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

April 3, 1990

Marketing Operations

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

Mr. Rick Mueller
Pleasanton Fire Department
4444 Railroad Street
Pleasanton, CA 94566

Re: Chevron Service Station #9-0917
5280 Hopyard Road
Pleasanton, CA

Dear Mr. Mueller:

Enclosed we are forwarding the Quarterly Groundwater Sampling report dated March 1990, conducted by our consultant Groundwater Technology, Inc., at the above referenced site. As indicated in the report, sampling results remained similar to previous quarters findings.

Chevron will continue to sample this site on a quarterly basis.

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
John Randall

JMR/jmr
Enclosure

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

GROUNDWATER TECHNOLOGY, INC.

4080-D Pike Lane, Concord, CA 94520
(415) 671-2387

March 30, 1990

Job No. 203 175 3284.01

Mr. John Randall
Chevron U.S.A. Inc.
2410 Camino Ramon
Bishop Ranch #6
San Ramon, CA 94583

Re: Chevron Service Station No. 9-0917
5280 Hopyard Road, Pleasanton, California

Dear Mr. Randall: KLD APR 2'90

Enclosed are two copies of the Quarterly Status Report on groundwater monitoring and sampling activities conducted at the above-referenced site on March 12, 1990, by Groundwater Technology, Inc.

A copy of this report should be submitted to:

Pleasanton Fire Department
4444 Railroad Street
Pleasanton, CA 94566

Attn: Mr. Rick Muller

Groundwater Technology, Inc. is pleased to be of continued service to Chevron U.S.A. Inc. on this project. If you have any questions or comments regarding this site, please call our Concord office at (415) 671-2387.

Sincerely,
GROUNDWATER TECHNOLOGY, INC.

Fred Hayden
Project Geologist

FH:lf
CV3284A

Enclosures

QUARTERLY STATUS REPORT
CHEVRON SERVICE STATION NO. 9-0917
5280 HOPYARD ROAD
PLEASANTON, CALIFORNIA

MARCH 1990

GROUNDWATER TECHNOLOGY, INC.
CONCORD, CALIFORNIA

GROUNDWATER TECHNOLOGY, INC.

4080-D Pike Lane, Concord, CA 94520
(415) 671-2387

QUARTERLY STATUS REPORT
CHEVRON SERVICE STATION NO. 9-0917
5280 HOPYARD ROAD
PLEASANTON, CALIFORNIA
MARCH 1990

Prepared for:

Mr. John Randall
Chevron U.S.A. Inc.
2410 Camino Ramon
Bishop Ranch #6
San Ramon, CA 94583

Prepared by:

GROUNDWATER TECHNOLOGY, INC.
4080 Pike Lane, Suite D
Concord, CA 94520

Fred Hayden
Geologist

Allen B. Storm
Registered Geologist
No. 4394

REGISTERED GEOLOGIST
ALLEN B. STORM
No. 4394
Exp. 6-90
STATE OF CALIFORNIA

R203 175 3284.01B

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QUARTERLY STATUS REPORT
CHEVRON SERVICE STATION NO. 9-0917
5280 HOPYARD ROAD
PLEASANTON, CALIFORNIA
MARCH 1990

INTRODUCTION

This Quarterly Status Report summarizes the results and findings of the ongoing quarterly groundwater monitoring and sampling program conducted by Groundwater Technology, Inc. at Chevron Service Station No. 9-0917 located at 5280 Hopyard Road in Pleasanton, California (Figure 1). This report covers the first quarter of 1990.

WORK PERFORMED

Monitoring and sampling of the three on-site monitoring wells was conducted on March 12, 1990. The locations of the monitoring wells are shown on the attached Site Plan (Figure 2). Groundwater samples were analyzed for the presence of concentrations of benzene, toluene, ethylbenzene, and xylenes (BTEX), and for total petroleum hydrocarbons (TPH)-as-gasoline.

GROUNDWATER MONITORING

The wells were monitored to determine depth-to-groundwater and hydraulic gradient and were inspected for the presence of separate-phase hydrocarbons. Groundwater Technology, Inc.

