



January 13, 2011
Project 101.00173.00010

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

Re: 2010 Deep Groundwater Remediation System Performance Report,
Former Arco Service Station #0855, Longview, Washington

Dear Mr. Middleton:

On behalf of Wakefield Family LLC (Wakefield), SLR International Corp. (SLR) has prepared this report to present the results of the deep groundwater recovery/treatment system operations at the above-referenced property from October 2009 through December 2010. The former Arco Service Station #0855 property is located at 4603 Ocean Beach Highway, near the western end of Longview, Washington (see Figure 1).

BACKGROUND

On June 26, 2007, Wakefield (the property owner) entered into the Washington Department of Ecology's (Ecology's) Voluntary Cleanup Program (VCP) to obtain Ecology's opinions regarding the results of the previous investigation activities at the site and the recommended remedial alternative. The recommended remedial alternative was presented in a Feasibility Study Report (SLR, 2007), and consisted of soil excavation, shallow groundwater and free product extraction, and natural attenuation of the remaining contamination with a contingency to potentially implement deeper groundwater extraction. On October 11, 2007, Ecology notified Wakefield that they agreed that the recommended alternative was the most feasible option for addressing the contamination at the site (Ecology, 2007).

Primary Phase of Remedial Action

During September, November, and December 2007, and March 2008, the primary phase of the site remedial action, consistent with the recommended remedial alternative, was completed. The objectives of the work were: 1) to remediate the soil that contained petroleum hydrocarbon concentrations greater than Model Toxics Control Act (MTCA)

Method A cleanup levels¹, 2) to remove the source of the impacted shallow groundwater, 3) to remove the primary source of the impacted deep groundwater, and 4) to extract the accessible impacted shallow groundwater. The remedial action consisted of demolishing all of the property structures, excavating the petroleum hydrocarbon-impacted soil that occurred at depths above 15 feet below ground surface (bgs), extracting hydrocarbon-impacted shallow groundwater from the open excavation, installing replacement shallow and deep groundwater monitoring wells within the areas of excavation, and conducting two groundwater sampling events.

Based on the analytical results from the final excavation floor and sidewall confirmation samples, the excavation activities effectively removed all of the soil that contained petroleum hydrocarbon concentrations greater than the MTCA Method A cleanup levels, except at three locations (SLR, 2008). The final floor samples from sample grid cells A3, B3, and C2, at 15 feet bgs, contained benzene, ethylbenzene, total xylenes, and/or gasoline-range organics (GRO) concentrations that exceeded the Method A cleanup levels. The excavation was not extended below 15 feet bgs at those three locations to ensure that a semi-confining unit (clayey silt) was not breached. The results of the two subsequent groundwater sampling events indicated that the shallow groundwater extraction activities removed the impacted groundwater within the excavation area and the soil excavation effectively eliminated the source of any additional shallow groundwater contamination. The groundwater sampling results also showed that the excavation and shallow groundwater extraction activities had limited short-term affects on the petroleum hydrocarbon concentrations in the deeper semi-confined groundwater zone (SLR, 2008).

Secondary Phase of Remedial Action

The secondary phase of the site remedial action consists of long-term groundwater monitoring to assess the natural attenuation of the remaining petroleum hydrocarbon concentrations in the shallow and deep groundwater zones. Since the primary phase of the remedial action had limited short-term affects on the deep groundwater concentrations, the secondary phase of the remedial action also includes the installation and operation of a deep groundwater recovery/treatment system. The purpose of the system is to reduce the petroleum hydrocarbon concentrations in the deep groundwater zone to levels that will naturally attenuate to below the MTCA Method A cleanup levels within a reasonable period of time.

To extract petroleum hydrocarbon-impacted deep groundwater, a groundwater recovery well (designated RW-1) was installed at the area of the highest petroleum hydrocarbon

¹ Chapter 173-340 WAC, Model Toxics Control Act Cleanup Regulation, Method A Cleanup Levels. Amended February 12, 2001.

concentrations in the deep groundwater zone, near the western end of the former gasoline dispenser island (see Figure 2). The top of the 5-foot-long well screen was installed at a depth of approximately 24 feet bgs [approximately 6 inches below the top of the primary water-producing unit (fine- to coarse-grained sand) of the upper part of the deep groundwater zone].

In June 2009, the deep groundwater recovery/treatment system was installed at the property. An electronic submersible pump was installed in RW-1, and the bottom of the pump (the intake) was set near the bottom of the screen. Two float switches were installed within the well to activate and deactivate the pump. The groundwater extracted by the pump is plumbed, via hose and underground piping, to a groundwater treatment system located in the southeastern corner of the property (see Figure 3). The treatment system consists of two canisters in series that are each filled with 1,000 pounds of activated carbon. A totalizing flow meter is located after the second carbon canister to record the pumping rate and the total volume of extracted groundwater. After the flow meter, the effluent line is plumbed into a 50-gallon equalization tank and the effluent from the tank discharges into the City of Longview sanitary sewer system. A plan view of the treatment system is shown on Figure 3.

Initial Operation of Deep Groundwater Recovery/Treatment System

On June 17, 2009, the groundwater recovery/treatment system was activated. By September 28, 2009, a total of 592,675 gallons of water were recovered and treated by the system. The groundwater pumping rates ranged from approximately 4 to 5 gallons per minute (SLR, 2009).

During the system operations, SLR personnel have monitored system performance in accordance with the requirements of a Permit for Utility Service from the City of Longview. At system activation, on a weekly basis for the first month of operation, and then on an every other week basis, treatment system samples were collected after the first carbon canister to monitor contaminant breakthrough and after the second carbon unit to monitor the system discharge concentrations. At system activation and on a monthly basis, an influent sample to the first carbon canister was also collected to monitor contaminant loading. All of the samples were analyzed for benzene, toluene, ethylbenzene, and total xylenes (BTEX) and GRO. On June 18, 2009 (the system activation sample), the influent sample to the first carbon canister contained benzene and total xylenes concentrations of 500 and 2.6 micrograms per liter ($\mu\text{g/L}$), respectively. Toluene, ethylbenzene, and GRO were not detected at concentrations above the method reporting limits (MRLs). By September 9, 2009, the benzene concentration in the system influent sample had decreased to 95 $\mu\text{g/L}$. From June 18 through September 28, 2009, none of the effluent samples from

either carbon canister contained BTEX or GRO concentrations above the MRLs (SLR, 2009).

Immediately prior to activating the recovery/treatment system on June 17, 2009, and on a monthly basis through September 2009, SLR personnel measured the depths to groundwater in all of the shallow and deep groundwater monitoring wells and in deep groundwater recovery well RW-1. The groundwater monitoring data showed that the greatest decreases in groundwater elevations in the deep and shallow monitoring wells were in the wells (DMW-9 and MW-13) located nearest to the recovery well. This indicated that the pumping operations were influencing both the deep and shallow groundwater zones in the area near the recovery well (SLR, 2009).

2010 SYSTEM OPERATIONS

From September 28, 2009 through December 30, 2010, a total of 2,970,531 gallons of groundwater were extracted and treated by the deep groundwater recovery/treatment system. The groundwater pumping rates ranged from approximately 3.4 to 5.3 gallons per minute.

Treatment System Sample Analytical Results

From October 2009 through December 2010, treatment system samples were collected on a monthly basis from the influent to the first carbon canister, the effluent from the first carbon canister, and the effluent from the second carbon unit. All of the samples were submitted to Columbia Analytical Services, Inc. (CAS) in Kelso, Washington, for analysis of BTEX by EPA Method 8021B and GRO by Ecology Method NWTPH-Gx. On October 15, 2009, the influent sample to the first carbon canister contained benzene, ethylbenzene, and total xylenes concentrations of 65, 1.6, and 3.2 µg/L, respectively. Toluene and GRO were not detected at concentrations above the MRLs. By September 2010, the benzene concentrations in the influent samples to the first carbon canister had consistently decreased to below 30 µg/L, and toluene, ethylbenzene, total xylenes, and GRO were no longer detected at concentrations above the MRLs. From October 2009 through December 2010, none of the effluent samples from either carbon canister contained BTEX or GRO concentrations above the MRLs. All of the treatment system sample analytical results are presented in Table 1, and copies of the laboratory reports from the October 2009 through December 2010 system sampling events are presented in Appendix A.

Groundwater Monitoring Data

In December 2009 and in March, June, September, and December 2010, the deep groundwater recovery/treatment system was deactivated for at least 18 hours in order to

collect groundwater samples from selected monitoring wells under static groundwater conditions. Immediately prior to each groundwater sampling event, SLR personnel measured the depths to groundwater in all of the shallow and deep monitoring wells and in the deep recovery well. Within 45 days after each groundwater sampling event, except the December 2010 event, SLR measured the depths to groundwater in all of the shallow and deep wells and in the recovery well while the system was operating. The purpose of these groundwater level measurements was to evaluate the radius of groundwater pumping influence over time. The depth to groundwater measurements were converted to groundwater elevations by using the results of previous well elevation surveys. The groundwater monitoring data from December 2009 through December 2010, as well as the previous groundwater monitoring data, are presented in Table 2.

During static (non-pumping) conditions in December 2009 and in March, June, and September 2010, the depths to groundwater in the deep wells (including the recovery well) ranged from 4.36 to 7.59 feet and the depths to groundwater in the shallow monitoring wells ranged from 1.37 to 8.14 feet. Free product was not observed in any of the wells. The groundwater elevations in the deep wells ranged from 1.56 to 3.38 feet above the NAVD 88 datum, and the groundwater elevations in the shallow wells ranged from 1.38 to 7.55 feet above the NAVD 88 datum. During each monitoring event, the groundwater elevations in the deep and shallow wells were inconsistent and could not be used to determine general deep or shallow groundwater flow directions beneath the site area. The groundwater elevations in the deep wells and shallow wells on September 14, 2010, are shown on Figures 2 and 4, respectively.

During pumping conditions from October 2009 through December 2010, SLR measured the depths to groundwater in recovery well RW-1 on approximately a monthly basis. The depths to groundwater ranged from 21.20 to 24.60 feet (-13.12 to -16.52 feet above the NAVD 88 datum), and the drawdown in the well was approximately 15.9 to 17.7 feet.

Except in March 2010, the depths to groundwater in the deep monitoring well (DMW-9) located approximately 10 feet from RW-1 consistently decreased (by 0.29 to 0.38 feet) after re-activating the recovery/treatment system after a groundwater sampling event. On March 31, 2010, the groundwater elevation in DMW-9 was 0.10 feet higher than during static conditions on March 18, 2010. Except for DMW-9, there was no evidence of consistent groundwater drawdown in any of the deep monitoring wells or shallow monitoring wells after re-activating the system. During the monitoring events with the system operating, the groundwater elevations in the deep and shallow wells were inconsistent and could not be used to determine general deep or shallow groundwater flow directions beneath the site area. The groundwater elevations in the deep wells and shallow wells on September 30, 2010, are shown on Figures 5 and 6, respectively.

2010 Groundwater Sampling Results

After activating the deep groundwater recovery/treatment system, the groundwater sampling program has consisted of conducting annual groundwater sampling events (collect samples from all of the shallow and deep monitoring wells) and quarterly groundwater sampling events [collect samples from the remaining wells that contain petroleum hydrocarbon concentrations greater than MTCA Method A cleanup levels (shallow well MW-10 and deep wells DMW-5, DMW-9, and DMW-10)]. The objectives of the groundwater sampling program are to evaluate the affects of the deep groundwater recovery system and to monitor the natural attenuation of the remaining petroleum hydrocarbon concentrations in the shallow and deep groundwater.

This report summarizes the results of the groundwater sampling events that were conducted from December 2009 through December 2010. Quarterly events were conducted in December 2009 and in March, June, and December 2010, and an annual event was conducted in September 2010. The results of the groundwater sampling showed that samples from deep wells DMW-5, DMW-9, and DMW-10 contained benzene concentrations (up to 13, 980, and 41 µg/L, respectively) that exceeded the MTCA Method A cleanup level (5 µg/L) (SLR, 2010a; SLR, 2010b; SLR, 2010c; SLR, 2010d; and SLR, 2011); however, the benzene concentrations in these wells were significantly lower than the benzene concentrations (42, 3,300, and 90 µg/L, respectively) from the wells in October 2008 (the last sampling event conducted prior to activation of the deep groundwater recovery system). From December 2009 through December 2010, at least one of the samples from DMW-9 contained total xylenes and GRO concentrations (up to 1,100 and 5,300 µg/L, respectively) that exceeded the Method A cleanup levels (1,000 and 800 µg/L, respectively). The samples from DMW-5 and DMW-10 did not contain toluene, ethylbenzene, total xylenes, or GRO concentrations that exceeded the Method A cleanup levels.

From December 2009 through September 2010, the groundwater samples from shallow well MW-10 did not contain BTEX or GRO concentrations greater than the Method A cleanup levels. Since the samples from MW-10 contained petroleum hydrocarbon concentrations below the cleanup levels for four consecutive quarters, MW-10 was eliminated from the quarterly sampling program in December 2010 (SLR, 2011). The groundwater sample analytical results (petroleum hydrocarbons only) from the December 2009 through December 2010 sampling events, as well as from the previous sampling events, are presented in Table 3.

In September 2010, the groundwater samples were analyzed (in the field or by a laboratory) for parameters (dissolved manganese, alkalinity, dissolved methane, sulfate, nitrate, dissolved ferrous iron, dissolved oxygen, oxygen-reduction potential) to evaluate the natural attenuation of the remaining petroleum hydrocarbons. The sample analytical results showed that the greatest dissolved methane concentrations [2.2 and 3.7 milligrams per liter (mg/L)] were at the remaining area of elevated petroleum hydrocarbon concentrations in the deep groundwater (at DMW-9 and DMW-10) (SLR, 2010d). In addition, the highest alkalinity concentration (311 mg/L calcium carbonate) was also present at DMW-9. The relatively higher dissolved methane and alkalinity concentrations in the remaining area of deep groundwater contamination are consistent with the previous sampling results. The groundwater sample analytical results and field measurements for the natural attenuation parameters from the September 2010 sampling event, as well as from previous sampling events, are presented in Table 4.

CONCLUSIONS

From September 28, 2009 through December 30, 2010, the deep groundwater recovery/treatment system extracted and treated a total of 2,970,531 gallons of water. The system operated at pumping rates that ranged from approximately 3.4 to 5.3 gallons per minute. The treatment system influent sample analytical results indicate that the system is effectively recovering petroleum hydrocarbon-impacted deep groundwater, and that the extracted groundwater concentrations are decreasing over time. The treatment system effluent sample analytical results show that the carbon treatment system effectively adsorbed the extracted petroleum hydrocarbons prior to discharge to the sanitary sewer system.

The groundwater monitoring data indicate that groundwater drawdown from the pumping operations only consistently occurred at a deep monitoring well (DMW-9) located approximately 10 feet from the recovery well. Based on the lack of consistent drawdown at deep wells DMW-4, DMW-5, and DMW-10, the radius of pumping influence in the deep groundwater zone appears to be typically less than 50 feet. SLR previously believed that the pumping operations also influenced the shallow groundwater zone near the recovery well (SLR, 2009); however, based on the groundwater monitoring data from 2010, the previous decreases in groundwater elevations at shallow well MW-13 (from June through September 2009) appear to be primarily due to seasonal effects and that pumping influence on the shallow groundwater is likely minimal.

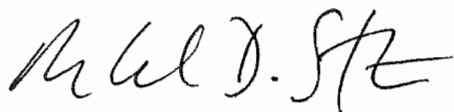
The groundwater sample analytical results since the activation of the deep groundwater recovery/treatment system (in June 2009) indicate that only the samples from deep wells DMW-5, DMW-9, and DMW-10 contained petroleum hydrocarbon concentrations greater than the MTCA Method A cleanup levels, and that the concentrations are decreasing over

time due to the performance of the system and to natural attenuation. At the monitoring well (DMW-9) located within the area of pumping influence, the benzene, total xylenes, and GRO concentrations have steadily decreased during the system operations. In December 2010, the benzene, total xylenes, and GRO concentrations were below the MTCA Method A cleanup levels; however, the concentrations may increase during periods of lower seasonal groundwater elevations. Outside of the radius of pumping influence, the remaining petroleum hydrocarbon concentrations at wells DMW-5 and DMW-10 are decreasing at a slower rate than at DMW-9. The relatively higher dissolved methane and alkalinity concentrations in the remaining area of deep groundwater contamination indicate that the impacted groundwater occurs in a reducing (little or no oxygen) environment and that there is more biological activity where petroleum hydrocarbons are present. By December 2010, the benzene concentrations in the samples from DMW-5 and DMW-10 (9 and 32 µg/L, respectively) exceeded the Method A cleanup levels; however, petroleum hydrocarbons were not detected in the September 2010 sample from DMW-5.

If you have any questions or comments about this report, please contact Mike Staton at (425)471-0479.

Sincerely,

SLR International Corp



Michael D. Staton, L.G.
Principal Geologist

Attachments: Limitations
References
Tables 1 through 4
Figures 1 through 6
Appendix A – Laboratory Analytical Reports

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

LIMITATIONS

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

Opinions and recommendations contained in this report apply to conditions existing when services were performed and are intended only for the client, purposes, locations, time frames, 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 International Corp. 2007. *Feasibility Study Report, Former Arco Service Station #0855, Longview, Washington*. February 22.
- SLR International Corp. 2008. *Remedial Action Report, Former Arco Service Station #0855, 4603 Ocean Beach Highway, Longview, Washington*. July 21.
- SLR International Corp. 2009. *Deep Groundwater Remediation System Installation and Performance Report, Former Arco Service Station #0855, Longview, Washington*. November 4.
- SLR International Corp. 2010a. *Quarterly Groundwater Sampling Report – December 2009 Event, Former Arco Service Station #0855, Longview, Washington*. January 9.
- SLR International Corp. 2010b. *Quarterly Groundwater Sampling Report – March 2010 Event, Former Arco Service Station #0855, Longview, Washington*. April 5.
- SLR International Corp. 2010c. *Quarterly Groundwater Sampling Report – June 2010 Event, Former Arco Service Station #0855, Longview, Washington*. July 20.
- SLR International Corp. 2010d. *Groundwater Sampling Report – September 2010 Event, Former Arco Service Station #0855, Longview, Washington*. October 25.
- SLR International Corp. 2011. *Quarterly Groundwater Sampling Report – December 2010 Event, Former Arco Service Station #0855, Longview, Washington*. January 4.
- Washington Department of Ecology. 2001. *Model Toxics Control Act Cleanup Regulation, Chapter 173-340 WAC*. Publication No. 94-06. Amended February 12.
- Washington Department of Ecology. 2007. Letter to Wakefield Family LLC. October 11.

TABLES

Table 1
Groundwater Treatment System Sample Analytical Results
Former ARCO Service Station #0855
Longview, Washington

Date	Sample Location	Sample Name	Benzene ^a (µg/L)	Toluene ^a (µg/L)	Ethylbenzene ^a (µg/L)	Total Xylenes ^a (µg/L)	GRO ^b (µg/L)
06/18/09	Influent - First Carbon	INF1-61809	500	<1.0	<1.0	2.6	<250
	Effluent - First Carbon	EFF1-61809	<0.5	<0.5	<0.5	<0.5	<250
	Effluent - Second Carbon	EFF2-61809	<0.5	<0.5	<0.5	<0.5	<250
06/25/09	Effluent - First Carbon	EFF1-62509	<0.5	<0.5	<0.5	<0.5	<250
	Effluent - Second Carbon	EFF2-62509	<0.5	<0.5	<0.5	<0.5	<250
07/01/09	Effluent - First Carbon	EFF1-7109	<0.5	<0.5	<0.5	<0.5	<250
	Effluent - Second Carbon	EFF2-7109	<0.5	<0.5	<0.5	<0.5	<250
07/08/09	Effluent - First Carbon	EFF1-7809	<0.5	<0.5	<0.5	<0.5	<250
	Effluent - Second Carbon	EFF2-7809	<0.5	<0.5	<0.5	<0.5	<250
07/15/09	Influent - First Carbon	INF1-71509	230	0.7	4.0	6.4	<250
	Effluent - First Carbon	EFF1-71509	<0.5	<0.5	<0.5	<0.5	<250
	Effluent - Second Carbon	EFF2-71509	<0.5	<0.5	<0.5	<0.5	<250
07/29/09	Effluent - First Carbon	EFF1-72909	<0.5	<0.5	<0.5	<0.5	<250
	Effluent - Second Carbon	EFF2-72909	<0.5	<0.5	<0.5	<0.5	<250
08/13/09	Influent - First Carbon	INF1-81309	140	0.5	3.0	5.0	<250
	Effluent - First Carbon	EFF1-81309	<0.5	<0.5	<0.5	<0.5	<250
	Effluent - Second Carbon	EFF2-81309	<0.5	<0.5	<0.5	<0.5	<250
08/26/09	Effluent - First Carbon	EFF1-82609	<0.5	<0.5	<0.5	<0.5	<250
	Effluent - Second Carbon	EFF2-82609	<0.5	<0.5	<0.5	<0.5	<250
09/09/09	Influent - First Carbon	INF1-9909	95	<0.5	1.9	3.8	<250
	Effluent - First Carbon	EFF1-9909	<0.5	<0.5	<0.5	<0.5	<250
	Effluent - Second Carbon	EFF2-9909	<0.5	<0.5	<0.5	<0.5	<250
09/28/09	Effluent - First Carbon	EFF1-92809	<0.5	<0.5	<0.5	<0.5	<250
	Effluent - Second Carbon	EFF2-92809	<0.5	<0.5	<0.5	<0.5	<250
10/15/09	Influent - First Carbon	INF-101509	65	<0.5	1.6	3.2	<250
	Effluent - First Carbon	EFF1-101509	<0.5	<0.5	<0.5	<0.5	<250
	Effluent - Second Carbon	EFF2-101509	<0.5	<0.5	<0.5	<0.5	<250
11/17/09	Influent - First Carbon	INF1-111709	67	<0.5	1.4	3.2	<250
	Effluent - First Carbon	EFF1-111709	<0.5	<0.5	<0.5	<0.5	<250
	Effluent - Second Carbon	EFF2-111709	<0.5	<0.5	<0.5	<0.5	<250
12/14/09	Influent - First Carbon	INF-121409	50	<0.5	0.72	1.7	<250
	Effluent - First Carbon	EFF1-121409	<0.5	<0.5	<0.5	<0.5	<250
	Effluent - Second Carbon	EFF2-121409	<0.5	<0.5	<0.5	<0.5	<250
01/13/10	Influent - First Carbon	INF-11310	48	<0.5	0.80	2.4	<250
	Effluent - First Carbon	EFF1-11310	<0.5	<0.5	<0.5	<0.5	<250
	Effluent - Second Carbon	EFF2-11310	<0.5	<0.5	<0.5	<0.5	<250
02/17/10	Influent - First Carbon	INF-21710	33	<0.5	<0.5	1.7	<250
	Effluent - First Carbon	EFF1-21710	<0.5	<0.5	<0.5	<0.5	<250
	Effluent - Second Carbon	EFF2-21710	<0.5	<0.5	<0.5	<0.5	<250

Table 1
Groundwater Treatment System Sample Analytical Results
Former ARCO Service Station #0855
Longview, Washington

Date	Sample Location	Sample Name	Benzene ^a (µg/L)	Toluene ^a (µg/L)	Ethylbenzene ^a (µg/L)	Total Xylenes ^a (µg/L)	GRO ^b (µg/L)
03/17/10	Influent - First Carbon	INF-31710	25	<0.5	<0.5	1.4	<250
	Effluent - First Carbon	EFF1-31710	<0.5	<0.5	<0.5	<0.5	<250
	Effluent - Second Carbon	EFF2-31710	<0.5	<0.5	<0.5	<0.5	<250
04/15/10	Influent - First Carbon	INF-41510	32	<0.5	<0.5	1.4	<250
	Effluent - First Carbon	EFF1-41510	<0.5	<0.5	<0.5	<0.5	<250
	Effluent - Second Carbon	EFF2-41510	<0.5	<0.5	<0.5	<0.5	<250
05/14/10	Influent - First Carbon	INF-51410	27	<0.5	<0.5	1.0	<250
	Effluent - First Carbon	EFF1-51410	<0.5	<0.5	<0.5	<0.5	<250
	Effluent - Second Carbon	EFF2-51410	<0.5	<0.5	<0.5	<0.5	<250
06/14/10	Influent - First Carbon	INF-61410	31	<0.5	<0.5	0.86	<250
	Effluent - First Carbon	EFF1-61410	<0.5	<0.5	<0.5	<0.5	<250
	Effluent - Second Carbon	EFF2-61410	<0.5	<0.5	<0.5	<0.5	<250
07/20/10	Influent - First Carbon	INF-72010	19	<0.5	<0.5	0.52	<250
	Effluent - First Carbon	EFF1-72010	<0.5	<0.5	<0.5	<0.5	<250
	Effluent - Second Carbon	EFF2-72010	<0.5	<0.5	<0.5	<0.5	<250
08/13/10	Influent - First Carbon	INF-81310	27	<0.5	<0.5	0.56	<250
	Effluent - First Carbon	EFF1-81310	<0.5	<0.5	<0.5	<0.5	<250
	Effluent - Second Carbon	EFF2-81310	<0.5	<0.5	<0.5	<0.5	<250
09/10/10	Influent - First Carbon	INF-91010	17	<0.5	<0.5	<0.5	<250
	Effluent - First Carbon	EFF1-91010	<0.5	<0.5	<0.5	<0.5	<250
	Effluent - Second Carbon	EFF2-91010	<0.5	<0.5	<0.5	<0.5	<250
10/08/10	Influent - First Carbon	INF-100810	26	<0.5	<0.5	<0.5	<250
	Effluent - First Carbon	EFF1-100810	<0.5	<0.5	<0.5	<0.5	<250
	Effluent - Second Carbon	EFF2-100810	<0.5	<0.5	<0.5	<0.5	<250
11/12/10	Influent - First Carbon	INF-111210	19	<0.5	<0.5	<0.5	<250
	Effluent - First Carbon	EFF1-111210	<0.5	<0.5	<0.5	<0.5	<250
	Effluent - Second Carbon	EFF2-111210	<0.5	<0.5	<0.5	<0.5	<250
12/13/10	Influent - First Carbon	INF-121310	22	<0.5	<0.5	<0.5	<250
	Effluent - First Carbon	EFF1-121310	<0.5	<0.5	<0.5	<0.5	<250
	Effluent - Second Carbon	EFF2-121310	<0.5	<0.5	<0.5	<0.5	<250

Notes:

The deep groundwater recovery/treatment system was activated on June 17, 2009.

µg/L = micrograms per liter (ppb).

^aBenzene, toluene, ethylbenzene, and total xylenes by EPA Method 8260B.

^bGasoline-range organics (GRO) by Northwest Method NWTPH-Gx.

Table 2
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
		05/25/05	4.12	NP	4.13
		12/07/05	3.77	NP	4.48
		08/16/06	6.58	NP	1.67
	8.25 ^c	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
		05/25/05	4.15	NP	4.74
		12/07/05	4.09	NP	4.80
		08/16/06	5.96	NP	2.93
	8.89 ^c	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*
		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*
	8.58 ^c	Well abandoned in September 2007.			

Table 2
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-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
		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.			
	MW-5	8.67 ^c	11/15/00	6.54	NP
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
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
06/17/09			6.00	NP	2.67
07/01/09			6.25	NP	2.42
07/29/09			6.80	NP	1.87
08/26/09			6.98	NP	1.69
09/02/09			7.08	NP	1.59
09/28/09			7.03	NP	1.64
12/15/09			4.63	NP	4.04
01/29/10			4.81	NP	3.86
03/18/10			4.85	NP	3.82
03/31/10			3.85	NP	4.82
06/15/10			4.84	NP	3.83
06/30/10			5.68	NP	2.99
09/14/10			6.87	NP	1.80
09/30/10			5.96	NP	2.71
12/14/10			3.03	NP	5.64

Table 2
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-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.			
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
		06/17/09	3.91	NP	2.54
		07/01/09	3.89	NP	2.56
		07/29/09	4.12	NP	2.33
		08/26/09	4.47	NP	1.98
		09/02/09	4.55	NP	1.90
		09/28/09	4.51	NP	1.94
		12/15/09	3.31	NP	3.14
		01/29/10	3.21	NP	3.24
		03/18/10	3.05	NP	3.40
		03/31/10	3.04	NP	3.41
		06/15/10	2.48	NP	3.97
		06/30/10	3.41	NP	3.04
		09/14/10	4.32	NP	2.13
		09/30/10	4.26	NP	2.19
		12/14/10	2.70	NP	3.75

Table 2
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-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
		06/17/09	5.05	NP	4.38
		07/01/09	5.01	NP	4.42
		07/29/09	5.20	NP	4.23
		08/26/09	5.05	NP	4.38
		09/02/09	5.20	NP	4.23
		09/28/09	4.97	NP	4.46
		12/15/09	4.51	NP	4.92
		01/29/10	4.67	NP	4.76
		03/18/10	4.64	NP	4.79
		03/31/10	4.45	NP	4.98
		06/15/10	4.72	NP	4.71
		06/30/10	4.93	NP	4.50
		09/14/10	4.94	NP	4.49
		09/30/10	4.71	NP	4.72
		12/14/10	4.66	NP	4.77
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
		06/17/09	6.61	NP	2.91
		07/01/09	6.89	NP	2.63
		07/29/09	7.35	NP	2.17
		08/26/09	7.34	NP	2.18
		09/02/09	7.76	NP	1.76
		09/28/09	7.51	NP	2.01
		12/15/09	5.97	NP	3.55
		01/29/10	5.21	NP	4.31
		03/18/10	8.14	NP	1.38
		06/15/10	5.15	NP	4.37
		06/30/10	6.33	NP	3.19
		09/14/10	7.88	NP	1.64
		09/30/10	6.96	NP	2.56
		12/14/10	3.42	NP	6.10

Table 2
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
		06/17/09	5.70	NP	2.46
		07/01/09	6.02	NP	2.14
		07/29/09	6.72	NP	1.44
		08/26/09	7.37	NP	0.79
		09/02/09	7.52	NP	0.64
		09/28/09	7.01	NP	1.15
		12/15/09	4.35	NP	3.81
		01/29/10	4.10	NP	4.06
		03/18/10	4.17	NP	3.99
		03/31/10	3.68	NP	4.48
		06/15/10	4.22	NP	3.94
		06/30/10	5.28	NP	2.88
		09/14/10	6.28	NP	1.88
		09/30/10	5.61	NP	2.55
		12/14/10	1.86	NP	6.30
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
		06/17/09	5.41	NP	2.80
		07/01/09	5.57	NP	2.64
		07/29/09	6.11	NP	2.10
		08/26/09	6.21	NP	2.00
		09/02/09	6.33	NP	1.88
		09/28/09	5.76	NP	2.45
		12/15/09	3.09	NP	5.12
		01/29/10	3.60	NP	4.61
		03/18/10	3.46	NP	4.75
		03/31/10	2.54	NP	5.67
		06/15/10	3.65	NP	4.56
		06/30/10	4.78	NP	3.43
		09/14/10	5.65	NP	2.56
		09/30/10	4.85	NP	3.36
		12/14/10	1.45	NP	6.76

Table 2
Groundwater Monitoring Data
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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-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
		06/17/09	3.65	NP	5.38
		07/01/09	4.68	NP	4.35
		07/29/09	6.07	NP	2.96
		08/26/09	6.97	NP	2.06
		09/02/09	7.04	NP	1.99
		09/28/09	7.75	NP	1.28
		12/15/09	2.24	NP	6.79
		01/29/10	1.91	NP	7.12
		03/18/10	1.48	NP	7.55
		03/31/10	1.41	NP	7.62
		06/15/10	1.65	NP	7.38
		06/30/10	2.91	NP	6.12
		09/14/10	5.80	NP	3.23
		09/30/10	2.11	NP	6.92
		12/14/10	1.48	NP	7.55
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
		06/17/09	5.49	NP	2.90
		07/01/09	6.00	NP	2.39
		07/29/09	6.52	NP	1.87
		08/26/09	6.85	NP	1.54
		09/02/09	6.93	NP	1.46
		09/28/09	6.90	NP	1.49
		12/15/09	1.77	NP	6.62
		01/29/10	1.68	NP	6.71
		03/18/10	1.65	NP	6.74
		03/31/10	1.47	NP	6.92
		06/15/10	1.78	NP	6.61
		06/30/10	4.05	NP	4.34
		09/14/10	6.23	NP	2.16
		09/30/10	2.10	NP	6.29
		12/14/10	1.37	NP	7.02
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.			

