November 19, 2012
Project 101.00173.00011

Mr. Tom Middleton
Washington Department of Ecology
P.O. Box 47775
Olympia, Washington 98504-7775

Re: Groundwater Sampling Report – September 2012 Event
Former Arco Service Station #0855, Longview, Washington

Dear Mr. Middleton:

On behalf of Wakefield Family LLC (the property owner), SLR International Corporation (SLR) has prepared this report to present the results of the annual groundwater sampling activities conducted in September 2012 at the above-referenced site. The former Arco Service Station #0855 property is located at 4603 Ocean Beach Highway, near the western end of Longview, Washington (see Figure 1). The purposes of the groundwater sampling program are to assess the effectiveness of the 2007 site remedial action (soil excavation and shallow groundwater extraction) and the subsequent deep groundwater recovery operations that were deactivated in July 2011, and to monitor the migration and attenuation of the petroleum hydrocarbon concentrations in the shallow groundwater-bearing unit and the deep aquifer over time. An additional objective of the September 2012 sampling event is to evaluate if the June 2012 injection of an electron-acceptor solution is stimulating the biodegradation of the remaining petroleum hydrocarbon concentrations in the deep groundwater.

BACKGROUND

After completing the 2007 remedial action at the property, quarterly groundwater sampling results in 2007 and 2008 showed that the samples from all of the shallow groundwater monitoring wells, except MW-10, and from all of the deep groundwater monitoring wells, except DMW-4, DMW-5, DMW-9, and DMW-10, contained petroleum hydrocarbon concentrations below the Model Toxics Control Act (MTCA) Method A groundwater cleanup levels for four consecutive quarters (SLR, 2008a; SLR, 2008b; and SLR, 2008c). To remediate the remaining impacted groundwater in the deep aquifer, a deep groundwater recovery well (RW-1) was installed and a recovery/treatment system operated from June 2009 through July 2011. The system was deactivated after the groundwater concentrations in all of the deep wells were near or below the Method A cleanup levels.

Since September 2009, the groundwater sampling program has consisted of conducting annual sampling events (collect samples from all of the shallow and deep monitoring

wells) in September, and conducting quarterly sampling events (collect samples from shallow well MW-10 and from deep wells DMW-5, DMW-9, and DMW-10) in December, March, and June. Based on the groundwater sampling results in September and December 2009 and March and June 2010, the samples from shallow monitoring well MW-10 contained petroleum hydrocarbon concentrations below the Method A cleanup levels for four consecutive quarters (SLR, 2009; SLR, 2010a; SLR, 2010b; and SLR, 2010c). Therefore, MW-10 was eliminated from the future quarterly groundwater sampling events.

Based on the groundwater sampling results in June 2011, September 2011, December 2011, March 2012, and June 2012, the samples from deep monitoring wells DMW-5 and DMW-9 contained petroleum hydrocarbon concentrations below the Method A cleanup levels for four consecutive quarters (SLR, 2011c; SLR, 2011d; SLR, 2012a; SLR, 2012b; and SLR, 2012c). Therefore, DMW-5 and DMW-9 were eliminated from the future quarterly groundwater sampling events.

The radius of pumping influence of the previous deep groundwater recovery system did not extend to deep well DMW-10, and the benzene concentrations in the groundwater samples from DMW-10 have typically been above the MTCA Method A cleanup level. The groundwater sampling results also indicate that natural attenuation of the remaining benzene concentrations at DMW-10 has been limited. To reduce the benzene concentrations in the deep groundwater near DMW-10 to below the MTCA Method A cleanup levels and to try to ensure that the benzene concentrations in the deep groundwater near wells DMW-5 and DMW-9 remain below the Method A cleanup levels, a sulfate-based, electron-acceptor solution (EAS^{TM}) was injected on June 4, 2012, in a total of nine borings to stimulate anaerobic bacteria activity (SLR, 2012c). Four of the injection borings were located near DMW-10, three of the borings were located near DMW-9, and two of the borings were located near DMW-5.

SEPTEMBER 2012 SAMPLING EVENT

SLR personnel conducted the groundwater sampling activities on September 11 and 12, 2012. Immediately prior to sampling, SLR measured the depths to groundwater in all of the shallow monitoring wells (MW-5, MW-8, MW-9, MW-10, MW-11, MW-12, MW-13, and MW-14), all of the deep monitoring wells (DMW-3, DMW-4, DMW-5, DMW-6, DMW-7, DMW-8, DMW-9, and DMW-10), and in the inactive deep groundwater recovery well (RW-1) by using an electronic water level probe. The depth to groundwater measurements were converted to groundwater elevations by using the results of previous well elevation surveys conducted by Gibbs and Olson, Inc., of Longview, Washington. The depths to groundwater in the shallow wells ranged from 4.78 to 7.71 feet below the tops of the well casings. The groundwater elevations in the shallow wells ranged from 1.53 to 4.05 feet above the NAVD 88 datum. The depths to groundwater in the deep wells

ranged from 4.98 to 7.72 feet below the tops of the well casings. The groundwater elevations in the deep wells ranged from 1.35 to 3.77 feet above the NAVD 88 datum. The groundwater elevations in the shallow and deep wells were inconsistent and could not be used to determine general shallow or deep groundwater flow directions beneath the site area. The groundwater monitoring data from the September 2012 sampling event, as well as from the previous groundwater sampling events, are presented in Table 1. The groundwater elevations in the shallow and deep wells on September 11, 2012, are shown on Figures 2 and 3, respectively.

SLR personnel collected groundwater samples from all of the shallow monitoring wells and all of the deep monitoring wells for laboratory analysis. SLR purged the wells by using a peristaltic pump with dedicated tubing at a flow rate of approximately 0.33 liters per minute. During purging, field parameters of temperature, conductivity, dissolved oxygen (DO), pH, and oxidation-reduction potential were measured every three to five minutes. Each groundwater sample was collected following the stabilization of the field parameter measurements.

The groundwater samples were submitted to Friedman & Bruya, Inc. (F&B) in Seattle, Washington, for analysis of benzene, toluene, ethylbenzene, and total xylenes (BTEX) by EPA Method 8021B, and gasoline-range organics (GRO) by Ecology Method NWTPH-Gx. The analytical results indicated that the groundwater samples from deep well DMW-10 contained a benzene concentration [29 micrograms per liter (µg/L)] that exceeded the MTCA Method A cleanup level (5 µg/L). The groundwater samples from deep wells DMW-9 and DMW-10 and from shallow well MW-10 contained GRO concentrations (160 to 230 µg/L) that were below the Method A cleanup level (800 µg/L). The groundwater samples from all of the shallow wells, except MW-10, and from all of the deep wells, except DMW-9 and DMW-10, did not contain petroleum hydrocarbon concentrations greater than the method reporting limits (MRLs). The groundwater sample analytical results (petroleum hydrocarbons only) from the September 2012 event, as well as from the previous sampling events, are presented in Table 2. The benzene and GRO concentrations in the September 2012 samples from the shallow and deep wells are shown on Figures 2 and 3, respectively. A copy of the laboratory analytical report is attached.

The groundwater samples were also analyzed for the following natural attenuation parameters: dissolved methane by EPA Method RSK 175 Modified and sulfate by EPA Method 300.0. The sample analytical results showed that the greatest dissolved methane concentration [20.3 milligrams per liter (mg/L)] was at the source area deep well (at DMW-9), and the dissolved methane concentration at the remaining petroleum hydrocarbon-impacted deep well (DMW-10) was 6.7 mg/L. The greatest sulfate concentration (53.9 mg/L) in a deep well was at DMW-10. The groundwater sample analytical results and field measurements (DO, redox potential, and dissolved ferrous iron) for the natural attenuation parameters (for the September 2012 event as well as from the

previous sampling events) are presented in Table 3. A copy of the laboratory analytical report is attached.

CONCLUSIONS

The 2008 groundwater sampling results from the shallow wells indicated that the 2007 remediation activities effectively removed the source of the shallow groundwater contamination and extracted most of the impacted shallow groundwater (SLR, 2008a; SLR, 2008b; and SLR, 2008c). Based on the 2009, 2010, 2011, and 2012 groundwater sampling results (SLR, 2009; SLR, 2010a; SLR, 2010b; SLR, 2010c; SLR, 2010d; and SLR, 2011d), including the September 2012 results, the remaining petroleum hydrocarbon concentrations in the shallow groundwater have naturally attenuated to below the MTCA Method A cleanup levels.

The 2008 groundwater sampling results from the deep wells showed that the 2007 remediation activities had limited short-term affects on the deep groundwater concentrations (SLR, 2008a; SLR, 2008b; and SLR, 2008c). To actively remediate the impacted deep groundwater, a deep groundwater recovery/treatment system operated from June 2009 through July 2011. Based on the results of the quarterly groundwater sampling events that have been conducted since September 2009 (SLR, 2009; SLR, 2010a; SLR, 2010b; SLR, 2010c; SLR, 2010d; SLR, 2011a; SLR, 2011b; SLR, 2011c; SLR, 2011d; SLR, 2012a; SLR, 2012b; and SLR, 2012c), including the September 2012 results, the benzene and GRO concentrations in the deep groundwater have decreased due to the operation of the system and to natural attenuation. At the source area deep well (DMW-9), the BTEX and GRO concentrations in September 2012 were less than the MTCA Method A groundwater cleanup levels for the fifth consecutive quarter.

Since June 2011, groundwater samples from deep well DMW-10 have been the only samples from the subject property to contain petroleum hydrocarbon (benzene only) concentrations greater than the MTCA Method A cleanup levels. The radius of pumping influence of the previous deep groundwater recovery system did not extend to DMW-10, and the natural attenuation of the remaining benzene concentrations at the DMW-10 area has been limited. To reduce the benzene concentrations in the deep groundwater near DMW-10 to below the Method A cleanup levels and to try to ensure that the benzene concentrations in the deep groundwater near wells DMW-5 and DMW-9 remain below the Method A cleanup levels, the sulfate-based EAS^{TM} was injected into the deep aquifer on June 4, 2012, to stimulate anaerobic bacteria activity. In September 2012, the sulfate concentration (53.9 mg/L) in the groundwater sample from DMW-10 was similar to the sulfate concentration (59.9 mg/L) at the well in September 2011, prior to EAS^{TM} injection. Based on the sulfate concentration at DMW-10 and the limited deep groundwater flow (due to flat and inconsistent hydraulic gradients) beneath the property area, it does not appear that the EAS^{TM} solution has migrated to DMW-10. However, it is possible that the

solution has stimulated biodegradation of petroleum hydrocarbons in the immediate vicinity of DMW-10.

If you have any questions, please contact Mike Staton at (425) 471-0479.

Sincerely,

SLR International Corporation

Amanda Meugniot
Staff Geologist

Michael D. Staton, L.G.
Principal Geologist

Attachments: Limitations
References
Tables 1, 2, and 3
Figures 1 through 3
Laboratory Analytical Reports

cc: Kurt Peterson, Cascadia Law Group PLLC (4 copies)

LIMITATIONS

The services reflected in this report were performed consistent with generally accepted professional consulting principals and practices. No other warranty, express or implied, is made. These services were performed consistent with our agreement with our client. This information is solely for the use of our client unless otherwise noted. Any reliance on this information by a third party is at such party's sole risk.

Opinions and recommendations contained herein apply to conditions existing when services were performed and are intended only for the client, purposes, location, timeframes, and project parameters indicated. We are not responsible for the impacts of any changes in environmental standards, practices, or regulations subsequent to performance of services. We do not warrant the accuracy of information supplied by others, nor the use of segregated portions of this report.

REFERENCES

SLR. 2008a. *Remedial Action Report, Former Arco Service Station #0855, 4603 Ocean Beach Highway, Longview, Washington.* July 21.

SLR. 2008b. *Quarterly Groundwater Sampling Report – July 2008 Event, Former Arco Service Station #0855, Longview, Washington.* August 29.

SLR. 2008c. *Quarterly Groundwater Sampling Report – September/October 2008 Event, Former Arco Service Station #0855, Longview, Washington.* October 29.

SLR. 2009. *Deep Groundwater Remediation System Installation and Performance Report, Former Arco Service Station #0855, Longview, Washington.* November 4.

SLR. 2010a. *Quarterly Groundwater Sampling Report – December 2009 Event, Former Arco Service Station #0855, Longview, Washington.* January 9.

SLR. 2010b. *Quarterly Groundwater Sampling Report – March 2010 Event, Former Arco Service Station #0855, Longview, Washington.* April 5.

SLR. 2010c. *Quarterly Groundwater Sampling Report – June 2010 Event, Former Arco Service Station #0855, Longview, Washington.* July 20.

SLR. 2010d. *Groundwater Sampling Report – September 2010 Event, Former Arco Service Station #0855, Longview, Washington.* October 25.

SLR. 2011a. *Groundwater Sampling Report – December 2010 Event, Former Arco Service Station #0855, Longview, Washington.* January 4.

SLR. 2011b. *Groundwater Sampling Report – March 2011 Event, Former Arco Service Station #0855, Longview, Washington.* May 23.

SLR. 2011c. *Groundwater Sampling Report – June 2011 Event, Former Arco Service Station #0855, Longview, Washington.* July 20.

SLR. 2011d. *Groundwater Sampling Report – September 2011 Event, Former Arco Service Station #0855, Longview, Washington.* October 31.

