GROUNDWATER TECHNOLOGY, INC.
1401 Halyard Drive, Suite 140, West Sacramento, CA 95691, (916) 372-4700
FAX (916) 372-8781

SHDF 3614

January 27, 1992

Project No. 02320 1383

Mr. R. R. Zielinski
Texaco Environmental Services
108 Cutting Boulevard
Richmond, California 94804

RE: QUARTERLY STATUS REPORT (R-1 OF 92)
FORMER TEXACO SERVICE STATION
930 SPRINGTOWN BOULEVARD
LIVERMORE, CALIFORNIA 94550

Dear Mr. Zielinski:

This letter is presented as a quarterly report on groundwater conditions at the former Texaco service station site in Livermore, California for the quarter of November 1991 through January 1992. Groundwater monitoring and sampling were conducted to determine water table elevation, the thickness of any separate-phase petroleum hydrocarbons (SP), and the distribution of dissolved hydrocarbons in the 10 monitoring wells (MWs) at this site. Groundwater monitoring data and results of laboratory analyses of groundwater samples collected on January 2, 1991 are included.

WORK PERFORMED

GROUNDWATER MONITORING

Water table elevations at the site have increased an average of 0.37 foot from levels reported the previous quarter in all wells except MW-7, in which the level decreased 0.64 foot. The potentiometric surface map (Figure 1, Attachment I) indicates that groundwater beneath the site flows to the north-northwest with a hydraulic gradient of approximately 0.04. Trace thicknesses (<0.01 foot) of SP were detected in MW-A and MW-B. Historical and recent monitoring data are summarized in Table 1 (Attachment II).

GROUNDWATER SAMPLING

Prior to water-sample collection, the groundwater monitoring wells were purged of approximately 4 well volumes and allowed to recharge to at least 80 percent of their initial levels. A Teflon® sampler, cleaned with an industrial detergent and distilled water, was used for the groundwater sampling. The water samples were transferred to 40-milliliter glass vials with Teflon® septum caps, preserved on ice, and transported to a California state-certified laboratory, accompanied by a chain-of-custody manifest.

Groundwater samples were analyzed using modified EPA methods 8020/8015, which measure concentrations of total petroleum hydrocarbons-as-gasoline (TPH-G), and benzene, toluene, ethylbenzene and xylenes (BTEX).

MW-7 was not sampled because it is interpreted to be non-strategic to plume boundary definition. MW-A and MW-B were not sampled because the wells contained separate-phase petroleum hydrocarbons.

GROUNDWATER ANALYTICAL RESULTS

Concentrations of TPH-G in the January 2, 1992 groundwater samples ranged from below the method detection limit (<MDL) to 12,000 parts per billion (ppb) (Figure 2, Attachment I). Dissolved benzene concentrations ranged from <MDL to 74 ppb (Figure 3, Attachment I). Historical and recent analytical data are summarized in Table 2 (Attachment II). Copies of the laboratory analyses reports and the chain-of-custody manifest for the January 2, 1992 samples are included in Attachment III.

WASTEWATER DISPOSAL

Wastewater generated during purging and sampling of the 10 monitoring wells is stored on site in Department of Transportation (DOT)-approved 55-gallon drums. Purge water is characterized as non-hazardous waste, based on the laboratory analyses from the water samples obtained from the monitoring wells. Transportation and disposal of the wastewater is performed on a quarterly basis. A vacuum truck is used to remove the water from the drums and to transport it to Gibson Oil in Taft, California.

Please contact Groundwater Technology's West Sacramento office if you have questions or comments regarding this quarterly report.

Sincerely,

GROUNDWATER TECHNOLOGY, INC.

