GeoStrategies Inc.
Environmental Consulting,
Engineering and Geologic Services

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Letter of Transmittal

Date: 1/8/93

From: ROBERT MALLORY **Project No:** 7909

To: MS. SUSAN L. HUGO (CERTIFIED MAIL)
A.C.H.C.S.A.
80 SWAN WAY, RM. 200
OAKLAND, CA. 94621

Subject: QUARTERLY MONITORING REPORT - 4th qtr. '92
ARCO SS# 4931
731 WEST MacARTHUR BLVD.
OAKLAND, CA.

The following items are: ☑ Enclosed ☐ Sent Separately via _____

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1/8/93	QUARTERLY MONITORING REPORT - 4th qtr. '92	1

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- ☐ For your review
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Comments:

CC: MR. MICHAEL WHELAN, ARCO PRODUCTS CO.
MR. RICHARD HIETT, RWQCB - S.F. REGION
(CERTIFIED MAIL)

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(510) 352-4800 - Fax (510) 783-1089

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Robert C. Mallory
(Signed)

GeoStrategies Inc.

QUARTERLY MONITORING REPORT - Fourth Quarter 1992

ARCO Service Station No. 4931
731 West MacArthur Boulevard
Oakland, California

790901-20

January 8, 1993

GeoStrategies Inc.

January 8, 1993

ARCO Products Company
P.O. Box 5811
San Mateo, California 94402

Attn: Mr. Michael Whelan

Re: QUARTERLY MONITORING REPORT - Fourth Quarter 1992
ARCO Service Station No. 4931
731 West MacArthur Boulevard
Oakland, California

Mr. Whelan:

INTRODUCTION

This Quarterly Monitoring Report has been prepared by GeoStrategies Inc. (GSI) and presents the results of the fourth quarter, 1992 sampling for the above referenced site (Plate 1). Sampling data were furnished by the ARCO Products Company contractor.

SITE BACKGROUND

There are currently twelve monitoring wells (A-2 through A-13) and three recovery wells (AR-1 through AR-3) at the site (Plate 2). These wells were installed between 1982 and 1992 by Groundwater Technology, Inc., Pacific Environmental Group, and GSI. Wells A-2 through A-10 and AR-1 through AR-3 are on-site and Wells A-11, A-12, and A-13 are off-site. These wells were installed to evaluate the horizontal and vertical extent of petroleum hydrocarbons in soil and groundwater beneath the site. The proposed interim remedial system was completed in early November and began operating on November 10, 1992.

Quarterly monitoring and sampling of site wells began in 1989. Ground-water samples have been analyzed for Total Petroleum Hydrocarbons calculated as Gasoline (TPH-Gasoline) according to EPA Method 8015 (Modified) and Benzene, Toluene, Ethylbenzene, and Xylenes (BTEX) according to EPA Method 8020. The ground-water samples collected from Well A-2 were analyzed for Total Oil and Grease (TOG) and Organic Lead during the first quarter, 1992 sampling event.

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CURRENT QUARTER SAMPLING RESULTS

Depth to water-level measurements were obtained in each monitoring well prior to sampling on October 28, 1992. Wells A-8, A-9, and AR-1 through AR-3 were not monitored or sampled this quarter due to remedial system equipment installed in these wells. Static ground-water levels were measured from the surveyed top of each well box and recorded to the nearest $\pm$0.01 foot. Water-level data were referenced to Mean Sea Level (MSL) datum and used to construct a quarterly potentiometric map (Plate 3). Shallow ground-water flow is to the southwest at an approximate hydraulic gradient of 0.016.

Each accessible well was checked for the presence of floating product. Floating product was observed in Well A-4 this quarter at a measured thickness of 0.03. Current depth-to-water and floating product measurements are summarized in Table 1 and in the EMCON Associates (EMCON) ground-water sampling report (Appendix A). Historical water-level data and floating product measurements are presented in Table 2.

Ground-water samples were collected on October 28 and 29, 1992. Samples were analyzed for TPH-Gasoline according to EPA Method 8015 (Modified) and for BTEX according to EPA Method 8020. The ground - water samples were analyzed by Sequoia Analytical, a California State-certified laboratory located in Redwood City, California. A Table of current chemical analytical data are included in Table 1. The EMCON ground-water sampling report is presented in Appendix A. Current chemical analytical data have been added to the Historical Ground-water Quality Database presented in Table 3. A chemical concentration map for TPH-Gasoline and benzene is presented on Plate 4.

CONCLUSIONS

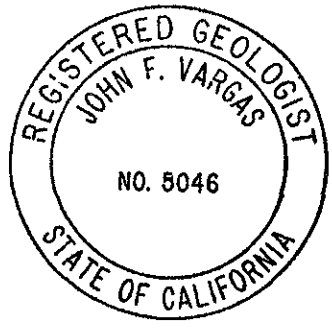
Petroleum hydrocarbons were detected in on-site Wells A-2 and A-4 during fourth quarter ground-water sampling. Hydrocarbons appears to be delineated on-site as indicated by none detected analytical results from off-site Wells A-11 through A-13. Wells A-8, A-9, and AR-1 through AR-3 were not sampled due to remedial system equipment. The interim remedial system began operation on November 10, 1992.

If you have any questions, please call.

GeoStrategies Inc. by,

Robert C. Mallory
Geologist

John F. Vargas
Senior Geologist
R.G. 5046



RCM/JFV/rmt

Table 1. Ground-water Analyses Data
Table 2. Historical Water-level Data
Table 3. Historical Ground-water Quality Database

Plate 1. Vicinity Map
Plate 2. Site Plan
Plate 3. Potentiometric Map
Plate 4. TPH-G/Benzene Concentration Map

Appendix A: EMCON Ground-water Sampling Report

QC Review:

790901-20

TABLES

TABLE 1

GROUNDWATER ANALYSES DATA

WELL NO.	SAMPLE DATE	ANALYSIS DATE	TPH-G (PPB)	BENZENE (PPB)	TOLUENE (PPB)	ETHYLBENZENE (PPB)	XYLENES (PPB)	WELL ELEV. (FT)	STATIC WATER ELEV. (FT)	PRODUCT THICKNESS (FT)	DEPTH TO WATER (FT)
A-2	29-Oct-92	03-Nov-92	77	0.56	<0.50	<0.50	0.51	55.48	43.57	0.00	11.91
A-3	28-Oct-92	03-Nov-92	<50	<0.50	<0.50	<0.50	<0.50	54.66	42.66	0.00	12.00
A-4	28-Oct-92	03-Nov-92	----	----	----	----	----	54.73	42.82	0.03	11.93
A-5	28-Oct-92	03-Nov-92	<50	<0.50	<0.50	<0.50	<0.50	54.17	42.62	0.00	11.55
A-6	28-Oct-92	03-Nov-92	<50	<0.50	<0.50	<0.50	<0.50	55.17	44.62	0.00	10.55
A-7	28-Oct-92	03-Nov-92	<50	<0.50	<0.50	<0.50	<0.50	54.71	44.40	0.00	10.31
A-8	28-Oct-92	03-Nov-92	----	----	----	----	----	53.77	----	----	----
A-9	28-Oct-92	03-Nov-92	----	----	----	----	----	53.04	----	----	----
A-10	28-Oct-92	03-Nov-92	<50	<0.50	<0.50	<0.50	<0.50	54.26	42.37	0.00	11.89
A-11	28-Oct-92	03-Nov-92	<50	<0.50	<0.50	<0.50	<0.50	53.74	42.20	0.00	11.54
A-12	28-Oct-92	03-Nov-92	<50	<0.50	<0.50	<0.50	<0.50	52.05	41.24	0.00	10.81
A-13	28-Oct-92	03-Nov-92	<50	<0.50	<0.50	<0.50	<0.50	55.11	44.27	0.00	10.84
AR-1	28-Oct-92	03-Nov-92	----	----	----	----	----	54.72	----	----	----
AR-2	28-Oct-92	03-Nov-92	----	----	----	----	----	54.77	----	----	----
AR-3	28-Oct-92	03-Nov-92	----	----	----	----	----	54.19	----	----	----
XDUP	29-Oct-92	03-Nov-92	65	0.71	<0.50	<0.50	0.59	----	----	----	----

TABLE 1

GROUNDWATER ANALYSES DATA

WELL NO.	SAMPLE DATE	ANALYSIS DATE	TPH-G (PPB)	BENZENE (PPB)	TOLUENE (PPB)	ETHYLBENZENE (PPB)	XYLENES (PPB)	WELL ELEV. (FT)	STATIC WATER ELEV. (FT)	PRODUCT THICKNESS (FT)	DEPTH TO WATER (FT)
FB-1	28-Oct-92	03-Nov-92	<50	<0.50	<0.50	<0.50	<0.50	----	----	----	----
TB-1	29-Oct-92	03-Nov-92	<50	<0.50	<0.50	<0.50	<0.50	----	----	----	----

Current Regional Water Quality Control Board Maxiumu Contaminant Levels
Benzene 1.ppb Xylenes 1750.ppb Ethlybenzene 680.ppb

Current DHS Action Levels Toluene 100.0 ppb

TPH-G = Total Petroleum Hydrocarbons Calculated as Gasoline
PPB = Parts Per Billion
TB = Trip Blank

Note: 1. All data shown as <x are reported as ND (none detected).
2. Water level elevations referenced to Mean Sea Level (MSL).
3. DHS Action levels and MCLs are subject to change pending State review.

TABLE 2

HISTORICAL WATER-LEVEL DATA

MONITORING DATE	WELL NUMBER	DEPTH TO WATER (FT)	WELL ELEVATION (FT)	STATIC WATER ELEVATION (FT)	FLOATING PRODUCT THICKNESS (FT)
20-Mar-89	A-2	3.45	55.38	51.93	0.00
24-May-89	A-2	6.80	55.38	48.58	0.00
18-Aug-89	A-2	10.82	55.38	44.56	0.00
27-Oct-89	A-2	8.25	55.38	47.13	0.00
15-Jan-90	A-2	4.87	55.38	50.51	0.00
04-Apr-90	A-2	7.03	55.38	48.35	0.00
30-Jul-90	A-2	10.01	55.38	45.37	0.00
29-Oct-90	A-2	11.60	55.38	43.78	0.00
16-Jan-91	A-2	9.43	55.38	45.95	0.00
12-Apr-91	A-2	3.65	55.38	51.73	0.00
10-Jul-91	A-2	9.57	55.38	45.81	0.00
21-Oct-91	A-2	11.54	55.38	43.84	0.00
01-Feb-92	A-2	11.20	55.38	44.18	0.00
29-Apr-92	A-2	7.18	55.38	48.20	0.00
29-Jul-92	A-2	11.81	55.48	43.67	0.00
29-Oct-92	A-2	11.91	55.48	43.57	0.00
20-Mar-89	A-3	7.51	54.48	46.97	0.00
24-May-89	A-3	10.29	54.48	44.19	0.00
18-Aug-89	A-3	11.60	54.48	42.88	0.00
27-Oct-89	A-3	10.16	54.48	44.32	0.00
15-Jan-90	A-3	8.55	54.48	45.93	0.00
04-Apr-90	A-3	10.66	54.48	43.82	0.00
30-Jul-90	A-3	11.26	54.48	43.22	0.00
29-Oct-90	A-3	11.86	54.48	42.62	0.00
16-Jan-91	A-3	11.46	54.48	43.02	0.00
12-Apr-91	A-3	9.28	54.48	45.20	0.00
10-Jul-91	A-3	11.29	54.48	43.19	0.00
21-Oct-91	A-3	11.51	54.48	42.97	0.00
02-Feb-92	A-3	N/A	54.48	-----	----
29-Apr-92	A-3	N/A	54.48	-----	----

TABLE 2

HISTORICAL WATER-LEVEL DATA

MONITORING DATE	WELL NUMBER	DEPTH TO WATER (FT)	WELL ELEVATION (FT)	STATIC WATER ELEVATION (FT)	FLOATING PRODUCT THICKNESS (FT)
29-Jul-92	A-3	11.59	54.66	43.07	0.00
28-Oct-92	A-3	12.00	54.66	42.66	0.00
21-Mar-86	A-4	-----	54.62	-----	3.50
07-Jan-88	A-4	-----	54.62	-----	0.02
20-Mar-89	A-4	8.13	54.62	46.49	0.00
24-May-89	A-4	11.40	54.62	43.22	0.00
18-Aug-89	A-4	11.91	54.62	42.72	0.01
27-Oct-89	A-4	11.37	54.62	43.26	0.01
15-Jan-90	A-4	9.74	54.62	44.89	0.01
04-Apr-90	A-4	11.19	54.62	43.43	0.00
30-Jul-90	A-4	11.71	54.62	42.92	0.01
29-Oct-90	A-4	12.21	54.62	42.43	0.03
16-Jan-91	A-4	11.89	54.62	42.74	0.01
12-Apr-91	A-4	9.54	54.62	45.08	0.00
10-Jul-91	A-4	11.55	54.62	43.07	0.00
20-Sep-91	A-4	12.12	54.62	42.50	0.00
21-Oct-91	A-4	11.76	54.62	42.88	0.03
02-Feb-92	A-4	11.18	54.62	43.46	0.02
29-Apr-92	A-4	10.78	54.62	43.86	0.02
29-Jul-92	A-4	11.74	54.73	43.02	0.04
28-Oct-92	A-4	11.93	54.73	42.82	0.03
20-Mar-89	A-5	8.09	54.15	46.06	0.00
24-May-89	A-5	11.13	54.15	43.02	0.00
18-Aug-89	A-5	11.58	54.15	42.57	0.00
27-Oct-89	A-5	10.68	54.15	43.47	0.00
15-Jan-90	A-5	9.24	54.15	44.91	0.00
04-Apr-90	A-5	10.93	54.15	43.22	0.00
30-Jul-90	A-5	11.48	54.15	42.67	0.00
29-Oct-90	A-5	11.77	54.15	42.38	0.00

