

STD /109

108 Cutting Blvd Richmond CA 94804



November 28, 1994

#### ENV - STUDIES, SURVEYS, & REPORTS 500 Grand Avenue Oakland, California

Ms. Susan Hugo Alameda County Environmental Health Department 80 Swan Way, Room 200 Oakland, CA 94621

Dear Ms. Hugo:

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 south-southeast (see Plate 2, Groundwater Gradient Map). 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 Environmental Services' Standard Operating Procedures.

If you have any questions or comments regarding this site, please call the Texaco Environmental Services' site Project Coordinator, Tom Hargett at (818) 505-2733.

Best Regards,

Rebecca Digerness

**Environmental Technician** 

Tom Hargett, R. G. Project Coordinator

Texaco Environmental Service

RBD:hs

P:\GWMP\QMR\500G\QMR.LET

**Enclosures** 

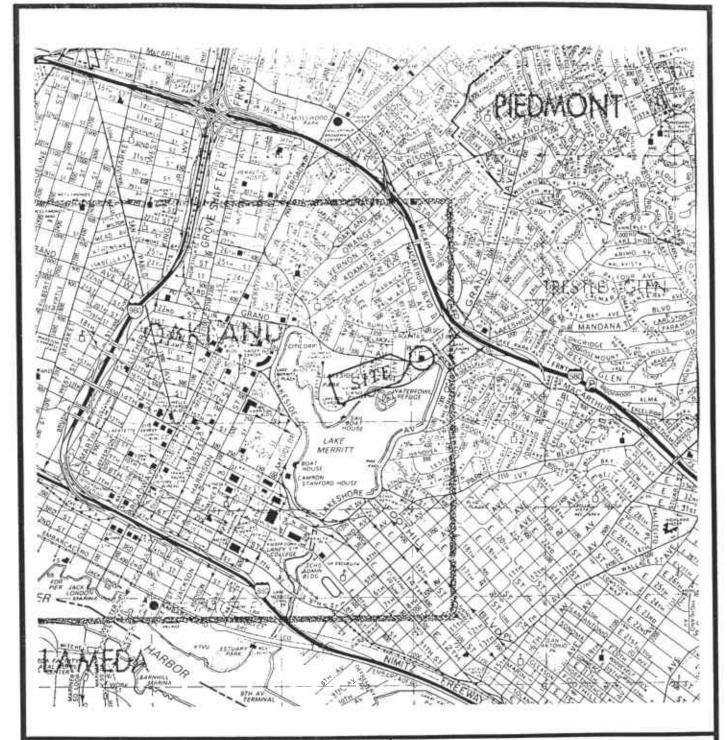
No. 5510

CC: Mr. Richard Hiett
CRWQCB - San Francisco Bay Region
2101 Webster St., Suite 500
Oakland, CA 94612

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

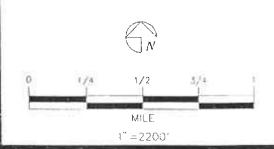
PR: KEP

Groundwater Monitoring and Sampling
Fourth Quarter, 1994
at the
Former Texaco Station
500 Grand Avenue
Oakland, CA





1993 THE THOMAS GUIDE ALAMEDA COUNTY, PAGE 9 (D4)





## **TEXACO**

REFINING AND MARKETING, INC. TEXACO ENVIRONMENTAL SERVICES

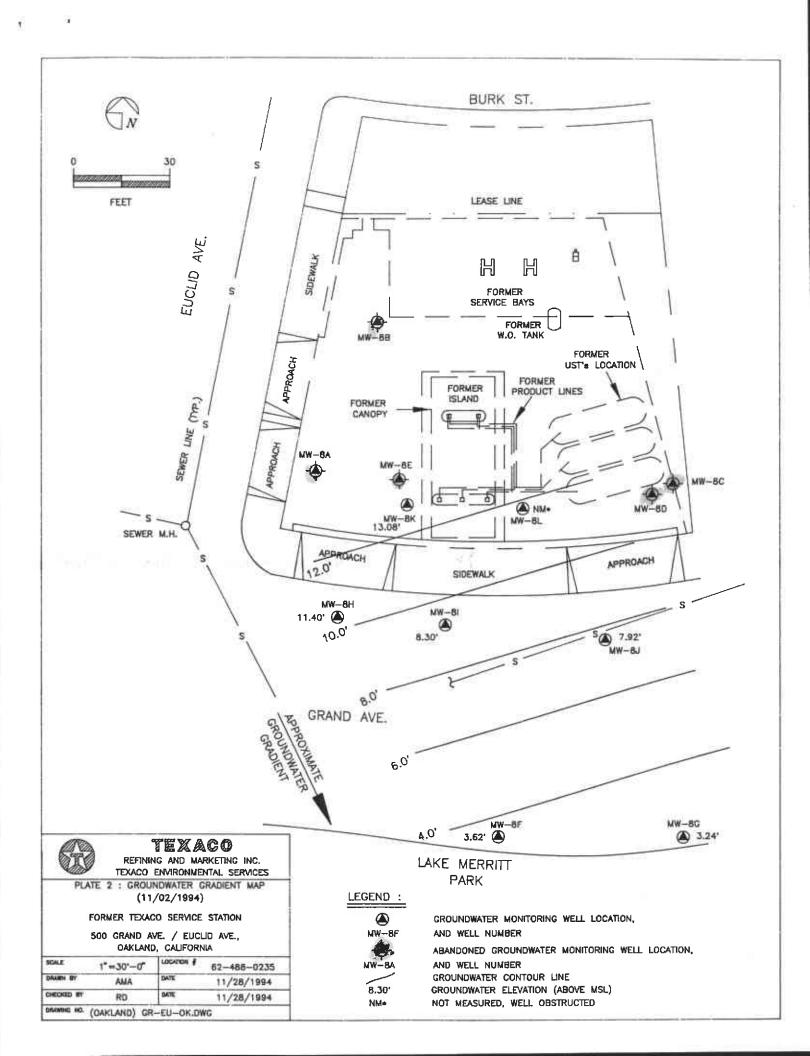
PLATE 1

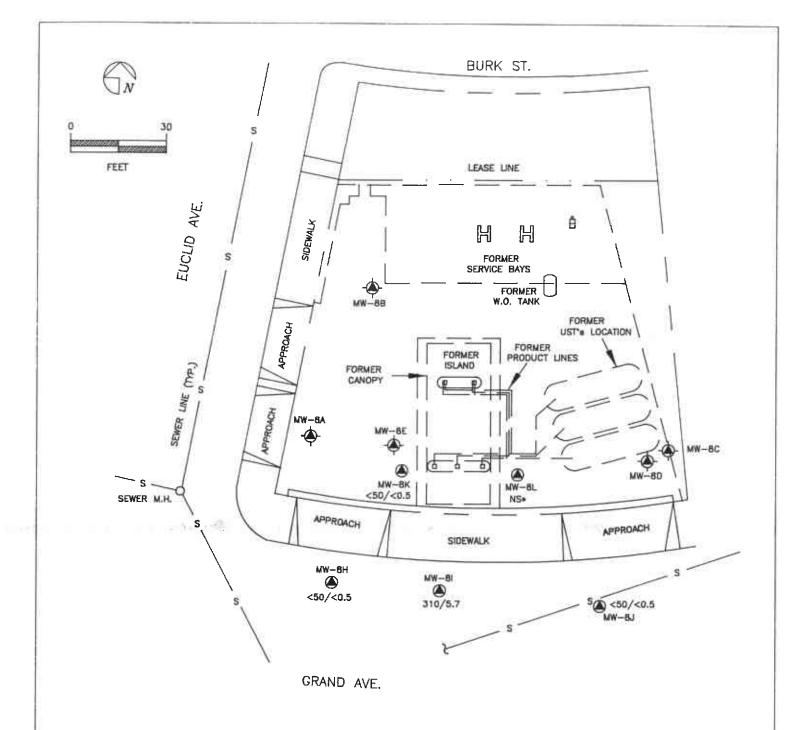
SITE VICINITY MAP

FORMER TEXACO SERVICE STATION

500 GRAND AVE. / EUCLID AVE.;

OAKLAND. CALIFORNIA







### TEXACO

REFINING AND MARKETING INC. TEXACO ENVIRONMENTAL SERVICES

PLATE 3 : TPHq/BENZENE CONCENTRATION IN GROUNDWATER (11/02/1994)

FORMER TEXACO SERVICE STATION

500 GRAND AVE. / EUCLID AVE., OAKLAND, CALIFORNIA

SCALE	1"=30'-0"	FIGURESIA	62-488-0235
DRAWN BY	AMA	DATE	11/28/1994
CHECKED BY	RD	DATE	11/28/1994
DRAWING NO.	(OAKLAND) GR	-EU-OK.DV	VG



<50/<0.5 MW-8C 



LEGEND :

MW-8F **\Phi** 

GROUNDWATER MONITORING WELL LOCATION.

AND WELL NUMBER

ABANDONED GROUNDWATER MONITORING WELL LOCATION, AND WELL NUMBER

AB-WM

<50/<0.5 TPHg/BENZENE CONCENTRATION IN GROUNDWATER (ppb) NS\* NOT SAMPLED, WELL OBSTRUCTED

Table 1
Groundwater Elevation Data
500 Grand Avenue, Oakland, CA

		Top of Casing	Depth to	Elevation of
Well	Date	Elevation	Water	Groundwater
Number	Gauged	(feet, MSL)	(feet, TOC)	(feet, MSL)
MW-8A	03/29/91	99.72		
	01/23/92		2.57	97.15
	02/28/92		2.48	97.24
	03/26/92		2.13	97.59
	04/30/92		2.10	97.62
	08/03/92		Well Proper	y Abandoned
		-		
MW-8B	03/29/91	101.11		
	01/23/92		0.54	100.57
	02/28/92		0.29	100.82
	03/26/92		0.07	101.04
	04/30/92		0.60	100.51
	09/28/92		Not Mon	itored
	11/19/92		Not Mon	itored
	02/12/93		Not Mon	itored
	04/01/93		Well Proper	y Abandoned
MW-8C	03/29/91	98.41		
	01/23/92		6.88	91.53
	02/28/92	· · · · · · · · · · · · · · · · · · ·	6.69	91.72
	03/26/92		6.69	91.72
	04/30/92		5.90	92.51
	09/28/92		Not Mon	
	11/19/92	-	Not Mon	
	02/12/93		Not Mon	
	04/01/93		Well Properl	y Abandoned
MW-8D			Well Properl	y Abandoned
MW-8E	03/29/91	99.38		
	01/23/92		3.57	95.81
	02/28/92		3,35	96.03
	03/26/92		3.01	96.37
	04/30/92		3.76	95.62
	08/03/92		Well Propert	y Abandoned
i				

Table 1 Groundwater Elevation Data 500 Grand Avenue, Oakland, CA

		Top of Casing	Depth to	Elevation of
Well	Date	Elevation	Water	Groundwater
Number	Gauged	(feet, MSL)	(feet, TOC)	(feet, MSL)
MW-8F	03/29/91	97.94		
	01/23/92		10.24	87.70
	02/28/92		9.93	88,01
	03/26/92		8.78	89.16
	04/30/92		9.36	88.58
	09/28/92		11.83	86.11
	11/19/92		11.22	86.72
	02/12/93		9.66	88.28
	05/06/93		8.83	89.11
	08/16/93	14.04	* 10.16	3.88
	10/12/93		10.60	3.44
	02/03/94		9.29	4.75
	05/31/94		9.34	4.70
	08/25/94		10.14	3.90
	11/02/94		10.42	3.62
MW-8G	04/22/04	07.04	ļ	
10100-00	04/23/91 01/23/92	97.24	44.00	05.04
	02/28/92	-	11.30	85.94
	02/26/92		10.83	86.41
			9.20	88.04
	04/30/92		9,00	88.24
	09/28/92 11/19/92		13.32	83.92
				cessible
	02/12/93 05/06/93			cessible
	08/16/93	40.00	11.18	86.06
	10/12/93	13.32		3.81
	02/03/94		10.93	2.39
	05/31/94		9.69	3.63
	08/25/94		9.24	4.08
	11/02/94		9.74	3.58
	11/02/94		10.08	3.24
MW-8H	03/29/91	98.90		
	01/23/92		3.74	95.16
	02/28/92		4.44	94.46
	03/26/92		4.21	94.69
	04/30/92		3.46	95.44
	09/28/92		Well Inac	
	11/19/92	-	3.75	95.15
	02/12/93		4.12	94.78
-	05/06/93		3.85	95.05
	08/16/93	15.04 *		11.16
	10/12/93	-	3.80	11.24
	02/03/94		3.71	11.33
	05/31/94		3.80	11.24
	08/25/94		3.89	11.15
	11/02/94		3.64	11.40
				10

