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Groundwater Monitoring Report
First Quarter 2010

Former Columbia Marine Lines Site
6305 NW Lower River Road
Vancouver, Washington

May 2010

Prepared for:

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Seattle, WA 98134

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SIGNATURE PAGE

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1.0 INTRODUCTION

SLR International Corp prepared this Remedial Action Report for the First Quarter of 2010 on behalf of Crowley Marine Services, Inc. (Crowley), a successor to Columbia Marine Lines. On August 19, 1985, Columbia Marine Lines entered into Order No. DE 85-591 with the Washington State Department of Ecology (Ecology) to conduct a remedial action at the former Columbia Marine Lines site, located at 6305 Lower River Road in Vancouver, Washington. The site location is shown on **Figure 1**.

For the purposes of this report, the site is defined as the area illustrated on **Figure 2**, which includes portions of Clark County Tax Lots 153104000 and 152800000. The approximate area affected by the remediation activity is three acres. The site is currently vacant. Prior to remediation, the site was covered with grass, small trees, and other vegetation.

In February 2010, six groundwater monitoring wells were installed and one round of quarterly groundwater monitoring was completed. The work was completed per the Remedial Action Work Plan (SLR 2008b), dated December 8, 2008, which was approved by Ecology on January 7, 2009. Work completed in February 2010 followed sampling protocols presented in the Sampling and Analysis Plan (SAP) (Appendix A of the Remedial Action Work Plan) and the Site-Specific Health and Safety Plan (Appendix B of the Remedial Action Work Plan).

The remedial action conducted at the site consists of the following tasks:

- Task 1: Site Preparation
- Task 2: Excavation of Clean Overburden and TPH-Impacted Soil
- Task 3: Water Treatment and Subsurface Injection
- Task 4: On-Site Ex-Situ Soil Bioremediation
- Task 5: Monitored Natural Attenuation; and
- Task 6: Institutional controls

Tasks 1 through 4 were completed during 2009. Task 5 began in the first quarter of 2010.

2.1 TASK 5 - MONITORED NATURAL ATTENUATION

Petroleum hydrocarbon concentrations in groundwater typically naturally attenuate relatively rapidly once source materials have been removed. The groundwater cleanup component of the remedial action conducted for Task 5 is natural attenuation. This consists of monitoring the TPH concentrations in groundwater following the completion of the soil excavation and treatment. The existing groundwater monitoring network was repaired and expanded as part of the monitored natural attenuation task.

2.1.1 TASK 5B – MONITORING AFTER BIOREMEDIATION CELL OPERATION

Five groundwater monitoring wells (MW-7, MW-8, MW-19, RW-4, and RW-6/EX-2) were located within the extent of excavation and were destroyed during the excavation activities conducted during Task 2. These wells were decommissioned by a licensed well driller prior to the excavation commencing.

After completion of operation of the bioremediation cell in the fourth quarter of 2009, monitoring wells were installed to replace MW-7, MW-8, MW-19, and RW-4 (MW-7N, MW-8N, MW-19N, and MW-22). Two additional monitoring wells were also installed (MW-23, and MW-24). Decommissioned and new monitoring well locations are illustrated on **Figure 2**. The new wells were installed to monitor the attenuation of dissolved-phase TPH.

2.1.1.1 MONITORING WELL INSTALLATION

On February 4, 2010 SLR met with Cascade Drilling LP to install six new monitoring wells on the Site. Prior to any drilling activities, the Washington public utility notification center was notified and the Site was cleared of any public utilities. Drilling activities were performed with a Geoprobe direct-push drill rig using a 4" casing size. The installed wells were completed as 2" monitoring wells with pre-pack sand filters around the ten foot screen intervals. Additional filter sand was used in the open annulus of the boring to two feet above the uppermost slot of the screen. The monitoring wells were

completed with a bentonite seal and concrete surface seal. Monitoring well boring logs have been attached as **Appendix A**.

Following installation of the monitoring wells, the wells were surged with a surge block and developed with a pump to minimize silt and sediment in samples and limit the potential for artificially inflated TPH concentrations due to the presence of silt and sediment in samples. In addition to the new wells, wells MW-1, MW-3, MW-4, and MW-18 were also developed because they were in the area of the bioremediation cell. The water samples collected from developed wells were clear, although some had some coloration to them, indicating that the well development was effective at reducing solids entering the wells.

2.1.1.2 QUARTERLY GROUNDWATER MONITORING

Groundwater monitoring was completed on February 9 and 10, 2010. All monitoring wells within the Site well network were sampled with the exception of MW-6, MW-15, and MW-18. MW-6 was destroyed or paved over during historical paving activities on the Tidewater property, MW-15 has not been sampled since the 1980s and has been decommissioned, and MW-18 was dry. The locations of the monitoring wells are depicted on **Figure 2**.

Groundwater levels were measured and recorded at all monitoring wells prior to sampling. The groundwater level data is presented in **Table 1** and displayed on **Figure 3**. Monitoring wells were purged prior to sampling using a peristaltic pump and flow through cell with a water quality meter. The meter measured temperature, conductivity, pH, dissolved oxygen, and oxidation reduction potential (ORP). If possible, purging was continued until these values stabilized; however, there is limited water in some of these wells, and in those instances purging may have been halted early. The Groundwater Monitoring Field Data Sheets for each well sampled are included in **Appendix B**.

Monitoring wells were sampled for Total Petroleum Hydrocarbons – Gasoline Range (TPH-Gx) per the NWTPH-Gx method and Total Petroleum Hydrocarbons – Diesel Range and Residual Range (TPH-Dx) per the NWTPH-Dx method. The results of the TPH-Gx and TPH-Dx analyses are presented in **Table 2**. TPH analytical data is also presented on **Figure 4**. As shown on **Table 2**, TPH concentrations in groundwater have fluctuated over time. TPH was detected at low levels just over the detection limits in MW-13 and MW-14. TPH sampling will be conducted in subsequent quarterly groundwater monitoring events, and the data from these wells will continue to be evaluated.

Three flow paths were determined from historical Site monitoring data for analysis of natural attenuation parameters. These parameters include: nitrate, sulfate, alkalinity, dissolved methane, ferrous iron and manganese. The monitoring wells included for natural attenuation analysis include: Flow Path 1 (MW-1, MW-3 and MW-11), Flow Path 2 (MW-7N, MW-19N and MW-21) and Flow Path 3 (MW-8N, MW-23, MW-24 and MW-13). The locations of these monitoring wells and the associated flow paths are depicted on **Figure 3**. The results of the natural attenuation parameter analyses are presented in **Table 3**. Laboratory analytical reports have been included as **Appendix C**.

The natural attenuation monitoring results for each flow path are as follows (evaluation of these results will be conducted after additional monitoring events):

- Flow Path 1 (MW-1, MW-3 and MW-11): pH and DO appear to be reduced in MW-1, but nitrate and sulfate are elevated and ferrous iron is low (indicating that the subsurface is not strongly reducing yet). MW-3 and MW-11 have higher pH and DO. MW-3 has lower nitrate and sulfate and higher ferrous iron than MW-1, indicative of biodegradation.

- Flow Path 2 (MW-7N, MW-19N and MW-21): DO is reduced in MW-7N and MW-19N. Sulfate and ferrous iron are elevated in MW-7N, indicating that biodegradation is in a ferric iron reducing stage. Sulfate concentrations in MW-19N and MW-21 are declining with distance from MW-7N, which is indicative of biodegradation.

- Flow Path 3 (MW-8N, MW-23, MW-24 and MW-13): DO is reduced and ferrous iron is high in the upgradient wells. Sulfate is still elevated in these wells, indicating that biodegradation is in a ferric iron reducing stage. In the downgradient well, DO, nitrate, ferric iron, and sulfate are all at relatively low levels.

After completing the first year of quarterly monitoring, SLR will assess the data in accordance with the Ecology's *Natural Attenuation Analysis Tool Package for Petroleum-Contaminated Groundwater*. The results will be used to evaluate if the groundwater plume is shrinking, stable, or expanding; to assess the attenuation rate; and to identify the wells that will be sampled during the subsequent monitoring events.

2.2 TASK 6 - INSTITUTIONAL CONTROLS

The site is zoned for heavy industrial use by the City of Vancouver (Vancouver Municipal Code 20.160.020) and the uses allowed in this zone are consistent with MTCA's definition of industrial land use (WAC 173-340-745). It is Crowley's understanding that Alcoa and/or the Port of Vancouver will be designating institutional controls limiting the property use to industrial land use.

3.1 LABORATORY QA/QC

The data quality objectives (DQOs) for the laboratory data are listed in Table 1 and Table 2 of the SAP prepared for the Final Remedial Action Work Plan. These DQOs are used to assess the validity of the analytical data reported by the laboratory.

3.1.1 PRECISION

Laboratory precision is measured by assessing the results of laboratory duplicates. Based on the results of duplicate analysis, the relative percent difference (RPD) is calculated as a measure of QA/QC. RPD is defined as the difference between the duplicate results divided by the mean of the results, expressed as a percentage. Analytical error increases near the method detection limit (MDL); therefore the RPD is not normally calculated unless the concentrations of both the original and duplicate samples are greater than 5 times the MDL. If the RPD for a sample and its duplicate do not meet RPD standards for the parameters analyzed, an explanation is required to qualify the difference in values.

Results from the RPD calculations for the laboratory duplicates are in the Level II Quality Assurance Report included in the Laboratory Analytical Reports, **Appendix C**. In addition, groundwater sample MW-22 was submitted with a blind duplicate for this monitoring event. The RPD for MW-22 and the duplicate was 19% for TPH-Dx – Diesel Range, 10% for TPH-Dx – Residual Range and 2.5% for TPH-Gx. The laboratory and field RPDs were within the DQOs established in the SAP.

3.1.2 ACCURACY

Accuracy of laboratory analysis is assessed through laboratory control spikes, blank spikes, matrix spikes, and method blanks. The matrix spike results will provide additional information regarding the method performance on the actual samples. Professional judgment will be used to assess the data quality and any action that should be taken based on the matrix spike results.

Results from the laboratory spike and blank samples are in the Level II Quality Assurance Report included in the Laboratory Analytical Report, **Appendix C**. The matrix spike result for manganese was outside the MS/MSD control limits from Table 2 of the SAP, but all other samples and parameters were within the DQOs established in the SAP.

3.1.3 COMPARABILITY

Data comparability is achieved through the consistent use of standard field sampling procedures and trained personnel, as outlined in the SAP. Sampling procedures will be similar to historical field procedures. The laboratory will use standard analytical methods. Adherence to the QA/QC procedures described in the SAP will provide comparable data throughout the duration of this project.

One rinsate blank and one one trip blank were analyzed as part of this monitoring event. For the rinsate blank, distilled water was run through a section of unused tubing and collected in a laboratory-provided container in the same manner as all the groundwater samples. Results from the rinsate and trip blank are presented in **Table 2**. The rinsate sample was reported to contain a qualified concentration of 50 µg/L of TPH-Gx. For future sampling events rinsate blanks will continue to be collected.

3.1.4 COMPLETENESS

Completeness is evaluated through the following criteria:

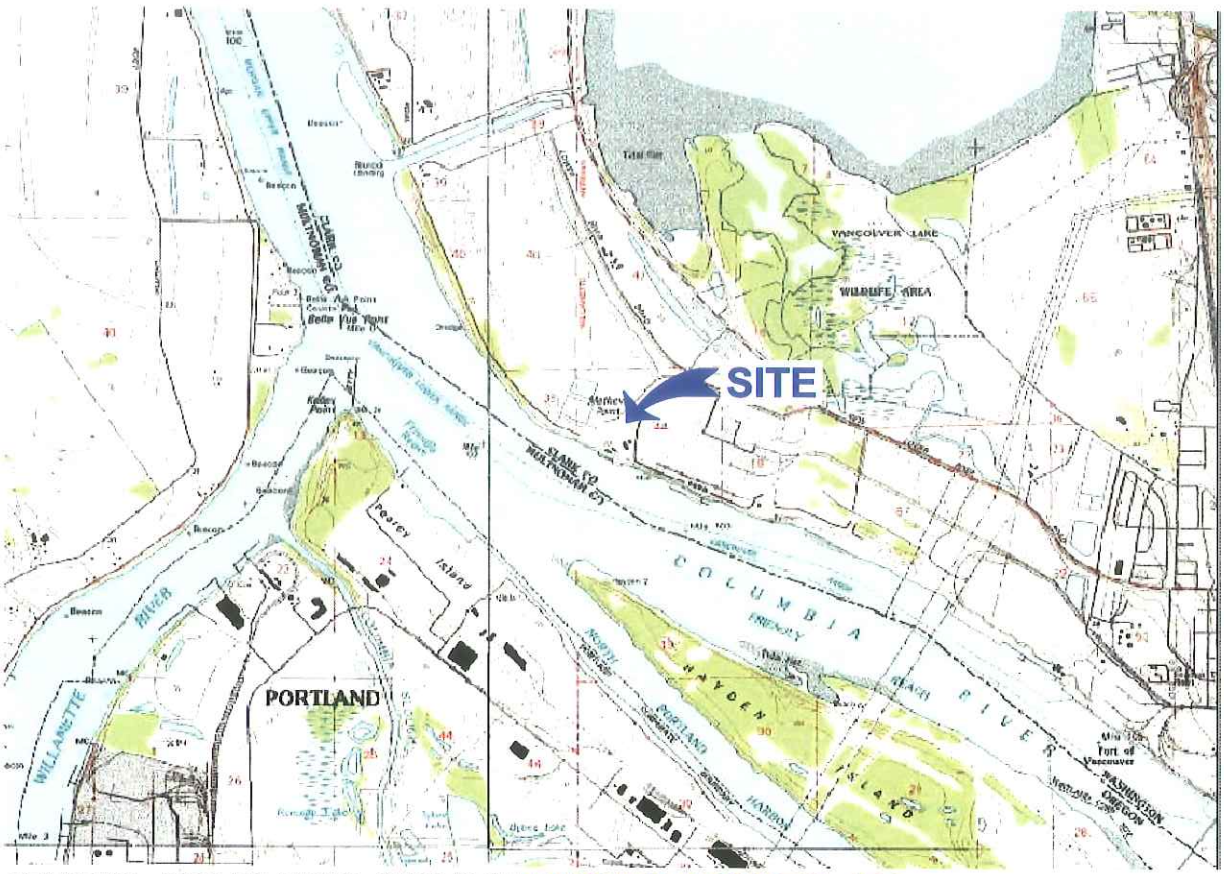
1. The number of useable data points compared to the number of projected data points
2. Compliance with the data quality objectives
3. Compliance with standard method procedures (i.e. required holding times)

The goal is to achieve 100% data completeness. Where data are not complete, professional judgment is used to either qualify the data or reject the data. This sampling event met the DQO for completeness.

