



**Chevron U.S.A. Inc.**

2410 Camino Ramon, San Ramon, California • Phone (415) 842-9500  
Mail Address: P.O. Box 5004, San Ramon, CA 94583-0804

Marketing Operations

January 30, 1990

D. Moller  
Manager, Operations  
S. L. Patterson  
Area Manager, Operations  
C. G. Trimbach  
Manager, Engineering

Mr. Rafat Shahid  
Alameda County  
Environmental Health  
80 Swan Way, Room 200  
Oakland, California 94621

Re: Former Chevron Station #9-2960  
2416 Grove Way/Redwood Road  
Castro Valley, CA

Dear Mr. Shahid:

Enclosed we are forwarding the groundwater sampling update report dated January 5, 1990, conducted by our consultant GeoStrategies Inc. (GSI), for the above referenced site. As indicated in the report, levels of hydrocarbon were detected in all of the onsite monitoring wells.

The need for additional site assessment is apparent. Chevron has instructed GSI to permit and install additional onsite and offsite monitoring wells to further define the extent of contamination. All work will be performed in accordance with published regulatory guidelines. When contaminant definition is complete, GSI will prepare recommendations for appropriate remedial actions. All technical reports will be forwarded to your office. Allowing for sufficient time to secure encroachment permits, perform work, and prepare the report of findings, we have placed a May 1, 1990 deadline for submittal of the next formal report.

Chevron will proceed with the above proposed work under self direction unless otherwise informed by your office. Please let us know if you will be requiring submittal of a formal work plan.

I declare under penalty of perjury that the information contained in the attached report is true and correct, and that any recommended actions are appropriate under the circumstances, to the best of my knowledge.

If you have any questions or comments please do not hesitate to call me at (415) 842 - 9625.

Very truly yours,

C. G. Trimbach

By   
John Randall

JMR/jmr  
Enclosure

cc: Mr. Lester Feldman  
RWQCB-Bay Area  
1800 Harrison Street  
Suite # 700  
Oakland, CA 94612

Jerri Garber  
First Presbyterian Church  
2490 Grove Way  
Castro Valley, CA 95646

Jerry Mitchell  
GSI



**GeoStrategies Inc.**

6-11-90

**SITE UPDATE**

Former Chevron Service Station #2960  
2416 Grove Way  
Castro Valley, California

Report No. 7170-1

January 5, 1990



**GeoStrategies Inc.**

2140 WEST WINTON AVENUE  
HAYWARD, CALIFORNIA 94545

(415) 352-4800

January 5, 1990

RECEIVED

JAN 10 1990

GETTLER-RYAN INC.  
GENERAL CONTRACTORS

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

Attn: Mr. Jerry Mitchell

Re: SITE UPDATE  
Former Chevron Service Station #2960  
2416 Grove Way  
Castro Valley, California

Gentlemen:

**INTRODUCTION**

This Site Update has been prepared for the above referenced location (Plate 1).

This report describes the results of the groundwater sampling performed by Gettler-Ryan Inc. (G-R), on October 16, 1989. Included are an updated site plan, potentiometric map, and chemical concentration map.

**GROUNDWATER LEVEL MONITORING**

Potentiometric Data

Prior to ground-water sampling, depth to groundwater levels were measured in each well using an electronic interface probe. Water levels were measured on October 16, 1989, by G-R. Static groundwater levels were measured from the top of well box and recorded to the nearest  $\pm 0.01$  foot. Groundwater was encountered between 16.36 and 20.26 feet below the top of the well box.

Ground-water elevation data for this quarter has been plotted and contoured and is presented as a potentiometric map (Plate 3). Water level data indicate a local ground-water gradient of 0.005 which flows toward the southwest beneath the site. Table 1 presents a summary of the potentiometric data for this quarter.

# GeoStrategies Inc.

Gettler-Ryan Inc.

January 5, 1990

Page 2

Each well was monitored for separate-phase petroleum hydrocarbons using an electric oil-water interface probe. Monitoring well C-1 contained 0.91 feet of floating hydrocarbons and subsequently was not sampled.

## CHEMICAL ANALYTICAL DATA

Ground-water samples were collected from site monitoring wells by G-R on October 16, 1989. The monitoring wells were sampled for Total Petroleum Hydrocarbons calculated as Gasoline (TPH-Gasoline) using EPA Method 8015 (Modified), and benzene, toluene, ethylbenzene, and xylenes (BTEX) according to EPA Method 8020. All samples were analyzed by Superior Analytical Laboratory (Superior), a State-certified environmental laboratory located in Martinez, California. A copy of the G-R groundwater sampling protocol is presented in Appendix A.

TPH-Gasoline was reported in Wells C-2 and C-3 at concentrations of 600 parts per billion (ppb) and 900 ppb respectively. Monitoring well C-4 was reported as none detected (ND) for TPH-Gasoline. Three wells contained benzene concentrations above the current Regional Water Quality Control Board (RWQCB) Maximum Contaminant Levels (MCLs). Benzene was detected in Wells C-2 (260 ppb), C-3 (610 ppb), and C-4 (12 ppb). A TPH-Gasoline/Benzene chemical concentration map was prepared using this quarter's sampling results (Plate 4). Table 1 presents a summary of all available ground-water analytical data for the site. A copy of the G-R groundwater Sampling Report, Chain-of-Custody Forms, and Superior Analytical Results are presented in Appendix B.

# GeoStrategies Inc.

Gettler-Ryan Inc.  
January 5, 1990  
Page 3

If you have any questions, please call.