Table 1 Groundwater Elevation Data 500 Grand Avenue, Oakland, CA

		Top of Casing		Depth to	Elevation of
Well	Date	Elevation		Water	Groundwater
Number	Gauged	(feet, MSL)		(feet, TOC)	(feet, MSL)
MW-8I	03/29/91	98.27			
	01/23/92			6.33	91.94
	02/28/92		_	6.55	91.72
	03/26/92			6.45	91.82
	04/30/92	-		6.48	91.79
	09/28/92			Well Inac	cessible
	11/19/92	-		6.37	91.90
	02/12/93			6.44	91.83
	05/06/93			6.36	91.91
	08/16/93	14.40	*	6.35	8.05
	10/12/93			5.99	8.41
	02/03/94			5.84	8.56
	05/31/94			6.25	8,15
	08/25/94			6,31	8.09
	11/02/94			6.10	8.30
MW-8J	03/29/91	97.69			
	01/23/92			6.31	91.38
	02/28/92			6.28	91.41
	03/26/92			6.20	91.49
	04/30/92			6.48	91.21
	09/28/92			Well Inac	cessible
	11/19/92		Ĭ	6.55	91.14
	02/12/93			7.46	90.23
	05/06/93			6.21	91.48
	08/16/93	13.82	*	6.29	7.53
	10/12/93			5.87	7.95
	02/03/94			5.98	7.84
	05/31/94			6.10	7.72
· · · · · · · · · · · · · · · · · · ·	08/25/94			6.01	7.81
	11/02/94			5.90	7.92
			$\int$		
MW-8K	08/16/93	15.18	*	2.08	13.10
	10/12/93			1.95	13.23
	02/03/94			1,48	13.70
	05/31/94			1.59	13.59
	08/25/94			2.00	13.18
	11/02/94			2.10	13.08
			$\int$		

Table 1 Groundwater Elevation Data 500 Grand Avenue, Oakland, CA

		Top of Casing		Depth to	Elevation of					
Well	Date	Elevation	П	Water	Groundwater					
Number	Gauged	(feet, MSL)		(feet, TOC)	(feet, MSL)					
MW-8L	08/16/93	14.44	*	2.47	11.97					
	10/12/93			2.36	12.08					
	02/03/94			2.82	11.62					
	05/31/94			2.66	11.78					
	08/25/94			2.34	12.10					
	11/02/94			Well Obs	tructed					
* = New w	* = New well elevation survey performed on August 16, 1993 based on									
				ed on arbitrary si						
TOC = Top										

Table 2 Groundwater Analytical Data 500 Grand Avenue, Oakland, CA

					Ethyl-			TPH as
Well	Date	TPHg	Benzene	Toluene	benzene	Xylenes	TPHd	Other*
Number	Sampled	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(ppm)	(ppm)
MW-8A	01/23/92		<0.5	<0.5	<0.5	<0.5	0.7	NA
	04/30/92		<0.5	<0.5	<0.5	<0.5	<0.05	<500
	08/03/92		Well Pro	perly Aband	loned			
MW-8B	04/00/00	-50						
IVIVV-OB	01/23/92		<0.5	<0.5	<0.5	<0.5	0.55	NA_
	04/30/92		<0.5	<0.5	<0.5	<0.5	<0.05	<500
-	09/28/92		Not Sa	impled				
	11/19/92		Not Sa	impled	***************************************			
	02/12/93		Not Sa	impled				
	04/01/93		Well Pro	perly Aband	loned			
MW-8C	01/23/92	<50	1.2	<0.5	<0.5	<0.5	0.84	NA
	04/30/92		<0.5	<0.5	<0.5	<0.5	0.15	<500
	09/28/92		Not Sa	mpled	-0.0	-0.0	0.10	1000
	11/19/92		Not Sa	mpled				
	02/12/93		Not Sa	mpled				
	04/01/93		Well Pro	perly Abanc	loned			<del></del>
1411/ 00								
MW-8D			Well Pro	perly Aband	loned			
MW-8E	01/23/92	38,000	3,800	2,800	610	4,800	9.8	NA
	04/23/92	41,000	20,000		500	3,900	9.6	<500
			Well Pro	perly Aband	0,500	9.0	\300	
				party riburio	oned			
MW-8F	01/23/92	<50	4.0	1.3	<0.5	1.9	1.3	NA
	04/30/92	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<500
	09/28/92	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
	11/19/92	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
	02/12/93	<50	<0.5	<0.5	<0.5	<0.5	<0.5	NA
	05/06/93	<50	<0.5	<0.5	<0.5	<0.5	<0.1	<50
	08/16/93	<50	<0.5	<0.5	<0.5	<0.5	<0.05	<50
	10/12/93	<50	<0.5	<0.5	<0.5	<0.5	<0.05	<50
	02/03/94	<50	<0.5	<0.5	<0.5	<0.5	<0.05	<50
	05/31/94	<50	<0.5	<0.5	<0.5	<0.5	<0.05	0.53
	08/25/94	<50	<0.5	<0.5	<0.5	<0.5	<0.05	1.4
	11/02/94	<50	<0.5	<0.5	<0.5	<0.5	0.52	<5

Table 2 Groundwater Analytical Data 500 Grand Avenue, Oakland, CA

						Ethyl-			TPH as
Well		Date	TPHg	Benzene	Toluene	benzene	Xylenes	TPHd	Other*
Number		Sampled	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(ppm)	(ppm)
MW-8G	**	01/24/92	<50	<0.5	<0.5	<0.5	<0.5	0.98	NA
		04/30/92	<50	1.7	<0.5	<0.5	<0.5	<0.05	<500
		09/28/92		Well	Dry				
		11/19/92		Well Ir					
		02/12/93		Well Ir					
		04/29/93	<50	<0.5	<0.5	<0.5	<0.5	0.06	<250
		08/16/93	<50	<0.5	<0.5	<0.5	<0.5	<0.05	<50
		10/12/93	<50	<0.5	<0.5	<0.5	<0.5	<0.05	<50
		02/03/94	<50	<0.5	<0.5	<0.5	<0.5	<0.05	<50
		05/31/94	<50	<0.5	<0.5	<0.5	<0.5	<0.05	<0.2
		08/25/94	<50	<0.5	<0.5	<0.5	<0.5	<0.05	0.86
<u>.</u>		11/02/94	<50	<0.5	<0.5	<0.5	<0.5	0.53	<5
				·			- "		-
MW-8H		01/23/92	110	7.2	1.2	4.7	3.2	<0.06	NA
		04/30/92	190	11	1.5	5.6	3.6	0.09	<500
		09/28/92		Well Ir	naccessible				
		11/19/92	130	6.8	<0.5	1.1	1.5	NA	NA
		02/12/93	73	5.9	<0.5	8.0	<0.5	NA	NA
		05/06/93	57	1.7	<0.5	<0.5	<0.5	<0.1	<50
		08/16/93	<50	0.5	<0.5	0.5	1.4	<0.05	<50
		10/12/93	<50	<0.5	<0.5	<0.5	<0.5	<0.05	<50
		02/03/94	<50	<0.5	<0.5	<0.5	<0.5	<0.05	<50
		05/31/94	<50	0.79	<0.5	<0.5	<0.5	<0.05	1.6
		08/25/94	<50	<0.5	<0.5	<0.5	<0.5	<0.05	4.0
		11/02/94	<50	<0.5	<0.5	<0.5	<0.5	0.76	<5
	_								
MW-8I		01/23/92	820	420	7	27	20	0.21	NA
	_	04/30/92	2,200	1,800	19	180	25	0.43	<500
	1	09/28/92		Well Ina	ccessible				
	_	11/19/92	720	120	1.1	29	13	NA	NA
		02/12/93	4,000	970	9.2	52	36	NA	NA
		05/06/93	1,400	370	2.4	40	8.4	<0.01	<50
		08/16/93	<50	3.1	<0.5	6	<0.5	<0.05	<50
		10/12/93	<50	1.4	<0.5	<0.5	<0.5	<0.05	<50
		02/03/94	1,000	270	3.2	51	14	<0.05	<50
	$\prod$	05/31/94	1,400	330	4.6	52	16	<0.05	0.33
		08/25/94	540	14	0.58	30	4.3	<0.05	0.73
		11/02/94	310	5.7	0.74	20	<0.5	0.37	<5
	[								

Table 2 Groundwater Analytical Data 500 Grand Avenue, Oakland, CA

					Ethyl-			TPH as
Well	Date	TPHg	Benzene	Toluene	benzene	Xylenes	TPHd	Other*
Number	Sampled	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(ppm)	(ppm)
MW-8J	01/23/92	<50	1	<0.5	<0.5	<0.5	<0.05	NÄ
	04/30/92	<50	2	<0.5	<0.5	<0.5	<0.05	<500
	09/28/92		Well In	accessible -				
	11/19/92	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
	02/12/93	<50	<0.5	<0.5	<0.5 <0.5	<0.5	NA	NA
	05/06/93	<50	<0.5	<0.5		<0.5	<0.01	<50
	08/16/93	<50	<0.5	<0.5	<0.5	<0.5	<0.05	<50
	10/12/93	<50	<0.5	<0.5	<0.5	<0.5	<0.05	<50
	02/03/94	<50	<0.5	<0.5	<0.5	<0.5	<0.05	<50
	05/31/94	<50	<0.5	<0.5	<0.5	<0.5	<0.05	<0.2
	08/25/94	<50	<0.5	<0.5	<0.5	<0.5	<0.05	1.0
	11/02/94	<50	<0.5	<0.5	<0.5	<0.5	<0.05	<5
MW-8K	05/21/93	54	12	<0.5	<0.5	<0.5	<0.05	<50
	08/16/93	<50	<0.5	<0.5	1.0	<0.5	<0.05	<50 <50
	10/24/93	<50	4.2	<0.5	<0.5	<0.5	<0.05	<50 <50
	02/03/94	<50	<0.5	<0.5	<0.5	<0.5	<0.05	<50 <50
	05/31/94	<50	1.0	0.57	<0.5	<0.5	<0.05	<0.2
	08/25/94	<50	0.78	<0.5	<0.5	<0.5	<0.05	0.98
	11/02/94	<50	<0.5	<0.5	<0.5	<0.5	<0.05	<5
MW-8L	05/21/93	76	1.1	<0.5			-0.05	.50
IVI V OL	08/16/93	<50	<0.5	<0.5	<0.5 0.7	6	<0.05	<50 450
	10/12/93	110	13	<0.5	U.7 6	1.1 <0.5	<0.05	<50
	02/03/94	590	61	2.4	<0.5	<0.5 110	<0.05	<50 <50
	05/31/94	410	77	<0.5	20	1.1	<0.05 <0.05	
-	08/25/94	260	16	<0.5	2.5	<0.5	<0.05	<0.2 1.1
	11/02/94		Not Sa		2.5	<b>\0.5</b>	~0.03	1,1
-	11/102/01		Not Ga	mpied				
EB	08/25/94	69	<0.5	<0.5	<0.5	<0.5	<0.05	0.71
	11/02/94	<50	<0.5	<0.5	<0.5	<0.5	<0.05	<5
TO	00/05/04	- 50						
ТВ	08/25/94	52	<0.5	<0.5	<0.5	<0.5	NA	NA
	11/02/94	<50	<0.5	<0.5	<0.5	<0.5	NA NA	NA
EB = Equipn	nent Blank							
TB = Trip Bl				· · · · · · · · · · · · · · · · · ·			···	
ppb = parts (		-		-				
ppm = parts				· · · <del></del> · · ·				
NA = Not A	<u> </u>		·					
	n the detection	on limit for t	he specified	d method of	analysis.			
* = Includ	les "heavy" p	etroleum hy	drocarbons	s such as w	asta oil min	Aral spirits	iet fuel or f	ual oil

 <sup>=</sup> Includes "heavy" petroleum hydrocarbons such as waste oil, mineral spirits, jet fuel, or fuel oil.
 = Non-diesel mix >C16. The certified analytical report for sample MW-8G was revised on 10/21/93.