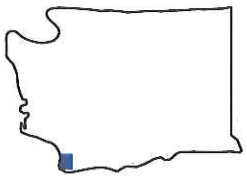
4.0 CLOSING

SLR prepared this report on behalf of Crowley to present the remedial action activities of First Quarter 2010, including the installation of six additional monitoring wells and one quarterly groundwater monitoring event (Task 5 of the Work Plan). Well installation and quarterly sampling were completed per the approved work plan. The next groundwater monitoring event is scheduled for May 2010. Evaluation of the results from the first year of post-remedial action groundwater monitoring event using Ecology's *Natural Attenuation Analysis Tool Package for Petroleum-Contaminated Groundwater* will be completed after the fourth quarter sampling event.

FIGURES



REFERENCE: USGS 7.5 MINUTE QUADRANGLE; VANCOUVER, WASHINGTON; 1990



QUADRANGLE LOCATION

0 1/4 1/2 1

SCALE IN MILE

0 1000 2000

1 INCH = 2000 FEET

THIS DRAWING IS FOR CONCEPTUAL PURPOSES ONLY. ACTUAL LOCATIONS MAY VARY AND NOT ALL STRUCTURES ARE SHOWN.

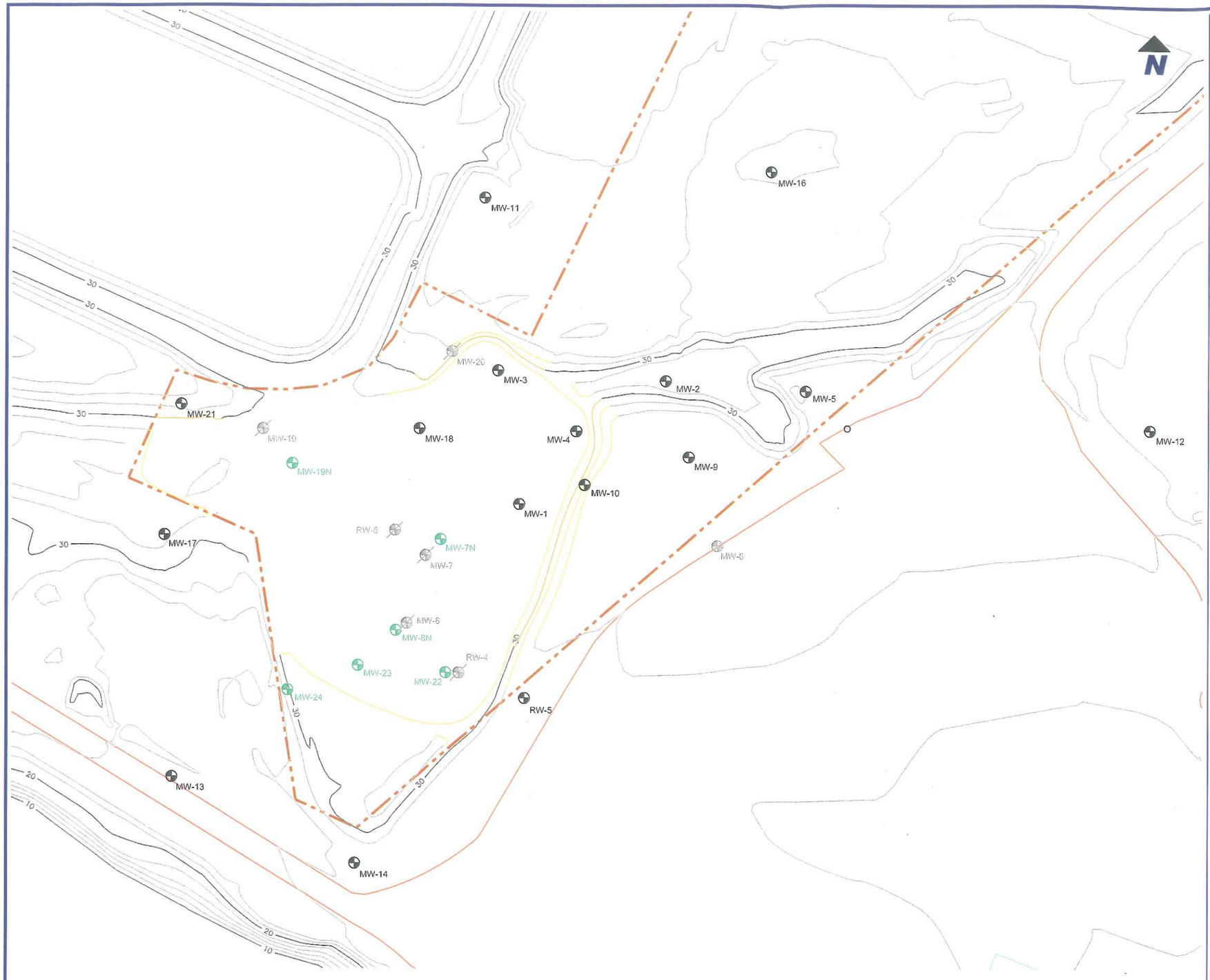
SLR

FORMER COLUMBIA MARINE LINES FACILITY
6205 LOWER RIVER ROAD
VANCOUVER, WASHINGTON

Report
REMEDIAL ACTION WORK PLAN

Drawing
SITE LOCATION MAP

Date November 26, 2008	Scale AS SHOWN	Fig. No. 1
File Name Figure 1 - Site Location Map-1	Project No. 008.0205.00007	



NOTES

LEGEND

- PROPERTY LINE
- ASPHALT ROAD
- TOPOGRAPHIC CONTOUR – 10 FT INTERVAL
- TOPOGRAPHIC CONTOUR – 2 FT INTERVAL
- APPROXIMATE NEW TOPOGRAPHIC CONTOUR
- MW-1 PREVIOUS GROUNDWATER MONITORING WELL
- MW-7N GROUNDWATER MONITORING WELLS INSTALLED 2010
- MW-6 ABANDONED/DESTROYED GROUNDWATER MONITORING WELL

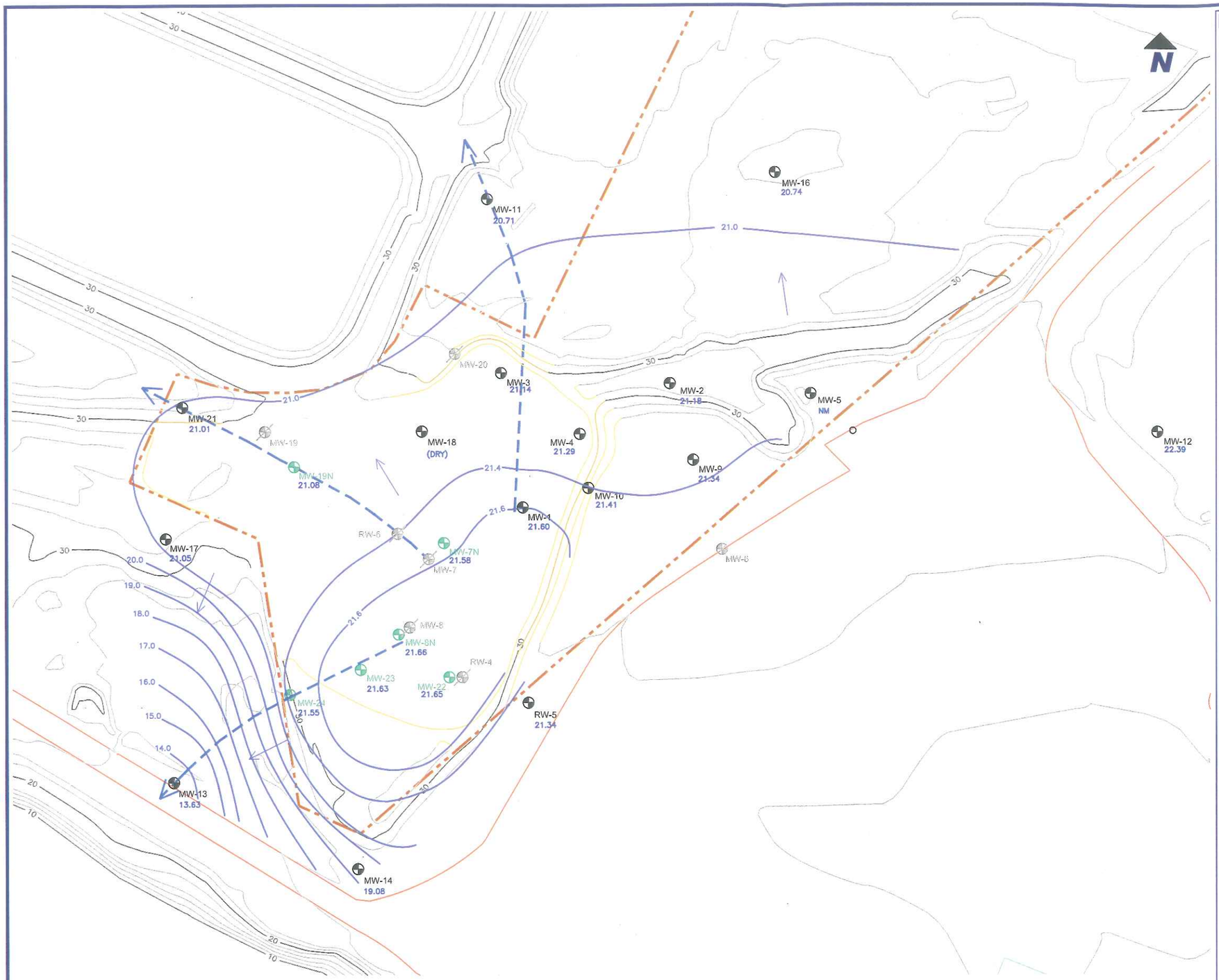
FORMER COLUMBIA MARINE LINES FACILTIY
6305 LOWER RIVER ROAD
VANCOUVER, WASHINGTON

Report: 1ST QUARTER 2010 GROUNDWATER MONITORING REPORT

Drawing: SITE PLAN AND MONITORING WELL LOCATIONS

Date: March 22, 2010	Scale: AS SHOWN	Fig. No. 2
File Name: 1QGWElevations-3	Project No. 008.0256.00007	

SLR



NOTES

LEGEND

- PROPERTY LINE
- ASPHALT ROAD
- TOPOGRAPHIC CONTOUR – 10 FT INTERVAL
- TOPOGRAPHIC CONTOUR – 2 FT INTERVAL
- APPROXIMATE NEW TOPOGRAPHIC CONTOUR
- MW-1 — PREVIOUS GROUNDWATER MONITORING WELL
- NW-19N — GROUNDWATER MONITORING WELL INSTALLED 2010
- MW-6 — ABANDONED GROUNDWATER MONITORING WELL
- 22.07 — GROUNDWATER ELEVATION (APRIL 2, 2008)
- 21.0 — INFERRED GROUNDWATER ELEVATION CONTOURS
- INFERRED GROUNDWATER FLOW DIRECTION
- NATURAL ATTENUATION GROUNDWATER FLOW PATHS

