

10 - 2436



Atlantic Richfield Company
(a BP affiliated company)

P.O. Box 6549
Moraga, California 94570
Phone: (925) 299-8891
Fax: (925) 299-8872

Alameda County
JUL 23 2003
Environmental Health

July 11, 2003

Re: Second Quarter 2003 Groundwater Monitoring Report
ARCO Service Station #4977
2770 Castro Valley Blvd
Castro Valley, CA

I declare, that to the best of my knowledge at the present time, that the information and/or recommendations contained in the attached document are true and correct.

Submitted by:

Paul Supple
Environmental Business Manager



Alameda County
JUL 23 2003
Environmental Health

July 11, 2003

Mr. Scott Seery
Alameda County Health Care Services Agency
Department of Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

**Re: Second Quarter 2003 Groundwater Monitoring Report
ARCO Service Station #4977
2770 Castro Valley Blvd
Castro Valley, California
URS Project # 38486124**

Dear Mr. Seery

On behalf of Atlantic Richfield Company (ARCO – an affiliated company of the Group Environmental Management Company), URS Corporation (URS) is submitting the *Second Quarter 2003 Groundwater Monitoring Report* for ARCO Service Station # 4977, located at 2770 Castro Valley Blvd, Castro Valley, California.

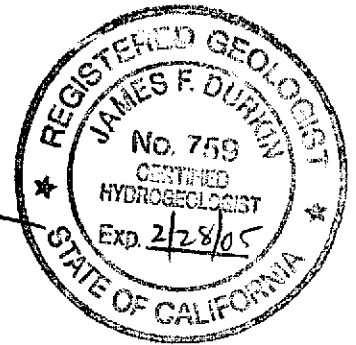
If you have any questions regarding this submission, please call (510) 874-3280.

Sincerely,

URS CORPORATION

Scott Robinson
Project Manager

James F. Durkin, C.Hg.
Senior Geologist



Enclosure: Second Quarter 2003 Groundwater Monitoring Report

cc: Mr. Paul Supple, ARCO, PO Box 6549, Moraga, California 94570

R E P O R T

**SECOND QUARTER 2003
GROUNDWATER MONITORING**

ARCO SERVICE STATION #4977
2770 CASTRO VALLEY BLVD
CASTRO VALLEY, CALIFORNIA

Prepared for
Atlantic Richfield Company

July 11, 2003

URS

URS Corporation
500 12th Street, Suite 200
Oakland, California 94607

38486124

Date: July 11, 2003
Quarter: 2Q 03

ATLANTIC RICHFIELD COMPANY QUARTERLY GROUNDWATER MONITORING REPORT

Facility No.: 4977 Address: 2770 Castro Valley Blvd, Castro Valley, CA
Atlantic Richfield Co. Environmental Engineer: Paul Supple
Consulting Co./Contact Person: URS Corporation / Scott Robinson
Consultant Project No.: 38486124
Primary Agency: Alameda County Health Services Agency (ACHCSA)

WORK PERFORMED THIS QUARTER (Second – 2003):

1. Performed second quarter groundwater monitoring event on June 17, 2003.
2. Prepared and submitted first quarter 2003 groundwater monitoring report.
3. Submitted Conduit and Water Well Survey Report on June 6, 2003.
4. The site was claimed on the GeoTracker database. All data from the third quarter 2002 until present has been uploaded.

WORK PROPOSED FOR NEXT QUARTER (Third – 2003):

1. Perform third quarter groundwater monitoring event.
2. Prepare and submit second quarter 2003 groundwater monitoring report.

Current Phase of Project:	<u>GW monitoring/sampling</u>
Frequency of Groundwater Sampling:	<u>Quarterly: Wells MW-1 through MW-3</u>
Frequency of Groundwater Monitoring:	<u>Quarterly</u>
Is Free Product (FP) Present On-Site:	<u>No</u>
Current Remediation Techniques:	<u>Natural Attenuation</u>
Approximate Depth to Groundwater:	<u>6.31 ft (MW-2) to 8.31 ft (MW-1)</u>
Groundwater Gradient (direction):	<u>South-southwest</u>
Groundwater Gradient (magnitude):	<u>0.022 feet per foot</u>

DISCUSSION:

TPH-g was detected in two of the three wells sampled at concentrations of 510 µg/L (MW-1) and 28,000 µg/L (MW-2). Benzene was detected in two wells at concentrations of 60 µg/L (MW-1) and 1,300 µg/L (MW-2). MTBE was detected in all three wells at concentrations ranging from 23 µg/L (MW-1) to 610 µg/L (MW-2).

ATTACHMENTS:

- Table 1 - Groundwater Elevation and Analytical Data
- Table 2 - Groundwater Flow Direction and Gradient
- Table 3 - Fuel Oxygenate Analytical Data
- Figure 1 - Groundwater Elevation Contour and Analytical Summary Map – June 17, 2003
- Attachment A - Field Procedures and Field Data Sheets
- Attachment B - Laboratory Procedures, Certified Analytical Reports and Chain-of-Custody Records
- Attachment C - EDCC Report and EDF/Geowell Submittal Confirmation

Table 1
Groundwater Elevation and Analytical Data

ARCO Service Station #4977
2770 Castro Valley Boulevard
Castro Valley, California

