

**GROUNDWATER
TECHNOLOGY**

Consulting Groundwater Geologists

A Division of Oil Recovery Systems, Inc.

5047 CLAYTON ROAD • CONCORD, CA 94521 • (415) 671-2387

**PRELIMINARY SITE ASSESSMENT
CHEVRON SERVICE STATION
CYPRESS AND 7TH STREETS
OAKLAND, CALIFORNIA**

September 24, 1985

Prepared for:

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TABLE OF CONTENTS

TITLE

PAGE

Introduction.....1
 Project Overview

Conclusion.....5

INTRODUCTION

On September 16, 1985 Groundwater Technology was authorized by Chevron U.S.A., Inc. to continue the assessment of subsurface hydrocarbon contamination at the abandoned Chevron Service Station located on the southeast corner of 7th and Cypress Streets in Oakland, California. The purpose of this second phase of the investigation was to quantify the degree of contamination by laboratory analysis of soil and water samples.

PROJECT OVERVIEW

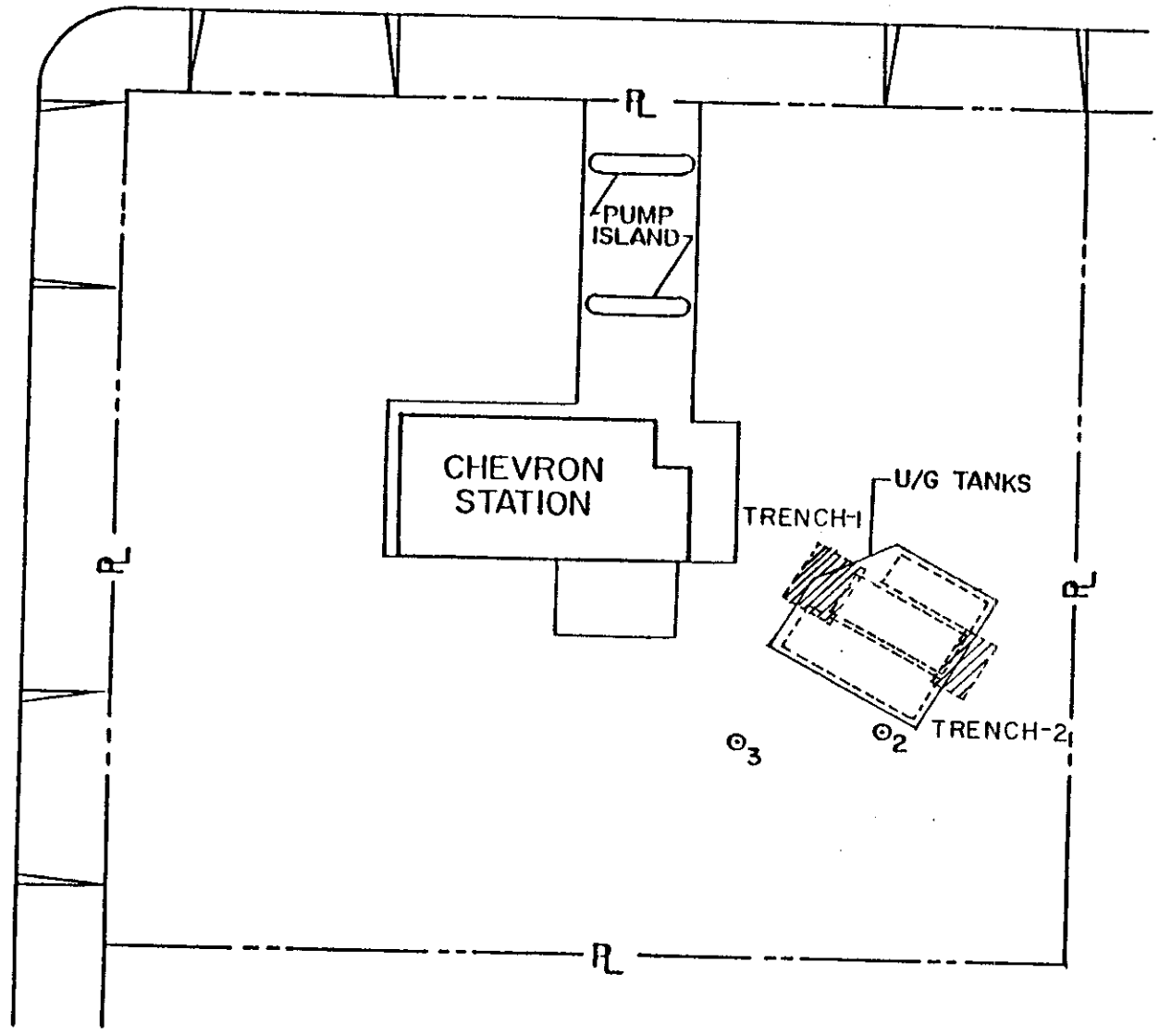
On April 19, 1985 three monitoring wells were installed within and adjacent to the tank pit containing a subsurface storage tank (middle tank) which failed recent tank integrity testing. Field analysis of soil samples collected during drilling indicated slight amounts of hydrocarbon contamination present. Groundwater monitoring thru September 9, 1985 revealed free product accumulation within Well #1, which lies within the tank backfill next to the suspect tank. Please refer to the Groundwater Technology report entitled "Monitoring Well Installation, Chevron Service Station, Cypress and 7th Streets Oakland, California".