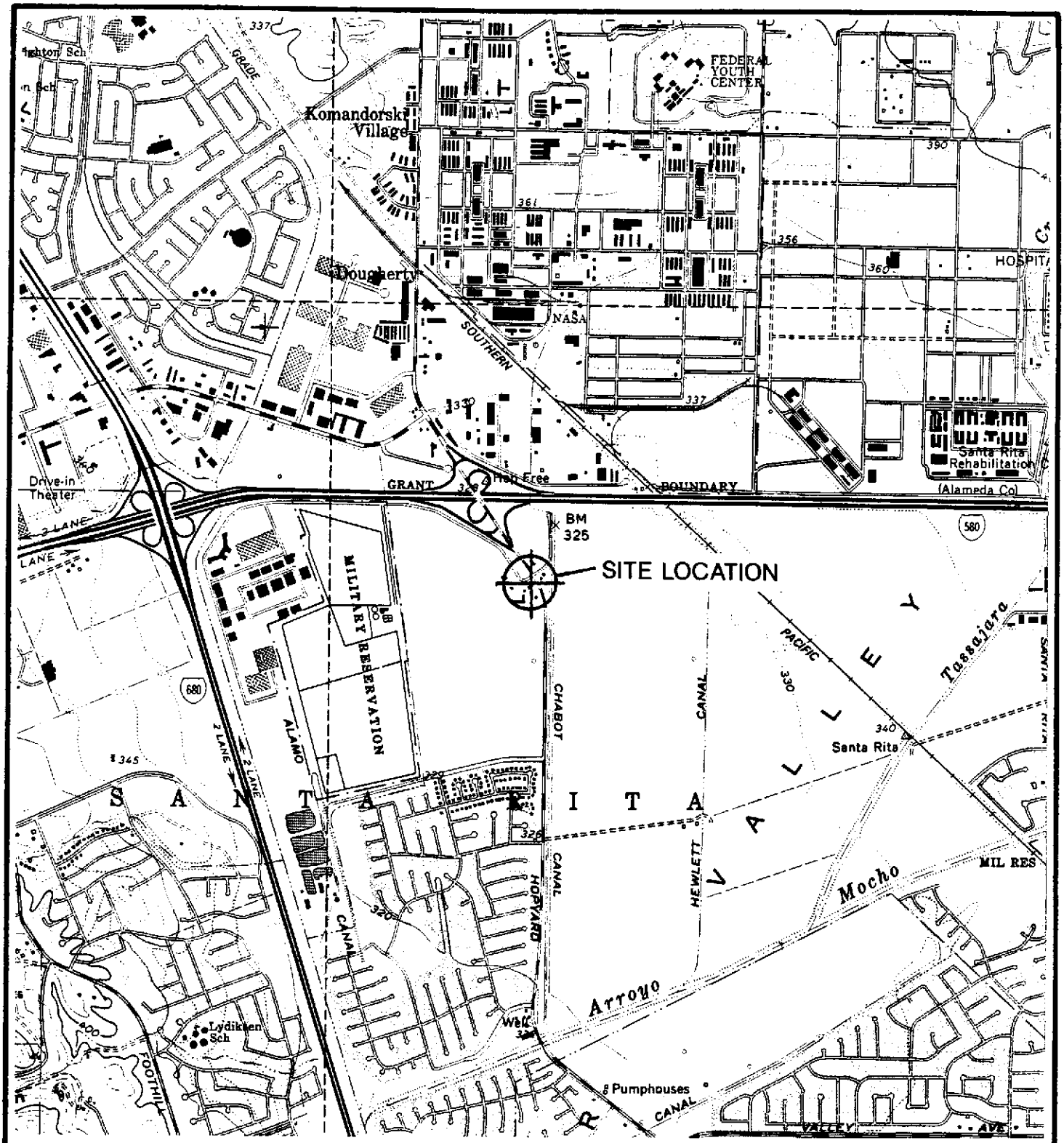

FIGURE 1. SITE LOCATION MAP

N

0 MILES

CHEVRON USA
PLEASANTON, CALIFORNIA

ML 1/90

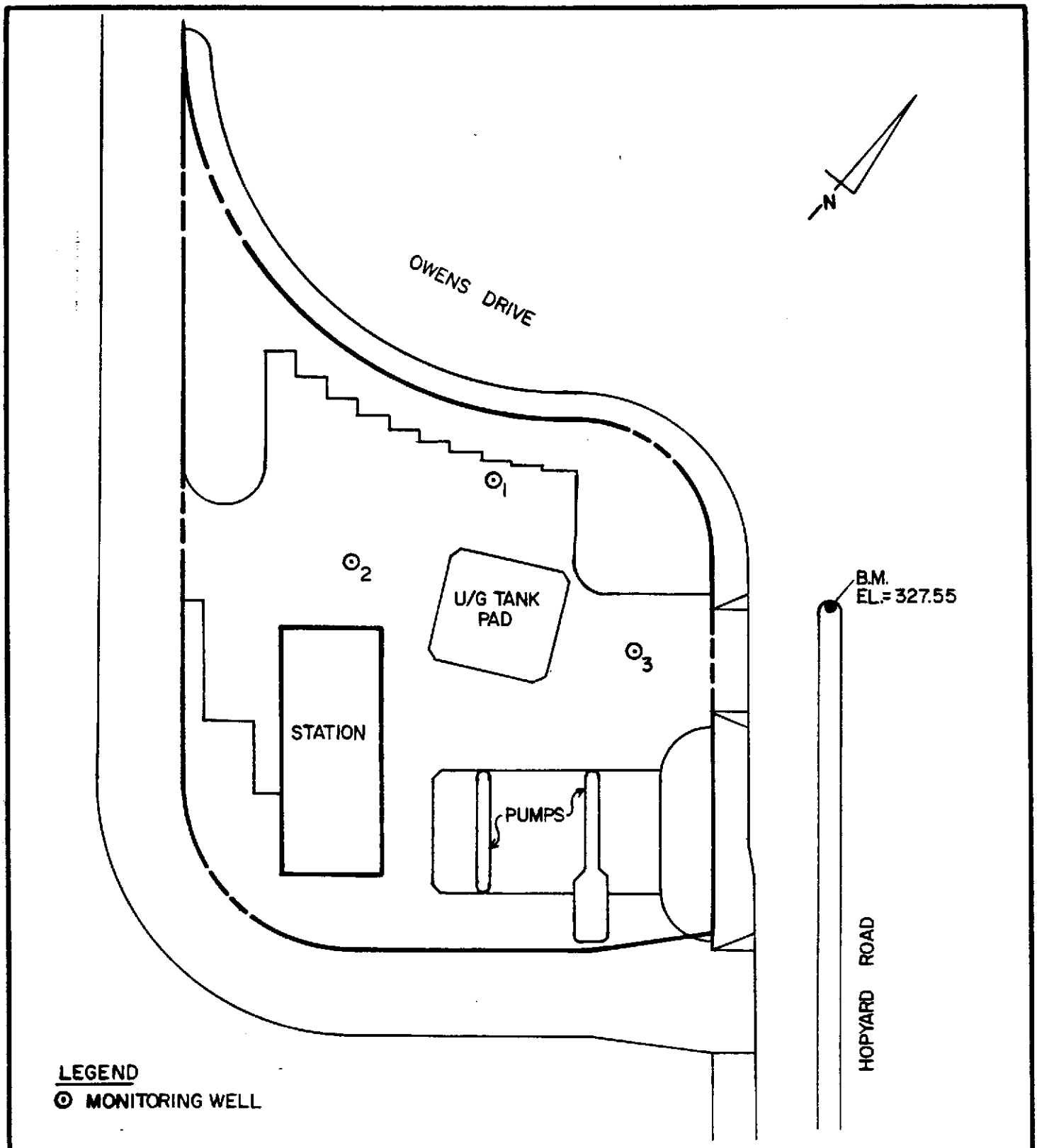

FIGURE 2. SITE PLAN

0 FEET 40
SCALE

CHEVRON USA
PLEASANTON, CALIFORNIA

M. 8/89

Standard Operating Procedure (SOP) 8 describes the groundwater monitoring procedure (Appendix C). Data were collected using an ORS Environmental Equipment Interface Probe^{R} to determine depth-to-groundwater and to check for the presence of separate-phase (floating) hydrocarbons. No floating hydrocarbons were detected. The monitoring data are presented on the attached Water/Product Level Data Sheets (Appendix A).

GROUNDWATER SAMPLING AND ANALYSES

Following monitoring, the wells were purged by hand bailing to allow for the collection of representative groundwater samples. A copy of SOP 9, which describes the Groundwater Technology procedure for well sampling is included in Appendix C. Between 15 and 23 gallons of water were removed from each well. This purged water was collected in two 55-gallon steel drums. These drums are stored on site pending proper disposal of the water.

After allowing the wells to recover to at least 80 percent of the original levels as measured before purging, groundwater samples were collected in accordance with attached SOPs 9, 10, and 12. The samples were placed in 40-milliliter glass vials, acidified to a pH below 2, and the vials sealed with Teflon^{R} septum caps so that no air was trapped inside. Each sample was labeled and placed on ice in an insulated cooler for transportation to the GTEL Environmental Laboratories, Inc. (GTEL) facility in Concord, California for analyses. The analyses were performed in accordance with the guidelines requested by Chevron with regards to detection limits and documentation. Proper Chain-of-Custody Manifest documentation, as described in SOP 11 was maintained. A copy of the Chain-of-Custody Manifest is attached.