Danise M. Scriven

DANISE M. SCRIVEN
Project Geologist

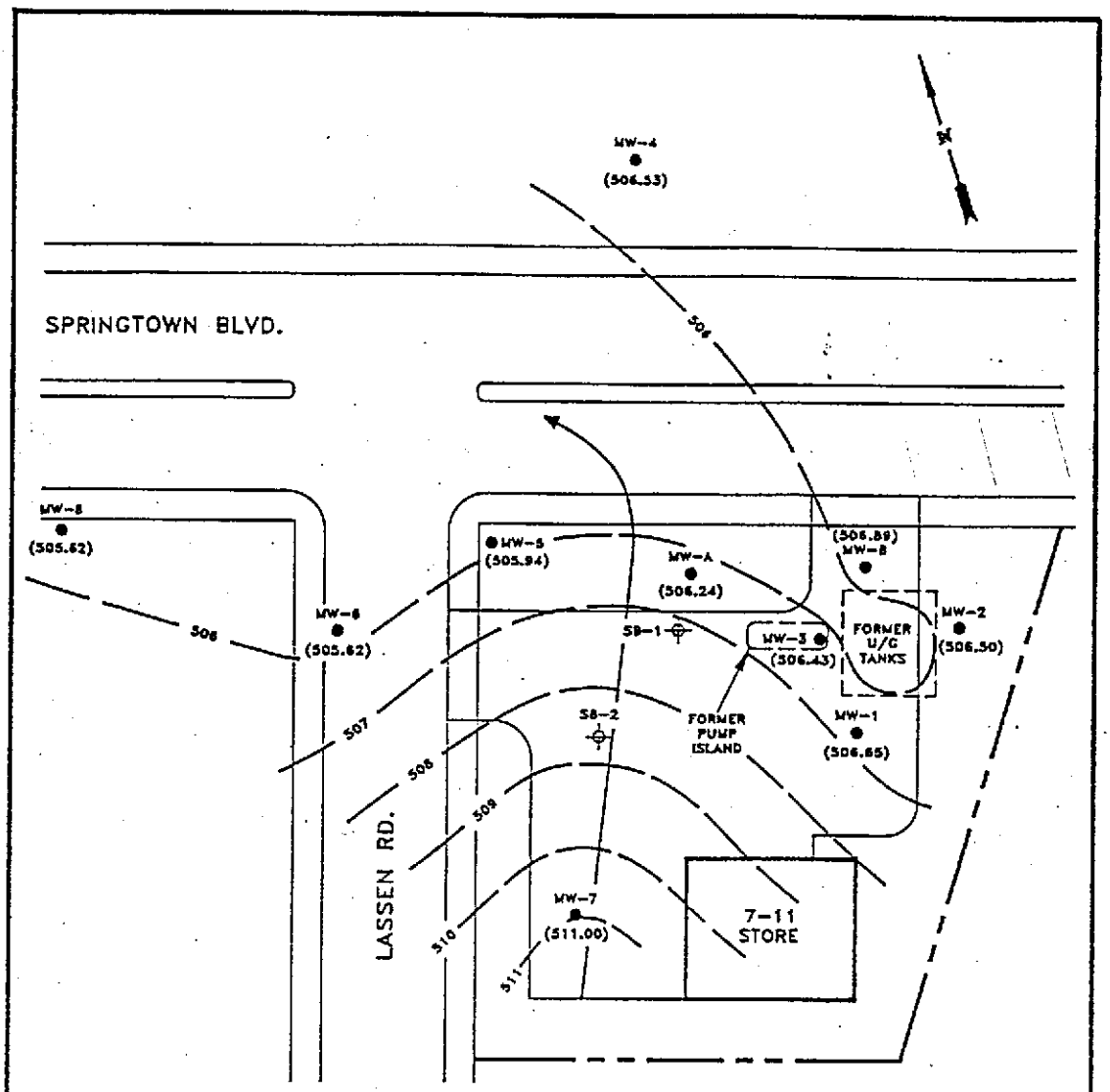
John E Bower

JOHN E. BOWER, R.E.A.
Environmental Geologist
Project Manager

E. K. SIMONIS, R.G.
Senior Environmental Geologist

REGISTERED GEOLOGIST
EDVARDAS (ED) K. SIMONIS
No. 4422
STATE OF CALIFORNIA

DMS/JEB/EKS:rc
Attachments
Ms. Karol Detterman, Texaco Environmental Services
1383QSR.R1