On September 13, 1985 observation trenches were excavated at both ends of the middle tank. The trenches were excavated to a depth of 11 feet and were approximately 5 feet wide by 10 feet long. Monitoring Well 1 was removed during excavation of Trench 1. The site map shows the location of the two trenches (See Figure 1). The purpose of the trenches was to further define the extent of subsurface contamination by visual inspection and by collection of soil samples for laboratory analysis.



7th STREET

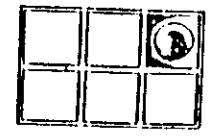
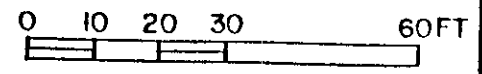
CYPRESS STREET



LEGEND

⊙ MONITORING WELL

**FIGURE 1
SITE PLAN**



**GROUNDWATER
TECHNOLOGY, INC.**
CONSULTING GROUNDWATER GEOLOGISTS

**CHEVRON SERVICE STATION
OAKLAND, CALIFORNIA**

Observations made on the September 16, 1985 site visit included:

- A moderate fuel odor was detected in Trench 1 starting at a depth of seven feet.
- Depth to water in Trench 1 was about 8.5 feet from the ground surface.
- Slight fuel odor was detected in Trench 2 starting at a depth of seven feet.
- Depth to water in Trench 2 was about 8.8 feet from the ground surface.
- A black sheen was present on the water in both trenches.
- Well 2 contained no free product and fuel odor was not detectable in a water sample. Depth to Water = 8.62 feet.
- Well 3 contained no free product and fuel odor was not detectable in a water sample. Depth to Water = 8.17 feet.

To evaluate the degree of subsurface soil contamination a soil sample was collected from each trench. The two samples were taken at a depth of 8 feet, slightly above the static groundwater level. Sample 1B was collected from Trench 1 and Sample 2A was collected from Trench 2 (See Site Map). The samples were collected in a brass tube sampler (2" diameter, 4" length) driven into the soil. The ends of the sample tube were covered with aluminum foil and plastic caps, and then securely taped. The samples were labeled and immediately placed in an ice filled cooler.

The soil samples were delivered the same day to Environmental Research Group, Inc. to be analyzed for the gasoline constituents benzene (B), toluene (T), ethyl benzene and xylene (X). Sample 1B was analyzed for total gasoline concentration. The sample analyses was conducted the the following day using a modified EPA 602 procedure. Please see the attached data sheet for the methods and results of the analysis.