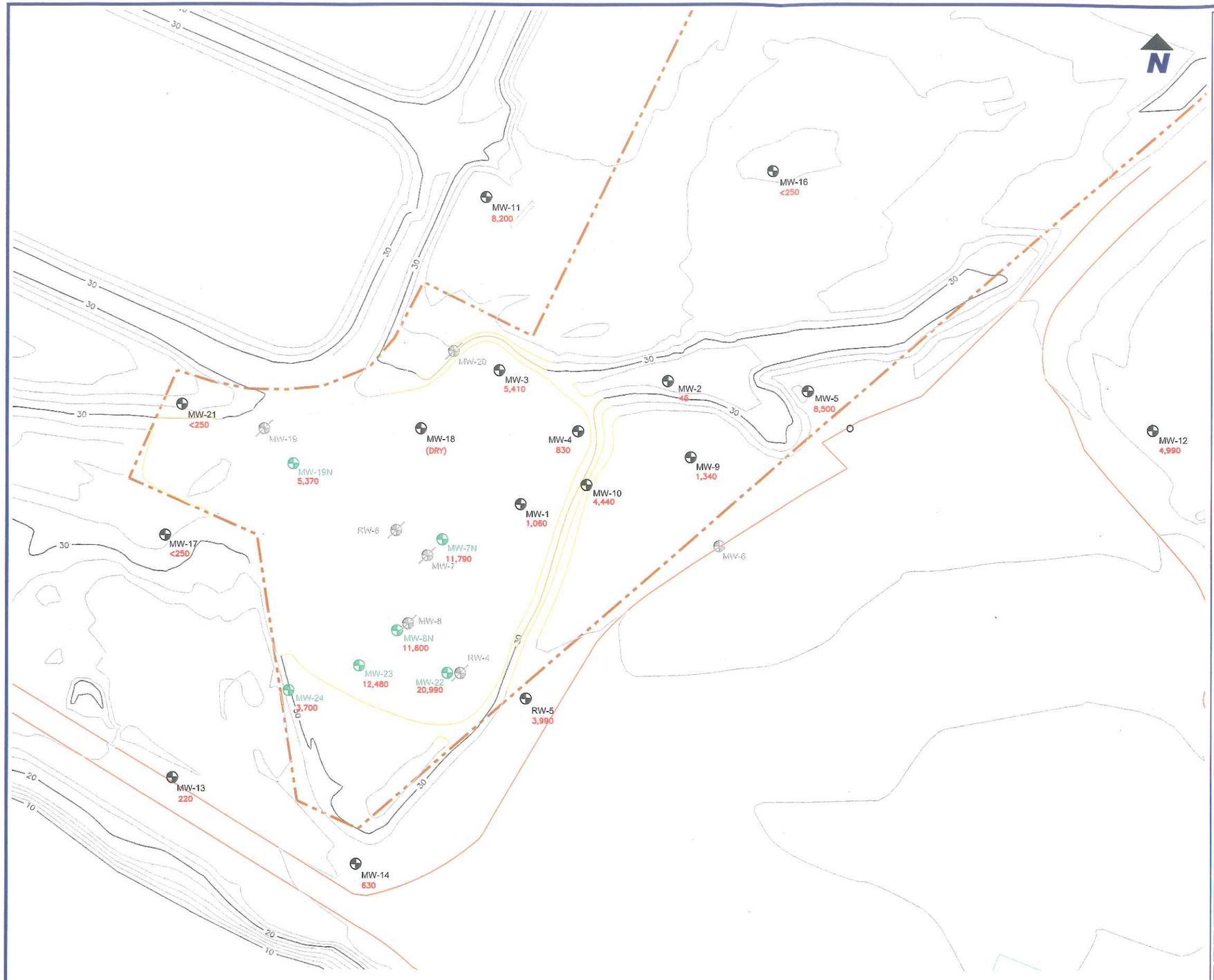
FORMER COLUMBIA MARINE LINES FACILTIY
6305 LOWER RIVER ROAD
VANCOUVER, WASHINGTON

Report: 1ST QUARTER 2010 GROUNDWATER MONITORING REPORT

Drawing: GROUNDWATER ELEVATIONS AND GROUNDWATER FLOW PATHS

Date March 22, 2010	Scale AS SHOWN	Fig. No. 3
File Name 1QGWElevations-3	Project No. 008.0256.00007	

SLR



NOTES

LEGEND

- PROPERTY LINE
- ASPHALT ROAD
- TOPOGRAPHIC CONTOUR – 10 FT INTERVAL
- TOPOGRAPHIC CONTROUR – 2 FT INTERVAL
- APPROXIMATE NEW TOPOGRAPHIC CONTOUR
- MW-1 — PREVIOUS GROUNDWATER MONITORING WELL
- NW-19N — GROUNDWATER MONITORING WELL INSTALLED 2010
- MW-6 — ABANDONED GROUNDWATER MONITORING WELL
- 4,990 — TOTAL TPH CONCENTRATION (NWTPH–Gx PLUS NWTPH–Dx)

FORMER COLUMBIA MARINE LINES FACILTIY
6305 LOWER RIVER ROAD
VANCOUVER, WASHINGTON

Report: 1ST QUARTER 2010 GROUNDWATER MONITORING REPORT

Drawing: TOTAL PETROLEUM HYDROCARBON CONCENTRATIONS

Date: March 22, 2010	Scale: AS SHOWN	Fig. No. 4
File Name: 1QGWElevations-3	Project No. 008.0256.00007	

SLR

TABLES

Table 1. Groundwater Elevation Data
Former Columbia Marine Lines Facility
6305 Lower River Road, Vancouver, Washington

Sample Location	Measurement Date	Depth to Groundwater (feet)	Free Product Thickness (feet)	Groundwater Elevation (feet)
MW-1 [A]	11/13/1995	9.19	0.00	22.47
31.66	8/1/1996	10.23	0.00	21.43
	10/30/1997	9.54	0.00	22.12
	10/29/1998	12.26	0.00	19.40
	5/7/1999	9.51	0.00	22.15
31.69	10/14/1999	12.39	0.00	19.27
	6/28/2001	11.80	0.00	19.89
	2/12/2002	9.65	0.00	22.04
	5/13/2005	10.09	0.00	21.60
	10/20/2005	13.49	0.00	18.20
32.06	2/9/2010	10.46	0.00	21.60
MW-2	11/13/1995	12.95	0.00	21.02
33.97	8/1/1996	13.75	0.00	20.22
	10/30/1997	13.55	0.00	20.42
	10/29/1998	14.92	0.00	19.05
	5/7/1999	12.79	0.00	21.18
33.98	10/14/1999	15.06	0.00	18.92
	6/28/2001	14.93	0.00	19.05
	2/12/2002	12.28	0.00	21.70
	5/13/2005	14.61	0.00	19.37
	10/20/2005	16.27	0.00	17.71
33.97	2/9/2010	12.79	0.00	21.18
MW- 3 [A]	11/13/1995	11.24	0.00	19.66
30.90	8/1/1996	11.11	0.00	19.79
	10/30/1997	11.23	0.00	19.67
	10/30/1998	12.28	0.00	18.62
	5/7/1999	9.98	0.00	20.92
30.96	10/14/1999	12.33	0.00	18.63
	6/28/2001	12.27	0.00	18.69
	2/12/2002	9.42	0.00	21.54
	5/13/2005	11.83	0.00	19.13
	10/20/2005	13.50	0.00	17.46
	2/9/2010	9.82	0.00	21.14
MW-4 [A]	11/13/1995	8.27	0.00	20.15
28.42	8/1/1996	8.40	0.00	20.02
	10/30/1997	8.45	0.00	19.97
	10/29/1998	9.65	0.00	18.77
	5/7/1999	7.26	0.00	21.16
28.64	10/14/1999	9.74	0.00	18.90
	6/28/2001	10.68	0.00	17.96
	2/12/2002	6.68	0.00	21.96
	5/13/2005	8.12	0.00	20.52
	10/20/2005	10.88	0.00	17.76
32.70	2/9/2010	11.41	0.00	21.29

Table 1. Groundwater Elevation Data
Former Columbia Marine Lines Facility
6305 Lower River Road, Vancouver, Washington

Sample Location	Measurement Date	Depth to Groundwater (feet)	Free Product Thickness (feet)	Groundwater Elevation (feet)
MW-5	11/13/1995	3.07	0.00	20.30
23.37	8/1/1996	3.60	0.00	19.77
	5/7/1999	2.45	0.00	20.92
23.38	10/14/1999	4.85	0.00	18.53
	2/9/2010	2.16	0.00	21.22
MW-6	11/13/1995	5.23	0.00	20.91
26.14	8/1/1996	5.50	0.00	20.64
	10/30/1998	5.44	0.00	20.70
	5/7/1999	3.18	0.00	22.96
24.76	10/14/1999	5.41	0.00	20.73
	6/28/2001	5.28	0.00	19.48
	2/12/2002	2.87	0.00	21.89
	Unable to locate - possibly destroyed.			
MW-7	11/13/1995	12.54	0.00	20.82
33.36	8/1/1996	13.55	0.62	20.31
	10/30/1997	13.24	0.17	20.26
	10/30/1998	14.51	0.07	18.91
	5/7/1999	11.82	0.02	21.56
33.40	10/14/1999	14.70	0.00	18.70
	6/28/2001	15.41	0.00	17.99
	5/13/2005	13.84	0.00	19.56
	10/21/2005	15.42	0.00	17.98
	Well Abandoned			
MW-7N [A]	2/9/2010	13.54	0.00	21.58
35.12				
MW-8	11/13/1995	12.90	0.50	20.99
33.49	8/1/1996	12.98	0.15	20.63
	10/30/1997	13.20	0.21	20.46
	10/30/1998	14.94	0.14	18.66
	5/7/1999	12.05	0.37	21.74
33.53	10/14/1999	15.31	0.18	18.36
	6/28/2001	15.99	0.00	17.54
	5/13/2005	13.77	0.00	19.76
	10/21/2005	15.45	0.00	18.08
	Well Abandoned			
MW-8N [A]	2/9/2010	10.81	0.00	21.66
32.47				
MW-9	11/13/1995	4.25	0.00	22.11
26.36	8/1/1996	5.81	0.00	20.55
	10/30/1997	1.87	0.00	24.49
	10/30/1998	6.31	0.00	20.05
	5/7/1999	5.02	0.00	21.34
26.38	10/14/1999	7.25	0.00	19.13
	6/28/2001	6.87	0.00	19.51
	2/11/2002	4.41	0.00	21.97
	5/13/2005	5.74	0.00	20.64
	10/20/2005	8.44	0.00	17.94
26.39	2/9/2010	5.05	0.00	21.34

Table 1. Groundwater Elevation Data
Former Columbia Marine Lines Facility
6305 Lower River Road, Vancouver, Washington

Sample Location	Measurement Date	Depth to Groundwater (feet)	Free Product Thickness (feet)	Groundwater Elevation (feet)
MW-10 [A]	11/13/1995	5.09	0.00	20.80
25.89	8/1/1996	5.62	0.00	20.27
	10/30/1997	5.64	0.00	20.25
	10/30/1998	DRY	DRY	DRY
	5/7/1999	4.53	0.00	21.36
25.92	10/14/1999	6.81	0.00	19.11
	6/28/2001	7.04	0.00	18.88
	2/11/2002	4.01	0.00	21.91
	5/13/2005	5.46	0.00	20.46
	10/20/2005	DRY	DRY	DRY
30.36	2/9/2010	8.95	0.00	21.41
MW-11	11/13/1995	6.57	0.00	19.32
25.89	8/1/1996	6.71	0.00	19.18
	10/30/1997	6.75	0.00	19.14
	10/29/1998	8.12	0.00	17.77
	5/7/1999	5.49	0.00	20.40
25.90	10/14/1999	8.12	0.00	17.78
	6/28/2001	3.90	0.00	22.00
	2/11/2002	4.91	0.00	20.99
	5/13/2005	6.21	0.00	19.69
	10/21/2005	9.26	0.00	16.64
25.92	2/9/2010	5.21	0.00	20.71
MW-12	11/13/1995	6.07	0.00	22.10
28.17	8/1/1996	7.15	0.00	21.02
	10/30/1997	6.61	0.00	21.56
	10/29/1998	8.01	0.00	20.16
	5/7/1999	6.36	0.00	21.81
28.28	10/14/1999	8.34	0.00	19.94
	6/28/2001	8.24	0.00	20.04
	2/11/2002	5.76	0.00	22.52
	5/13/2005	6.61	0.00	21.67
	10/20/2005	9.41	0.00	18.87
28.26	2/9/2010	5.87	0.00	22.39
MW-13	11/13/1995	10.60	0.00	12.18
22.78	8/1/1996	10.70	0.00	12.08
	10/30/1997	10.48	0.00	12.30
	5/7/1999	9.60	0.00	13.18
22.75	10/14/1999	11.19	0.00	11.56
	6/28/2001	11.18	0.00	11.57
	2/12/2002	9.33	0.00	13.42
	5/13/2005	9.91	0.00	12.84
	10/20/2005	11.72	0.00	11.03
	9/13/2007	11.72	0.00	11.03
22.72	2/9/2010	9.09	0.00	13.63
MW-14	11/13/1995	8.08	0.00	18.17
26.25	8/1/1996	9.15	0.00	17.10
	10/30/1997	8.89	0.00	17.36
	5/7/1999	8.03	0.00	18.22
26.28	10/14/1999	11.73	0.00	14.55
	6/28/2001	11.95	0.00	14.33
	2/12/2002	6.56	0.00	19.72
	5/13/2005	7.85	0.00	18.43
	10/20/2005	9.56	0.00	16.72
	2/9/2010	7.20	0.00	19.08

Table 1. Groundwater Elevation Data
Former Columbia Marine Lines Facility
6305 Lower River Road, Vancouver, Washington

Sample Location	Measurement Date	Depth to Groundwater (feet)	Free Product Thickness (feet)	Groundwater Elevation (feet)
MW-16	11/13/1995	9.94	0.00	21.19
31.13	8/1/1996	10.36	0.00	20.77
	10/30/1997	10.26	0.00	20.87
	10/29/1998	11.43	0.00	19.70
	5/7/1999	9.33	0.00	21.80
29.67	10/14/1999	11.50	0.00	18.17
	6/28/2001	11.35	0.00	18.32
	2/11/2002	8.60	0.00	21.07
	5/13/2005	9.87	0.00	19.80
	10/21/2005	12.65	0.00	17.02
	2/9/2010	8.93	0.00	20.74
MW-17	11/13/1995	DRY	DRY	DRY
33.94	8/1/1996	14.62	0.00	19.32
	10/30/1997	15.61	0.00	18.33
	10/29/1998	DRY	DRY	DRY
	5/7/1999	13.42	0.00	20.52
33.97	10/14/1999	DRY	DRY	DRY
	6/28/2001	DRY	DRY	DRY
	2/11/2002	12.68	0.00	21.29
	5/13/2005	14.64	0.00	19.33
	10/20/2005	17.74	0.00	16.23
33.96	2/9/2010	12.91	0.00	21.05
MW-18 [A]	11/13/1995	8.47	0.00	24.72
33.19	8/1/1996	9.96	0.00	23.23
	10/30/1997	DRY	DRY	DRY
	10/29/1998	DRY	DRY	DRY
	5/7/1999	DRY	DRY	DRY
33.24	10/14/1999	DRY	DRY	DRY
	6/28/2001	DRY	DRY	DRY
	2/11/2002	DRY	DRY	DRY
	5/13/2005	DRY	DRY	DRY
	10/20/2005	DRY	DRY	DRY
31.49	2/9/2010	DRY	DRY	DRY
MW-19	11/13/1995	14.77	0.00	18.90
33.67	8/1/1996	14.24	0.00	19.43
	10/30/1997	14.47	0.00	19.20
	10/30/1998	16.11	0.75	18.16
	5/7/1999	12.95	0.00	20.72
33.72	10/14/1999	15.43	0.02	18.31
	6/28/2001	15.85	0.00	17.87
	5/13/2005	14.08	0.00	19.64
	10/21/2005	16.93	0.00	16.79
	Well Abandoned			
MW-19N [A]	2/9/2010	13.98	0.00	21.08
35.06				
MW-20	11/13/1995	21.99	0.00	8.37
30.36	8/1/1996	22.66	0.00	7.70
	10/30/1997	23.72	0.00	6.64
	10/30/1998	27.70	0.00	2.66
	5/7/1999	19.30	0.00	11.06
	Well Abandoned			