Table 2
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-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
		06/17/09	6.68	NP	-0.02
		07/01/09	6.41	NP	0.25
		07/29/09	5.38	NP	1.28
		08/26/09	5.15	NP	1.51
		09/02/09	5.19	NP	1.47
		09/28/09	6.81	NP	-0.15
		12/15/09	4.71	NP	1.95
		01/29/10	4.71	NP	1.95
		03/18/10	4.55	NP	2.11
		03/31/10	4.60	NP	2.06
		06/15/10	4.42	NP	2.24
		06/30/10	4.45	NP	2.21
		09/14/10	5.01	NP	1.65
		09/30/10	5.02	NP	1.64
		12/14/10	4.36	NP	2.30
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
		06/17/09	6.61	NP	1.94
		07/01/09	6.76	NP	1.79
		07/29/09	7.00	NP	1.55
		08/26/09	7.05	NP	1.50
		09/02/09	7.13	NP	1.42
		09/28/09	7.20	NP	1.35
		12/15/09	6.26	NP	2.29
		01/29/10	6.40	NP	2.15
		03/18/10	6.43	NP	2.12
		03/31/10	6.10	NP	2.45
		06/15/10	6.11	NP	2.44
		06/30/10	6.31	NP	2.24
		09/14/10	6.97	NP	1.58
		09/30/10	6.91	NP	1.64
		12/14/10	5.18	NP	3.37

Table 2
Groundwater Monitoring Data
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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
		06/17/09	6.23	NP	1.91
		07/01/09	6.36	NP	1.78
		07/29/09	6.65	NP	1.49
		08/26/09	6.66	NP	1.48
		09/02/09	6.75	NP	1.39
		09/28/09	6.79	NP	1.35
		12/15/09	5.87	NP	2.27
		01/29/10	5.97	NP	2.17
		03/18/10	6.03	NP	2.11
		03/31/10	5.67	NP	2.47
		06/15/10	5.68	NP	2.46
		06/30/10	5.89	NP	2.25
		09/14/10	6.55	NP	1.59
		09/30/10	6.52	NP	1.62
		12/14/10	4.80	NP	3.34
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
		06/17/09	7.25	NP	1.90
		07/01/09	7.37	NP	1.78
		07/29/09	7.62	NP	1.53
		08/26/09	7.67	NP	1.48
		09/02/09	7.79	NP	1.36
		09/28/09	7.80	NP	1.35
		12/15/09	6.89	NP	2.26
		01/29/10	6.99	NP	2.16
		03/18/10	7.06	NP	2.09
		03/31/10	6.71	NP	2.44
		06/15/10	6.74	NP	2.41
		06/30/10	6.93	NP	2.22
		09/14/10	7.59	NP	1.56
		09/30/10	7.53	NP	1.62
		12/14/10	5.79	NP	3.36

Table 2
Groundwater Monitoring Data
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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-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
		06/17/09	6.07	NP	2.05
		07/01/09	6.20	NP	1.92
		07/29/09	6.51	NP	1.61
		08/26/09	6.51	NP	1.61
		09/02/09	6.74	NP	1.38
		09/28/09	6.80	NP	1.32
		12/15/09	5.85	NP	2.27
		01/29/10	5.96	NP	2.16
		03/18/10	5.93	NP	2.19
		03/31/10	5.92	NP	2.20
		06/15/10	5.82	NP	2.30
		06/30/10	5.87	NP	2.25
		09/14/10	6.55	NP	1.57
		09/30/10	7.11	NP	1.01
		12/14/10	5.27	NP	2.85
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
		06/17/09	7.01	NP	2.08
		07/01/09	7.13	NP	1.96
		07/29/09	7.44	NP	1.65
		08/26/09	7.45	NP	1.64
		09/02/09	7.69	NP	1.40
		09/28/09	7.76	NP	1.33
		12/15/09	6.80	NP	2.29
		01/29/10	6.81	NP	2.28
		03/18/10	6.81	NP	2.28
		03/31/10	6.91	NP	2.18
		06/15/10	6.55	NP	2.54
		06/30/10	6.87	NP	2.22
		09/14/10	7.50	NP	1.59
		09/30/10	7.45	NP	1.64
		12/14/10	6.52	NP	2.57

Table 2
Groundwater Monitoring Data
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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-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
		06/17/09	6.55	NP	2.31
		07/01/09	6.80	NP	2.06
		07/29/09	7.36	NP	1.50
		08/26/09	7.41	NP	1.45
		09/02/09	7.44	NP	1.42
		09/28/09	7.52	NP	1.34
		12/15/09	6.54	NP	2.32
		01/29/10	6.87	NP	1.99
		03/18/10	6.69	NP	2.17
		03/31/10	6.59	NP	2.27
		06/15/10	6.39	NP	2.47
		06/30/10	6.77	NP	2.09
		09/14/10	7.23	NP	1.63
		09/30/10	7.52	NP	1.34
		12/14/10	5.66	NP	3.20
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
		06/17/09	6.44	NP	1.94
		07/01/09	6.61	NP	1.77
		07/29/09	6.83	NP	1.55
		08/26/09	6.89	NP	1.49
		09/02/09	6.99	NP	1.39
		09/28/09	7.03	NP	1.35
		12/15/09	6.09	NP	2.29
		01/29/10	6.19	NP	2.19
		03/18/10	6.25	NP	2.13
		03/31/10	5.91	NP	2.47
		06/15/10	5.91	NP	2.47
		06/30/10	6.13	NP	2.25
		09/14/10	6.77	NP	1.61
		09/30/10	6.75	NP	1.63
		12/14/10	5.02	NP	3.36

Table 2
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 Recovery Well					
RW-1	8.08	06/17/09	6.13	NP	1.95
		07/01/09	<i>21.20</i>	<i>NP</i>	<i>-13.12</i>
		07/29/09	<i>21.85</i>	<i>NP</i>	<i>-13.77</i>
		08/26/09	<i>20.05</i>	<i>NP</i>	<i>-11.97</i>
		09/02/09	6.69	NP	1.39
		09/28/09	<i>23.20</i>	<i>NP</i>	<i>-15.12</i>
		10/28/09	<i>23.23</i>	<i>NP</i>	<i>-15.15</i>
		11/30/09	<i>21.20</i>	<i>NP</i>	<i>-13.12</i>
		12/15/09	5.78	NP	2.30
		01/29/10	<i>23.20</i>	<i>NP</i>	<i>-15.12</i>
		03/01/10	<i>23.55</i>	<i>NP</i>	<i>-15.47</i>
		03/18/10	5.96	NP	2.12
		03/31/10	<i>21.90</i>	<i>NP</i>	<i>-13.82</i>
		04/30/10	<i>21.75</i>	<i>NP</i>	<i>-13.67</i>
		06/01/10	<i>23.10</i>	<i>NP</i>	<i>-15.02</i>
		06/15/10	5.60	NP	2.48
		06/30/10	<i>23.25</i>	<i>NP</i>	<i>-15.17</i>
		07/20/10	<i>24.50</i>	<i>NP</i>	<i>-16.42</i>
		08/31/10	<i>21.45</i>	<i>NP</i>	<i>-13.37</i>
		09/30/10	<i>24.50</i>	<i>NP</i>	<i>-16.42</i>
		11/01/10	<i>24.60</i>	<i>NP</i>	<i>-16.52</i>
		12/14/10	4.70	NP	3.38
NOTES:					
NP = Free product was not present.					
The deep groundwater recovery/treatment system was activated on June 17, 2009, after measuring the depths to groundwater in the wells.					
Values in bold and italics were measured when the deep groundwater recovery system was operating.					
^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 3
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 3
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
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 3
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
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
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
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

Table 3
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
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
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
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
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

Table 3
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
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
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
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
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

Table 3
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-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
<p>NOTES: Values in bold exceed the MTCA Method A cleanup levels.</p> <p>All concentrations in micrograms per liter (µg/L).</p> <p>ND = Not detected above the laboratory method reporting limit (MRL).</p> <p>NA = Not analyzed.</p> <p>^a Benzene, toluene, ethylbenzene, and total xylenes (BTEX) by EPA Method 8021B or EPA Method 8260B.</p> <p>^b Gasoline-range organics (GRO) by Ecology Method NWTPH-Gx.</p> <p>^c Diesel-range organics (DRO) by Ecology Method NWTPH-Dx.</p> <p>^d Chapter 173-340 WAC, Model Toxics Control Act (MTCA) Cleanup Regulation, Method A Cleanup Levels. Amended February 12, 2001.</p> <p>^e Total xylenes calculated by using the formula: total xylenes concentration = (m, p-xylene concentration) + (o-xylene concentration).</p> <p>^f The laboratory reported that the DRO concentration is due to overlap from the gasoline range.</p> <p>^g The laboratory reported that the pattern of chromatogram peaks from the sample were not indicative of diesel.</p>							

Table 4
Groundwater Sample Analytical Results - Natural Attenuation Parameters
Former Arco Service Station #0855
Longview, Washington

Sample Location	Sample Date	Nitrate ^a (mg/L)	Sulfate ^a (mg/L)	Dissolved Methane ^b (mg/L)	Dissolved Oxygen ^c (mg/L)	Dissolved Manganese ^d (mg/L)	Dissolved Ferrous Iron ^e (mg/L)	Alkalinity ^f (mg/L CaCO ₃)	Redox Potential ^g (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
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
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	0.0	118	39.3
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
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
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	0.0	187	32.7
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	0.0	74.2	64.8
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	0.10	0.7	1.1	<0.1	45.4	-108
	09/14/10	0.05	294	<0.005	2.7	0.02	0.0	24.8	91.9

Table 4
Groundwater Sample Analytical Results - Natural Attenuation Parameters
Former Arco Service Station #0855
Longview, Washington

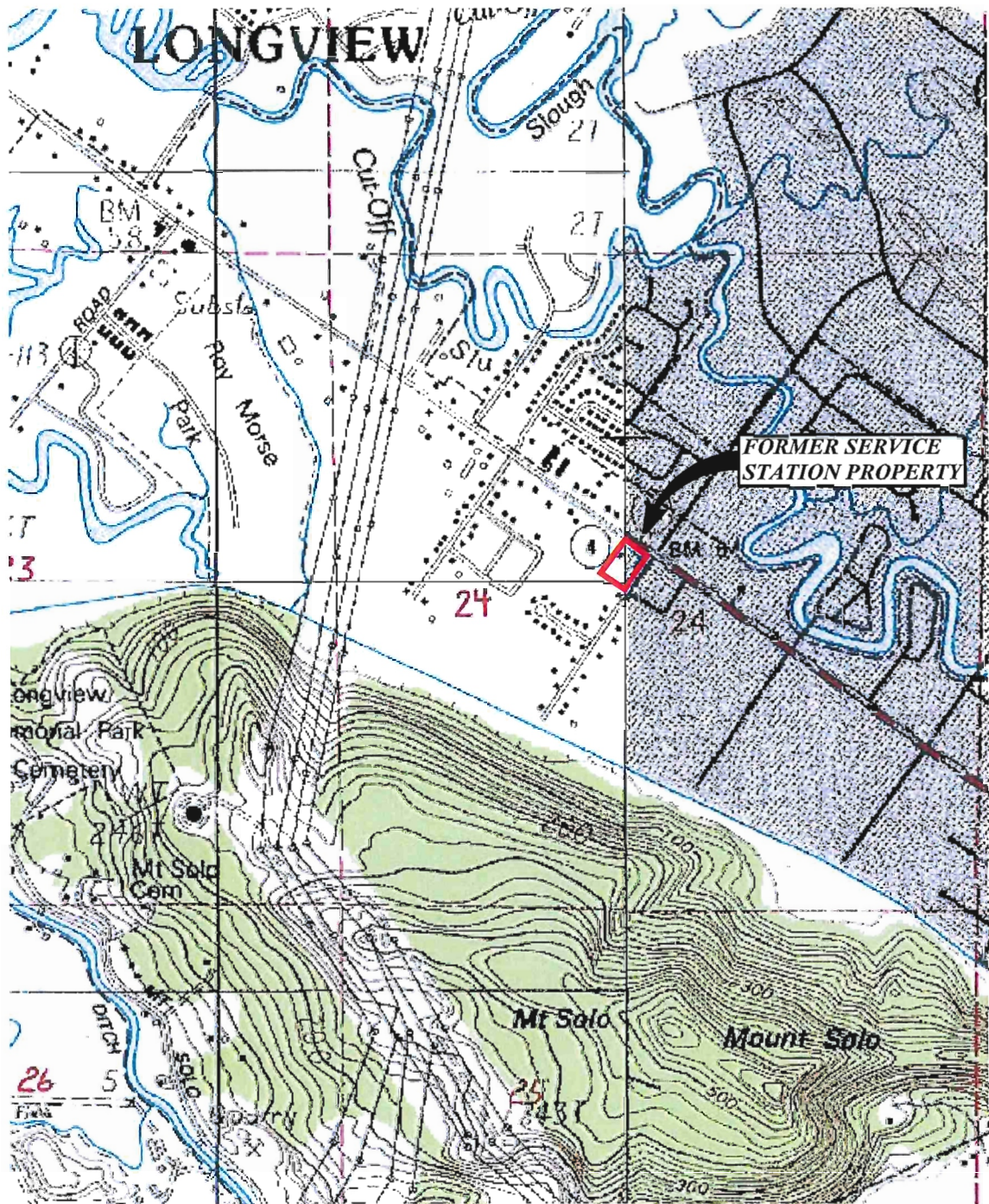
Sample Location	Sample Date	Nitrate ^a (mg/L)	Sulfate ^a (mg/L)	Dissolved Methane ^b (mg/L)	Dissolved Oxygen ^c (mg/L)	Dissolved Manganese ^d (mg/L)	Dissolved Ferrous Iron ^e (mg/L)	Alkalinity ^f (mg/L CaCO ₃)	Redox Potential ^g (mV)
Deep Wells									
DMW-3	12/12/07	<0.05	31.8	1.6	3.8	2.8	1.0	220	256
	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
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
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
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
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
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
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

Table 4
Groundwater Sample Analytical Results - Natural Attenuation Parameters
Former Arco Service Station #0855
Longview, Washington

Sample Location	Sample Date	Nitrate ^a (mg/L)	Sulfate ^a (mg/L)	Dissolved Methane ^b (mg/L)	Dissolved Oxygen ^c (mg/L)	Dissolved Manganese ^d (mg/L)	Dissolved Ferrous Iron ^e (mg/L)	Alkalinity ^f (mg/L CaCO ₃)	Redox Potential ^g (mV)
Deep Wells (continued)									
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
NOTES: NM = Not measured. mg/L = milligrams per liter (ppm). ^a Nitrate by EPA Method 353.2. ^a Sulfate by EPA Method 375.2. ^b Dissolved methane by EPA Method RSK 175 Modified. ^c Dissolved oxygen by EPA Method 360.1 (field instrument reading). ^d Dissolved manganese by EPA Method 200.8. ^e Dissolved ferrous iron by Standard Method SM 3500 (field test kit). ^f Alkalinity by Standard Method SM 2320. ^g Oxidation-reduction (redox) potential by EPA Method D1498-76 (field instrument reading).									

FIGURES

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0 1500 3000
SCALE IN FEET



WASHINGTON

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

FIGURE 1
FORMER ARCO SERVICE STATION #0855
LONGVIEW, WASHINGTON

PROPERTY LOCATION MAP

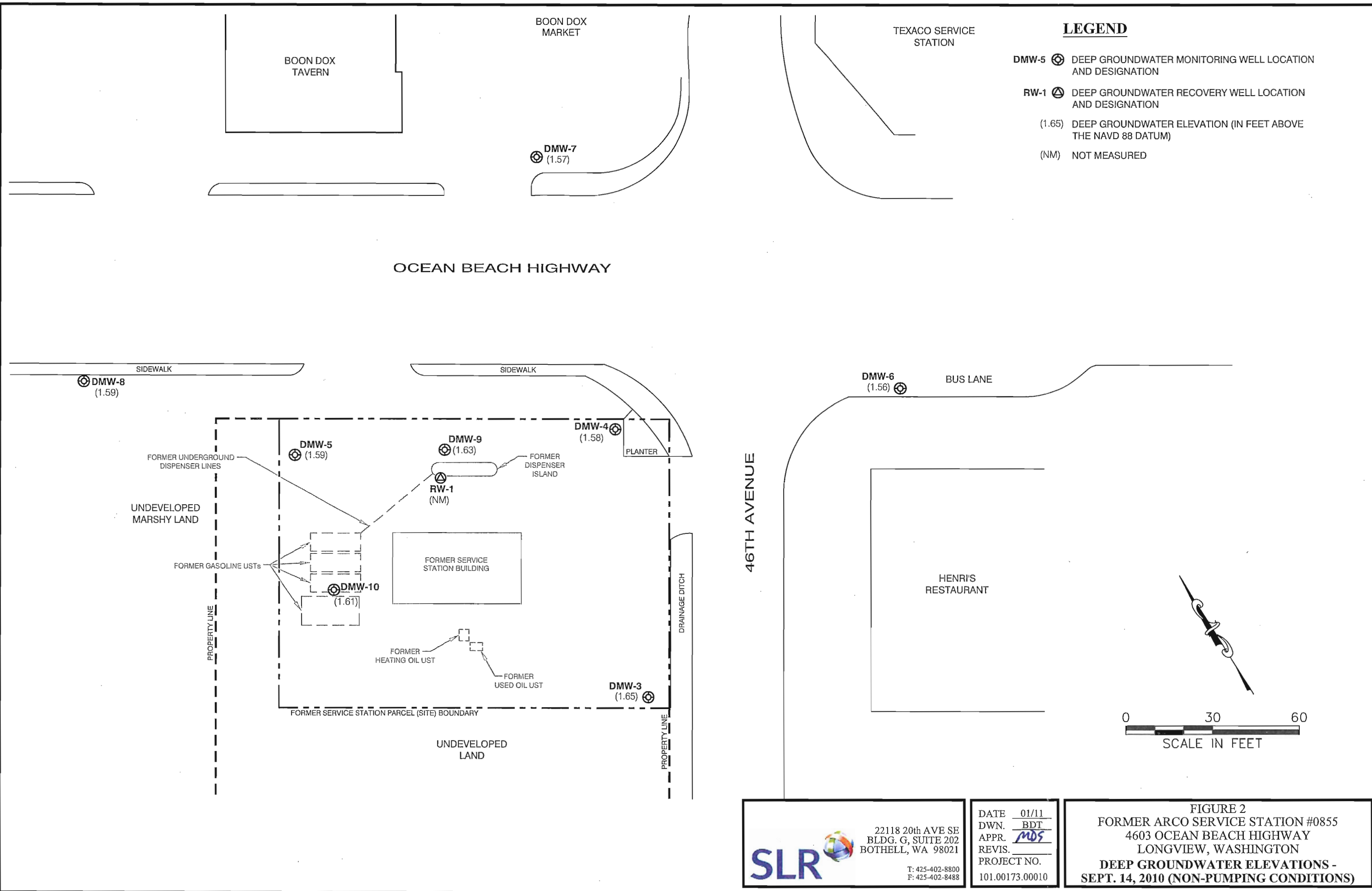



22118 20th AVE SE
BUILDING G, SUITE 202
BOTHELL, WA 98021

T: 425-402-8800
F: 425-402-8488

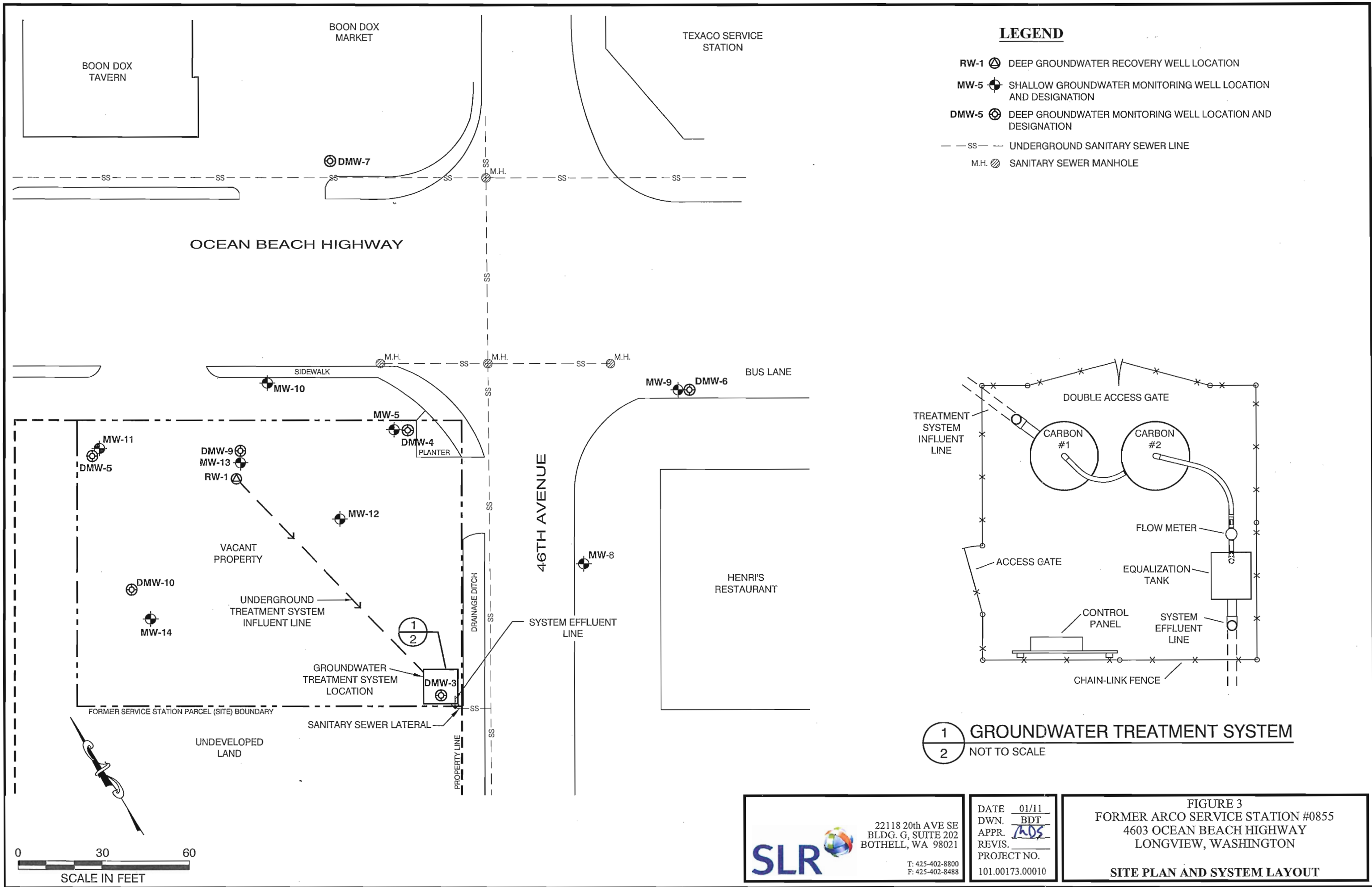
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DWN. BDT
APPR. [Signature]
REVIS.
PROJECT NO.
101.00173.00010

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	22118 20th AVE SE BLDG. G, SUITE 202 BOTHELL, WA 98021	DATE 01/11 DWN. BDT APPR. MDS REVIS. PROJECT NO. 101.00173.00010	FIGURE 2 FORMER ARCO SERVICE STATION #0855 4603 OCEAN BEACH HIGHWAY LONGVIEW, WASHINGTON DEEP GROUNDWATER ELEVATIONS - SEPT. 14, 2010 (NON-PUMPING CONDITIONS)
	T: 425-402-8800 F: 425-402-8488		

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SLR 

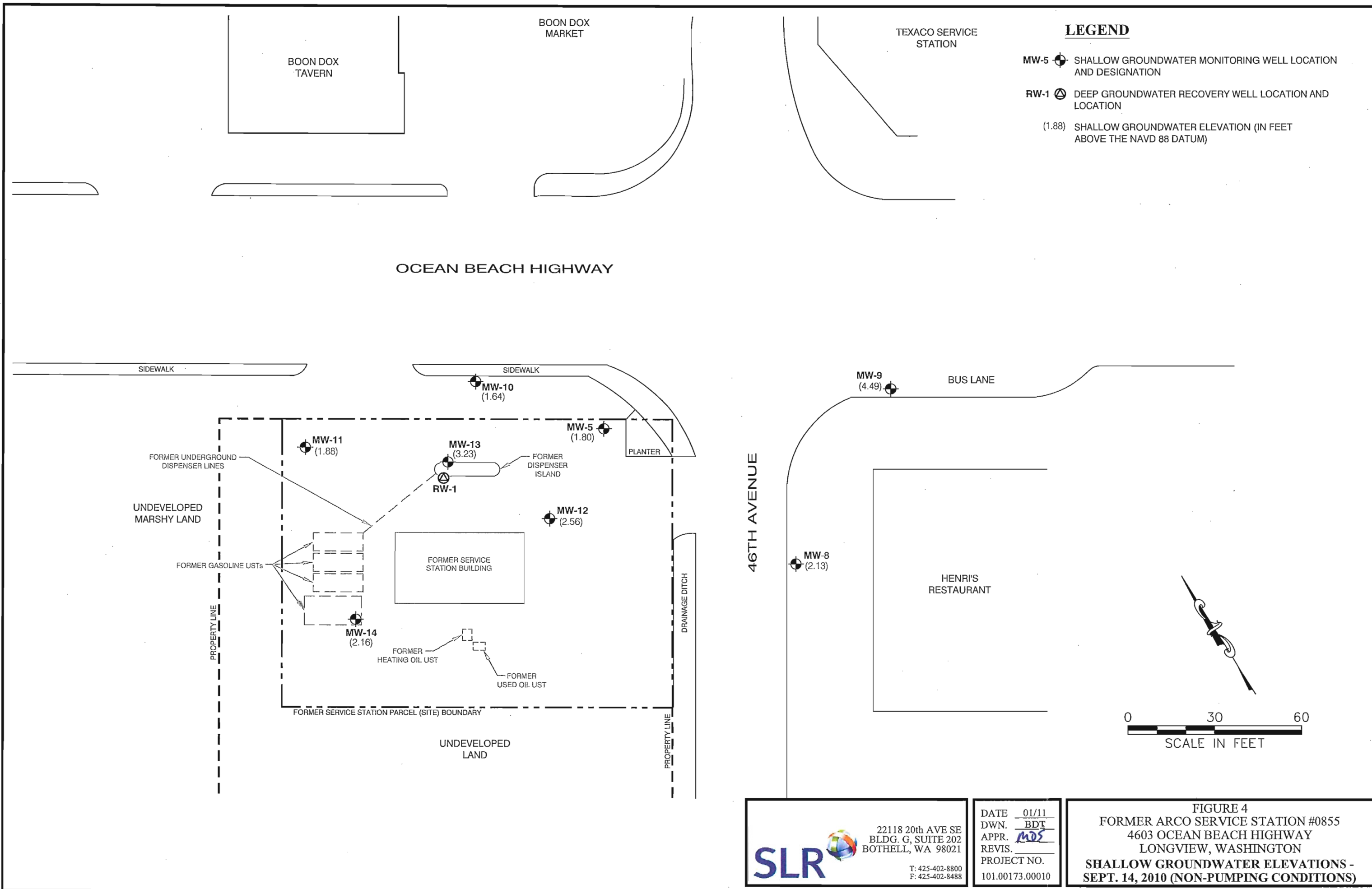
22118 20th AVE SE
BLDG. G, SUITE 202
BOTHELL, WA 98021


T: 425-402-8800
F: 425-402-8488

DATE	01/11
DWN.	BDT
APPR.	<i>ADS</i>
REVIS.	
PROJECT NO.	101.00173.00010

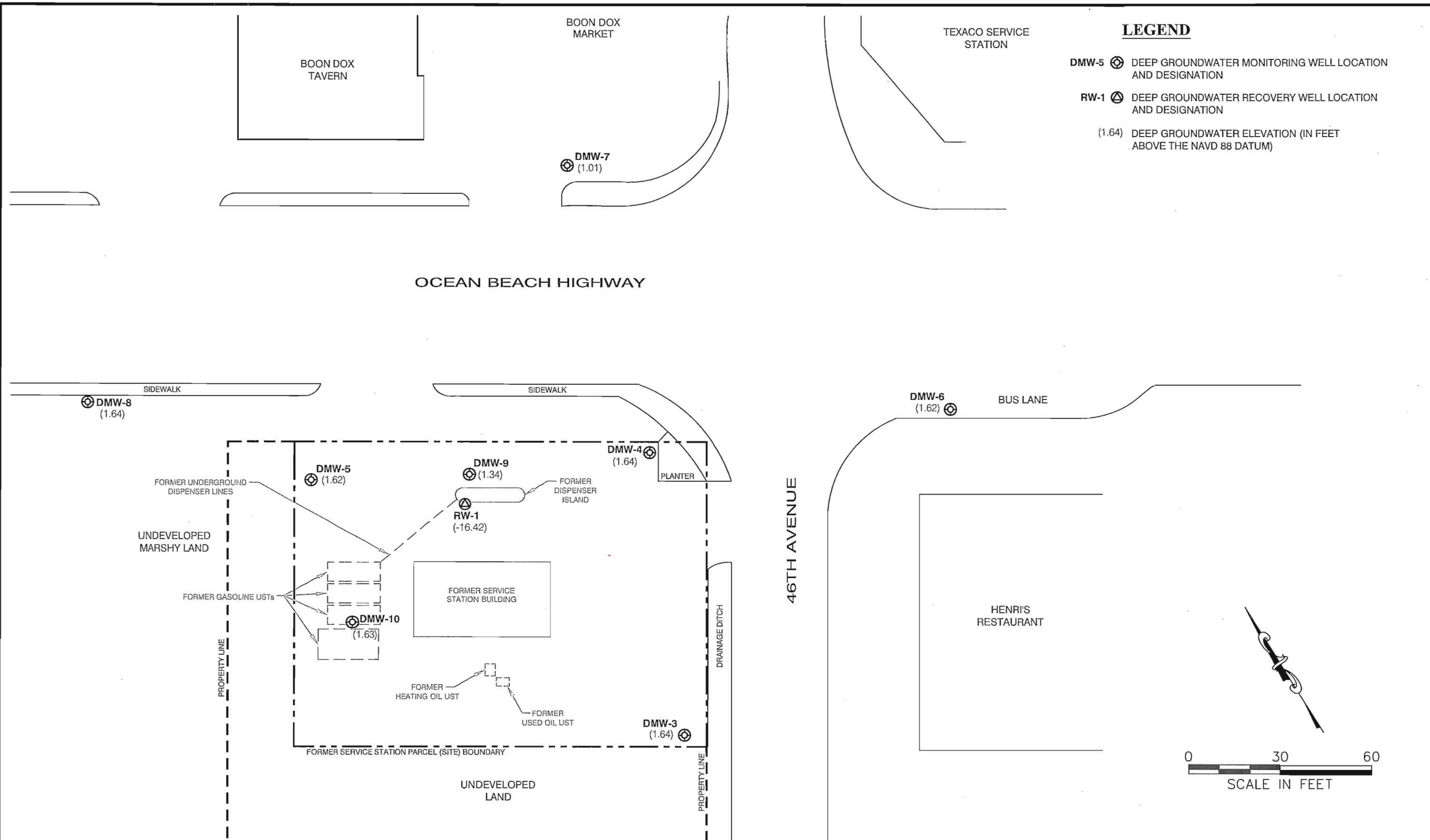
FIGURE 3
FORMER ARCO SERVICE STATION #0855
4603 OCEAN BEACH HIGHWAY
LONGVIEW, WASHINGTON
SITE PLAN AND SYSTEM LAYOUT



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	22118 20th AVE SE	FIGURE 4 FORMER ARCO SERVICE STATION #0855 4603 OCEAN BEACH HIGHWAY LONGVIEW, WASHINGTON SHALLOW GROUNDWATER ELEVATIONS - SEPT. 14, 2010 (NON-PUMPING CONDITIONS)
	BLDG. G, SUITE 202	
	BOTHELL, WA 98021	
	T: 425-402-8800	
	F: 425-402-8488	
DATE 01/11		
DWN. BDT		
APPR. <i>MDS</i>		
REVIS.		
PROJECT NO.		
101.00173.00010		

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	22118 20th AVE SE	FIGURE 5 FORMER ARCO SERVICE STATION #0855 4603 OCEAN BEACH HIGHWAY LONGVIEW, WASHINGTON DEEP GROUNDWATER ELEVATIONS - SEPTEMBER 30, 2010 (SYSTEM OPERATING)
	BLDG. G, SUITE 202	
	BOTHELL, WA 98021	
	T: 425-402-8800	
	F: 425-402-8488	
DATE 01/11		
DWN. BDT		
APPR. 		
REVIS.		
PROJECT NO. 101.00173.00010		

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BOON DOX
MARKET

BOON DOX
TAVERN

TEXACO SERVICE
STATION

LEGEND

MW-5  SHALLOW GROUNDWATER MONITORING WELL LOCATION
AND DESIGNATION

RW-1  DEEP GROUNDWATER RECOVERY WELL LOCATION AND
LOCATION

(2.56) SHALLOW GROUNDWATER ELEVATION (IN FEET
ABOVE THE NAVD 88 DATUM)

NOTE: AT THE TIME OF THE SHALLOW GROUNDWATER LEVEL
MEASUREMENTS, THE GROUNDWATER ELEVATION IN
THE DEEP GROUNDWATER RECOVERY WELL WAS
-16.42 FEET ABOVE THE NAVD 88 DATUM.

OCEAN BEACH HIGHWAY

SIDEWALK

SIDEWALK

MW-10
(2.56)

MW-5
(2.71)

MW-11
(2.55)

MW-13
(6.92)

RW-1

MW-12
(3.36)

UNDEVELOPED
MARSHY LAND

FORMER UNDERGROUND
DISPENSER LINES

FORMER GASOLINE USTs

FORMER SERVICE
STATION BUILDING

PLANTER

FORMER DISPENSER
ISLAND

MW-14
(6.29)

FORMER
HEATING OIL UST

FORMER
USED OIL UST

FORMER SERVICE STATION PARCEL (SITE) BOUNDARY

UNDEVELOPED
LAND

DRAINAGE DITCH

46TH AVENUE

MW-9
(4.72)

BUS LANE

MW-8
(2.19)

HENRI'S
RESTAURANT

0 30 60
SCALE IN FEET

SLR



22118 20th AVE SE
BLDG. G, SUITE 202
BOTHELL, WA 98021

T: 425-402-8800
F: 425-402-8488

DATE 01/11
DWN. BDT
APPR. *MD*
REVIS.
PROJECT NO.
101.00173.00010

FIGURE 6
FORMER ARCO SERVICE STATION #0855
4603 OCEAN BEACH HIGHWAY
LONGVIEW, WASHINGTON
SHALLOW GROUNDWATER ELEVATIONS -
SEPTEMBER 30, 2010 (SYSTEM OPERATING)

APPENDIX A
LABORATORY ANALYTICAL REPORTS

October 26, 2009

Analytical Report for Service Request No: K0909893

Mike Staton
SLR International
22122 SE 20th Bldg H
Bothell, WA 98021

RE: Longview/001.0173.00010

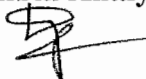
Dear Mike:

Enclosed are the results of the rush samples submitted to our laboratory on October 15, 2009. For your reference, these analyses have been assigned our service request number K0909893.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.caslab.com. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please call if you have any questions. My extension is 3281. You may also contact me via Email at PDivvela@caslab.com.

Respectfully submitted,

Columbia Analytical Services, Inc.

Pradeep Divvela
Project Chemist

PD/cw

Page 1 of 20

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated concentration that is less than the MRL or LOQ but greater than or equal to the MDL or LOD.
The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.1 definition* :
- U Analyte was not detected and is reported as less than the LOD or as defined by the project. The LOD has been adjusted for dilution.
- i The MRL/MDL or LOQ/LOD has been elevated due to a matrix interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.

