Texaco Refining
and Marketing Inc

108 Cutting Boulevard
Richmond CA 94804

HAZMAT

95 JAN 31 AM 10:01

January 18, 1995

ENV - STUDIES, SURVEYS, & REPORTS
930 Springtown Blvd., Livermore, California

Ms. Eva Chu
Alameda County Department of Environmental Health
80 Swan Way, Room 200
Oakland, CA 94612

Dear Ms. Chu:

This letter presents the results of groundwater monitoring and sampling conducted by Blaine Tech Services, Inc. on November 2, 1994, at the site referenced above (see Plate 1, Site Vicinity Map). Based on groundwater level measurements, the areal hydraulic gradient was estimated to be north-northeast (see Plate 2, Groundwater Gradient Map). The gradient map has been reviewed by a registered professional. TPHg and benzene concentrations are shown on Plate 3. Tables 1 and 2 list historical groundwater monitoring data and analytical results, respectively.

The certified analytical report, chain-of-custody, field data sheets, bill of lading, and quarterly summary report are in the Appendix, along with Texaco Enviornmental Services' Standard Operating Procedures.

If you have any questions or comments regarding this site, please call the Texaco Environmental Services' site Project Coordinator, Ms. Karen Petryna at (510) 236-9139.

Best Regards,

Rebecca Digerness

Rebecca Digerness
Environmental Assistant

- Investigate utility/sewer trenches down Springtown blvd - letter already sent 12/22/94 not yet.
- include gradient ft/ft in future - will do.

Per K. Petryna 2/2/95

Karen E. Petryna
Engineer
Texaco Environmental Services

extraction system up and running. getting another consultant to put together rpt. Future rpts will include results of extraction etc.

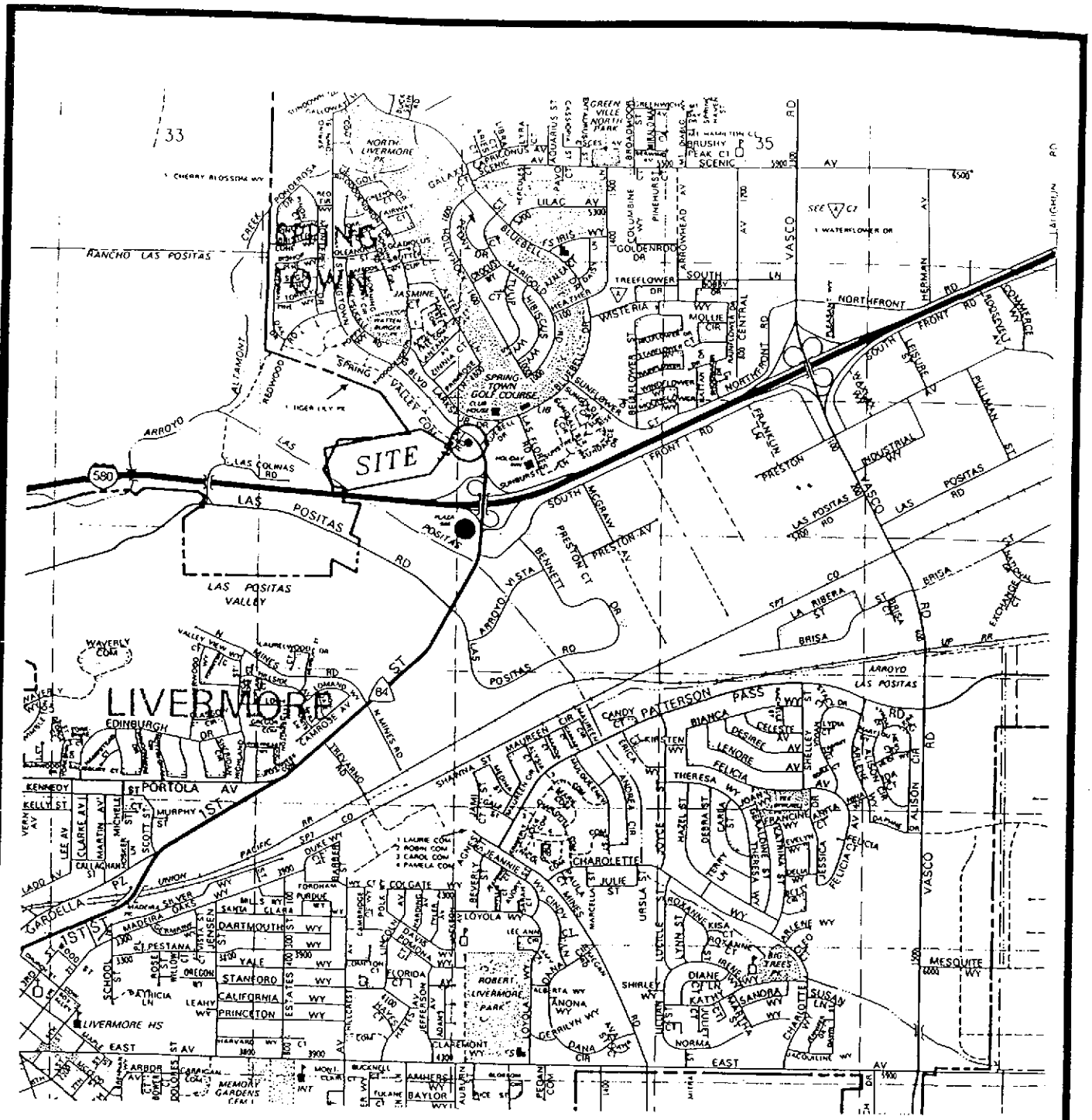
RBD:hs
C:\QMR\930S\QMR.LET

Enclosures

RAOFile-UCPFile (w/enclosures) RRZielinski (w/o enclosures)

PR: KEP

GROUNDWATER MONITORING AND SAMPLING
Fourth Quarter, 1994
at the
Former Texaco Station
930 Springtown Boulevard
Livermore, California



SOURCE:

1993 THE THOMAS GUIDE
ALAMEDA COUNTY, PAGE 51 (C3)

N

0 1/4 1/2 3/4 1

MILE

1" = 2200'

TEXACO

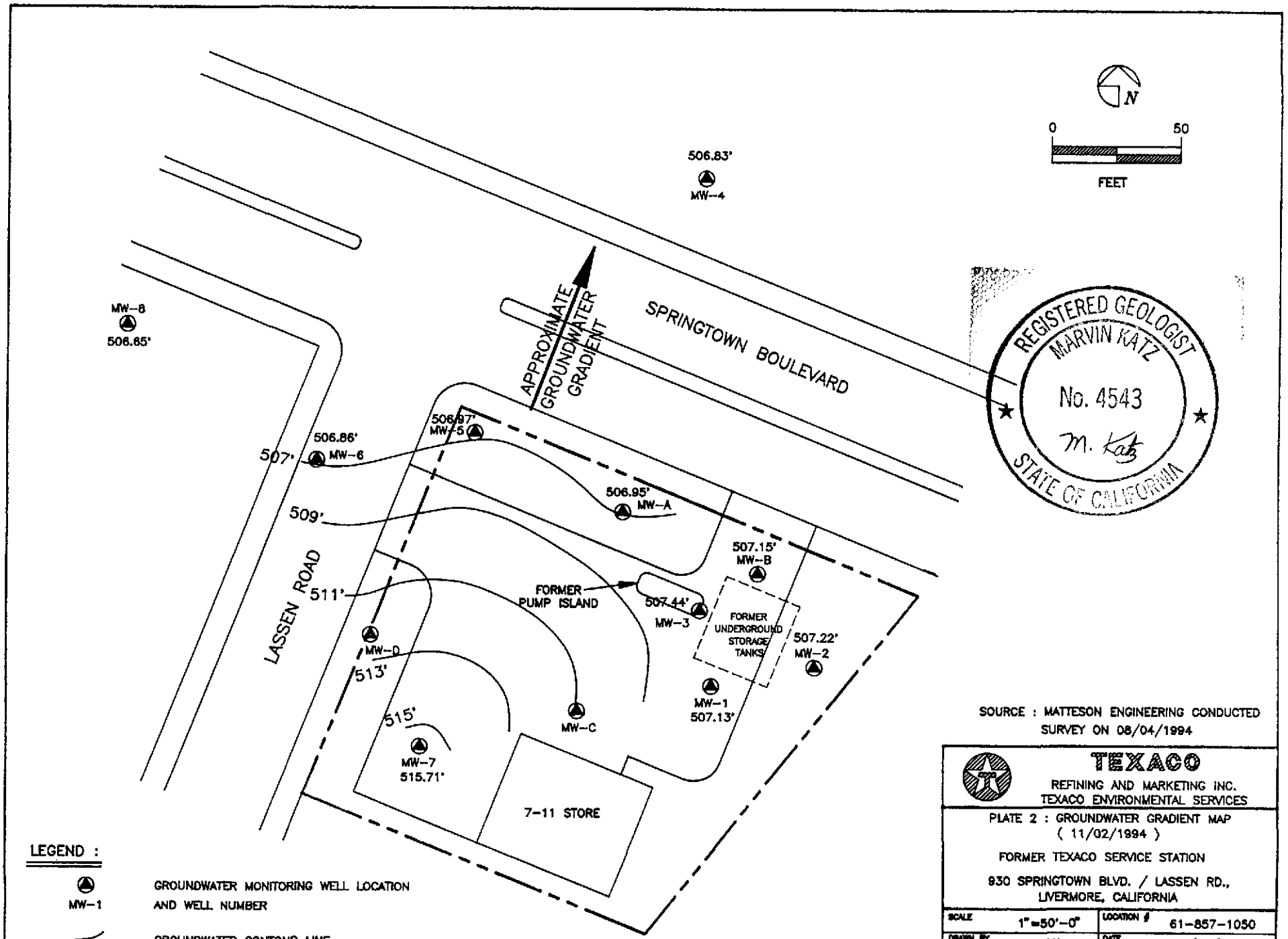
REFINING AND MARKETING, INC.
TEXACO ENVIRONMENTAL SERVICES

PLATE 1

SITE VICINITY MAP

FORMER TEXACO SERVICE STATION

930 SPRINGTOWN BLVD. / LASSEN RD.,
LIVERMORE, CALIFORNIA



LEGEND :