SLR. 2012a. *Groundwater Sampling Report – December 2011 Event, Former Arco Service Station #0855, Longview, Washington.* January 9.

REFERENCES (CONTINUED)

SLR. 2012b. *Groundwater Sampling Report – March 2012 Event, Former Arco Service Station #0855, Longview, Washington.* April 13.

SLR. 2012c. *Groundwater Sampling Report – June 2012 Event, Former Arco Service Station #0855, Longview, Washington.* August 10.

TABLES

Table 1
Groundwater Monitoring Data
Former Arco Service Station #0855
Longview Washington

Well Number	Top of Casing Elevation[a] (feet)	Date Measured	Depth to Groundwater[b] (feet)	Free Product Thickness (feet)	Groundwater Elevation (feet)
Shallow Monitoring Wells					
MW-1	8.34	03/27/00	4.36	NP	3.98
		05/23/00	5.20	NP	3.14
		07/20/00	5.55	NP	2.79
		10/18/00	5.41	NP	2.93
		01/18/01	4.81	NP	3.53
		04/18/01	4.58	NP	3.76
		07/17/01	5.54	NP	2.80
		10/18/01	5.26	NP	3.08
		01/16/02	4.45	NP	3.89
		07/09/03	5.80	NP	2.54
	8.25[c]	05/25/05	4.12	NP	4.13
		12/07/05	3.77	NP	4.48
		08/16/06	6.58	NP	1.67
		Well abandoned in September 2007.			
MW-2	8.76	03/27/00	3.61	NP	5.15
		05/23/00	4.64	NP	4.12
		07/20/00	5.06	NP	3.70
		10/18/00	5.19	NP	3.57
		01/18/00	3.96	NP	4.80
		04/18/01	3.83	NP	4.93
		07/17/01	5.08	NP	3.68
		10/18/01	4.83	NP	3.93
		01/16/02	3.71	NP	5.05
		07/09/03	5.36	NP	3.40
	8.89[c]	05/25/05	4.15	NP	4.74
		12/07/05	4.09	NP	4.80
		08/16/06	5.96	NP	2.93
		Well abandoned in September 2007.			
MW-3	8.78	03/27/00	5.61	NP	3.17
		05/23/00	6.46	NP	2.32
		07/20/00	7.05	NP	1.73
		10/18/00	6.84	NP	1.94
		01/18/01	6.37	NP	2.41
		04/18/01	5.46	NP	3.32
		07/17/01	6.93	NP	1.85
		10/18/01	6.47	NP	2.31
		01/16/01	4.83	NP	3.95
		07/09/03	6.72	0.02	2.08*
	8.58[c]	05/25/05	4.65	Film	3.93
		12/07/05	4.45	0.01	4.14*
		08/16/06	6.91	0.24	1.86*
		Well abandoned in September 2007.			
MW-4	8.78	11/15/00	6.88	NP	1.90
		01/18/01	6.78	NP	2.00
		04/18/01	6.90	NP	1.88
		07/17/01	7.50	NP	1.28
		10/18/01	6.92	NP	1.86
		01/16/02	6.15	NP	2.63
		07/09/03	7.04	NP	1.74
	8.69[c]	05/25/05	6.24	NP	2.45
		12/07/05	5.70	NP	2.99
		08/16/06	6.84	NP	1.85
		Well abandoned in September 2007.			

Table 1
Groundwater Monitoring Data
Former Arco Service Station #0855
Longview Washington

Well Number	Top of Casing Elevation[a] (feet)	Date Measured	Depth to Groundwater[b] (feet)	Free Product Thickness (feet)	Groundwater Elevation (feet)
Shallow Monitoring Wells (continued)					
MW-5	8.78	11/15/00	6.54	NP	2.24
		01/18/01	6.07	NP	2.71
		04/18/01	5.46	NP	3.32
		07/17/01	6.79	NP	1.99
		10/18/01	6.50	NP	2.28
		01/16/02	5.49	NP	3.29
		07/09/03	6.86	NP	1.92
	8.67[c]	05/25/05	5.64	NP	3.03
		12/07/05	5.53	NP	3.14
		08/16/06	6.28	NP	2.39
		12/11/07	4.64	NP	4.03
		03/11/08	4.90	NP	3.77
		07/01/08	5.33	NP	3.34
		09/30/08	6.17	NP	2.50
		09/02/09	7.08	NP	1.59
		12/15/09	4.63	NP	4.04
		03/18/10	4.85	NP	3.82
		06/15/10	4.84	NP	3.83
		09/14/10	6.87	NP	1.80
		12/14/10	3.03	NP	5.64
		03/16/11	2.80	NP	5.87
		06/16/11	5.66	NP	3.01
		09/14/11	7.12	NP	1.55
		12/08/11	5.57	NP	3.10
		03/13/12	2.83	NP	5.84
		06/15/12	5.44	NP	3.23
		09/11/12	7.02	NP	1.65
MW-6	8.21	11/15/00	6.15	NP	2.06
		01/18/01	5.85	NP	2.36
		04/18/01	5.70	NP	2.51
		07/17/01	6.02	NP	2.19
		10/18/01	6.03	NP	2.18
		01/16/02	5.80	NP	2.41
		07/09/03	6.16	NP	2.05
	8.11[c]	05/25/05	4.00	NP	4.11
		12/07/05	5.70	NP	2.41
		08/16/06	6.40	NP	1.71
		Well destroyed in November 2007.			
MW-7	8.45	11/15/00	6.52	NP	1.93
		01/18/01	6.24	NP	2.21
		04/18/01	5.98	NP	2.47
		07/17/01	6.44	NP	2.01
		10/18/01	6.39	NP	2.06
		01/16/02	6.31	NP	2.14
		07/09/03	7.00	NP	1.45
	8.26[c]	05/25/05	5.61	NP	2.65
		12/07/05	6.36[d]	NP	1.90
		08/16/06	6.40	NP	1.86
		Well abandoned in September 2007.			

Table 1
Groundwater Monitoring Data
Former Arco Service Station #0855
Longview Washington

Well Number	Top of Casing Elevation[a] (feet)	Date Measured	Depth to Groundwater[b] (feet)	Free Product Thickness (feet)	Groundwater Elevation (feet)
Shallow Monitoring Wells (continued)					
MW-8	6.45	05/25/05	4.50	NP	1.95
		12/07/05	3.69	NP	2.76
		08/16/06	4.67	NP	1.78
		12/11/07	3.55	NP	2.90
		03/11/08	3.51	NP	2.94
		07/01/08	4.03	NP	2.42
		09/30/08	4.19	NP	2.26
		09/02/09	4.55	NP	1.90
		12/15/09	3.31	NP	3.14
		03/18/10	3.05	NP	3.40
		06/15/10	2.48	NP	3.97
		09/14/10	4.32	NP	2.13
		12/14/10	2.70	NP	3.75
		03/16/11	2.15	NP	4.30
		06/16/11	2.37	NP	4.08
		09/14/11	4.79	NP	1.66
		12/08/11	3.52	NP	2.93
		03/13/12	2.76	NP	3.69
		06/15/12	3.01	NP	3.44
		09/11/12	4.78	NP	1.67
MW-9	9.43	05/25/05	4.66	NP	4.77
		12/07/05	4.59	NP	4.84
		08/16/06	5.23	NP	4.20
		12/11/07	4.52	NP	4.91
		03/11/08	4.65	NP	4.78
		07/01/08	5.06	NP	4.37
		09/30/08	5.08	NP	4.35
		09/02/09	5.20	NP	4.23
		12/15/09	4.51	NP	4.92
		03/18/10	4.64	NP	4.79
		06/15/10	4.72	NP	4.71
		09/14/10	4.94	NP	4.49
		12/14/10	4.66	NP	4.77
		03/16/11	3.91	NP	5.52
		06/16/11	4.83	NP	4.60
		09/14/11	5.35	NP	4.08
		12/08/11	4.78	NP	4.65
		03/13/12	4.25	NP	5.18
		06/15/12	4.78	NP	4.65
		09/11/12	5.38	NP	4.05
MW-10	9.52	05/25/05	10.30	NP	-0.78
		12/07/05	5.90	NP	3.62
		08/16/06	7.18	NP	2.34
		12/11/07	4.22	NP	5.30
		03/11/08	6.02	NP	3.50
		07/01/08	6.53	NP	2.99
		09/30/08	4.51	NP	5.01
		09/02/09	7.76	NP	1.76
		12/15/09	5.97	NP	3.55
		03/18/10	8.14	NP	1.38
		06/15/10	5.15	NP	4.37
		09/14/10	7.88	NP	1.64
		12/14/10	3.42	NP	6.10
		03/16/11	3.54	NP	5.98
		06/16/11	6.40	NP	3.12
		09/14/11	8.01	NP	1.51
		12/08/11	5.36	NP	4.16
		03/13/12	3.73	NP	5.79
		06/15/12	5.93	NP	3.59
		09/11/12	7.71	NP	1.81

Table 1
Groundwater Monitoring Data
Former Arco Service Station #0855
Longview Washington

Well Number	Top of Casing Elevation[a] (feet)	Date Measured	Depth to Groundwater[b] (feet)	Free Product Thickness (feet)	Groundwater Elevation (feet)
Shallow Monitoring Wells (continued)					
MW-11	8.16	12/07/05	3.87	NP	4.29
		08/16/06	6.10	NP	2.06
		12/11/07	3.51	NP	4.65
		03/11/08	4.86	NP	3.30
		07/01/08	5.61	NP	2.55
		09/30/08	6.56	NP	1.60
		09/02/09	7.52	NP	0.64
		12/15/09	4.35	NP	3.81
		03/18/10	4.17	NP	3.99
		06/15/10	4.22	NP	3.94
		09/14/10	6.28	NP	1.88
		12/14/10	1.86	NP	6.30
		03/16/11	2.59	NP	5.57
		06/16/11	5.43	NP	2.73
		09/14/11	8.17	NP	-0.01
		12/08/11	4.18	NP	3.98
		03/13/12	5.91	NP	2.25
		06/15/12	4.94	NP	3.22
		09/11/12	6.63	NP	1.53
MW-12	8.21	12/11/07	2.69	NP	5.52
		03/11/08	4.25	NP	3.96
		07/01/08	5.20	NP	3.01
		09/30/08	5.85	NP	2.36
		09/02/09	6.33	NP	1.88
		12/15/09	3.09	NP	5.12
		03/18/10	3.46	NP	4.75
		06/15/10	3.65	NP	4.56
		09/14/10	5.65	NP	2.56
		12/14/10	1.45	NP	6.76
		03/16/11	1.90	NP	6.31
		06/16/11	4.77	NP	3.44
		09/14/11	5.35	NP	2.86
		12/08/11	3.89	NP	4.32
		03/13/12	2.00	NP	6.21
		06/15/12	4.25	NP	3.96
		09/11/12	6.34	NP	1.87
MW-13	9.03	12/11/07	1.10	NP	7.93
		03/11/08	1.53	NP	7.50
		07/01/08	3.53	NP	5.50
		09/30/08	4.73	NP	4.30
		09/02/09	7.04	NP	1.99
		12/15/09	2.24	NP	6.79
		03/18/10	1.48	NP	7.55
		06/15/10	1.65	NP	7.38
		09/14/10	5.80	NP	3.23
		12/14/10	1.48	NP	7.55
		03/16/11	1.45	NP	7.58
		06/16/11	3.12	NP	5.91
		09/14/11	6.97	NP	2.06
		12/08/11	2.46	NP	6.57
		03/13/12	1.74	NP	7.29
		06/15/12	3.16	NP	5.87
		09/11/12	6.76	NP	2.27

Table 1
Groundwater Monitoring Data
Former Arco Service Station #0855
Longview Washington

Well Number	Top of Casing Elevation[a] (feet)	Date Measured	Depth to Groundwater[b] (feet)	Free Product Thickness (feet)	Groundwater Elevation (feet)
Shallow Monitoring Wells (continued)					
MW-14	8.39	12/11/07	1.50	NP	6.89
		03/11/08	3.85	NP	4.54
		07/01/08	4.27	NP	4.12
		09/30/08	6.44	NP	1.95
		09/02/09	6.93	NP	1.46
		12/15/09	1.77	NP	6.62
		03/18/10	1.65	NP	6.74
		06/15/10	1.78	NP	6.61
		09/14/10	6.23	NP	2.16
		12/14/10	1.37	NP	7.02
		03/16/11	1.41	NP	6.98
		06/16/11	4.77	NP	3.62
		09/14/11	7.25	NP	1.14
		12/08/11	1.88	NP	6.51
		03/13/12	1.45	NP	6.94
		06/15/12	1.98	NP	6.41
		09/11/12	6.75	NP	1.64
Deep Monitoring Wells					
DMW-1	8.55	12/07/05	6.73	NP	1.82
		08/16/06	6.28	NP	2.27
		Well abandoned in September 2007.			
DMW-2	8.29	12/07/05	6.10	NP	2.19
		08/16/06	6.71	NP	1.58
		Well abandoned in September 2007.			
DMW-3	6.66	12/07/05	12.15[d]	NP	-5.49
		08/16/06	4.55	NP	2.11
		12/11/07	4.60	NP	2.06
		03/11/08	5.68	NP	0.98
		07/01/08	5.52	NP	1.14
		09/30/08	5.03	NP	1.63
		09/02/09	5.19	NP	1.47
		12/15/09	4.71	NP	1.95
		03/18/10	4.55	NP	2.11
		06/15/10	4.42	NP	2.24
		09/14/10	5.01	NP	1.65
		12/14/10	4.36	NP	2.30
		03/16/11	3.95	NP	2.71
		06/16/11	4.10	NP	2.56
		09/14/11	4.73	NP	1.93
		12/08/11	7.52	NP	-0.86
		03/13/12	6.24	NP	0.42
		06/15/12	4.70	NP	1.96
		09/11/12	4.98	NP	1.68
DMW-4	8.55	12/07/05	6.30	NP	2.25
		08/16/06	7.12	NP	1.43
		12/11/07	6.08	NP	2.47
		03/11/08	6.54	NP	2.01
		07/01/08	6.41	NP	2.14
		09/30/08	6.91	NP	1.64
		09/02/09	7.13	NP	1.42
		12/15/09	6.26	NP	2.29
		03/18/10	6.43	NP	2.12
		06/15/10	6.11	NP	2.44
		09/14/10	6.97	NP	1.58
		12/14/10	5.18	NP	3.37
		03/16/11	5.55	NP	3.00
		06/16/11	6.11	NP	2.44
		09/14/11	7.20	NP	1.35
		12/08/11	6.67	NP	1.88
		03/13/12	5.66	NP	2.89
		06/15/12	6.44	NP	2.11
		09/11/12	7.18	NP	1.37