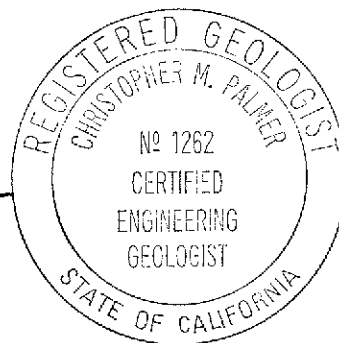
GeoStrategies Inc. by,

*Randall Young*

Randall S. Young  
Geologist

*Christopher M. Palmer*

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



RSY/CMP/kjj

- Plate 1. Vicinity Map
- Plate 2. Site Plan
- Plate 3. Potentiometric Map
- Plate 4. TPH-Gasoline/Benzene concentration Map
- Appendix A. G-R Sampling Protocol
- Appendix B. G-R Groundwater Sampling Report

TABLE 1

## GROUND-WATER ANALYSES 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)
C-1	23-Oct-86	----	37000.	6400.	3700.	----	4300.	----	----	----	----
C-1	----	----	----	----	----	----	----	92.34	74.36	0.91	18.69
C-2	23-Oct-86	----	30000.	2700.	1900.	----	1500.	----	----	----	----
C-2	16-Oct-89	26-Oct-89	600.	260.	34.	1.7	41.	90.79	74.43	----	16.36
C-3	13-Oct-86	----	3300.	49.	24.	----	20.	----	----	----	----
C-3	16-Oct-89	25-Oct-89	900.	610.	4.2	1.6	16.	93.09	74.14	----	18.95
C-4	13-Oct-86	----	570.	3.	4.	----	5.	----	----	----	----
C-4	16-Oct-89	26-Oct-89	<500	12	1.0	<0.5	0.8	94.99	74.73	----	20.26
TB	16-Oct-89	25-Oct-89	<500	<0.5	<0.5	<0.5	<0.5	----	----	----	----

CURRENT REGIONAL WATER QUALITY CONTROL BOARD MAXIMUM  
CONTAMINANT LEVELS

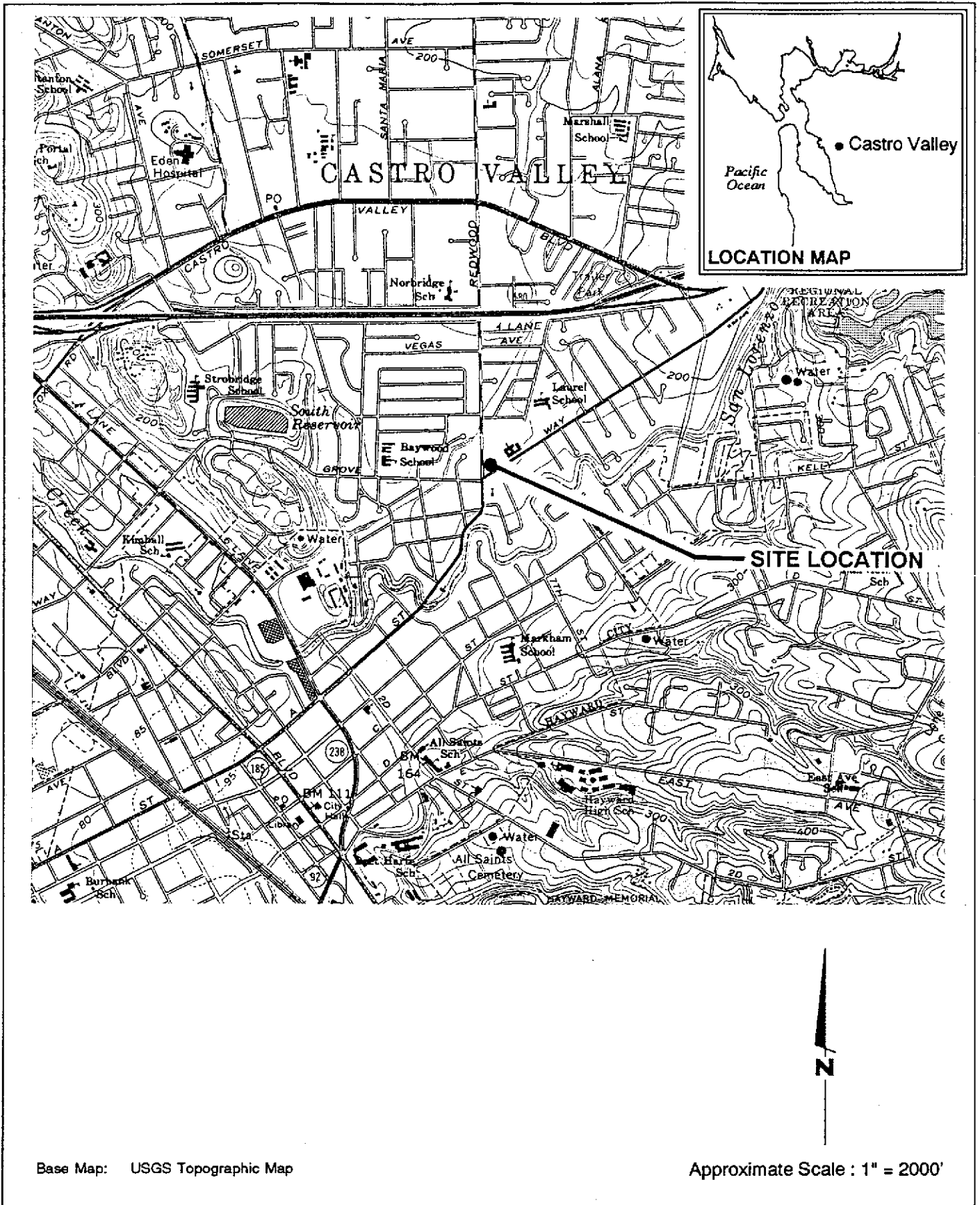
Benzene 1 ppb      Xylenes 1750 ppb      Ethylbenzene 680 ppb