Metals Data Qualifiers

- # The control limit criteria is not applicable. See case narrative.
- J The result is an estimated concentration that is less than the MRL or LOQ but greater than or equal to the MDL or LOD.
- E The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
- M The duplicate injection precision was not met.
- N The Matrix Spike sample recovery is not within control limits. See case narrative.
- S The reported value was determined by the Method of Standard Additions (MSA).
The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.1 definition* :
- U Analyte was not detected and is reported as less than the LOD or as defined by the project. The LOD has been adjusted for any dilution or
- W The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
- i The MRL/MDL or LOQ/LOD has been elevated due to a matrix interference.
- X See case narrative.
- + The correlation coefficient for the MSA is less than 0.995.
- Q See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- A A tentatively identified compound, a suspected aldol-condensation product.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result.
- C The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
- D The reported result is from a dilution.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
- N The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
- P The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.1 definition* :
- U Analyte was not detected and is reported as less than the LOD or as defined by the project. The LOD has been adjusted for any dilution or
- i The MRL/MDL or LOQ/LOD has been elevated due to a chromatographic interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

- F The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
- L The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
- H The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
- O The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
- Y The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
- Z The chromatographic fingerprint does not resemble a petroleum product.

Columbia Analytical Services, Inc.
Kelso, WA
State Certifications, Accreditations, and Licenses

Program	Number
Alaska DEC UST	UST-040
Arizona DHS	AZ0339
Arkansas - DEQ	88-0637
California DHS	2286
Colorado DPHE	-
Florida DOH	E87412
Hawaii DOH	-
Idaho DHW	-
Indiana DOH	C-WA-01
Louisiana DEQ	3016
Louisiana DHH	LA050010
Maine DHS	WA0035
Michigan DEQ	9949
Minnesota DOH	053-999-368
Montana DPHHS	CERT0047
Nevada DEP	WA35
New Jersey DEP	WA005
New Mexico ED	-
North Carolina DWQ	605
Oklahoma DEQ	9801
Oregon - DHS	WA200001
South Carolina DHEC	61002
Utah DOH	COLU
Washington DOE	C1203
Wisconsin DNR	998386840
Wyoming (EPA Region 8)	-

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Longview/001.0173.00010
Sample Matrix: Water

Service Request: K0909893
Date Collected: 10/15/2009
Date Received: 10/15/2009

Gasoline Range Organics

Sample Name: INF-101509
Lab Code: K0909893-001
Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTP	ND	U	250	1	10/19/09	10/19/09	KWG0909761	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	101	50-150	10/19/09	Acceptable

Comments: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Longview/001.0173.00010
Sample Matrix: Water

Service Request: K0909893
Date Collected: 10/15/2009
Date Received: 10/15/2009

Gasoline Range Organics

Sample Name: EFF1-101509
Lab Code: K0909893-002
Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTP	ND	U	250	1	10/19/09	10/19/09	KWG0909761	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	101	50-150	10/19/09	Acceptable

Comments: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Longview/001.0173.00010
Sample Matrix: Water

Service Request: K0909893
Date Collected: 10/15/2009
Date Received: 10/15/2009

Gasoline Range Organics

Sample Name: EFF2-101509
Lab Code: K0909893-003
Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTP	ND	U	250	1	10/19/09	10/19/09	KWG0909761	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	101	50-150	10/19/09	Acceptable

Comments: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Longview/001.0173.00010
Sample Matrix: Water

Service Request: K0909893
Date Collected: NA
Date Received: NA

Gasoline Range Organics

Sample Name: Method Blank
Lab Code: KWG0909761-3
Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTP	ND	U	250	1	10/19/09	10/19/09	KWG0909761	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	101	50-150	10/19/09	Acceptable

Comments: _____

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: SLR International
Project: Longview/001.0173.00010
Sample Matrix: Water

Service Request: K0909893

Surrogate Recovery Summary
Gasoline Range Organics

Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: PERCENT
Level: Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>
INF-101509	K0909893-001	101
EFF1-101509	K0909893-002	101
EFF2-101509	K0909893-003	101
EFF1-101509DUP	KWG0909761-1	101
Method Blank	KWG0909761-3	101
Lab Control Sample	KWG0909761-2	105

Surrogate Recovery Control Limits (%)

Sur1 = 1,4-Difluorobenzene 50-150

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: SLR International
Project: Longview/001.0173.00010
Sample Matrix: Water

Service Request: K0909893
Date Extracted: 10/19/2009
Date Analyzed: 10/19/2009

Duplicate Sample Summary
Gasoline Range Organics

Sample Name: EFF1-101509
Lab Code: K0909893-002
Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG0909761

Analyte Name	MRL	Sample Result	EFF1-101509DUP KWG0909761-1 Duplicate Sample		Relative Percent Difference	RPD Limit
			Result	Average		
Gasoline Range Organics-NWTPH	250	ND	ND	ND	-	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: SLR International
Project: Longview/001.0173.00010
Sample Matrix: Water

Service Request: K0909893
Date Extracted: 10/19/2009
Date Analyzed: 10/19/2009

Lab Control Spike Summary
Gasoline Range Organics

Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG0909761

Analyte Name	Lab Control Sample KWG0909761-2 Lab Control Spike			%Rec Limits
	Result	Expected	%Rec	
Gasoline Range Organics-NWTPH	442	500	88	80-119

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Longview/001.0173.00010
Sample Matrix: Water

Service Request: K0909893
Date Collected: 10/15/2009
Date Received: 10/15/2009

Volatile Organics by GC/MS

Sample Name: INF-101509
Lab Code: K0909893-001
Extraction Method: EPA 5030B
Analysis Method: 8260B

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	65	D	5.0	10	10/22/09	10/22/09	KWG0909840	
Toluene	ND	U	0.50	1	10/22/09	10/22/09	KWG0909840	
Ethylbenzene	1.6		0.50	1	10/22/09	10/22/09	KWG0909840	
m,p-Xylenes	3.2		0.50	1	10/22/09	10/22/09	KWG0909840	
o-Xylene	ND	U	0.50	1	10/22/09	10/22/09	KWG0909840	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,1-Dibromofluoromethane	97	73-122	10/22/09	Acceptable
Toluene-d8	114	78-129	10/22/09	Acceptable
1-Bromofluorobenzene	93	68-117	10/22/09	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Longview/001.0173.00010
Sample Matrix: Water

Service Request: K0909893
Date Collected: 10/15/2009
Date Received: 10/15/2009

Volatile Organics by GC/MS

Sample Name: EFF1-101509
Lab Code: K0909893-002
Extraction Method: EPA 5030B
Analysis Method: 8260B

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	ND	U	0.50	1	10/22/09	10/22/09	KWG0909840	
Toluene	ND	U	0.50	1	10/22/09	10/22/09	KWG0909840	
Ethylbenzene	ND	U	0.50	1	10/22/09	10/22/09	KWG0909840	
m,p-Xylenes	ND	U	0.50	1	10/22/09	10/22/09	KWG0909840	
o-Xylene	ND	U	0.50	1	10/22/09	10/22/09	KWG0909840	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	96	73-122	10/22/09	Acceptable
Toluene-d8	116	78-129	10/22/09	Acceptable
4-Bromofluorobenzene	90	68-117	10/22/09	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Longview/001.0173.00010
Sample Matrix: Water

Service Request: K0909893
Date Collected: 10/15/2009
Date Received: 10/15/2009

Volatile Organics by GC/MS

Sample Name: EFF2-101509
Lab Code: K0909893-003
Extraction Method: EPA 5030B
Analysis Method: 8260B

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	ND	U	0.50	1	10/22/09	10/22/09	KWG0909840	
toluene	ND	U	0.50	1	10/22/09	10/22/09	KWG0909840	
ethylbenzene	ND	U	0.50	1	10/22/09	10/22/09	KWG0909840	
m,p-Xylenes	ND	U	0.50	1	10/22/09	10/22/09	KWG0909840	
Xylene	ND	U	0.50	1	10/22/09	10/22/09	KWG0909840	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
tribromofluoromethane	98	73-122	10/22/09	Acceptable
toluene-d8	117	78-129	10/22/09	Acceptable
Bromofluorobenzene	93	68-117	10/22/09	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Longview/001.0173.00010
Sample Matrix: Water

Service Request: K0909893
Date Collected: NA
Date Received: NA

Volatile Organics by GC/MS

Sample Name: Method Blank
Lab Code: KWG0909840-4
Extraction Method: EPA 5030B
Analysis Method: 8260B

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	ND	U	0.50	1	10/22/09	10/22/09	KWG0909840	
Toluene	ND	U	0.50	1	10/22/09	10/22/09	KWG0909840	
Ethylbenzene	ND	U	0.50	1	10/22/09	10/22/09	KWG0909840	
m,p-Xylenes	ND	U	0.50	1	10/22/09	10/22/09	KWG0909840	
o-Xylene	ND	U	0.50	1	10/22/09	10/22/09	KWG0909840	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	95	73-122	10/22/09	Acceptable
Toluene-d8	115	78-129	10/22/09	Acceptable
4-Bromofluorobenzene	93	68-117	10/22/09	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: SLR International
Project: Longview/001.0173.00010
Sample Matrix: Water

Service Request: K0909893

Surrogate Recovery Summary
Volatile Organics by GC/MS

Extraction Method: EPA 5030B
Analysis Method: 8260B

Units: PERCENT
Level: Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>	<u>Sur2</u>	<u>Sur3</u>
NF-101509	K0909893-001	97	114	93
FF1-101509	K0909893-002	96	116	90
FF2-101509	K0909893-003	98	117	93
Method Blank	KWG0909840-4	95	115	93
Batch QC	K0909863-037	95	116	92
Batch QCMS	KWG0909840-1	103	120	98
Batch QCDMS	KWG0909840-2	102	118	97
Lab Control Sample	KWG0909840-3	101	120	99

Surrogate Recovery Control Limits (%)

Sur1 = Dibromofluoromethane	73-122
Sur2 = Toluene-d8	78-129
Sur3 = 4-Bromofluorobenzene	68-117

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: SLR International
Project: Longview/001.0173.00010
Sample Matrix: Water

Service Request: K0909893
Date Extracted: 10/22/2009
Date Analyzed: 10/22/2009

Matrix Spike/Duplicate Matrix Spike Summary
Volatile Organics by GC/MS

Sample Name: Batch QC
Lab Code: K0909863-037
Extraction Method: EPA 5030B
Analysis Method: 8260B

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG0909840

Analyte Name	Sample Result	Batch QCMS KWG0909840-1 Matrix Spike			Batch QCDMS KWG0909840-2 Duplicate Matrix Spike			%Rec Limits	RPD	RPD Limit
		Result	Expected	%Rec	Result	Expected	%Rec			
Benzene	ND	9.94	10.0	99	9.69	10.0	97	69-126	3	30
Toluene	ND	10.0	10.0	100	9.71	10.0	97	66-128	3	30
Ethylbenzene	ND	9.71	10.0	97	9.66	10.0	97	65-126	1	30
m,p-Xylenes	ND	19.7	20.0	98	19.5	20.0	97	63-130	1	30
o-Xylene	ND	9.46	10.0	95	9.35	10.0	94	65-130	1	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: SLR International
Project: Longview/001.0173.00010
Sample Matrix: Water

Service Request: K0909893
Date Extracted: 10/22/2009
Date Analyzed: 10/22/2009

Lab Control Spike Summary
Volatile Organics by GC/MS

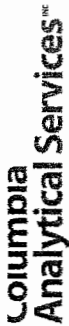
Extraction Method: EPA 5030B
Analysis Method: 8260B

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG0909840

Analyte Name	Lab Control Sample KWG0909840-3 Lab Control Spike			%Rec Limits
	Result	Expected	%Rec	
benzene	9.99	10.0	100	74-118
toluene	9.92	10.0	99	74-117
ethylbenzene	9.83	10.0	98	71-118
m,p-Xylenes	19.7	20.0	98	73-119
o-Xylene	9.52	10.0	95	74-120

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.



SR#: K04061842

PAGE / OF / COC #

[illegible]

November 24, 2009

Analytical Report for Service Request No: K0911201

Mike Staton
SLR International
22122 SE 20th Bldg H
Bothell, WA 98021

RE: Arco Longview/001.0173.00010

Dear Mike:

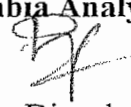
Enclosed are the results of the rush samples submitted to our laboratory on November 17, 2009. For your reference, these analyses have been assigned our service request number K0911201.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.caslab.com. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please call if you have any questions. My extension is 3281. You may also contact me via Email at PDivvela@caslab.com.

Respectfully submitted,

Columbia Analytical Services, Inc.



Pradeep Divvela
Project Chemist

PD/cw

Page 1 of 20

cc: Chris Kramer, SLR International, West Linn, OR

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated concentration that is less than the MRL or LOQ but greater than or equal to the MDL or LOD.
The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.1 definition* :
- U Analyte was not detected and is reported as less than the LOD or as defined by the project. The LOD has been adjusted for dilution.
- i The MRL/MDL or LOQ/LOD has been elevated due to a matrix interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.

Metals Data Qualifiers

- # The control limit criteria is not applicable. See case narrative.
- J The result is an estimated concentration that is less than the MRL or LOQ but greater than or equal to the MDL or LOD.
- E The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
- M The duplicate injection precision was not met.
- N The Matrix Spike sample recovery is not within control limits. See case narrative.
- S The reported value was determined by the Method of Standard Additions (MSA).
The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.1 definition* :
- U Analyte was not detected and is reported as less than the LOD or as defined by the project. The LOD has been adjusted for any dilution or
- W The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
- i The MRL/MDL or LOQ/LOD has been elevated due to a matrix interference.
- X See case narrative.
- + The correlation coefficient for the MSA is less than 0.995.
- Q See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- A A tentatively identified compound, a suspected aldol-condensation product.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result.
- C The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
- D The reported result is from a dilution.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
- N The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
- P The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.1 definition* :
- U Analyte was not detected and is reported as less than the LOD or as defined by the project. The LOD has been adjusted for any dilution or
- i The MRL/MDL or LOQ/LOD has been elevated due to a chromatographic interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

- F The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
- L The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
- H The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
- O The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
- Y The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
- Z The chromatographic fingerprint does not resemble a petroleum product.

Columbia Analytical Services, Inc.
Kelso, WA
State Certifications, Accreditations, and Licenses

Program	Number
Alaska DEC UST	UST-040
Arizona DHS	AZ0339
Arkansas - DEQ	88-0637
California DHS	2286
Colorado DPHE	-
Florida DOH	E87412
Hawaii DOH	-
Idaho DHW	-
Indiana DOH	C-WA-01
Louisiana DEQ	3016
Louisiana DHH	LA050010
Maine DHS	WA0035
Michigan DEQ	9949
Minnesota DOH	053-999-368
Montana DPHHS	CERT0047
Nevada DEP	WA35
New Jersey DEP	WA005
New Mexico ED	-
North Carolina DWQ	605
Oklahoma DEQ	9801
Oregon - DHS	WA200001
South Carolina DHEC	61002
Utah DOH	COLU
Washington DOE	C1203
Wisconsin DNR	998386840
Wyoming (EPA Region 8)	-

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Arco Longview/001.0173.00010
Sample Matrix: Water

Service Request: K0911201
Date Collected: 11/17/2009
Date Received: 11/17/2009

Gasoline Range Organics

Sample Name: INF1-111709
Lab Code: K0911201-001
Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTP	ND U	250	1	11/23/09	11/23/09	KWG0911123	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	103	50-150	11/23/09	Acceptable

Comments: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Arco Longview/001.0173.00010
Sample Matrix: Water

Service Request: K0911201
Date Collected: 11/17/2009
Date Received: 11/17/2009

Gasoline Range Organics

Sample Name: EFF1-111709
Lab Code: K0911201-002
Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTP	ND	U	250	1	11/23/09	11/23/09	KWG0911123	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	103	50-150	11/23/09	Acceptable

Comments: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Arco Longview/001.0173.00010
Sample Matrix: Water

Service Request: K0911201
Date Collected: 11/17/2009
Date Received: 11/17/2009

Gasoline Range Organics

Sample Name: EFF2-111709
Lab Code: K0911201-003
Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTP	ND	U	250	1	11/23/09	11/23/09	KWG0911123	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	103	50-150	11/23/09	Acceptable

Comments: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Arco Longview/001.0173.00010
Sample Matrix: Water

Service Request: K0911201
Date Collected: NA
Date Received: NA

Gasoline Range Organics

Sample Name: Method Blank
Lab Code: KWG0911123-3
Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTP	ND	U	250	1	11/23/09	11/23/09	KWG0911123	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	103	50-150	11/23/09	Acceptable

Comments: _____

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: SLR International
Project: Arco Longview/001.0173.00010
Sample Matrix: Water

Service Request: K0911201

Surrogate Recovery Summary
Gasoline Range Organics

Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: PERCENT
Level: Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>
INF1-111709	K0911201-001	103
EFF1-111709	K0911201-002	103
EFF2-111709	K0911201-003	103
Batch QCDUP	KWG0911123-1	103
Method Blank	KWG0911123-3	103
Batch QC	K0911115-002	103
Lab Control Sample	KWG0911123-2	107

Surrogate Recovery Control Limits (%)

Sur1 = 1,4-Difluorobenzene 50-150

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: SLR International
Project: Arc0 Longview/001.0173.00010
Sample Matrix: Water

Service Request: K0911201
Date Extracted: 11/22/2009
Date Analyzed: 11/22/2009

Duplicate Sample Summary
Gasoline Range Organics

Sample Name: Batch QC
Lab Code: K0911115-002
Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG0911123

Analyte Name	MRL	Sample Result	Batch QCDUP KWG0911123-1 Duplicate Sample Result	Average	Relative Percent Difference	RPD Limit
Gasoline Range Organics-NWTPH	250	ND	ND	ND	-	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: SLR International
Project: Arco Longview/001.0173.00010
Sample Matrix: Water

Service Request: K0911201
Date Extracted: 11/23/2009
Date Analyzed: 11/23/2009

Lab Control Spike Summary
Gasoline Range Organics

Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG0911123

Analyte Name	Lab Control Sample KWG0911123-2 Lab Control Spike			%Rec Limits
	Result	Expected	%Rec	
Gasoline Range Organics-NWTPH	449	500	90	80-119

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Analytical Results

Client: SLR International
 Project: Arco Longview/001.0173.00010
 Sample Matrix: Water

Service Request: K0911201
 Date Collected: 11/17/2009
 Date Received: 11/17/2009

Volatile Organics by GC/MS

Sample Name: INF1-111709
 Lab Code: K0911201-001
 Extraction Method: EPA 5030B
 Analysis Method: 8260B

Units: ug/L
 Basis: NA
 Level: Low

Analyte Name	Result Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	67	0.50	1	11/20/09	11/20/09	KWG0910938	
Toluene	ND U	0.50	1	11/20/09	11/20/09	KWG0910938	
Ethylbenzene	1.4	0.50	1	11/20/09	11/20/09	KWG0910938	
m,p-Xylenes	3.2	0.50	1	11/20/09	11/20/09	KWG0910938	
o-Xylene	ND U	0.50	1	11/20/09	11/20/09	KWG0910938	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	100	73-122	11/20/09	Acceptable
Toluene-d8	103	78-129	11/20/09	Acceptable
m-Bromofluorobenzene	92	68-117	11/20/09	Acceptable

Comments:

Analytical Results

Client: SLR International
 Project: Arco Longview/001.0173.00010
 Sample Matrix: Water

Service Request: K0911201
 Date Collected: 11/17/2009
 Date Received: 11/17/2009

Volatile Organics by GC/MS

Sample Name: EFF1-111709
 Lab Code: K0911201-002
 Extraction Method: EPA 5030B
 Analysis Method: 8260B

Units: ug/L
 Basis: NA
 Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	ND	U	0.50	1	11/20/09	11/20/09	KWG0910938	
Toluene	ND	U	0.50	1	11/20/09	11/20/09	KWG0910938	
Ethylbenzene	ND	U	0.50	1	11/20/09	11/20/09	KWG0910938	
m,p-Xylenes	ND	U	0.50	1	11/20/09	11/20/09	KWG0910938	
o-Xylene	ND	U	0.50	1	11/20/09	11/20/09	KWG0910938	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	105	73-122	11/20/09	Acceptable
Toluene-d8	105	78-129	11/20/09	Acceptable
4-Bromofluorobenzene	87	68-117	11/20/09	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Arco Longview/001.0173.00010
Sample Matrix: Water

Service Request: K0911201
Date Collected: 11/17/2009
Date Received: 11/17/2009

Volatile Organics by GC/MS

Sample Name: EFF2-111709
Lab Code: K0911201-003
Extraction Method: EPA 5030B
Analysis Method: 8260B

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	ND	U	0.50	1	11/20/09	11/20/09	KWG0910938	
Toluene	ND	U	0.50	1	11/20/09	11/20/09	KWG0910938	
Ethylbenzene	ND	U	0.50	1	11/20/09	11/20/09	KWG0910938	
m,p-Xylenes	ND	U	0.50	1	11/20/09	11/20/09	KWG0910938	
o-Xylene	ND	U	0.50	1	11/20/09	11/20/09	KWG0910938	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	103	73-122	11/20/09	Acceptable
Toluene-d8	105	78-129	11/20/09	Acceptable
4-Bromofluorobenzene	88	68-117	11/20/09	Acceptable

Comments: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Arco Longview/001.0173.00010
Sample Matrix: Water

Service Request: K0911201
Date Collected: NA
Date Received: NA

Volatile Organics by GC/MS

Sample Name: Method Blank
Lab Code: KWG0910938-5
Extraction Method: EPA 5030B
Analysis Method: 8260B

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	ND	U	0.50	1	11/19/09	11/19/09	KWG0910938	
Toluene	ND	U	0.50	1	11/19/09	11/19/09	KWG0910938	
Ethylbenzene	ND	U	0.50	1	11/19/09	11/19/09	KWG0910938	
m,p-Xylenes	ND	U	0.50	1	11/19/09	11/19/09	KWG0910938	
o-Xylene	ND	U	0.50	1	11/19/09	11/19/09	KWG0910938	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	99	73-122	11/19/09	Acceptable
Toluene-d8	104	78-129	11/19/09	Acceptable
4-Bromofluorobenzene	91	68-117	11/19/09	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: SLR International
Project: Arco Longview/001.0173.00010
Sample Matrix: Water

Service Request: K0911201

Surrogate Recovery Summary
Volatile Organics by GC/MS

Extraction Method: EPA 5030B
Analysis Method: 8260B

Units: PERCENT
Level: Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>	<u>Sur2</u>	<u>Sur3</u>
INF1-111709	K0911201-001	100	103	92
EFF1-111709	K0911201-002	105	105	87
EFF2-111709	K0911201-003	103	105	88
Method Blank	KWG0910938-5	99	104	91
EFF1-111709MS	KWG0910938-1	103	110	97
EFF1-111709DMS	KWG0910938-2	102	110	98
Lab Control Sample	KWG0910938-3	100	109	97
Duplicate Lab Control Sample	KWG0910938-4	102	111	96

Surrogate Recovery Control Limits (%)

Sur1 = Dibromofluoromethane	73-122
Sur2 = Toluene-d8	78-129
Sur3 = 4-Bromofluorobenzene	68-117

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Client: SLR International
 Project: Arco Longview/001.0173.00010
 Sample Matrix: Water

Service Request: K0911201
 Date Extracted: 11/19/2009
 Date Analyzed: 11/19/2009

Matrix Spike/Duplicate Matrix Spike Summary
Volatile Organics by GC/MS

Sample Name: EFF1-111709
 Lab Code: K0911201-002
 Extraction Method: EPA 5030B
 Analysis Method: 8260B

Units: ug/L
 Basis: NA
 Level: Low
 Extraction Lot: KWG0910938

Analyte Name	Sample Result	EFF1-111709MS KWG0910938-1 Matrix Spike			EFF1-111709DMS KWG0910938-2 Duplicate Matrix Spike			%Rec Limits	RPD	RPD Limit
		Result	Expected	%Rec	Result	Expected	%Rec			
Benzene	ND	9.62	10.0	96	9.49	10.0	95	69-126	1	30
Toluene	ND	9.48	10.0	95	9.35	10.0	94	66-128	1	30
Ethylbenzene	ND	9.42	10.0	94	9.41	10.0	94	65-126	0	30
m,p-Xylenes	ND	18.4	20.0	92	18.6	20.0	93	63-130	1	30
o-Xylene	ND	8.90	10.0	89	9.08	10.0	91	65-130	2	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: SLR International
Project: Arco Longview/001.0173.00010
Sample Matrix: Water

Service Request: K0911201
Date Extracted: 11/19/2009
Date Analyzed: 11/19/2009

Lab Control Spike/Duplicate Lab Control Spike Summary
Volatile Organics by GC/MS

Extraction Method: EPA 5030B
Analysis Method: 8260B

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG0910938

Analyte Name	Lab Control Sample KWG0910938-3 Lab Control Spike			Duplicate Lab Control Sample KWG0910938-4 Duplicate Lab Control Spike			%Rec Limits	RPD	RPD Limit
	Result	Expected	%Rec	Result	Expected	%Rec			
Benzene	9.84	10.0	98	9.84	10.0	98	74-118	0	30
Toluene	9.65	10.0	97	9.62	10.0	96	74-117	0	30
Ethylbenzene	9.87	10.0	99	9.52	10.0	95	71-118	4	30
m,p-Xylenes	19.3	20.0	97	18.5	20.0	93	73-119	4	30
o-Xylene	9.30	10.0	93	8.93	10.0	89	74-120	4	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.



SR#: K041201

PAGE _____ OF _____ COC # _____

[illegible]

December 21, 2009

Analytical Report for Service Request No: K0912064

Mike Staton
SLR International
22122 SE 20th Bldg H
Bothell, WA 98021

RE: Longview-Former ARCO/001.0173.00010

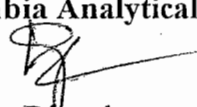
Dear Mike:

Enclosed are the results of the rush samples submitted to our laboratory on December 14, 2009. For your reference, these analyses have been assigned our service request number K0912064.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.caslab.com. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please call if you have any questions. My extension is 3281. You may also contact me via Email at PDivvela@caslab.com.

Respectfully submitted,

Columbia Analytical Services, Inc.
Pradeep Divvela
Project Chemist

PD/ln

Page 1 of 20

cc: Chris Kramer, SLR International, West Linn, OR

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated concentration that is less than the MRL or LOQ but greater than or equal to the MDL or LOD.
The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.1 definition:*
- U Analyte was not detected and is reported as less than the LOD or as defined by the project. The LOD has been adjusted for dilution.
- i The MRL/MDL or LOQ/LOD has been elevated due to a matrix interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.

Metals Data Qualifiers

- # The control limit criteria is not applicable. See case narrative.
- J The result is an estimated concentration that is less than the MRL or LOQ but greater than or equal to the MDL or LOD.
- E The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
- M The duplicate injection precision was not met.
- N The Matrix Spike sample recovery is not within control limits. See case narrative.
- S The reported value was determined by the Method of Standard Additions (MSA).
The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.1 definition:*
- U Analyte was not detected and is reported as less than the LOD or as defined by the project. The LOD has been adjusted for any dilution or
- W The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
- i The MRL/MDL or LOQ/LOD has been elevated due to a matrix interference.
- X See case narrative.
- + The correlation coefficient for the MSA is less than 0.995.
- Q See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- A A tentatively identified compound, a suspected aldol-condensation product.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result.
- C The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
- D The reported result is from a dilution.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
- N The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
- P The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.1 definition:*
- U Analyte was not detected and is reported as less than the LOD or as defined by the project. The LOD has been adjusted for any dilution or
- i The MRL/MDL or LOQ/LOD has been elevated due to a chromatographic interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

- F The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
- L The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
- H The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
- O The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
- ~ The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
- Z The chromatographic fingerprint does not resemble a petroleum product.

Columbia Analytical Services, Inc.
Kelso, WA
State Certifications, Accreditations, and Licenses

Program	Number
Alaska DEC UST	UST-040
Arizona DHS	AZ0339
Arkansas - DEQ	88-0637
California DHS	2286
Colorado DPHE	-
Florida DOH	E87412
Hawaii DOH	-
Idaho DHW	-
Indiana DOH	C-WA-01
Louisiana DEQ	3016
Louisiana DHH	LA050010
Maine DHS	WA0035
Michigan DEQ	9949
Minnesota DOH	053-999-368
Montana DPHHS	CERT0047
Nevada DEP	WA35
New Jersey DEP	WA005
New Mexico ED	-
North Carolina DWQ	605
Oklahoma DEQ	9801
Oregon - DHS	WA200001
South Carolina DHEC	61002
Utah DOH	COLU
Washington DOE	C1203
Wisconsin DNR	998386840
Wyoming (EPA Region 8)	-

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Longview-Former ARCO/001.0173.00010
Sample Matrix: Water

Service Request: K0912064
Date Collected: 12/14/2009
Date Received: 12/14/2009

Gasoline Range Organics

Sample Name: INF-121409
Lab Code: K0912064-001
Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTP	ND	U	250	1	12/15/09	12/15/09	KWG0911806	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	104	50-150	12/15/09	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Longview-Former ARCO/001.0173.00010
Sample Matrix: Water

Service Request: K0912064
Date Collected: 12/14/2009
Date Received: 12/14/2009

Gasoline Range Organics

Sample Name: EFF1-121409
Lab Code: K0912064-002
Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTP	ND	U	250	1	12/15/09	12/15/09	KWG0911806	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	104	50-150	12/15/09	Acceptable

Comments: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Longview-Former ARCO/001.0173.00010
Sample Matrix: Water

Service Request: K0912064
Date Collected: 12/14/2009
Date Received: 12/14/2009

Gasoline Range Organics

Sample Name: EFF2-121409
Lab Code: K0912064-003
Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTP	ND	U	250	1	12/15/09	12/15/09	KWG0911806	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	104	50-150	12/15/09	Acceptable

Comments: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Longview-Former ARCO/001.0173.00010
Sample Matrix: Water

Service Request: K0912064
Date Collected: NA
Date Received: NA

Gasoline Range Organics

Sample Name: Method Blank
Lab Code: KWG0911806-3
Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTP	ND	U	250	1	12/15/09	12/15/09	KWG0911806	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	104	50-150	12/15/09	Acceptable

Comments: _____

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: SLR International
Project: Longview-Former ARCO/001.0173.00010
Sample Matrix: Water

Service Request: K0912064

Surrogate Recovery Summary
Gasoline Range Organics

Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: PERCENT
Level: Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>
INF-121409	K0912064-001	104
EFF1-121409	K0912064-002	104
EFF2-121409	K0912064-003	104
EFF1-121409DUP	KWG0911806-1	104
Method Blank	KWG0911806-3	104
Lab Control Sample	KWG0911806-2	109

Surrogate Recovery Control Limits (%)

Sur1 = 1,4-Difluorobenzene 50-150

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: SLR International
Project: Longview-Former ARCO/001.0173.00010
Sample Matrix: Water

Service Request: K0912064
Date Extracted: 12/15/2009
Date Analyzed: 12/15/2009

Duplicate Sample Summary
Gasoline Range Organics

Sample Name: EFF1-121409
Lab Code: K0912064-002
Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG0911806

Analyte Name	MRL	Sample Result	EFF1-121409DUP KWG0911806-1 Duplicate Sample		Relative Percent Difference	RPD Limit
			Result	Average		
Gasoline Range Organics-NWTPH	250	ND	ND	ND	-	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: SLR International
Project: Longview-Former ARCO/001.0173.00010
Sample Matrix: Water

Service Request: K0912064
Date Extracted: 12/15/2009
Date Analyzed: 12/15/2009

Lab Control Spike Summary
Gasoline Range Organics

Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG0911806

Analyte Name	Lab Control Sample KWG0911806-2 Lab Control Spike			%Rec Limits
	Result	Expected	%Rec	
Gasoline Range Organics-NWTPH	489	500	98	80-119

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Longview-Former ARCO/001.0173.00010
Sample Matrix: Water

Service Request: K0912064
Date Collected: 12/14/2009
Date Received: 12/14/2009

Volatile Organics by GC/MS

Sample Name: INF-121409
Lab Code: K0912064-001
Extraction Method: EPA 5030B
Analysis Method: 8260B

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	50		0.50	1	12/17/09	12/17/09	KWG0911910	
Toluene	ND	U	0.50	1	12/17/09	12/17/09	KWG0911910	
Ethylbenzene	0.72		0.50	1	12/17/09	12/17/09	KWG0911910	
m,p-Xylenes	1.7		0.50	1	12/17/09	12/17/09	KWG0911910	
o-Xylene	ND	U	0.50	1	12/17/09	12/17/09	KWG0911910	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	102	73-122	12/17/09	Acceptable
Toluene-d8	97	78-129	12/17/09	Acceptable
1-Bromofluorobenzene	86	68-117	12/17/09	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Longview-Former ARCO/001.0173.00010
Sample Matrix: Water

Service Request: K0912064
Date Collected: 12/14/2009
Date Received: 12/14/2009

Volatile Organics by GC/MS

Sample Name: EFF1-121409
Lab Code: K0912064-002
Extraction Method: EPA 5030B
Analysis Method: 8260B

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	ND	U	0.50	1	12/17/09	12/17/09	KWG0911910	
Toluene	ND	U	0.50	1	12/17/09	12/17/09	KWG0911910	
Ethylbenzene	ND	U	0.50	1	12/17/09	12/17/09	KWG0911910	
m,p-Xylenes	ND	U	0.50	1	12/17/09	12/17/09	KWG0911910	
o-Xylene	ND	U	0.50	1	12/17/09	12/17/09	KWG0911910	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	110	73-122	12/17/09	Acceptable
Toluene-d8	105	78-129	12/17/09	Acceptable
4-Bromofluorobenzene	81	68-117	12/17/09	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
 Project: Longview-Former ARCO/001.0173.00010
 Sample Matrix: Water

Service Request: K0912064
 Date Collected: 12/14/2009
 Date Received: 12/14/2009

Volatile Organics by GC/MS

Sample Name: EFF2-121409
 Lab Code: K0912064-003
 Extraction Method: EPA 5030B
 Analysis Method: 8260B

