Report of Quarterly Sampling and Analysis
Exxon Retail Site 7-0210
7840 Amador Valley Boulevard
Dublin, California

Prepared for

Exxon Company, U.S.A.

Prepared by

EA Engineering, Science, and Technology

November 1994

83A02.10.1468

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Report of Quarterly Sampling and Analysis
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7840 Amador Valley Boulevard
Dublin, California

Prepared for

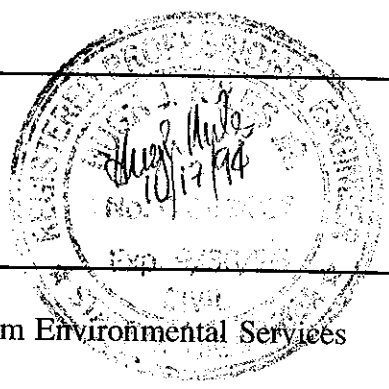
Exxon Company, U.S.A.
2300 Clayton Road, Suite 490
Concord, California 94520

Prepared by

EA Engineering, Science, and Technology
3468 Mt. Diablo Boulevard, Suite B-100
Lafayette, California 94549
(510) 283-7077

Tracy A. Paulkner
Project Manager

11 November '94
Date



Hugh J. Miles, P.E. #C49427
Senior Business Leader, Petroleum Environmental Services

17 November 94
Date

November 1994

SITE CONTACTS

Site Name:	Exxon Retail Site 7-0210
Site Address:	7840 Amador Valley Boulevard Dublin, California
Site Business Owner:	Shih Hsiung
Site Business Phone:	(510) 829-7218
Exxon Project Manager:	Marla D. Guensler Exxon Company, U.S.A. 2300 Clayton Road, Suite 490 Concord, California 94520 (510) 246-8776
Consultant to Exxon:	EA Engineering, Science, and Technology 3468 Mt. Diablo Boulevard, Suite B-100 Lafayette, California 94549 (510) 283-7077
EA Project Manager:	Tracy A. Faulkner
EA Program Director:	Tracy A. Faulkner
Regulatory Oversight:	Eva Chu Alameda County Health Care Service 80 Swan Way, Room 200 Oakland, California 94621 (510) 271-4530

1. INTRODUCTION

Exxon Retail Site (RS) 7-0210 is an active service station located at 7840 Amador Valley Boulevard, Dublin, California, on the southeast corner of the intersection of Amador Valley Boulevard and Regional Street. The station has three operating underground storage tanks (USTs) located approximately 40 feet west of the pump islands. Three former underground storage tanks were located in between the current tank locations and the pump islands.

On 5 October 1994, groundwater in wells MW1–MW4 (Figure 1) was monitored for liquid-phase hydrocarbons (LPH), using an optical interface probe. Groundwater samples were collected from the wells, and the samples were analyzed for petroleum hydrocarbons.

2. SUMMARY OF RESULTS

On 5 October 1994, the depth to water in wells MW1–MW4 was measured. The gauging data and calculated groundwater elevations are presented in boldface type in Table 1, along with previous gauging data. Groundwater elevations have fallen approximately 0.59 feet since the previous gauging of 26 July 1994. The calculated direction of the groundwater gradient is to the southeast (see Figure 1) at a magnitude of 0.003, which is consistent with previous gauging data. The field documents are included as Appendix A.

After the depths to water were determined, each well was purged with a 2-inch vacuum pump. Field parameters of temperature and electrical conductance of the purged water were measured for approximately every well casing volume during purging. When the field parameters were stable (less than 10 percent change from the previous reading for temperature and electrical conductance) and at least three casing volumes had been removed from each well, purging was stopped and samples collected. Samples were collected using factory-cleaned polyethylene disposable bailers that were tripled-rinsed prior to collecting each sample. The samples were poured into 40-ml VOA vials, which were then placed in an ice-filled sample cooler. A field-prepared sampling equipment rinse blank and a laboratory-prepared trip blank were stored and transported in the cooler with the groundwater samples. All samples were handled and transported under standard chain-of-custody procedures.