CURRENT DHS ACTION LEVELS

Toluene 100 ppb

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

- Note: 1. Water level elevations referenced to project datum  
2. DHS Action Levels and MCLs are subject to change pending State review  
3. Well C-1 contained free product and was not sampled 16-Oct-89  
4. All data shown as <x is reported as none detected (ND)



Base Map: USGS Topographic Map

Approximate Scale : 1" = 2000'



GeoStrategies Inc.

Vicinity Map  
 Former Chevron Service Station #2960  
 2416 Grove Way  
 Castro Valley, California

PLATE

1

JOB NUMBER  
 7170

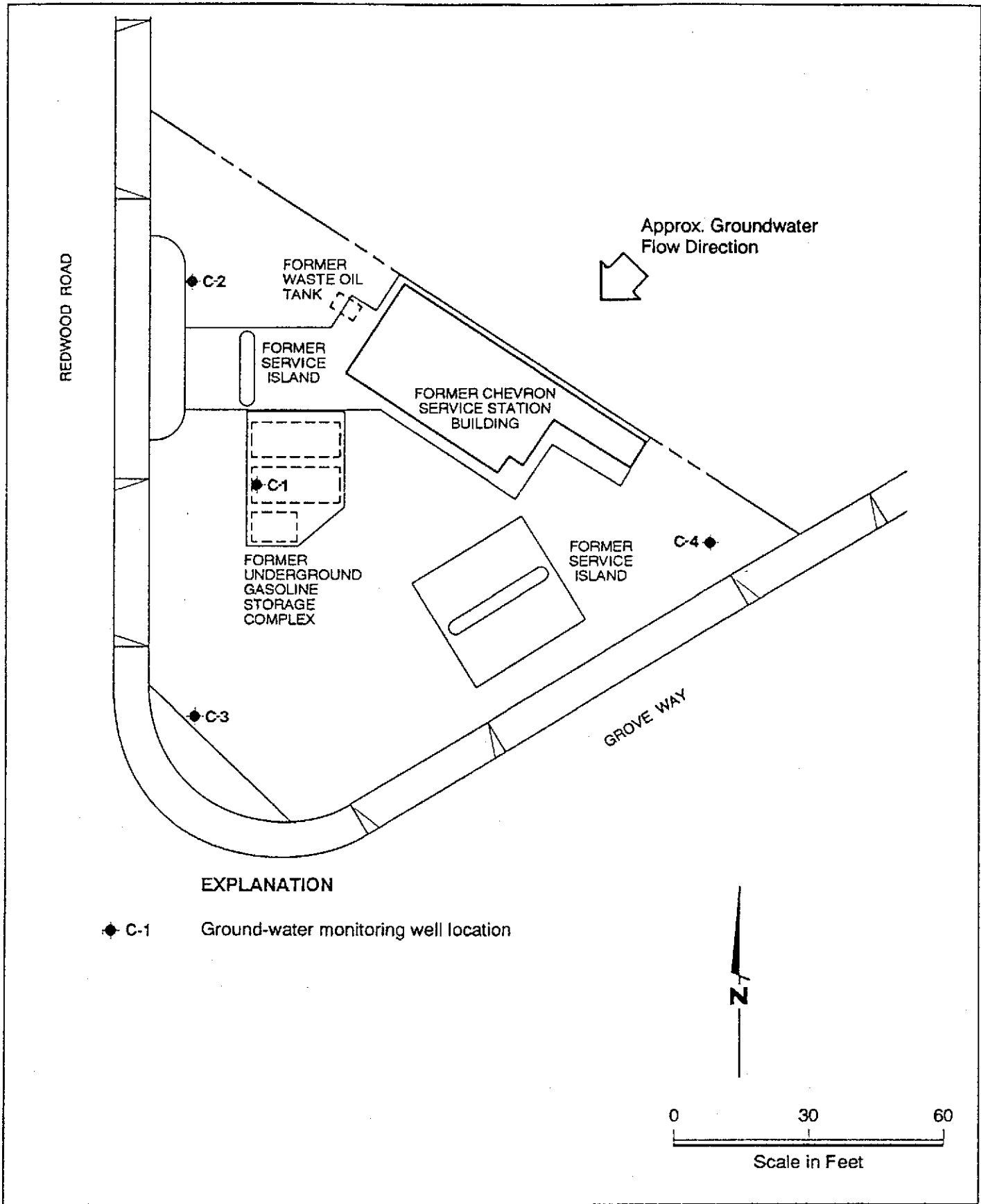
REVIEWED BY RG/CEG

DATE  
 11/89

REVISED DATE

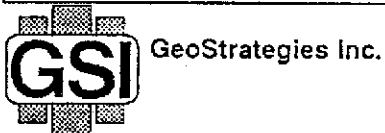
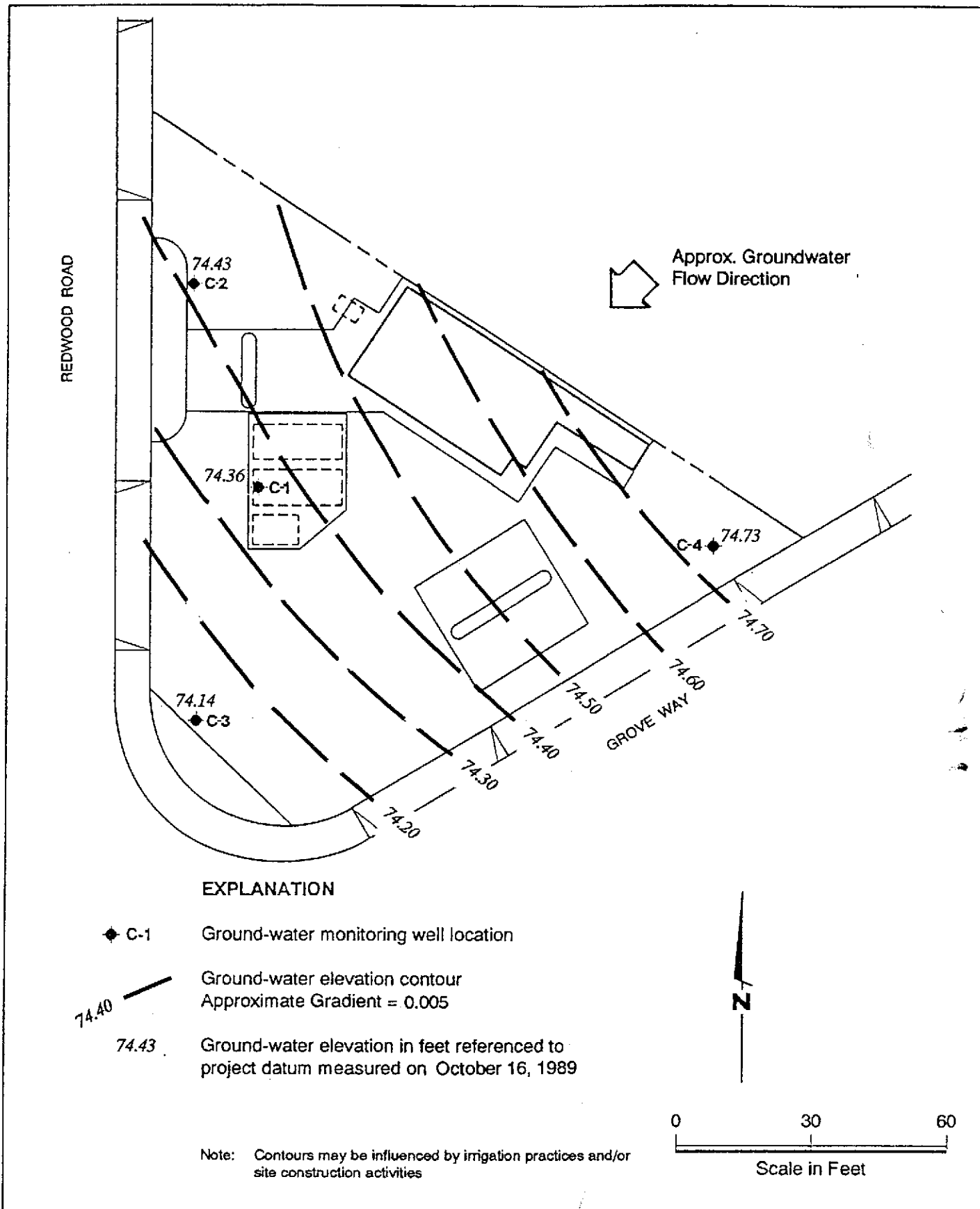
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**EXPLANATION**

◆ C-1 Ground-water monitoring well location



Potentiometric Map  
Former Chevron Service Station #2960  
2416 Grove Way  
Castro Valley, California