TABLE 2

HISTORICAL WATER-LEVEL DATA

MONITORING DATE	WELL NUMBER	DEPTH TO WATER (FT)	WELL ELEVATION (FT)	STATIC WATER ELEVATION (FT)	FLOATING PRODUCT THICKNESS (FT)
16-Jan-91	A-5	11.36	54.15	42.79	0.00
12-Apr-91	A-5	9.64	54.15	44.51	0.00
10-Jul-91	A-5	11.30	54.15	42.85	0.00
21-Oct-91	A-5	11.48	54.15	42.67	0.00
02-Feb-92	A-5	10.73	54.15	43.42	0.00
29-Apr-92	A-5	10.58	54.15	43.57	0.00
29-Jul-92	A-5	11.46	54.17	42.71	0.00
28-Oct-92	A-5	11.55	54.17	42.62	0.00
20-Mar-89	A-6	6.43	55.13	48.70	0.00
24-May-89	A-6	9.43	55.13	45.70	0.00
18-Aug-89	A-6	10.10	55.13	45.03	0.00
27-Oct-89	A-6	9.16	55.13	45.97	0.00
15-Jan-90	A-6	8.02	55.13	47.11	0.00
04-Apr-90	A-6	9.29	55.13	45.84	0.00
30-Jul-90	A-6	9.93	55.13	45.20	0.00
29-Oct-90	A-6	10.42	55.13	44.71	0.00
16-Jan-91	A-6	10.15	55.13	44.98	0.00
12-Apr-91	A-6	8.05	55.13	47.08	0.00
10-Jul-91	A-6	10.03	55.13	45.10	0.00
21-Oct-91	A-6	10.30	55.13	44.83	0.00
02-Feb-92	A-6	9.81	55.13	45.32	0.00
29-Apr-92	A-6	N/A	55.13	-----	----
29-Jul-92	A-6	10.40	55.17	44.77	0.00
28-Oct-92	A-6	10.55	55.17	44.62	0.00
20-Mar-89	A-7	6.29	54.67	48.38	0.00
24-May-89	A-7	9.26	54.67	45.41	0.00
18-Aug-89	A-7	9.97	54.67	44.70	0.00
27-Oct-89	A-7	9.02	54.67	45.65	0.00
15-Jan-90	A-7	7.90	54.67	46.77	0.00

TABLE 2

HISTORICAL WATER-LEVEL DATA

MONITORING DATE	WELL NUMBER	DEPTH TO WATER (FT)	WELL ELEVATION (FT)	STATIC WATER ELEVATION (FT)	FLOATING PRODUCT THICKNESS (FT)
04-Apr-90	A-7	9.15	54.67	45.52	0.00
30-Jul-90	A-7	9.80	54.67	44.87	0.00
29-Oct-90	A-7	10.30	54.67	44.37	0.00
16-Jan-91	A-7	11.35	54.67	43.32	0.00
12-Apr-91	A-7	7.90	54.67	46.77	0.00
10-Jul-91	A-7	9.82	54.67	44.85	0.00
21-Oct-91	A-7	10.12	54.67	44.55	0.00
02-Feb-92	A-7	9.28	54.67	45.39	0.00
29-Apr-92	A-7	8.85	54.67	45.82	0.00
29-Jul-92	A-7	10.09	54.71	44.62	0.00
28-Oct-92	A-7	10.31	54.71	44.40	0.00
21-Mar-86	A-8	-----	53.61	-----	0.02
07-Jan-88	A-8	-----	53.61	-----	0.18
20-Mar-89	A-8	8.21	53.61	45.93	0.66
24-May-89	A-8	11.41	53.61	43.16	1.20
18-Aug-89	A-8	10.88	53.61	43.35	0.77
27-Oct-89	A-8	11.66	53.61	43.00	1.31
15-Jan-90	A-8	9.84	53.61	44.47	0.87
04-Apr-90	A-8	11.35	53.61	42.46	0.25
30-Jul-90	A-8	10.48	53.61	44.53	1.75
29-Oct-90	A-8	11.39	53.61	42.30	0.10
16-Jan-91	A-8	11.11	53.61	42.51	0.01
12-Apr-91	A-8	9.16	53.61	44.46	0.01
10-Jul-91	A-8	10.73	53.61	42.89	0.01
21-Oct-91	A-8	10.98	53.61	42.72	0.11
02-Feb-92	A-8	10.80	53.61	43.93	1.40
29-Apr-92	A-8	11.15	53.61	43.50	1.30
29-Jul-92	A-8	11.33	53.77	42.49	0.06
28-Oct-92	A-8	N/A	53.77	-----	-----

TABLE 2

HISTORICAL WATER-LEVEL DATA

MONITORING DATE	WELL NUMBER	DEPTH TO WATER (FT)	WELL ELEVATION (FT)	STATIC WATER ELEVATION (FT)	FLOATING PRODUCT THICKNESS (FT)
20-Mar-89	A-9	6.28	52.96	46.68	0.00
24-May-89	A-9	10.12	52.96	42.84	0.00
18-Aug-89	A-9	9.51	52.96	43.45	0.00
27-Oct-89	A-9	8.56	52.96	44.40	0.00
15-Jan-90	A-9	7.20	52.96	45.76	0.00
04-Apr-90	A-9	8.78	52.96	44.18	0.00
30-Jul-90	A-9	10.16	52.96	42.80	0.00
29-Oct-90	A-9	10.71	52.96	42.25	0.00
16-Jan-91	A-9	10.44	52.96	42.52	0.00
12-Apr-91	A-9	8.69	52.96	44.27	0.00
10-Jul-91	A-9	10.23	52.96	42.73	0.00
20-Sep-91	A-9	10.47	52.96	42.49	0.00
21-Oct-91	A-9	10.39	52.96	42.57	0.00
02-Feb-92	A-9	9.05	52.96	43.91	0.00
29-Apr-92	A-9	9.56	52.96	43.40	0.00
29-Jul-92	A-9	10.43	53.04	42.61	0.00
28-Oct-92	A-9	N/A	53.04	-----	----
20-Mar-89	A-10	8.52	54.16	45.64	0.00
24-May-89	A-10	11.31	54.16	42.85	0.00
18-Aug-89	A-10	11.82	54.16	42.34	0.00
27-Oct-89	A-10	10.94	54.16	43.22	0.00
15-Jan-90	A-10	9.58	54.16	44.58	0.00
04-Apr-90	A-10	N/A	54.16	-----	----
30-Jul-90	A-10	11.67	54.16	42.49	0.00
29-Oct-90	A-10	12.11	54.16	42.05	0.00
16-Jan-91	A-10	11.60	54.16	42.56	0.00
12-Apr-91	A-10	10.04	54.16	44.12	0.00
10-Jul-91	A-10	11.55	54.16	42.61	0.00
21-Oct-91	A-10	11.79	54.16	42.37	0.00
02-Feb-92	A-10	N/A	54.16	-----	----

TABLE 2

HISTORICAL WATER-LEVEL DATA

MONITORING DATE	WELL NUMBER	DEPTH TO WATER (FT)	WELL ELEVATION (FT)	STATIC WATER ELEVATION (FT)	FLOATING PRODUCT THICKNESS (FT)
29-Apr-92	A-10	10.85	54.16	43.31	0.00
29-Jul-92	A-10	11.84	54.26	42.42	0.00
28-Oct-92	A-10	11.89	54.26	42.37	0.00
20-Mar-89	A-11	8.11	53.75	45.64	0.00
24-May-89	A-11	10.92	53.75	42.83	0.00
18-Aug-89	A-11	11.52	53.75	42.23	0.00
27-Oct-89	A-11	10.63	53.75	43.12	0.00
15-Jan-90	A-11	9.22	53.75	44.53	0.00
04-Apr-90	A-11	10.85	53.75	42.90	0.00
30-Jul-90	A-11	11.29	53.75	42.46	0.00
29-Oct-90	A-11	11.66	53.75	42.09	0.00
16-Jan-91	A-11	11.31	53.75	42.44	0.00
12-Apr-91	A-11	9.55	53.75	44.20	0.00
10-Jul-91	A-11	11.18	53.75	42.57	0.00
21-Oct-91	A-11	11.24	53.75	42.51	0.00
02-Feb-92	A-11	10.70	53.75	43.05	0.00
29-Apr-92	A-11	10.57	53.75	43.18	0.00
29-Jul-92	A-11	11.33	53.74	42.41	0.00
28-Oct-92	A-11	11.54	53.74	42.20	0.00
20-Mar-89	A-12	8.00	52.05	44.05	0.00
24-May-89	A-12	10.35	52.05	41.70	0.00
18-Aug-89	A-12	10.75	52.05	41.30	0.00
27-Oct-89	A-12	10.06	52.05	41.99	0.00
15-Jan-90	A-12	8.88	52.05	43.17	0.00
04-Apr-90	A-12	10.30	52.05	41.75	0.00
30-Jul-90	A-12	10.66	52.05	41.39	0.00
29-Oct-90	A-12	10.90	52.05	41.15	0.00
16-Jan-91	A-12	10.60	52.05	41.45	0.00
12-Apr-91	A-12	9.45	52.05	42.60	0.00

TABLE 2

HISTORICAL WATER-LEVEL DATA

MONITORING DATE	WELL NUMBER	DEPTH TO WATER (FT)	WELL ELEVATION (FT)	STATIC WATER ELEVATION (FT)	FLOATING PRODUCT THICKNESS (FT)
10-Jul-91	A-12	10.56	52.05	41.49	0.00
21-Oct-91	A-12	10.62	52.05	41.43	0.00
02-Feb-92	A-12	10.10	52.05	41.95	0.00
29-Apr-92	A-12	10.19	52.05	41.86	0.00
29-Jul-92	A-12	10.81	52.05	41.24	0.00
28-Oct-92	A-12	10.81	52.05	41.24	0.00
01-Jul-92	A-13	9.93	55.11	45.18	0.00
29-Jul-92	A-13	11.12	55.11	43.99	0.00
28-Oct-92	A-13	10.84	55.11	44.27	0.00
01-Jul-92	AR-1	10.27	54.72	44.45	0.00
29-Jul-92	AR-1	11.32	54.72	43.40	0.00
28-Oct-92	AR-1	N/A	54.72	-----	----
01-Jul-92	AR-2	11.33	54.77	43.44	0.00
29-Jul-92	AR-2	11.90	54.77	42.87	0.00
28-Oct-92	AR-2	N/A	54.77	-----	----
01-Jul-92	AR-3	10.11	54.19	44.08	0.00
29-Jul-92	AR-3	11.55	54.19	42.64	0.00
28-Oct-92	AR-3	N/A	54.19	-----	----

N\A = Not accessible

Notes:
1. Static water elevations referenced to Mean Sea Level (MSL).
2. Static water-levels corrected for floating product (conversion factor = 0.80).
3. Wells A-3 and A-10 were not monitored on February 2, 1992 due to site construction activities.
4. Wells A-3 and A-6 were not monitored on April 29, 1992 due to site construction activities.

TABLE 2

HISTORICAL WATER-LEVEL DATA

MONITORING DATE	WELL NUMBER	DEPTH TO WATER (FT)	WELL ELEVATION (FT)	STATIC WATER ELEVATION (FT)	FLOATING PRODUCT THICKNESS (FT)

5. Water-level data prior to March, 1989 are not available.
6. Depths-to-water from Wells AR-1, AR-2, and AR-3 measured on July 1, 1992 were referenced to the top of the casing. These measurements have been adjusted to the top of well box reference.
7. Well elevations and depths-to-water are referenced to the top of the well box.
8. Wells re-surveyed July 30, 1992.
9. Wells A-8, A-9, and AR-1 through AR-3 were not measured 10/28/92 due to remediation equipment installed in the wells.

TABLE 3

HISTORICAL GROUND WATER QUALITY DATABASE

SAMPLE DATE	SAMPLE POINT	TPH-G (PPB)	BENZENE (PPB)	TOLUENE (PPB)	ETHYLBENZENE (PPB)	XYLENES (PPB)
21-Mar-86	A-2	31000.	----	----	----	----
07-Jan-88	A-2	12000.	920.	1500.	----	4000.
20-Mar-89	A-2	22000.	1200.	1800.	1200.	7700.
24-May-89	A-2	9000.	460.	260.	250.	2400.
18-Aug-89	A-2	14000.	900.	200.	<200.	1300.
27-Oct-89	A-2	16000.	1200.	340.	90.	3100.
15-Jan-90	A-2	9900.	1100.	460.	150.	2900.
04-Apr-90	A-2	16000.	1100.	400.	380.	3900.
30-Jul-90	A-2	16000.	1400.	340.	290.	3600.
30-Jul-90	A-2	16000.	1400.	340.	290.	3600.
29-Oct-90	A-2	14000.	1100.	210.	66.	2700.
16-Jan-91	A-2	15000.	1200.	800.	190.	4600.
12-Apr-91	A-2	16000	640	290	280	2600
21-Oct-91	A-2	26000	1100	560	81	3900
02-Feb-92	A-2	11000	150	13	91	94
29-Apr-92	A-2	5400	120	16	129	19
30-Jul-92	A-2	590	10	<2.0	<2.0	9.0
29-Oct-92	A-2	77	0.56	<0.50	<0.50	0.51
21-Mar-86	A-3	1000.	----	----	----	----
07-Jan-88	A-3	250.	2.3	8.	----	21.
20-Mar-89	A-3	230.	1.6	<1.	3.	3.
24-May-89	A-3	170.	0.9	2.	1.	<3.
18-Aug-89	A-3	180.	0.7	1.	<1.	<3.
27-Oct-89	A-3	120.	<0.5	<0.5	<0.5	<1.
15-Jan-90	A-3	<50.	<0.5	<0.5	<0.5	<1.
04-Apr-90	A-3	88.	1.2	2.0	0.8	4.
30-Jul-90	A-3	120.	8.3	2.9	2.3	12.
29-Oct-90	A-3	780.	10.	27.	18.	85.
16-Jan-91	A-3	69.	2.0	3.5	<0.5	9.6

TABLE 3

HISTORICAL GROUND WATER QUALITY DATABASE

SAMPLE DATE	SAMPLE POINT	TPH-G (PPB)	BENZENE (PPB)	TOLUENE (PPB)	ETHYLBENZENE (PPB)	XYLENES (PPB)
12-Apr-91	A-3	<30	<0.30	<0.30	<0.30	<0.30
10-Jul-91	A-3	59	<0.30	<0.30	0.50	0.51
21-Oct-91	A-3	56	0.44	0.77	0.41	1.3
01-Feb-92	A-3		Not accessible			
29-Apr-92	A-3		Not accessible			
30-Jul-92	A-3	<50	<0.50	<0.50	<0.50	<0.50
28-Oct-92	A-3	<50	<0.50	<0.50	<0.50	<0.50
21-Mar-86	A-4		Floating product			
07-Jan-88	A-4		Floating product			
20-Mar-89	A-4	360000.	1500.	3700.	6500.	35000.
24-May-89	A-4	1500000.	1000.	2000.	6000.	23000.
18-Aug-89	A-4		Floating product			
27-Oct-89	A-4		Floating product			
15-Jan-90	A-4		Floating product			
04-Apr-90	A-4	40000.	680.	320.	1400.	4900.
30-Jul-90	A-4		Floating product			
29-Oct-90	A-4		Floating product			
16-Jan-91	A-4		Floating product			
12-Apr-91	A-4	1800	<60	90	650	1700
10-Jul-91	A-4	61000	2700	8500	1700	8200
20-Sep-91	A-4	N/A	1200	5300	1500	11000
21-Oct-91	A-4		Floating product			
01-Feb-92	A-4		Floating product			
29-Apr-92	A-4		Floating product			
29-Jul-92	A-4		Floating product			
28-Oct-92	A-4		Floating product			
21-Mar-86	A-5	88.	----	----	----	----
07-Jan-88	A-5	<50.	0.5	1.	----	4.
20-Mar-89	A-5	60.	0.5	1.	2.	10.

