



Atlantic Richfield Company  
(a BP affiliated company)

P.O. Box 6549  
Moraga, California 94570  
Phone: (925) 299-8891  
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Alameda County  
JUL 07 2003  
Environmental Health

June 30, 2003

Re: Second Quarter 2003 Groundwater Monitoring Report  
BP Site 2169  
889 West Grand Ave.  
Oakland, 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



June 20, 2003

Ms. Susan Hugo  
Hazardous Materials Specialist  
Alameda County Health Care Services Agency  
1131 Harbor Bay Parkway, Suite 250  
Alameda, CA 94502-6577

Alameda County  
JUL 07 2003  
Environmental Health

**Re: Second Quarter 2003 Groundwater Monitoring Report  
ARCO Service Station #2169  
889 West Grand Avenue  
Oakland, California  
URS Project #38486121**

Dear Ms. Hugo:

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 #2169, located at 889 West Grand Avenue, Oakland, California.

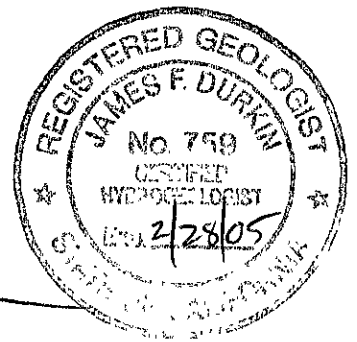
If you have any questions regarding this submission, please call at (510) 874-3280.

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, P.O. Box 6549, Moraga, CA 94570

**R E P O R T**

**SECOND QUARTER 2003  
GROUNDWATER MONITORING**

ARCO SERVICE STATION #2169  
889 WEST GRAND AVENUE  
OAKLAND, CALIFORNIA

*Prepared for*  
Atlantic Richfield Company

June 20, 2003

**URS**

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

38486121

Date: June 20, 2003  
Quarter: 2Q 03

### ATLANTIC RICHFIELD COMPANY QUARTERLY GROUNDWATER MONITORING REPORT

Facility No.: 2169 Address: 889 West Grand Avenue, Oakland, California  
Atlantic Richfield Co. Environmental Engineer: Paul Supple  
Consulting Co./Contact Person: URS Corporation / Scott Robinson / (510) 874-3280  
Consultant Project No.: 38486121  
Primary Agency: Alameda County Health Care Services Agency (ACHCSA)

#### WORK PERFORMED THIS QUARTER (Second – 2003):

1. Performed second quarter 2003 groundwater monitoring event on May 22, 2003.
2. Prepared and submitted first quarter 2003 groundwater monitoring report.
3. Replaced oxygen-releasing compound (ORC) socks.

#### WORK PROPOSED FOR NEXT QUARTER (Third – 2003):

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

Current Phase of Project: GW monitoring/sampling  
Frequency of Groundwater Sampling: Annual (1<sup>st</sup> Quarter): A-3, A-4  
Semi-annual (1<sup>st</sup>/3<sup>rd</sup> Quarter): A-2, AR-1, AR-2  
Quarterly: A-1, A-5, A-6, ADR-1, ADR-2  
Frequency of Groundwater Monitoring: Quarterly  
Is Free Product (FP) Present On-Site: No  
FP Recovered this Quarter: None  
Cumulative FP Recovered to Date: 4.8 gallons, wells ADR-1 and ADR-2  
Bulk Soil Removed This Quarter: None  
Bulk Soil Removed to Date: 2,196 cubic yards of TPH impacted soil  
Current Remediation Techniques: Natural Attenuation / ORC: A-1, A-5, A-6, ADR-1, and ADR-2  
Approximate Depth to Groundwater: 9.43 (A-6) to 11.42 (A-3) feet  
Groundwater Gradient (direction): West to Northwest  
Groundwater Gradient (magnitude): 0.002 to 0.003 feet per foot

#### DISCUSSION:

TPH-g was detected in three of the five wells sampled this quarter, at concentrations ranging from 400 micrograms per liter ( $\mu\text{g/L}$ ) in well A-1 to 520  $\mu\text{g/L}$  in well ADR-2. Benzene was detected in four wells at concentrations ranging from 0.96  $\mu\text{g/L}$  in well ADR-1 to 110  $\mu\text{g/L}$  in well ADR-2. MTBE was detected in four wells at concentrations ranging from 3.5  $\mu\text{g/L}$  in well ADR-1 to 11  $\mu\text{g/L}$  in well A-6.

**RECOMMENDATIONS:**

We recommend removing upgradient wells A-3 and A-4 from the annual sampling schedule due to the consistent non-detect values for the constituents of concern. We further recommend reducing the sampling frequency of wells A-2, AR-1 and AR-2 from semi-annually to annually due to the consistently low to non-detect values for the constituents of concern. All of the wells would continue to be gauged quarterly for groundwater levels.

**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 -- May 22, 2003
- Attachment A - Field Procedures and Field Data Sheets
- Attachment B - Laboratory Procedures, Certified Analytical Reports and Chain-of-Custody Records
- Attachment C - Historic Groundwater Data
- Attachment D - EDCC and EDF/Geowell Submittal Confirmation

**Table 1**  
**Groundwater Elevation and Analytical Data**

ARCO Service Station #2169  
889 West Grand Avenue  
Oakland, California

Well Number	Date Sampled	Top of Riser Elevation (ft)	Depth to Groundwater (ft)	Groundwater Elevation (ft)	TPH as Gasoline (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)	Dissolved Oxygen (mg/L)	
AR-1	06/26/00	15.61	11.59	4.02	NA	NA	NA	NA	NA	NA	NA	
	07/20/00		12.06	3.55	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<1.0	6	NA	
	09/19/00		11.89	3.72	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<1.0	ND<3	NA	
	12/26/00		11.95	3.66	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	NA	
	03/20/01 <sup>a</sup>		NM	NM	NS	NS	NS	NS	NS	NS	NS	NS
	06/12/01		11.87	3.74	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	17	NA	
	09/23/01		12.42	3.19	NS	NS	NS	NS	NS	NS	NS	
	12/28/01		7.62	7.99	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	NA	
	03/21/02		9.37	6.24	NS	NS	NS	NS	NS	NS	NS	
	04/17/02		10.43	5.18	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	NA	
	08/14/02		12.08	3.53	ND<50	ND<0.5	ND<0.5	ND<0.5	1.3	ND<2.5	2.2	
	11/27/02		12.00	3.61	NS	NS	NS	NS	NS	NS	NS	
	02/12/03 <sup>d</sup>		10.89	4.72	ND<50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	1.8
	<b>05/22/03</b>		<b>11.18</b>	<b>4.43</b>	<b>NS</b>	<b>NS</b>	<b>NS</b>	<b>NS</b>	<b>NS</b>	<b>NS</b>	<b>NS</b>	<b>NS</b>
AR-2	06/26/00	15.28	11.79	3.49	NA	NA	NA	NA	NA	NA	NA	
	07/20/00		12.07	3.21	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<1.0	ND<3	NA	
	09/19/00		12.08	3.2	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<1.0	ND<3	NA	
	12/26/00		11.95	3.33	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	NA	
	03/20/01		10.50	4.78	NS	NS	NS	NS	NS	NS	NS	
	06/12/01		11.73	3.55	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	82	NA	
	09/23/01		12.43	2.85	NS	NS	NS	NS	NS	NS	NS	
	12/28/01		8.60	6.68	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	30	NA	
	03/21/02		9.49	5.79	NS	NS	NS	NS	NS	NS	NS	
	04/17/02		10.37	4.91	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	3.2	NA	
	08/14/02		12.13	3.15	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	1.4	
	11/27/02		12.08	3.20	NS	NS	NS	NS	NS	NS	NS	
	02/12/03 <sup>d</sup>		11.15	4.13	ND<50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	1.2
	<b>05/22/03</b>		<b>11.18</b>	<b>4.10</b>	<b>NS</b>	<b>NS</b>	<b>NS</b>	<b>NS</b>	<b>NS</b>	<b>NS</b>	<b>NS</b>	<b>NS</b>

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Well Number	Date Sampled	Top of Riser Elevation (ft)	Depth to Groundwater (ft)	Groundwater Elevation (ft)	TPH as Gasoline (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)	Dissolved Oxygen (mg/L)
ADR-1	06/26/00	13.95	10.55	3.40	NA	NA	NA	NA	NA	NA	NA
	07/20/00		10.85	3.10	180	29	ND<0.5	0.8	ND<1.0	22	NA
	09/19/00		11.08	2.87	120	7.4	ND<0.5	1.2	ND<1.0	22	NA
	12/26/00		10.93	3.02	ND<50	1.29	ND<0.5	ND<0.5	ND<0.5	14.7	NA
	03/20/01		9.32	4.63	225	23.4	ND<0.5	8.71	4.13	10.8	NA
	06/12/01		10.65	3.30	250	23	0.5	13	4.2	7.5	NA
	09/23/01		11.25	2.70	ND<50	1.4	ND<0.5	ND<0.5	0.57	2.8	NA
	12/28/01		8.43	5.52	250	16	ND<0.5	1.2	4.1	6.8	NA
	03/21/02		8.27	5.68	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	NA
	04/17/02		9.17	4.78	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	NA
	08/14/02		11.88	2.07	ND<50	1.1	ND<0.5	ND<0.5	ND<0.5	ND<2.5	3.4
	11/27/02		10.91	3.04	ND<50	0.54	ND<0.5	ND<0.5	ND<0.5	1.1	1.8
	02/12/03 <sup>d</sup>		9.95	4.00	ND<50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	0.73	1.9
<b>05/22/03</b>			<b>9.86</b>	<b>4.09</b>	<b>ND&lt;50</b>	<b>0.96</b>	<b>ND&lt;0.50</b>	<b>ND&lt;0.50</b>	<b>ND&lt;0.50</b>	<b>3.5</b>	<b>1.2</b>
ADR-2	06/26/00	14.64	11.22	3.42	NA	NA	NA	NA	NA	NA	NA
	07/20/00		11.60	3.04	12,000	410	2.5	540	720	23	NA
	09/19/00		11.81	2.83	1,400	530	5	680	740	34	NA
	12/26/00		11.52	3.12	901	26.6	ND<5.0	21.4	32.5	32.8	NA
	03/20/01		10.10	4.54	Sheen	Sheen	Sheen	Sheen	Sheen	Sheen	Sheen
	06/12/01		11.41	3.23	Sheen	Sheen	Sheen	Sheen	Sheen	Sheen	Sheen
	09/23/01		11.98	2.66	5300	370	ND<5.0	550	96	60	NA
	12/28/01		9.48	5.16	2,600	190	ND<5.0	160	29	61	NA
	03/21/02		9.1	5.54	180	6	ND<0.5	4.5	3.2	15	NA
	04/17/02		9.93	4.71	730	86	ND<0.5	13	ND<0.5	ND<2.5	NA
	08/14/02		12.09	2.55	1,300 <sup>b</sup>	170	ND<10	100	47	ND<50	0.9
	11/27/02		11.66	2.98	1,800 <sup>b</sup>	240	3.1	120	14	74	0.6
	02/12/03 <sup>d</sup>		10.74	3.90	760	120	ND<5.0	15	5.2	22	1.3
<b>05/22/03</b>			<b>10.67</b>	<b>3.97</b>	<b>520</b>	<b>110</b>	<b>ND&lt;5.0</b>	<b>7.1</b>	<b>ND&lt;5.0</b>	<b>9.7</b>	<b>0.7</b>