Units: ug/L
 Basis: NA
 Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	ND	U	0.50	1	12/17/09	12/17/09	KWG0911910	
Toluene	ND	U	0.50	1	12/17/09	12/17/09	KWG0911910	
Ethylbenzene	ND	U	0.50	1	12/17/09	12/17/09	KWG0911910	
m,p-Xylenes	ND	U	0.50	1	12/17/09	12/17/09	KWG0911910	
o-Xylene	ND	U	0.50	1	12/17/09	12/17/09	KWG0911910	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	111	73-122	12/17/09	Acceptable
Toluene-d8	106	78-129	12/17/09	Acceptable
1-Bromofluorobenzene	78	68-117	12/17/09	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Longview-Former ARCO/001.0173.00010
Sample Matrix: Water

Service Request: K0912064
Date Collected: NA
Date Received: NA

Volatile Organics by GC/MS

Sample Name: Method Blank
Lab Code: KWG0911910-5
Extraction Method: EPA 5030B
Analysis Method: 8260B

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	ND	U	0.50	1	12/17/09	12/17/09	KWG0911910	
Toluene	ND	U	0.50	1	12/17/09	12/17/09	KWG0911910	
Ethylbenzene	ND	U	0.50	1	12/17/09	12/17/09	KWG0911910	
m,p-Xylenes	ND	U	0.50	1	12/17/09	12/17/09	KWG0911910	
o-Xylene	ND	U	0.50	1	12/17/09	12/17/09	KWG0911910	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	107	73-122	12/17/09	Acceptable
Toluene-d8	105	78-129	12/17/09	Acceptable
4-Bromofluorobenzene	84	68-117	12/17/09	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: SLR International
Project: Longview-Former ARCO/001.0173.00010
Sample Matrix: Water

Service Request: K0912064

Surrogate Recovery Summary
Volatile Organics by GC/MS

Extraction Method: EPA 5030B
Analysis Method: 8260B

Units: PERCENT
Level: Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>	<u>Sur2</u>	<u>Sur3</u>
INF-121409	K0912064-001	102	97	86
EFF1-121409	K0912064-002	110	105	81
EFF2-121409	K0912064-003	111	106	78
Method Blank	KWG0911910-5	107	105	84
EFF1-121409MS	KWG0911910-1	103	116	94
EFF1-121409DMS	KWG0911910-2	103	117	95
Lab Control Sample	KWG0911910-3	107	121	93
Duplicate Lab Control Sample	KWG0911910-4	107	120	93

Surrogate Recovery Control Limits (%)

Sur1 = Dibromofluoromethane	73-122
Sur2 = Toluene-d8	78-129
Sur3 = 4-Bromofluorobenzene	68-117

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: SLR International
 Project: Longview-Former ARCO/001.0173.00010
 Sample Matrix: Water

Service Request: K0912064
 Date Extracted: 12/17/2009
 Date Analyzed: 12/17/2009

Matrix Spike/Duplicate Matrix Spike Summary
 Volatile Organics by GC/MS

Sample Name: EFF1-121409
 Lab Code: K0912064-002
 Extraction Method: EPA 5030B
 Analysis Method: 8260B

Units: ug/L
 Basis: NA
 Level: Low
 Extraction Lot: KWG0911910

Analyte Name	Sample Result	EFF1-121409MS KWG0911910-1 Matrix Spike			EFF1-121409DMS KWG0911910-2 Duplicate Matrix Spike			%Rec Limits	RPD	RPD Limit
		Result	Expected	%Rec	Result	Expected	%Rec			
Benzene	ND	11.0	10.0	110	11.1	10.0	111	69-126	1	30
Toluene	ND	11.0	10.0	110	10.9	10.0	109	66-128	1	30
Ethylbenzene	ND	10.8	10.0	108	10.6	10.0	106	65-126	1	30
m,p-Xylenes	ND	21.1	20.0	106	21.2	20.0	106	63-130	0	30
o-Xylene	ND	9.61	10.0	96	9.74	10.0	97	65-130	1	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: SLR International
 Project: Longview-Former ARCO/001.0173.00010
 Sample Matrix: Water

Service Request: K0912064
 Date Extracted: 12/17/2009
 Date Analyzed: 12/17/2009

Lab Control Spike/Duplicate Lab Control Spike Summary
 Volatile Organics by GC/MS

Extraction Method: EPA 5030B
 Analysis Method: 8260B

Units: ug/L
 Basis: NA
 Level: Low
 Extraction Lot: KWG0911910

Analyte Name	Lab Control Sample KWG0911910-3 Lab Control Spike			Duplicate Lab Control Sample KWG0911910-4 Duplicate Lab Control Spike			%Rec Limits	RPD	RPD Limit
	Result	Expected	%Rec	Result	Expected	%Rec			
Benzene	10.8	10.0	108	10.7	10.0	107	74-118	0	30
Toluene	10.6	10.0	106	10.6	10.0	106	74-117	1	30
Ethylbenzene	10.3	10.0	103	10.2	10.0	102	71-118	1	30
m,p-Xylenes	20.2	20.0	101	20.0	20.0	100	73-119	1	30
o-Xylene	9.52	10.0	95	9.46	10.0	95	74-120	1	30

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SR#: 7009200

PAGE 1 OF 1 COC #

RCOC #1 07/09

January 19, 2010

Analytical Report for Service Request No: K1000336

Mike Staton
SLR International
22122 SE 20th Bldg H
Bothell, WA 98021

RE: Longview Former Arco/001.0173.00010

Dear Mike:

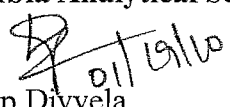
Enclosed are the results of the rush samples submitted to our laboratory on January 13, 2010. For your reference, these analyses have been assigned our service request number K1000336.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.caslab.com. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please call if you have any questions. My extension is 3281. You may also contact me via Email at PDivvela@caslab.com.

Respectfully submitted,

Columbia Analytical Services, Inc.


Pradeep Divvela
Project Chemist

PD/lb

Page 1 of 20

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated concentration that is less than the MRL or LOQ but greater than or equal to the MDL or LOD.
The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.1 definition* :
- U Analyte was not detected and is reported as less than the LOD or as defined by the project. The LOD has been adjusted for dilution.
- i The MRL/MDL or LOQ/LOD has been elevated due to a matrix interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.

Metals Data Qualifiers

- # The control limit criteria is not applicable. See case narrative.
- J The result is an estimated concentration that is less than the MRL or LOQ but greater than or equal to the MDL or LOD.
- E The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
- M The duplicate injection precision was not met.
- N The Matrix Spike sample recovery is not within control limits. See case narrative.
- S The reported value was determined by the Method of Standard Additions (MSA).
The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.1 definition* :
- U Analyte was not detected and is reported as less than the LOD or as defined by the project. The LOD has been adjusted for any dilution or
- W The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
- i The MRL/MDL or LOQ/LOD has been elevated due to a matrix interference.
- X See case narrative.
- + The correlation coefficient for the MSA is less than 0.995.
- Q See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- A A tentatively identified compound, a suspected aldol-condensation product.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result.
- C The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
- D The reported result is from a dilution.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
- N The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
- P The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.1 definition* :
- U Analyte was not detected and is reported as less than the LOD or as defined by the project. The LOD has been adjusted for any dilution or
- i The MRL/MDL or LOQ/LOD has been elevated due to a chromatographic interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

- F The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
- L The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
- H The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
- O The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
- Y The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
- Z The chromatographic fingerprint does not resemble a petroleum product.

Columbia Analytical Services, Inc.
Kelso, WA
State Certifications, Accreditations, and Licenses

Program	Number
Alaska DEC UST	UST-040
Arizona DHS	AZ0339
Arkansas - DEQ	88-0637
California DHS	2286
Colorado DPHE	-
Florida DOH	E87412
Hawaii DOH	-
Idaho DHW	-
Indiana DOH	C-WA-01
Louisiana DEQ	3016
Louisiana DHH	LA050010
Maine DHS	WA0035
Michigan DEQ	9949
Minnesota DOH	053-999-368
Montana DPHHS	CERT0047
Nevada DEP	WA35
New Jersey DEP	WA005
New Mexico ED	-
North Carolina DWQ	605
Oklahoma DEQ	9801
Oregon - DHS	WA200001
South Carolina DHEC	61002
Utah DOH	COLU
Washington DOE	C1203
Wisconsin DNR	998386840
Wyoming (EPA Region 8)	-

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Longview Former Arco/001.0173.00010
Sample Matrix: Water

Service Request: K1000336
Date Collected: 01/13/2010
Date Received: 01/13/2010

Gasoline Range Organics

Sample Name: INF-11310
Lab Code: K1000336-001
Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTP	ND	U	250	1	01/14/10	01/14/10	KWG1000453	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	101	50-150	01/14/10	Acceptable

Comments: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Longview Former Arco/001.0173.00010
Sample Matrix: Water

Service Request: K1000336
Date Collected: 01/13/2010
Date Received: 01/13/2010

Gasoline Range Organics

Sample Name: EFF1-11310
Lab Code: K1000336-002
Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTP	ND	U	250	1	01/14/10	01/14/10	KWG1000453	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	101	50-150	01/14/10	Acceptable

Comments: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Longview Former Arco/001.0173.00010
Sample Matrix: Water

Service Request: K1000336
Date Collected: 01/13/2010
Date Received: 01/13/2010

Gasoline Range Organics

Sample Name: EFF2-11310
Lab Code: K1000336-003
Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTP	ND	U	250	1	01/14/10	01/14/10	KWG1000453	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	101	50-150	01/14/10	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Longview Former Arco/001.0173.00010
Sample Matrix: Water

Service Request: K1000336
Date Collected: NA
Date Received: NA

Gasoline Range Organics

Sample Name: Method Blank
Lab Code: KWG1000453-3
Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTP	ND	U	250	1	01/14/10	01/14/10	KWG1000453	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	101	50-150	01/14/10	Acceptable

Comments: _____

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: SLR International
Project: Longview Former Arco/001.0173.00010
Sample Matrix: Water

Service Request: K1000336

Surrogate Recovery Summary
Gasoline Range Organics

Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: PERCENT
Level: Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>
INF-11310	K1000336-001	101
EFF1-11310	K1000336-002	101
EFF2-11310	K1000336-003	101
EFF1-11310DUP	KWG1000453-1	100
Method Blank	KWG1000453-3	101
Lab Control Sample	KWG1000453-2	105

Surrogate Recovery Control Limits (%)

Sur1 = 1,4-Difluorobenzene 50-150

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: SLR International
Project: Longview Former Arco/001.0173.00010
Sample Matrix: Water

Service Request: K1000336
Date Extracted: 01/14/2010
Date Analyzed: 01/14/2010

Duplicate Sample Summary
Gasoline Range Organics

Sample Name: EFF1-11310
Lab Code: K1000336-002
Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1000453

Analyte Name	MRL	Sample Result	EFF1-11310DUP KWG1000453-1 Duplicate Sample Result	Average	Relative Percent Difference	RPD Limit
Gasoline Range Organics-NWTPH	250	ND	ND	ND	-	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: SLR International
Project: Longview Former Arco/001.0173.00010
Sample Matrix: Water

Service Request: K1000336
Date Extracted: 01/14/2010
Date Analyzed: 01/14/2010

Lab Control Spike Summary
Gasoline Range Organics

Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1000453

Analyte Name	Lab Control Sample KWG1000453-2 Lab Control Spike			%Rec Limits
	Result	Expected	%Rec	
Gasoline Range Organics-NWTPH	470	500	94	80-119

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Longview Former Arco/001.0173.00010
Sample Matrix: Water

Service Request: K1000336
Date Collected: 01/13/2010
Date Received: 01/13/2010

Volatile Organics by GC/MS

Sample Name: INF-11310
Lab Code: K1000336-001
Extraction Method: EPA 5030B
Analysis Method: 8260B

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
m-xylene	48		0.50	1	01/15/10	01/15/10	KWG1000458	
toluene	ND	U	0.50	1	01/15/10	01/15/10	KWG1000458	
ethylbenzene	0.80		0.50	1	01/15/10	01/15/10	KWG1000458	
p-Xylenes	2.4		0.50	1	01/15/10	01/15/10	KWG1000458	
Xylene	ND	U	0.50	1	01/15/10	01/15/10	KWG1000458	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
bromofluoromethane	103	73-122	01/15/10	Acceptable
toluene-d8	115	78-129	01/15/10	Acceptable
Bromofluorobenzene	96	68-117	01/15/10	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Longview Former Arco/001.0173.00010
Sample Matrix: Water

Service Request: K1000336
Date Collected: 01/13/2010
Date Received: 01/13/2010

Volatile Organics by GC/MS

Sample Name: EFF1-11310
Lab Code: K1000336-002
Extraction Method: EPA 5030B
Analysis Method: 8260B

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	ND	U	0.50	1	01/15/10	01/15/10	KWG1000458	
Toluene	ND	U	0.50	1	01/15/10	01/15/10	KWG1000458	
Ethylbenzene	ND	U	0.50	1	01/15/10	01/15/10	KWG1000458	
m,p-Xylenes	ND	U	0.50	1	01/15/10	01/15/10	KWG1000458	
o-Xylene	ND	U	0.50	1	01/15/10	01/15/10	KWG1000458	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	106	73-122	01/15/10	Acceptable
Toluene-d8	116	78-129	01/15/10	Acceptable
4-Bromofluorobenzene	95	68-117	01/15/10	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Longview Former Arco/001.0173.00010
Sample Matrix: Water

Service Request: K1000336
Date Collected: 01/13/2010
Date Received: 01/13/2010

Volatile Organics by GC/MS

Sample Name: EFF2-11310
Lab Code: K1000336-003
Extraction Method: EPA 5030B
Analysis Method: 8260B

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
benzene	ND	U	0.50	1	01/15/10	01/15/10	KWG1000458	
toluene	ND	U	0.50	1	01/15/10	01/15/10	KWG1000458	
ethylbenzene	ND	U	0.50	1	01/15/10	01/15/10	KWG1000458	
1,p-Xylenes	ND	U	0.50	1	01/15/10	01/15/10	KWG1000458	
m-Xylene	ND	U	0.50	1	01/15/10	01/15/10	KWG1000458	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	107	73-122	01/15/10	Acceptable
toluene-d8	114	78-129	01/15/10	Acceptable
m-Bromofluorobenzene	95	68-117	01/15/10	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Longview Former Arco/001.0173.00010
Sample Matrix: Water

Service Request: K1000336
Date Collected: NA
Date Received: NA

Volatile Organics by GC/MS

Sample Name: Method Blank
Lab Code: KWG1000458-4
Extraction Method: EPA 5030B
Analysis Method: 8260B

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	ND	U	0.50	1	01/15/10	01/15/10	KWG1000458	
Toluene	ND	U	0.50	1	01/15/10	01/15/10	KWG1000458	
Ethylbenzene	ND	U	0.50	1	01/15/10	01/15/10	KWG1000458	
m,p-Xylenes	ND	U	0.50	1	01/15/10	01/15/10	KWG1000458	
o-Xylene	ND	U	0.50	1	01/15/10	01/15/10	KWG1000458	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	105	73-122	01/15/10	Acceptable
Toluene-d8	112	78-129	01/15/10	Acceptable
4-Bromofluorobenzene	96	68-117	01/15/10	Acceptable

Comments:

Client: SLR International
Project: Longview Former Arco/001.0173.00010
Sample Matrix: Water

Service Request: K1000336

Surrogate Recovery Summary
Volatile Organics by GC/MS

Extraction Method: EPA 5030B
Analysis Method: 8260B

Units: PERCENT
Level: Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>	<u>Sur2</u>	<u>Sur3</u>
NF-11310	K1000336-001	103	115	96
FF1-11310	K1000336-002	106	116	95
FF2-11310	K1000336-003	107	114	95
Method Blank	KWG1000458-4	105	112	96
atch QC	K1000317-001	107	116	95
atch QCMS	KWG1000458-1	109	116	95
atch QCDMS	KWG1000458-2	110	117	93
Lab Control Sample	KWG1000458-3	109	117	96

Surrogate Recovery Control Limits (%)

ur1 = Dibromofluoromethane	73-122
ur2 = Toluene-d8	78-129
ur3 = 4-Bromofluorobenzene	68-117

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: SLR International
Project: Longview Former Arco/001.0173.00010
Sample Matrix: Water

Service Request: K1000336
Date Extracted: 01/15/2010
Date Analyzed: 01/15/2010

Matrix Spike/Duplicate Matrix Spike Summary
Volatile Organics by GC/MS

Sample Name: Batch QC
Lab Code: K1000317-001
Extraction Method: EPA 5030B
Analysis Method: 8260B

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1000458

Analyte Name	Sample Result	Batch QCMS KWG1000458-1 Matrix Spike			Batch QCDMS KWG1000458-2 Duplicate Matrix Spike			%Rec Limits	RPD	RPD Limit
		Result	Expected	%Rec	Result	Expected	%Rec			
Benzene	ND	11.6	10.0	116	10.9	10.0	109	69-126	6	30
Toluene	ND	11.4	10.0	114	10.7	10.0	107	66-128	7	30
Ethylbenzene	ND	9.73	10.0	97	8.97	10.0	90	65-126	8	30
m,p-Xylenes	ND	19.4	20.0	97	17.9	20.0	90	63-130	8	30
o-Xylene	ND	9.57	10.0	96	8.71	10.0	87	65-130	9	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: SLR International
Project: Longview Former Arco/001.0173.00010
Sample Matrix: Water

Service Request: K1000336
Date Extracted: 01/15/2010
Date Analyzed: 01/15/2010

Lab Control Spike Summary
Volatile Organics by GC/MS

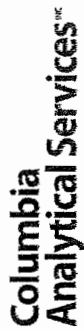
Extraction Method: EPA 5030B
Analysis Method: 8260B

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1000458

Analyte Name	Lab Control Sample KWG1000458-3 Lab Control Spike			%Rec Limits
	Result	Expected	%Rec	
Benzene	8.96	10.0	90	74-118
Toluene	9.12	10.0	91	74-117
Ethylbenzene	7.55	10.0	76	71-118
m,p-Xylenes	15.5	20.0	77	73-119
o-Xylene	8.06	10.0	81	74-120

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.



SR#: K1600330

PAGE 1 OF 1
COC #

PROJECT INFORMATION				INVOICE INFORMATION				REPORT REQUIREMENTS				TURNAROUND REQUIREMENTS				RECEIVED BY:			
PROJECT NAME	PROJECT NUMBER	PROJECT MANAGER	COMPANY/ADDRESS	P.O. #	Bill To:	I. Routine Report: Method Blank, Surrogate, as required	II. Report Dup., MS, MSD as required	III. Data Validation Report (includes all raw data)	IV. CLP Deliverable Report	V. EDD	Requested Report Date	Signature	Date/Time	Printed Name	Firm				
Longview Farmer Area	001.0173.00010	Mike Staton	SLR								1/13/10 1030	Chris Kraver	1/13/10 1030	Chris Kraver	SLR				
E-MAIL ADDRESS: Mstaton@slr.com				P.O. #				I. Routine Report: Method Blank, Surrogate, as required				Requested Report Date				RECEIVED BY:			
PHONE # 425-402-8800				Bill To:				II. Report Dup., MS, MSD as required				Signature				Date/Time			
FAX #								III. Data Validation Report (includes all raw data)				Printed Name				Firm			
SAMPLER'S SIGNATURE: Chris Kraver								IV. CLP Deliverable Report				Requested Report Date				RECEIVED BY:			
CITY/STATE/ZIP								V. EDD				Signature				Date/Time			
E-MAIL ADDRESS												Printed Name				Firm			
PHONE #												Requested Report Date				RECEIVED BY:			
FAX #												Signature				Date/Time			
SAMPLER'S SIGNATURE												Printed Name				Firm			
CITY/STATE/ZIP												Requested Report Date				RECEIVED BY:			
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PHONE #												Printed Name				Firm			
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PHONE #												Signature				Date/Time			
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SAMPLER'S SIGNATURE												Printed Name				Firm			
CITY/STATE/ZIP												Requested Report Date				RECEIVED BY:			
E-MAIL ADDRESS												Signature				Date/Time			

February 23, 2010

Analytical Report for Service Request No: K1001467

Mike Staton
SLR International
22122 SE 20th Bldg H
Bothell, WA 98021

RE: Longview-Former ARCO/001.0173.00010

Dear Mike:

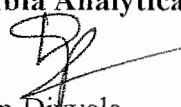
Enclosed are the results of the rush samples submitted to our laboratory on February 17, 2010. For your reference, these analyses have been assigned our service request number K1001467.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.caslab.com. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please call if you have any questions. My extension is 3281. You may also contact me via Email at PDivvela@caslab.com.

Respectfully submitted,

Columbia Analytical Services, Inc.


Pradeep Divvela
Project Chemist

PD/rh

Page 1 of 20

cc: Chris Kramer, SLR International, West Linn, OR

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated value that was detected outside the quantitation range.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.1 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.

Metals Data Qualifiers

- # The control limit criteria is not applicable. See case narrative.
- J The result is an estimated value that was detected outside the quantitation range.
- E The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
- M The duplicate injection precision was not met.
- N The Matrix Spike sample recovery is not within control limits. See case narrative.
- S The reported value was determined by the Method of Standard Additions (MSA).
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.1 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- W The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- + The correlation coefficient for the MSA is less than 0.995.
- Q See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- A A tentatively identified compound, a suspected aldol-condensation product.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- C The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
- D The reported result is from a dilution.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated value that was detected outside the quantitation range.
- N The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
- P The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.1 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

- F The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
- L The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
- H The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
- O The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
- Y The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
- Z The chromatographic fingerprint does not resemble a petroleum product.

Columbia Analytical Services, Inc.
Kelso, WA
State Certifications, Accreditations, and Licenses

Program	Number
Alaska DEC UST	UST-040
Arizona DHS	AZ0339
Arkansas - DEQ	88-0637
California DHS	2286
Colorado DPHE	-
Florida DOH	E87412
Hawaii DOH	-
Idaho DHW	-
Indiana DOH	C-WA-01
Louisiana DEQ	3016
Louisiana DHH	LA050010
Maine DHS	WA0035
Michigan DEQ	9949
Minnesota DOH	053-999-368
Montana DPHHS	CERT0047
Nevada DEP	WA35
New Jersey DEP	WA005
New Mexico ED	-
North Carolina DWQ	605
Oklahoma DEQ	9801
Oregon - DHS	WA200001
South Carolina DHEC	61002
Utah DOH	COLU
Washington DOE	C1203
Wisconsin DNR	998386840
Wyoming (EPA Region 8)	-

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Longview-Former ARCO/001.0173.00010
Sample Matrix: Water

Service Request: K1001467
Date Collected: 02/17/2010
Date Received: 02/17/2010

Gasoline Range Organics

Sample Name: INF-21710
Lab Code: K1001467-001
Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTP	ND U	250	1	02/18/10	02/18/10	KWG1001358	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	95	50-150	02/18/10	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Longview-Former ARCO/001.0173.00010
Sample Matrix: Water

Service Request: K1001467
Date Collected: 02/17/2010
Date Received: 02/17/2010

Gasoline Range Organics

Sample Name: EFF1-21710
Lab Code: K1001467-002
Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTP	ND	U	250	1	02/18/10	02/18/10	KWG1001358	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	96	50-150	02/18/10	Acceptable

Comments: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Longview-Former ARCO/001.0173.00010
Sample Matrix: Water

Service Request: K1001467
Date Collected: 02/17/2010
Date Received: 02/17/2010

Gasoline Range Organics

Sample Name: EFF2-21710
Lab Code: K1001467-003
Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTP	ND	U	250	1	02/18/10	02/18/10	KWG1001358	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	96	50-150	02/18/10	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Longview-Former ARCO/001.0173.00010
Sample Matrix: Water

Service Request: K1001467
Date Collected: NA
Date Received: NA

Gasoline Range Organics

Sample Name: Method Blank
Lab Code: KWG1001358-3
Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTP	ND	U	250	1	02/18/10	02/18/10	KWG1001358	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	96	50-150	02/18/10	Acceptable

Comments: _____

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: SLR International
Project: Longview-Former ARCO/001.0173.00010
Sample Matrix: Water

Service Request: K1001467

Surrogate Recovery Summary
Gasoline Range Organics

Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: PERCENT
Level: Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>
INF-21710	K1001467-001	95
EFF1-21710	K1001467-002	96
EFF2-21710	K1001467-003	96
Batch QCDUP	KWG1001358-1	96
Method Blank	KWG1001358-3	96
Batch QC	K1001407-005	96
Lab Control Sample	KWG1001358-2	100

Surrogate Recovery Control Limits (%)

Sur1 = 1,4-Difluorobenzene 50-150

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: SLR International
Project: Longview-Former ARCO/001.0173.00010
Sample Matrix: Water

Service Request: K1001467
Date Extracted: 02/18/2010
Date Analyzed: 02/18/2010

Duplicate Sample Summary
Gasoline Range Organics

Sample Name: Batch QC
Lab Code: K1001407-005
Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1001358

Analyte Name	MRL	Sample Result	Batch QCDUP KWG1001358-1 Duplicate Sample Result	Average	Relative Percent Difference	RPD Limit
Gasoline Range Organics-NWTPH	250	ND	ND	ND	-	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: SLR International
Project: Longview-Former ARCO/001.0173.00010
Sample Matrix: Water

Service Request: K1001467
Date Extracted: 02/18/2010
Date Analyzed: 02/18/2010

Lab Control Spike Summary
Gasoline Range Organics

Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1001358

Lab Control Sample
KWG1001358-2
Lab Control Spike

Analyte Name	Result	Expected	%Rec	%Rec Limits
Gasoline Range Organics-NWTPH	479	500	96	80-119

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Longview-Former ARCO/001.0173.00010
Sample Matrix: Water

Service Request: K1001467
Date Collected: 02/17/2010
Date Received: 02/17/2010

Volatile Organics by GC/MS

Sample Name: INF-21710
Lab Code: K1001467-001
Extraction Method: EPA 5030B
Analysis Method: 8260B

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	33	0.50	1	02/19/10	02/19/10	KWG1001376	
Toluene	ND U	0.50	1	02/19/10	02/19/10	KWG1001376	
Ethylbenzene	ND U	0.50	1	02/19/10	02/19/10	KWG1001376	
m,p-Xylenes	1.7	0.50	1	02/19/10	02/19/10	KWG1001376	
o-Xylene	ND U	0.50	1	02/19/10	02/19/10	KWG1001376	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	105	73-122	02/19/10	Acceptable
Toluene-d8	117	78-129	02/19/10	Acceptable
4-Bromofluorobenzene	94	68-117	02/19/10	Acceptable

Comments: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Longview-Former ARCO/001.0173.00010
Sample Matrix: Water

Service Request: K1001467
Date Collected: 02/17/2010
Date Received: 02/17/2010

Volatile Organics by GC/MS

Sample Name: EFF1-21710
Lab Code: K1001467-002
Extraction Method: EPA 5030B
Analysis Method: 8260B

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	ND	U	0.50	1	02/19/10	02/19/10	KWG1001376	
Toluene	ND	U	0.50	1	02/19/10	02/19/10	KWG1001376	
Ethylbenzene	ND	U	0.50	1	02/19/10	02/19/10	KWG1001376	
m,p-Xylenes	ND	U	0.50	1	02/19/10	02/19/10	KWG1001376	
o-Xylene	ND	U	0.50	1	02/19/10	02/19/10	KWG1001376	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	107	73-122	02/19/10	Acceptable
Toluene-d8	118	78-129	02/19/10	Acceptable
4-Bromofluorobenzene	93	68-117	02/19/10	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Longview-Former ARCO/001.0173.00010
Sample Matrix: Water

Service Request: K1001467
Date Collected: 02/17/2010
Date Received: 02/17/2010

Volatile Organics by GC/MS

Sample Name: EFF2-21710
Lab Code: K1001467-003
Extraction Method: EPA 5030B
Analysis Method: 8260B

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	ND	U	0.50	1	02/19/10	02/19/10	KWG1001376	
Toluene	ND	U	0.50	1	02/19/10	02/19/10	KWG1001376	
Ethylbenzene	ND	U	0.50	1	02/19/10	02/19/10	KWG1001376	
m,p-Xylenes	ND	U	0.50	1	02/19/10	02/19/10	KWG1001376	
o-Xylene	ND	U	0.50	1	02/19/10	02/19/10	KWG1001376	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	107	73-122	02/19/10	Acceptable
Toluene-d8	118	78-129	02/19/10	Acceptable
4-Bromofluorobenzene	93	68-117	02/19/10	Acceptable

Comments: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Longview-Former ARCO/001.0173.00010
Sample Matrix: Water

Service Request: K1001467
Date Collected: NA
Date Received: NA

Volatile Organics by GC/MS

Sample Name: Method Blank
Lab Code: KWG1001376-4
Extraction Method: EPA 5030B
Analysis Method: 8260B

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	ND	U	0.50	1	02/19/10	02/19/10	KWG1001376	
Toluene	ND	U	0.50	1	02/19/10	02/19/10	KWG1001376	
Ethylbenzene	ND	U	0.50	1	02/19/10	02/19/10	KWG1001376	
m,p-Xylenes	ND	U	0.50	1	02/19/10	02/19/10	KWG1001376	
o-Xylene	ND	U	0.50	1	02/19/10	02/19/10	KWG1001376	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	102	73-122	02/19/10	Acceptable
Toluene-d8	117	78-129	02/19/10	Acceptable
4-Bromofluorobenzene	94	68-117	02/19/10	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: SLR International
Project: Longview-Former ARCO/001.0173.00010
Sample Matrix: Water

Service Request: K1001467

Surrogate Recovery Summary
Volatile Organics by GC/MS

Extraction Method: EPA 5030B
Analysis Method: 8260B

Units: PERCENT
Level: Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>	<u>Sur2</u>	<u>Sur3</u>
INF-21710	K1001467-001	105	117	94
EFF1-21710	K1001467-002	107	118	93
EFF2-21710	K1001467-003	107	118	93
Method Blank	KWG1001376-4	102	117	94
Batch QC	K1001277-004	104	118	93
Batch QCMS	KWG1001376-1	103	117	93
Batch QCDMS	KWG1001376-2	105	118	95
Lab Control Sample	KWG1001376-3	105	118	95

Surrogate Recovery Control Limits (%)

Sur1 = Dibromofluoromethane	73-122
Sur2 = Toluene-d8	78-129
Sur3 = 4-Bromofluorobenzene	68-117

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: SLR International
Project: Longview-Former ARCO/001.0173.00010
Sample Matrix: Water

Service Request: K1001467
Date Extracted: 02/19/2010
Date Analyzed: 02/19/2010

Matrix Spike/Duplicate Matrix Spike Summary
Volatile Organics by GC/MS

Sample Name: Batch QC
Lab Code: K1001277-004
Extraction Method: EPA 5030B
Analysis Method: 8260B

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1001376

Analyte Name	Sample Result	Batch QCMS KWG1001376-1 Matrix Spike			Batch QCDMS KWG1001376-2 Duplicate Matrix Spike			%Rec Limits	RPD	RPD Limit
		Result	Expected	%Rec	Result	Expected	%Rec			
Benzene	ND	12.0	10.0	120	11.6	10.0	116	69-126	3	30
Toluene	ND	12.5	10.0	125	12.2	10.0	122	66-128	3	30
Ethylbenzene	ND	11.8	10.0	118	11.3	10.0	113	65-126	4	30
m,p-Xylenes	ND	23.8	20.0	119	23.0	20.0	115	63-130	4	30
o-Xylene	ND	11.9	10.0	119	11.5	10.0	115	65-130	4	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: SLR International
Project: Longview-Former ARCO/001.0173.00010
Sample Matrix: Water

Service Request: K1001467
Date Extracted: 02/19/2010
Date Analyzed: 02/19/2010

Lab Control Spike Summary
Volatile Organics by GC/MS

Extraction Method: EPA 5030B
Analysis Method: 8260B

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1001376

Analyte Name	Lab Control Sample KWG1001376-3 Lab Control Spike			%Rec Limits
	Result	Expected	%Rec	
Benzene	10.3	10.0	103	74-118
Toluene	10.8	10.0	108	74-117
Ethylbenzene	9.92	10.0	99	71-118
m,p-Xylenes	20.3	20.0	102	73-119
o-Xylene	10.3	10.0	103	74-120

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.



SR#: K1001467

COC #

PROJECT NAME		PROJECT NUMBER		PROJECT MANAGER		COMPANY/ADDRESS		CITY/STATE/ZIP		E-MAIL ADDRESS		PHONE #		FAX #		SAMPLE SIGNATURE		NUMBER OF CONTAINERS		REMARKS	
PROJECT NAME		PROJECT NUMBER		PROJECT MANAGER		COMPANY/ADDRESS		CITY/STATE/ZIP		E-MAIL ADDRESS		PHONE #		FAX #		SAMPLE SIGNATURE		NUMBER OF CONTAINERS		REMARKS	
Longview - Fanny ARCO		001-073-00010		Mike Staton		SLR		Mstaton@slr.com		425/402-8600		425/402-8600				Chris Kram		6			
INF-21710		2/17/10		1130		W															
EFF2-21710		2/17/10		1135		J															
EFF2-21710		2/17/10		1140																	
REPORT REQUIREMENTS		I. Routine Report: Method Blank, Surrogate, as required		II. Report Dup., MS, MSD as required		III. Data Validation Report (includes all raw data)		IV. CLP Deliverable Report		V. EDD											
INVOICE INFORMATION		P.O. #		Bill To:																	
TURNAROUND REQUIREMENTS		24 hr.		48 hr.		5 Day		Standard (10-15 working days)		Provide FAX Results											
RECEIVED BY:		Signature		Date/Time		Printed Name		Firm													
RELINQUISHED BY:		Signature		Date/Time		Printed Name		Firm													

March 23, 2010

Analytical Report for Service Request No: K1002453

Mike Staton
SLR International
22122 SE 20th Bldg H, Ste 150
Bothell, WA 98021

RE: Longview Former ARCO/001.0173.00010

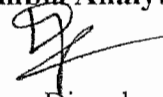
Dear Mike:

Enclosed are the results of the rush samples submitted to our laboratory on March 17, 2010. For your reference, these analyses have been assigned our service request number K1002453.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.caslab.com. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please call if you have any questions. My extension is 3281. You may also contact me via Email at PDivvela@caslab.com.

Respectfully submitted,

Columbia Analytical Services, Inc.
Pradeep Divvela
Project Chemist

PD/rh

Page 1 of 20

cc: Chris Kramer, SLR International, West Linn, OR

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated value that was detected outside the quantitation range.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.1 definition: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.