The samples were submitted to Curtis & Tompkins, Ltd., and analyzed for Total Petroleum Hydrocarbons as gasoline (TPH-g) by Cal EPA-modified EPA Method 8015 and for benzene, toluene, ethylbenzene, and xylenes (BTEX) by EPA Method 8020. No petroleum hydrocarbons were detected at concentrations equal to or greater than method detection limits, with the exception of toluene in well MW4. Toluene was detected in the sample from well MW4 at a concentration of 12 µg/L. The analytical results for the 5 October 1994 samples are presented in boldface type in Table 1, along with previous analytical results. The distribution of petroleum hydrocarbons is shown in Figure 1. The laboratory analytical report is included as Appendix B.

3. WORK PROPOSED FOR NEXT QUARTER

Groundwater from MW1–MW4 will be sampled in January 1995. Samples will be analyzed for TPH-g and BTEX by EPA Methods 8015 and 8020.

Figures

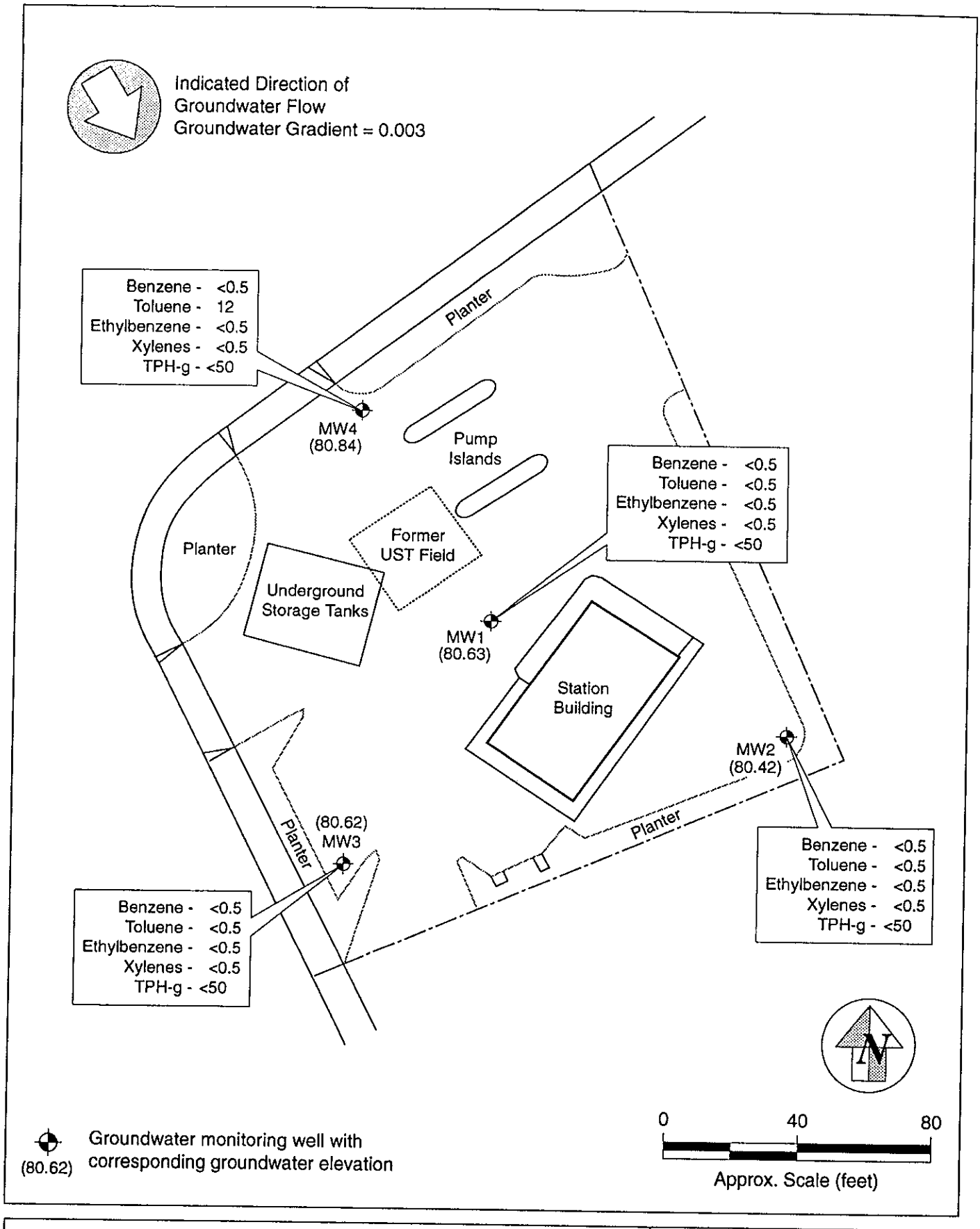


Figure 1. Site map showing locations of groundwater monitoring wells, direction of groundwater gradient, and concentrations (µg/L) of petroleum hydrocarbons in samples of groundwater, Exxon RS 7-0210, Dublin, California, 5 October 1994.

Drawn	MAW	Date	11/13/94
Reviewed		Date	
Rev		Date	
Final		Date	11/15/94

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Tables

TABLE 1 GAUGING DATA AND ANALYTICAL RESULTS, EXXON RS 7-0210, DUBLIN, CALIFORNIA, 1992-1994

Well No.	Date	Casing Elevation (ft msl)	Depth to Water (ft)	Groundwater Elevation (ft msl)	LPH Thickness (ft)	Concentration (µg/L)				
						Benzene	Toluene	Ethyl-benzene	Xylenes	TPH-g
MW1	05/21/92	96.32	14.45	81.87	0.00	<0.5	<0.5	<0.5	<0.5	<50