LEGEND

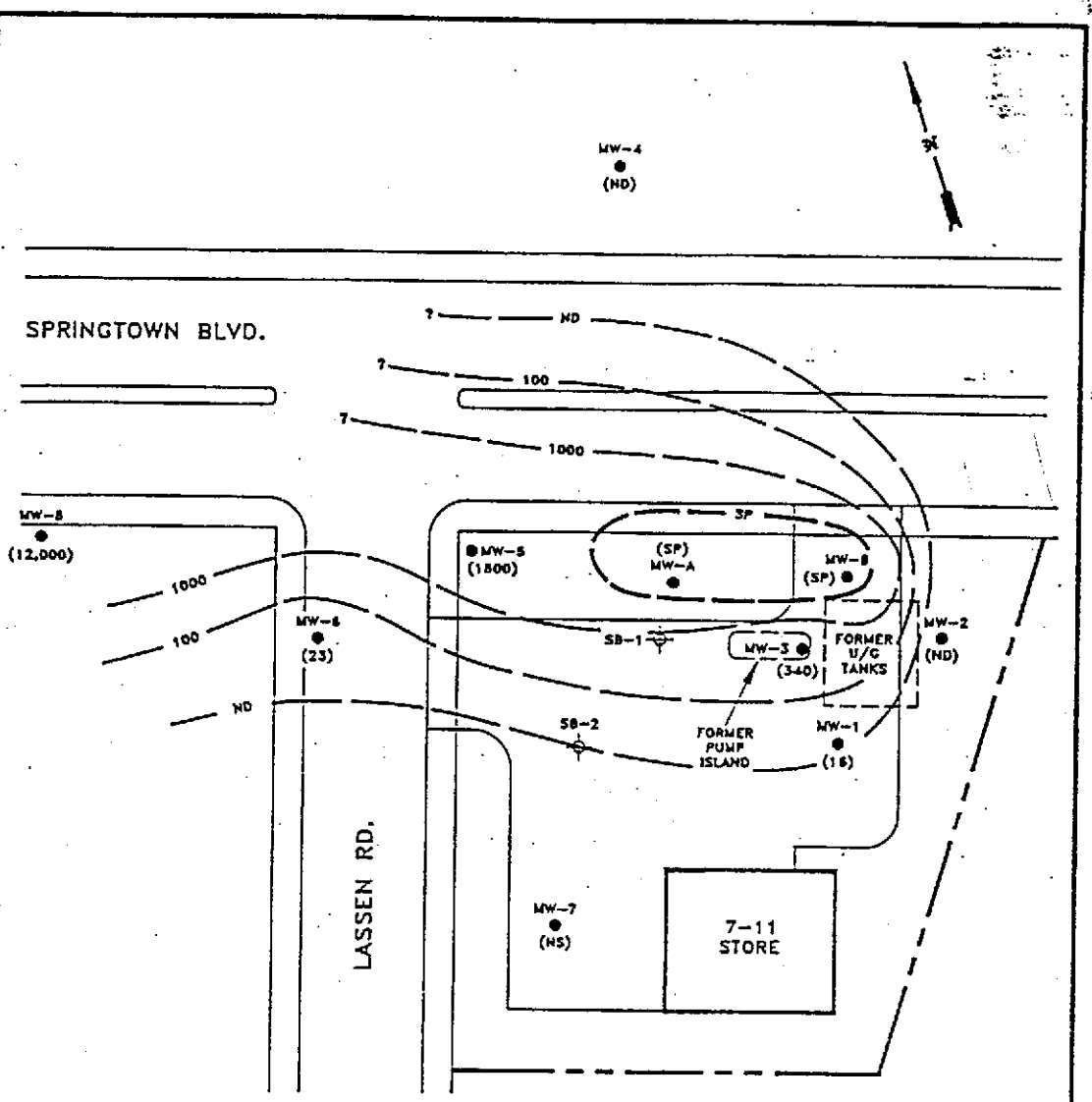
- GROUNDWATER MONITORING WELL
- SOIL BORING
- (505.62) POTENTIOMETRIC SURFACE ELEVATION (FT.)
- POTENTIOMETRIC SURFACE CONTOUR; INTERVAL=1 FT.
- ESTIMATED GROUNDWATER FLOW DIRECTION

FIGURE 1
POTENTIOMETRIC SURFACE MAP
(DATUM: MEAN SEA LEVEL)
JANUARY 2, 1992
TEXACO REFINING & MARKETING INC.
930 SPRINGTOWN BLVD.
LIVERMORE, CA.
02320-1383

REVISIONS:
DATE: 1/23/92
REVISION: FINAL DRAFT
BY: GWS

40 0 40 80
SCALE FEET

GROUNDWATER TECHNOLOGY, INC.



