gettler — ryan inc.
general contractors

90 FEB 21 PM 12:35

February 15, 1990

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

Attention: Mr. Larry Seto

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 Quarterly Report dated February 13, 1990 documenting the groundwater sampling and site activities conducted between October - December 1989.

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

Sincerely,

John P. Werfal
Project Manager

JPW/ch

enclosure

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

1992 national avenue • hayward, california 94545-1787 • 783-7500

GeoStrategies Inc.

QUARTERLY REPORT

OCTOBER - DECEMBER 1989

ARCO Service Station No. 4931
731 West MacArthur Boulevard
Oakland, California 94609

Report No. 7909-4

February 13, 1990

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

February 13, 1990

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

Attn: Mr. John Werfal

Re: QUARTERLY REPORT
ARCO Service Station No. 4931
731 West MacArthur Boulevard
Oakland, California

Gentlemen:

This quarterly report has been prepared for the above referenced site, for the October through December, 1989 quarter.

If you have any questions, please call.

GeoStrategies Inc. by,

David A. Ferreira
Geologist

Christopher M. Palmer
Senior Geologist
C.E.G. 1262, R.E.A. 285

REGISTERED GEOLOGIST
CHRISTOPHER M. PALMER
№ 1262
CERTIFIED
ENGINEERING
GEOLOGIST
STATE OF CALIFORNIA

DAF/CMP/mlg

Report No. 7909-4

1.0 INTRODUCTION

This Quarterly Report has been prepared by GeoStrategies Inc. (GSI) for ARCO Service Station No. 4931 located at 731 West MacArthur Boulevard in Oakland, California (Plate 1).

This report describes the results of the fourth quarterly ground-water sampling for 1989, performed by Gettler-Ryan Inc. (G-R), in accordance with the current quarterly sampling plan for the site. Field work and laboratory analytical methods were performed in compliance with current State of California Water Resources Control Board (SWRCB) procedures for conducting environmental investigations related to leaking underground fuel tanks. The G-R sampling protocol are presented in Appendix A. The field and chemical analytical data discussed in this report were collected between October 1 and December 31, 1989.

2.0 SITE HISTORY

A petroleum hydrocarbon product loss reportedly occurred in November 1982. As a result, four ground-water monitoring wells (A-1 through A-4) were installed at the site in December 1982. Four additional ground-water monitoring wells (A-5 through A-8) were installed by Groundwater Technology, Inc. (GTI) in March 1983. Well A-1 was destroyed during the replacement of the underground storage tanks in August 1983.

On June 18, 1986, EMCON Associates (EMCON) issued a report discussing ground-water quality conditions beneath the site. EMCON recommended the installation of three additional ground-water monitoring wells to further delineate the extent of lateral migration of petroleum hydrocarbons.

In December 1987, four additional ground-water monitoring wells (A-9 through A-12) were installed by Pacific Environmental Group, Inc. (PACIFIC). Ground-water analysis revealed that 7 of the 9 wells contained detectable concentrations of Benzene, Toluene, Ethylbenzene, and Xylenes (BTEX). The results of the investigation, along with a half-mile radius well survey, are presented in the PACIFIC report dated January 20, 1988.

Quarterly sampling was initiated for this site in January 1989 by G-R.

On March 20 and 21, 1989, G-R sampled all site monitoring wells. Well A-8 contained floating product. TPH-Gasoline was detected in monitoring wells A-2, A-3, A-4, A-5, A-6, and A-9 at concentrations ranging from 50 parts per billion (ppb) in Well A-9 to 360,000 ppb in Well A-4. Benzene was detected in wells A-2, A-3, A-4, A-5, A-6, A-7, and A-9, at concentrations ranging from 0.5 (A-5) to 1,500 (A-4). The results are presented in the GSI report dated April 20, 1989.

On May 24, 1989, G-R sampled all site monitoring wells. Well A-8 contained floating product. TPH-Gasoline was detected in monitoring wells A-2, A-3, A-4, A-6, and A-9 at concentrations ranging from 110 ppb (A-6) to 1,500,000 ppb (A-4). Benzene was detected in wells A-2, A-3, A-4, A-5, A-6, and A-9, at concentrations ranging from 0.50 ppb (A-5) to 1,000 ppb (A-4). The results are presented in the GSI report dated September 12, 1989.

On August 18, 1989, G-R sampled all site monitoring wells. Wells A-4 and A-8 contained floating product. TPH-Gasoline was detected in monitoring wells A-2, A-3, and A-9 at concentrations ranging from 180 ppb (A-3) to 14,000 ppb (A-2 and A-9). Benzene was detected in wells A-2, A-3, A-6, and A-9, at concentrations ranging from 0.70 ppb (A-3) to 900 ppb (A-2). The results are presented in the GSI report dated December 5, 1989.

The historical chemical analytical data have been tabulated and are presented in Appendix B.

On October 27, 1989, G-R performed the fourth quarterly sampling. The results are presented below.

No other site history data are available to GSI at this time.

3.0 GROUNDWATER LEVEL MONITORING

3.1 Potentiometric Data

Prior to ground-water sampling, on October 27, 1989, water levels were measured in each monitoring well using an electronic oil-water interface probe. Static water levels were measured from the surveyed top of the well box and recorded to the nearest $\pm$0.01 foot (Table 1). Plate 2 presents the location of each well at the site.

Ground-water elevation data for this quarter have been plotted and contoured and are presented on Plate 3. Water level data used to prepare the quarterly potentiometric map were taken from data collected on the same day that ground-water sampling occurred. Depth to groundwater in the uppermost water-bearing strata ranged from 8.25 to 11.66 feet below grade. Potentiometric data indicate that shallow groundwater beneath the site flows to the southwest with an approximate hydraulic gradient of 0.05.

Historically, depth to ground-water in the uppermost water-bearing strata ranged from 3.45 to 11.91 feet below ground surface. The shallow ground-water gradient ranged from 0.03 to 0.07 and the shallow ground-water flow was toward the southwest.

3.2 Floating Product Measurements

Measurements for separate-phase petroleum hydrocarbons (floating product) were made in each well using an oil-water interface probe. Floating product thicknesses were measured and recorded to the nearest ± 0.01 foot. All wells were visually inspected using a clean, clear acrylic bailer to confirm interface probe results.

Floating product was measured in monitoring wells A-4 (0.01 feet) and A-8 (1.31 feet) and a product sheen was observed in Well A-9 during this quarterly sampling event.

Historically, Wells A-4 and A-8 have contained floating product.

4.0 CHEMICAL ANALYTICAL DATA

Ground-water samples were collected from site monitoring wells on October 27, 1989. The ground-water samples were analyzed for Total Petroleum Hydrocarbons calculated as Gasoline (TPH-Gasoline) according to EPA Method 8015 (Modified) and BTEX according to EPA Method 8020. All analyses were performed by International Technology (IT) Analytical Services, a State-certified analytical laboratory located in San Jose, California.

TPH-Gasoline was detected in monitoring wells A-2, A-3, A-6, and A-9 at concentrations ranging from 55 ppb in Well A-6 to 16,000 ppb in Well A-2. Wells A-5, A-7, A-10, A-11, and A-12 were reported as none detected (ND).

A total of three wells at the site were found to contain aromatic fractions of petroleum hydrocarbon products at or above Regional Water Quality Control Board (RWQCB) Maximum Contaminant Levels (MCLs). As shown on Table 1, benzene concentrations were identified in ground-water samples collected from monitoring wells A-2 (1,200 ppb), A-6 (3.8 ppb), and A-9 (150 ppb).

TPH-Gasoline and benzene chemical analytical data were used to prepare isoconcentration maps for this quarter (Plates 4 and 5).

As shown on Plates 4 and 5, Well A-2 located on the east side of the site contains the highest concentrations of TPH-Gasoline and benzene. As in previous quarters, floating product thicknesses have increased in Well A-8 located in the southwest corner of the site. Well A-3 reported a drop in the concentrations of TPH-Gasoline and benzene as in previous quarters. Wells A-2, A-6 and A-9 report fluctuations in the concentrations of these constituents. On-site Well A-10, and off-site Wells A-11 and A-12, have been reported as ND since the March 20, 1989 sampling event. Well A-7 has been reported as ND since the May 24, 1989 sampling event and Well A-5 has been reported as ND since the August 18, 1989 sampling event. Current potentiometric and chemical analytical data appear to indicate a predominant ground-water flow to the southwest, with an apparent "mound" at A-9. This "mound" has been observed during previous monitoring events and the cause is not clear at this time.

4.1 Quality Control

The Quality Control (QC) sample for this quarterly ground-water sampling was a trip blank. The trip blank was prepared in the IT laboratory using organic-free water to evaluate laboratory handling and analytical procedures. QC procedures during sampling are summarized in the Methods and Procedures in Appendix A. The G-R Groundwater Sampling Report, Chain-of-Custody Form, and IT Analytical Services certified analytical report for this quarterly groundwater sampling are presented in Appendix C.