Sample ID	Date	Top of Casing Elevation (ft amsl)	Depth to Groundwater (ft btc)	Groundwater Elevation (ft amsl)	TPH-g (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)	Dissolved Oxygen (mg/L)
MW-1	04/19/02	161.11	11.21	149.90	660	12	1.3	4.3	0.80	38	NA
	09/27/02		9.29	151.82	130	7.7	0.87	5.4	0.79	39	1.7
	12/16/02 *		8.55	152.56	77	1.8	ND<0.50	0.69	ND<1.0	42	1.6
	03/11/03		8.07	153.04	140	9.8	ND<0.50	5.6	ND<0.50	20	1.4
	06/17/03		8.31	152.80	510	60	1.4	81	ND<1.0	23	2.2
MW-2	04/19/02	161.87	6.59	155.28	28,000	970	120	860	6,900	760	NA
	09/27/02		7.18	154.69	17,000	1,400	ND<50	1,200	3,700	1,400	1.5
	12/16/02 *		7.31	154.56	17,000	1,000	ND<50	980	3,300	980	1.9
	03/11/03		6.02	155.85	24,000	1,600	70	1,300	4,300	920	1.7
	06/17/03		6.31	155.56	28,000	1,300	55	1,300	4,500	610	1.4
MW-3	04/19/02	162.14	6.94	155.20	1,200	29	1.1	43	62	1,700	NA
	09/27/02		8.26	153.88	740	7.8	ND<2.5	6.8	4.4	1,100	1.0
	12/16/02 *		6.76	155.38	1,200	13	ND<10	170	88	910	2.3
	03/11/03		6.92	155.22	ND<2,500	ND<25	ND<25	ND<25	ND<25	470	1.7
	06/17/03		7.44	154.70	ND<1,000	ND<10	ND<10	14	ND<10	530	1.9

amsl = above mean sea level

btc = below top of casing

TPH-g = Total petroleum hydrocarbons in the gasoline range (C5-C9).

MTBE = Methyl tertiary butyl ether analyzed by EPA Method 8021B unless otherwise noted. (before 12/16/02)

µg/L = micrograms per liter

mg/L = milligrams per liter

ND< = Not detected at or above laboratory reporting limits

* =TPH, BTEX, and MTBE analyzed by EPA Method 8260B beginning on 4th Quarter Sampling event (12/16/02)

Source : The data within this table collected prior to September 2002 was provided to URS by Group Environmental Management Company and their previous consultants. URS has not verified the accuracy of this information.

Table 2
Groundwater Flow Direction and Gradient

ARCO Service Station #4977
2770 Castro Valley Boulevard
Castro Valley, California

Date Measured	Average Flow Direction	Average Hydraulic Gradient
04/19/02	Southwest	0.038
09/27/02	Southwest	0.021
12/16/02	Southeast	0.029
03/11/03	South	0.024
06/17/03	South-Southwest	0.022

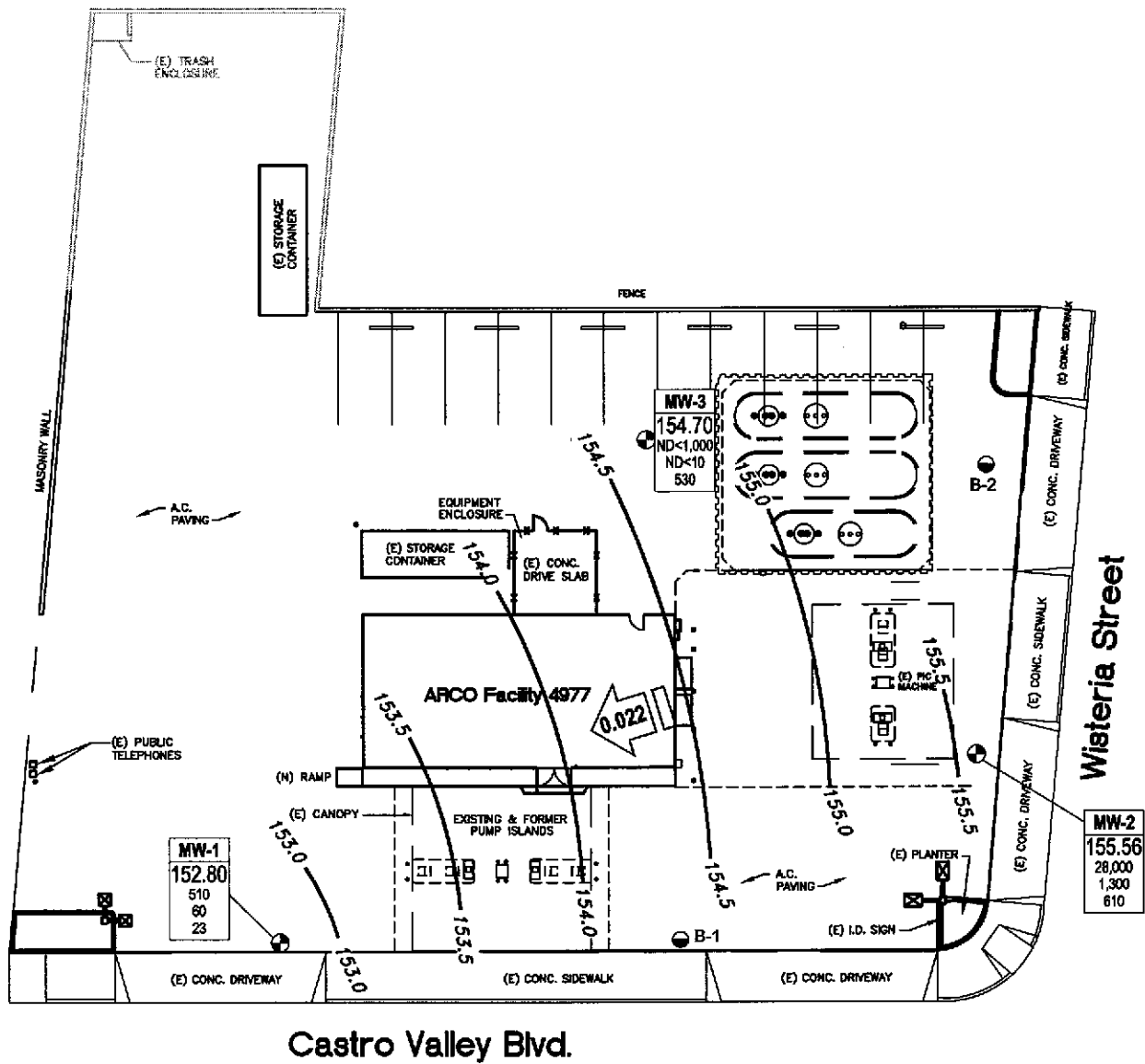
Source : The data within this table collected prior to September 2002 was provided to URS by Group Environmental Management Company and their previous consultants. URS has not verified the accuracy of this information.