The results indicate negligible amounts of contamination with respect to benzene, toluene, ethyl benzene and xylene in Trench 2. The concentration of these components in Trench 1, though higher, does not represent significant contamination. The total gasoline concentration of 16 parts per million (ppm) is relatively low considering the California Regional Water Quality Control Board has stated that "concentrations less than 10 ppm do not generally constitute a threat to groundwater or cause nuisance or hazard conditions".

Water samples were retrieved from Wells 2 and 3 to evaluate the extent of dissolved hydrocarbon contamination. The sampling methodology followed the attached Groundwater Technology Laboratory Standard Operating Procedure (SOP10) for the sampling of volatiles in water. The samples were delivered to Groundwater Technology Laboratory which analyzed the samples by EPA Method 602 (GC/PID). Please see the attached laboratory data sheets for the results of the analyses.

The results indicate that the concentration of total dissolved hydrocarbons is below detectable limits in the sample from Well 3. The sample from Well 2 contained only slight concentrations of total dissolved hydrocarbons (55.9).

In a second site visit on September 23, 1985, the following was observed:

- Free product had not accumulated in Trench 1 or 2.
- A slight black sheen was noted on the water in both trenches.
- Fuel odors were detectable from Trench 1.
- Well 1 was replaced within Trench 1.

* Ref: "Guidelines for Addressing Fuel Leaks" California Regional Water Quality Control Board San Francisco Bay Region First Draft 1984.

CONCLUSION

The subsurface soils and water in the vicinity of the suspect underground storage tank have been exposed to a release of hydrocarbon product. The slight sheen within the two trenches and the detection of hydrocarbon components in soil and water samples are an indication of the release. However, the absence of significant quantities of free product in conjunction with the relatively low values from soil and water analyses suggest that the extent and magnitude of the contamination is limited. The apparent disappearance of previously observed free product in Monitoring Well 1 could be attributed to one or a combination of the following factors:

- Only a small quantity of product was lost, possibly during tank/testing.

- Most of the product was adsorbed onto the soils in the vicinity of the leak point.
- A small pocket of free product could have been removed with the excavations of Trench 1.
- Some product may have been trapped in the soil matrix below the present water table elevation.
- Migration of the product plume could be in a direction away from the existing monitoring points.



1400 53rd Street Emeryville, California 94608 (415) 652-2300

September 20, 1985

Groundwater Technology
5047 Clayton Road
Concord, California 94521

Attention: Robert Juncal

Report #6322

P.O. #Written Analysis Request

RE: Two (2) soil samples for rush BTX analysis and one (1) for same day analysis for gasoline.

Procedure: The samples are analyzed for BTX by using a modified EPA Method 602 procedure. The samples are concentrated on a Tekmar LSC-2 automatic concentrator prior to injection into a gas chromatograph fitted with a photoionization detector. Quantitation is performed against known concentrations of BTX.

The sample is analyzed for gasoline by using a modified EPA Method 603 procedure. The sample is concentrated on a Tekmar LSC-2 prior to injection into a gas chromatograph equipped with a flame ionization detector. Quantitation is performed as total hydrocarbon response, against a known concentration of heptane-isooctane (55/45). The limit of detection for this method of analysis is one part per million (mg/kg).

The results are shown in the table below:

<u>ERG #</u>	<u>CLIENT ID</u>	<u>GASOLINE</u>	<u>BENZENE</u>	<u>Concentration (mg/kg)</u>		
				<u>TOLUENE</u>	<u>XYLENES</u>	<u>ETHYLBENZENE</u>
6322-1B	1B	16	ND(0.001)	1.3	4.0	4.3
6322-2A	2A	-	0.002	0.08	0.34	0.08

Submitted by:

Robert B. Flay
Manager, Organics Department

RBF:c1p
092485t

GROUNDWATER TECHNOLOGY LABORATORY (GTL)
STANDARD OPERATING PROCEDURE

CONCERNING SAMPLING FOR VOLATILES IN WATER (DISSOLVED GASOLINE,
SOLVENTS, ETC.).