The analyses performed on the trip blank did not detect any measurable concentrations of TPH-Gasoline or BTEX. These results indicate that proper field and laboratory handling techniques were followed and that no hydrocarbons were introduced into the samples during sampling or transport.

5.0 SUMMARY

A summary of activities and findings associated with this quarterly report are presented below:

- Water levels were measured in selected monitoring wells. A potentiometric map was constructed from static water level elevation data. Potentiometric data indicate that the shallow groundwater, beneath the site, flows to the southwest with an approximate hydraulic gradient of 0.05.

- Floating product was measured in monitoring wells A-4 (0.01 feet) and A-8 (1.31 feet) this quarter.

- A total of four wells at the site reported detectable concentrations of TPH-Gasoline. Concentrations ranged from 55 ppb (A-6) to 16,000 ppb (A-2). Wells A-5, A-7, A-10, A-11, and A-12 were reported as ND.

- A total of three wells at the site reported concentrations of benzene above MCLs. Concentrations ranged from 3.8 ppb (A-6) to 1,200 ppb (A-2). Wells A-3, A-5, A-7, A-10, A-11, and A-12 were reported as ND.

6.0 PLANNED SITE ACTIVITIES

The following activities are planned for the first quarter, January 1 to March 31, 1990, at the site:

- All scheduled wells will be sampled and analyzed for TPH-Gasoline according to EPA Method 8015 (Modified) and BTEX according to EPA Method 8020.

- Water levels will be measured quarterly and selected data will be used to prepare a potentiometric map across the site. The local groundwater gradient will be calculated.

- Chemical analytical data will be used to construct isoconcentration maps for TPH-Gasoline and benzene.

REFERENCES CITED

EMCON Associates, 1986, letter report describing the sampling of Wells A-2 through A-8: Project 800-32.01, dated June 18, 1986.

GeoStrategies Inc., 1989, Quarterly Ground-water Sampling Report: Project No. 7909, dated April 20, 1989.

GeoStrategies Inc., 1989, Quarterly Ground-water Sampling Report: Report No. 7909-2, dated September 12, 1989.

GeoStrategies Inc., 1989, Quarterly Report: Report No. 7909-3, dated December 5, 1989.

PACIFIC Environmental Group, 1988, letter report describing the installation of Wells A-9 through A-12 and the sampling of all site wells: Project 130-12.03, dated January 20, 1988.

TABLE 1

GROUND-WATER ANALYSIS DATA

WELL NO	SAMPLE DATE	ANALYSIS DATE	TPH (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	27-Oct-89	03-Nov-89	16000.	1200.	340.	90.	3100.	55.38	47.13	----	8.25
A-3	27-Oct-89	01-Nov-89	120.	<0.5	<0.5	<0.5	<1.0	54.48	44.32	----	10.16
A-4	27-Oct-89	----	----	----	----	----	----	54.62	43.26	0.01	11.37
A-5	27-Oct-89	01-Nov-89	<50.	<0.5	<0.5	<0.5	<1.0	54.15	43.47	----	10.68
A-6	27-Oct-89	01-Nov-89	55.	3.8	1.6	1.7	6.	55.13	45.97	----	9.16
A-7	27-Oct-89	01-Nov-89	<50.	<0.5	<0.5	<0.5	<1.0	54.67	45.65	----	9.02
A-8	27-Oct-89	----	----	----	----	----	----	53.61	42.91	1.31	11.66
A-9	27-Oct-89	01-Nov-89	1700.	150.	36.	30.	110.	52.96	44.40	sheen	8.56
A-10	27-Oct-89	01-Nov-89	<50.	<0.5	<0.5	<0.5	<1.0	54.16	43.22	----	10.94

CURRENT REGIONAL WATER QUALITY CONTROL BOARD MAXIMUM CONTAMINANT LEVELS

Benzene 1.0 ppb Xylenes 1750 ppb Ethylbenzene 680 ppb

CURRENT DHS ACTION LEVELS

Toluene 100 ppb

TPH = Total Petroleum Hydrocarbons as Gasoline
PPB = Parts Per Billion ND = None Detected

Note: 1. All data shown as <x is reported as ND (none detected)
2. Water level elevations referenced to mean sea level (MSL)
3. Wells A-4 and A-8 contained separate phase product and were not sampled
4. Static water elevation has been corrected for product thickness

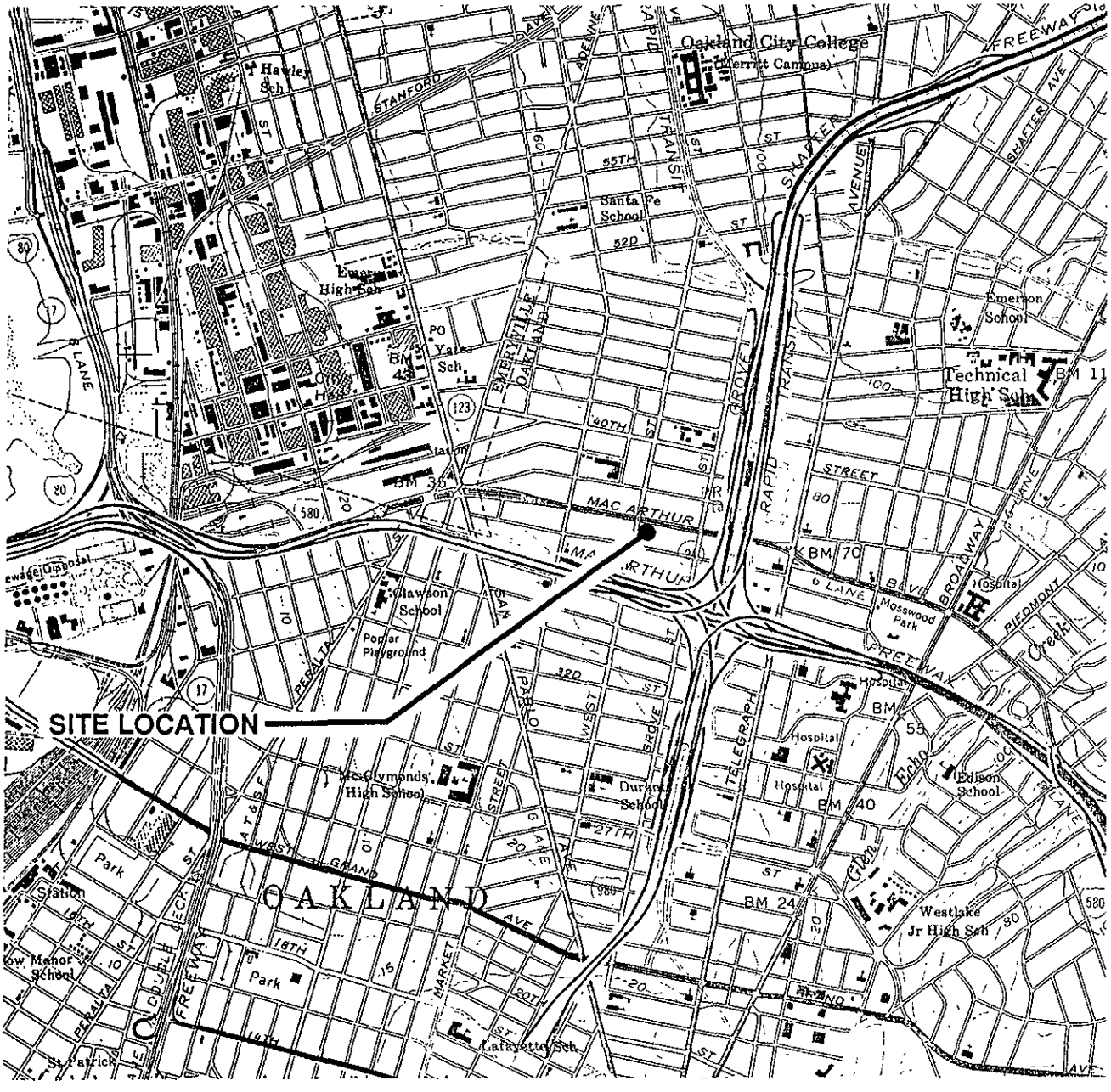
Report No. 7909-4

TABLE 1

GROUND-WATER ANALYSIS DATA

WELL NO	SAMPLE DATE	ANALYSIS DATE	TPH (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	27-Oct-89	02-Nov-89	<50.	<0.5	<0.5	<0.5	<1.0	53.75	43.12	----	10.63
A-12	27-Oct-89	01-Nov-89	<50.	<0.5	<0.5	<0.5	<1.0	52.05	41.99	----	10.06
TB	27-Oct-89	01-Nov-89	<50.	<0.5	<0.5	<0.5	<1.0	----	----	----	----

