gettler — ryan inc.

May 3, 1991

County of Alameda
Department of Environmental Health
Hazardous Materials Division
80 Swan Way, Room 200
Oakland, California 94621

Reference: ARCO Service Station #4931
731 W. MacArthur Boulevard
Oakland, California

Gentlemen:

As requested by ARCO Products Company, we are forwarding a copy of the Site Update report dated May 2, 1991 documenting the groundwater sampling and site activities conducted during the first quarter 1991.

Please do not hesitate to call should you have any questions or comments.

Sincerely,

Keith E. Bullock

KEB/jpz

Enclosure

cc: Mr. Charles Carmel, ARCO Products Company
Mr. Tom Callaghan, Regional Water Quality Control Board
Mr. H. C. Winsor, ARCO Products Company

91 MAY -7 AM 8:03

2150 west winton avenue • hayward, california 94545-1210 • (415) 783-7500

GeoStrategies Inc.

SITE UPDATE

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

790901-9

May 3, 1991

GeoStrategies Inc.
2140 WEST WINTON AVENUE
HAYWARD, CALIFORNIA 94545
(415) 352-4800

May 3, 1991

Gettler-Ryan Inc.
2150 West Winton Avenue
Hayward, California 94545

Attn: Mr. Keith Bullock

Re: SITE UPDATE
ARCO Service Station No. 4931
731 West MacArthur Boulevard
Oakland, California

Gentlemen:

This Site Update by GeoStrategies Inc. (GSI) presents results of the 1991 first quarter ground-water sampling performed on January 16, 1991, by Gettler-Ryan Inc. (G-R) for the above referenced location (Plates 1 and 2). The scope of work presented in this document was performed at the request of ARCO Products Company. Field work and laboratory analysis methods were performed to comply with current State of California Water Resources Control Board (SWRCB) guidelines. G-R ground-water sampling procedures are presented in a previous GSI Site Update report dated October 4, 1990.

SITE BACKGROUND

There are currently eleven monitoring wells at the site; Wells A-2 through A-12 (Plate 2). These wells were installed between 1982 and 1987 by Groundwater Technology, Inc. and Pacific Environmental Group. Wells A-2 through A-10 are onsite and Wells A-11 and A-12 are offsite. These wells were installed to evaluate the vertical and horizontal extent of petroleum hydrocarbons in the soil and groundwater beneath the site.

Quarterly monitoring and sampling of wells began in 1989. Ground-water samples have been analyzed for Total Petroleum Hydrocarbons calculated as Gasoline (TPH-Gasoline) according to EPA Method 8015 (Modified) and Benzene, Toluene, Ethylbenzene and Xylenes (BTEX) according to EPA Method 8020.

CURRENT QUARTERLY SAMPLING RESULTS

Potentiometric Data

Prior to ground-water sampling, water levels were measured in each of the monitoring wells using an electronic oil-water interface probe (Table 1). Static water-levels were measured from the surveyed top of well box and recorded to the nearest $\pm$0.01 foot. Elevations corresponding to Mean Sea Level (MSL) are presented in Table 1. The potentiometric contour map presented on Plate 3 was prepared from the water-level measurement data. The local hydraulic gradient in the first water bearing zone was calculated to be 0.046 with ground-water flow approximately to the southwest.

Floating Product Measurements

Each monitoring well was checked for the presence of floating product with an electronic oil-water interface probe. A clear acrylic bailer was used to confirm interface probe results. Floating product was observed in monitoring wells A-4 and A-8 at a measured thickness of 0.01 feet in each well.

Groundwater Analytical Data

Ground-water samples were collected on January 16, 1991. The samples were analyzed for TPH-Gasoline according to EPA Method 8015 (Modified) and BTEX according to EPA Method 8020 by International Technology (IT) a State-certified laboratory located in San Jose, California.

Detectable TPH-Gasoline was reported in monitoring wells A-2 (15,000 ppb) and A-3 (69. ppb). Benzene was detected in monitoring Wells A-2 (1,200. ppb), A-3 (2.0 ppb), and A-9 (15. ppb). Wells A-5, A-6, A-7 and A-10 through A-12 were reported as none detected (ND) for TPH-Gasoline and benzene. Well A-9 was ND for TPH-Gasoline. The chemical analytical data are summarized in Table 1. Historical chemical data are summarized in Table 2. TPH-Gasoline and benzene chemical analytical data have been used to prepare a concentration map (Plate 4).

Quality Control

The Quality control (QC) sample for the first quarter's ground-water sampling was a trip blank. The trip blank was prepared in the IT laboratory using organic-free water to evaluate field laboratory handling and analytical procedures. The results of the QC sample analyses are presented in Table 1.

If you have any questions, please call.

GeoStrategies Inc. by,

Cliff M. Garratt
Hydrogeologist

David H. Peterson
Senior Geologist
C.E.G. 1186

REGISTERED GEOLOGIST
DAVID H. PETERSON
No. 1186
CERTIFIED
ENGINEERING
GEOLOGIST
STATE OF CALIFORNIA

CMG/DHP/mlg

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

Appendix A: Gettler-Ryan Inc. Groundwater Sampling Report

QC Review:

TABLE 1

GROUND-WATER ANALYSES DATA

WELL NO	SAMPLE DATE	ANALYZED DATE	TPH-G (PPB)	BENZENE (PPB)	TOLUENE (PPB)	ETHYLBENZENE (PPB)	XYLENES (PPB)	WELL ELEV (FT)	STATIC WATER ELEV (FT)	PRODUCT THICKNESS (FT)	DEPTH TO WATER (FT)
A-2	16-Jan-91	24-Jan-91	15,000.	1,200.	800.	190.	4,600.	55.38	45.95	----	9.43
A-3	16-Jan-91	24-Jan-91	69.	2.0	3.5	<0.5	9.6	54.48	43.02	----	11.46
A-4	16-Jan-91	----	----	----	----	----	----	54.62	42.74	0.01	11.89
A-5	16-Jan-91	24-Jan-91	<50.	<0.5	<0.5	<0.5	<0.5	54.15	42.79	----	11.36
A-6	16-Jan-91	24-Jan-91	<50.	<0.5	<0.5	<0.5	<0.5	55.13	44.98	----	10.15
A-7	16-Jan-91	23-Jan-91	<50.	<0.5	<0.5	<0.5	<0.5	54.67	43.32	----	11.35
A-8	16-Jan-91	----	----	----	----	----	----	53.61	42.51	0.01	11.11
A-9	16-Jan-91	24-Jan-91	<50.	15.	<0.5	<0.5	0.6	52.96	42.52	----	10.44
A-10	16-Jan-91	23-Jan-91	<50.	<0.5	<0.5	<0.5	<0.5	54.16	42.56	----	11.60

CURRENT REGIONAL WATER QUALITY CONTROL BOARD MAXIMUM CONTAMINANT LEVELS
Benzene 1.0 ppb Xylenes 1,750 ppb Ethylbenzene 680 ppb

CURRENT DHS ACTION LEVELS
Toluene 100 ppb

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

Notes: 1. All data shown as <x are reported as ND (none detected).
2. Static Water elevations referenced to mean sea level (MSL). Elevations are corrected for free product using a correction factor of 0.8.
3. DHS Action Levels and MCLs are subject to change pending State review.

TABLE 1

GROUND-WATER ANALYSES DATA

WELL NO	SAMPLE DATE	ANALYZED DATE	TPH-G (PPB)	BENZENE (PPB)	TOLUENE (PPB)	ETHYLBENZENE (PPB)	XYLENES (PPB)	WELL ELEV (FT)	STATIC WATER ELEV (FT)	PRODUCT THICKNESS (FT)	DEPTH TO WATER (FT)
A-11	16-Jan-91	23-Jan-91	<50.	<0.5	<0.5	<0.5	<0.5	53.75	42.44	----	11.31
A-12	16-Jan-91	24-Jan-91	<50.	<0.5	<0.5	<0.5	<0.5	52.05	41.45	----	10.60
TB	----	22-Jan-91	<50.	<0.5	<0.5	<0.5	<0.5	----	----	----	----

TABLE 2

HISTORICAL GROUNDWATER QUALITY DATABASE

SAMPLE DATE	SAMPLE POINT	TPH-G (PPB)	BENZENE (PPB)	TOLUENE (PPB)	E.B. (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.
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
20-Mar-89	A-4	360000.	1500.	3700.	6500.	35000.
24-May-89	A-4	1500000.	1000.	2000.	6000.	23000.
04-Apr-90	A-4	40000.	680.	320.	1400.	4900.
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.	<0.5	<0.5	<0.5	<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
21-Mar-86	A-6	<10.	----	----	----	----
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.

TABLE 2

HISTORICAL GROUNDWATER QUALITY DATABASE

SAMPLE DATE	SAMPLE POINT	TPH-G (PPB)	BENZENE (PPB)	TOLUENE (PPB)	E.B. (PPB)	XYLENES (PPB)
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
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
07-Jan-88	A-9	300.	45.	14.	----	43.
21-Mar-89	A-9	50.	2.8	1.	1.	3.
24-May-89	A-9	120.	26.	12.	4.	79.
18-Aug-89	A-9	14000.	400.	800.	400.	2000.
27-Oct-89	A-9	1700.	150.	36.	30.	110.
15-Jan-90	A-9	860.	140.	58.	38.	140.
04-Apr-90	A-9	620.	36.	13.	9.4	32.
30-Jul-90	A-9	180.	77.	1.6	2.1	4.2
29-Oct-90	A-9	110.	30.	3.7	4.1	8.3
16-Jan-91	A-9	<50.	15.	<0.5	<0.5	0.6
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.
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
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.

