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TRANSMITTAL

TO: Mr. Michael Whelan
Environmental Engineer
ARCO Products Company
P.O. Box 5811
San Mateo, California 94402

DATE: November 17, 1993
PROJECT #: 790970-23
SUBJECT: 3rd QMR 1993
ARCO Station 4931

FROM:
Robert D. Campbell
Project Geologist
GeoStrategies Inc.
6747 Sierra Court, Suite G
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cc: **Ms. Susan Hugo, Alameda County Health Care Services Agency**
Mr. Richard Hiett, Regional Water Quality Control Board

GeoStrategies Inc.

RECOVERY SYSTEM EVALUATION REPORT - THIRD QUARTER 1993

ARCO Station 4931
731 West MacArthur Boulevard
Oakland, California

790970-23

November 17, 1993

GeoStrategies Inc.

November 17, 1993

Mr. Michael Whelan
ARCO Products Company
Post Office Box 5811
San Mateo, California 94402

Subject: Recovery System Evaluation Report, Third Quarter 1993 at ARCO Service Station 4931, 731 West MacArthur Boulevard in Oakland, California.

Mr. Whelan:

As requested by ARCO Products Company (ARCO), GeoStrategies Inc (GSI) has prepared this Recovery System Evaluation Report for the Third Quarter 1993, which evaluates the performance of the interim groundwater remediation system at the above referenced site (Plate 1) for the period from July 1993 through September 1993.

SITE BACKGROUND

There are currently twelve groundwater monitoring wells (A-2 through A-13) and three groundwater 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 onsite and wells A-11, A-12, and A-13 are offsite. The interim groundwater remedial system was completed in early November 1992 and began operating on November 10, 1992.

Quarterly monitoring and sampling of site wells began in 1989. Quarterly groundwater samples were collected from wells A-3, A-5 through A-7, and A-10 through A-13. Monthly water samples were collected from the interim groundwater remediation system influent (sample D), midpoint (between carbon canisters [sample ports C and B]), and effluent (sample

port A) during the third quarter 1993. The interim groundwater remediation system process flow diagram is shown on Plate 3.

EXECUTIVE SUMMARY

A summary of activities and findings associated with the 1993 third quarter system evaluation are presented below:

- The groundwater remediation system appears to be hydraulically controlling the groundwater flow beneath the site.

- The groundwater monitoring wells were sampled by EMCON on August 6, 1993, and were analyzed for total petroleum hydrocarbons as gasoline (TPH-G) and benzene, toluene, ethylbenzene, and total xylenes (BTEX).

- Benzene was not detected in all eight wells sampled during the third quarter of 1993.

- The existing interim groundwater remediation system consists of three recovery wells (AR-1 through AR-3). Each well contains a pneumatic total fluids pump. Groundwater is pumped to an onsite treatment system. The groundwater remedial system was activated on November 10, 1992. Approximately 891,480 gallons of groundwater have been removed by the system this quarter.

- The groundwater treatment facility consists of a surge tank, particulate filter, and three in-series 1,500-pound activated carbon vessels (Plate 3).

- TPH-G and benzene were reported as not detected in samples from the groundwater treatment systems' midpoint (port B).

- Groundwater containing dissolved hydrocarbons was pumped through the treatment system at an average rate of eight (8) gallons per minute (gpm) during the third quarter of 1993, and was

discharged to the sanitary sewer system. The discharge effluent stream was within regulatory guidelines.

HYDRAULIC MONITORING

Depth-to-water (DTW) level measurements were performed by EMCON on wells A-2 through A-8, and A-10 through A-13 on August 6, 1993. Well A-4 contained floating product, and well A-9 was not monitored due to remediation equipment. Static groundwater levels were measured from the surveyed top of each well box and recorded to the nearest +/-0.01 foot. Groundwater elevations were calculated from Mean Seal Level (MSL) datum and are presented with DTW measurements in Table 1, Groundwater Analytical Data. Historical water-level data are presented in Table 2, Historical Water-Level Data. The potentiometric map (Plate 4) indicate that current pumping from recovery wells AR-1, AR-2, and AR-3 have influenced shallow groundwater flow generating a depression in groundwater beneath most of the site.

Each well was checked for the presence of floating product. Floating product was detected in well A-4 with a thickness of approximately 0.03 foot. Product sheen was also detected on the interface probe when gauging well AR-1. Floating product was not detected in any of the other wells this quarter. Current floating product measurements are presented in Table 1 and have been added to the Historical Water-Level Data (Table 2). Current quarter monitoring data are presented in Appendix A.

The groundwater remediation system appears to be operating as designed. No modifications are recommended at this time.

CHEMICAL MONITORING

EMCON Associates (EMCON) field personnel sampled the interim groundwater monitoring wells A-3, A-5 through A-7, and A-10 through A-13 on August 6, 1993. Well A-2 was not sampled because it went dry during purging and did not recover, and well A-4 was not sampled

because it contained floating product. Wells A-8, A-9, and AR-1 through AR-3 were not sampled this quarter due to remedial system equipment installed in these wells. Gettler-Ryan Inc. (G-R) field personnel collected D-influent, B-midpoint, and A-effluent water samples from the groundwater remediation system on July 15, August 23, and September 15, 1993. Groundwater samples collected by EMCON and G-R field personnel were preserved as required by the applicable analytical method and delivered, with Chain of Custody Records, to Sequoia Analytical Laboratories of Redwood City, California, a State-certified laboratory (Hazardous Waste Testing Laboratory Certification #1210) for water analyses. The groundwater samples collected from monitoring wells A-3, A-5 through A-7, and A-10 through A-13 were analyzed for total petroleum hydrocarbons as gasoline (TPH-G) and benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) by Environmental Protection Agency (EPA) Methods 5030/8015/8020. Results of current analytical data are shown on Table 1. Groundwater Analytical Data and historical analytical data are presented in Table 3, Historical Groundwater Quality Database. TPH-G and benzene data are plotted on Plate 5, TPH-G/Benzene Concentration Map. The EMCON Groundwater Sampling and Monitoring Reports are included in Appendix A. The Remediation System Chain of Custodies and groundwater analytical reports are included in Appendix B.

GROUNDWATER TREATMENT SYSTEM MONITORING

Chemical Analytical Results

Monthly samples from ports A, B, and D of the interim groundwater remediation system, collected by G-R field personnel, were preserved as required by the applicable analytical method and delivered, with Chain of Custody Records, to Sequoia Analytical Laboratories of Redwood City, California, a State-certified laboratory (Hazardous Waste Testing Laboratory Certification #1210). The samples were analyzed for EPA Priority Pollutant Metals, halogenated volatile organics by EPA Methods 5030/8010, and purgeable hydrocarbons and BTEX using EPA Methods 5030/8015/8020. The groundwater remediation system analytical data

is shown on Tables 4A and 4B. The chain of custody and groundwater analytical reports are included in Appendix B.

During the third quarter 1993 sampling period, the mid-point samples (between carbon vessels [port B]) were reported as not detected (ND) for TPHg and BTEX, and ND for volatile organic compounds. Metals were nondetectable in all samples this quarter, with the exception of the influent sample collected on July 15, 1993 which indicated zinc at a concentration of 44 parts per billion (ppb) and detectable concentrations of nickel in samples collected on September 15, 1993. Detectable concentrations of nickel ranged from 5.0 ppb in sample A to 5.8 ppb in sample B. Sample analyses indicate that the effluent discharge meets the parameters of the POTW permit. Chemical analytical data indicates that the treatment system is effectively removing dissolved hydrocarbons from groundwater prior to discharge to the sanitary sewer.

Groundwater Recovery System Operation

Flowmeter readings from the groundwater recovery system were recorded at the time of sampling and are presented in Table 5. Groundwater was pumped through the treatment system at approximately eight (8) gpm. Approximately 891,480 gallons of groundwater were recovered and treated from July through September 1993.

DISCUSSION

The groundwater remediation system appears to be operating as designed during the third quarter of 1993. Nondetectable concentrations of TPHg and BTEX from all eight wells sampled this quarter indicates that the groundwater recovery and treatment system is effectively capturing the dissolved phase of petroleum hydrocarbons beneath the site. The need for modifications to the remediation system will be evaluated as additional data becomes available.

ARCO Station 4931
Quarterly Monitoring Report
790970-23

November 17, 1993

If you have any questions or comments, please call us at (510) 551-8777.

Sincerely,
GeoStrategies Inc.

Robert D. Campbell
Project Geologist

Stephen J. Carter
Senior Geologist
R.G. 5577

TABLES

PLATES

ARCO Station 4931
Quarterly Monitoring Report
790970-23

November 17, 1993

APPENDICES

Appendix A.	EMCON Groundwater Sampling and Monitoring Reports
Appendix B.	Groundwater Remediation System Analytical Reports

QC Review: _____

TABLES

TABLE 1

GROUNDWATER ANALYTICAL DATA
ARCO Station 4931

Well No.	Sample Date	Analyzed Date	TPH-G (PPB)	Benzene (PPB)	Toluene (PPB)	Ethylbenzene (PPB)	Xylenes (PPB)	Well Elev. (ft)	Depth to Water (ft)	Product Thickness (ft)	Static Water Elev. (ft)
A-2	06-Aug-93	10-Aug-93		Not Sampled		Purged Dry		55.48	15.33	0.00	40.15
A-3	06-Aug-93	10-Aug-93	<50	<0.5	<0.5	<0.5	<0.5	54.66	14.90	0.00	39.76
A-4	06-Aug-93	---		Not Sampled		Floating	Product	54.73	15.12	0.03	39.61
A-5	06-Aug-93	10-Aug-93	<50	<0.5	<0.5	<0.5	<0.5	54.17	14.82	0.00	39.35
A-6	06-Aug-93	10-Aug-93	<50	<0.5	<0.5	<0.5	<0.5	55.17	12.32	0.00	42.85
A-7	06-Aug-93	10-Aug-93	<50	<0.5	<0.5	<0.5	<0.5	54.71	12.67	0.00	42.04
A-8	06-Aug-93			Not Sampled		Dry		53.77	---	---	---
A-9	06-Aug-93			Not Sampled		Inaccess.	Well	53.04	---	---	---
A-10	06-Aug-93	10-Aug-93	<50	<0.5	<0.5	<0.5	<0.5	54.26	15.06	0.00	39.20
A-11	06-Aug-93	10-Aug-93	<50	<0.5	<0.5	<0.5	<0.5	53.74	14.43	0.00	39.31
A-12	06-Aug-93	10-Aug-93	<50	<0.5	<0.5	<0.5	<0.5	52.05	12.95	0.00	39.10
A-13	06-Aug-93	10-Aug-93	<50	<0.5	<0.5	<0.5	<0.5	55.11	13.70	0.00	41.41
AR-1	06-Aug-93			Not Sampled		Pump in Well		54.72	17.42	---	37.30
AR-2	06-Aug-93			Not Sampled		Pump in Well		54.77	17.16	---	37.61
AR-3	06-Aug-93			Not Sampled		Pump in Well		54.19	16.12	---	38.07
FB-1	06-Aug-93	10-Aug-93	<50	<0.5	<0.5	<0.5	<0.5	---	---	---	---
TB-1	06-Aug-93	10-Aug-93	<50	<0.5	<0.5	<0.5	<0.5	---	---	---	---

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

Notes:

1. All data shown as <x are reported as ND (none detected).
2. Water level elevations referenced to Mean Sea Level (MSL).
3. Static water levels corrected for floating product (conversion factor = 0.80).

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
26-Jan-93	A-2	5.06	55.48	50.42	0.00
01-Apr-93	A-2	5.15	55.48	50.33	0.00
06-Aug-93	A-2	15.33	55.48	40.15	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	-----	----
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
26-Jan-93	A-3	9.82	54.66	44.84	0.00
01-Apr-93	A-3	10.61	54.66	44.05	0.00
06-Aug-93	A-3	14.90	54.66	39.76	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)
21-Mar-88	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
26-Jan-93	A-4	10.59	54.73	44.17	0.04
01-Apr-93	A-4	10.17	54.73	44.58	0.02
06-Aug-93	A-4	15.12	54.73	39.61	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
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
26-Jan-93	A-5	10.32	54.17	43.85	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)
01-Apr-93	A-5	10.36	54.17	43.81	0.00
06-Aug-93	A-5	14.82	54.17	39.35	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
26-Jan-93	A-6	7.50	55.17	47.62	0.00
01-Apr-93	A-6	7.59	55.17	47.58	0.00
06-Aug-93	A-6	12.32	55.17	42.85	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
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
26-Jan-93	A-7	7.33	54.71	47.38	0.00
01-Apr-93	A-7	7.35	54.71	47.36	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)
06-Aug-93	A-7	12.67	54.71	42.04	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	-----	-----
26-Jan-93	A-8	N/A	53.77	-----	-----
01-Apr-93	A-8	9.38	53.77	44.39	0.00
06-Aug-93	A-8		Dry		
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	-----	-----

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)
26-Jan-93	A-9	N/A	53.04	-----	-----
01-Apr-93	A-9	N/A	53.04	-----	-----
06-Aug-93	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	-----	----
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
26-Jan-93	A-10	10.81	54.26	43.45	0.00
01-Apr-93	A-10	10.85	54.26	43.41	0.00
06-Aug-93	A-10	15.06	54.26	39.20	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
26-Jan-93	A-11	9.90	53.74	43.84	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)
01-Apr-93	A-11	10.11	53.74	43.63	0.00
06-Aug-93	A-11	14.43	53.74	39.31	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
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
26-Jan-93	A-12	9.48	52.05	42.57	0.00
01-Apr-93	A-12	10.67	52.05	41.38	0.00
06-Aug-93	A-12	12.95	52.05	39.10	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
26-Jan-93	A-13	8.99	55.11	46.12	0.00
01-Apr-93	A-13	9.18	55.11	45.93	0.00
06-Aug-93	A-13	13.70	55.11	41.41	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	-----	----
26-Jan-93	AR-1	N/A	54.72	-----	----
01-Apr-93	AR-1	N/A	54.72	-----	----
06-Aug-93	AR-1	17.42	54.72	37.30	Product on Sounder
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	-----	----
26-Jan-93	AR-2	N/A	54.77	-----	----
01-Apr-93	AR-2	N/A	54.77	-----	----

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)
06-Aug-93	AR-2	17.16	54.77	37.61	----
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	-----	----
26-Jan-93	AR-3	N/A	54.19	-----	----
01-Apr-93	AR-3	N/A	54.19	-----	----
06-Aug-93	AR-3	16.12	54.19	38.07	----

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.
5. Water level data prior to March, 1989 are not available.
6. Depth-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 referenced.
7. Well elevations and depth-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 on April 1, 1993 and after, due to remediation equipment installed in the wells.

TABLE 3

HISTORICAL GROUNDWATER 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
26-Jan-93	A-2	390	0.87	<0.50	<0.50	4.3
01-Apr-93	A-2	16,000	<10	<10	<10	<10
06-Aug-93	A-2		Purged Dry			
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
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

TABLE 3

HISTORICAL GROUNDWATER QUALITY DATABASE

SAMPLE DATE	SAMPLE POINT	TPH-G (PPB)	BENZENE (PPB)	TOLUENE (PPB)	ETHYLBENZENE (PPB)	XYLENES (PPB)
26-Jan-93	A-3	<50	<0.50	<0.50	<0.50	<0.50
01-Apr-93	A-3	<50	<0.50	<0.50	<0.50	<0.50
06-Aug-93	A-3	<50	<0.5	<0.5	<0.5	<0.5
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		
26-Jan-93	A-4			Floating product		
01-Apr-93	A-4			Floating Product		
06-Aug-93	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.
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

TABLE 3

HISTORICAL GROUNDWATER QUALITY DATABASE

SAMPLE DATE	SAMPLE POINT	TPH-G (PPB)	BENZENE (PPB)	TOLUENE (PPB)	ETHYLBENZENE (PPB)	XYLENES (PPB)
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
26-Jan-93	A-5	<50	<0.50	<0.50	<0.50	<0.50
01-Apr-93	A-5	<50	<0.50	<0.50	<0.50	<0.50
06-Aug-93	A-5	<50	<0.5	<0.5	<0.5	<0.5
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
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
26-Jan-93	A-6	1600	4.8	1.2	14	46
01-Apr-93	A-6	310	4.8	0.74	3.3	8.7
06-Aug-93	A-6	<50	<0.5	<0.5	<0.5	<0.5
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

TABLE 3

HISTORICAL GROUNDWATER QUALITY DATABASE

SAMPLE DATE	SAMPLE POINT	TPH-G (PPB)	BENZENE (PPB)	TOLUENE (PPB)	ETHYLBENZENE (PPB)	XYLENES (PPB)
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
26-Jan-93	A-7	<50	<0.50	<0.50	<0.50	<0.50
01-Apr-93	A-7	<50	<0.50	<0.50	<0.50	<0.50
06-Aug-93	A-7	<50	<0.5	<0.5	<0.5	<0.5
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			
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			
26-Jan-93	A-8		Not Accessible			
01-Apr-93	A-8		Not Accessible			
06-Aug-93	A-8		Dry			
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

TABLE 3

HISTORICAL GROUNDWATER QUALITY DATABASE

SAMPLE DATE	SAMPLE POINT	TPH-G (PPB)	BENZENE (PPB)	TOLUENE (PPB)	ETHYLBENZENE (PPB)	XYLENES (PPB)
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			
26-Jan-93	A-9		Not Accessible			
01-Apr-93	A-9		Not Accessible			
06-Aug-93	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.
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
26-Jan-93	A-10	<50	<0.50	<0.50	<0.50	<0.50
01-Apr-93	A-10	<50	<0.50	<0.50	<0.50	<0.50
06-Aug-93	A-10	<50	<0.5	<0.5	<0.5	<0.5
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.

TABLE 3

HISTORICAL GROUNDWATER QUALITY DATABASE

SAMPLE DATE	SAMPLE POINT	TPH-G (PPB)	BENZENE (PPB)	TOLUENE (PPB)	ETHYLBENZENE (PPB)	XYLENES (PPB)
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
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
26-Jan-93	A-11	<50	<0.50	<0.50	<0.50	<0.50
01-Apr-93	A-11	<50	<0.50	<0.50	<0.50	<0.50
06-Aug-93	A-11	<50	<0.5	<0.5	<0.5	<0.5
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
26-Jan-93	A-12	<50	<0.50	<0.50	<0.50	<0.50
01-Apr-93	A-12	<50	<0.50	<0.50	<0.50	<0.50
06-Aug-93	A-12	<50	<0.5	<0.5	<0.5	<0.5
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
26-Jan-93	A-13	<50	<0.50	<0.50	<0.50	<0.50
01-Apr-93	A-13	<50	<0.50	<0.50	<0.50	<0.50
06-Aug-93	A-13	<50	<0.5	<0.5	<0.5	<0.5

TABLE 3

HISTORICAL GROUNDWATER QUALITY DATABASE

SAMPLE DATE	SAMPLE POINT	TPH-G (PPB)	BENZENE (PPB)	TOLUENE (PPB)	ETHYLBENZENE (PPB)	XYLENES (PPB)
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			
26-Jan-93	AR-1		Not Accessible			
01-Apr-93	AR-1		Not Accessible			
06-Aug-93	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
28-Oct-92	AR-2		Not Accessible			
26-Jan-93	AR-2		Not Accessible			
01-Apr-93	AR-2		Not Accessible			
06-Aug-93	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			
26-Jan-93	AR-3		Not Accessible			
01-Apr-93	AR-3		Not Accessible			
06-Aug-93	AR-3		Not Accessible			

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. Ethylbenzene & Xylenes were combined in 1986 and 1988.
3. Wells A-4 and A-9 were sampled in September, 1991 for water discharge permits for the proposed groundwater treatment system.
4. Wells A-8, A-9, and AR-1 through AR-3 were not sampled on April 1, 1993 due to remediation equipment in the wells.