ILLUSTRATIONS



Base Map: USGS Topographic Map

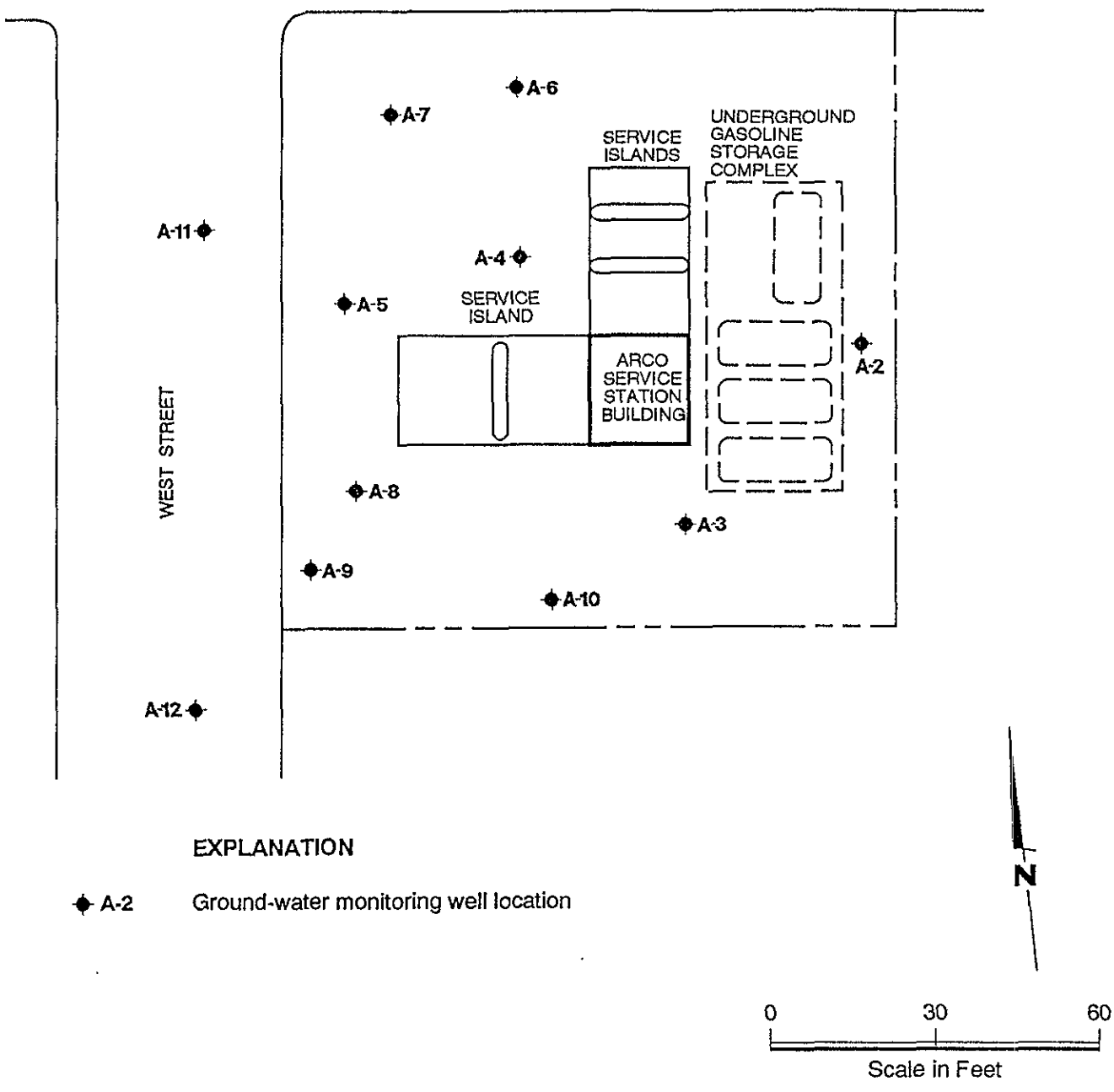
Approx. Scale: 1"=2000'

GeoStrategies Inc.

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

PLATE
1

JOBNUMBER	REVIEWEDBYRG/CEG	DATE	REVISEDDATE	REVISEDDATE
7909		10/89		

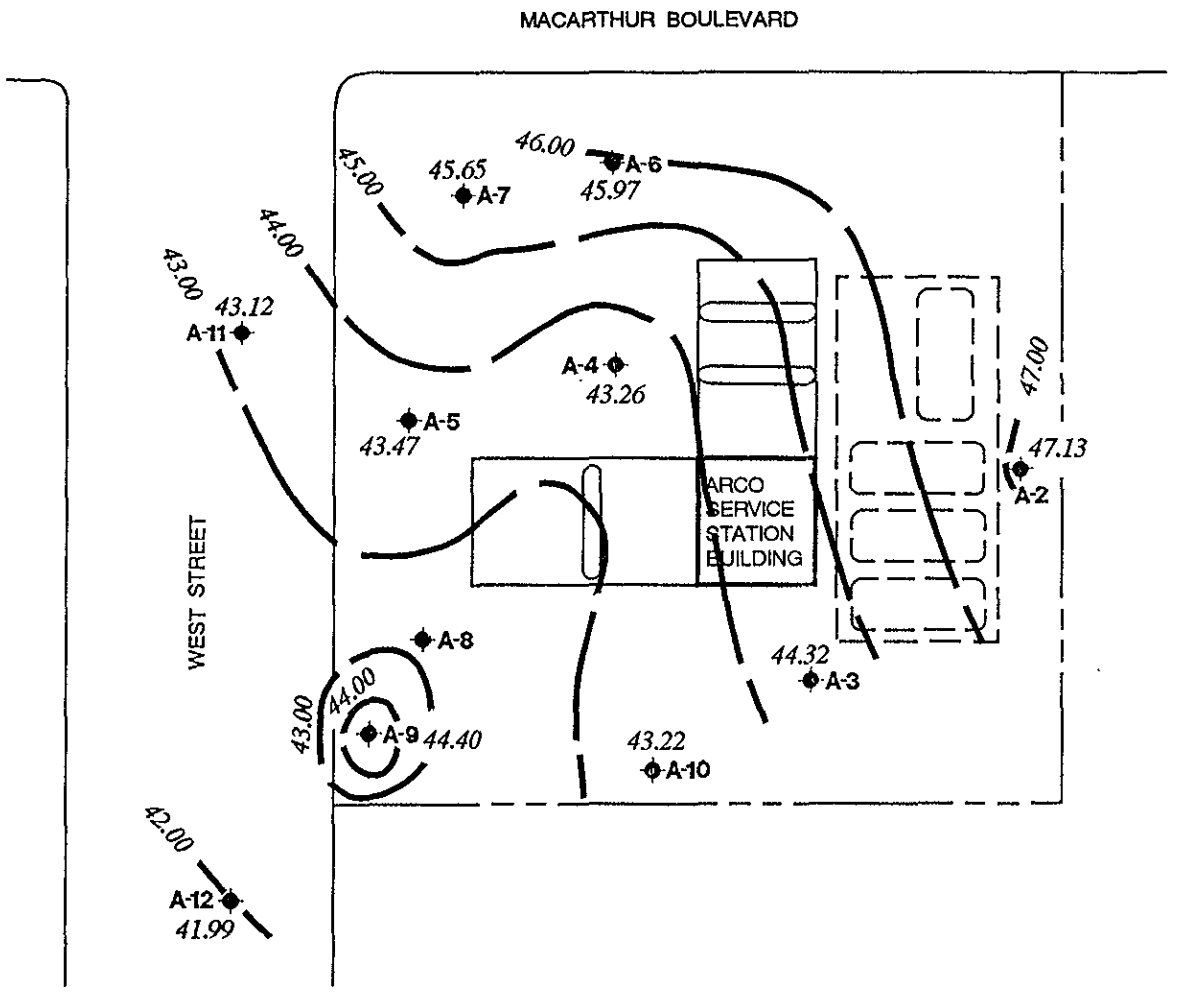


GeoStrategies Inc.