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Well Number	Date Sampled	Top of Riser Elevation (ft)	Depth to Groundwater (ft)	Groundwater Elevation (ft)	TPH as Gasoline (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)	Dissolved Oxygen (mg/L)
A-1	06/26/00	14.16	10.75	3.41	NA	NA	NA	NA	NA	NA	NA
	07/20/00		11.01	3.15	3,900	1,100	28	12	46	25	NA
	09/19/00		11.26	2.90	4,800	2,400	27	20	57	32	NA
	12/26/00		10.96	3.20	429	104	2.85	12.2	9.91	18.7	NA
	03/20/01		9.59	4.57	ND<500	13.9	7.12	13.9	23.2	ND<25	NA
	06/12/01		10.83	3.33	140	2.2	ND<0.5	8.7	9.2	25	NA
	09/23/01		11.43	2.73	ND<50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	4.5	NA
	12/28/01		8.66	5.50	930	250.0	7.6	21	13	ND<25	NA
	03/21/02		8.43	5.73	ND<50	ND<0.5	ND<0.5	ND<0.5	1.2	ND<2.5	NA
	04/17/02		9.36	4.80	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	NA
	08/14/02		11.12	3.04	170 <sup>b</sup>	8.4	ND<0.5	ND<0.5	1.4	4.9	5.7
	11/27/02		11.11	3.05	98 <sup>b</sup>	2.9	0.75	ND<0.5	ND<0.5	6.4	1.6
	02/12/03 <sup>d</sup>		10.10	4.06	73	9.3	ND<0.50	1.0	0.53	2.9	2.1
	<b>05/22/03</b>		<b>10.18</b>	<b>3.98</b>	<b>400</b>	<b>88</b>	<b>1.6</b>	<b>4.6</b>	<b>11</b>	<b>4.9</b>	<b>1.3</b>
A-2	06/26/00	14.55	11.27	3.28	NA	NA	NA	NA	NA	NA	NA
	07/20/00		11.52	3.03	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<1.0	ND<3	NA
	09/19/00		11.63	2.92	NS	NS	NS	NS	NS	NS	NS
	12/26/00		11.44	3.11	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	NA
	03/20/01		10.08	4.47	NS	NS	NS	NS	NS	NS	NS
	06/12/01		11.35	3.2	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	NA
	09/23/01		11.92	2.63	NS	NS	NS	NS	NS	NS	NS
	12/28/01		9.31	5.24	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	NA
	03/21/02		9.05	5.5	NS	NS	NS	NS	NS	NS	NS
	04/17/02		9.88	4.67	52	ND<0.5	ND<0.5	ND<0.5	ND<0.5	26	NA
	08/14/02		11.62	2.93	ND<50	ND<0.5	ND<0.5	ND<0.5	1.2 <sup>c</sup>	ND<2.5	3.7
	11/27/02		11.56	2.99	NS	NS	NS	NS	NS	NS	NS
	02/12/03 <sup>d</sup>		10.75	3.80	ND<50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	12	2.9
	<b>05/22/03</b>		<b>10.72</b>	<b>3.83</b>	<b>NS</b>	<b>NS</b>	<b>NS</b>	<b>NS</b>	<b>NS</b>	<b>NS</b>	<b>NS</b>



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Well Number	Date Sampled	Top of Riser Elevation (ft)	Depth to Groundwater (ft)	Groundwater Elevation (ft)	TPH as Gasoline (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)	Dissolved Oxygen (mg/L)	
A-3	06/26/00	15.75	11.98	3.77	NS	NS	NS	NS	NS	NS	NS	
	07/20/00		12.21	3.54	NS	NS	NS	NS	NS	NS	NS	
	09/19/00		12.50	3.25	NS	NS	NS	NS	NS	NS	NS	
	12/26/00		12.17	3.58	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	NA	
	03/20/01		10.70	5.05	NS	NS	NS	NS	NS	NS	NS	
	06/12/01		12.09	3.66	NS	NS	NS	NS	NS	NS	NS	
	09/23/01		12.65	3.1	NS	NS	NS	NS	NS	NS	NS	
	12/28/01		9.94	5.81	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	NA	
	03/21/02		9.69	6.06	NS	NS	NS	NS	NS	NS	NS	
	04/17/02		10.61	5.14	NS	NS	NS	NS	NS	NS	NS	
	08/14/02		12.27	3.48	NS	NS	NS	NS	NS	NS	NS	
	11/27/02		12.22	3.53	NS	NS	NS	NS	NS	NS	NS	
	02/12/03 <sup>d</sup>		11.40	4.35	ND<50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	1.2
	<b>05/22/03</b>		<b>11.42</b>	<b>4.33</b>	<b>NS</b>	<b>NS</b>	<b>NS</b>	<b>NS</b>	<b>NS</b>	<b>NS</b>	<b>NS</b>	<b>NS</b>
A-4	06/26/00	15.25	10.99	4.26	NS	NS	NS	NS	NS	NS	NS	
	07/20/00		11.16	4.09	NS	NS	NS	NS	NS	NS	NS	
	09/19/00		11.97	3.28	NS	NS	NS	NS	NS	NS	NS	
	12/26/00		11.19	4.06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	NA	
	03/20/01		9.81	5.44	NS	NS	NS	NS	NS	NS	NS	
	06/12/01		11.12	4.13	NS	NS	NS	NS	NS	NS	NS	
	09/23/01		11.63	3.62	NS	NS	NS	NS	NS	NS	NS	
	12/28/01		8.41	6.84	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	NA	
	03/21/02		8.63	6.62	NS	NS	NS	NS	NS	NS	NS	
	04/17/02		9.68	5.57	NS	NS	NS	NS	NS	NS	NS	
	08/14/02		11.31	3.94	NS	NS	NS	NS	NS	NS	NS	
	11/27/02		11.25	4.00	NS	NS	NS	NS	NS	NS	NS	
	02/12/03 <sup>d</sup>		10.37	4.88	ND<50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	0.9
	<b>05/22/03</b>		<b>10.42</b>	<b>4.83</b>	<b>NS</b>	<b>NS</b>	<b>NS</b>	<b>NS</b>	<b>NS</b>	<b>NS</b>	<b>NS</b>	<b>NS</b>

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A-5	06/26/00	13.51	10.04	3.47	NA	NA	NA	NA	NA	NA	NA
	07/20/00		10.31	3.20	730	140	11	ND<0.5	8.9	3	NA
	09/19/00		10.55	2.96	160	13	ND<0.5	2.8	1.9	ND<3	NA
	12/26/00		10.37	3.14	8,120	465	108	659	1,450	ND<250	NA
	03/20/01		8.81	4.70	7,990	1110	473	611	1,580	ND<250	NA
	06/12/01		10.13	3.38	450	91	18	35	95	ND<5.0	NA
	09/23/01		10.80	2.71	110	20	ND<0.5	5.0	5.0	2.7	NA
	12/28/01		8.17	5.34	320	24	2	20	27	5	NA
	03/21/02		7.78	5.73	2,500	420	85	130	350	31	NA
	04/17/02		8.68	4.83	1,300	190	36	67	210	ND<25	NA
	08/14/02		10.41	3.10	840 <sup>b</sup>	150	ND<5.0	68	41	ND<25	1.4
	11/27/02		10.50	3.01	300 <sup>b</sup>	26	2.3	17	6	ND<0.5	1.2
	02/12/03 <sup>d</sup>		10.81	2.70	ND<500	74	7.0	34	45	ND<5.0	1.0
<b>05/22/03</b>	<b>9.46</b>	<b>4.05</b>	<b>500</b>	<b>100</b>	<b>9.0</b>	<b>28</b>	<b>47</b>	<b>ND&lt;5.0</b>	<b>1.0</b>		
A-6	06/26/00	13.51	10.09	3.42	NA	NA	NA	NA	NA	NA	NA
	07/20/00		10.91	2.60	170	ND<0.5	ND<0.5	0.6	2.0	6	NA
	09/19/00		11.27	2.24	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<1.0	6	NA
	12/26/00		10.65	2.86	56.2	ND<0.5	ND<0.5	ND<0.5	ND<0.5	8.17	NA
	03/20/01		8.72	4.79	216	ND<0.5	ND<0.5	ND<0.5	1.8	19.9	NA
	06/12/01		10.80	2.71	80	0.62	ND<0.5	ND<0.5	ND<0.5	15	NA
	09/23/01		10.79	2.72	450	1.7	1.9	2.3	3.3	53	NA
	12/28/01		8.05	5.46	270	0.98	3.5	0.77	1.4	26	NA
	03/21/02		7.83	5.68	130	ND<0.5	ND<0.5	ND<0.5	ND<0.5	19	NA
	04/17/02		8.73	4.78	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	16	NA
	08/14/02		10.43	3.08	980 <sup>b</sup>	4.8	2.6	2.0	4.9	75	1.5
	11/27/02		10.47	3.04	280 <sup>b</sup>	ND<0.5	0.74	ND<0.5	ND<0.5	16	0.9
	02/12/03 <sup>d</sup>		10.44	3.07	51	ND<0.50	ND<0.50	ND<0.50	ND<0.50	9.9	0.8
<b>05/22/03</b>	<b>9.43</b>	<b>4.08</b>	<b>ND&lt;50</b>	<b>ND&lt;0.50</b>	<b>ND&lt;0.50</b>	<b>ND&lt;0.50</b>	<b>ND&lt;0.50</b>	<b>11</b>	<b>1.2</b>		

**Table 1**  
**Groundwater Elevation and Analytical Data**

ARCO Service Station #2169  
889 West Grand Avenue  
Oakland, California

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TPH	= Total Petroleum Hydrocarbons
MTBE	= Methyl tertiary butyl ether analyzed by EPA Method 8021B unless otherwise noted
µg/L	= Micrograms per liter
NM	= Not measured
NC	= Not calculated
NA	= Not analyzed, not available, not applicable
NS	= Not sampled
ND<	= Not detected at or above specified laboratory method detection limit
a	= Well was covered by stockpiled soil and not accessible
b	= Chromatogram Pattern: Gasoline C6-C10
c	= Primary and confirmation results varied by greater than 40% RPD. The values may still be useful for their intended purpose
d	= TPH-g, BTEX, and MTBE analyzed using EPA Method 8260B starting first quarter 2003

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

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**Table 2  
Groundwater Flow Direction and Gradient**

ARCO Service Station #2169  
889 West Grand Avenue  
Oakland, California

Date Measured	Average Flow Direction	Average Hydraulic Gradient
07/20/00	Northwest	0.004
09/19/00	West-Northwest	0.003
12/26/00	Northwest	0.004
03/20/01	Northwest	0.003
06/12/01	Northwest	0.004
09/23/01	Northwest	0.004
12/28/01	Variable	Variable
03/21/02	Northwest	0.004
04/17/02	Northwest	0.003
08/14/02	West	0.003
11/27/02	West	0.003
02/12/03	South	0.005
<b>05/22/03</b>	<b>West to Northwest</b>	<b>0.002 to 0.003</b>

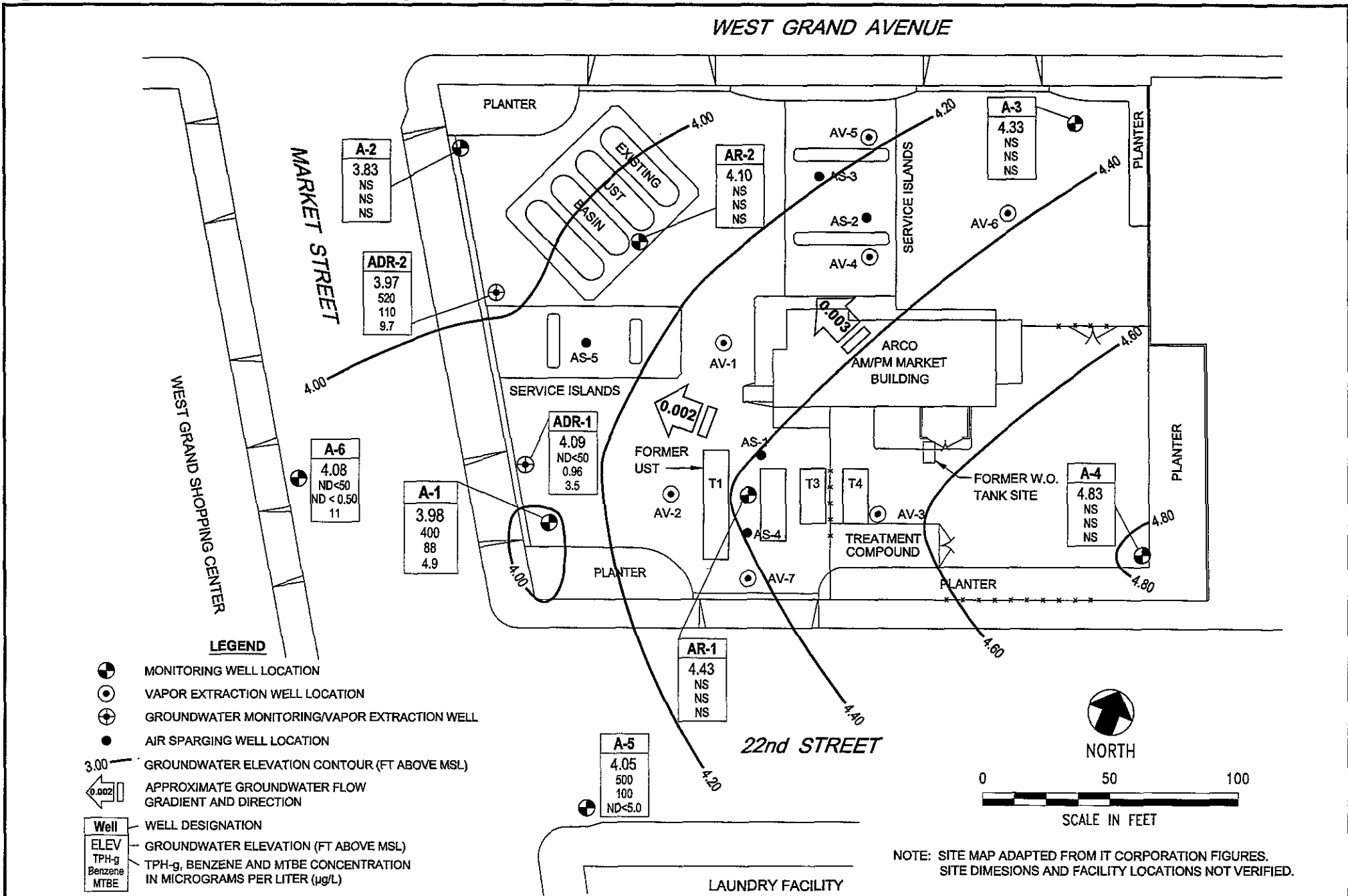
Source: The data within this table collected prior to August 2002 was provided to URS by Group Environmental Management Company and their previous consultants. URS has not verified the accuracy of this information.

