

February 26, 2003

Alameda County**MAR 04 2003**

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

Environmental Health

Re: Fourth Quarter 2002 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 *Fourth Quarter 2002 Groundwater Monitoring Report* at 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



Steve Krcik, R.G.
Project Geologist



Enclosure: Fourth Quarter 2002 Groundwater Monitoring Report

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



Atlantic Richfield Company
(a BP affiliated company)

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

February 27, 2003

Re: Fourth Quarter 2002 Groundwater Monitoring Report
ARCO Station #4977
2770 Castro Valley Rd
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

R E P O R T

**FOURTH QUARTER 2002
GROUNDWATER MONITORING**

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

Prepared for
Atlantic Richfield Company

February 26, 2003

URS

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

38486124

Date: February 26, 2003
Quarter: 4Q 02

ATLANTIC RICHFIELD COMPANY QUARTERLY GROUNDWATER MONITORING REPORT

Former Facility No.: 4977 Address: 2770 Castro Valley Blvd, Castro Valley, CA
ARCO Environmental Engineer: Paul Supple
Consulting Co./Contact Person: URS Corporation / Scott Robinson
Consultant Project No.: 38486124
Primary Agency: ACHCSA

WORK PERFORMED THIS QUARTER (Fourth – 2002):

1. Performed fourth quarter 2002 groundwater monitoring event on December 16, 2002.
2. Prepared third quarter 2002 groundwater monitoring report.

WORK PROPOSED FOR NEXT QUARTER (First – 2003):

1. Prepare and submit fourth quarter 2002 groundwater monitoring report.
2. Perform first quarter 2003 groundwater monitoring event.

Current Phase of Project: GW monitoring/sampling
Frequency of Groundwater Sampling: Wells MW-1 through MW-3
Frequency of Groundwater Monitoring: Quarterly
Is Free Product (FP) Present On-Site: No
Current Remediation Techniques: Natural Attenuation
Approximate Depth to Groundwater: 6.76 ft (MW-3) to 8.55 ft (MW-1)
Groundwater Gradient (direction): Southeast
Groundwater Gradient (magnitude): 0.029 feet per foot

DISCUSSION:

TPH-g was detected in all three wells at concentrations ranging from 77 µg/L (MW-1) to 17,000 µg/L (MW-2).
Benzene was detected in all three wells at concentrations ranging from 1.8 µg/L (MW-1) to 1,000 µg/L (MW-2).
MTBE was detected in all three wells at concentrations ranging from 42 µg/L (MW-1) to 980 µg/L (MW-2).

ATTACHMENTS:

- Table 1 - Groundwater Elevation and Analytical Data
- Table 2 - Summary of Groundwater Flow Direction and Gradient
- Table 3 – Oxygenate Analytical Data
- Figure 1 - Groundwater Elevation Contour and Analytical Summary Map – December 16, 2002
- Attachment A - Field Procedures and Field Data Sheets
- Attachment B - Laboratory Procedures, Certified Analytical Reports and Chain-of-Custody Records
- Attachment C - EDCC Report/ Geowell Submittal Confirmation

Table 1
Groundwater Elevation and Analytical Data

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

Sample ID	Date	Top of Casing Elevation (ft amsl)	Depth to Groundwater (ft. btc)	Groundwater Elevation (ft amsl)	TPH-g (mg/L)	Benzene (mg/L)	Toluene (mg/L)	Ethyl-benzene (mg/L)	Total Xylenes (mg/L)	MTBE (mg/L)
MW-1	04/19/02	161.11	11.21	149.90	660	12	1.3	4.3	0.80	38
	09/27/02		9.29	151.82	130	7.7	0.87	5.4	0.79	39
	12/16/02 *		8.55	152.56	77	1.8	ND<0.50	0.69	ND<1.0	42
MW-2	04/19/02	161.87	6.59	155.28	28,000	970	120	860	6,900	760
	09/27/02		7.18	154.69	17,000	1,400	ND<50	1,200	3,700	1,400
	12/16/02 *		7.31	154.56	17,000	1,000	ND<50	980	3,300	980
MW-3	04/19/02	162.14	6.94	155.20	1,200	29	1.1	43	62	1,700
	09/27/02		8.26	153.88	740	7.8	ND<2.5	6.8	4.4	1,100
	12/16/02 *		6.76	155.38	1,200	13	ND<10	170	88	910

amsl = above mean sea level

btc = below top of casing

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

MTBE = Methyl tertiary butyl ether analyzed by EPA Method 8021B unless otherwise noted.

mg/L = micrograms 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 Road
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

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.