Site Plan
Arco Service Station #4931
731 West MacArthur Boulevard
Oakland, California

PLATE
2

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
7909	CWP CEG 1262	11/89		



EXPLANATION

A-2 — Ground-water monitoring well location

43.00 — Ground-water elevation contour
Approximate Gradient = 0.05

43.26 — Ground-water elevation measured on October 27, 1989 in feet referenced to mean sea level (MSL)

N

0 30 60
Scale in Feet

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

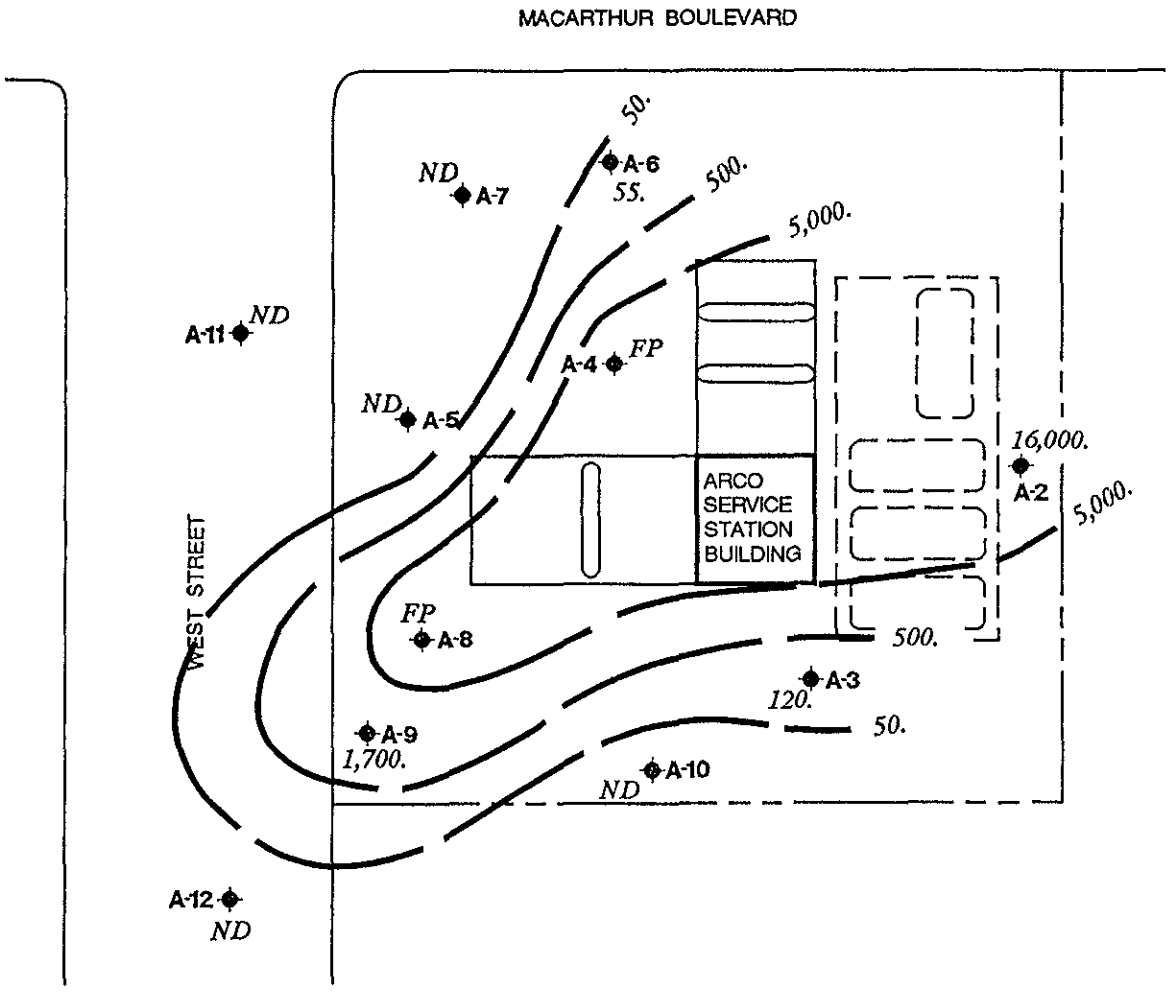
Well A-8 not used in contouring

GSI GeoStrategies Inc.

Potentiometric Map
Arco Service Station #4931
731 West MacArthur Boulevard
Oakland, California

PLATE
3

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
7909	RG CEG 1262	11/89		



EXPLANATION

◆ A-2	Ground-water monitoring well location
120.	TPH (Total Petroleum Hydrocarbon) concentration in ppb sampled on October 27, 1989
500.	TPH isoconcentration contour
ND	Not Detected (see laboratory reports for detection limits)
FP	Floating Product

N

0 30 60

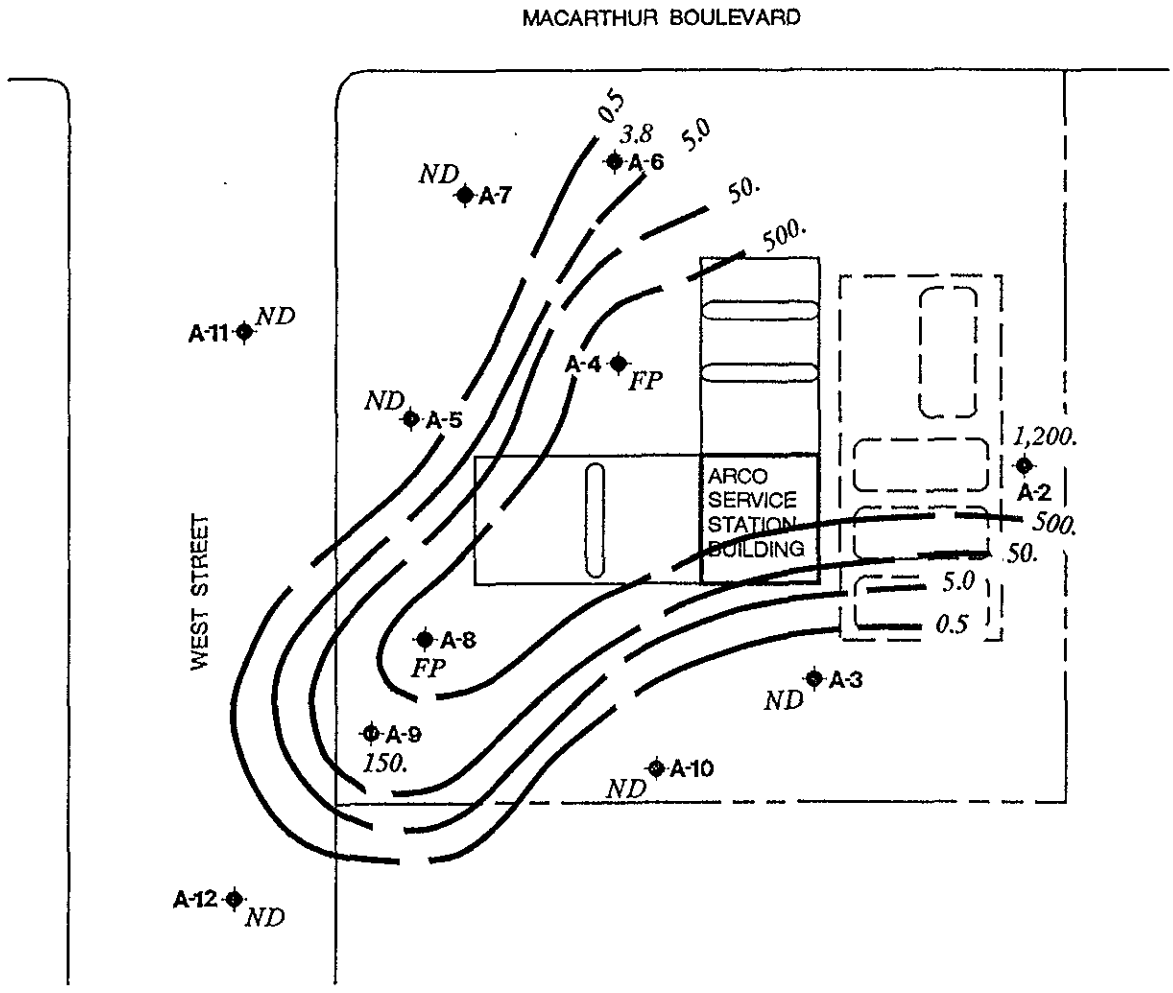
Scale in Feet

GeoStrategies Inc.

TPH Isoconcentration Map
Arco Service Station #4931
731 West MacArthur Boulevard
Oakland, California

PLATE **4**

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
7909	CWP CKG 1262	11/89		



EXPLANATION

◆ A-2	Ground-water monitoring well location
150.	Benzene concentration in ppb sampled on October 27, 1989
50.	Benzene isoconcentration contour
ND	Not Detected (see laboratory reports for detection limits)
FP	Floating Product

N

0 30 60

Scale in Feet

GeoStrategies Inc.