All groundwater samples were analyzed for the presence of BTEX and TPH-as-gasoline using modified EPA Methods 8020/8015. A copy of the GTEL report is attached. The results of the laboratory analyses indicate the presence of measurable concentrations of benzene and ethylbenzene in one sample from monitoring well MW-1 (Appendix B). Laboratory analyses also indicate the presence of TPH-as-gasoline in MW-1 at 140 parts per billion (ppb). Analytical results of samples collected from the two other wells (MW-2 and MW-3) showed no detectable levels of BTEX or TPH-as-gasoline. These analytical findings are relatively consistent with the results of the previous sampling and water level monitoring conducted during 1989. Table 1 presents the most recent analytical results as well as results from the previous rounds of sampling.

TABLE 1

WATER SAMPLE ANALYTICAL RESULTS
parts per billion (ppb)

Well	Date	Benzene	Toluene	Ethyl-Benzene	Xylenes	Total BTEX	TPH-as-Gasoline
MW-1	07/17/89	ND[a]	ND	6	ND	6	100
	10/24/89	1	ND	13	ND	14	ND
	03/12/89	0.8	ND	1	ND	1.8	140
MW-2	07/17/89	ND	ND	ND	ND	ND	ND
	10/24/89	ND	ND	ND	ND	ND	ND
	03/12/90	ND	ND	ND	ND	ND	ND
MW-3	07/17/89	ND	ND	ND	ND	ND	ND
	10/24/89	ND	ND	ND	ND	ND	ND
	03/12/90	ND	ND	ND	ND	ND	ND

[a]ND = Compound not detected at Method Detection Limits
Detection Limits = For 07/17/89 Analysis, 0.5 ppb for BTEX, 1 ppb for TPH-as-gasoline. For 10/24/89 Analysis, 0.3 ppb for BTEX, 500 ppb for TPH-as-gasoline. For 3/12/90 Analysis, 0.3 ppb for BTEX, 50 ppb for TPH-as-gasoline.