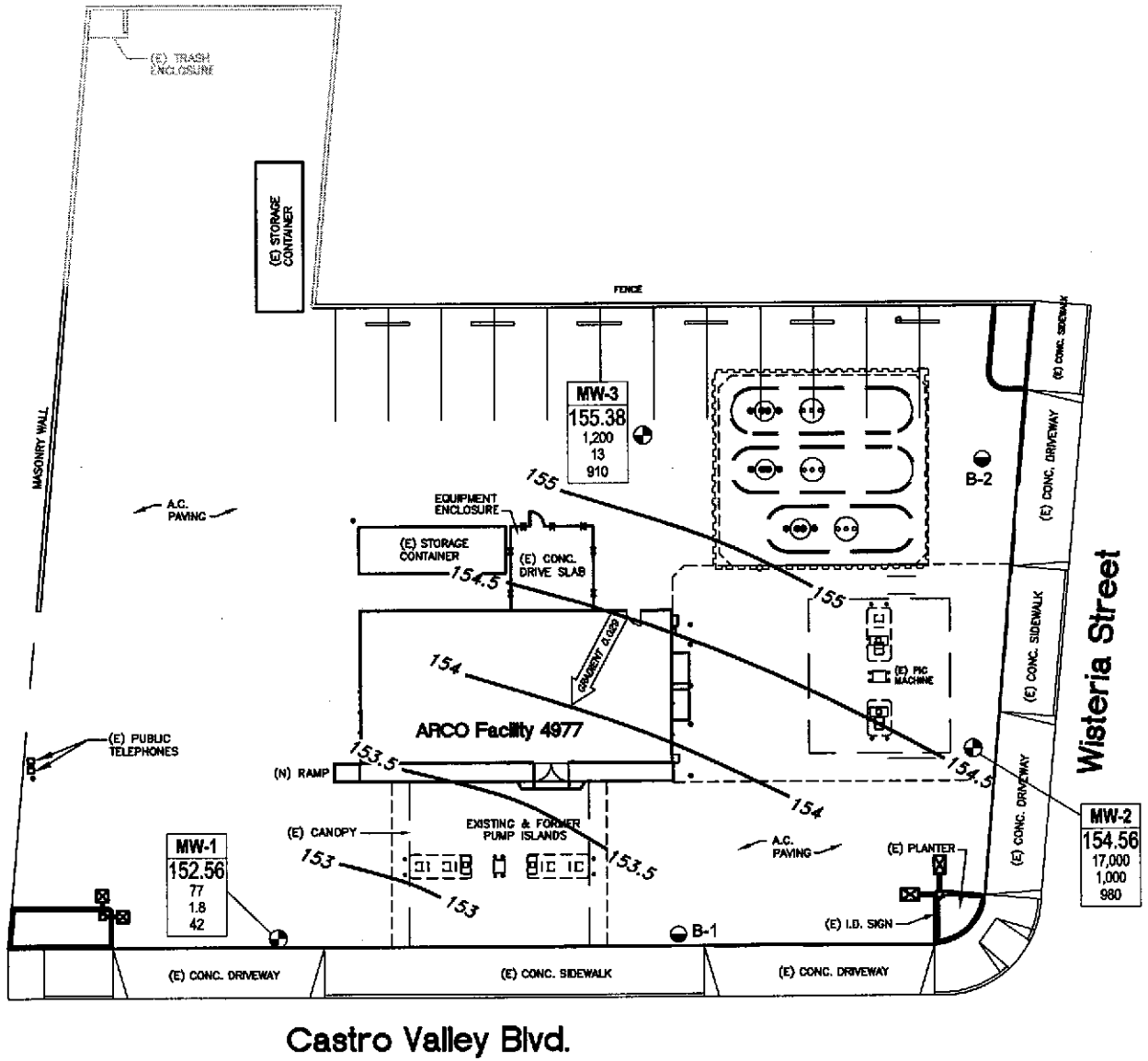
Table 3
Oxygenate Analytical Data

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)	1,2 Dibromo-ethane (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
MW-2	12/16/02	ND<5,000	ND<500	980	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

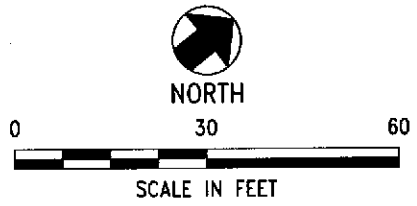
Note = All fuel oxygenate compounds analyzed using EPA Method 8260B
TBA = tert-Butyl alcohol
MTBE = Methyl tert-butyl ether
DIPE = Di-isopropyl ether
ETBE = Ethyl tert butyl ether
TAME = tert-Amyl methyl ether
µg/L = micrograms per liter

X:\env\waste\BP_GEM\Sites\Scott Robinson\Paul_Supplet\4977\Monitoring\Ctr 4_2002\Drawings\GWEC-AS_12-16.dwg



LEGEND

- MONITORING WELL LOCATION
- SOIL BORING LOCATION
- Well** — WELL DESIGNATION
- ELEV** — GROUNDWATER ELEVATION (FT/MSL)
- TPH-g** — CONCENTRATION OF TOTAL PETROLEUM HYDROCARBONS AS GASOLINE, BENZENE, AND MTBE IN GROUNDWATER IN
- Benzene**
- MTBE**
- GROUNDWATER ELEVATION CONTOUR (FT/MSL)
- APPROXIMATE GROUNDWATER FLOW DIRECTION AND GRADIENT



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
Fourth Quarter 2002 (December 16, 2002)

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.