# **APPENDIX**

#### **ANALYTICAL REPORT**

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

LOG NO: G94-11-050

Received: 03 NOV 94

Maileu:

NOV 2.1

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

Purchase Order: 94-1446346+4370

Requisition: 624880235 Project: FKEP1014L

REPORT OF ANALYTICAL RESULTS

Page 1

#### AQUEOUS

SAMPLE DESCRIPTION	DATE SAMPLED	TRPH (CADHS/418.1)	TPH (CADHS/3520)			 (	TPH/BTEX (CADHS/8020)	·		
		mg/L	Date Extracted Date	Date Analyzed Date	Dilution Factor Times	TPH-d mg/L	Date Analyzed Date	Dilution Factor Times	 ТРН-д шg/L	Benzene ug/L
RDL		5				0.05		1		0.5
1*MW-8F 2*MW-8G 3*MW-8H 4*MW-8I 5*MW-8J 6*MW-8K 7*EB 8*TB	11/02/94 11/02/94 11/02/94 11/02/94 11/02/94 11/02/94 11/02/94 11/02/94	<5 <5 <5 <5 <5 <5	11/09/94 11/09/94 11/09/94 11/09/94 11/09/94 11/09/94	11/12/94 11/12/94 11/12/94 11/12/94 11/17/94 11/12/94 11/17/94	1 1 1 1 1 1 1	0.52 0.53 0.76 0.37 <0.05 <0.05	11/11/94 11/11/94 11/11/94 11/11/94 11/11/94 11/11/94 11/11/94 11/11/94	1 1 1 1 1 1 1 1 1	<50 <50 <50 310 <50 <50 <50 <50	<0.5 <0.5 <0.5 5.7 <0.5 <0.5 <0.5

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

LOG NO: G94-11-050

Received: 03 NOV 94

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

Purchase Order: 94-1446346+4370

Requisition: 624880235

Project: FKEP1014L

REPORT OF ANALYTICAL RESULTS

Page 2

AQUEOUS

SAMPLE DESCRIPTION	DATE SAMPLED	TPH/BTEX (CADHS/8020)			
		To luene ug/L	Ethyl- Benzene ug/L	Total Xylenes Isomers ug/L	
RDL		0.5	0.5	0.5	
1*MW-8F 2*MW-8G 3*MW-8H 4*MW-8I 5*MW-8J 6*MW-8K 7*EB 8*TB	11/02/94 11/02/94 11/02/94 11/02/94 11/02/94 11/02/94 11/02/94 11/02/94	<0.5 <0.5 <0.5 0.74 <0.5 <0.5 <0.5	<0.5 <0.5 <0.5 20 <0.5 <0.5 <0.5	<0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5	······································

Tom Hargett 500 Grand Avenue, Oakland Alameda County

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SAMPLES	SAMPLE DESCRIPTION	DETERM	DATE ANALYZED	METHOD	EQUIP.	ватсн	ID.NO
9411050*1	MW-8F	IR.PET.TES.AQ DIESEL.3520.TES		8015M	533-17 536-01	94229	7772 7325
9411050*2	MW-8G	GAS.BTX.TESNC IR.PET.TES.AQ DIESEL.3520.TES	11.08.94 11.12.94	8015M	536-21 533-17 536-01	94150 94112 94229	8042 7772 7325
9411050*3	MW-8H	GAS.BTX.TESNC IR.PET.TES.AQ DIESEL.3520.TES	11.08.94		536-21 533-17 536-01	94150 94112 94229	8042 7772 7325
9411050*4	MW-8I	GAS.BTX.TESNC IR.PET.TES.AQ DIESEL.3520.TES	11.08.94		536-21 533-17 536-01	94150 94112 94229	8042 7772 7325
9411050*5	MW-8J	GAS.BTX.TESNC IR.PET.TES.AQ DIESEL.3520.TES	11.11.94 11.08.94	8015M.TX 418.1	536-21 533-17 536-01	94150 94112 94233	8042 7772 7325
9411050*6	MW-8K	GAS.BTX.TESNC IR.PET.TES.AQ	11.11.94 11.08.94	8015M.TX 418.1	536-21 533-17	94150 94112	8042 7772
9411050*7	EB	DIESEL.3520.TES GAS.BTX.TESNC IR.PET.TES.AQ DIESEL.3520.TES	11.11.94 11.08.94	8015M.TX 418.1	536-01 536-21 533-17 536-01	94229 94150 94112 94233	7325 8042 7772 7325
9411050*8	ТВ	GAS.BTX.TESNC GAS.BTX.TESNC		8015M.TX 8015M.TX	536-21 536-21	94150 94150	8042 8042

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

## ORDER QC REPORT FOR G9411050

DATE REPORTED : 11/19/94

Page 1

# LABORATORY CONTROL STANDARDS FOR BATCHES WHICH INCLUDE THIS ORDER

	DATE	BATCH	LC	LT		PERCENT
PARAMETER	ANALYZED	NUMBER	RESULT	RESULT	UNIT	RECOVERY
1. TRPH/CADHS/418.1 C411918*1	11.08.94	94112	2.23	2.55	mg/L	87
2. TPH - (8015M/3520) C4111584	l*1				•	
Date Analyzed	11.12.94	94229	11/12/94	11/12/94	Date	N/A
Date Extracted	11.12.94	94229	11/09/94	11/09/94	Date	N/A
TPH (as diesel)	11.12.94	94229	0.996	1.00	mg/L	100
3. TPH - (8015M/3520) C4111585	5*1				•	
Date Analyzed	11.12.94	94229	11/12/94	11/12/94	Date	N/A
Date Extracted	11.12.94		11/09/94	11/09/94	Date	N/A
TPH (as diesel)	11.12.94	94229	1.16	1.00	mg/L	116
4. TPH-gas/BTEX (CADHS/80 C4111318	<b>}</b> *1					
Date Analyzed	11.10.94	94150	11/10/94	11/10/94	Date	N/A
Benzene	11.10.94	94150	14.4	15.4	ug/L	94
Toluene	11.10.94		54.2	70.5	ug/L	77 Q
Ethy lbenzene	11.10.94		11.6	16.7	ug/L	69 Q
Total Xylene Isomers	11.10.94		63.8	55.2	ug/L	116
TPH (as Gasoline)	11.10.94	94150	871	1000	ug/L	87

## ORDER QC REPORT FOR G9411050

DATE REPORTED : 11/19/94

Page 1,

# ADDITIONAL LCS PRECISION (DUPLICATES) BATCH QC REPORT

PARAMETER	SAMPLE NUMBER	DATE ANALYZED	BATCH	LC1 RESULT	LC2 RESULT	UNIT	RELATIVE % DIFF
1. TPH - (8015M/3520)	NUMBER	ANALIZED	NUMBER	KEOULI	KESULI	TINU	a Dift
Date Analyzed		11.12.94	94229	11/12/94	11/12/94	Date	N/A
Date Extracted		11.12.94	94229	11/09/94	11/09/94	Date	N/A
TPH (as diesel)		11.12.94	94229	0.996	1.16	mg/L	15
2. TPH-gas/BTEX (CADHS	5/80					•	
Date Analyzed		11.10.94	94150	11/10/94		Date	N/A

#### ORDER QC REPORT FOR G9411050

DATE REPORTED : 11/19/94

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# MATRIX QC PRECISION (DUPLICATE SPIKES) BATCH QC REPORT

		DATE ANALYZED 11.08.94		MS RESULT 4.14	MSD RESULT 4.14	UNIT mg/L	RELATIVE % DIFF 0
2. TPH-gas/BTEX (CADH	S/80 9411050*	<b>ъ</b>				Ü	
Date Analyzed		11.11.94	94150	11/11/94	11/11/94	Date	N/A
Benzene		11.11.94	94150	14.1	14.0	ug/L	1
Toluene		11.11.94	94150	55.3	55.9	ug/L	1
Ethylbenzene		11.11.94	94150	11.7	11.3	ug/L	3
Total Xylene Isomer	S	11.11.94	94150	63.3	60.5	ug/L	5
TPH (as Gasoline)		11.11.94	94150	792	745	ug/L	6

#### ORDER QC REPORT FOR G9411050

DATE REPORTED : 11/19/94

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# MATRIX QC ACCURACY (SPIKES) BATCH QC REPORT

	SAMPLE	DATE	BATCH	MS	MSD	TRUE	
PARAMETER	NUMBER	ANALYZED	NUMBER	3	oko	RESULT	UNIT
1. TRPH/CADHS/418.1	9411050*7	11.08.94	94112	101	101	4.08	mg/L
2. TPH-gas/BTEX (CADH	IS/80 9411050	*6					
Benzene		11.11.94	94150	92	91	15.4	ug/L
Toluene		11.11.94	94150	78	79	70.5	ug/L
Ethylbenzene		11.11.94	94150	70	68	16.7	ug/L
Total Xylene Isomer	'S	11.11.94	94150	115	110	55.2	ug/L
TPH (as Gasoline)		11.11.94	94150	79	75	1000	ug/L

## ORDER QC REPORT FOR G9411050

DATE REPORTED : 11/19/94

Page 1

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

PARAMETER 1. TRPH/CADHS/418.1 B411751*1 2. TPH - (8015M/3520) B411129	DATE BATCH ANALYZED NUMBER 11.08.94 94112 58*1	BLANK RESULT 0.099	RDL 0.2	UNIT mg/L	METHOD 418.1
Date Analyzed	11.12.94 94229	11/12/94	NA	Date	8015M
Date Extracted	11.12.94 94229	11/09/94	NA	Date	8015M
TPH (as diesel)	11.12.94 94229	0	0.05	mg/L	8015M
<ol><li>TPH-gas/BTEX (CADHS/80 B41110)</li></ol>	71*1			J	
Date Analyzed	11.10.94 94150	11/10/94	NA	Date	8015M.TX
Benzene	11.10.94 94150	0	0.5	ug/L	8015M.TX
Toluene	11.10.94 94150	0	0.5	ug/L	8015M.TX
Ethylbenzene	11.10.94 94150	0	0.5	ug/L	8015M.TX
Total Xylene Isomers	11.10.94 94150	0	0.5	ug/L	8015M.TX
TPH (as Gasoline)	11.10.94 94150	0	50	ug/L	8015M.TX

: SURROGATE RECOVERIES : : BC ANALYTICAL : GLEN LAB : 13:53:52 19 NOV 1994 - P. 1 :

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METHOD ANALYTE	ВАТСН	ANALYZED I	REPORTED	TRUE	%REC FLAG
9411050*1					
8015M Napthalene reported 8015M.TXa,a,a-Trifluorotoluene	94229 94150	11/12/94 11/11/94	0.0525 46.0	0.0600 50.0	88 92
9411050*2					
8015M Napthalene reported 8015M.TXa,a,a-Trifluorotoluene	94229 94150	11/12/94 11/11/94	0.0450 45.9	0.0600 50.0	75 92
9411050*3					
8015M Napthalene reported 8015M.TXa,a,a-Trifluorotoluene	94229 94150	11/12/94 11/11/94	0.0635 46.1	0.0600 50.0	106 92
9411050*4					
8015M Napthalene reported 8015M.TXa,a,a-Trifluorotoluene	94229 94150	11/12/94 11/11/94	0.0535 44.0	0.0600 50.0	89 88
9411050*5					
8015M Napthalene reported 8015M.TXa,a,a-Trifluorotoluene	94233 94150	11/17/94 11/11/94	0.0559 45.9	0.0600 50.0	93 92
9411050*6					
8015M Napthalene reported 8015M.TXa,a,a-Trifluorotoluene	94229 94150	11/12/94 11/11/94	0.0482 46.9	0.0600 50.0	80 94
9411050*7					
8015M Napthalene reported 8015M.TXa,a,a-Trifluorotoluene	94233 94150	11/17/94 11/11/94	0.0470 53.9	0.0600 50.0	78 108
9411050*8					
8015M.TXa,a,a-Trifluorotoluene	94150	11/11/94	53.3	50.0	107

: SURROGATE RECOVERIES :