Metals Data Qualifiers

- # The control limit criteria is not applicable. See case narrative.
- J The result is an estimated value that was detected outside the quantitation range.
- E The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
- M The duplicate injection precision was not met.
- N The Matrix Spike sample recovery is not within control limits. See case narrative.
- S The reported value was determined by the Method of Standard Additions (MSA).
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.1 definition: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- W The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- + The correlation coefficient for the MSA is less than 0.995.
- Q See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- A A tentatively identified compound, a suspected aldol-condensation product.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- C The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
- D The reported result is from a dilution.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated value that was detected outside the quantitation range.
- N The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
- P The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.1 definition: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

- F The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
- L The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
- H The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
- O The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
- Y The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
- Z The chromatographic fingerprint does not resemble a petroleum product.

Columbia Analytical Services, Inc.
Kelso, WA
State Certifications, Accreditations, and Licenses

Program	Number
Alaska DEC UST	UST-040
Arizona DHS	AZ0339
Arkansas - DEQ	88-0637
California DHS	2286
Colorado DPHE	-
Florida DOH	E87412
Hawaii DOH	-
Idaho DHW	-
Indiana DOH	C-WA-01
Louisiana DEQ	3016
Louisiana DHH	LA050010
Maine DHS	WA0035
Michigan DEQ	9949
Minnesota DOH	053-999-368
Montana DPHHS	CERT0047
Nevada DEP	WA35
New Jersey DEP	WA005
New Mexico ED	-
North Carolina DWQ	605
Oklahoma DEQ	9801
Oregon - DHS	WA200001
South Carolina DHEC	61002
Utah DOH	COLU
Washington DOE	C1203
Wisconsin DNR	998386840
Wyoming (EPA Region 8)	-

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Longview Former ARCO/001.0173.00010
Sample Matrix: Water

Service Request: K1002453
Date Collected: 03/17/2010
Date Received: 03/17/2010

Gasoline Range Organics

Sample Name: INF-31710
Lab Code: K1002453-001
Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTP	ND	U	250	1	03/19/10	03/19/10	KWG1002326	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	103	50-150	03/19/10	Acceptable

Comments: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Longview Former ARCO/001.0173.00010
Sample Matrix: Water

Service Request: K1002453
Date Collected: 03/17/2010
Date Received: 03/17/2010

Gasoline Range Organics

Sample Name: EFF1-31710
Lab Code: K1002453-002
Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTP	ND	U	250	1	03/19/10	03/19/10	KWG1002326	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	103	50-150	03/19/10	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Longview Former ARCO/001.0173.00010
Sample Matrix: Water

Service Request: K1002453
Date Collected: 03/17/2010
Date Received: 03/17/2010

Gasoline Range Organics

Sample Name: EFF2-31710
Lab Code: K1002453-003
Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTP	ND	U	250	1	03/19/10	03/19/10	KWG1002326	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	103	50-150	03/19/10	Acceptable

Comments: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Longview Former ARCO/001.0173.00010
Sample Matrix: Water

Service Request: K1002453
Date Collected: NA
Date Received: NA

Gasoline Range Organics

Sample Name: Method Blank
Lab Code: KWG1002326-3
Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTP	ND	U	250	1	03/19/10	03/19/10	KWG1002326	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	103	50-150	03/19/10	Acceptable

Comments: _____

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: SLR International
Project: Longview Former ARCO/001.0173.00010
Sample Matrix: Water

Service Request: K1002453

Surrogate Recovery Summary
Gasoline Range Organics

Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: PERCENT
Level: Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>
INF-31710	K1002453-001	103
EFF1-31710	K1002453-002	103
EFF2-31710	K1002453-003	103
EFF2-31710DUP	KWG1002326-1	103
Method Blank	KWG1002326-3	103
Lab Control Sample	KWG1002326-2	107

Surrogate Recovery Control Limits (%)

Sur1 = 1,4-Difluorobenzene 50-150

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: SLR International
Project: Longview Former ARCO/001.0173.00010
Sample Matrix: Water

Service Request: K1002453
Date Extracted: 03/19/2010
Date Analyzed: 03/19/2010

Duplicate Sample Summary
Gasoline Range Organics

Sample Name: EFF2-31710
Lab Code: K1002453-003
Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1002326

Analyte Name	MRL	Sample Result	EFF2-31710DUP KWG1002326-1 Duplicate Sample		Relative Percent Difference	RPD Limit
			Result	Average		
Gasoline Range Organics-NWTPH	250	ND	ND	ND	-	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: SLR International
Project: Longview Former ARCO/001.0173.00010
Sample Matrix: Water

Service Request: K1002453
Date Extracted: 03/19/2010
Date Analyzed: 03/19/2010

Lab Control Spike Summary
Gasoline Range Organics

Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1002326

Analyte Name	Lab Control Sample KWG1002326-2 Lab Control Spike			%Rec Limits
	Result	Expected	%Rec	
Gasoline Range Organics-NWTPH	448	500	90	80-119

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Longview Former ARCO/001.0173.00010
Sample Matrix: Water

Service Request: K1002453
Date Collected: 03/17/2010
Date Received: 03/17/2010

Volatile Organic Compounds

Sample Name: INF-31710
Lab Code: K1002453-001
Extraction Method: EPA 5030B
Analysis Method: 8260B

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	25		0.50	1	03/18/10	03/18/10	KWG1002279	
Toluene	ND	U	0.50	1	03/18/10	03/18/10	KWG1002279	
Ethylbenzene	ND	U	0.50	1	03/18/10	03/18/10	KWG1002279	
m,p-Xylenes	1.4		0.50	1	03/18/10	03/18/10	KWG1002279	
o-Xylene	ND	U	0.50	1	03/18/10	03/18/10	KWG1002279	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	87	73-122	03/18/10	Acceptable
Toluene-d8	100	78-129	03/18/10	Acceptable
1-Bromofluorobenzene	86	68-117	03/18/10	Acceptable

Comments: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Longview Former ARCO/001.0173.00010
Sample Matrix: Water

Service Request: K1002453
Date Collected: 03/17/2010
Date Received: 03/17/2010

Volatile Organic Compounds

Sample Name: EFF1-31710
Lab Code: K1002453-002
Extraction Method: EPA 5030B
Analysis Method: 8260B

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	ND	U	0.50	1	03/18/10	03/18/10	KWG1002279	
Toluene	ND	U	0.50	1	03/18/10	03/18/10	KWG1002279	
Ethylbenzene	ND	U	0.50	1	03/18/10	03/18/10	KWG1002279	
m,p-Xylenes	ND	U	0.50	1	03/18/10	03/18/10	KWG1002279	
o-Xylene	ND	U	0.50	1	03/18/10	03/18/10	KWG1002279	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	89	73-122	03/18/10	Acceptable
Toluene-d8	101	78-129	03/18/10	Acceptable
4-Bromofluorobenzene	87	68-117	03/18/10	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Longview Former ARCO/001.0173.00010
Sample Matrix: Water

Service Request: K1002453
Date Collected: 03/17/2010
Date Received: 03/17/2010

Volatile Organic Compounds

Sample Name: EFF2-31710
Lab Code: K1002453-003
Extraction Method: EPA 5030B
Analysis Method: 8260B

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	ND	U	0.50	1	03/18/10	03/18/10	KWG1002279	
Toluene	ND	U	0.50	1	03/18/10	03/18/10	KWG1002279	
Ethylbenzene	ND	U	0.50	1	03/18/10	03/18/10	KWG1002279	
m,p-Xylenes	ND	U	0.50	1	03/18/10	03/18/10	KWG1002279	
o-Xylene	ND	U	0.50	1	03/18/10	03/18/10	KWG1002279	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	88	73-122	03/18/10	Acceptable
Toluene-d8	99	78-129	03/18/10	Acceptable
4-Bromofluorobenzene	86	68-117	03/18/10	Acceptable

Comments: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Longview Former ARCO/001.0173.00010
Sample Matrix: Water

Service Request: K1002453
Date Collected: NA
Date Received: NA

Volatile Organic Compounds

Sample Name: Method Blank
Lab Code: KWG1002279-4
Extraction Method: EPA 5030B
Analysis Method: 8260B

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	ND	U	0.50	1	03/18/10	03/18/10	KWG1002279	
Toluene	ND	U	0.50	1	03/18/10	03/18/10	KWG1002279	
Ethylbenzene	ND	U	0.50	1	03/18/10	03/18/10	KWG1002279	
m,p-Xylenes	ND	U	0.50	1	03/18/10	03/18/10	KWG1002279	
o-Xylene	ND	U	0.50	1	03/18/10	03/18/10	KWG1002279	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	88	73-122	03/18/10	Acceptable
Toluene-d8	101	78-129	03/18/10	Acceptable
4-Bromofluorobenzene	88	68-117	03/18/10	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: SLR International
Project: Longview Former ARCO/001.0173.00010
Sample Matrix: Water

Service Request: K1002453

Surrogate Recovery Summary
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260B

Units: PERCENT
Level: Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>	<u>Sur2</u>	<u>Sur3</u>
INF-31710	K1002453-001	87	100	86
EFF1-31710	K1002453-002	89	101	87
EFF2-31710	K1002453-003	88	99	86
Method Blank	KWG1002279-4	88	101	88
Batch QC	K1002360-001	88	100	86
Batch QCMS	KWG1002279-1	94	104	91
Batch QCDMS	KWG1002279-2	94	104	91
Lab Control Sample	KWG1002279-3	94	104	94

Surrogate Recovery Control Limits (%)

Sur1 = Dibromofluoromethane	73-122
Sur2 = Toluene-d8	78-129
Sur3 = 4-Bromofluorobenzene	68-117

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Client: SLR International
Project: Longview Former ARCO/001.0173.00010
Sample Matrix: Water

Service Request: K1002453
Date Extracted: 03/18/2010
Date Analyzed: 03/18/2010

Matrix Spike/Duplicate Matrix Spike Summary
Volatile Organic Compounds

Sample Name: Batch QC
Lab Code: K1002360-001
Extraction Method: EPA 5030B
Analysis Method: 8260B

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1002279

Analyte Name	Sample Result	Batch QCMS KWG1002279-1 Matrix Spike			Batch QCDMS KWG1002279-2 Duplicate Matrix Spike			%Rec Limits	RPD	RPD Limit
		Result	Expected	%Rec	Result	Expected	%Rec			
Benzene	ND	8.94	10.0	89	9.43	10.0	94	69-126	5	30
Toluene	ND	9.03	10.0	90	9.64	10.0	96	66-128	7	30
Ethylbenzene	ND	9.48	10.0	95	10.1	10.0	101	65-126	6	30
m,p-Xylenes	ND	19.2	20.0	96	20.5	20.0	102	63-130	6	30
o-Xylene	ND	9.38	10.0	94	9.95	10.0	100	65-130	6	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: SLR International
Project: Longview Former ARCO/001.0173.00010
Sample Matrix: Water

Service Request: K1002453
Date Extracted: 03/18/2010
Date Analyzed: 03/18/2010

Lab Control Spike Summary
Volatile Organic Compounds

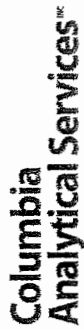
Extraction Method: EPA 5030B
Analysis Method: 8260B

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1002279

Analyte Name	Lab Control Sample KWG1002279-3 Lab Control Spike			%Rec Limits
	Result	Expected	%Rec	
Benzene	9.16	10.0	92	74-118
Toluene	9.30	10.0	93	74-117
Ethylbenzene	9.60	10.0	96	71-118
m,p-Xylenes	19.6	20.0	98	73-119
o-Xylene	9.78	10.0	98	74-120

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.



SR#: K1007457

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April 21, 2010

Analytical Report for Service Request No: K1003574

Mike Staton
SLR International
22118 20th Avenue, Suite G202
Bothell, WA 98021

RE: Longview Former ARCO/001.0173.00010

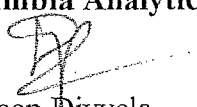
Dear Mike:

Enclosed are the results of the rush samples submitted to our laboratory on April 15, 2010. For your reference, these analyses have been assigned our service request number K1003574.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.caslab.com. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please call if you have any questions. My extension is 3281. You may also contact me via Email at PDivvela@caslab.com.

Respectfully submitted,

Columbia Analytical Services, Inc.
Pradeep Divvela
Project Chemist

PD/ln

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cc: Chris Kramer, SLR International, West Linn, OR

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated concentration that is less than the MRL or LOQ but greater than or equal to the MDL or LOD.
The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.1 definition:*
- U Analyte was not detected and is reported as less than the LOD or as defined by the project. The LOD has been adjusted for dilution.
- i The MRL/MDL or LOQ/LOD has been elevated due to a matrix interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.

Metals Data Qualifiers

- # The control limit criteria is not applicable. See case narrative.
- J The result is an estimated concentration that is less than the MRL or LOQ but greater than or equal to the MDL or LOD.
- E The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
- M The duplicate injection precision was not met.
- N The Matrix Spike sample recovery is not within control limits. See case narrative.
- S The reported value was determined by the Method of Standard Additions (MSA).
The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.1 definition:*
- U Analyte was not detected and is reported as less than the LOD or as defined by the project. The LOD has been adjusted for any dilution or
- W The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
- i The MRL/MDL or LOQ/LOD has been elevated due to a matrix interference.
- X See case narrative.
- + The correlation coefficient for the MSA is less than 0.995.
- Q See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- A A tentatively identified compound, a suspected aldol-condensation product.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result.
- C The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
- D The reported result is from a dilution.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
- N The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
- P The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.1 definition:*
- U Analyte was not detected and is reported as less than the LOD or as defined by the project. The LOD has been adjusted for any dilution or
- i The MRL/MDL or LOQ/LOD has been elevated due to a chromatographic interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

- F The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
- L The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
- H The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
- O The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
- Y The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
- Z The chromatographic fingerprint does not resemble a petroleum product.

Columbia Analytical Services, Inc.
Kelso, WA
State Certifications, Accreditations, and Licenses

Program	Number
Alaska DEC UST	UST-040
Arizona DHS	AZ0339
Arkansas - DEQ	88-0637
California DHS	2286
Colorado DPHE	-
Florida DOH	E87412
Hawaii DOH	-
Idaho DHW	-
Indiana DOH	C-WA-01
Louisiana DEQ	3016
Louisiana DHH	LA050010
Maine DHS	WA0035
Michigan DEQ	9949
Minnesota DOH	053-999-368
Montana DPHHS	CERT0047
Nevada DEP	WA35
New Jersey DEP	WA005
New Mexico ED	-
North Carolina DWQ	605
Oklahoma DEQ	9801
Oregon - DHS	WA200001
South Carolina DHEC	61002
Utah DOH	COLU
Washington DOE	C1203
Wisconsin DNR	998386840
Wyoming (EPA Region 8)	-

Analytical Results

Client: SLR International
Project: Longview Former ARCO/001.0173.00010
Sample Matrix: Water

Service Request: K1003574
Date Collected: 04/15/2010
Date Received: 04/15/2010

Gasoline Range Organics

Sample Name: INF - 41510
Lab Code: K1003574-001
Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTP	ND	U	250	1	04/20/10	04/20/10	KWG1003473	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	101	50-150	04/20/10	Acceptable

Comments:

Analytical Results

Client: SLR International
Project: Longview Former ARCO/001.0173.00010
Sample Matrix: Water

Service Request: K1003574
Date Collected: 04/15/2010
Date Received: 04/15/2010

Gasoline Range Organics

Sample Name: EFF1 - 41510
Lab Code: K1003574-002
Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTP	ND	U	250	1	04/20/10	04/20/10	KWG1003473	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	102	50-150	04/20/10	Acceptable

Comments: _____

Analytical Results

Client: SLR International
Project: Longview Former ARCO/001.0173.00010
Sample Matrix: Water

Service Request: K1003574
Date Collected: 04/15/2010
Date Received: 04/15/2010

Gasoline Range Organics

Sample Name: EFF2 - 41510
Lab Code: K1003574-003
Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTP	ND U	250	1	04/20/10	04/20/10	KWG1003473	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	102	50-150	04/20/10	Acceptable

Comments: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Longview Former ARCO/001.0173.00010
Sample Matrix: Water

Service Request: K1003574
Date Collected: NA
Date Received: NA

Gasoline Range Organics

Sample Name: Method Blank
Lab Code: KWG1003473-3
Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTP	ND	U	250	1	04/20/10	04/20/10	KWG1003473	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	102	50-150	04/20/10	Acceptable

Comments:

Client: SLR International
Project: Longview Former ARCO/001.0173.00010
Sample Matrix: Water

Service Request: K1003574

Surrogate Recovery Summary
Gasoline Range Organics

Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: PERCENT
Level: Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>
INF - 41510	K1003574-001	101
EFF1 - 41510	K1003574-002	102
EFF2 - 41510	K1003574-003	102
INF - 41510DUP	KWG1003473-1	101
Method Blank	KWG1003473-3	102
Lab Control Sample	KWG1003473-2	101

Surrogate Recovery Control Limits (%)

Sur1 = 1,4-Difluorobenzene 50-150

Results flagged with an asterisk (*) indicate values outside control criteria.
Results flagged with a pound (#) indicate the control criteria is not applicable.

Client: SLR International
Project: Longview Former ARCO/001.0173.00010
Sample Matrix: Water

Service Request: K1003574
Date Extracted: 04/20/2010
Date Analyzed: 04/20/2010

Duplicate Sample Summary
Gasoline Range Organics

Sample Name: INF - 41510
Lab Code: K1003574-001

Units: ug/L

Basis: NA

Extraction Method: EPA 5030B

Level: Low

Analysis Method: NWTPH-Gx

Extraction Lot: KWG1003473

Analyte Name	MRL	Sample Result	INF - 41510DUP KWG1003473-1 Duplicate Sample Result	Average	Relative Percent Difference	RPD Limit
Gasoline Range Organics-NWTPH	250	ND	ND	ND	-	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client: SLR International
Project: Longview Former ARCO/001.0173.00010
Sample Matrix: Water

Service Request: K1003574
Date Extracted: 04/20/2010
Date Analyzed: 04/20/2010

Lab Control Spike Summary
Gasoline Range Organics

Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1003473

Lab Control Sample
KWG1003473-2
Lab Control Spike

Analyte Name	Result	Expected	%Rec	%Rec Limits
Gasoline Range Organics-NWTPH	443	500	89	80-119

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Longview Former ARCO/001.0173.00010
Sample Matrix: Water

Service Request: K1003574
Date Collected: 04/15/2010
Date Received: 04/15/2010

Volatile Organic Compounds

Sample Name: INF - 41510
Lab Code: K1003574-001
Extraction Method: EPA 5030B
Analysis Method: 8260B

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	32	0.50	1	04/19/10	04/19/10	KWG1003439	
Toluene	ND U	0.50	1	04/19/10	04/19/10	KWG1003439	
Ethylbenzene	ND U	0.50	1	04/19/10	04/19/10	KWG1003439	
p-Xylenes	1.4	0.50	1	04/19/10	04/19/10	KWG1003439	
m-Xylene	ND U	0.50	1	04/19/10	04/19/10	KWG1003439	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Bromofluoromethane	106	73-122	04/19/10	Acceptable
Toluene-d8	106	78-129	04/19/10	Acceptable
Bromofluorobenzene	95	68-117	04/19/10	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Longview Former ARCO/001.0173.00010
Sample Matrix: Water

Service Request: K1003574
Date Collected: 04/15/2010
Date Received: 04/15/2010

Volatile Organic Compounds

Sample Name: EFF1 - 41510
Lab Code: K1003574-002
Extraction Method: EPA 5030B
Analysis Method: 8260B

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	ND	U	0.50	1	04/19/10	04/19/10	KWG1003439	
Toluene	ND	U	0.50	1	04/19/10	04/19/10	KWG1003439	
Ethylbenzene	ND	U	0.50	1	04/19/10	04/19/10	KWG1003439	
m,p-Xylenes	ND	U	0.50	1	04/19/10	04/19/10	KWG1003439	
o-Xylene	ND	U	0.50	1	04/19/10	04/19/10	KWG1003439	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	112	73-122	04/19/10	Acceptable
Toluene-d8	110	78-129	04/19/10	Acceptable
1-Bromofluorobenzene	92	68-117	04/19/10	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Longview Former ARCO/001.0173.00010
Sample Matrix: Water

Service Request: K1003574
Date Collected: 04/15/2010
Date Received: 04/15/2010

Volatile Organic Compounds

Sample Name: EFF2 - 41510
Lab Code: K1003574-003
Extraction Method: EPA 5030B
Analysis Method: 8260B

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Azene	ND	U	0.50	1	04/19/10	04/19/10	KWG1003439	
Buene	ND	U	0.50	1	04/19/10	04/19/10	KWG1003439	
Tolylbenzene	ND	U	0.50	1	04/19/10	04/19/10	KWG1003439	
p-Xylenes	ND	U	0.50	1	04/19/10	04/19/10	KWG1003439	
Toluene	ND	U	0.50	1	04/19/10	04/19/10	KWG1003439	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Bromofluoromethane	113	73-122	04/19/10	Acceptable
Buene-d8	110	78-129	04/19/10	Acceptable
Bromofluorobenzene	91	68-117	04/19/10	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Longview Former ARCO/001.0173.00010
Sample Matrix: Water

Service Request: K1003574
Date Collected: NA
Date Received: NA

Volatile Organic Compounds

Sample Name: Method Blank
Lab Code: KWG1003439-4

Units: ug/L

Basis: NA

Extraction Method: EPA 5030B

Level: Low

Analysis Method: 8260B

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	ND	U	0.50	1	04/19/10	04/19/10	KWG1003439	
Toluene	ND	U	0.50	1	04/19/10	04/19/10	KWG1003439	
Ethylbenzene	ND	U	0.50	1	04/19/10	04/19/10	KWG1003439	
m,p-Xylenes	ND	U	0.50	1	04/19/10	04/19/10	KWG1003439	
o-Xylene	ND	U	0.50	1	04/19/10	04/19/10	KWG1003439	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	102	73-122	04/19/10	Acceptable
Toluene-d8	109	78-129	04/19/10	Acceptable
1-Bromofluorobenzene	96	68-117	04/19/10	Acceptable

Comments:

Client: SLR International
Project: Longview Former ARCO/001.0173.00010
Sample Matrix: Water

Service Request: K1003574

Surrogate Recovery Summary
Volatile Organic Compounds

Injection Method: EPA 5030B
Analysis Method: 8260B

Units: PERCENT
Level: Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>	<u>Sur2</u>	<u>Sur3</u>
F - 41510	K1003574-001	106	106	95
F1 - 41510	K1003574-002	112	110	92
F2 - 41510	K1003574-003	113	110	91
Method Blank	KWG1003439-4	102	109	96
Injection QC	K1003362-001	107	110	96
Injection QCMS	KWG1003439-1	99	110	99
Injection QCDMS	KWG1003439-2	101	111	102
Control Sample	KWG1003439-3	99	110	101

Surrogate Recovery Control Limits (%)

1 = Dibromofluoromethane	73-122
2 = Toluene-d8	78-129
3 = 4-Bromofluorobenzene	68-117

Values flagged with an asterisk (*) indicate values outside control criteria.

Values flagged with a pound (#) indicate the control criteria is not applicable.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: SLR International
Project: Longview Former ARCO/001.0173.00010
Sample Matrix: Water

Service Request: K1003574
Date Extracted: 04/19/2010
Date Analyzed: 04/19/2010

Matrix Spike/Duplicate Matrix Spike Summary
Volatile Organic Compounds

Sample Name: Batch QC
Lab Code: K1003362-001
Extraction Method: EPA 5030B
Analysis Method: 8260B

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1003439

Analyte Name	Sample Result	Batch QCMS KWG1003439-1 Matrix Spike			Batch QCDMS KWG1003439-2 Duplicate Matrix Spike			%Rec Limits	RPD	RPD Limit
		Result	Expected	%Rec	Result	Expected	%Rec			
Benzene	ND	9.59	10.0	96	9.39	10.0	94	69-126	2	30
Toluene	ND	10.9	10.0	109	10.7	10.0	107	66-128	2	30
Ethylbenzene	ND	10.0	10.0	100	9.88	10.0	99	65-126	1	30
m,p-Xylenes	ND	20.9	20.0	104	20.4	20.0	102	63-130	2	30
o-Xylene	ND	10.4	10.0	104	10.3	10.0	103	65-130	1	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: SLR International
Project: Longview Former ARCO/001.0173.00010
Sample Matrix: Water

Service Request: K1003574
Date Extracted: 04/19/2010
Date Analyzed: 04/19/2010

Lab Control Spike Summary
Volatile Organic Compounds

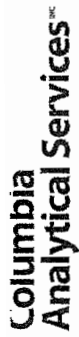
Extraction Method: EPA 5030B
Analysis Method: 8260B

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1003439

Analyte Name	Lab Control Sample KWG1003439-3 Lab Control Spike			%Rec Limits
	Result	Expected	%Rec	
m-xylene	9.26	10.0	93	74-118
luene	9.77	10.0	98	74-117
nylbenzene	9.66	10.0	97	71-118
p-Xylenes	20.1	20.0	100	73-119
ylene	10.3	10.0	103	74-120

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.



SR#: K1003574

PAGE OF COC #

#COC

PROJECT INFORMATION				INVOICE INFORMATION				REPORT REQUIREMENTS				TURNAROUND REQUIREMENTS				RECEIVED BY:			
PROJECT NAME	PROJECT NUMBER	PROJECT MANAGER	COMPANY/ADDRESS	P.O. #	Bill To:	I. Routine Report: Method Blank, Surrogate, as required	II. Report Dup., MS, MSD as required	III. Data Validation Report (includes all raw data)	IV. CLP Deliverable Report	V. EDD	Requested Report Date	Signature	Date/Time	Printed Name	Firm				
Longview - Former ARCO	001.073.00010	Mike Statton	SLR																
E-MAIL ADDRESS: mstatton@slrcorp.com				P.O. #				I. Routine Report: Method Blank, Surrogate, as required				Requested Report Date				RECEIVED BY:			
PHONE: 425/402-8800				Bill To:				II. Report Dup., MS, MSD as required				Signature				Date/Time			
FAX #								III. Data Validation Report (includes all raw data)				Printed Name				Firm			
SAMPLE SIGNATURE: Chris Kramer								IV. CLP Deliverable Report				Signature				Date/Time			
CITY/STATE/ZIP								V. EDD				Printed Name				Firm			
E-MAIL ADDRESS: mstatton@slrcorp.com																			
PHONE: 425/402-8800																			
FAX #																			
SAMPLE SIGNATURE: Chris Kramer																			
CITY/STATE/ZIP																			
E-MAIL ADDRESS: mstatton@slrcorp.com																			
PHONE: 425/402-8800																			
FAX #																			
SAMPLE SIGNATURE: Chris Kramer																			
CITY/STATE/ZIP																			
E-MAIL ADDRESS: mstatton@slrcorp.com																			
PHONE: 425/402-8800																			
FAX #																			
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FAX #																			
SAMPLE SIGNATURE: Chris Kramer																			
CITY/STATE/ZIP																			
E-MAIL ADDRESS: mstatton@slrcorp.com																			

May 24, 2010

Analytical Report for Service Request No: K1004898

Mike Staton
SLR International
22118 20th Avenue, Suite G202
Bothell, WA 98021

RE: Longview - Former ARCO/001.0173.00010

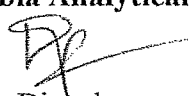
Dear Mike:

Enclosed are the results of the rush samples submitted to our laboratory on May 14, 2010. For your reference, these analyses have been assigned our service request number K1004898.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.caslab.com. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please call if you have any questions. My extension is 3281. You may also contact me via Email at PDivvela@caslab.com.

Respectfully submitted,

Columbia Analytical Services, Inc.
Pradeep Divvela
Project Chemist

PD/ln

Page 1 of 21

cc: Chris Kramer, SLR International, West Linn, OR

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated value that was detected outside the quantitation range.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.1 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.

Metals Data Qualifiers

- # The control limit criteria is not applicable. See case narrative.
- J The result is an estimated value that was detected outside the quantitation range.
- E The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
- M The duplicate injection precision was not met.
- N The Matrix Spike sample recovery is not within control limits. See case narrative.
- S The reported value was determined by the Method of Standard Additions (MSA).
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.1 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- W The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- + The correlation coefficient for the MSA is less than 0.995.
- Q See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- A A tentatively identified compound, a suspected aldol-condensation product.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- C The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
- D The reported result is from a dilution.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated value that was detected outside the quantitation range.
- N The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
- P The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.1 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

- F The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
- L The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
- H The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
- O The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
- Y The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
- Z The chromatographic fingerprint does not resemble a petroleum product.

Columbia Analytical Services, Inc.
Kelso, WA
State Certifications, Accreditations, and Licenses

Program	Number
Alaska DEC UST	UST-040
Arizona DHS	AZ0339
Arkansas - DEQ	88-0637
California DHS	2286
Colorado DPHE	-
Florida DOH	E87412
Hawaii DOH	-
Idaho DHW	-
Indiana DOH	C-WA-01
Louisiana DEQ	3016
Louisiana DHH	LA050010
Maine DHS	WA0035
Michigan DEQ	9949
Minnesota DOH	053-999-368
Montana DPHHS	CERT0047
Nevada DEP	WA35
New Jersey DEP	WA005
New Mexico ED	-
North Carolina DWQ	605
Oklahoma DEQ	9801
Oregon - DHS	WA200001
South Carolina DHEC	61002
Utah DOH	COLU
Washington DOE	C1203
Wisconsin DNR	998386840
Wyoming (EPA Region 8)	-

COLUMBIA ANALYTICAL SERVICES, INC.

Client: SLR International
Project: Longview - Former ARCO
Sample Matrix: Water

Service Request No.: K1004898
Date Received: 05/14/10

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of Columbia Analytical Services, Inc. (CAS). This report contains analytical results for samples designated for Tier II data deliverables. When appropriate to the method, method blank results have been reported with each analytical test. Surrogate recoveries have been reported for all applicable organic analyses. Additional quality control analyses reported herein include: Matrix/Duplicate Matrix Spike (MS/DMS), and Laboratory Control Sample (LCS).

Sample Receipt

Three field samples were received for analysis at Columbia Analytical Services on 05/14/10. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

Gasoline Range Organics by Method NWTPH-GX

No anomalies associated with the analysis of these samples were observed.

Volatile Organic Compounds by EPA Method 8260B

No anomalies associated with the analysis of these samples were observed.

