/23/95	BH231.04	02
MW-1	08/22/95	08/23/95	08/24/95	08/24/95	BH231.04	03
MW-7	08/22/95	08/23/95	08/24/95	08/24/95	BH231.04	04
MW-8	08/22/95	08/23/95	08/23/95	08/23/95	BH231.04	05
MW-5	08/22/95	08/23/95	08/24/95	08/24/95	BH231.04	06
MW-6	08/22/95	08/23/95	08/24/95	08/24/95	BH231.04	07

QC Samples

QC Batch #	QC Sample ID	TypeRef.	Matrix	Extract.	Analyzed
BH231.04-25	Method Blank	MB	Water	08/23/95	08/23/95
BH231.04-32	MW-4	MS 20006-01	Water	08/23/95	08/23/95
BH231.04-33	MW-4	MSD 20006-01	Water	08/23/95	08/23/95
BH231.04-49	Method Blank	MB	Water	08/24/95	08/24/95



Superior Precision Analytical, Inc.

A member of ESSCON Environmental Support Service Consortium

SECOR
Attn: TERRY PLUNKETT

Project 50085-1-1
Reported on August 28, 1995

Gasoline Range Petroleum Hydrocarbons and BTXE
by EPA SW-846 5030/8015M/8020
Gasoline Range quantitated as all compounds from C6-C10

LAB ID	Sample ID	Matrix	Dil. Factor	Moisture
20006-01	MW-4	Water	1.0	-
20006-02	MW-4B	Water	1.0	-
20006-03	MW-1	Water	1.0	-
20006-04	MW-7	Water	1.0	-

RESULTS OF ANALYSIS

Compound	20006-01		20006-02		20006-03		20006-04	
	Conc.	RL	Conc.	RL	Conc.	RL	Conc.	RL
	ug/L		ug/L		ug/L		ug/L	
Gasoline_Range	ND	50	ND	50	ND	50	ND	50
Benzene	ND	0.5	ND	0.5	ND	0.5	ND	0.5
Toluene	ND	0.5	ND	0.5	ND	0.5	ND	0.5
Ethyl Benzene	ND	0.5	ND	0.5	ND	0.5	ND	0.5
Total Xylenes	ND	0.5	ND	0.5	ND	0.5	ND	0.5
>> Surrogate Recoveries (%) <<								
Trifluorotoluene (SS)	104		101		112		105	



Superior Precision Analytical, Inc.

A member of ESSCON Environmental Support Service Consortium

SECOR
Attn: TERRY PLUNKETT

Project 50085-1-1
Reported on August 28, 1995

Gasoline Range Petroleum Hydrocarbons and BTXE
by EPA SW-846 5030/8015M/8020
Gasoline Range quantitated as all compounds from C6-C10

LAB ID	Sample ID	Matrix	Dil. Factor	Moisture
20006-05	MW-8	Water	1.0	-
20006-06	MW-5	Water	1.0	-
20006-07	MW-6	Water	1.0	-

RESULTS OF ANALYSIS

Compound	20006-05		20006-06		20006-07	
	Conc.	RL	Conc.	RL	Conc.	RL
	ug/L		ug/L		ug/L	
Gasoline_Range	ND	50	ND	50	ND	50
Benzene	ND	0.5	ND	0.5	ND	0.5
Toluene	ND	0.5	ND	0.5	ND	0.5
Ethyl Benzene	ND	0.5	ND	0.5	ND	0.5
Total Xylenes	ND	0.5	ND	0.5	ND	0.5

>> Surrogate Recoveries (%) <<

Trifluorotoluene (SS)	101	105	106
-----------------------	-----	-----	-----



Superior Precision Analytical, Inc.