Table 1. Groundwater Elevation Data
Former Columbia Marine Lines Facility
6305 Lower River Road, Vancouver, Washington

Sample Location	Measurement Date	Depth to Groundwater (feet)	Free Product Thickness (feet)	Groundwater Elevation (feet)
MW-21	11/13/1995	DRY	DRY	DRY
30.06	8/1/1996	10.65	0.00	19.41
	10/30/1997	11.50	0.00	18.56
	10/29/1998	DRY	DRY	DRY
	5/7/1999	9.57	0.00	20.49
30.08	10/14/1999	DRY	DRY	DRY
	6/28/2001	DRY	DRY	DRY
	2/11/2002	7.15	0.00	22.93
	5/13/2005	8.91	0.00	21.17
	10/20/2005	DRY	DRY	DRY
28.36	2/9/2010	7.35	0.00	21.01
MW-22 [A]	2/9/2010	10.14	0.00	21.65
31.79				
MW-23 [A]	2/9/2010	10.50	0.00	21.63
32.13				
MW-24 [A]	2/9/2010	11.15	0.00	21.55
32.70				
RW-4	6/28/2001	16.27	0.00	--
	2/12/2002	12.38	0.00	--
	5/13/2005	14.28	0.00	--
	10/21/2005	16.40	0.00	--
	Well Abandoned			
RW-5	6/28/2001	9.42	0.00	--
	2/12/2002	6.7	0.00	--
	5/13/2005	8.12	0.00	--
	10/20/2005	9.74	0.00	--
28.75	2/9/2010	7.41	0.00	21.34
RW-6	6/28/2001	14.52	0.00	19.01
33.53	2/12/2002	11.59	0.00	21.94
	5/13/2005	13.40	0.00	20.13
	10/20/2005	15.21	0.00	18.32
	Well Abandoned			
P-1	11/13/1995	9.74	0.00	19.61
29.35				
P-2	11/13/1995	4.35	0.00	20.87
25.22				
EX-1	11/13/1995	14.72	0.00	17.58
32.3				
GP1	5/7/1999	5.05	0.00	21.50
GP2	5/7/1999	10.3	0.00	21.94
GP3	5/7/1999	10.9	0.00	21.19
GP4	5/7/1999	10.2	0.00	20.55
GP5	5/7/1999	6.86	0.00	20.11
GP6	5/7/1999	8.89	0.00	18.28
GP7	5/7/1999	10.5	0.00	20.37
GP8	5/7/1999	7.71	0.00	21.66
GP9	5/7/1999	8.06	0.00	21.60

Note:

-- = Top of casing elevation not known.

A - Surveyed by SLR on March 4, 2010

Table 2. Groundwater Analytical Results
TPH-Dx and TPH-Gx
Former Columbia Marine Lines Facility
6305 Lower River Road, Vancouver, Washington

Sample Location	Sample Date	Silica Gel Cleanup (TPH-Dx)	TPH-Dx [A] (µg/L)		TPH-Gx [B] (µg/L)	Total TPH [C]
			Diesel	Heavy Oil		
MTCA Method A Cleanup Level			**500**	**500**	**800**	**500**
MW-1	11/13/1995	No	12,000	<5,000 [D]	<80	12,000
	10/29/1998	No	5,430	1,230	233	6,893
	10/14/1999	No	10,400	2,850	--	13,250
	10/20/2000	No	8,140	1,060	269	9,469
	10/20/2000	Yes	1,980	<500	--	1,980
	6/28/2001	Yes	796	<625	392	1,188
	2/12/2002	Yes	271	<500	--	271
	5/13/2005	Yes	<250	<500	--	0
	10/20/2005	Yes	268	<476	--	268
	8/30/2007	No	5,600	1,250	<80	6,850
	2/9/2010	Yes	910	150	<100	1,060
MW-2	8/28/1990	No	26,400	--	<50	26,400
	8/2/1994	No	10,000	--	3,100	13,100
	11/13/1995	No	40,000	7,400	4,000	51,400
	8/1/1996	No	4,700	--	<80	4,700
	10/29/1998	No	9,030	<2,500	3,220	12,250
	10/14/1999	No	9,060	3,460	--	12,520
	10/20/2000	No	7,740	1,610	862	10,212
	10/20/2000	Yes	2,480	747	--	3,227
	6/28/2001	Yes	8,400	2,240	900	11,540
	2/12/2002	Yes	5,700	1,750	--	7,450
	5/13/2005	Yes	2,070	836	--	2,906
	10/20/2005	Yes	3,760	1,190	--	4,950
	8/30/2007	No	9,390	2,850	180	12,420
	2/10/2010	Yes	<100	<250	45	45
MW-3	11/13/1995	No	4,600	<5,000	290	4,890
	10/30/1998	No	11,400	4,100	282	15,782
	10/14/1999	No	15,500	4,890	--	20,390
	6/28/2001	Yes	1,560	<588	529	2,089
	2/12/2002	Yes	435	<500	--	435
	5/13/2005	Yes	710	<500	--	710
	10/20/2005	Yes	428	<476	--	428
	8/30/2007	No	9,390	3,920	<80	13,310
	2/9/2010	Yes	4,500	910	<100	5,410
MW-4	11/13/1995	No	7,800	<5000	390	8,190
	8/1/1996	No	11,000	--	380	11,380
	10/29/1998	No	11,200	2,920	1,120	15,240
	10/14/1999	No	17,200	5,180	--	22,380
	5/13/2005	Yes	965	<500	--	965
	10/20/2005	Yes	319	<476	--	319
	8/30/2007	No	15,600	3,330	88	19,018
	2/10/2010	Yes	730	100	<100	830
MW-5	11/13/1995	No	2,600	770	<80	3,370
	10/14/1999	No	2,380	680	--	3,060
	2/10/2010	Yes	7,000	1,500	<100	8,500
MW-6	11/13/1995	No	48,000	<5,000	740	48,740
	10/30/1998	No	27,000	6,790	<80	33,790
	10/14/1999	No	19,700	2,810	--	22,510
	10/20/2000	No	30,200	2,360	936	33,496
	10/20/2000	Yes	13,500	1,390	--	14,890
	6/28/2001	Yes	5,660	822	212	6,694
	2/12/2002	Yes	31,500	3,380	--	34,880

Table 2. Groundwater Analytical Results
TPH-Dx and TPH-Gx
Former Columbia Marine Lines Facility
6305 Lower River Road, Vancouver, Washington

Sample Location	Sample Date	Silica Gel Cleanup (TPH-Dx)	TPH-Dx [A] (µg/L)		TPH-Gx [B] (µg/L)	Total TPH [C]
			Diesel	Heavy Oil		
MTCA Method A Cleanup Level			**500**	**500**	**800**	**500**
MW-7	8/2/1994	No	7,700	--	1,600	9,300
	11/13/1995	No	43,000	<5,000	1,800	44,800
	8/24/1999	No	35,800	<10,000	--	35,800
	8/24/1999	Yes	28,900	<5,000	--	28,900
	10/14/1999	No	25,800	3,950	--	29,750
	10/20/2000	No	61,800	<10,000	2,110	63,910
	10/20/2000	Yes	76,100	<5,000	--	76,100
	2/12/2002	Yes	1,590	<500	--	1,590
	5/13/2005	Yes	1,450	<500	<80	1,450
	10/21/2005	Yes	4,540	<481	<800	4,540
MW-7N	2/9/2010	Yes	10,000	1,600	190	11,790
MW-8	11/13/1995	No	490,000	41,000	5,400	536,400
	10/14/1999	No	19,500	2,400	--	21,900
	2/12/2002	Yes	2,990	<500	--	2,990
MW-8N	2/9/2010	Yes	9,600	2,000	<100	11,600
MW-9	11/13/1995	No	880	630	<80	1,510
	10/30/1998	No	5,760	2,030	<80	7,790
	10/14/1999	No	4,250	2,330	--	6,580
	10/14/1999	Yes	446	811	--	1,257
	5/13/2005	Yes	498	<500	--	498
	10/20/2005	Yes	824	852	--	1,676
	2/10/2010	Yes	600	740	<100	1,340
MW-10	11/13/1995	No	<250	<500	760	760
	5/13/2005	Yes	522	1,910	--	2,432
	2/10/2010	Yes	3,500	940	<100	4,440
MW-11	8/2/1994	No	<500	--	<200	0
	11/13/1995	No	11,000	<5000	<80	11,000
	10/29/1998	No	3,160	698	<80	3,858
	10/14/1999	No	3,160	<500	--	3,160
	10/14/1999	Yes	<250	<500	--	0
	5/13/2005	Yes	<250	<500	--	0
	10/21/2005	Yes	<236	<472	--	0
	8/31/2007	No	402	<476	<80	402
	2/10/2010	Yes	6,400	1,800	<100	8,200
MW-12	11/13/1995	No	<250	<500	<80	0
	8/1/1996	No	<250	--	<80	0
	10/29/1998	No	<250	<500	<80	0
	10/14/1999	No	<250	<500	--	0
	5/13/2005	Yes	<250	<500	--	0
	10/20/2005	Yes	<236	<472	--	0
	8/30/2007	No	<238	<476	<80	0
	2/10/2010	Yes	4,300	690	<100	4,990
MW-13	8/28/1990	No	<50	--	<50	0
	8/2/1994	No	1,200	--	<200	1,200
	11/13/1995	No	1,400	<500	<80	1,400
	8/1/1996	No	900	--	<80	900
	10/30/1997	No	1,530	750	<80	2,280
	10/14/1999	No	1,500	854	--	2,354
	10/14/1999	Yes	<250	<500	--	0
	6/28/2001	Yes	<250	<500	<80	0
	2/12/2002	Yes	<250	<500	--	0
	5/13/2005	Yes	<250	<500	--	0
	10/20/2005	Yes	<238	<476	--	0
	9/13/2007	Yes	<243	<485	--	0
	2/9/2010	Yes	220	<250	<100	220

Table 2. Groundwater Analytical Results
TPH-Dx and TPH-Gx
Former Columbia Marine Lines Facility
6305 Lower River Road, Vancouver, Washington

Sample Location	Sample Date	Silica Gel Cleanup (TPH-Dx)	TPH-Dx [A] (µg/L)		TPH-Gx [B] (µg/L)	Total TPH [C]
			Diesel	Heavy Oil		
MTCA Method A Cleanup Level			**500**	**500**	**800**	**500**
MW-14	11/13/1995	No	1,000	<500	<80	1,000
	8/1/1996	No	1,800	--	<80	1,800
	10/30/1997	No	<250	<500	<80	0
	10/14/1999	No	3,820	1,810	--	5,630
	10/14/1999	Yes	<250	<500	--	0
	6/28/2001	Yes	<294	<588	108	108
	2/12/2002	Yes	<250	<500	--	0
	5/13/2005	Yes	<250	<500	--	0
	10/20/2005	Yes	<250	<500	--	0
	2/10/2010	Yes	500	130	<100	630
MW-16	8/28/1990	No	4,910	--	1,000	5,910
	8/2/1994	No	11,000	--	1,100	12,100
	11/13/1995	No	10,000	2,100	900	13,000
	8/1/1996	No	<500	--	740	740
	10/30/1997	No	9,010	2,700	1,220	12,930
	10/29/1998	No	11,600	2,590	482	14,672
	8/24/1999	No	9,900	2,130	--	12,030
	8/24/1999	Yes	842	<500	--	842
	10/14/1999	No	12,300	2,650	--	14,950
	10/14/1999	Yes	1,190	<500	--	1,190
	10/20/2000	No	13,200	1,530	463	15,193
	10/20/2000	Yes	1,510	<500	--	1,510
	6/28/2001	Yes	1,800	<500	361	2,161
	5/13/2005	Yes	1,220	<500	--	1,220
	10/21/2005	Yes	572	<472	--	572
	8/31/2007	No	12,700	2,800	116	15,616
	2/10/2010	Yes	<100	<250	<100	0
MW-17	5/13/2005	Yes	<250	<500	--	0
	10/20/2005	Yes	<236	<472	--	0
	8/30/2007	No	<236	<472	<80	0
	2/10/2010	Yes	<100	<250	<100	0
MW-18	11/13/1995	No	4,900	2,100	<80	7,000
	8/1/1996	No	9,600	--	<80	9,600
MW-19	8/28/1990	No	35,200	--	<50	35,200
	11/13/1995	No	69,000	<25,000	4,300	73,300
	10/30/1997	No	21,600	3,180	2,860	27,640
	10/14/1999	No	35,000	4,280	--	39,280
	10/14/1999	Yes	5,280	<500	--	5,280
	2/12/2002	Yes	19,800	<5,000	--	19,800
	5/13/2005	Yes	9,990	1,260	390	11,640
	10/21/2005	Yes	35,500	4,140	<800	39,640
	8/31/2007	No	30,700	4,680	--	35,380
MW-19N	2/9/2010	Yes	4,700	670	<100	5,370
MW-20	11/13/1995	No	870	730	<80	1,600
	10/30/1998	No	<250	<500	<80	0
	10/20/2000	No	14,500	1,340	294	16,134
	10/20/2000	Yes	878	<500	--	878
MW-21	2/5/1986	No	--	--	--	--
	5/13/2005	Yes	<250	<500	--	0
	2/9/2010	Yes	<100	<250	<100	0
MW-22	2/10/2010	Yes	14,000	3,100	200	17,300
	Duplicate	Yes	17,000	3,800	190	20,990
MW-23	2/9/2010	Yes	11,000	1,100	380	12,480
MW-24	2/9/2010	Yes	2,800	380	520	3,700