LEGEND

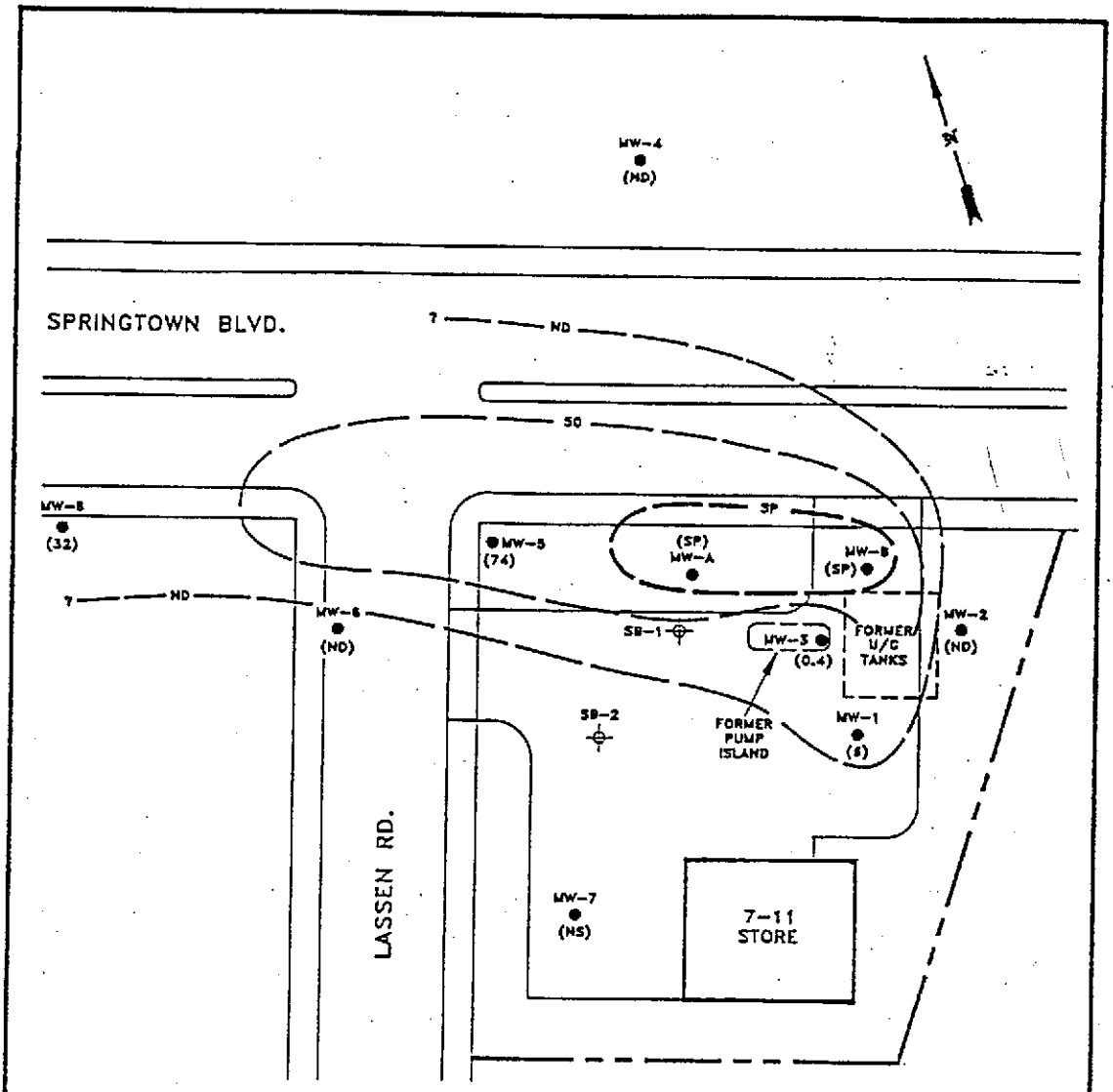
- ● GROUNDWATER MONITORING WELL
- ⊕ SOIL BORING
- (340) DISSOLVED TPH-G CONCENTRATION (ppb)
- (SP) SEPARATE-PHASE PETROLEUM HYDROCARBONS
- (ND) NOT DETECTABLE AT OR ABOVE METHOD DETECTION LIMIT
- (NS) NOT SAMPLED
- LINE OF ESTIMATED EQUAL DISSOLVED TPH-G CONCENTRATION (ppb)
- APPROXIMATE EXTENT OF SEPARATE-PHASE PETROLEUM HYDROCARBONS