Table 3
Fuel Oxygenate Analytical Data

ARCO Service Station #4977
2770 Castro Valley Boulevard
Castro Valley, California

Well Number	Date Sampled	Ethanol (µg/L)	TBA (µg/L)	MTBE (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)	1,2-Dichloro-ethane (µg/L)	EDB (µg/L)
MW-1	12/16/02	ND<50	ND<5.0	42	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50
	03/11/03	ND<100	ND<20	20	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50
	06/17/03	ND<200	ND<40	23	ND<1.0	ND<1.0	ND<1.0	ND<1.0	ND<1.0
MW-2	12/16/02	ND<5,000	ND<500	980	ND<50	ND<50	ND<50	ND<50	ND<50
	03/11/03	ND<10,000	ND<2,000	920	ND<50	ND<50	ND<50	ND<50	ND<50
	06/17/03	ND<10,000	ND<2,000	610	ND<50	ND<50	ND<50	ND<50	ND<50
MW-3	12/16/02	ND<1,000	ND<100	910	ND<10	ND<10	12	ND<10	ND<10
	03/11/03	ND<5,000	ND<1,000	470	ND<25	ND<25	ND<25	ND<25	ND<25
	06/17/03	ND<2,000	ND<400	530	ND<10	ND<10	ND<10	ND<10	ND<10

Note = All fuel oxygenate compounds analyzed using EPA Method 8260B
TBA = tert-Butyl alcohol
MTBE = Methyl tert-butyl ether
DIPE = Di-isopropyl ether
ETBE = Ethyl tert butyl ether
TAME = tert-Amyl methyl ether
EDB = 1, 2 Dibromoethane
µg/L = micrograms per liter
ND< = Not detected at or above laboratory reporting limit



LEGEND

- MONITORING WELL LOCATION
- SOIL BORING LOCATION
- Well** - WELL DESIGNATION
- ELEV** - GROUNDWATER ELEVATION (FT ABOVE MSL)
- TPH-g** - CONCENTRATION OF TPH-g, BENZENE AND MTBE IN GROUNDWATER (µg/L)
- Benzene**
- MTBE**
- ND< - NOT DETECTED AT OR ABOVE LABORATORY REPORTING LIMITS
- 153.5 - GROUNDWATER ELEVATION CONTOUR (FT ABOVE MSL)
- GROUNDWATER FLOW DIRECTION AND GRADIENT (FT/FT)



NORTH

0 30 60



SCALE IN FEET

NOTE: SITE MAP ADAPTED FROM DELTA ENVIRONMENTAL FIGURES. SITE DIMENSIONS AND FACILITY LOCATIONS NOT VERIFIED.



Project No. 38486124
Arco Service Station #4977
2770 Castro Valley Boulevard
Castro Valley, California

GROUNDWATER ELEVATION CONTOUR
AND ANALYTICAL SUMMARY MAP
Second Quarter 2003 (June 17, 2003)

FIGURE

1

ATTACHMENT A
FIELD PROCEDURES AND FIELD DATA SHEETS

FIELD PROCEDURES

Sampling Procedures

The sampling procedure for each well consists first of measuring the water level and depth to bottom, and checking for the presence of free phase petroleum product (free product), using either an electronic indicator and a clear Teflon™ bailer or an oil-water interface probe. Wells not containing free product are purged approximately three casing volumes of water (or until dewatered) using a centrifugal pump, gas displacement pump, or bailer. Equipment and purging method used for the current sampling event is noted on the attached field data sheets. During purging, temperature, pH, and electrical conductivity are monitored to document that these parameters are stable prior to collecting samples. After purging, water levels are allowed to partially (approximately 80%) recover. Groundwater samples (both purge and no purge) are collected using a Teflon bailer, placed into appropriate Environmental Protection Agency- (EPA) approved containers, labeled, logged onto chain-of-custody records, and transported on ice to a California State-certified laboratory. Wells with free product are not sampled and free product is removed according to California Code of Regulation, Title 23, Div. 3, Chap. 16, Section 2655, UST Regulations.

WELL GAUGING DATA

Project # D30617-MM2 Date 6/17/03 Client Arco 4877

Site 2770 Castro Valley Blvd., Castro Valley

Well ID	Well Size (in.)	Sheen / Odor	Depth to Immiscible Liquid (ft.)	Thickness of Immiscible Liquid (ft.)	Volume of Immiscibles Removed (ml)	Depth to water (ft.)	Depth to well bottom (ft.)	Survey Point: TOB or TOC
Mw-1	4					8.31	14.91	TOC
Mw-2	4					6.31	14.55	↓
Mw-3	4					7.44	14.95	

ARCO / BP WELL MONITORING DATA SHEET

BTS #: 030617-MM2	Station # Arco 4977
Sampler: MM	Date: 4/17/07
Well I.D.: MW-1	Well Diameter: 2 3 <u>4</u> 6 8
Total Well Depth: 14.91	Depth to Water: 8.31
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: <u>PVC</u> Grade	D.O. Meter (if req'd): YSI HACH

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	<u>4"</u>	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius ² * 0.163

6.6
9.63 = 80%

Purge Method: Bailer Sampling Method: Bailer
 Disposable Bailer Disposable Bailer
 Middleburg Extraction Port
 Electric Submersible
 Extraction Pump
 Other: _____

Top of Screen: _____ If well is listed as a no-purge, confirm that water level is below the top of screen. Otherwise, the well must be purged.