**Table 3  
Fuel Oxygenate Analytical Data**

ARCO Service Station #2169  
889 West Grand Avenue  
Oakland, California

Well Number	Date Sampled	Ethanol (µg/L)	TBA (µg/L)	MTBE (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)
AR-1	02/12/03	ND<40	ND<20	ND<0.50	ND<0.50	ND<0.50	ND<0.50
	05/22/03	NS	NS	NS	NS	NS	NS
AR-2	02/12/03	ND<40	ND<20	ND<0.50	ND<0.50	ND<0.50	ND<0.50
	05/22/03	NS	NS	NS	NS	NS	NS
ADR-1	02/12/03	ND<40	ND<20	0.73	ND<0.50	ND<0.50	ND<0.50
	05/22/03	ND<100	ND<20	3.5	ND<0.50	ND<0.50	ND<0.50
ADR-2	02/12/03	ND<400	ND<200	22	ND<5.0	ND<5.0	ND<5.0
	05/22/03	ND<1,000	ND<200	9.7	ND<5.0	ND<5.0	ND<5.0
A-1	02/12/03	ND<40	ND<20	2.9	ND<0.50	ND<0.50	ND<0.50
	05/22/03	ND<100	ND<20	4.9	ND<0.50	ND<0.50	ND<0.50
A-2	02/12/03	ND<40	ND<20	12	ND<0.50	ND<0.50	ND<0.50
	05/22/03	NS	NS	NS	NS	NS	NS
A-3	02/12/03	ND<40	ND<20	ND<0.50	ND<0.50	ND<0.50	ND<0.50
	05/22/03	NS	NS	NS	NS	NS	NS
A-4	02/12/03	ND<40	ND<20	ND<0.50	ND<0.50	ND<0.50	ND<0.50
	05/22/03	NS	NS	NS	NS	NS	NS
A-5	02/12/03	ND<400	ND<200	ND<5.0	ND<5.0	ND<5.0	ND<5.0
	05/22/03	ND<1,000	ND<200	ND<5.0	ND<5.0	ND<5.0	ND<5.0
A-6	02/12/03	ND<40	ND<20	9.9	ND<0.50	ND<0.50	ND<0.50
	05/22/03	ND<100	ND<20	11	ND<0.50	ND<0.50	0.60

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  
ND< = Not detected at or above the laboratory detection limit  
NS = Not sampled



NOTE: SITE MAP ADAPTED FROM IT CORPORATION FIGURES. SITE DIMENSIONS AND FACILITY LOCATIONS NOT VERIFIED.

- LEGEND**
- MONITORING WELL LOCATION
  - VAPOR EXTRACTION WELL LOCATION
  - GROUNDWATER MONITORING/VAPOR EXTRACTION WELL
  - AIR SPARGING WELL LOCATION
  - 3.00 GROUNDWATER ELEVATION CONTOUR (FT ABOVE MSL)
  - APPROXIMATE GROUNDWATER FLOW GRADIENT AND DIRECTION
- | Well    | WELL DESIGNATION   |
|---------|--|
| ELEV    | GROUNDWATER ELEVATION (FT ABOVE MSL)                                 |
| TPH-g   | TPH-g, BENZENE AND MTBE CONCENTRATION IN MICROGRAMS PER LITER (µg/L) |
| Benzene |  |
| MTBE    |  |
- ND< NOT DETECTED AT OR ABOVE LABORATORY REPORTING LIMIT
  - NS NOT SAMPLED

<b>URS</b>	Project No. 38486121	<b>GROUNDWATER ELEVATION CONTOUR AND ANALYTICAL SUMMARY MAP</b> Second Quarter 2003 (May 22, 2003)	FIGURE <b>1</b>
	Arco Service Station 2169 889 West Grand Avenue Oakland, California		

**ATTACHMENT A**  
**FIELD PROCEDURES AND FIELD DATA SHEETS**

## FIELD PROCEDURES

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### 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 # 030522-BAL      Date 5/22/03      Client Arco 2169

Site 889 W. GRAND AVE, OAKLAND

P  
CS  
CS  
O  
O  
O  
CS  
CS  
O  
CS  
O  
CS  
O  
CS  
O  
CS  
O  
CS  
O  
CS

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.)	All <input checked="" type="checkbox"/> Depth to well bottom (ft.)	Survey Point: TOB or TOC	
A-1	3					10.18*	23.72	TOC	ORCs
A-2	3					10.72	24.56		
A-3	3					11.42	28.35		
A-4	3					10.42	27.60		
A-5	2					9.46*	24.12		ORCs
A-6	2					9.43	26.97		
AR-1	6					11.18	27.64		
AR-2	4					11.18	28.57		
ADR-1	4					9.86*	-		ORCs
ADR-2	4					10.67*	-	▷	ORCs
* gauged w/ ORCs in well									

# ARCO / BP WELL MONITORING DATA SHEET

BTS #: 030522-BAL	Station # 2169
Sampler: BRIAN ALLEN	Date: 5/22/03
Well I.D.: A-1	Well Diameter: 2 (3) 4 6 8
Total Well Depth: 23.72	Depth to Water: 10-18 w/ ORLS in well
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 <sup>2</sup> * 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: _____
---	--

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>5.0</u>	x	<u>3</u>	=	<u>15.0</u> Gals.
1 Case Volume (Gals.)		Specified Volumes		Calculated Volume

Time	Temp (°F)	pH	Conductivity (mS or (µS))	Gals. Removed	Observations
1205					ORL SOCKS REMOVED FROM WELL PRIOR TO PURGE
1221	71.3	7.6	1030	5.0	clear
1226	71.7	7.5	1,007	10.0	"
1231	70.9	7.4	1,015	15.0	"
UNABLE TO REPLACE W/ NEW ORL SOCKS DUE TO PLUMBING					

Did well dewater? Yes <u>No</u>	Gallons actually evacuated: 15
Sampling Time: <del>1230</del> 1235	Sampling Date: 5/22/03
Sample I.D.: A-1	Laboratory: Pace (Sequoia) Other _____
Analyzed for: (TPH-G BTEX) MTBE TPH-D	Other: OxyS + Ethanol All b <sub>2</sub> 8260
D.O. (if req'd):	Pre-purge: _____ mg/L
	Post-purge: (1.3) mg/L
O.R.P. (if req'd):	Pre-purge: _____ mV
	Post-purge: _____ mV

## ARCO / BP WELL MONITORING DATA SHEET

BTS #: 030522-BAL	Station # 2169
Sampler: BRIAN ALORN	Date: 5/22/03
Well I.D.: A-5	Well Diameter: (2) 3 4 6 8
Total Well Depth: 24.12	Depth to Water: 9.46 w/ ORCs in Well
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 <sup>2</sup> * 0.163

Purge Method: <del>Bailer</del> <del>Disposable Bailer</del> <del>Middleburg</del> <del>Electric Submersible</del> <del>Extraction Pump</del> Other: _____	Sampling Method: <del>Bailer</del> <del>(Disposable Bailer)</del> Extraction Port Other: _____
---	---

Top of Screen: 5'      If well is listed as a no-purge, confirm that water level is below the top of screen. Otherwise, the well must be purged.

—	x <u>No Purge</u>	=	—	Gals.
1 Case Volume (Gals.)	Specified Volumes		Calculated Volume	

Time	Temp (°F)	pH	Conductivity (mS or (μS))	Gals. Removed	Observations
1150	66.8	7.6	1,038	—	clear, odor

Did well dewater?    Yes    No      Gallons actually evacuated:    —

Sampling Time: 1150      Sampling Date: 5/22/03

Sample I.D.: A-5      Laboratory: Pace (Sequoia) Other \_\_\_\_\_

Analyzed for: (TPH-G BTEX MTBE TPH-D) Other: OxyS + Ethanol All to 8260

D.O. (if req'd):	Pre-purge:	mg/L	(Post-purge):	1.0	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:		mV

## ARCO / BP WELL MONITORING DATA SHEET

BTS #: 030522-BAL	Station # 2169
Sampler: BRIAN ALLEN	Date: 5/22/03
Well I.D.: A-6	Well Diameter: (2) 3 4 6 8
Total Well Depth: 26.97	Depth to Water: 9.43
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 <sup>2</sup> * 0.163

Purge Method: <del>Bailer</del> <del>Disposable Bailer</del> <del>Middleburg</del> <del>Electric Submersible Extraction Pump</del> Other: _____	Sampling Method: <del>Bailer</del> (Disposable Bailer) Extraction Port Other: _____
---	--

Top of Screen: 5' If well is listed as a no-purge, confirm that water level is below the top of screen. Otherwise, the well must be purged.

—	x	<u>No Purge</u>	=	—	Gals.
1 Case Volume (Gals.)		Specified Volumes		Calculated Volume	

Time	Temp (°F)	pH	Conductivity (mS or $\mu$ S)	Gals. Removed	Observations
1135	68.0	8.2	1,066	—	clear

Did well dewater? Yes <input type="checkbox"/> No <input type="checkbox"/>	Gallons actually evacuated: —
Sampling Time: 1135	Sampling Date: 5/22/03
Sample I.D.: A-6	Laboratory: Pace (Sequoia) Other _____

Analyzed for: (TPH-G) (BTEX) MTBE TPH-D Other: OxyS + Ethanol All by 8260
D.O. (if req'd): Pre-purge: _____ mg/L Post-purge: (1.2) mg/L
O.R.P. (if req'd): Pre-purge: _____ mV Post-purge: _____ mV

## ARCO / BP WELL MONITORING DATA SHEET

BTS #: 030522-BAT	Station # 2169
Sampler: BRIAN ALCOON	Date: 5/22/03
Well I.D.: ADR-1	Well Diameter: 2 3 <u>4</u> 6 8
Total Well Depth:	Depth to Water: 9.86 w/ ORCs in well
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: <u>PVC</u> Grade	D.O. Meter (if req'd): <u>YSI</u> EACH

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

Purge Method: <u>Bailer</u> <del>Disposable Bailer</del> <del>Middleburg</del> <del>Electric Submersible Extraction Pump</del> Other: _____	Sampling Method: <u>Bailer</u> <del>Disposable Bailer</del> <del>Extraction Port</del> Other: _____
---	--

Top of Screen: 5' If well is listed as a no-purge, confirm that water level is below the top of screen. Otherwise, the well must be purged.