SOP 10

1. Use only vials properly washed and baked, available from GTL or Pierce Chemical.
2. Use clean sampling equipment. Scrub with Alconox or equivalent laboratory detergent and water followed by a thorough water rinse. Complete with a distilled water rinse.

Sampling equipment which has come into contact with liquid hydrocarbons (free product) should be regarded with suspicion. Such equipment should have tubing and cables replaced and all resilient parts washed with laboratory detergent solution, as above. Visible deposits may have to be removed with hexane, followed by methanol or acetone. CAUTION: do not breath methanol fumes. Solvent washing should be followed by detergent washing as above.

This procedure is valid for volatile organics analysis only. For extractable organics (for example, pesticides, or base neutrals for EPA method 625) a final rinse with pesticide grade isopropyl alcohol, followed by overnight or oven drying, will be necessary.

3. Take duplicate samples for GTL. Mark on forms as a single sample with two containers to avoid duplication of analysis.
4. Take a site blank using distilled water or known uncontaminated source. This sample will be run at the discretion of the project manager.
5. Fill out labels and forms as much as possible ahead of time. Use an indelible laundry marker or a Space pen.
6. Preservatives are required for some types of samples. Use specially prepared vials from GTL, marked as indicated below, or use the appropriate field procedure (SOP 12 for acidification). Make note on forms that samples were preserved. Always have extra vials in case of problems.

For samples from dissolved gasoline sites or other samples potentially containing benzene, toluene, or xylenes, samples should be acidified below pH 2 with hydrochloric acid. Use vials labelled "CAUTION: CONC. HYDROCHLORIC ACID". Handle these vials with care and keep them upright. Eye protection, foot protection, and disposable vinyl gloves are required for

handling. Samples designated for expedited service and analyzed within seven (7) days of sampling will be acceptable without preservation.

Acid causes burns. Glasses or goggles (not contacts) are necessary for protection of the eyes. Wash eyes with fresh water for 15 minutes if contact occurs and seek medical attention. Rinse off hands frequently with water, and be prepared to find a few holes in your T-shirt after the next wash.

For sampling chlorinated drinking water supplies for chlorinated volatiles, samples shall be preserved with sodium thiosulfate. Use vials labelled "CONTAINS THIOSULFATE". No particular cautions are necessary.

7. Fill vial to overflowing with water, avoiding turbulence and bubbling as much as possible. Water should stand above lip of vial.
8. Carefully but quickly slip cap onto vial. Avoid dropping the teflon disc from cap by not inverting cap until in contact with vial. Disc should have teflon face toward the water. Also avoid touching white teflon face with dirty fingers.
9. Tighten cap securely, invert vial and tap against hand to see that there are no bubbles inside.
10. Label vial using indelible ink as follows:
 - a) Sample I.D. No. (and "Groundwater Technology" if not on preprinted label).
 - b) Job I.D.
 - c) Date and time.
 - d) Type of analysis requested.
 - e) Your name.
11. Unless the fabric type label is used, place scotch tape over the label to preserve its integrity.
12. For chain of custody reasons, sample vial should be wrapped end-for-end with scotch tape or evidence tape and signed with indelible ink where the end of the tape seals on itself. The septum needs to be covered.
13. Chill samples immediately. Samples to be stored should be kept at 4C (39F). Samples received at the laboratory above 10C (as measured at glass surface by a thermocouple probe), after overnight shipping will be considered substandard, so use a high quality cooler with sufficient ice or freezer packs. (Coolers are available from GTL).
14. Fill out Chain of Custody and Analysis Request form. (See Chain of Custody Procedures SOP11).



GROUNDWATER TECHNOLOGY LABORATORY

ANALYTICAL & CONSULTING SERVICES

Division of Oil Recovery Systems, Inc.