Benzene Isoconcentration Map
Arco Service Station #4931
731 West MacArthur Boulevard
Oakland, California

PLATE **5**

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
7909	CEG 1262	11/89		

APPENDIX A
FIELD METHODS AND PROCEDURES

GROUND-WATER SAMPLING AND ANALYSIS

Quality Assurance/Quality Control Objectives

The sampling and analysis procedures employed by Gettler-Ryan Inc. (G-R) for ground-water sampling and monitoring follow specific Quality Assurance/Quality Control (QA/QC) guidelines. Quality Assurance objectives have been established by G-R to develop and implement procedures for obtaining and evaluating water quality and field data in an accurate, precise, and complete manner so that sampling procedures and field measurements provide information that is comparable and representative of actual field conditions. Quality Control (QC) is maintained by G-R by using specific field protocols and requiring the analytical laboratory to perform internal and external QC checks. It is the goal of G-R to provide data that are accurate, precise, complete, comparable, and representative. The definitions for accuracy, precision, completeness, comparability, and representativeness are as follows:

- Accuracy - the degree of agreement of a measurement with an accepted referenced or true value.

- Precision - a measure of agreement among individual measurements under similar conditions. Usually expressed in terms of the standard deviation.

- Completeness - the amount of valid data obtained from a measurement system compared to the amount that was expected to meet the project data goals.

- Comparability - expresses the confidence with which one data set can be compared to another.

- Representativeness - a sample or group of samples that reflects the characteristics of the media at the sampling point. It also includes how well the sampling point represents the actual parameter variations which are under study.

As part of the G-R QA/QC program, applicable federal, state, and local reference guidance documents are followed. The procedures outlined in these regulations, manuals, handbooks, guidance documents, and journals are incorporated into the G-R sampling procedures to assure that; (1) ground-water samples are properly collected, (2) ground-water samples are identified, preserved, and transported in a manner such that they are representative of field conditions, and (3) chemical analysis of samples are accurate and reproducible.

gettler — ryan inc. (415) 783-7500
general and environmental contractors

August 15, 1989

Guidance and Reference Documents Used to Collect Groundwater Samples

These documents are used to verify Gettler-Ryan Inc. sampling procedures and consistent with current regulatory guidance. If site specific work and sampling plans are required, those plans will be developed from these documents.

U.S.E.P.A. - 330/9-51-002	NEIC Manual for Groundwater/Subsurface Investigation at Hazardous Waste Sites
U.S.E.P.A. - 530/SW611	Procedures Manual for Groundwater Monitoring at Solid Waste Disposal Facilities (August, 1977)
U.S.E.P.A. - 600/4-79-020	Methods for Chemical Analysis of Water and Wastes (1983)
U.S.E.P.A. - 600/4-82-029	Handbook for Sampling and Sample Preservation of Water and Wastewater (1982)
U.S.E.P.A. - 600/4-82-057	Test Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater (July, 1982)
U.S.E.P.A. - SW-846#, 3rd Edition	Test Methods for Evaluating Solid Waste - Physical/Chemical Methods (November, 1986)
40 CFR 136.3e,Table II (Code of Federal Regulations)	Required Containers, Preservation Techniques, and Holding Times
Resources Conservation and Recover Act (OSWER 9950.1)	Groundwater Monitoring Technical Enforcement Guidance Document (September, 1986)
California Regional Water Quality Control Board (Central Valley Region)	A Compilation of Water Quality Goals (September, 1988); Updates (October, 1988)
California Regional Water Quality Control Board (North Coast, San Francisco Bay, and Central Valley)	Regional Board Staff Recommendations for Initial Evaluations and Investigation of Underground Tanks: Tri-Regional Recommendations (June, 1988)

Guidance and Reference Documents Used to Collect Groundwater Samples (cont.)

Regional Water Quality Control Board (Central Valley Region)	Memorandum: Disposal, Treatment, and Refuse of Soils Contaminated with Petroleum Fractions (August, 1986)
State of California Department of Health Services	Hazardous Waste Testing Laboratory Certification List (March, 1987)
State of California Water Resources Control Board	Leaking Underground Fuel Tank (LUFT) Field Manual (May, 1988), and LUFT Field Manual Revision (April, 1989)
State of California Water Resources Control Board	Title 23, (Register #85.#33-8-17-85), Subchapter 16: Underground Tank Regulations; Article 3, Sections 2632 and 2634; Article 4, Section 2647 (October, 1986)
Alameda County Water District	Groundwater Protection Program: Guidelines for Groundwater and Soil Investigations at Leaking Underground Fuel Tank Sites (November, 1988)
American Public Health Association	Standard Methods for the Examination of Water and Wastewaters, 16th Edition
Analytical Chemistry (journal)	Principles of Environmental Analysis, Volume 55, Pages 2212-2218 (December, 1983)
Santa Clara Valley Water District	Guidelines for Preparing or Reviewing Sampling Plans for Soil and Groundwater Investigation of Fuel Contamination Sites (January, 1989)
Santa Clara Valley Water District	Investigation and Remediation at Fuel Leak sites: Guidelines for Investigation and Technical Report Preparation (March 1989)
American Petroleum Institute	Groundwater Monitoring & Sample Bias; API Publication 4367, Environmental Affairs Department, June 1983
Site Specific (as needed)	General and specific regulatory documents as required.

Because ground-water samples collected by G-R are analyzed to the parts per billion (ppb) range for many compounds, extreme care is exercised to prevent contamination of samples. When volatile or semi-volatile organic compounds are included for analysis, G-R sampling crew members will adhere to the following precautions in the field:

1. A clean pair of new, disposable gloves are worn for each well being sampled.

2. When possible, samples are collected from known or suspected wells that are least contaminated (i.e. background) followed by wells in increasing order of contamination.

When known or potential organic compounds are being sampled for, the following additional precautions are taken:

1. All sample bottles and equipment are kept away from fuels and solvents. When possible, gasoline (used in generators) is stored away from bailers, sample bottles, purging pumps, etc.

2. Bailers are made of Teflon or Stainless Steel. Other materials such as plastic may contaminate samples with phthalate esters which interfere with many Gas Chromatography (GC) analyses.

3. Volatile organic ground-water samples are collected so that air passage through the sample does not occur or is minimal (to prevent volatiles from being stripped from the samples): sample bottles are filled by slowly running the sample down the side of the bottle until there is a positive convex meniscus over the neck of the bottle; the Teflon side of the septum (in cap) is positioned against the meniscus, and the cap screwed on tightly; the sample is inverted and the bottle lightly tapped. The absence of an air bubble indicates a successful seal; if a bubble is evident, the cap is removed, more sample is added, and the bottle is resealed.

4. Extra Teflon seals are brought into the field in case seals are difficult to handle and/or are dropped. Dropped seals are considered contaminated and are not used. When replacing seals or if seals become flipped, care is taken to assure that the Teflon seal faces down.

Sample analysis methods, containers, preservatives and holding times are shown on Table 1.

Laboratory and field handling procedures of samples are monitored by including QC samples for analysis with every submitted sample lot from a project site. QC samples may include any combination of the following:

A. Trip Blank: Used for purgeable organic compounds only; QC samples are collected in 40 milliliter (ml) samples vials filled in the analytical laboratory with organic-free water. Trip blanks are sent to the project site, and travel with project site samples. Trip blanks are not opened, and are returned from a project site with the project site samples for analysis.

B. Field Blank: Prepared in the field using organic-free water. These QC samples accompany project site samples to the laboratory and are analyzed for specific chemical parameters unique to the project site where they were prepared.

C. Duplicates: Duplicated samples are collected "second samples" from a selected well and project site. They are collected as either split samples or second-run samples collected from the same well.

D. Equipment Blank: Periodic QC sample collected from field equipment rinsate to verify decontamination procedures.

The number and types of QC samples are determined as follows:

A. Up to 2 wells - Trip Blank Only

B. 2 to 5 Wells - 1 Field Blank and 1 Trip Blank

C. 5 to 10 Wells - 1 Field blank, 1 Trip Blank, and 1 Duplicate

D. More than 10 Wells - 1 Field Blank, 1 Trip Blank, and 1 Duplicate per each 12 wells

E. If sampling extends beyond one day, quality control samples will be collected for each day.

SAMPLE COLLECTION

This section describes the routine procedures followed by G-R while collecting ground-water samples for chemical analysis. These procedures include decontamination, water-level measurements, well purging, physical parameter measurements, sample collection, sample preservation, sample handling, and sample documentation. Critical sampling objectives for G-R are to:

1. Collect ground-water samples that are representative of the sampled matrix and,

2. Maintain sample integrity from the time of sample collection to receipt by the analytical laboratory.

Sample analyses methods, containers, preservation, and holding times are presented in Table 1.

Decontamination Procedures

All physical parameter measuring and sampling equipment are decontaminated prior to sample collection using Alconox or equivalent detergent followed by steam cleaning with deionized water. Any sampling equipment surfaces or parts that might absorb specific contaminants, such as plastic pump valves, impellers, etc., are cleaned in the same manner.

Sample bottles, bottle caps, and septa used for sampling volatile organics are thoroughly cleaned and prepared in the laboratory. Sample bottles, bottle caps, and septa are protected from all potential chemical contact before actual usage at a sample location.