Approved by _____ Date _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Longview - Former ARCO/001.0173.00010
Sample Matrix: Water

Service Request: K1004898
Date Collected: 05/14/2010
Date Received: 05/14/2010

Gasoline Range Organics

Sample Name: INF-51410
Lab Code: K1004898-001
Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTP	ND	U	250	1	05/19/10	05/19/10	KWG1004716	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	102	50-150	05/19/10	Acceptable

Comments: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Longview - Former ARCO/001.0173.00010
Sample Matrix: Water

Service Request: K1004898
Date Collected: 05/14/2010
Date Received: 05/14/2010

Gasoline Range Organics

Sample Name: EFF1-51410
Lab Code: K1004898-002
Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTP	ND	U	250	1	05/19/10	05/19/10	KWG1004716	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	102	50-150	05/19/10	Acceptable

Comments: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Longview - Former ARCO/001.0173.00010
Sample Matrix: Water

Service Request: K1004898
Date Collected: 05/14/2010
Date Received: 05/14/2010

Gasoline Range Organics

Sample Name: EFF2-51410
Lab Code: K1004898-003
Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTP	ND	U	250	1	05/19/10	05/19/10	KWG1004716	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	102	50-150	05/19/10	Acceptable

Comments: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Longview - Former ARCO/001.0173.00010
Sample Matrix: Water

Service Request: K1004898
Date Collected: NA
Date Received: NA

Gasoline Range Organics

Sample Name: Method Blank
Lab Code: KWG1004716-3
Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTP	ND U	250	1	05/19/10	05/19/10	KWG1004716	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	102	50-150	05/19/10	Acceptable

Comments: _____

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: SLR International
Project: Longview - Former ARCO/001.0173.00010
Sample Matrix: Water

Service Request: K1004898

Surrogate Recovery Summary
Gasoline Range Organics

Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: PERCENT
Level: Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>
INF-51410	K1004898-001	102
EFF1-51410	K1004898-002	102
EFF2-51410	K1004898-003	102
EFF1-51410DUP	KWG1004716-1	102
Method Blank	KWG1004716-3	102
Lab Control Sample	KWG1004716-2	106

Surrogate Recovery Control Limits (%)

Sur1 = 1,4-Difluorobenzene	50-150
----------------------------	--------

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: SLR International
Project: Longview - Former ARCO/001.0173.00010
Sample Matrix: Water

Service Request: K1004898
Date Extracted: 05/19/2010
Date Analyzed: 05/19/2010

Duplicate Sample Summary
Gasoline Range Organics

Sample Name: EFF1-51410
Lab Code: K1004898-002
Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1004716

Analyte Name	MRL	Sample Result	EFF1-51410DUP KWG1004716-1 Duplicate Sample		Relative Percent Difference	RPD Limit
			Result	Average		
Gasoline Range Organics-NWTPH	250	ND	ND	ND	-	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: SLR International
Project: Longview - Former ARCO/001.0173.00010
Sample Matrix: Water

Service Request: K1004898
Date Extracted: 05/19/2010
Date Analyzed: 05/19/2010

Lab Control Spike Summary
Gasoline Range Organics

Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1004716

Lab Control Sample KWG1004716-2 Lab Control Spike				
Analyte Name	Result	Expected	%Rec	%Rec Limits
Gasoline Range Organics-NWTPH	515	500	103	80-119

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Longview - Former ARCO/001.0173.00010
Sample Matrix: Water

Service Request: K1004898
Date Collected: 05/14/2010
Date Received: 05/14/2010

Volatile Organic Compounds

Sample Name: INF-51410
Lab Code: K1004898-001
Extraction Method: EPA 5030B
Analysis Method: 8260B

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	27	0.50	1	05/20/10	05/20/10	KWG1004684	
Toluene	ND U	0.50	1	05/20/10	05/20/10	KWG1004684	
Ethylbenzene	ND U	0.50	1	05/20/10	05/20/10	KWG1004684	
m,p-Xylenes	1.0	0.50	1	05/20/10	05/20/10	KWG1004684	
o-Xylene	ND U	0.50	1	05/20/10	05/20/10	KWG1004684	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	82	73-122	05/20/10	Acceptable
Toluene-d8	90	78-129	05/20/10	Acceptable
4-Bromofluorobenzene	85	68-117	05/20/10	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Longview - Former ARCO/001.0173.00010
Sample Matrix: Water

Service Request: K1004898
Date Collected: 05/14/2010
Date Received: 05/14/2010

Volatile Organic Compounds

Sample Name: EFF1-51410
Lab Code: K1004898-002
Extraction Method: EPA 5030B
Analysis Method: 8260B

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	ND	U	0.50	1	05/20/10	05/20/10	KWG1004684	
Toluene	ND	U	0.50	1	05/20/10	05/20/10	KWG1004684	
Ethylbenzene	ND	U	0.50	1	05/20/10	05/20/10	KWG1004684	
m,p-Xylenes	ND	U	0.50	1	05/20/10	05/20/10	KWG1004684	
o-Xylene	ND	U	0.50	1	05/20/10	05/20/10	KWG1004684	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	83	73-122	05/20/10	Acceptable
Toluene-d8	90	78-129	05/20/10	Acceptable
m-Bromofluorobenzene	83	68-117	05/20/10	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Longview - Former ARCO/001.0173.00010
Sample Matrix: Water

Service Request: K1004898
Date Collected: 05/14/2010
Date Received: 05/14/2010

Volatile Organic Compounds

Sample Name: EFF2-51410
Lab Code: K1004898-003
Extraction Method: EPA 5030B
Analysis Method: 8260B

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	ND	U	0.50	1	05/20/10	05/20/10	KWG1004684	
Toluene	ND	U	0.50	1	05/20/10	05/20/10	KWG1004684	
Ethylbenzene	ND	U	0.50	1	05/20/10	05/20/10	KWG1004684	
m,p-Xylenes	ND	U	0.50	1	05/20/10	05/20/10	KWG1004684	
o-Xylene	ND	U	0.50	1	05/20/10	05/20/10	KWG1004684	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	83	73-122	05/20/10	Acceptable
Toluene-d8	91	78-129	05/20/10	Acceptable
4-Bromofluorobenzene	82	68-117	05/20/10	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Longview - Former ARCO/001.0173.00010
Sample Matrix: Water

Service Request: K1004898
Date Collected: NA
Date Received: NA

Volatile Organic Compounds

Sample Name: Method Blank
Lab Code: KWG1004684-4
Extraction Method: EPA 5030B
Analysis Method: 8260B

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	ND	U	0.50	1	05/20/10	05/20/10	KWG1004684	
Toluene	ND	U	0.50	1	05/20/10	05/20/10	KWG1004684	
Ethylbenzene	ND	U	0.50	1	05/20/10	05/20/10	KWG1004684	
m,p-Xylenes	ND	U	0.50	1	05/20/10	05/20/10	KWG1004684	
o-Xylene	ND	U	0.50	1	05/20/10	05/20/10	KWG1004684	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	82	73-122	05/20/10	Acceptable
Toluene-d8	90	78-129	05/20/10	Acceptable
m-Bromofluorobenzene	84	68-117	05/20/10	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: SLR International
Project: Longview - Former ARCO/001.0173.00010
Sample Matrix: Water

Service Request: K1004898

Surrogate Recovery Summary
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260B

Units: PERCENT
Level: Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>	<u>Sur2</u>	<u>Sur3</u>
INF-51410	K1004898-001	82	90	85
EFF1-51410	K1004898-002	83	90	83
EFF2-51410	K1004898-003	83	91	82
Method Blank	KWG1004684-4	82	90	84
Batch QC	K1004778-005	88	92	83
Batch QCMS	KWG1004684-1	92	95	89
Batch QCDMS	KWG1004684-2	89	94	88
Lab Control Sample	KWG1004684-3	90	93	88

Surrogate Recovery Control Limits (%)

Sur1 = Dibromofluoromethane	73-122
Sur2 = Toluene-d8	78-129
Sur3 = 4-Bromofluorobenzene	68-117

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: SLR International
 Project: Longview - Former ARCO/001.0173.00010
 Sample Matrix: Water

Service Request: K1004898
 Date Extracted: 05/20/2010
 Date Analyzed: 05/20/2010

Matrix Spike/Duplicate Matrix Spike Summary
Volatile Organic Compounds

Sample Name: Batch QC
 Lab Code: K1004778-005
 Extraction Method: EPA 5030B
 Analysis Method: 8260B

Units: ug/L
 Basis: NA
 Level: Low
 Extraction Lot: KWG1004684

Analyte Name	Sample Result	Batch QCMS KWG1004684-1 Matrix Spike			Batch QCDMS KWG1004684-2 Duplicate Matrix Spike			%Rec Limits	RPD	RPD Limit
		Result	Expected	%Rec	Result	Expected	%Rec			
Benzene	ND	81.4	100	81	88.1	100	88	69-126	8	30
Toluene	ND	84.8	100	85	91.5	100	92	66-128	8	30
Ethylbenzene	ND	83.4	100	83	93.1	100	93	65-126	11	30
m,p-Xylenes	ND	168	200	84	187	200	93	63-130	11	30
o-Xylene	ND	83.9	100	84	94.4	100	94	65-130	12	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: SLR International
Project: Longview - Former ARCO/001.0173.00010
Sample Matrix: Water

Service Request: K1004898
Date Extracted: 05/20/2010
Date Analyzed: 05/20/2010

Lab Control Spike Summary
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260B

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1004684

Lab Control Sample
KWG1004684-3
Lab Control Spike

Analyte Name	Result	Expected	%Rec	%Rec Limits
Benzene	9.75	10.0	98	74-118
Toluene	10.1	10.0	101	74-117
Ethylbenzene	9.88	10.0	99	71-118
m,p-Xylenes	19.9	20.0	99	73-119
o-Xylene	10.0	10.0	100	74-120

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.



SR#: K1004898

1317 South 13th Ave, Kelso, WA 98626

800.695.7222 | 360.636.1068 (fax)

PAGE

40

#COC

Project Name: Langview - former ARCO
Project Number: 0010173.00010
Project Manager: Mike Stabin
Company/Address: SLR
City/State/Zip: mstabin@slr.com
Phone: 1925/402-8800
Fax: 1925/402-8800
Sampler's Signature: [Signature]

Sample ID: INF-51410 DATE: 5/14/10 TIME: 1305 MATRIX: W
Sample ID: EFF-51410 DATE: 5/14/10 TIME: 1310 MATRIX: ↓
Sample ID: EFF-51410 DATE: 5/14/10 TIME: 1315 MATRIX: ↓

REMARKS

TOX 9020 ☐ AOX 1650 ☐ 506 ☐
DOC (circle) NO₂+NO₃
NH₃-N, COD, Total-P, TKN, TOC
NO₃, BOD, TSS, TDS (circle)
pH, Cond, Cl, SO₄, PO₄, F, NO₂
Hex-Chrom ☐
Cyanide ☐
(See list below)
Metals, Total or Dissolved
PAHS 8310 ☐ SIM ☐
PCP ☐ 8151A ☐
Chlorophenolics - 8151M ☐
8081A ☐ 8141A ☐
Pesticides/Herbicides
Congeners ☐
PCBs ☐
1664 SGT ☐
Oil & Grease/TPH ☐
1664 HEM ☐
Oil & Grease/Screen ☐
NW-HCID Screen ☐
Fuel Fingerprint (FIC) ☐
Oil ☐
Gas ☒ Diesel ☐
Hydrocarbons (*see below)
8021 ☐ BTEX ☒
8260 ☐
Volatile Organics by GC/MS
625 ☐ 8270 ☐ 8270LL ☐
Semi-volatile Organics by GC/MS
624 ☐ 8260 ☐
8270 ☐ 8270LL ☐

INVOICE INFORMATION
P.O. #
Bill To:

TURNAROUND REQUIREMENTS
24 hr. ☐ 48 hr. ☐
X 5 Day
Standard (10-15 working days)
Provide FAX Results
Requested Report Date

REPORT REQUIREMENTS
I. Routine Report: Method Blank, Surrogate, as required
II. Report Dup., MS, MSD as required
III. Data Validation Report (includes all raw data)
IV. CLP Deliverable Report
V. EDD

RECEIVED BY: [Signature] 5/14/10 1350
RELINQUISHED BY: [Signature] 5/14/10 1350
Signature: [Signature] Date/Time: 5/14/10
Printed Name: Mike Stabin Firm: SLR

RECEIVED BY: [Signature] Date/Time: 5/14/10
RELINQUISHED BY: [Signature] Date/Time: 5/14/10
Signature: [Signature] Date/Time: 5/14/10
Printed Name: Mike Stabin Firm: SLR

*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER: (CIRCLE ONE)
SPECIAL INSTRUCTIONS/COMMENTS: 5 DAY TAT

Sample Shipment contains USDA regulated soil samples (check box if applicable)

June 21, 2010

Analytical Report for Service Request No: K1006143

Mike Staton
SLR International
22118 20th Avenue, Suite G202
Bothell, WA 98021

RE: Longview - Former ARCO/001.0173.00010

Dear Mike:

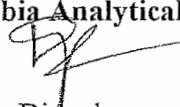
Enclosed are the results of the rush samples submitted to our laboratory on June 14, 2010. For your reference, these analyses have been assigned our service request number K1006143.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.caslab.com. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please call if you have any questions. My extension is 3281. You may also contact me via Email at PDivvela@caslab.com.

Respectfully submitted,

Columbia Analytical Services, Inc.


Pradeep Divvela
Project Chemist

PD/ln

Page 1 of 21

cc: Chris Kramer, SLR International, West Linn, OR

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated value that was detected outside the quantitation range.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.1 definition: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.

Metals Data Qualifiers

- # The control limit criteria is not applicable. See case narrative.
- J The result is an estimated value that was detected outside the quantitation range.
- E The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
- M The duplicate injection precision was not met.
- N The Matrix Spike sample recovery is not within control limits. See case narrative.
- S The reported value was determined by the Method of Standard Additions (MSA).
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.1 definition: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- W The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- + The correlation coefficient for the MSA is less than 0.995.
- Q See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- A A tentatively identified compound, a suspected aldol-condensation product.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- C The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
- D The reported result is from a dilution.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated value that was detected outside the quantitation range.
- N The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
- P The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.1 definition: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

- F The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
- L The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
- H The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
- O The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
- Y The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
- Z The chromatographic fingerprint does not resemble a petroleum product.

Columbia Analytical Services, Inc.
Kelso, WA
State Certifications, Accreditations, and Licenses

Program	Number
Alaska DEC UST	UST-040
Arizona DHS	AZ0339
Arkansas - DEQ	88-0637
California DHS	2286
Colorado DPHE	-
Florida DOH	E87412
Hawaii DOH	-
Idaho DHW	-
Indiana DOH	C-WA-01
Louisiana DEQ	3016
Louisiana DHH	LA050010
Maine DHS	WA0035
Michigan DEQ	9949
Minnesota DOH	053-999-368
Montana DPHHS	CERT0047
Nevada DEP	WA35
New Jersey DEP	WA005
New Mexico ED	-
North Carolina DWQ	605
Oklahoma DEQ	9801
Oregon - DHS	WA200001
South Carolina DHEC	61002
Utah DOH	COLU
Washington DOE	C1203
Wisconsin DNR	998386840
Wyoming (EPA Region 8)	-

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Longview - Former ARCO/001.0173.00010
Sample Matrix: Water

Service Request: K1006143
Date Collected: 06/14/2010
Date Received: 06/14/2010

Gasoline Range Organics

Sample Name: INF-61410
Lab Code: K1006143-001
Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTP	ND	U	250	1	06/18/10	06/18/10	KWG1005898	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	104	50-150	06/18/10	Acceptable

Comments: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Longview - Former ARCO/001.0173.00010
Sample Matrix: Water

Service Request: K1006143
Date Collected: 06/14/2010
Date Received: 06/14/2010

Gasoline Range Organics

Sample Name: EFF1-61410
Lab Code: K1006143-002
Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTP	ND	U	250	1	06/18/10	06/18/10	KWG1005898	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	103	50-150	06/18/10	Acceptable

Comments: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Longview - Former ARCO/001.0173.00010
Sample Matrix: Water

Service Request: K1006143
Date Collected: 06/14/2010
Date Received: 06/14/2010

Gasoline Range Organics

Sample Name: EFF2-61410
Lab Code: K1006143-003
Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTP	ND	U	250	1	06/18/10	06/18/10	KWG1005898	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	104	50-150	06/18/10	Acceptable

Comments: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Longview - Former ARCO/001.0173.00010
Sample Matrix: Water

Service Request: K1006143
Date Collected: NA
Date Received: NA

Gasoline Range Organics

Sample Name: Method Blank
Lab Code: KWG1005898-5
Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTP	ND	U	250	1	06/18/10	06/18/10	KWG1005898	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	104	50-150	06/18/10	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: SLR International
Project: Longview - Former ARCO/001.0173.00010
Sample Matrix: Water

Service Request: K1006143
Date Extracted: 06/17/2010
Date Analyzed: 06/17/2010

Duplicate Sample Summary
Gasoline Range Organics

Sample Name: Batch QC
Lab Code: K1005913-024
Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1005898

Analyte Name	MRL	Sample Result	Batch QCDUP KWG1005898-3 Duplicate Sample Result	Average	Relative Percent Difference	RPD Limit
Gasoline Range Organics-NWTPH	250	ND	ND	ND	-	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: SLR International
Project: Longview - Former ARCO/001.0173.00010
Sample Matrix: Water

Service Request: K1006143

Surrogate Recovery Summary
Gasoline Range Organics

Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: PERCENT
Level: Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>
INF-61410	K1006143-001	104
EFF1-61410	K1006143-002	103
EFF2-61410	K1006143-003	104
Batch QCDUP	KWG1005898-3	101
Method Blank	KWG1005898-5	104
Batch QC	K1005913-024	102
Lab Control Sample	KWG1005898-4	109

Surrogate Recovery Control Limits (%)

Sur1 = 1,4-Difluorobenzene 50-150

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Lab Control Spike Summary Report

Lab Control Spike Information

ListJoinID : LJ1015

Data File:	J:\GC07A\DATA\061710\0617F031.D	Instrument:	GC07A
Lab ID:	KWG1005898-4	Dilution:	1
Client ID:	Lab Control Sample	Units:	ug/L
Prod Code:	NWTPH-Gx NW_GAS	Acqu Date:	06/18/2010 05:26
Matrix:	WATER	Quant Date:	06/18/2010 08:16

Parameter Name	Lab Control Spike			%Rec Limits
	Result	Expected	%Rec	
Gasoline Range Organics (G	499	500	100	85-121

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: SLR International
Project: Longview - Former ARCO/001.0173.00010
Sample Matrix: Water

Service Request: K1006143
Date Extracted: 06/18/2010
Date Analyzed: 06/18/2010

Lab Control Spike Summary
Gasoline Range Organics

Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1005898

Analyte Name	Lab Control Sample KWG1005898-4 Lab Control Spike			%Rec Limits
	Result	Expected	%Rec	
Gasoline Range Organics-NWTPH	506	500	101	80-119

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Longview - Former ARCO/001.0173.00010
Sample Matrix: Water

Service Request: K1006143
Date Collected: 06/14/2010
Date Received: 06/14/2010

Volatile Organic Compounds

Sample Name: INF-61410
Lab Code: K1006143-001
Extraction Method: EPA 5030B
Analysis Method: 8260B

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	31		0.50	1	06/16/10	06/16/10	KWG1005826	
Toluene	ND	U	0.50	1	06/16/10	06/16/10	KWG1005826	
Ethylbenzene	ND	U	0.50	1	06/16/10	06/16/10	KWG1005826	
m,p-Xylenes	0.86		0.50	1	06/16/10	06/16/10	KWG1005826	
o-Xylene	ND	U	0.50	1	06/16/10	06/16/10	KWG1005826	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	91	73-122	06/16/10	Acceptable
Toluene-d8	95	78-129	06/16/10	Acceptable
4-Bromofluorobenzene	88	68-117	06/16/10	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Longview - Former ARCO/001.0173.00010
Sample Matrix: Water

Service Request: K1006143
Date Collected: 06/14/2010
Date Received: 06/14/2010

Volatile Organic Compounds

Sample Name: EFF1-61410
Lab Code: K1006143-002
Extraction Method: EPA 5030B
Analysis Method: 8260B

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	ND	U	0.50	1	06/16/10	06/16/10	KWG1005826	
Toluene	ND	U	0.50	1	06/16/10	06/16/10	KWG1005826	
Ethylbenzene	ND	U	0.50	1	06/16/10	06/16/10	KWG1005826	
m,p-Xylenes	ND	U	0.50	1	06/16/10	06/16/10	KWG1005826	
o-Xylene	ND	U	0.50	1	06/16/10	06/16/10	KWG1005826	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	96	73-122	06/16/10	Acceptable
Toluene-d8	99	78-129	06/16/10	Acceptable
4-Bromofluorobenzene	87	68-117	06/16/10	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Longview - Former ARCO/001.0173.00010
Sample Matrix: Water

Service Request: K1006143
Date Collected: 06/14/2010
Date Received: 06/14/2010

Volatile Organic Compounds

Sample Name: EFF2-61410
Lab Code: K1006143-003
Extraction Method: EPA 5030B
Analysis Method: 8260B

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	ND	U	0.50	1	06/16/10	06/16/10	KWG1005826	
Toluene	ND	U	0.50	1	06/16/10	06/16/10	KWG1005826	
Ethylbenzene	ND	U	0.50	1	06/16/10	06/16/10	KWG1005826	
m,p-Xylenes	ND	U	0.50	1	06/16/10	06/16/10	KWG1005826	
o-Xylene	ND	U	0.50	1	06/16/10	06/16/10	KWG1005826	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	97	73-122	06/16/10	Acceptable
Toluene-d8	99	78-129	06/16/10	Acceptable
4-Bromofluorobenzene	88	68-117	06/16/10	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Longview - Former ARCO/001.0173.00010
Sample Matrix: Water

Service Request: K1006143
Date Collected: NA
Date Received: NA

Volatile Organic Compounds

Sample Name: Method Blank
Lab Code: KWG1005826-4
Extraction Method: EPA 5030B
Analysis Method: 8260B

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	ND	U	0.50	1	06/16/10	06/16/10	KWG1005826	
Toluene	ND	U	0.50	1	06/16/10	06/16/10	KWG1005826	
Ethylbenzene	ND	U	0.50	1	06/16/10	06/16/10	KWG1005826	
m,p-Xylenes	ND	U	0.50	1	06/16/10	06/16/10	KWG1005826	
o-Xylene	ND	U	0.50	1	06/16/10	06/16/10	KWG1005826	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	92	73-122	06/16/10	Acceptable
Toluene-d8	100	78-129	06/16/10	Acceptable
4-Bromofluorobenzene	86	68-117	06/16/10	Acceptable

Comments: _____

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: SLR International
Project: Longview - Former ARCO/001.0173.00010
Sample Matrix: Water

Service Request: K1006143

Surrogate Recovery Summary
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260B

Units: PERCENT
Level: Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>	<u>Sur2</u>	<u>Sur3</u>
INF-61410	K1006143-001	91	95	88
EFF1-61410	K1006143-002	96	99	87
EFF2-61410	K1006143-003	97	99	88
Method Blank	KWG1005826-4	92	100	86
Batch QC	K1005956-002	94	99	86
Batch QCMS	KWG1005826-1	102	103	97
Batch QCDMS	KWG1005826-2	98	103	95
Lab Control Sample	KWG1005826-3	97	102	94

Surrogate Recovery Control Limits (%)

Sur1 = Dibromofluoromethane	73-122
Sur2 = Toluene-d8	78-129
Sur3 = 4-Bromofluorobenzene	68-117

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: SLR International
 Project: Longview - Former ARCO/001.0173.00010
 Sample Matrix: Water

Service Request: K1006143
 Date Extracted: 06/16/2010
 Date Analyzed: 06/16/2010

Matrix Spike/Duplicate Matrix Spike Summary
 Volatile Organic Compounds

Sample Name: Batch QC
 Lab Code: K1005956-002
 Extraction Method: EPA 5030B
 Analysis Method: 8260B

Units: ug/L
 Basis: NA
 Level: Low
 Extraction Lot: KWG1005826

Analyte Name	Sample Result	Batch QCMS KWG1005826-1 Matrix Spike			Batch QCDMS KWG1005826-2 Duplicate Matrix Spike			%Rec Limits	RPD	RPD Limit
		Result	Expected	%Rec	Result	Expected	%Rec			
Benzene	ND	8.72	10.0	87	9.40	10.0	94	69-126	8	30
Toluene	ND	9.03	10.0	90	9.74	10.0	97	66-128	8	30
Ethylbenzene	ND	8.30	10.0	83	9.23	10.0	92	65-126	11	30
m,p-Xylenes	ND	17.1	20.0	85	18.8	20.0	94	63-130	10	30
o-Xylene	ND	8.29	10.0	83	9.17	10.0	92	65-130	10	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: SLR International
Project: Longview - Former ARCO/001.0173.00010
Sample Matrix: Water

Service Request: K1006143
Date Extracted: 06/16/2010
Date Analyzed: 06/16/2010

Lab Control Spike Summary
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260B

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1005826

Analyte Name	Lab Control Sample KWG1005826-3 Lab Control Spike			%Rec Limits
	Result	Expected	%Rec	
Benzene	10.2	10.0	102	74-118
Toluene	10.2	10.0	102	74-117
Ethylbenzene	9.91	10.0	99	71-118
m,p-Xylenes	20.0	20.0	100	73-119
o-Xylene	9.76	10.0	98	74-120

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.



SPR#: 6143

#000

RCOC #1 03/10

July 27, 2010

Analytical Report for Service Request No: K1007452

Mike Staton
SLR International
22118 20th Avenue, Suite G202
Bothell, WA 98021

RE: Longview - Former ARCO/001.00173.00010

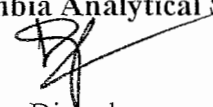
Dear Mike:

Enclosed are the results of the rush samples submitted to our laboratory on July 20, 2010. For your reference, these analyses have been assigned our service request number K1007452.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.caslab.com. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please call if you have any questions. My extension is 3281. You may also contact me via Email at PDivvela@caslab.com.

Respectfully submitted,

Columbia Analytical Services, Inc.
Pradeep Divvela
Project Chemist

PD/lg

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Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated value that was detected outside the quantitation range.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.1 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.

Metals Data Qualifiers

- # The control limit criteria is not applicable. See case narrative.
- J The result is an estimated value that was detected outside the quantitation range.
- E The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
- M The duplicate injection precision was not met.
- N The Matrix Spike sample recovery is not within control limits. See case narrative.
- S The reported value was determined by the Method of Standard Additions (MSA).
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.1 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- W The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- + The correlation coefficient for the MSA is less than 0.995.
- Q See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- A A tentatively identified compound, a suspected aldol-condensation product.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- C The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
- D The reported result is from a dilution.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated value that was detected outside the quantitation range.
- N The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
- P The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.1 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

- F The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
- L The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
- H The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
- O The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
- Y The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
- Z The chromatographic fingerprint does not resemble a petroleum product.

Columbia Analytical Services, Inc.
Kelso, WA
State Certifications, Accreditations, and Licenses

Program	Number
Alaska DEC UST	UST-040
Arizona DHS	AZ0339
Arkansas - DEQ	88-0637
California DHS	2286
Colorado DPHE	-
Florida DOH	E87412
Hawaii DOH	-
Idaho DHW	-
Indiana DOH	C-WA-01
Louisiana DEQ	3016
Louisiana DHH	LA050010
Maine DHS	WA0035
Michigan DEQ	9949
Minnesota DOH	053-999-368
Montana DPHHS	CERT0047
Nevada DEP	WA35
New Jersey DEP	WA005
New Mexico ED	-
North Carolina DWQ	605
Oklahoma DEQ	9801
Oregon - DHS	WA200001
South Carolina DHEC	61002
Utah DOH	COLU
Washington DOE	C1203
Wisconsin DNR	998386840
Wyoming (EPA Region 8)	-

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Longview - Former ARCO/001.00173.00010
Sample Matrix: Water

Service Request: K1007452
Date Collected: 07/20/2010
Date Received: 07/20/2010

Volatile Organic Compounds

Sample Name: INF-72010
Lab Code: K1007452-001
Extraction Method: EPA 5030B
Analysis Method: 8260B

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	19	0.50	1	07/24/10	07/24/10	KWG1007325	
Toluene	ND U	0.50	1	07/24/10	07/24/10	KWG1007325	
Ethylbenzene	ND U	0.50	1	07/24/10	07/24/10	KWG1007325	
m,p-Xylenes	0.52	0.50	1	07/24/10	07/24/10	KWG1007325	
o-Xylene	ND U	0.50	1	07/24/10	07/24/10	KWG1007325	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	74	73-122	07/24/10	Acceptable
Toluene-d8	88	78-129	07/24/10	Acceptable
4-Bromofluorobenzene	79	68-117	07/24/10	Acceptable

Comments: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Longview - Former ARCO/001.00173.00010
Sample Matrix: Water

Service Request: K1007452
Date Collected: 07/20/2010
Date Received: 07/20/2010

Volatile Organic Compounds

Sample Name: EFF1-72010
Lab Code: K1007452-002
Extraction Method: EPA 5030B
Analysis Method: 8260B

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	ND	U	0.50	1	07/24/10	07/24/10	KWG1007325	
Toluene	ND	U	0.50	1	07/24/10	07/24/10	KWG1007325	
Ethylbenzene	ND	U	0.50	1	07/24/10	07/24/10	KWG1007325	
m,p-Xylenes	ND	U	0.50	1	07/24/10	07/24/10	KWG1007325	
o-Xylene	ND	U	0.50	1	07/24/10	07/24/10	KWG1007325	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	76	73-122	07/24/10	Acceptable
Toluene-d8	88	78-129	07/24/10	Acceptable
4-Bromofluorobenzene	77	68-117	07/24/10	Acceptable

Comments: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Longview - Former ARCO/001.00173.00010
Sample Matrix: Water

Service Request: K1007452
Date Collected: 07/20/2010
Date Received: 07/20/2010

Volatile Organic Compounds

Sample Name: EFF2-72010
Lab Code: K1007452-003
Extraction Method: EPA 5030B
Analysis Method: 8260B

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	ND	U	0.50	1	07/24/10	07/24/10	KWG1007325	
Toluene	ND	U	0.50	1	07/24/10	07/24/10	KWG1007325	
Ethylbenzene	ND	U	0.50	1	07/24/10	07/24/10	KWG1007325	
m,p-Xylenes	ND	U	0.50	1	07/24/10	07/24/10	KWG1007325	
o-Xylene	ND	U	0.50	1	07/24/10	07/24/10	KWG1007325	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	76	73-122	07/24/10	Acceptable
Toluene-d8	89	78-129	07/24/10	Acceptable
4-Bromofluorobenzene	78	68-117	07/24/10	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Longview - Former ARCO/001.00173.00010
Sample Matrix: Water

Service Request: K1007452
Date Collected: NA
Date Received: NA

Volatile Organic Compounds

Sample Name: Method Blank
Lab Code: KWG1007325-5
Extraction Method: EPA 5030B
Analysis Method: 8260B

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	ND	U	0.50	1	07/24/10	07/24/10	KWG1007325	
Toluene	ND	U	0.50	1	07/24/10	07/24/10	KWG1007325	
Ethylbenzene	ND	U	0.50	1	07/24/10	07/24/10	KWG1007325	
m,p-Xylenes	ND	U	0.50	1	07/24/10	07/24/10	KWG1007325	
o-Xylene	ND	U	0.50	1	07/24/10	07/24/10	KWG1007325	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	77	73-122	07/24/10	Acceptable
Toluene-d8	88	78-129	07/24/10	Acceptable
4-Bromofluorobenzene	77	68-117	07/24/10	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: SLR International
Project: Longview - Former ARCO/001.00173.00010
Sample Matrix: Water

Service Request: K1007452

Surrogate Recovery Summary
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260B

Units: PERCENT
Level: Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>	<u>Sur2</u>	<u>Sur3</u>
Batch QCMS	KWG1007325-1	87	93	87
Batch QCDMS	KWG1007325-2	87	93	85
Lab Control Sample	KWG1007325-3	89	95	86
Duplicate Lab Control Sample	KWG1007325-4	87	95	86
INF-72010	K1007452-001	74	88	79
EFF1-72010	K1007452-002	76	88	77
EFF2-72010	K1007452-003	76	89	78
Method Blank	KWG1007325-5	77	88	77
Batch QC	K1007177-001	77	88	78

Surrogate Recovery Control Limits (%)

Sur1 = Dibromofluoromethane	73-122
Sur2 = Toluene-d8	78-129
Sur3 = 4-Bromofluorobenzene	68-117

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: SLR International
 Project: Longview - Former ARCO/001.00173.00010
 Sample Matrix: Water

Service Request: K1007452
 Date Extracted: 07/24/2010
 Date Analyzed: 07/24/2010

Matrix Spike/Duplicate Matrix Spike Summary
 Volatile Organic Compounds

Sample Name: Batch QC
 Lab Code: K1007177-001
 Extraction Method: EPA 5030B
 Analysis Method: 8260B

Units: ug/L
 Basis: NA
 Level: Low
 Extraction Lot: KWG1007325

Analyte Name	Sample Result	Batch QCMS KWG1007325-1 Matrix Spike			Batch QCDMS KWG1007325-2 Duplicate Matrix Spike			%Rec Limits	RPD	RPD Limit
		Result	Expected	%Rec	Result	Expected	%Rec			
Benzene	ND	9.14	10.0	91	9.02	10.0	90	69-126	1	30
Toluene	ND	9.44	10.0	94	9.42	10.0	94	66-128	0	30
Ethylbenzene	ND	9.29	10.0	93	9.25	10.0	93	65-126	0	30
m,p-Xylenes	ND	18.5	20.0	93	18.4	20.0	92	63-130	1	30
o-Xylene	ND	8.97	10.0	90	8.89	10.0	89	65-130	1	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: SLR International
Project: Longview - Former ARCO/001.00173.00010
Sample Matrix: Water

Service Request: K1007452
Date Extracted: 07/24/2010
Date Analyzed: 07/24/2010

Lab Control Spike/Duplicate Lab Control Spike Summary
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260B

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1007325

Analyte Name	Lab Control Sample KWG1007325-3 Lab Control Spike			Duplicate Lab Control Sample KWG1007325-4 Duplicate Lab Control Spike			%Rec Limits	RPD	RPD Limit
	Result	Expected	%Rec	Result	Expected	%Rec			
Benzene	9.31	10.0	93	9.36	10.0	94	74-118	1	30
Toluene	9.54	10.0	95	9.58	10.0	96	74-117	0	30
Ethylbenzene	9.44	10.0	94	9.37	10.0	94	71-118	1	30
m,p-Xylenes	19.0	20.0	95	18.6	20.0	93	73-119	2	30
o-Xylene	9.14	10.0	91	9.04	10.0	90	74-120	1	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Longview - Former ARCO/001.00173.00010
Sample Matrix: Water

Service Request: K1007452
Date Collected: 07/20/2010
Date Received: 07/20/2010

Gasoline Range Organics

Sample Name: INF-72010
Lab Code: K1007452-001
Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTP	ND U	250	1	07/21/10	07/21/10	KWG1007247	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
4-Difluorobenzene	98	50-150	07/21/10	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Longview - Former ARCO/001.00173.00010
Sample Matrix: Water

Service Request: K1007452
Date Collected: 07/20/2010
Date Received: 07/20/2010

Gasoline Range Organics

Sample Name: EFF1-72010
Lab Code: K1007452-002
Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTP	ND U	250	1	07/21/10	07/21/10	KWG1007247	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	98	50-150	07/21/10	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Longview - Former ARCO/001.00173.00010
Sample Matrix: Water

Service Request: K1007452
Date Collected: 07/20/2010
Date Received: 07/20/2010

Gasoline Range Organics

Sample Name: EFF2-72010
Lab Code: K1007452-003
Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTP	ND	U	250	1	07/21/10	07/21/10	KWG1007247	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
4-Difluorobenzene	98	50-150	07/21/10	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Longview - Former ARCO/001.00173.00010
Sample Matrix: Water

Service Request: K1007452
Date Collected: NA
Date Received: NA

Gasoline Range Organics

Sample Name: Method Blank
Lab Code: KWG1007247-5
Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTP	ND U	250	1	07/21/10	07/21/10	KWG1007247	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	98	50-150	07/21/10	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

ent: SLR International
ject: Longview - Former ARCO/001.00173.00010
mple Matrix: Water

Service Request: K1007452

Surrogate Recovery Summary
Gasoline Range Organics

traction Method: EPA 5030B
alysis Method: NWTPH-Gx

Units: PERCENT
Level: Low

<u>mple Name</u>	<u>Lab Code</u>	<u>Sur1</u>
F-72010	K1007452-001	98
F1-72010	K1007452-002	98
F2-72010	K1007452-003	98
ethod Blank	KWG1007247-5	98
o Control Sample	KWG1007247-3	103
uplicate Lab Control Sample	KWG1007247-4	103

Surrogate Recovery Control Limits (%)

ur1 = 1,4-Difluorobenzene 50-150

ults flagged with an asterisk (*) indicate values outside control criteria.

ults flagged with a pound (#) indicate the control criteria is not applicable.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: SLR International
Project: Longview - Former ARCO/001.00173.00010
Sample Matrix: Water

Service Request: K1007452
Date Extracted: 07/21/2010
Date Analyzed: 07/21/2010

Lab Control Spike/Duplicate Lab Control Spike Summary
Gasoline Range Organics

Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1007247

Analyte Name	Lab Control Sample KWG1007247-3 Lab Control Spike			Duplicate Lab Control Sample KWG1007247-4 Duplicate Lab Control Spike			%Rec Limits	RPD	RPD Limit
	Result	Expected	%Rec	Result	Expected	%Rec			
Gasoline Range Organics-NWTPH	465	500	93	463	500	93	80-119	0	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

August 23, 2010

Analytical Report for Service Request No: K1008657

Mike Staton
SLR International
22118 20th Avenue, Suite G202
Bothell, WA 98021

RE: Longview-Former ARCO/101.00173.00010

Dear Mike:

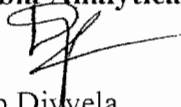
Enclosed are the results of the rush samples submitted to our laboratory on August 13, 2010. For your reference, these analyses have been assigned our service request number K1008657.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.caslab.com. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please call if you have any questions. My extension is 3281. You may also contact me via Email at PDivvela@caslab.com.