METHOD ANALY	TE	ватсн	ANALYZED	REPORTED	TRUE	%REC	FLAG
9411050*6*R1							
8015M.TXa,a,a	-Trifluorotoluene	94150	11/11/94	46.9	50.0	• 94	
9411050*6*\$1							
8015M.TXa,a,a	-Trifluorotoluene	94150	11/11/94	50.4	50.0	101	
9411050*6*S2							
8015M.TXa,a,a	-Trifluorotoluene	94150	11/11/94	52.4	50.0	105	
941105 <b>0</b> *6*T							
8015M.TXa,a,a	-Trifluorotoluene	94150	11/11/94	50.0	50.0	100	
9411050*7*R1							
8015M Napth	alene reported	94233	11/17/94	0.0470	0.0600	78	
B4111071*1*MB							
8015M.TXa,a,a	-Trifluorotoluene	94150	11/10/94	46.1	50.0	92	
B4111258*1*MB							
8015M Napth	alene reported	94229	11/12/94	0.0456	0.0600	76	
C4111318*1*LC							
8015M.TXa,a,a	-Trifluorotoluene	94150	11/10/94	49.9	50.0	100	
C4111318*1*LT							
8015M.TXa,a,a	-Trifluorotoluene	94150	11/10/94	50.0	50.0	100	
C4111319*1*LT							
8015M.TXa,a,a	-Trifluorotoluene	94150	11/11/94	50.0	50.0	100	
C4111584*1*LC							
8015M Naptha	alene reported	94229	11/12/94	0.0484	0.0600	81	
C4111584*1*LT							
8015M Naptha	alene reported	94229	11/12/94	0.0600	0.0600	100	•
C4111585*1*LC							
8015M Naptha	alene reported	94229	11/12/94	0.0560	0.0600	93	
C4111585*1*LT							p.C.1. 1.2. 1
8015M Naptha	alene reported	94229	11/12/94	0.0600	0.0600	100	B C Analytical

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## Well Gauging Data

Po 1 4 4 1	100 1110	Truit Gadging Bata
Project Name:	500 64AVD	Date: $1/-02-9$
		- Duic.
Project Number:	941/02-MI	Recorded By: Hill myke
-		

	TOC	DTB	Wall Dia	DYD			P. C.	
Well ID		(ft. TOÇ)	Well Dia.	DTP (ft.)	DTW (ft.)	PT (ft.)	C	omments
MW-87 MW-86 MW-84 MW-8I		14.44	4	<u> </u>	10 42			
MW-86		14.18	4		10.08			
mw-84		14.18	4	- <del></del>	10.08		· <del></del>	
MW-BI		4.52	4		6.10		<del></del>	
MW-8J		14.72	4		5-90			
NW-8K		6.90	2		210			
MW-8T MW-8K MW-8L		1.04	2		0.53		WELL OB	STRUCTED
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TOC To (	<u> </u>	l_						

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

roject Name 5006R	A1 (V)		Well No.		MU-8.	•
roject Number 94/102	-pry	_	Well Type	Vionitor	Extraction	Other
ecorded By Man		Sampled by	fun		Date	11-02-94
		WELL PUR	GING			
PURGE VOLUME			•	PURGE	METHOD	
ell casing diameter				Bailer - Ty	ре	
2-inch 俎 4-inch	Other	_		ump - Ty	pe MCC	THIC SUB
ell Total Depth (TD, ft. below	TOC) 14.44	_ ,.		Other		
epth to Water (WL, ft. below T	oc) 10.42	-	,	PUMI	P INTAKE:	
epth to free phase hydrocarbor			j	Near top	Depth (ft)	<del></del>
umber of well volumes to be po 3 10	urged Other	00	c	Other	m Depth (ft)	14.00
		- 2.70	are	-		
PURGE VOLUME CALCUI			7	Pumping Ra	le	gpm
7.00	- X - 6 6	_ ×	<u> </u>	_ =	641611147	SO BURGE VOLUME
Water Column			No. Vols	ān .	CALCOLAT	ED PURGE VOLUME
MULTIPLIER (	Casing Dia [inches] = Ga	llons/linear ft)			407:11	<u></u>
21 PT 42311 PT 1 PT 1 PT 1 PT 1	38  4 = 0.66  4.5 = 0.83   5			رادا استار در الرادا	·	PURGE VOLUME
GROUNDWATER PARAM	1 12 12 12 12 12 12 12 12 12 12 12 12 12			LHF	_	
Time/Gallons	pН	Cond.	Temp	deg C	Turbidity	Color/Odor
11143,7	77	(uomhos/cm)	100	7.6	/S/2	
1			7 · · ·	<i></i>	1,7,7	
1	Well the w	MENTO (	13 69	r		
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Comments during well purge						Some The Let
Well Pumped dry YES NO		Purge water stor	PLING	Drummed	onsite	Other TSAC
Well Pumped dry YES NO	Date/Time Sampled		PLING 1/4:50	<u>-</u> _		Other Text
Well Pumped dry YES NO SAMPLING METHOD Bailer - Type	Date/Time Sampled	WELL SAN	PLING 1/4:50 Sample port		Other	Sother BAC
Well Pumped dry YES NO SAMPLING METHOD Bailer - Type  GROUNDWATER SAMP	Date/Time Sampled	WELL SAM	PLING  //:50  Sample port  Meter Typ		Other WL HP	<u> </u>
Well Pumped dry YES NO SAMPLING METHOD Bailer - Type	Date/Time Sampled	WELL SAM	PLING 1/4:50 Sample port		Other  WL HF  Turbidity	Other TSACC
Nell Pumped dry YES NO SAMPLING METHOD Bailer - Type  GROUNDWATER SAMP	Date/Time Sampled  ON PLE PARAMETER MEAS  PH	WELL SAM	PLING  //:50  Sample port  Meter Typ		Other  WL HF  Turbidity  (NTU)	Color/Odor
SAMPLING METHOD Bailer - Type GROUNDWATER SAMP Date/Time/% Recharge	Date/Time Sampled	WELL SAM	PLING  //:50  Sample port  Meter Typ		Other  WL HF  Turbidity	Color/Odor
SAMPLING METHOD Bailer - Type GROUNDWATER SAMP Date/Time/% Recharge	Date/Time Sampled  CON  PLE PARAMETER MEAS  PH  18076	WELL SAM	PLING  //:50 Sample port Meter Typ Temp	e	Other  WL HF  Turbidity  (NTU)	Color/Odor
SAMPLING METHOD Bailer - Type  GROUNDWATER SAMP Date/Time/% Recharge  SAMPLING PROGRAM Sample No.	Date/Time Sampled  CON  PLE PARAMETER MEAS  PH  18070  Container #/Volume	WELL SAM  //- 7- SUREMENTS  Cond. (uomhos/cm)	PLING  //:50  Sample port  Meter Typ  Temp  //.	e MYMA deg C deg F	Other  WL HI  Turbidity (NTU)  boratory	Color/Odor
SAMPLING METHOD Bailer - Type GROUNDWATER SAMP Date/Time/% Recharge	Date/Time Sampled  CON  PLE PARAMETER MEAS  PH  18076	WELL SAM	PLING Sample port Meter Typ Temp  Preservatives  HCL	e MYMA deg C deg F	Other  WL HF  Turbidity  (NTU)	Color/Odor
SAMPLING METHOD Bailer - Type  GROUNDWATER SAMP Date/Time/% Recharge  SAMPLING PROGRAM Sample No.	Date/Time Sampled  CON  PLE PARAMETER MEAS  PH  18070  Container #/Volume	WELL SAM  //- 7- SUREMENTS  Cond. (uomhos/cm)  Analysis  THIGGER	PLING  //4:50  Sample port  Meter Typ  Temp  2/.  Preservatives  HCL  Look	e MYMA deg C deg F	Other  WL HI  Turbidity (NTU)  boratory	Color/Odor
SAMPLING METHOD Bailer - Type  GROUNDWATER SAMP Date/Time/% Recharge  //	Date/Time Sampled  CON  PLE PARAMETER MEAS  PH  18070  Container #/Volume	WELL SAM  //- 7- SUREMENTS  Cond. (uomhos/cm)	PLING  //4:50  Sample port  Meter Typ  Temp  2/.  Preservatives  HCL  Look	e MYMA deg C deg F	Other  WL HI  Turbidity (NTU)  boratory	Color/Odor
SAMPLING METHOD Bailer - Type  GROUNDWATER SAMP Date/Time/% Recharge  J-2 / 4:50 SAMPLING PROGRAM Sample No.	Date/Time Sampled  CON  PLE PARAMETER MEAS  PH  18070  Container #/Volume	WELL SAM  //- 7- SUREMENTS  Cond. (uomhos/cm)  Analysis  THIGGER	PLING  //4:50  Sample port  Meter Typ  Temp  2/.  Preservatives  HCL  Look	e MYMA deg C deg F	Other  WL HI  Turbidity (NTU)  boratory	Color/Odor
SAMPLING METHOD Bailer - Type  GROUNDWATER SAMP Date/Time/% Recharge  J-2 / 4:50 SAMPLING PROGRAM Sample No.	Date/Time Sampled  CON  PLE PARAMETER MEAS  PH  18070  Container #/Volume	WELL SAM  //- 7- SUREMENTS  Cond. (uomhos/cm)  Analysis  THIGGER	PLING  //4:50  Sample port  Meter Typ  Temp  2/.  Preservatives  HCL  Look	e MYMA deg C deg F	Other  WL HI  Turbidity (NTU)  boratory	Color/Odor
SAMPLING METHOD Bailer - Type  GROUNDWATER SAMP Date/Time/% Recharge  J-2 / 4:50 SAMPLING PROGRAM Sample No.	Date/Time Sampled  CON  PLE PARAMETER MEAS  PH  18070  Container #/Volume	WELL SAM  //- 7- SUREMENTS  Cond. (uomhos/cm)  Analysis  THIGGER	PLING  //4:50  Sample port  Meter Typ  Temp  2/.  Preservatives  HCL  Look	e MYMA deg C deg F	Other  WL HI  Turbidity (NTU)  boratory	Color/Odor
SAMPLING METHOD Bailer - Type  GROUNDWATER SAMP Date/Tirne/% Recharge  //	Date/Time Sampled  LOW  PLE PARAMETER MEAS  PH  18070  Container #/Volume  3 YOM L VOIT  2 LITM  2 LITM	WELL SAM  //- 7- SUREMENTS  Cond. (uomhos/cm)  Analysis  THIGGER	PLING  //4:50  Sample port  Meter Typ  Temp  2/.  Preservatives  HCL  Look	e MYMA deg C deg F	Other  WL HI  Turbidity (NTU)  boratory	Color/Odor
SAMPLING METHOD Bailer - Type  GROUNDWATER SAMP Date/Tirne/% Recharge  SAMPLING PROGRAM Sample No.  MW - 8 F	Date/Time Sampled  LOW  PLE PARAMETER MEAS  PH  18070  Container #/Volume  3 YOM L VOM  2 LITTEL  ALITTEL  Samples	WELL SAM  //- 7- SUREMENTS  Cond. (uomhos/cm)  Analysis  THE STEP  OIL / OLL ANA	PLING  //4:50  Sample port  Meter Typ  Temp  2/.  Preservatives  HCL  Look	e MYMA deg C deg F	Other  WL HH  Turbidity (NTU)  Doratory	Color/Odor
SAMPLING METHOD Bailer - Type  GROUNDWATER SAMP Date/Tirne/% Recharge  SAMPLING PROGRAM Sample No.  MW - 8 F	Date/Time Sampled  LOW  PLE PARAMETER MEAS  PH  18070  Container #/Volume  3 YOM L VOIT  2 LITTLE  MPLES	WELL SAM  //- 7- SUREMENTS  Cond. (uomhos/cm)  Analysis  THE STEP  OIL / OLL ANA	PLING  //4:50  Sample port  Meter Typ  Temp  2/.  Preservatives  HCL  Look	e MYMA deg C deg F	Other  WL H/  Turbidity  (NTU)  boratory  Blar  Type	Color/Odor  Comments
SAMPLING METHOD Bailer - Type  GROUNDWATER SAMP Date/Time/% Recharge  J-2 / J-3:50 SAMPLING PROGRAM Sample No. MW - 8 F	Date/Time Sampled  LOW  PLE PARAMETER MEAS  PH  18070  Container #/Volume  3 YOM L VOM  2 LITTEL  ALITTEL  Samples	WELL SAM  //- 7- SUREMENTS  Cond. (uomhos/cm)  Analysis  THE STEP  OIL / OLL ANA	PLING  //4:50  Sample port  Meter Typ  Temp  2/.  Preservatives  HCL  Look	e Mynu deg C deg F	Other  WL HH  Turbidity (NTU)  boratory  Blar Type Trip	Color/Odor  Comments  Ak Samples
SAMPLING METHOD Bailer - Type  GROUNDWATER SAMP Date/Time/% Recharge  SAMPLING PROGRAM Sample No.  MW - 8 F	Date/Time Sampled  LOW  PLE PARAMETER MEAS  PH  18070  Container #/Volume  3 YOM L VOM  2 LITTEL  ALITTEL  Samples	WELL SAM  //- 7- SUREMENTS  Cond. (uomhos/cm)  Analysis  THE STEP  OIL / OLL ANA	PLING  //4:50  Sample port  Meter Typ  Temp  2/.  Preservatives  HCL  Look	e MyM deg C deg F	Other  WL HI  Turbidity (NTU)  boratory  Blar Type Trip Rinsate	Color/Odor  Comments  Ak Samples
SAMPLING METHOD Bailer - Type S GROUNDWATER SAMP Date/Time/% Recharge  J-2 / J-3:50 SAMPLING PROGRAM Sample No. MW - 8 F  QUALITY CONTROL SAM Duplicate	Date/Time Sampled  LOW  PLE PARAMETER MEAS  PH  18070  Container #/Volume  3 YOM L VOM  2 LITTEL  ALITTEL  Samples	WELL SAM  //- 7- SUREMENTS  Cond. (uomhos/cm)  Analysis  THE STEP  OIL / OLL ANA	PLING  //4:50  Sample port  Meter Typ  Temp  2/.  Preservatives  HCL  Look	e MyM deg C deg F	Other  WL HE Turbidity (NTU)  boratory  Blar Type Trip	Color/Odor  Comments  Ak Samples