	02/10/93		12.22	84.10	0.00	3.1	<0.5	1.8	0.6	2,600
	05/20/93		10.74	85.58	0.00	1.9	<0.5	1.8	<1.0	1,000
	06/23/93		11.74	84.58	0.00	1.0	<0.5	1.2	<0.5	1,300
	08/23/93		12.72	83.60	0.00	<0.5	<0.5	<0.5	0.8	80
	10/25/93		13.99	82.33	0.00	<0.5	<0.5	0.8	1.3	140
	02/16/94		14.90	81.42	0.00	<0.5	<0.5	<0.5	<0.5	<50
	04/16/94		14.49	81.83	0.00	<0.5 *	<0.5	<0.5	<0.5	190
	07/26/94		15.11	81.21	0.00	<0.5 *	<0.5	<0.5	<0.5	130
	10/05/94		**15.69**	**80.63**	**0.00**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<50**
MW2	05/21/92	95.91	14.30	81.61	0.00	<0.5	<0.5	<0.5	<0.5	<50
	02/10/93		12.34	83.57	0.00	<0.5	<0.5	<0.5	<0.5	<50
	05/20/93		10.73	85.18	0.00	<0.5	<0.5	<0.5	<1.0	320
	06/23/93		11.74	84.17	0.00	<0.5	<0.5	<0.5	<0.5	130
	08/23/93		12.60	83.31	0.00	<0.5	<0.5	<0.5	1.1	140
	10/25/93		13.86	82.05	0.00	<0.5	<0.5	0.5	2.4	75
	02/16/94		14.73	81.18	0.00	<0.5	<0.5	<0.5	<0.5	<50
	04/16/94		14.33	81.58	0.00	<0.5	<0.5	<0.5	<0.5	<50
	07/26/94		14.96	80.95	0.00	<0.5	<0.5	<0.5	<0.5	<50
	10/05/94		**15.49**	**80.42**	**0.00**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<50**
MW3	05/21/92	97.95	16.05	81.90	0.00	<0.5	<0.5	<0.5	<0.5	<50
	02/10/93		13.77	84.18	0.00	<0.5	<0.5	<0.5	0.7	<50
	05/20/93		12.32	85.63	0.00	<0.5	<0.5	<0.5	<1.0	<50
	06/23/93		13.34	84.61	0.00	<0.5	<0.5	<0.5	<0.5	<50
	08/23/93		14.30	83.65	0.00	2.3	1.2	1.4	4.1	<50
	10/25/93		15.62	82.33	0.00	NS	NS	NS	NS	NS
	02/16/94		16.48	81.47	0.00	NS	NS	NS	NS	NS
	04/16/94		16.61	81.34	0.00	NS	NS	NS	NS	NS
	07/26/94		16.72	81.23	0.00	<0.5	<0.5	<0.5	<0.5	<50
	10/05/94		**17.33**	**80.62**	**0.00**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<50**