TABLE 3

HISTORICAL GROUND WATER QUALITY DATABASE

SAMPLE DATE	SAMPLE POINT	TPH-G (PPB)	BENZENE (PPB)	TOLUENE (PPB)	ETHYLBENZENE (PPB)	XYLENES (PPB)
24-May-89	A-5	<50.	0.5	<1.	<1.	<3.
18-Aug-89	A-5	<50.	<0.5	<1.	<1.	<3.
27-Oct-89	A-5	<50.	<0.50	<0.50	<0.50	<1.
15-Jan-90	A-5	<50.	<0.5	<0.5	<0.5	<1.
04-Apr-90	A-5	<50.	<0.5	<0.5	<0.5	<1.
30-Jul-90	A-5	<50.	<0.5	<0.5	<0.5	<0.5
29-Oct-90	A-5	280.	<0.5	<0.5	<0.5	<0.5
16-Jan-91	A-5	<50.	<0.5	<0.5	<0.5	<0.5
12-Apr-91	A-5	<30	<0.30	<0.30	<0.30	0.84
10-Jul-91	A-5	<30	<0.30	<0.30	<0.30	<0.30
21-Oct-91	A-5	<30	<0.30	<0.30	<0.30	<0.30
01-Feb-92	A-5	<30	1.7	<0.30	<0.30	<0.30
29-Apr-92	A-5	<30	<0.30	<0.30	<0.30	<0.30
30-Jul-92	A-5	<50	<0.50	<0.50	<0.50	<0.50
28-Oct-92	A-5	<50	<0.50	<0.50	<0.50	<0.50
21-Mar-86	A-6	<10.	----	----	----	----
07-Jan-88	A-6	390.	54.	89.	----	110.
20-Mar-89	A-6	220.	33.	21.	9.	39.
24-May-89	A-6	110.	13.	6.	3.	13.
18-Aug-89	A-6	<50.	2.1	1.	<1.	<3.
27-Oct-89	A-6	55.	3.8	1.6	1.7	6.
15-Jan-90	A-6	100.	12.	2.5	5.5	18.
04-Apr-90	A-6	100.	17.	7.1	5.5	18.
30-Jul-90	A-6	<50.	2.6	<0.5	<0.5	1.2
29-Oct-90	A-6	<50.	0.7	<0.5	<0.5	<0.5
16-Jan-91	A-6	<50.	<0.5	<0.5	<0.5	<0.5
12-Apr-91	A-6	430	24	5.1	9.4	32
10-Jul-91	A-6	<30	1.4	0.39	0.47	1.5
21-Oct-91	A-6	<30	<0.30	<0.30	<0.30	<0.30
01-Feb-92	A-6	<30	2.0	0.40	0.58	1.7

TABLE 3

HISTORICAL GROUND WATER QUALITY DATABASE

SAMPLE DATE	SAMPLE POINT	TPH-G (PPB)	BENZENE (PPB)	TOLUENE (PPB)	ETHYLBENZENE (PPB)	XYLENES (PPB)
29-Apr-92	A-6	Not accessible				
30-Jul-92	A-6	<50	0.64	<0.50	<0.50	<0.50
28-Oct-92	A-6	<50	<0.50	<0.50	<0.50	<0.50
07-Jan-88	A-7	<50.	<0.5	1.	----	4.
20-Mar-89	A-7	<50.	0.9	<1.	<1.	<3.
24-May-89	A-7	<50.	<0.5	<1.	<1.	<3.
18-Aug-89	A-7	<50.	<0.5	<1.	<1.	<3.
27-Oct-89	A-7	<50.	<0.5	<0.5	<0.5	<1.
15-Jan-90	A-7	<50.	<0.5	<0.5	<0.5	<1.
04-Apr-90	A-7	<50.	<0.5	<0.5	<0.5	<1.
30-Jul-90	A-7	<50.	<0.5	<0.5	<0.5	<0.5
29-Oct-90	A-7	<50.	2.7	7.6	1.1	3.0
16-Jan-91	A-7	<50.	<0.5	<0.5	<0.5	<0.5
12-Apr-91	A-7	<30	<0.30	<0.30	<0.30	0.48
10-Jul-91	A-7	<30	<0.30	0.49	<0.30	1.2
21-Oct-91	A-7	<30	<0.30	<0.30	<0.30	<0.30
01-Feb-92	A-7	<30	<0.30	<0.30	<0.30	<0.30
29-Apr-92	A-7	<30	<0.30	<0.30	<0.30	<0.30
29-Jul-92	A-7	<50.	<0.50	<0.50	<0.50	<0.50
28-Oct-92	A-7	<50	<0.50	<0.50	<0.50	<0.50
21-Mar-86	A-8	Floating Product				
07-Jan-88	A-8	Floating Product				
20-Mar-89	A-8	Floating Product				
24-May-89	A-8	Floating Product				
18-Aug-89	A-8	Floating Product				
27-Oct-89	A-8	Floating Product				
15-Jan-90	A-8	Floating Product				
04-Apr-90	A-8	Floating Product				
30-Jul-90	A-8	Floating Product				

TABLE 3

HISTORICAL GROUND WATER QUALITY DATABASE

SAMPLE DATE	SAMPLE POINT	TPH-G (PPB)	BENZENE (PPB)	TOLUENE (PPB)	ETHYLBENZENE (PPB)	XYLENES (PPB)
29-Oct-90	A-8	Floating Product				
16-Jan-91	A-8	Floating Product				
12-Apr-91	A-8	Floating Product				
10-Jul-91	A-8	Floating Product				
21-Oct-91	A-8	Floating Product				
01-Feb-92	A-8	Floating Product				
29-Apr-92	A-8	Floating Product				
29-Jul-92	A-8	Floating Product				
28-Oct-92	A-8	Not Accessible				
07-Jan-88	A-9	300.	45.	14.	----	43.
21-Mar-89	A-9	50.	2.8	1.	1.	3.
24-May-89	A-9	120.	26.	12.	4.	79.
18-Aug-89	A-9	14000.	400.	800.	400.	2000.
27-Oct-89	A-9	1700.	150.	36.	30.	110.
15-Jan-90	A-9	860.	140.	58.	38.	140.
04-Apr-90	A-9	620.	36.	13.	9.4	32.
30-Jul-90	A-9	180.	77.	1.6	2.1	4.2
29-Oct-90	A-9	110.	30.	3.7	4.1	8.3
16-Jan-91	A-9	<50.	15.	<0.5	<0.5	0.6
12-Apr-91	A-9	130	52	0.83	5.3	6.0
10-Jul-91	A-9	<30	7.8	<0.30	<0.30	<0.30
20-Sep-91	A-9	N/A	21	<2.0	<2.0	<2.0
21-Oct-91	A-9	240	63	0.65	5.1	1.6
01-Feb-92	A-9	320	77	0.95	11	6.5
29-Apr-92	A-9	170	52	<0.30	5.6	1.4
30-Jul-92	A-9	<50	14	<0.50	1.7	6.0
28-Oct-92	A-9	Not Accessible				
07-Jan-88	A-10	<50.	0.6	11.	----	4.
20-Mar-89	A-10	<50.	<0.5	<1.	<1.	<3.

TABLE 3

HISTORICAL GROUND WATER QUALITY DATABASE

SAMPLE DATE	SAMPLE POINT	TPH-G (PPB)	BENZENE (PPB)	TOLUENE (PPB)	ETHYLBENZENE (PPB)	XYLENES (PPB)
24-May-89	A-10	<50.	<0.5	<1.	<1.	<3.
18-Aug-89	A-10	<50.	<0.5	<1.	<1.	<3.
27-Oct-89	A-10	<50.	<0.5	<0.5	<0.5	<1.
15-Jan-90	A-10	<50.	<0.5	<0.5	<0.5	<1.
04-Apr-90	A-10	Not accessible				
30-Jul-90	A-10	<50.	<0.5	<0.5	<0.5	<0.5
29-Oct-90	A-10	<50.	2.3	6.9	1.2	3.0
16-Jan-91	A-10	<50.	<0.5	<0.5	<0.5	<0.5
12-Apr-91	A-10	<30	0.67	0.55	<0.30	0.90
10-Jul-91	A-10	<30	<0.30	<0.30	<0.30	<0.30
21-Oct-91	A-10	<30	<0.30	<0.30	<0.30	<0.30
02-Feb-92	A-10	Not accessible				
29-Apr-92	A-10	<30	<0.30	<0.30	<0.30	<0.30
29-Jul-92	A-10	<50	25	<0.50	<0.50	1.8
28-Oct-92	A-10	<50	<0.50	<0.50	<0.50	<0.50
07-Jan-88	A-11	<50.	1.1	2.	----	5.
20-Mar-89	A-11	<50.	<0.5	<1.	<1.	<3.
24-May-89	A-11	<50.	<0.5	<1.	<1.	<3.
18-Aug-89	A-11	<50.	<0.5	<1.	<1.	<3.
27-Oct-89	A-11	<50.	<0.5	<0.5	<0.5	<1.
15-Jan-90	A-11	<50.	<0.5	<0.5	<0.5	<1.
04-Apr-90	A-11	<50.	<0.5	<0.5	<0.5	<1.
30-Jul-90	A-11	<50.	<0.5	0.6	<0.5	0.5
29-Oct-90	A-11	<50.	0.6	2.4	0.6	1.5
16-Jan-91	A-11	<50.	<0.5	<0.5	<0.5	<0.5
12-Apr-91	A-11	<30	<0.30	0.37	<0.30	<0.30
10-Jul-91	A-11	<30	0.61	0.46	<0.30	1.0
21-Oct-91	A-11	<30	<0.30	<0.30	<0.30	<0.30
01-Feb-92	A-11	<30	<0.30	<0.30	<0.30	<0.30
29-Apr-92	A-11	<30	<0.30	<0.30	<0.30	<0.30

TABLE 3

HISTORICAL GROUND WATER QUALITY DATABASE

SAMPLE DATE	SAMPLE POINT	TPH-G (PPB)	BENZENE (PPB)	TOLUENE (PPB)	ETHYLBENZENE (PPB)	XYLENES (PPB)
30-Jul-92	A-11	<50.	<0.50	<0.50	<0.50	<0.50
28-Oct-92	A-11	<50	<0.50	<0.50	<0.50	<0.50
07-Jan-88	A-12	<50.	<0.5	2.	----	<4.
20-Mar-89	A-12	<50.	<0.5	<1.	<1.	<3.
24-May-89	A-12	<50.	<0.5	<1.	<1.	<3.
18-Aug-89	A-12	<50.	<0.5	<1.	<1.	<3.
27-Oct-89	A-12	<50.	<0.5	<0.5	<0.5	<1.
15-Jan-90	A-12	<50.	<0.5	<0.5	<0.5	<1.
04-Apr-90	A-12	<50.	<0.5	<0.5	<0.5	<1.
30-Jul-90	A-12	<50.	<0.5	<0.5	<0.5	<0.5
29-Oct-90	A-12	<50.	<0.5	<0.5	<0.5	<0.5
16-Jan-91	A-12	<50.	<0.5	<0.5	<0.5	<0.5
12-Apr-91	A-12	<30	<0.30	<0.30	<0.30	<0.30
10-Jul-91	A-12	<30	<0.30	<0.30	<0.30	<0.30
21-Oct-91	A-12	<30	<0.30	<0.30	<0.30	<0.30
01-Feb-92	A-12	<30	<0.30	<0.30	<0.30	<0.30
29-Apr-92	A-12	<30	<0.30	<0.30	<0.30	<0.30
30-Jul-92	A-12	<50.	<0.50	<0.50	<0.50	<0.50
28-Oct-92	A-12	<50	<0.50	<0.50	<0.50	<0.50
01-Jul-92	A-13	<50	<0.50	<0.50	<0.50	<0.50
30-Jul-92	A-13	<50	<0.50	<0.50	<0.50	<0.50
28-Oct-92	A-13	<50	<0.50	<0.50	<0.50	<0.50
01-Jul-92	AR-1	2300	260	150	38	470
29-Jul-92	AR-1	1600	340	180	52	320
28-Oct-92	AR-1	Not Accessible				
01-Jul-92	AR-2	<50	<0.50	<0.50	<0.50	<0.50
29-Jul-92	AR-2	350	130	8.5	<10	<10

TABLE 3

HISTORICAL GROUND WATER QUALITY DATABASE

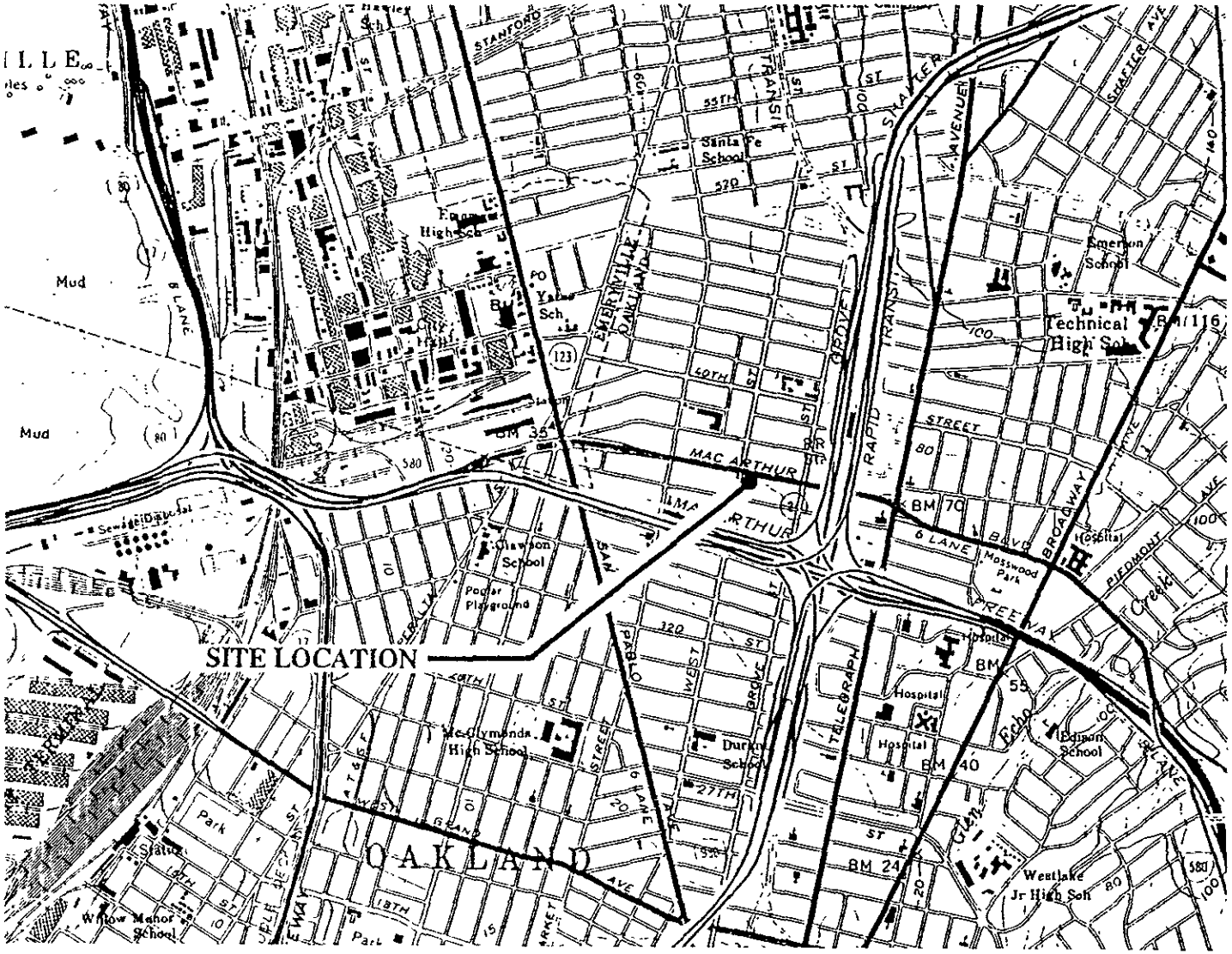
SAMPLE DATE	SAMPLE POINT	TPH-G (PPB)	BENZENE (PPB)	TOLUENE (PPB)	ETHYLBENZENE (PPB)	XYLENES (PPB)
28-Oct-92	AR-2	Not Accessible				
01-Jul-92	AR-3	<50	1.8	0.86	<0.50	2.2
29-Jul-92	AR-3	<50	1.6	<0.50	<0.50	<0.50
28-Oct-92	AR-3	Not Accessible				