Table 2. Groundwater Analytical Results
TPH-Dx and TPH-Gx
Former Columbia Marine Lines Facility
6305 Lower River Road, Vancouver, Washington

Sample Location	Sample Date	Silica Gel Cleanup (TPH-Dx)	TPH-Dx [A] (µg/L)		TPH-Gx [B] (µg/L)	Total TPH [C]
			Diesel	Heavy Oil		
MTCA Method A Cleanup Level			**500**	**500**	**800**	**500**
RW-4	10/20/2000	No	10,400	1,020	782	12,202
	10/20/2000	Yes	<250	<500	--	0
	6/28/2001	Yes	806	<588	550	1,356
	2/12/2002	No	2,430	<500	--	2,430
	5/13/2005	Yes	2,280	<500	--	2,280
	10/21/2005	Yes	867	<476	--	867
	8/30/2007	No	16,400	2,090	--	18,490
RW-5	10/20/2000	No	12,700	2,720	491	15,911
	10/20/2000	Yes	696	<500	--	696
	6/28/2001	Yes	29,000	1,580	2,010	32,590
	2/12/2002	Yes	405	<500	--	405
	5/13/2005	Yes	2,120	<500	--	2,120
	10/20/2005	Yes	502	<481	--	502
	2/10/2010	Yes	2,900	490	<100	3,390
RW-6	2/3/1996	No	13,000	2,500	5,300	20,800
	6/28/2001	Yes	2,020	<500	1,580	3,600
	2/12/2002	Yes	1,040	<500	--	1,040
	5/13/2005	Yes	1,060	<500	--	1,060
	10/20/2005	Yes	384	<481	--	384
	8/31/2007		11,600	1,270	104	12,974
GP1	5/7/1999	No	335	<500	<80	335
GP2	5/7/1999	No	17,900	<500	2,710	20,610
GP3	5/7/1999	No	13,100	<500	2,780	15,880
GP4	5/7/1999	No	486	<500	<80	486
GP5	5/7/1999	No	1,970	<500	<80	1,970
GP6	5/7/1999	No	<250	<500	<80	0
GP7	5/7/1999	No	11,800	<500	<80	11,800
GP8	5/7/1999	No	15,200	<500	479	15,679
GP9	5/7/1999	No	4,930	<500	<80	4,930
GPE-1-GW	8/24/2007	No	2,830	714	199	3,743
GPE-2-GW	8/24/2007	No	1,170	<490	<80	1,170
GPE-3-GW	8/24/2007	No	5,590	1,660	162	7,412
Rinsate Blank	2/10/2010	Yes	50 [J]	<250	<100	50
Trip Blank	2/10/2010	Yes	<100	--	<100	0

Notes:

A - TPH - Diesel Range and Residual Range per NWTPH-Dx method

B - TPH - Gasoline Range per NWTPH-Gx method

C - Total Value of TPH - Diesel, Residual and Gasoline

D - <5,000 indicates detected below laboratory detection limit of 5,000µg/L

Laboratory Qualifiers from ESC

J - Estimated value below the lowest calibration point. Confidence correlates with concentration.

Table 3. Groundwater Analytical Results and Natural Attenuation Parameters
Former Columbia Marine Lines Facility
Vancouver, Washington

		Field Measurements[A]						Laboratory Analyses[B]					
Well Number	Date	Temp-erature °C	Cond-uctivity mS/cm	pH	Dissolved Oxygen mg/L	ORP mV	Visual	NO_3 µg/L[C]	Ferrous Iron (Fe^{+2}) µg/L[F]	SO_4 µg/L[C]	Alkalinity µg/L[D]	Methane µg/L[E]	Manganese µg/L[G]
Flow Path 1													
MW-1	2/9/2010	11.78	0.334	5.16	1.06	43.6	Sl. Cloudy	1,500	440	99,000	19,000 J	32	390
MW-3	2/9/2010	13.46	0.324	7.16	6.88	-57.1	Cloudy	420	22,000	14,000	120,000	260	1,000
MW-11	2/10/2010	9.96	0.154	6.66	5.79	-11.6	Sl. Cloudy	870	200	6,600	61,000	<10 H	89
Flow Path 2													
MW-7N	2/9/2010	12.49	1.166	6.56	2.18	-33.5	Yellow tint	<100	100,000	370,000	150,000	500	6,200
MW-19N	2/9/2010	16.46	0.337	5.74	0.68	29.5	Clear	10,000	11,000	150,000	49,000	240	1,700
MW-21	2/9/2010	11.34	0.056	7.55	9.11	-22.0	Clear	410	72	2,800 J	16,000 J	<10	2.8
Flow Path 3													
MW-8N	2/9/2010	13.60	1.033	6.84	1.02	-100.1	Yellow tint	<100	140,000	110,000	310,000	350	5,500
MW-23	2/9/2010	12.74	1.181	7.94	0.65	-106.6	Clear	<100	120,000	180,000	270,000	89	5,100 V
MW-24	2/9/2010	13.22	0.442	5.60	3.49	49.7	Clear	13,000	650	100,000	36,000	<10	230
MW-13	2/9/2010	14.23	0.751	7.26	0.81	-54.8	Clear	350	280	1,500 J	220,000	21	310
Other Wells													
MW-2	2/10/2010	12.48	0.240	7.19	0.57	-89.0	Black tint	--	--	--	--	--	--
MW-4	2/10/2010	12.70	0.528	6.85	0.59	-103.5	Clear	--	--	--	--	--	--
MW-5	2/10/2010	12.50	0.263	7.46	0.62	-103.9	Clear	--	--	--	--	--	--
MW-9	2/10/2010	10.25	0.378	7.28	0.88	-107.2	Clear	--	--	--	--	--	--
MW-10	2/10/2010 I	8.26	0.502	7.67	3.26	-59.9	Cloudy	--	--	--	--	--	--
MW-12	2/10/2010	10.51	0.178	7.40	6.72	-7.5	Clear	--	--	--	--	--	--
MW-14	2/10/2010	10.38	0.152	6.45	4.87	-85.8	Clear	--	--	--	--	--	--
MW-16	2/10/2010	11.96	0.287	6.73	0.98	-99.3	Clear	--	--	--	--	--	--
MW-17	2/10/2010	13.40	0.061	7.11	1.60	-36.4	Clear	--	--	--	--	--	--
MW-22	2/10/2010	13.88	1.431	6.97	0.60	-82.0	Yellow tint	--	--	--	--	--	--
RW-5	2/10/2010	12.54	0.520	6.98	0.34	-55.6	Clear	--	--	--	--	--	--

Notes:

A - Field Measurements taken with YSI 556 Multi-meter

B - Laboratory analyses performed by national laboratory Environmental Science Corp. of Mt. Juliet, TN

C - Nitrates and Sulfates per 9056 method

D - Alkalinity per 2320B method

E - Methane per RSK175 method

F - Ferrous Iron per 3500Fe-B method

G - Dissolved Manganese per 6020 method

H - <10 indicates analyte not detected above the laboratory detection limit of 10 micrograms per liter (µg/L)

I - Low recharge, only 1 round of parameters were collected prior to sampling

Laboratory Qualifiers from ESC

J - Estimated value below the lowest calibration point. Confidence correlates with concentration - ESC

V - Additional QC info: The sample concentration is too high to evaluate accurate spike recoveries

APPENDIX A

MONITORING WELL BORING LOGS

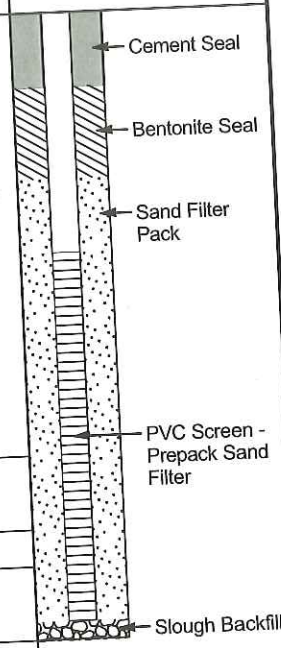
WELL NUMBER MW-7N

SLR
SLR International Corp
1800 Blankenship Rd; Suite 440
West Linn, Oregon 97068
Telephone: (503) 723-4423
Fax: (503) 723-4436

CLIENT Crowley Maritime Corporation
PROJECT NUMBER 008.0205.00020
DATE STARTED 2/5/10 COMPLETED 2/5/10
DRILLING DRILLING CONTRACTOR Cascade Drilling
DRILLING DRILLING METHOD Direct Push
LOGGED BY C. Kramer CHECKED BY
NOTES

PROJECT NAME Former Columbia Marine Lines
PROJECT LOCATION Vancouver, WA
GROUND ELEVATION HOLE SIZE 4
GROUND WATER LEVELS:
AT TIME OF DRILLING ---
AT END OF ---
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0		SP		SAND: brown, fine grained, moist at 10', transition to gray sand
12.0		SP-SM		SAND: with silt, wet
14.0		SP-SM		SAND and SILT: moist to wet, soft, gray
15.0		ML		SILT: gray, roots, dense
17.0				Bottom of hole at 17.0 feet.



GENERAL BH / TP / WELL CROWLEY 2-11-10.GPJ GINT US.GDT 2/16/10

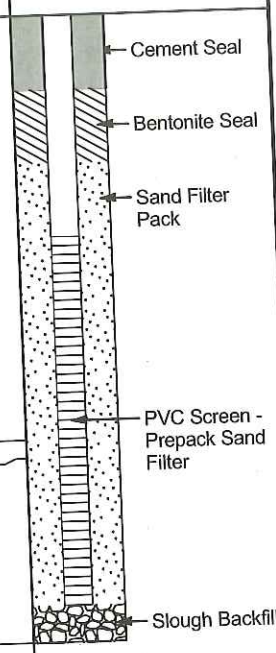
WELL NUMBER MW-8N

SLR
SLR International Corp
1800 Blankenship Rd; Suite 440
West Linn, Oregon 97068
Telephone: (503) 723-4423
Fax: (503) 723-4436

CLIENT Crowley Maritime Corporation
PROJECT NUMBER 008.0205.00020
DATE STARTED 2/5/10 COMPLETED 2/5/10
DRILLING DRILLING CONTRACTOR Cascade Drilling
DRILLING DRILLING METHOD Direct Push
LOGGED BY C. Kramer CHECKED BY
NOTES

PROJECT NAME Former Columbia Marine Lines
PROJECT LOCATION Vancouver, WA
GROUND ELEVATION HOLE SIZE 4
GROUND WATER LEVELS:
AT TIME OF DRILLING ---
AT END OF ---
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0		SP		SAND: brown, fine grained, moist, trace gravel
11.5				
12.0		SP-SM		SAND and SILT: gray
		SP-SM		SAND and SILT: gray, very wet, sheen and soil staining at 14', stiff silt at end of run
17.0				Bottom of hole at 17.0 feet.



GENERAL BH / TP / WELL CROWLEY 2-11-10.GPJ GINT US.GDT 2/16/10

WELL NUMBER MW-19N

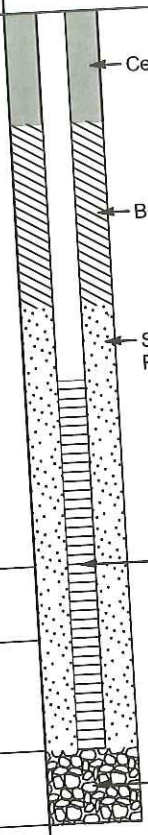
SLR
SLR International Corp
1800 Blankenship Rd; Suite 440
West Linn, Oregon 97068
Telephone: (503) 723-4423
Fax: (503) 723-4436

CLIENT Crowley Maritime Corporation
PROJECT NUMBER 008.0205.00020
DATE STARTED 2/4/10 COMPLETED 2/4/10
DRILLING DRILLING CONTRACTOR Cascade Drilling
DRILLING DRILLING METHOD Direct Push
LOGGED BY C. Kramer CHECKED BY
NOTES

PROJECT NAME Former Columbia Marine Lines
PROJECT LOCATION Vancouver, WA
GROUND ELEVATION HOLE SIZE 4
GROUND WATER LEVELS:
AT TIME OF DRILLING ---
AT END OF ---
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0		SP		SAND: brown, fine-grained
15.0		SP		SAND: gray, fine-grained
17.0		ML		SILT and SAND: gray, fine-grained sand, wet
20.0		ML		SILT: gray
22.0				Bottom of hole at 20.0 feet.

WELL DIAGRAM



WELL NUMBER MW-22

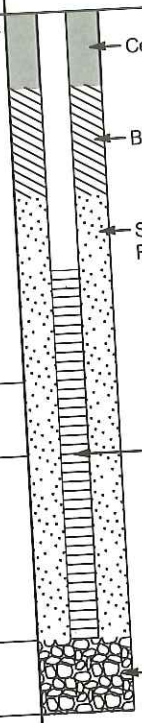
SLR
SLR International Corp
1800 Blankenship Rd; Suite 440
West Linn, Oregon 97068
Telephone: (503) 723-4423
Fax: (503) 723-4436

CLIENT Crowley Maritime Corporation
PROJECT NUMBER 008.0205.00020
DATE STARTED 2/5/10 COMPLETED 2/5/10
DRILLING DRILLING CONTRACTOR Cascade Drilling
DRILLING DRILLING METHOD Direct Push
LOGGED BY C. Kramer CHECKED BY
NOTES

PROJECT NAME Former Columbia Marine Lines
PROJECT LOCATION Vancouver, WA
GROUND ELEVATION HOLE SIZE 4
GROUND WATER LEVELS:
AT TIME OF DRILLING ---
AT END OF ---
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0		SP		SAND: brown, fine grained, trace gravel, trace plant roots, increasing silt and wetness, organic odor around 9'
10.0		SP-SM		SAND and SILT: trace clay, wet at end of run
12.0		SP-SM		SAND and SILT: very wet
17.0		ML		SILT: dense, gray
19.0				Bottom of hole at 19.0 feet.