Project Name 506	Grour	ndwater Sa	ampling . Well No.	Form	1W-8	6
	102-111		Well Type	₩ivionitor	Extraction	Other
Recorded By MKA		Sampled by			_ Date	11-02-84
		WELL PU	RGING			The second of th
PURGE VOLUME				PURGE	METHOD	
Well casing diameter				Bailer - Typ		
2-inch 4-inch	Other			Pump - Typ	e acci	lic Sub
Well Total Depth (TD, ft. belov	7-44-	<u>3_</u>		Other		
Depth to Water (WL, ft. below			ব		INTAKE	
Depth to free phase hydrocarb Number of well volumes to be			]	Near top	Depth (ft)	to di alton
<b>10</b> 3 10	Other	274	and .	Other	n Depth (fi)	14.00
PURGE VOLUME CALC		2,1		Pumping Rat	e 6	gpm
4.1	x ,65	•	2,		- <u> </u>	<del>*************************************</del>
Water Colum		<u> </u>	No. Vols	_ ~	CALCULATE	O./ gals ED PURGE VOLUME
	(Casing Dia [inches] = (		ny jeretésznej A	٦		<del></del>
2 = 0.17 3 = 0	0.38  4 = 0.66  4.5 = 0.83	5 = 1.02   6 = 1.5	8 <b>=</b> 2.6	1	ACTUAL P	gals URGE VOLUME
GROUNDWATER PARAM			MIKON	2, 1150		
Time/Gallons	pH	Cond.	Temp		Turbidity	Color/Odor
		(uomnos/cm)		deg C deg F	(NTU)	
11:32 1 5	7.5	1/00	63	6	700	
	DEWATERED	2 47 3	GAL			
1			- , -			
1		<del> -</del>				
1						
I						
1						
Comments during well purge	· · · · · · · · · · · · · · · · · · ·					
Well Pumped dry YES No	0	Purge water sto	rage/disposal	Drummed o	onsite (	Other TEXACO
		WELLSAN	/IPLING	maa aggi sam aara oo Samaasi	· · · · · · · · · · · · · · · · · · ·	
SAMPLING METHOD	Date/Time Sampled	., 5	1 14:25			<u> </u>
Bailer - Type 🛛 🌃	(100)		Sample port	_	Other [	
GROUNDWATER SAM	PLE PARAMETER ME	— ASHREMENTS		<u>.</u>	Ollici [	_1
Date/Time/% Recharge		Cond,	Temp	 ydeg C	Turbidity	Color/Odor
1/ 20/	pri	(uomhos/cm)	Temp	deg F	(NTU)	Colol/Cdbl
11-2-79-14:25	185/0 7.4	1/200	do.	4	172,8	
SAMPLING PROGRAM	5 5	- •		,		
Sample No.	Container #/Volume		Preservatives	Lab	oratory	Comments
MW-862	3 YUAL LOA	7/46,582	HCL	I BC	A	
<u> </u>	2 LITERS	DILJUKEASE	HU	1 2		
C.	LITTER	TPHO	NONC	//		
		<del> </del>		<del></del>		
		_		<del>                                     </del>		-
	-	<del>                                     </del>		<del> </del>	<u>i</u>	
QUALITY CONTROL SA	MPLES	<del> </del>	<u> </u>			
	te Samples				Diset	( Samples
Original Sample No.		Sample No.	]		Туре	Sample No.
			]		Trip	
			_	R	linsate	
					ransfer	
				Other:		
						_

Project Name 500 GM	WD GIOW	ndwater Sa	Well No.	Form	MW-	84
Project Number 91//6	27-M/	_	Well Type	Monitor	Extraction	. <del> </del>
Recorded By	n	Sampled by	<i>a</i> ''	Danning	Date	1400 .95/
	erica de la compania	WELL PUR		e na kaod autora nago in na		
		WELL FUR	(GIIVG)			
PURGE VOLUME					метнор	
Well casing diameter	Π			Bailer - Typ		OIP
2-inch 4-inch			,		pe MEC	7 345
Well Total Depth (TD, ft. belo	7	<u>0</u> ,	-	Other		
Depth to Water (WL, ft. below		• 7	ก	PUMF		
Depth to free phase hydrocar lumber of well volumes to be	bons (FP, ft, below TOU)	<u>'                                     </u>	J	Near top	Depth (fi) m Depth (ft)	7 <del>7                                   </del>
3 10	Other	70	crae	Other	il Deput (ii)	13.00
PURGE VOLUME CALC	CULATION		-	Pumping Rat	e	gpm
//. //	$\times$ $\times$ $\sim$		7		<u></u>	
Water Colum		× X	No. Vols	_ <del>=</del>	CALCULAT	ED PURGE VOLUME
- Cana			11 <b>4. 74.</b>	<b>¬</b>	UNLUGGE.	
2 = 0.17 3 =	R (Casing Dia.[inches] = 0.38  4 = 0.66  4.5 = 0.83	Gallons/linear π) 315 = 1 0216 = 1 51	B = 2.6	-	ACTUAL	PURGE VOLUME
GROUNDWATER PARA			MIKONL	45/11	NOTONE	FUNGE VOLUME
Time/Gallons			· · · · · · · · · · · · · · · · · · ·		- ۲. ــــــــــــــــــــــــــــــــــــ	
I II II GOIONA	s pH	Cond. (uomhos/cm)	Temp	deg C deg F	Turbidity (NTU)	Color/Odor
12:39 1	10 70	1600	20.	7	79.5	<del>                                     </del>
17.001	16 6.9	1400	57.	4	29.8	
12:471	24 7.0	1400	21.	6	27.7	
/ / / /	•			·		
1			-			
	· ·	1				
1						
1						
/ // Comments during well purg						
Comments during well purg Well Pumped dry: YES	<u> </u>	Purge water stor	age/disposal	Drummed o	nsite	Dother TEXACC
				Drummed o	onsite	Other TEXACC
Well Pumped dry: YES	9	WELLSAM		Drummed o	onsite	Other TEXACE
Well Pumped dry: YES	Date/Time Sampled	WELLSAM	PLING	Drummed o		Dother TEXACC
Well Pumped dry: YES (No. 1) SAMPLING METHOD Bailer - Type (1)	Date/Time Sampled	WELL SAM	PLING 1/2-56 Sample port	<u> </u>	Other	Dother TEXAC
SAMPLING METHOD Bailer - Type X	Date/Time Sampled  FLON  MPLE PARAMETER ME	WELL SAM	PLING  // 2	<u>*</u>	Other	
Well Pumped dry: YES (No. 1) SAMPLING METHOD Bailer - Type (1)	Date/Time Sampled  FLOA  MPLE PARAMETER ME	WELL SAM  //-02  EASUREMENTS  Cond.	PLING 1/2-56 Sample port	€deg C	Other Turbidity	Other TEXACE  Color/Odor
SAMPLING METHOD Bailer - Type X	Date/Time Sampled  FLON  MPLE PARAMETER ME	WELL SAM	PLING  // 2	<u>*</u>	Other	
SAMPLING METHOD Bailer - Type GROUNDWATER SAM Date/Time/% Recharg	Date/Time Sampled FLOA/ MPLE PARAMETER ME ge pH	WELL SAM  //-02  EASUREMENTS  Cond.	PLING  // 2	€deg C	Other Turbidity	
SAMPLING METHOD Bailer - Type S GROUNDWATER SAM Date/Time/% Recharg	Date/Time Sampled FLOA/ MPLE PARAMETER ME ge pH	WELL SAM	PLING  / 2 5 6 Sample port  Meter Typ  Temp	e deg C deg F	Other  Turbidity (NTU)	Color/Odor
SAMPLING METHOD Bailer - Type S GROUNDWATER SAM Date/Time/% Recharg  / SAMPLING PROGRAM Sample No.	Date/Time Sampled  FLON  MPLE PARAMETER ME  ge pH  /    Container #/Volume	WELL SAM    //- 02     Cond. (uomhos/cm)     Analysis	Sample port Meter Typ Temp Preservatives	e deg C deg F	Other Turbidity	
SAMPLING METHOD Bailer - Type S GROUNDWATER SAM Date/Time/% Recharg	Date/Time Sampled FLOA/ MPLE PARAMETER ME ge pH	WELL SAM	Sample port Meter Typ Temp  Preservatives	deg C deg F	Other  Turbidity (NTU)	Color/Odor
SAMPLING METHOD Bailer - Type S GROUNDWATER SAM Date/Time/% Recharg  / SAMPLING PROGRAM Sample No.	Date/Time Sampled FLOA/ MPLE PARAMETER ME ge pH / Container #/Volume 7 40 PL 901 2 LITCE	WELL SAM //-12  EASUREMENTS Cond. (uomhos/cm)  Analysis THIS SU	Sample port Meter Typ Temp  Preservatives HCL VONC	deg C deg F	Other  Turbidity (NTU)	Color/Odor
SAMPLING METHOD Bailer - Type S GROUNDWATER SAM Date/Time/% Recharg  / SAMPLING PROGRAM Sample No.	Date/Time Sampled  FLON  MPLE PARAMETER ME  ge pH  /    Container #/Volume	WELL SAM    //- 02     Cond. (uomhos/cm)     Analysis	Sample port Meter Typ Temp  Preservatives HCL VONC	deg C deg F	Other  Turbidity (NTU)	Color/Odor
SAMPLING METHOD Bailer - Type S GROUNDWATER SAM Date/Time/% Recharg  / SAMPLING PROGRAM Sample No.	Date/Time Sampled FLOA/ MPLE PARAMETER ME ge pH / Container #/Volume 7 40 PL 901 2 LITCE	WELL SAM //-12  EASUREMENTS Cond. (uomhos/cm)  Analysis THIS SU	Sample port Meter Typ Temp  Preservatives HCL VONC	deg C deg F	Other  Turbidity (NTU)	Color/Odor
SAMPLING METHOD Bailer - Type S GROUNDWATER SAM Date/Time/% Recharg  / SAMPLING PROGRAM Sample No.	Date/Time Sampled FLOA/ MPLE PARAMETER ME ge pH / Container #/Volume 7 40 PL 901 2 LITCE	WELL SAM //-12  EASUREMENTS Cond. (uomhos/cm)  Analysis THIS SU	Sample port Meter Typ Temp  Preservatives HCL VONC	deg C deg F	Other  Turbidity (NTU)	Color/Odor
SAMPLING METHOD Bailer - Type S GROUNDWATER SAM Date/Time/% Recharg  / SAMPLING PROGRAM Sample No.	Date/Time Sampled FLOA/ MPLE PARAMETER ME ge pH / Container #/Volume 7 40 PL 901 2 LITCE	WELL SAM //-12  EASUREMENTS Cond. (uomhos/cm)  Analysis THIS SU	Sample port Meter Typ Temp  Preservatives HCL VONC	deg C deg F	Other  Turbidity (NTU)	Color/Odor
SAMPLING METHOD Bailer - Type S GROUNDWATER SAM Date/Time/% Recharg  / SAMPLING PROGRAM Sample No.	Date/Time Sampled FLOA/ MPLE PARAMETER ME ge pH / Container #/Volume 3 40 mL 901 2 L/TELL 2 LATELL	WELL SAM //-12  EASUREMENTS Cond. (uomhos/cm)  Analysis THIS SU	Sample port Meter Typ Temp  Preservatives HCL VONC	deg C deg F	Other  Turbidity (NTU)	Color/Odor
SAMPLING METHOD Bailer - Type	Date/Time Sampled FLOA/ MPLE PARAMETER ME ge pH  / Container #/Volume 7 40 PL FOA 2 LITER AMPLES	WELL SAM //-12  EASUREMENTS Cond. (uomhos/cm)  Analysis THIS SU	Sample port Meter Typ Temp  Preservatives HCL VONC	deg C deg F	Other  Turbidity (NTU)	Color/Odor  Comments
SAMPLING METHOD Bailer - Type S GROUNDWATER SAM Date/Time/% Recharg  / SAMPLING PROGRAM Sample No. MW-8 H AI  QUALITY CONTROL SAM	Date/Time Sampled FLOA/ MPLE PARAMETER ME ge pH / Container #/Volume 3 40 mL 901 2 L/TELL 2 LATELL	WELL SAM  //- 02  EASUREMENTS  Cond. (uomhos/cm)  E Analysis  TIMO DITTO ONLY GUAL  ONLY GUAL	Sample port Meter Typ Temp  Preservatives HCL VONC	deg C deg F	Other  Turbidity (NTU)	Color/Odor Comments Comments
SAMPLING METHOD Bailer - Type S GROUNDWATER SAM Date/Time/% Recharg  / SAMPLING PROGRAM Sample No. AND SH GI DUPLICE DUPLICE DUPLICE DUPLICE DUPLICE SAMPLING ONTROL SAMPLING	Date/Time Sampled FLOA/ MPLE PARAMETER ME ge pH  / Container #/Volume 7 46 PL FOA 2 LITER AMPLES ate Samples	WELL SAM  //- 02  EASUREMENTS  Cond. (uomhos/cm)  E Analysis  TIMO DITTO ONLY GUAL  ONLY GUAL	Sample port Meter Typ Temp  Preservatives HCL VONC	deg C deg F	Other  Turbidity (NTU)	Color/Odor  Comments
SAMPLING METHOD Bailer - Type S GROUNDWATER SAM Date/Time/% Recharg  / SAMPLING PROGRAM Sample No. AND SH GI OUALITY CONTROL SAM Duplice	Date/Time Sampled FLOA/ MPLE PARAMETER ME ge pH  / Container #/Volume 7 46 PL FOA 2 LITER AMPLES ate Samples	WELL SAM  //- 02  EASUREMENTS  Cond. (uomhos/cm)  E Analysis  TIMO DITTO ONLY GUAL  ONLY GUAL	Sample port Meter Typ Temp  Preservatives HCL VONC	e deg C deg F	Other  Turbidity (NTU)  poratory  Blan Type	Color/Odor Comments As Samples
SAMPLING METHOD Bailer - Type S GROUNDWATER SAM Date/Time/% Recharg  / SAMPLING PROGRAM Sample No. AND SH GI DUPLICE DUPLICE DUPLICE DUPLICE DUPLICE SAMPLING ONTROL SAMPLING	Date/Time Sampled FLOA/ MPLE PARAMETER ME ge pH  / Container #/Volume 7 46 PL FOA 2 LITER AMPLES ate Samples	WELL SAM  //- 02  EASUREMENTS  Cond. (uomhos/cm)  E Analysis  TIMO DITTO ONLY GUAL  ONLY GUAL	Sample port Meter Typ Temp  Preservatives HCL VONC	e deg C deg F	Other  Turbidity (NTU)  poratory  Blan Type Trip	Color/Odor Comments As Samples
SAMPLING METHOD Bailer - Type S GROUNDWATER SAM Date/Time/% Recharg  / SAMPLING PROGRAM Sample No. MY - 8 H GI OUALITY CONTROL SAM Duplice	Date/Time Sampled FLOA/ MPLE PARAMETER ME ge pH  / Container #/Volume 7 46 PL FOA 2 LITER AMPLES ate Samples	WELL SAM  //- 02  EASUREMENTS  Cond. (uomhos/cm)  E Analysis  TIMO DITTO ONLY GUAL  ONLY GUAL	Sample port Meter Typ Temp  Preservatives HCL VONC	e deg C deg F	Other  Turbidity (NTU)  poratory  Blan Type Trip Rinsate	Color/Odor Comments As Samples