A member of ESSCON Environmental Support Service Consortium

Gasoline Range Petroleum Hydrocarbons and BTXE
by EPA SW-846 5030/8015M/8020
Gasoline Range quantitated as all compounds from C6-C10

Quality Assurance and Control Data

Laboratory Number: 20006
Method Blank(s)

	BH231.04-25		BH231.04-49	
	Conc.	RL	Conc.	RL
	ug/L		ug/L	
Gasoline_Range	ND	50	ND	50
Benzene	ND	0.5	ND	0.5
Toluene	ND	0.5	ND	0.5
Ethyl Benzene	ND	0.5	ND	0.5
Total Xylenes	ND	0.5	ND	0.5
>> Surrogate Recoveries (%) <<				
Trifluorotoluene (SS)	102		103	



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Gasoline Range Petroleum Hydrocarbons and BTXE
by EPA SW-846 5030/8015M/8020
Gasoline Range quantitated as all compounds from C6-C10

Quality Assurance and Control Data

Laboratory Number: 20006

Compound	Sample conc.	SPK Level	SPK Result	Recovery %	Limits %	RPD %
For Water Matrix (ug/L)						
BH231.04 32 / 33 - Sample Spiked: 20006 - 01						
Gasoline_Range	ND	320	390/410	122/128	65-135	5
Benzene	ND	20	21/20	105/100	65-135	5
Toluene	ND	20	22/21	110/105	65-135	5
Ethyl Benzene	ND	20	22/21	110/105	65-135	5
Total Xylenes	ND	60	64/62	107/103	65-135	4
>> Surrogate Recoveries (%) <<						
Trifluorotoluene (SS)				101/100	50-150	

Definitions:

ND = Not Detected

RL = Reporting Limit

NA = Not Analysed

RPD = Relative Percent Difference

ug/L = parts per billion (ppb)

mg/L = parts per million (ppm)

ug/kg = parts per billion (ppb)

mg/kg = parts per million (ppm)



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SECOR
Attn: TERRY PLUNKETT

Project 50085-1-1
Reported on August 28, 1995

Total Oil and Grease by Standard Method 5520

Chronology

Laboratory Number 20006

Sample ID	Sampled	Received	Extract.	Analyzed	QC Batch	LAB #
MW-4	08/22/95	08/23/95	08/25/95	08/25/95	BH251.34	01
MW-4B	08/22/95	08/23/95	08/25/95	08/25/95	BH251.34	02
MW-1	08/22/95	08/23/95	08/25/95	08/25/95	BH251.34	03
MW-7	08/22/95	08/23/95	08/25/95	08/25/95	BH251.34	04
MW-8	08/22/95	08/23/95	08/25/95	08/25/95	BH251.34	05
MW-5	08/22/95	08/23/95	08/25/95	08/25/95	BH251.34	06
MW-6	08/22/95	08/23/95	08/25/95	08/25/95	BH251.34	07

QC Samples

QC Batch #	QC Sample ID	TypeRef.	Matrix	Extract.	Analyzed
BH251.34-01	Method Blank	MB	Water	08/25/95	08/25/95
BH251.34-02	Laboratory Spike	LS	Water	08/25/95	08/25/95
BH251.34-03	Laboratory Spike Duplicate	LSD	Water	08/25/95	08/25/95



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SECOR

Attn: TERRY PLUNKETT

Project 50085-1-1
Reported on August 28, 1995

Total Oil and Grease by Standard Method 5520

LAB ID	Sample ID	Matrix	Dil. Factor	Moisture
20006-01	MW-4	Water	1.0	-
20006-02	MW-4B	Water	1.0	-
20006-03	MW-1	Water	1.0	-
20006-04	MW-7	Water	1.0	-

R E S U L T S O F A N A L Y S I S

Compound	20006-01		20006-02		20006-03		20006-04	
	Conc.	RL	Conc.	RL	Conc.	RL	Conc.	RL
	mg/L		mg/L		mg/L		mg/L	
Oil and Grease	ND	5	ND	5	ND	5	ND	5



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Project 50085-1-1
Reported on August 28, 1995

Total Oil and Grease by Standard Method 5520

LAB ID	Sample ID	Matrix	Dil. Factor	Moisture
20006-05	MW-8	Water	1.0	-
20006-06	MW-5	Water	1.0	-
20006-07	MW-6	Water	1.0	-

RESULTS OF ANALYSIS

Compound	20006-05		20006-06		20006-07	
	Conc.	RL	Conc.	RL	Conc.	RL
	mg/L		mg/L		mg/L	
Oil and Grease	ND	5	ND	5	ND	5



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Total Oil and Grease by Standard Method 5520