TABLE 1 (continued)

Well No.	Date	Casing Elevation (ft msl)	Depth to Water (ft)	Groundwater Elevation (ft msl)	LPH Thickness (ft)	Concentration (µg/L)				
						Benzene	Toluene	Ethyl-benzene	Xylenes	TPH-g
MW4	05/21/92	96.69	14.59	82.10	0.00	<0.5	<0.5	<0.5	<0.5	<50
	02/10/93		12.30	84.39	0.00	<0.5	<0.5	<0.5	<0.5	<50
	05/20/93		10.75	85.94	0.00	1.4	1.0	<0.5	1.8	<50
	06/23/93		11.78	84.91	0.00	<0.5	<0.5	<0.5	<0.5	<50
	08/23/93		12.82	83.87	0.00	<0.5	<0.5	<0.5	0.8	<50
	10/25/93		14.10	82.59	0.00	NS	NS	NS	NS	NS
	02/16/94		15.02	81.67	0.00	<0.5	<0.5	<0.5	<0.5	<50
	04/16/94		14.61	82.08	0.00	NS	NS	NS	NS	NS
	07/26/94		15.23	81.46	0.00	<0.5	<0.5	<0.5	<0.5	<50
	10/05/94		**15.85**	**80.84**	**0.00**	**<0.5**	**12**	**<0.5**	**<0.5**	**<50**
Trip Blank	**10/05/94**					**<0.5**	**<0.5**	**<0.5**	**<0.5**	**73 ****
Rinse Blank	**10/05/94**					**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<50**

* A peak eluting earlier than benzene, suspected to be methyl tertiary butyl ether (MTBE).
** Single peak contributing to sample result.
NS Not sampled.

Appendix A

Field Documents

MONITORING WELL DATA FORM

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

Project Number 83A0210G263 Station Number 7-0210

Client Exxon Samplers K Legge Date 10/5

Site Location 7840 Amador Valley Rd Dublin CA

MONITORING WELL NUMBER	ELEVATION TOP OF CASING	DEPTH TO WATER	DEPTH TO PRODUCT	ELEVATION TOP OF GROUNDWATER	APPARENT PRODUCT THICKNESS	STICK UP (+) DOWN (-)	DEPTH TO BOTTOM
mw1		15.69					23.65
mw2		15.49					25.10
mw3		17.33					27.65
mw4		15.85					25.00

GROUNDWATER PURGE AND SAMPLE FORM

Date: 10 5 94

Project Name: Exxon Well Number: MW1

Project Number: 23M0210 Personnel: KL

GAUGING DATA

Water Level Measuring Method: Interface Probe Measuring Point Description: TOC

WELL VOLUME CALCULATION	Total Depth (feet)	−	Depth To Water (feet)	=	Water Column (feet)	X	Multiplier For Casing Diameter			=	Casing Volume (gal)	Total Req'd Purge Volume (gal)
							2	4	6			
	23.65		15.69		7.96		0.16	0.64	1.44		5.0	15 gals