TABLE 2

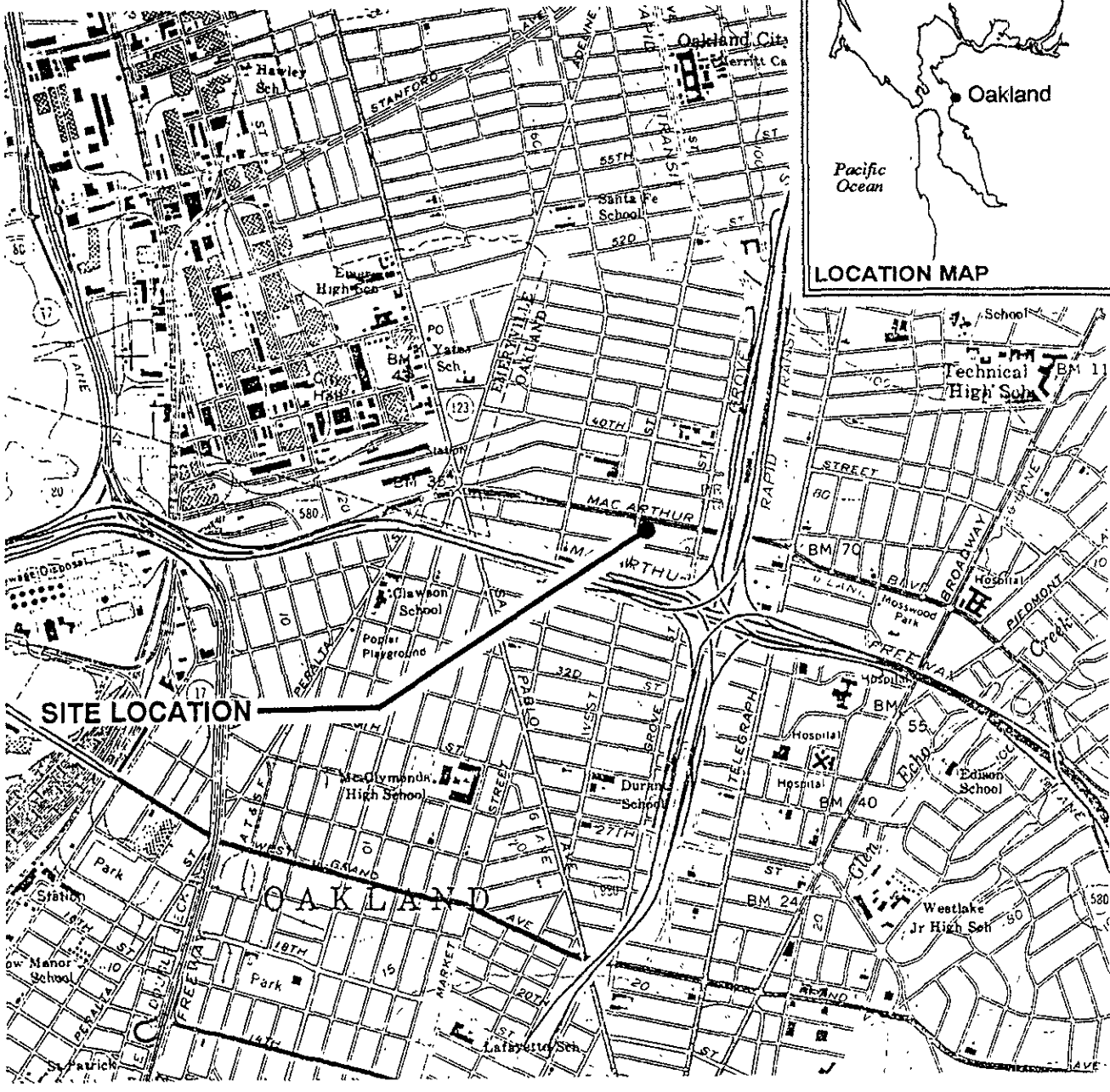
HISTORICAL GROUNDWATER QUALITY DATABASE

SAMPLE DATE	SAMPLE POINT	TPH-G (PPB)	BENZENE (PPB)	TOLUENE (PPB)	E.B. (PPB)	XYLENES (PPB)
04-Apr-90	A-11	<50.	<0.5	<0.5	<0.5	<1.
30-Jul-90	A-11	<50.	<0.5	0.6	<0.5	0.5
29-Oct-90	A-11	<50.	0.6	2.4	0.6	1.5
16-Jan-91	A-11	<50.	<0.5	<0.5	<0.5	<0.5
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

TPH-G - Total Petroleum Hydrocarbons as Gasoline
PPB - Parts per billion
E.B. - Ethylbenzene

NOTE: 1. All data shown as <X are reported as ND (none detected)
2. Ethylbenzene & Xylenes were combined in 1986 and 1988

ILLUSTRATIONS



Base Map: USGS Topographic Map

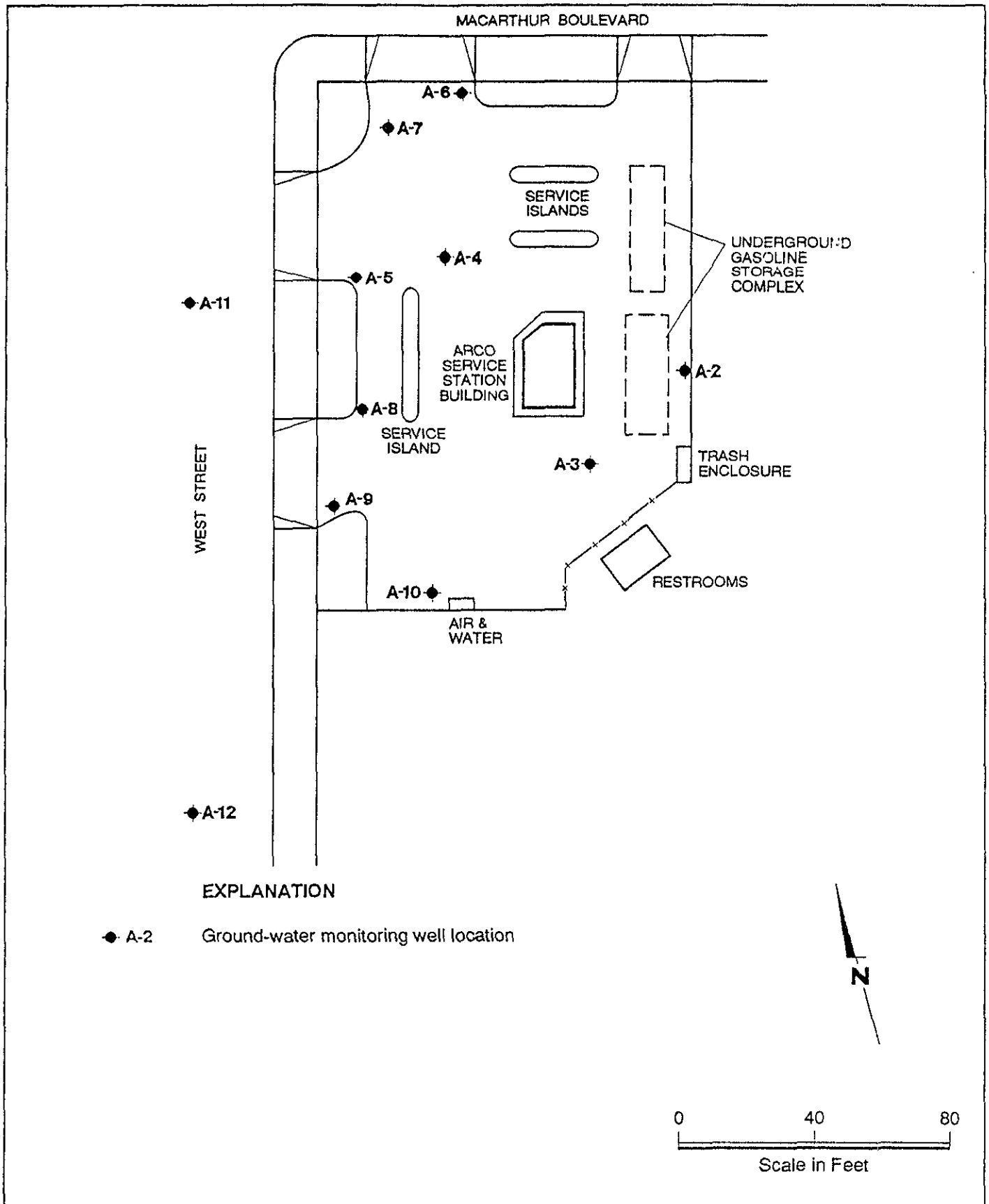
Approximate Scale : 1" = 2000'

GeoStrategies Inc.