FIGURE 2
DISSOLVED TPH-G CONCENTRATION MAP
(IN PARTS PER BILLION [ppb])
JANUARY 2, 1992
TEXACO REFINING & MARKETING INC.
930 SPRINGTOWN BLVD.
LIVERMORE, CA.
02320-1383

REVISIONS:
DATE: 1/23/92
REVISION: FINAL DRAFT
BY: CWS

40 0 40 80
SCALE FEET

GROUNDWATER TECHNOLOGY, INC.



LEGEND

- GROUNDWATER MONITORING WELL
- SOIL BORING
- (74) DISSOLVED BENZENE CONCENTRATION (ppb)
- (SP) SEPARATE-PHASE PETROLEUM HYDROCARBONS
- (ND) NOT DETECTABLE AT OR ABOVE METHOD DETECTION LIMIT
- (NS) NOT SAMPLED
- LINE OF ESTIMATED EQUAL DISSOLVED BENZENE CONCENTRATION (ppb)
- APPROXIMATE EXTENT OF SEPARATE-PHASE PETROLEUM HYDROCARBONS

FIGURE 3
DISSOLVED BENZENE CONCENTRATION MAP
(IN PARTS PER BILLION [ppb])
JANUARY 2, 1992
TEXACO REFINING & MARKETING INC.
930 SPRINGTOWN BLVD.
LIVERMORE, CA.
02320-1383

REVISIONS:
DATE: 1/23/92
REVISION: FINAL DRAFT
BY: GWS

40 0 40 80
SCALE FEET

GROUNDWATER TECHNOLOGY, INC.

Table 1
CUMULATIVE GROUNDWATER MONITORING SUMMARY
(in feet)

Former Texaco Service Station
930 Springtown Boulevard
Livermore, California

WELL I. D.	DATE MONITORED	WELL ELEVATION	DEPTH TO WATER	WATER TABLE ELEVATION	COMMENTS
MW-A	01/10/91	519.85	13.28	506.57	
	04/04/91		12.12	507.73	
	07/12/91		12.95	506.90	
	10/04/91		13.98	505.87	Trace SP
	01/02/92		13.61	506.24	Trace SP
MW-B	01/10/91	518.16	11.06	507.10	
	04/04/91		10.04	508.12	
	07/12/91		10.91	507.25	
	10/04/91		11.82	506.34	Trace SP
	01/02/92		11.27	506.89	Trace SP
MW-1	01/10/91	520.76	13.80	506.96	
	04/04/91		12.70	508.06	
	07/12/91		13.55	507.21	
	10/04/91		14.52	506.24	
	01/02/92		14.11	506.65	
MW-2	01/10/91	518.46	11.66	506.80	
	04/04/91		10.61	507.85	
	07/12/91		11.48	506.98	
	10/04/91		12.35	506.11	
	01/02/92		11.96	506.50	
MW-3	01/10/91	519.30	12.84	506.46	
	04/04/91		11.71	507.59	
	07/12/91		12.54	506.76	
	10/04/91		13.47	505.83	
	01/02/92		12.87	506.43	
MW-4	01/10/91	518.75	12.02	506.73	
	04/04/91		10.72	508.03	
	07/12/91		11.78	506.97	
	10/04/91		12.30	506.45	
	01/02/92		12.22	506.53	
MW-5	01/10/91	520.50	14.33	506.17	
	04/04/91		13.26	507.24	
	07/12/91		14.14	506.36	
	10/04/91		14.96	505.54	
	01/02/92		14.56	505.94	