Potentiometric surface-elevation data collected during well monitoring were combined with well survey information to produce the Potentiometric Surface Map presented in Figure 3. The flow of groundwater beneath the site is to the south. The hydraulic gradient of the southern flow is 0.0125-foot per foot. These data are consistent with data from the previous monitoring rounds. The elevation of groundwater has decreased since the last reporting period an average of 0.84 feet. Table 2 summarizes the groundwater elevation data collected.

TABLE 2

GROUNDWATER ELEVATION DATA

DATE	MW-1	MW-2	MW-3
08/02/89	318.38	318.48	318.32
10/24/89	318.97	318.29	318.88
03/12/90	318.07	317.46	318.00

All elevations are given as feet above mean sea level.

Figure 3 also shows the concentrations of dissolved total BTEX detected in each well.

SUMMARY

In summary, groundwater elevations have declined an average of 0.84 feet from October of 1989 to March of 1990. The groundwater-flow direction has remained consistently to the south under a gradient of 0.0125-foot per foot.

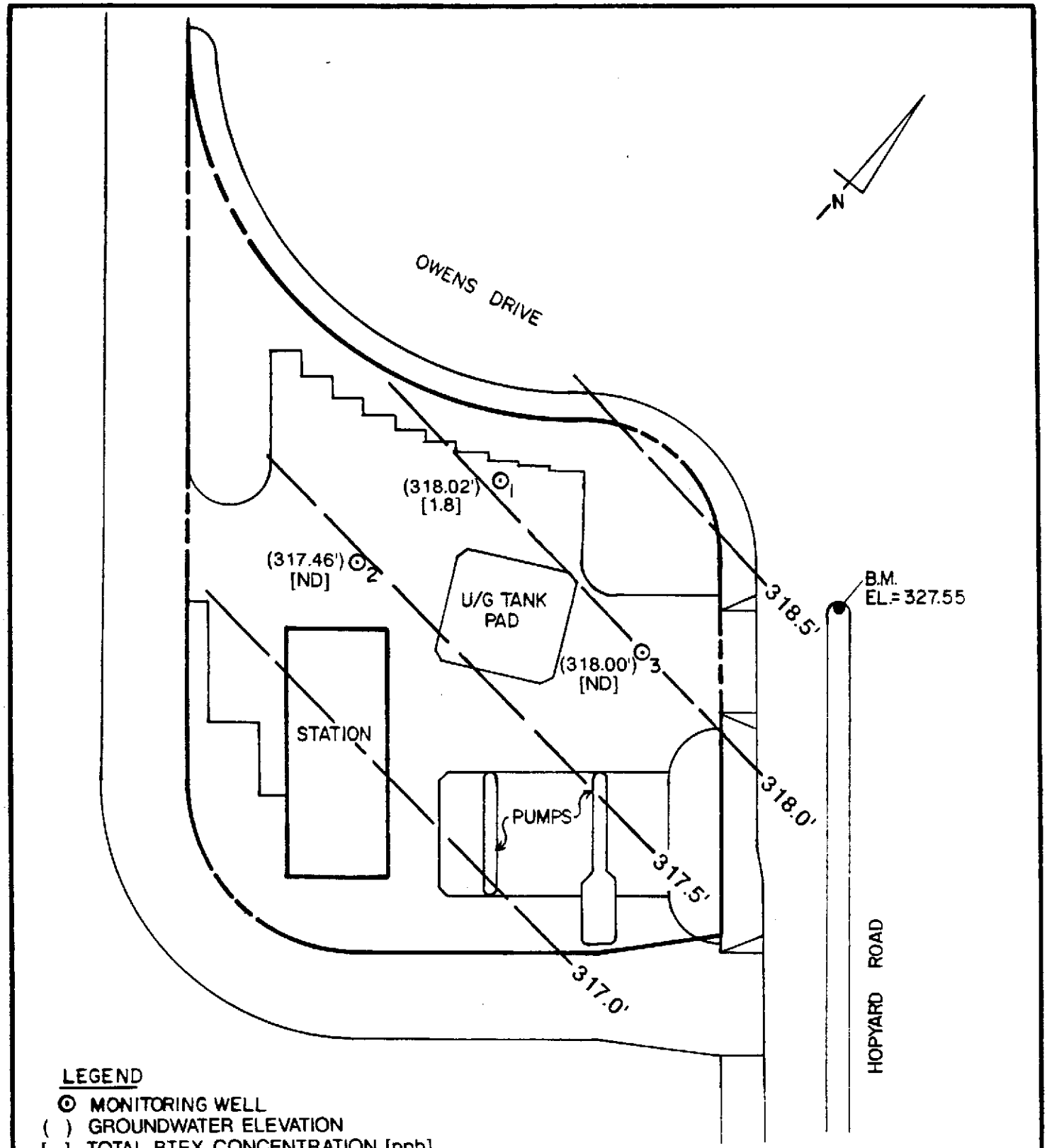

FIGURE 3
GROUNDWATER GRADIENT
TOTAL DISSOLVED BTEX MAP
(3/12/90)