PLATE

**3**

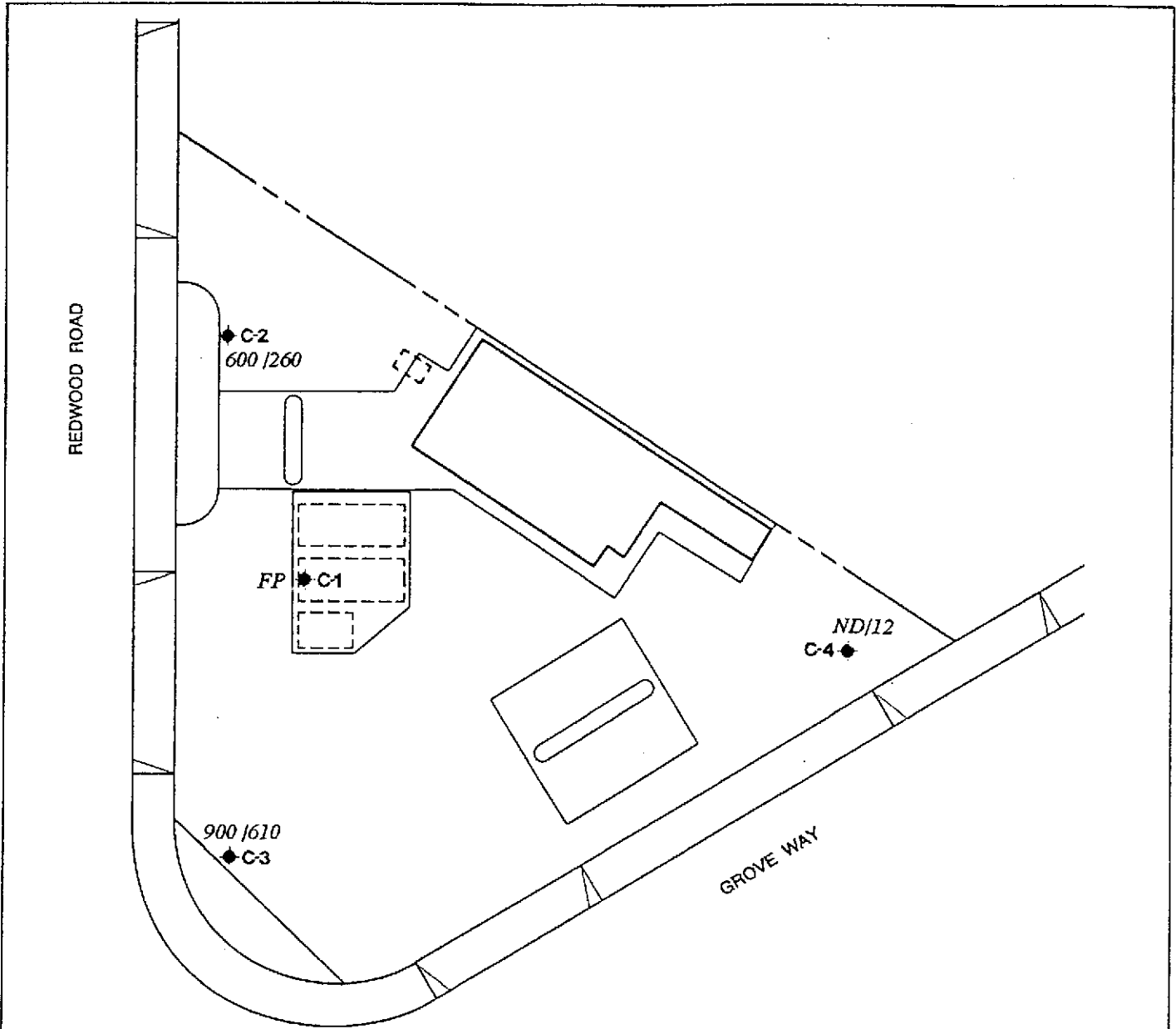
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REVIEWED BY RG/CEG  
CMP of 6/24/2

DATE  
12/89

REVISED DATE

REVISED DATE



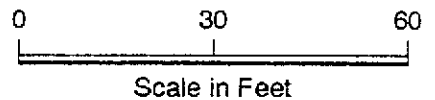
**EXPLANATION**

◆ C-1 Ground-water monitoring well location

600 / 260 TPH (Total Petroleum Hydrocarbon)/ Benzene concentrations in ppb sampled on October 16, 1989

FP Floating Product

ND Not Detected Note: Values reported as ND are less than the detection limit.



GeoStrategies Inc.

**TPH/Benzene Concentration Map**  
Former Chevron Service Station #2960  
2416 Grove Way  
Castro Valley, California

PLATE

**4**

JOB NUMBER  
7170

REVIEWED BY RG/CEG  
UMP cky 1262

DATE  
12/89

REVISED DATE

REVISED DATE

GROUND-WATER SAMPLING AND ANALYSISQuality 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.

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  $\pm 0.01$  foot. The presence of separate-phase product is confirmed using a clean, acrylic or polyvinylchloride (PVC) bailer, measured to the nearest  $\pm 0.01$  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 centrifugal 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  $\pm 10$  umhos/cm, and are calibrated daily. pH meters are read to the nearest  $\pm 0.1$  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

<u>Parameter</u>	<u>Analytical Method</u>	<u>Reporting Units</u>	<u>Container</u>	<u>Preservation</u>	<u>Maximum Holding Time</u>
Total Petroleum Hydrocarbons (gasoline)	EPA 8015 (modified)	mg/l ug/l	40 ml. vial glass, Teflon	cool, 4 C HCl to pH<2	14 days (maximum)
Benzene	EPA 8020	mg/l	50 ml. vial	cool, 4 C	7 days (w/o preservative)
Toluene		ug/l	glass, Teflon lined septum	HCl to pH<2	14 days (w preservative)
Ethylbenzene					
Xylenes (BTEX)		mg/l	1 l glass, Teflon		
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)
Halogenated 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			

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" = 1.50	12" = 5.00
	3" = 0.30	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 \_\_\_\_\_