Table 1 (continued)

WELL I.D.	DATE MONITORED	WELL ELEVATION	DEPTH TO WATER	WATER TABLE ELEVATION	COMMENTS
MW-6	01/10/91	522.26	16.31	505.95	
	04/04/91		15.19	507.07	
	07/12/91		NA	NA	
	10/04/91		16.90	505.36	
	01/02/92		16.64	505.62	
MW-7	01/10/91	522.17	9.07	513.10	
	04/04/91		7.59	514.58	
	07/12/91		9.26	512.91	
	10/04/91		10.53	511.64	
	01/02/92		11.17	511.00	
MW-8	01/10/91	524.04	18.03	506.01	
	04/04/91		17.01	507.03	
	07/12/91		17.82	506.22	
	10/04/91		18.70	505.34	
	01/02/92		18.42	505.62	

NOTES:
SP = Separate-phase petroleum hydrocarbons
NA = Not Available

GMSTAB1.WK1

Table 2
CUMULATIVE LABORATORY ANALYSES OF GROUNDWATER
(in parts per billion [ppb])

Former Texaco Service Station
930 Springtown Boulevard
Livermore, California

WELL I.D.	DATE SAMPLED	BENZENE	TOLUENE	ETHYL-BENZENE	XYLENES	TPH-G
MW-A	01/10/91	1,900	3,700	2,600	8,300	50,000
	04/04/91	950	1,100	1,300	2,900	31,000
	07/12/91	2,000	4,200	4,600	13,000	100,000
	10/04/91	SP	SP	SP	SP	SP
	01/02/92	SP	SP	SP	SP	SP
MW-B	01/10/91	47	1,300	770	3,100	35,000
	04/04/91	4	10	22	19	2,300
	07/12/91	88	1,800	390	1,300	18,000
	10/04/91	SP	SP	SP	SP	SP
	01/02/92	SP	SP	SP	SP	SP
MW-1	01/10/91	ND	ND	ND	ND	ND
	04/04/91	ND	ND	ND	ND	ND
	07/12/91	ND	ND	3	16	390
	10/04/91	1	ND	ND	ND	ND
	01/02/92	6	ND	ND	ND	16
MW-2	01/10/91	ND	ND	ND	ND	ND
	04/04/91	ND	ND	ND	ND	ND
	07/12/91	ND	ND	ND	ND	ND
	10/04/91	0.3	ND	ND	ND	ND
	01/02/92	ND	ND	ND	ND	ND
MW-3	01/10/91	ND	ND	ND	ND	110
	04/04/91	4	ND	0.6	0.9	630
	07/12/91	2	ND	ND	1	230
	10/04/91	0.5	2	ND	0.5	360
	01/02/92	0.4	ND	ND	ND	340
MW-4	01/10/91	ND	ND	ND	ND	ND
	04/04/91	ND	ND	ND	ND	ND
	07/12/91	ND	ND	ND	ND	ND
	10/04/91	0.6	ND	ND	ND	ND
	01/02/92	ND	ND	ND	ND	ND
MW-5	01/10/91	48	2	87	9	1,900
	04/04/91	ND	ND	ND	ND	ND
	07/12/91	13	ND	18	1	850
	10/04/91	240	13	34	14	2,000
	01/02/92	74	41	84	94	1,800
MDL		0.3	0.3	0.3	0.5	10

Table 2 (continued)

WELL I.D.	DATE SAMPLED	BENZENE	TOLUENE	ETHYL-BENZENE	XYLENES	TPH-G
MW-6	01/10/91	ND	ND	ND	ND	ND
	04/04/91	ND	ND	ND	ND	ND
	07/12/91	--	--	--	--	--
	10/04/91	0.3	ND	ND	ND	ND
	01/02/92	ND	0.3	0.6	3	23
MW-7	01/10/91	ND	ND	ND	ND	ND
	04/04/91	ND	ND	ND	ND	ND
	07/12/91	--	--	--	--	--
	10/04/91	--	--	--	--	--
	01/02/92	--	--	--	--	--
MW-8	01/10/91	ND	ND	ND	ND	ND
	04/04/91	--	--	--	--	--
	07/12/91	--	--	--	--	--
	10/04/91	--	--	--	--	--
	01/02/92	32	980	200	760	12,000
MDL		0.3	0.3	0.3	0.5	10