Current Regional Water Quality Control Board Maximum Contaminant Levels
Benzene 1. ppb Xylenes 1750. ppb Ethylbenzene 680.ppb

Current DHS Action Levels Toluene 100.0 ppb

TPH-G = Total Petroleum Hydrocarbons calculated as Gasoline
PPB = Parts Per Billion
NOTES 1. All data shown as <X are reported as ND (none detected).
2. DHS Action Levels and MCL's are subject to change peding State review.
3. Ethylbenzene & Xylenes were combined in 1986 and 1988.
4. Wells A-4 and A-9 were sampled in September, 1991 for water discharge permits for the proposed groundwater treatment system.
5. Wells A-8, A-9, and AR-1 through AR-3 were not sampled on October 28, 1992 due to remediation equipment in the wells.

ILLUSTRATIONS



N

0 2000

Scale in Feet

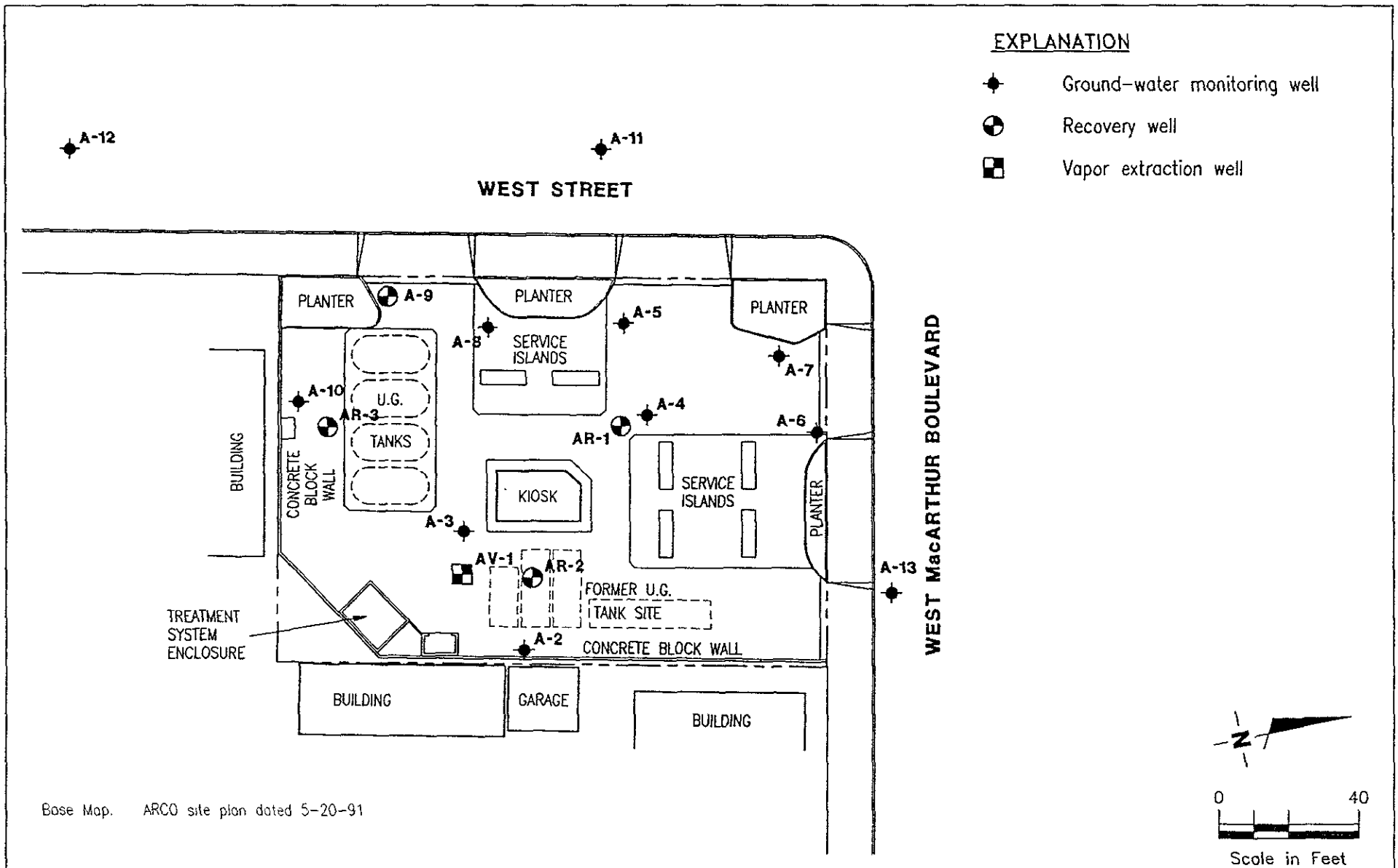
Base Map: USGS Topographic Map

GeoStrategies Inc.

VICINITY MAP
ARCO Service Station #4931
731 West MacArthur Boulevard
Oakland, California

PLATE 1

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
7909		9/91	



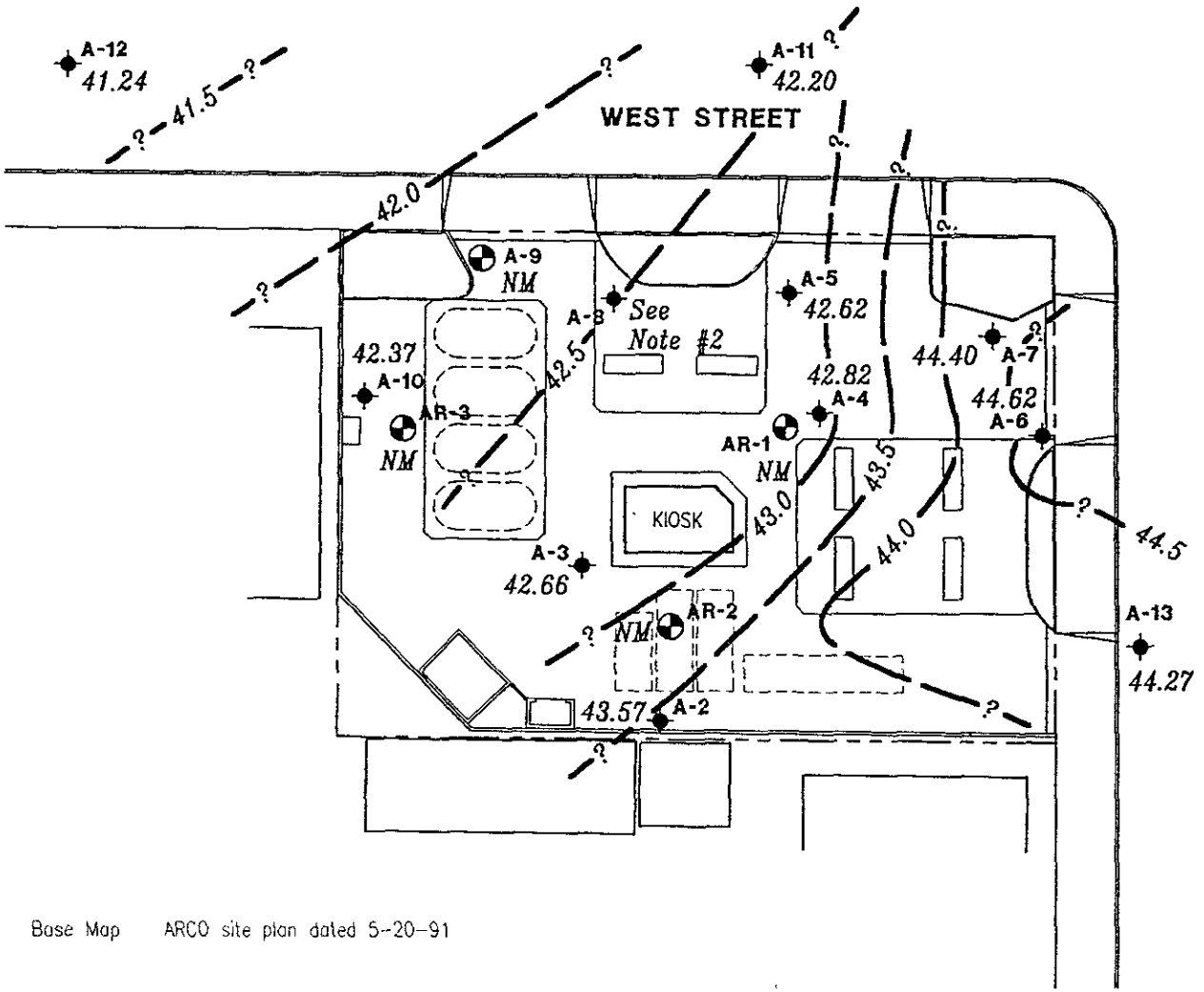
Base Map. ARCO site plan dated 5-20-91

GeoStrategies Inc.

SITE PLAN
ARCO Service Station #4931
731 West MacArthur Boulevard
Oakland, California

PLATE
2

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
7909		9/92	



Base Map ARCO site plan dated 5-20-91

EXPLANATION

- Ground-water monitoring well
- Recovery well
- 99.99 Ground-water elevation contour. Approximate Gradient = 0.016
- *99.99* Ground-water elevation in feet referenced to Mean Sea Level (MSL) measured on October 28, 1992
- *NM* Not Measured

NOTES:
1. Contours may be influenced by irrigation practices and/or site construction activities.
2. Well A-8 was not used in contouring due to the presence of a dedicated product skimmer.

N

0 40

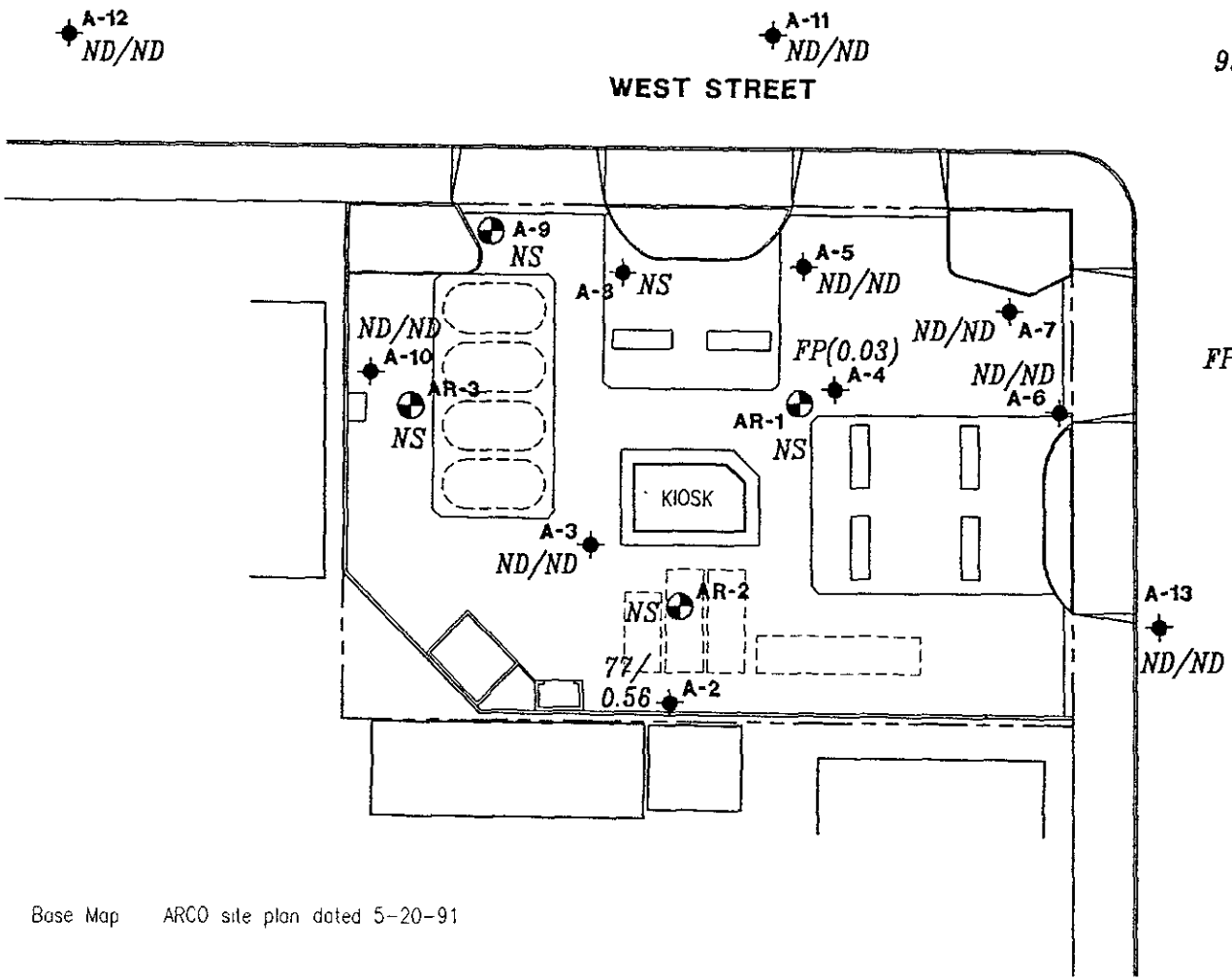
Scale in Feet

GeoStrategies Inc.