PURGING DATA

Purge Method: Vacuum Truck Purge Depth: Screen Purge Rate: 2.5 gpm

Time	1208	1210	1213	1215			
Volume Purged (gal)	0	5	10	15			
Temperature (°C)	21°	21°	20°	20°			
pH	8.2	8.1	8.1	8.1			
Specific Conductivity (µmhos)	1125	1050	1050	1050			
Turbidity / Color	low / LBrn	low / LBrn	low / clr	low / clr			
Odor	N	N	N	N			
Casing Volumes Removed	0	1	2	3			
Dewatered?	N	N	N	N			

Comments/Observations:

SAMPLING DATA

Time Sampled: 1220 Approx. Depth to Water During Sampling: 20

Comments:

Sample Number	Number of Containers	Container Type	Preservative	Volume Filled (ml or l)	Turbidity	Color	Shipped Under Chain of Custody at 4°C (Y/N)	Analysis Method	Comments
	3	VOA	HCl	40	L	C	yes	TPHG BTEX	N —

Total Purge Volume: 15 gals Disposal/Containment Method: 55 gal drums on site

Weather Conditions: warm clear

Condition of Well Box and Casing at Time of Sampling: ok

Well Head Conditions Requiring Correction (locks, damaged casing or well box, etc.): —

Problems Encountered During Purging and Sampling: —

Comments: —

GROUNDWATER PURGE AND SAMPLE FORM

Date: 10 5 94

Project Name: Exxon Well Number: MW2

Project Number: 23M0210 Personnel: KL

GAUGING DATA

Water Level Measuring Method: Interface Probe Measuring Point Description: TOC

WELL VOLUME CALCULATION	Total Depth (feet)	−	Depth To Water (feet)	=	Water Column (feet)	X	Multiplier For Casing Diameter			=	Casing Volume (gal)	Total Req'd Purge Volume (gal)
							2	4	6			
	25.10		15.49		9.6		0.16	0.64	1.44		6.1	18.5

PURGING DATA

Purge Method: Vacuum Truck Purge Depth: Screen Purge Rate: 3 gpm

Time	1250	1252	1254	1255			
Volume Purged (gal)	0	6	12	18.5			
Temperature (°C)	20	20	19.5	19.5			
pH	8.0	8.0	8.0	8.0			
Specific Conductivity (µmhos)	1200	1200	1200	1200			
Turbidity / Color	low HBH	low clr	/	→	/	/	/
Odor	N	N	N	N			
Casing Volumes Removed	0	1	2	3			
Dewatered?	N	N	N	N			

Comments/Observations:

SAMPLING DATA

Time Sampled: 1300 Approx. Depth to Water During Sampling: 19ft

Comments:

Sample Number	Number of Containers	Container Type	Preservative	Volume Filled (ml or l)	Turbidity	Color	Shipped Under Chain of Custody at 4°C (Y/N)	Analysis Method	Comments
	3	VOA	HCl	40	L	C	yes	TPHg BTEX	N —

Total Purge Volume: 18.5 Disposal/Containment Method: 55 gal drums on site

Weather Conditions: Warm Clear

Condition of Well Box and Casing at Time of Sampling: OK

Well Head Conditions Requiring Correction (locks, damaged casing or well box, etc.): N

Problems Encountered During Purging and Sampling: N

Comments: N

GROUNDWATER PURGE AND SAMPLE FORM

Date: 10 5 94

Project Name: Exxon Well Number: MW 3

Project Number: 93M0210 Personnel: KL

GAUGING DATA

Water Level Measuring Method: Interface Probe Measuring Point Description: TOC

WELL VOLUME CALCULATION	Total Depth (feet)	−	Depth To Water (feet)	=	Water Column (feet)	X	Multiplier For Casing Diameter			=	Casing Volume (gal)	Total Req'd Purge Volume (gal)
							2	4	6			
	27.65		17.33		10.32		0.16	0.64	1.44		6.6	20