MW-1 — GROUNDWATER MONITORING WELL LOCATION AND WELL NUMBER

GROUNDWATER CONTOUR LINE

507.13' — GROUNDWATER ELEVATION (ABOVE MSL)

SOURCE : MATTESON ENGINEERING CONDUCTED SURVEY ON 08/04/1994

TEXACO

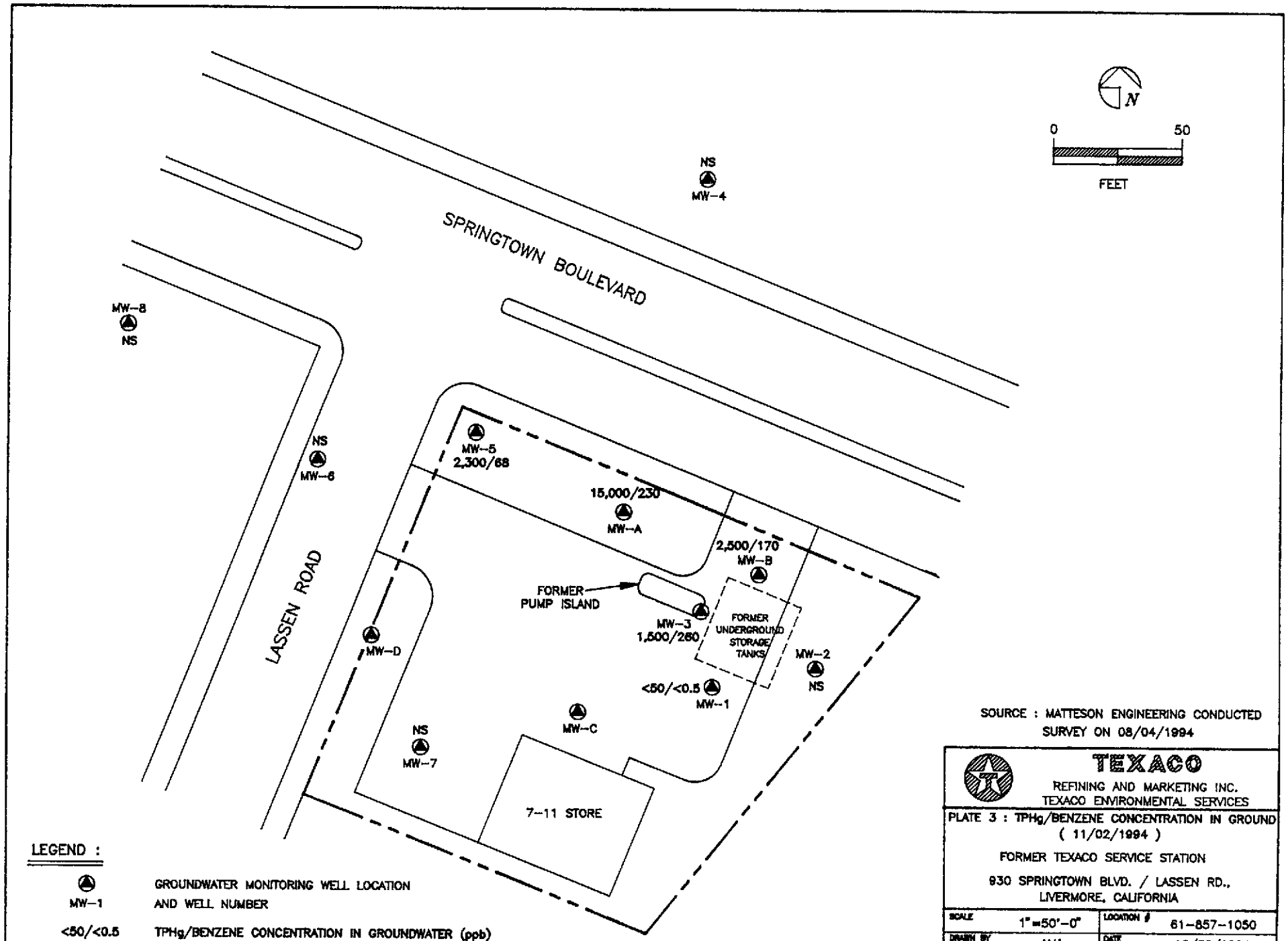
REFINING AND MARKETING INC.
TEXACO ENVIRONMENTAL SERVICES

PLATE 2 : GROUNDWATER GRADIENT MAP
(11/02/1994)

FORMER TEXACO SERVICE STATION

930 SPRINGTOWN BLVD. / LASSEN RD.,
LIVERMORE, CALIFORNIA

SCALE	1"=50'-0"	LOCATION #	61-857-1050
DRAWN BY	AMA	DATE	12/30/1994
CHECKED BY	RO	DATE	1/5/95
DRAWING NO.	(LIVERMORE) ST-LA-LI.DWG		



LEGEND :

MW-1	GROUNDWATER MONITORING WELL LOCATION AND WELL NUMBER
<50/<0.5	TPHg/BENZENE CONCENTRATION IN GROUNDWATER (ppb)
NS	WELL NOT SAMPLED

SOURCE : MATTESON ENGINEERING CONDUCTED SURVEY ON 08/04/1994

TEXACO
REFINING AND MARKETING INC.
TEXACO ENVIRONMENTAL SERVICES

PLATE 3 : TPHg/BENZENE CONCENTRATION IN GROUND (11/02/1994)

FORMER TEXACO SERVICE STATION

930 SPRINGTOWN BLVD. / LASSEN RD.,
LIVERMORE, CALIFORNIA

SCALE	1"=50'-0"	LOCATION #	61-857-1050
DRAWN BY	AMA	DATE	12/30/1994
CHECKED BY	RD	DATE	1/5/95
DRAWING NO.	(LIVERMORE) ST-LA-LI.DWG		

Table 1
Groundwater Elevation Data
930 Springtown Boulevard, Livermore, CA

Well Number	Date Gauged	Top of Casing Elevation (feet, MSL)		Depth to Water (feet, TOC)	Elevation of Groundwater (feet, MSL)	Floating Product
MW-A						
	1/10/91	519.85				
	1/2/92			13.61	506.24	---
	4/2/92			12.44	507.41	---
	7/21/92			13.35	506.50	---
	10/9/92			12.92	506.93	SD
	1/11/93			11.78	508.07	SD
	5/5/93			11.39	508.46	SD
	8/9/93			12.80	507.05	SD
	10/14/93			13.48	506.37	SD
	1/24/94			12.74	507.11	SD
	5/31/94			12.28	507.57	---
	8/31/94	520.10	*	13.20	506.90	SD
	11/2/94			13.15	506.95	SD
MW-B						
	1/10/91	518.16				
	1/2/92			11.27	506.89	---
	4/2/92			10.18	507.98	---
	7/21/92			11.27	506.89	---
	10/9/92			11.64	506.52	SD
	1/11/93			9.65	508.51	SD
	5/5/93			9.28	508.88	SD
	8/9/93			11.02	507.14	SD
	10/14/93			11.34	506.82	SD
	1/24/94			10.54	507.62	SD
	5/31/94			10.19	507.97	---
	8/31/94	518.05	*	10.98	507.07	SD
	11/2/94			10.90	507.15	SD
MW-1						
	1/10/91	520.76				
	1/2/92			14.11	506.65	---
	4/2/92			12.98	507.78	---
	7/21/92			13.92	506.84	---
	10/9/92			14.25	506.51	---
	1/11/93			12.30	508.46	---
	5/5/93			11.88	508.88	---
	8/9/93			13.63	507.13	---
	10/14/93			13.91	506.85	---
	1/24/93			13.12	507.64	---
	5/31/94			12.74	508.02	---
	8/31/94	520.61	*	13.68	506.93	---
	11/2/94			13.48	507.13	---