<u>4.3</u>	x	<u>3</u>	=	<u>12.9</u>	Gals.
1 Case Volume (Gals.)		Specified Volumes		Calculated Volume	

Time	Temp (°F)	pH	Conductivity (mS or µS)	Gals. Removed	Observations
1037	69.4	7.1	1310	4.0	clear
	dewatered @ 4.0 gals				OTW = 10.85
1044	70.1	7.0	1310		
					site departure

Did well dewater? Yes No Gallons actually evacuated: 4.0

Sampling Time: 1045 site departure Sampling Date: 6/17/03

Sample I.D.: MW-1 Laboratory: Pace Sequoia Other _____

Analyzed for: TPH-G BTEX MTBE TPH-D Other: Dxy's, 1,2-DCA + EDB (8260), Ethanol

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge: <u>2.2</u>	mg/L
	O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:

ARCO / BP WELL MONITORING DATA SHEET

BTS #: D30617-MM2	Station # Arco 4977
Sampler: MM	Date: 4/17/03
Well I.D.: MW-2	Well Diameter: 2 3 (4) 6 8
Total Well Depth: 14.55	Depth to Water: 6.31
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: PVC Grade	D.O. Meter (if req'd): YSI HACH

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius ² * 0.163

8.24
7.96 = 80%

Purge Method: Bailer
 Disposable Bailer
 Middleburg
Electric Submersible
 Extraction Pump
 Other: _____

Sampling Method: Bailer
Disposable Bailer
 Extraction Port
 Other: _____

Top of Screen: _____ If well is listed as a no-purge, confirm that water level is below the top of screen. Otherwise, the well must be purged.

5.4	x	3	=	16.2	Gals.
1 Case Volume (Gals.)		Specified Volumes		Calculated Volume	

Time	Temp (°F)	pH	Conductivity (mS or μS)	Gals. Removed	Observations
1100	76.4	7.0	934	5.0	clear
	dewatered @		5.0 gals		DTW = 10.70 site dep
1104	69.5	6.9	964		DTW = 10.70

Did well dewater? Yes No Gallons actually evacuated: 5.0

Sampling Time: 1105 *DTW = 10.70 site dep* Sampling Date: 6/17/03

Sample I.D.: MW-2 Laboratory: Pace Sequoia Other: _____

Analyzed for: TPH-G BTEX MTBE TPH-D Other: DXY'S, 1,2-DCA + EDB (8240)

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	mg/L
			<u>1.4</u>	
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	mV

ARCO / BP WELL MONITORING DATA SHEET

BTS #: <u>D30017-MM2</u>	Station # <u>Arco 4977</u>
Sampler: <u>MM</u>	Date: <u>4/17/03</u>
Well I.D.: <u>MW-3</u>	Well Diameter: 2 3 <u>(4)</u> 6 8
Total Well Depth: <u>14.95</u>	Depth to Water: <u>7.44</u>
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: <u>PVC</u> Grade	D.O. Meter (if req'd): YSI HACH

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	<u>4"</u>	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius ² * 0.163

7.51
8.94 = 90%

Purge Method: Bailer
Disposable Bailer
Middleburg
Electric Submersible
Extraction Pump
 Other: _____

Sampling Method: Bailer
Disposable Bailer
Extraction Port
 Other: _____

Top of Screen: _____ If well is listed as a no-purge, confirm that water level is below the top of screen. Otherwise, the well must be purged.

<u>4.9</u>	X	<u>3</u>	=	<u>14.7</u>	Gals.
1 Case Volume (Gals.)		Specified Volumes		Calculated Volume	

Time	Temp (°F)	pH	Conductivity (mS or μ S)	Gals. Removed	Observations
1019	69.4	7.0	910	5.0	clear
					dewatered @ 5.0 gals.
1119	69.5	7.0	897		DTW = 10.07 DTW = 8.27 site departure

Did well dewater? (Yes) No Gallons actually evacuated: 5.0

Sampling Time: 1120 site departure DTW = 8.27 Sampling Date: 6/17/03

Sample I.D.: MW-3 Laboratory: Pace Sequoia Other _____

Analyzed for: (TPH-G) (BTEX) MTBE TPH-D Other: DXY's, 1,2-DCA + EDB (0266)

D.O. (if req'd):	Pre-purge:	mg/L		Post-purge: <u>1.9</u>	mg/L
O.R.P. (if req'd):	Pre-purge:	mV		Post-purge:	mV

BP GEM OIL COMPANY TYPE A BILL OF LADING

SOURCE RECORD BILL OF LADING FOR NON-HAZARDOUS PURGEWATER RECOVERED FROM GROUNDWATER WELLS AT BP GEM OIL COMPANY FACILITIES IN THE STATE OF CALIFORNIA. THE NON-HAZARDOUS PURGE- WATER WHICH HAS BEEN RECOVERED FROM GROUND- WATER WELLS IS COLLECTED BY THE CONTRACTOR, MADE UP INTO LOADS OF APPROPRIATE SIZE AND HAULED BY DILLARD ENVIRONMENTAL TO THE ALTAMONT LANDFILL AND RESOURCE RECOVERY FACILITY IN LIVERMORE, CALIFORNIA.