roject Name 500 (	HN	0		Well No.	///	1// - E	
roject Number 94/	102-	MI	_	Well Type	Monitor	Extraction	Other
ecorded By	m		Sampled by				11-02-99
		9 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -	WELL PUR				www.industrial.com
PURGE VOLUME					PURGE	METHOD	
/ell casing diameter					Bailer - Type		
2-inch 🔛 4-inch	_		<del>-</del>			BLEC	THIC SUB
/ell Total Depth (TD, ft. below		14.52	<u>.</u>	•	Other		
epth to Water (WL, ft, below		4.10		ı	PUMP		
epth to free phase hydrocarb umber of well volumes to be p	ons (FP, ft. b	zelow TOC)	<del></del>		Near top		
-3 10	Other		56	case	Near Bottorr Other	1 Deput (ii)	1800 -
PURGE VOLUME CALCI	_		- ) - 6	C	Pumping Rate		gpm
8.9		16	, ,	7	( uniping 112.2		_ gpiii
Water Column	^_	Multiplier	<u></u>	No. Vols	_ =	CALCULAT	ED PURGE VOLUME
		Faction - Cal	0 #: A\	or angeleting	י ן	Onloca	123
MULTIPLIER 2 = 0.17/3 = 0	.38  4 = 0.66	Inches	iions/iinear π) 5 = 1.02   6 = 1.5	8 = 2.6	-	ACTUAL	PURGE VOLUME
GROUNDWATER PARAM				MIKOVI. /	HESCI"	/10/	101106 1001112
Time/Gallons		pH	Cond.	Temp	Judeg C	Turbidity	Color/Odor
r ni isai sessi		ν	(uomhos/cm)	1 Citip	deg F	(NTU)	
13:56 1 6	2	7.0	1900	PC	2.4	180.	عا
13:57 1 /	2	1.9	1400	20.	8	165.4	
13:58 1 19	3	7.0	1400	20.	د	160.1	
1	· .	-					
•			1		Í		1
/ / / / / / / / / / / / / / / / / / /							
							~ My46
			Purge water stor		Drummed or	nsite	Sother TEXAC
Well Pumped dry; YES No	<b>)</b>		WELL SAM		Drummed or	nsite	Sther TEXAC
Well Pumped dry: YES NO	Date/Tim	ne Sampled			Drummed or	nsite	Sether TEXAC
Well Pumped dry: YES NO	Date/Tim		WELL SAM		Drummed or	nsite Other	Sother TEXAC
Well Pumped dry; YES NO SAMPLING METHOD Bailer - Type	Date/Tirr	ne Sampled	WELL SAM	PLING /4:/0 Sample port			Sther TEXAC
Well Pumped dry; YES NO SAMPLING METHOD Bailer - Type	Date/Tim FUON PLE PARAN	ne Sampled	WELL SAM	PLING /4:/0 Sample port			Color/Odor
Well Pumped dry: YES NO SAMPLING METHOD Bailer - Type D 72 GROUNDWATER SAM	Date/Tim FUON PLE PARAN	ne Sampled METER MEAS	WELL SAM	PLING / /4:/0 Sample port Meter Typ		Other	
SAMPLING METHOD Bailer - Type O	Date/Tim FVON PLE PARAM	ne Sampled METER MEAS	WELL SAM	PLING / /4:/0 Sample port Meter Typ	edeg C	Other	
SAMPLING METHOD Bailer - Type O	Date/Tim FVON PLE PARAM	ne Sampled METER MEAS	WELL SAM	PLING / /4:/0 Sample port Meter Typ	edeg C	Other	
SAMPLING METHOD Bailer - Type O TE GROUNDWATER SAM Date/Time/% Recharge / SAMPLING PROGRAM Sample No.	Date/Tim	METER MEAS pH er #/Volume	WELL SAM //-2 SUREMENTS Cond. (uomhos/cm) Analysis	PLING  Sample port  Meter Typ  Temp  Preservatives	e deg C deg F	Other	
SAMPLING METHOD Bailer - Type O	Date/Tim	METER MEAS	WELL SAM  //- SUREMENTS  Cond. (uomhos/cm)  Analysis	PLING  / Y-/O  Sample port  Meter Typ  Temp	e deg C deg F	Other Turbidity (NTU)	Color/Odor
SAMPLING METHOD Bailer - Type O TE GROUNDWATER SAM Date/Time/% Recharge / SAMPLING PROGRAM Sample No.	Date/Tim	METER MEAS pH er #/Volume	WELL SAM  //-2  SUREMENTS  Cond. (uomhos/cm)  Analysis  7/4/6/4/4	PLING  Sample port  Meter Typ  Temp  Preservatives  HCL	deg C deg F	Other Turbidity (NTU)	Color/Odor
SAMPLING METHOD Bailer - Type O	Date/Tim	METER MEAS pH er #/Volume	WELL SAM  //- SUREMENTS  Cond. (uomhos/cm)  Analysis	PLING  Sample port  Meter Typ  Temp  Preservatives	e deg C deg F	Other Turbidity (NTU)	Color/Odor
SAMPLING METHOD Bailer - Type O	Date/Tim	METER MEAS pH er #/Volume	WELL SAM  //-2  SUREMENTS  Cond. (uomhos/cm)  Analysis  7/4/6/4/4	PLING  Sample port  Meter Typ  Temp  Preservatives  HCL	deg C deg F	Other Turbidity (NTU)	Color/Odor
SAMPLING METHOD Bailer - Type O	Date/Tim	METER MEAS pH er #/Volume	WELL SAM  //-2  SUREMENTS  Cond. (uomhos/cm)  Analysis  7/4/6/4/4	PLING  Sample port  Meter Typ  Temp  Preservatives  HCL	deg C deg F	Other Turbidity (NTU)	Color/Odor
SAMPLING METHOD Bailer - Type O	Date/Tim	METER MEAS pH er #/Volume	WELL SAM  //-2  SUREMENTS  Cond. (uomhos/cm)  Analysis  7/4/6/4/4	PLING  Sample port  Meter Typ  Temp  Preservatives  HCL	deg C deg F	Other Turbidity (NTU)	Color/Odor
SAMPLING METHOD Bailer - Type O	Date/Tim FUON PLE PARAM  Containe 3 You 2 L/1	METER MEAS pH er #/Volume	WELL SAM  //-2  SUREMENTS  Cond. (uomhos/cm)  Analysis  7/4/6/4/4	PLING  Sample port  Meter Typ  Temp  Preservatives  HCL	deg C deg F	Other Turbidity (NTU)	Color/Odor  Comments
SAMPLING METHOD Bailer - Type O TE GROUNDWATER SAM Date/Time/% Recharge  / SAMPLING PROGRAM Sample No.  // // // // // // // // // // // // /	Date/Tim  FLON  PLE PARAM  Contains  2 C  2-C/1	METER MEAS pH er #/Volume	WELL SAM  //-2  SUREMENTS  Cond. (uomhos/cm)  Analysis  7/4/6/4/4	PLING  Sample port  Meter Typ  Temp  Preservatives  HCL	deg C deg F	Other  Turbidity (NTU)	Color/Odor Comments
SAMPLING METHOD Bailer - Type	Date/Tim FLON PLE PARAM  Contains 2 U 2-UI  MPLES E Samples	METER MEAS pH er#/Volume M.C. Vol	WELL SAM  //-2  SUREMENTS  Cond. (uomhos/cm)  Analysis  TMGALL  SEKLISE  TMGALL	PLING  Sample port  Meter Typ  Temp  Preservatives  HCL	e deg C deg F	Other  Turbidity (NTU)	Color/Odor Comments Ask Samples
SAMPLING METHOD Bailer - Type	Date/Tim FLON PLE PARAM  Contains 2 U 2-UI  MPLES E Samples	METER MEAS pH er #/Volume	WELL SAM  //-2  SUREMENTS  Cond. (uomhos/cm)  Analysis  TMGALL  SEKLISE  TMGALL	PLING  Sample port  Meter Typ  Temp  Preservatives  HCL	e deg C deg F	Other  Turbidity (NTU)  pratory  Blar	Color/Odor Comments
SAMPLING PROGRAM Sample No.  17 17 18  QUALITY CONTROL SA Duplicat	Date/Tim FLON PLE PARAM  Contains 2 U 2-UI  MPLES E Samples	METER MEAS pH er#/Volume M.C. Vol	WELL SAM  //-2  SUREMENTS  Cond. (uomhos/cm)  Analysis  TMGALL  SEKLISE  TMGALL	PLING  Sample port  Meter Typ  Temp  Preservatives  HCL	e deg C deg F	Other  Turbidity (NTU)  Iratory  Blan Type Trip	Color/Odor Comments Ask Samples
SAMPLING METHOD Bailer - Type O	Date/Tim FLON PLE PARAM  Contains 2 U 2-UI  MPLES E Samples	METER MEAS pH er#/Volume M.C. Vol	WELL SAM  //-2  SUREMENTS  Cond. (uomhos/cm)  Analysis  TMGALL  SEKLISE  TMGALL	PLING  Sample port  Meter Typ  Temp  Preservatives  HCL	e deg C deg F	Other  Turbidity (NTU)  Iratory  Blan Type Trip nsate	Color/Odor Comments Ask Samples
SAMPLING METHOD Bailer - Type O	Date/Tim FUON PLE PARAM  Contains 3 YOU 2-L/11  MPLES e Samples	METER MEAS pH er#/Volume M.C. Vol	WELL SAM  //-2  SUREMENTS  Cond. (uomhos/cm)  Analysis  TMGALL  SEKLISE  TMGALL	PLING  Sample port  Meter Typ  Temp  Preservatives  HCL	e deg C deg F	Other  Turbidity (NTU)  Iratory  Blan Type Trip	Color/Odor Comments Ask Samples