Vicinity Map
ARCO Service Station #4931
731 W. MacArthur Boulevard
Oakland, California

PLATE **1**

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
7909		1/90		

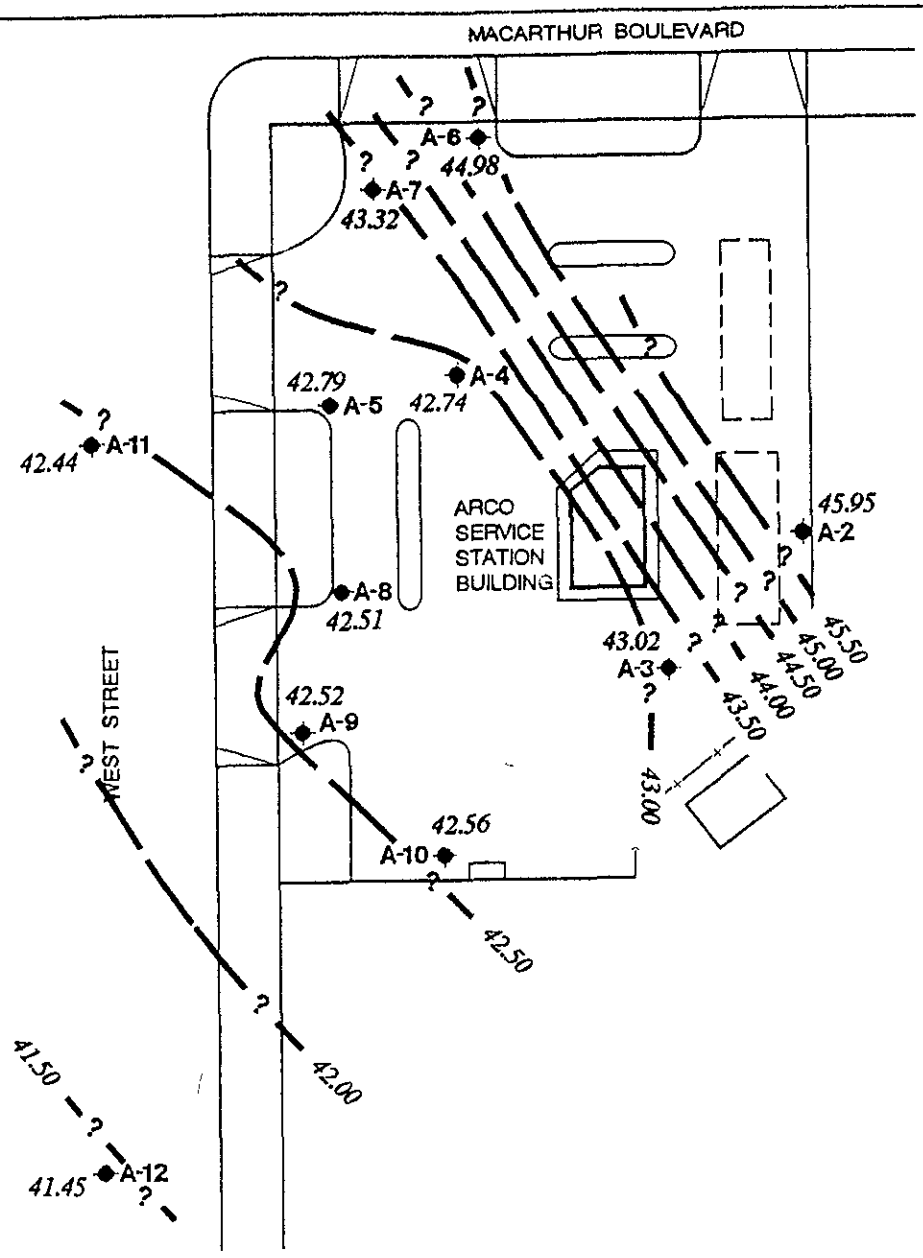


GeoStrategies Inc.

Site Plan
ARCO Service Station #4931
731 W. MacArthur Boulevard
Oakland, California

PLATE
2

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
790901-9	DHP	2/91		



EXPLANATION

- ◆ A-2 — Ground-water monitoring well location
- 41.50 — Ground-water elevation contour
  Approximate Gradient = **0.046**
- 41.45 — Ground-water elevation in feet referenced to Mean Sea Level (MSL) measured on **January 16, 1991**

Note: Contours may be influenced by irrigation practices and/or site construction activities