Respectfully submitted,

Columbia Analytical Services, Inc.


Pradeep Divvela
Project Chemist

PD/ln

Page 1 of 20

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated value that was detected outside the quantitation range.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.1 definition: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.

Metals Data Qualifiers

- # The control limit criteria is not applicable. See case narrative.
- J The result is an estimated value that was detected outside the quantitation range.
- E The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
- M The duplicate injection precision was not met.
- N The Matrix Spike sample recovery is not within control limits. See case narrative.
- S The reported value was determined by the Method of Standard Additions (MSA).
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.1 definition: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- W The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- + The correlation coefficient for the MSA is less than 0.995.
- Q See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- A A tentatively identified compound, a suspected aldol-condensation product.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- C The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
- D The reported result is from a dilution.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated value that was detected outside the quantitation range.
- N The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
- P The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.1 definition: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

- F The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
- L The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
- H The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
- O The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
- Y The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
- Z The chromatographic fingerprint does not resemble a petroleum product.

Columbia Analytical Services, Inc.
Kelso, WA
State Certifications, Accreditations, and Licenses

Program	Number
Alaska DEC UST	UST-040
Arizona DHS	AZ0339
Arkansas - DEQ	88-0637
California DHS	2286
Colorado DPHE	-
Florida DOH	E87412
Hawaii DOH	-
Idaho DHW	-
Indiana DOH	C-WA-01
Louisiana DEQ	3016
Louisiana DHH	LA050010
Maine DHS	WA0035
Michigan DEQ	9949
Minnesota DOH	053-999-368
Montana DPHHS	CERT0047
Nevada DEP	WA35
New Jersey DEP	WA005
New Mexico ED	-
North Carolina DWQ	605
Oklahoma DEQ	9801
Oregon - DHS	WA200001
South Carolina DHEC	61002
Utah DOH	COLU
Washington DOE	C1203
Wisconsin DNR	998386840
Wyoming (EPA Region 8)	-

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Longview-Former ARCO/101.00173.00010
Sample Matrix: Water

Service Request: K1008657
Date Collected: 08/13/2010
Date Received: 08/13/2010

Gasoline Range Organics

Sample Name: INF-81310
Lab Code: K1008657-001
Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTP	ND	U	250	1	08/20/10	08/20/10	KWG1008689	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	94	50-150	08/20/10	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Longview-Former ARCO/101.00173.00010
Sample Matrix: Water

Service Request: K1008657
Date Collected: 08/13/2010
Date Received: 08/13/2010

Gasoline Range Organics

Sample Name: EFF1-81310
Lab Code: K1008657-002
Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTP	ND	U	250	1	08/20/10	08/20/10	KWG1008689	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	94	50-150	08/20/10	Acceptable

Comments: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Longview-Former ARCO/101.00173.00010
Sample Matrix: Water

Service Request: K1008657
Date Collected: 08/13/2010
Date Received: 08/13/2010

Gasoline Range Organics

Sample Name: EFF2-81310
Lab Code: K1008657-003
Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTP	ND	U	250	1	08/20/10	08/20/10	KWG1008689	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	95	50-150	08/20/10	Acceptable

Comments: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Longview-Former ARCO/101.00173.00010
Sample Matrix: Water

Service Request: K1008657
Date Collected: NA
Date Received: NA

Gasoline Range Organics

Sample Name: Method Blank
Lab Code: KWG1008689-3
Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTP	ND	U	250	1	08/20/10	08/20/10	KWG1008689	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	94	50-150	08/20/10	Acceptable

Comments: _____

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: SLR International
Project: Longview-Former ARCO/101.00173.00010
Sample Matrix: Water

Service Request: K1008657

Surrogate Recovery Summary
Gasoline Range Organics

Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: PERCENT
Level: Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>
INF-81310	K1008657-001	94
EFF1-81310	K1008657-002	94
EFF2-81310	K1008657-003	95
EFF2-81310DUP	KWG1008689-1	95
Method Blank	KWG1008689-3	94
Lab Control Sample	KWG1008689-2	100

Surrogate Recovery Control Limits (%)

Sur1 = 1,4-Difluorobenzene 50-150

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: SLR International
Project: Longview-Former ARCO/101.00173.00010
Sample Matrix: Water

Service Request: K1008657
Date Extracted: 08/20/2010
Date Analyzed: 08/20/2010

Duplicate Sample Summary
Gasoline Range Organics

Sample Name: EFF2-81310
Lab Code: K1008657-003
Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1008689

Analyte Name	MRL	Sample Result	EFF2-81310DUP KWG1008689-1 Duplicate Sample		Relative Percent Difference	RPD Limit
			Result	Average		
Gasoline Range Organics-NWTPH	250	ND	ND	ND	-	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: SLR International
Project: Longview-Former ARCO/101.00173.00010
Sample Matrix: Water

Service Request: K1008657
Date Extracted: 08/20/2010
Date Analyzed: 08/20/2010

Lab Control Spike Summary
Gasoline Range Organics

Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1008689

Analyte Name	Lab Control Sample KWG1008689-2 Lab Control Spike			%Rec Limits
	Result	Expected	%Rec	
Gasoline Range Organics-NWTPH	434	500	87	80-119

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Longview-Former ARCO/101.00173.00010
Sample Matrix: Water

Service Request: K1008657
Date Collected: 08/13/2010
Date Received: 08/13/2010

Volatile Organic Compounds

Sample Name: INF-81310
Lab Code: K1008657-001
Extraction Method: EPA 5030B
Analysis Method: 8260B

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	27	0.50	1	08/18/10	08/18/10	KWG1008505	
Toluene	ND U	0.50	1	08/18/10	08/18/10	KWG1008505	
Ethylbenzene	ND U	0.50	1	08/18/10	08/18/10	KWG1008505	
m,p-Xylenes	0.56	0.50	1	08/18/10	08/18/10	KWG1008505	
o-Xylene	ND U	0.50	1	08/18/10	08/18/10	KWG1008505	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	96	73-122	08/18/10	Acceptable
Toluene-d8	94	78-129	08/18/10	Acceptable
4-Bromofluorobenzene	92	68-117	08/18/10	Acceptable

Comments: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Longview-Former ARCO/101.00173.00010
Sample Matrix: Water

Service Request: K1008657
Date Collected: 08/13/2010
Date Received: 08/13/2010

Volatile Organic Compounds

Sample Name: EFF1-81310
Lab Code: K1008657-002
Extraction Method: EPA 5030B
Analysis Method: 8260B

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	ND	U	0.50	1	08/18/10	08/18/10	KWG1008505	
Toluene	ND	U	0.50	1	08/18/10	08/18/10	KWG1008505	
Ethylbenzene	ND	U	0.50	1	08/18/10	08/18/10	KWG1008505	
m,p-Xylenes	ND	U	0.50	1	08/18/10	08/18/10	KWG1008505	
o-Xylene	ND	U	0.50	1	08/18/10	08/18/10	KWG1008505	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	99	73-122	08/18/10	Acceptable
Toluene-d8	96	78-129	08/18/10	Acceptable
4-Bromofluorobenzene	90	68-117	08/18/10	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Longview-Former ARCO/101.00173.00010
Sample Matrix: Water

Service Request: K1008657
Date Collected: 08/13/2010
Date Received: 08/13/2010

Volatile Organic Compounds

Sample Name: EFF2-81310
Lab Code: K1008657-003
Extraction Method: EPA 5030B
Analysis Method: 8260B

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	ND	U	0.50	1	08/18/10	08/18/10	KWG1008505	
Toluene	ND	U	0.50	1	08/18/10	08/18/10	KWG1008505	
Ethylbenzene	ND	U	0.50	1	08/18/10	08/18/10	KWG1008505	
m,p-Xylenes	ND	U	0.50	1	08/18/10	08/18/10	KWG1008505	
o-Xylene	ND	U	0.50	1	08/18/10	08/18/10	KWG1008505	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	100	73-122	08/18/10	Acceptable
Toluene-d8	97	78-129	08/18/10	Acceptable
4-Bromofluorobenzene	90	68-117	08/18/10	Acceptable

Comments: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Longview-Former ARCO/101.00173.00010
Sample Matrix: Water

Service Request: K1008657
Date Collected: NA
Date Received: NA

Volatile Organic Compounds

Sample Name: Method Blank
Lab Code: KWG1008505-4
Extraction Method: EPA 5030B
Analysis Method: 8260B

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	ND	U	0.50	1	08/18/10	08/18/10	KWG1008505	
Toluene	ND	U	0.50	1	08/18/10	08/18/10	KWG1008505	
Ethylbenzene	ND	U	0.50	1	08/18/10	08/18/10	KWG1008505	
m,p-Xylenes	ND	U	0.50	1	08/18/10	08/18/10	KWG1008505	
o-Xylene	ND	U	0.50	1	08/18/10	08/18/10	KWG1008505	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	96	73-122	08/18/10	Acceptable
Toluene-d8	96	78-129	08/18/10	Acceptable
4-Bromofluorobenzene	91	68-117	08/18/10	Acceptable

Comments:

Client: SLR International
Project: Longview-Former ARCO/101.00173.00010
Sample Matrix: Water

Service Request: K1008657

Surrogate Recovery Summary
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260B

Units: PERCENT
Level: Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>	<u>Sur2</u>	<u>Sur3</u>
INF-81310	K1008657-001	96	94	92
EFF1-81310	K1008657-002	99	96	90
EFF2-81310	K1008657-003	100	97	90
Method Blank	KWG1008505-4	96	96	91
Batch QC	K1008603-003	92	99	89
Batch QCMS	KWG1008505-1	95	100	95
Batch QCDMS	KWG1008505-2	95	101	95
Lab Control Sample	KWG1008505-3	95	100	96

Surrogate Recovery Control Limits (%)

Sur1 = Dibromofluoromethane	73-122
Sur2 = Toluene-d8	78-129
Sur3 = 4-Bromofluorobenzene	68-117

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Client: SLR International
Project: Longview-Former ARCO/101.00173.00010
Sample Matrix: Water

Service Request: K1008657
Date Extracted: 08/18/2010
Date Analyzed: 08/18/2010

Matrix Spike/Duplicate Matrix Spike Summary
Volatile Organic Compounds

Sample Name: Batch QC
Lab Code: K1008603-003
Extraction Method: EPA 5030B
Analysis Method: 8260B

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1008505

Analyte Name	Sample Result	Batch QCMS KWG1008505-1 Matrix Spike			Batch QCDMS KWG1008505-2 Duplicate Matrix Spike			%Rec Limits	RPD	RPD Limit
		Result	Expected	%Rec	Result	Expected	%Rec			
Benzene	150	203	50.0	103	199	50.0	96	69-126	2	30
Toluene	2.5	53.5	50.0	102	53.1	50.0	101	66-128	1	30
Ethylbenzene	52	102	50.0	100	98.8	50.0	94	65-126	3	30
m,p-Xylenes	41	139	100	98	136	100	95	63-130	2	30
o-Xylene	4.9	53.6	50.0	97	52.6	50.0	95	65-130	2	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: SLR International
Project: Longview-Former ARCO/101.00173.00010
Sample Matrix: Water

Service Request: K1008657
Date Extracted: 08/18/2010
Date Analyzed: 08/18/2010

Lab Control Spike Summary
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260B

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1008505

Analyte Name	Lab Control Sample KWG1008505-3 Lab Control Spike			%Rec Limits
	Result	Expected	%Rec	
Benzene	10.3	10.0	103	74-118
Toluene	10.1	10.0	101	74-117
Ethylbenzene	9.75	10.0	98	71-118
m,p-Xylenes	19.2	20.0	96	73-119
o-Xylene	9.50	10.0	95	74-120

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.



SR#: K1008657

1317 South 13th Ave, Kelso, WA 98626 | 360.577.7222 | 800.695.7222 | 360.636.1068 (fax)

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September 17, 2010

Analytical Report for Service Request No: K1009834

Mike Staton
SLR International
22118 20th Avenue, Suite G202
Bothell, WA 98021

RE: Former ARCO-Longview/001.0173.00010

Dear Mike:


Enclosed are the results of the rush samples submitted to our laboratory on September 10, 2010. For your reference, these analyses have been assigned our service request number K1009834.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.caslab.com. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please call if you have any questions. My extension is 3281. You may also contact me via Email at PDivvela@caslab.com.

Respectfully submitted,

Columbia Analytical Services, Inc.



Pradeep Divvela
Project Chemist

PD/dlm

Page 1 of 21

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated value that was detected outside the quantitation range.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.1 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.

Metals Data Qualifiers

- # The control limit criteria is not applicable. See case narrative.
- J The result is an estimated value that was detected outside the quantitation range.
- E The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
- M The duplicate injection precision was not met.
- N The Matrix Spike sample recovery is not within control limits. See case narrative.
- S The reported value was determined by the Method of Standard Additions (MSA).
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.1 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- W The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- + The correlation coefficient for the MSA is less than 0.995.
- Q See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- A A tentatively identified compound, a suspected aldol-condensation product.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- C The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
- D The reported result is from a dilution.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated value that was detected outside the quantitation range.
- N The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
- P The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.1 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

- F The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
- L The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
- H The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
- O The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
- Y The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
- Z The chromatographic fingerprint does not resemble a petroleum product.

Columbia Analytical Services, Inc.
Kelso, WA
State Certifications, Accreditations, and Licenses

Program	Number
Alaska DEC UST	UST-040
Arizona DHS	AZ0339
Arkansas - DEQ	88-0637
California DHS	2286
Colorado DPHE	-
Florida DOH	E87412
Hawaii DOH	-
Idaho DHW	-
Indiana DOH	C-WA-01
Louisiana DEQ	3016
Louisiana DHH	LA050010
Maine DHS	WA0035
Michigan DEQ	9949
Minnesota DOH	053-999-368
Montana DPHHS	CERT0047
Nevada DEP	WA35
New Jersey DEP	WA005
New Mexico ED	-
North Carolina DWQ	605
Oklahoma DEQ	9801
Oregon - DHS	WA200001
South Carolina DHEC	61002
Utah DOH	COLU
Washington DOE	C1203
Wisconsin DNR	998386840
Wyoming (EPA Region 8)	-

COLUMBIA ANALYTICAL SERVICES, INC.

Client: SLR International
Project: Former ARCO-Longview
Sample Matrix: Water

Service Request No.: K1009834
Date Received: 09/10/10

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of Columbia Analytical Services, Inc. (CAS). This report contains analytical results for samples designated for Tier II data deliverables. When appropriate to the method, method blank results have been reported with each analytical test. Surrogate recoveries have been reported for all applicable organic analyses. Additional quality control analyses reported herein include: Laboratory Duplicate (DUP), Matrix/Duplicate Matrix Spike (MS/DMS), and Laboratory Control Sample (LCS).

Sample Receipt

Three water samples were received for analysis at Columbia Analytical Services on 09/10/10. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

Gasoline Range Organics by Method NWTPH-Gx

No anomalies associated with the analysis of these samples were observed.

Volatile Organic Compounds by EPA Method 8260B

Matrix Spike Recovery Exceptions:

The matrix spike recovery of Benzene for sample INF-91010 was outside control criteria. Recovery in the Laboratory Control Sample (LCS) was acceptable, which indicated the analytical batch was in control. No further corrective action was appropriate.

No other anomalies associated with the analysis of these samples were observed.

Approved by _____

 Date _____

9/17/10

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Former ARCO-Longview/001.0173.00010
Sample Matrix: Water

Service Request: K1009834
Date Collected: 09/10/2010
Date Received: 09/10/2010

Gasoline Range Organics

Sample Name: INF-91010
Lab Code: K1009834-001
Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTP	ND	U	250	1	09/11/10	09/11/10	KWG1009630	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	98	50-150	09/11/10	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Former ARCO-Longview/001.0173.00010
Sample Matrix: Water

Service Request: K1009834
Date Collected: 09/10/2010
Date Received: 09/10/2010

Gasoline Range Organics

Sample Name: EFF1-91010
Lab Code: K1009834-002
Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTP	ND U	250	1	09/11/10	09/11/10	KWG1009630	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	98	50-150	09/11/10	Acceptable

Comments: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Former ARCO-Longview/001.0173.00010
Sample Matrix: Water

Service Request: K1009834
Date Collected: 09/10/2010
Date Received: 09/10/2010

Gasoline Range Organics

Sample Name: EFF2-91010
Lab Code: K1009834-003
Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTP	ND	U	250	1	09/11/10	09/11/10	KWG1009630	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	99	50-150	09/11/10	Acceptable

Comments:

Analytical Results

Client: SLR International
Project: Former ARCO-Longview/001.0173.00010
Sample Matrix: Water

Service Request: K1009834
Date Collected: NA
Date Received: NA

Gasoline Range Organics

Sample Name: Method Blank
Lab Code: KWG1009630-4
Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTP	ND	U	250	1	09/11/10	09/11/10	KWG1009630	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	98	50-150	09/11/10	Acceptable

Comments:

Client: SLR International
Project: Former ARCO-Longview/001.0173.00010
Sample Matrix: Water

Service Request: K1009834

Surrogate Recovery Summary
Gasoline Range Organics

Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: PERCENT
Level: Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>
INF-91010	K1009834-001	98
EFF1-91010	K1009834-002	98
EFF2-91010	K1009834-003	99
EFF2-91010DUP	KWG1009630-1	98
Method Blank	KWG1009630-4	98
Lab Control Sample	KWG1009630-2	104
Duplicate Lab Control Sample	KWG1009630-3	103

Surrogate Recovery Control Limits (%)

Sur1 = 1,4-Difluorobenzene 50-150

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

QA/QC Report

Client: SLR International
Project: Former ARCO-Longview/001.0173.00010
Sample Matrix: Water

Service Request: K1009834
Date Extracted: 09/11/2010
Date Analyzed: 09/11/2010

Duplicate Sample Summary
Gasoline Range Organics

Sample Name: EFF2-91010
Lab Code: K1009834-003
Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1009630

		EFF2-91010DUP KWG1009630-1 Duplicate Sample			Relative Percent Difference	RPD Limit
Analyte Name	MRL	Sample Result	Result	Average		
Gasoline Range Organics-NWTPH	250	ND	ND	ND	-	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: SLR International
Project: Former ARCO-Longview/001.0173.00010
Sample Matrix: Water

Service Request: K1009834
Date Extracted: 09/11/2010
Date Analyzed: 09/11/2010

Lab Control Spike/Duplicate Lab Control Spike Summary
Gasoline Range Organics

Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1009630

Analyte Name	Lab Control Sample KWG1009630-2 Lab Control Spike			Duplicate Lab Control Sample KWG1009630-3 Duplicate Lab Control Spike			%Rec Limits	RPD	RPD Limit
	Result	Expected	%Rec	Result	Expected	%Rec			
Gasoline Range Organics-NWTPH	465	500	93	428	500	86	80-119	8	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Former ARCO-Longview/001.0173.00010
Sample Matrix: Water

Service Request: K1009834
Date Collected: 09/10/2010
Date Received: 09/10/2010

Volatile Organic Compounds

Sample Name: INF-91010
Lab Code: K1009834-001
Extraction Method: EPA 5030B
Analysis Method: 8260B

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	17		0.50	1	09/14/10	09/14/10	KWG1009693	
Toluene	ND	U	0.50	1	09/14/10	09/14/10	KWG1009693	
Ethylbenzene	ND	U	0.50	1	09/14/10	09/14/10	KWG1009693	
m,p-Xylenes	ND	U	0.50	1	09/14/10	09/14/10	KWG1009693	
o-Xylene	ND	U	0.50	1	09/14/10	09/14/10	KWG1009693	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	97	73-122	09/14/10	Acceptable
Toluene-d8	110	78-129	09/14/10	Acceptable
4-Bromofluorobenzene	93	68-117	09/14/10	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Former ARCO-Longview/001.0173.00010
Sample Matrix: Water

Service Request: K1009834
Date Collected: 09/10/2010
Date Received: 09/10/2010

Volatile Organic Compounds

Sample Name: EFF1-91010
Lab Code: K1009834-002
Extraction Method: EPA 5030B
Analysis Method: 8260B

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	ND	U	0.50	1	09/14/10	09/14/10	KWG1009693	
Toluene	ND	U	0.50	1	09/14/10	09/14/10	KWG1009693	
Ethylbenzene	ND	U	0.50	1	09/14/10	09/14/10	KWG1009693	
m,p-Xylenes	ND	U	0.50	1	09/14/10	09/14/10	KWG1009693	
o-Xylene	ND	U	0.50	1	09/14/10	09/14/10	KWG1009693	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	100	73-122	09/14/10	Acceptable
Toluene-d8	110	78-129	09/14/10	Acceptable
4-Bromofluorobenzene	93	68-117	09/14/10	Acceptable

Comments: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Former ARCO-Longview/001.0173.00010
Sample Matrix: Water

Service Request: K1009834
Date Collected: 09/10/2010
Date Received: 09/10/2010

Volatile Organic Compounds

Sample Name: EFF2-91010
Lab Code: K1009834-003
Extraction Method: EPA 5030B
Analysis Method: 8260B

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	ND	U	0.50	1	09/14/10	09/14/10	KWG1009693	
Toluene	ND	U	0.50	1	09/14/10	09/14/10	KWG1009693	
Ethylbenzene	ND	U	0.50	1	09/14/10	09/14/10	KWG1009693	
m,p-Xylenes	ND	U	0.50	1	09/14/10	09/14/10	KWG1009693	
o-Xylene	ND	U	0.50	1	09/14/10	09/14/10	KWG1009693	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	100	73-122	09/14/10	Acceptable
Toluene-d8	111	78-129	09/14/10	Acceptable
4-Bromofluorobenzene	93	68-117	09/14/10	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Former ARCO-Longview/001.0173.00010
Sample Matrix: Water

Service Request: K1009834
Date Collected: NA
Date Received: NA

Volatile Organic Compounds

Sample Name: Method Blank
Lab Code: KWG1009693-4
Extraction Method: EPA 5030B
Analysis Method: 8260B

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	ND	U	0.50	1	09/14/10	09/14/10	KWG1009693	
Toluene	ND	U	0.50	1	09/14/10	09/14/10	KWG1009693	
Ethylbenzene	ND	U	0.50	1	09/14/10	09/14/10	KWG1009693	
m,p-Xylenes	ND	U	0.50	1	09/14/10	09/14/10	KWG1009693	
o-Xylene	ND	U	0.50	1	09/14/10	09/14/10	KWG1009693	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	99	73-122	09/14/10	Acceptable
Toluene-d8	110	78-129	09/14/10	Acceptable
4-Bromofluorobenzene	93	68-117	09/14/10	Acceptable

Comments: _____

Client: SLR International
Project: Former ARCO-Longview/001.0173.00010
Sample Matrix: Water

Service Request: K1009834

Surrogate Recovery Summary
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260B

Units: PERCENT
Level: Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>	<u>Sur2</u>	<u>Sur3</u>
INF-91010	K1009834-001	97	110	93
EFF1-91010	K1009834-002	100	110	93
EFF2-91010	K1009834-003	100	111	93
Method Blank	KWG1009693-4	99	110	93
INF-91010MS	KWG1009693-1	96	110	96
INF-91010DMS	KWG1009693-2	98	110	95
Lab Control Sample	KWG1009693-3	97	111	96

Surrogate Recovery Control Limits (%)

Sur1 = Dibromofluoromethane	73-122
Sur2 = Toluene-d8	78-129
Sur3 = 4-Bromofluorobenzene	68-117

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Client: SLR International
 Project: Former ARCO-Longview/001.0173.00010
 Sample Matrix: Water

Service Request: K1009834
 Date Extracted: 09/14/2010
 Date Analyzed: 09/14/2010

**Matrix Spike/Duplicate Matrix Spike Summary
 Volatile Organic Compounds**

Sample Name: INF-91010
 Lab Code: K1009834-001
 Extraction Method: EPA 5030B
 Analysis Method: 8260B

Units: ug/L
 Basis: NA
 Level: Low
 Extraction Lot: KWG1009693

Analyte Name	Sample Result	INF-91010MS KWG1009693-1 Matrix Spike			INF-91010DMS KWG1009693-2 Duplicate Matrix Spike			%Rec Limits	RPD	RPD Limit
		Result	Expected	%Rec	Result	Expected	%Rec			
Benzene	17	24.1	10.0	74	22.6	10.0	59 *	69-126	6	30
Toluene	ND	10.2	10.0	102	9.50	10.0	95	66-128	7	30
Ethylbenzene	ND	9.90	10.0	99	9.13	10.0	91	65-126	8	30
m,p-Xylenes	ND	19.9	20.0	100	18.5	20.0	92	63-130	8	30
o-Xylene	ND	9.19	10.0	92	8.54	10.0	85	65-130	7	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client: SLR International
Project: Former ARCO-Longview/001.0173.00010
Sample Matrix: Water

Service Request: K1009834
Date Extracted: 09/14/2010
Date Analyzed: 09/14/2010

Lab Control Spike Summary
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260B

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1009693

Analyte Name	Lab Control Sample KWG1009693-3 Lab Control Spike			%Rec Limits
	Result	Expected	%Rec	
Benzene	8.90	10.0	89	74-118
Toluene	9.72	10.0	97	74-117
Ethylbenzene	9.29	10.0	93	71-118
m,p-Xylenes	18.4	20.0	92	73-119
o-Xylene	8.67	10.0	87	74-120

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

October 18, 2010

Analytical Report for Service Request No: K1011247

Mike Staton
SLR International
22118 20th Avenue, Suite G202
Bothell, WA 98021

RE: Longview - Former ARCO/101.00173.00010

Dear Mike:

Enclosed are the results of the samples submitted to our laboratory on October 08, 2010. For your reference, these analyses have been assigned our service request number K1011247.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.caslab.com. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please call if you have any questions. My extension is 3281. You may also contact me via Email at MShelton@caslab.com.

Respectfully submitted,

Columbia Analytical Services, Inc.



Mike Shelton
Project Chemist

MS/dlm

Page 1 of 20

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated value that was detected outside the quantitation range.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.1 definition: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.

Metals Data Qualifiers

- # The control limit criteria is not applicable. See case narrative.
- J The result is an estimated value that was detected outside the quantitation range.
- E The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
- M The duplicate injection precision was not met.
- N The Matrix Spike sample recovery is not within control limits. See case narrative.
- S The reported value was determined by the Method of Standard Additions (MSA).
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.1 definition: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- W The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- + The correlation coefficient for the MSA is less than 0.995.
- Q See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- A A tentatively identified compound, a suspected aldol-condensation product.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- C The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
- D The reported result is from a dilution.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated value that was detected outside the quantitation range.
- N The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
- P The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.1 definition: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

- F The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
- L The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
- H The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
- O The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
- Y The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
- Z The chromatographic fingerprint does not resemble a petroleum product.

Columbia Analytical Services, Inc.
Kelso, WA
State Certifications, Accreditations, and Licenses

Program	Number
Alaska DEC UST	UST-040
Arizona DHS	AZ0339
Arkansas - DEQ	88-0637
California DHS	2286
Colorado DPHE	-
Florida DOH	E87412
Hawaii DOH	-
Idaho DHW	-
Indiana DOH	C-WA-01
Louisiana DEQ	3016
Louisiana DHH	LA050010
Maine DHS	WA0035
Michigan DEQ	9949
Minnesota DOH	053-999-368
Montana DPHHS	CERT0047
Nevada DEP	WA35
New Jersey DEP	WA005
New Mexico ED	-
North Carolina DWQ	605
Oklahoma DEQ	9801
Oregon - DHS	WA200001
South Carolina DHEC	61002
Utah DOH	COLU
Washington DOE	C1203
Wisconsin DNR	998386840
Wyoming (EPA Region 8)	-

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Longview - Former ARCO/101.00173.00010
Sample Matrix: Water

Service Request: K1011247
Date Collected: 10/08/2010
Date Received: 10/08/2010

Gasoline Range Organics

Sample Name: INF-100810
Lab Code: K1011247-001
Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTP	ND	U	250	1	10/12/10	10/12/10	KWG1011207	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	101	50-150	10/12/10	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Longview - Former ARCO/101.00173.00010
Sample Matrix: Water

Service Request: K1011247
Date Collected: 10/08/2010
Date Received: 10/08/2010

Gasoline Range Organics

Sample Name: EFF1-100810
Lab Code: K1011247-002
Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTP	ND	U	250	1	10/12/10	10/12/10	KWG1011207	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
4-Difluorobenzene	101	50-150	10/12/10	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Longview - Former ARCO/101.00173.00010
Sample Matrix: Water

Service Request: K1011247
Date Collected: 10/08/2010
Date Received: 10/08/2010

Gasoline Range Organics

Sample Name: EFF2-100810
Lab Code: K1011247-003
Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTP	ND	U	250	1	10/12/10	10/12/10	KWG1011207	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	102	50-150	10/12/10	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Longview - Former ARCO/101.00173.00010
Sample Matrix: Water

Service Request: K1011247
Date Collected: NA
Date Received: NA

Gasoline Range Organics

Sample Name: Method Blank
Lab Code: KWG1011207-3
Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: ug/L
Basis: NA
Level: Low

Sample Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTP	ND	U	250	1	10/12/10	10/12/10	KWG1011207	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	101	50-150	10/12/10	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: SLR International
Project: Longview - Former ARCO/101.00173.00010
Sample Matrix: Water

Service Request: K1011247**Surrogate Recovery Summary
Gasoline Range Organics**

Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: PERCENT
Level: Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>
INF-100810	K1011247-001	101
EFF1-100810	K1011247-002	101
EFF2-100810	K1011247-003	102
INF-100810DUP	KWG1011207-1	101
Method Blank	KWG1011207-3	101
Lab Control Sample	KWG1011207-2	106

Surrogate Recovery Control Limits (%)

Sur1 = 1,4-Difluorobenzene 50-150

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: SLR International
Project: Longview - Former ARCO/101.00173.00010
Sample Matrix: Water

Service Request: K1011247
Date Extracted: 10/12/2010
Date Analyzed: 10/12/2010

Duplicate Sample Summary
Gasoline Range Organics

Sample Name: INF-100810
Lab Code: K1011247-001
Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1011207

Analyte Name	MRL	Sample Result	Duplicate Sample		Relative Percent Difference	RPD Limit
			Result	Average		
Gasoline Range Organics-NWTPH	250	ND	ND	ND	-	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: SLR International
Project: Longview - Former ARCO/101.00173.00010
Sample Matrix: Water

Service Request: K1011247
Date Extracted: 10/12/2010
Date Analyzed: 10/12/2010

Lab Control Spike Summary
Gasoline Range Organics

Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1011207

Lab Control Sample KWG1011207-2 Lab Control Spike				
Analyte Name	Result	Expected	%Rec	%Rec Limits
Gasoline Range Organics-NWTPH	481	500	96	80-119

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Longview - Former ARCO/101.00173.00010
Sample Matrix: Water

Service Request: K1011247
Date Collected: 10/08/2010
Date Received: 10/08/2010

Volatile Organic Compounds

Sample Name: INF-100810
Lab Code: K1011247-001
Extraction Method: EPA 5030B
Analysis Method: 8260B

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	26		0.50	1	10/15/10	10/15/10	KWG1011168	
Toluene	ND	U	0.50	1	10/15/10	10/15/10	KWG1011168	
Ethylbenzene	ND	U	0.50	1	10/15/10	10/15/10	KWG1011168	
m,p-Xylenes	ND	U	0.50	1	10/15/10	10/15/10	KWG1011168	
o-Xylene	ND	U	0.50	1	10/15/10	10/15/10	KWG1011168	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	103	73-122	10/15/10	Acceptable
Toluene-d8	92	78-129	10/15/10	Acceptable
4-Bromofluorobenzene	93	68-117	10/15/10	Acceptable

Comments: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Longview - Former ARCO/101.00173.00010
Sample Matrix: Water

Service Request: K1011247
Date Collected: 10/08/2010
Date Received: 10/08/2010

Volatile Organic Compounds

Sample Name: EFF1-100810
Lab Code: K1011247-002
Extraction Method: EPA 5030B
Analysis Method: 8260B

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	ND	U	0.50	1	10/15/10	10/15/10	KWG1011168	
Toluene	ND	U	0.50	1	10/15/10	10/15/10	KWG1011168	
Ethylbenzene	ND	U	0.50	1	10/15/10	10/15/10	KWG1011168	
m,p-Xylenes	ND	U	0.50	1	10/15/10	10/15/10	KWG1011168	
o-Xylene	ND	U	0.50	1	10/15/10	10/15/10	KWG1011168	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	112	73-122	10/15/10	Acceptable
Toluene-d8	96	78-129	10/15/10	Acceptable
4-Bromofluorobenzene	89	68-117	10/15/10	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Longview - Former ARCO/101.00173.00010
Sample Matrix: Water

Service Request: K1011247
Date Collected: 10/08/2010
Date Received: 10/08/2010

Volatile Organic Compounds

Sample Name: EFF2-100810
Lab Code: K1011247-003
Extraction Method: EPA 5030B
Analysis Method: 8260B

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	ND	U	0.50	1	10/15/10	10/15/10	KWG1011168	
Toluene	ND	U	0.50	1	10/15/10	10/15/10	KWG1011168	
Ethylbenzene	ND	U	0.50	1	10/15/10	10/15/10	KWG1011168	
m,p-Xylenes	ND	U	0.50	1	10/15/10	10/15/10	KWG1011168	
o-Xylene	ND	U	0.50	1	10/15/10	10/15/10	KWG1011168	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	110	73-122	10/15/10	Acceptable
Toluene-d8	96	78-129	10/15/10	Acceptable
4-Bromofluorobenzene	88	68-117	10/15/10	Acceptable

Comments: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Longview - Former ARCO/101.00173.00010
Sample Matrix: Water

Service Request: K1011247
Date Collected: NA
Date Received: NA

Volatile Organic Compounds

Sample Name: Method Blank
Lab Code: KWG1011168-4
Extraction Method: EPA 5030B
Analysis Method: 8260B

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	ND	U	0.50	1	10/15/10	10/15/10	KWG1011168	
Toluene	ND	U	0.50	1	10/15/10	10/15/10	KWG1011168	
Ethylbenzene	ND	U	0.50	1	10/15/10	10/15/10	KWG1011168	
m,p-Xylenes	ND	U	0.50	1	10/15/10	10/15/10	KWG1011168	
o-Xylene	ND	U	0.50	1	10/15/10	10/15/10	KWG1011168	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	110	73-122	10/15/10	- Acceptable
Toluene-d8	97	78-129	10/15/10	Acceptable
4-Bromofluorobenzene	90	68-117	10/15/10	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: SLR International
Project: Longview - Former ARCO/101.00173.00010
Sample Matrix: Water

Service Request: K1011247

Surrogate Recovery Summary
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260B

Units: PERCENT
Level: Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>	<u>Sur2</u>	<u>Sur3</u>
INF-100810	K1011247-001	103	92	93
EFF1-100810	K1011247-002	112	96	89
EFF2-100810	K1011247-003	110	96	88
Method Blank	KWG1011168-4	110	97	90
EFF1-100810MS	KWG1011168-1	99	102	102
EFF1-100810DMS	KWG1011168-2	100	102	102
Lab Control Sample	KWG1011168-3	102	102	101

Surrogate Recovery Control Limits (%)

Sur1 = Dibromofluoromethane	73-122
Sur2 = Toluene-d8	78-129
Sur3 = 4-Bromofluorobenzene	68-117

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: SLR International
 Project: Longview - Former ARCO/101.00173.00010
 Sample Matrix: Water

Service Request: K1011247
 Date Extracted: 10/15/2010
 Date Analyzed: 10/15/2010

Matrix Spike/Duplicate Matrix Spike Summary
 Volatile Organic Compounds

Sample Name: EFF1-100810
 Lab Code: K1011247-002
 Extraction Method: EPA 5030B
 Analysis Method: 8260B

Units: ug/L
 Basis: NA
 Level: Low
 Extraction Lot: KWG1011168

Analyte Name	Sample Result	EFF1-100810MS KWG1011168-1 Matrix Spike			EFF1-100810DMS KWG1011168-2 Duplicate Matrix Spike			%Rec Limits	RPD	RPD Limit
		Result	Expected	%Rec	Result	Expected	%Rec			
Benzene	ND	8.67	10.0	87	8.33	10.0	83	69-126	4	30
Toluene	ND	8.73	10.0	87	8.46	10.0	85	66-128	3	30
Ethylbenzene	ND	8.50	10.0	85	8.12	10.0	81	65-126	5	30
m,p-Xylenes	ND	17.1	20.0	86	16.6	20.0	83	63-130	3	30
o-Xylene	ND	8.21	10.0	82	8.09	10.0	81	65-130	1	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: SLR International
Project: Longview - Former ARCO/101.00173.00010
Sample Matrix: Water

Service Request: K1011247
Date Extracted: 10/15/2010
Date Analyzed: 10/15/2010

Lab Control Spike Summary
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260B

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1011168

Analyte Name	Lab Control Sample KWG1011168-3 Lab Control Spike			%Rec Limits
	Result	Expected	%Rec	
Benzene	10.1	10.0	101	74-118
Toluene	10.1	10.0	101	74-117
Ethylbenzene	9.93	10.0	99	71-118
m,p-Xylenes	19.5	20.0	98	73-119
o-Xylene	9.50	10.0	95	74-120

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.