WELL DIAGRAM



GENERAL BH / TP / WELL CROWLEY 2-11-10.GPJ GINT US.GDT 2/16/10

WELL NUMBER MW-23

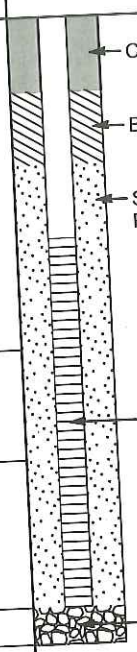
SLR
SLR International Corp
1800 Blankenship Rd; Suite 440
West Linn, Oregon 97068
Telephone: (503) 723-4423
Fax: (503) 723-4436

CLIENT Crowley Maritime Corporation
PROJECT NUMBER 008.0205.00020
DATE STARTED 2/5/10 COMPLETED 2/5/10
DRILLING DRILLING CONTRACTOR Cascade Drilling
DRILLING DRILLING METHOD Direct Push
LOGGED BY C. Kramer CHECKED BY
NOTES

PROJECT NAME Former Columbia Marine Lines
PROJECT LOCATION Vancouver, WA
GROUND ELEVATION HOLE SIZE 4
GROUND WATER LEVELS:
AT TIME OF DRILLING ---
AT END OF ---
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0		SP		SAND: brown
9.0		SP		SAND: gray, with silt, wood debris 11' to 12'
12.0		SP-SM		SAND and SILT: gray, wet, soft
16.0		ML		SILT: gray, dense
17.0				Bottom of hole at 17.0 feet.

WELL DIAGRAM



GENERAL BH / TP / WELL CROWLEY 2-11-10.GPJ GINT US.GDT 2/16/10

WELL NUMBER MW-24

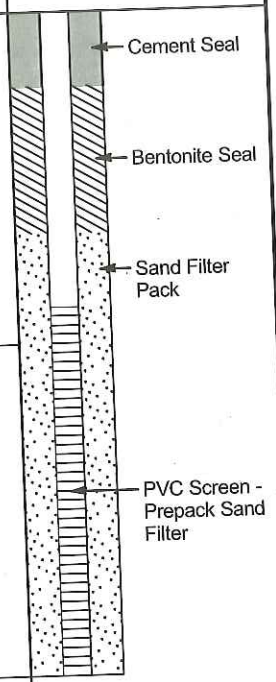
SLR
SLR International Corp
1800 Blankenship Rd; Suite 440
West Linn, Oregon 97068
Telephone: (503) 723-4423
Fax: (503) 723-4436

CLIENT Crowley Maritime Corporation
PROJECT NUMBER 008.0205.00020
DATE STARTED 2/5/10 COMPLETED 2/5/10
DRILLING DRILLING CONTRACTOR Cascade Drilling
DRILLING DRILLING METHOD Direct Push
LOGGED BY C. Kramer CHECKED BY
NOTES

PROJECT NAME Former Columbia Marine Lines
PROJECT LOCATION Vancouver, WA
GROUND ELEVATION HOLE SIZE 4
GROUND WATER LEVELS:
AT TIME OF DRILLING ---
AT END OF ---
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0		SP		SAND: brown, trace plant roots 0' to 0.5', trace silt @ 4.5', increasing silt and density
9.0		SP-SM		SAND and SILT: gray, wet, increasing silt, odors around 7' to 10'
18.0		ML		SILT: gray, dense
20.0				Bottom of hole at 20.0 feet.

WELL DIAGRAM



GENERAL BH / TP / WELL CROWLEY 2-11-10.GPJ GINT US.GDT 2/16/10

APPENDIX B

GROUNDWATER MONITORING FIELD DATA SHEETS

SLR International Corp

GROUNDWATER SAMPLING FIELD DATA SHEET

ROJECT #: 008.0205.00020 PURGED BY: CK WELL I.D.: MW-1

CLIENT NAME: Crowley Marine Services SAMPLED BY: CK SAMPLE I.D.: MW-1

LOCATION: Vancouver, WA QA SAMPLES: _____

DATE PURGED 2/9/10 START (2400hr) 9:[illegible]34 END (2400hr) _____

DATE SAMPLED 2/9/10 SAMPLE TIME (2400hr) 9:56

SAMPLE TYPE: Groundwater X Surface Water _____ Treatment Effluent _____ Other _____

CASING DIAMETER: 2" (0.17) 3" (0.38) 4" (0.67) 5" (1.02) 6" (1.50) 8" (2.60) Other ( )

Casing Volume: (gallons per foot)

DEPTH TO BOTTOM (feet) = _____ CASING VOLUME (gal) = _____

DEPTH TO WATER (feet) = _____ CALCULATED PURGE (gal) = _____

WATER COLUMN HEIGHT (feet) = _____ ACTUAL PURGE (gal) = _____

FIELD MEASUREMENTS

DATE	TIME (2400hr)	VOLUME (L)	TEMP. (degrees C)	CONDUCTIVITY (µS/cm)	pH (units)	DO	ORP	TURBIDITY (visual)
2/9/10	9:37	.5	11.65	0.319	4.84	3.14	47.3	cloudy
↓	9:50	2	11.66	0.321	5.07	1.52	51.7	sediment
	9:52	3	11.68	0.327	5.13	1.09	47.7	unclear
	9:54	4	11.78	0.334	5.16	1.06	43.6	↓

SAMPLE INFORMATION

SAMPLE DEPTH TO WATER: _____ SAMPLE TURBIDITY: _____

80% RECHARGE: ___ YES ___ NO ANALYSES: _____

ODOR: _____ SAMPLE VESSEL / PRESERVATIVE: _____

PURGING EQUIPMENT

___ Bladder Pump
___ Centrifugal Pump
___ Submersible Pump
___ Peristalic Pump
___ Bailer (Teflon)
___ Bailer (PVC)
___ Bailer (Stainless Steel)
___ Dedicated _____

Other: _____

Pump Depth: _____

SAMPLING EQUIPMENT

___ Bladder Pump
___ Centrifugal Pump
___ Submersible Pump
___ Peristalic Pump
___ Bailer (Teflon)
___ Bailer (___ PVC or ___ disposable)
___ Bailer (Stainless Steel)
___ Dedicated _____

Other: _____

WELL INTEGRITY: _____ LOCK#: _____

REMARKS: _____

Page ___ of ___

SIGNATURE: _____

SLR International Corp

GROUNDWATER SAMPLING FIELD DATA SHEET

PROJECT #: 008.0205.00020
CLIENT NAME: Crowley Marine Services
LOCATION: Vancouver, WA

PURGED BY: RF
SAMPLED BY: RF

WELL I.D.: MW-2
SAMPLE I.D.: MW-2
QA SAMPLES: _____

DATE PURGED 2/10/10
DATE SAMPLED 2/10/10
START (2400hr) 10:59
SAMPLE TIME (2400hr) 11:10
END (2400hr) _____

SAMPLE TYPE: Groundwater X Surface Water ____ Treatment Effluent ____ Other _____

CASING DIAMETER: 2" ____ (0.17) 3" ____ (0.38) 4" ____ (0.67) 5" ____ (1.02) 6" ____ (1.50) 8" ____ (2.60) Other ____ ( )
Casing Volume: (gallons per foot)

DEPTH TO BOTTOM (feet) = _____
DEPTH TO WATER (feet) = _____
WATER COLUMN HEIGHT (feet) = _____

CASING VOLUME (gal) = _____
CALCULATED PURGE (gal) = _____
ACTUAL PURGE (gal) = _____

FIELD MEASUREMENTS

DATE	TIME (2400hr)	VOLUME (L)	TEMP. (degrees C)	CONDUCTIVITY (mS/cm)	pH (units)	DO	ORP	TURBIDITY (visual)
2/10/10	11:02	1	12.40	0.242	7.33	1.13	-83.3	black
↓	11:04	2	12.46	0.241	7.24	0.70	-85.5	black
	11:06	3	12.48	0.240	7.19	0.57	-89.0	black, but clearing

SAMPLE INFORMATION

SAMPLE DEPTH TO WATER: _____
SAMPLE TURBIDITY: _____

80% RECHARGE: ____ YES ____ NO
ANALYSES: _____

ODOR: _____
SAMPLE VESSEL / PRESERVATIVE: _____

PURGING EQUIPMENT

____ Bladder Pump
____ Centrifugal Pump
____ Submersible Pump
____ Peristalic Pump
____ Bailer (Teflon)
____ Bailer (PVC)
____ Bailer (Stainless Steel)
____ Dedicated _____
Other: _____
Pump Depth: _____

SAMPLING EQUIPMENT

____ Bladder Pump
____ Centrifugal Pump
____ Submersible Pump
____ Peristalic Pump
____ Bailer (Teflon)
____ Bailer (____ PVC or ____ disposable)
____ Bailer (Stainless Steel)
____ Dedicated _____
Other: _____

WELL INTEGRITY: _____
LOCK#: _____

REMARKS: Sheen black

Page ____ of ____

SIGNATURE: _____

SLR International Corp

GROUNDWATER SAMPLING FIELD DATA SHEET

ROJECT #: 008.0205.00020
CLIENT NAME: Crowley Marine Services
LOCATION: Vancouver, WA

PURGED BY: RF+CK
SAMPLED BY: RF+CK

WELL I.D.: MW-3
SAMPLE I.D.: MW-3
QA SAMPLES: _____

DATE PURGED 2/9/10
DATE SAMPLED 2/9/10

START (2400hr) 14:45
SAMPLE TIME (2400hr) 14:55

END (2400hr) _____

SAMPLE TYPE: Groundwater X Surface Water ____ Treatment Effluent ____ Other _____

CASING DIAMETER: 2" ____ (0.17) 3" ____ (0.38) 4" ____ (0.67) 5" ____ (1.02) 6" ____ (1.50) 8" ____ (2.60) Other ____ ( )
Casing Volume: (gallons per foot)

DEPTH TO BOTTOM (feet) = _____
DEPTH TO WATER (feet) = _____
WATER COLUMN HEIGHT (feet) = _____

CASING VOLUME (gal) = _____
CALCULATED PURGE (gal) = _____
ACTUAL PURGE (gal) = _____

FIELD MEASUREMENTS

DATE	TIME (2400hr)	VOLUME (L)	TEMP. (degrees C)	CONDUCTIVITY (µS/cm)	pH (units)	DO	ORP	TURBIDITY (visual)
2/9/10	14:47	1	13.65	0.310	7.03	4.81	-34.0	cloudy
	14:49	2	13.49	0.310	7.25	1.92	-39.1	cloudy
✓	14:51	3	13.42	0.318	7.28	1.17	-51.8	cloudy
	14:53	4	13.46	0.324	7.16	6.88	-57.1	cloudy

SAMPLE INFORMATION

SAMPLE DEPTH TO WATER: _____
SAMPLE TURBIDITY: _____

80% RECHARGE: ___ YES ___ NO
ANALYSES: _____

ODOR: _____
SAMPLE VESSEL / PRESERVATIVE: _____

PURGING EQUIPMENT

___ Bladder Pump
___ Centrifugal Pump
___ Submersible Pump
___ Peristalic Pump
___ Bailer (Teflon)
___ Bailer (PVC)
___ Bailer (Stainless Steel)
___ Dedicated _____

Other: _____
Pump Depth: _____

SAMPLING EQUIPMENT

___ Bladder Pump
___ Centrifugal Pump
___ Submersible Pump
___ Peristalic Pump
___ Bailer (Teflon)
___ Bailer (___ PVC or ___ disposable)
___ Bailer (Stainless Steel)
___ Dedicated _____

Other: _____

WELL INTEGRITY: _____
LOCK#: _____

REMARKS: Slight petroleum odor

Page ___ of ___

SIGNATURE: _____

SLR International Corp

GROUNDWATER SAMPLING FIELD DATA SHEET

ROJECT #: 008.0205.00020
CLIENT NAME: Crowley Marine Services
LOCATION: Vancouver, WA

PURGED BY: R Fack
SAMPLED BY: R Fack

WELL I.D.: MW-4
SAMPLE I.D.: MW-4
QA SAMPLES:

DATE PURGED 2/10/10
DATE SAMPLED 2/10/10
SAMPLE TYPE: Groundwater X Surface Water ____ Treatment Effluent ____ Other ____

START (2400hr) 1127
SAMPLE TIME (2400hr) 1135
END (2400hr) ____

CASING DIAMETER: 2" ____ (0.17) 3" ____ (0.38) 4" ____ (0.67) 5" ____ (1.02) 6" ____ (1.50) 8" ____ (2.60) Other ____ ( )
Casing Volume: (gallons per foot)

DEPTH TO BOTTOM (feet) = ____
DEPTH TO WATER (feet) = ____
WATER COLUMN HEIGHT (feet) = ____

CASING VOLUME (gal) = ____
CALCULATED PURGE (gal) = ____
ACTUAL PURGE (gal) = ____

FIELD MEASUREMENTS

DATE	TIME (2400hr)	VOLUME (L)	TEMP. (degrees C)	CONDUCTIVITY (µS/cm)	pH (units)	DO	ORP	TURBIDITY (visual)
2/10/10	1129	1	12.08	0.499	6.90	1.94	-89.5	Clear
	1131	2	12.58	0.514	6.89	0.91	-100.6	Clear
↓	1133	3	11.70	0.519	6.95	0.59	-103.5	Clear