N

0 40 80

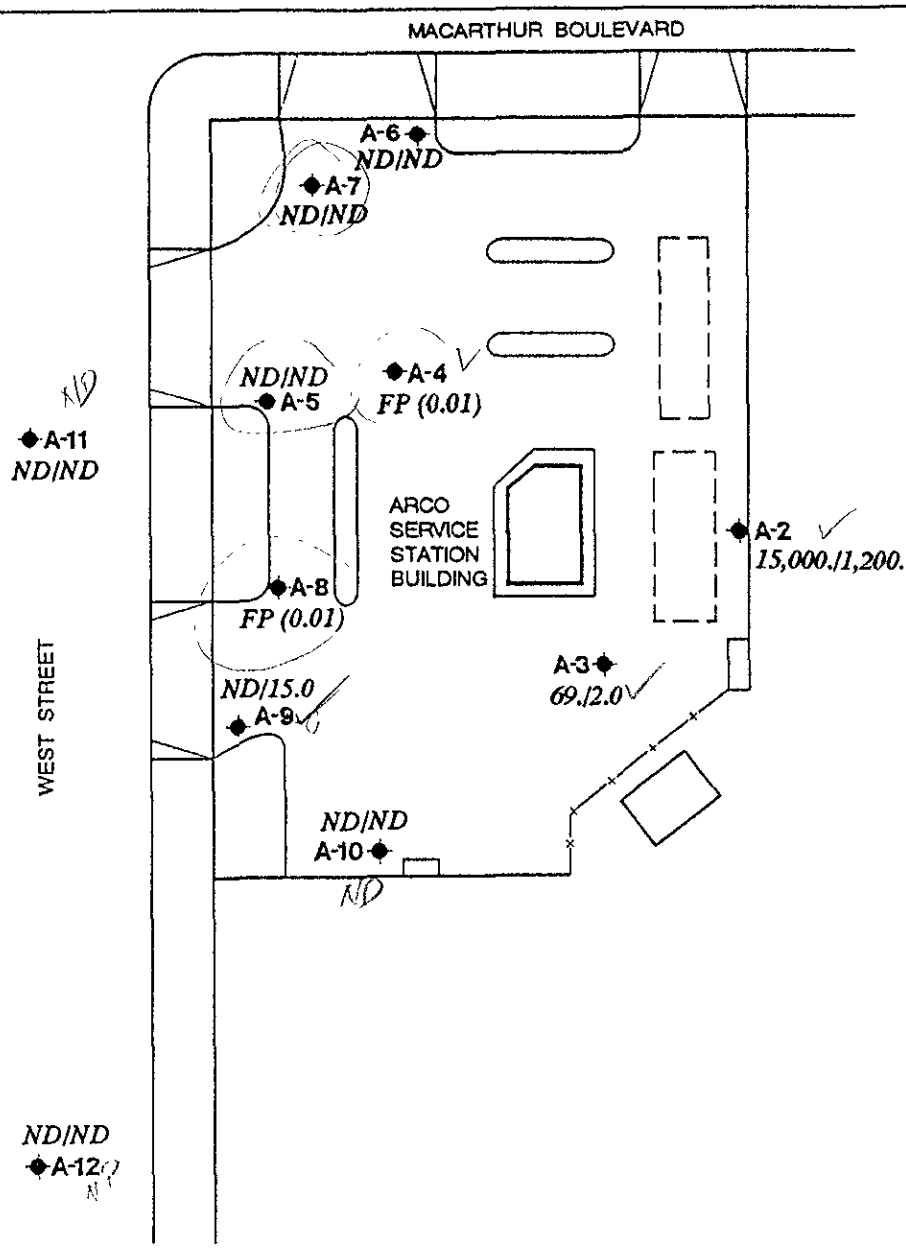
Scale in Feet

GeoStrategies Inc.

Potentiometric Map
ARCO Service Station #4931
731 W. MacArthur Boulevard
Oakland, California

PLATE **3**

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
790901-9	PHP	2/91		



EXPLANATION

◆ A-2	Ground-water monitoring well location
69./2.0	TPH-G (Total Petroleum Hydrocarbons calculated as Gasoline)/Benzene concentrations in ppb sampled on **January 16, 1991**
ND	Not Detected (see laboratory reports for detection limits)
FP (0.01)	Floating Product (thickness in feet)

N

0 40 80

Scale in Feet

GeoStrategies Inc.

TPH-G/Benzene Concentration Map
ARCO Service Station #4931
731 W. MacArthur Boulevard
Oakland, California

PLATE **4**

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
790901-9	DHP	2/91		

APPENDIX A

GETTLER-RYAN INC.

GROUNDWATER SAMPLING REPORT

gettler — ryan inc.

February 4, 1991

GROUNDWATER SAMPLING REPORT

ARCO Products Company
Post Office Box 5811
San Mateo, California 94402

Referenced Site: ARCO Service Station #4931
731 W MacArthur Blvd./West St.
Oakland, California

Sampling Date: January 16, 1991

This report presents the results of the quarterly groundwater sampling and analytical program conducted by Gettler-Ryan Inc. on January 16, 1991 at the referenced location. The site is occupied by an operating service station located on the southeast corner of West MacArthur Boulevard and West Street. The service station has underground storage tanks containing regular leaded, unleaded and super unleaded gasoline products.

There are currently nine groundwater monitoring wells on site and two off site at the locations shown on the attached site map. Prior to sampling, the wells were inspected for total well depth, water levels, and presence of separate phase product using an electronic interface probe. A clean acrylic bailer was used to visually confirm the presence and thickness of separate phase product. Groundwater depths ranged from 9.43 to 11.89 feet below grade. Separate phase product was observed in wells A-4 and A-8.

Wells that did not contain separate phase product were purged and sampled. The purge water was contained in drums for proper disposal. Standard sampling procedure calls for a minimum of four case volumes to be purged from each well. Each well was purged while pH, temperature, and conductivity measurements were monitored for stability. Details of the final well purging results are presented on the attached Table of Monitoring Data. In cases where a well dewatered or less than four case volumes were purged, groundwater samples were obtained after the physical parameters had stabilized. Under such circumstances the sample may not represent actual formation water, due to low flow conditions.

Samples were collected, using Teflon bailers, in properly cleaned and laboratory prepared containers. All sampling equipment was thoroughly cleaned after each well was sampled and steam cleaned upon completion of work at the site. The samples were labeled, stored on blue ice, and transported to the laboratory for analysis. A trip blank, supplied by the laboratory, was included and analyzed to assess quality control. Analytical results for the trip blank are included in the Certified Analytical Report (CAR's). Chain of custody records were established noting sample identification numbers, time, date, and custody signatures.