PURGING DATA

Purge Method: Vacuum Truck Purge Depth: Screen Purge Rate: 3gpm

Time	1223	1224	1227	1228			
Volume Purged (gal)	0	7	14	20			
Temperature (°C)	19.5°	20°	19.5°	19°			
pH	8.0	8.0	8.0	8.0			
Specific Conductivity (µmhos)	1000	1050	1050	1050			
Turbidity / Color	clear						
Odor	n	n	n	n			
Casing Volumes Removed	0	1	2	3			
Dewatered?	n	n	n	n			

Comments/Observations:

SAMPLING DATA

Time Sampled: 1230 Approx. Depth to Water During Sampling: 22

Comments:

Sample Number	Number of Containers	Container Type	Preservative	Volume Filled (ml or l)	Turbidity	Color	Shipped Under Chain of Custody at 4°C (Y/N)	Analysis Method	Comments
	3	VOA	HCl	40	0	C	yes	TPHg BTEX	N

Total Purge Volume: 20 gals Disposal/Containment Method: 55 gal drums on site

Weather Conditions: Warm clear

Condition of Well Box and Casing at Time of Sampling: OK

Well Head Conditions Requiring Correction (locks, damaged casing or well box, etc.): n

Problems Encountered During Purging and Sampling: n

Comments: n

GROUNDWATER PURGE AND SAMPLE FORM

Date: 10 5 94

Project Name: Exxon Well Number: MW 4

Project Number: 93M0210 Personnel: KL

GAUGING DATA

Water Level Measuring Method: Interface Probe Measuring Point Description: TOC

WELL VOLUME CALCULATION	Total Depth (feet)	−	Depth To Water (feet)	=	Water Column (feet)	X	Multiplier For Casing Diameter			=	Casing Volume (gal)	Total Req'd Purge Volume (gal)
							2	4	6			
	25.00		15.85		9.15		0.16	0.64	1.44		5.8	17.5

PURGING DATA

Purge Method: Vacuum Truck Purge Depth: Screen Purge Rate:

Time	1235	1237	1239	1240			
Volume Purged (gal)	0	6	12	17.5			
Temperature (°C)	20°	20°	20°	19°			
pH	8.0	8.0	8.0	8.0			
Specific Conductivity (µmhos)	1200	1200	1200	1200			
Turbidity / Color	low / brn	low / clr	/	/	/	/	/
Odor	N	N	N	N			
Casing Volumes Removed	0	1	2	3			
Dewatered?	N	N	N	N			

Comments/Observations:

SAMPLING DATA

Time Sampled: 1245 Approx. Depth to Water During Sampling:

Comments:

Sample Number	Number of Containers	Container Type	Preservative	Volume Filled (ml or l)	Turbidity	Color	Shipped Under Chain of Custody at 4°C (Y/N)	Analysis Method	Comments
	3	VOA	HCl	40	L	C	yes	TPHg BTEX	N

Total Purge Volume: 17.5 Disposal/Containment Method: 55 gal drums on site

Weather Conditions: warm clear

Condition of Well Box and Casing at Time of Sampling: OK

Well Head Conditions Requiring Correction (locks, damaged casing or well box, etc.): N

Problems Encountered During Purging and Sampling: N

Comments: N

Appendix B

Laboratory Analytical Report

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

A N A L Y T I C A L R E P O R T

Prepared for:

EA Engineering
3468 Mt. Diablo Blvd.
Suite B-100
Lafayette, CA 94549

Date: 25-OCT-94
Lab Job Number: 117865
Project ID: 83A0210
Location: 7840 Amador Valley Rd.