ARCO / BP WELL MONITORING DATA SHEET

BTS #: <u>021216-RH2</u>	Station # <u>4977</u>
Sampler: <u>Ryan Hanstedt</u>	Date: <u>12/16/02</u>
Well I.D.: <u>mw-2</u>	Well Diameter: 2 3 <u>4</u> 6 8
Total Well Depth: <u>14.81</u>	Depth to Water: <u>7.31</u>
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: <u>PVC</u> Grade	D.O. Meter (if req'd): <u>YSI</u> 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

Purge Method: <u>Bailer</u>	Sampling Method: <u>Bailer</u>
<input type="checkbox"/> Disposable Bailer	<input checked="" type="checkbox"/> <u>Disposable Bailer</u>
<input type="checkbox"/> Middleburg	<input type="checkbox"/> Extraction Port
<input checked="" type="checkbox"/> <u>Electric Submersible</u>	Other: _____
<input type="checkbox"/> 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>4.9</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
<u>1107</u>	<u>69.3</u>	<u>6.9</u>	<u>1126</u>	<u>4.9</u>	<u>clear</u>
<u>1108</u>	<u>70.3</u>	<u>6.8</u>	<u>1121</u>	<u>9.8</u>	<u>11</u>
<u>1109</u>	<u>Well de-watered @ 12.0 gal.</u>			<u>12.0</u>	<u>DTW = 12.87</u>
<u>1115</u>					<u>DTW = 12.52, clear</u>

Did well dewater? <input checked="" type="radio"/> <u>Yes</u> <input type="radio"/> No	Gallons actually evacuated: <u>12.0</u>
Sampling Time: <u>1115</u>	Sampling Date: <u>12/16/02</u>
Sample I.D.: <u>mw-2</u>	Laboratory: Pace <u>Sequoia</u> Other _____
Analyzed for: <input checked="" type="checkbox"/> TPH-G <input checked="" type="checkbox"/> BTEX <input checked="" type="checkbox"/> MTBE <input type="checkbox"/> TPH-D Other: <u>Oxygenates, 12-DCA + EDB (8260)</u>	
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

ARCO / BP WELL MONITORING DATA SHEET

BTS #: 021216-RHZ	Station # 4977
Sampler: Ryan Hanstedt	Date: 12/16/02
Well I.D.: mw-3	Well Diameter: 2 3 <u>4</u> 6 8
Total Well Depth: 15.11	Depth to Water: 6.76
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: <u>PVC</u> Grade	D.O. Meter (if req'd): <u>YSI</u> 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

Purge Method: <u>Bailer</u> Disposable Bailer Middleburg Electric Submersible Extraction Pump Other: _____	Sampling Method: <u>Bailer</u> Disposable Bailer Extraction Port Other: _____
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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 <u>µS</u>)	Gals. Removed	Observations
1131	68.7	6.9	915	5.4	cloudy
1132	70.7	6.9	913	10.8	turbid
1133	71.3	6.8	914	16.2	"

Did well dewater? Yes <u>No</u>	Gallons actually evacuated: 16.2
Sampling Time: 1140	Sampling Date: 12/16/02
Sample I.D.: mw-3	Laboratory: Pace <u>Sequoia</u> Other _____
Analyzed for: <u>TPH-G</u> <u>PIEX</u> <u>MTBE</u> <u>TPH-D</u> Other: <u>Oxygenates, 1,2-DCA + EDB (8260)</u>	
D.O. (if req'd):	Pre-purge: _____ mg/L
	Post-purge: <u>2.3</u> mg/L
O.R.P. (if req'd):	Pre-purge: _____ mV
	Post-purge: _____ mV



Chain of Custody Record

Project Name _____
 BP BU/GEM CO Portfolio: _____
 BP Laboratory Contract Number: _____

Date: 12/16/02 Requested Due Date (mm/dd/yy) _____

On-site Time:	Temp:
Off-site Time:	Temp:
Sky Conditions:	
Meteorological Events:	
Wind Speed:	Direction:

Send To:	BP/GEM Facility No.:	Consultant/Contractor: URS
Lab Name: SEQUOIA	BP/GEM Facility Address: 2770 Castro Valley Rd, Castro Valley, CA	Address: 500 12th St, Ste. 200
Lab Address: 885 Jarvis Dr, Morgan Hill, CA 95037	Site ID No. ARCO 4977	Oakland, CA 94609-4014
	Site Lat/Long:	e-mail EDD: syed_rehan@urscorp.com
	California Global ID #:	Consultant/Contractor Project No.: J5-00004977.01 00427
Lab PM: Latonya Pelt	BP/GEM PM Contact: PAUL SUPPLE	Consultant Tele/Fax: 510-874-1735/510-874-3268
Tele/Fax: 408-776-9600 / 408-782-6308	Address:	Consultant/Contractor PM: Scott Robinson
Report Type & QC Level: Send EDF Reports		Invoice to: Consultant/Contractor or <u>BP/GEM</u> (Circle one)
BP/GEM Account No.:	Tele/Fax:	BP/GEM Work Release No: INTRIM -50467