2150 west winton avenue • hayward, california 94545-1210 • (415) 783-7500

The samples were analyzed at International Technology Corporation - Santa Clara Valley Laboratory, located at 2055 Junction Avenue, San Jose, California. The laboratory is assigned a California DHS-HMTL Certification number of E630. The results are presented as a Certified Analytical Report, a copy of which is attached to this report.

Tom Paulson
Sampling Manager

attachments

TABLE OF MONITORING DATA
GROUNDWATER WELL SAMPLING REPORT

WELL I.D.	A-2	A-3	A-4	A-5	A-6	A-7
Casing Diameter (inches)	4	4	4	3	3	3
Total Well Depth (feet)	18.3	19.1	----	23.7	24.7	22.6
Depth to Water (feet)	9.43	11.46	11.89 **	11.36	10.15	11.35
Free Product (feet)	none	none	0.01	none	none	none
Reason Not Sampled	----	----	free product	----	----	----
Calculated 4 Case Vol.(gal.)	23.4	20.2	----	18.7	22.1	17.1
Did Well Dewater?	yes	yes	----	no	yes	no
Volume Evacuated (gal.)	10.0	7.0	----	19.0	22.0	19.0
Purging Device	Suction	Suction	----	Suction	Suction	Suction
Sampling Device	Bailer	Bailer	----	Bailer	Bailer	Bailer
Time	12:39	12:39	----	12:06	11:32	11:48
Temperature (F)*	63.5	67.9	----	68.6	67.5	68.4
pH*	6.64	6.54	----	6.64	6.72	6.66
Conductivity (umhos/cm)*	1042	850	----	727	604	613

* Indicates Stabilized Value

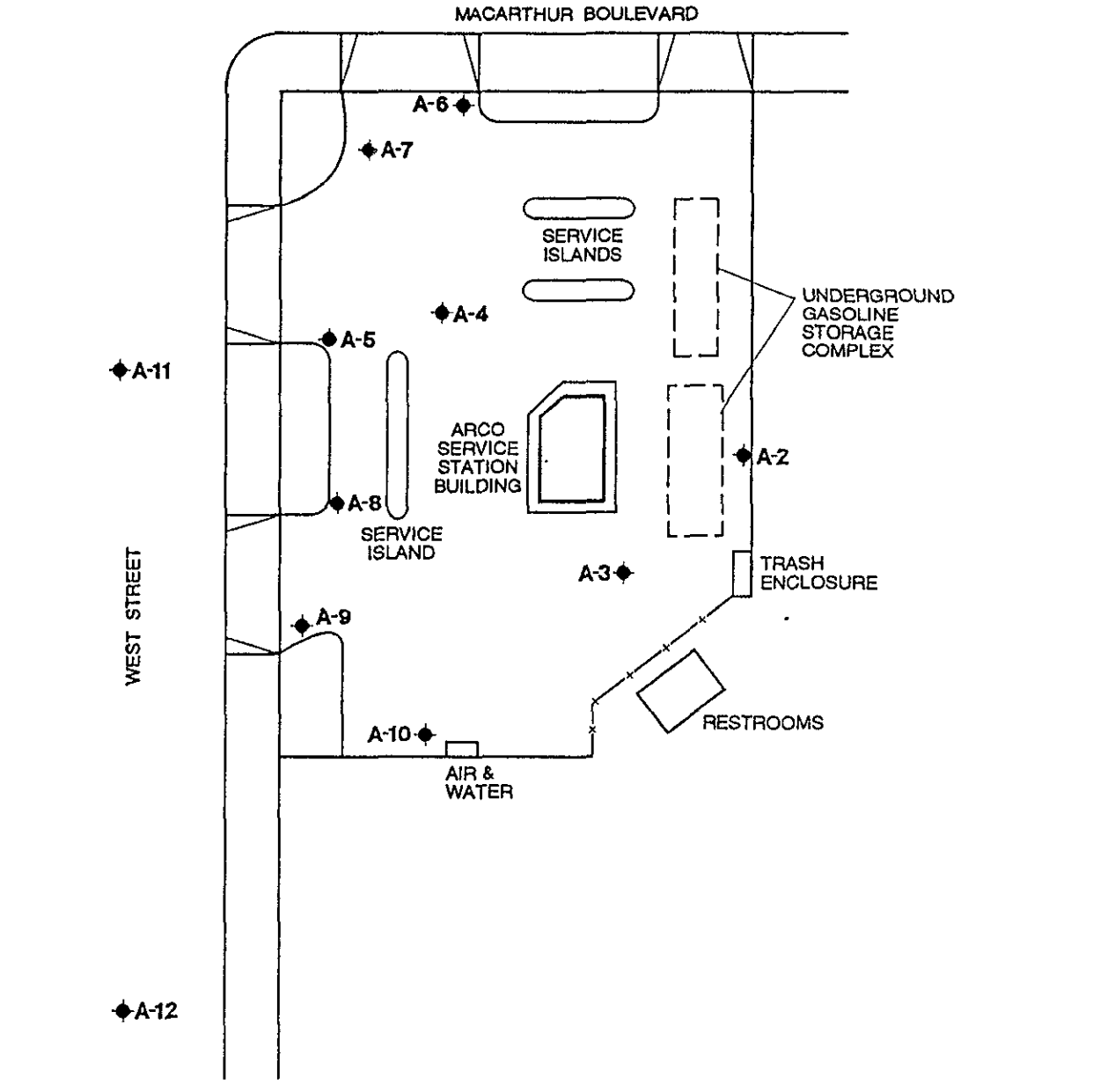
** Not corrected for presence of free product