TABLE 4A

GROUNDWATER REMEDIAL SYSTEM
ANALYTICAL DATA - TPH-G, BTEX, AND METALS

Date	SAMPLE NO.	TPH-G	BENZENE	TOLUENE	ETHYLBENZENE	XYLENES	Sb	As	Be	Cd	Cr	Cu	Pb	Hg	Ni	Se	Ag	Tl	Zn
20-Jan-93	A	NA	NA	NA	NA	NA	<5	<5	<10	<10	<10	<10	<5	<0.2	<50	<5	<10	<5	<10
	B	<50	<0.5	<0.5	<0.5	<0.5	<5	<5	<10	<10	<10	<10	<5	<0.2	<50	<5	<10	<5	<10
	D	NA	NA	NA	NA	NA	<5	<5	<10	<10	<10	<10	12	<0.2	<50	<5	<10	<5	<10
10-Feb-93	A	NA	NA	NA	NA	NA	18	<5	<10	<10	<10	<10	<5	<0.2	<50	<5	<10	<5	<10
	B	NA	NA	NA	NA	NA	7.4	<5	<10	<10	<10	<10	<5	<0.2	<50	<5	<10	<5	<10
	D	NA	NA	NA	NA	NA	<5	<5	<10	<10	<10	<10	<5	<0.2	<50	<5	<10	<5	<10
14-Mar-93	A	NA	NA	NA	NA	NA	<5	<5	<10	<10	<10	21	<5	<0.2	<50	<5	<10	<5	<10
	B	NA	NA	NA	NA	NA	<5	<5	<10	<10	<10	89	<5	<0.2	<50	<5	<10	<5	<10
	D	NA	NA	NA	NA	NA	<5	<5	<10	<10	<10	82	<5	<0.2	<50	<5	<10	<5	<10
21-Apr-93	A	NA	NA	NA	NA	NA	<5	<5	<10	<10	<10	<10	<5	<0.2	<50	<5	<10	<5	<10
	B	NA	NA	NA	NA	NA	<5	<5	<10	<10	<10	<10	<5	<0.2	<50	<5	<10	<5	<10
	D	NA	NA	NA	NA	NA	<5	<5	<10	<10	<10	<10	<5	<0.2	<50	<5	<10	<5	<10
11-May-93	A	<50	<0.5	<0.5	<0.5	<0.5	<5	<5	<10	<10	<10	<10	<5	<0.2	<50	<5	<10	<5	<10
	B	<50	<0.5	<0.5	<0.5	<0.5	<5	<5	<10	<10	<10	<10	<5	<0.2	<50	<5	<10	<5	<10
	D	<50	<0.5	<0.5	<0.5	<0.5	<5	<5	<10	<10	<10	<10	<5	<0.2	<50	<5	<10	<5	<10
11-Jun-93	A	<50	<0.5	<0.5	<0.5	<0.5	<5	<5	<10	<10	<10	<10	<5	<0.2	<50	<5	<10	<5	<10
	B	<50	<0.5	<0.5	<0.5	<0.5	<5	<5	<10	<10	<10	<10	<5	<0.2	<50	<5	<10	<5	<10
	D	<50	<0.5	<0.5	<0.5	<0.5	<5	<5	<10	<10	53	<10	<5	<0.2	<50	<5	<10	<5	<10
15-Jul-93	A	<50	<0.5	<0.5	<0.5	<0.5	<5	<5	<10	<10	<10	<10	<5	<0.2	<50	<5	<10	<5	<10
	B	<50	<0.5	<0.5	<0.5	<0.5	<5	<5	<10	<10	<10	<10	<5	<0.2	<50	<5	<10	<5	<10
	D	<50	2.6	<0.5	<0.5	2.7	<5	<5	<10	<10	<10	<10	<5	<0.2	<50	<5	<10	<5	44
23-Aug-93	A	<50	<0.5	<0.5	<0.5	<0.5	<5	<5	<10	<10	<10	<10	<5	<0.2	<50	<5	<10	<5	<10
	B	<50	<0.5	<0.5	<0.5	<0.5	<5	<5	<10	<10	<10	<10	<5	<0.2	<50	<5	<10	<5	<10
	D	<50	<0.5	<0.5	<0.5	<0.5	<5	<5	<10	<10	<10	<10	<5	<0.2	<50	<5	<10	<5	<10
15-Sep-93	A	<50	<0.5	<0.5	<0.5	<0.5	<5	<5	<10	<10	<10	<10	<5	<0.2	5.0	<5	<10	<5	<10
	B	<50	<0.5	<0.5	<0.5	<0.5	<5	<5	<10	<10	<10	<10	<5	<0.2	5.8	<5	<10	<5	<10
	D	<50	1.3	<0.5	<0.5	<0.5	<5	<5	<10	<10	<10	<10	<5	<0.2	5.6	<5	<10	<5	<10

All Metals were analyzed using EPA priority pollutants.
Analytical results in parts per billion (ppb).

TPH-G = Total petroleum hydrocarbons as gasoline using EPA Methods 5030/8015, and purgeable hydrocarbons using EPA Method 8020.

Sample A = Effluent
Sample B = Midpoint
Sample D = Influent

TABLE 4A

GROUNDWATER REMEDIAL SYSTEM
ANALYTICAL DATA - TPH-G, BTEX, AND METALS

Sb	=	Antimony
Cr	=	Chromium
Cu	=	Copper
As	=	Arsenic
Be	=	Beryllium
Cd	=	Cadmium
Pb	=	Lead
Hg	=	Mercury
Ni	=	Nickel
Se	=	Selenium
Ag	=	Silver
Tl	=	Thallium
Zn	=	Zinc
NA	=	Not analyzed
<	=	Less than the detection limit

TABLE 4B

GROUNDWATER REMEDIAL SYSTEM ANALYTICAL DATA - VOCs

DATE	SAMPLE NO.	COMPOUND	RESULT
20-Jan-93	A	---	<1.0 for all compounds
	B	---	<1.0 for all compounds
	D	Carbon Tetrachloride	2.3
		Chloroform	1.6
		cis-1,2-Dichloroethene	3.3
		Tetrachloroethene	20
		Trichloroethene	1.1
10-Feb-93	A	---	<1.0 for all compounds
	B	---	<1.0 for all compounds
	D	Carbon Tetrachloride	1.9
		Chloroform	1.3
		cis-1,2-Dichloroethene	1.0
		Tetrachloroethene	21
14-Mar-93	A	---	<1.0 for all compounds
	B	---	<1.0 for all compounds
	D	Carbon Tetrachloride	1.9
		Chloroform	1.3
		cis-1,2-Dichloroethene	1.0
		Tetrachloroethene	21
21-Apr-93	A	---	<1.0 for all compounds
	B	---	<1.0 for all compounds
	D	Carbon Tetrachloride	3.5
		Chloroform	1.5
		Tetrachloroethene	11
11-May-93	A	---	<1.0 for all compounds
	B	---	<1.0 for all compounds
	D	Carbon Tetrachloride	2.2
		Chloroform	1.4
		cis-1,2-Dichloroethene	1.4
		Tetrachloroethene	19
11-Jun-93	A	---	<1.0 for all compounds
	B	---	<1.0 for all compounds
	D	cis-1,2-Dichloroethene	3.6
		Tetrachloroethene	23
		Trichloroethene	1.1
		Vinyl Chloride	2.4
15-Jul-93	A	---	<1.0 for all compounds
	B	---	<1.0 for all compounds
	D	Carbon Tetrachloride	1.9
		Chloroform	1.5
		cis-1,2-Dichloroethene	4.1
		Tetrachloroethene	32
		Trichloroethene	1.2
23-Aug-93	A	---	<1.0 for all compounds
	B	---	<1.0 for all compounds
	D	Carbon Tetrachloride	1.4
		Chloroform	1.3
		cis-1,2-Dichloroethene	2.6
		Tetrachloroethene	20
15-Sep-93	A	---	<1.0 for all compounds
	B	---	<1.0 for all compounds
	D	Carbon Tetrachloride	2.3
		Chloroform	1.6
		cis-1,2-Dichloroethene	2.7
		Tetrachloroethene	26
		Trichloroethene	0.76

Results in parts per billion (ppb).
VOCs = Volatile organic compounds by EPA Methods 5030/8010
< = Less than method detection limit.

Sample A = Effluent
Sample B = Midpoint
Sample D = Influent

Note: 1. All other compounds <1.0 ppb.

Arco Station 4931
731 W. MacArthur Blvd.
Oakland, CA

Table 5
Groundwater Treatment System Flow Data

Reading Date	Flow Meter Reading	Cumulative flow (gallons)	Average Flowrates (gal/day)	Average Flowrates (gal/min)	Laboratory Results effluent (port A) TPHg (ug/l)	effluent (port A) Benzene (ug/l)	influent (port D) TPHg (ug/l)	influent (port D) Benzene (ug/l)	Periodic Hydrocarbon Recovery (LBS)
11/16/92	1,090	0	---	---					
11/18/92	22,690	21,600	10,800	8					0.02
11/20/92	44,920	43,830	11,115	8					0.02
12/17/92	92,210	91,120	1,751	1	<50	<0.50	92	25	0.04
1/12/93	564,680	563,590	18,172	13					0.36
2/10/93	838,640	837,550	9,447	7					0.21
2/24/93	947,220	946,130	7,756	5					0.08
3/14/93	1,086,630	1,085,540	7,745	5					0.11
4/1/93	1,129,690	1,128,600	2,392	2					0.03
4/20/93	1,193,300	1,192,210	3,348	2					0.05
4/29/93	1,259,700	1,258,610	7,378	5					0.05
6/11/93	1,614,620	1,613,530	8,254	6	<50	<0.50	<50	<0.50	0.00
6/21/93	1,722,260	1,721,170	10,764	7					0.00
6/28/93	1,809,950	1,808,860	12,527	9					0.00
7/15/93	2,013,960	2,012,870	12,001	8	<50	<0.50	<50	2.6	0.00
8/23/93	2,446,870	2,445,780	11,100	8	<50	<0.50	<50	<0.50	0.00
9/15/93	2,701,430	2,700,340	11,068	8	<50	<0.50	<50	1.3	0.00
3rd Quarter 1993		891,480	11,285	8					0.00
Total		2,700,340	8,912	6					0.97

Notes:

1) Average flowrates calculated using flowmeter readings and days between readings.

2) <x indicates concentration below laboratory detection limit x.

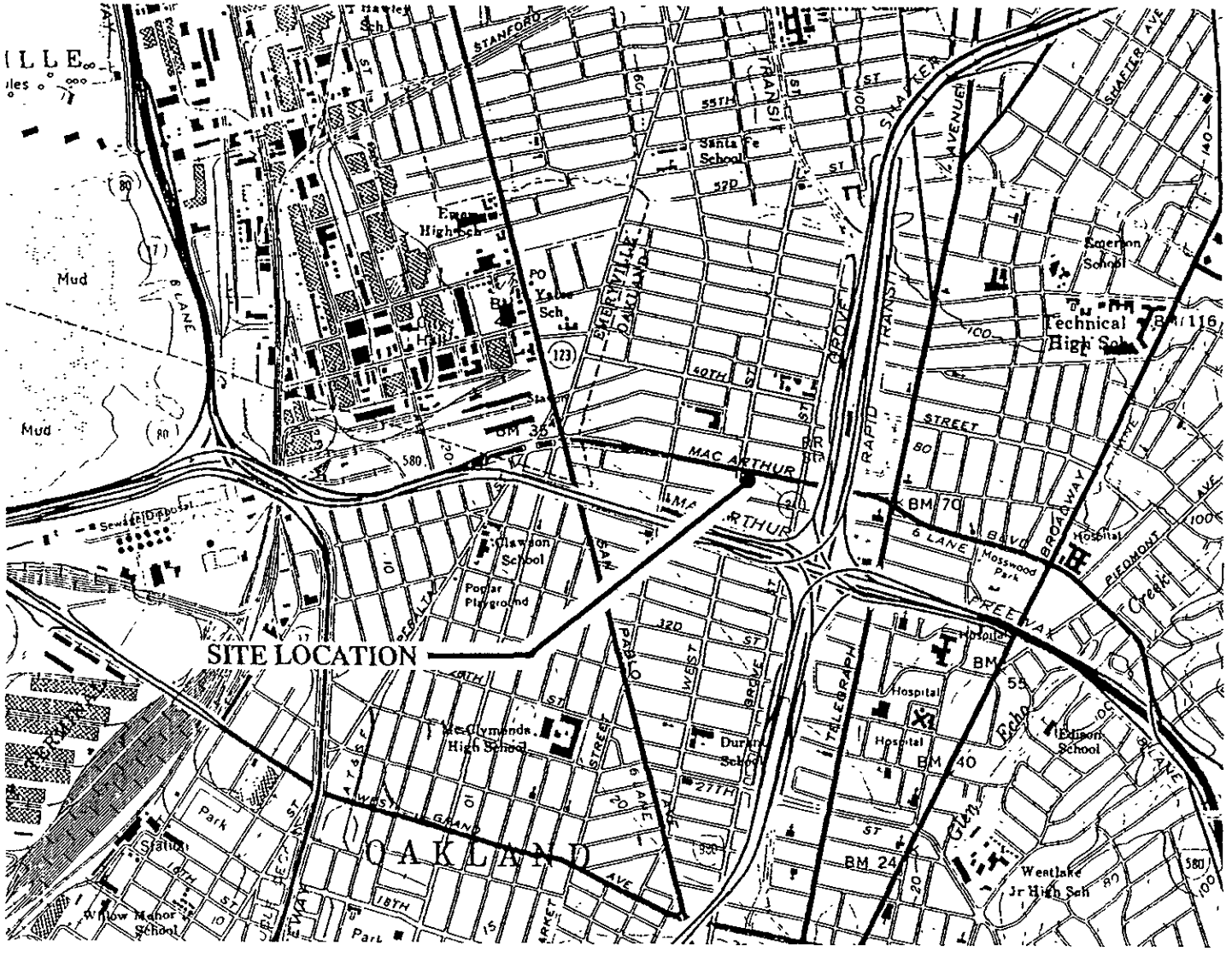
3) TPHg (Total Purgeable Hydrocarbons as gasoline) quantitated against a fresh gasoline standard.

4) Periodic Hydrocarbon Recovery calculated using influent TPHg concentrations. Zero pounds recovered is assumed when the concentration is <x.

5) ug/l = micrograms per liter.

6) Effluent concentrations reported on 12/17/92 taken between first and second carbon vessels.

ILLUSTRATIONS



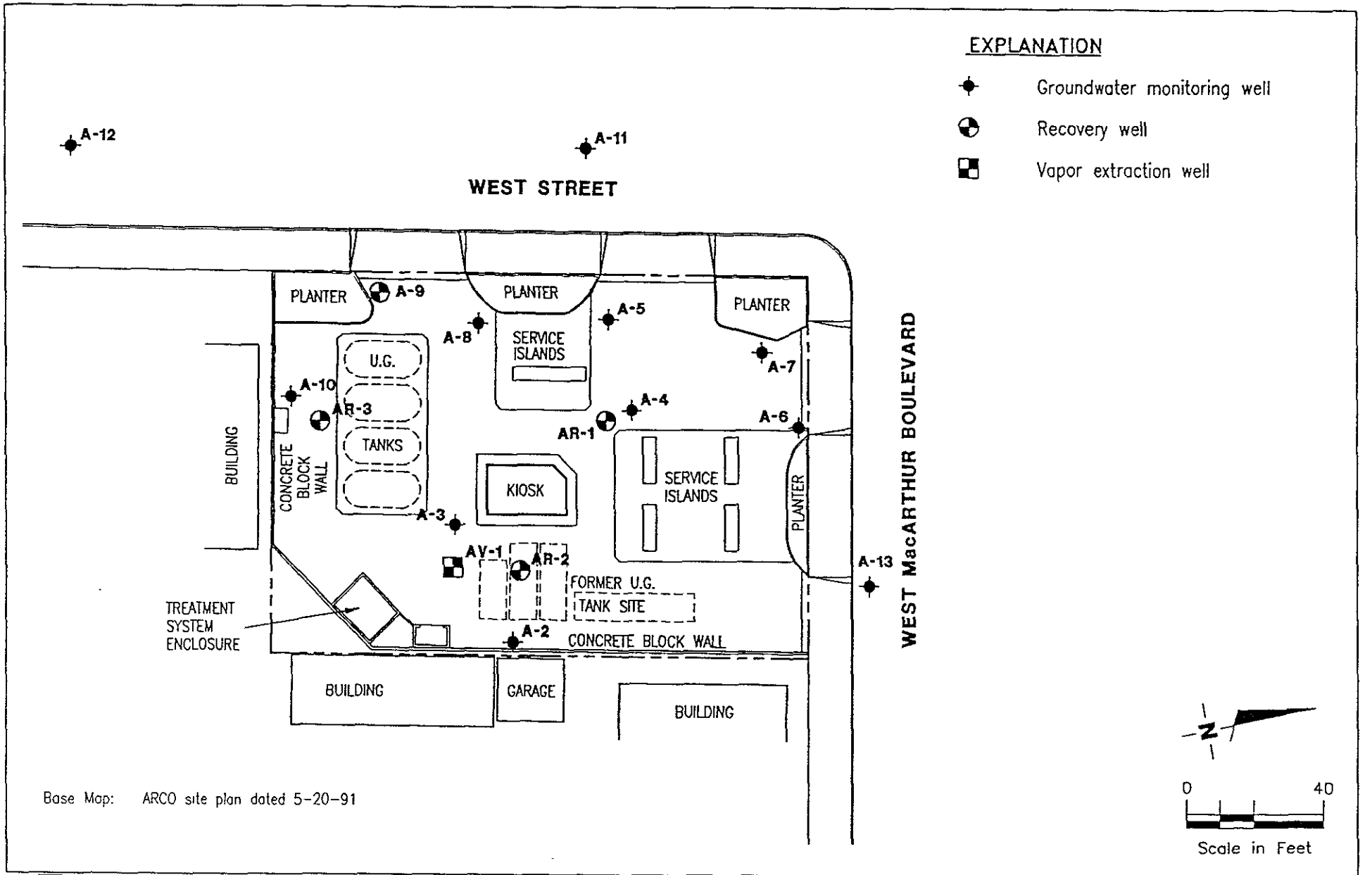
Base Map: USGS Topographic Map

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	



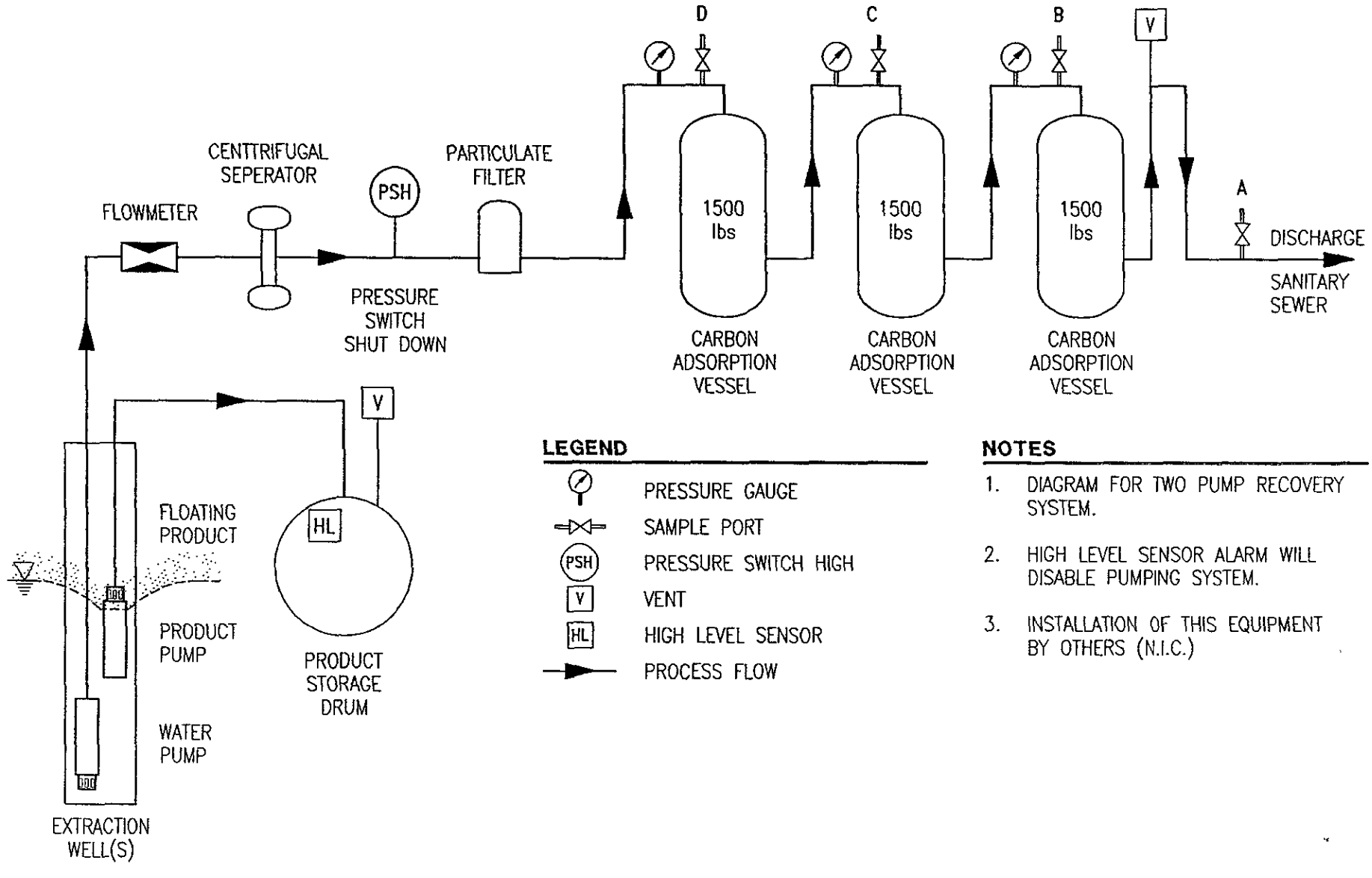
Base Map: ARCO site plan dated 5-20-91

GeoStrategies Inc.