Table 1
Groundwater Monitoring Data
Former Arco Service Station #0855
Longview Washington

Well Number	Top of Casing Elevation[a] (feet)	Date Measured	Depth to Groundwater[b] (feet)	Free Product Thickness (feet)	Groundwater Elevation (feet)
Deep Monitoring Wells (continued)					
DMW-5	8.14	12/07/05	5.88	NP	2.26
		08/16/06	6.57	NP	1.57
		12/11/07	5.75	NP	2.39
		03/11/08	6.14	NP	2.00
		07/01/08	5.01	NP	3.13
		09/30/08	6.52	NP	1.62
		09/02/09	6.75	NP	1.39
		12/15/09	5.87	NP	2.27
		03/18/10	6.03	NP	2.11
		06/15/10	5.68	NP	2.46
		09/14/10	6.55	NP	1.59
		12/14/10	4.80	NP	3.34
		03/16/11	5.17	NP	2.97
		06/16/11	5.69	NP	2.45
		09/14/11	6.79	NP	1.35
		12/08/11	6.28	NP	1.86
		03/13/12	5.25	NP	2.89
		06/15/12	6.05	NP	2.09
		09/11/12	6.74	NP	1.40
DMW-6	9.15	08/16/06	7.74	NP	1.41
		12/11/07	6.68	NP	2.47
		03/11/08	7.15	NP	2.00
		07/01/08	7.04	NP	2.11
		09/30/08	7.53	NP	1.62
		09/02/09	7.79	NP	1.36
		12/15/09	6.89	NP	2.26
		03/18/10	7.06	NP	2.09
		06/15/10	6.74	NP	2.41
		09/14/10	7.59	NP	1.56
		12/14/10	5.79	NP	3.36
		03/16/11	6.18	NP	2.97
		06/16/11	6.75	NP	2.40
		09/14/11	7.82	NP	1.33
		12/08/11	7.31	NP	1.84
		03/13/12	6.34	NP	2.81
		06/15/12	7.09	NP	2.06
		09/11/12	5.38	NP	3.77
DMW-7	8.12	08/16/06	6.68	NP	1.44
		12/11/07	5.68	NP	2.44
		03/11/08	6.11	NP	2.01
		07/01/08	6.02	NP	2.10
		09/30/08	6.61	NP	1.51
		09/02/09	6.74	NP	1.38
		12/15/09	5.85	NP	2.27
		03/18/10	5.93	NP	2.19
		06/15/10	5.82	NP	2.30
		09/14/10	6.55	NP	1.57
		12/14/10	5.27	NP	2.85
		03/16/11	5.15	NP	2.97
		06/16/11	5.70	NP	2.42
		09/14/11	6.64	NP	1.48
		12/08/11	6.28	NP	1.84
		03/13/12	5.22	NP	2.90
		06/15/12	6.05	NP	2.07
		09/11/12	6.76	NP	1.36

Table 1
Groundwater Monitoring Data
Former Arco Service Station #0855
Longview Washington

Well Number	Top of Casing Elevation[a] (feet)	Date Measured	Depth to Groundwater[b] (feet)	Free Product Thickness (feet)	Groundwater Elevation (feet)
Deep Monitoring Wells (continued)					
DMW-8	9.09	08/16/06	7.65	NP	1.44
		12/11/07	6.60	NP	2.49
		03/11/08	7.06	NP	2.03
		07/01/08	6.97	NP	2.12
		09/30/08	7.48	NP	1.61
		09/02/09	7.69	NP	1.40
		12/15/09	6.80	NP	2.29
		03/18/10	6.81	NP	2.28
		06/15/10	6.55	NP	2.54
		09/14/10	7.50	NP	1.59
		12/14/10	6.52	NP	2.57
		03/16/11	6.26	NP	2.83
		06/16/11	6.60	NP	2.49
		09/14/11	7.23	NP	1.86
		12/08/11	7.19	NP	1.90
		03/13/12	6.17	NP	2.92
		06/15/12	6.98	NP	2.11
		09/11/12	7.72	NP	1.37
DMW-9	8.86	12/11/07	5.39	NP	3.47
		03/11/08	6.84	NP	2.02
		07/01/08	6.85	NP	2.01
		09/30/08	7.20	NP	1.66
		09/02/09	7.44	NP	1.42
		12/15/09	6.54	NP	2.32
		03/18/10	6.69	NP	2.17
		06/15/10	6.39	NP	2.47
		09/14/10	7.23	NP	1.63
		12/14/10	5.66	NP	3.20
		03/16/11	5.87	NP	2.99
		06/16/11	6.39	NP	2.47
		09/14/11	7.46	NP	1.40
		12/08/11	6.95	NP	1.91
		03/13/12	5.91	NP	2.95
		06/15/12	6.73	NP	2.13
		09/11/12	7.45	NP	1.41
DMW-10	8.38	12/11/07	4.91	NP	3.47
		03/11/08	6.35	NP	2.03
		07/01/08	6.24	NP	2.14
		09/30/08	6.75	NP	1.63
		09/02/09	6.99	NP	1.39
		12/15/09	6.09	NP	2.29
		03/18/10	6.25	NP	2.13
		06/15/10	5.91	NP	2.47
		09/14/10	6.77	NP	1.61
		12/14/10	5.02	NP	3.36
		03/16/11	5.38	NP	3.00
		06/16/11	5.92	NP	2.46
		09/14/11	7.02	NP	1.36
		12/08/11	6.51	NP	1.87
		03/13/12	5.50	NP	2.88
		06/15/12	6.28	NP	2.10
		09/11/12	7.03	NP	1.35

Table 1
Groundwater Monitoring Data
Former Arco Service Station #0855
Longview Washington

Well Number	Top of Casing Elevation[a] (feet)	Date Measured	Depth to Groundwater[b] (feet)	Free Product Thickness (feet)	Groundwater Elevation (feet)
Inactive Deep Recovery Well					
RW-1	8.08	09/02/09	6.69	NP	1.39
		12/15/09	5.78	NP	2.30
		03/18/10	5.96	NP	2.12
		06/15/10	5.60	NP	2.48
		12/14/10	4.70	NP	3.38
		03/16/11	5.06	NP	3.02
		06/16/11	5.61	NP	2.47
		09/14/11	6.95	NP	1.13
		12/08/11	5.83	NP	2.25
		03/13/12	5.12	NP	2.96
		06/15/12	5.72	NP	2.36
		09/11/12	6.59	NP	1.49

NOTES:

NP = Free prroduct was not present.

[a] Top of well casing elevations were surveyed relative to NAVD 88 datum.

[b] Measurements in feet below top of well casing.

[c] Top of casing (TOC) elevation was re-surveyed in May 2005.

[d] Water in well was under pressure and rising when the cap was removed. The water level was recorded after the well cap was off for over 2 hours.

* Groundwater elevation corrected for product thickness by using the equation: Groundwater elevation = TOC elevation - depth to groundwater + (product thickness x 0.80).

Table 2
Groundwater Sample Analytical Results - Petroleum Hydrocarbons
Former Arco Service Station #0855
Longview, Washington

Well Number	Sample Date	Benzene[a] (µg/L)	Toluene[a] (µg/L)	Ethylbenzene[a] (µg/L)	Total Xylenes[a] (µg/L)	GRO[b] (µg/L)	DRO[c] (µg/L)
MTCA Method A Cleanup Levels[d]		**5**	**1,000**	**700**	**1,000**	**800**	**500**
Shallow Monitoring Wells							
MW-1	03/27/00	ND	ND	ND	ND	ND	ND
	05/23/00	ND	ND	ND	ND	ND	NA
	07/20/00	ND	ND	ND	ND	ND	NA
	10/18/00	ND	ND	1.61	ND	404	NA
	01/18/01	ND	ND	ND	ND	95.6	NA
	04/18/01	ND	ND	ND	ND	NA	NA
	07/17/01	ND	2.63	1.46	ND	386	NA
	10/18/01	ND	ND	ND	ND	ND	NA
	01/16/02	ND	ND	ND	ND	104	NA
	07/09/03	<0.50	<0.50	<0.50	<1.0	<50	<250
	05/25/05	<1.0	<1.0	<1.0	<2.0	<100	<50
	11/30/05	<1.0	<1.0	<1.0	<3.0	<100	<50
		Well abandoned in September 2007.					
MW-2	03/27/00	**6.89**	49.5	599	**2,490**	**17,100**	ND
	05/23/00	**26.2**	16.2	614	**1,770**	**13,200**	NA
	07/20/00	**11.9**	11.8	304	330	**7,220**	NA
	10/18/00	3.67	1.23	13.9	7.55	743	NA
	01/18/00	ND	ND	41.1	5.62	691	NA
	04/18/01	ND	ND	8.73	ND	NA	NA
	07/17/01	ND	1.26	14	ND	430	NA
	10/18/01	2.11	ND	3.64	ND	304	NA
	01/16/02	1.16	0.81	37.1	6.71	370	NA
	07/09/03	0.86	<0.50	6.43	1.28	131	<250
	05/30/05	<1.0	<1.0	<1.0	<2.0	<100	52
	12/01/05	<1.0	<1.0	<1.0	<3.0	120	<50
		Well abandoned in September 2007.					
MW-3	03/07/00	**7,520**	**12,900**	**2,780**	**14,500**	**93,700**	ND
	05/23/00	**4,710**	**8,330**	**2,280**	**11,200**	**65,200**	NA
	07/20/00	**10,700**	**22,600**	**3,160**	**17,400**	**145,000**	NA
	10/18/00	**12,900**	**33,000**	**4,890**	**26,700**	**179,000**	NA
	01/18/01	**9,380**	**17,200**	**3,940**	**20,230**	**121,000**	NA
	04/18/01	**7,700**	**15,300**	**3,430**	**16,990**	NA	NA
	07/17/01	**10,100**	**21,400**	**4,120**	**20,900**	**940,000**	NA
	10/18/01	**7,200**	**19,700**	**3,340**	**17,300**	**139,000**	NA
	01/16/02	**13,600**	**26,600**	**3,920**	**20,800**	**177,000**	NA
	07/09/03	**11,800**	**20,100**	**4,560**	**21,200**	**124,000**	**3,750**
	05/25/05	Not sampled due to presence of free product.					
	11/28/05	Not sampled due to presence of free product.					
		Well abandoned in September 2007.					