0 FEET 40
SCALE

CHEVRON USA
PLEASANTON, CALIFORNIA

ML 3/90

Dissolved hydrocarbons were found to exist in groundwater samples collected from monitoring well MW-1. Groundwater samples collected from this well contained 140 ppb TPH-as-gasoline in March 1990, and was found to have no detectable dissolved hydrocarbons in October 1989. A concentration of 100 ppb was measured in groundwater from this well in July 1989.

CLOSURE

Groundwater Technology, Inc. is pleased to be of service on this project. Monitoring and sampling of the site will continue on a quarterly basis. The next round of monitoring and sampling is scheduled for June of 1990. If you have any questions or require further information, please contact our Concord office, (415) 671-2387.

WATER/PRODUCT LEVEL DATA

Project Location 5280 Hopyard Road, Pleasanton, CA Fluid Measurement Technique Interface Probe

Recorded by Jeff Nimmo Date 03/12/90

Well No.	Time	(A) Casing Rim Elevation (feet)	(B) Tape Reading At Rim	(C) Tape Reading At Product	(D) Tape Reading At Water	(B)-(D) Depth to Water (feet)	(A)-(B-D) Water Surface Elevation (feet)	(C)-(D) Product Thickness (feet)	See Note * Potentiometric Surface Elevation (feet)	Comments
MW-1	13:00	326.48				8.41	318.07			Broken well plug
MW-2	13:25	327.53				10.07	317.46			Surface water with oily sheen in well box - frozen lock
MW-3	13:10	326.47				8.47	318.00			Surface water in well box

Specific gravity of product (S.G.) NA

* c: Potentiometric Surface Elevation = (A) - ((B)-(D)) + S.G. ((C)-(D))

APPENDIX B
LABORATORY REPORTS

GTEL
ENVIRONMENTAL
LABORATORIES, INC.

Western Region
4080-C Pike Ln., Concord, CA 94520
(415) 685-7852
In CA: (800) 544-3422
Outside CA: (800) 423-7143

Project Number: SFB-175-0204.72
Consultant Project Number: 203-175-3284.01
Contract Number: N46CWC0244-9-X
Facility Number: None Given
Work Order Number: D003306
Report Issue Date: March 19, 1990

Joe Ramage
Groundwater Technology, Inc.
4080 Pike Lane, Suite D
Concord, CA 94520

Dear Mr. Ramage:

Enclosed please find the analytical results report prepared by GTEL for samples received on March 12, 1990.

GTEL is certified by the California State Department of Health Services to perform analyses for drinking water, wastewater, and hazardous waste materials according to EPA protocols.

A formal quality control/quality assurance program is maintained by GTEL, which is designed to meet or exceed the EPA requirements. Analytical work for this project was performed in strict adherence to our QA/QC program to ensure sample integrity and to meet quality control criteria.

If you have any questions concerning this analysis, or if we can be of further assistance, please call our Customer Service Representative.

Sincerely,
GTEL Environmental Laboratories, Inc.

Emma P. Popek
Laboratory Director

Project Number: SFB-175-0204.72
Consultant Project Number: 203-175-3284.01
Contract Number: N46CWC0244-9-X
Facility Number: None Given
Work Order Number: D003306
Report Issue Date: March 19, 1990

Table 1

ANALYTICAL RESULTS

Purgeable Aromatics and Total Petroleum Hydrocarbons
as Gasoline in Water
EPA Method 8020/8015[1]

GTEL Sample Number		01	02	03	
Client Identification		MW-1	MW-2	MW-3	
Date Sampled		03/12/90	03/12/90	03/12/90	
Date Analyzed		03/15/90	03/15/90	03/15/90	
Analyte	Detection Limit, ug/L	Concentration, ug/L			
Benzene	0.3	0.8	<0.3	<0.3	
Toluene	0.3	<0.3	<0.3	<0.3	
Ethylbenzene	0.3	1	<0.3	<0.3	
Xylene (total)	0.6	<0.6	<0.6	<0.6	
TPH as Gasoline	50	140	<50	<50	

1 = Extraction by EPA Method 5030

GTEL ENVIRONMENTAL LABORATORIES, INC

Project Number: SFB-175-0204.72
Consultant Project Number: 203-175-3284.01
Contract Number: N46CWC0244-9-X
Facility Number: None Given
Work Order Number: D003306
Report Issue Date: March 19, 1990

QA Conformance Summary

Purgeable Aromatics and Total Petroleum Hydrocarbons
as Gasoline in Water
EPA Method 8020/8015

1.0 Blanks

Five of 5 target compounds were below detection limits in the reagent blank as shown in Table 2.