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

PLATE
2

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
7909		7/93	



LEGEND

- PRESSURE GAUGE
- SAMPLE PORT
- PSH — PRESSURE SWITCH HIGH
- V — VENT
- HL — HIGH LEVEL SENSOR
- PROCESS FLOW

NOTES

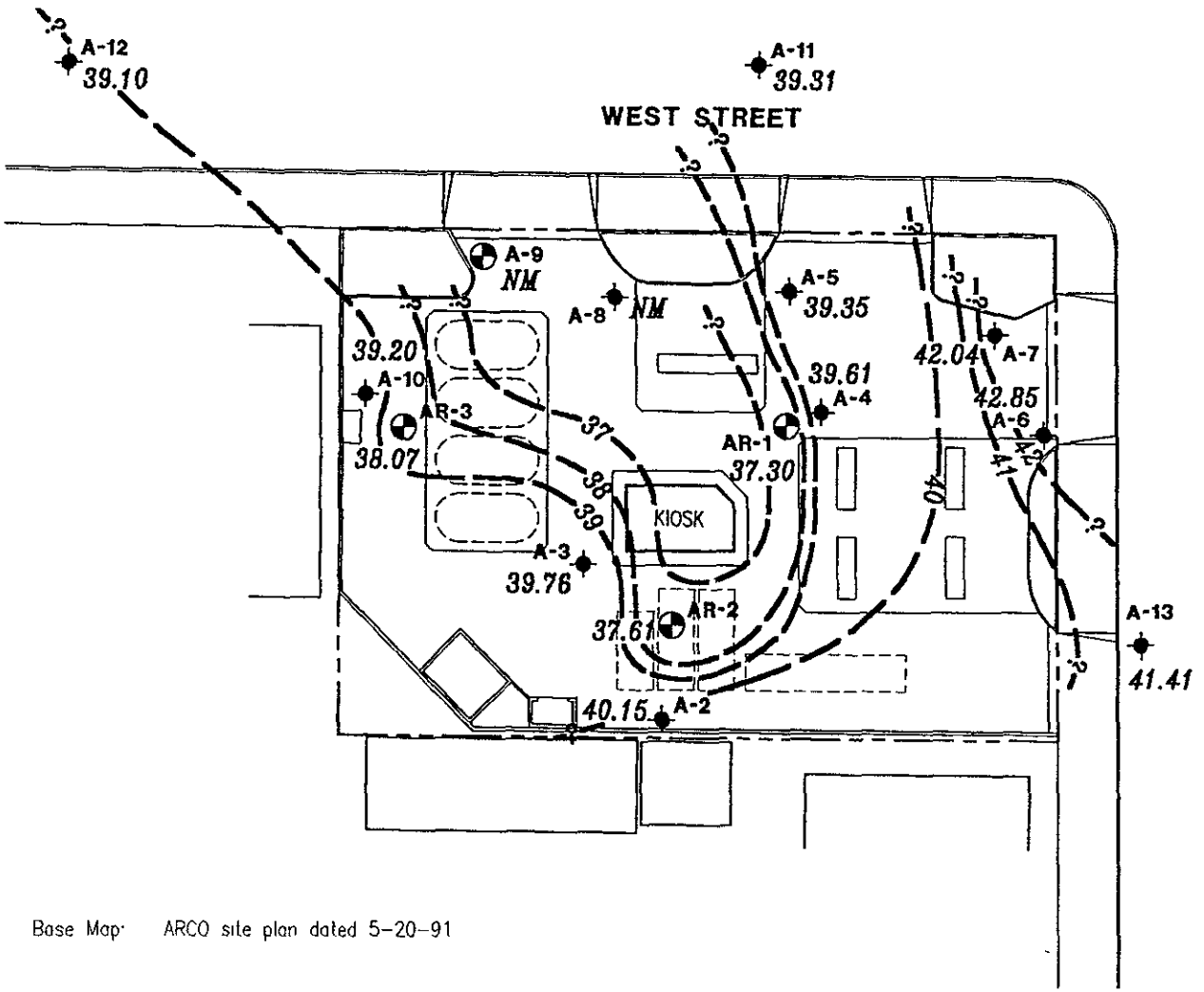
1. DIAGRAM FOR TWO PUMP RECOVERY SYSTEM.
2. HIGH LEVEL SENSOR ALARM WILL DISABLE PUMPING SYSTEM.
3. INSTALLATION OF THIS EQUIPMENT BY OTHERS (N.I.C.)

GeoStrategies Inc.

PROCESS FLOW DIAGRAM
ARCO Service Station #4931
731 W. MacArthur Boulevard
Oakland, California

PLATE **3**

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
7909		6/93	



EXPLANATION

- Groundwater monitoring well
- Recovery well
- 99.99 — Groundwater elevation contour.
- 99.99 — Groundwater elevation in feet referenced to Mean Sea Level (MSL) measured on August 6, 1993
- NM — Not Measured

NOTES:
1. Contours may be influenced by irrigation practices, groundwater pumping and/or construction activities.

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

N

0 40

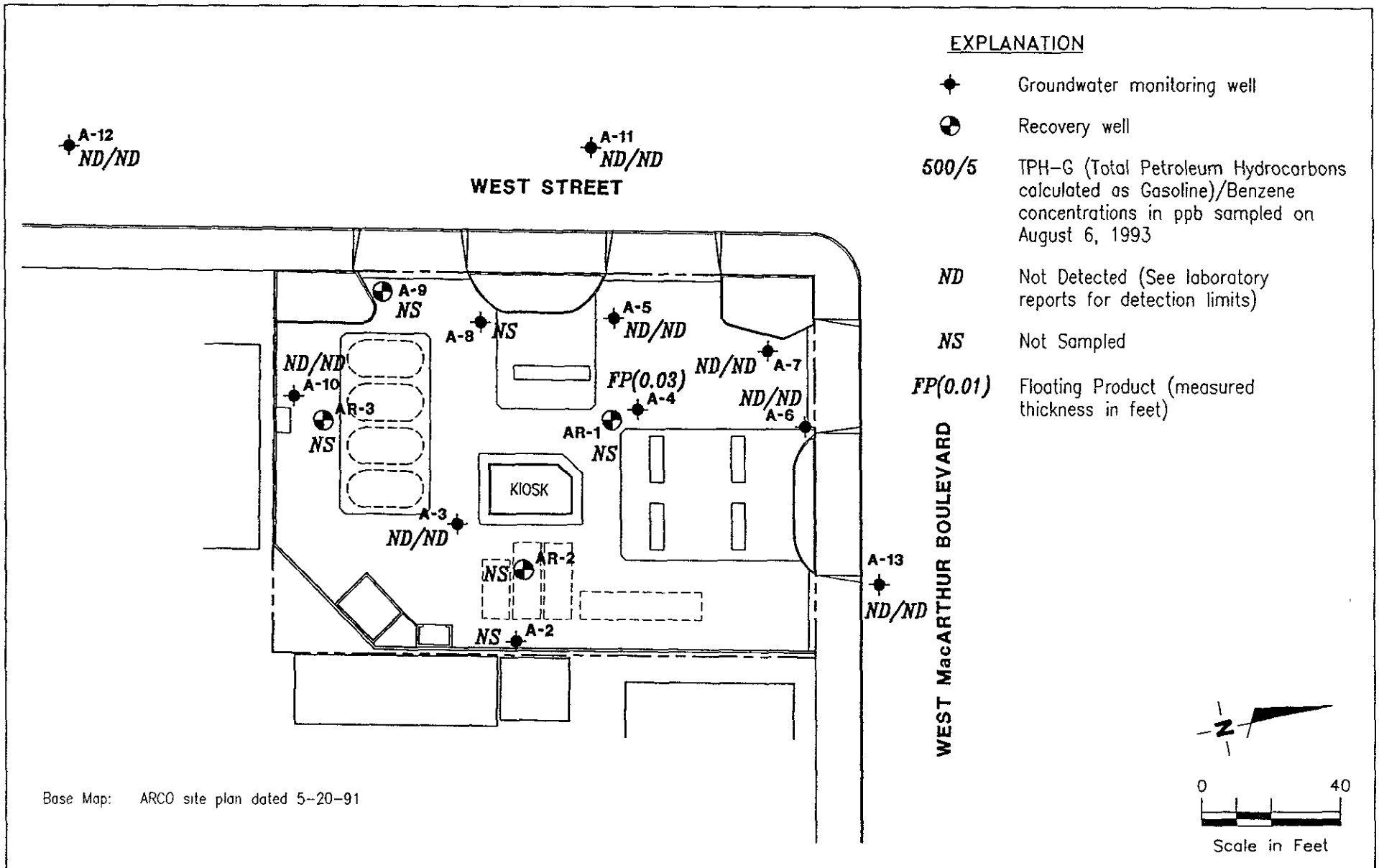
Scale in Feet

GeoStrategies Inc.

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

PLATE
4

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
790970-23		11/93	



GeoStrategies Inc.

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

PLATE 5

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
790970-23		11/93	

APPENDIX A

EMCON GROUNDWATER SAMPLING AND MONITORING REPORTS

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

Date August 18, 1993
Project 0G70-032.01

To:
Ms. Barbara Sieminski
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 third quarter 1993 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.

Reviewed by:

Jim Butera JB

Robert Porter, Senior Project Engineer.

FIELD REPORT
DEPTH TO WATER / FLOATING PRODUCT SURVEY

PROJECT # : 0G70-032.01 STATION ADDRESS : 731 West MacArthur Blvd. Oakland, DATE : August 6, 1993

ARCO STATION # : 4931 FIELD TECHNICIAN : S. Horton / K. Reichelderfer DAY : Friday

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	good	vault	na	None	Slip	17.42	17.42	ND	ND	30.0	Lid fit is too tight very difficult to open. 4 bolts missing, sounder coated w/ product when retrieved
2	AR-2	good	vault	na	None	Slip	17.16	17.16	ND	ND	28.5	4 bolts missing No Sample Port in vault
3	AR-3	good	vault	na	None	Slip	16.12	16.12	ND	ND	30.0	Lid does not fit properly 4 bolts missing too tight very difficult to open almost broke handle No Sample Port
4	A-8	good	vault	na	None	Slip	Dry	Dry	ND	ND	20.0	Extreme Difficulty Encountered opening lid. Broke handle on lid No Sample Port 4 bolts missing
5	A-9	good	vault	na	None	Slip	NR	NR	ND	ND	38.0	Could not be opened. Broke handle off lid attempting to open w/pry bar & screwdriver
6	A-13	good	yes	na	2357	yes	13.70	13.70	ND	ND	29.4	
7	A-11	good	C-5 yes	na	2357 ~~3900~~	yes	14.43	14.43	ND	ND	27.8	Traffic Control Required Installed New lock (2357)
8	A-12	good	C-5 yes	na	2357 ~~2200~~	yes	12.95	12.95	ND	ND	29.8	Installed New lock (2357)
9	A-3	good	C-5 yes	na	2357	yes	14.90	14.90	ND	ND	17.1	water in box over TOC
10	A-5	good	C-5 yes	na	2357 ~~2000~~	yes	14.82	14.82	ND	ND	23.9	Installed New lock (2357)
11	A-7	good	C-5 yes	na	2357 ~~2000~~	yes	12.67	12.67	ND	ND	22.8	Installed New lock (2357)
12	A-10	good	C-5 yes	na	2357 ~~3283~~	yes	15.06	15.06	ND	ND	30.1	water in box. Flip cap allows water to enter well (water marks) Extremely strong sewer type smell being emitted from box.
13	A-6	good	C-5 yes	na	2357 ~~2357~~	yes	12.32	12.32	ND	ND	24.4	Installed New lock (2357)
14	A-2	good	C-5 yes	na	2357 ~~2000~~	yes	15.33	15.33	ND	ND	19.8	Installed New lock (2357)

SURVEY POINTS ARE TOP OF WELL BOXES

Repairs need to be made to vault boxes so that lids fit

FIELD REPORT
DEPTH TO WATER / FLOATING PRODUCT SURVEY

PROJECT # : 0G70-032.01 STATION ADDRESS : 731 West MacArthur Blvd. Oakland, DATE : August 6, 1993

ARCO STATION # : 4931 FIELD TECHNICIAN : S Horton / K. Reichelderfer DAY : Friday

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-4	good	G-5 yes	no	2357 ~~3285~~	yes	15.14	15.14	15.11 ND *	.03 ND *	19.9	HNC did not detect any product but was coated w/sheen and had strong odor. Upon verification with clear teflon bailer, a layer of product between .02 - .03 was measured. Installed new lock (#2357)

SURVEY POINTS ARE TOP OF WELL BOXES

Summary of Groundwater Monitoring Data
Third Quarter 1993
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	08/06/93	17.42	NR.[2]	NR.	NR.	NR.	NR.	NR.
AR-2	08/06/93	17.16	NR.	NR.	NR.	NR.	NR.	NR.
AR-3	08/06/93	16.12	NR.	NR.	NR.	NR.	NR.	NR.
A-2	08/06/93	15.33	ND.[3]	NS.[4]	NS.	NS.	NS.	NS.
A-3(17)	08/06/93	14.90	ND.	<50.	<0.5	<0.5	<0.5	<0.5
A-4	08/06/93	15.14	0.03	FP.[5]	FP.	FP.	FP.	FP.
A-5(23)	08/06/93	14.82	ND.	<50.	<0.5	<0.5	<0.5	<0.5
A-6(24)	08/06/93	12.32	ND.	<50.	<0.5	<0.5	<0.5	<0.5
A-7(22)	08/06/93	12.67	ND.	<50.	<0.5	<0.5	<0.5	<0.5
A-8	08/06/93	Dry[6]	Dry	Dry	Dry	Dry	Dry	Dry
A-9	08/06/93	IW.[7]	IW.	IW.	IW.	IW.	IW.	IW.
A-10(30)	08/06/93	15.06	ND.	<50.	<0.5	<0.5	<0.5	<0.5
A-11(27)	08/06/93	14.43	ND.	<50.	<0.5	<0.5	<0.5	<0.5
A-12(29)	08/06/93	12.95	ND.	<50.	<0.5	<0.5	<0.5	<0.5
A-13(29)	08/06/93	13.70	ND.	<50.	<0.5	<0.5	<0.5	<0.5
XDup[8]	08/06/93	NA.[9]	NA.	NA.	NA.	NA.	NA.	NA.
FB-1[10]	08/06/93	NA.	NA.	<50.	<0.5	<0.5	<0.5	<0.5
TB-1[11]	08/06/93	NA.	NA.	<50.	<0.5	<0.5	<0.5	<0.5

1. TPH = Total petroleum hydrocarbons
2. NR. = Not recorded due to ground water extraction system installed in well.
3. ND. = Not detected
4. NS. = Not sampled, well dried during purge and did not recharge sufficiently for sample collection
5. FP. = Floating product; well was not sampled due to detection of floating product
6. Dry = Well was dry, no sample was taken
7. IW = Inaccessable well, well box could not be opened, well was not sampled
8. XDup = Duplicate well sample was not collected due to insufficient recharge of designated well
9. NA = Not applicable
10. FB = Field Blank
11. TB = Trip Blank

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-93-5/Arco 4931, Oakland

Enclosed are the results from 10 water samples received at Sequoia Analytical on August 9,1993. The requested analyses are listed below:

SAMPLE #	SAMPLE DESCRIPTION	DATE OF COLLECTION	TEST METHOD
3H40901	Water, A.3 (17)	8/6/93	EPA 5030/8015/8020
3H40902	Water, A.5 (23)	8/6/93	EPA 5030/8015/8020
3H40903	Water, A.6 (24)	8/6/93	EPA 5030/8015/8020
3H40904	Water, A.7 (22)	8/6/93	EPA 5030/8015/8020
3H40905	Water, A.10 (30)	8/6/93	EPA 5030/8015/8020
3H40906	Water, A.11 (27)	8/6/93	EPA 5030/8015/8020
3H40907	Water, A.12 (29)	8/6/93	EPA 5030/8015/8020
3H40908	Water, A.13 (29)	8/6/93	EPA 5030/8015/8020
3H40909	Water, FB-1	8/6/93	EPA 5030/8015/8020
3H40910	Water, TB-1	8/6/93	EPA 5030/8015/8020

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
Project Manager

SEQUOIA ANALYTICAL

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

Emcon Associates	Client Project ID:	EMC-93-5/Arco 4931, Oakland	Sampled:	Aug 6, 1993
1938 Junction Avenue	Sample Matrix:	Water	Received:	Aug 9, 1993
San Jose, CA 95131	Analysis Method:	EPA 5030/8015/8020	Reported:	Aug 12, 1993
Attention: Jim Butera	First Sample #:	3H40901		

TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

Analyte	Reporting Limit µg/L	Sample I.D. 3H40901 A.3 (17)	Sample I.D. 3H40902 A.5 (23)	Sample I.D. 3H40903 A.6 (24)	Sample I.D. 3H40904 A.7 (22)	Sample I.D. 3H40905 A.10 (30)	Sample I.D. 3H40906 A.11 (27)
Purgeable Hydrocarbons	50	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Benzene	0.50	N.D.	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	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Chromatogram Pattern:		--	--	--	--	--	--

Quality Control Data

Report Limit Multiplication Factor:	1.0	1.0	1.0	1.0	1.0	1.0
Date Analyzed:	8/10/93	8/10/93	8/10/93	8/10/93	8/10/93	8/10/93
Instrument Identification:	GCHP-2	GCHP-2	GCHP-2	GCHP-2	GCHP-2	GCHP-2
Surrogate Recovery, %: (QC Limits = 70-130%)	99	88	99	86	98	85

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

SEQUOIA ANALYTICAL

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

Emcon Associates	Client Project ID:	EMC-93-5/Arco 4931, Oakland	Sampled: Aug 6, 1993
1938 Junction Avenue	Sample Matrix:	Water	Received: Aug 9, 1993
San Jose, CA 95131	Analysis Method:	EPA 5030/8015/8020	Reported: Aug 12, 1993
Attention: Jim Butera	First Sample #:	3H40907	

TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

Analyte	Reporting Limit µg/L	Sample I.D. 3H40907 A.12 (29)	Sample I.D. 3H40908 A.13 (29)	Sample I.D. 3H40909 FB-1	Sample I.D. 3H40910 TB-1
Purgeable Hydrocarbons	50	N.D.	N.D.	N.D.	N.D.
Benzene	0.50	N.D.	N.D.	N.D.	N.D.
Toluene	0.50	N.D.	N.D.	N.D.	N.D.
Ethyl Benzene	0.50	N.D.	N.D.	N.D.	N.D.
Total Xylenes	0.50	N.D.	N.D.	N.D.	N.D.
Chromatogram Pattern:		--	--	--	--

Quality Control Data

Report Limit Multiplication Factor:	1.0	1.0	1.0	1.0
Date Analyzed:	8/10/93	8/10/93	8/10/93	8/10/93
Instrument Identification:	GCHP-2	GCHP-2	GCHP-2	GCHP-2
Surrogate Recovery, %: (QC Limits = 70-130%)	88	95	86	94

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

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-93-5/Arco 4931, Oakland
Matrix: Water

QC Sample Group: 3H40901-10

Reported: Aug 12, 1993

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
Conc. Spiked:	10	10	10	30
Units:	µg/L	µg/L	µg/L	µg/L
LCS Batch#:	GBLK081093	GBLK081093	GBLK081093	GBLK081093
Date Prepared:	N.A.	N.A.	N.A.	N.A.
Date Analyzed:	8/10/93	8/10/93	8/10/93	8/10/93
Instrument I.D.#:	GCHP-2	GCHP-2	GCHP-2	GCHP-2
LCS % Recovery:	97	95	96	93
Control Limits:	80-120	80-120	80-120	80-120
MS/MSD Batch #:	3H22806	3H22806	3H22806	3H22806
Date Prepared:	N.A.	N.A.	N.A.	N.A.
Date Analyzed:	8/10/93	8/10/93	8/10/93	8/10/93
Instrument I.D.#:	GCHP-2	GCHP-2	GCHP-2	GCHP-2
Matrix Spike % Recovery:	100	100	100	100
Matrix Spike Duplicate % Recovery:	100	100	100	100
Relative % Difference:	0.0	0.0	0.0	0.0

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

SEQUOIA ANALYTICAL

Eileen A. Manning

Please Note:
The LCS is a control sample of known, interferent free matrix that is analyzed using the same reagents, preparation and analytical methods employed for the samples. The LCS % recovery data is used for validation of sample batch results. Due to matrix effects, the QC limits for MS/MSD's are advisory only and are not used to accept or reject batch results.

ARCO Products Company
Division of AtlanticRichfieldCompany

Task Order No. EMC-93-5

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) 571-2434	Telephone no. (Consultant) 453-0719	Fax no. (Consultant) 453-0452	Contract number
Consultant name EMCON ASSOCIATES	Address (Consultant) 1938 Junction Avenue San Jose		Method of shipment Courier 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 ☐	
(17)		6		X		X	HCl				X		X	NO SAMPLES TAKEN, NOT ENOUGH WATER IN WELL							
(17)		2						8-6-93	1425		X										1
		2									X			NO SAMPLES TAKEN, PRODUCT IN WELL							
(23)		2						8-6-93	1200		X										2
(24)		2						↓	1243		X										3
(22)		2						↓	1320		X										4
		2									X			NO SAMPLES TAKEN, NO SAMPLE PORT							
		2									X			NO SAMPLES TAKEN, NO SAMPLE PORT							
(30)		2						8-6-93	1233		X										5
(27)		2						↓	1120		X										6
(29)		2						↓	1102		X										7
(29)		2						↓	1400		X										8
		2									X			NO SAMPLES TAKEN, NO SAMPLE PORT							
		2									X			NO SAMPLES TAKEN, NO SAMPLE PORT							
		2									X			NO SAMPLES TAKEN, NO SAMPLE PORT							
B3		2									X										9
B-1		2		↓		↓	↓	8-6-93	1240		X										

Special detection Limit/reporting: Lowest Possible

Special QA/QC: AS Normal

Remarks: 2-40ml HCl VOA's; 2-Liter HCl (GLASS)

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
Relinquished by sampler: Steve Pitchford	8-6-93	1703
Relinquished by: David Adam	8/9/93	4:50
Relinquished by:		

	Date	Time
Received by: David Adam		
Received by:		
Received by laboratory: Stephanie Kamegai	8-9-93	1650

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

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: 0670-032.01 SAMPLE ID: A-2(19)

PURGED BY: K REICHELDERFER CLIENT NAME: ARCO 4931

SAMPLED BY: ↓ LOCATION: 731 W. MACARTHUR BLVD 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.):	2.92
DEPTH TO WATER (feet):	15.33	CALCULATED PURGE (gal.):	8.76
DEPTH OF WELL (feet):	19.8	ACTUAL PURGE VOL. (gal.):	3.00

DATE PURGED: 8-6-93 Start (2400 Hr) 1024 End (2400 Hr) 1029

DATE SAMPLED: NA Start (2400 Hr) NA End (2400 Hr) NA

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1029	3.00	5.93	442	66.8	BROWN	HEAVY
— WELL DRIED @ 3.00 GALLONS						
NO SAMPLES TAKEN, NOT ENOUGH WATER IN WELL						
~~RECHARGE~~						

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

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

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: 1029 WELL DRIED @ 3.00 GALLONS
1436 DTW 19.75 (NOT ENOUGH WATER ~~FOR~~ SAMPLE)

Meter Calibration: Date: 8-6-93 Time: 1005 Meter Serial #: 9203 Temperature °F: 75.3

(EC 1000 950 / 1000) (DI 7.24) (pH 7 7.02 / 7.00) (pH 10 9.98 / 10.00) (pH 4 3.90 / —)

Location of previous calibration: ___

Signature: Kevin Reichelderfer Reviewed By: JB Page 1 of 13

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: 0670-032.01 SAMPLE ID: A-3 (17)

PURGED BY: K REICHELDERFER CLIENT NAME: ARCO 4931

SAMPLED BY: ↓ LOCATION: 731 W. MACARTHUR BLVD. 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.):	1.44
DEPTH TO WATER (feet):	14.90	CALCULATED PURGE (gal.):	4.31
DEPTH OF WELL (feet):	17.1	ACTUAL PURGE VOL. (gal.):	1.50

DATE PURGED: 8-6-93 Start (2400 Hr) 1145 End (2400 Hr) 1150

DATE SAMPLED: 8-6-93 Start (2400 Hr) 1425 End (2400 Hr) 1428

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1150	1.50	6.42	832	69.4	BROWN/GREY	HEAVY
—	WELL DRIED @ 1.50 GALLONS					
1432	RECHARGE	6.34	968	70.2	CLOUDY	LIGHT

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 #: 2357

REMARKS: BOX FULL OF WATER
1150 WELL DRIED @ 1.52 GALLONS (DTW 16.98)
1420 DTW 15.39

Meter Calibration: Date: 8-6-93 Time: 1005 Meter Serial #: 9203 Temperature °F: ___

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

Location of previous calibration: A-2

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

WATER SAMPLE FIELD DATA SHEET

Rev. 2. 5/9

EMCON ASSOCIATES

PROJECT NO: 0670-032.01 SAMPLE ID: A-4(15)

PURGED BY: Steve Horton CLIENT NAME: ARCO #4931

SAMPLED BY: Steve 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.): 3.10

DEPTH TO WATER (feet): 15.14 CALCULATED PURGE (gal.): 9.32

DEPTH OF WELL (feet): 19.9 ACTUAL PURGE VOL. (gal.): ___

DATE PURGED: 8/6/93 Start (2400 Hr) ___ End (2400 Hr) ___

DATE SAMPLED: 8/6/93 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				

D. O. (ppm): NR ODOR: Strong 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	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 #: 2269 → 2357

REMARKS: Changed 2269 lock to 2357 lock

Meter Calibration: Date: 8/6/93 Time: 10:01 Meter Serial #: 9208 Temperature °F: ___

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

Location of previous calibration: A-12(2)

WATER SAMPLE FIELD DATA SHEET

Rev. 2.5/

EMCON ASSOCIATES

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

PURGED BY: Steve Horton CLIENT NAME: ARCO #4931

SAMPLED BY: Steve Horton 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.): 3.32

DEPTH TO WATER (feet): 14.82 CALCULATED PURGE (gal.): 9.98

DEPTH OF WELL (feet): 23.9 ACTUAL PURGE VOL. (gal.): 10.0

DATE PURGED: 8/6/93 Start (2400 Hr) 11:47 End (2400 Hr) 11:57

DATE SAMPLED: 8/6/93 Start (2400 Hr) 12:00 End (2400 Hr) 12:07

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
11:50	3.5	6.76	708	66.3	Brown	Heavy
11:54	7.0	6.84	669	65.9	Brown	Heavy
11:57	10.0	6.86	633	65.9	Brown	Heavy

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

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

SAMPLING EQUIPMENT

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

WELL INTEGRITY: Good LOCK #: 2269 → 2357

REMARKS: Changed 2268 lock to 2357 lock

Meter Calibration: Date: 8/6/93 Time: 10:01 Meter Serial #: 9208 Temperature °F: ___

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

Location of previous calibration: A-12(29)

AM

WATER SAMPLE FIELD DATA SHEET

Rev. 2. 5/

EMCON ASSOCIATES

PROJECT NO: 0670-032.01 SAMPLE ID: A-6(24)

PURGED BY: Steve Horton CLIENT NAME: ARCO #4931

SAMPLED BY: Steve Horton 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.): 4.42

DEPTH TO WATER (feet): 12.32 CALCULATED PURGE (gal.): 13.28

DEPTH OF WELL (feet): 24.4 ACTUAL PURGE VOL. (gal.): 13.5

DATE PURGED: 8/16/93 Start (2400 Hr) 12:30 End (2400 Hr) 12:41

DATE SAMPLED: 8/16/93 Start (2400 Hr) 12:43 End (2400 Hr) 12:45

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
12:32	4.5	6.91	511	66.1	Brown	Heavy
12:37	9.0	6.96	512	66.4	Brown	Heavy
12:41	13.5	6.95	510	66.2	Brown	Heavy

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

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

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

SAMPLING EQUIPMENT

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

WELL INTEGRITY: Good LOCK #: 2269 → 2357

REMARKS: Change 2268 lock to 2357 lock

Meter Calibration: Date: 8/16/93 Time: 10:01 Meter Serial #: 9208 Temperature °F: ___

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

Location of previous calibration: A-12(24)

WATER SAMPLE FIELD DATA SHEET

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EMCON ASSOCIATES

PROJECT NO: 0670-032.01 SAMPLE ID: A-7(22)

PURGED BY: K REICHELDERFER CLIENT NAME: ARCO 4931

SAMPLED BY: ↓ LOCATION: 731 W. MACARTHUR BLVD 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.):	3.71
DEPTH TO WATER (feet):	12.67	CALCULATED PURGE (gal.):	11.14
DEPTH OF WELL (feet):	22.8	ACTUAL PURGE VOL. (gal.):	11.50

DATE PURGED: 8-6-93 Start (2400 Hr) 1303 End (2400 Hr) 1313

DATE SAMPLED: 8-6-93 Start (2400 Hr) 1320 End (2400 Hr) 1322

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1306	4.00	6.31	622	69.4	BROWN	MODERATE
1309	8.00	6.39	640	69.3	↓	↓
1313	11.50	6.48	623	68.7	↓	↓

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®)
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

REMARKS: REPLACED 2008 LOCK W/ 2357 LOCK

Meter Calibration: Date: 8-6-93 Time: 1005 Meter Serial #: 9203 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 15

WATE.. SAMPLE FIELD DA. A SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

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

PURGED BY: K REICHELDERFER CLIENT NAME: ARCO 4931

SAMPLED BY: N/A LOCATION: 731 W. MACARTHUR BL 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.): NA

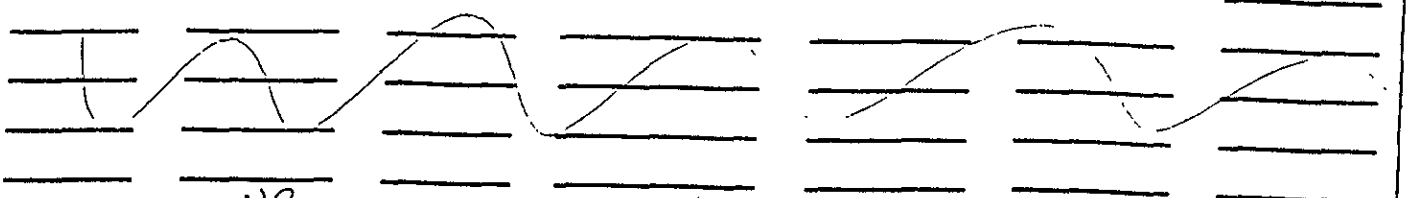
DEPTH TO WATER (feet): DRY CALCULATED PURGE (gal.): NA

DEPTH OF WELL (feet): 20.0 ACTUAL PURGE VOL. (gal.): NA

DATE PURGED: 8-6-93 Start (2400 Hr) NA End (2400 Hr) NA

DATE SAMPLED: NA Start (2400 Hr) NA End (2400 Hr) NA

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
NO	SAMPLES	TAKEN,	NO	SAMPLE	PORT IN	BOX



D. O. (ppm): NR ODOR: NA 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: NA		Other: NA	

WELL INTEGRITY: POOR LOCK #: NONE

REMARKS: • LID FIT IS TOO TIGHT, BROKE HANDLE ON LID TRYING TO OPEN IT & 4 BOLTS MISSING
• NO SAMPLES TAKEN, NO SAMPLE PORT

Meter Calibration: Date: 8-6-93 Time: ____ Meter Serial #: 9203 Temperature °F: ____

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

Location of previous calibration: ____

Signature: [signature] Reviewed By: [signature] Page 7 of 15

WATE.. SAMPLE FIELD DA A SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: 0670-032.01 SAMPLE ID: A-9

PURGED BY: K REICHELDERFER CLIENT NAME: ARCO 4931

SAMPLED BY: NA LOCATION: 731 W. MACARTHUR BL OAKLAND, CA

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

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

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

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

DEPTH OF WELL (feet): 38.0 ACTUAL PURGE VOL. (gal.): NA

DATE PURGED: 8-6-93 Start (2400 Hr) NA End (2400 Hr) NA

DATE SAMPLED: NA Start (2400 Hr) NA End (2400 Hr) NA

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
NO SAMPLES TAKEN LID FIT IS TOO TIGHT AND LID COULD NOT BE OPENED TO COLLECT SAMPLES						

D. O. (ppm): NR ODOR: NA 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: NA		Other: NA	

WELL INTEGRITY: POOR LOCK #: NONE

REMARKS: • LID FIT IS TOO TIGHT; HANDLE WAS BROKEN TRYING TO OPEN VAULT LID

• NO SAMPLES TAKEN BECAUSE WE COULDN'T GET IN THE VAULT BOX → NO INL. EITHER

Meter Calibration: Date: 8-6-93 Time: ____ Meter Serial #: 9203 Temperature °F: ____

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

Location of previous calibration: ____

Signature: [signature] Reviewed By: [signature] Page 5 of 15

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: 0670-032.01 SAMPLE ID: A-1C (3C)

PURGED BY: K REICHELDERFER CLIENT NAME: ARCO 4931

SAMPLED BY: ↓ LOCATION: 731 W. MACARTHUR BLVD. 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.): 5.51

DEPTH TO WATER (feet): 15.06 CALCULATED PURGE (gal.): 16.54

DEPTH OF WELL (feet): 30.1 ACTUAL PURGE VOL. (gal.): 17.00

DATE PURGED: 8-6-93 Start (2400 Hr) 1218 End (2400 Hr) 1227

DATE SAMPLED: 8-6-93 Start (2400 Hr) 1233 End (2400 Hr) 1235

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1221	6.00	6.31	711	65.7	BROWN	MODERATE
1224	12.00	6.38	702	65.6	↓	↓
1227	17.00	6.44	696	65.4		

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

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): FB-1 @ 1240

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

REMARKS: REPLACED 2268 LOCK W/ 2357 WATER IN BOX, EVEN WITH THE FLIP TOP CAP (WATER TRACES DOWN INTO WELL) STRONG SEWER-TYPE ODOR COMING OUT OF WELL

Meter Calibration: Date: 8-6-93 Time: 1005 Meter Serial #: 9203 Temperature °F: ___

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

Location of previous calibration: A-2

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

WATER SAMPLE FIELD DATA SHEET

Rev. 2. 5/9

EMCON ASSOCIATES

PROJECT NO: 0670-032.01 SAMPLE ID: A-11(27)

PURGED BY: Steve Horton CLIENT NAME: ARCO #4931

SAMPLED BY: Steve Horton 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.): 4.90

DEPTH TO WATER (feet): 14.43 CALCULATED PURGE (gal.): 14.70

DEPTH OF WELL (feet): 27.8 ACTUAL PURGE VOL. (gal.): 15.0

DATE PURGED: 8/6/93 Start (2400 Hr) 11:12 End (2400 Hr) 11:19

DATE SAMPLED: 8/6/93 Start (2400 Hr) 11:20 End (2400 Hr) 11:21

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
11:15	5.0	6.93	571	66.3	Brown	Heavy
11:17	10.0	6.87	571	66.7	Brown	Heavy
11:19	15.0	6.84	565	66.7	Brown	Heavy

D. O. (ppm): NR ODOR: none COLOR: NR (CCBALT 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 #: 2269 → 2357

REMARKS: Changed 2268 lock to 2357 lock

Traffic control should be required for this well as it is located in the center of the fast lane of West Ave

Meter Calibration: Date: 8/6/93 Time: 10:01 Meter Serial #: 9208 Temperature °F: ___

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

Location of previous calibration: A-12(29)

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/

EMCON ASSOCIATES

PROJECT NO: 0670-032.01 SAMPLE ID: A-12(9)

PURGED BY: Steve Horton CLIENT NAME: ARCO #4931

SAMPLED BY: Steve Horton 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.): 6.17