Table 2
Groundwater Sample Analytical Results - Petroleum Hydrocarbons
Former Arco Service Station #0855
Longview, Washington

Well Number	Sample Date	Benzene[a] (µg/L)	Toluene[a] (µg/L)	Ethylbenzene[a] (µg/L)	Total Xylenes[a] (µg/L)	GRO[b] (µg/L)	DRO[c] (µg/L)
MTCA Method A Cleanup Levels[d]		**5**	**1,000**	**700**	**1,000**	**800**	**500**
Shallow Monitoring Wells (continued)							
MW-4	11/15/00	**1,310**	53.6	**2,430**	**7,250**	**45,500**	NA
	01/18/01	**1,130**	ND	**2,030**	**2,764**	**29,400**	NA
	04/18/01	**1,280**	ND	**1,700**	**2,591**	NA	NA
	07/17/01	**1,610**	35	**2,870**	**1,870**	**34,900**	NA
	10/18/01	**1,040**	ND	**2,300**	**1,320**	**33,000**	NA
	01/16/02	**733**	ND	**920**	948	**19,300**	NA
	07/09/03	**906**	39.1	**1,350**	156	**14,100**	**798**
	05/24/05	**310**	2.90	410	185[e]	**9,600**	**2,300**
	12/01/05	**990**	140	**1,100**	**1,353[e]**	**11,000**	**2,900[f]**
	Well abandoned in September 2007.						
MW-5	11/15/00	ND	ND	ND	ND	ND	NA
	01/18/01	ND	ND	ND	ND	786	NA
	04/18/01	**9.42**	ND	6.76	10.1	NA	NA
	07/17/01	1.83	1.16	1.90	3.28	694	NA
	10/18/01	3.05	1.39	1.48	1.45	647	NA
	01/16/02	**52.3**	3.82	48	24.9	**2,800**	NA
	07/09/03	1.26	0.99	1.54	4.64	615	<250
	05/24/05	<1.0	<1.0	<1.0	<2.0	460	120
	11/28/05	<1.0	<1.0	<1.0	<3.0	420	230[f]
	12/11/07	<1.0	<1.0	<1.0	<3.0	140	<50
	03/11/08	<1.0	<1.0	<1.0	<3.0	<100	<50
	07/02/08	<1.0	<1.0	<1.0	<3.0	<100	<50
	10/02/08	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/03/09	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/14/10	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/14/11	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/11/12	<1.0	<1.0	<1.0	<3.0	<100	NA
MW-6	11/15/00	ND	ND	ND	ND	131	NA
	01/18/01	ND	ND	ND	ND	732	NA
	04/18/01	ND	ND	ND	ND	NA	NA
	07/17/01	ND	1.35	1.33	5.79	**892**	NA
	10/18/01	ND	ND	2.60	5.48	**1,000**	NA
	01/16/02	ND	0.72	1.58	2.78	**810**	NA
	07/09/03	<0.50	0.53	1.15	4.84	462	**958**
	05/25/05	<1.0	<1.0	<1.0	<2.0	370	270
	11/28/05	<1.0	<1.0	<1.0	<1.0	NA	<1.0
	Well destroyed in November 2007.						
MW-7	11/15/00	ND	ND	ND	1.35	113	NA
	01/18/01	ND	ND	ND	ND	242	NA
	04/18/01	ND	ND	ND	ND	NA	NA
	07/17/01	ND	ND	ND	ND	275	NA
	10/18/01	ND	ND	ND	ND	286	NA
	01/16/02	ND	ND	ND	ND	362	NA
	07/09/03	<0.50	<0.50	<0.50	1.48	232	**2,050**
	05/25/05	<1.0	<1.0	<1.0	<2.0	<100	220
	11/30/05	<1.0	<1.0	<1.0	<3.0	<100	140
	Well abandoned in September 2007.						

Table 2
Groundwater Sample Analytical Results - Petroleum Hydrocarbons
Former Arco Service Station #0855
Longview, Washington

Well Number	Sample Date	Benzene[a] (µg/L)	Toluene[a] (µg/L)	Ethylbenzene[a] (µg/L)	Total Xylenes[a] (µg/L)	GRO[b] (µg/L)	DRO[c] (µg/L)
MTCA Method A Cleanup Levels[d]		**5**	**1,000**	**700**	**1,000**	**800**	**500**
Shallow Monitoring Wells (continued)							
MW-8	05/25/05	<1.0	<1.0	<1.0	<3.0	<100	<70
	11/29/05	<1.0	<1.0	<1.0	<3.0	<100	<50
	12/11/07	<1.0	<1.0	<1.0	<3.0	<100	<50
	03/11/08	<1.0	<1.0	<1.0	<3.0	<100	<50
	07/01/08	<1.0	<1.0	<1.0	<3.0	<100	<50
	10/01/08	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/03/09	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/14/10	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/14/11	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/12/12	<1.0	<1.0	<1.0	<3.0	<100	NA
MW-9	05/25/05	<1.0	<1.0	<1.0	<3.0	<100	<50
	11/28/05	<1.0	<1.0	<1.0	<3.0	<100	<50
	12/11/07	<1.0	<1.0	<1.0	<3.0	<100	<50
	03/11/08	<1.0	<1.0	<1.0	<3.0	<100	<50
	07/02/08	<1.0	<1.0	<1.0	<3.0	<100	<50
	10/02/08	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/03/09	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/14/10	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/14/11	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/12/12	<1.0	<1.0	<1.0	<3.0	<100	NA
MW-10	05/25/05	**45**	<1.0	110	<2.0	**1,000**	**1,200**
	11/30/05	**31**	<1.0	110	<3.0	**1,400**	**1,000[f]**
	12/11/07	**9.0**	3.0	65	<3.0	**3,100**	**1,000[g]**
	03/11/08	**16**	2.0	40	<3.0	**3,000**	**1,200[g]**
	07/03/08	**18**	2.0	53	41	**2,500**	**1,100[g]**
	10/02/08	<1.0	<1.0	<1.0	<3.0	**1,300**	NA
	09/03/09	<1.0	<1.0	2.0	<3.0	200	NA
	12/15/09	3.0	<1.0	11	<3.0	310	NA
	03/18/10	<1.0	<1.0	<1.0	<3.0	<100	NA
	06/15/10	<1.0	<1.0	<1.0	<3.0	170	NA
	09/14/10	<1.0	<1.0	<1.0	<3.0	180	NA
	09/14/11	1.5	<1.0	<1.0	<3.0	120	NA
	09/12/12	<1.0	<1.0	<1.0	<3.0	160	NA
MW-11	12/05/05	<1.0	<1.0	<1.0	<3.0	<100	<50
	12/11/07	<1.0	<1.0	<1.0	<3.0	<100	<50
	03/11/08	<1.0	<1.0	<1.0	<3.0	<100	<50
	07/02/08	<1.0	<1.0	<1.0	<3.0	<100	<50
	10/02/08	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/03/09	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/14/10	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/14/11	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/11/12	<1.0	<1.0	<1.0	<3.0	<100	NA

Table 2
Groundwater Sample Analytical Results - Petroleum Hydrocarbons
Former Arco Service Station #0855
Longview, Washington

Well Number	Sample Date	Benzene[a] (µg/L)	Toluene[a] (µg/L)	Ethylbenzene[a] (µg/L)	Total Xylenes[a] (µg/L)	GRO[b] (µg/L)	DRO[c] (µg/L)
MTCA Method A Cleanup Levels[d]		**5**	**1,000**	**700**	**1,000**	**800**	**500**
Shallow Monitoring Wells (continued)							
MW-12	12/11/07	<1.0	<1.0	<1.0	<3.0	<100	<50
	03/11/08	<1.0	<1.0	<1.0	<3.0	<100	<50
	07/02/08	<1.0	<1.0	<1.0	<3.0	<100	<50
	10/02/08	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/03/09	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/14/10	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/14/11	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/12/12	<1.0	<1.0	<1.0	<3.0	<100	NA
MW-13	12/11/07	<1.0	<1.0	<1.0	<3.0	<100	<50
	03/11/08	<1.0	<1.0	<1.0	<3.0	<100	<50
	07/03/08	<1.0	<1.0	<1.0	<3.0	<100	<50
	10/02/08	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/03/09	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/14/10	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/14/11	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/11/12	<1.0	<1.0	<1.0	<3.0	<100	NA
MW-14	12/11/07	<1.0	<1.0	<1.0	<3.0	<100	<50
	03/11/08	<1.0	<1.0	<1.0	<3.0	<100	50
	07/02/08	<1.0	<1.0	<1.0	<3.0	<100	<50
	10/01/08	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/03/09	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/14/10	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/14/11	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/12/12	<1.0	<1.0	<1.0	<3.0	<100	NA
Deep Monitoring Wells							
DMW-1	12/07/05	**4,000**	160	**1,100**	**4,090[e]**	**22,000**	**2,900[f]**
	08/17/06	**4,100**	<1.0	**520**	**841[e]**	**16,000**	**930[f]**
		Well abandoned in September 2007.					
DMW-2	12/07/05	**11**	<1.0	40	46[f]	270	<50
	08/16/06	**10**	<1.0	5.6	<3.0	<100	<50
		Well abandoned in September 2007.					
DMW-3	12/07/05	<1.0	<1.0	<1.0	<3.0	<50	<50
	08/17/06	<1.0	<1.0	<1.0	<3.0	<100	<50
	12/11/07	<1.0	<1.0	<1.0	<3.0	<100	<50
	03/11/08	<1.0	<1.0	<1.0	<3.0	<100	<50
	07/02/08	<1.0	<1.0	<1.0	<3.0	<100	<50
	10/01/08	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/03/09	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/14/10	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/14/11	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/12/12	<1.0	<1.0	<1.0	<3.0	<100	NA
DMW-4	12/05/05	**56**	<1.0	<1.0	<3.0	230	<50
	08/17/06	**5.7**	<1.0	<1.0	<3.0	210	<50
	12/11/07	**27**	3.0	2.0	4.0	260	<50
	03/11/08	**6.0**	<1.0	<1.0	<3.0	230	68[g]
	07/02/08	<1.0	<1.0	<1.0	<3.0	<100	<50
	10/02/08	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/03/09	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/14/10	<1.0	1.2	<1.0	3.3	<100	NA
	09/14/11	<1.0	<1.0	<1.0	<3.0	<100	NA
	03/13/12	<1.0	<1.0	<1.0	<3.0	<100	NA
	06/15/12	1.0	<1.0	<1.0	<3.0	<100	NA
	09/11/12	<1.0	<1.0	<1.0	<3.0	<100	NA

Table 2
Groundwater Sample Analytical Results - Petroleum Hydrocarbons
Former Arco Service Station #0855
Longview, Washington

Well Number	Sample Date	Benzene[a] (µg/L)	Toluene[a] (µg/L)	Ethylbenzene[a] (µg/L)	Total Xylenes[a] (µg/L)	GRO[b] (µg/L)	DRO[c] (µg/L)
MTCA Method A Cleanup Levels[d]		**5**	**1,000**	**700**	**1,000**	**800**	**500**
Deep Monitoring Wells (continued)							
DMW-5	12/05/05	**36**	<1.0	<1.0	<3.0	130	<50
	08/17/06	**74**	<1.0	<1.0	<3.0	170	<50
	12/11/07	**41**	<1.0	<1.0	<3.0	100	<50
	03/11/08	**10**	<1.0	<1.0	<3.0	<100	<50
	07/02/08	1.0	<1.0	<1.0	<3.0	<100	<50
	10/01/08	**42**	<1.0	<1.0	<3.0	110	NA
	09/03/09	<1.0	<1.0	<1.0	<3.0	<100	NA
	12/15/09	1.0	<1.0	<1.0	<3.0	<100	NA
	03/18/10	**13**	<1.0	<1.0	<3.0	<100	NA
	06/15/10	**13**	<1.0	<1.0	<3.0	<100	NA
	09/14/10	<1.0	<1.0	<1.0	<3.0	<100	NA
	12/14/10	**9.0**	<1.0	<1.0	<3.0	<100	NA
	03/16/11	**11**	<1.0	<1.0	<3.0	<100	NA
	06/16/11	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/14/11	<1.0	<1.0	<1.0	<3.0	<100	NA
	12/08/11	<1.0	<1.0	<1.0	<3.0	<100	NA
	03/13/12	3.0	<1.0	<1.0	<3.0	<100	NA
	09/11/12	<1.0	<1.0	<1.0	<3.0	<100	NA
DMW-6	08/16/06	<1.0	<1.0	<1.0	<3.0	<100	<50
	12/11/07	<1.0	<1.0	<1.0	<3.0	<100	<50
	03/11/08	<1.0	<1.0	<1.0	<3.0	<100	<50
	07/02/08	<1.0	<1.0	<1.0	<3.0	<100	<50
	10/02/08	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/03/09	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/14/10	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/14/11	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/12/12	<1.0	<1.0	<1.0	<3.0	<100	NA
DMW-7	08/16/06	<1.0	<1.0	<1.0	<3.0	<100	<50
	12/11/07	<1.0	<1.0	<1.0	<3.0	<100	<50
	03/11/08	<1.0	<1.0	<1.0	<3.0	<100	<50
	07/01/08	<1.0	<1.0	<1.0	<3.0	<100	<50
	10/01/08	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/03/09	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/14/10	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/14/11	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/11/12	<1.0	<1.0	<1.0	<3.0	<100	NA
DMW-8	08/16/06	<1.0	<1.0	<1.0	<3.0	<100	<50
	12/11/07	<1.0	<1.0	<1.0	<3.0	<100	<50
	03/11/08	<1.0	<1.0	<1.0	<3.0	<100	<50
	07/02/08	<1.0	<1.0	<1.0	<3.0	<100	<50
	10/02/08	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/03/09	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/14/10	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/14/11	<1.0	<1.0	<1.0	<3.0	<100	NA
	0911/12	<1.0	<1.0	<1.0	<3.0	<100	NA

Table 2
Groundwater Sample Analytical Results - Petroleum Hydrocarbons
Former Arco Service Station #0855
Longview, Washington