The contractor performing this work is BLAINE TECH SERVICES, INC. (BTS), 1680 Rogers Avenue, San Jose, CA 95112 (phone [408] 573-0555). Blaine Tech Services, Inc. is authorized by BP GEM OIL COMPANY to recover, collect, apportion into loads the Non-Hazardous Well Purgewater that is drawn from wells at the BP GEM Oil Company facility indicated below and deliver that purgewater to BTS. Transport routing of the Non-Hazardous Well Purgewater may be direct from one BP GEM facility to the designated destination point; from one BP GEM facility to the designated destination point via another BP GEM facility; from a BP GEM facility to the designated destination point via the contractor's facility, or any combination thereof. The Non-Hazardous Well Purgewater is and remains the property of BP GEM Oil Company.

This **Source Record BILL OF LADING** was initiated to cover the recovery of Non-Hazardous Well Purgewater from wells at the BP GEM Oil Company facility described below:

ARLD 4977

Station #

2770 Castro Valley Blvd, Castro Valley

Station Address

Total Gallons Collected From Groundwater Monitoring Wells:

14

added equip. _____
rinse water 6

any other adjustments _____

TOTAL GALS. RECOVERED 20

loaded onto BTS vehicle # 12

BTS event #

time 1140 date 6/17/03

signature _____

REC'D AT

time 1320 date 6/17/03

unloaded by BTS
signature _____

WELLHEAD INSPECTION CHECKLIST

Client ARCO 4877 Date 6/17/03
 Site Address 2770 Castro Valley Blvd, Castro Valley
 Job Number 030617-MMZ Technician MM

Well ID	Well Inspected - No Corrective Action Required	Water Bailed From Wellbox	Wellbox Components Cleaned	Cap Replaced	Lock Replaced	Other Action Taken (explain below)	Well Not Inspected (explain below)	Repair Order Submitted
MW-1		X				X ^①		X
MW-2	X							
MW-3						X ^①		X

NOTES: X^① BOLTS STRIPPED

ATTACHMENT B
LABORATORY PROCEDURES,
CERTIFIED ANALYTICAL REPORTS,
AND CHAIN-OF-CUSTODY RECORDS

LABORATORY PROCEDURES

Laboratory Procedures

The groundwater samples were analyzed for the presence of the chemicals mentioned in the chain of custody using standard EPA methods. The methods of analysis for the groundwater samples are documented in the certified analytical report. The certified analytical reports and chain-of-custody record are presented in this attachment. The analytical data provided by the laboratory approved by Group Environmental Management Company have been reviewed and verified by that laboratory.



1 July, 2003

Scott Robinson
URS Corporation [Arco]
500 12th Street, Suite 100
Oakland, CA 94607

RE: ARCO #4977, Castro Valley, CA
Sequoia Work Order: MMF0437

Enclosed are the results of analyses for samples received by the laboratory on 06/17/03 15:06. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Latonya Pelt
Project Manager

CA ELAP Certificate #1210



URS Corporation [Arco]
500 12th Street, Suite 100
Oakland CA, 94607

Project: ARCO #4977, Castro Valley, CA
Project Number: INTRIM-50467
Project Manager: Scott Robinson

MMF0437
Reported:
07/01/03 07:00

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-1	MMF0437-01	Water	06/17/03 10:45	06/17/03 15:06
MW-2	MMF0437-02	Water	06/17/03 11:05	06/17/03 15:06
MW-3	MMF0437-03	Water	06/17/03 11:20	06/17/03 15:06

There were no custody seals that were received with this project.

URS Corporation [Arco]
 500 12th Street, Suite 100
 Oakland CA, 94607

 Project: ARCO #4977, Castro Valley, CA
 Project Number: INTRIM-50467
 Project Manager: Scott Robinson

 MMF0437
 Reported:
 07/01/03 07:00

Volatile Organic Compounds by EPA Method 8260B

Sequoia Analytical - Morgan Hill

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-1 (MMF0437-01) Water Sampled: 06/17/03 10:45 Received: 06/17/03 15:06									
Ethanol	ND	200	ug/l	2	3F23034	06/23/03	06/24/03	EPA 8260B	O-12
tert-Butyl alcohol	ND	40	"	"	"	"	"	"	"
Methyl tert-butyl ether	23	1.0	"	"	"	"	"	"	"
Di-isopropyl ether	ND	1.0	"	"	"	"	"	"	"
Ethyl tert-butyl ether	ND	1.0	"	"	"	"	"	"	"
tert-Amyl methyl ether	ND	1.0	"	"	"	"	"	"	"
1,2-Dichloroethane	ND	1.0	"	"	"	"	"	"	"
1,2-Dibromoethane (EDB)	ND	1.0	"	"	"	"	"	"	"
Benzene	60	1.0	"	"	"	"	"	"	"
Toluene	1.4	1.0	"	"	"	"	"	"	"
Ethylbenzene	81	1.0	"	"	"	"	"	"	"
Xylenes (total)	ND	1.0	"	"	"	"	"	"	"
Gasoline Range Organics (C6-C10)	510	100	"	"	"	"	"	"	"
<i>Surrogate: 1,2-Dichloroethane-d4</i>		106 %	78-129	"	"	"	"	"	"
MW-2 (MMF0437-02) Water Sampled: 06/17/03 11:05 Received: 06/17/03 15:06									
Ethanol	ND	10000	ug/l	100	3F23034	06/23/03	06/24/03	EPA 8260B	O-12
tert-Butyl alcohol	ND	2000	"	"	"	"	"	"	"
Methyl tert-butyl ether	610	50	"	"	"	"	"	"	"
Di-isopropyl ether	ND	50	"	"	"	"	"	"	"
Ethyl tert-butyl ether	ND	50	"	"	"	"	"	"	"
tert-Amyl methyl ether	ND	50	"	"	"	"	"	"	"
1,2-Dichloroethane	ND	50	"	"	"	"	"	"	"
1,2-Dibromoethane (EDB)	ND	50	"	"	"	"	"	"	"
Benzene	1300	50	"	"	"	"	"	"	"
Toluene	55	50	"	"	"	"	"	"	"
Ethylbenzene	1300	50	"	"	"	"	"	"	"
Xylenes (total)	4500	50	"	"	"	"	"	"	"
Gasoline Range Organics (C6-C10)	28000	5000	"	"	"	"	"	"	"
<i>Surrogate: 1,2-Dichloroethane-d4</i>		104 %	78-129	"	"	"	"	"	"