Project Number Numb	gal
Sampled by   WELL PURGING	DLUME gal
PURGE VOLUME  Well casing diameter    2-Inch   9	DLUME gal
Well casing diameter    2-Inch   2-Inch   2-Inch   Other	DLUME gal
2-inch   4-inch   Other   Ot	DLUME gal
Other   Depth to Water (WL, ft, below TOC)   Peth to Water (WL, ft, below TOC)   Peth to Water (WL, ft, below TOC)   Pumping Rate   Depth (ft)   D	DLUME gal
Color   Colo	DLUME gal
Depth to free phase hydrocarbons (FP, ft. below TOC)   Number of well volumes to be purged   10   Other     PURGE VOLUME CALCULATION:   Pumping Rate   Gpm     Water Column Length   Multiplier   No, Vols     Water Column Length   Multiplier   No, Vols     MULTIPLIER (Casing Dia [inches] = Galions/linear fi)     2 = 0.17/3 = 0.38   4 = 0.66   4.5 = 0.83   5 = 1.02   6 = 1.5   8 = 2.6     GROUNDWATER PARAMETER MEASUREMENT   Meter Type   MUNIV   Modes     Time/Galions   pH   Cond.   Temp   Modes   Color/C     Water Column Length   Multiplier   No, Vols     ACTUAL PURGE VOLUME     GROUNDWATER PARAMETER MEASUREMENT   Meter Type   MUNIV   Modes     Time/Galions   pH   Cond.   Temp   Modes   Turbidity   Color/C     Water Column Length   Multiplier   Meter Type   Multiplier     Time/Galions   pH   Cond.   Temp   Modes   Turbidity   Color/C     Water Column Length   Multiplier   Meter Type   Modes   Turbidity   Color/C     Water Column Length   Multiplier   Meter Type   Modes   Meter Type     Well Pumped dry: YES   NO	DLUME gal
Near Bottom   Depth (ft)   1, 72   1, 72   1, 73   1, 74   1, 75   1	DLUME gal
3	DLUME gal
PURGE VOLUME CALCULATION:  Water Column Length  MULTIPLIER (Casing Dia_finches) = Galions/finear ft)  2 = 0.17 3 = 0.38  4 = 0.66  4.5 = 0.83  5 = 1.02  6 = 1.5  8 = 2.6  GROUNDWATER PARAMETER MEASUREMENT  Time/Gallons  PH  Cond  (uomhos/cm)  Temp  Mdeg C  Turbidify  (NTU)  ACTUAL PURGE VOLUME  Time/Gallons  PH  Cond  (uomhos/cm)  Temp  Mdeg C  (NTU)  ACTUAL PURGE VOLUME  Torbidify  Color/C  (NTU)  ACTUAL PURGE VOLUME  ACT	DLUME gal
Water Column Length Multiplier No, Vols CALCULATED PURGE VOLUME  MULTIPLIER (Casing Dia [inches] = Galions/linear ft)  2 = 0.17 3 = 0.38  4 = 0.66  4.5 = 0.83   5 = 1.02   6 = 1.5  8 = 2.6  GROUNDWATER PARAMETER MEASUREMENT Meter Type Mideg C (NTU)  Time/Gallons pH Cond. Temp Mideg C (NTU)  (January January J	DLUME gal
Water Column Length Multiplier No, Vols  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  GROUNDWATER PARAMETER MEASUREMENT Meter Type Multiplier Wilder Type Multiplier No. Volume Actual Purge Volum	DLUME gal
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  GROUNDWATER PARAMETER MEASUREMENT  Meter Type  WINDL:  Time/Gallons  PH  Cond. (uomhos/cm)  ACTUAL PURGE VOLUME  ACTU	gal
2 = 0.17 3 = 0.38  4 = 0.66  4.5 = 0.83  5 = 1.02  6 = 1.5  8 = 2.6	
GROUNDWATER PARAMETER MEASUREMENT    Time/Gallons	-
Time/Gallons pH Cond. Temp Lideg C Turbidity (NTU)    Color/C (uomhos/cm)   Videg F (NTU)   Color/C (vomhos/cm)   Videg F (NTU)   Comments during well purge   Videg C (NTU)   Videg F (NTU)   Color/C (vomhos/cm)   Videg F (NTU)   Videg F (NTU)   Color/C (NTU)   Videg F (NTU)   Color/C (NTU)   Videg F (NTU)   Vi	
12: 14	
12:14   18   7.0   300   19.2   10.3   10.	ir/Oabr
12:14	
Well Pumped dry: YES NO Purge water storage/disposal □Drummed onsite Cother A	
Well Pumped dry: YES NO Purge water storage/disposal Drummed onsite Other A	
Well Pumped dry: YES NO Purge water storage/disposal □Drummed onsite Cother A	
Well Pumped dry: YES NO Purge water storage/disposal Drummed onsite Other A	
Well Pumped dry: YES NO Purge water storage/disposal Drummed onsite Other A	
Well Pumped dry: YES NO Purge water storage/disposal Drummed onsite Other NAMPLING  SAMPLING METHOD Date/Time Sampled //- 2-7/1 / 2-20  Bailer - Type	
Well Pumped dry: YES NO Purge water storage/disposal Drummed onsite Other NAMPLING  SAMPLING METHOD Date/Time Sampled //- 2-7/1 / 2-20  Bailer - Type	
WELL SAMPLING  SAMPLING METHOD Date/Time Sampled //- 2-71 / 2: 20  Bailer - Type  Sample port  Other  GROUNDWATER SAMPLE PARAMETER MEASUREMENTS Meter Type	
SAMPLING METHOD Date/Time Sampled //- 2-7/1 / 2: 20  Bailer - Type	ACO_
Bailer - Type  Sample port  Other  Other  Other  Meter Type	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
GROUNDWATER SAMPLE PARAMETER MEASUREMENTS Meter Type	
GROUNDWATER SAMPLE PARAMETER MEASUREMENTS Meter Type	
	or/Odor
(uomhos/cm)     deg F (NTU)	
SAMPLING PROGRAM	
Sample No.   Container #/Volume   Analysis   Preservatives   Laboratory   Comme	nments
NW-83 34 ONE DOA TRAGETE HEL BE MARYTHORE	
11 2 LITER HCL DILYGRENCE HCL	
11 2 CARLOWALS TRAD NOW "	
QUALITY CONTROL SAMPLES	
Duplicate Samples  Blank Samples  Secret	
Original Sample No. Duplicate Sample No. Type Sample  Trip	unio Nie
I INP	nple No.
Dincata	iple No.
Rinsate	iple No.
Rinsate  Transfer  Other:	sple No.