Well Number	Sample Date	Benzene[a] (µg/L)	Toluene[a] (µg/L)	Ethylbenzene[a] (µg/L)	Total Xylenes[a] (µg/L)	GRO[b] (µg/L)	DRO[c] (µg/L)
MTCA Method A Cleanup Levels[d]		**5**	**1,000**	**700**	**1,000**	**800**	**500**
Deep Monitoring Wells (continued)							
DMW-9	12/11/07	**6,100**	**1,900**	**970**	**3,100**	**27,000**	**600[g]**
	03/11/08	**3,000**	150	380	880	**13,000**	450[g]
	07/03/08	**3,600**	3.0	320	610	**9,500**	**520[g]**
	10/02/08	**3,300**	4.0	140	270	**8,600**	NA
	09/03/09	**2,800**	4.0	320	**1,100**	**14,000**	NA
	12/15/09	**980**	2.0	<1.0	**1,100**	**5,300**	NA
	03/18/10	**190**	<1.0	10	200	**1,600**	NA
	06/15/10	**50**	<1.0	9.1	60	630	NA
	09/14/10	**210**	<1.0	5.2	120	**1,000**	NA
	12/14/10	3.3	<1.0	1.3	9.8	320	NA
	03/16/11	**14**	<1.0	2.0	3.7	310	NA
	06/16/11	**87**	<1.0	<1.0	33	700	NA
	09/14/11	<1.0	<1.0	<1.0	3.4	200	NA
	12/08/11	<1.0	<1.0	<1.0	<3.0	140	NA
	03/13/12	1.9	<1.0	<1.0	<3.0	310	NA
	06/15/12	<1.0	<1.0	<1.0	<3.0	160	NA
	09/11/12	<1.0	<1.0	<1.0	<3.0	230	NA
DMW-10	12/11/07	**60**	4.0	88	130	750	53[g]
	03/11/08	**75**	4.0	140	120	**1,000**	74[g]
	07/02/08	**89**	6.0	160	130	**1,100**	68[g]
	10/01/08	**90**	5.0	120	25	**820**	NA
	09/03/09	**9.0**	<1.0	2.0	<3.0	<100	NA
	12/15/09	**20**	<1.0	13	7.0	150	NA
	03/18/10	**41**	<1.0	21	13	310	NA
	06/15/10	**34**	2.3	14	12	340	NA
	09/14/10	**12**	<1.0	<1.0	<3.0	<100	NA
	12/14/10	**32**	1.7	7.1	11	120	NA
	03/16/11	**27**	1.2	8.2	11	220	NA
	06/16/11	**27**	1.8	<1.0	9.9	130	NA
	09/14/11	**20**	<1.0	<1.0	3.9	140	NA
	12/08/11	<1.0	<1.0	<1.0	<3.0	<100	NA
	03/13/12	**37**	1.0	3.6	14	260	NA
	06/15/12	**51**	1.4	1.7	20	400	NA
	09/11/12	**29**	<1.0	<1.0	<3.0	200	NA

NOTES: Values in bold exceed the MTCA Method A cleanup levels.

All concentrations in micrograms per liter (µg/L).

ND = Not detected above the laboratory method reporting limit (MRL).

NA = Not analyzed.

[a] Benzene, toluene, ethylbenzene, and total xylenes (BTEX) by EPA Method 8021B or EPA Method 8260B.

[b] Gasoline-range organics (GRO) by Ecology Method NWTPH-Gx.

[c] Diesel-range organics (DRO) by Ecology Method NWTPH-Dx.

[d] Chapter 173-340 WAC, Model Toxics Control Act (MTCA) Cleanup Regulation, Method A Cleanup Levels. Amended February 12, 2001.

[e] Total xylenes calculated by using the formula: total xylenes concentration = (m, p-xylene concentration) + (o-xylene concentration).

[f] The laboratory reported that the DRO concentration is due to overlap from the gasoline range.

[g] The laboratory reported that the pattern of chromatogram peaks from the sample were not indicative of diesel.

Table 3
Groundwater Sample Analytical Results - Natural Attenuation Parameters
Former Arco Service Station #0855
Longview, Washington

Sample Location	Sample Date	Nitrate[a] (mg/L)	Sulfate[b] (mg/L)	Dissolved Methane[c] (mg/L)	Dissolved Oxygen[d] (mg/L)	Dissolved Manganese[e] (mg/L)	Dissolved Ferrous Iron[f] (mg/L)	Alkalinity[g] (mg/L $CaCO^3$)	Redox Potential[h] (mV)
Shallow Wells									
MW-5	12/12/07	12.2	969	0.6	0.2	2.9	5.0	10.3	119
	03/13/08	2.3	341	<0.007	0.4	2.5	3.3	19.3	-123
	07/02/08	0.5	275	0.5	0.1	1.4	NM	80.8	10.0
	10/02/08	0.6	288	0.5	1.7	1.9	2.9	106	92.8
	09/03/09	<0.1	202	0.3	0.6	1.4	4.6	49.4	-67.4
	09/14/10	0.07	202	0.03	3.5	1.7	2.2	37.8	33.7
	09/14/11	<0.01	129	0.1	0.2	1.3	4.2	63.8	30.4
	09/11/12	NA	89.4[i]	0.04	0.3	NA	NM	NA	3.4
MW-8	12/12/07	<0.01	4.8	0.1	1.9	0.5	1.7	33.3	248
	03/13/08	<0.2	6.6	0.001	0.7	0.4	2.1	57.6	-140
	07/01/08	<0.1	14.0	2.0	0.2	0.4	NM	73.0	-78.9
	10/01/08	<0.1	15.9	1.1	1.3	0.5	3.6	74.1	-49.3
	09/03/09	<0.1	0.1	1.5	0.7	0.4	4.4	67.4	-110.3
	09/14/10	0.02	1.4	0.3	2.8	0.5	3.2	75.9	-70.6
	09/14/11	0.03	<1.0	1.5	0.2	0.4	4.2	80.0	-71.6
	09/12/12[j]	NA	2.5[i]	1.4	0.5	NA	NM	NA	-95.7
MW-9	12/12/07	0.5	5.0	0.0008	4.0	0.004	<0.1	40.1	237
	03/13/08	0.5	8.5	3.3	3.2	0.01	0.6	39.7	-33.5
	07/02/08	1.2	36.4	<0.0007	2.2	0.02	NM	80.2	85.6
	10/02/08	0.3	8.0	0.004	2.8	0.4	0.6	51.6	135
	09/03/09	0.3	9.3	0.010	1.9	0.5	0.4	52.9	-123
	09/14/10	1.8	25.2	0.02	4.1	0.01	<0.1	118	39.3
	09/14/11	0.09	6.1	0.01	0.4	1.6	<0.1	82.0	57.2
	09/12/12	NA	6.1[i]	0.04	1.0	NA	NM	NA	40.6
MW-10	12/12/07	0.04	74.9	6.5	3.0	2.4	2.0	174	294
	03/13/08	<0.2	186	1.8	2.1	2.2	3.1	160	-117
	07/02/08	<0.2	199	7.3	0.1	3.3	NM	232	15.2
	10/02/08	<0.1	69.0	1.7	1.3	2.1	3.0	181	111
	09/03/09	<0.1	34.3	7.9	1.3	1.4	3.0	180	111
	09/14/10	0.2	11.3	0.9	2.4	1.6	3.0	122	-24.6
	09/14/11	0.03	1.3	1.5	0.4	1.2	2.0	172	-81.6
	09/12/12[j]	NA	3.7[i]	3.0	0.4	NA	NM	NA	-153.1
MW-11	12/12/07	0.8	643	0.1	0.6	1.8	3.8	28.4	200
	03/13/08	0.4	199	<0.0007	0.6	2.5	1.4	45.1	-81.5
	07/02/08	0.04	162	0.2	0.2	1.0	NM	89.4	25.4
	10/02/08	<0.1	89.5	0.4	1.5	1.8	2.4	138	27.1
	09/03/09	<0.1	82.6	0.6	0.7	1.6	4.4	126	-88.1
	09/14/10	0.3	86.4	0.03	1.5	1.2	2.7	112	-67.4
	09/14/11	0.03	112	0.4	0.3	1.6	2.0	180	-48.4
	09/11/12	NA	103[i]	0.1	0.5	NA	NM	NA	-58.2
MW-12	12/12/07	37.0	1,500	0.2	0.7	5.3	3.8	6.9	178
	03/13/08	27.5	1,060	0.0009	0.8	6.8	<0.1	58.8	-147
	07/02/08	<0.1	204	0.5	0.2	8.3	NM	52.3	83.7
	10/02/08	0.4	1,280	0.3	0.9	11.3	<0.1	91.8	141
	09/03/09	<0.1	882	0.8	1.7	11.5	1.2	146	-117
	09/14/10	0.02	547	0.03	2.8	6.6	<0.1	187	32.7
	09/14/11	<0.01	912	0.2	0.6	8.1	0.4	226	55.3
	09/12/12	NA	453[i]	0.1	0.4	NA	NM	NA	13.9

Table 3
Groundwater Sample Analytical Results - Natural Attenuation Parameters
Former Arco Service Station #0855
Longview, Washington

Sample Location	Sample Date	Nitrate[a] (mg/L)	Sulfate[b] (mg/L)	Dissolved Methane[c] (mg/L)	Dissolved Oxygen[d] (mg/L)	Dissolved Manganese[e] (mg/L)	Dissolved Ferrous Iron[f] (mg/L)	Alkalinity[g] (mg/L $CaCO^3$)	Redox Potential[h] (mV)
Shallow Wells (continued)									
MW-13	12/12/07	31.7	1,590	0.04	NM	8.7	<0.1	70.7	236
	03/13/08	21.5	1,540	0.005	0.6	9.1	<0.1	218	-113
	07/03/08	4.5	1,420	0.007	0.1	9.8	NM	133	21.9
	10/02/08	1.9	1,800	0.02	1.3	16.3	<0.1	152	376
	09/03/09	<0.1	805	0.1	0.6	11.3	0.2	96	-66.8
	09/14/10	0.07	1,038	0.05	2.2	9.8	<0.1	74.2	64.8
	09/14/11	<0.01	775	0.01	0.5	6.0	<0.1	71.0	94.1
	09/11/12	NA	542[i]	0.01	0.3	NA	NM	NA	24.7
MW-14	12/12/07	16.7	1,190	0.07	2.5	9.4	0.2	16.0	215
	03/13/08	5.7	945	0.0009	2.4	7.1	1.2	57.8	-164
	07/02/08	1.0	891	<0.0007	0.3	2.4	NM	43.4	28.7
	10/01/08	0.3	879	<0.0007	1.6	1.9	<0.1	80.7	547
	09/03/09	<0.1	444	0.1	0.7	1.1	<0.1	45.4	-108
	09/14/10	0.05	294	<0.005	2.7	0.02	<0.1	24.8	91.9
	09/14/11	0.01	154	<0.005	0.4	0.004	<0.1	23.7	128.9
	09/12/12	NA	142[i]	<0.0007	0.4	NA	NM	NA	56.9
Deep Wells									
DMW-3	12/12/07	<0.05	31.8	1.6	3.8	2.8	1.0	220	256
	03/13/08	<0.2	23.4	2.5	2.0	2.6	3.0	197	-129
	07/02/08	<0.1	43.9	1.6	0.2	2.3	NM	214	-96.2
	10/01/08	<0.1	22.2	2.2	1.3	2.8	3.5	210	276
	09/03/09	<0.1	8.8	1.4	1.3	2.3	3.5	220	276
	09/14/10	0.04	<1.0	0.2	3.0	1.9	2.5	155	-114
	09/14/11	0.01	5.5	0.8	0.5	1.6	2.8	191	-65.7
	09/12/12	NA	10.7[i]	0.9	0.5	NA	NM	NA	-89.4
DMW-4	12/12/07	<0.01	22.4	10.1	0.1	2.2	3.6	174	105
	03/13/08	<0.2	297	0.0009	0.2	15.5	4.6	22.2	-137
	07/02/08	3.4	1,040	1.6	0.1	2.3	NM	65.8	-86.8
	10/02/08	<0.2	309	0.9	1.1	3.4	3.0	72.7	-18.4
	09/03/09	<0.1	24.4	4.2	1.5	1.7	4.4	178	-93.0
	09/14/10	0.03	50.6	0.4	3.4	2.1	2.2	133	-75.3
	09/14/11	0.03	106	2.1	0.3	1.2	3.0	111	-57.1
	06/15/12	NA	1.3[i]	NA	--	NA	--	NA	--
	09/11/12	NA	25.2[i]	2.4	0.4	NA	NM	NA	-109.6
DMW-5	12/12/07	<0.01	13.0	13.7	0.1	2.3	3.4	177	102
	03/13/08	<0.2	10.3	8.2	0.2	2.9	3.6	180	-128
	07/02/08	<0.1	42.6	8.8	0.4	2.5	NM	221	-101
	10/01/08	<0.1	7.7	5.9	1.4	2.4	NM	166	48.6
	09/03/09	<0.05	33.6	4.2	1.7	1.6	2.8	126	-318
	09/14/10	0.01	<1.0	0.3	1.5	1.7	3.0	109	-82.7
	09/14/11	0.02	32.1	2.1	0.5	1.3	2.0	118	-74.7
	09/11/12	NA	1.7[i]	5.8	0.4	NA	NM	NA	-109.9
DMW-6	12/12/07	<0.01	8.0	11.7	0.2	1.7	2.2	104	121
	03/13/08	<0.2	7.5	9.5	0.2	4.3	2.2	112	-137
	07/02/08	<0.1	54.0	7.6	0.1	2.0	NM	149	-86.1
	10/02/08	<0.1	39.0	6.4	1.1	2.0	2.6	154	-25.6
	09/03/09	<0.1	<0.1	9.5	0.5	1.7	4.2	146	-117.0
	09/14/10	0.02	1.3	0.9	1.9	1.9	5.1	124	-73.1
	09/14/11	0.02	6.3	6.8	0.5	1.9	3.0	150	-78.2
	09/12/12	NA	1.6[i]	10.4	0.4	NA	NM	NA	-103.6