DEPTH TO WATER (feet): 12.95 CALCULATED PURGE (gal.): 18.53

DEPTH OF WELL (feet): 29.8 ACTUAL PURGE VOL. (gal.): 19.0

DATE PURGED: 8/6/93 Start (2400 Hr) 10:47 End (2400 Hr) 11:00

DATE SAMPLED: 8/6/93 Start (2400 Hr) 11:02 End (2400 Hr) 11:03

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
10:52	6.5	6.91	565	66.7	Brown	Heavy
10:58	13.0	6.89	554	65.7	Brown	Heavy
11:00	19.0	7.00	554	65.5	Brown	Heavy

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

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

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

SAMPLING EQUIPMENT

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

WELL INTEGRITY: Good LOCK #: 2269 → 2357

REMARKS: Changed 2269 lock to 2357 lock

Traffic control should be required for this well as it is located in the center of the fast lane of West Ave

Meter Calibration: Date: 8/6/93 Time: 10:01 Meter Serial #: 9208 Temperature °F: 73.3

(EC 1000 1056 / YCC) (DI ___) (pH 7 6.58 / 7.00) (pH 10 10.02 / 10.00) (pH 4 4.00 / ___)

Location of previous calibration: ___

WATER SAMPLE FIELD DATA SHEET

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EMCON ASSOCIATES

PROJECT NO: 0670-032.01 SAMPLE ID: A-13(29)

PURGED BY: K REICHELDERFER CLIENT NAME: ARCO 4931

SAMPLED BY: ↓ LOCATION: 731 W. MacARTHUR BLVD 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.):	5.76
DEPTH TO WATER (feet):	13.70	CALCULATED PURGE (gal.):	17.27
DEPTH OF WELL (feet):	29.4	ACTUAL PURGE VOL. (gal.):	17.50

DATE PURGED: 8-6-93 Start (2400 Hr) 1342 End (2400 Hr) 1354

DATE SAMPLED: 8-6-93 Start (2400 Hr) 1400 End (2400 Hr) 1402

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1346	6.00	6.34	652	69.3	CLOUDY	LIGHT
1350	12.00	6.42	656	68.4	↓	↓
1354	17.50	6.44	652	67.6	↓	↓

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			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: ___

Meter Calibration: Date: 8-6-93 Time: 1005 Meter Serial #: 9203 Temperature °F: ___

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

Location of previous calibration: A-2

Signature: Kevin Reichelderfer Reviewed By: JP Page 12 of 15

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: 0670-032.01 SAMPLE ID: AR-1

PURGED BY: K REICHELDERFER CLIENT NAME: ARCO 4931

SAMPLED BY: N/A LOCATION: 731 W. MACARTHUR BLVD OAKLAND, CA

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

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

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

DEPTH TO WATER (feet): 17.42 CALCULATED PURGE (gal.): N/A

DEPTH OF WELL (feet): 30.0 ACTUAL PURGE VOL. (gal.): N/A

DATE PURGED: 8-6-93 Start (2400 Hr) N/A End (2400 Hr) N/A

DATE SAMPLED: N/A Start (2400 Hr) N/A End (2400 Hr) N/A

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
NO SAMPLES TAKEN, NO SAMPLE PORT IN BOX						

D. O. (ppm): NR ODOR: N/A 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™ (N/A)	___ Dedicated	___ Well Wizard™ (N/A)	___ Dedicated
Other: ___		Other: ___	

WELL INTEGRITY: POOR LOCK #: NONE

REMARKS: - LID FIT IS TOO TIGHT - HARD TO OPEN
- SOUNDER COATED WITH PRODUCT AFTER TAKING WL
- NO SAMPLES TAKEN; NO SAMPLE PORT

Meter Calibration: Date: 8-6-93 Time: ___ Meter Serial #: 9203 Temperature °F: ___

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

Location of previous calibration: ___

Signature: [signature] Reviewed By: JB Page 13 of 15

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

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

PURGED BY: K REICHELDERFER CLIENT NAME: ARCO 4931

SAMPLED BY: NA LOCATION: 731 W. MACARTHUR BLVD OAKLAND, CA

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

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

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

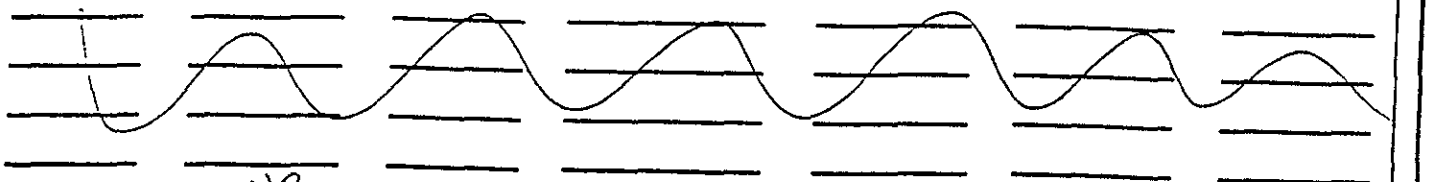
DEPTH TO WATER (feet): 17.16 CALCULATED PURGE (gal.): NA

DEPTH OF WELL (feet): 28.5 ACTUAL PURGE VOL. (gal.): NA

DATE PURGED: 8-6-93 Start (2400 Hr) NA End (2400 Hr) NA

DATE SAMPLED: NA Start (2400 Hr) NA End (2400 Hr) NA

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
NO	SAMPLES	TAKEN	- NO SAMPLE PORT	IN	BOX	



D. O. (ppm): NR ODOR: NA NR (COBALT 0 - 100) 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™ NA	___ Dedicated	___ Well Wizard™ NA	___ Dedicated
Other: ___		Other: ___	

WELL INTEGRITY: POOR LOCK #: NONE

REMARKS: - FOUR BOLTS MISSING
- NO SAMPLES TAKEN; NO SAMPLE PORT

Meter Calibration: Date: 8-6-93 Time: ___ Meter Serial #: 9203 Temperature °F: ___

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

Location of previous calibration: ___

Signature: Kevin Reichelderfer Reviewed By: JB Page 14 of 15

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: 0670-032.01 SAMPLE ID: AR-3

PURGED BY: K REICHELDERFER CLIENT NAME: ARCO 4931

SAMPLED BY: NA LOCATION: 731 W. MACARTHUR BLVD OAKLAND, CA

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

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

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

DEPTH TO WATER (feet): 16.12 CALCULATED PURGE (gal.): NA

DEPTH OF WELL (feet): 30.0 ACTUAL PURGE VOL. (gal.): NA

DATE PURGED: 8-6-93 Start (2400 Hr) NA End (2400 Hr) NA

DATE SAMPLED: NA Start (2400 Hr) NA End (2400 Hr) NA

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
NO	SAMPLES	TAKEN,	NO	SAMPLE	PORT	IN BOX

D. O. (ppm): NR ODOR: NA 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: NA		Other: NA	

WELL INTEGRITY: POOR LOCK #: NONE

REMARKS: - LID FIT IS TOO TIGHT, FOUR BOLTS MISSING
- NO SAMPLES TAKEN: NO SAMPLE PORT

Meter Calibration: Date: 8-6-93 Time: ___ Meter Serial #: 9203 Temperature °F: ___

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

Location of previous calibration: ___

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

APPENDIX B

GROUNDWATER REMEDIATION SYSTEM ANALYTICAL REPORTS

SEQUOIA ANALYTICAL

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

Gettler Ryan
2150 W. Winton Avenue
Hayward, CA 94545
Attention: Matt Donohue

Project: 4931-93-5, Arco 4931-Oakland

Enclosed are the results from 5 water samples received at Sequoia Analytical on July 15,1993. The requested analyses are listed below:

SAMPLE #	SAMPLE DESCRIPTION	DATE OF COLLECTION	TEST METHOD
3G75401	Water, A	7/15/93	Priority Pollutants EPA 5030/8010 EPA 5030/8015/8020
3G75402	Water, B	7/15/93	EPA 5030/8010 EPA 5030/8015/8020 Priority Pollutants
3G75403	Water, D	7/15/93	EPA 5030/8010 EPA 5030/8015/8020 Priority Pollutants
3G75404	Water, TB	7/15/93	EPA 5030/8015/8020

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

Nokowhat D. Herrera
Project Manager

SEQUOIA ANALYTICAL

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

Gettler Ryan	Client Project ID:	4931-93-5, Arco 4931-Oakland	Sampled:	Jul 15, 1993
2150 W. Winton Avenue	Sample Matrix:	Water	Received:	Jul 15, 1993
Hayward, CA 94545	Analysis Method	EPA 5030/8015/8020	Reported:	Jul 26, 1993
Attention: Matt Donohue	First Sample #:	3G75401		

TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

Analyte	Reporting Limit µg/L	Sample I.D. 3G75401 A	Sample I.D. 3G75402 B	Sample I.D. 3G75403 D	Sample I.D. 3G75404 TB	Sample I.D.	Sample I.D.
Purgeable Hydrocarbons	50	N.D.	N.D.	N.D.	N.D.		
Benzene	0.50	N.D.	N.D.	2.6	N.D.		
Toluene	0.50	N.D.	N.D.	N.D.	N.D.		
Ethyl Benzene	0.50	N.D.	N.D.	N.D.	N.D.		
Total Xylenes	0.50	N.D.	N.D.	2.7	N.D.		
Chromatogram Pattern:		--	--	Gas	--		

Quality Control Data

Report Limit Multiplication Factor:	1.0	1.0	1.0	1.0
Date Analyzed:	7/19/93	7/19/93	7/19/93	7/19/93
Instrument Identification:	GCHP-3	GCHP-3	GCHP-3	GCHP-3
Surrogate Recovery, %: (QC Limits = 70-130%)	96	89	93	85

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

SEQUOIA ANALYTICAL

Nokowhat D. Herrera
Project Manager

SEQUOIA ANALYTICAL

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

Gettler Ryan	Client Project ID:	4931-93-5, Arco 4931-Oakland	Sampled	Jul 15, 1993
2150 W. Winton Avenue	Sample Descript:	Water, A	Received:	Jul 15, 1993
Hayward, CA 94545	Analysis Method:	EPA 5030/8010	Analyzed	Jul 20, 1993
Attention: Matt Donohue	Lab Number:	3G75401	Reported:	Jul 26, 1993

HALOGENATED VOLATILE ORGANICS (EPA 8010)

Analyte	Detection Limit µg/L	Sample Results µg/L
Bromodichloromethane	0.50	N.D.
Bromoform	0.50	N.D.
Bromomethane	1.0	N.D.
Carbon tetrachloride	0.50	N.D.
Chlorobenzene	0.50	N.D.
Chloroethane	1.0	N.D.
2-Chloroethylvinyl ether	1.0	N.D.
Chloroform	0.50	N.D.
Chloromethane	1.0	N.D.
Dibromochloromethane	0.50	N.D.
1,3-Dichlorobenzene	0.50	N.D.
1,4-Dichlorobenzene	0.50	N.D.
1,2-Dichlorobenzene	0.50	N.D.
1,1-Dichloroethane	0.50	N.D.
1,2-Dichloroethane	0.50	N.D.
1,1-Dichloroethene	0.50	N.D.
cis-1,2-Dichloroethene	0.50	N.D.
trans-1,2-Dichloroethene	0.50	N.D.
1,2-Dichloropropane	0.50	N.D.
cis-1,3-Dichloropropene	0.50	N.D.
trans-1,3-Dichloropropene	0.50	N.D.
Methylene chloride	5.0	N.D.
1,1,2,2-Tetrachloroethane	0.50	N.D.
Tetrachloroethene	0.50	N.D.
1,1,1-Trichloroethane	0.50	N.D.
1,1,2-Trichloroethane	0.50	N.D.
Trichloroethene	0.50	N.D.
Trichlorofluoromethane	0.50	N.D.
Vinyl chloride	1.0	N.D.

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

SEQUOIA ANALYTICAL

Nokowhat D. Herrera
Project Manager

SEQUOIA ANALYTICAL

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

Gettler Ryan	Client Project ID:	4931-93-5, Arco 4931-Oakland	Sampled	Jul 15, 1993
2150 W Winton Avenue	Sample Descript:	Water, B	Received:	Jul 15, 1993
Hayward, CA 94545	Analysis Method:	EPA 5030/8010	Analyzed	Jul 20, 1993
Attention: Matt Donohue	Lab Number:	3G75402	Reported:	Jul 26, 1993

HALOGENATED VOLATILE ORGANICS (EPA 8010)

Analyte	Detection Limit µg/L	Sample Results µg/L
Bromodichloromethane	0.50	N.D.
Bromoform	0.50	N.D.
Bromomethane	1.0	N.D.
Carbon tetrachloride	0.50	N.D.
Chlorobenzene	0.50	N.D.
Chloroethane	1.0	N.D.
2-Chloroethylvinyl ether	1.0	N.D.
Chloroform	0.50	N.D.
Chloromethane	1.0	N.D.
Dibromochloromethane	0.50	N.D.
1,3-Dichlorobenzene	0.50	N.D.
1,4-Dichlorobenzene	0.50	N.D.
1,2-Dichlorobenzene	0.50	N.D.
1,1-Dichloroethane	0.50	N.D.
1,2-Dichloroethane	0.50	N.D.
1,1-Dichloroethene	0.50	N.D.
cis-1,2-Dichloroethene	0.50	N.D.
trans-1,2-Dichloroethene	0.50	N.D.
1,2-Dichloropropane	0.50	N.D.
cis-1,3-Dichloropropene	0.50	N.D.
trans-1,3-Dichloropropene	0.50	N.D.
Methylene chloride	5.0	N.D.
1,1,2,2-Tetrachloroethane	0.50	N.D.
Tetrachloroethene	0.50	N.D.
1,1,1-Trichloroethane	0.50	N.D.
1,1,2-Trichloroethane	0.50	N.D.
Trichloroethene	0.50	N.D.
Trichlorofluoromethane	0.50	N.D.
Vinyl chloride	1.0	N.D.

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

SEQUOIA ANALYTICAL

Nokowhat D. Herrera
Project Manager

SEQUOIA ANALYTICAL

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

Gettler Ryan	Client Project ID.	4931-93-5, Arco 4931-Oakland	Sampled:	Jul 15, 1993
2150 W. Winton Avenue	Sample Descript:	Water, D	Received	Jul 15, 1993
Hayward, CA 94545	Analysis Method	EPA 5030/8010	Analyzed:	Jul 20, 1993
Attention: Matt Donohue	Lab Number.	3G75403	Reported:	Jul 26, 1993

HALOGENATED VOLATILE ORGANICS (EPA 8010)

Analyte	Detection Limit µg/L	Sample Results µg/L
Bromodichloromethane	0.50	N.D.
Bromoform	0.50	N.D.
Bromomethane	1.0	N.D.
Carbon tetrachloride	0.50	1.9
Chlorobenzene	0.50	N.D.
Chloroethane	1.0	N.D.
2-Chloroethylvinyl ether	1.0	N.D.
Chloroform	0.50	1.5
Chloromethane	1.0	N.D.
Dibromochloromethane	0.50	N.D.
1,3-Dichlorobenzene	0.50	N.D.
1,4-Dichlorobenzene	0.50	N.D.
1,2-Dichlorobenzene	0.50	N.D.
1,1-Dichloroethane	0.50	N.D.
1,2-Dichloroethane	0.50	N.D.
1,1-Dichloroethene	0.50	N.D.
cis-1,2-Dichloroethene	0.50	4.1
trans-1,2-Dichloroethene	0.50	N.D.
1,2-Dichloropropane	0.50	N.D.
cis-1,3-Dichloropropene	0.50	N.D.
trans-1,3-Dichloropropene	0.50	N.D.
Methylene chloride	5.0	N.D.
1,1,2,2-Tetrachloroethane	0.50	N.D.
Tetrachloroethene	0.50	32
1,1,1-Trichloroethane	0.50	N.D.
1,1,2-Trichloroethane	0.50	N.D.
Trichloroethene	0.50	1.2
Trichlorofluoromethane	0.50	N.D.
Vinyl chloride	1.0	N.D.

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

SEQUOIA ANALYTICAL

Nokowhat D. Herrera
Project Manager

SEQUOIA ANALYTICAL

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

Gettler Ryan	Client Project ID:	4931-93-5, Arco 4931-Oakland	Sampled:	Jul 15, 1993
2150 W. Winton Avenue	Sample Descript:	Water, A	Received:	Jul 15, 1993
Hayward, CA 94545			Analyzed:	Jul 20, 1993
Attention: Matt Donohue	Lab Number:	3G75401	Reported:	Jul 26, 1993

E.P.A. PRIORITY POLLUTANTS: METALS

Analyte	Detection Limit µg/L (ppb)	Sample Results µg/L (ppb)
Antimony	5.0	N.D.
Arsenic	5.0	N.D.
Beryllium	10	N.D.
Cadmium	10	N.D.
Chromium	10	N.D.
Copper	10	N.D.
Lead	5.0	N.D.
Mercury	0.20	N.D.
Nickel	50	N.D.
Selenium	5.0	N.D.
Silver	10	N.D.
Thallium	5.0	N.D.
Zinc	10	N.D.

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

SEQUOIA ANALYTICAL

Nokowhat D. Herrera
Project Manager

SEQUOIA ANALYTICAL

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

Gettler Ryan	Client Project ID	4931-93-5, Arco 4931-Oakland	Sampled	Jul 15, 1993
2150 W. Winton Avenue	Sample Descript	Water, B	Received	Jul 15, 1993
Hayward, CA 94545			Analyzed	Jul 20, 1993
Attention: Matt Donohue	Lab Number	7G75402	Reported	Jul 26, 1993

E.P.A. PRIORITY POLLUTANTS: METALS

Analyte	Detection Limit µg/L (ppb)	Sample Results µg/L (ppb)
Antimony	5.0	N.D.
Arsenic	5.0	N.D.
Beryllium	10	N.D.
Cadmium	10	N.D.
Chromium	10	N.D.
Copper	10	N.D.
Lead	5.0	N.D.
Mercury	0.20	N.D.
Nickel	50	N.D.
Selenium	5.0	N.D.
Silver	10	N.D.
Thallium	5.0	N.D.
Zinc	10	N.D.

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

SEQUOIA ANALYTICAL

Nokowhat D. Herrera
Project Manager

SEQUOIA ANALYTICAL

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

Gettler Ryan	Client Project ID.	4931-93-5, Arco 4931-Oakland	Sampled.	Jul 15, 1993
2150 W Winton Avenue	Sample Descript:	Water, D	Received	Jul 15, 1993
Hayward, CA 94545			Analyzed	Jul 20, 1993
Attention: Matt Donohue	Lab Number:	3G75403	Reported:	Jul 26, 1993

E.P.A. PRIORITY POLLUTANTS: METALS

Analyte	Detection Limit µg/L (ppb)	Sample Results µg/L (ppb)
Antimony	5.0	N.D.
Arsenic	5.0	N.D.
Beryllium	10	N.D.
Cadmium	10	N.D.
Chromium	10	N.D.
Copper	10	N.D.
Lead	5.0	N.D.
Mercury	0.20	N.D.
Nickel	50	N.D.
Selenium	5.0	N.D.
Silver	10	N.D.
Thallium	5.0	N.D.
Zinc	10	44

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

SEQUOIA ANALYTICAL

Nokowhat D. Herrera
Project Manager

SEQUOIA ANALYTICAL

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

Gettler Ryan
2150 W. Winton Avenue
Hayward, CA 94545
Attention: Matt Donohue

Client Project ID: 4931-93-5, Arco 4931-Oakland
Matrix: Water

QC Sample Group: 3G75401 - 04

Reported: Jul 26, 1993

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
Conc. Spiked:	10	10	10	30
Units:	µg/L	µg/L	µg/L	µg/L
LCS Batch#:	GBLK071993	GBLK071993	GBLK071993	GBLK071993
Date Prepared:	7/19/93	7/19/93	7/19/93	7/19/93
Date Analyzed:	7/19/93	7/19/93	7/19/93	7/19/93
Instrument I.D.#:	GCHP-3	GCHP-3	GCHP-3	GCHP-3
LCS % Recovery:	92	91	91	90
Control Limits:	80-120	80-120	80-120	80-120
MS/MSD Batch #:	G3G74501	G3G74501	G3G74501	G3G74501
Date Prepared:	7/19/93	7/19/93	7/19/93	7/19/93
Date Analyzed:	7/19/93	7/19/93	7/19/93	7/19/93
Instrument I.D.#:	GCHP-3	GCHP-3	GCHP-3	GCHP-3
Matrix Spike % Recovery:	110	110	110	103
Matrix Spike Duplicate % Recovery:	110	110	110	110
Relative % Difference:	0.0	0.0	0.0	6.6

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

SEQUOIA ANALYTICAL

Nokowhat D. Herrera
Project Manager

Please Note.
The LCS is a control sample of known, interferent free matrix that is analyzed using the same reagents, preparation and analytical methods employed for the samples. The LCS % recovery data is used for validation of sample batch results. Due to matrix effects, the QC limits for MS/MSD's are advisory only and are not used to accept or reject batch results.