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	H ₂ SO ₄	HNO ₃	HCl	TPH-G/BTEX (8015/8021)	TPH-D (8015)	MTBE (8021)	MTBE, TAME, ETBE DIPE, TBA (8260)	1,2-DCA & EDB (8260)		
1	MW-1	1055		X			6						X		X				
2	MW-2	1115		X			6						X		X				
3	MW-3	1146		X			6						X		X				
4																			
5																			
6																			
7																			
8																			
9																			
10																			

Sampler's Name: <u>Ryan Hanstedt</u>	Relinquished By / Affiliation: <u>Janet / BTS</u>	Date:	Time:	Accepted By / Affiliation:	Date:	Time:
Sampler's Company: <u>Blaine Tech</u>						
Shipment Date:						
Shipment Method:						
Shipment Tracking No.:						

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

Custody Seals In Place Yes No Temperature Blank Yes No Cooler Temperature on Receipt °F/C Trip Blank Yes No

WELLHEAD INSPECTION CHECKLIST

Client BP Date 12/16/02

Site Address 2770 Castro Valley Blvd, Castro Valley

Job Number 021216-RH2 Technician Ryan Hanstedt

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			
mw-2					X			
mw-3		X			X			

NOTES: _____

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:

4977		
Station #		
2770 Castro Valley Blvd, Castro Valley		
Station Address		
Total Gallons Collected From Groundwater Monitoring Wells:		
27		
added equip. rinse water	2	any other adjustments
TOTAL GALS. RECOVERED	29	loaded onto BTS vehicle #
BTS event #	021226 021216-RH2	time date
signature		1200 12/16/02

REC'D AT		time date
unloaded by signature		/ /

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.



7 January, 2003

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

RE: ARCO #4977, Castro Valley, CA
Sequoia Work Order: MLL0681

Enclosed are the results of analyses for samples received by the laboratory on 12/17/02 17:20. 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
500 12th Street, Suite 100
Oakland CA, 94607

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

MLL0681
Reported:
01/07/03 13:53

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-1	MLL0681-01	Water	12/16/02 10:55	12/17/02 17:20
MW-2	MLL0681-02	Water	12/16/02 11:15	12/17/02 17:20
MW-3	MLL0681-03	Water	12/16/02 11:40	12/17/02 17:20

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

URS Corporation 500 12th Street, Suite 100 Oakland CA, 94607	Project: ARCO #4977, Castro Valley, CA Project Number: ARCO #4977, Castro Valley, CA Project Manager: Scott Robinson	MLL0681 Reported: 01/07/03 13:53
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BTEX by EPA Method 8260B
Sequoia Analytical - Sacramento

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-1 (MLL0681-01) Water Sampled: 12/16/02 10:55 Received: 12/17/02 17:20									
Ethanol	ND	50	ug/l	1	2120442	12/27/02	12/27/02	EPA 8260B	
Tert-butyl alcohol	ND	5.0	"	"	"	"	"	"	
Methyl tert-butyl ether	42	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	1.8	0.50	"	"	"	"	"	"	
Ethylbenzene	0.69	0.50	"	"	"	"	"	"	
Toluene	ND	0.50	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	
Gasoline (C6-C10)	77	50	"	"	"	"	"	"	HC-12
<i>Surrogate: Toluene-d8</i>		98 %	60-140		"	"	"	"	
<i>Surrogate: 4-BFB</i>		99 %	60-140		"	"	"	"	
<i>Surrogate: 1,2-DCA-d4</i>		116 %	60-140		"	"	"	"	
MW-2 (MLL0681-02) Water Sampled: 12/16/02 11:15 Received: 12/17/02 17:20									
Ethanol	ND	5000	ug/l	100	2120476	12/27/02	12/27/02	EPA 8260B	
Tert-butyl alcohol	ND	500	"	"	"	"	"	"	
Methyl tert-butyl ether	980	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	1000	50	"	"	"	"	"	"	
Ethylbenzene	980	50	"	"	"	"	"	"	
Toluene	ND	50	"	"	"	"	"	"	
Xylenes (total)	3300	100	"	"	"	"	"	"	
Gasoline (C6-C10)	17000	5000	"	"	"	"	"	"	
<i>Surrogate: Toluene-d8</i>		104 %	60-140		"	"	"	"	
<i>Surrogate: 4-BFB</i>		101 %	60-140		"	"	"	"	
<i>Surrogate: 1,2-DCA-d4</i>		116 %	60-140		"	"	"	"	