Monitoring Well Sampling Protocol Schematic

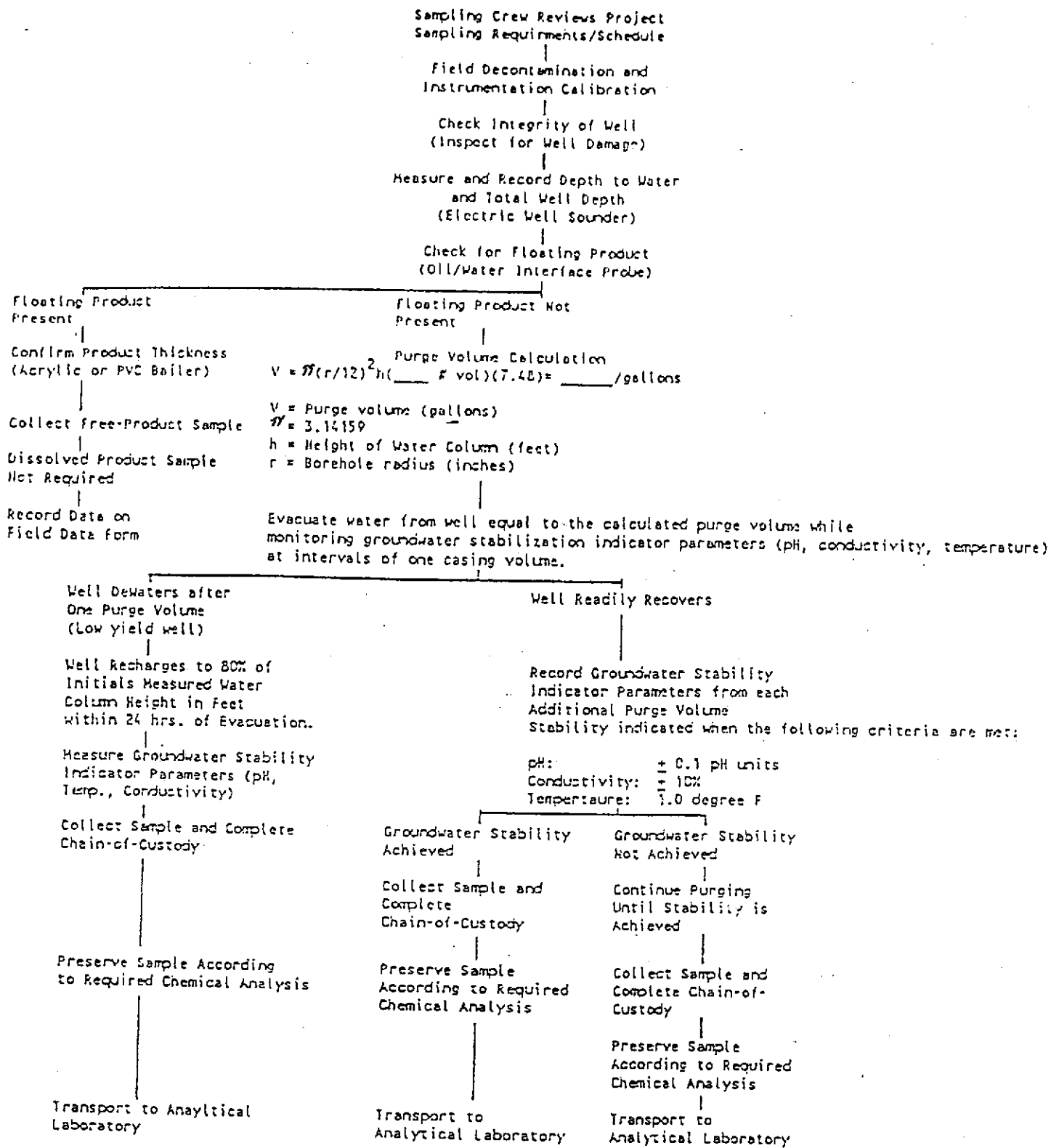


FIGURE 4







November 3, 1989

## GROUNDWATER SAMPLING REPORT

Chevron U.S.A. Inc.  
Post Office Box 5004  
San Ramon, California 94583-0804

Referenced Site: Former Chevron Service Station #2960  
2416 Grove Way/Redwood Road  
Castro Valley, California

Sampling Date: October 16, 1989

This report presents the results of the quarterly groundwater sampling and analytical program conducted by Gettler-Ryan Inc. on October 16, 1989 at the referenced location. The site, located on the northeast corner of Grove Way and Redwood Road, is no longer an operating service station. The former station had underground storage tanks which contained petroleum products.

There are currently four groundwater monitoring wells on 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. A clean acrylic bailer was used to visually confirm the presence and thickness of separate phase product. Groundwater depths ranged from 16.36 to 20.26 feet below grade. Separate phase product was observed in monitoring well C-1.

Wells which did not contain separate phase product were then 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 one drum for proper disposal. Details of the final well purging results are presented on the attached Table of Monitoring Data.

Samples were collected, using Teflon bladder pumps, 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 field blank (CF-3) and a trip blank, supplied by the laboratory, were included and analyzed to assess quality control. Analytical results for the blanks are included in the Certified Analytical Report (CAR's). Chain of custody records were established noting sample identification numbers, time, date, and custody signatures.

The samples were analyzed at Superior Analytical Laboratory Inc. located at 825 Arnold, Suite 2, Martinez, California. The laboratory is assigned a California DHS-HMTL Certification number of 319. The results are presented as a Certified Analytical Report, a copy of which is attached to this report.