URS Corporation [Arco]
 500 12th Street, Suite 100
 Oakland CA, 94607

 Project: ARCO #4977, Castro Valley, CA
 Project Number: INTRIM-50467
 Project Manager: Scott Robinson

 MMF0437
Reported:
 07/01/03 07:00

Volatile Organic Compounds by EPA Method 8260B
Sequoia Analytical - Morgan Hill

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-3 (MMF0437-03) Water Sampled: 06/17/03 11:20 Received: 06/17/03 15:06									
Ethanol	ND	2000	ug/l	20	3F23034	06/23/03	06/24/03	EPA 8260B	O-12
tert-Butyl alcohol	ND	400	"	"	"	"	"	"	"
Methyl tert-butyl ether	530	10	"	"	"	"	"	"	"
Di-isopropyl ether	ND	10	"	"	"	"	"	"	"
Ethyl tert-butyl ether	ND	10	"	"	"	"	"	"	"
tert-Amyl methyl ether	ND	10	"	"	"	"	"	"	"
1,2-Dichloroethane	ND	10	"	"	"	"	"	"	"
1,2-Dibromoethane (EDB)	ND	10	"	"	"	"	"	"	"
Benzene	ND	10	"	"	"	"	"	"	"
Toluene	ND	10	"	"	"	"	"	"	"
Ethylbenzene	14	10	"	"	"	"	"	"	"
Xylenes (total)	ND	10	"	"	"	"	"	"	"
Gasoline Range Organics (C6-C10)	ND	1000	"	"	"	"	"	"	"
<i>Surrogate: 1,2-Dichloroethane-d4</i>		<i>102 %</i>		<i>78-129</i>					

URS Corporation [Arco]
 500 12th Street, Suite 100
 Oakland CA, 94607

 Project: ARCO #4977, Castro Valley, CA
 Project Number: INTRIM-50467
 Project Manager: Scott Robinson

 MMF0437
 Reported:
 07/01/03 07:00

Volatile Organic Compounds by EPA Method 8260B - Quality Control
Sequoia Analytical - Morgan Hill

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 3F23034 - EPA 5030B P/T
Blank (3F23034-BLK1)

Prepared & Analyzed: 06/23/03

Ethanol	ND	100	ug/l							O-12
tert-Butyl alcohol	ND	20	"							
Methyl tert-butyl ether	ND	0.50	"							
Di-isopropyl ether	ND	0.50	"							
Ethyl tert-butyl ether	ND	0.50	"							
tert-Amyl methyl ether	ND	0.50	"							
1,2-Dichloroethane	ND	0.50	"							
1,2-Dibromoethane (EDB)	ND	0.50	"							
Benzene	ND	0.50	"							
Toluene	ND	0.50	"							
Ethylbenzene	ND	0.50	"							
Xylenes (total)	ND	0.50	"							
Gasoline Range Organics (C6-C10)	ND	50	"							

<i>Surrogate: 1,2-Dichloroethane-d4</i>	5.25		"	5.00		105	78-129			
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Laboratory Control Sample (3F23034-BS1)

Prepared & Analyzed: 06/23/03

Methyl tert-butyl ether	10.9	0.50	ug/l	10.0		109	63-137			
Benzene	9.87	0.50	"	10.0		98.7	78-124			
Toluene	9.95	0.50	"	10.0		99.5	78-129			

<i>Surrogate: 1,2-Dichloroethane-d4</i>	5.16		"	5.00		103	78-129			
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Laboratory Control Sample (3F23034-BS2)

Prepared & Analyzed: 06/23/03

Methyl tert-butyl ether	8.90	0.50	ug/l	9.92		89.7	63-137			
Benzene	5.45	0.50	"	6.40		85.2	78-124			
Toluene	31.6	0.50	"	29.7		106	78-129			
Gasoline Range Organics (C6-C10)	437	50	"	440		99.3	70-113			

<i>Surrogate: 1,2-Dichloroethane-d4</i>	5.35		"	5.00		107	78-129			
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 Project: ARCO #4977, Castro Valley, CA
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 Project Manager: Scott Robinson

 MMF0437
Reported:
 07/01/03 07:00

Volatile Organic Compounds by EPA Method 8260B - Quality Control
Sequoia Analytical - Morgan Hill

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 3F23034 - EPA 5030B P/T
Matrix Spike (3F23034-MS1) **Source: MMF0442-16** Prepared: 06/23/03 Analyzed: 06/24/03

Methyl tert-butyl ether	294	5.0	ug/l	99.2	200	94.8	63-137			
Benzene	52.1	5.0	"	64.0	ND	81.4	78-124			
Toluene	310	5.0	"	297	ND	104	78-129			
Gasoline Range Organics (C6-C10)	4380	500	"	4400	400	90.5	70-113			

Surrogate: 1,2-Dichloroethane-d4 5.20 " 5.00 104 78-129

Matrix Spike Dup (3F23034-MSD1) **Source: MMF0442-16** Prepared: 06/23/03 Analyzed: 06/24/03