SAMPLE INFORMATION

SAMPLE DEPTH TO WATER: ____
SAMPLE TURBIDITY: ____

80% RECHARGE: ____ YES ____ NO
ANALYSES: ____

ODOR: ____
SAMPLE VESSEL / PRESERVATIVE: ____

PURGING EQUIPMENT

____ Bladder Pump
____ Centrifugal Pump
____ Submersible Pump
____ Peristalic Pump
____ Bailer (Teflon)
____ Bailer (PVC)
____ Bailer (Stainless Steel)
____ Dedicated ____
Other: ____
Pump Depth: ____

SAMPLING EQUIPMENT

____ Bladder Pump
____ Centrifugal Pump
____ Submersible Pump
____ Peristalic Pump
____ Bailer (Teflon)
____ Bailer (____ PVC or ____ disposable)
____ Bailer (Stainless Steel)
____ Dedicated ____
Other: ____

WELL INTEGRITY: ____
LOCK#: ____

REMARKS: ____

SIGNATURE: ____

SLR International Corp

GROUNDWATER SAMPLING FIELD DATA SHEET

ROJECT #: 008.0205.00020 PURGED BY: CK+RF WELL I.D.: MW-5

CLIENT NAME: Crowley Marine Services SAMPLED BY: CK+RF SAMPLE I.D.: MW-5

LOCATION: Vancouver, WA QA SAMPLES: _____

DATE PURGED 2/10/10 START (2400hr) 10:30 END (2400hr) _____

DATE SAMPLED 2/10/10 SAMPLE TIME (2400hr) 10:40

SAMPLE TYPE: Groundwater X Surface Water _____ Treatment Effluent _____ Other _____

CASING DIAMETER: 2" _____ (0.17) 3" _____ (0.38) 4" _____ (0.67) 5" _____ (1.02) 6" _____ (1.50) 8" _____ (2.60) Other _____ ( )

Casing Volume: (gallons per foot)

DEPTH TO BOTTOM (feet) = _____ CASING VOLUME (gal) = _____

DEPTH TO WATER (feet) = _____ CALCULATED PURGE (gal) = _____

WATER COLUMN HEIGHT (feet) = _____ ACTUAL PURGE (gal) = _____

FIELD MEASUREMENTS

DATE	TIME (2400hr)	VOLUME (L)	TEMP. (degrees C)	CONDUCTIVITY (µS/cm)	pH (units)	DO	ORP	TURBIDITY (visual)
2/10/10	10:32	1	11.19	0.404	7.34	2.33	-90.8	clear
↓	10:34	2	12.31	0.302	7.31	0.95	-103.5	clear
↓	10:36	3	12.50	0.263	7.46	0.62	-103.9	clear

SAMPLE INFORMATION

SAMPLE DEPTH TO WATER: _____ SAMPLE TURBIDITY: _____

80% RECHARGE: ___ YES ___ NO ANALYSES: _____

ODOR: _____ SAMPLE VESSEL / PRESERVATIVE: _____

PURGING EQUIPMENT

___ Bladder Pump ___ Bailer (Teflon)
___ Centrifugal Pump ___ Bailer (PVC)
___ Submersible Pump ___ Bailer (Stainless Steel)
___ Peristalic Pump ___ Dedicated _____

Other: _____

Pump Depth: _____

SAMPLING EQUIPMENT

___ Bladder Pump ___ Bailer (Teflon)
___ Centrifugal Pump ___ Bailer (___ PVC or ___ disposable)
___ Submersible Pump ___ Bailer (Stainless Steel)
___ Peristalic Pump ___ Dedicated _____

Other: _____

WELL INTEGRITY: _____ LOCK#: _____

REMARKS: _____

SIGNATURE: _____ Page ___ of ___

SLR International Corp

GROUNDWATER SAMPLING FIELD DATA SHEET

PROJECT #: 008.0205.00020 | PURGED BY: CK & RF | WELL I.D.: MW-7N

CLIENT NAME: Crowley Marine Services | SAMPLED BY: CK & RF | SAMPLE I.D.: MW-7N

LOCATION: Vancouver, WA | QA SAMPLES: _____

DATE PURGED 2/9/10 | START (2400hr) 10:45 | END (2400hr) _____

DATE SAMPLED 2/9/10 | SAMPLE TIME (2400hr) _____

SAMPLE TYPE: Groundwater X | Surface Water _____ | Treatment Effluent _____ | Other _____

CASING DIAMETER: 2" (0.17) | 3" (0.38) | 4" (0.67) | 5" (1.02) | 6" (1.50) | 8" (2.60) | Other ( )

Casing Volume: (gallons per foot)

DEPTH TO BOTTOM (feet) = _____ | CASING VOLUME (gal) = _____

DEPTH TO WATER (feet) = _____ | CALCULATED PURGE (gal) = _____

WATER COLUMN HEIGHT (feet) = _____ | ACTUAL PURGE (gal) = _____

FIELD MEASUREMENTS

DATE	TIME (2400hr)	VOLUME (L)	TEMP. (degrees C)	CONDUCTIVITY (mS/cm)	pH (units)	DO	ORP	TURBIDITY (visual)
2/9/10	10:47	1	12.34	1.163	6.61	7.62	-44.0	cloudy-yellow
↓	10:49	2	12.53	1.163	6.58	3.23	-32.4	↓
	10:51	3	12.49	1.166	6.56	2.18	-33.5	
	~~10:53~~	~~4~~	~~12.36~~		~~6.56~~			

SAMPLE INFORMATION

SAMPLE DEPTH TO WATER: _____ | SAMPLE TURBIDITY: _____

80% RECHARGE: ___ YES ___ NO | ANALYSES: _____

ODOR: _____ | SAMPLE VESSEL / PRESERVATIVE: _____

PURGING EQUIPMENT

___ Bladder Pump
___ Centrifugal Pump
___ Submersible Pump
___ Peristalic Pump
___ Bailer (Teflon)
___ Bailer (PVC)
___ Bailer (Stainless Steel)
___ Dedicated _____

Other: _____

Pump Depth: _____

SAMPLING EQUIPMENT

___ Bladder Pump
___ Centrifugal Pump
___ Submersible Pump
___ Peristalic Pump
___ Bailer (Teflon)
___ Bailer (___ PVC or ___ disposable)
___ Bailer (Stainless Steel)
___ Dedicated _____

Other: _____

WELL INTEGRITY: _____ | LOCK#: _____

REMARKS: petroleum odor

Page ___ of ___

SIGNATURE: _____

SLR International Corp

GROUNDWATER SAMPLING FIELD DATA SHEET

PROJECT #: 008.0205.00020 PURGED BY: CK WELL I.D.: MW-89N

CLIENT NAME: Crowley Marine Services SAMPLED BY: CK SAMPLE I.D.: MW-3N

LOCATION: Vancouver, WA QA SAMPLES: _____

DATE PURGED 2/9/10 START (2400hr) 10:19 END (2400hr) _____

DATE SAMPLED _____ SAMPLE TIME (2400hr) 10:27

SAMPLE TYPE: Groundwater X Surface Water _____ Treatment Effluent _____ Other _____

CASING DIAMETER: 2" (0.17) 3" (0.38) 4" (0.67) 5" (1.02) 6" (1.50) 8" (2.60) Other ( )

Casing Volume: (gallons per foot)

DEPTH TO BOTTOM (feet) = _____ CASING VOLUME (gal) = _____

DEPTH TO WATER (feet) = _____ CALCULATED PURGE (gal) = _____

WATER COLUMN HEIGHT (feet) = _____ ACTUAL PURGE (gal) = _____

FIELD MEASUREMENTS

DATE	TIME (2400hr)	VOLUME (L)	TEMP. (degrees C)	CONDUCTIVITY (mS/cm)	pH (units)	DO	ORP	TURBIDITY (visual)
2/9/10	10:21	1	13.65	1.021	6.56	3.49	-76.7	yellow/orange
↓	10:23	2	13.69	1.027	6.73	1.61	-97.6	↓
	10:25	3	13.60	1.033	6.84	1.02	-100.1	

SAMPLE INFORMATION

SAMPLE DEPTH TO WATER: _____ SAMPLE TURBIDITY: _____

80% RECHARGE: ___ YES ___ NO ANALYSES: _____

ODOR: _____ SAMPLE VESSEL / PRESERVATIVE: _____

PURGING EQUIPMENT

___ Bladder Pump
___ Centrifugal Pump
___ Submersible Pump
___ Peristalic Pump
___ Bailer (Teflon)
___ Bailer (PVC)
___ Bailer (Stainless Steel)
___ Dedicated _____

Other: _____

Pump Depth: _____

SAMPLING EQUIPMENT

___ Bladder Pump
___ Centrifugal Pump
___ Submersible Pump
___ Peristalic Pump
___ Bailer (Teflon)
___ Bailer (___ PVC or ___ disposable)
___ Bailer (Stainless Steel)
___ Dedicated _____

Other: _____

LOCK#: _____

WELL INTEGRITY: _____

REMARKS: Petroleum odor

Page ___ of ___

SIGNATURE: _____

SLR International Corp

GROUNDWATER SAMPLING FIELD DATA SHEET

ROJECT #: 008.0205.00020
CLIENT NAME: Crowley Marine Services
LOCATION: Vancouver, WA

PURGED BY: RF+CK
SAMPLED BY: RF+CK

WELL I.D.: MW-9
SAMPLE I.D.: MW-9
QA SAMPLES: _____

DATE PURGED 2/10/10
DATE SAMPLED 2/10/10
START (2400hr) 10:00
SAMPLE TIME (2400hr) 10:10
END (2400hr) _____

SAMPLE TYPE: Groundwater X Surface Water _____ Treatment Effluent _____ Other _____

CASING DIAMETER: 2" _____ 3" _____ 4" _____ 5" _____ 6" _____ 8" _____ Other _____ ( )
Casing Volume: (gallons per foot) (0.17) (0.38) (0.67) (1.02) (1.50) (2.60)

DEPTH TO BOTTOM (feet) = _____
DEPTH TO WATER (feet) = _____
WATER COLUMN HEIGHT (feet) = _____

CASING VOLUME (gal) = _____
CALCULATED PURGE (gal) = _____
ACTUAL PURGE (gal) = _____

FIELD MEASUREMENTS

DATE	TIME (2400hr)	VOLUME (L)	TEMP. (degrees C)	CONDUCTIVITY (µS/cm)	pH (units)	DO	ORP	TURBIDITY (visual)
2/10/10	10:02	1	10.21	0.352	7.33	3.12	-100.5	clear
	10:04	2	10.44	0.358	7.33	1.57	-107.1	clear
↓	10:06	3	10.25	0.376	7.28	0.88	-107.2	clear

SAMPLE INFORMATION

SAMPLE DEPTH TO WATER: _____
SAMPLE TURBIDITY: _____

80% RECHARGE: ___YES ___NO
ANALYSES: _____

ODOR: _____
SAMPLE VESSEL / PRESERVATIVE: _____

PURGING EQUIPMENT

___ Bladder Pump
___ Centrifugal Pump
___ Submersible Pump
___ Peristalic Pump
___ Bailer (Teflon)
___ Bailer (PVC)
___ Bailer (Stainless Steel)
___ Dedicated _____

Other: _____
Pump Depth: _____

SAMPLING EQUIPMENT

___ Bladder Pump
___ Centrifugal Pump
___ Submersible Pump
___ Peristalic Pump
___ Bailer (Teflon)
___ Bailer (___ PVC or ___ disposable)
___ Bailer (Stainless Steel)
___ Dedicated _____

Other: _____

WELL INTEGRITY: _____
LOCK#: _____

REMARKS: _____

Page ___ of ___

SIGNATURE: _____

SLR International Corp

GROUNDWATER SAMPLING FIELD DATA SHEET

ROJECT #: 008.0205.00020 PURGED BY: CK WELL I.D.: MW-10

CLIENT NAME: Crowley Marine Services SAMPLED BY: CK SAMPLE I.D.: MW-10

LOCATION: Vancouver, WA QA SAMPLES: _____

DATE PURGED 2/10/10 START (2400hr) 1148 END (2400hr) _____

DATE SAMPLED 2/10/10 SAMPLE TIME (2400hr) _____

SAMPLE TYPE: Groundwater X Surface Water ____ Treatment Effluent ____ Other _____

CASING DIAMETER: 2" ____ (0.17) 3" ____ (0.38) 4" ____ (0.67) 5" ____ (1.02) 6" ____ (1.50) 8" ____ (2.60) Other ____ ( )

Casing Volume: (gallons per foot)

DEPTH TO BOTTOM (feet) = _____ CASING VOLUME (gal) = _____

DEPTH TO WATER (feet) = _____ CALCULATED PURGE (gal) = _____

WATER COLUMN HEIGHT (feet) = _____ ACTUAL PURGE (gal) = _____

FIELD MEASUREMENTS

DATE	TIME (2400hr)	VOLUME (L)	TEMP. (degrees C)	CONDUCTIVITY (µS/cm)	pH (units)	DO	ORP	TURBIDITY (visual)
2/10/10	1154		8.26	0.501	7.67	3.26	-59.9	Cloudy

SAMPLE INFORMATION

SAMPLE DEPTH TO WATER: _____ SAMPLE TURBIDITY: _____

80% RECHARGE: ____ YES ____ NO ANALYSES: _____

ODOR: _____ SAMPLE VESSEL / PRESERVATIVE: _____

PURGING EQUIPMENT

____ Bladder Pump
____ Centrifugal Pump
____ Submersible Pump
____ Peristalic Pump
____ Bailer (Teflon)
____ Bailer (PVC)
____ Bailer (Stainless Steel)
____ Dedicated _____

Other: _____

Pump Depth: _____

SAMPLING EQUIPMENT

____ Bladder Pump
____ Centrifugal Pump
____ Submersible Pump
____ Peristalic Pump
____ Bailer (Teflon)
____ Bailer (____ PVC or ____ disposable)
____ Bailer (Stainless Steel)
____ Dedicated _____