During field sampling, equipment placed in a well are decontaminated before purging or sampling the next well. The equipment are decontaminated by cleaning with Alconox or equivalent detergent followed by steam cleaning with deionized water.

Water-Level Measurements

Prior to purging and sampling a well, the static-water levels are measured in all wells at a project site using an electric sounder and/or calibrated portable oil-water interface probe (Figure 3). Both static water-level and separate-phase product thickness are measured to the nearest ±0.01 foot. The presence of separate-phase product is confirmed using a clean, acrylic or polyvinylchloride (PVC) bailer, measured to the nearest ±0.01 foot with a decimal scale tape.

Water-Level Measurements (continued)

The monofilament line used to lower the bailer is replaced between wells with new line to preclude the possibility of cross-contamination. Field observations (e.g. well integrity, product color, turbidity, water color, odors, etc.) are noted on the G-R Well Sampling Field Data Sheet shown in Figure 3. Before and after each use, the electric sounder, interface probe and bailer are decontaminated by washing with Alconox or equivalent detergent followed by rinsing with deionized water to prevent cross-contamination.

As mentioned previously, water-levels are measured in wells with known or suspected lowest dissolved chemical concentrations to the highest dissolved concentrations.

Well Purging

Before sampling occurs, well casing storage water and interstitial water in the artificial sand pack will be purged using (1) a positive displacement bladder pump constructed of inert, non-wetting, Teflon and stainless steel, (2) a pneumatic-airlift pumping system, (3) a centrifigal pumping system, or (4) a Teflon or Stainless steel bailer (Figure 4). Methods of purging will be assessed based on well size, location, accessibility, and known chemical conditions. Individual well purge volumes are calculated from borehole volumes which take into account the sand packed interval in the well annular space. As a general rule, a minimum of 3 and a maximum of 10 borehole volumes will be purged. Wells which dewater or demonstrate slow recharge periods (i.e. low-yield wells) during purging activities may be sampled after fewer purging cycles. If a low-yield (low recovery) well is to be sampled, sampling will not take place until at least 80 percent of the previously measured water column has been replaced by recharge, or as per local requirements. Physical parameter measurements (temperature, pH, and specific conductance) are closely monitored throughout the well purging process and are used by the G-R sampling crew as indicators for assessing sufficient purging. Purging is continued until all three physical parameters have stabilized. Specific conductance (conductivity) meters are read to the nearest ±10 umhos/cm, and are calibrated daily. pH meters are read to the nearest ±0.1 pH units and are calibrated daily. Temperature is read to the nearest 0.1 degree F. Calibration of physical parameter meters will follow manufacturers specifications. Monitoring wells will be purged according to the protocol presented in Figure 4. Collected field data during purging activities will be entered on the G-R Well Sampling Field Data Sheet shown in Figure 3. Copies of the G-R Field Data Sheets will be reviewed by the G-R Sampling Manager for accuracy and completeness.

DOCUMENTATION

Sample Container Labels

Each sample container will be labeled by an adhesive label, noted in permanent ink immediately after the sample is collected. Label information will include:

Sample point designation (i.e. well number or code)

Sampler's identification

Project number

Date and time of collection

Type of preservation used

Well Sampling Data Forms

In the field, the G-R sampling crew will record the following information on the Well Sampling Data Sheet for each sample collected:

Project number

Client

Location

Source (i.e. well number)

Time and date

Well accessibility and integrity

Pertinent well data (e.g. depth, product thickness, static water-level, pH, specific conductance, temperature)

Calculated and actual purge volumes

Chain-of-Custody

A Chain-of-Custody record (Figure 5) shall be completed and accompany every sample and every shipment of samples to the analytical laboratory in order to establish the documentation necessary to trace sample possession from time of collections. The record will contain the following information:

- Sample or station number or sample identification (ID)
- Signature of collector, sampler, or recorder
- Date and time of collection
- Place of collection
- Sample type
- Signatures of persons involved in chain of possession
- Inclusive dates of possession

Samples shall always be accompanied by a Chain-of-Custody record. When transferring the samples, the individual relinquishing and receiving the samples will sign, date, and note the time on the Chain-of-Custody record. G-R will be responsible for notifying the laboratory coordinator when and how many samples will be sent to the laboratory for analysis, and what types of analyses shall be performed.

TABLE 1

SAMPLE ANALYSIS METHODS, CONTAINERS, PRESERVATIONS, AND HOLDING TIMES

Parameter	Analytical Method	Reporting Units	Container	Preservation	Maximum Holding Time
Total Petroleum Hydrocarbons (gasoline)	EPA 8015 (modified)	mg/l ug/l	40 ml. vial glass, Teflon	cool, 4 C HC1 to pH<2	14 days (maximum)
Benzene Toluene Ethylbenzene Xylenes (BTEX)	EPA 8020	mg/l ug/l mg/l	50 ml. vial glass, Teflon lined septum 1 l glass, Teflon	cool, 4 C HC1 to pH<2	7 days (w/o preservative) 14 days (w preservative)
Oil & Grease	SM 503E	ug/l	lined septum	H2SO4 to pH<2	28 days (maximum)
Total Petroleum Hydrocarbons (Diesel)	EPA 8015 (modified)	mg/l ug/l	40 ml. vial glass, Teflon lined septum	cool, 4 C	14 days (maximum)
Halogented Volatile Organics (chlorinated solvents)	8010	mg/l ug/l	40 ml. vial glass, Teflon lined septum	cool, 4 C	14 days (maximum)
Non chlorinated solvents	8020	mg/l ug/l	40 ml. vial glass, Teflon lined septum	cool, 4 C HCl to pH<2	14 days (maximum)
Volatile Organics	8240	mg/l ug/l	40 ml. vial glass, Teflon lined septum	cool, 4 C	14 days (maximum)
Semi-Volatile Organics	8270	mg/l ug/l	40 ml. vial glass, Teflon lined septum	cool , 4 C	14 days (maximum)
Specific Conductance (Field test)		umhos/cm			
pH (Field test)		pH units			
Temperature (Field test)		Deg F			

CLAYTON RYAN INC.
General and Environmental Contractors

WELL SAMPLING FIELD DATA SHEET

COMPANY _____ JOB # _____

LOCATION _____ DATE _____

CITY _____ TIME _____

Well ID. _____ Well Condition _____

Well Diameter _____ in. Hydrocarbon Thickness _____ ft.

Total Depth _____ ft.

Depth to Liquid- _____ ft.

Volume Factor (VF)			
	2" = 0.17	6" = 1.60	12" = 5.80
	3" = 0.38	8" = 2.60	
	4" = 0.66	10" = 4.10	

(# of casing volumes) _____ x _____ x(VF) _____ = (Estimated Purge Volume) _____ gal.

Purging Equipment _____

Sampling Equipment _____

Starting Time _____ Purging Flow Rate _____ gpm.

(Estimated Purge Volume) _____ gal. / (Purging Flow Rate) _____ gpm. = (Anticipated Purging Time) _____ min.