POTENTIOMETRIC MAP
ARCO Service Station #4931
731 West MacArthur Boulevard
Oakland, California

PLATE 3

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
790901-20	Rcm	12/92	



EXPLANATION

- Ground-water monitoring well
- Recovery well
- *99/9.9* — TPH-G (Total Petroleum Hydrocarbons calculated as Gasoline)/Benzene concentrations in ppb sampled on October 28 and 29, 1992
- *ND* — Not Detected (See laboratory reports for detection limits)
- *NS* — Not Sampled
- *FP(0.01)* — Floating Product (measured thickness in feet)

Base Map ARCO site plan dated 5-20-91

N

0 40

Scale in Feet

GeoStrategies Inc.

TPH-G/BENZENE CONCENTRATION MAP
ARCO Service Station #4931
731 West MacArthur Boulevard
Oakland, California

PLATE 4

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
790901-20	Ron	12/92	

APPENDIX A
EMCON GROUND-WATER SAMPLING REPORT

EMCON ASSOCIATES
Consultants in Wastes Management and Environmental Control

RECEIVED
NOV 30 1992
GeoStrategies Inc.

Date November 19, 1992
Project 0G70-032.01

To:
Mr. John Vargas
GeoStrategies, Inc.
2140 West Winton Avenue
Hayward, California 94545

We are enclosing:

Copies	Description
1	Depth To Water / Floating Product Survey Results
1	Summary of Groundwater Monitoring Data
1	Certified Analytical Reports with Chain-of-Custody
15	Water Sample Field Data Sheets

For your: X Information Sent by: X Mail

Comments:

Enclosed are the data from the fourth quarter 1992 monitoring event at ARCO service station 4931, 731 West MacArthur Boulevard, Oakland, CA. Groundwater monitoring is conducted consistent with applicable regulatory guidelines. Please call if you have any questions: (408) 453-2266.

Jim Butera JB

Reviewed by:

REGISTERED PROFESSIONAL ENGINEER
ROBERT CURTIS PORTER
No: 4094
Exp. 6/31/92
INDUSTRIAL
STATE OF CALIFORNIA

Robert Porter, Senior Project Engineer.

1938 Junction Avenue, San Jose, California 95131-2102, (408) 453-0719, Fax (408) 453-0452

FIELD REPORT
DEPTH TO WATER / FLOATING PRODUCT SURVEY

PROJECT # : 0G70-032.01 STATION ADDRESS : 731 West MacArthur Blvd, Oakland, DATE : 10/28/97

ARCO STATION # : 4931 FIELD TECHNICIAN : Horton/Williams/Reichelaeife DAY : Wednesday

DTW Order	WELL ID	Well Box Seal	Well Lid Secure	Gasket	Lock	Locking Well Cap	FIRST DEPTH TO WATER (feet)	SECOND DEPTH TO WATER (feet)	DEPTH TO FLOATING PRODUCT (feet)	FLOATING PRODUCT THICKNESS (feet)	WELL TOTAL DEPTH (feet)	COMMENTS
1	AR-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	-
2	AR-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	dedicated pump no water level port.
3	AR-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
4	A-13	good	yes	no	2269	yes	11.23	11.23	ND	ND	29.3	—
5	A-7	good	yes	no	2268	yes	10.31	10.31	ND	ND	22.8	—
6	A-11	good	yes	no	2008	yes	11.54 ~~11.55~~	11.54 ~~11.55~~	ND	ND	28.C	—
7	A-12	good	yes	no	2008	yes	10.84	10.84	ND	ND	29.8	—
8	A-10	good	yes	no	2268	yes	11.89	11.90	ND	ND	30.2	water in box
9	A-5	good	yes	no	2008	yes	11.55	11.55	ND	ND	24.C	—
10	A-6	good	yes	no	2008	yes	10.55	10.55	ND	ND	24.7	-
11	A-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	dedicated pump no water level port.
12	A-3	good	yes	no	2008	yes	12.00	11.99	ND	ND	17.C	water in box
13	A-2	good	yes	no	2008	yes	11.91	11.91	ND	ND	19.8	—
14	A-4	good	yes	no	3283	yes	11.93	11.93	11.90	.03	2C.C	—

SURVEY POINTS ARE TOP OF WELL BOXES

FIELD REPORT
DEPTH TO WATER / FLOATING PRODUCT SURVEY

PROJECT # : 0G70-032.01 STATION ADDRESS : 731 West MacArthur Blvd. Oakland, DATE : 10/28/92

ARCO STATION # : 4931 FIELD TECHNICIAN : Horton, Williams, Reichelderfer DAY : Wednesday

DTW Order	WELL ID	Well Box Seal	Well Lid Secure	Gasket	Lock	Locking Well Cap	FIRST DEPTH TO WATER (feet)	SECOND DEPTH TO WATER (feet)	DEPTH TO FLOATING PRODUCT (feet)	FLOATING PRODUCT THICKNESS (feet)	WELL TOTAL DEPTH (feet)	COMMENTS
15	A-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	dedicated pump no water level port

SURVEY POINTS ARE TOP OF WELL BOXES

Summary of Groundwater Monitoring Data
Fourth Quarter 1992
ARCO Service Station 4931
731 West MacArthur Boulevard, Oakland, California
micrograms per liter (µg/l) and milligrams per liter (mg/l)

Well ID and Sample Depth	Sampling Date	Depth To Water (feet)	Floating Product Thickness (feet)	TPH[1] as Gasoline (µg/l)	Benzene (µg/l)	Toluene (µg/l)	Ethyl-benzene (µg/l)	Total Xylenes (µg/l)
AR-1	10/28/92	NR.[2]	NR.	NR.	NR.	NR.	NR.	NR.
AR-2	10/28/92	NR.	NR.	NR.	NR.	NR.	NR.	NR.
AR-3	10/28/92	NR.	NR.	NR.	NR.	NR.	NR.	NR.
A-2(19)	10/29/92	11.91	ND.[3]	77.	0.56	<0.50	<0.50	0.51
A-3(17)	10/28/92	12.00	ND.	<50.	<0.50	<0.50	<0.50	<0.50
A-4	10/28/92	11.93	0.03	FP.[4]	FP.	FP.	FP.	FP.
A-5(23)	10/28/92	11.55	ND.	<50.	<0.50	<0.50	<0.50	<0.50
A-6(24)	10/28/92	10.55	ND.	<50.	<0.50	<0.50	<0.50	<0.50
A-7(22)	10/28/92	10.31	ND.	<50.	<0.50	<0.50	<0.50	<0.50
A-8	10/28/92	NR.	NR.	NR.	NR.	NR.	NR.	NR.
A-9	10/28/92	NR.	NR.	NR.	NR.	NR.	NR.	NR.
A-10(30)	10/28/92	11.89	ND.	<50	<0.50	<0.50	<0.50	<0.50
A-11(28)	10/28/92	11.54	ND.	<50.	<0.50	<0.50	<0.50	<0.50
A-12(29)	10/28/92	10.84	ND.	<50.	<0.50	<0.50	<0.50	<0.50
A-13(28)	10/28/92	11.23	ND.	<50.	<0.50	<0.50	<0.50	<0.50
XDup[5]	10/29/92	NA.[6]	ND.	65.	0.71	<0.50	<0.50	0.59
FB-1[7]	10/28/92	NA.	NA.	<50.	<0.50	<0.50	<0.50	<0.50
TB-1[8]	10/29/92	NA.	NA.	<50.	<0.50	<0.50	<0.50	<0.50

1. TPH = Total petroleum hydrocarbons
2. NR. = Not recorded due to ground water extraction system installed in well.
3. ND. = Not detected
4. FP. = Floating product; well was not sampled due to detection of floating product
5. XDup = Duplicate well sample collected at well A-2
6. NA = Not applicable
7. FB = Field Blank
8. TB = Trip Blank

Summary of Groundwater Monitoring Data
Fourth Quarter 1992
ARCO Service Station 4931
731 West MacArthur Boulevard, Oakland, California
parts per million (ppm) and milligrams per liter (mg/l)

Well ID and Sample Depth	TOG[1] by 413.1 (mg/l)	TOG by 413.2 (mg/l)	Total Lead (mg/l)
A-2(19)	<5.0	1.2	0.0077

1. TOG = Total Oil and Greese

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Emcon Associates
1938 Junction Avenue
San Jose, CA 95131
Attention: Jim Butera

Project: EMC GC-92-1/Arco 4931, Oakland

Enclosed are the results from 12 water samples received at Sequoia Analytical on October 30,1992. The requested analyses are listed below:

SAMPLE #	SAMPLE DESCRIPTION	DATE OF COLLECTION	TEST METHOD
2104943	Water, A-2 (19)	10/29/92	EPA 5030/8015/8020
2104944	Water, A-3 (17)	10/28/92	EPA 5030/8015/8020
2104945	Water, A-5 (23)	10/28/92	EPA 5030/8015/8020
2104946	Water, A-6 (24)	10/28/92	EPA 5030/8015/8020
2104947	Water, A-7 (22)	10/28/92	EPA 5030/8015/8020
2104948	Water, A-10 (30)	10/28/92	EPA 5030/8015/8020
2104949	Water, A-11 (28)	10/28/92	EPA 5030/8015/8020
2104950	Water, A-12 (29)	10/28/92	EPA 5030/8015/8020
2104951	Water, A-13 (28)	10/28/92	EPA 5030/8015/8020
2104952	Water, X-Dup	10/29/92	EPA 5030/8015/8020
2104953	Water, FB-1	10/28/92	EPA 5030/8015/8020
2104954	Water, TB-1	10/29/92	EPA 5030/8015/8020
2104955	Water, A-2 (19)	10/29/92	Lead EPA 413.1 (Gravimetric) EPA 413.2 (I.R.)

Please contact me if you have any questions. In the meantime, thank you for the opportunity to work with you on this project.

Very truly yours,

SEQUOIA ANALYTICAL

Eileen A. Manning

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Emcon Associates	Client Project ID:	EMC GC-92-1/Arco 4931, Oakland	Sampled: Oct 28-29, 1992
1938 Junction Avenue	Sample Matrix:	Water	Received: Oct 30, 1992
San Jose, CA 95131	Analysis Method:	EPA 5030/8015/8020	Reported: Nov 13, 1992
Attention: Jim Butera	First Sample #:	210-4943	

TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

Analyte	Reporting Limit µg/L	Sample I.D. 210-4943 A-2 (19)	Sample I.D. 210-4944 A-3 (17)	Sample I.D. 210-4945 A-5 (23)	Sample I.D. 210-4946 A-6 (24)	Sample I.D. 210-4947 A-7 (22)	Sample I.D. 210-4948 A-10 (30)
Purgeable Hydrocarbons	50	77	N.D.	N.D.	N.D.	N.D.	N.D.
Benzene	0.50	0.56	N.D.	N.D.	N.D.	N.D.	N.D.
Toluene	0.50	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Ethyl Benzene	0.50	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Total Xylenes	0.50	0.51	N.D.	N.D.	N.D.	N.D.	N.D.
Chromatogram Pattern:		Gas	--	--	--	--	--

Quality Control Data

Report Limit Multiplication Factor:	1.0	1.0	1.0	1.0	1.0	1.0
Date Analyzed:	11/3/92	11/3/92	11/3/92	11/3/92	11/3/92	11/3/92
Instrument Identification:	GCHP-2	GCHP-2	GCHP-2	GCHP-2	GCHP-2	GCHP-2
Surrogate Recovery, %: (QC Limits = 70-130%)	106	106	92	101	100	105

Purgeable Hydrocarbons are quantitated against a fresh gasoline standard.
Analytes reported as N.D. were not detected above the stated reporting limit.

SEQUOIA ANALYTICAL

Eileen A. Manning
Project Manager

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Emcon Associates	Client Project ID:	EMC GC-92-1/Arco 4931, Oakland	Sampled: Oct 28-29, 1992
1938 Junction Avenue	Sample Matrix:	Water	Received: Oct 30, 1992
San Jose, CA 95131	Analysis Method:	EPA 5030/8015/8020	Reported: Nov 13, 1992
Attention: Jim Butera	First Sample #:	210-4949	

TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

Analyte	Reporting Limit µg/L	Sample I.D. 210-4949 A-11 (28)	Sample I.D. 210-4950 A-12 (29)	Sample I.D. 210-4951 A-13 (28)	Sample I.D. 210-4952 X-Dup	Sample I.D. 210-4953 FB-1	Sample I.D. 210-4954 TB-1
Purgeable Hydrocarbons	50	N.D.	N.D.	N.D.	65	N.D.	N.D.
Benzene	0.50	N.D.	N.D.	N.D.	0.71	N.D.	N.D.
Toluene	0.50	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Ethyl Benzene	0.50	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Total Xylenes	0.50	N.D.	N.D.	N.D.	0.59	N.D.	N.D.
Chromatogram Pattern:		--	--	--	Gas	--	--

Quality Control Data

Report Limit Multiplication Factor:	1.0	1.0	1.0	1.0	1.0	1.0
Date Analyzed:	11/3/92	11/3/92	11/3/92	11/3/92	11/3/92	11/3/92
Instrument Identification:	GCHP-2	GCHP-2	GCHP-2	GCHP-2	GCHP-2	GCHP-2
Surrogate Recovery, %: (QC Limits = 70-130%)	101	91	93	87	106	88

Purgeable Hydrocarbons are quantitated against a fresh gasoline standard.
Analytes reported as N.D. were not detected above the stated reporting limit.

SEQUOIA ANALYTICAL

Eileen A. Manning
Project Manager

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Emcon Associates	Client Project ID:	EMC GC-92-1/Arco 4931, Oakland	Sampled:	Oct 29, 1992
1938 Junction Avenue	Matrix Descript:	Water	Received:	Oct 30, 1992
San Jose, CA 95131	Analysis Method:	EPA 413.1 (Gravimetric)	Extracted:	Nov 4, 1992
Attention: Jim Butera	First Sample #:	210-4955	Analyzed:	Nov 4, 1992
			Reported:	Nov 13, 1992

TOTAL RECOVERABLE OIL & GREASE

Sample Number	Sample Description	Oil & Grease mg/L (ppm)
210-4955	A-2 (19)	N.D.