2.0 Independent QC Check Sample

The control limits were met for 4 out of 4 QC check compounds as shown in Table 3.

3.0 Surrogate Compound Recoveries

Percent recovery limits were met for the surrogate compound (naphthalene) for all samples as shown in Table 4.

4.0 Matrix Spike (MS) Accuracy

Percent recovery limits were met for 4 of 4 compounds in the MS as shown in Table 5.

5.0 Reagent Water Spike (WS) and Reagent Water Spike (WSD) Duplicate Precision

Relative percent difference (RPD) criteria was met for 4 of 4 analytes in the WS and WSD as shown in Table 6.

6.0 Sample Handling

6.1 Sample handling and holding time criteria were met for all samples.

6.2 There were no exceptional conditions requiring dilution of samples.

Project Number: SFB-175-0204.72
Consultant Project Number: 203-175-3284.01
Contract Number: N46CWC0244-9-X
Facility Number: None Given
Work Order Number: D003306
Report Issue Date: March 19, 1990

Table 2

REAGENT BLANK DATA

Purgeable Aromatics and Total Petroleum Hydrocarbons
as Gasoline in Water
EPA Method 8020/8015

Date of Analysis: 03/15/90

Analyte	Concentration, ug/L
Benzene	<0.3
Toluene	<0.3
Ethylbenzene	<0.3
Xylene (total)	<0.6
Gasoline	<50

<# = Not detected at the indicated detection limit.

Project Number: SFB-175-0204.72
Consultant Project Number: 203-175-3284.01
Contract Number: N46CWC0244-9-X
Facility Number: None Given
Work Order Number: D003306
Report Issue Date: March 19, 1990

Table 3

INDEPENDENT QC CHECK SAMPLE RESULTS

Purgeable Aromatics and Total Petroleum Hydrocarbons
as Gasoline in Water
EPA Method 8020/8015

Date of Analysis: 03/15/90

Analyte	Expected Result, ug/L	Observed Result, ug/L	Recovery, %	Acceptability Limits, %
Benzene	50	51	102	85 - 115
Toluene	50	47	94	85 - 115
Ethylbenzene	50	47	94	85 - 115
Xylene (total)	150	143	95	85 - 115

Table 3a

INDEPENDENT QC CHECK SAMPLE SOURCE

Purgeable Aromatics and Total Petroleum Hydrocarbons
as Gasoline in Water
EPA Method 8020/8015

Analyte	Lot Number	Source
Benzene	LA18042	Supelco
Toluene	LA18042	Supelco
Ethylbenzene	LA18042	Supelco
Xylene (total)	LA18042	Supelco

Table 4

SURROGATE COMPOUND RECOVERY

Naphthalene

Purgeable Aromatics and Total Petroleum Hydrocarbons
as Gasoline in Water
EPA Method 8020/8015

Acceptability Limits[1]: 70 - 130 %

GTEL No.	Expected Result, ug/L	Surrogate Result, ug/L	Surrogate Recovery, %
Blank	200	190	95
01	200	197	98
02	200	194	97
03	200	172	86
MS	200	179	90
WS	200	162	81
WSD	200	158	79

MS = Matrix Spike
WS = Reagent Water Spike
WSD = Reagent Water Spike Duplicate
1 = Acceptability limits are derived from the 99% confidence interval of all samples during the previous quarter.

Project Number: SFB-175-0204.72
Consultant Project Number: 203-175-3284.01
Contract Number: N46CWC0244-9-X
Facility Number: None Given
Work Order Number: D003306
Report Issue Date: March 19, 1990

Table 5

MATRIX SPIKE (MS) RECOVERY REPORT

Purgeable Aromatics and Total Petroleum Hydrocarbons
as Gasoline in Water
EPA Method 8020/8015

Date of Analysis: 03/15/90
Sample Spiked: 02

Client ID: MW-2
Units: ug/L

Analyte	Sample Result	Concentration Added	Concentration Recovered	MS Result	MS, % Recovery	Acceptability Limits[1], %
Benzene	<0.3	25	23	23	92	71 - 123
Toluene	<0.3	25	21.6	21.6	86	69 - 120
Ethylbenzene	<0.3	25	22.2	22.2	89	72 - 121
Xylene (total)	<0.6	75	73	73	97	75 - 123

<# = Not detected at the indicated detection limit.
1 = Acceptability limits are derived from the 99% confidence interval of all samples during the previous quarter.