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

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

 MLL0681
Reported:
 01/07/03 13:53

BTEX by EPA Method 8260B
Sequoia Analytical - Sacramento

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-3 (MLL0681-03) Water Sampled: 12/16/02 11:40 Received: 12/17/02 17:20									
Ethanol	ND	1000	ug/l	20	2120476	12/27/02	12/27/02	EPA 8260B	
Tert-butyl alcohol	ND	100	"	"	"	"	"	"	
Methyl tert-butyl ether	910	10	"	"	"	"	"	"	
Di-isopropyl ether	ND	10	"	"	"	"	"	"	
Ethyl tert-butyl ether	ND	10	"	"	"	"	"	"	
Tert-amyl methyl ether	12	10	"	"	"	"	"	"	
1,2-Dichloroethane	ND	10	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	10	"	"	"	"	"	"	
Benzene	13	10	"	"	"	"	"	"	
Ethylbenzene	170	10	"	"	"	"	"	"	
Toluene	ND	10	"	"	"	"	"	"	
Xylenes (total)	88	20	"	"	"	"	"	"	
Gasoline (C6-C10)	1200	1000	"	"	"	"	"	"	
<i>Surrogate: Toluene-d8</i>		103 %		60-140	"	"	"	"	
<i>Surrogate: 4-BFB</i>		102 %		60-140	"	"	"	"	
<i>Surrogate: 1,2-DCA-d4</i>		128 %		60-140	"	"	"	"	

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

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

 MLL0681
Reported:
 01/07/03 13:53

BTEX by EPA Method 8260B - Quality Control
Sequoia Analytical - Sacramento

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 2120442 - EPA 5030B [P/T]
Blank (2120442-BLK1)

Prepared & Analyzed: 12/27/02

Ethanol	ND	50	ug/l							
Tert-butyl alcohol	ND	5.0	"							
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	"							
Ethylbenzene	ND	0.50	"							
Toluene	ND	0.50	"							
Xylenes (total)	ND	1.0	"							
Gasoline (C6-C10)	ND	50	"							

<i>Surrogate: Toluene-d8</i>	26.5		"	25.0		106	60-140			
<i>Surrogate: 4-BFB</i>	26.5		"	25.0		106	60-140			
<i>Surrogate: 1,2-DCA-d4</i>	31.0		"	25.0		124	60-140			

Laboratory Control Sample (2120442-BS1)

Prepared & Analyzed: 12/27/02

Methyl tert-butyl ether	22.6	0.50	ug/l	22.4		101	60-140			
Benzene	14.6	0.50	"	13.6		107	70-130			
Toluene	83.4	0.50	"	83.4		100	70-130			
Gasoline (C6-C10)	1110	50	"	1100		101	70-130			

<i>Surrogate: Toluene-d8</i>	24.8		"	25.0		99	60-140			
<i>Surrogate: 4-BFB</i>	25.5		"	25.0		102	60-140			
<i>Surrogate: 1,2-DCA-d4</i>	31.7		"	25.0		127	60-140			

Matrix Spike (2120442-MS1)

Source: S212673-04

Prepared & Analyzed: 12/27/02

Methyl tert-butyl ether	19.7	0.50	ug/l	22.4	ND	88	60-140			
Benzene	12.3	0.50	"	13.6	ND	90	70-130			
Toluene	72.2	0.50	"	83.4	ND	87	70-130			
Gasoline (C6-C10)	893	50	"	1100	ND	81	60-140			

<i>Surrogate: Toluene-d8</i>	25.3		"	25.0		101	60-140			
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Sequoia Analytical - Morgan Hill

The results in this report apply to the samples analyzed in accordance with the chain of custody document. Unless otherwise stated, results are reported on a wet weight basis. This analytical report must be reproduced in its entirety.



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

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

MLL0681
Reported:
01/07/03 13:53

BTEX by EPA Method 8260B - Quality Control
Sequoia Analytical - Sacramento

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 2120442 - EPA 5030B [P/T]

Matrix Spike (2120442-MS1)

Source: S212673-04

Prepared & Analyzed: 12/27/02

Surrogate: 4-BFB	25.2		ug/l	25.0		101	60-140			
Surrogate: 1,2-DCA-d4	29.9		"	25.0		120	60-140			

Matrix Spike Dup (2120442-MSD1)

Source: S212673-04

Prepared & Analyzed: 12/27/02

Methyl tert-butyl ether	20.0	0.50	ug/l	22.4	ND	89	60-140	2	25	
Benzene	12.4	0.50	"	13.6	ND	91	70-130	0.8	25	
Toluene	71.1	0.50	"	83.4	ND	85	70-130	2	25	
Gasoline (C6-C10)	901	50	"	1100	ND	82	60-140	0.9	25	
Surrogate: Toluene-d8	25.0		"	25.0		100	60-140			
Surrogate: 4-BFB	25.8		"	25.0		103	60-140			
Surrogate: 1,2-DCA-d4	30.8		"	25.0		123	60-140			