Time	pH	Conductivity	Temperature	Volume

Did well dewater? _____ If yes, time _____ Volume _____

Sampling Time _____ Weather Conditions _____

Analysis _____ Bottles Used _____

Chain of Custody Number _____

COMMENTS _____

FOREMAN _____ ASSISTANT _____

FIGURE 3

Monitoring Well Sampling Protocol Schematic

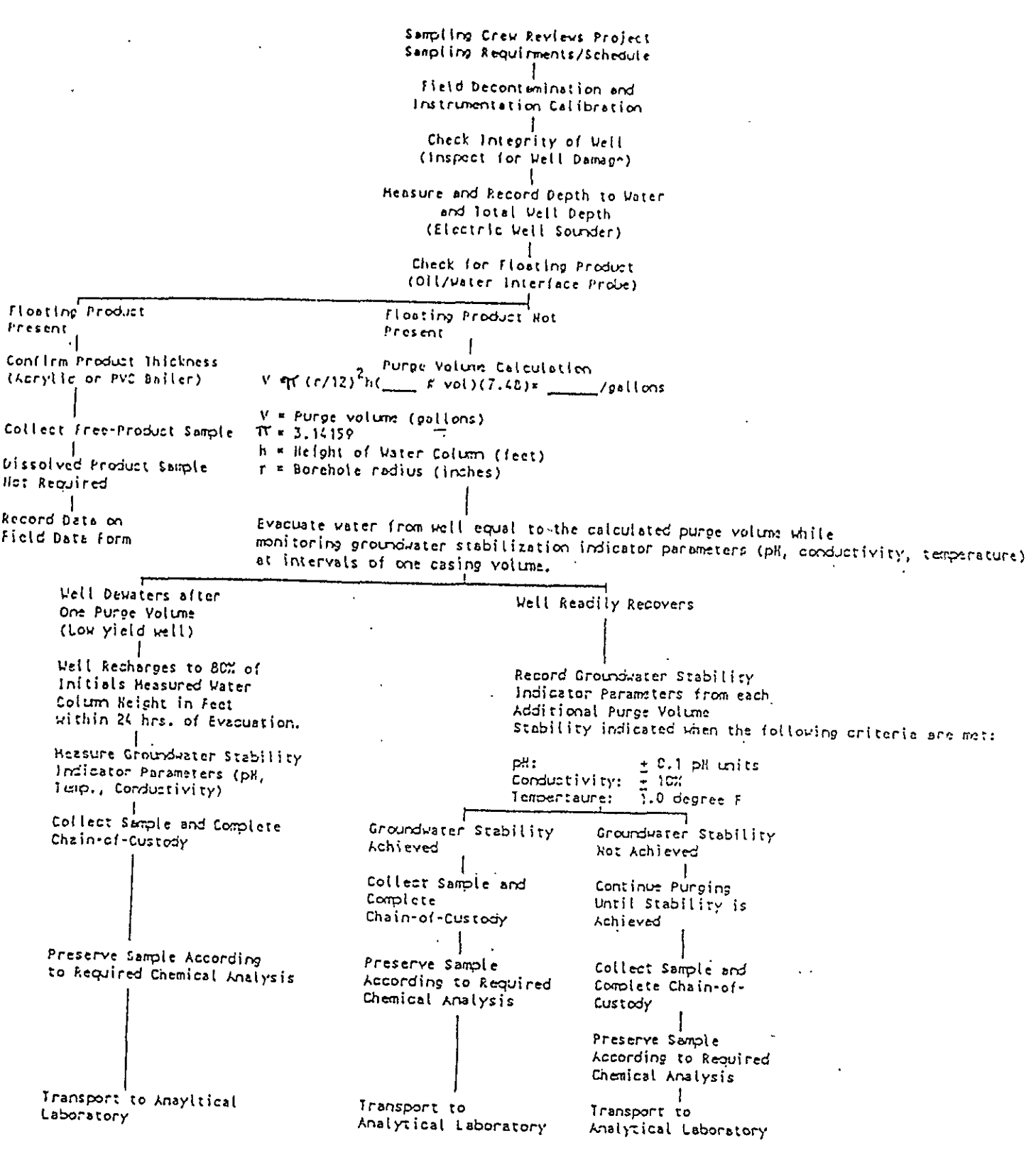


FIGURE 4

Geitler - Ryan Inc. ENVIRONMENTAL DIVISION — Chain of Custod

COMPANY _____ JOB NO. _____

JOB LOCATION _____

CITY _____ PHONE NO. _____

AUTHORIZED _____ DATE _____ P.O. NO. _____

SAMPLE ID	NO. OF CONTAINERS	SAMPLE MATRIX	DATE/TIME SAMPLED	ANALYSIS REQUIRED	SAMPLE CONDITION LAB ID

ELINQUISHED BY: _____ RECEIVED BY: _____

ELINQUISHED BY: _____ RECEIVED BY: _____

ELINQUISHED BY: _____ RECEIVED BY LAB: _____

ESIGNATED LABORATORY: _____ DHS #: _____

EMARKS: _____

TE COMPLETED _____ FOREMAN _____

FIGURE 5

APPENDIX B
HISTORICAL CHEMICAL ANALYTICAL DATA

ANALYTICAL LOG

SAMPLE DATE	SAMPLE POINT	TPH (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.
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.
20-Mar-89	A-4	360000.	1500.	3700.	6500.	35000.
24-May-89	A-4	1500000.	1000.	2000.	6000.	23000.
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.
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.
21-Mar-86	A-7	<10.	----	----	----	----
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.
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.

ANALYTICAL LOG

SAMPLE DATE	SAMPLE POINT	TPH (PPB)	BENZENE (PPB)	TOLUENE (PPB)	E.B. (PPB)	XYLENES * (PPB)
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.
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.
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.
20-Mar-89	AF-6	<50.	<0.5	<1.	<1.	<3.
24-May-89	AF-2	<50.	<0.5	<1.	<1.	<3.
24-May-89	AF-4	<50.	<0.5	<1.	<1.	<3.
07-Jan-88	TB	<50.	<0.5	<1.	----	<4.
20-Mar-89	TB	<50.	<0.5	<1.	<1.	<3.
24-May-89	TB	<50.	<0.5	<1.	<1.	<3.
18-Aug-89	TB	<50.	<0.5	<1.	<1.	<3.
27-Oct-89	TB	<50.	<0.5	<0.5	<0.5	<1.

* ETHYLBENZENE & XYLENES COMBINED IN 1986 AND 1988

ALL DATA SHOWN AS <X ARE REPORTED AS ND (NONE DETECTED)

APPENDIX C
GETTLER-RYAN INC.
GROUNDWATER SAMPLING REPORT

gettler — ryan inc.

November 9, 1989

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: October 27, 1989

This report presents the results of the quarterly groundwater sampling and analytical program conducted by Gettler-Ryan Inc. on October 27, 1989 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, all 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 8.25 to 11.66 feet below grade. A product sheen was observed in well A-9. Separate phase product was observed in wells A-4 and A-8.

Wells that did not contain separate phase product were purged and sampled. 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. In cases where a well dewatered or less than four case volumes were purged, groundwater samples were obtained after the physical parameters had stabilized. The purge water was contained in drums for proper disposal. Details of the final well purging results are presented on the attached Table of Monitoring Data.

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.

1992 national avenue • hayward, california 94545-1787 • (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 137. 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)	18.5	19.3	----	23.8	25.1	22.7
Depth to Water (feet)	8.25	10.16	11.37**	10.68	9.16	9.02
Free Product (feet)	none	none	0.01	none	none	none
Reason Not Sampled	----	----	free product	----	----	----
Calculated 4 Case Vol.(gal.)	27.2	24.0	----	20.0	24.4	20.8
Did Well Dewater?	yes	yes	----	yes	yes	yes
Volume Evacuated (gal.)	8	7	----	10	19	16
Purging Device	Suction	Suction	----	Suction	Suction	Suction
Sampling Device	Bailer	Bailer	----	Bailer	Bailer	Bailer
Time	13:37	14:07	----	12:57	12:15	12:35
Temperature (F)*	67.5	71.2	----	70.3	70.2	70.9
pH*	6.35	6.50	----	6.58	6.63	6.56
Conductivity (umhos/cm)*	754	1017	----	703	590	585

* Indicates Stabilized Value

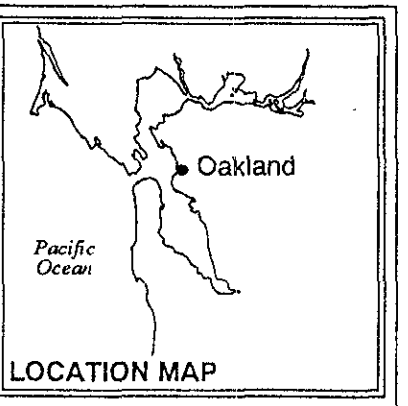
** Not corrected for presence of free product