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
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Gettler Ryan
2150 W. Winton Avenue
Hayward, CA 94545
Attention: Matt Donohue

Client Project ID: 4931-93-5, Arco 4931-Oakland
Matrix: Water

QC Sample Group: 3G75401 - 03

Reported: Jul 26, 1993

QUALITY CONTROL DATA REPORT

ANALYTE	1,1-Dichloroethene	Trichloroethene	Chloro-benzene
Method:	EPA 8010	EPA 8010	EPA 8010
Analyst:	L. Duong	L. Duong	L. Duong
Conc. Spiked:	25	25	25
Units:	µg/L	µg/L	µg/L
LCS Batch#:	VBLK072093	VBLK072093	VBLK072093
Date Prepared:	7/20/93	7/20/93	7/20/93
Date Analyzed:	7/20/93	7/20/93	7/20/93
Instrument I.D.#:	GCHP-9	GCHP-9	GCHP-9
LCS % Recovery:	112	116	104
Control Limits:	61-145	71-120	76-127
MS/MSD Batch #:	V3G86601	V3G86601	V3G86601
Date Prepared:	7/20/93	7/20/93	7/20/93
Date Analyzed:	7/20/93	7/20/93	7/20/93
Instrument I.D.#:	GCHP-9	GCHP-9	GCHP-9
Matrix Spike % Recovery:	160	160	130
Matrix Spike Duplicate % Recovery:	140	112	104
Relative % Difference:	42	38	22

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

SEQUOIA ANALYTICAL

Nokowhat D. Herrera
Project Manager

Please Note:
The LCS is a control sample of known, interferent free matrix that is analyzed using the same reagents, preparation and analytical methods employed for the samples. The LCS % recovery data is used for validation of sample batch results. Due to matrix effects, the QC limits for MS/MSD's are advisory only and are not used to accept or reject batch results.

SEQUOIA ANALYTICAL

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

Gettler Ryan
2150 W. Winton Avenue
Hayward, CA 94545
Attention: Matt Donohue

Client Project ID: 4931-93-5, Arco 4931-Oakland
Matrix: Water

QC Sample Group: 3G75401 - 03

Reported: Jul 26, 1993

QUALITY CONTROL DATA REPORT

ANALYTE	Beryllium	Cadmium	Chromium	Nickel
Method:	EPA 200.7	EPA 200.7	EPA 200.7	EPA 200.7
Analyst:	C. Medefesser	C. Medefesser	C. Medefesser	C. Medefesser
Conc. Spiked:	1000	1000	1000	1000
Units:	µg/L	µg/L	µg/L	µg/L
LCS Batch#:	BLK072093	BLK072093	BLK072093	BLK072093
Date Prepared:	7/20/93	7/20/93	7/20/93	7/20/93
Date Analyzed:	7/20/93	7/20/93	7/20/93	7/20/93
Instrument I.D.#:	MTJA-2	MTJA-2	MTJA-2	MTJA-2
LCS % Recovery:	103	103	101	103
Control Limits:	75-125	75-125	75-125	75-125
MS/MSD Batch #:	3G78401	3G78401	3G78401	3G78401
Date Prepared:	7/20/93	7/20/93	7/20/93	7/20/93
Date Analyzed:	7/20/93	7/20/93	7/20/93	7/20/93
Instrument I.D.#:	MTJA-2	MTJA-2	MTJA-2	MTJA-2
Matrix Spike % Recovery:	103	101	99	100
Matrix Spike Duplicate % Recovery:	103	101	99	100
Relative % Difference:	0.0	0.0	0.0	0.0

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

SEQUOIA ANALYTICAL

Nokowhat D. Herrera
Project Manager

Please Note:
The LCS is a control sample of known, interferent free matrix that is analyzed using the same reagents, preparation and analytical methods employed for the samples. The LCS % recovery data is used for validation of sample batch results. Due to matrix effects, the QC limits for MS/MSD's are advisory only and are not used to accept or reject batch results

SEQUOIA ANALYTICAL

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Gettler Ryan
2150 W. Winton Avenue
Hayward, CA 94545
Attention: Matt Donohue

Client Project ID: 4931-93-5, Arco 4931-Oakland
Matrix: Water

QC Sample Group: 3G75401 - 03

Reported: Jul 26, 1993

QUALITY CONTROL DATA REPORT

ANALYTE	Arsenic	Selenium	Antimony	Thallium	Mercury	Lead
Method:	EPA 206.2	EPA 270.2	EPA 204.2	EPA 279.2	EPA 245.1	EPA 239.2
Analyst:	S.Chin	S.Chin	F.Contreras	F.Contreras	A.McDonald	J. Martinez
Conc. Spiked:	50	50	50	50	2.0	50
Units:	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LCS Batch#:	BLK072093	BLK072093	BLK072093	BLK072093	BLK072193	BLK072093
Date Prepared:	7/20/93	7/20/93	7/20/93	7/20/93	7/21/93	7/20/93
Date Analyzed:	7/21/93	7/21/93	7/21/93	7/21/93	7/21/93	7/21/93
Instrument I.D.#:	MTJA-3	MTJA-3	MTJA-3	MTJA-3	MPE-2	MV-1
LCS % Recovery:	104	113	105	102	100	101
Control Limits:	75-125	75-125	75-125	75-125	90-110	75-125
MS/MSD Batch #:	3G82201	3G82201	3G82201	3G82201	3G75403	3G82201
Date Prepared:	7/20/93	7/20/93	7/20/93	7/20/93	7/21/93	7/20/93
Date Analyzed:	7/21/93	7/21/93	7/21/93	7/21/93	7/21/93	7/20/93
Instrument I.D.#:	MTJA-3	MTJA-3	MTJA-1	MTJA-1	MPE-2	MV-1
Matrix Spike % Recovery:	98	29	87	52	93	85
Matrix Spike Duplicate % Recovery:	110	29	88	52	92	88
Relative % Difference:	12	0.0	1.1	0.0	1.1	3.5

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

SEQUOIA ANALYTICAL

Nokowhat D. Herrera
Project Manager

Please Note

The LCS is a control sample of known, interferent free matrix that is analyzed using the same reagents, preparation and analytical methods employed for the samples. The LCS % recovery data is used for validation of sample batch results. Due to matrix effects, the QC limits for MS/MSD's are advisory only and are not used to accept or reject batch results.

ARCO Products Company

Division of AtlanticRichfieldCompany

Task Order No. 4931 - 93 - 5

Chain of Custody

ARCO Facility no. 4931	City (Facility) Oakland	Project manager (Consultant) Joel Coffman	Laboratory name
ARCO engineer Mike Whelan	Telephone no. (ARCO)	Telephone no. (Consultant) 510-783-7560	Fax no. (Consultant) 783-6181	Contract number
Consultant name Cochran Ryan Inc.	Address (Consultant) 2150 W. Winton Ave Hayward			Method of shipment

Sample I.D.	Lab no.	Container no.	Matrix: Soil	Matrix: Water	Matrix: Other	Preservation: Ice	Preservation: Acid	Sampling date	Sampling time	8TEX 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 ☐	Pb Tetra/Penta	
1		3		X		X	X	7-15-93	12:55		X				X						X	
2		3		X		X	X		12:58		X				X						X	
3		3		X		X	X		13:02		X				X						X	
4		1		X		X		—	—		X							1				
												8015			8010							
																		4/16				
																		Fuel Tank				

Special detection Limit/reporting

Special QA/QC

Remarks

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	
Relinquished by sampler	7-15-93	16:45	Received by
Relinquished by			Received by
Relinquished by			Received by laboratory

Date: 7-15-93 Time: 1845

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

SEQUOIA ANALYTICAL

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(415) 364-9600 • FAX (415) 364-9233

Gettler Ryan/Geostrategies
2150 W. Winton Avenue
Hayward, CA 94545
Attention: Matt Donohue

Project: 4931-93-5, Arco 4931-Oakland

Enclosed are the results from 4 water samples received at Sequoia Analytical on August 25,1993. The requested analyses are listed below:

SAMPLE #	SAMPLE DESCRIPTION	DATE OF COLLECTION	TEST METHOD
3HD6401	Water, A	8/23/93	Priority Pollutant Metals EPA 5030/8010 EPA 5030/8015/8020
3HD6402	Water, B	8/23/93	Priority Pollutant Metals EPA 5030/8010 EPA 5030/8015/8020
3HD6403	Water, D	8/23/93	Priority Pollutant Metals EPA 5030/8010 EPA 5030/8015/8020
3HD6404	Water, TB	8/23/93	EPA 5030/8010 EPA 5030/8015/8020

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

Nokowhat D. Herrera
Project Manager

SEQUOIA ANALYTICAL

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(415) 364-9600 • FAX (415) 364-9233

Gettler Ryan/Geostrategies	Client Project ID:	4931-93-5, Arco 4931-Oakland	Sampled:	Aug 23, 1993
2150 W. Winton Avenue	Sample Matrix:	Water	Received:	Aug 25, 1993
Hayward, CA 94545	Analysis Method:	EPA 5030/8015/8020	Amended:	Sep 17, 1993
Attention: Matt Donohue	First Sample #:	3HD6401		

TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

Analyte	Reporting Limit µg/L	Sample I.D. 3HD6401 A	Sample I.D. 3HD6402 B	Sample I.D. 3HD6403 D	Sample I.D. 3HD6404 TB	Sample I.D.	Sample I.D.
Purgeable Hydrocarbons	50	N.D.	N.D.	N.D.	N.D.		
Benzene	0.50	N.D.	N.D.	N.D.	N.D.		
Toluene	0.50	N.D.	N.D.	N.D.	N.D.		
Ethyl Benzene	0.50	N.D.	N.D.	N.D.	N.D.		
Total Xylenes	0.50	N.D.	N.D.	N.D.	N.D.		
Chromatogram Pattern:		--	--	--	--		

Quality Control Data

Report Limit Multiplication Factor:	1.0	1.0	1.0	1.0
Date Analyzed:	8/31/93	8/31/93	8/31/93	8/31/93
Instrument Identification:	GCHP-2	GCHP-2	GCHP-2	GCHP-2
Surrogate Recovery, %: (QC Limits = 70-130%)	98	90	97	94

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

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Nokowhat D. Herrera
Project Manager

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Gettler Ryan/Geostrategies	Client Project ID:	4931-93-5, Arco 4931-Oakland	Sampled:	Aug 23, 1993
2150 W. Winton Avenue	Sample Descript:	Water, A	Received:	Aug 25, 1993
Hayward, CA 94545	Analysis Method:	EPA 5030/8010	Analyzed:	Aug 30, 1993
Attention: Matt Donohue	Lab Number:	3HD6401	Amended:	Sep 17, 1993

HALOGENATED VOLATILE ORGANICS (EPA 8010)

Analyte	Detection Limit µg/L	Sample Results µg/L
Bromodichloromethane	0.50	N.D.
Bromoform	0.50	N.D.
Bromomethane	1.0	N.D.
Carbon tetrachloride	0.50	N.D.
Chlorobenzene	0.50	N.D.
Chloroethane	1.0	N.D.
2-Chloroethylvinyl ether	1.0	N.D.
Chloroform	0.50	N.D.
Chloromethane	1.0	N.D.
Dibromochloromethane	0.50	N.D.
1,3-Dichlorobenzene	0.50	N.D.
1,4-Dichlorobenzene	0.50	N.D.
1,2-Dichlorobenzene	0.50	N.D.
1,1-Dichloroethane	0.50	N.D.
1,2-Dichloroethane	0.50	N.D.
1,1-Dichloroethene	0.50	N.D.
cis-1,2-Dichloroethene	0.50	N.D.
trans-1,2-Dichloroethene	0.50	N.D.
1,2-Dichloropropane	0.50	N.D.
cis-1,3-Dichloropropene	0.50	N.D.
trans-1,3-Dichloropropene	0.50	N.D.
Methylene chloride	5.0	N.D.
1,1,2,2-Tetrachloroethane	0.50	N.D.
Tetrachloroethene	0.50	N.D.
1,1,1-Trichloroethane	0.50	N.D.
1,1,2-Trichloroethane	0.50	N.D.
Trichloroethene	0.50	N.D.
Trichlorofluoromethane	0.50	N.D.
Vinyl chloride	1.0	N.D.

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

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Nokowhat D. Herrera
Project Manager

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(415) 364-9600 • FAX (415) 364-9233

Gettler Ryan/Geostrategies	Client Project ID:	4931-93-5, Arco 4931-Oakland	Sampled:	Aug 23, 1993
2150 W. Winton Avenue	Sample Descript:	Water, B	Received:	Aug 25, 1993
Hayward, CA 94545	Analysis Method:	EPA 5030/8010	Analyzed:	Aug 30, 1993
Attention: Matt Donohue	Lab Number:	3HD6402	Amended:	Sep 17, 1993

HALOGENATED VOLATILE ORGANICS (EPA 8010)

Analyte	Detection Limit µg/L	Sample Results µg/L
Bromodichloromethane	0.50	N.D.
Bromoform	0.50	N.D.
Bromomethane	1.0	N.D.
Carbon tetrachloride	0.50	N.D.
Chlorobenzene	0.50	N.D.
Chloroethane	1.0	N.D.
2-Chloroethylvinyl ether	1.0	N.D.
Chloroform	0.50	N.D.
Chloromethane	1.0	N.D.
Dibromochloromethane	0.50	N.D.
1,3-Dichlorobenzene	0.50	N.D.
1,4-Dichlorobenzene	0.50	N.D.
1,2-Dichlorobenzene	0.50	N.D.
1,1-Dichloroethane	0.50	N.D.
1,2-Dichloroethane	0.50	N.D.
1,1-Dichloroethene	0.50	N.D.
cis-1,2-Dichloroethene	0.50	N.D.
trans-1,2-Dichloroethene	0.50	N.D.
1,2-Dichloropropane	0.50	N.D.
cis-1,3-Dichloropropene	0.50	N.D.
trans-1,3-Dichloropropene	0.50	N.D.
Methylene chloride	5.0	N.D.
1,1,2,2-Tetrachloroethane	0.50	N.D.
Tetrachloroethene	0.50	N.D.
1,1,1-Trichloroethane	0.50	N.D.
1,1,2-Trichloroethane	0.50	N.D.
Trichloroethene	0.50	N.D.
Trichlorofluoromethane	0.50	N.D.
Vinyl chloride	1.0	N.D.

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

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Nokowhat D. Herrera
Project Manager

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Gettler Ryan/Geostrategies	Client Project ID:	4931-93-5, Arco 4931-Oakland	Sampled:	Aug 23, 1993
2150 W. Winton Avenue	Sample Descript:	Water, D	Received:	Aug 25, 1993
Hayward, CA 94545	Analysis Method:	EPA 5030/8010	Analyzed:	Aug 31, 1993
Attention: Matt Donohue	Lab Number:	3HD6403	Amended:	Sep 17, 1993

HALOGENATED VOLATILE ORGANICS (EPA 8010)

Analyte	Detection Limit µg/L	Sample Results µg/L
Bromodichloromethane	0.50	N.D.
Bromoform	0.50	N.D.
Bromomethane	1.0	N.D.
Carbon tetrachloride	**0.50**	**1.4**
Chlorobenzene	0.50	N.D.
Chloroethane	1.0	N.D.
2-Chloroethylvinyl ether	1.0	N.D.
Chloroform	**0.50**	**1.3**
Chloromethane	1.0	N.D.
Dibromochloromethane	0.50	N.D.
1,3-Dichlorobenzene	0.50	N.D.
1,4-Dichlorobenzene	0.50	N.D.
1,2-Dichlorobenzene	0.50	N.D.
1,1-Dichloroethane	0.50	N.D.
1,2-Dichloroethane	0.50	N.D.
1,1-Dichloroethene	0.50	N.D.
cis-1,2-Dichloroethene	**0.50**	**2.6**
trans-1,2-Dichloroethene	0.50	N.D.
1,2-Dichloropropane	0.50	N.D.
cis-1,3-Dichloropropene	0.50	N.D.
trans-1,3-Dichloropropene	0.50	N.D.
Methylene chloride	5.0	N.D.
1,1,2,2-Tetrachloroethane	0.50	N.D.
Tetrachloroethene	**0.50**	**20**
1,1,1-Trichloroethane	0.50	N.D.
1,1,2-Trichloroethane	0.50	N.D.
Trichloroethene	0.50	N.D.
Trichlorofluoromethane	0.50	N.D.
Vinyl chloride	1.0	N.D.

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

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Nokowhat D. Herrera
Project Manager

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Gettler Ryan/Geostrategies	Client Project ID:	4931-93-5, Arco 4931-Oakland	Sampled:	Aug 23, 1993
2150 W. Winton Avenue	Sample Descript:	Water, TB	Received:	Aug 25, 1993
Hayward, CA 94545	Analysis Method:	EPA 5030/8010	Analyzed:	Aug 31, 1993
Attention: Matt Donohue	Lab Number:	3HD6404	Amended:	Sep 17, 1993

HALOGENATED VOLATILE ORGANICS (EPA 8010)

Analyte	Detection Limit µg/L	Sample Results µg/L
Bromodichloromethane	0.50	N.D.
Bromoform	0.50	N.D.
Bromomethane	1.0	N.D.
Carbon tetrachloride	0.50	N.D.
Chlorobenzene	0.50	N.D.
Chloroethane	1.0	N.D.
2-Chloroethylvinyl ether	1.0	N.D.
Chloroform	0.50	N.D.
Chloromethane	1.0	N.D.
Dibromochloromethane	0.50	N.D.
1,3-Dichlorobenzene	0.50	N.D.
1,4-Dichlorobenzene	0.50	N.D.
1,2-Dichlorobenzene	0.50	N.D.
1,1-Dichloroethane	0.50	N.D.
1,2-Dichloroethane	0.50	N.D.
1,1-Dichloroethene	0.50	N.D.
cis-1,2-Dichloroethene	0.50	N.D.
trans-1,2-Dichloroethene	0.50	N.D.
1,2-Dichloropropane	0.50	N.D.
cis-1,3-Dichloropropene	0.50	N.D.
trans-1,3-Dichloropropene	0.50	N.D.
Methylene chloride	5.0	N.D.
1,1,2,2-Tetrachloroethane	0.50	N.D.
Tetrachloroethene	0.50	N.D.
1,1,1-Trichloroethane	0.50	N.D.
1,1,2-Trichloroethane	0.50	N.D.
Trichloroethene	0.50	N.D.
Trichlorofluoromethane	0.50	N.D.
Vinyl chloride	1.0	N.D.