GTEL ENVIRONMENTAL LABORATORIES, INC

Project Number: SFB-175-0204.72
Consultant Project Number: 203-175-3284.01
Contract Number: N46CWC0244-9-X
Facility Number: None Given
Work Order Number: D003306
Report Issue Date: March 19, 1990

Table 6

REAGENT WATER SPIKE (WS) AND REAGENT WATER SPIKE DUPLICATE (WSD)
RECOVERY AND RELATIVE PERCENT DIFFERENCE (RPD) REPORT

Purgeable Aromatics and Total Petroleum Hydrocarbons
as Gasoline in Water
EPA Method 8020/8015

Date of Analysis: 03/15/90 Units: ug/L

Analyte	Concentration Added	WS Result	WS, % Recovery	WSD Result	WSD, % Recovery
Benzene	25	23.6	94	23.6	94
Toluene	25	21.3	85	21.6	86
Ethylbenzene	25	22.9	92	23.2	93
Xylene (total)	75	74.5	99	75.2	100

Analyte	RPD, %	Maximum RPD, %	Acceptability Limits[1] % Recovery
Benzene	0	30	77 - 118
Toluene	1	30	76 - 113
Ethylbenzene	1	30	81 - 119
Xylene (total)	1	30	86 - 124

1 = Acceptability limits are derived from the 99% confidence interval of all samples during the previous quarter.

GTEL ENVIRONMENTAL LABORATORIES, INC.

Chain-of-Custody Record

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

Chevron Facility Number
Consultant Release Number #246-6210
Consultant Project Number 203-175-3284-01
Consultant Name GROUNDWATER TECHNOLOGY INC
Address CONCORD, CA.
Fax Number
Project Contact (Name) JOE RAMAGLI
(Phone) (415) 671-2387

Chevron Contact (Name) John Randall
(Phone)
Laboratory Name GTEL - CONCORD
Contract Number ~~#246-6210-2~~ #247-3350
Samples Collected by (Name) J. NIMMO
Collection Date MAR. 12 1990
Signature J. Nimmo

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: 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				Remarks
MW-1		2	W	G	13:30	HCL 1:1	✓	✓			✓							
MW-2		2	W	G	14:00	HCL 1:1	✓	✓			✓							
MW-3		2	W	G	14:30	HCL 1:1	✓	✓			✓							

Relinquished By (Signature)	Organization	Date/Time	Received By (Signature)	Organization	Date/Time
J. Nimmo	GTI	3/12/90			
Relinquished By (Signature)	Organization	Date/Time	Received By (Signature)	Organization	Date/Time
Relinquished By (Signature)	Organization	Date/Time	Received For Laboratory By (Signature)		Date/Time
		3/12/90			

Turn Around Time (Circle Choice)
24 Hrs
48 Hrs
5 Days
10 Days

APPENDIX C
STANDARD OPERATING PROCEDURES

GROUNDWATER TECHNOLOGY
STANDARD OPERATING PROCEDURE
CONCERNING GROUNDWATER MONITORING
SOP 8

Groundwater monitoring of wells at the site shall be conducted using an ORS Interface Probe and Surface Sampler. The Interface Probe is a hand held, battery operated device for measuring depth to petroleum product and depth to water as measured from an established datum (i.e., top of the well casing which has been surveyed). Product thickness is then calculated by subtracting the depth to product from the depth to water. In addition, water elevations are adjusted for the presence of fuel with the following calculation:

(Product Thickness)(.8)+(Water Elevation)
= Corrected Water Elevation

Note: The factor of 0.8 accounts for the density difference between water and petroleum hydrocarbons.

The Interface Probe consists of a dual sensing probe utilizing an optical liquid sensor and electrical conductivity to distinguish between water and petroleum products. A coated steel measuring tape transmits the sensor's signals to the reel assembly, where an audible alarm sounds a continuous tone when the sensor is immersed in petroleum product and an oscillating tone when immersed in water. The Interface Probe is accurate to 1/16-inch.

A Surface Sampler shall be used for visual inspection of the groundwater to note sheens (difficult to detect with the Interface Probe), odors, microbial action, etc.

The Surface Sampler used consists of a 12-inch long cast acrylic tube with a Delrin ball which closes onto a conical surface creating a seal as the sampler is pulled up. The sampler is calibrated in inches and centimeters for visual inspection of product thickness.

To reduce the potential for cross contamination between wells the monitorings shall take place in order from the least to most contaminated wells. Wells containing free product should be monitored last. Between each monitoring the equipment shall be washed with laboratory grade detergent and double rinsed with distilled water.

GROUNDWATER TECHNOLOGY
STANDARD OPERATING PROCEDURE
CONCERNING WATER SAMPLING METHODOLOGY
SOP 9

Prior to water sampling, each well shall be purged by pumping a minimum of four well volumes or until the discharge water indicates stabilization of temperature, conductivity,and pH. If the well is evacuated before four well volumes are removed or stabilization is achieved, the sample should be taken when the water level in the well recovers to 80% of its initial level.

Retrieval of the water sample, sample handling and sample preservation shall be conducted in accordance with Groundwater Technology Laboratory Standard Operating Procedure (GTL SOP 10) concerning Sampling For Volatiles in Water". The sampling equipment used shall consist of a teflon and/or stainless steel samplers, which meets EPA regulations. Glass vials with teflon lids should be used to store the collected samples.