Reviewed by: Teresa K Morris

Reviewed by: Cynthia E Gallegos

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 117865
CLIENT: EA ENGINEERING
PROJECT ID: 83A0210
LOCATION: 7840 Amador Valley Rd.
STORE NUMBER: 7-0210

DATE SAMPLED: 10/05/94
DATE RECEIVED: 10/05/94
DATE ANALYZED: 10/17/94
DATE REPORTED: 10/26/94

Total Volatile Hydrocarbons with BTXE in Aqueous Solutions
TVH by California DOHS Method/LUFT Manual October 1989
BTXE by EPA 5030/8020

LAB ID	SAMPLE ID	TVH AS GASOLINE (ug/L)	BENZENE (ug/L)	TOLUENE (ug/L)	ETHYL BENZENE (ug/L)	TOTAL XYLENES (ug/L)
117865-001	MW-1	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
117865-002	MW-2	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
117865-003	MW-3	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
117865-004	MW-4	ND(50)	ND(0.5)	12	ND(0.5)	ND(0.5)
	METHOD BLANK	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)

ND = Not detected at or above reporting limit; Reporting limit indicated in parentheses.

QA/QC SUMMARY

RPD, %	12
RECOVERY, %	87

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 117865
CLIENT: EA ENGINEERING
PROJECT ID: 83A0210
LOCATION: 7840 Amador Valley Rd.
STORE NUMBER: 7-0210

DATE SAMPLED: 10/05/94
DATE RECEIVED: 10/05/94
DATE ANALYZED: 10/17/94
DATE REPORTED: 10/26/94

Total Volatile Hydrocarbons with BTXE in Aqueous Solutions
TVH by California DOHS Method/LUFT Manual October 1989
BTXE by EPA 5030/8020

LAB ID	SAMPLE ID	TVH AS GASOLINE (ug/L)	BENZENE (ug/L)	TOLUENE (ug/L)	ETHYL BENZENE (ug/L)	TOTAL XYLENES (ug/L)
117865-005	RINSE	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
117865-006	TRIP	73*	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
	METHOD BLANK	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)

* Single peak contributing to sample result.

ND = Not detected at or above reporting limit; Reporting limit indicated in parentheses.

QA/QC SUMMARY

RPD, %	9
RECOVERY, %	92

117865

Curtis & Tompkins, Ltd.

EXXON COMPANY, U.S.A

P.O.Box 2180, Houston, TX 77002-7426

CHAIN OF CUSTODY

[X] Berkeley, CA, 2323 5th St., 94710 (510)486-0900

[ ] Irvine, CA 2495 Da Vinci, Rd. 92714 (714)252-9700

Consultant's Name: EH

Address: 3468 Mt Diablo Blvd B-100

Page 1 of 1

Project #: 83A0210

Site Location: 7840 Amador Valley Rd.

Consultant Project #:

Project Contact: T Faulkner EHWest

Phone #:

Consultant Work Release #: 19407251

EXXON Contact: M- Guesmber

Phone #:

Laboratory Work Release #:

Sampled by (print): K Fegge

Sampler's Signature: K Fegge

EXXON RAS #: 7- 0210

Shipment Method: CT

Air Bill #:

TAT: [ ] 24 hr [ ] 48 hr [ ] 72 hr [ ] 96 hr [X] Standard (10 day)

	Sample Description	Collection Date	Collection Time	Matrix Soil/Water/Air	Prsv	# of Cont.	C & T Sample #	TPH/ GAS/ BTEX/ 8015/ 8020	TPH/ Diesel EPA 8015	TRPH EPA 418.1		
-1	MW1	10/5	1220	H2O	HCl	3		X				
-2	MW2	↓	1300	↓	↓	3		X				
-3	MW3	↓	1230	↓	↓	3		X				
-4	MW4	↓	1245	↓	↓	3		X				
-5	RINSE	↓	1205	↓	↓	3		X				
-6	TRIP	↓		↓	↓	2		X				

Temperature: ______

Inbound Seal Yes

Outbound Seal Yes

Relinquished by/Affiliation	Date	Time	Accepted/Affiliation	Date	Time
K Fegge EH	10/5	1350	Melinda Ortega	10/5	1350
Melinda Ortega	10/5	1550	[illegible]	10/[illegible]	

Additional comments