Quality Assurance and Control Data

Laboratory Number: 20006

Method Blank(s)

BH251.34-01

Conc. RL

ug/L

Oil and Grease

ND

5



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Total Oil and Grease by Standard Method 5520

Quality Assurance and Control Data

Laboratory Number: 20006

Compound	Sample conc.	SPK Level	SPK Result	Recovery %	Limits %	RPD %
----------	--------------	-----------	------------	------------	----------	-------

For Water Matrix (mg/L)
 BH251.34 02 / 03 - Laboratory Control Spikes

Oil and Grease		30	26.4/23.4	88/78	50-110	12
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Definitions:

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 RL = Reporting Limit
 NA = Not Analysed
 RPD = Relative Percent Difference
 ug/L = parts per billion (ppb)
 mg/L = parts per million (ppm)

ug/kg = parts per billion (ppb)
 mg/kg = parts per million (ppm)



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SECOR

Attn: TERRY PLUNKETT

Project 50085-1-1
Reported on September 11, 1995
Revised on September 11, 1995

Total Petroleum Hydrocarbons as Diesel
by EPA SW-846 Method 8015M
Diesel Range quantitated as all compounds from C10-C25

Chronology

Laboratory Number 20006

Sample ID	Sampled	Received	Extract.	Analyzed	QC Batch	LAB #
MW-4	08/22/95	08/23/95	08/28/95	08/31/95	BH281.42	01
MW-4B	08/22/95	08/23/95	08/28/95	08/31/95	BH281.42	02
MW-1	08/22/95	08/23/95	08/28/95	08/31/95	BH281.42	03
MW-7	08/22/95	08/23/95	08/28/95	08/31/95	BH281.42	04
MW-8	08/22/95	08/23/95	08/28/95	08/31/95	BH281.42	05
MW-5	08/22/95	08/23/95	08/28/95	08/31/95	BH281.42	06
MW-6	08/22/95	08/23/95	08/28/95	08/31/95	BH281.42	07.

QC Samples

QC Batch #	QC Sample ID	TypeRef.	Matrix	Extract.	Analyzed
BH281.42-01	Method Blank				
BH281.42-02	Laboratory Spike	MB	Soil	08/28/95	08/29/95
BH281.42-03	Laboratory Spike Duplicate	LS	Soil	08/28/95	08/29/95
BH281.42-04	72605-20	LSD	Soil	08/28/95	08/29/95
BH281.42-05	72605-20	MS 82301-02	Soil	08/28/95	08/29/95
		MSD 82301-02	Soil	08/28/95	08/29/95



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Reported on September 11, 1995
Revised on September 11, 1995

Total Petroleum Hydrocarbons as Diesel
by EPA SW-846 Method 8015M
Diesel Range quantitated as all compounds from C10-C25

LAB ID	Sample ID	Matrix	Dil. Factor	Moisture
20006-01	MW-4	Water	1.0	-
20006-02	MW-4B	Water	1.0	-
20006-03	MW-1	Water	1.0	-
20006-04	MW-7	Water	1.0	-

RESULTS OF ANALYSIS

Compound	20006-01		20006-02		20006-03		20006-04	
	Conc.	RL	Conc.	RL	Conc.	RL	Conc.	RL
	ug/L		ug/L		ug/L		ug/L	
Diesel:	200	50	620**	50	1100	50	2200	50
>> Surrogate Recoveries (%) << Tetracosane	71		132		137		143	



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Reported on September 11, 1995
Revised on September 11, 1995

Total Petroleum Hydrocarbons as Diesel
by EPA SW-846 Method 8015M
Diesel Range quantitated as all compounds from C10-C25

LAB ID	Sample ID	Matrix	Dil. Factor	Moisture
20006-05	MW-8	Water	1.0	-
20006-06	MW-5	Water	1.0	-
20006-07	MW-6	Water	1.0	-

R E S U L T S O F A N A L Y S I S

Compound	20006-05		20006-06		20006-07	
	Conc.	RL	Conc.	RL	Conc.	RL
	ug/L		ug/L		ug/L	
Diesel:	1500**	50	910**	50	790**	50
>> Surrogate Recoveries (%) <<						
Tetracosane	140		125		132	