Table 3
Groundwater Sample Analytical Results - Natural Attenuation Parameters
Former Arco Service Station #0855
Longview, Washington

Sample Location	Sample Date	Nitrate[a] (mg/L)	Sulfate[b] (mg/L)	Dissolved Methane[c] (mg/L)	Dissolved Oxygen[d] (mg/L)	Dissolved Manganese[e] (mg/L)	Dissolved Ferrous Iron[f] (mg/L)	Alkalinity[g] (mg/L $CaCO^3$)	Redox Potential[h] (mV)
Deep Wells (continued)									
DMW-7	12/12/07	<0.01	23.3	9.1	0.3	3.7	3.1	158	93.6
	03/13/08	<0.2	29.6	8.3	0.4	12.4	3.0	155	-172
	07/01/08	<0.1	53.3	5.6	0.2	5.6	NM	195	-88.1
	10/01/08	<0.2	34.7	5.2	1.5	6.4	3.0	203	6.9
	09/03/09	<0.05	18.0	5.9	2.2	3.5	4.2	174	-261.0
	09/14/10	0.03	2.5	0.8	3.4	4.4	3.8	169	-93.5
	09/14/11	0.02	<1.0	6.1	0.7	4.3	5.2	236	-74.7
	09/11/12	NA	1.6[i]	8.5	0.3	NA	NM	NA	-110.1
DMW-8	12/12/07	0.01	6.2	3.8	0.2	1.9	4.4	133	109
	03/13/08	<0.2	17.6	2.0	0.3	2.1	3.1	107	-160
	07/02/08	<0.1	37.0	1.6	0.2	1.8	NM	109	-5.9
	10/02/08	<0.1	26.8	2.0	1.2	2.0	2.6	151	1,103
	09/03/09	<0.05	23.2	3.1	1.7	1.9	3.6	142	-290
	09/14/10	0.03	1.3	0.4	1.4	2.0	3.1	127	-64.6
	09/14/11	0.02	34.5	2.6	0.3	1.7	2.6	128	-79.8
	09/11/12	NA	1.9[i]	3.7	0.5	NA	NM	NA	-132.9
DMW-9	12/12/07	<0.01	55.7	27.4	0.2	1.9	5.7	270	113
	03/13/08	<0.5	32.2	19.8	0.2	3.4	3.7	355	-128
	07/03/08	<0.1	38.9	21.1	0.2	2.6	NM	406	-83.8
	10/02/08	<0.1	20.0	21.0	1.2	2.8	2.7	451	4.0
	09/03/09	<0.1	<0.1	20.6	0.7	2.1	4.2	330	-120.0
	09/14/10	0.03	<1.0	2.2	3.6	2.1	5.3	311	-89.2
	09/14/11	0.04	52.4	18.6	0.5	2.1	2.4	342	-71.8
	09/15/12	NA	<1.0[i]	NA	--	NA	--	NA	--
	09/11/12	NA	1.8[i]	20.3	0.4	NA	NM	NA	-115.6
DMW-10	12/12/07	<0.01	24.2	11.3	0.09	3.0	3.6	191	92.5
	03/13/08	<0.2	7.7	8.1	0.1	5.4	3.1	227	-94.2
	07/02/08	<0.1	27.9	11.0	0.3	4.0	NM	266	-113
	10/01/08	<0.2	5.3	11.5	1.5	4.5	4.4	271	-0.6
	09/03/09	<0.05	32.7	2.9	1.1	2.1	2.8	117	-343.0
	09/14/10	0.02	<1.0	3.7	1.2	1.7	3.9	93	-96.4
	09/14/11	0.03	59.9	3.2	0.3	1.8	3.4	132	-77.4
	06/15/12	NA	<1.0[i]	NA	--	NA	--	NA	--
	09/11/12	NA	53.9[i]	6.7	0.4	NA	NM	NA	-136.5

NOTES:

NM = Not measured.

NA = Not analyzed.

mg/L = milligrams per liter (ppm).

[a] Nitrate by EPA Method 353.2.

[b] Sulfate by EPA Method 375.2.

[c] Dissolved methane by EPA Method RSK 175 Modified.

[d] Dissolved oxygen by EPA Method 360.1 (field instrument reading).

[e] Dissolved manganese by EPA Method 200.8.

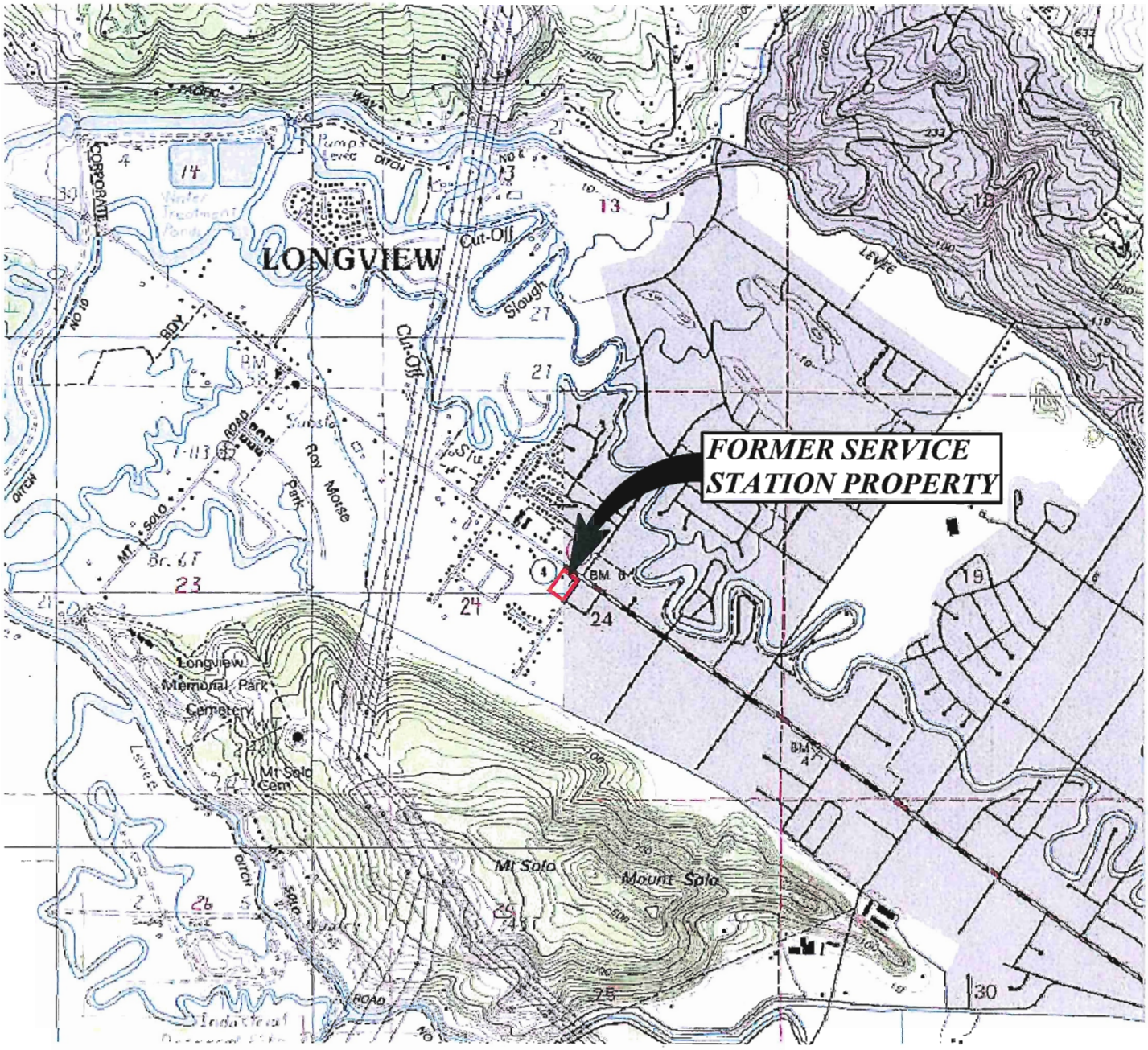
[f] Dissolved ferrous iron by Standard Method SM 3500 (field test kit).

[g] Alkalinity by Standard Method SM 2320.

[h] Oxidation-reduction (redox) potential by EPA Method D1498-76 (field instrument reading).

[i] Sulfate by EPA Method 300.0.

FIGURES



0 2000 4000

SCALE IN FEET

WASHINGTON

SOURCE: USGS 7.5 Minute Quadrangles Kelso, 1970 Contour Interval 20 Feet and Abernathy Mtn., 1986 Contour Interval 20 Feet.

SLR
22122 20th AVE SE
BLDG. H, SUITE 150
BOTHELL, WA 98021
T: 425-402-8800
F: 425-402-8488

DATE 04/11
DWN. BDT
APPR. MDS
REVIS. ____
PROJECT NO.
101.00173.00011

FIGURE 1
FORMER ARCO SERVICE STATION #0855
LONGVIEW, WASHINGTON

PROPERTY LOCATION MAP

C:\DRIVE_E\Clients\SLR\101\101.00173.00011\01-01.dwg, 4/13/2012 7:48:24 AM, BDT

BOON DOX MARKET

BOON DOX TAVERN

TEXACO SERVICE STATION

LEGEND

- **MW-5** — SHALLOW GROUNDWATER MONITORING WELL LOCATION AND DESIGNATION
- MW-2 — ABANDONED OR DESTROYED SHALLOW GROUNDWATER MONITORING WELL LOCATION AND DESIGNATION
- (4.05) — SHALLOW GROUNDWATER ELEVATION (IN FEET) ON SEPTEMBER 11,2012
- <1 B / 160 G — B = BENZENE CONCENTRATION IN GROUNDWATER SAMPLE (in µg/L); G = GRO CONCENTRATION IN GROUNDWATER SAMPLE (in µg/L)

OCEAN BEACH HIGHWAY

APPROXIMATE EXTENT OF 2007 SOIL EXCAVATION

SIDEWALK

SIDEWALK

MW-10 (1.81) <1 B 160 G

MW-11 (1.53) <1 B <100 G

MW-3 <1 B <100 G

MW-4

MW-13 (2.27)

FORMER DISPENSER ISLAND

MW-5 (1.65) <1 B <100 G

PLANTER

FORMER UNDERGROUND DISPENSER LINES

UNDEVELOPED MARSHY LAND

MW-12 (1.87) <1 B <100 G

MW-6

FORMER GASOLINE USTs

MW-2

FORMER SERVICE STATION BUILDING

PROPERTY LINE

MW-14 (1.64) <1 B <100 G

FORMER HEATING OIL UST

FORMER USED OIL UST

MW-1

MW-7

GRASS STRIP

FORMER SERVICE STATION PARCEL (SITE) BOUNDARY

UNDEVELOPED LAND

APPROXIMATE EXTENT OF 2007 SOIL EXCAVATION

PROPERTY LINE

MW-9 (4.05) <1 B <100 G

BUS LANE

46TH AVENUE

<1 B <100 G

MW-8 (1.67)

HENRI'S RESTAURANT

0 30 60

SCALE IN FEET

SLR
22118 20th AVE SE
BUILDING G, SUITE 202
BOTHELL, WA 98021
T: 425-402-8800
F: 425-402-8488

DATE 10/12
DWN. NMB
APPR. MDS
REVIS.
PROJECT NO.
101.00173.00011

FIGURE 2
FORMER ARCO SERVICE STATION #0855
LONGVIEW, WASHINGTON

SHALLOW GROUNDWATER SAMPLING RESULTS SEPTEMBER 2012

BOON DOX MARKET

BOON DOX TAVERN

TEXACO SERVICE STATION

<1 B
<100 G
DMW-7
(1.36)

LEGEND

- **DMW-7** ⊕ DEEP GROUNDWATER MONITORING WELL LOCATION AND DESIGNATION
- **RW-1** △ INACTIVE DEEP GROUNDWATER RECOVERY WELL LOCATION AND LOCATION
- DMW-1 ⊕ ABANDONED DEEP GROUNDWATER MONITORING WELL LOCATION AND DESIGNATION
- (3.77) DEEP GROUNDWATER ELEVATION (IN FEET) ON SEPTEMBER 11, 2012
- **29** B / 200 G — B = BENZENE CONCENTRATION IN GROUNDWATER SAMPLE (in µg/L); G = GRO CONCENTRATION IN GROUNDWATER SAMPLE (in µg/L)

VALUES IN BOLD EXCEED MTCA METHOD A CLEANUP LEVELS

NM= NOT MEASURED

OCEAN BEACH HIGHWAY

SIDEWALK

DMW-8
(1.37)
<1 B
<100 G

SIDEWALK

<1 B
<100 G
DMW-6
(3.77)

BUS LANE

DMW-5
(1.40)
<1 B
<100 G

DMW-1
DMW-9
(1.41)
<1 B
230 G

DMW-4
(1.37)
PLANTER
<1 B
<100 G

FORMER UNDERGROUND DISPENSER LINES

UNDEVELOPED MARSHY LAND

RW-1
(1.49)

FORMER DISPENSER ISLAND

FORMER GASOLINE USTs

FORMER SERVICE STATION BUILDING

DMW-10
(1.35)

DMW-2

29 B
200 G

PROPERTY LINE

FORMER HEATING OIL UST

FORMER USED OIL UST

<1 B
<100 G
DMW-3
(1.68)

GRASS STRIP

FORMER SERVICE STATION PARCEL (SITE) BOUNDARY

UNDEVELOPED LAND

PROPERTY LINE

46TH AVENUE

HENRI'S RESTAURANT

0 30 60
SCALE IN FEET

SLR
22118 20th AVE SE
BUILDING G, SUITE 202
BOTHELL, WA 98021
T: 425-402-8800
F: 425-402-8488

DATE 10/12
DWN. NMB
APPR. MDS
REVIS. ____
PROJECT NO.
101.00173.00011

FIGURE 3
FORMER ARCO SERVICE STATION #0855
LONGVIEW, WASHINGTON

DEEP GROUNDWATER SAMPLING RESULTS SEPTEMBER 2012

LABORATORY ANALYTICAL REPORTS

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Bradley T. Benson, B.S.
Kurt Johnson, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
TEL: (206) 285-8282
e-mail: fbi@isomedia.com

October 1, 2012

Mike Staton, Project Manager
SLR International Corp.
22118 20th Ave. SE., G-202
Bothell, WA 98021

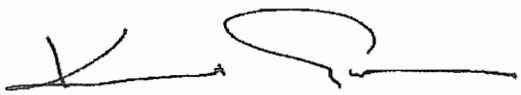
Dear Mr. Staton:

Included are the results from the testing of material submitted on September 13, 2012 from the Former ARCO 0855 Longview WA 101.00173.00011, F&BI 209175 project. There are 5 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.