TABLE OF MONITORING DATA
GROUNDWATER WELL SAMPLING REPORT

WELL I.D.	A-8	A-9	A-10	A-11	A-12
Casing Diameter (inches)	3	6	3	3	3
Total Well Depth (feet)	----	38.6	27.8	27.1	28.8
Depth to Water (feet)	11.11 **	10.44	11.60	11.31	10.60
Free Product (feet)	0.01	none	none	none	none
Reason Not Sampled	free product	----		----	----
Calculated 4 Case Vol.(gal.)	----	168.9	24.6	24.0	27.7
Did Well Dewater?	----	no	no	no	no
Volume Evacuated (gal.)	----	217.0	31.0	31.0	28.0
Purging Device	----	Suction	Suction	Suction	Suction
Sampling Device	----	Bailer	Bailer	Bailer	Bailer
Time	----	13:41	13:08	10:44	10:20
Temperature (F)*	----	65.6	65.7	68.3	66.2
pH*	----	6.56	6.68	6.62	6.74
Conductivity (umhos/cm)*	----	665	668	673	661

* Indicates Stabilized Value

** Not corrected for presence of free product



GeoStrategies Inc.

Site Plan
ARCO Service Station #4931
731 W. MacArthur Boulevard
Oakland, California

PLATE

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
909				

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

CERTIFICATE OF ANALYSIS

Date: 01/31/91

Gettler-Ryan
2150 West Winton
Hayward, CA 94545
Tom Paulson

Work Order: T1-01-154 P.O. Number: 3909

This is the Certificate of Analysis for the following samples:

Client Work ID: GR3909, Arco #4931
Date Received: 01/17/91
Number of Samples: 10
Sample Type: aqueous

TABLE OF CONTENTS FOR ANALYTICAL RESULTS

Reviewed and Approved:

Suzanne Veaudry
Project Manager

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Gettler-Ryan
Date: 01/31/91
Client Work ID: GR3909, Arco #4931

Work Order: T1-01-154

TEST NAME: **Petroleum Hydrocarbons**

SAMPLE ID: **A-2**
SAMPLE DATE: **01/16/91**
LAB SAMPLE ID: **T101154-01**
SAMPLE MATRIX: **aqueous**
RECEIPT CONDITION: **Cool pH < 2**

RESULTS in Micrograms per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		01/24/91
Low Boiling Hydrocarbons	Mod.8015		01/24/91

PARAMETER	DETECTION LIMIT	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	1,000.	15,000.
BTEX		
Benzene	10.	1,200.
Toluene	10.	800.
Ethylbenzene	10.	190.
Xylenes (total)	10.	4,600.

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Gettler-Ryan
Date: 01/31/91
Client Work ID: GR3909, Arco #4931

Work Order: T1-01-154

TEST NAME: **Petroleum Hydrocarbons**

SAMPLE ID: **A-3**
SAMPLE DATE: **01/16/91**
LAB SAMPLE ID: **T101154-02**
SAMPLE MATRIX: **aqueous**
RECEIPT CONDITION: **Cool pH < 2**

RESULTS in Micrograms per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		01/24/91
Low Boiling Hydrocarbons	Mod.8015		01/24/91

PARAMETER	DETECTION LIMIT	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	50.	69.
BTEX		
Benzene	0.5	2.0
Toluene	0.5	3.5
Ethylbenzene	0.5	None
Xylenes (total)	0.5	9.6

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Gettler-Ryan
Date: 01/31/91
Client Work ID: GR3909, Arco #4931

Work Order: T1-01-154

TEST NAME: **Petroleum Hydrocarbons**

SAMPLE ID: **A-5**
SAMPLE DATE: **01/16/91**
LAB SAMPLE ID: **T101154-03**
SAMPLE MATRIX: **aqueous**
RECEIPT CONDITION: **Cool pH < 2**

RESULTS in Micrograms per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		01/24/91
Low Boiling Hydrocarbons	Mod.8015		01/24/91

PARAMETER	DETECTION LIMIT	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	50.	None
BTEX		
Benzene	0.5	None
Toluene	0.5	None
Ethylbenzene	0.5	None
Xylenes (total)	0.5	None

682-1-89

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Gettler-Ryan
Date: 01/31/91
Client Work ID: GR3909, Arco #4931

Work Order: T1-01-154

TEST NAME: **Petroleum Hydrocarbons**

SAMPLE ID: **A-6**
SAMPLE DATE: **01/16/91**
LAB SAMPLE ID: **T101154-04**
SAMPLE MATRIX: **aqueous**
RECEIPT CONDITION: **Cool pH < 2**

RESULTS in Micrograms per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		01/24/91
Low Boiling Hydrocarbons	Mod.8015		01/24/91

PARAMETER	DETECTION LIMIT	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	50.	None
BTEX		
Benzene	0.5	None
Toluene	0.5	None
Ethylbenzene	0.5	None
Xylenes (total)	0.5	None

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Gettler-Ryan
Date: 01/31/91
Client Work ID: GR3909, Arco #4931

Work Order: T1-01-154

TEST NAME: **Petroleum Hydrocarbons**

SAMPLE ID: **A-7**
SAMPLE DATE: **01/16/91**
LAB SAMPLE ID: **T101154-05**
SAMPLE MATRIX: **aqueous**
RECEIPT CONDITION: **Cool pH < 2**

RESULTS in Micrograms per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		01/23/91
Low Boiling Hydrocarbons	Mod.8015		01/23/91

PARAMETER	DETECTION LIMIT	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	50.	None
BTEX		
Benzene	0.5	None
Toluene	0.5	None
Ethylbenzene	0.5	None
Xylenes (total)	0.5	None

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Gettler-Ryan
Date: 01/31/91
Client Work ID: GR3909, Arco #4931

Work Order: T1-01-154

TEST NAME: **Petroleum Hydrocarbons**

SAMPLE ID: **A-9**
SAMPLE DATE: **01/16/91**
LAB SAMPLE ID: **T101154-06**
SAMPLE MATRIX: **aqueous**
RECEIPT CONDITION: **Cool pH < 2**