NOTES:
MDL = Method Detection Limit
ND = Not detected at or above the MDL
TPH-G = Total petroleum hydrocarbons-as-gasoline
SP = Separate-phase petroleum hydrocarbons
-- = Not sampled

LABTAB2.WK1

ATTACHMENT III

LABORATORY ANALYSES REPORTS

AND

CHAIN-OF-CUSTODY MANIFEST

GTEL
ENVIRONMENTAL
LABORATORIES, INC.

Northwest Region
4080-C Pike Lane
Concord, CA 94520
(415) 685-7852
(800) 544-3422 *from inside California*
(800) 423-7143 *from outside California*
(415) 825-0720 (FAX)

Client Number: GTI71TEX01
Consultant Project Number: 023201383
Project ID: Livermore
Work Order Number: C2-01-048

January 9, 1992

John Bower
Groundwater Technology, Inc.
1401 Halyard Dr., Ste. 140
West Sacramento, CA 95691

Enclosed please find the analytical results for samples received by GTEL Environmental Laboratories, Inc. on 01/03/92, under chain of custody record 72-13660.

A formal Quality Control/Quality Assurance (QA/QC) program is maintained by GTEL, which is designed to meet or exceed the EPA requirements. Analytical work for this project met QA/QC criteria, unless otherwise stated in the footnotes.

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.

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/ec
Emma P. Popek
Laboratory Director

Table 1

ANALYTICAL RESULTS

Aromatic Volatile Organics and Total Petroleum Hydrocarbons as Gasoline in Water

EPA Methods 5030, 8020, and Modified 8015[a]

GTEL Sample Number		01	02	03	04
Client Identification		TRIP BLANK	RINSATE	MW 6	MW 4
Date Sampled		01/02/92	01/02/92	01/02/92	01/02/92
Date Analyzed		01/07/92	01/07/92	01/07/92	01/07/92
Analyte	Detection Limit, ug/L	Concentration, ug/L			
Benzene	0.3	<0.3	<0.3	<0.3	<0.3
Toluene	0.3	<0.3	<0.3	0.3	<0.3
Ethylbenzene	0.3	<0.3	<0.3	0.6	<0.3
Xylene, total	0.5	<0.5	<0.5	3	<0.5
BTEX, total	--	--	--	4	--
Gasoline	10	<10	<10	23	<10
Detection Limit Multiplier		1	1	1	1

a. Test Methods for Evaluating Solid Waste, SW-846, Third Edition, Revision 0, US EPA November 1986. Modification for TPH as gasoline as per California State Water Resources Control Board LUFT Manual protocols, May 1988 revision.

Table 1 (Continued)

ANALYTICAL RESULTS

Aromatic Volatile Organics and Total Petroleum Hydrocarbons as Gasoline in Water

EPA Methods 5030, 8020, and Modified 8015[a]

GTEL Sample Number		05	06	07	08
Client Identification		MW 2	MW 1	MW 3	MW 5
Date Sampled		01/02/92	01/02/92	01/02/92	01/02/92
Date Analyzed		01/07/92	01/07/92	01/07/92	01/07/92
Analyte	Detection Limit, ug/L	Concentration, ug/L			
Benzene	0.3	<0.3	6	0.4	74
Toluene	0.3	<0.3	<0.3	<0.3	41
Ethylbenzene	0.3	<0.3	<0.3	<0.3	84
Xylene, total	0.5	<0.5	<0.5	<0.5	94
BTEX, total	--	--	6	0.4	290
Gasoline	10	<10	16	340	1800
Detection Limit Multiplier		1	1	1	1

a. Test Methods for Evaluating Solid Waste, SW-846, Third Edition, Revision 0, US EPA November 1986. Modification for TPH as gasoline as per California State Water Resources Control Board LUFT Manual protocols, May 1988 revision.