Batch 2120476 - EPA 5030B [P/T]

Blank (2120476-BLK1)

Prepared & Analyzed: 12/30/02

Ethanol	ND	50	ug/l							
Tert-butyl alcohol	ND	5.0	"							
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	"							
Ethylbenzene	ND	0.50	"							
Toluene	ND	0.50	"							
Xylenes (total)	ND	1.0	"							
Gasoline (C6-C10)	ND	50	"							
Surrogate: Toluene-d8	24.7		"	25.0		99	60-140			
Surrogate: 4-BFB	23.8		"	25.0		95	60-140			
Surrogate: 1,2-DCA-d4	28.9		"	25.0		116	60-140			



URS Corporation 500 12th Street, Suite 100 Oakland CA, 94607	Project: ARCO #4977, Castro Valley, CA Project Number: ARCO #4977, Castro Valley, CA Project Manager: Scott Robinson	MLL0681 Reported: 01/07/03 13:53
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**BTEX by EPA Method 8260B - Quality Control
Sequoia Analytical - Sacramento**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 2120476 - EPA 5030B [P/T]

Blank (2120476-BLK2)											Prepared & Analyzed: 12/27/02				
Ethanol	ND	50	ug/l												
Tert-butyl alcohol	ND	5.0	"												
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	"												
Ethylbenzene	ND	0.50	"												
Toluene	ND	0.50	"												
Xylenes (total)	ND	1.0	"												
Gasoline (C6-C10)	ND	50	"												
<i>Surrogate: Toluene-d8</i>											26.5	"	25.0	106	60-140
<i>Surrogate: 4-BFB</i>											26.5	"	25.0	106	60-140
<i>Surrogate: 1,2-DCA-d4</i>											31.0	"	25.0	124	60-140

Laboratory Control Sample (2120476-BS1)											Prepared & Analyzed: 12/30/02				
Methyl tert-butyl ether	19.5	0.50	ug/l	22.4		87	60-140								
Benzene	13.7	0.50	"	13.6		101	70-130								
Toluene	80.0	0.50	"	83.4		96	70-130								
Gasoline (C6-C10)	1060	50	"	1100		96	70-130								
<i>Surrogate: Toluene-d8</i>											24.4	"	25.0	98	60-140
<i>Surrogate: 4-BFB</i>											24.4	"	25.0	98	60-140
<i>Surrogate: 1,2-DCA-d4</i>											28.3	"	25.0	113	60-140

Laboratory Control Sample (2120476-BS2)											Prepared & Analyzed: 12/27/02				
Methyl tert-butyl ether	22.6	0.50	ug/l	22.4		101	60-140								
Benzene	14.6	0.50	"	13.6		107	70-130								
Toluene	83.4	0.50	"	83.4		100	70-130								
Gasoline (C6-C10)	1110	50	"	1100		101	70-130								
<i>Surrogate: Toluene-d8</i>											24.8	"	25.0	99	60-140

URS Corporation
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 Project: ARCO #4977, Castro Valley, CA
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 MLL0681
Reported:
 01/07/03 13:53

BTEX by EPA Method 8260B - Quality Control
Sequoia Analytical - Sacramento

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 2120476 - EPA 5030B [P/T]
Laboratory Control Sample (2120476-BS2)

Prepared & Analyzed: 12/27/02

Surrogate: 4-BFB	25.5		ug/l	25.0		102	60-140			
Surrogate: 1,2-DCA-d4	31.7		"	25.0		127	60-140			

Matrix Spike (2120476-MS1)

Source: S212570-07

Prepared & Analyzed: 12/30/02

Methyl tert-butyl ether	21.9	0.50	ug/l	22.4	2.4	87	60-140			
Benzene	12.3	0.50	"	13.6	ND	90	70-130			
Toluene	71.4	0.50	"	83.4	ND	86	70-130			
Gasoline (C6-C10)	910	50	"	1100	ND	81	60-140			

Surrogate: Toluene-d8	25.9		"	25.0		104	60-140			
Surrogate: 4-BFB	26.2		"	25.0		105	60-140			
Surrogate: 1,2-DCA-d4	31.4		"	25.0		126	60-140			

Matrix Spike Dup (2120476-MSD1)

Source: S212570-07

Prepared & Analyzed: 12/30/02

Methyl tert-butyl ether	21.9	0.50	ug/l	22.4	2.4	87	60-140	0	25	
Benzene	12.6	0.50	"	13.6	ND	93	70-130	2	25	
Toluene	73.4	0.50	"	83.4	ND	88	70-130	3	25	
Gasoline (C6-C10)	936	50	"	1100	ND	83	60-140	3	25	

Surrogate: Toluene-d8	24.8		"	25.0		99	60-140			
Surrogate: 4-BFB	25.9		"	25.0		104	60-140			
Surrogate: 1,2-DCA-d4	30.2		"	25.0		121	60-140			



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Project: ARCO #4977, Castro Valley, CA
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MLL0681
Reported:
01/07/03 13:53

Notes and Definitions

HC-12 Hydrocarbon pattern is present in the requested fuel quantitation range but does not resemble the pattern of the requested fuel.