Table 1
Groundwater Elevation Data
930 Springtown Boulevard, Livermore, CA

Well Number	Date Gauged	Top of Casing Elevation (feet, MSL)		Depth to Water (feet, TOC)	Elevation of Groundwater (feet, MSL)	Floating Product
MW-2						
	1/10/91	518.46				
	1/2/92			11.96	506.50	---
	4/2/92			10.89	507.57	---
	7/21/92			11.55	506.91	---
	10/9/92			Not Monitored		
	1/11/93			Not Monitored		
	5/5/93			Not Monitored		
	8/9/93			Not Monitored		
	10/14/93			Not Monitored		
	1/24/94			Not Monitored		
	5/31/94			10.37	508.09	---
	8/31/94	518.29	*	11.16	507.13	---
	11/2/94			11.07	507.22	---
MW-3						
	1/10/91	519.30				
	1/2/92			12.87	506.43	---
	4/2/92			11.97	507.33	---
	7/21/92			12.60	506.70	---
	10/9/92			12.93	506.37	---
	1/11/93			11.16	508.14	---
	5/5/93			10.72	508.58	---
	8/9/93			12.34	506.96	---
	10/14/93			12.71	506.59	---
	1/24/94			12.03	507.27	---
	5/31/94			11.54	507.76	---
	8/31/94	519.60	*	12.60	507.00	---
	11/2/94			12.16	507.44	---
MW-4						
	1/10/91	518.75				
	1/2/92			12.22	506.53	---
	4/2/92			11.03	507.72	---
	7/21/92			12.36	506.39	---
	10/9/92			12.40	506.35	---
	1/11/93			10.72	508.03	---
	5/5/93			10.21	508.54	---
	8/9/93			12.25	506.50	---
	10/14/93			12.58	506.17	---
	1/24/94			11.72	507.03	---
	5/31/94			11.29	507.46	---
	8/31/94	518.79	*	12.00	506.79	---
	11/2/94			11.96	506.83	---

Table 1
Groundwater Elevation Data
930 Springtown Boulevard, Livermore, CA

Well Number	Date Gauged	Top of Casing Elevation (feet, MSL)		Depth to Water (feet, TOC)	Elevation of Groundwater (feet, MSL)	Floating Product
MW-5						
	1/10/91	520.50				
	1/2/92			14.56	505.94	---
	4/2/92			13.58	506.92	---
	7/21/92			13.77	506.73	---
	10/9/92			14.09	506.41	---
	1/11/93			12.24	508.26	---
	5/5/93			11.90	508.60	---
	8/9/93			13.35	507.15	---
	10/14/93			13.89	506.61	---
	1/24/94			13.32	507.18	---
	5/31/94			12.75	507.75	---
	8/31/94	521.19	*	14.34	506.85	---
	11/2/94			14.22	506.97	---
MW-6						
	1/10/91	522.26				
	1/2/92			16.64	505.62	---
	4/2/91			15.61	506.65	---
	7/21/92			15.53	506.73	---
	10/9/92			15.69	506.57	---
	1/11/93			Not Monitored		
	5/5/93			Not Monitored		
	8/9/93			14.50	507.76	---
	10/14/93			Not Monitored		
	1/24/94			15.09	507.17	---
	5/31/94			14.64	507.62	---
	8/31/94	522.18	*	15.32	506.86	---
	11/2/94			15.32	506.86	---
MW-7						
	1/10/91	522.17				
	1/2/92			11.17	511.00	---
	4/2/92			10.34	511.83	---
	7/21/92			9.02	513.15	---
	10/9/92			Not Monitored		
	1/11/93			Not Monitored		
	5/5/93			Not Monitored		
	8/9/93			Not Monitored		
	10/14/93			Not Monitored		
	1/24/94			Not Monitored		
	5/31/94			9.42	512.75	---
	8/31/94	522.19	*	6.84	515.35	---
	11/2/94			6.48	515.71	---

Table 1
Groundwater Elevation Data
930 Springtown Boulevard, Livermore, CA

Well Number	Date Gauged	Top of Casing Elevation (feet, MSL)		Depth to Water (feet, TOC)	Elevation of Groundwater (feet, MSL)	Floating Product
MW-8						
	1/10/91	524.04				
	1/2/92			18.42	505.62	---
	4/2/92			17.39	506.65	---
	7/21/92			14.02	510.02	---
	10/9/92			Not Monitored		
	1/11/93			Not Monitored		
	5/5/93			Not Monitored		
	8/9/93			Not Monitored		
	10/14/93			Not Monitored		
	1/24/94			Not Monitored		
	5/31/94			19.65	504.39	---
	8/31/94	524.03	*	17.40	506.63	---
	11/2/94			17.38	506.65	---
*Wells resurveyed on 8/4/94						
MSL = Mean Sea Level						
TOC = Top of Casing						
--- = None Present						
SD = Sheen detected in purge water						

Table 2
Groundwater Analytical Data
930 Springtown Boulevard, Livermore, CA

Well Number	Date Sampled	TPHg (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl-benzene (ppb)	Xylenes (ppb)
MW-A						
	1/2/92	SP	SP	SP	SP	SP
	4/2/92	27,000	1,200	570	1,700	2,300
	7/21/92	57,000	1,500	1,800	2,700	7,100
	10/9/92	56,000	2,900	2,600	4,600	12,000
	1/11/93	NS	NS	NS	NS	NS
	5/5/93	NS	NS	NS	NS	NS
	8/9/93	NS	NS	NS	NS	NS
	10/14/93	NS	NS	NS	NS	NS
	1/24/94	1,400,000	6,900	2,100	15,000	38,000
	5/31/94	48,000	1,200	900	1,900	4,200
	8/31/94	24,000	140	120	830	1,500
	11/2/94	15,000	230	360	1,100	1,800
MW-B						
	1/2/92	SP	SP	SP	SP	SP
	4/2/92	1,900	ND	39	24	35
	7/21/92	16,000	180	1,600	270	1,100
	10/9/92	38,000	490	8,300	1,400	5,100
	1/11/93	NS	NS	NS	NS	NS
	5/5/93	NS	NS	NS	NS	NS
	8/9/93	NS	NS	NS	NS	NS
	10/14/93	NS	NS	NS	NS	NS
	1/24/94	23,000	110	1,700	600	1,900
	5/31/94	13,000	780	310	370	1,400
	8/31/94	35,000	160	2,800	1,000	4,500
	11/2/94	2,500	170	3,200	1,100	4,700
MW-1						
	1/2/92	16	6	ND	ND	ND
	4/2/92	ND	ND	ND	ND	ND
	7/21/92	<50	3.2	<0.5	<0.5	<0.5
	10/9/92	<50	8.5	<0.5	<0.5	<0.5
	1/11/93	<50	<0.5	<0.5	<0.5	<0.5
	5/5/93	<50	<0.5	<0.5	<0.5	<0.5
	8/9/93	<50	<0.5	<0.5	<0.5	<0.5
	10/14/93	440	16	2.9	2.9	11
	5/31/94	<50	<0.5	<0.5	<0.5	<0.5
	8/31/94	<50	<0.5	<0.5	<0.5	<0.5
	11/2/94	<50	<0.5	<0.5	<0.5	<0.5

Table 2
Groundwater Analytical Data
930 Springtown Boulevard, Livermore, CA

Well Number	Date Sampled	TPHg (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl-benzene (ppb)	Xylenes (ppb)
MW-2						
	1/2/92	ND	ND	ND	ND	ND
	4/2/91	ND	ND	ND	ND	ND
	7/21/92	NS	NS	NS	NS	NS
	10/9/92	NS	NS	NS	NS	NS
	1/11/93	NS	NS	NS	NS	NS
	5/5/93	NS	NS	NS	NS	NS
	8/9/93	NS	NS	NS	NS	NS
	10/14/93	NS	NS	NS	NS	NS
	1/24/94	NS	NS	NS	NS	NS
	5/31/94	NS	NS	NS	NS	NS
	8/31/94	<50	<0.5	<0.5	<0.5	<0.5
	11/2/94	NS	NS	NS	NS	NS
MW-3						
	1/2/92	340	0.4	ND	ND	ND
	4/2/92	160	5	ND	0.3	0.5
	7/21/92	260	1.7	<0.5	<0.5	<0.5
	10/9/92	88	<0.5	<0.5	<0.5	<0.5
	1/11/93	130	<0.5	<0.5	<0.5	<0.5
	5/5/93	340	1.8	<0.5	1.3	<0.5
	8/9/93	610	18	<0.5	2.4	0.9
	10/14/93	<50	<0.5	<0.5	<0.5	<0.5
	1/24/94	320	3.5	<0.5	<0.5	<0.5
	5/31/94	830	11	12	5.0	1.2
	8/31/94	660	2	<0.5	1	<0.5
	11/2/94	1,500	260	36	34	76
MW-4						
	1/2/92	ND	ND	ND	ND	ND
	4/2/92	ND	ND	ND	ND	ND
	7/21/92	<50	<0.5	<0.5	<0.5	<0.5
	10/9/92	<50	<0.5	<0.5	<0.5	<0.5
	1/11/93	<50	<0.5	<0.5	<0.5	<0.5
	5/5/93	<50	<0.5	<0.5	<0.5	<0.5
	8/9/93	<50	<0.5	<0.5	<0.5	<0.5
	10/14/93	<50	<0.5	<0.5	<0.5	<0.5
	1/24/94	<50	<0.5	<0.5	<0.5	<0.5
	5/31/94	NS	NS	NS	NS	NS
	8/31/94	<50	<0.5	<0.5	<0.5	<0.5
	11/2/94	NS	NS	NS	NS	NS