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Total Petroleum Hydrocarbons as Diesel
by EPA SW-846 Method 8015M
Diesel Range quantitated as all compounds from C10-C25

Quality Assurance and Control Data

Laboratory Number: 20006
Method Blank(s)

BH281.42-01
Conc. RL
mg/kg

Diesel: ND 1

>> Surrogate Recoveries (%) <<
Tetracosane 97



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Total Petroleum Hydrocarbons as Diesel
by EPA SW-846 Method 8015M
Diesel Range quantitated as all compounds from C10-C25

Quality Assurance and Control Data

Laboratory Number: 20006

Compound	Sample conc.	SPK Level	SPK Result	Recovery %	Limits %	RPD %
For Soil Matrix (mg/kg)						
BH281.42 02 / 03 - Laboratory Control Spikes						
Diesel:		100	112/118	112/118	50-150	5
>> Surrogate Recoveries (%) <<						
Tetracosane				90/92	50-150	
For Soil Matrix (mg/kg)						
BH281.42 04 / 05 - Sample Spiked: 82301 - 02						
Diesel:	ND	100	118/108	118/108	50-150	9
>> Surrogate Recoveries (%) <<						
Tetracosane				96/88	50-150	

** - Hydrocarbons were found in the range of diesel, but do not resemble a diesel fingerprint.

Definitions:

- ND = Not Detected
- RL = Reporting Limit
- NA = Not Analysed
- RPD = Relative Percent Difference
- ug/L = parts per billion (ppb)
- mg/L = parts per million (ppm)
- ug/kg = parts per billion (ppb)
- mg/kg = parts per million (ppm)

20006

Chain-of-Custody Number:

SEACOR Chain-of-Custody Record

Field Office: 90 New MONTGOMERY ST.
 Address: Suite 620
SAN FRANCISCO CA 94105
(415) 882-1548

Additional documents are attached, and are a part of this Record.
 Job Name: GRAND MARINA
 Location: GRAND MARINA ALAMEDA CA

Project # SC085-1-1 Task # 25M11
 Project Manager TERRY PLUNKETT
 Laboratory SEACOR
 Turnaround Time STANDARD

Sampler's Name CARLOS TORRES
 Sampler's Signature Carlos H. Torres

Analysis Request

Sample ID	Date	Time	Matrix	HCID	TPH/gBTEX/WTPH-G 8015 (modified)/8020	TPH/dWTPH-D/ 8015 (modified) <u>TPH 1 & 11</u>	TPH-419/WTPH-419-1 <u>TPH 419-1</u>	Aromatic Volatiles 602/8020	Volatile Organics 624/8240 (GC/MS)	Halogenated Volatiles 601/8010	Semi-volatile Organics 625/8270 (GC/MS)	Pesticides/PCBs 608/8080	Total Lead 7421	Priority Pollutant Metals (13)	TCLP Metals	Comments/ Instructions	Number of Containers
MW - 4	8/22/95	14:40	1/20		X	X	X										5
MW - 4B	8/22/95	14:45			X	X	X										5
MW - 1	8/22/95	15:05			X	X	X										5
MW - 7	8/22/95	15:35			X	X	X										5
MW - 8	8/22/95	16:10			X	X	X										5
MW - 5	8/22/95	16:40			X	X	X										5
MW - 6	8/22/95	17:10			X	X	X										5

Special Instructions/Comments:
60

Relinquished by: T. Plunkett
 Sign T. Plunkett
 Print T. Plunkett
 Company SEACOR
 Time _____ Date 8/23/95

Received by: Atlanta Crossman
 Sign Atlanta Crossman
 Print m.j. Crossman
 Company Aero
 Time 9:25 Date 8-23-95

Sample Receipt
 Total no. of containers: 35
 Chain of custody seals: _____
 Rec'd. good condition/cold: _____
 Conforms to record: _____

Relinquished by: m.j. Crossman
 Sign m.j. Crossman
 Print M. J. Crossman
 Company Aero
 Time 12:20 Date 8-23

Received by: A. Horn
 Sign A. Horn
 Print A. Horn
 Company SPA
 Time 12:20 Date 8-23-95

Client: _____
 Client Contact: _____
 Client Phone: _____