Kurt Johnson
Chemist

Enclosures
SLR1001R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on September 13, 2012 by Friedman & Bruya, Inc. from the SLR International Corp. Former ARCO 0855 Longview WA 101.00173.00011, F&BI 209175 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	SLR International Corp.
209175-01	DMW3-0912
209175-02	DMW4-0912
209175-03	DMW5-0912
209175-04	DMW6-0912
209175-05	DMW7-0912
209175-06	DMW8-0912
209175-07	DMW9-0912
209175-08	DMW10-0912
209175-09	MW5-0912
209175-10	MW8-0912
209175-11	MW9-0912
209175-12	MW10-0912
209175-13	MW11-0912
209175-14	MW12-0912
209175-15	MW13-0912
209175-16	MW14-0912

All quality control requirements were acceptable.

The samples were also sent to Analytical Resources, Inc. for dissolved methane and sulfate analyses. The report generated by ARI is enclosed.

Date of Report: 10/01/12
Date Received: 09/13/12
Project: Former ARCO 0855 Longview WA 101.00173.00011, F&BI 209175
Date Extracted: 09/18/12
Date Analyzed: 09/18/12 and 09/19/12

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 52-124)
DMW3-0912 209175-01	<1	<1	<1	<3	<100	94
DMW4-0912 209175-02	<1	<1	<1	<3	<100	100
DMW5-0912 209175-03	<1	<1	<1	<3	<100	99
DMW6-0912 209175-04	<1	<1	<1	<3	<100	99
DMW7-0912 209175-05	<1	<1	<1	<3	<100	98
DMW8-0912 209175-06	<1	<1	<1	<3	<100	99
DMW9-0912 209175-07	<1	<1	<1	<3	230	104
DMW10-0912 209175-08	29	<1	<1	<3	200	96
MW5-0912 209175-09	<1	<1	<1	<3	<100	98
MW8-0912 209175-10	<1	<1	<1	<3	<100	101
MW9-0912 209175-11	<1	<1	<1	<3	<100	103

Date of Report: 10/01/12
Date Received: 09/13/12
Project: Former ARCO 0855 Longview WA 101.00173.00011, F&BI 209175
Date Extracted: 09/18/12
Date Analyzed: 09/18/12 and 09/19/12

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 52-124)
MW10-0912 209175-12	<1	<1	<1	<3	160	100
MW11-0912 209175-13	<1	<1	<1	<3	<100	103
MW12-0912 209175-14	<1	<1	<1	<3	<100	102
MW13-0912 209175-15	<1	<1	<1	<3	<100	105
MW14-0912 209175-16	<1	<1	<1	<3	<100	101
Method Blank 02-1691 MB	<1	<1	<1	<3	<100	98

Date of Report: 10/01/12
Date Received: 09/13/12
Project: Former ARCO 0855 Longview WA 101.00173.00011, F&BI 209175

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 209175-01 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	Relative Percent Difference (Limit 20)
Benzene	ug/L (ppb)	<1	<1	nm
Toluene	ug/L (ppb)	<1	<1	nm
Ethylbenzene	ug/L (ppb)	<1	<1	nm
Xylenes	ug/L (ppb)	<3	<3	nm
Gasoline	ug/L (ppb)	<100	<100	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	ug/L (ppb)	50	89	65-118
Toluene	ug/L (ppb)	50	96	72-122
Ethylbenzene	ug/L (ppb)	50	96	73-126
Xylenes	ug/L (ppb)	150	95	74-118
Gasoline	ug/L (ppb)	1,000	96	69-134

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

A1 – More than one compound of similar molecule structure was identified with equal probability.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for this range fell outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte indicated may be due to carryover from previous sample injections.

d - The sample was diluted. Detection limits may be raised due to dilution.

ds - The sample was diluted. Detection limits are raised due to dilution and surrogate recoveries may not be meaningful.

dv - Insufficient sample was available to achieve normal reporting limits and limits are raised accordingly.

fb - Analyte present in the blank and the sample.

fc – The compound is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. The variability is attributed to sample inhomogeneity.

ht - Analysis performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of normal control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.

j – The result is below normal reporting limits. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The analyte result in the laboratory control sample is out of control limits. The reported concentration should be considered an estimate.

jr - The rpd result in laboratory control sample associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the compound indicated is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc – The sample was received in a container not approved by the method. The value reported should be considered an estimate.

pr – The sample was received with incorrect preservation. The value reported should be considered an estimate.

ve - Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

Analytical Resources, Incorporated
Analytical Chemists and Consultants

October 3, 2012

Michele Costales Poquiz
Friedman & Bruya
3012 16th Ave W
Seattle, WA 98119

RE: Project: 209175
ARI Job No.: VJ77 - Revised

Dear Michele:

Please find enclosed the Chain-of-Custody records (COCs), sample receipt documentation, and the final data for the samples from the project referenced above. Analytical Resources, Inc. (ARI) accepted sixteen water samples on September 18, 2012, under ARI job VJ77. For further details regarding sample receipt, please refer to the enclosed Cooler Receipt Form.

The samples were analyzed for Sulfate and Dissolved Methane, as requested on the COCs.

There were no anomalies associated with the analysis of these samples.

Select sample identifications were modified as requested on October 3, 2012.

An electronic copy of this report and all associated raw data will be kept on file at ARI. Should you have any questions or concerns, please feel free to call me at your convenience.

Respectfully,
ANALYTICAL RESOURCES, INC.

Cheronne Oreiro
Project Manager
(206) 695-6214
cheronneo@arilabs.com
www.arilabs.com

cc: eFile VJ77_rev

Enclosures

SAMPLE CHAIN OF CUSTODY

Send Report To Michele Costales Poquiz
Company F&BI
Address
City, State, ZIP
Phone # Fax #

SAMPLERS *(signature)*

PROJECT NAME/NO. 209175

PO # B-951

PROJECT ADDRESS

mpoquiz@friedmanandbruya.com

TURNAROUND TIME
☒ Standard (2 Weeks)
☐ RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
☒ Dispose after 30 days
☐ Return samples
☐ Will call with instructions

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of containers	ANALYSES REQUESTED: TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260	SVOCs by 8270	HFS	Dissolved Methane by RSK-175	Sulfate by 300.0					Notes
OMW3-0912		9/12/12	1020	water	3							X	X					
OMW4-0912		9/11/12	1621															
OMW5-0912		9/11/12	1414															
OMW6-0912		9/12/12	1202															
OMW7-0912		9/11/12	1224															
OMW8-0912		9/11/12	1311															
OMW9-0912		9/11/12	1514															
OMW10-0912		9/11/12	1723															
MW5-0912		9/11/12	1646															
MW8-0912		9/12/12	1213	↓	↓							↓	↓					

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044

	SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Michele Costales Poquiz	Michele Costales Poquiz	F&BI	9/17/12	11:20 AM
Received by:		Jennifer Millsap	ARI	9/18/12	930
Relinquished by:					
Received by:					

FORMS\COC\COC.DOC

v17r. 00002

SAMPLE CHAIN OF CUSTODY

Page # 2 of T2 6

Send Report To Michele Costales Poquiz

Company F&BI

Address

City, State, ZIP

Phone # Fax #

SAMPLERS *(signature)*

PROJECT NAME/NO. 209175

PO # B-951

PROJECT ADDRESS mpoquiz@friedmanandbruya.com

TURNAROUND TIME
- [X] Standard (2 Weeks)
- [ ] RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- [X] Dispose after 30 days
- [ ] Return samples
- [ ] Will call with instructions

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of containers	ANALYSES REQUESTED: TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260	SVOCs by 8270	HFS	Dissolved methane by RSK-175	Sulfate by 300.0					Notes
MW9-0912		9/12/12	1258	water	3							X	X					
MW10-0912		9/12/12	1310															
MW11-0912		9/11/12	1443															
MW12-0912		9/12/12	1129															
MW13-0912		9/11/12	1554															
MW14-0912		9/12/12	1104		2													

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Michele Costales Poquiz	F&BI	9/17/12	11:20AM
Received by:	Jennifer Millsap	ARI	9/18/12	930
Relinquished by:				
Received by:				

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044

FORMS\COC\COC.DOC

VJ77: 09593

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: Friedman + Bruya
Project Name: 209175
COC No(s): _____ (NA)
Delivered by: Fed-Ex UPS Courier Hand Delivered Other _____
Assigned ARI Job No: VJ77
Tracking No: _____ (NA)

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler?	YES	(NO)
Were custody papers included with the cooler?	(YES)	NO
Were custody papers properly filled out (ink, signed, etc.)	(YES)	NO
Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry)	17.5	
If cooler temperature is out of compliance fill out form 00070F	Temp Gun ID#:	90877952

Cooler Accepted by: JM Date: 9/18/12 Time: 936

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler?		YES	(NO)
What kind of packing material was used?	Bubble Wrap Wet Ice (Gel Packs) Baggies Foam Block Paper Other:		
Was sufficient ice used (if appropriate)?	NA	YES	(NO)
Were all bottles sealed in individual plastic bags?		YES	(NO)
Did all bottles arrive in good condition (unbroken)?		(YES)	NO
Were all bottle labels complete and legible?		(YES)	NO
Did the number of containers listed on COC match with the number of containers received?		(YES)	NO
Did all bottle labels and tags agree with custody papers?		(YES)	NO
Were all bottles used correct for the requested analyses?		(YES)	NO
Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)	NA	YES	(NO)
Were all VOC vials free of air bubbles?	NA	YES	(NO)
Was sufficient amount of sample sent in each bottle?		(YES)	NO
Date VOC Trip Blank was made at ARI	(NA)		

Was Sample Split by ARI: (NA) YES Date/Time: _____ Equipment: _____ Split by: _____

Samples Logged by: JM Date: 9/18/12 Time: 1042

***** Notify Project Manager of discrepancies or concerns *****

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

MW5-0912 - pb in 1 of 2

By: JM Date: 9/18/12

Small Air Bubbles ~2mm	Peabubbles 2-4 mm	LARGE Air Bubbles > 4 mm	
			Small → "sm"
			Peabubbles → "pb"
			Large → "lg"
			Headspace → "hs"

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Temperature Compliance Form

VJ77

Cooler#: 1	Temperature(°C): 17.5	
Sample ID	**Bottle Count**	**Bottle Type**
All samples associated with this job were received at a temp greater than 6°C.		