Detection Limits:	5.0

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL

Eileen A. Manning
Project Manager

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Emcon Associates	Client Project ID:	EMC GC-92-1/Arco 4931, Oakland	Sampled:	Oct 28-29, 1992
1938 Junction Avenue	Matrix Descript:	Water	Received:	Oct 30, 1992
San Jose, CA 95131	Analysis Method:	EPA 413.2 (I.R.)	Extracted:	Nov 4, 1992
Attention: Jim Butera	First Sample #:	210-4955	Analyzed:	Nov 4, 1992
			Reported:	Nov 13, 1992

TOTAL RECOVERABLE OIL & GREASE

Sample Number	Sample Description	Oil & Grease mg/L (ppm)
210-4955	A-2 (19)	1.2

Detection Limits:	1.0

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL

Eileen A. Manning
Project Manager

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Emcon Associates	Client Project ID:	EMC GC-92-1/Arco 4931, Oakland	Sampled:	Oct 29, 1992
1938 Junction Avenue	Sample Descript:	Water, A-2 (19)	Received:	Oct 30, 1992
San Jose, CA 95131			Analyzed:	see below
Attention: Jim Butera	Lab Number:	210-4955	Reported:	Nov 13, 1992

LABORATORY ANALYSIS

Analyte	Date Analyzed	Detection Limit mg/L	Sample Result mg/L
Lead	11/5/92	0.0050	0.0077

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL

Eileen A. Manning
Project Manager

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Emcon Associates
1938 Junction Avenue
San Jose, CA 95131
Attention: Jim Butera

Client Project ID: EMC GC-92-1/Arco 4931, Oakland

QC Sample Group: 2104943-54

Reported: Nov 13, 1992

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl-Benzene	Xylenes
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Analyst:	M. Nipp	M. Nipp	M. Nipp	M. Nipp
Reporting Units:	µg/L	µg/L	µg/L	µg/L
Date Analyzed:	Nov 3, 1992	Nov 3, 1992	Nov 3, 1992	Nov 3, 1992
QC Sample #:	GBLK110392	GBLK110392	GBLK110392	GBLK110392
Sample Conc.:	N.D.	N.D.	N.D.	N.D.
Spike Conc. Added:	10	10	10	30
Conc. Matrix Spike:	9.9	9.8	9.8	30
Matrix Spike % Recovery:	99	98	98	100
Conc. Matrix Spike Dup.:	10	9.9	10	30
Matrix Spike Duplicate % Recovery:	100	99	100	100
Relative % Difference:	1.0	1.0	2.0	0.0

Quality Assurance Statement: All standard operating procedures and quality control requirements have been met.

SEQUOIA ANALYTICAL

Eileen A. Manning
Project Manager

% Recovery:	Conc. of M.S. - Conc. of Sample / Spike Conc. Added	x 100
Relative % Difference:	Conc. of M.S. - Conc. of M.S.D. / (Conc. of M.S. + Conc. of M.S.D.) / 2	x 100

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Emcon Associates
1938 Junction Avenue
San Jose, CA 95131
Attention: Jim Butera

Client Project ID: EMC GC-92-1/Arco 4931, Oakland

QC Sample Group: 210-4955

Reported: Nov 13, 1992

QUALITY CONTROL DATA REPORT

ANALYTE	Total Oil & Grease	Total Oil & Grease	Lead
Method:	SM 5520 B	EPA 413.2	EPA 239.2
Analyst:	M. Shkidt	P. Penner	S. Chin
Reporting Units:	mg/L	mg/L	mg/L
Date Analyzed:	Nov 4, 1992	Nov 5, 1992	Nov 5, 1992
QC Sample #:	BLK110492	Blank	210-4955
Sample Conc.:	N.D.	N.D.	0.0077
Spike Conc. Added:	30	40	0.050
Conc. Matrix Spike:	31	46	0.062
Matrix Spike % Recovery:	103	115	109
Conc. Matrix Spike Dup.:	29	46	0.064
Matrix Spike Duplicate % Recovery:	97	115	113
Relative % Difference:	6.0	0.0	3.2

Quality Assurance Statement: All standard operating procedures and quality control requirements have been met.

SEQUOIA ANALYTICAL

Eileen A. Manning
Project Manager

$$\text{\% Recovery:} \quad \frac{\text{Conc. of M.S. - Conc. of Sample}}{\text{Spike Conc. Added}} \times 100$$

$$\text{Relative \% Difference:} \quad \frac{\text{Conc. of M.S. - Conc. of M.S.D.}}{\text{(Conc. of M.S. + Conc. of M.S.D.) / 2}} \times 100$$

ARCO Products Company
Division of AtlanticRichfieldCompany

Task Order No. EMCGC-92-1

Chain of Custody

ARCO Facility no. 4931	City (Facility) OAKLAND	Project manager (Consultant) JIM BUTERA	Laboratory name SEQUOIA
ARCO engineer Kyle Christie	Telephone no. (ARCO) 415 571-7434	Telephone no. (Consultant) 453-0719	Fax no. (Consultant) 4530452
Consultant name ENCON ASSOCIATES	Address (Consultant) 1938 JUNCTION Ave San Jose		Contract number

Method of shipment: Carrier will Pick up

Sample I.D.	Lab no	Container no.	Matrix: Soil	Matrix: Water	Matrix: Other	Preservation: Ice	Preservation: Acid	Sampling date	Sampling time	BTEX 602/EPA 8020	BTEX/TPH EPA M602/8020/8015	TPH Modified 8015 Gas ☐ Diesel ☐	Oil and Grease 413.1 ☐ 413.2 ☐	TPH EPA 418.1/SM503E	EPA 601/8010	EPA 624/8240	EPA 625/8270	TCLP Metals ☐ Semi VOA ☐ VOA ☐	CAM Metals EPA 6010/7000 TTLC ☐ STLC ☐	Lead Org./DHS ☐ Lead EPA 7420/7421 ☐
A-4(19)		2		X		X	HCl	10-29	0937		X						210	49	43	
A-3(17)		↓		↓		↓	↓	10-28-92	14:55		↓						↓		44	
A-4(										NO SAMPLE - PRODUCT IN WELL										
A-5(23)								10-28-92	14:48								210	49	45	
A-6(24)								10-28-92	14:57								↓		46	
A-7(22)								10-28-92	13:00								↓		47	
A-8(										NO SAMPLE - SEALED EXTRACTION SYST.										
A-9(										NO SAMPLE - SEALED EXTRACTION SYSTEM										
A-10(30)								10-28-92	13:55								210	49	48	
A-11(28)								10-28-92	13:15								↓		49	
A-12(29)								10-28-92	14:00								↓		50	
A-13(28)								10-28-92	12:10								↓		51	
AR-1(										NO SAMPLE SEALED EXTRACTION SYSTEM										
AR-2(																				
AR-3(																				
XDP		↓		↓		↓	↓	10/29	-		↓						210	49	52	

Special detection Limit/reporting: Lowest Possible

Special QA/QC: As Advised

Remarks: 2-40ml/HCl VOA's

Add H_2SO_4 2-Liter ~~HCl~~ G/MS

Lab number

Turnaround time

- Priority Rush 1 Business Day ☐
- Rush 2 Business Days ☐
- Expedited 5 Business Days ☐
- Standard 10 Business Days ☒

Condition of sample:

Temperature received:

Relinquished by sampler	Date	Time	Received by
[signature] SH	10/30/92	1410	[signature]
Relinquished by [signature]	10/30/92	1574	Received by
Relinquished by	Date	Time	Received by laboratory [signature] Date 10-30-92 Time 1545

White copy — Laboratory; Canary copy — ARCO Environmental Engineering; Pink copy — Consultant

ARCO Products Company
Division of AtlanticRichfieldCompany

Chain of Custody

Task Order No. EMC6C-92-1

ARCO Facility no. 4931	City (Facility) OAKLAND	Project manager (Consultant) JIM BUTERA	Laboratory name SEQUOIA
ARCO engineer Kyle Christie	Telephone no. (ARCO) 415-571-7434	Telephone no. (Consultant) 453-0719	Fax no. (Consultant) 453-0452
Consultant name EMCON ASSOCIATES	Address (Consultant) 1938 JUNCTION Ave San Jose		Contract number

Sample I.D.	Lab no.	Container no.	Matrix: Soil	Matrix: Water	Matrix: Other	Preservation: Ice	Preservation: Acid	Sampling date	Sampling time	BTEX 602/EPA 8020	BTEX/TPH GAS EPA M602/8020/8015	TPH Modified 8015 Gas ☐ Diesel ☐	Oil and Grease 413.1 ☐ 413.2 ☐	TPH EPA 418.1/SM503E	EPA 601/8010	EPA 624/8240	EPA 625/8270	TCLP Metals ☐ Semi VOA ☐ VOA ☐	CAM Metals EPA 6010/7000 TTLC ☐ STLC ☐	Lead Org./DHS ☐ Lead EPA 7420/7421 ☐		
FB-1		2		X		X	HCl	10/28	1255		X						210	49	53			
TB-1		2		X		X	HCl	10/29	–		X								54			
A-2(19)		2		X		X	~~HCl~~ H2SO4 HCl	10/29	0937				X						55			
A-2(19)		1		X		X	HNO3	10/29	0937								↓		↓	X		

Special detection Limit/reporting: Lowest possible

Special QA/QC: As normal

Remarks: 2-40ml HCl VOA's; 2-Liter ~~HCl~~ H_2SO_4 GLASS; 1 ~~Liter~~ Liter HNO_3 Plastic. NOT FILTERED

Method of shipment: Courier will pick up

Lab number

Turnaround time

- Priority Rush 1 Business Day ☐
- Rush 2 Business Days ☐
- Expedited 5 Business Days ☐
- Standard 10 Business Days ☒

Condition of sample:

Temperature received:

	Date	Time		Date	Time
Relinquished by Sampler: J Buterajon SH	10/30/92	1410	Received by: Tina Van Leuven		
Relinquished by: Tina Van Leuven	10/30/92	545	Received by:		
Relinquished by:			Received by laboratory: Jim Cutts	10-30-92	1545

White copy — Laboratory; Canary copy — ARCO Environmental Engineering; Pink copy — Consultant

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: CG7C - 0.3.2.01 SAMPLE ID: A - 2 (19)

PURGED BY: K REICHELDERFER CLIENT NAME: ARCO 4931

SAMPLED BY: √ LOCATION: 731 W. MacARTHUR BLVD, OAKLAND

TYPE: Ground Water X Surface Water ___ Treatment Effluent ___ Other ___

CASING DIAMETER (inches): 2 ___ 3 ___ 4 X 4.5 ___ 6 ___ Other ___

CASING ELEVATION (feet/MSL):	NR	VOLUME IN CASING (gal.):	5.18
DEPTH TO WATER (feet):	11.91	CALCULATED PURGE (gal.):	25.88
DEPTH OF WELL (feet):	19.8	ACTUAL PURGE VOL. (gal.):	6.00

DATE PURGED: 10-28-92 Start (2400 Hr) 11:00 End (2400 Hr) 11:05

DATE SAMPLED: 10-29-92 Start (2400 Hr) 09:37 End (2400 Hr) 09:46

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
11:03	5.50	6.46	747	64.1	GREY	HEAVY
11:05	WELL DRIED UP @ 6.00 GALLONS					
09:50	RECHARGE	6.70	1140	67.1	BROWN	HEAVY

D. O. (ppm): NR ODOR: SLIGHT NR (COBALT 0 - 100) NR (NTU 0 - 200)

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): ~~NR~~ XDUP-

PURGING EQUIPMENT		SAMPLING EQUIPMENT	
___ 2" Bladder Pump	___ Bailer (Teflon®)	___ 2" Bladder Pump	X Bailer (Teflon®)
X Centrifugal Pump	___ Bailer (PVC)	___ DDL Sampler	___ Bailer (Stainless Steel)
___ Submersible Pump	___ Bailer (Stainless Steel)	___ Dipper	___ Submersible Pump
___ Well Wizard™	___ Dedicated	___ Well Wizard™	___ Dedicated
Other: ___		Other: ___	

WELL INTEGRITY: OK LOCK #: 2357

REMARKS: INSTALLED NEW LOCK (2357)

15:15 DTW 19.52

10-29-92 09:33 DTW 16.81 → ~~NOT ENOUGH WATER FOR RECHARGE READING~~

Meter Calibration: Date: 10-28-92 Time: 10:50 Meter Serial #: 3349 Temperature °F: 67.3

(EC 1000 997 / 1000) (DI 11.12) (pH 7 6.81 / 7.00) (pH 10 9.88 / 10.00) (pH 4 3.99 / ___)

Location of previous calibration: ___

Signature: Kevin Reichelderfer Reviewed By: JB Page 1 of 15

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: 6670-037.01 SAMPLE ID: A-3(17)

PURGED BY: S. Horton CLIENT NAME: ARCC #4931

SAMPLED BY: S. Horton LOCATION: Oakland, CA

TYPE: Ground Water X Surface Water ____ Treatment Effluent ____ Other ____

CASING DIAMETER (inches): 2 ____ 3 ____ 4 X 4.5 ____ 6 ____ Other ____

CASING ELEVATION (feet/MSL): NR VOLUME IN CASING (gal.): 3.28

DEPTH TO WATER (feet): 12.00 CALCULATED PURGE (gal.): 16.40

DEPTH OF WELL (feet): 17.00 ACTUAL PURGE VOL. (gal.): 16.5

DATE PURGED: 10/28/92 Start (2400 Hr) 14:32 End (2400 Hr) 14:36

DATE SAMPLED: 10/28/92 Start (2400 Hr) 14:54 End (2400 Hr) 14:55

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
14:34	3.5	6.44	1175	66.7	brown	heavy
14:36		Well Dried At 4.0 Gallons				
14:55	recharge	6.47	1057	64.1	brown	heavy

D. O. (ppm): NR ODOR: strong

COLOR (visual): NR (COBALT 0 - 100) TURBIDITY (visual): NR (NTU 0 - 200)

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): NR

PURGING EQUIPMENT		SAMPLING EQUIPMENT	
____ 2" Bladder Pump	____ Bailer (Teflon®)	____ 2" Bladder Pump	X Bailer (Teflon®)
X Centrifugal Pump	____ Bailer (PVC)	____ DDL Sampler	____ Bailer (Stainless Steel)
____ Submersible Pump	____ Bailer (Stainless Steel)	____ Dipper	____ Submersible Pump
____ Well Wizard™	____ Dedicated	____ Well Wizard™	____ Dedicated
Other: ____		Other: ____	

WELL INTEGRITY: Good LOCK #: 2008

REMARKS: ____

Meter Calibration: Date: 10/28/92 Time: ____ Meter Serial #: 9704 Temperature °F: ____

(EC 1000 ____ / ____) (DI ____) (pH 7 ____ / ____) (pH 10 ____ / ____) (pH 4 ____ / ____)

Location of previous calibration: A-11

Signature: [signature] Reviewed By: JB Page 2 of 15

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: CG70-032.01 SAMPLE ID: A-4