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 _____

BP BU/GEM CO Portfolio: _____

BP Laboratory Contract Number: _____

Date: 12/16/02

Requested Due Date (mm/dd/yy) _____

1110681

On-site Time:	Temp:
Off-site Time:	Temp:
Sky Conditions:	
Meteorological Events:	
Wind Speed:	Direction:

Send To:	BP/GEM Facility No.:	Consultant/Contractor: URS
Lab Name: SEQUOIA	BP/GEM Facility Address: 2770 Castro Valley Rd, Castro Valley, CA	Address: 500 12th St., Ste. 200
Lab Address: 885 Jarvis Dr. Morgan Hill, CA 95037	Site ID No. ARCO 4977	Oakland, CA 94609-4014
	Site Lat/Long:	e-mail ADD: eyed_rehan@urscorp.com
	California Global ID #:	Consultant/Contractor Project No.: J5-00004977.01 00427
Lab PM: Latonya Peft	BP/GEM PM Contact: PAUL SUPPLE	Consultant Tele/Fax: 510-874-1735/510-874-3268
Tele/Fax: 408-776-9600 / 408-782-5308	Address:	Consultant/Contractor PM: Scott Robinson
Report Type & QC Level: Send EDF Reports		Invoice to: Consultant/Contractor of <u>BP/GEM</u> (Circle one)
BP/GEM Account No.:	Tele/Fax:	BP/GEM Work Release No: INTRIM-50467

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	H ₂ SO ₄	HNO ₃	HCl	TPH-G/BTEX (8015/8021)	TPH-D (8015)	MTBE (8021)	MTBE, TAME, ETBE (2169, TBA (8260)	1,2-DCA & DIB (8260)	
1	MW-1	1055	X				01	6					X	X	X			414000
2	MW-2	1115	X				02	6					X	X	X			
3	MW-3	1140	X				03	6					X	X	X			
4																		
5																		
6																		
7																		
8																		
9																		
10																		

Sampler's Name: Ryan Blumstoft	Relinquished By / Affiliation: <u>3rd Party</u>	Date: <u>12/17/02</u>	Time: <u>1114</u>	Accepted By / Affiliation: <u>[Signature]</u>	Date: <u>12/17/02</u>	Time: <u>1114</u>
Sampler's Company: Blaine Tech						
Shipment Date:						
Shipment Method:						
Shipment Tracking No:						

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

Body Seals in Place Yes No Temperature Blank Yes No Cooler Temperature on Receipt °F/C Trip Blank Yes No

SEQUOIA ANALYTICAL SAMPLE RECEIPT LOG

CLIENT NAME: URS
 REC. BY (PRINT) PL
 WORKORDER: M46681

DATE Received at Lab: 12/17/02
 TIME Received at Lab: 1740
 LOG IN DATE: 12-19-02

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

CIRCLE THE APPROPRIATE RESPONSE	LAB SAMPLE #	#	CLIENT ID	CONTAINER DESCRIPTION	SAMPLE MATRIX	DATE SAMPLED	REMARKS: CONDITION (ETC.)
1. Custody Seal(s) Present / <input checked="" type="checkbox"/> Absent Intact / Broken*	1		MW-1	(6) VOC/H ₂ O	(L)	12/16/02	2114030
2. Chain-of-Custody <input checked="" type="checkbox"/> Present / Absent*	7		↓-2 ↓-3	↓	↓	↓	↓
3. Traffic Reports or Packing List: Present / Absent							
4. Airbill: Airbill / Sticker Present / Absent							
5. Airbill #:							
6. Sample Labels: Present / Absent							
7. Sample IDs: Listed / Not Listed on Chain-of-Custody							
8. Sample Condition: Intact / Broken* / Leaking*							
9. Does information on custody reports, traffic reports and sample labels agree? <input checked="" type="checkbox"/> Yes / No*							
10. Sample received within hold time: <input checked="" type="checkbox"/> Yes / No*							
11. Proper Preservatives used: <input checked="" type="checkbox"/> Yes / No*							
12. Temp Rec. at Lab: (Acceptance range for samples requiring thermal pres.: 4+/-2°C) <input checked="" type="checkbox"/> Yes / No**							
**Exception (if any):							

***If Circled, contact Project Manager and attach record of resolution.**

ATTACHMENT C

EDCC REPORT/ GEOWELL SUBMITTAL CONFIRMATION

Error Summary Log

02/19/03

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:	MLL0681
Global ID:	NA
Lab Report Number:	MLL0681010720031355