4 Mill St., Greenville, NH 03048

Tel: (603) 878-2500

Laboratory Test Results

9/23/85

Report No. 20-3235-1

Submitted to:

Robert Juncal
Groundwater Technology
5047 Clayton Rd.
Concord, CA 94519

Sample Identification:

The attached report covers water samples # 18247-18248 taken by F.Seiler using 40 ml septum-capped glass vials at site # 20-3235, Oakland, California.

Method:

Analysis was performed for purgeable aromatic priority pollutants and xylenes by purge and trap gas chromatography with photoionization and flame ionization detection as per EPA Method 602. Quantification was performed on a very polar column which fractionates aliphatics (up to C12) away from volatile aromatics. Chromatographic conditions are referenced in GTL Method Code 110. Hexane and ortho-xylene are used as calibration standards for the aliphatic hydrocarbons and miscellaneous aromatics, respectively, if reported.

Minimum Detection Limit (MDL) at 5 times background is 0.5 ppb for all parameters. The level for reliable quantitation for the summed groups such as aliphatics is 20 ppb. Samples diluted in order to maintain the calibrated range are so indicated by a footnote giving the factor by which the MDL is raised.

Sampling and sample handling and preservation are specified by this laboratory to be as per EPA Method 602. Any irregularities are referenced in the attached quality assurance report.

Results:

Results are reported in ppb (ug/l).

Prepared by:

Eileen Foley
Analytical Program Manager

E.M.Foley
Analyst

OTHER OFFICES: NORWOOD, MA: CHADDS FORD, PA: TAMPA, FL: CONCORD, CA: REDONDO BEACH, CA: NOVI, MI
MINNEAPOLIS, MN: MANDEVILLE, LA: MONTREAL, QUEBEC, CANADA



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HYDROCARBONS IN WATER ug/l

REPORT NO. 20-3235-1

SAMPLE NO.	I.D.	C4-C12 ALIPHATIC HYDROCARBONS	MISC AROMATICS C8-C12	TOTAL
18247	MW-2	17	25	55.9
18248	MW-3	ND	ND	ND

NOTES:

TOTAL = THE SUM OF THE TOTAL BTEX AND THE ABOVE PARAMETERS.

ND = BELOW DETECTION LIMIT



GROUNDWATER TECHNOLOGY LABORATORY

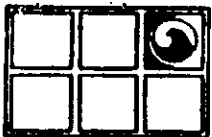
ANALYTICAL & CONSULTING SERVICES
Division of Oil Recovery Systems, Inc.
4 Mill St., Greenville, NH 03048
Tel: (603) 878-2500

HYDROCARBONS IN WATER ug/L (ppb)
REPORT NO. 20-3235-1

Sample I.D.	DATE SAMPLED	DATE RUN	BENZENE	TOLUENE	ETHYL BENZENE	TOTAL XYLENES	TOTAL BTEX
18247 MW-2	9/17/85	9/20/85	ND	0.6	0.3	13	13.9
18248 MW-3	9/17/85	9/20/85	ND	ND	ND	ND	ND

***NOTES:**

TOTAL BTEX = THE SUM OF BENZENE, TOLUENE, ETHYL BENZENE,
AND XYLENES, ROUNDED TO THREE SIGNIFICANT FIGURES.



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Quality Assurance Documentation

Statement of Sample Integrity:

The samples in this data set meet the Groundwater Technology Laboratory criteria for physical integrity as per GTL Method Code 103 throughout the sampling, handling and analytical process.

Quality Assurance Specifications:

The data in this set conforms to the GTL Quality Assurance program and provisions specified in EPA Method 602 including daily calibration with freshly made standards, blanks before trace level samples, surrogate spikes, spikes in untested matrices, a minimum of 10% duplicates and a minimum of 6% reference samples traceable to the U.S. EPA.

Certification:

The data in this report have been checked for accuracy and completeness.

Respectfully Submitted,

Michael D. Webb
Technical Director