To insure sample integrity, each vial shall be filled with the sampled water such that the water stands above the lip of the vial. The cap should then be quickly placed on the vial and tightened securely. The vial should then be checked to ensure that air bubbles are not present prior to labeling of the sample. Label information should include a sample identification number, job identification, date, time, type of analysis requested and the sampler's name. Chain-of-Custody forms shall be completed as per Groundwater Technology Laboratory Standard Operating Procedure (SOP 11) concerning Chain of Custody.

The vials should be immediately placed in high quality coolers for shipment to the laboratory. The coolers should be packed with sufficient ice or freezer packs to ensure that the samples are kept below 4C. Samples which are received at the Groundwater Technology Laboratory above 10 C. will be considered substandard. To minimize sample degradation the prescribed analysis shall take place within seven days of sample collection unless specially prepared acidified vials are used.

To minimize the potential for cross contamination between wells, all the well development and water sampling equipment which contacts the groundwater shall be cleaned between each well sampling. As a second precautionary measure, the wells shall be sampled in order of increasing contaminant concentrations as established by previous analysis.

GT ENVIRONMENTAL LABORATORY (GTEL)
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 GTEL or I-Chem.

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. Solvent washing should be followed be 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 GTEL. 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 marker.

GT ENVIRONMENTAL LABORATORY (GTEL)
STANDARD OPERATING PROCEDURE
CONCERNING CHAIN OF CUSTODY
SOP 11

1. Samples must be maintained under custody until shipped or delivered to the laboratory. The laboratory will then maintain custody. A sample is under custody if:

    a) It is in your possession
    b) It is in your view after being in your possession
    c) You locked it up after being in your possession
    d) It is in a designated secure area

2. Custody of samples may be transferred from one person to the next. Each transferee and recipient must date, sign and note the time on the chain-of-custody form.

3. In shipping, the container must be sealed with tape, bearing the sender's signature across the area of bonding at the ends of the tape in order to prevent undetected tampering. Each sampling jar should be taped and signed as well. Scotch tape works well.

4. Write "sealed by" and sign in the "Remarks" box at the bottom of the form before sealing up the box. Place form in a plastic bag and seal it inside the box.

5. The "REMARKS" section in the upper right part of the form is for documenting details such as:

    a) Correlation of sample numbers if samples are split between labs.
    b) QC numbers when lab is logging in the samples.
    c) Sample temperature and condition when received by lab.
    d) Preservation notation.
    e) pH of samples when opened for analysis (if acidified).
    f) Sampling observation or sampling problem

6. The chain-of-custody form should be included inside the shipping container. A copy should be sent to the project manager.

7. When the samples are received by the lab, the chain-of-custody form will be dated, signed, and a note of the time made by a laboratory representative. The form along with shipping bills and receipts will be retained in the laboratory files.

8. At the time of receipt of samples by the laboratory, the shipping container will be inspected and the sealing signature will be checked, the samples will be inspected for condition and bubbles and the temperature of a representative sample container will be measured externally by a thermocouple probe (held tightly between two samples) and recorded. The laboratory QC numbers will be placed on the labels, in the accession log, and on the chain-of-custody form. If samples are acidified their pH will be measured by narrow range pH paper at the time of opening for analysis. All comments concerning procedures requiring handling of the samples will be dated and initialed on the form by the laboratory person performing the procedure. A copy of the completed chain-of-custody form with the comments on sample integrity will be returned to the sampler.

GT ENVIRONMENTAL LABORATORY (GTEL)
STANDARD OPERATING PROCEDURE
CONCERNING FIELD PRESERVATION OF BTX SAMPLES
BY ACIDIFICATION
SOP 12

If specially prepared acidified vials are not available, apply the following Field Procedures, using the field acidification kit. The kit contains:

a) 500 cc glass measuring cup or breaker.
b) dropping bottle of 50% hydrocloric acid or nitric acid.
c) narrow range pH paper, 1.0-2.5 pH range.
d) glass stirring rod.

1. Collect approximately 300cc of water in beaker. Try to minimize turbulence, bubbling, and time of exposure to the air.

2. For inorganic analysis: use 50% nitric acid
For volatile organic analysis: use 50% hydrocloric acid
Add 30 drops of 50% acid to measuring cup. Hold dropper completely vertically.

3. Gently mix with glass bar.

4. Remove bar and touch wetted tip to the pH paper and check color code to assure it is below pH 2. As more acid is added the pH goes lower. Discard used pH strip.

5. Add more acid if necessary. Too much acid is not a problem, just record how much was added (this will be helpful next time). Don't waste time trying to get it right - just add plenty of acid to get it below pH 2. Ideally, once you know how much acid needs to be added at one well, that amount will be sufficient for the rest. However, test the pH each time.

6. Pour the water into the vials prepared for that well and cap off with no bubbles inside. Again turbulence and bubbling are to be minimized. Also note that it is important that all of the vials for a given well be poured and sealed one right after another. Make sure the 300cc collected is enough to fill all of the vials with some to spare at the end. The volume collected can be increased but remember to proportionally increase the amount of acid added.

7. Acidification does not replace chilling. Always chill samples and ship via air for next day delivery.

8. 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 during sampling.