Table 2
Groundwater Analytical Data
930 Springtown Boulevard, Livermore, CA

Well Number	Date Sampled	TPHg (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl-benzene (ppb)	Xylenes (ppb)
MW-5						
	1/2/92	1,800	74	41	84	94
	4/2/92	ND	ND	ND	ND	ND
	7/21/92	1,000	69	16	40	31
	10/9/92	3,400	890	51	110	110
	1/11/93	15,000	460	110	900	370
	5/5/93	4,500	160	19	280	110
	8/9/93	2,300	180	19	130	80
	10/14/93	2,200	160	27	90	64
	1/24/94	2,600	69	11	65	25
	5/31/94	3,100	130	64	140	120
	8/31/94	600	20	2.9	14	7.1
	11/2/94	2,300	68	18	52	54
MW-6						
	1/2/92	23	ND	0.3	0.6	3
	4/2/92	ND	ND	ND	ND	ND
	7/21/92	<50	<0.5	<0.5	<0.5	<0.5
	10/9/92	<50	<0.5	<0.5	<0.5	<0.5
	1/11/93	NS	NS	NS	NS	NS
	5/5/93	NS	NS	NS	NS	NS
	8/9/93	<50	<0.5	<0.5	<0.5	<0.5
	10/14/93	NS	NS	NS	NS	NS
	1/24/94	<50	<0.5	<0.5	<0.5	<0.5
	5/31/94	NS	NS	NS	NS	NS
	8/31/94	<50	<0.5	<0.5	<0.5	<0.5
	11/2/94	NS	NS	NS	NS	NS
MW-7						
	1/2/92	NS	NS	NS	NS	NS
	4/2/92	ND	ND	ND	ND	ND
	7/21/92	NS	NS	NS	NS	NS
	10/9/92	NS	NS	NS	NS	NS
	1/11/93	NS	NS	NS	NS	NS
	5/5/93	NS	NS	NS	NS	NS
	8/9/93	NS	NS	NS	NS	NS
	10/14/93	NS	NS	NS	NS	NS
	1/24/94	NS	NS	NS	NS	NS
	5/31/94	NS	NS	NS	NS	NS
	8/31/94	NS	NS	NS	NS	NS
	11/2/94	NS	NS	NS	NS	NS

Table 2
Groundwater Analytical Data
930 Springtown Boulevard, Livermore, CA

Well Number	Date Sampled	TPHg (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl-benzene (ppb)	Xylenes (ppb)
MW-8						
	1/2/92	12,000	32	980	200	760
	4/2/92	ND	ND	ND	ND	ND
	7/21/92	NS	NS	NS	NS	NS
	10/9/93	NS	NS	NS	NS	NS
	1/11/93	NS	NS	NS	NS	NS
	5/5/93	NS	NS	NS	NS	NS
	8/9/93	NS	NS	NS	NS	NS
	10/14/93	NS	NS	NS	NS	NS
	1/24/94	NS	NS	NS	NS	NS
	5/31/94	NS	NS	NS	NS	NS
	8/31/94	<50	<0.5	<0.5	<0.5	<0.5
	11/2/94	NS	NS	NS	NS	NS

NS = Not Sampled
ND = None Detected
SP = Separate-phase petroleum hydrocarbons
TPHg = Total petroleum hydrocarbons as gasoline analyzed by EPA method 5030/602.
BTEX: Analyzed by EPA method 5030/602.
< = Less than the detection limit for the specified method of analysis.

APPENDIX

B C Analytical

801 Western Avenue
Glendale, CA 91201
818/247-5737
Fax: 818/247-9797

ANALYTICAL REPORT

LOG NO: G94-11-051

Received: 03 NOV 94

Mailed: NOV 18 1994

Ms. Rebecca Digerness
Texaco Environmental Services
108 Cutting Boulevard
Richmond, CA 94804

Purchase Order: 94-1446346+4370

Requisition: 618571050
Project: FKEP1012L

REPORT OF ANALYTICAL RESULTS

AQUEOUS

SAMPLE DESCRIPTION	DATE SAMPLED	TPH/BTEX (CADHS/8020)							
		Date Analyzed Date	Dilution Factor Times	TPH-g ug/L	Benzene ug/L	Toluene ug/L	Ethyl- Benzene ug/L	Total Xylenes Isomers ug/L	
RDL			1		0.5	0.5	0.5	0.5	
1*MW-1	11/02/94	11/11/94	1	<50	<0.5	<0.5	<0.5	<0.5	
2*MW-3	11/02/94	11/14/94	1	1500	260	36	34	76	
3*MW-5	11/02/94	11/14/94	5	2300	68	18	52	54	
4*MW-B	11/02/94	11/14/94	25	2500	170	3200	1100	4700	
5*MW-A	11/02/94	11/14/94	50	15000	230	360	1100	1800	
6*EB	11/02/94	11/14/94	1	<50	<0.5	<0.5	<0.5	<0.5	
7*TB	11/02/94	11/14/94	1	<50	<0.5	<0.5	<0.5	<0.5	

Karen Petryna
930 Springtown Boulevard, Livermore
Alameda County

Mark A. Valentini, PhD, Laboratory Director

ORDER PLACED FOR CLIENT: Texaco Environmental Services 9411051 :
BC'ANALYTICAL : GLEN LAB : 12:00:38 17 NOV 1994 - P. 1 :

AMPLES...	SAMPLE DESCRIPTION..	DETERM.....	DATE..... ANALYZED	METHOD.....	EQUIP.	BATCH..	ID.NO
411051*1	MW-1	GAS.BTX.TESNC	11.11.94	8015M.TX	516-20	948033	8607
411051*2	MW-3	GAS.BTX.TESNC	11.14.94	8015M.TX	516-20	948034	8607
411051*3	MW-5	GAS.BTX.TESNC	11.14.94	8015M.TX	516-20	948034	8607
411051*4	MW-B	GAS.BTX.TESNC	11.14.94	8015M.TX	516-20	948034	8607
411051*5	MW-A	GAS.BTX.TESNC	11.14.94	8015M.TX	516-20	948034	8607
411051*6	EB	GAS.BTX.TESNC	11.14.94	8015M.TX	516-20	948034	8607
411051*7	TB	GAS.BTX.TESNC	11.14.94	8015M.TX	516-20	948034	8607

**

Notes: Equipment = BC Analytical identification number for a particular piece of analytical equipment.

ID.NO = BC Analytical employee identification number of analyst.

BC ANALYTICAL

ORDER QC REPORT FOR G9411051

DATE REPORTED : 11/17/94

LABORATORY CONTROL STANDARDS
FOR BATCHES WHICH INCLUDE THIS ORDER

PARAMETER	DATE ANALYZED	BATCH NUMBER	LC RESULT	LT RESULT	UNIT	PERCENT RECOVERY
1. TPH-gas/BTEX (CADHS/80 C4111470*1						
Date Analyzed	11.11.94	948033	11/11/94	11/11/94	Date	N/A
Benzene	11.11.94	948033	20.9	19.6	ug/L	107
Toluene	11.11.94	948033	56.3	57.0	ug/L	99
Ethylbenzene	11.11.94	948033	15.2	13.9	ug/L	109
Total Xylene Isomers	11.11.94	948033	71.8	67.3	ug/L	107
TPH (as Gasoline)	11.11.94	948033	968	1000	ug/L	97
2. TPH-gas/BTEX (CADHS/80 C4111583*1						
Date Analyzed	11.14.94	948034	11/14/94	11/14/94	Date	N/A
Benzene	11.14.94	948034	19.1	19.6	ug/L	97
Toluene	11.14.94	948034	50.5	57.0	ug/L	89
Ethylbenzene	11.14.94	948034	14.1	13.9	ug/L	101
Total Xylene Isomers	11.14.94	948034	66.5	67.3	ug/L	99
TPH (as Gasoline)	11.14.94	948034	755	1000	ug/L	76