$\frac{\text{---}}{1 \text{ Case Volume (Gals.)}} \times \frac{\text{No Purge}}{\text{Specified Volumes}} = \frac{\text{---}}{\text{Calculated Volume}} \text{ Gals.}$
--

Time	Temp (°F)	pH	Conductivity (mS or $\mu$ S)	Gals. Removed	Observations
1050	69.6	7.3	1,133	—	clear

Did well dewater? Yes    No	Gallons actually evacuated: —
Sampling Time: 1050	Sampling Date: 5/22/03
Sample I.D.: ADR-1	Laboratory: Pace <u>Sequoia</u> Other _____
Analyzed for: <u>TPH-G BTEX</u> MTBE TPH-D Other: OATS + Ethanol All by 8260	
D.O. (if req'd):	Pre-purge: _____ mg/L <u>Post-purge:</u> 1.2 mg/L
O.R.P. (if req'd):	Pre-purge: _____ mV    Post-purge: _____ mV

## ARCO / BP WELL MONITORING DATA SHEET

BTS #: 030522-BAL	Station # 2169
Sampler: BRIAN ALLEN	Date: 5/22/03
Well I.D.: ADR-2	Well Diameter: 2 3 (4) 6 8
Total Well Depth: —	Depth to Water: 10.67 w/ ORCs in well
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 <sup>2</sup> * 0.163

Purge Method: <u>Bailer</u> <del>Disposable Bailer</del> <del>Middleburg</del> <del>Electric Submersible</del> <del>Extraction Pump</del> Other: _____	Sampling Method: <u>Bailer</u> <del>Disposable Bailer</del> Extraction Port Other: _____
---	---

Top of Screen: 5' If well is listed as a no-purge, confirm that water level is below the top of screen. Otherwise, the well must be purged.

—	x <u>No Purge</u>	=	—	Gals.
1 Case Volume (Gals.)	Specified Volumes		Calculated Volume	

Time	Temp (°F)	pH	Conductivity (mS or (uS))	Gals. Removed	Observations
1120	69.4	7.6	1,243	—	clear w/ black debris, odor, slight sheen

Did well dewater? Yes  No  Gallons actually evacuated: —

Sampling Time: 1120 Sampling Date: 5/22/03

Sample I.D.: ADR-2 Laboratory: Pace (Sequoia) Other \_\_\_\_\_

Analyzed for: (TPH-G) (BTEX) MTBE TPH-D Other: Oxy + Ethanol All bis 8260

D.O. (if req'd):	Pre-purge:	mg/L	(Post-purge):	0.7	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:		mV

# WELLHEAD INSPECTION CHECKLIST

Client Arco 2169 Date 5/22/03

Site Address 889 W. GRAND AVE, OAKLAND

Job Number 030522-BA1 Technician BRIAN ALCOAN

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
A-1		✓						✓
A-2								✓
A-3								✓
A-4								✓
A-5	✓							
A-6	✓							
AR-1								✓
AR-2								✓
ADR-1								✓
ADR-2								✓

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:

2169

Station #

889 W. GRAND AVE., OAKLAND

Station Address

Total Gallons Collected From Groundwater Monitoring Wells:

added equip.  
rinse water \_\_\_\_\_

any other  
adjustments \_\_\_\_\_

TOTAL GALS.  
RECOVERED 15

loaded onto  
BTS vehicle # 23

BTS event #

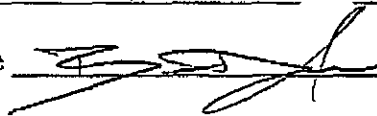
time date

030522-BAZ

1350

5/22/03

signature



\*\*\*\*\*  
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.



9 June, 2003

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

RE: ARCO #2169, Oakland, CA  
Sequoia Work Order: MME0680

Enclosed are the results of analyses for samples received by the laboratory on 05/23/03 09:53. 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 #2169, Oakland, CA  
Project Number: INTRIM-50325  
Project Manager: Scott Robinson

MME0680  
**Reported:**  
06/09/03 12:11

**ANALYTICAL REPORT FOR SAMPLES**

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
A-1	MME0680-01	Water	05/22/03 12:35	05/23/03 09:53
A-5	MME0680-02	Water	05/22/03 11:50	05/23/03 09:53
A-6	MME0680-03	Water	05/22/03 11:35	05/23/03 09:53
ADR-1	MME0680-04	Water	05/22/03 10:50	05/23/03 09:53
ADR-2	MME0680-05	Water	05/22/03 11:20	05/23/03 09:53

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

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

Project: ARCO #2169, Oakland, CA  
Project Number: INTRIM-50325  
Project Manager: Scott Robinson

MME0680  
Reported:  
06/09/03 12:11

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

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>A-1 (MME0680-01) Water</b> <b>Sampled: 05/22/03 12:35</b> <b>Received: 05/23/03 09:53</b>									
Ethanol	ND	100	ug/l	1	3F05011	06/05/03	06/05/03	EPA 8260B	
tert-Butyl alcohol	ND	20	"	"	"	"	"	"	
Methyl tert-butyl ether	4.9	0.50	"	"	"	"	"	"	
Di-isopropyl ether	ND	0.50	"	"	"	"	"	"	
Ethyl tert-butyl ether	ND	0.50	"	"	"	"	"	"	
tert-Amyl methyl ether	ND	0.50	"	"	"	"	"	"	
Benzene	88	0.50	"	"	"	"	"	"	
Toluene	1.6	0.50	"	"	"	"	"	"	
Ethylbenzene	4.6	0.50	"	"	"	"	"	"	
Xylenes (total)	11	0.50	"	"	"	"	"	"	
Gasoline Range Organics (C6-C10)	400	50	"	"	"	"	"	"	
<i>Surrogate: 1,2-Dichloroethane-d4</i>		93.8 %	78-129	"	"	"	"	"	
<b>A-5 (MME0680-02) Water</b> <b>Sampled: 05/22/03 11:50</b> <b>Received: 05/23/03 09:53</b>									
Ethanol	ND	1000	ug/l	10	3F04033	06/04/03	06/04/03	EPA 8260B	
tert-Butyl alcohol	ND	200	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	5.0	"	"	"	"	"	"	
Di-isopropyl ether	ND	5.0	"	"	"	"	"	"	
Ethyl tert-butyl ether	ND	5.0	"	"	"	"	"	"	
tert-Amyl methyl ether	ND	5.0	"	"	"	"	"	"	
Benzene	100	5.0	"	"	"	"	"	"	
Toluene	9.0	5.0	"	"	"	"	"	"	
Ethylbenzene	28	5.0	"	"	"	"	"	"	
Xylenes (total)	47	5.0	"	"	"	"	"	"	
Gasoline Range Organics (C6-C10)	500	500	"	"	"	"	"	"	
<i>Surrogate: 1,2-Dichloroethane-d4</i>		114 %	78-129	"	"	"	"	"	

URS Corporation [Aero]  
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 Oakland CA, 94607

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 Project Number: INTRIM-50325  
 Project Manager: Scott Robinson

 MME0680  
 Reported:  
 06/09/03 12:11

### Volatile Organic Compounds by EPA Method 8260B

#### Sequoia Analytical - Morgan Hill

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>A-6 (MME0680-03) Water</b> Sampled: 05/22/03 11:35 Received: 05/23/03 09:53									
Ethanol	ND	100	ug/l	1	3F04033	06/04/03	06/04/03	EPA 8260B	
tert-Butyl alcohol	ND	20	"	"	"	"	"	"	"
<b>Methyl tert-butyl ether</b>	<b>11</b>	0.50	"	"	"	"	"	"	"
Di-isopropyl ether	ND	0.50	"	"	"	"	"	"	"
Ethyl tert-butyl ether	ND	0.50	"	"	"	"	"	"	"
<b>tert-Amyl methyl ether</b>	<b>0.60</b>	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>		116 %	78-129	"	"	"	"	"	"
<b>ADR-1 (MME0680-04) Water</b> Sampled: 05/22/03 10:50 Received: 05/23/03 09:53									
Ethanol	ND	100	ug/l	1	3F04033	06/04/03	06/05/03	EPA 8260B	
tert-Butyl alcohol	ND	20	"	"	"	"	"	"	"
<b>Methyl tert-butyl ether</b>	<b>3.5</b>	0.50	"	"	"	"	"	"	"
Di-isopropyl ether	ND	0.50	"	"	"	"	"	"	"
Ethyl tert-butyl ether	ND	0.50	"	"	"	"	"	"	"
tert-Amyl methyl ether	ND	0.50	"	"	"	"	"	"	"
<b>Benzene</b>	<b>0.96</b>	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>		114 %	78-129	"	"	"	"	"	"

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

 Project: ARCO #2169, Oakland, CA  
 Project Number: INTRIM-50325  
 Project Manager: Scott Robinson

 MME0680  
 Reported:  
 06/09/03 12:11

### Volatile Organic Compounds by EPA Method 8260B

#### Sequoia Analytical - Morgan Hill

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>ADR-2 (MME0680-05) Water</b> <b>Sampled: 05/22/03 11:20</b> <b>Received: 05/23/03 09:53</b>									
Ethanol	ND	1000	ug/l	10	3F04033	06/04/03	06/05/03	EPA 8260B	
tert-Butyl alcohol	ND	200	"	"	"	"	"	"	
<b>Methyl tert-butyl ether</b>	<b>9.7</b>	5.0	"	"	"	"	"	"	
Di-isopropyl ether	ND	5.0	"	"	"	"	"	"	
Ethyl tert-butyl ether	ND	5.0	"	"	"	"	"	"	
tert-Amyl methyl ether	ND	5.0	"	"	"	"	"	"	
<b>Benzene</b>	<b>110</b>	5.0	"	"	"	"	"	"	
Toluene	ND	5.0	"	"	"	"	"	"	
<b>Ethylbenzene</b>	<b>7.1</b>	5.0	"	"	"	"	"	"	
Xylenes (total)	ND	5.0	"	"	"	"	"	"	
<b>Gasoline Range Organics (C6-C10)</b>	<b>520</b>	500	"	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		114 %		78-129	"	"	"	"	

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 Reported:  
 06/09/03 12:11

**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 3F04033 - EPA 5030B P/T**
**Blank (3F04033-BLK1)**

Prepared &amp; Analyzed: 06/04/03

Ethanol	ND	100	ug/l							
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>	5.39		"	5.00		108	78-129			
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**Laboratory Control Sample (3F04033-BS1)**

Prepared &amp; Analyzed: 06/04/03

Methyl tert-butyl ether	10.1	0.50	ug/l	10.0		101	63-137			
Benzene	10.5	0.50	"	10.0		105	78-124			
Toluene	10.6	0.50	"	10.0		106	78-129			

<i>Surrogate: 1,2-Dichloroethane-d4</i>	5.64		"	5.00		113	78-129			
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**Laboratory Control Sample (3F04033-BS2)**

Prepared &amp; Analyzed: 06/04/03

Methyl tert-butyl ether	7.93	0.50	ug/l	9.92		79.9	63-137			
Benzene	5.31	0.50	"	6.40		83.0	78-124			
Toluene	29.6	0.50	"	29.7		99.7	78-129			
Gasoline Range Organics (C6-C10)	368	50	"	440		83.6	70-113			

<i>Surrogate: 1,2-Dichloroethane-d4</i>	5.39		"	5.00		108	78-129			
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URS Corporation [Arco]  
 500 12th Street, Suite 100  
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 MME0680  
 Reported:  
 06/09/03 12:11

### 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 3F04033 - EPA 5030B P/T**

<b>Matrix Spike (3F04033-MS1)</b>		<b>Source: MMF0105-03</b>		<b>Prepared: 06/04/03</b>		<b>Analyzed: 06/05/03</b>				
Methyl tert-butyl ether	411	5.0	ug/l	99.2	360	51.4	63-137			QM-07
Benzene	57.6	5.0	"	64.0	1.9	87.0	78-124			
Toluene	299	5.0	"	297	4.1	99.3	78-129			
Gasoline Range Organics (C6-C10)	3740	500	"	4400	370	76.6	70-113			
<hr/>										
<i>Surrogate: 1,2-Dichloroethane-d4</i>	5.62		"	5.00		112	78-129			

<b>Matrix Spike Dup (3F04033-MSD1)</b>		<b>Source: MMF0105-03</b>		<b>Prepared: 06/04/03</b>		<b>Analyzed: 06/05/03</b>				
Methyl tert-butyl ether	413	5.0	ug/l	99.2	360	53.4	63-137	0.485	13	QM-07
Benzene	52.7	5.0	"	64.0	1.9	79.4	78-124	8.88	12	
Toluene	306	5.0	"	297	4.1	102	78-129	2.31	10	
Gasoline Range Organics (C6-C10)	3900	500	"	4400	370	80.2	70-113	4.19	9	
<hr/>										
<i>Surrogate: 1,2-Dichloroethane-d4</i>	5.62		"	5.00		112	78-129			