Table 1 (Continued)

ANALYTICAL RESULTS

Aromatic Volatile Organics and Total Petroleum Hydrocarbons as Gasoline in Water

EPA Methods 5030, 8020, and Modified 8015[a]

GTEL Sample Number		09			
Client Identification		MW 8			
Date Sampled		01/02/92			
Date Analyzed		01/07/92			
Analyte	Detection Limit, ug/L	Concentration, ug/L			
Benzene	0.3	32			
Toluene	0.3	980			
Ethylbenzene	0.3	200			
Xylene, total	0.5	760			
BTEX, total	--	2000			
Gasoline	10	12000			
Detection Limit Multiplier		1			

a. Test Methods for Evaluating Solid Waste, SW-846, Third Edition, Revision 0, US EPA November 1986. Modification for TPH as gasoline as per California State Water Resources Control Board LUFT Manual protocols, May 1988 revision.

GTEL ENVIRONMENTAL LABORATORIES, INC

4080- Pike Lane
Concord, CA 94520
415-685-7852

800-544-3422 (In CA)
800-423-7143 (Outside CA)

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST 72-13660

CUSTODY RECORD

Project Manager: John Boulé

Phone #: (916) 372-4200

FAX #: (916) 372-8781

Address: 1401 Halyard Dr. Suite 40
West Sacramento, CA 95691

Site location: Livermore

Project Number: 92320383.030504

Project Name: TES Livermore

I attest that the proper field sampling procedures were used during the collection of these samples.

Sampler Name (Print): Paul Quarth

ANALYSIS REQUEST

Field Sample ID	Source of Sample	GTEL Lab # (Lab use only)	# CONTAINERS	Matrix: WATER	SOIL	AIR	SLUDGE	OTHER	Method Preserved: HCl	HNO_3	H_2SO_4	ICE	NONE	OTHER	Sampling: DATE	TIME
TRIP BLK		01	1	X											2 Nov 91	
MW5 STE		02	2													1804
MW6	N	03	2													1811
MW4	N	04	2													1817
MW2	N	05	2													1823
MW1	N	06	2													1838
MW3	N	07	2													1839
MW5	N	08	2													1850
MW8		09	2													1854

BTEX 602 ☐ 8020 ☐	with MTBE ☐	BTEX/TPH Gas 602/8015 ☐ 8020/8015 ☐ MTBE ☐	TPH as ☐ Gas ☐ Diesel ☐ Jet Fuel	Product I.D. by GC (SIMDIS) ☐	Total Oil & Grease: 413.1 ☐ 413.2 ☐ 503A ☐	Total Petroleum Hydrocarbons: 418.1 ☐ 503E ☐	EPA 601 ☐ 8010 ☐	DCA only ☐	EPA 602 ☐ 8020 ☐	EPA 608 ☐ 8080 ☐	PCBs only ☐	EPA 610 ☐ 8310 ☐	EPA 624 ☐ 8240 ☐	NBS +15 ☐	EPA 625 ☐ 8270 ☐	NBS +25 ☐	EPTOX: Metals ☐ Pesticides ☐ Herbicides ☐	TCLP Metals ☐ VOA ☐ Semi VOA ☐	EPA Priority Pollutant Metals ☐ HSL ☐	LEAD 7420 ☐ 7421 ☐ 239.2 ☐ 6010 ☐ Org. Lead ☐	CAM Metals ☐ STLC ☐ TTLC	Corrosivity ☐ Flashpoint ☐ Reactivity ☐
X			X																			

SPECIAL HANDLING

24 HOURS ☐
EXPEDITED 48 Hours ☐
SEVEN DAY ☐
OTHER _____(#) BUSINESS DAYS
QA/QC CLP Level ☐ Blue Level ☐
FAX ☐

SPECIAL DETECTION LIMITS (Specify)

SPECIAL REPORTING REQUIREMENTS (Specify)

REMARKS:

Lab Use Only
Lot #:

Storage Location
Work Order #:

	Relinquished by Sampler:	Received by:	Relinquished by:	Received by:	Relinquished by:	Received by Laboratory:
Date	2 Nov 91		4 Nov 91			4/3/92
Time	2110		0825			1255
						Way bill #