BC ANALYTICAL

ORDER QC REPORT FOR G9411051

DATE REPORTED : 11/17/94

MATRIX QC PRECISION (DUPLICATE SPIKES)
BATCH QC REPORT

PARAMETER	SAMPLE NUMBER	DATE ANALYZED	BATCH NUMBER	MS RESULT	MSD RESULT	UNIT	RELATIVE % DIFF
1. TPH-gas/BTEX (CADHS/80 9411051*1							
Date Analyzed		11.11.94	948033	11/11/94	11/11/94	Date	N/A
Benzene		11.11.94	948033	21.0	20.8	ug/L	1
Toluene		11.11.94	948033	64..8	66.0	ug/L	N/A
Ethylbenzene		11.11.94	948033	16.6	17.5	ug/L	5
Total Xylene Isomers		11.11.94	948033	82.2	85.5	ug/L	4
TPH (as Gasoline)		11.11.94	948033	888	878	ug/L	1
2. TPH-gas/BTEX (CADHS/80 9411082*1							
Date Analyzed		11.14.94	948034	11/14/94	11/14/94	Date	N/A
Benzene		11.14.94	948034	21.3	19.3	ug/L	10
Toluene		11.14.94	948034	54.9	50.0	ug/L	9
Ethylbenzene		11.14.94	948034	14.9	14.2	ug/L	5
Total Xylene Isomers		11.14.94	948034	70.4	67.0	ug/L	5
TPH (as Gasoline)		11.14.94	948034	883	867	ug/L	2

BC ANALYTICAL

ORDER QC REPORT FOR G9411051

DATE REPORTED : 11/17/94

MATRIX QC ACCURACY (SPIKES)
BATCH QC REPORT

PARAMETER	SAMPLE NUMBER	DATE ANALYZED	BATCH NUMBER	MS %	MSD %	TRUE RESULT	UNIT
1. TPH-gas/BTEX (CADHS/80 9411051*1							
Benzene		11.11.94	948033	107	106	19.6	ug/L
Ethylbenzene		11.11.94	948033	119	126	13.9	ug/L
Total Xylene Isomers		11.11.94	948033	122	127	67.3	ug/L
TPH (as Gasoline)		11.11.94	948033	89	88	1000	ug/L
2. TPH-gas/BTEX (CADHS/80 9411082*1							
Benzene		11.14.94	948034	105	94	20.4	ug/L
Toluene		11.14.94	948034	96	88	57.0	ug/L
Ethylbenzene		11.14.94	948034	107	102	13.9	ug/L
Total Xylene Isomers		11.14.94	948034	105	100	67.3	ug/L
TPH (as Gasoline)		11.14.94	948034	88	87	1000	ug/L

BC ANALYTICAL

ORDER QC REPORT FOR G9411051

DATE REPORTED : 11/17/94

METHOD BLANKS AND REPORTING DETECTION LIMIT (RDL)
FOR BATCHES WHICH INCLUDE THIS ORDER

PARAMETER	DATE ANALYZED	BATCH NUMBER	BLANK RESULT	RDL	UNIT	METHOD
1. TPH-gas/BTEX (CADHS/80 B4111188*1						
Date Analyzed	11.11.94	948033	11/11/94	NA	Date	8015M.TX
Benzene	11.11.94	948033	0.073	0.5	ug/L	8015M.TX
Toluene	11.11.94	948033	0.21	0.5	ug/L	8015M.TX
Ethylbenzene	11.11.94	948033	0	0.5	ug/L	8015M.TX
Total Xylene Isomers	11.11.94	948033	0.077	0.5	ug/L	8015M.TX
TPH (as Gasoline)	11.11.94	948033	87.8	50	ug/L	8015M.TX
2. TPH-gas/BTEX (CADHS/80 B4111257*1						
Date Analyzed	11.14.94	948034	11/14/94	NA	Date	8015M.TX
Benzene	11.14.94	948034	0	0.5	ug/L	8015M.TX
Toluene	11.14.94	948034	0.46	0.5	ug/L	8015M.TX
Ethylbenzene	11.14.94	948034	0	0.5	ug/L	8015M.TX
Total Xylene Isomers	11.14.94	948034	0.059	0.5	ug/L	8015M.TX
TPH (as Gasoline)	11.14.94	948034	5.3	50	ug/L	8015M.TX

: SURROGATE RECOVERIES :
: BC ANALYTICAL : GLEN LAB : 12:01:41 17 NOV 1994 - P. 1 :

METHOD	ANALYTE	BATCH	ANALYZED	REPORTED	TRUE	%REC	FLAG
9411051*1							
8015M.TX	a,a,a-Trifluorotoluene	948033	11/11/94	55.6	50.0	111	
9411051*2							
8015M.TX	a,a,a-Trifluorotoluene	948034	11/14/94	59.5	50.0	119	
9411051*3							
8015M.TX	a,a,a-Trifluorotoluene	948034	11/14/94	54.9	50.0	110	
9411051*4							
8015M.TX	a,a,a-Trifluorotoluene	948034	11/14/94	54.9	50.0	110	
9411051*5							
8015M.TX	a,a,a-Trifluorotoluene	948034	11/14/94	56.1	50.0	112	
9411051*6							
8015M.TX	a,a,a-Trifluorotoluene	948034	11/14/94	55.6	50.0	111	
9411051*7							
8015M.TX	a,a,a-Trifluorotoluene	948034	11/14/94	55.9	50.0	112	

: SURROGATE RECOVERIES :
: BC ANALYTICAL : GLEN LAB : 12:01:46 17 NOV 1994 - P. 1 :

METHOD ANALYTE	BATCH	ANALYZED	REPORTED	TRUE	%REC	FLAG
9411051*1*R1						
8015M.TXa,a,a-Trifluorotoluene	948033	11/11/94	55.6	50.0	111	
9411051*1*S1						
8015M.TXa,a,a-Trifluorotoluene	948033	11/11/94	53.6	50.0	107	
9411051*1*S2						
8015M.TXa,a,a-Trifluorotoluene	948033	11/11/94	55.9	50.0	112	
9411051*1*T						
8015M.TXa,a,a-Trifluorotoluene	948033	11/11/94	50.0	50.0	100	
9411082*1*R1						
8015M.TXa,a,a-Trifluorotoluene	948034	11/14/94	54.5	50.0	109	
9411082*1*S1						
8015M.TXa,a,a-Trifluorotoluene	948034	11/14/94	57.1	50.0	114	
9411082*1*S2						
8015M.TXa,a,a-Trifluorotoluene	948034	11/14/94	58.6	50.0	117	
9411082*1*T						
8015M.TXa,a,a-Trifluorotoluene	948034	11/14/94	50.0	50.0	100	
B4111188*1*MB						
8015M.TXa,a,a-Trifluorotoluene	948033	11/11/94	55.0	50.0	110	
B4111257*1*MB						
8015M.TXa,a,a-Trifluorotoluene	948034	11/14/94	54.6	50.0	109	
C4111470*1*LC						
8015M.TXa,a,a-Trifluorotoluene	948033	11/11/94	57.1	50.0	114	
C4111470*1*LT						
8015M.TXa,a,a-Trifluorotoluene	948033	11/11/94	50.0	50.0	100	
C4111583*1*LC						
8015M.TXa,a,a-Trifluorotoluene	948034	11/14/94	56.8	50.0	114	
C4111583*1*LT						
8015M.TXa,a,a-Trifluorotoluene	948034	11/14/94	50.0	50.0	100	

694-11-051

Chain-of-Custody

Page 1 of 1

Texaco Environmental Services
108 Cutting Boulevard
Richmond, California 94804
Phone: (510) 236-3541
FAX: (510) 237-7821

Forward Results to the Attention of Rebecca Digerness

Texaco Project Corordinator: Karen Petryna

Site Name: Texaco Loc.# 618571050
Site Address: 930 Springtown Blvd. Livermore, CA
Contractor Project Number: 941102-E2
Contractor Name: Blaine Tech Services, Inc.
Address: 985 Timothy Dr., San Jose, CA 95133
Project Contact: Don Weltz
Phone/FAX: (408) 995-5535 / (408) 293-8773

Laboratory: B C Analytical
Turn Around Time: normal (10 day)
Samplers (PRINT NAME): KENT BROWN
Sampler Signature: Kent E. Brown
Date Samples Collected: 11/2/94

Sample Number	Lab Sample Number	Date/Time Collected	No. of Containers	Type of Containers	Sample Matrix	Preservative	TPH gas/BTEX	TPH Diesel	O&G/TRPH (418.1)	TPH Ex. (C8-C36+)	VOCs 8240/624	P. Halocarbons 8010/60	P. Aromatics 8020/602	Organic Lead			Comments
MW-1		11/2/94 1205	3	VOA	W	HCl	X										
MW-3		1240	3		W		X										
MW-5		1310	3		W		X										
MW-B		1355	3		W		X										
MW-A		1420	3		W		X										
EB		1215	3		W		X										
TB		—	2		W		X										

Relinquished by: (Signature) Kent E. Brown	Date: 11/3/94	Time: 1130	Received by: (Signature) Bill Lyons
Relinquished by: (Signature) Bill Lyons	Date: 11-3-94	Time: 3:30	Received by: (Signature) Maria Cisneros
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Method of Shipment:			Lab Comments:

Date: 11-3-94 Time: 1130
Date: 11-3-94 Time: 1530
Date: Time:

B C Analytical

P:\GWMP\FORMS\TEX-COC.XLS

Well Gauging Data

Project Name: 930 SPRINGTOWN, LIVERMORE
Project Number: 94102-E1

Date: 11/2/94
Recorded By: KEB

Well ID	TOC Elev.	DTB (ft. TOC)	Well Dia. (in.)	DTP (ft.)	DTW (ft.)	PT (ft.)	Comments
MW-A	16.75 → ~~2~~		~~16.75~~	2"	13.15		
MW-B		21.35	2"		10.90		
MW-1		25.45	4"		13.48		
MW-2		22.50	4"		11.07		
MW-3		24.65	4		12.16		
MW-4		25.04	4"		11.96		
MW-5		28.28	2"		14.22		
MW-6		24.50	2"		15.32		
MW-7		23.52	4"		6.48		
MW-8		23.95	4"		17.38		

TOC = Top of casing
DTB = Depth to bottom in feet below TOC
DTP = Depth to product in feet below TOC
DTW = Depth to water in feet below TOC
PT = Product thickness in feet

Groundwater Sampling Form

Project Name 930 SPRING DOWN Well No. MW-A
Project Number 94102-E2 Well Type ☐ Monitor ☑ Extraction ☐ Other
Recorded By KEB Sampled by KEB Date 11/2/94

WELL PURGING

PURGE VOLUME

Well casing diameter
☑ 2-inch ☐ 4-inch ☐ Other
Well Total Depth (TD, ft. below TOC) 16.75
Depth to Water (WL, ft. below TOC) 13.15
Depth to free phase hydrocarbons (FP, ft. below TOC)
Number of well volumes to be purged
☑ 3 ☐ 10 ☐ Other

PURGE METHOD

☑ Bailer - Type Teflon
☐ Pump - Type
☐ Other

PUMP INTAKE

☐ Near top Depth (ft)
☐ Near Bottom Depth (ft)
☐ Other

Pumping Rate ____ gpm

PURGE VOLUME CALCULATION

3.6 (Water Column Length) x .17=.6 (Multiplier) x 3 (No. Vols) = 1.9 gals CALCULATED PURGE VOLUME

MULTIPLIER (Casing Dia.[inches] = Gallons/linear ft)
2 = 0.17 | 3 = 0.38 | 4 = 0.66 | 4.5 = 0.83 | 5 = 1.02 | 6 = 1.5 | 8 = 2.6

2.0 gals ACTUAL PURGE VOLUME

GROUNDWATER PARAMETER MEASUREMENT

Meter Type HYDAC/HF

Time/Gallons	pH	Cond. (uomhos/cm)	Temp	deg C / deg F	Turbidity (NTU)	Color/Odor
1409 / 1.75	7.57	2020	63.7		>200	ODOR/Sheen
1411 / 1.25	7.45	2090	63.4		>200	Black color
1413 / 2.0	7.52	2080	64.1		>200	
/						
/						
/						
/						
/						

Comments during well purge
Well Pumped dry: YES (NO) Purge water storage/disposal ☐ Drummed onsite ☑ Other HAUL

WELL SAMPLING

SAMPLING METHOD

Date/Time Sampled 11/2/94 / 1420
Bailer - Type ☑ Teflon Sample port ☐ Other ☐

GROUNDWATER SAMPLE PARAMETER MEASUREMENTS

Meter Type

Date/Time/% Recharge	pH	Cond. (uomhos/cm)	Temp	deg C / deg F	Turbidity (NTU)	Color/Odor
/ /						

SAMPLING PROGRAM

Sample No.	Container,#/Volume	Analysis	Preservatives	Laboratory	Comments
MW-A	3/40ml	TPHg, BTEX	HCl	BC	

QUALITY CONTROL SAMPLES

Duplicate Samples

Original Sample No.	Duplicate Sample No.

Blank Samples

Type	Sample No.
Trip	
Rinsate	
Transfer	
Other:	

Groundwater Sampling Form

Project Name 930 SPRINGDOWN Well No. MW-B
Project Number 941102-EZ Well Type ☐ Monitor ☑ Extraction ☐ Other
Recorded By LEB Sampled by LEB Date 11/2/94

WELL PURGING

PURGE VOLUME

Well casing diameter
☑ 2-inch ☐ 4-inch ☐ Other
Well Total Depth (TD, ft. below TOC) 21.35
Depth to Water (WL, ft. below TOC) 10.90
Depth to free phase hydrocarbons (FP, ft. below TOC)
Number of well volumes to be purged
☐ 3 ☐ 10 ☐ Other

PURGE METHOD

☑ Bailer - Type TEFLON
☐ Pump - Type
☐ Other

PUMP INTAKE

☐ Near top Depth (ft)
☐ Near Bottom Depth (ft)
☐ Other

Pumping Rate ____ gpm

PURGE VOLUME CALCULATION

10.45 (Water Column Length) x .17 = 1.8 (Multiplier) x 3 (No. Vols) = 5.3 gals CALCULATED PURGE VOLUME

MULTIPLIER (Casing Dia.[inches] = Gallons/linear ft)
2 = 0.17 | 3 = 0.38 | 4 = 0.66 | 4.5 = 0.83 | 5 = 1.02 | 6 = 1.5 | 8 = 2.6

6.0 gals ACTUAL PURGE VOLUME

GROUNDWATER PARAMETER MEASUREMENT Meter Type HACH/HF

Time/Gallons	pH	Cond. (uomhos/cm)	Temp	deg C / deg F	Turbidity (NTU)	Color/Odor
1342 / 2.0	7.97	2330	65.9		>200	SHEEN / STEAM ODOR
1346 / 4.0	7.84	2340	65.9		>200	BLACK/GRAY
1350 / 6.0	7.90	2350	64.0		>200	COLOR
/						
/						
/						
/						
/						

Comments during well purge
Well Pumped dry: YES (NO) Purge water storage/disposal ☐ Drummed onsite ☑ Other

WELL SAMPLING

SAMPLING METHOD Date/Time Sampled 11/2/94 / 1355

Bailer - Type ☑ TEFLON Sample port ☐ Other ☐

GROUNDWATER SAMPLE PARAMETER MEASUREMENTS Meter Type

Date/Time/% Recharge	pH	Cond. (uomhos/cm)	Temp	deg C / deg F	Turbidity (NTU)	Color/Odor
/ /						

SAMPLING PROGRAM

Sample No.	Container #/Volume	Analysis	Preservatives	Laboratory	Comments
MW-B	3/40ml	TPH G, BTEX	HCl	BC	

QUALITY CONTROL SAMPLES

Duplicate Samples

Original Sample No.	Duplicate Sample No.

Blank Samples

Type	Sample No.
Trip	
Rinsate	
Transfer	
Other:	

Groundwater Sampling Form

Project Name 930 SPRINGTOWN Well No. MW-1

Project Number 94102-EZ Well Type ☑ Monitor ☐ Extraction ☐ Other

Recorded By KEB Sampled by KEB Date 11/2/94

WELL PURGING

PURGE VOLUME

Well casing diameter

☐ 2-inch ☑ 4-inch ☐ Other

Well Total Depth (TD, ft. below TOC) 25.45

Depth to Water (WL, ft. below TOC) 13.48

Depth to free phase hydrocarbons (FP, ft. below TOC)

Number of well volumes to be purged

☑ 3 ☐ 10 ☐ Other

PURGE METHOD

☐ Bailer - Type

☑ Pump - Type Grundfos Sub

☐ Other

PUMP INTAKE

☑ Near top Depth (ft)

☐ Near Bottom Depth (ft)

☐ Other

Pumping Rate ____ gpm

PURGE VOLUME CALCULATION

11.97 (Water Column Length) x .66 = 7.9 (Multiplier) x 3 (No. Vols) = 23.7 gals CALCULATED PURGE VOLUME

MULTIPLIER (Casing Dia. [inches] = Gallons/linear ft)
2 = 0.17 | 3 = 0.38 | 4 = 0.66 | 4.5 = 0.83 | 5 = 1.02 | 6 = 1.5 | 8 = 2.6

24.0 gals ACTUAL PURGE VOLUME

GROUNDWATER PARAMETER MEASUREMENT Meter Type HYDAC / HF-NU

Time/Gallons	pH	Cond. (uomhos/cm)	Temp ☐ deg C ☑ deg F	Turbidity (NTU)	Color/Odor
1153 / 8.0	6.62	3080	65.5	46.3	CLEAR NO ODOR
1155 / 16.0	6.69	3140	66.4	51.9	
1157 / 24.0	6.79	3160	67.6		
/					
/					
/					
/					
/					

Comments during well purge

Well Pumped dry: YES (NO)

Purge water storage/disposal ☐ Drummed onsite ☑ Other HAUL

WELL SAMPLING

SAMPLING METHOD Date/Time Sampled 11/2/94 / 1205

Bailer - Type ☑ SS, Sample port ☐ Other ☐

GROUNDWATER SAMPLE PARAMETER MEASUREMENTS Meter Type

Date/Time/% Recharge	pH	Cond. (uomhos/cm)	Temp ☐ deg C ☐ deg F	Turbidity (NTU)	Color/Odor
/ /					

SAMPLING PROGRAM

Sample No.	Container #/Volume	Analysis	Preservatives	Laboratory	Comments
MW-1	3 / 40 ml	TPH-G BTEX	HCl	BC	

QUALITY CONTROL SAMPLES

Duplicate Samples

Original Sample No.	Duplicate Sample No.