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

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Project Manager

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Gettler Ryan/Geostrategies	Client Project ID:	4931-93-5, Arco 4931-Oakland	Sampled:	Aug 23, 1993
2150 W. Winton Avenue	Sample Descript:	Water, A	Received:	Aug 25, 1993
Hayward, CA 94545			Analyzed:	Aug 31, 1993
Attention: Matt Donohue	Lab Number:	3HD6401	Amended:	Sep 17, 1993

E.P.A. PRIORITY POLLUTANTS: METALS

Analyte	Detection Limit µg/L (ppb)	Sample Results µg/L (ppb)
Antimony	5.0	N.D.
Arsenic	5.0	N.D.
Beryllium	10	N.D.
Cadmium	10	N.D.
Chromium	10	N.D.
Copper	10	N.D.
Lead	5.0	N.D.
Mercury	0.20	N.D.
Nickel	50	N.D.
Selenium	5.0	N.D.
Silver	10	N.D.
Thallium	5.0	N.D.
Zinc	10	N.D.

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

SEQUOIA ANALYTICAL

Nokowhat D. Herrera
Project Manager

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Gettler Ryan/Geostrategies	Client Project ID:	4931-93-5, Arco 4931-Oakland	Sampled:	Aug 23, 1993
2150 W. Winton Avenue	Sample Descript:	Water, B	Received:	Aug 25, 1993
Hayward, CA 94545			Analyzed:	Aug 31, 1993
Attention: Matt Donohue	Lab Number:	3HD6402	Amended:	Sep 17, 1993

E.P.A. PRIORITY POLLUTANTS: METALS

Analyte	Detection Limit µg/L (ppb)	Sample Results µg/L (ppb)
Antimony	5.0	N.D.
Arsenic	5.0	N.D.
Beryllium	10	N.D.
Cadmium	10	N.D.
Chromium	10	N.D.
Copper	10	N.D.
Lead	5.0	N.D.
Mercury	0.20	N.D.
Nickel	50	N.D.
Selenium	5.0	N.D.
Silver	10	N.D.
Thallium	5.0	N.D.
Zinc	10	N.D.

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

SEQUOIA ANALYTICAL

Nokowhat D. Herrera
Project Manager

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Gettler Ryan/Geostrategies	Client Project ID:	4931-93-5, Arco 4931-Oakland	Sampled:	Aug 23, 1993
2150 W. Winton Avenue	Sample Descript:	Water, D	Received:	Aug 25, 1993
Hayward, CA 94545			Analyzed:	Aug 31, 1993
Attention: Matt Donohue	Lab Number:	3HD6403	Amended:	Sep 17, 1993

E.P.A. PRIORITY POLLUTANTS: METALS

Analyte	Detection Limit µg/L (ppb)	Sample Results µg/L (ppb)
Antimony	5.0	N.D.
Arsenic	5.0	N.D.
Beryllium	10	N.D.
Cadmium	10	N.D.
Chromium	10	N.D.
Copper	10	N.D.
Lead	5.0	N.D.
Mercury	0.20	N.D.
Nickel	50	N.D.
Selenium	5.0	N.D.
Silver	10	N.D.
Thallium	5.0	N.D.
Zinc	10	N.D.

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

SEQUOIA ANALYTICAL

Nokowhat D. Herrera
Project Manager

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Gettler Ryan/Geostrategies
2150 W. Winton Avenue
Hayward, CA 94545
Attention: Matt Donohue

Client Project ID: 4931-93-5, Arco 4931-Oakland
Matrix: Water

QC Sample Group: 3HD6401 - 04

Amended: Sep 17, 1993

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
Conc. Spiked:	10	10	10	30
Units:	µg/L	µg/L	µg/L	µg/L
LCS Batch#:	GBLK083193	GBLK083193	GBLK083193	GBLK083193
Date Prepared:	8/31/93	8/31/93	8/31/93	8/31/93
Date Analyzed:	8/31/93	8/31/93	8/31/93	8/31/93
Instrument I.D.#:	GCHP-2	GCHP-2	GCHP-2	GCHP-2
LCS % Recovery:	98	99	98	100
Control Limits:	80-120	80-120	80-120	80-120
MS/MSD Batch #:	G3HD6502	G3HD6502	G3HD6502	G3HD6502
Date Prepared:	8/31/93	8/31/93	8/31/93	8/31/93
Date Analyzed:	8/31/93	8/31/93	8/31/93	8/31/93
Instrument I.D.#:	GCHP-2	GCHP-2	GCHP-2	GCHP-2
Matrix Spike % Recovery:	99	100	100	100
Matrix Spike Duplicate % Recovery:	98	98	97	97
Relative % Difference:	1.0	2.0	3.0	3.0

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

SEQUOIA ANALYTICAL

Nokowhat D. Herrera
Project Manager

Please Note:
The LCS is a control sample of known, interferent free matrix that is analyzed using the same reagents, preparation and analytical methods employed for the samples. The LCS % recovery data is used for validation of sample batch results. Due to matrix effects, the QC limits for MS/MSD's are advisory only and are not used to accept or reject batch results.

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Gettler Ryan/Geostrategies
2150 W. Winton Avenue
Hayward, CA 94545
Attention: Matt Donohue

Client Project ID: 4931-93-5, Arco 4931-Oakland
Matrix: Water

QC Sample Group: 3HD6401 - 02, 04

Amended: Sep 17, 1993

QUALITY CONTROL DATA REPORT

ANALYTE	1,1-Dichloroethene	Trichloroethene	Chloro-benzene
Method:	EPA 8010	EPA 8010	EPA 8010
Analyst:	L.Duong	L.Duong	L.Duong
Conc. Spiked:	25	25	25
Units:	µg/L	µg/L	µg/L
LCS Batch#:	VBLK083093	VBLK083093	VBLK083093
Date Prepared:	8/30/93	8/30/93	8/30/93
Date Analyzed:	8/30/93	8/30/93	8/30/93
Instrument I.D.#:	GCHP-9	GCHP-9	GCHP-9
LCS % Recovery:	92	88	88
Control Limits:	61-145	71-120	76-127
MS/MSD Batch #:	V3HD3201	V3HD3201	V3HD3201
Date Prepared:	8/30/93	8/30/93	8/30/93
Date Analyzed:	8/30/93	8/30/93	8/30/93
Instrument I.D.#:	GCHP-9	GCHP-9	GCHP-9
Matrix Spike % Recovery:	92	96	100
Matrix Spike Duplicate % Recovery:	100	96	96
Relative % Difference:	8.3	0.0	4.1

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

SEQUOIA ANALYTICAL

Nokowhat D. Herrera
Project Manager

Please Note:
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SEQUOIA ANALYTICAL

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Gettler Ryan/Geostrategies
2150 W. Winton Avenue
Hayward, CA 94545
Attention: Matt Donohue

Client Project ID: 4931-93-5, Arco 4931-Oakland
Matrix: Water

QC Sample Group: 3HD6403

Amended: Sep 17, 1993

QUALITY CONTROL DATA REPORT

ANALYTE	1,1-Dichloroethene	Trichloroethene	Chloro-benzene
Method:	EPA 8010	EPA 8010	EPA 8010
Analyst:	B. Pitamah	B. Pitamah	B. Pitamah
Conc. Spiked:	25	25	25
Units:	µg/L	µg/L	µg/L
LCS Batch#:	VBLK083193	VBLK083193	VBLK083193
Date Prepared:	8/31/93	8/31/93	8/31/93
Date Analyzed:	8/31/93	8/31/93	8/31/93
Instrument I.D.#:	GCHP-8	GCHP-8	GCHP-8
LCS % Recovery:	84	96	96
Control Limits:	61-145	71-120	76-127
MS/MSD Batch #:	V3HC3101	V3HC3101	V3HC3101
Date Prepared:	8/31/93	8/31/93	8/31/93
Date Analyzed:	8/31/93	8/31/93	8/31/93
Instrument I.D.#:	GCHP-8	GCHP-8	GCHP-8
Matrix Spike % Recovery:	96	96	96
Matrix Spike Duplicate % Recovery:	96	92	92
Relative % Difference:	0.0	4.3	4.3

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

SEQUOIA ANALYTICAL

Nokowhat D. Herrera
Project Manager

Please Note:
The LCS is a control sample of known, interferent free matrix that is analyzed using the same reagents, preparation and analytical methods employed for the samples. The LCS % recovery data is used for validation of sample batch results. Due to matrix effects, the QC limits for MS/MSD's are advisory only and are not used to accept or reject batch results.

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Gettler Ryan/Geostrategies
2150 W. Winton Avenue
Hayward, CA 94545
Attention: Matt Donohue

Client Project ID: 4931-93-5, Arco 4931-Oakland
Matrix: Water

QC Sample Group: 3HD6401 - 03

Amended: Sep 17, 1993

QUALITY CONTROL DATA REPORT

ANALYTE	Beryllium	Cadmium	Chromium	Nickel	Lead	Mercury
Method:	EPA 200.7	EPA 200.7	EPA 200.7	EPA 200.7	EPA 239.2	EPA 245.1
Analyst:	C.Medefesser	C.Medefesser	C.Medefesser	C.Medefesser	S.Chin	J.Martinez
Conc. Spiked:	1000	1000	1000	1000	50	2.0
Units:	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LCS Batch#:	BLK083093	BLK083093	BLK083093	BLK083093	BLK083093	ICV083193
Date Prepared:	8/30/93	8/30/93	8/30/93	8/30/93	8/30/93	8/31/93
Date Analyzed:	8/31/93	8/31/93	8/31/93	8/31/93	8/31/93	8/31/93
Instrument I.D.#:	MTJA-2	MTJA-2	MTJA-2	MTJA-2	MV-1	MPE-2
LCS % Recovery:	101	100	100	102	96	96
Control Limits:	75-125	75-125	75-125	75-125	75-125	90-110
MS/MSD Batch #:	3H05801	3H05801	3H05801	3H05801	3HC9102	3HD6403
Date Prepared:	8/30/93	8/30/93	8/30/93	8/30/93	8/30/93	8/31/93
Date Analyzed:	8/31/93	8/31/93	8/31/93	8/31/93	8/31/93	8/31/93
Instrument I.D.#:	MTJA-2	MTJA-2	MTJA-2	MTJA-2	MV-1	MPE-2
Matrix Spike % Recovery:	97	95	96	96	82	100
Matrix Spike Duplicate % Recovery:	96	94	95	96	85	94
Relative % Difference:	1.0	1.1	1.0	0.0	3.6	6.2

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

SEQUOIA ANALYTICAL

Nokowhat D. Herrera
Project Manager

Please Note:
The LCS is a control sample of known, interferent free matrix that is analyzed using the same reagents, preparation and analytical methods employed for the samples. The LCS % recovery data is used for validation of sample batch results. Due to matrix effects, the QC limits for MS/MSD's are advisory only and are not used to accept or reject batch results.

SEQUOIA ANALYTICAL

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

Gettler Ryan/Geostrategies
2150 W. Winton Avenue
Hayward, CA 94545
Attention: Matt Donohue

Client Project ID: 4931-93-5, Arco 4931-Oakland
Matrix: Water
QC Sample Group: 3HD6401 - 03

Amended: Sep 17, 1993

QUALITY CONTROL DATA REPORT

ANALYTE	Arsenic	Selenium	Antimony	Thallium
Method:	EPA 206.2	EPA 270.2	EPA 204.2	EPA 279.2
Analyst:	W.Thant	W.Thant	W.Thant	W.Thant
Conc. Spiked:	50	50	50	50
Units:	µg/L	µg/L	µg/L	µg/L
LCS Batch#:	BLK083093	BLK083093	BLK083093	BLK083093
Date Prepared:	8/30/93	8/30/93	8/30/93	8/30/93
Date Analyzed:	8/30/93	8/30/93	9/1/93	8/30/93
Instrument I.D.#:	MTJA-3	MTJA-3	MTJA-1	MTJA-3
LCS % Recovery:	87	87	107	117
Control Limits:	75-125	75-125	75-125	75-125
MS/MSD Batch #:	3HC9102	3HC9102	3HC9102	3HC9102
Date Prepared:	8/30/93	8/30/93	8/30/93	8/30/93
Date Analyzed:	8/30/93	8/30/93	9/1/93	8/30/93
Instrument I.D.#:	MTAJ-3	MTAJ-3	MTAJ-1	MTAJ-3
Matrix Spike % Recovery:	64	52	99	39
Matrix Spike Duplicate % Recovery:	63	53	95	39
Relative % Difference:	1.6	1.9	4.1	0.0

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

SEQUOIA ANALYTICAL

Nokowhat D. Herrera
Project Manager

Please Note:
The LCS is a control sample of known, interferent free matrix that is analyzed using the same reagents, preparation and analytical methods employed for the samples. The LCS % recovery data is used for validation of sample batch results. Due to matrix effects, the QC limits for MS/MSD's are advisory only and are not used to accept or reject batch results.

ARCO Products Company
Division of AtlanticRichfieldCompany

Task Order No. 4193-93-5

Chain of Custody

ARCO Facility no: 4193	City (Facility): Oakland	Project manager (Consultant): Joel Coffman	Laboratory name: Sequoia
ARCO engineer: Mike Whelan	Telephone no. (ARCO):	Telephone no. (Consultant): 510-788-7500	Fax no. (Consultant): 788-7089
Consultant name: Geotter Ryan Inc	Address (Consultant): 2150 W. Winton Ave Hayward CA		Contract number:

Method of shipment: Coll

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 (GC) 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 ☐	Priority Pollutant Metals
A		3		X		X	X	8-25-93	11:00		X				X			01			X
B		3		"		"	"		11:05		"				"			02			"
D		3		"		"	"		11:10		"				"			03			"
TB		1		"		"	"		—		"				"			04			

Special detection Limit/reporting: Standard

Special QA/QC: Standard

Remarks: Cal # 9909.70

Lab number: 9308064

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: 8-25-93 Time: 1500	Received by	
Relinquished by	Date: Time:	Received by	
Relinquished by	Date: Time:	Received by laboratory	Date: 8-25-93 Time: 1500

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

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680 Chesapeake Drive • Redwood City, CA 94063
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Gettler Ryan/Geostrategies
2150 W. Winton Avenue
Hayward, CA 94545
Attention: Matt Donohoe

Project: 4931-93-5, Arco 4931-Oakland

Enclosed are the results from 4 water samples received at Sequoia Analytical on September 15,1993. The requested analyses are listed below:

SAMPLE #	SAMPLE DESCRIPTION	DATE OF COLLECTION	TEST METHOD
3I80101	Water, A	9/15/93	Priority Metals EPA 5030/8010 EPA 5030/8015/8020
3I80102	Water, B	9/15/93	Priority Metals EPA 5030/8010 EPA 5030/8015/8020
3I80103	Water, D	9/15/93	Priority Metals EPA 5030/8010 EPA 5030/8015/8020
3I80104	Water, Trip Blank	9/15/93	EPA 5030/8010 EPA 5030/8015/8020

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

Nokowhat D. Herrera
Project Manager

SEQUOIA ANALYTICAL

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

Gettler Ryan/Geostrategies	Client Project ID:	4931-93-5, Arco 4931-Oakland	Sampled:	Sep 15, 1993
2150 W. Winton Avenue	Sample Descript:	Water, A	Received:	Sep 15, 1993
Hayward, CA 94545	Analysis Method:	EPA 5030/8010	Analyzed:	Sep 20, 1993
Attention: Matt Donohue	Lab Number:	3I80101	Reported:	Sep 27, 1993

HALOGENATED VOLATILE ORGANICS (EPA 8010)

Analyte	Detection Limit µg/L	Sample Results µg/L
Bromodichloromethane	0.50	N.D.
Bromoform	0.50	N.D.
Bromomethane	1.0	N.D.
Carbon tetrachloride	0.50	N.D.
Chlorobenzene	0.50	N.D.
Chloroethane	1.0	N.D.
2-Chloroethylvinyl ether	1.0	N.D.
Chloroform	0.50	N.D.
Chloromethane	1.0	N.D.
Dibromochloromethane	0.50	N.D.
1,3-Dichlorobenzene	0.50	N.D.
1,4-Dichlorobenzene	0.50	N.D.
1,2-Dichlorobenzene	0.50	N.D.
1,1-Dichloroethane	0.50	N.D.
1,2-Dichloroethane	0.50	N.D.
1,1-Dichloroethene	0.50	N.D.
cis-1,2-Dichloroethene	0.50	N.D.
trans-1,2-Dichloroethene	0.50	N.D.
1,2-Dichloropropane	0.50	N.D.
cis-1,3-Dichloropropene	0.50	N.D.
trans-1,3-Dichloropropene	0.50	N.D.
Methylene chloride	5.0	N.D.
1,1,2,2-Tetrachloroethane	0.50	N.D.
Tetrachloroethene	0.50	N.D.
1,1,1-Trichloroethane	0.50	N.D.
1,1,2-Trichloroethane	0.50	N.D.
Trichloroethene	0.50	N.D.
Trichlorofluoromethane	0.50	N.D.
Vinyl chloride	1.0	N.D.

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

SEQUOIA ANALYTICAL

Nokowhat D. Herrera
Project Manager

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Gettler Ryan/Geostrategies	Client Project ID:	4931-93-5, Arco 4931-Oakland	Sampled:	Sep 15, 1993
2150 W. Winton Avenue	Sample Descript:	Water, B	Received:	Sep 15, 1993
Hayward, CA 94545	Analysis Method:	EPA 5030/8010	Analyzed:	Sep 20, 1993
Attention: Matt Donohoe	Lab Number:	3I80102	Reported:	Sep 27, 1993

HALOGENATED VOLATILE ORGANICS (EPA 8010)

Analyte	Detection Limit µg/L	Sample Results µg/L
Bromodichloromethane	0.50	N.D.
Bromoform	0.50	N.D.
Bromomethane	1.0	N.D.
Carbon tetrachloride	0.50	N.D.
Chlorobenzene	0.50	N.D.
Chloroethane	1.0	N.D.
2-Chloroethylvinyl ether	1.0	N.D.
Chloroform	0.50	N.D.
Chloromethane	1.0	N.D.
Dibromochloromethane	0.50	N.D.
1,3-Dichlorobenzene	0.50	N.D.
1,4-Dichlorobenzene	0.50	N.D.
1,2-Dichlorobenzene	0.50	N.D.
1,1-Dichloroethane	0.50	N.D.
1,2-Dichloroethane	0.50	N.D.
1,1-Dichloroethene	0.50	N.D.
cis-1,2-Dichloroethene	0.50	N.D.
trans-1,2-Dichloroethene	0.50	N.D.
1,2-Dichloropropane	0.50	N.D.
cis-1,3-Dichloropropene	0.50	N.D.
trans-1,3-Dichloropropene	0.50	N.D.
Methylene chloride	5.0	N.D.
1,1,2,2-Tetrachloroethane	0.50	N.D.
Tetrachloroethene	0.50	N.D.
1,1,1-Trichloroethane	0.50	N.D.
1,1,2-Trichloroethane	0.50	N.D.
Trichloroethene	0.50	N.D.
Trichlorofluoromethane	0.50	N.D.
Vinyl chloride	1.0	N.D.