**Batch 3F05011 - EPA 5030B P/T**

<b>Blank (3F05011-BLK1)</b>		<b>Prepared &amp; Analyzed: 06/05/03</b>									
Ethanol	ND	100	ug/l								
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	"								
<hr/>											
<i>Surrogate: 1,2-Dichloroethane-d4</i>	4.94		"	5.00		98.8	78-129				

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 MME0680  
 Reported:  
 06/09/03 12:11

**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 3F05011 - EPA 5030B P/T**

Laboratory Control Sample (3F05011-BS1)				Prepared & Analyzed: 06/05/03						
Methyl tert-butyl ether	8.83	0.50	ug/l	10.0		88.3	63-137			
Benzene	9.43	0.50	"	10.0		94.3	78-124			
Toluene	10.0	0.50	"	10.0		100	78-129			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>4.80</i>		<i>"</i>	<i>5.00</i>		<i>96.0</i>	<i>78-129</i>			

Laboratory Control Sample (3F05011-BS2)				Prepared & Analyzed: 06/05/03						
Methyl tert-butyl ether	8.05	0.50	ug/l	9.92		81.1	63-137			
Benzene	5.14	0.50	"	6.40		80.3	78-124			
Toluene	32.2	0.50	"	29.7		108	78-129			
Gasoline Range Organics (C6-C10)	422	50	"	440		95.9	70-113			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>4.71</i>		<i>"</i>	<i>5.00</i>		<i>94.2</i>	<i>78-129</i>			

Matrix Spike (3F05011-MS1)				Source: MME0790-08		Prepared & Analyzed: 06/05/03				
Methyl tert-butyl ether	1950	100	ug/l	1980	480	74.2	63-137			
Benzene	5480	100	"	1280	4500	76.6	78-124			QM-07
Toluene	8420	100	"	5940	2000	108	78-129			
Gasoline Range Organics (C6-C10)	148000	10000	"	88000	68000	90.9	70-113			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>4.45</i>		<i>"</i>	<i>5.00</i>		<i>89.0</i>	<i>78-129</i>			

Matrix Spike Dup (3F05011-MSD1)				Source: MME0790-08		Prepared & Analyzed: 06/05/03				
Methyl tert-butyl ether	1890	100	ug/l	1980	480	71.2	63-137	3.12	13	
Benzene	5310	100	"	1280	4500	63.3	78-124	3.15	12	QM-07
Toluene	8410	100	"	5940	2000	108	78-129	0.119	10	
Gasoline Range Organics (C6-C10)	145000	10000	"	88000	68000	87.5	70-113	2.05	9	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>4.41</i>		<i>"</i>	<i>5.00</i>		<i>88.2</i>	<i>78-129</i>			

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

Project: ARCO #2169, Oakland, CA  
Project Number: INTRIM-50325  
Project Manager: Scott Robinson

MME0680  
**Reported:**  
06/09/03 12:11

### Notes and Definitions

QM-07 The spike recovery was outside control limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.

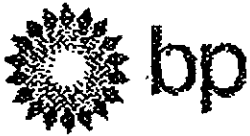
DET Analyte DETECTED

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

IME D680

Project Name \_\_\_\_\_  
 BP BU/GEM CO Portfolio: \_\_\_\_\_  
 BP Laboratory Contract Number: \_\_\_\_\_  
 Date: 5/22/03 Requested Due Date (m/d/yyyy) \_\_\_\_\_

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: 889 W. GRAND AVE, OAKLAND, CA	Address: 500 12th St., Ste. 200
Lab Address: 885 Jarvis Dr. Morgan Hill, CA 95037	Site ID No. ARCO 2169	Oakland, CA 94608-4014
	Site Lat/Long:	e-mail EDD: syed_rehan@urscorp.com
	California Global ID #: T0600100112	Consultant/Contractor Project No.: J5-00002169.01 00427
Lab PM: Latonya Peil	BP/GEM PM Contact: PAUL SUPPLE	Consultant Tele/Fax: 510-874-1735/510-874-3288
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 BP/GEM (circle one)
BP/GEM Account No.:	Tele/Fax:	BP/GEM Work Release No: INTRIM-50325

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 <sub>2</sub> SO <sub>4</sub>	HNO <sub>3</sub>	HCl	TPH-G/TEX (8015-8881) (8260)	TPH-D (8015)	MTBE (8021)		MIBK, TAME, ETBE DIPN, TBA (8260)
1	A-1	1235	X			01	3					X			X		
2	A-5	1150	X			02	3					X			X		
3	A-6	1135	X			03	3					X			X		
4	ADR-1	1050	X			04	3					X			X		
5	ADR-2	1100	X			05	3					X			X		
6																	
7																	
8																	
9																	
10																	

Sampler's Name: <u>Brian Accord</u>	Relinquished By / Affiliation: _____	Date: <u>5/23/03</u>	Time: <u>9:09</u>	Accepted By / Affiliation: _____	Date: <u>5/23/03</u>	Time: <u>9:09</u>
Sampler's Company: <u>FLORIAN TECH SERVICES</u>	_____	<u>5/23/03</u>	<u>9:53</u>	<u>Latonya Peil</u>	<u>5/23/03</u>	<u>9:57</u>
Shipment Date: _____	_____	_____	_____	_____	_____	_____
Shipment Method: _____	_____	_____	_____	_____	_____	_____
Shipment Tracking No: _____	_____	_____	_____	_____	_____	_____

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

Seals In Place Yes  No  Temperature Blank Yes  No  Cooler Temperature on Receipt  Trip Blank Yes  No

## SEQUOIA ANALYTICAL SAMPLE RECEIPT LOG

CLIENT NAME: URS  
 REC. BY (PRINT) PL  
 WORKORDER: MHE 0650

DATE REC'D AT LAB: 5/23/07  
 TIME REC'D AT LAB: 9:53  
 DATE LOGGED IN: 5-24-07

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

CIRCLE THE APPROPRIATE RESPONSE	LAB SAMPLE #	DASII #	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-1	(3) Vials	Hu	L	5/22/07	2361030
2. Chain-of-Custody <input checked="" type="radio"/> Present / Absent*	02		A-5	↓	↓	↓	↓	↓
3. Traffic Reports or Packing List: Present / <input checked="" type="radio"/> Absent	03		A-6	↓	↓	↓	↓	↓
4. Airbill: Airbill / Sticker Present / <input checked="" type="radio"/> Absent	04		ADK-1	↓	↓	↓	↓	↓
5. Airbill #:	05		L-2	↓	↓	↓	↓	↓
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** <small>(Acceptance range for samples requiring thermal pres.)</small>								
**Exception (if any): Metals / DFF (Direct From Field) or Problem COC								

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

**ATTACHMENT C**

**HISTORIC GROUNDWATER DATA**

**Table 1**  
**Historical Groundwater Elevation and Analytical Data**  
**Petroleum Hydrocarbons and Their Constituents**  
**1995 - Present\*\*\***

**ARCO Service Station 2169**  
**889 West Grand Avenue, Oakland, California**

Well Number	Date Gauged	TOC Elevation (ft-MSL)	Depth to Water (feet)	FP Thickness (feet)	Groundwater Elevation (ft-MSL)	Date Sampled	TPH			Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE 8021B* (µg/L)	MTBE 8260 (µg/L)	TPH Diesel (µg/L)	Dissolved Oxygen (mg/L)	Purged/Not Purged (P/NP)
							Gasoline (µg/L)	Benzene (µg/L)	Toluene (µg/L)							
A-1	03-24-95	14.16	8.10	ND	6.06	03-24-95	1,200	230	39	34	66	--	--	160		
A-1	06-05-95	14.16	11.13	ND	3.03	06-05-95	1,500	310	27	36	76	--	--	710		
A-1	08-17-95	14.16	11.71	ND	2.45	08-18-95	1,600	470	35	48	110	--	--	240		
A-1	12-04-95	14.16	12.28	ND	1.88	12-04-95	1,200	240	17	25	56	--	120	--		
A-1	03-01-96	14.16	8.78	ND	5.38	03-13-96	1,300	300	74	29	73	100	--	--		
A-1	05-29-96	14.16	9.85	ND	4.31	05-29-96	Not sampled: well sampled semi-annually, during the first and third quarters									
A-1	08-29-96	14.16	11.08	ND	3.08	08-29-96	1,200	320	5.9	25	27	110	--	--		
A-1	11-21-96	14.16	10.54	ND	3.62	11-21-96	Not sampled: well sampled semi-annually, during the first and third quarters									
A-1	03-26-97	14.16	10.55	ND	3.61	03-26-97	<50	0.8	<0.5	<0.5	<0.5	64	--	--		
A-1	05-21-97	14.16	11.10	ND	3.06	05-21-97	Not sampled: well sampled semi-annually, during the first and third quarters									
A-1	08-08-97	14.16	11.32	ND	2.84	08-08-97	91	7	<0.5	0.5	3.9	<60	--	--		
A-1	11-18-97	14.16	3.46	ND	10.70	11-18-97	54	<0.5	<0.5	<0.5	0.6	27	--	--		
A-1	02-20-98	14.16	7.10	ND	7.06	02-23-98	590	160	22	15	28	70	--	--		
A-1	05-11-98	14.16	9.87	ND	4.29	05-11-98	280	26	<0.5	0.8	2.3	6	--	--		
A-1	07-30-98	14.16	10.73	ND	3.43	07-30-98	1,000	210	5	<5	38	<30	--	--		
A-1	10-08-98	14.16	11.15	ND	3.01	10-08-98	3,100	740	11	<10	24	<60	--	--		
A-1	02-18-99	14.16	8.00	ND	6.16	02-18-99	510	87	7.1	6.4	13	52	--	--		
A-1	05-26-99	14.16	10.60	ND	3.56	05-26-99	240	26	<0.5	1.2	6.2	34	--	--		
A-1	08-23-99	14.16	11.22	ND	2.94	08-23-99	79	3.9	0.6	<0.5	1.7	38	--	--	0.68	NP
A-1	10-27-99	14.16	11.37	ND	2.79	10-27-99	110	2.2	<0.5	<0.5	<1	25	--	--	0.80	NP
A-1	01-31-00	14.16	9.44	ND	4.72	01-31-00	<50	<0.5	<0.5	<0.5	<1	<3	--	--	1.0	NP

**Table 1**  
**Historical Groundwater Elevation and Analytical Data**  
**Petroleum Hydrocarbons and Their Constituents**  
**1995 - Present\*\*\***