Project Name 500 G	AND		-	Well No.		rw - 8	
Project Number 99/18	•			Well Type	Monitor [		-
Recorded By	<u> </u>		Sampled by	_MM		Date	402-24
		i primi religioni. Na la companya	WELL PUR	GING	graggious con estado en egalectrica con estado		
PURGE VOLUME					PURGE M		1
Vell casing diameter					Bailer - Type		<u>v</u>
_	Other	·····×···	•	•	🔲 Ритр - Туре	·	
Vell Total Depth (TD, ft. below	<del></del> _	6.90	· -		Other		
epth to Water (WL, ft. below		2.10		n	PUMP		
Pepth to free phase hydrocarbo Jumber of well volumes to be p	ons (FP, ft. below	v TOC)			Near top	Depth (ft)	
10	Other		2.50	Mr.	Other	Depth (ft)	
PURGE VOLUME CALCU		.17	<i>y</i>		Pumping Rate		gpm
14 Q1	^	#	-	7	Tumping		7
Water Column	Z X Z Length N	lultiplier	. X	Na. Vols	- =	CALCULATE	D PURGE VOLUME
	<u>_</u>	<u> </u>	or a section of the	ja grand journako	] [	Unicos	7 9
2 = 0.17(3 = 0	(Casing Dia [incl 38.14 = 0.66.14.5	1es = Gail	ons/linear ft) = 1.02   6 = 1.5	and the state of the state of	}	<u>ب</u> ۱۵۲۱۱۵۱ <b>۹</b>	URGE VOLUME
GROUNDWATER PARAM					HFSC		ORGE VOLUME
Time/Gallons	IETER WEASO						Caladodas
TIME/Galiuna		рН	Cond, (uomhos/cm)	Temp	deg C deg F	Turbidity (NTU)	Color/Odor
13.15.12.	7 -	7.()	1200	2/4	1323.	<b>606</b>	
13:18 15.	0 5	7.1	1200	01.0	)	2000	
11:21 1 8	.0	20_	1200	131.2		4200	
1			, ,				
							T
/							<del> </del>
1							
/ / / Comments during well purge							
/ / / Comments during well purge			Purge water stor		Drummed or	nsite	Jother TEXAC
/ / / Comments during well purge	<b>&gt;</b>		Purge water stor		Drummed or	nsite	Jother TEXAC
/ / / Comments during well purge Well Pumped dry: YES NO		Morrow Technic The Colony (18			Drummed or	nsite	Sother TEXAC
/ / / Comments during well purge Well Pumped dry: YES NO	Date/Time Sa	Morrow Technic The Colony (18		PLING . 1 / 3:25	Drummed or		Sother TEXAC
Comments during well purge Well Pumped dry: YES NO SAMPLING METHOD Bailer - Type X The	Date/Time Sa	ampled	WELL SAM	PLING  / /S: 25  Sample port		osite	Sother TEXAC
Comments during well purge Well Pumped dry: YES NO SAMPLING METHOD Bailer - Type X TEA	Date/Time Sa	ampled ER MEAS	WELL SAM	PLING //3:25 Sample port Meter Type		Other [	
/ / / / Comments during well purge Well Pumped dry: YES NO SAMPLING METHOD Bailer - Type X TW	Date/Time Sa	ampled	WELL SAM	PLING  / /S: 25  Sample port			Color/Odor
Comments during well purge Well Pumped dry: YES NO SAMPLING METHOD Bailer - Type X TEA	Date/Time Sa	ampled ER MEAS	WELL SAM	PLING //3:25 Sample port Meter Type	deg C	Other [	
Comments during well purge Well Pumped dry: YES NO SAMPLING METHOD Bailer - Type A The GROUNDWATER SAMI Date/Time/% Recharge	Date/Time S: LOW PLE PARAMET(	ampled ER MEAS	WELL SAM	PLING //3:25 Sample port Meter Type	deg C	Other [	
Comments during well purge Well Pumped dry: YES NO SAMPLING METHOD Bailer - Type A TW GROUNDWATER SAMI Date/Time/% Recharge  / SAMPLING PROGRAM Sample No.	Date/Time S: LOW PLE PARAMET(	ampled ER MEAS pH	WELL SAM	PLING //S-25 Sample port Meter Type Temp	deg C deg F	Other [	Color/Odor
Comments during well purge Well Pumped dry: YES NO SAMPLING METHOD Bailer - Type 2 Til GROUNDWATER SAMI Date/Time/% Recharge / SAMPLING PROGRAM	Date/Time Sa	ampled ER MEAS pH	WELL SAM //-2 UREMENTS Cond. (uomhos/cm) Analysis	PLING //3:25 Sample port Meter Type	deg C deg F	Other [ Turbidity (NTU)	
Comments during well purge Well Pumped dry: YES NO SAMPLING METHOD Bailer - Type A TW GROUNDWATER SAMI Date/Time/% Recharge / SAMPLING PROGRAM Sample No.	Date/Time Sa	ampled ER MEAS pH	WELL SAM	PLING  //S-2S Sample port Meter Type Temp  Preservatives	deg C deg F	Other [ Turbidity (NTU)	Color/Odor
Comments during well purge Well Pumped dry: YES NO SAMPLING METHOD Bailer - Type A TW GROUNDWATER SAMI Date/Time/% Recharge / SAMPLING PROGRAM Sample No.	Date/Time Sa	ampled ER MEAS pH	WELL SAM //-2  UREMENTS: Cond. (uomhos/cm)  Analysis  THURKE	Sample port Meter Type Temp  Preservatives	deg C deg F	Other [ Turbidity (NTU)	Color/Odor
Comments during well purge Well Pumped dry: YES NO SAMPLING METHOD Bailer - Type A TW GROUNDWATER SAMI Date/Time/% Recharge / SAMPLING PROGRAM Sample No.	Date/Time Sa	ampled ER MEAS pH	WELL SAM //-2 UREMENTS: Cond. (uomhos/cm)  Analysis THEFF	Sample port Meter Type Temp  Preservatives	deg C deq F	Other [ Turbidity (NTU)	Color/Odor
Comments during well purge Well Pumped dry: YES NO SAMPLING METHOD Bailer - Type A TW GROUNDWATER SAMI Date/Time/% Recharge / SAMPLING PROGRAM Sample No.	Date/Time Sa	ampled ER MEAS pH	WELL SAM //-2  UREMENTS: Cond. (uomhos/cm)  Analysis  THURKE	Sample port Meter Type Temp  Preservatives	deg C deq F	Other [ Turbidity (NTU)	Color/Odor
Comments during well purge Well Pumped dry: YES NO SAMPLING METHOD Bailer - Type A TW GROUNDWATER SAMI Date/Time/% Recharge / SAMPLING PROGRAM Sample No.	Date/Time Sa	ampled ER MEAS pH	WELL SAM //-2  UREMENTS: Cond. (uomhos/cm)  Analysis  THURKE	Sample port Meter Type Temp  Preservatives	deg C deq F	Other [ Turbidity (NTU)	Color/Odor
Comments during well purge Well Pumped dry: YES NO SAMPLING METHOD Bailer - Type A TWA GROUNDWATER SAMI Date/Time/% Recharge / SAMPLING PROGRAM Sample No.	Date/Time Si	ampled ER MEAS pH	WELL SAM //-2  UREMENTS: Cond. (uomhos/cm)  Analysis  THURKE	Sample port Meter Type Temp  Preservatives	deg C deq F	Other [ Turbidity (NTU)	Color/Odor
Comments during well purge Well Pumped dry: YES NO SAMPLING METHOD Bailer - Type A TW GROUNDWATER SAMI Date/Time/% Recharge / SAMPLING PROGRAM Sample No.	Date/Time Si	ampled ER MEAS pH	WELL SAM //-2  UREMENTS: Cond. (uomhos/cm)  Analysis  THURKE	Sample port Meter Type Temp  Preservatives	deg C deq F	Other [ Turbidity (NTU)	Color/Odor
Comments during well purge Well Pumped dry: YES NO SAMPLING METHOD Bailer - Type A TW GROUNDWATER SAMI Date/Time/% Recharge  / SAMPLING PROGRAM Sample No.	Date/Time Si	ampled ER MEAS pH  Volume	WELL SAM //-2 UREMENTS: Cond. (uomhos/cm)  Analysis THISTER THIS OIL/SEES	Sample port Meter Type Temp  Preservatives	deg C deq F	Other [ Turbidity (NTU)	Color/Odor
Comments during well purge Well Pumped dry: YES NO SAMPLING METHOD Bailer - Type A THE GROUNDWATER SAMI Date/Time/% Recharge  / SAMPLING PROGRAM Sample No.	Date/Time Si	ampled ER MEAS pH	WELL SAM //-2 UREMENTS: Cond. (uomhos/cm)  Analysis THISTER THIS OIL/SEES	Sample port Meter Type Temp  Preservatives	deg C deg F Labo	Other [ Turbidity (NTU)	Color/Odor  Comments
Comments during well purge Well Pumped dry: YES NO SAMPLING METHOD Bailer - Type A TW GROUNDWATER SAMI Date/Time/% Recharge  / SAMPLING PROGRAM Sample No.	Date/Time Si	ampled ER MEAS pH  Volume	WELL SAM //-2 UREMENTS: Cond. (uomhos/cm)  Analysis THISTER THIS OIL/SEES	Sample port Meter Type Temp  Preservatives	deg C deg F	Other [ Turbidity (NTU)  ratory  Blant Type Trip	Color/Odor  Comments  K Samples  Sample No.
Comments during well purge Well Pumped dry: YES NO SAMPLING METHOD Bailer - Type A TW GROUNDWATER SAMI Date/Time/% Recharge  / SAMPLING PROGRAM Sample No.	Date/Time Si	ampled ER MEAS pH  Volume	WELL SAM //-2 UREMENTS: Cond. (uomhos/cm)  Analysis THISTER THIS OIL/SEES	Sample port Meter Type Temp  Preservatives	deg C deg F Labo	Other [ Turbidity (NTU)  ratory  Blant Type Trip nsate	Color/Odor  Comments  k Samples
Comments during well purge Well Pumped dry: YES NO SAMPLING METHOD Bailer - Type A TW GROUNDWATER SAMI Date/Time/% Recharge  / SAMPLING PROGRAM Sample No.	Date/Time Si	ampled ER MEAS pH  Volume	WELL SAM //-2 UREMENTS: Cond. (uomhos/cm)  Analysis THISTER THIS OIL/SEES	Sample port Meter Type Temp  Preservatives	deg C deg F Labo	Other [ Turbidity (NTU)  ratory  Blant Type Trip	Color/Odor  Comments  K Samples  Sample No.

Project Name 500 GK	Groun	idwater Sa	ampling i	Form	4W-8	32
Project Number 94110					Extraction	<del></del>
Recorded By		Sampled by			Date	11-02-94
		WELL PU	RGING		egrande a de la	anti di mandi di mandi di 1881 miliodi side
PURGE VOLUME		*		PURGE	METHOD	v
Well casing diameter						
	Other					
Well Total Depth (TD, ft. below		<del></del>		Other		
Depth to Water (WL, ft. below T	OC)			PUMF	INTAKE	
Depth to free phase hydrocarbor				Near top	Depth (ft)	
Number of well volumes to be pu	- <del>-</del> -		_		m Depth (ft)	
☐ 3 ☐ 10	Other	<del></del>		Other		
PURGE VOLUME CALCUL	ATION			Pumping Rat	e	gpm
M/-4 C-1	XX	×		_ =		gals
Water Column			No. Vols		CALCULAT	ED PURGE VOLUME
MULTIPLIER (	Casing Dia [inches] = G	allons/linear fl)			407111	gals
	8  4 = 0.66  4.5 = 0.83		8 = 2.6	J	ACTUAL	PURGE VOLUME
GROUNDWATER PARAME					_	
Time/Gallons	VALLY PH	Cond.	Temp	Lideg C	Turbidity	Color/Odor
1/1/1/1/1/	0 - 100	(uomhos/cm)	<u> </u>	deg F	(NTU)	<u> </u>
TARLUNI O	K51KUC1		1007	-5117	rilli	7
,					1	
1						
1						
					<u> </u>	
			<u> </u>		1	
Comments during well purge						<u> </u>
Well Pumped dry; YES NO		Purge water sto		Drummed o	onsite	Other
		WELLSAN	IPLING	giadinaria, rendidentali jen da ugangan di		
SAMPLING METHOD	Date/Time Sampled	•	1	_		
Bailer - Type	• .		Sample port	П	Other	П
GROUNDWATER SAMP	LE PARAMETER ME	ASUREMENTS	Meter Type			
Date/Time/% Recharge	pН	Cond.	Temp	deg C	Turbidity	Color/Odor
		(uomhos/cm)		deg F	(NTU)	
1	1					
SAMPLING PROGRAM						
Sample No.	Container #/Volume	Analysis	Preservatives	Lat	ooratory	Comments
	•	<del></del>		1		
<del></del>	<del>                                     </del>		· · · · · · · · · · · · · · · · · · ·			
		<del></del>		-		
	-		<b></b>			
· · · · · · · · · · · · · · · · · · ·	<del>                                     </del>	-				
QUALITY CONTROL SAM	PI ES		1	1		<u>,                                    </u>
					n.	di Camalaa
Duplicate Original Sample No.	Duplicate S	ample No.	1		Type Blar	nk Samples Sample No.
			1		Trip	
			]	F	Rinsate	
			-		Fransfer	
				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 PURGEWATER WHICH HAS BEEN RECOVERED FROM GROUNDWATER 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 destination point; from one 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 #: 624880235

Address: 500 GRANO AVE

City, State, ZIP: 04KLAND CA

Well I.D. Gals. MW-8f1 3	Well I.D. Gals.
MW-861 3	
MW-8H, 24	
MW-8T 1 18	· 1
MW-8J118	
MW-8K 18.	
MW-8L1 -	
Total gals. 54	added rinse water
Total Gals. Recovered 64	
Job #: 941/02-A Date 11-03-8	<u> </u>
Time 11-02-7	7
Signature: Long	4-
REC'DAT: BIS	
Date: 11-02-90	
Time: /9.00	
Signature: July My	<u> </u>

#### THIRD-QUARTER 1994 PROGRESS REPORT 500 GRAND AVENUE OAKLAND, CALIFORNIA

### HISTORY OF INVESTIGATIVE AND REMEDIAL ACTIONS

The site is the former location of a Texaco service station location. Currently the site is a fenced, vacant lot. A site preliminary subsurface investigation was conducted in May 1988. During the initial investigation, a soil gas survey was conducted, 15 soil borings were drilled, and 5 on-site groundwater monitoring wells were installed. In 1989, five off-site wells were installed. The initial five on-site wells have been abandoned and replaced by two wells located at the southern perimeter of the site.

Over 2,400 cubic yards of hydrocarbon-impacted soil have been excavated and removed from within the property boundaries. The waste oil tank, tank backfill material, and impacted soil were excavated and disposed of in September 1990. Clay sewer pipes and contaminated soil from an abandoned utility trench near the former waste oil tank were removed from the site in early 1991. Three underground storage tanks, dispenser islands and associated piping, stockpiled soils, and site structures were removed from the site in April 1992. The excavated area was backfilled and compacted using clean imported material.

### **WORK PERFORMED THIRD QUARTER 1994**

Ground-water monitoring was conducted during the quarter. Results are provided in a separate ground-water monitoring report.

## PROPOSED INVESTIGATIONS OR REMEDIATION PLANS

All petroleum impacted soils underlying the site, with a possible exception of a very narrow band along the Grand Avenue sidewalk, have been removed by the extensive soil excavation activities. No further investigation or remediation of the vadose-zone soils is proposed.

Ground water at the site has been affected by gasoline, diesel, and hydrocarbons above the range of diesel. Since the removal of on-site contaminated soils, significant reductions in TPH-g and TPH-d concentrations in groundwater have been reported for samples taken from on- and off-site wells. It is proposed that downgradient wells continue to be monitored to document the biodegradation of the remaining dissolved-phase hydrocarbons in the ground water.

# METHOD AND LOCATION OF DISPOSAL

Ground water purged during the quarterly monitoring was transported to the Texaco Terminal in Richmond, California, for disposal.

#### 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.