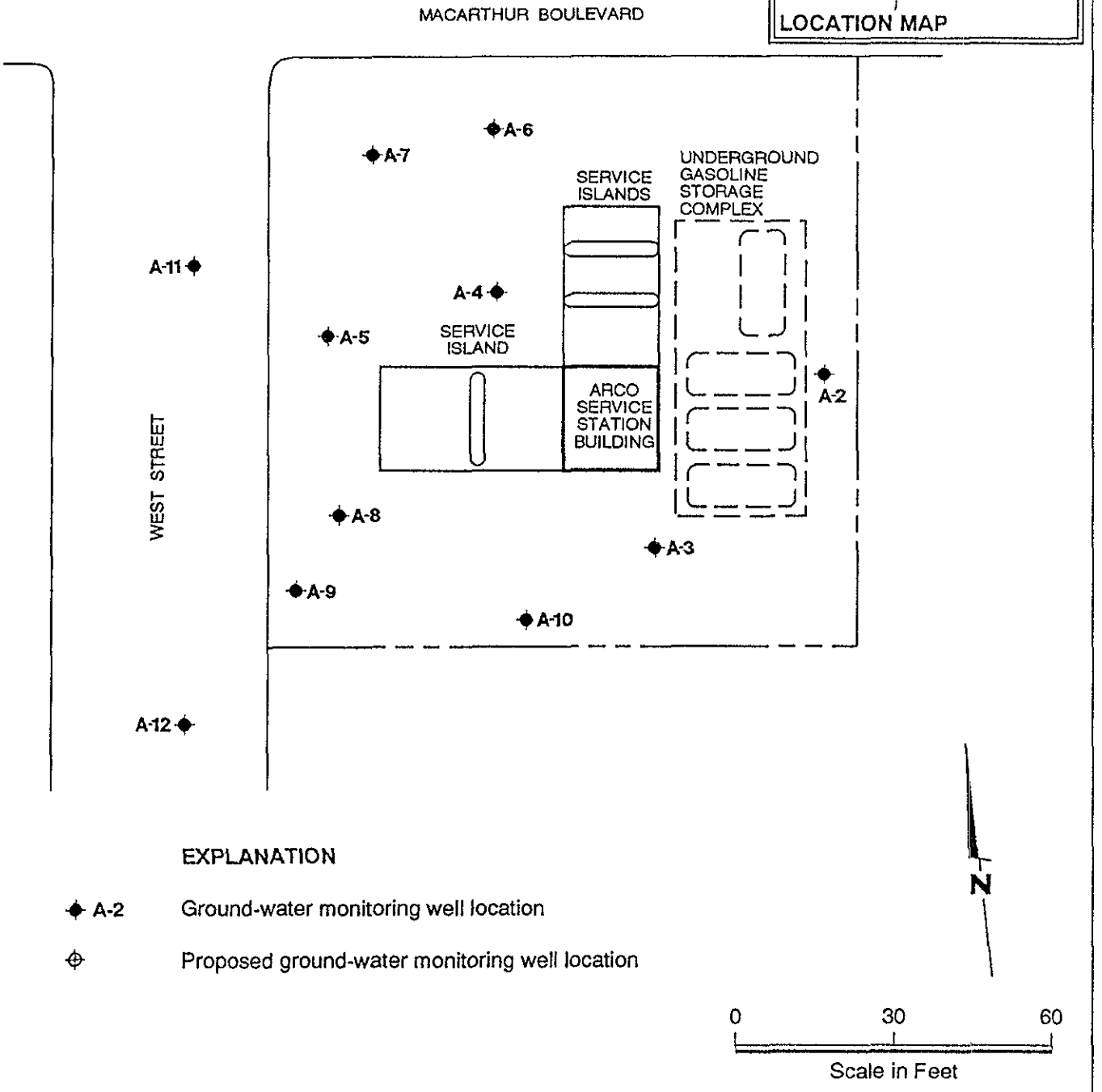
TABLE OF MONITORING DATA
GROUNDWATER WELL SAMPLING REPORT

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)	----	37.6	28.6	27.7	29.1
Depth to Water (feet)	11.66**	8.56**	10.94	10.63	10.06
Free Product (feet)	1.31	sheen	none	none	none
Reason Not Sampled	free product	----	----	----	----
Calculated 4 Case Vol.(gal.)	----	174.2	26.8	26.0	28.8
Did Well Dewater?	----	no	no	no	yes
Volume Evacuated (gal.)	----	221	34	34	28
Purging Device	----	Suction	Suction	Suction	Suction
Sampling Device	----	Bailer	Bailer	Bailer	Bailer
Time	----	15:55	14:40	11:35	11:05
Temperature (F)*	----	70.8	67.7	68.7	68.8
pH*	----	6.42	6.69	6.61	6.59
Conductivity (umhos/cm)*	----	661	708	655	655

* Indicates Stabilized Value

** Not corrected for presence of free product





GeoStrategies Inc.

Site Plan
Arco Service Station #4931
731 West MacArthur Boulevard
Oakland, California

PLATE
1

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
909		9/89		

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

CERTIFICATE OF ANALYSIS

Gettler-Ryan
1992 National Avenue
Hayward, CA 94545
ATTN: John Werfal

Date: November 7, 1989

Work Order Number: S9-10-344

P.O. Number: 3909

This is the Certificate of Analysis for the following samples:

Client Project ID:	GR #3909, Arco SS# 4931, 731 W. MacArthur Blvd/ West St., Oakland, CA
Date Received by Lab:	10/30/89
Number of Samples:	10
Sample Type:	Water

The method of analysis for low boiling hydrocarbons is taken from EPA Methods 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 as well as a photoionization detector. The result for total low boiling hydrocarbons is calculated as gasoline and includes benzene, toluene, ethyl benzene and xylenes.

Reviewed and Approved

David A. Pichette
Project Manager

DAP/tw
2 Pages Following - Tables of Results

Date: November 7, 1989
Client Project ID: GR #3909, Arco, 731 W. MacArthur Blvd/ West St., Oakland, CA
Work Order Number: S9-10-344

IT ANALYTICAL SERVICES
SAN JOSE, CA

Lab Sample ID	Client Sample ID	Sample Date	Date Analysis Completed	Sample Condition on Receipt
S9-10-344-01	A-2	10/27/89	11/03/89	Cool, pH≤2
S9-10-344-02	A-3	10/27/89	11/01/89	Cool, pH≤2
S9-10-344-03	A-5	10/27/89	11/01/89	Cool, pH≤2
S9-10-344-04	A-6	10/27/89	11/01/89	Cool, pH≤2
S9-10-344-05	A-7	10/27/89	11/01/89	Cool, pH≤2

Total Petroleum Hydrocarbons - Modified E.P.A. Methods 8015, 8020

ND = None Detected

Results - Micrograms per Liter

Lab Sample ID	Client Sample ID	Low Boiling Hydrocarbons (calculated as Gasoline)	Benzene	Toluene	Ethyl Benzene	Xylenes (total)
S9-10-344-01	A-2	16000.	1200.	340.	90.	3100.
Detection Limit		1000.	10.	10.	10.	20.
S9-10-344-02	A-3	120.	ND	ND	ND	ND
Detection Limit		50.	0.5	0.5	0.5	1.
S9-10-344-03	A-5	ND	ND	ND	ND	ND
Detection Limit		50.	0.5	0.5	0.5	1.
S9-10-344-04	A-6	55.	3.8	1.6	1.7	6.
Detection Limit		50.	0.5	0.5	0.5	1.
S9-10-344-05	A-7	ND	ND	ND	ND	ND
Detection Limit		50.	0.5	0.5	0.5	1.

Date: November 7, 1989
Client Project ID: GR #3909, Arco, 731 W. MacArthur Blvd/ West St., Oakland, CA
Work Order Number: S9-10-344

IT ANALYTICAL SERVICES
SAN JOSE, CA

Lab Sample ID	Client Sample ID	Sample Date	Date Analysis Completed	Sample Condition on Receipt
S9-10-344-06	A-9	10/27/89	11/01/89	Cool, pH≤2
S9-10-344-07	A-10	10/27/89	11/01/89	Cool, pH≤2
S9-10-344-08	A-11	10/27/89	11/02/89	Cool, pH≤2
S9-10-344-09	A-12	10/27/89	11/01/89	Cool, pH≤2
S9-10-344-10	Trip Blank	----	11/01/89	Cool, pH≤2

Total Petroleum Hydrocarbons - Modified E.P.A. Methods 8015, 8020

ND = None Detected

Results - Micrograms per Liter

Lab Sample ID	Client Sample ID	Low Boiling Hydrocarbons (calculated as Gasoline)	Benzene	Toluene	Ethyl Benzene	Xylenes (total)
S9-10-344-06	A-9	1700.	150.	36.	30.	110.
S9-10-344-07	A-10	ND	ND	ND	ND	ND
S9-10-344-08	A-11	ND	ND	ND	ND	ND
S9-10-344-09	A-12	ND	ND	ND	ND	ND
S9-10-344-10	Trip Blank	ND	ND	ND	ND	ND
Detection Limit		50.	0.5	0.5	0.5	1.

Gettler - Ryan Inc. 59-10-3444 ENVIRONMENTAL DIVISION 1213 **Chain of Custody**

COMPANY Arco Products Company SS # 4931 JOB NO.

JOB LOCATION 731 W. MacArthur / West

CITY Oakland, CA PHONE NO. (415) 783-7500

AUTHORIZED John Werfal DATE 10-27-89 P.O. NO. 3909

SAMPLE ID	NO OF CONTAINERS	SAMPLE MATRIX	DATE/TIME SAMPLED	ANALYSIS REQUIRED	SAMPLE CONDITION LAB ID
A-2	3	Liquid	10/27/89 15:37	THC (Gas) BTXE	OK / Ice
A-3			14:07		
A-5			12:57		
A-6			12:15		
A-7			12:35		
A-9			15:55		
A-10			14:40		
A-11			11:35		
A-12			11:05		
trip blank	1		10-27-89		

RELINQUISHED BY: Guadalupe Sanchez 10-30-89

RECEIVED BY: [signature] 10-30-89 713am

RELINQUISHED BY: [signature] 10-30-89 11:00 am

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY LAB: Julie Clifford 10/30/89 11:00

DESIGNATED LABORATORY: IT SCV DHS #: 157

REMARKS:

Normal TAT Results due

DATE COMPLETED 10-27-89 FOREMAN Guadalupe Sanchez

ORIGINAL