Blank Samples

Type	Sample No.
Trip	
Rinsate	
Transfer	
Other:	

Groundwater Sampling Form

Project Name 930 SPRINGTOWN Well No. MW-3
Project Number 941102-EZ Well Type ~~Monitor~~ X Extraction ☐ Other
Recorded By KEB Sampled by KEB Date

WELL PURGING

PURGE VOLUME

Well casing diameter
☐ 2-inch ☑ 4-inch ☐ Other
Well Total Depth (TD, ft. below TOC) 24.65
Depth to Water (WL, ft. below TOC) 12.16
Depth to free phase hydrocarbons (FP, ft. below TOC)
Number of well volumes to be purged
☑ 3 ☐ 10 ☐ Other

PURGE METHOD

☐ Bailer - Type
☑ Pump - Type Elec Sub
☐ Other

PUMP INTAKE

☑ Near top Depth (ft)
☐ Near Bottom Depth (ft)
☐ Other
Pumping Rate gpm

PURGE VOLUME CALCULATION

12.49 (Water Column Length) x .66 (Multiplier) = 8.2 x 3 (No. Vols) = 24.7 gals CALCULATED PURGE VOLUME

MULTIPLIER (Casing Dia [inches] = Gallons/linear ft)
2 = 0.17 | 3 = 0.38 | 4 = 0.66 | 4.5 = 0.63 | 5 = 1.02 | 6 = 1.5 | 8 = 2.6

25. gals ACTUAL PURGE VOLUME

GROUNDWATER PARAMETER MEASUREMENT Meter Type HYDAC/ECF

Time/Gallons	pH	Cond. (uomhos/cm)	Temp	deg C / deg F	Turbidity (NTU)	Color/Odor
1220 / 8.5	7.77	2640	68.9		46.4	clear / ODOR PRESENT
1230 / 17	7.49	2900	71.1		22.3	
1235 / 25	7.10	2900	71.2		15.4	
/						
/						
/						
/						
/						

Comments during well purge
Well Pumped dry: YES (NO) Purge water storage/disposal ☐ Drummed onsite ☑ Other HAUL

WELL SAMPLING

SAMPLING METHOD Date/Time Sampled 11/2/94 / 1240
Bailer - Type ☑ SS, Sample port ☐ Other ☐

GROUNDWATER SAMPLE PARAMETER MEASUREMENTS Meter Type

Date/Time/% Recharge	pH	Cond. (uomhos/cm)	Temp	deg C / deg F	Turbidity (NTU)	Color/Odor
/ /						

SAMPLING PROGRAM

Sample No.	Container #/Volume	Analysis	Preservatives	Laboratory	Comments
MW-3	3 / 40ml	TPH6, BTEX	HCl	BC	

QUALITY CONTROL SAMPLES

Duplicate Samples

Original Sample No.	Duplicate Sample No.

Blank Samples

Type	Sample No.
Trip	
✓ Rinsate 1215	EB
Transfer	
Other:	

EB After MW-5 TPH6, BTEX

Groundwater Sampling Form

Project Name 930 Springtown
Project Number 941102-E2
Recorded By KEB
Well No. MW-5
Well Type ~~Monitor~~ X Extraction ☐ Other
Sampled by KEB
Date

WELL PURGING

PURGE VOLUME

Well casing diameter
☒ 2-inch ☒ 4-inch ☐ Other
Well Total Depth (TD, ft. below TOC) 28.60
Depth to Water (WL, ft. below TOC) 14.22
Depth to free phase hydrocarbons (FP, ft. below TOC)
Number of well volumes to be purged
☒ 3 ☐ 10 ☐ Other

PURGE METHOD

☑ Bailer - Type Teflon
☐ Pump - Type
☐ Other

PUMP INTAKE

☐ Near top Depth (ft)
☐ Near Bottom Depth (ft)
☐ Other

Pumping Rate ____ gpm

PURGE VOLUME CALCULATION

14.06 (Water Column Length) x .17 = 2.4 (Multiplier) x 3 (No. Vols) = 7.2 gals CALCULATED PURGE VOLUME

MULTIPLIER (Casing Dia.[inches] = Gallons/linear ft)
2 = 0.17 | 3 = 0.38 | 4 = 0.66 | 4.5 = 0.63 | 5 = 1.02 | 6 = 1.5 | 8 = 2.6

7.5 gals ACTUAL PURGE VOLUME

GROUNDWATER PARAMETER MEASUREMENT

Meter Type HYDAC / EA

Time/Gallons	pH	Cond. (uomhos/cm)	Temp	☐ deg C ☑ deg F	Turbidity (NTU)	Color/Odor
1250 / 2.5	6.27	2230	73.0		7200	GRAY-BROWN / ODOR
1302 / 5.0	7.09	2200	70.1		7200	"
1306 / 7.5	7.10	2140	67.6		7200	"
/						
/						
/						
/						
/						

Comments during well purge
Well Pumped dry: YES (NO)
Purge water storage/disposal ☐ Drummed onsite ☑ Other Haul

WELL SAMPLING

SAMPLING METHOD

Date/Time Sampled 11/2/94 / 1310
Bailer - Type ☑ Teflon
Sample port ☐ Other ☐

GROUNDWATER SAMPLE PARAMETER MEASUREMENTS

Meter Type

Date/Time/% Recharge	pH	Cond. (uomhos/cm)	Temp	☐ deg C ☐ deg F	Turbidity (NTU)	Color/Odor
/ /						

SAMPLING PROGRAM

Sample No.	Container, #/Volume	Analysis	Preservatives	Laboratory	Comments
MW-5	3/40ml	TPH-G, BTEX	HCl	BC	

QUALITY CONTROL SAMPLES

Duplicate Samples

Original Sample No.	Duplicate Sample No.

Blank Samples

Type	Sample No.
Trip	
Rinsate	
Transfer	
Other:	

SOURCE RECORD

BILL OF LADING

FOR NON-HAZARDOUS PURGEWATER RECOVERED FROM GROUNDWATER WELLS AT TEXACO FACILITIES IN THE STATE OF CALIFORNIA. THE NON-HAZARDOUS PURGE-WATER WHICH HAS BEEN RECOVERED FROM GROUND-WATER WELLS IS COLLECTED BY THE CONTRACTOR, MADE UP INTO LOADS OF APPROPRIATE SIZE AND HAULED TO THE DESTINATION DESIGNATED BY TEXACO ENVIRONMENTAL SERVICES (TES).

Contractor: Blaine Tech Services, Inc.
Address: 985 Timothy Drive
City, State, ZIP: San Jose, CA 95133
Phone: (408) 995-5535

is authorized by Texaco Environmental Services to recover, collect, apportion into loads, and haul the NON-HAZARDOUS WELL PURGEWATER that is drawn from wells at the Texaco facility listed below and to deliver that purgewater to an appropriate destination designated by TEXACO ENVIRONMENTAL SERVICES in either Redwood City, California or in Richmond, California. Transport routing of the Non-Hazardous Well Purgewater may be directed from one Texaco facility to the designated desitnation point; from one Texaco facility to the designated destination point via another Texaco facility; from a Texaco facility via the contractor's facility, or any combination thereof. The Non-Hazardous Well Purgewater is and remains the property of Texaco Environmental Services (TES).

This SOURCE RECORD BILL OF LADING was initiated to cover the recovery of Non-Hazardous Well Purgewater from wells at the Texaco facility described below:

TEXACO #: 6105 7/050
Address: 930 Springtown, Livermore CA.
City, State, ZIP: Livermore CA

Well I.D.	Gals.	Well I.D.	Gals.
MW1	64.5		
MW2			
MW-1			
MW-3			
MW-5			

Total gals. 69.5

added rinse water 5.0

Total Gals. Recovered 69.5

Job #: 941102-EC
Date 11/2/94
Time 1530
Signature:

REC'D AT: TES
Date: 11/2/94
Time: 1530
Signature:

P:\GWMP\FORMS\TEX-BOL.WK4

QUARTERLY SUMMARY REPORT
Former Texaco Service Station
930 Springtown, Livermore, California
Alameda County
Third Quarter, 1994

HISTORY OF INVESTIGATIVE AND REMEDIAL ACTIONS

Subsurface investigation was initiated in September, 1984 with the installation of two groundwater monitoring wells (MW-A and MW-B). Underground storage tanks removed in June, 1985. Investigation continued in 1985, 1986, and 1989 to define extent of plume. Monitoring wells MW-1 through MW-3 were installed in June, 1985, MW-4 was installed in September, 1985, and MW-5 and MW-6 were installed in November, 1986. One soil boring and two additional monitoring wells (MW-7 and MW-8) were drilled in December, 1989 to fully define the extent of subsurface hydrocarbons.