PURGED BY: S. Horton CLIENT NAME: ARCO #4931

SAMPLED BY: S. Horton LOCATION: Oakland, CA

TYPE: Ground Water X Surface Water ____ Treatment Effluent ____ Other ____

CASING DIAMETER (inches): 2 ____ 3 ____ 4 ____ 4.5 ____ 6 ____ Other ____

CASING ELEVATION (feet/MSL): NR VOLUME IN CASING (gal.): ____

DEPTH TO WATER (feet): ____ CALCULATED PURGE (gal.): ____

DEPTH OF WELL (feet): ____ ACTUAL PURGE VOL. (gal.): ____

DATE PURGED: 10/28/92 Start (2400 Hr) ____ End (2400 Hr) ____

DATE SAMPLED: 10/28/92 Start (2400 Hr) ____ End (2400 Hr) ____

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
		No Sample				
		Well Contained Product			0.03	

D. O. (ppm): NR ODOR: ____ COLOR (COBALT 0 - 100): NR TURBIDITY (NTU 0 - 200): NR

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): NR

PURGING EQUIPMENT		SAMPLING EQUIPMENT	
____ 2" Bladder Pump	____ Bailer (Teflon®)	____ 2" Bladder Pump	____ Bailer (Teflon®)
____ Centrifugal Pump	____ Bailer (PVC)	____ DDL Sampler	____ Bailer (Stainless Steel)
____ Submersible Pump	____ Bailer (Stainless Steel)	____ Dipper	____ Submersible Pump
____ Well Wizard™	____ Dedicated	____ Well Wizard™	____ Dedicated
Other: ____		Other: ____	

WELL INTEGRITY: Good LOCK #: none

REMARKS: 0.03 feet of Product

Meter Calibration: Date: 10/28/92 Time: ____ Meter Serial #: 9204 Temperature °F: ____

(EC 1000 ____ / ____) (DI ____) (pH 7 ____ / ____) (pH 10 ____ / ____) (pH 4 ____ / ____)

Location of previous calibration: A-11

Signature: Steve Horton Reviewed By: TB Page 3 of 15

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: OG70-032.01 SAMPLE ID: A-5 (23)

PURGED BY: K REICHELDERFER CLIENT NAME: ARCO 4931

SAMPLED BY: ↓ LOCATION: 731 W MacARTHUR BLVD, OAKLAND

TYPE: Ground Water X Surface Water ___ Treatment Effluent ___ Other ___

CASING DIAMETER (inches): 2 ___ 3 X 4 ___ 4.5 ___ 6 ___ Other ___

CASING ELEVATION (feet/MSL):	NR	VOLUME IN CASING (gal.):	4.60
DEPTH TO WATER (feet):	11.64	CALCULATED PURGE (gal.):	22.99
DEPTH OF WELL (feet):	24.0	ACTUAL PURGE VOL (gal.):	23.00

DATE PURGED: 10-28-92 Start (2400 Hr) 14:25 End (2400 Hr) 14:41

DATE SAMPLED: 10-28-92 Start (2400 Hr) 14:48 End (2400 Hr) 14:50

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
14:28	5.00	6.52	444	64.2	BROWN	HEAVY
14:31	10.00	6.59	427	64.6		
14:35	15.00	6.68	445	64.7		
14:38	19.00	6.74	439	64.7		
14:41	23.00	6.75	430	64.7	↓	↓

D. O. (ppm): NR ODOR: NONE

COLOR: NR (COBALT 0 - 100) TURBIDITY: NR (NTU 0 - 200)

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): NR

PURGING EQUIPMENT		SAMPLING EQUIPMENT	
___ 2" Bladder Pump	___ Bailer (Teflon®)	___ 2" Bladder Pump	X Bailer (Teflon®)
___ Centrifugal Pump	X Bailer (PVC)	___ DDL Sampler	___ Bailer (Stainless Steel)
___ Submersible Pump	___ Bailer (Stainless Steel)	___ Dipper	___ Submersible Pump
___ Well Wizard™	___ Dedicated	___ Well Wizard™	___ Dedicated
Other: ___		Other: ___	

WELL INTEGRITY: OK LOCK #: 2008

REMARKS: ___

Meter Calibration: Date: 10-28-92 Time: 10:50 Meter Serial #: 3349 Temperature °F: ___

(EC 1000 ___ / ___) (DI ___) (pH 7 ___ / ___) (pH 10 ___ / ___) (pH 4 ___ / ___)

Location of previous calibration: A-2

Signature: Kevin Reichelderfer Reviewed By: JB Page 4 of 15

Rev. 2, 5/91

WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: 0G70-032-01 SAMPLE ID: A-6 (24)

PURGED BY: J. Williams CLIENT NAME: ARCO 4931

SAMPLED BY: J. Williams LOCATION: Oakland, CA

TYPE: Ground Water ✓ Surface Water ____ Treatment Effluent ____ Other ____

CASING DIAMETER (inches): 2 ____ 3 ____ 4 ✓ 4.5 ____ 6 ____ Other ____

CASING ELEVATION (feet/MSL): NR VOLUME IN CASING (gal.): 5.28

DEPTH TO WATER (feet): 10.[illegible] CALCULATED PURGE (gal.): 26.31

DEPTH OF WELL (feet): 2[illegible] ACTUAL PURGE VOL. (gal.): 27

DATE PURGED: 10-28-97 Start (2400 Hr) 1430 End (2400 Hr) 1451

DATE SAMPLED: 10-28-97 Start (2400 Hr) 1455 End (2400 Hr) 1457

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1436	5.5	5.87	578	73.0	Brown	Heavy
1439	11	6.03	598	68.2	Brown	Heavy
1444	16.5	5.80	593	67.0	Brown	Heavy
1448	22	5.73	597	66.8	Brown	Heavy
1451	27	5.76	595	66.8	Brown	Heavy

D. O. (ppm): NR ODOR: None NR (COBALT 0 - 100) NR (NTU 0 - 200)

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): NR

PURGING EQUIPMENT

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

Other: ____

SAMPLING EQUIPMENT

- ____ 2" Bladder Pump
- ____ DDL Sampler
- ____ Dipper
- ____ Well Wizard™
- ✓ Bailer (Teflon®)
- ____ Bailer (Stainless Steel)
- ____ Submersible Pump
- ____ Dedicated

Other: ____

WELL INTEGRITY: OK LOCK #: 2008

REMARKS: ____

Meter Calibration: Date: 10-28-97 Time: 1209 Meter Serial #: 9611 Temperature °F: 70.0

(EC 1000 975 / 1000) (DI ____) (pH 7 7.?? / ____) (pH 10 ____ / ____) (pH 4 ____ / ____)

Location of previous calibration: MW-17

Signature: [illegible] Reviewed By: JB Page 5 of 15

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: OG70-032.01 SAMPLE ID: A-7(22)

PURGED BY: K REICHELDERFER CLIENT NAME: ARCO 4931

SAMPLED BY: ↓ LOCATION: 731 W MacARTHUR BLVD. OAKLAND

TYPE: Ground Water X Surface Water ___ Treatment Effluent ___ Other ___

CASING DIAMETER (inches): 2 ___ 3 X 4 ___ 4.5 ___ 6 ___ Other ___

CASING ELEVATION (feet/MSL): NR VOLUME IN CASING (gal.): 4.64

DEPTH TO WATER (feet): 10.33 CALCULATED PURGE (gal.): 23.19

DEPTH OF WELL (feet): 22.8 ACTUAL PURGE VOL. (gal.): 15.00

DATE PURGED: 10-28-92 Start (2400 Hr) 12:38 End (2400 Hr) 12:46

DATE SAMPLED: 10-28-92 Start (2400 Hr) 13:00 End (2400 Hr) 13:02

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
12:41	5.00	6.50	711	67.2	BROWN	HEAVY
12:43	10.00	6.70	536	68.2	↓	↓
12:46	15.00	6.74	577	68.3	↓	↓
—	WELL DRIED @ 15.00 GALLONS					
13:05	RECHARGE	6.82	580	69.1	CLOUDY	LIGHT

D. O. (ppm): NR ODOR: NONE

COLOR (visual) (COBALT 0 - 100): NR

TURBIDITY (visual) (NTU 0 - 200): NR

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): ~~NR~~ FB-1 @ 12:55

PURGING EQUIPMENT

- ___ 2" Bladder Pump
- ___ Bailer (Teflon®)
- X Centrifugal Pump
- ___ Bailer (PVC)
- ___ Submersible Pump
- ___ Bailer (Stainless Steel)
- ___ Well Wizard™
- ___ Dedicated
- Other: ___

SAMPLING EQUIPMENT

- ___ 2" Bladder Pump
- X Bailer (Teflon®)
- ___ DDL Sampler
- ___ Bailer (Stainless Steel)
- ___ Dipper
- ___ Submersible Pump
- ___ Well Wizard™
- ___ Dedicated
- Other: ___

WELL INTEGRITY: OK LOCK #: 2008

REMARKS: 12:46 WELL DRIED @ 15.00 GALLONS DTW - 22.39 @ 12:59 DTW 13.51

Meter Calibration: Date: 10 28 92 Time: 10:50 Meter Serial #: 3349 Temperature °F: ___

(EC 1000 ___ / ___) (DI ___) (pH 7 ___ / ___) (pH 10 ___ / ___) (pH 4 ___ / ___)

Location of previous calibration: A-2

Signature: Kevin Reichelderfer Reviewed By: JB Page 6 of 12

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: 0670-032.01 SAMPLE ID: A-8

PURGED BY: S. Horton CLIENT NAME: ARCO #4931

SAMPLED BY: S. Horton LOCATION: Oakland, CA

TYPE: Ground Water X Surface Water ___ Treatment Effluent ___ Other ___

CASING DIAMETER (inches): 2 ___ 3 ___ 4 ___ 4.5 ___ 6 ___ Other ___

CASING ELEVATION (feet/MSL): NR VOLUME IN CASING (gal.): ___

DEPTH TO WATER (feet): ___ CALCULATED PURGE (gal.): ___

DEPTH OF WELL (feet): ___ ACTUAL PURGE VOL. (gal.): ___

DATE PURGED: 10/28/92 Start (2400 Hr) ___ End (2400 Hr) ___

DATE SAMPLED: 10/28/92 Start (2400 Hr) ___ End (2400 Hr) ___

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
		No Sample				
	Dedicated Pump No Sampling Port					

D. O. (ppm): NR ODOR: ___ COLOR: NR (COBALT 0 - 100) TURBIDITY: NR (NTU 0 - 200)

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): NR

PURGING EQUIPMENT		SAMPLING EQUIPMENT	
___ 2" Bladder Pump	___ Bailer (Teflon®)	___ 2" Bladder Pump	___ Bailer (Teflon®)
___ Centrifugal Pump	___ Bailer (PVC)	___ DDL Sampler	___ Bailer (Stainless Steel)
___ Submersible Pump	___ Bailer (Stainless Steel)	___ Dipper	___ Submersible Pump
___ Well Wizard™	___ Dedicated	___ Well Wizard™	___ Dedicated
Other: ___		Other: ___	

WELL INTEGRITY: Good LOCK #: none

REMARKS: ___

Meter Calibration: Date: 10/28/92 Time: ___ Meter Serial #: 9204 Temperature °F: ___

(EC 1000 ___ / ___) (DI ___) (pH 7 ___ / ___) (pH 10 ___ / ___) (pH 4 ___ / ___)

Location of previous calibration: A-11

Signature: Scott Horton Reviewed By: JB Page 7 of 25

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: OG70-032.01 SAMPLE ID: A-9

PURGED BY: S. Horton CLIENT NAME: ARCO #4931

SAMPLED BY: S. Horton LOCATION: Oakland, CA

TYPE: Ground Water X Surface Water ___ Treatment Effluent ___ Other ___

CASING DIAMETER (inches): 2 ___ 3 ___ 4 ___ 4.5 ___ 6 ___ Other ___

CASING ELEVATION (feet/MSL): NR VOLUME IN CASING (gal.): ___

DEPTH TO WATER (feet): ___ CALCULATED PURGE (gal.): ___

DEPTH OF WELL (feet): ___ ACTUAL PURGE VOL. (gal.): ___

DATE PURGED: 10/28/97 Start (2400 Hr) ___ End (2400 Hr) ___

DATE SAMPLED: 10/28/97 Start (2400 Hr) ___ End (2400 Hr) ___

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
		No Sample				
	Dedicated Pump No Sampling Port					

D. O. (ppm): NR ODOR: ___ COLOR: NR (COBALT 0 - 100) TURBIDITY: NR (NTU 0 - 200)

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): NR

PURGING EQUIPMENT		SAMPLING EQUIPMENT	
___ 2" Bladder Pump	___ Bailer (Teflon®)	___ 2" Bladder Pump	___ Bailer (Teflon®)
___ Centrifugal Pump	___ Bailer (PVC)	___ DDL Sampler	___ Bailer (Stainless Steel)
___ Submersible Pump	___ Bailer (Stainless Steel)	___ Dipper	___ Submersible Pump
___ Well Wizard™	___ Dedicated	___ Well Wizard™	___ Dedicated
Other: ___		Other: ___	

WELL INTEGRITY: Good LOCK #: none

REMARKS: ___

Meter Calibration: Date: 10/28/97 Time: ___ Meter Serial #: 9204 Temperature °F: ___

(EC 1000 ___ / ___) (DI ___) (pH 7 ___ / ___) (pH 10 ___ / ___) (pH 4 ___ / ___)

Location of previous calibration: A-11

Signature: [signature] Reviewed By: JB Page 8 of 15

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: 0670-032.01 SAMPLE ID: A-10 (30)

PURGED BY: K REICHELDERFER CLIENT NAME: ARCO 4931

SAMPLED BY: ↓ LOCATION: 731 W MacARTHUR BLVD. OAKLAND

TYPE: Ground Water X Surface Water ____ Treatment Effluent ____ Other ____

CASING DIAMETER (inches): 2 ____ 3 X 4 ____ 4.5 ____ 6 ____ Other ____

CASING ELEVATION (feet/MSL):	NR	VOLUME IN CASING (gal.):	6.80
DEPTH TO WATER (feet):	11.92	CALCULATED PURGE (gal.):	34.00
DEPTH OF WELL (feet):	30.2	ACTUAL PURGE VOL. (gal.):	34.00

DATE PURGED: 10-28-92 Start (2400 Hr) 13.38 End (2400 Hr) 13:48

DATE SAMPLED: 10-28-92 Start (2400 Hr) 13:55 End (2400 Hr) 13-57

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
13.40	7.00	6.55	448	63.1	BROWN	HEAVY
13:42	14.00	6.58	475	63.5		
13:44	21.00	6.67	464	63.5		
13:46	28.00	6.78	458	63.6		
13:48	34.00	6.81	451	63.4	↓	↓