Cooler#:	Temperature(°C):	
Sample ID	**Bottle Count**	**Bottle Type**

Cooler#:	Temperature(°C):	
Sample ID	**Bottle Count**	**Bottle Type**

Cooler#:	Temperature(°C):	
Sample ID	**Bottle Count**	**Bottle Type**

Completed by: JM Date: 9/18/12 Time: 1012

Sample ID Cross Reference Report

ANALYTICAL RESOURCES INCORPORATED

ARI Job No: VJ77
Client: Friedman and Bruya, Inc
Project Event: 209175
Project Name: 209175

	Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1.	DMW3-0912	VJ77A	12-17723	Water	09/12/12 10:20	09/18/12 09:30
2.	DMW4-0912	VJ77B	12-17724	Water	09/11/12 16:21	09/18/12 09:30
3.	DMW5-0912	VJ77C	12-17725	Water	09/11/12 14:14	09/18/12 09:30
4.	DMW6-0912	VJ77D	12-17726	Water	09/12/12 12:02	09/18/12 09:30
5.	DMW7-0912	VJ77E	12-17727	Water	09/11/12 12:24	09/18/12 09:30
6.	DMW8-0912	VJ77F	12-17728	Water	09/11/12 13:11	09/18/12 09:30
7.	DMW9-0912	VJ77G	12-17729	Water	09/11/12 15:14	09/18/12 09:30
8.	DMW10-0912	VJ77H	12-17730	Water	09/11/12 17:23	09/18/12 09:30
9.	MW5-0912	VJ77I	12-17731	Water	09/11/12 16:46	09/18/12 09:30
10.	MW8-0912	VJ77J	12-17732	Water	09/12/12 12:13	09/18/12 09:30
11.	MW9-0912	VJ77K	12-17733	Water	09/12/12 12:58	09/18/12 09:30
12.	MW10-0912	VJ77L	12-17734	Water	09/12/12 13:10	09/18/12 09:30
13.	MW11-0912	VJ77M	12-17735	Water	09/11/12 14:43	09/18/12 09:30
14.	MW12-0912	VJ77N	12-17736	Water	09/12/12 11:29	09/18/12 09:30
15.	MW13-0912	VJ77O	12-17737	Water	09/11/12 15:54	09/18/12 09:30
16.	MW14-0912	VJ77P	12-17738	Water	09/12/12 11:04	09/18/12 09:30

10/3/12

VJ77: 00006_rev

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
METHANE ETHANE ETHENE
Modified RSK 175
Page 1 of 1
Matrix: Water

QC Report No: VJ77-Friedman and Bruya, Inc
Project: 209175
209175
Date Received: 09/18/12

Data Release Authorized:
Reported: 10/03/12

ARI ID	Sample ID	Analysis Date	DL	Analyte	RL	Result
VJ77A 12-17723	DMW3-0912	09/20/12	1.0	**Methane**	**0.7**	**885**
VJ77B 12-17724	DMW4-0912	09/20/12	1.0	**Methane**	**0.7**	**2,440**
VJ77C 12-17725	DMW5-0912	09/20/12	1.0	**Methane**	**0.7**	**5,840**
VJ77D 12-17726	DMW6-0912	09/20/12	1.0	**Methane**	**0.7**	**10,400**
VJ77E 12-17727	DMW7-0912	09/20/12	1.0	**Methane**	**0.7**	**8,450**
VJ77F 12-17728	DMW8-0912	09/20/12	1.0	**Methane**	**0.7**	**3,700**
VJ77G 12-17729	DMW9-0912	09/20/12	1.0	**Methane**	**0.7**	**20,300**
VJ77H 12-17730	DMW10-0912	09/20/12	1.0	**Methane**	**0.7**	**6,730**
VJ77I 12-17731	MW5-0912	09/20/12	1.0	**Methane**	**0.7**	**35.8**
VJ77J 12-17732	MW8-0912	09/20/12	1.0	**Methane**	**0.7**	**1,380**
VJ77K 12-17733	MW9-0912	09/20/12	1.0	**Methane**	**0.7**	**38.7**
VJ77L 12-17734	MW10-0912	09/20/12	1.0	**Methane**	**0.7**	**3,040**
VJ77M 12-17735	MW11-0912	09/20/12	1.0	**Methane**	**0.7**	**124**
VJ77N 12-17736	MW12-0912	09/20/12	1.0	**Methane**	**0.7**	**124**
VJ77O 12-17737	MW13-0912	09/20/12	1.0	**Methane**	**0.7**	**9.5**
VJ77P 12-17738	MW14-0912	09/20/12	1.0	Methane	0.7	< 0.7 U
092012MB	Method Blank	09/20/12	1.0	Methane	0.7	< 0.7 U

Reported in ug/L (ppb)

dd 10/3/12

VJ77: 00007_REV

ANALYTICAL RESOURCES INCORPORATED

RSK 175 WATER SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: VJ77-Friedman and Bruya, Inc
Project: 209175
209175

ARI ID	Client ID	PRP	TOT OUT
VJ77A	DMW3-0912	88.4%	0
VJ77AMS	DMW3-0912	88.4%	0
VJ77AMSD	DMW3-0912	89.5%	0
VJ77B	DMW4-0912	92.8%	0
VJ77C	DMW5-0912	88.9%	0
VJ77D	DMW6-0912	88.9%	0
VJ77E	DMW7-0912	87.8%	0
VJ77F	DMW8-0912	91.1%	0
VJ77G	DMW9-0912	78.4%	0
VJ77H	DMW10-0912	90.6%	0
VJ77I	MW5-0912	97.8%	0
VJ77J	MW8-0912	95.6%	0
VJ77K	MW9-0912	98.4%	0
VJ77L	MW10-0912	88.9%	0
VJ77M	MW11-0912	91.1%	0
VJ77N	MW12-0912	86.7%	0
VJ77O	MW13-0912	93.4%	0
VJ77P	MW14-0912	98.4%	0
MB-092012	Method Blank	98.9%	0
LCS-092012	Lab Control	101%	0
LCSD-092012	Lab Control Dup	99.5%	0

	LCS/MB LIMITS	QC LIMITS
(PRP) = Propane	(79-132)	(72-122)

Log Number Range: 12-17723 to 12-17738

a) 10/3/18

VJ77: 00008-rev

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
METHANE ETHANE ETHENE

Modified RSK 175
Page 1 of 1
Matrix: Water

QC Report No: VJ77-Friedman and Bruya, Inc
Project: 209175
209175
Date Received: 09/18/12

Data Release Authorized:
Reported: 10/03/12

Analyte	Date	Spike Type	Sample	Spike	Spike Added	Recovery	RPD
ARI ID: VJ77A Client ID: DMW3-0912							
Methane	09/20/12	MS	885	1,550	654	101.6%	
	09/20/12	MSD		1,550		101.6%	0.0%

Reported in ug/L (ppb)

QO 10/3/12

VJ77: 00009_rev

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
METHANE ETHANE ETHENE

Modified RSK 175
Page 1 of 1
Matrix: Water

QC Report No: VJ77-Friedman and Bruya, Inc
Project: 209175
209175
Date Received: 09/18/12

Data Release Authorized: MW
Reported: 09/24/12

ARI ID	Analysis Date	Analyte	Spike	Result	Recovery	RPD
092012LCS	09/20/12	Methane	654	685	104.7%	3.0%
092012LCSD				665	101.6%	

Reported in ug/L (ppb)

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
Sulfate by Method EPA 300.0

Data Release Authorized:
Reported: 10/03/12
Date Received: 09/18/12
Page 1 of 1

QC Report No: VJ77-Friedman and Bruya, Inc
Project: 209175
209175

Client/ ARI ID	Date Sampled	Matrix	Analysis Date & Batch	RL	Result
DMW3-0912 VJ77A 12-17723	09/12/12	Water	09/25/12 092512#1	1.0	10.7
DMW4-0912 VJ77B 12-17724	09/11/12	Water	09/19/12 091912#1	2.0	25.2
DMW5-0912 VJ77C 12-17725	09/11/12	Water	09/25/12 092512#1	1.0	1.7
DMW6-0912 VJ77D 12-17726	09/12/12	Water	09/25/12 092512#1	1.0	1.6
DMW7-0912 VJ77E 12-17727	09/11/12	Water	09/25/12 092512#1	1.0	1.6
DMW8-0912 VJ77F 12-17728	09/11/12	Water	09/25/12 092512#1	1.0	1.9
DMW9-0912 VJ77G 12-17729	09/11/12	Water	09/25/12 092512#1	1.0	1.8
DMW10-0912 VJ77H 12-17730	09/11/12	Water	09/19/12 091912#1	2.0	53.9
MW5-0912 VJ77I 12-17731	09/11/12	Water	09/19/12 091912#1	2.0	89.4
MW8-0912 VJ77J 12-17732	09/12/12	Water	09/25/12 092512#1	1.0	2.5
MW9-0912 VJ77K 12-17733	09/12/12	Water	09/25/12 092512#1	1.0	6.1
MW10-0912 VJ77L 12-17734	09/12/12	Water	09/25/12 092512#1	1.0	3.7
MW11-0912 VJ77M 12-17735	09/11/12	Water	09/25/12 092512#1	5.0	103
MW12-0912 VJ77N 12-17736	09/12/12	Water	09/25/12 092512#1	20.0	453
MW13-0912 VJ77O 12-17737	09/11/12	Water	09/27/12 092712#1	20.0	542
MW14-0912 VJ77P 12-17738	09/12/12	Water	09/25/12 092512#1	5.0	142

Reported in mg/L

RL-Analytical reporting limit
U-Undetected at reported detection limit

cc 10/3/12
VJ77: 0001l_rev

MS/MSD RESULTS-CONVENTIONALS
VJ77-Friedman and Bruya, Inc

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 10/03/12

Project: 209175
Event: 209175
Date Sampled: 09/12/12
Date Received: 09/18/12

Analyte	Date	Units	Sample	Spike	Spike Added	Recovery
ARI ID: VJ77A Client ID: DMW3-0912						
Sulfate	09/25/12	mg/L	10.7	27.1	20.0	82.0%

10/3/12
VJ77: 0012_rev

REPLICATE RESULTS-CONVENTIONALS
VJ77-Friedman and Bruya, Inc

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 10/03/12

Project: 209175
Event: 209175
Date Sampled: 09/12/12
Date Received: 09/18/12

Analyte	Date	Units	Sample	Replicate(s)	RPD/RSD
ARI ID: VJ77A Client ID: DMW3-0912					
Sulfate	09/25/12	mg/L	10.7	10.4	2.8%

co 10/31/12
VJ77: 00013_rev

METHOD BLANK RESULTS-CONVENTIONALS
VJ77-Friedman and Bruya, Inc

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 09/28/12

Project: 209175
Event: 209175
Date Sampled: NA
Date Received: NA

Analyte	Date/Time	Units	Blank
Sulfate	09/19/12 09:35	mg/L	< 0.1 U
	09/25/12 12:32		< 0.1 U
	09/27/12 08:08		< 0.1 U

STANDARD REFERENCE RESULTS-CONVENTIONALS
VJ77-Friedman and Bruya, Inc

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized
Reported: 09/28/12

Project: 209175
Event: 209175
Date Sampled: NA
Date Received: NA

Analyte/SRM ID	Date/Time	Units	SRM	True Value	Recovery
Sulfate	09/19/12 09:35	mg/L	3.0	3.0	100.0%
ERA #070811	09/25/12 12:32		3.1	3.0	103.3%
	09/27/12 08:08		3.1	3.0	103.3%

acm 16

SAMPLE CHAIN OF CUSTODY KJ 09-13-12

V4/ AI4

Page # 1 of 2

Send Report To MIKE STATON

Company SLR INTERNATIONAL CORP

Address 22118 20TH AVE SE, G-202

City, State, ZIP BOTHELL, WA 98021

Phone # (425) 402-8800 Fax # (425) 402-8488

SAMPLERS (signature)

PROJECT NAME/NO.: FORMER ARCO # 0855 LONGVIEW, WA 101.00173.~~00010~~ 00011 CA

PO#: 101.00173.~~00010~~ 00011 CA

REMARKS

TURNAROUND TIME
- [x] Standard (2 Weeks)
- [ ] RUSH
- Rush charges authorized by

SAMPLE DISPOSAL
- [x] Dispose after 30 days
- [ ] Return samples
- [ ] Will call with instructions

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of containers	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by8260	SVOCs by 8270	HFS	Dissolved Methane by RSK-175	Sulfate by 300.0					Notes
OMW3-0912	01 A-F	9/12/12	1020	WATER	6		X	X				X	X					
OMW4-0912	02 A-F	9/11/12	1621															
OMW5-0912	03 A-F	9/11/12	1414															
OMW6-0912	04 A-F	9/12/12	1202															
OMW7-0912	05 A-F	9/11/12	1224															
OMW8-0912	06 A-F	9/11/12	1311															
OMW9-0912	07 A-F	9/11/12	1514															
OMW10-0912	08 A-F	9/11/12	1723															
MW5-0912	09 A-F	9/11/12	1646															
MW8-0912	10 A-F	9/12/12	1213															

Samples received at 1 °C

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	CHRIS LEE	SLR		
Received by:	Rachel Reisinger	Postal X.	9/13/12	9:42
Relinquished by:				
Received by:	James Bruya	F&B		11 24

FORMS\COC\COC.DOC

209175

SAMPLE CHAIN OF CUSTODY

KJ 09-13-12

V4/AI4

Page # 2 of 2

Send Report To MIKE STATON

Company SLR INTERNATIONAL CORP

Address 22118 20TH AVE SE, G-202

City, State, ZIP BOTHELL, WA 98021

Phone # (425) 402-8800 Fax # (425) 402-8488

SAMPLERS (signature)

PROJECT NAME/NO.: FORMER ARCO # 0855, LONGVIEW, WA, 101.00173.00010 00011 EA

PO#: 101.00173.00010 00011 EA

REMARKS

TURNAROUND TIME
- [x] Standard (2 Weeks)
- [ ] RUSH
- Rush charges authorized by

SAMPLE DISPOSAL
- [x] Dispose after 30 days
- [ ] Return samples
- [ ] Will call with instructions

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of containers	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by8260	SVOCs by 8270	HFS	Dissolved Methane by RSK-175	Sulfate by 300.0					Notes
MW9-0912	11A-F	9/12/12	1258	WATER	6		X	X				X	X					
MW10-0912	12A-F	9/12/12	1310															
MW11-0912	13A-F	9/11/12	1443															
MW12-0912	14A-F	9/12/12	1129															
MW13-0912	15A-F	9/11/12	1554															
MW14-0912	16A-F	9/12/12	1104															

Samples received at 1 °C

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	CHRIS LEE	SLR		
Received by: Rachel M. R	Rachel Reisinger	Rootal X	9/13/12	9:42
Relinquished by:				
Received by:	James Bruya	F&B	9/13/12	1134

FORMS\COC\COC.DOC