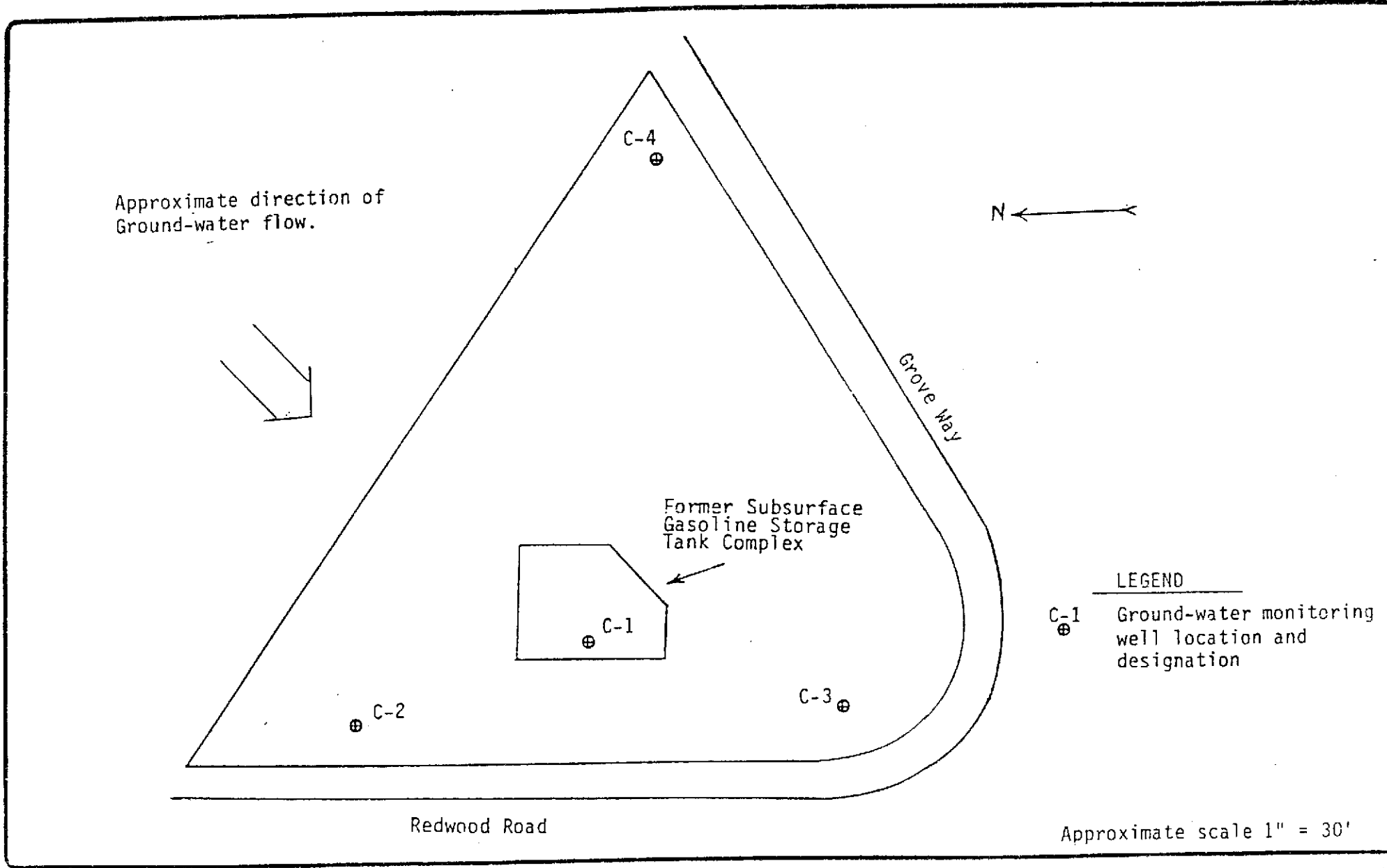
Tom Paulson  
Sampling Manager

attachments

TABLE OF MONITORING DATA  
GROUNDWATER WELL SAMPLING REPORT

WELL I.D. _____	C-1	C-2	C-3	C-4
Casing Diameter (inches)	3	3	3	3
Total Well Depth (feet)	----	28.5	30.6	29.2
Depth to Water (feet)	18.69	16.36	18.95	20.26
Free Product (feet)	0.91	none	none	none
Reason Not Sampled	free product	----	----	----
Calculated 4 Case Vol. (gal.)	----	18.5	17.6	13.6
Did Well Dewater?	----	no	yes	yes
Volume Evacuated (gal.)	----	23	8	12
Purging Device	----	Bladder	Bladder	Bladder
Sampling Device	----	Bladder	Bladder	Bladder
Time	----	13:19	13:57	12:34
Temperature (F)*	----	68.7	69.7	69.9
pH*	----	6.98	6.75	6.33
Conductivity (umhos/cm)*	----	1889	2060	1070

\* Indicates Stabilized Value



**LEGEND**

C-1 ⊕ Ground-water monitoring well location and designation



**EMCON**  
Associates  
San Jose, California

Gettler-Ryan Inc.  
Subsurface Hydrogeologic Investigation  
Former Chevron Service Station, Redwood Road &  
Grove Way, Castro Valley, California

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Monitoring Well Location Map

FIGURE  
1  
PROJECT NO  
800-25.01

# SUPERIOR ANALYTICAL LABORATORY INC.

825 ARNOLD, STE. 2 • MARTINEZ, CALIFORNIA 94553 • (415) 229-1512

## C E R T I F I C A T E   O F   A N A L Y S I S

LABORATORY NO.: 80184  
CLIENT: Gettler Ryan Co.  
CLIENT JOB NO.: 3170

DATE RECEIVED: 10/17/89  
DATE REPORTED: 10/26/89

Page 1 of 2

Lab Number	Customer Sample Identification	Date Sampled	Date Analyzed
80184- 1	C-2	10/16/89	10/26/89
80184- 2	C-3	10/16/89	10/25/89
80184- 3	C-4	10/16/89	10/26/89
80184- 4	CF-3	10/16/89	10/25/89
80184- 5	TRIP BLANK	10/16/89	10/25/89