**ARCO Service Station 2169**  
**889 West Grand Avenue, Oakland, California**

Well Number	Date Gauged	TOC Elevation (ft-MSL)	Depth to Water (feet)	FP Thickness (feet)	Groundwater Elevation (ft-MSL)	Date Sampled	TPH Gasoline (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE 8021B* (µg/L)	MTBE 8260 (µg/L)	TPH Diesel (µg/L)	Dissolved Oxygen (mg/L)	Purged/ Not Purged (P/NP)
A-2	03-24-95	14.55	8.64	ND	5.91	03-24-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--		
A-2	06-05-95	14.55	11.72	ND	2.83	06-05-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--		
A-2	08-17-95	14.55	12.35	ND	2.20	08-17-95	<50	<0.5	<0.5	<0.5	<0.5	12	--	--		
A-2	12-04-95	14.55	12.74	ND	1.81	12-04-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--		
A-2	03-01-96	14.55	9.34	ND	5.21	03-13-96	<50	<0.5	0.6	<0.5	1.3	<9	--	--		
A-2	05-29-96	14.55	10.40	ND	4.15	05-29-96	<50	<0.5	<0.5	<0.5	<0.5	<20	--	--		
A-2	08-29-96	14.55	11.50	ND	3.05	08-29-96	<50	<0.5	<0.5	<0.5	<0.5	<39	--	--		
A-2	11-21-96	14.55	11.06	ND	3.49	11-21-96	<50	<0.5	<0.5	<0.5	<0.5	<30	--	--		
A-2	03-26-97	14.55	11.12	ND	3.43	03-26-97	<50	<0.5	<0.5	<0.5	<0.5	<20	--	--		
A-2	05-21-97	14.55	11.58	ND	2.97	05-21-97	Not sampled: well sampled semi-annually, during the first and third quarters									
A-2	08-08-97	14.55	11.82	ND	2.73	08-08-97	<50	<0.5	<0.5	<0.5	<0.5	<20	--	--		
A-2	11-18-97	14.55	3.33	ND	11.22	11-18-97	Not sampled: well sampled semi-annually, during the first and third quarters									
A-2	02-20-98	14.55	7.68	ND	6.87	02-20-98	<50	<0.5	<0.5	<0.5	<0.5	17	--	--		
A-2	05-11-98	14.55	10.45	ND	4.10	05-11-98	Not sampled									
A-2	07-30-98	14.55	11.23	ND	3.32	07-30-98	Not sampled: well sampled semi-annually, during the first and second quarters									
A-2	10-08-98	14.55	11.62	ND	2.93	10-08-98	Not sampled: well sampled semi-annually, during the first and second quarters									
A-2	02-18-99	14.55	8.62	ND	5.93	02-18-99	93	<0.5	<0.5	<0.5	<1	26	--	--		
A-2	05-26-99	14.55	11.16	ND	3.39	05-26-99	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--		
A-2	08-23-99	14.55	11.69	ND	2.86	08-23-99	Not sampled: well sampled semi-annually, during the first and second quarters									
A-2	10-27-99	14.55	11.88	ND	2.67	10-27-99	Not sampled: well sampled semi-annually, during the first and second quarters									
A-2	01-31-00	14.55	10.17	ND	4.38	01-31-00	<50	<0.5	<0.5	<0.5	<1	<3	--	--	1.0	NP



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**1995 - Present\*\*\***

**ARCO Service Station 2169**  
**889 West Grand Avenue, Oakland, California**

Well Number	Date Gauged	TOC Elevation (ft-MSL)	Depth to Water (feet)	FP Thickness (feet)	Groundwater Elevation (ft-MSL)	Date Sampled	TPH			Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE 8021B* (µg/L)	MTBE 8260 (µg/L)	TPH Diesel (µg/L)	Dissolved Oxygen (mg/L)	Purged/ Not Purged (P/NP)
							Gasoline (µg/L)	Benzene (µg/L)	Toluene (µg/L)							
A-3	03-24-95	15.75	8.83	ND	6.92	03-24-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--		
A-3	06-05-95	15.75	12.44	ND	3.31	06-05-95	Not sampled: well sampled annually									
A-3	08-17-95	15.75	13.04	ND	2.71	08-17-95	Not sampled: well sampled annually									
A-3	12-04-95	15.75	13.57	ND	2.18	12-04-95	Not sampled: well sampled annually									
A-3	03-01-96	15.75	9.90	ND	5.85	03-13-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--		
A-3	05-29-96	15.75	11.08	ND	4.67	05-29-96	Not sampled: well sampled annually									
A-3	08-29-96	15.75	12.38	ND	3.37	08-29-96	Not sampled: well sampled annually									
A-3	11-21-96	15.75	11.86	ND	3.89	11-21-96	Not sampled: well sampled annually									
A-3	03-26-97	15.75	11.81	ND	3.94	03-26-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--		
A-3	05-21-97	15.75	12.35	ND	3.40	05-21-97	Not sampled: well sampled annually									
A-3	08-08-97	15.75	12.62	ND	3.13	08-08-97	Not sampled: well sampled annually									
A-3	11-18-97	15.75	3.75	ND	12.00	11-18-97	Not sampled: well sampled annually									
A-3	02-20-98	15.75	8.06	ND	7.69	02-20-98	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--		
A-3	05-11-98	15.75	11.19	ND	4.56	05-11-98	Not sampled: well sampled annually									
A-3	07-30-98	15.75	12.05	ND	3.70	07-30-98	Not sampled: well sampled annually									
A-3	10-08-98	15.75	12.43	ND	3.32	10-08-98	Not sampled: well sampled annually									
A-3	02-18-99	15.75	9.05	ND	6.70	02-18-99	Not sampled: well sampled annually									
A-3	05-26-99	15.75	11.93	ND	3.82	05-26-99	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--		
A-3	08-23-99	15.75	12.57	ND	3.18	08-23-99	Not sampled: well sampled annually								0.88	
A-3	10-27-99	15.75	12.65	ND	3.10	10-27-99	Not sampled: well sampled annually									
A-3	01-31-00	15.75	9.55	ND	6.20	01-31-00	<50	<0.5	<0.5	<0.5	<1	9	--	--	1.0	NP

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**1995 - Present\*\*\***

**ARCO Service Station 2169**  
**889 West Grand Avenue, Oakland, California**

Well Number	Date Gauged	TOC Elevation (ft-MSL)	Depth to Water (feet)	FP Thickness (feet)	Groundwater Elevation (ft-MSL)	Date Sampled	TPH			Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE 8021B* (µg/L)	MTBE 8260 (µg/L)	TPH Diesel (µg/L)	Dissolved Oxygen (mg/L)	Purged/ Not Purged (P/NP)
							Gasoline (µg/L)	Benzene (µg/L)	Toluene (µg/L)							
A-4	03-24-95	15.25	7.20	ND	8.05	03-24-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--		
A-4	06-05-95	15.25	11.70	ND	3.55	06-05-95	Not sampled: well sampled annually									
A-4	08-17-95	15.25	12.28	ND	2.97	08-17-95	Not sampled: well sampled annually									
A-4	12-04-95	15.25	12.63	ND	2.62	12-04-95	Not sampled: well sampled annually									
A-4	03-01-96	15.25	8.55	ND	6.70	03-13-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--		
A-4	05-29-96	15.25	10.32	ND	4.93	05-29-96	Not sampled: well sampled annually									
A-4	08-29-96	15.25	11.55	ND	3.70	08-29-96	Not sampled: well sampled annually									
A-4	11-21-96	15.25	10.83	ND	4.42	11-21-96	Not sampled: well sampled annually									
A-4	03-26-97	15.25	10.97	ND	4.28	03-26-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--		
A-4	05-21-97	15.25	11.51	ND	3.74	05-21-97	Not sampled: well sampled annually									
A-4	08-08-97	15.25	11.73	ND	3.52	08-08-97	Not sampled: well sampled annually									
A-4	11-18-97	15.25	4.37	ND	10.88	11-18-97	Not sampled: well sampled annually									
A-4	02-20-98	15.25	6.25	ND	9.00	02-20-98	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--		
A-4	05-11-98	15.25	10.33	ND	4.92	05-11-98	Not sampled: well sampled annually									
A-4	07-30-98	15.25	11.25	ND	4.00	07-30-98	Not sampled: well sampled annually									
A-4	10-08-98	15.25	11.62	ND	3.63	10-08-98	Not sampled: well sampled annually									
A-4	02-18-99	15.25	7.12	ND	8.13	02-18-99	Not sampled: well sampled annually									
A-4	05-26-99	15.25	11.12	ND	4.13	05-26-99	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--		
A-4	08-23-99	15.25	11.62	ND	3.63	08-23-99	Not sampled: well sampled annually								0.54	
A-4	10-27-99	15.25	11.74	ND	3.51	10-27-99	Not sampled: well sampled annually									
A-4	01-31-00	15.25	9.45	ND	5.80	01-31-00	<50	<0.5	<0.5	<0.5	<1	4	--	--	1.0	NP

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**1995 - Present\*\*\***

**ARCO Service Station 2169**  
**889 West Grand Avenue, Oakland, California**

Well Number	Date Gauged	TOC Elevation (ft-MSL)	Depth to Water (feet)	FP Thickness (feet)	Groundwater Elevation (ft-MSL)	Date Sampled	TPH Gasoline (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE 8021B* (µg/L)	MTBE 8260 (µg/L)	TPH Diesel (µg/L)	Dissolved Oxygen (mg/L)	Purged/Not Purged (P/NP)	
A-5	03-24-95	13.51	7.40	ND	6.11	03-24-95	3,300	200	310	130	460	--	--	--			
A-5	06-05-95	13.51	10.43	ND	3.08	06-05-95	57,000	2,700	4,600	1,500	6,800	--	--	--			
A-5	08-17-95	13.51	11.15	ND	2.36	08-18-95	34,000	1,600	2,700	1,100	5,100	<28	--	--			
A-5	12-04-95	13.51	11.42	ND	2.09	12-04-95	61	<0.5	<0.5	<0.5	<0.5	--	--	--			
A-5	03-01-96	13.51	8.11	ND	5.40	03-13-96	11,000	860	960	380	1,600	<100	--	--			
A-5	05-29-96	13.51	9.30	ND	4.21	05-29-96	19,000	1,600	1,900	880	3,300	<100	--	--			
A-5	08-29-96	13.51	10.60	ND	2.91	08-29-96	7,700	490	450	260	990	<30	--	--			
A-5	11-21-96	13.51	10.05	ND	3.46	11-21-96	8,000	450	550	340	1,100	<30	--	--			
A-5	03-26-97	13.51	9.87	ND	3.64	03-26-97	3,100	190	140	130	340	<30	--	--			
A-5	05-21-97	13.51	10.25	ND	3.26	05-21-97	16,000	1,500	900	700	2,700	<120	--	--			
A-5	08-08-97	13.51	10.42	ND	3.09	08-08-97	9,000	690	240	440	1,300	<30	--	--			
A-5	11-18-97	13.51	Not surveyed: well inaccessible														
A-5	02-20-98	13.51	Not surveyed: well inaccessible														
A-5	05-11-98	13.51	Not surveyed: well inaccessible														
A-5	07-30-98	13.51	Not surveyed: well inaccessible														
A-5	10-08-98	13.51	Not surveyed: well inaccessible														
A-5	02-18-99	13.51	7.63	ND	5.88	02-18-99	<50	0.8	<0.5	<0.5	1.5	<10	--	--			
A-5	05-26-99	13.51	9.85	ND	3.66	05-26-99	1,700	240	41	110	330	<12	--	--			
A-5	08-23-99	13.51	10.60	ND	2.91	08-23-99	560	65	3	30	52	<6	--	--	0.73	NP	
A-5	10-27-99	13.51	10.72	ND	2.79	10-27-99	480	93	1.0	16	19	<3	--	--	0.65	NP	
A-5	01-31-00	13.51	9.37	ND	4.14	01-31-00	Not sampled: well was inaccessible										

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**1995 - Present\*\*\***

**ARCO Service Station 2169**  
**889 West Grand Avenue, Oakland, California**

Well Number	Date Gauged	TOC	Depth	FP	Groundwater	Date Sampled	TPH			Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE 8021B* (µg/L)	MTBE 8260 (µg/L)	TPH Diesel (µg/L)	Dissolved Oxygen (mg/L)	Purged/Not Purged (P/NP)
		Elevation (ft.-MSL)	to Water (feet)	Thickness (feet)	Elevation (ft.-MSL)		Gasoline (µg/L)	Benzene (µg/L)	Toluene (µg/L)							
A-6	03-24-95	13.51	7.89	ND	5.62	03-24-95	120	<0.5	<1	<0.5	<1.5	--	--	--		
A-6	06-05-95	13.51	10.06	ND	3.45	06-05-95	160	<0.5	<0.6	<0.5	<0.5	--	--	--		
A-6	08-17-95	13.51	11.10	ND	2.41	08-18-95	530	<0.5	<0.5	<2.4	<4.2	6	--	--		
A-6	12-04-95	13.51	11.52	ND	1.99	12-04-95	28,000	1,600	1,800	880	3,600	--	--	--		
A-6	03-01-96	13.51	8.21	ND	5.30	03-13-96	1,400	<3	<15	<7	<10	<20	--	--		
A-6	05-29-96	13.51	9.25	ND	4.26	05-29-96	410	<2	<2	<2	<2	3	--	--		
A-6	08-29-96	13.51	10.52	ND	2.99	08-29-96	80	<0.5	<0.5	<0.5	<0.5	6	--	--		
A-6	11-21-96	13.51	10.54	ND	2.97	11-21-96	62	<0.5	<0.5	<0.5	<0.5	12	--	--		
A-6	03-26-97	13.51	9.93	ND	3.58	03-26-97	110	<0.5	0.8	1	1.4	15	--	--		
A-6	05-21-97	13.51	10.54	ND	2.97	05-21-97	600	0.6	0.6	<2	2.7	<3	--	--		
A-6	08-08-97	13.51	10.77	ND	2.74	08-08-97	850	<0.5	<0.5	6.1	<0.5	<4	--	--		
A-6	11-18-97	13.51	3.41	ND	10.10	11-18-97	690	<1	<1	3	2	7	--	--		
A-6	02-20-98	13.51	6.73	ND	6.78	02-20-98	60	<0.5	0.6	1.3	0.5	4	--	--		
A-6	05-11-98	13.51	9.26	ND	4.25	05-11-98	140	<0.5	0.7	0.6	<0.5	6	--	--		
A-6	07-30-98	13.51	10.12	ND	3.39	07-30-98	910	<2	<2	3	7	34	--	--		
A-6	10-08-98	13.51	10.53	ND	2.98	10-08-98	1,300	<2	4	3	4	21	--	--		
A-6	02-18-99	13.51	7.50	ND	6.01	02-18-99	150	<0.5	<0.5	1.4	1.7	35	--	--		
A-6	05-26-99	13.51	10.00	ND	3.51	05-26-99	100	<0.5	<0.5	<0.5	<0.5	17	--	--		
A-6	08-23-99	13.51	10.70	ND	2.81	08-23-99	98	0.6	<0.5	1.1	4.3	13	--	--	2.42	NP
A-6	10-27-99	13.51	11.00	ND	2.51	10-27-99	<50	<0.5	<0.5	<0.5	<1	7	--	--	13.23	NP
A-6	01-31-00	13.51	9.31	ND	4.20	01-31-00	<50	<0.5	<0.5	<0.5	<1	9	--	--	1.0	NP