Methyl tert-butyl ether	299	5.0	ug/l	99.2	200	99.8	63-137	1.69	13	
Benzene	54.1	5.0	"	64.0	ND	84.5	78-124	3.77	12	
Toluene	322	5.0	"	297	ND	108	78-129	3.80	10	
Gasoline Range Organics (C6-C10)	4430	500	"	4400	400	91.6	70-113	1.14	9	

Surrogate: 1,2-Dichloroethane-d4 4.98 " 5.00 99.6 78-129



URS Corporation [Arco]
500 12th Street, Suite 100
Oakland CA, 94607

Project: ARCO #4977, Castro Valley, CA
Project Number: INTRIM-50467
Project Manager: Scott Robinson

MMF0437
Reported:
07/01/03 07:00

Notes and Definitions

- O-12 "The continuing calibration verification was outside of client contractual acceptance limits by 8% low. However, it was within method acceptance limits. The data should still be useful for its intended purpose."
- DET Analyte DETECTED
- ND Analyte NOT DETECTED at or above the reporting limit
- NR Not Reported
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference



Chain of Custody Record

Project Name 030617 - M2
 BP BUI/GEM CO Portfolio: _____
 BP Laboratory Contract Number: _____

Date: 6/17/03

Requested Due Date (mm/dd/yy) MMFO 037

On-site Time: 9:35 Temp: 60
 Off-site Time: 11:45 Temp: 70
 Sky Conditions: cloudy
 Meteorological Events: _____
 Wind Speed: _____ Direction: _____

Send To:
 Lab Name: SEQUOIA
 Lab Address: 185 Jarvis Dr.
Morgan Hill, CA 95037
 Lab PM: Lafonya Peik
 Tele/Fax: 408-776-9800 / 408-782-6308
 Report Type & QC Level: Send PDF Reports
 BP/GEM Account No.: _____

BP/GEM Facility No.: _____
 BP/GEM Facility Address: 2770 Castro Valley Rd, Castro Valley, CA
 Site ID No. ARCO 4877
 Site Lat/Long: _____
 California Global ID #: _____
 BP/GEM POC Contact: PAUL SUPPLE
 Address: _____
 Tele/Fax: _____

Consultant/Contractor: URS
 Address: 500 12th St, Ste. 200
Oakland, CA 94609-4014
 e-mail (EDI): syed.rehan@urscorp.com
 Consultant/Contractor Project No.: JS-00004977.01 00427
 Consultant Tele/Fax: 510-874-1735/510-874-3268
 Consultant/Contractor PM: Sarah Robinson
 Invoice to: Consultant/Contractor or (BP/GEM) (whichever)
 BP/GEM Work Release No: INTREM-50467

Lab Bottle Order No.	Item No.	Sample Description	Time	Matrix				Laboratory No.	No. of containers	Preservatives			Requested Analysis				Sample Point Lat/Long and Comments	
				Soil/Solid	Water/Liquid	Sediments	Air			Unpreserved	H2SO4	HNO3	HCl	TPH-D (8015)	MTBE (8021)	1,2-DIB, TAMP, STBE DUPS, TEA, (8260)		1,2-DCA & EDB (8260)
	1	MW-1	1045	X				4	3				X	X	X	X		
	2	MW-2	1105	X				62	3				X	X	X	X		Correction to LOC
	3	MW-3	1120	X				67	5				X	X	X	X		Erratum (8260) MW-2 & MW-3 MWA 6/18/03
	4																	
	5																	
	6																	
	7																	
	8																	
	9																	
	10																	

Sampler's Name: MICHAEL MONTANA Date: 6/17/03 Time: 1400
 Sampler's Company: PLATON TECH SERVICES Date: 6/17/03 Time: 1405
 Shipment Date: _____
 Shipment Method: _____
 Shipment Tracking No: _____

Special Instructions: Address Invoice to BP/GEM but send to URS for approval

July Seals in Place Yes No Temperature Blank Yes No Cooler Temperature on Receipt Trip Blank Yes No

PLAINE TECH SERVICES Fax: 1+408+578+7771 Jun 18 2003 9:02 P.02

SEQUOIA ANALYTICAL SAMPLE RECEIPT LOG

CLIENT NAME: BP
 REC. BY (PRINT): [Signature]
 WORKORDER: MW 0437

DATE REC'D AT LAB: 6/17/03
 TIME REC'D AT LAB: 15:06
 DATE LOGGED IN: 6-18-03

Drinking water for
 regulatory purposes: YES / NO
 Wastewater for
 regulatory purposes: YES / NO

CIRCLE THE APPROPRIATE RESPONSE	LAB SAMPLE #	DASH #	CLIENT ID	CONTAINER DESCRIPTION	PRESERVATIVE	SAMPLE MATRIX	DATE SAMPLED	REMARKS: CONDITION (ETC.)
1. Custody Seal(s) Present / <input checked="" type="radio"/> Absent Intact / Broken*	01	A.C	MW-1	(3) vials	HCL	L	6/17/03	
2. Chain-of-Custody <input checked="" type="radio"/> Present / Absent*	14	↓	↓ 2	↓	↓	↓	↓	
3. Traffic Reports or Packing List: Present / <input checked="" type="radio"/> Absent	17	↓	↓ 3	↓	↓	↓	↓	
4. Airbill: Airbill / Sticker Present / <input checked="" type="radio"/> Absent								
5. Airbill #:								
6. Sample Labels: <input checked="" type="radio"/> Present / Absent								
7. Sample IDs: <input checked="" type="radio"/> Listed / Not Listed on Chain-of-Custody								
8. Sample Condition: <input checked="" type="radio"/> Intact / Broken* / Leaking*								
9. Does information on custody reports, traffic reports and sample labels agree? <input checked="" type="radio"/> Yes / No*								
10. Sample received within hold time: <input checked="" type="radio"/> Yes / No*								
11. Proper Preservatives used: <input checked="" type="radio"/> Yes / No*								
12. Temp Rec. at Lab: Is temp 4 ± 2°C? <input checked="" type="radio"/> Yes / No**								

(Acceptance range for samples requiring thermal pres.)