RESULTS in Micrograms per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		01/24/91
Low Boiling Hydrocarbons	Mod.8015		01/24/91

PARAMETER	DETECTION LIMIT	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	50.	None
BTEX		
Benzene	0.5	15.
Toluene	0.5	None
Ethylbenzene	0.5	None
Xylenes (total)	0.5	0.6

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Gettler-Ryan
Date: 01/31/91
Client Work ID: GR3909, Arco #4931

Work Order: T1-01-154

TEST NAME: **Petroleum Hydrocarbons**

SAMPLE ID: **A-10**
SAMPLE DATE: **01/16/91**
LAB SAMPLE ID: **T101154-07**
SAMPLE MATRIX: **aqueous**
RECEIPT CONDITION: **Cool pH < 2**

RESULTS in Micrograms per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		01/23/91
Low Boiling Hydrocarbons	Mod.8015		01/23/91

PARAMETER	DETECTION LIMIT	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	50.	None
BTEX		
Benzene	0.5	None
Toluene	0.5	None
Ethylbenzene	0.5	None
Xylenes (total)	0.5	None

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IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Gettler-Ryan
Date: 01/31/91
Client Work ID: GR3909, Arco #4931

Work Order: T1-01-154

TEST NAME: **Petroleum Hydrocarbons**

SAMPLE ID: **A-11**
SAMPLE DATE: **01/16/91**
LAB SAMPLE ID: **T101154-08**
SAMPLE MATRIX: **aqueous**
RECEIPT CONDITION: **Cool pH < 2**

RESULTS in Micrograms per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		01/23/91
Low Boiling Hydrocarbons	Mod.8015		01/23/91

PARAMETER	DETECTION LIMIT	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	50.	None
BTEX		
Benzene	0.5	None
Toluene	0.5	None
Ethylbenzene	0.5	None
Xylenes (total)	0.5	None

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Gettler-Ryan
Date: 01/31/91
Client Work ID: GR3909, Arco #4931

Work Order: T1-01-154

TEST NAME: **Petroleum Hydrocarbons**

SAMPLE ID: **A-12**
SAMPLE DATE: **01/16/91**
LAB SAMPLE ID: **T101154-09**
SAMPLE MATRIX: **aqueous**
RECEIPT CONDITION: **Cool pH < 2**

RESULTS in Micrograms per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		01/24/91
Low Boiling Hydrocarbons	Mod.8015		01/24/91

PARAMETER	DETECTION LIMIT	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	50.	None
BTEX		
Benzene	0.5	None
Toluene	0.5	None
Ethylbenzene	0.5	None
Xylenes (total)	0.5	None

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Gettler-Ryan
Date: 01/31/91
Client Work ID: GR3909, Arco #4931

Work Order: T1-01-154

TEST NAME: **Petroleum Hydrocarbons**

SAMPLE ID: **Trip Blank**
SAMPLE DATE: **not spec**
LAB SAMPLE ID: **T101154-10**
SAMPLE MATRIX: **aqueous**
RECEIPT CONDITION: **Cool pH < 2**

RESULTS in Micrograms per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		01/22/91
Low Boiling Hydrocarbons	Mod.8015		01/22/91

PARAMETER	DETECTION LIMIT	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	50.	None
BTEX		
Benzene	0.5	None
Toluene	0.5	None
Ethylbenzene	0.5	None
Xylenes (total)	0.5	None

682-1-89

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Gettler-Ryan
Date: 01/31/91
Client Work ID: GR3909, Arco #4931

Work Order: T1-01-154

TEST CODE **TPHVB** TEST NAME **TPH Gas,BTEX by 8015/8020**

The method of analysis for low boiling hydrocarbons is taken from EPA Methods modified 8015, 8020 and 5030. The sample is examined using the purge and trap technique. Final detection is by gas chromatography using a flame ionization detector in series with a photoionization detector. The result for total low boiling hydrocarbons is calculated as gasoline. Results in soils are corrected for moisture content and are reported on a dry soil basis unless otherwise noted.

71-01-154

Gettler - Ryan Inc. ENVIRONMENTAL DIVISION **Chain of Custody**

COMPANY ARCO Products Company SS # 4931 JOB NO.

JOB LOCATION 731 W. MacArthur Blvd

CITY Oakland PHONE NO. (415) 783-7500

AUTHORIZED Tom Paulson DATE P.O. NO. 3909

SAMPLE ID	NO. OF CONTAINERS	SAMPLE MATRIX	DATE/TIME SAMPLED	ANALYSIS REQUIRED	SAMPLE CONDITION LAB ID
A-2	3	Liquid	1-16-91 / 12:29	THC (gas) BTXE	Cool
A-3	↓	↓	↓ / 12:39	↓	↓
A-5	↓	↓	↓ / 12:06	↓	↓
A-6	↓	↓	↓ / 11:32	↓	↓
A-7	↓	↓	↓ / 11:48	↓	↓
A-9	↓	↓	↓ / 13:41	↓	↓
A-10	↓	↓	↓ / 13:08	↓	↓
A-11	↓	↓	↓ / 10:44	↓	↓
A-12	↓	↓	↓ / 10:20	↓	↓
trip blank	1	↓	1-7-91 / —	↓	↓

RELINQUISHED BY: Guadalupe Sanc[hez] 1-16-91 15:47 RECEIVED BY: Refrigerator #1 1-16-91 1548

RELINQUISHED BY: Refrigerator #1 1-17-91 800 RECEIVED BY: Bw Balan ~~BB Refrig #1~~ 1-17-91 801

RELINQUISHED BY: Bw Balan 1-17-91 1531 RECEIVED BY LAB: Josephine DeCarli 1/17/91 15:35

DESIGNATED LABORATORY: IT SCV DHS #: 137

REMARKS:

Normal TAT

DATE COMPLETED 1-16-91 FOREMAN Guadalupe Sanchez

ORIGINAL