Laboratory Number:	80184	80184	80184	80184	80184
	1	2	3	4	5

ANALYTE LIST	Amounts/Quantitation Limits (ug/L)				
OIL AND GREASE:	NA	NA	NA	NA	NA
TPH/GASOLINE RANGE:	600	900	ND<500	ND<500	ND<500
TPH/DIESEL RANGE:	NA	NA	NA	NA	NA
BENZENE:	260	610	12	ND<0.5	ND<0.5
TOLUENE:	34	4.2	1.0	ND<0.5	ND<0.5
ETHYL BENZENE:	1.7	1.6	ND<0.5	ND<0.5	ND<0.5
XYLENES:	41	16	0.8	ND<0.5	ND<0.5

**SAN FRANCISCO**

**MARTINEZ**

OUTSTANDING QUALITY AND SERVICE

**SUPERIOR ANALYTICAL LABORATORY INC.**

825 ARNOLD, STE. 2 • MARTINEZ, CALIFORNIA 94553 • (415) 229-1512

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

ANALYSIS FOR TOTAL PETROLEUM HYDROCARBONS  
Diesel by Modified EPA SW-846 Method 8015  
Gasoline by Purge and Trap: EPA Method 8015/5030  
ANALYSIS FOR BENZENE, TOLUENE, ETHYL BENZENE & XYLENES  
by EPA SW-846 Methods 5030 and 8020

Page 2 of 2  
QA/QC INFORMATION  
SET: 80184

NA = ANALYSIS NOT REQUESTED  
ND = ANALYSIS NOT DETECTED ABOVE QUANTITATION LIMIT

ug/L = part per billion (ppb)

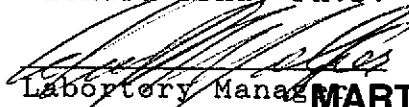
OIL AND GREASE ANALYSIS By Standard Methods Method 503E:  
Duplicate RPD NA  
Minimum Detection Limit in Water: 5000ug/L

Modified EPA Method 8015 for Extractable Hydrocarbons:  
Minimum Quantitation Limit for Diesel in Water: 1000ug/L  
Daily Standard run at 200mg/L; RPD Diesel = NA  
MS/MSD Average Recovery = NA: Duplicate RPD = NA

8015/5030 Total Purgable Petroleum Hydrocarbons:  
Minimum Quantitation Limit for Gasoline in Water: 500ug/L  
Daily Standard run at 2mg/L; RPD Gasoline = 11  
MS/MSD Average Recovery =93%: Duplicate RPD = 3

8020/BTXE  
Minimum Quantitation Limit in Water: 0.50ug/L  
Daily Standard run at 20ug/L; RPD = <15%  
MS/MSD Average Recovery =93%: Duplicate RPD = <4

Richard Srna, Ph.D.

  
Laboratory Manager **MARTINEZ**

**SAN FRANCISCO**

OUTSTANDING QUALITY AND SERVICE

80184

10219

# Chain-of-Custody Record

Chevron U.S.A. Inc.  
P.O. Box 5004  
San Ramon, CA 94583  
FAX (415) 842-9591

Chevron Facility Number 2960  
 Consultant Release Number 2427710 Consultant Project Number 3170  
 Consultant Name Gettler Ryan Co.  
 Address 1992 National Ave, Hayward, CA 94541  
 Fax Number 415 783-1089  
 Project Contact (Name) Larry Mitchell  
 (Phone) (415) 783-7500

Chevron Contact (Name) John Randall  
 (Phone) \_\_\_\_\_  
 Laboratory Name Superior Analytical  
 Contract Number Ref # 2512110  
 Samples Collected by (Name) G. Sanchez  
 Collection Date 10-16-89  
 Signature Guadalupe Sanchez

Sample Number	Lab Number	Number of Containers	Matrix S = Soil W = Water A = Air C = Charcoal	Type G = Grab C = Composite	Time	Sample Preservation	Iced	Analyses To Be Performed							Remarks		
								Modified EPA 8015 Total Petro. Hydrocarb. as Gasoline	Modified EPA 8015 Total Petro. Hydrocarb. as Gasoline + Diesel	503 Oil and Grease	Arom. Volatiles - BTXE Soil: 8020/Wtr.: 602	Arom. Volatiles - BTXE Soil: 8240/Wtr.: 624	Total Lead DHS-Luft	EDB DHS-AB 1803			
C-2		2	W	GW Wells	13:19	none	Y	X				X					
C-3		↓	↓	↓	13:57	↓	↓	X									
C-4		↓	↓	↓	12:34	↓	↓	X									
CF-3		↓	↓	↓	13:57	↓	↓	X									
trip blank		↓	↓	↓	-	↓	↓	X									

Relinquished By (Signature) <u>Guadalupe Sanchez</u>	Organization <u>Gettler Ryan</u>	Date/Time <u>10-16-89 16:00</u>	Received By (Signature) <u>Franklin</u>	Organization <u>Gettler Ryan</u>	Date/Time <u>10-16-1601</u>	Turn Around Time (Circle Choice) 24 Hrs 48 Hrs 5 Days 10 Days
Relinquished By (Signature) <u>Franklin</u>	Organization <u>Gettler Ryan</u>	Date/Time <u>10-17-89 10:00 AM</u>	Received By (Signature) <u>Joe Aaga</u>	Organization <u>Gettler Ryan</u>	Date/Time <u>10/17/89 10 AM</u>	
Relinquished By (Signature) <u>Joe Aaga</u>	Organization <u>Gettler Ryan</u>	Date/Time <u>10/17 11 AM</u>	Received For Laboratory By (Signature) <u>XUSAP Valente</u>	Organization <u>Gettler Ryan</u>	Date/Time <u>10/17/89 12:00</u>	