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**1995 - Present\*\*\***

**ARCO Service Station 2169**  
**889 West Grand Avenue, Oakland, California**

Well Number	Date Gauged	TOC	Depth	FP	Groundwater	Date Sampled	TPH			Ethyl-	Total	MTBE	MTBE	TPH	Dissolved	Purged/
		Elevation (ft-MSL)	to Water (feet)	Thickness (feet)	Elevation (ft-MSL)		Gasoline (µg/L)	Benzene (µg/L)	Toluene (µg/L)	benzene (µg/L)	Xylenes (µg/L)	8021B* (µg/L)	8260 (µg/L)	Diesel (µg/L)	Oxygen (mg/L)	Not Purged (P/NP)
AR-1	03-24-95	15.61	7.25	ND	8.36	03-24-95	270	14	0.6	2.5	2.1	--	--	130		
AR-1	06-05-95	15.61	11.37	ND	4.24	06-05-95	190	10	<0.5	0.8	0.5	--	--	580		
AR-1	08-17-95	15.61	12.40	ND	3.21	08-17-95	960	110	12	4.5	150	14	--	<50		
AR-1	12-04-95	15.61	12.90	ND	2.71	12-04-95	<50	1.5	<0.5	<0.5	0.8	--	--	--		
AR-1	03-01-96	15.61	8.19	ND	7.42	03-13-96	150	3.8	0.5	1.4	1.3	<3	--	--		
AR-1	05-29-96	15.61	10.41	ND	5.20	05-29-96	Not sampled: well sampled semi-annually, during the first and third quarters									
AR-1	08-29-96	15.61	12.12	ND	3.49	08-29-96	<50	<0.5	<0.5	<0.5	0.8	<3	--	--		
AR-1	11-21-96	15.61	11.52	ND	4.09	11-21-96	Not sampled: well sampled semi-annually, during the first and third quarters									
AR-1	03-26-97	15.61	11.33	ND	4.28	03-26-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--		
AR-1	05-21-97	15.61	12.02	ND	3.59	05-21-97	Not sampled: well sampled semi-annually, during the first and third quarters									
AR-1	08-08-97	15.61	12.31	ND	3.30	08-08-97	<50	0.7	<0.5	1	<0.5	<3	--	--		
AR-1	11-18-97	15.61	3.97	ND	11.64	11-18-97	Not sampled: well sampled semi-annually, during the first and third quarters									
AR-1	02-20-98	15.61	6.42	ND	9.19	02-23-98	<200	<2	<2	<2	<2	160	--	--		
AR-1	05-11-98	15.61	10.93	ND	4.68	05-11-98	<50	<0.5	<0.5	<0.5	<0.5	4	--	--		
AR-1	07-30-98	15.61	11.82	ND	3.79	07-30-98	<50	<0.5	<0.5	<0.5	<0.5	6	--	--		
AR-1	10-08-98	15.61	12.24	ND	3.37	10-08-98	<50	<0.5	<0.5	<0.5	<0.5	6	--	--		
AR-1	02-18-99	15.61	7.75	ND	7.86	02-18-99	<50	<0.5	<0.5	<0.5	<1.0	<10	--	--		
AR-1	05-26-99	15.61	11.62	ND	3.99	05-26-99	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--		
AR-1	08-23-99	15.61	9.32	ND	6.29	08-23-99	Not sampled: well sampled semi-annually, during the first and second quarters									
AR-1	10-27-99	15.61	12.14	ND	3.47	10-27-99	Not sampled: well sampled semi-annually, during the first and second quarters									
AR-1	01-31-00	15.61	Not surveyed: well inaccessible													

**Table 1**  
**Historical Groundwater Elevation and Analytical Data**  
**Petroleum Hydrocarbons and Their Constituents**  
**1995 - Present\*\*\***

**ARCO Service Station 2169**  
**889 West Grand Avenue, Oakland, California**

Well Number	Date Gauged	TOC	Depth	FP	Groundwater	Date Sampled	TPH				Total	MTBE	MTBE	TPH	Dissolved	Purged/	
		Elevation (ft-MSL)	to Water (feet)	Thickness (feet)	Elevation (ft-MSL)		Gasoline (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Xylenes (µg/L)	8021B* (µg/L)	8260 (µg/L)	Diesel (µg/L)	Oxygen (mg/L)	Not Purged (P/NP)	
AR-2	03-24-95	15.28	9.13	ND	6.15	03-24-95	<50	6.2	<0.5	<0.5	0.6	--	--	<50			
AR-2	06-05-95	15.28	12.09	ND	3.19	06-05-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	<50			
AR-2	08-17-95	15.28	12.78	ND	2.50	08-18-95	<50	<0.5	<0.5	<0.5	<0.5	4	--	<50			
AR-2	12-04-95	15.28	11.44	ND	3.84	12-13-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--			
AR-2	03-01-96	15.28	9.83	ND	5.45	03-13-96	190	26	2.6	3.3	13	200	--	--			
AR-2	05-29-96	15.28	10.97	ND	4.31	05-29-96	Not sampled: well sampled semi-annually, during the first and third quarters										
AR-2	08-29-96	15.28	12.20	ND	3.08	08-29-96	<50	<0.5	<0.5	<0.5	<0.5	95	--	--			
AR-2	11-21-96	15.28	11.57	ND	3.71	11-21-96	Not sampled: well sampled semi-annually, during the first and third quarters										
AR-2	03-26-97	15.28	11.60	ND	3.68	03-26-97	<50	<0.5	<0.5	<0.5	<0.5	9	--	--			
AR-2	05-21-97	15.28	12.12	ND	3.16	05-21-97	Not sampled: well sampled semi-annually, during the first and third quarters										
AR-2	08-08-97	15.28	12.35	ND	2.93	08-08-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--			
AR-2	11-18-97	15.28	3.48	ND	11.80	11-18-97	Not sampled: well sampled semi-annually, during the first and third quarters										
AR-2	02-20-98	15.28	8.00	ND	7.28	02-20-98	<50	<0.5	<0.5	<0.5	<0.5	43	--	--			
AR-2	05-11-98	15.28	10.97	ND	4.31	05-11-98	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--			
AR-2	07-30-98	15.28	11.76	ND	3.52	07-30-98	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--			
AR-2	10-08-98	15.28	12.17	ND	3.11	10-08-98	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--			
AR-2	02-18-99	15.28	9.17	ND	6.11	02-18-99	<50	<0.5	<0.5	<0.5	<1.0	<10	--	--			
AR-2	05-26-99	15.28	11.72	ND	3.56	05-26-99	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--			
AR-2	08-23-99	15.28	12.31	ND	2.97	08-23-99	Not sampled: well sampled semi-annually, during the first and second quarters										0.61
AR-2	10-27-99	15.28	12.42	ND	2.86	10-27-99	Not sampled: well sampled semi-annually, during the first and second quarters										
AR-2	01-31-00	15.28	10.31	ND	4.97	01-31-00	Not sampled										

**Table 1**  
**Historical Groundwater Elevation and Analytical Data**  
**Petroleum Hydrocarbons and Their Constituents**  
**1995 - Present\*\*\***

**ARCO Service Station 2169**  
**889 West Grand Avenue, Oakland, California**

Well Number	Date Gauged	TOC Elevation (ft-MSL)	Depth to Water (feet)	FP Thickness (feet)	Groundwater Elevation (ft-MSL)	Date Sampled	TPH			Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE 8021B* (µg/L)	MTBE 8260 (µg/L)	TPH Diesel (µg/L)	Dissolved Oxygen (mg/L)	Purged/Not Purged (P/NP)
							Gasoline (µg/L)	Benzene (µg/L)	Toluene (µg/L)							
ADR-1	03-24-95	13.95	8.04	0.01	** 5.92	03-24-95	Not sampled: well contained floating product									
ADR-1	06-05-95	13.95	11.02	ND	2.93	06-05-95	23,000	310	420	300	1,900	--	--	13,000		
ADR-1	08-17-95	13.95	11.86	ND	2.09	08-18-95	4,400	150	120	95	620	120	--	4,500		
ADR-1	12-04-95	13.95	10.05	ND	3.90	12-13-95	8,800	100	130	120	990	--	--	--		
ADR-1	03-01-96	13.95	8.76	ND	5.19	03-13-96	89,000	370	1,000	840	8,100	<500	--	--		
ADR-1	05-29-96	13.95	9.74	ND	4.21	05-30-96	27,000	230	380	370	2,700	<100	--	--		
ADR-1	08-29-96	13.95	10.77	ND	3.18	08-29-96	5,300	190	58	76	470	85	--	--		
ADR-1	11-21-96	13.95	10.49	ND	3.46	11-21-96	1,900	82	21	32	270	110	--	--		
ADR-1	03-26-97	13.95	10.37	ND	3.58	03-26-97	1,300	260	6	39	27	95	--	--		
ADR-1	05-21-97	13.95	10.90	ND	3.05	05-21-97	2,100	300	18	37	200	79	--	--		
ADR-1	08-08-97	13.95	11.12	ND	2.83	08-08-97	3,900	620	49	110	470	<200	--	--		
ADR-1	11-18-97	13.95	3.47	ND	10.48	11-18-97	18,000	900	140	360	2,700	<60	--	--		
ADR-1	02-20-98	13.95	Not surveyed: well inaccessible													
ADR-1	05-11-98	13.95	Not surveyed: well inaccessible													
ADR-1	07-30-98	13.95	Not surveyed: well inaccessible													
ADR-1	10-08-98	13.95	Not surveyed: well inaccessible													
ADR-1	02-18-99	13.95	7.80	ND	6.15	02-18-99	200	4.4	<0.5	1.3	1.3	43	--	--		
ADR-1	05-26-99	13.95	10.40	ND	3.55	05-26-99	160	10	<0.5	1.7	1.8	43	--	--		
ADR-1	08-23-99	13.95	10.70	ND	3.25	08-23-99	7,400	310	16	210	970	18	--	--	0.37	NP
ADR-1	10-27-99	13.95	10.82	ND	3.13	10-27-99	5,000	210	6.3	180	490	5	--	--	0.73	NP
ADR-1	01-31-00	13.95	9.21	ND	4.74	01-31-00	290	3.6	<0.5	1.1	<1	26	--	--	1.0	NP

**Table 1**  
**Historical Groundwater Elevation and Analytical Data**  
**Petroleum Hydrocarbons and Their Constituents**  
**1995 - Present\*\*\***