20159

CHAIN OF CUSTODY

1317 South 13th Ave., Kelso, WA 98626 | 360.577.7222 | 800.695.7222 | 360.636.1068 (fax)

COC Set _____ of _____
SR# 11247
Page 1 OF 1 COC# _____

Project Name <u>Longview - Farmer ARCO</u>	
Project Number <u>101.00173.00010</u>	
Project Manager <u>Mike Stanton</u>	
Company Name <u>SLR</u>	
Company Address _____ _____ _____	
City/State/Zip _____ _____ _____	
E-Mail Address <u>mstanton@slr.com</u>	
Phone <u>(715) 402-8800</u>	
FAX # _____	
Sample Signature <u>Chris Kame</u>	

Sample ID	Date	Time	Lab ID	Matrix	Number of Containers	Remarks
1	10/8/10	930		U	8260B / VOC_FP (BTEX) 14D	
2	10/8/10	935		↓	NMTPH-GX / NW_GAS	
3	10/8/10	940		↓		
4						
5						
6						
7						
8						
9						
10						
11						

Report Requirements I. Routine Report: Method Blank, Surrogate, as required II. Report Dup., MS, MSD as required III. Data Validation Report (includes all raw data) IV. CLP Deliverable Report V. EDD		Invoice Information P.O.# _____ Bill To: _____	
Turnaround Requirements 24 hr. _____ 6 Day _____ Standard (10-15 working days) _____ Provide Fax Results _____		Special Instructions/Comments: <u>5 Day TAT</u>	
Relinquished By: Signature <u>Chris Kame</u> Printed Name <u>Chris Kame</u> Date/Time <u>10/8/10 1120</u> Firm _____		Relinquished By: Signature _____ Printed Name _____ Date/Time _____ Firm _____	
Received By: Signature _____ Printed Name _____ Date/Time _____ Firm _____		Received By: Signature _____ Printed Name _____ Date/Time _____ Firm _____	

November 17, 2010

Analytical Report for Service Request No: K1012710

Mike Staton
SLR International
22118 20th Avenue, Suite G202
Bothell, WA 98021

RE: Longview - Former Arco/001.00173.00010

Dear Mike:

Enclosed are the results of the rush samples submitted to our laboratory on November 12, 2010. For your reference, these analyses have been assigned our service request number K1012710.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.caslab.com. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please call if you have any questions. My extension is 3281. You may also contact me via Email at MShelton@caslab.com.

Respectfully submitted,

Columbia Analytical Services, Inc.



Mike Shelton
Project Chemist

MS/dlm

Page 1 of 21

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

- The result is an outlier. See case narrative.
- The control limit criteria is not applicable. See case narrative.
- The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- The result is an estimate amount because the value exceeded the instrument calibration range.
- The result is an estimated value that was detected outside the quantitation range.
- The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.1 definition: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- See case narrative.
- See case narrative. One or more quality control criteria was outside the limits.

Metals Data Qualifiers

- # The control limit criteria is not applicable. See case narrative.
- J The result is an estimated value that was detected outside the quantitation range.
- E The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
- M The duplicate injection precision was not met.
- N The Matrix Spike sample recovery is not within control limits. See case narrative.
- S The reported value was determined by the Method of Standard Additions (MSA).
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.1 definition: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- W The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- + The correlation coefficient for the MSA is less than 0.995.
- Q See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- A A tentatively identified compound, a suspected aldol-condensation product.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- C The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
- D The reported result is from a dilution.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated value that was detected outside the quantitation range.
- N The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
- P The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.1 definition: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

- F The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
- L The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
- H The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
- O The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
- Y The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
- Z The chromatographic fingerprint does not resemble a petroleum product.

Columbia Analytical Services, Inc.
Kelso, WA
State Certifications, Accreditations, and Licenses

Program	Number
Alaska DEC UST	UST-040
Arizona DHS	AZ0339
Arkansas - DEQ	88-0637
California DHS	2286
Colorado DPHE	-
Florida DOH	E87412
Hawaii DOH	-
Idaho DHW	-
Indiana DOH	C-WA-01
Louisiana DEQ	3016
Louisiana DHH	LA050010
Maine DHS	WA0035
Michigan DEQ	9949
Minnesota DOH	053-999-368
Montana DPHHS	CERT0047
Nevada DEP	WA35
New Jersey DEP	WA005
New Mexico ED	-
North Carolina DWQ	605
Oklahoma DEQ	9801
Oregon - DHS	WA200001
South Carolina DHEC	61002
Utah DOH	COLU
Washington DOE	C1203
Wisconsin DNR	998386840
Wyoming (EPA Region 8)	-

COLUMBIA ANALYTICAL SERVICES, INC.

Client: SLR International
Project: Longview- Former Arco
Sample Matrix: Water

Service Request No.: K1012710
Date Received: 11/12/10

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of Columbia Analytical Services, Inc. (CAS). This report contains analytical results for samples designated for Tier II data deliverables. When appropriate to the method, method blank results have been reported with each analytical test. Surrogate recoveries have been reported for all applicable organic analyses. Additional quality control analyses reported herein include: Matrix/Duplicate Matrix Spike (MS/DMS), and Laboratory Control Sample (LCS).

Sample Receipt

Three water samples were received for analysis at Columbia Analytical Services on 11/12/10. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

Gasoline Range Organics by EPA Method 8015B

No anomalies associated with the analysis of these samples were observed.

Volatile Organic Compounds by EPA Method 8260B

Matrix Spike Recovery Exceptions:

The matrix spike and duplicate matrix spike recoveries of Benzene for samples INF-111210MS KWG1012464-1 and INF-111210DMS KWG1012464-2 were outside control criteria. Recovery in the Laboratory Control Sample (LCS) was acceptable, which indicated the analytical batch was in control. The matrix spike outlier suggested a potential low bias in this matrix. No further corrective action was appropriate.

No other anomalies associated with the analysis of these samples were observed.

Approved by

Mike Sheer

Date

11/18/10

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
 Project: Longview - Former Arco/001.00173.00010
 Sample Matrix: Water

Service Request: K1012710
 Date Collected: 11/12/2010
 Date Received: 11/12/2010

Volatile Organic Compounds

Sample Name: INF-111210
 Lab Code: K1012710-001
 Extraction Method: EPA 5030B
 Analysis Method: 8260B

Units: ug/L
 Basis: NA
 Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	19		0.50	1	11/15/10	11/15/10	KWG1012464	
Toluene	ND	U	0.50	1	11/15/10	11/15/10	KWG1012464	
Ethylbenzene	ND	U	0.50	1	11/15/10	11/15/10	KWG1012464	
m,p-Xylenes	ND	U	0.50	1	11/15/10	11/15/10	KWG1012464	
o-Xylene	ND	U	0.50	1	11/15/10	11/15/10	KWG1012464	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	100	73-122	11/15/10	Acceptable
Toluene-d8	115	78-129	11/15/10	Acceptable
1-Bromofluorobenzene	90	68-117	11/15/10	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Longview - Former Arco/001.00173.00010
Sample Matrix: Water

Service Request: K1012710
Date Collected: 11/12/2010
Date Received: 11/12/2010

Volatile Organic Compounds

Sample Name: EFF-1-111210
Lab Code: K1012710-002
Extraction Method: EPA 5030B
Analysis Method: 8260B

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	ND	U	0.50	1	11/15/10	11/15/10	KWG1012464	
Toluene	ND	U	0.50	1	11/15/10	11/15/10	KWG1012464	
Ethylbenzene	ND	U	0.50	1	11/15/10	11/15/10	KWG1012464	
m,p-Xylenes	ND	U	0.50	1	11/15/10	11/15/10	KWG1012464	
o-Xylene	ND	U	0.50	1	11/15/10	11/15/10	KWG1012464	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	100	73-122	11/15/10	Acceptable
Toluene-d8	117	78-129	11/15/10	Acceptable
4-Bromofluorobenzene	87	68-117	11/15/10	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
 Project: Longview - Former Arco/001.00173.00010
 Sample Matrix: Water

Service Request: K1012710
 Date Collected: 11/12/2010
 Date Received: 11/12/2010

Volatile Organic Compounds

Sample Name: EFF-2-111210
 Lab Code: K1012710-003
 Extraction Method: EPA 5030B
 Analysis Method: 8260B

Units: ug/L
 Basis: NA
 Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	ND	U	0.50	1	11/15/10	11/15/10	KWG1012464	
Toluene	ND	U	0.50	1	11/15/10	11/15/10	KWG1012464	
Ethylbenzene	ND	U	0.50	1	11/15/10	11/15/10	KWG1012464	
m,p-Xylenes	ND	U	0.50	1	11/15/10	11/15/10	KWG1012464	
o-Xylene	ND	U	0.50	1	11/15/10	11/15/10	KWG1012464	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	101	73-122	11/15/10	Acceptable
Toluene-d8	116	78-129	11/15/10	Acceptable
m-Bromofluorobenzene	91	68-117	11/15/10	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Longview - Former Arco/001.00173.00010
Sample Matrix: Water

Service Request: K1012710
Date Collected: NA
Date Received: NA

Volatile Organic Compounds

Sample Name: Method Blank
Lab Code: KWG1012464-4
Extraction Method: EPA 5030B
Analysis Method: 8260B

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	ND	U	0.50	1	11/15/10	11/15/10	KWG1012464	
Toluene	ND	U	0.50	1	11/15/10	11/15/10	KWG1012464	
Ethylbenzene	ND	U	0.50	1	11/15/10	11/15/10	KWG1012464	
m,p-Xylenes	ND	U	0.50	1	11/15/10	11/15/10	KWG1012464	
o-Xylene	ND	U	0.50	1	11/15/10	11/15/10	KWG1012464	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	99	73-122	11/15/10	Acceptable
Toluene-d8	117	78-129	11/15/10	Acceptable
4-Bromofluorobenzene	92	68-117	11/15/10	Acceptable

Comments:

Client: SLR International
Project: Longview - Former Arco/001.00173.00010
Sample Matrix: Water

Service Request: K1012710

Surrogate Recovery Summary
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260B

Units: PERCENT
Level: Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>	<u>Sur2</u>	<u>Sur3</u>
NF-111210	K1012710-001	100	115	90
EFF-1-111210	K1012710-002	100	117	87
EFF-2-111210	K1012710-003	101	116	91
Method Blank	KWG1012464-4	99	117	92
NF-111210MS	KWG1012464-1	95	122	94
NF-111210DMS	KWG1012464-2	95	120	95
Lab Control Sample	KWG1012464-3	94	120	96

Surrogate Recovery Control Limits (%)

Sur1 = Dibromofluoromethane	73-122
Sur2 = Toluene-d8	78-129
Sur3 = 4-Bromofluorobenzene	68-117

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: SLR International
 Project: Longview - Former Arco/001.00173.00010
 Sample Matrix: Water

Service Request: K1012710
 Date Extracted: 11/15/2010
 Date Analyzed: 11/15/2010

Matrix Spike/Duplicate Matrix Spike Summary
 Volatile Organic Compounds

Sample Name: INF-111210
 Lab Code: K1012710-001
 Extraction Method: EPA 5030B
 Analysis Method: 8260B

Units: ug/L
 Basis: NA
 Level: Low
 Extraction Lot: KWG1012464

Analyte Name	Sample Result	INF-111210MS KWG1012464-1 Matrix Spike			INF-111210DMS KWG1012464-2 Duplicate Matrix Spike			%Rec Limits	RPD	RPD Limit
		Result	Expected	%Rec	Result	Expected	%Rec			
Benzene	19	24.7	10.0	58 *	24.5	10.0	55 *	69-126	1	30
Toluene	ND	9.31	10.0	93	9.06	10.0	91	66-128	3	30
Ethylbenzene	ND	8.34	10.0	83	8.12	10.0	81	65-126	3	30
m,p-Xylenes	ND	16.8	20.0	84	16.6	20.0	83	63-130	1	30
o-Xylene	ND	8.37	10.0	84	8.39	10.0	84	65-130	0	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: SLR International
Project: Longview - Former Arco/001.00173.00010
Sample Matrix: Water

Service Request: K1012710
Date Extracted: 11/15/2010
Date Analyzed: 11/15/2010

Lab Control Spike Summary
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260B

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1012464

Analyte Name	Lab Control Sample KWG1012464-3 Lab Control Spike			%Rec Limits
	Result	Expected	%Rec	
Benzene	8.71	10.0	87	74-118
Toluene	9.04	10.0	90	74-117
Ethylbenzene	8.22	10.0	82	71-118
m,p-Xylenes	16.5	20.0	83	73-119
o-Xylene	8.43	10.0	84	74-120

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Longview - Former Arco/001.00173.00010
Sample Matrix: Water

Service Request: K1012710
Date Collected: 11/12/2010
Date Received: 11/12/2010

Gasoline Range Organics

Sample Name: INF-111210
Lab Code: K1012710-001
Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTP	ND	U	250	1	11/16/10	11/16/10	KWG1012531	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	96	50-150	11/16/10	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Longview - Former Arco/001.00173.00010
Sample Matrix: Water

Service Request: K1012710
Date Collected: 11/12/2010
Date Received: 11/12/2010

Gasoline Range Organics

Sample Name: EFF-1-111210
Lab Code: K1012710-002
Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTP	ND	U	250	1	11/16/10	11/16/10	KWG1012531	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
4-Difluorobenzene	96	50-150	11/16/10	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Longview - Former Arco/001.00173.00010
Sample Matrix: Water

Service Request: K1012710
Date Collected: 11/12/2010
Date Received: 11/12/2010

Gasoline Range Organics

Sample Name: EFF-2-111210
Lab Code: K1012710-003
Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTP	ND U	250	1	11/16/10	11/16/10	KWG1012531	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	95	50-150	11/16/10	Acceptable

Comments: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Longview - Former Arco/001.00173.00010
Sample Matrix: Water

Service Request: K1012710
Date Collected: NA
Date Received: NA

Gasoline Range Organics

Sample Name: Method Blank
Lab Code: KWG1012531-3
Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTP	ND	U	250	1	11/16/10	11/16/10	KWG1012531	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	94	50-150	11/16/10	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: SLR International
Project: Longview - Former Arco/001.00173.00010
Sample Matrix: Water

Service Request: K1012710

Surrogate Recovery Summary
Gasoline Range Organics

Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: PERCENT
Level: Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>
INF-111210	K1012710-001	96
EFF-1-111210	K1012710-002	96
EFF-2-111210	K1012710-003	95
EFF-1-111210DUP	KWG1012531-1	95
Method Blank	KWG1012531-3	94
Lab Control Sample	KWG1012531-2	100

Surrogate Recovery Control Limits (%)

Sur1 = 1,4-Difluorobenzene	50-150
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Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: SLR International
Project: Longview - Former Arco/001.00173.00010
Sample Matrix: Water

Service Request: K1012710
Date Extracted: 11/16/2010
Date Analyzed: 11/16/2010

Duplicate Sample Summary
Gasoline Range Organics

Sample Name: EFF-1-111210
Lab Code: K1012710-002
Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1012531

Analyte Name	MRL	Sample Result	EFF-1-111210DUP KWG1012531-1 Duplicate Sample		Relative Percent Difference	RPD Limit
			Result	Average		
Gasoline Range Organics-NWTPH	250	ND	ND	ND	-	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: SLR International
Project: Longview - Former Arco/001.00173.00010
Sample Matrix: Water

Service Request: K1012710
Date Extracted: 11/16/2010
Date Analyzed: 11/16/2010

Lab Control Spike Summary
Gasoline Range Organics

Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1012531

Lab Control Sample
KWG1012531-2
Lab Control Spike

Analyte Name	Result	Expected	%Rec	%Rec Limits
Gasoline Range Organics-NWTPH	452	500	90	80-119

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.



20799

CHAIN OF CUSTODY

1317 South 13th Ave, Kelso, WA 98626 | 360.577.7222 | 800.695.7222 | 360.636.1068 (fax)

Project Name Longview - Farmer Area
Project Number 104.00173.00010
Project Manager Mike Statton
Company Name SLR
Company Address
City/State/Zip
E-Mail Address mstatton@slr.com
Phone (425) 502-8800 FAX #
Sampler Signature Mike Statton

Sample ID	Date	Time	Lab ID	Matrix
INF-111210	11/14/10	1115		W
EFF2-111210	1120			↓
EFF2-111210	1125			↓

Number of Containers
14D
8260B / VOC_FP - (GTEX)
NWTPH-GX / NW_GAS

Remarks
1
2
3
4
5
6
7
8
9
10
11

Report Requirements
I. Routine Report: Method Blank, Surrogate, as required
II. Report Dup., MS, MSD as required
III. Data Validation Report (includes all raw data)
IV. CLP Deliverable Report
V. EDD
Requested Report Date

Invoice Information
P.O.#
Bill To:
Turnaround Requirements
5 Day
48 hr.
Standard (10-15 working days)
Provide Fax Results

Circle which metals are to be analyzed
Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Ti Sn V Zn Hg
Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Ti Sn V Zn Hg
Special Instructions/Comments: *Indicate State Hydrocarbon Procedure: AK CA WA Northwest Other (Circle One)
5 Day TAT

Relinquished By: Chris Kram Date/Time 1200 11/14/10
Signature Chris Kram Printed Name SLR Firm

Relinquished By: Base Date/Time 11/12/10
Signature Base Printed Name Base Firm

Received By: 1200
Signature _____ Date/Time _____
Printed Name _____ Firm _____

December 21, 2010

Analytical Report for Service Request No: K1013791

Mike Staton
SLR International
22118 20th Avenue, Suite G202
Bothell, WA 98021

RE: Former Arco H0703/101.00173.00010


Dear Mike:

Enclosed are the results of the rush samples submitted to our laboratory on December 13, 2010. For your reference, these analyses have been assigned our service request number K1013791.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.caslab.com. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please call if you have any questions. My extension is 3281. You may also contact me via Email at MShelton@caslab.com.

Respectfully submitted,

Columbia Analytical Services, Inc.

Mike Shelton
Project Chemist

MS/dlm

Page 1 of 20

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated value that was detected outside the quantitation range.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.1 definition: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.

Metals Data Qualifiers

- # The control limit criteria is not applicable. See case narrative.
- J The result is an estimated value that was detected outside the quantitation range.
- E The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
- M The duplicate injection precision was not met.
- N The Matrix Spike sample recovery is not within control limits. See case narrative.
- S The reported value was determined by the Method of Standard Additions (MSA).
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.1 definition: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- W The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- + The correlation coefficient for the MSA is less than 0.995.
- Q See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- A A tentatively identified compound, a suspected aldol-condensation product.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- C The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
- D The reported result is from a dilution.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated value that was detected outside the quantitation range.
- N The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
- P The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.1 definition: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

- F The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
- L The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
- H The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
- O The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
- Y The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
- Z The chromatographic fingerprint does not resemble a petroleum product.

Columbia Analytical Services, Inc.
Kelso, WA
State Certifications, Accreditations, and Licenses

Program	Number
Alaska DEC UST	UST-040
Arizona DHS	AZ0339
Arkansas - DEQ	88-0637
California DHS	2286
Florida DOH	E87412
Hawaii DOH	-
Idaho DHW	-
Indiana DOH	C-WA-01
Louisiana DEQ	3016
Louisiana DHH	LA050010
Maine DHS	WA0035
Michigan DEQ	9949
Minnesota DOH	053-999-368
Montana DPHHS	CERT0047
Nevada DEP	WA35
New Jersey DEP	WA005
New Mexico ED	-
North Carolina DWQ	605
Oklahoma DEQ	9801
Oregon - DHS	WA200001
South Carolina DHEC	61002
Washington DOE	C1203
Wisconsin DNR	998386840
Wyoming (EPA Region 8)	-

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Former Arco H0703/101.00173.00010
Sample Matrix: Water

Service Request: K1013791
Date Collected: 12/13/2010
Date Received: 12/13/2010

Gasoline Range Organics

Sample Name: INF-121310
Lab Code: K1013791-001
Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTPI	ND	U	250	1	12/16/10	12/16/10	KWG1013831	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	105	50-150	12/16/10	Acceptable

Comments: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Former Arco H0703/101.00173.00010
Sample Matrix: Water

Service Request: K1013791
Date Collected: 12/13/2010
Date Received: 12/13/2010

Gasoline Range Organics

Sample Name: EFF1-121310
Lab Code: K1013791-002
Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTPH	ND	U	250	1	12/16/10	12/16/10	KWG1013831	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	105	50-150	12/16/10	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Former Arco H0703/101.00173.00010
Sample Matrix: Water

Service Request: K1013791
Date Collected: 12/13/2010
Date Received: 12/13/2010

Gasoline Range Organics

Sample Name: EFF2-121310
Lab Code: K1013791-003
Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTPH	ND U	250	1	12/17/10	12/17/10	KWG1013831	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	105	50-150	12/17/10	Acceptable

Comments: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Former Arco H0703/101.00173.00010
Sample Matrix: Water

Service Request: K1013791
Date Collected: NA
Date Received: NA

Gasoline Range Organics

Sample Name: Method Blank
Lab Code: KWG1013831-3
Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTPH	ND	U	250	1	12/17/10	12/17/10	KWG1013831	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	105	50-150	12/17/10	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: SLR International
Project: Former Arco H0703/101.00173.00010
Sample Matrix: Water

Service Request: K1013791

Surrogate Recovery Summary
Gasoline Range Organics

Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: PERCENT
Level: Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>
INF-121310	K1013791-001	105
EFF1-121310	K1013791-002	105
EFF2-121310	K1013791-003	105
EFF2-121310DUP	KWG1013831-1	105
Method Blank	KWG1013831-3	105
Lab Control Sample	KWG1013831-2	109

Surrogate Recovery Control Limits (%)

Sur1 = 1,4-Difluorobenzene	50-150
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Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: SLR International
Project: Former Arco H0703/101.00173.00010
Sample Matrix: Water

Service Request: K1013791
Date Extracted: 12/17/2010
Date Analyzed: 12/17/2010

Duplicate Sample Summary
Gasoline Range Organics

Sample Name: EFF2-121310
Lab Code: K1013791-003
Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1013831

Analyte Name	MRL	Sample Result	EFF2-121310DUP KWG1013831-1 Duplicate Sample		Relative Percent Difference	RPD Limit
			Result	Average		
Gasoline Range Organics-NWTPH	250	ND	ND	ND	-	30

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Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: SLR International
Project: Former Arco H0703/101.00173.00010
Sample Matrix: Water

Service Request: K1013791
Date Extracted: 12/17/2010
Date Analyzed: 12/17/2010

Lab Control Spike Summary
Gasoline Range Organics

Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1013831

Lab Control Sample KWG1013831-2 Lab Control Spike				
Analyte Name	Result	Expected	%Rec	%Rec Limits
Gasoline Range Organics-NWTPH	497	500	99	80-119

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
 Project: Former Arco H0703/101.00173.00010
 Sample Matrix: Water

Service Request: K1013791
 Date Collected: 12/13/2010
 Date Received: 12/13/2010

Volatile Organic Compounds

Sample Name: INF-121310
 Lab Code: K1013791-001
 Extraction Method: EPA 5030B
 Analysis Method: 8260B

Units: ug/L
 Basis: NA
 Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	22		0.50	1	12/14/10	12/14/10	KWG1013629	
Toluene	ND	U	0.50	1	12/14/10	12/14/10	KWG1013629	
Ethylbenzene	ND	U	0.50	1	12/14/10	12/14/10	KWG1013629	
m,p-Xylenes	ND	U	0.50	1	12/14/10	12/14/10	KWG1013629	
o-Xylene	ND	U	0.50	1	12/14/10	12/14/10	KWG1013629	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	101	73-122	12/14/10	Acceptable
Toluene-d8	106	78-129	12/14/10	Acceptable
o-Bromofluorobenzene	98	68-117	12/14/10	Acceptable

Comments

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Former Arco H0703/101.00173.00010
Sample Matrix: Water

Service Request: K1013791
Date Collected: 12/13/2010
Date Received: 12/13/2010

Volatile Organic Compounds

Sample Name: EFF1-121310
Lab Code: K1013791-002
Extraction Method: EPA 5030B
Analysis Method: 8260B

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	ND	U	0.50	1	12/14/10	12/14/10	KWG1013629	
Toluene	ND	U	0.50	1	12/14/10	12/14/10	KWG1013629	
Ethylbenzene	ND	U	0.50	1	12/14/10	12/14/10	KWG1013629	
m,p-Xylenes	ND	U	0.50	1	12/14/10	12/14/10	KWG1013629	
o-Xylene	ND	U	0.50	1	12/14/10	12/14/10	KWG1013629	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	103	73-122	12/14/10	Acceptable
Toluene-d8	107	78-129	12/14/10	Acceptable
4-Bromofluorobenzene	98	68-117	12/14/10	Acceptable

Comments

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
 Project: Former Arco H0703/101.00173.00010
 Sample Matrix: Water

Service Request: K1013791
 Date Collected: 12/13/2010
 Date Received: 12/13/2010

Volatile Organic Compounds

Sample Name: EFF2-121310
 Lab Code: K1013791-003
 Extraction Method: EPA 5030B
 Analysis Method: 8260B

Units: ug/L
 Basis: NA
 Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	ND	U	0.50	1	12/14/10	12/14/10	KWG1013629	
Toluene	ND	U	0.50	1	12/14/10	12/14/10	KWG1013629	
Ethylbenzene	ND	U	0.50	1	12/14/10	12/14/10	KWG1013629	
m,p-Xylenes	ND	U	0.50	1	12/14/10	12/14/10	KWG1013629	
o-Xylene	ND	U	0.50	1	12/14/10	12/14/10	KWG1013629	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	101	73-122	12/14/10	Acceptable
Toluene-d8	106	78-129	12/14/10	Acceptable
m-Bromofluorobenzene	97	68-117	12/14/10	Acceptable

Comments

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SLR International
Project: Former Arco H0703/101.00173.00010
Sample Matrix: Water

Service Request: K1013791
Date Collected: NA
Date Received: NA

Volatile Organic Compounds

Sample Name: Method Blank
Lab Code: KWG1013629-4
Extraction Method: EPA 5030B
Analysis Method: 8260B

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	ND	U	0.50	1	12/14/10	12/14/10	KWG1013629	
Toluene	ND	U	0.50	1	12/14/10	12/14/10	KWG1013629	
Ethylbenzene	ND	U	0.50	1	12/14/10	12/14/10	KWG1013629	
m,p-Xylenes	ND	U	0.50	1	12/14/10	12/14/10	KWG1013629	
o-Xylene	ND	U	0.50	1	12/14/10	12/14/10	KWG1013629	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	100	73-122	12/14/10	Acceptable
Toluene-d8	106	78-129	12/14/10	Acceptable
4-Bromofluorobenzene	97	68-117	12/14/10	Acceptable

Comments

Client: SLR International
Project: Former Arco H0703/101.00173.00010
Sample Matrix: Water

Service Request: K1013791

Surrogate Recovery Summary
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260B

Units: PERCENT
Level: Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>	<u>Sur2</u>	<u>Sur3</u>
Batch QC	K1013600-001	100	104	98
NF-121310	K1013791-001	101	106	98
FF1-121310	K1013791-002	103	107	98
FF2-121310	K1013791-003	101	106	97
Method Blank	KWG1013629-4	100	106	97
Batch QCMS	KWG1013629-1	104	109	98
Batch QCDMS	KWG1013629-2	105	110	101
Lab Control Sample	KWG1013629-3	105	109	100

Surrogate Recovery Control Limits (%)

Sur1 = Dibromofluoromethane	73-122
Sur2 = Toluene-d8	78-129
Sur3 = 4-Bromofluorobenzene	68-117

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Results flagged with a pound (#) indicate the control criteria is not applicable.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: SLR International
Project: Former Arco H0703/101.00173.00010
Sample Matrix: Water

Service Request: K1013791
Date Extracted: 12/14/2010
Date Analyzed: 12/14/2010

Matrix Spike/Duplicate Matrix Spike Summary
Volatile Organic Compounds

Sample Name: Batch QC
Lab Code: K1013600-001
Extraction Method: EPA 5030B
Analysis Method: 8260B

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1013629

Analyte Name	Sample Result	Batch QCMS KWG1013629-1 Matrix Spike			Batch QCDMS KWG1013629-2 Duplicate Matrix Spike			%Rec Limits	RPD	RPD Limit
		Result	Expected	%Rec	Result	Expected	%Rec			
Benzene	ND	12.0	10.0	120	11.5	10.0	115	69-126	4	30
Toluene	ND	12.1	10.0	121	11.9	10.0	119	66-128	2	30
Ethylbenzene	ND	11.6	10.0	116	11.2	10.0	112	65-126	3	30
m,p-Xylenes	ND	23.3	20.0	117	22.0	20.0	110	63-130	6	30
o-Xylene	ND	11.5	10.0	115	11.0	10.0	110	65-130	4	30

Results flagged with an asterisk (*) indicate values outside control criteria.

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Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: SLR International
Project: Former Arco H0703/101.00173.00010
Sample Matrix: Water

Service Request: K1013791
Date Extracted: 12/14/2010
Date Analyzed: 12/14/2010

Lab Control Spike Summary
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260B

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1013629

Analyte Name	Lab Control Sample KWG1013629-3 Lab Control Spike			%Rec Limits
	Result	Expected	%Rec	
Benzene	10.2	10.0	102	74-118
Toluene	10.1	10.0	101	74-117
Ethylbenzene	9.36	10.0	94	71-118
m,p-Xylenes	19.2	20.0	96	73-119
o-Xylene	9.80	10.0	98	74-120

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.



21398

CHAIN OF CUSTODY

1317 South 13th Ave, Kelso, WA 98626 | 360.577.7222 | 800.695.7222 | 360.636.1068 (fax)

SR#

COC Set of

Page 1 OF 1

COC#

Project Name Inner Basin #723
Project Number 101-00173-0010
Project Manager Mike Staton
Company Name SLR
Company Address _____
City/State/Zip _____
E-Mail Address mstaton@slr.com
Phone # 425-402-8800 FAX # _____
Sampler Signature Chris Kemer

Sample ID	Date	Time	Lab ID	Matrix	Number of Containers	Remarks
1						
2	12/13/10	1310		W		
3	12/13/10	1315		↓		
4	12/13/10	1320		↓		
5						
6						
7						
8						
9						
10						
11						

14D	8260B / VOC_FP	NWTPH-GX / NW_GAS	Remarks

Report Requirements
I. Routine Report: Method Blank, Surrogate, as required
II. Report Dup., MS, MSD as required
III. Data Validation Report (includes all raw data)
IV. CLP Deliverable Report
V. EDO

Invoice Information
P.O.# _____
Bill To: _____

Turnaround Requirements
24 hr. _____ 48 hr. _____
5 Day Standard (10-15 working days)
Provide Fax Results _____

Requested Report Date _____

Special Instructions/Comments:
5 Day TAT

Circle which metals are to be analyzed
Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Ti Sn V Zn Hg
Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Ti Sn V Zn Hg
Special Instructions/Comments: AK CA WI Northwest Other (Circle One)

Relinquished By:
Signature Chris Kemer Date/Time 12/13/10 1410
Printed Name Chris Kemer Firm _____

Relinquished By:
Signature Mike Staton Date/Time 12/13/10 1410
Printed Name Mike Staton Firm _____

Received By:
Signature _____ Date/Time _____
Printed Name _____ Firm _____