WORK PERFORMED DURING THIS QUARTER

Quarterly groundwater monitoring and sampling and soil vapor extraction system installation.

CHARACTERIZATION STATUS

Petroleum hydrocarbons plume has been delineated.

REMEDIATION STATUS

Soil vapor extraction in operation.

WORK TO BE PERFORMED NEXT QUARTER

Continue quarterly monitoring and sampling to record fluctuations in hydrocarbons concentrations and operate soil vapor extraction system.

COMPANY CONTACT: Karen Petryna (510) 236-9139

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Texaco Environmental Services
Standard Operating Procedures
for Groundwater Monitoring and Sampling

The following are routine procedures to be followed by personnel obtaining field information concerning petroleum product thickness and samples of groundwater during the monitoring and sampling of Texaco sites. These procedures are designed to assure that:

- Information and samples are properly collected.
- Samples are identified, preserved and transported in a manner such that they are representative of field conditions.
- Monitoring and sampling results are reproducible.

Water Level Measurements

Water level measurements are needed to document groundwater flow directions and calculate gradient. By gauging the level of water in a groundwater monitoring well and comparing the complied data, calculations can be made that determine the direction the groundwater at the monitored well is flowing and the groundwater gradient between successive monitoring wells.

- An interface probe or electronic probe is generally used to gauge the level of water in a monitoring well. When using either probe, it is slowly lowered into the well until the oscillating alarm indicating water is heard. Raise the interface probe above the water level and lower it back into the water at least three times to verify that the true depth to water is measured. Without moving the probe, read the numbers on the tape to determine the distance from the predetermined top of the well casing. A chalked, steel add-tape may also be used to gauge the level of water in a monitoring well. When using the steel tape, it is slowly lowered into the well until the chalked portion of the tape encounters water. Read the numbers on the tape to determine the distance from the predetermined top of the well casing. Raise the tape to the surface grade, re-chalk and lower it back into the water at least two times to verify that the true depth to water is measured. Record the depth to water on the Well Gauging Form and Groundwater Sampling Form.

Petroleum Product Thickness Measurements.

If free phase petroleum hydrocarbons (product) are observed floating on the groundwater surface during the water level measurement, the thickness of the product will be measured in each appropriate well. Groundwater samples will not be collected for chemical analysis from wells containing product unless specifically requested by the Project Coordinator. Product thicknesses will be measured using interface probes, and/or acrylic (clear plastic) bailers. The procedures for obtaining level and thickness measurements using each instrument are:

- The level of the top of the product will be measured with an interface probe. When product is suspected but not measurable with the interface probe, a visual evaluation can be made using clear acrylic bailers. A bailer will be lowered into the water/product surface so that the top of the bailer is NOT submerged; the bailer is then removed from

the well and the thickness of the product visually measured and documented on the Well Gauging Form.

- When the interface probe contacts liquid, the visual/audible alarm on the reel will be activated. An oscillating alarm indicates water, a continuous alarm indicates hydrocarbon. To determine the exact thickness of a hydrocarbon layer, the probe should be slowly lowered to the air/hydrocarbon interface until the alarm is activated. with the probe at the exact point where the alarm comes on, read the numbers on the tape to determine the distance from the predetermined top of casing elevation mark. Next, lower the probe through the hydrocarbon layer and well into the water. An oscillating alarm will be obtained. The probe should then be raised slowly to the hydrocarbon/water interface until the point where the alarm changes from oscillating to continuous. The thickness of the hydrocarbon layer is determined by subtracting the first reading from the second reading. Record the calculated value on the Well Gauging Form and Groundwater Sampling Form.

Groundwater Sampling

Groundwater samples will be collected from selected groundwater monitoring wells to provide data which will be statistically representative of local groundwater conditions at the site. Groundwater samples will be collected as follows:

- All measuring and sampling equipment will be decontaminated prior to sample collection from each well and documented on the Groundwater Sampling Form.

- Prior to sampling activity, the water level of the well will be measured and the minimum purge volume of each well will be calculated using the purge volume calculation portion of the Groundwater Sampling Form. A minimum of three casing volumes will be purged prior to sample collection. The actual total volume purged will be recorded on Groundwater Sampling Form.

- Prior to sampling, a submersible pump, centrifugal pump, peristaltic pump, or a Teflon or stainless steel bailer will be used to purge a minimum of three casing volumes from each well. Purge volumes will be estimated using a flow meter or a stopwatch and a bucket to estimate flow rate, from which a time to purge the required volume will be calculated. The pump will be lowered to a depth of two to three feet from bottom of the well. When bailers are used for purging, the bailer should be gently lowered into the water and allowed to fill then removed. Care should be taken to not agitate the water which could release volatile organics.

- Whenever possible, groundwater parameters (pH, temperature (in degrees Celsius [C]), specific conductance (in micromhos per centimeters squared (umhos)), and turbidity (in National Turbidity Units [NTU]) will be monitored and recorded on the Groundwater Sampling Form.

- If a well is purged dry before three casing volumes have been removed, the sample will be taken after the well has recovered to within 80 percent of the static water level prior to purging or after 4 hours when sufficient water volume is available to meet analytical requirements, whichever comes first. Reasonable efforts will be made to avoid dewatering wells by using low-yield pumps as necessary.

- Water samples will be collected with a stainless steel or Teflon bailer. To reduce potential cross contamination, sampling should take place in order from least to most contaminated wells. Bailer strings should be replaced between each well to avoid cross contamination from a bailer string which has absorbed contamination.

- Sample containers will be filled directly from the bailer.

- Use only sample containers prepared and provided by an analytical laboratory. Preservatives are required for some types of samples. Sample containers containing preservatives should be supplied by an analytical laboratory.

- For volatile organics analysis, each sample vial will be filled with sample water so that 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 no air bubbles are present prior to labeling the sample.

- Take site blank samples (trip and rinsate) using distilled water or laboratory supplied water from a known uncontaminated source. One trip blank and one rinsate blank sample for each site will be analyzed for each site sampling event.

- Once collected and labeled, all samples will be stored in cooler maintained at 4 degrees Celsius using frozen water ice.

Sample Custody Procedures

Sample custody procedures will be followed through sample collection, transfer, analysis and ultimate disposal. The purpose of these procedures is to assure that the integrity of samples is maintained during their collection and transfer. Sample quantities, types and locations will be determined before the actual field work beings. As few people as possible will handle samples. The field sampler is personally responsible for the care and custody of the collected samples until they are properly transferred.

Each sample will be labelled and sealed properly immediately after collection. Sample identification documents will be carefully prepared so that identification and chain-of-custody records can be maintained and sample disposition can be controlled. Forms will be filled out with waterproof ink. The following are sample identification documents that will be utilized during the field operations.

- Sample Identification Label
- Chain-of Custody

Each separate sample will be identified using a label obtained from the laboratory. The sampler will complete all information, using a black waterproof pen, as follows:

The Site ID This is the name assigned to the particular sampling station.

The Sample Source. This will be the name of the well location.

The Analysis Required. This will be indicated for each sample using proper EPA reference

number indicating analytical method.

The Date Taken. This will be the date the sample was collected, using the format MM-DD-YY. *Example: 06-15-91*

Noting the Time. The time the sample was collected will be given in military time. Example: 1430

The Method of Preservation. Preservation methods will be provided, specifying the type of preservation. For non-acidified samples, "ice" will be indicated.

The Sampler's Name. This will be printed in the "Sampled By" section. The sampler's signature will be written in the "Signed" section.

There is the potential that samples and analysis could be of an evidentiary nature. Therefore, the possession of samples must be traceable from the time samples are collected in the field until the analysis is completed and the data are entered as evidence. The tracing of the samples through the laboratory is accomplished by "chain-of-custody" procedures. Chain-of-Custody Forms will be completed for each set of samples. The sampler will sign the first "Relinquished By" line at the bottom of the chain of custody record, and will indicate the date and time of the custody transfer. Samples will not leave custody of the field technician until relinquished to another party. Custody is defined by the following criteria.

In the Actual Physical Possession. When field personnel have sample in possession, they have "custody".

In View. The field personnel view after being in physical possession.

Special Areas. Sample is kept in a locked area after being in physical possession.

Designated Area. Sample is in a designated, locked-storage area.

Transfer of samples to an analytical laboratory will be done by use of a common carrier or personal delivery. Carrier personnel will personally secure samples and sample containers in such a way that no containers can be opened in transit. The person to whom custody is being transferred will sign on the first "Received By" line of the chain-of-custody record, indicating that custody is being accepted by the carrier for all the samples listed on the sheet. For subsequent transfers of custody, the succeeding relinquish and receipt lines will be used.

Equipment Decontamination

All equipment that comes in contact with potentially contaminated soil or water will be decontaminated prior to and after each use (for example, after each sampling event). All hand bailers and will be decontamination with an Alconox wash with deionized (DI) water rinse.