**ARCO Service Station 2169**  
**889 West Grand Avenue, Oakland, California**

Well Number	Date Gauged	TOC Elevation (ft-MSL)	Depth to Water (feet)	FP Thickness (feet)	Groundwater Elevation (ft-MSL)	Date Sampled	TPH				Total Xylenes (µg/L)	MTBE 8021B* (µg/L)	MTBE 8260 (µg/L)	TPH Diesel (µg/L)	Dissolved Oxygen (mg/L)	Purged/ Not Purged (P/NP)	
							Gasoline (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)							
ADR-2	03-24-95	14.64	8.41	>3.00	NR[1]	03-24-95	Not sampled: well contained floating product										
ADR-2	06-05-95	14.64	11.45	>3.00	NR[1]	06-05-95	Not sampled: well contained floating product										
ADR-2	08-17-95	14.64	12.10	0.03	** 2.56	08-17-95	Not sampled: well contained floating product										
ADR-2	12-04-95	14.64	10.93	0.03	** 3.73	12-13-95	Not sampled: well contained floating product										
ADR-2	03-01-96	14.64	8.74	ND	5.90	03-13-96	29,000	1,100	1,200	710	3,800	<500	--	--			
ADR-2	05-29-96	14.64	10.43	ND	4.21	05-29-96	33,000	510	500	470	2,300	120	--	--			
ADR-2	08-29-96	14.64	11.64	ND	3.00	08-29-96	8,000	230	180	150	730	53	--	--			
ADR-2	11-21-96	14.64	11.23	ND	3.41	11-21-96	15,000	630	440	390	2,100	75	--	--			
ADR-2	03-26-97	14.64	11.13	ND	3.51	03-26-97	6,100	320	23	180	400	32	--	--			
ADR-2	05-21-97	14.64	11.64	ND	3.00	05-21-97	6,100	380	22	210	320	<30	--	--			
ADR-2	08-08-97	14.64	11.85	ND	2.79	08-08-97	8,400	380	35	230	910	<30	--	--			
ADR-2	11-18-97	14.64	3.33	ND	11.31	11-18-97	11,000	230	29	300	1,200	<60	--	--			
ADR-2	02-20-98	14.64	7.67	ND	6.97	02-20-98	4,700	320	30	130	360	20	--	--			
ADR-2	05-11-98	14.64	10.47	ND	4.17	05-11-98	Not sampled										
ADR-2	07-30-98	14.64	Not surveyed: well inaccessible														
ADR-2	10-08-98	14.64	11.67	ND	2.97	10-08-98	Not sampled										
ADR-2	02-18-99	14.64	Not surveyed: well inaccessible														
ADR-2	05-26-99	14.64	11.02	ND	3.62	05-26-99	5,900	670	5	340	104	16	--	--			
ADR-2	08-23-99	14.64	9.82	ND	4.82	08-23-99	9,100	570	12	410	1,000	28	--	--			
ADR-2	10-27-99	14.64	9.85	Sheen	4.79	10-27-99	Not sampled: sheen present										
ADR-2	01-31-00	14.64	10.15	ND	4.49	01-31-00	7,700	280	3.4	370	390	23	--	--	0.50	NP	
															0.65	NP	
															2.0	NP	



**Table 1**  
**Historical Groundwater Elevation and Analytical Data**  
**Petroleum Hydrocarbons and Their Constituents**  
**1995 - Present\*\*\***

**ARCO Service Station 2169**  
**889 West Grand Avenue, Oakland, California**

Well Number	Date Gauged	TOC Elevation (ft-MSL)	Depth to Water (feet)	FP Thickness (feet)	Groundwater Elevation (ft-MSL)	Date Sampled	TPH Gasoline ( $\mu\text{g/L}$ )	Benzene ( $\mu\text{g/L}$ )	Toluene ( $\mu\text{g/L}$ )	Ethyl-benzene ( $\mu\text{g/L}$ )	Total Xylenes ( $\mu\text{g/L}$ )	MTBE 8021B* ( $\mu\text{g/L}$ )	MTBE 8260 ( $\mu\text{g/L}$ )	TPH Diesel ( $\mu\text{g/L}$ )	Dissolved Oxygen (mg/L)	Purged/ Not Purged (P/NP)
-------------	-------------	------------------------	-----------------------	---------------------	--------------------------------	--------------	----------------------------------	-----------------------------	-----------------------------	-----------------------------------	-----------------------------------	---------------------------------	-------------------------------	--------------------------------	-------------------------	---------------------------

TOC: top of casing

R-MSL: elevation in feet, relative to mean sea level

TPH: total petroleum hydrocarbons, California DHS LUFT Method

BTEX: benzene, toluene, ethylbenzene, total xylenes by EPA method 8021B (EPA method 8020 prior to 10/27/99)

MTBE: Methyl tert-butyl ether

$\mu\text{g/L}$ : micrograms per liter

mg/L: milligrams per liter

ND: none detected

NR: not reported, data not available or not measurable

- -: not analyzed or not applicable

< denotes concentration not present at or above laboratory detection limit stated to the right

[1]: well contained more than 3 feet of floating product; exact product thickness and groundwater elevation could not be measured

\*: EPA method 8020 prior to 10/27/99

\*\* : [corrected elevation (Z')] = Z + (h \* 0.73) where: Z = measured elevation, h = floating product thickness, 0.73 = density ratio of oil to water

\*\*\*: For previous historical groundwater elevation data please refer to *Fourth Quarter 1995 Groundwater Monitoring Program Results and Remediation System Performance Evaluation Report, ARCO Service Station 2169, 889 West Grand Avenue, Oakland, California, (EMCON, March 4, 1996).*

**Table 2  
Groundwater Flow Direction and Gradient**

**ARCO Service Station 2169  
889 West Grand Avenue, Oakland, California**

<b>Date Measured</b>	<b>Average Flow Direction</b>	<b>Average Hydraulic Gradient</b>
03-24-95	Northwest	0.009
06-05-95	Northwest	0.002
08-17-95	West	0.001
12-04-95	North-Northwest	0.002
03-01-96	Northwest	0.003
05-29-96	Northwest	0.002
08-29-96	West	0.002
11-21-96	West-Northwest	0.002
03-26-97	Northwest	0.002
05-21-97	North-Northwest	0.002
08-08-97	North-Northwest	0.002
11-18-97	North-Northwest	0.003
02-20-98	North	0.013
05-11-98	North	0.03
07-30-98	North	0.002
10-08-98	North-Northwest	0.002
02-18-99	Northwest	0.008
05-26-99	North-Northwest	0.003
08-23-99	Variable	Variable
10-27-99	Variable	Variable
01-31-00	West-Northwest	0.006

**ATTACHMENT D**

**EDCC REPORT AND EDF/GEOWELL SUBMITTAL CONFIRMATION**

---

## Error Summary Log

06/10/03

EDF 1 2i All files present in deliverable.

---

Laboratory:	Sequoia Analytical Laboratories, Inc., Morgan Hill, CA
Project Name:	ARCO #2169, Oakland, CA
Work Order Number:	MME0680
Global ID:	T0600100112
Lab Report Number:	MME0680060920031211

## Report Summary

Labreport	Sampid	Labsampid	Mtrx	QC	Anmcode	Exmcode	Logdate	Extdate	Anadate	Lablotctl	Run Sub
MME06800609200 A-1 31211		MME068001	W	CS	8260+OX	SW5030B	05/22/03	06/05/03	06/05/03	3F05011	1
MME06800609200 A-5 31211		MME068002	W	CS	8260+OX	SW5030B	05/22/03	06/04/03	06/04/03	3F04033	1
MME06800609200 A-6 31211		MME068003	W	CS	8260+OX	SW5030B	05/22/03	06/04/03	06/04/03	3F04033	1
MME06800609200 ADR-1 31211		MME068004	W	CS	8260+OX	SW5030B	05/22/03	06/04/03	06/05/03	3F04033	1
MME06800609200 ADR-2 31211		MME068005	W	CS	8260+OX	SW5030B	05/22/03	06/04/03	06/05/03	3F04033	1
		MME079008	W	NC	8260+OX	SW5030B	//	06/05/03	06/05/03	3F05011	1
		MMF010503	W	NC	8260+OX	SW5030B	//	06/04/03	06/05/03	3F04033	1
		3F04033BS1	WQ	BS1	8260+OX	SW5030B	//	06/04/03	06/04/03	3F04033	1
		3F04033BS2	WQ	BS2	8260+OX	SW5030B	//	06/04/03	06/04/03	3F04033	1
		3F04033BLK1	WQ	LB1	8260+OX	SW5030B	//	06/04/03	06/04/03	3F04033	1
		3F04033MS1	W	MS1	8260+OX	SW5030B	//	06/04/03	06/05/03	3F04033	1
		3F04033MSD1	W	SD1	8260+OX	SW5030B	//	06/04/03	06/05/03	3F04033	1
		3F05011BS1	WQ	BS1	8260+OX	SW5030B	//	06/05/03	06/05/03	3F05011	1
		3F05011BS2	WQ	BS2	8260+OX	SW5030B	//	06/05/03	06/05/03	3F05011	1
		3F05011BLK1	WQ	LB1	8260+OX	SW5030B	//	06/05/03	06/05/03	3F05011	1
		3F05011MS1	W	MS1	8260+OX	SW5030B	//	06/05/03	06/05/03	3F05011	1
		3F05011MSD1	W	SD1	8260+OX	SW5030B	//	06/05/03	06/05/03	3F05011	1

# EDFSAMP: Error Summary Log

06/10/03

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

---

## EDFTEST: Error Summary Log

06/10/03

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

# EDFRES: Error Summary Log

06/10/03

Error type	Labsampid	Qccode	Matrix	Anrncode	Pvccode	Anadate	Run number	Parlabel
Warning: extra parameter	3F04033MS1	MS1	W	8260+OX	PR	06/05/03	1	GROC6C10
Warning: extra parameter	3F04033MSD1	SD1	W	8260+OX	PR	06/05/03	1	GROC6C10
Warning: extra parameter	3F05011MS1	MS1	W	8260+OX	PR	06/05/03	1	GROC6C10
Warning: extra parameter	3F05011MSD1	SD1	W	8260+OX	PR	06/05/03	1	GROC6C10
Warning: extra parameter	MME068001	CS	W	8260+OX	PR	06/05/03	1	GROC6C10
Warning: extra parameter	MME068001	CS	W	8260+OX	PR	06/05/03	1	XYLENES
Warning: extra parameter	MME068002	CS	W	8260+OX	PR	06/04/03	1	GROC6C10
Warning: extra parameter	MME068002	CS	W	8260+OX	PR	06/04/03	1	XYLENES
Warning: extra parameter	MME068003	CS	W	8260+OX	PR	06/04/03	1	GROC6C10
Warning: extra parameter	MME068003	CS	W	8260+OX	PR	06/04/03	1	XYLENES
Warning: extra parameter	MME068004	CS	W	8260+OX	PR	06/05/03	1	GROC6C10
Warning: extra parameter	MME068004	CS	W	8260+OX	PR	06/05/03	1	XYLENES
Warning: extra parameter	MME068005	CS	W	8260+OX	PR	06/05/03	1	GROC6C10
Warning: extra parameter	MME068005	CS	W	8260+OX	PR	06/05/03	1	XYLENES
Warning: extra parameter	MME079008	NC	W	8260+OX	PR	06/05/03	1	GROC6C10
Warning: extra parameter	MMF010503	NC	W	8260+OX	PR	06/05/03	1	GROC6C10
Warning: extra parameter	3F04033BLK1	LB1	WQ	8260+OX	PR	06/04/03	1	GROC6C10
Warning: extra parameter	3F04033BLK1	LB1	WQ	8260+OX	PR	06/04/03	1	XYLENES
Warning: extra parameter	3F04033BS2	BS2	WQ	8260+OX	PR	06/04/03	1	GROC6C10
Warning: extra parameter	3F05011BLK1	LB1	WQ	8260+OX	PR	06/05/03	1	GROC6C10
Warning: extra parameter	3F05011BLK1	LB1	WQ	8260+OX	PR	06/05/03	1	XYLENES
Warning: extra parameter	3F05011BS2	BS2	WQ	8260+OX	PR	06/05/03	1	GROC6C10



---

## EDFQC: Error Summary Log

06/10/03

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

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# EDFCL: Error Summary Log

06/10/03

---

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

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**Date/Time of Submittal:** 6/10/2003 10:37:26 AM

**Facility Global ID:** T0600100112

**Facility Name:** ARCO

**Submittal Title:** 2nd Qtr 2003 Monitoring Report for #2169

**Submittal Type:** GW Monitoring Report

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