D. O. (ppm): NR ODOR: NONE

COLOR (visual): NR (COBALT 0 - 100) TURBIDITY (visual): NR (NTU 0 - 200)

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): NR

PURGING EQUIPMENT		SAMPLING EQUIPMENT	
____ 2" Bladder Pump	____ Bailer (Teflon®)	____ 2" Bladder Pump	X Bailer (Teflon®)
X Centrifugal Pump	____ Bailer (PVC)	____ DDL Sampler	____ Bailer (Stainless Steel)
____ Submersible Pump	____ Bailer (Stainless Steel)	____ Dipper	____ Submersible Pump
____ Well Wizard™	____ Dedicated	____ Well Wizard™	____ Dedicated
Other: ____		Other: ____	

WELL INTEGRITY: OK LOCK #: ~~2268~~ 3283

REMARKS: WATER IN BOX
REPLACED 2268 LOCK WITH 3283 LOCK (LONG-NECK)

Meter Calibration: Date: 10-28-92 Time: 10.50 Meter Serial #: 3349 Temperature °F: ____

(EC 1000 ____ / ____) (DI ____) (pH 7 ____ / ____) (pH 10 ____ / ____) (pH 4 ____ / ____)

Location of previous calibration: A-2

Signature: Kevin Reichelderfer Reviewed By: JB Page 9 of 15

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: C670-C3[illegible]1 SAMPLE ID: A-11C28)

PURGED BY: S. Horton CLIENT NAME: ARCO #[illegible]31

SAMPLED BY: S. Horton LOCATION: C[illegible], CA

TYPE: Ground Water X Surface Water ___ Treatment Effluent ___ Other ___

CASING DIAMETER (inches): 2 ___ 3 X 4 ___ 4.5 ___ 6 ___ Other ___

CASING ELEVATION (feet/MSL):	NR	VOLUME IN CASING (gal.):	6.12
DEPTH TO WATER (feet):	11.54	CALCULATED PURGE (gal.):	30.61
DEPTH OF WELL (feet):	28.0	ACTUAL PURGE VOL. (gal.):	31.0

DATE PURGED: 10/28/92 Start (2400 Hr) 12:58 End (2400 Hr) 13:12

DATE SAMPLED: 10/28/92 Start (2400 Hr) 13:14 End (2400 Hr) 13:15

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
13:01	6.5	7.21	678	66.1	brown	heavy
13:04	13.0	6.84	665	67.3	brown	heavy
13:06	19.0	6.75	662	67.4	brown	heavy
13:09	25.0	6.72	650	67.0	brown	heavy
13:12	31.0	6.71	654	67.3	brown	heavy

D. O. (ppm): NR ODOR: none

COLOR: NR (COBALT 0 - 100) TURBIDITY: NR (NTU 0 - 200)

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): NR

PURGING EQUIPMENT		SAMPLING EQUIPMENT	
___ 2" Bladder Pump	___ Bailer (Teflon®)	___ 2" Bladder Pump	X Bailer (Teflon®)
___ Centrifugal Pump	X Bailer (PVC)	___ DDL Sampler	___ Bailer (Stainless Steel)
___ Submersible Pump	___ Bailer (Stainless Steel)	___ Dipper	___ Submersible Pump
___ Well Wizard™	___ Dedicated	___ Well Wizard™	___ Dedicated
Other: ___		Other: ___	

WELL INTEGRITY: Good LOCK #: 2268

REMARKS: ___

Meter Calibration: Date: 10/28/92 Time: 12:31 Meter Serial #: 9204 Temperature °F: 65.3

(EC 1000 974 / 1000) (DI ___) (pH 7 6.85 / 7.00) (pH 10 10.45 / 10.00) (pH 4 4.00 / ___)

Location of previous calibration: 9204

Signature: [signature] Reviewed By: JB Page 10 of 15

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: 06-70-032.01 SAMPLE ID: A-12 (29)

PURGED BY: J Williams CLIENT NAME: ARCO #6931

SAMPLED BY: J Williams LOCATION: Oakland, CA

TYPE: Ground Water X Surface Water ___ Treatment Effluent ___ Other ___

CASING DIAMETER (inches): 2 ___ 3 X 4 ___ 4.5 ___ 6 ___ Other ___

CASING ELEVATION (feet/MSL): NR VOLUME IN CASING (gal.): 7.65

DEPTH TO WATER (feet): 10.84 CALCULATED PURGE (gal.): 35.26

DEPTH OF WELL (feet): 29.8 ACTUAL PURGE VOL. (gal.): 35.5

DATE PURGED: 10/28/92 Start (2400 Hr) 13 38 End (2400 Hr) 13:57

DATE SAMPLED: 10/28/92 Start (2400 Hr) 13:59 End (2400 Hr) 14:00

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
13:44	7.5	6.69	635	64.3	brown	heavy
13:47	~~15.0~~ 14.5	6.69	648	65.7	brown	heavy
13:49	21.5	6.65	648	66.0	brown	heavy
13:54	28.5	6.69	640	65.5	brown	heavy
13:57	35.5	6.71	640	65.4	brown	heavy

D. O. (ppm): NR ODOR: none

COLOR: NR (COBALT 0 - 100) TURBIDITY: NR (NTU 0 - 200)

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): NR

PURGING EQUIPMENT		SAMPLING EQUIPMENT	
___ 2" Bladder Pump	___ Bailer (Teflon®)	___ 2" Bladder Pump	X Bailer (Teflon®)
___ Centrifugal Pump	X Bailer (PVC)	___ DDL Sampler	___ Bailer (Stainless Steel)
___ Submersible Pump	___ Bailer (Stainless Steel)	___ Dipper	___ Submersible Pump
___ Well Wizard™	___ Dedicated	___ Well Wizard™	___ Dedicated
Other: ___		Other: ___	

WELL INTEGRITY: Good LOCK #: 2268

REMARKS: ___

Meter Calibration: Date: 10/28/92 Time: ___ Meter Serial #: 9704 Temperature °F: ___

(EC 1000 ___ / ___) (DI ___) (pH 7 ___ / ___) (pH 10 ___ / ___) (pH 4 ___ / ___)

Location of previous calibration: A-11

Signature: [signature] Reviewed By: JB Page 11 of 15

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: CG7C-032.01 SAMPLE ID: A-13 (28)

PURGED BY: K REICHELDERFER CLIENT NAME: ARCO 4931

SAMPLED BY: ↓ LOCATION: 731 W MacARTHUR BLVD, OAKLAND

TYPE: Ground Water X Surface Water ___ Treatment Effluent ___ Other ___

CASING DIAMETER (inches): 2 ___ 3 X 4 ___ 4.5 ___ 6 ___ Other ___

CASING ELEVATION (feet/MSL):	NR	VOLUME IN CASING (gal.):	6.71
DEPTH TO WATER (feet):	11.25	CALCULATED PURGE (gal.):	33.57
DEPTH OF WELL (feet):	29.3	ACTUAL PURGE VOL. (gal.):	34.00

DATE PURGED: 10-28-92 Start (2400 Hr) 11:47 End (2400 Hr) 12:03

DATE SAMPLED: 10-28-92 Start (2400 Hr) 12:10 End (2400 Hr) 12:12

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
11:50	7.00	6.39	683	69.3	CLOUDY	LIGHT
11:53	14.00	6.57	685	68.6		
11:56	21.00	6.83	685	68.6		
11:59	28.00	6.85	707	68.7		
12:03	34.00	6.85	709	69.6		

D. O. (ppm): NR ODOR: NONE

COLOR: NR (COBALT 0 - 100) TURBIDITY: NR (NTU 0 - 200)

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): NR

PURGING EQUIPMENT		SAMPLING EQUIPMENT	
___ 2" Bladder Pump	___ Bailer (Teflon®)	___ 2" Bladder Pump	X Bailer (Teflon®)
X Centrifugal Pump	___ Bailer (PVC)	___ DDL Sampler	___ Bailer (Stainless Steel)
___ Submersible Pump	___ Bailer (Stainless Steel)	___ Dipper	___ Submersible Pump
___ Well Wizard™	___ Dedicated	___ Well Wizard™	___ Dedicated
Other: ___		Other: ___	

WELL INTEGRITY: OK LOCK #: ~~2008~~ 2268

REMARKS: ___

Meter Calibration: Date: 10-28-92 Time: 10:50 Meter Serial #: 3349 Temperature °F: ___

(EC 1000 ___ / ___) (DI ___) (pH 7 ___ / ___) (pH 10 ___ / ___) (pH 4 ___ / ___)

Location of previous calibration: A-2

Signature: [signature] Reviewed By: JB Page 12 of 13

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: CG70-032.01 SAMPLE ID: AR-1

PURGED BY: S. Horton CLIENT NAME: ARCO #4931

SAMPLED BY: S. Horton LOCATION: Oakland, CA

TYPE: Ground Water X Surface Water ____ Treatment Effluent ____ Other ____

CASING DIAMETER (inches): 2 ____ 3 ____ 4 ____ 4.5 ____ 6 ____ Other ____

CASING ELEVATION (feet/MSL): NR VOLUME IN CASING (gal.): ____

DEPTH TO WATER (feet): ____ CALCULATED PURGE (gal.): ____

DEPTH OF WELL (feet): ____ ACTUAL PURGE VOL. (gal.): ____

DATE PURGED: 10/28/92 Start (2400 Hr) ____ End (2400 Hr) ____

DATE SAMPLED: 10/28/92 Start (2400 Hr) ____ End (2400 Hr) ____

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
		No Sample				
	Dedicated Pump No Sampling Port					

D. O. (ppm): NR ODOR: ____ COLOR: NR (COBALT 0 - 100) TURBIDITY: NR (NTU 0 - 200)

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): NR

PURGING EQUIPMENT		SAMPLING EQUIPMENT	
____ 2" Bladder Pump	____ Bailer (Teflon®)	____ 2" Bladder Pump	____ Bailer (Teflon®)
____ Centrifugal Pump	____ Bailer (PVC)	____ DDL Sampler	____ Bailer (Stainless Steel)
____ Submersible Pump	____ Bailer (Stainless Steel)	____ Dipper	____ Submersible Pump
____ Well Wizard™	____ Dedicated	____ Well Wizard™	____ Dedicated
Other: ____		Other: ____	

WELL INTEGRITY: Good LOCK #: none

REMARKS: ____

Meter Calibration: Date: 10/28/92 Time: ____ Meter Serial #: 9204 Temperature °F: ____

(EC 1000 ____ / ____) (DI ____) (pH 7 ____ / ____) (pH 10 ____ / ____) (pH 4 ____ / ____)

Location of previous calibration: A-11

Signature: Scott Horton Reviewed By: JB Page 13 of 13

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: 0670-032.01 SAMPLE ID: AR-2

PURGED BY: S. Horton CLIENT NAME: ARCO #4931

SAMPLED BY: S. Horton LOCATION: Oakland, CA

TYPE: Ground Water X Surface Water ____ Treatment Effluent ____ Other ____

CASING DIAMETER (inches): 2 ____ 3 ____ 4 ____ 4.5 ____ 6 ____ Other ____

CASING ELEVATION (feet/MSL): NR VOLUME IN CASING (gal.): ____

DEPTH TO WATER (feet): ____ CALCULATED PURGE (gal.): ____

DEPTH OF WELL (feet): ____ ACTUAL PURGE VOL. (gal.): ____

DATE PURGED: 10/28/97 Start (2400 Hr) ____ End (2400 Hr) ____

DATE SAMPLED: 10/28/97 Start (2400 Hr) ____ End (2400 Hr) ____

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
		No Sample				
	Dedicated Pump No Sampling Port					

D. O. (ppm): NR ODOR: ____ COLOR: NR (COBALT 0 - 100) TURBIDITY: NR (NTU 0 - 200)

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): NR

PURGING EQUIPMENT		SAMPLING EQUIPMENT	
____ 2" Bladder Pump	____ Bailer (Teflon®)	____ 2" Bladder Pump	____ Bailer (Teflon®)
____ Centrifugal Pump	____ Bailer (PVC)	____ DDL Sampler	____ Bailer (Stainless Steel)
____ Submersible Pump	____ Bailer (Stainless Steel)	____ Dipper	____ Submersible Pump
____ Well Wizard™	____ Dedicated	____ Well Wizard™	____ Dedicated
Other: ____		Other: ____	

WELL INTEGRITY: Good LOCK #: none

REMARKS: ____

Meter Calibration: Date: 10/28/97 Time: ____ Meter Serial #: 9704 Temperature °F: ____

(EC 1000 ____ / ____) (DI ____) (pH 7 ____ / ____) (pH 10 ____ / ____) (pH 4 ____ / ____)

Location of previous calibration: A-11

Signature: Scott Horton Reviewed By: JB Page 14 of 15

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: CG70-032.01 SAMPLE ID: AR-3

PURGED BY: S. Horton CLIENT NAME: ARCO #4931

SAMPLED BY: S. Horton LOCATION: Oakland, CA

TYPE: Ground Water X Surface Water ____ Treatment Effluent ____ Other ____

CASING DIAMETER (inches): 2 ____ 3 ____ 4 ____ 4.5 ____ 6 ____ Other ____

CASING ELEVATION (feet/MSL): NR VOLUME IN CASING (gal.): ____

DEPTH TO WATER (feet): ____ CALCULATED PURGE (gal.): ____

DEPTH OF WELL (feet): ____ ACTUAL PURGE VOL. (gal.): ____

DATE PURGED: 10/28/92 Start (2400 Hr) ____ End (2400 Hr) ____

DATE SAMPLED: 10/28/92 Start (2400 Hr) ____ End (2400 Hr) ____

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
		No Sample				
	Dedicated Pump No Sampling Part					

D. O. (ppm): NR ODOR: ____ COLOR: NR (COBALT 0 - 100) TURBIDITY: NR (NTU 0 - 200)

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): NR

PURGING EQUIPMENT		SAMPLING EQUIPMENT	
____ 2" Bladder Pump	____ Bailer (Teflon®)	____ 2" Bladder Pump	____ Bailer (Teflon®)
____ Centrifugal Pump	____ Bailer (PVC)	____ DDL Sampler	____ Bailer (Stainless Steel)
____ Submersible Pump	____ Bailer (Stainless Steel)	____ Dipper	____ Submersible Pump
____ Well Wizard™	____ Dedicated	____ Well Wizard™	____ Dedicated
Other: ____		Other: ____	

WELL INTEGRITY: Good LOCK #: none

REMARKS: ____

Meter Calibration: Date: 10/28/92 Time: ____ Meter Serial #: 9204 Temperature °F: ____

(EC 1000 ____ / ____) (DI ____) (pH 7 ____ / ____) (pH 10 ____ / ____) (pH 4 ____ / ____)

Location of previous calibration: A-11

Signature: Steve Horton Reviewed By: JB Page 15 of 15