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

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Nokowhat D. Herrera
Project Manager

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Gettler Ryan/Geostrategies	Client Project ID:	4931-93-5, Arco 4931-Oakland	Sampled:	Sep 15, 1993
2150 W. Winton Avenue	Sample Descript:	Water, D	Received:	Sep 15, 1993
Hayward, CA 94545	Analysis Method:	EPA 5030/8010	Analyzed:	Sep 20; 1993
Attention: Matt Donohoe	Lab Number:	3180103	Reported:	Sep 27, 1993

HALOGENATED VOLATILE ORGANICS (EPA 8010)

Analyte	Detection Limit µg/L	Sample Results µg/L
Bromodichloromethane	0.50	N.D.
Bromoform	0.50	N.D.
Bromomethane	1.0	N.D.
Carbon tetrachloride	0.50	2.3
Chlorobenzene	0.50	N.D.
Chloroethane	1.0	N.D.
2-Chloroethylvinyl ether	1.0	N.D.
Chloroform	0.50	1.6
Chloromethane	1.0	N.D.
Dibromochloromethane	0.50	N.D.
1,3-Dichlorobenzene	0.50	N.D.
1,4-Dichlorobenzene	0.50	N.D.
1,2-Dichlorobenzene	0.50	N.D.
1,1-Dichloroethane	0.50	N.D.
1,2-Dichloroethane	0.50	N.D.
1,1-Dichloroethene	0.50	N.D.
cis-1,2-Dichloroethene	0.50	2.7
trans-1,2-Dichloroethene	0.50	N.D.
1,2-Dichloropropane	0.50	N.D.
cis-1,3-Dichloropropene	0.50	N.D.
trans-1,3-Dichloropropene	0.50	N.D.
Methylene chloride	5.0	N.D.
1,1,2,2-Tetrachloroethane	0.50	N.D.
Tetrachloroethene	0.50	26
1,1,1-Trichloroethane	0.50	N.D.
1,1,2-Trichloroethane	0.50	N.D.
Trichloroethene	0.50	0.76
Trichlorofluoromethane	0.50	N.D.
Vinyl chloride	1.0	N.D.

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

SEQUOIA ANALYTICAL

Nokowhat D. Herrera
Project Manager

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Gettler Ryan/Geostrategies	Client Project ID:	4931-93-5, Arco 4931-Oakland	Sampled:	Sep 15, 1993
2150 W. Winton Avenue	Sample Descript:	Water, Trip Blank	Received:	Sep 15, 1993
Hayward, CA 94545	Analysis Method:	EPA 5030/8010	Analyzed:	Sep 20, 1993
Attention: Matt Donohoe	Lab Number:	3I80104	Reported:	Sep 27, 1993

HALOGENATED VOLATILE ORGANICS (EPA 8010)

Analyte	Detection Limit µg/L	Sample Results µg/L
Bromodichloromethane	0.50	N.D.
Bromoform	0.50	N.D.
Bromomethane	1.0	N.D.
Carbon tetrachloride	0.50	N.D.
Chlorobenzene	0.50	N.D.
Chloroethane	1.0	N.D.
2-Chloroethylvinyl ether	1.0	N.D.
Chloroform	0.50	N.D.
Chloromethane	1.0	N.D.
Dibromochloromethane	0.50	N.D.
1,3-Dichlorobenzene	0.50	N.D.
1,4-Dichlorobenzene	0.50	N.D.
1,2-Dichlorobenzene	0.50	N.D.
1,1-Dichloroethane	0.50	N.D.
1,2-Dichloroethane	0.50	N.D.
1,1-Dichloroethene	0.50	N.D.
cis-1,2-Dichloroethene	0.50	N.D.
trans-1,2-Dichloroethene	0.50	N.D.
1,2-Dichloropropane	0.50	N.D.
cis-1,3-Dichloropropene	0.50	N.D.
trans-1,3-Dichloropropene	0.50	N.D.
Methylene chloride	5.0	N.D.
1,1,2,2-Tetrachloroethane	0.50	N.D.
Tetrachloroethene	0.50	N.D.
1,1,1-Trichloroethane	0.50	N.D.
1,1,2-Trichloroethane	0.50	N.D.
Trichloroethene	0.50	N.D.
Trichlorofluoromethane	0.50	N.D.
Vinyl chloride	1.0	N.D.

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

SEQUOIA ANALYTICAL

Nokowhat D. Herrera
Project Manager

SEQUOIA ANALYTICAL

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Gettler Ryan/Geostrategies	Client Project ID:	4931-93-5, Arco 4931-Oakland	Sampled:	Sep 15, 1993
2150 W. Winton Avenue	Sample Matrix:	Water	Received:	Sep 15, 1993
Hayward, CA 94545	Analysis Method:	EPA 5030/8015/8020	Reported:	Sep 27, 1993
Attention: Matt Donohoe	First Sample #:	3I80101		

TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

Analyte	Reporting Limit µg/L	Sample I.D. 3I80101 A	Sample I.D. 3I80102 B	Sample I.D. 3I80103 D	Sample I.D. 3I80104 Trip Blank
Purgeable Hydrocarbons	50	N.D.	N.D.	N.D.	N.D.
Benzene	0.50	N.D.	N.D.	1.3	N.D.
Toluene	0.50	N.D.	N.D.	N.D.	N.D.
Ethyl Benzene	0.50	N.D.	N.D.	N.D.	N.D.
Total Xylenes	0.50	N.D.	N.D.	N.D.	N.D.
Chromatogram Pattern:		--	--	Discrete Peaks	--

Quality Control Data

Report Limit Multiplication Factor:	1.0	1.0	1.0	1.0
Date Analyzed:	9/20/93	9/20/93	9/20/93	9/20/93
Instrument Identification:	GCHP-3	GCHP-3	GCHP-3	GCHP-3
Surrogate Recovery, %: (QC Limits = 70-130%)	99	99	112	99

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

SEQUOIA ANALYTICAL

Nokowhat D. Herrera
Project Manager

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Gettler Ryan/Geostrategies	Client Project ID:	4931-93-5, Arco 4931-Oakland	Sampled: Sep 15, 1993
2150 W. Winton Avenue	Sample Descript:	Water, A	Received: Sep 15, 1993
Hayward, CA 94545			Analyzed: Sep 20-23, 1993
Attention: Matt Donohoe	Lab Number:	3180101	Reported: Sep 27, 1993

E.P.A. PRIORITY POLLUTANTS: METALS

Analyte	Detection Limit µg/L (ppb)	Sample Results µg/L (ppb)
Antimony	5.0	N.D.
Arsenic	5.0	N.D.
Beryllium	10	N.D.
Cadmium	5.0	N.D.
Chromium	5.0	N.D.
Copper	5.0	N.D.
Lead	5.0	N.D.
Mercury	0.20	N.D.
Nickel	5.0	5.0
Selenium	5.0	N.D.
Silver	5.0	N.D.
Thallium	5.0	N.D.
Zinc	10	N.D.

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

SEQUOIA ANALYTICAL

Nokowhat D. Herrera
Project Manager

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Gettler Ryan/Geostrategies	Client Project ID:	4931-93-5, Arco 4931-Oakland	Sampled: Sep 15, 1993
2150 W. Winton Avenue	Sample Descript:	Water, B	Received: Sep 15, 1993
Hayward, CA 94545			Analyzed: Sep 20-23, 1993
Attention: Matt Donohoe	Lab Number:	3180102	Reported: Sep 27, 1993

E.P.A. PRIORITY POLLUTANTS: METALS

Analyte	Detection Limit µg/L (ppb)	Sample Results µg/L (ppb)
Antimony	5.0	N.D.
Arsenic	5.0	N.D.
Beryllium	10	N.D.
Cadmium	5.0	N.D.
Chromium	5.0	N.D.
Copper	5.0	N.D.
Lead	5.0	N.D.
Mercury	0.20	N.D.
Nickel	5.0	5.8
Selenium	5.0	N.D.
Silver	5.0	N.D.
Thallium	5.0	N.D.
Zinc	10	N.D.

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

SEQUOIA ANALYTICAL

Nokowhat D. Herrera
Project Manager

SEQUOIA ANALYTICAL

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Gettler Ryan/Geostrategies	Client Project ID:	4931-93-5, Arco 4931-Oakland	Sampled: Sep 15, 1993
2150 W. Winton Avenue	Sample Descript:	Water, D	Received: Sep 15, 1993
Hayward, CA 94545			Analyzed: Sep 20-23, 1993
Attention: Matt Donohoe	Lab Number:	3180103	Reported: Sep 27, 1993

E.P.A. PRIORITY POLLUTANTS: METALS

Analyte	Detection Limit µg/L (ppb)	Sample Results µg/L (ppb)
Antimony	5.0	N.D.
Arsenic	5.0	N.D.
Beryllium	10	N.D.
Cadmium	5.0	N.D.
Chromium	5.0	N.D.
Copper	5.0	N.D.
Lead	5.0	N.D.
Mercury	0.20	N.D.
Nickel	5.0	5.6
Selenium	5.0	N.D.
Silver	5.0	N.D.
Thallium	5.0	N.D.
Zinc	10	N.D.

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

SEQUOIA ANALYTICAL

Nokowhat D. Herrera
Project Manager

SEQUOIA ANALYTICAL

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Gettler Ryan/Geostrategies
2150 W. Winton Avenue
Hayward, CA 94545
Attention: Matt Donohoe

Client Project ID: 4931-93-5, Arco 4931-Oakland
Matrix: Water
QC Sample Group: 3I80101-04

Reported: Sep 27, 1993

QUALITY CONTROL DATA REPORT

ANALYTE	1,1-Dichloroethene	Trichloroethene	Chloro-benzene	Benzene	Toluene	Chloro-benzene
Method:	EPA 8010	EPA 8010	EPA 8010	EPA 8020	EPA 8020	EPA 8020
Analyst:	B. Samra	B. Samra	B. Samra	B. Samra	B. Samra	B. Samra
Conc. Spiked:	25	25	25	25	25	25
Units:	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LCS Batch#:	VBLK092093	VBLK092093	VBLK092093	VBLK092093	VBLK092093	VBLK092093
Date Prepared:	-	-	-	-	-	-
Date Analyzed:	9/20/93	9/20/93	9/20/93	9/20/93	9/20/93	9/20/93
Instrument I.D.#:	GCHP-9	GCHP-9	GCHP-9	GCHP-9	GCHP-9	GCHP-9
LCS % Recovery:	76	96	92	120	124	108
Control Limits:	61-145	71-120	76-127	76-125	75-130	75-130
MS/MSD Batch #:	3I71506	3I71506	3I71506	3I71506	3I71506	3I71506
Date Prepared:	-	-	-	-	-	-
Date Analyzed:	9/20/93	9/20/93	9/20/93	9/20/93	9/20/93	9/20/93
Instrument I.D.#:	GCHP-9	GCHP-9	GCHP-9	GCHP-9	GCHP-9	GCHP-9
Matrix Spike % Recovery:	96	88	80	108	108	96
Matrix Spike Duplicate % Recovery:	100	96	92	120	124	108
Relative % Difference:	4.2	8.7	14	11	14	12

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

SEQUOIA ANALYTICAL

Nokowhat D. Herrera
Project Manager

Please Note

The LCS is a control sample of known, interferent free matrix that is analyzed using the same reagents, preparation and analytical methods employed for the samples. The LCS % recovery data is used for validation of sample batch results. Due to matrix effects, the QC limits for MS/MSD's are advisory only and are not used to accept or reject batch results

SEQUOIA ANALYTICAL

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Gettler Ryan/Geostrategies
2150 W. Winton Avenue
Hayward, CA 94545
Attention: Matt Donohoe

Client Project ID: 4931-93-5, Arco 4931-Oakland
Matrix: Water
QC Sample Group: 3I80101-04

Reported: Sep 27, 1993

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
Conc. Spiked:	10	10	10	30
Units:	µg/L	µg/L	µg/L	µg/L
LCS Batch#:	GBLK092093	GBLK092093	GBLK092093	GBLK092093
Date Prepared:	N.A.	N.A.	N.A.	N.A.
Date Analyzed:	9/20/93	9/20/93	9/20/93	9/20/93
Instrument I.D.#:	GCHP-3	GCHP-3	GCHP-3	GCHP-3
LCS % Recovery:	90	91	91	90
Control Limits:	80-120	80-120	80-120	80-120
MS/MSD Batch #:	3I44201	3I44201	3I44201	3I44201
Date Prepared:	N.A.	N.A.	N.A.	N.A.
Date Analyzed:	9/20/93	9/20/93	9/20/93	9/20/93
Instrument I.D.#:	GCHP-3	GCHP-3	GCHP-3	GCHP-3
Matrix Spike % Recovery:	100	100	110	103
Matrix Spike Duplicate % Recovery:	110	110	120	110
Relative % Difference:	9.5	9.5	8.7	6.6

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

Nokowhat D. Herrera
Project Manager

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SEQUOIA ANALYTICAL

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

Gettler Ryan/Geostrategies
2150 W. Winton Avenue
Hayward, CA 94545
Attention: Matt Donohoe

Client Project ID: 4931-93-5, Arco 4931-Oakland
Matrix: Water
QC Sample Group: 3180101-03

Reported: Sep 27, 1993

QUALITY CONTROL DATA REPORT

ANALYTE	Beryllium	Cadmium	Chromium	Nickel
Method:	EPA 200.7	EPA 200.7	EPA 200.7	EPA 200.7
Analyst:	C. Medefesser	C. Medefesser	C. Medefesser	C. Medefesser
Conc. Spiked:	1000	1000	1000	1000
Units:	µg/L	µg/L	µg/L	µg/L
LCS Batch#:	BLK092093	BLK092093	BLK092093	BLK092093
Date Prepared:	9/20/93	9/20/93	9/20/93	9/20/93
Date Analyzed:	9/20/93	9/20/93	9/20/93	9/20/93
Instrument I.D.#:	MTJA-2	MTJA-2	MTJA-2	MTJA-2
LCS % Recovery:	100	99	101	99
Control Limits:	75-125	75-125	75-125	75-125
MS/MSD Batch #:	3137802	3137802	3137802	3137802
Date Prepared:	9/20/93	9/20/93	9/20/93	9/20/93
Date Analyzed:	9/20/93	9/20/93	9/20/93	9/20/93
Instrument I.D.#:	MTJA-2	MTJA-2	MTJA-2	MTJA-2
Matrix Spike % Recovery:	98	98	100	98
Matrix Spike Duplicate % Recovery:	100	100	102	99
Relative % Difference:	2.0	2.0	2.0	1.0

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

SEQUOIA ANALYTICAL

Nokowhat D. Herrera
Project Manager

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Client Project ID: 4931-93-5, Arco 4931-Oakland
Matrix: Water
QC Sample Group: 3I80101-03

Reported: Sep 27, 1993

QUALITY CONTROL DATA REPORT

ANALYTE	Mercury	Mercury	Arsenic	Selenium	Lead	Cadmium	Silver
Method:	EPA 245.1	EPA 245.1	EPA 206.2	EPA 270.2	EPA 239.2	EPA 213.2	EPA 272.2
Analyst:	A. McDonald	A. McDonald	S. Chin	S. Chin	W. Thant	W. Thant	W. Thant
Conc. Spiked:	2.0	2.0	5.0	5.0	5.0	5.0	5.0
Units:	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LCS Batch#:	CCV092093	CCV092093	BLK092093	BLK092093	BLK092093	BLK092093	BLK092093
Date Prepared:	9/20/93	9/20/93	9/20/93	9/20/93	9/20/93	9/20/93	9/20/93
Date Analyzed:	9/20/93	9/20/93	9/21/93	9/22/93	9/21/93	9/21/93	9/21/93
Instrument I.D.#:	MPE-2	MPE-2	MTJA-3	MTJA-1	MTJA-3	MTJA-1	MTJA-1
LCS % Recovery:	101	91	88	89	104	97	97
Control Limits:	90-110	90-110	75-125	75-125	75-125	75-125	75-125
MS/MSD Batch #:	3I80120	3I80103	3I80101	3I80101	3I80101	3I80101	3I80101
Date Prepared:	9/20/93	9/20/93	9/20/93	9/20/93	9/20/93	9/20/93	9/20/93
Date Analyzed:	9/20/93	9/20/93	9/21/93	9/22/93	9/21/93	9/21/93	9/21/93
Instrument I.D.#:	MPE-2	MPE-2	MTJA-3	MTJA-1	MTJA-3	MTJA-1	MTJA-1
Matrix Spike % Recovery:	104	100	96	36	87	81	75
Matrix Spike Duplicate % Recovery:	103	96	95	34	104	81	96
Relative % Difference:	1.0	4.0	1.0	5.7	18	0.0	25

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

SEQUOIA ANALYTICAL

Nokowhat D. Herrera
Project Manager

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Matrix: Water
QC Sample Group: 3I80101-03

Reported: Sep 27, 1993

QUALITY CONTROL DATA REPORT

ANALYTE	Chromium	Copper	Nickel	Antimony	Thallium
Method:	EPA218.2	EPA 220.2	EPA 249.2	EPA 204.2	EPA 279.2
Analyst:	W. Thant	F. Contreras	F. Contreras	W. Thant	S. Chin
Conc. Spiked:	5.0	5.0	5.0	5.0	5.0
Units:	µg/L	µg/L	µg/L	µg/L	µg/L
LCS Batch#:	BLK092093	BLK092093	BLK092093	BLK092093	BLK092093
Date Prepared:	9/20/93	9/20/93	9/20/93	9/20/93	9/20/93
Date Analyzed:	9/20/93	9/23/93	9/25/93	9/20/93	9/22/93
Instrument I.D.#:	MTJA-1	MTJA-1	MTJA-1	MTJA-1	MTJA-3
LCS % Recovery:	117	100	96	91	121
Control Limits:	75-125	75-125	75-125	75-125	75-125
MS/MSD Batch #:	3I80101	3I80101	3I80101	3I80101	3I80101
Date Prepared:	9/20/93	9/20/93	9/20/93	9/20/93	9/20/93
Date Analyzed:	9/20/93	9/23/93	9/25/93	9/20/93	9/22/93
Instrument I.D.#:	MTJA-1	MTJA-1	MTJA-1	MTJA-1	MTJA-3
Matrix Spike % Recovery:	113	118	104	118	30
Matrix Spike Duplicate % Recovery:	108	118	88	101	28
Relative % Difference:	4.5	0.0	17	16	6.9

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

SEQUOIA ANALYTICAL

Nokowhat D. Herrera
Project Manager

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ARCO Products Company
Division of AtlanticRichfieldCompany

Task Order No. 4931-93-5

Chain of Custody

ARCO Facility no: 4731	City (Facility): ~~East~~ Oakland	Project manager (Consultant): Joel Coffman	Laboratory name: Sequoia
ARCO engineer: Mike Wilkins	Telephone no. (ARCO):	Telephone no. (Consultant): 510-783-7500	Fax no. (Consultant): 783-7089
Consultant name: Gettler Ryan Inc	Address (Consultant): 2150 W. Winton Hayward CA		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 EPA 602/8020/8015	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 Semi Metals ☐ VOA ☐ VOA ☐	CAM Metals EPA 6010/7000 TTLC ☐ STLC ☐	Lead Org./DHS ☐ Lead EPA 7420/7421 ☐	Priority Pollutant Metals	Method of shipment: Grab
A		5		X		X	X	9-15-93	13:20		X				X	9309801			-01		X	
B		5				X	X		13:25		X				X				-02		X	Special detection Limit/reporting: Standard
D		5				X	X		13:30		X				X				-03		X	
TB		2				X	X	—			X				X				-04			Special QA/QC: Standard

Remarks: GPH 9909.10

Condition of sample: Samples on ice		Temperature received:	Lab number:
Relinquished by sampler	Date: 9-15-93 Time: 19:16	Received by	Turnaround time
Relinquished by	Date: Time:	Received by	Priority Rush 1 Business Day [ ]
Relinquished by	Date: Time:	Received by laboratory	Rush 2 Business Days [ ]
		Date: 9/15/93 Time: 1910	Expedited 5 Business Days [ ]
			Standard 10 Business Days [X]