Report Summary

Labreport	Sampid	Labsampid	Mtrx	QC	Anmcode	Exmcode	Logdate	Extdate	Anadate	Lablotctl	Run	Sub
MLL06810107200 31355	MW-1	MLL068101	W	CS	8260+OX	SW5030B	12/16/02	12/27/02	12/27/02	2120442	1	SEQS
MLL06810107200 31355	MW-2	MLL068102	W	CS	8260+OX	SW5030B	12/16/02	12/27/02	12/27/02	2120476	1	SEQS
MLL06810107200 31355	MW-3	MLL068103	W	CS	8260+OX	SW5030B	12/16/02	12/27/02	12/27/02	2120476	1	SEQS
		S21257007	W	NC	8260+OX	SW5030B	//	12/30/02	12/30/02	2120476	1	SEQS
		S21267304	W	NC	8260+OX	SW5030B	//	12/27/02	12/27/02	2120442	1	SEQS
		2120442BS1	WQ	BS1	8260+OX	SW5030B	//	12/27/02	12/27/02	2120442	1	SEQS
		2120442BLK1	WQ	LB1	8260+OX	SW5030B	//	12/27/02	12/27/02	2120442	1	SEQS
		2120442MS1	W	MS1	8260+OX	SW5030B	//	12/27/02	12/27/02	2120442	1	SEQS
		2120442MSD1	W	SD1	8260+OX	SW5030B	//	12/27/02	12/27/02	2120442	1	SEQS
		2120476BS1	WQ	BS1	8260+OX	SW5030B	//	12/30/02	12/30/02	2120476	1	SEQS
		2120476BS2	WQ	BS2	8260+OX	SW5030B	//	12/27/02	12/27/02	2120476	1	SEQS
		2120476BLK1	WQ	LB1	8260+OX	SW5030B	//	12/30/02	12/30/02	2120476	1	SEQS
		2120476BLK2	WQ	LB2	8260+OX	SW5030B	//	12/27/02	12/27/02	2120476	1	SEQS
		2120476MS1	W	MS1	8260+OX	SW5030B	//	12/30/02	12/30/02	2120476	1	SEQS
		2120476MSD1	W	SD1	8260+OX	SW5030B	//	12/30/02	12/30/02	2120476	1	SEQS

EDFSAMP: Error Summary Log

02/19/03

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

EDFTEST: Error Summary Log

02/19/03

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

EDFRES: Error Summary Log

02/19/03

Error type	Labsampid	Qccode	Matrix	Anmcode	Pvccode	Anadate	Run number	Parlabel
Warning: extra parameter	2120442MS1	MS1	W	8260+OX	PR	12/27/02	1	GRO
Warning: extra parameter	2120442MSD1	SD1	W	8260+OX	PR	12/27/02	1	GRO
Warning: extra parameter	2120476MS1	MS1	W	8260+OX	PR	12/30/02	1	GRO
Warning: extra parameter	2120476MSD1	SD1	W	8260+OX	PR	12/30/02	1	GRO
Warning: extra parameter	MLL068101	CS	W	8260+OX	PR	12/27/02	1	GRO
Warning: extra parameter	MLL068101	CS	W	8260+OX	PR	12/27/02	1	XYLENES
Warning: extra parameter	MLL068102	CS	W	8260+OX	PR	12/27/02	1	GRO
Warning: extra parameter	MLL068102	CS	W	8260+OX	PR	12/27/02	1	XYLENES
Warning: extra parameter	MLL068103	CS	W	8260+OX	PR	12/27/02	1	GRO
Warning: extra parameter	MLL068103	CS	W	8260+OX	PR	12/27/02	1	XYLENES
Warning: extra parameter	S21257007	NC	W	8260+OX	PR	12/30/02	1	GRO
Warning: extra parameter	S21267304	NC	W	8260+OX	PR	12/27/02	1	GRO
Warning: extra parameter	2120442BLK1	LB1	WQ	8260+OX	PR	12/27/02	1	GRO
Warning: extra parameter	2120442BLK1	LB1	WQ	8260+OX	PR	12/27/02	1	XYLENES
Warning: extra parameter	2120442BS1	BS1	WQ	8260+OX	PR	12/27/02	1	GRO
Warning: extra parameter	2120476BLK1	LB1	WQ	8260+OX	PR	12/30/02	1	GRO
Warning: extra parameter	2120476BLK1	LB1	WQ	8260+OX	PR	12/30/02	1	XYLENES
Warning: extra parameter	2120476BLK2	LB2	WQ	8260+OX	PR	12/27/02	1	GRO
Warning: extra parameter	2120476BLK2	LB2	WQ	8260+OX	PR	12/27/02	1	XYLENES
Warning: extra parameter	2120476BS1	BS1	WQ	8260+OX	PR	12/30/02	1	GRO
Warning: extra parameter	2120476BS2	BS2	WQ	8260+OX	PR	12/27/02	1	GRO

EDFQC: Error Summary Log

02/19/03

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

EDFCL: Error Summary Log

02/19/03

Error type	Clrevdate	Anmcode	Exmcode	Parlabel	Clcode
There are no errors in this data file	//				