**Exception (if any): Metals / DFP (Direct From Field) or Problem COC

***IF CIRCLED, CONTACT PROJECT MANAGER AND ATTACH RECORD OF RESOLUTION.**

ATTACHMENT C

EDCC REPORT AND EDF/GEOWELL SUBMITTAL CONFIRMATION

Error Summary Log

07/01/03

EDF 1.2i All files present in deliverable.

Laboratory:	Sequoia Analytical Laboratories, Inc., Morgan Hill, CA
Project Name:	ARCO #4977, Castro Valley
Work Order Number:	MMF0437
Global ID:	NA
Lab Report Number:	MMF0437070120030703

Report Summary

Labreport	Sampid	Labsampid	Mtrx	QC	Anmcode	Exmcode	Logdate	Extdate	Anadate	Lablotcl	Run	Sub
MMF04370701200 30703	MW-1	MMF043701	W	CS	8260+OX	SW5030B	06/17/03	06/23/03	06/24/03	3F23034	1	
MMF04370701200 30703	MW-2	MMF043702	W	CS	8260+OX	SW5030B	06/17/03	06/23/03	06/24/03	3F23034	1	
MMF04370701200 30703	MW-3	MMF043703	W	CS	8260+OX	SW5030B	06/17/03	06/23/03	06/24/03	3F23034	1	
		MMF044216	W	NC	8260+OX	SW5030B	//	06/23/03	06/24/03	3F23034	1	
		3F23034BS1	WQ	BS1	8260+OX	SW5030B	//	06/23/03	06/23/03	3F23034	1	
		3F23034BS2	WQ	BS2	8260+OX	SW5030B	//	06/23/03	06/23/03	3F23034	1	
		3F23034BLK1	WQ	LB1	8260+OX	SW5030B	//	06/23/03	06/23/03	3F23034	1	
		3F23034MS1	W	MS1	8260+OX	SW5030B	//	06/23/03	06/24/03	3F23034	1	
		3F23034MSD1	W	SD1	8260+OX	SW5030B	//	06/23/03	06/24/03	3F23034	1	

EDFSAMP: Error Summary Log

07/01/03

Error type	Logcode	Projname	Npdtwo	Sampid	Matrix
There are no errors in this data file					

EDFTEST: Error Summary Log

07/01/03

Error type	Labsampid	Qccode	Anmcode	Exmcode	Anadate	Run number
There are no errors in this data file					//	0

EDFRES: Error Summary Log

07/01/03

Error type	Labsampid	Qcocode	Matrix	Anmcode	Pvccode	Anadate	Run number	Parlabel
Warning: extra parameter	3F23034MS1	MS1	W	8260+OX	PR	06/24/03	1	GROC6C10
Warning: extra parameter	3F23034MSD1	SD1	W	8260+OX	PR	06/24/03	1	GROC6C10
Warning: extra parameter	MMF043701	CS	W	8260+OX	PR	06/24/03	1	GROC6C10
Warning: extra parameter	MMF043701	CS	W	8260+OX	PR	06/24/03	1	XYLENES
Warning: extra parameter	MMF043702	CS	W	8260+OX	PR	06/24/03	1	GROC6C10
Warning: extra parameter	MMF043702	CS	W	8260+OX	PR	06/24/03	1	XYLENES
Warning: extra parameter	MMF043703	CS	W	8260+OX	PR	06/24/03	1	GROC6C10
Warning: extra parameter	MMF043703	CS	W	8260+OX	PR	06/24/03	1	XYLENES
Warning: extra parameter	MMF044216	NC	W	8260+OX	PR	06/24/03	1	GROC6C10
Warning: extra parameter	3F23034BLK1	LB1	WQ	8260+OX	PR	06/23/03	1	GROC6C10
Warning: extra parameter	3F23034BLK1	LB1	WQ	8260+OX	PR	06/23/03	1	XYLENES
Warning: extra parameter	3F23034BS2	BS2	WQ	8260+OX	PR	06/23/03	1	GROC6C10

EDFQC: Error Summary Log

07/01/03

Error type	Lablctcl	Anmcode	Parlabel	Qccode	Labqid
There are no errors in this data files					

EDFCL: Error Summary Log

07/01/03

Error type	Crevdate	Anmcode	Exmcode	Parlabel	Cicode
There are no errors in this data file	//				

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Date/Time of Submittal: 7/1/2003 9:51:28 AM

Facility Global ID: T0600100089

Facility Name: ARCO

Submittal Title: 2nd Qtr 2003 Monitoring Report for #4977

Submittal Type: GW Monitoring Report

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Submittal Date/Time: 7/1/2003 9:53:00 AM

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Facility Global ID: T0600100089

Facility Name: ARCO

Submittal Title: 3rd Qtr 2002 Monitoring Report for #4977

Submittal Type: GW Monitoring Report

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Facility Global ID: T0600100089

Facility Name: ARCO

Submittal Title: 4th Qtr 2002 Monitoring Report for #4977

Submittal Type: GW Monitoring Report

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Date/Time of Submittal: 7/7/2003 10:46:00 AM

Facility Global ID: T0600100089

Facility Name: ARCO

Submittal Title: 1st Qtr 2003 Monitoring Report for #4977

Submittal Type: GW Monitoring Report

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