Other: _____

WELL INTEGRITY: _____ LOCK#: _____

REMARKS: Duplicate sample collected @ MW-10 Low Volume

Page ____ of ____

SIGNATURE: _____

SLR International Corp

GROUNDWATER SAMPLING FIELD DATA SHEET

ROJECT #: 008.0205.00020 PURGED BY: K+RF WELL I.D.: MW-11

CLIENT NAME: Crowley Marine Services SAMPLED BY: CK RF SAMPLE I.D.: MW-11

LOCATION: Vancouver, WA QA SAMPLES: _____

DATE PURGED 2/10/10 START (2400hr) 8:20 END (2400hr) _____

DATE SAMPLED 2/10/10 SAMPLE TIME (2400hr) 8:30

SAMPLE TYPE: Groundwater X Surface Water ____ Treatment Effluent ____ Other _____

CASING DIAMETER: 2" ____ (0.17) 3" ____ (0.38) 4" ____ (0.67) 5" ____ (1.02) 6" ____ (1.50) 8" ____ (2.60) Other ____ ( )

Casing Volume: (gallons per foot)

DEPTH TO BOTTOM (feet) = _____ CASING VOLUME (gal) = _____

DEPTH TO WATER (feet) = _____ CALCULATED PURGE (gal) = _____

WATER COLUMN HEIGHT (feet) = _____ ACTUAL PURGE (gal) = _____

FIELD MEASUREMENTS

DATE	TIME (2400hr)	VOLUME (L)	TEMP. (degrees C)	CONDUCTIVITY (mS/cm)	pH (units)	DO	ORP	TURBIDITY (visual)
2/10/10	8:22	1	9.95	0.150	6.80	9.53	1.8	sediment-y
	8:24	2	10.40	0.152	6.74	6.58	-6.8	
	8:26	3	10.27	0.099	6.67	5.78	-12.4	clearer
	8:28	4	9.96	0.154	6.66	5.79	-11.6	↓

SAMPLE INFORMATION

SAMPLE DEPTH TO WATER: _____ SAMPLE TURBIDITY: _____

80% RECHARGE: ___YES ___NO ANALYSES: _____

ODOR: _____ SAMPLE VESSEL / PRESERVATIVE: _____

PURGING EQUIPMENT

___ Bladder Pump
___ Centrifugal Pump
___ Submersible Pump
___ Peristalic Pump
___ Bailer (Teflon)
___ Bailer (PVC)
___ Bailer (Stainless Steel)
___ Dedicated _____

Other: _____

Pump Depth: _____

SAMPLING EQUIPMENT

___ Bladder Pump
___ Centrifugal Pump
___ Submersible Pump
___ Peristalic Pump
___ Bailer (Teflon)
___ Bailer (___ PVC or ___ disposable)
___ Bailer (Stainless Steel)
___ Dedicated _____

Other: _____

WELL INTEGRITY: _____ LOCK#: _____

REMARKS: _____

SIGNATURE: _____

SLR International Corp

GROUNDWATER SAMPLING FIELD DATA SHEET

'ROJECT #: 008.0205.00020
CLIENT NAME: Crowley Marine Services
LOCATION: Vancouver, WA

PURGED BY: CK + RF
SAMPLED BY: CK + RF

WELL I.D.: MW-12
SAMPLE I.D.: MW-12
QA SAMPLES:

DATE PURGED 2/10/10
DATE SAMPLED 2/10/10
START (2400hr) 9:20
SAMPLE TIME (2400hr) 9:35
END (2400hr)

SAMPLE TYPE: Groundwater X Surface Water ____ Treatment Effluent ____ Other ____

CASING DIAMETER: 2" (0.17) 3" (0.38) 4" (0.67) 5" (1.02) 6" (1.50) 8" (2.60) Other ( )
Casing Volume: (gallons per foot)

DEPTH TO BOTTOM (feet) =
DEPTH TO WATER (feet) =
WATER COLUMN HEIGHT (feet) =

CASING VOLUME (gal) =
CALCULATED PURGE (gal) =
ACTUAL PURGE (gal) =

FIELD MEASUREMENTS

DATE	TIME (2400hr)	VOLUME (L)	TEMP. (degrees C)	CONDUCTIVITY (mS/cm)	pH (units)	DO	ORP	TURBIDITY (visual)
2/10/10	9:27		10.79	0.183	7.07	6.42	8.0	clear
↓	9:29		10.68	0.181	7.06	6.48	8.6	clear
	9:31		10.51	0.178	7.41	6.72	7.5	clear

SAMPLE INFORMATION

SAMPLE DEPTH TO WATER:
SAMPLE TURBIDITY:
80% RECHARGE: ___ YES ___ NO
ANALYSES:
ODOR:
SAMPLE VESSEL / PRESERVATIVE:

PURGING EQUIPMENT

___ Bladder Pump
___ Centrifugal Pump
___ Submersible Pump
___ Peristalic Pump
___ Bailer (Teflon)
___ Bailer (PVC)
___ Bailer (Stainless Steel)
___ Dedicated ____
Other:
Pump Depth:

SAMPLING EQUIPMENT

___ Bladder Pump
___ Centrifugal Pump
___ Submersible Pump
___ Peristalic Pump
___ Bailer (Teflon)
___ Bailer (___ PVC or ___ disposable)
___ Bailer (Stainless Steel)
___ Dedicated ____
Other:

LOCK#:
WELL INTEGRITY:
REMARKS:

SIGNATURE:

SLR International Corp

GROUNDWATER SAMPLING FIELD DATA SHEET

ROJECT #: 008.0205.00020 PURGED BY: RF+CK WELL I.D.: MW-13

CLIENT NAME: Crowley Marine Services SAMPLED BY: RF+CK SAMPLE I.D.: MW-13

LOCATION: Vancouver, WA QA SAMPLES: _____

DATE PURGED 2/9/10 START (2400hr) 14:15 END (2400hr) _____

DATE SAMPLED 2/9/10 SAMPLE TIME (2400hr) 14:25

SAMPLE TYPE: Groundwater X Surface Water _____ Treatment Effluent _____ Other _____

CASING DIAMETER: 2" _____ 3" _____ 4" _____ 5" _____ 6" _____ 8" _____ Other _____

Casing Volume: (gallons per foot) (0.17) (0.38) (0.67) (1.02) (1.50) (2.60) ( )

DEPTH TO BOTTOM (feet) = _____ CASING VOLUME (gal) = _____

DEPTH TO WATER (feet) = _____ CALCULATED PURGE (gal) = _____

WATER COLUMN HEIGHT (feet) = _____ ACTUAL PURGE (gal) = _____

FIELD MEASUREMENTS

DATE	TIME (2400hr)	VOLUME (L)	TEMP. (degrees C)	CONDUCTIVITY (mS/cm)	pH (units)	DO	ORP	TURBIDITY (visual)
2/9/10	14:20	1	14.04	0.776	6.99	1.83	-53.1	clear
〃	14:22	2	14.15	0.763	7.37	1.00	-52.1	clear
	14:24	3	14.23	0.751	7.26	0.81	-54.8	clear

SAMPLE INFORMATION

SAMPLE DEPTH TO WATER: _____ SAMPLE TURBIDITY: _____

80% RECHARGE: ___ YES ___ NO ANALYSES: _____

ODOR: _____ SAMPLE VESSEL / PRESERVATIVE: _____

PURGING EQUIPMENT

___ Bladder Pump
___ Centrifugal Pump
___ Submersible Pump
___ Peristalic Pump
___ Bailer (Teflon)
___ Bailer (PVC)
___ Bailer (Stainless Steel)
___ Dedicated _____

Other: _____

Pump Depth: _____

SAMPLING EQUIPMENT

___ Bladder Pump
___ Centrifugal Pump
___ Submersible Pump
___ Peristalic Pump
___ Bailer (Teflon)
___ Bailer (___ PVC or ___ disposable)
___ Bailer (Stainless Steel)
___ Dedicated _____

Other: _____

WELL INTEGRITY: _____ LOCK#: _____

REMARKS: _____

Page ___ of ___

SIGNATURE: _____

SLR International Corp

GROUNDWATER SAMPLING FIELD DATA SHEET

ROJECT #: 008.0205.00020 PURGED BY: CK WELL I.D.: MW-14

CLIENT NAME: Crowley Marine Services SAMPLED BY: CK SAMPLE I.D.: MW-14

LOCATION: Vancouver, WA QA SAMPLES: _____

DATE PURGED 2/10/10 START (2400hr) 13:37 END (2400hr) _____

DATE SAMPLED 2/10/10 SAMPLE TIME (2400hr) 13:40

SAMPLE TYPE: Groundwater X Surface Water _____ Treatment Effluent _____ Other _____

CASING DIAMETER: 2" _____ 3" _____ 4" _____ 5" _____ 6" _____ 8" _____ Other _____

Casing Volume: (gallons per foot) (0.17) (0.38) (0.67) (1.02) (1.50) (2.60) ( )

DEPTH TO BOTTOM (feet) = _____ CASING VOLUME (gal) = _____

DEPTH TO WATER (feet) = _____ CALCULATED PURGE (gal) = _____

WATER COLUMN HEIGHT (feet) = _____ ACTUAL PURGE (gal) = _____

FIELD MEASUREMENTS

DATE	TIME (2400hr)	VOLUME (L)	TEMP. (degrees C)	CONDUCTIVITY (µS/cm)	pH (units)	DO	ORP	TURBIDITY (visual)
2/10/10	1334	1	10.77	0.154	6.65	2.49	-61.5	Clear
	1336	2	10.82	0.154	6.45	3.03	-75.6	Clear
	1340	3	10.38	0.152	6.45	4.87	-85.8	clear

SAMPLE INFORMATION

SAMPLE DEPTH TO WATER: _____ SAMPLE TURBIDITY: _____

80% RECHARGE: ___ YES ___ NO ANALYSES: _____

ODOR: _____ SAMPLE VESSEL / PRESERVATIVE: _____

PURGING EQUIPMENT

___ Bladder Pump
___ Centrifugal Pump
___ Submersible Pump
___ Peristalic Pump
___ Bailer (Teflon)
___ Bailer (PVC)
___ Bailer (Stainless Steel)
___ Dedicated _____

Other: _____

Pump Depth: _____

SAMPLING EQUIPMENT

___ Bladder Pump
___ Centrifugal Pump
___ Submersible Pump
___ Peristalic Pump
___ Bailer (Teflon)
___ Bailer (___ PVC or ___ disposable)
___ Bailer (Stainless Steel)
___ Dedicated _____

Other: _____

LOCK#: _____

WELL INTEGRITY: _____

REMARKS: _____

Page ___ of ___

SIGNATURE: _____

SLR International Corp

GROUNDWATER SAMPLING FIELD DATA SHEET

ROJECT #: 008.0205.00020 PURGED BY: CK + RF WELL I.D.: MW-16

CLIENT NAME: Crowley Marine Services SAMPLED BY: CK + RF SAMPLE I.D.: MW-16

LOCATION: Vancouver, WA QA SAMPLES: _____

DATE PURGED 2/10/10 START (2400hr) 9:01 END (2400hr) _____

DATE SAMPLED 2/10/10 SAMPLE TIME (2400hr) 9:10

SAMPLE TYPE: Groundwater X Surface Water _____ Treatment Effluent _____ Other _____

CASING DIAMETER: 2" (0.17) 3" (0.38) 4" (0.67) 5" (1.02) 6" (1.50) 8" (2.60) Other ( )

Casing Volume: (gallons per foot)

DEPTH TO BOTTOM (feet) = _____ CASING VOLUME (gal) = _____

DEPTH TO WATER (feet) = _____ CALCULATED PURGE (gal) = _____

WATER COLUMN HEIGHT (feet) = _____ ACTUAL PURGE (gal) = _____

FIELD MEASUREMENTS

DATE	TIME (2400hr)	VOLUME (L)	TEMP. (degrees C)	CONDUCTIVITY (mS/cm)	pH (units)	DO	ORP	TURBIDITY (visual)
2/10/10	9:03	1	11.70	0.277	7.01	4.07	-96.7	clear
	9:05	2	11.80	0.285	6.81	1.55	-99.5	clear
↓	9:07	3	11.96	0.287	6.73	0.98	-99.3	clear

SAMPLE INFORMATION

SAMPLE DEPTH TO WATER: _____ SAMPLE TURBIDITY: _____

80% RECHARGE: ___ YES ___ NO ANALYSES: _____

ODOR: _____ SAMPLE VESSEL / PRESERVATIVE: _____

PURGING EQUIPMENT

___ Bladder Pump
___ Centrifugal Pump
___ Submersible Pump
___ Peristalic Pump
___ Bailer (Teflon)
___ Bailer (PVC)
___ Bailer (Stainless Steel)
___ Dedicated _____

Other: _____

Pump Depth: _____

SAMPLING EQUIPMENT

___ Bladder Pump
___ Centrifugal Pump
___ Submersible Pump
___ Peristalic Pump
___ Bailer (Teflon)
___ Bailer (___ PVC or ___ disposable)
___ Bailer (Stainless Steel)
___ Dedicated _____

Other: _____

WELL INTEGRITY: _____ LOCK#: _____

REMARKS: _____

Page ___ of ___

SIGNATURE: _____

SLR International Corp

GROUNDWATER SAMPLING FIELD DATA SHEET

ROJECT #: 008.0205.00020 PURGED BY: _____ WELL I.D.: MW-17

CLIENT NAME: Crowley Marine Services SAMPLED BY: _____ SAMPLE I.D.: _____

LOCATION: Vancouver, WA QA SAMPLES: _____

DATE PURGED _____ START (2400hr) 1357 END (2400hr) _____

DATE SAMPLED _____ SAMPLE TIME (2400hr) 1407

SAMPLE TYPE: Groundwater X Surface Water _____ Treatment Effluent _____ Other _____

CASING DIAMETER: 2" _____ 3" _____ 4" _____ 5" _____ 6" _____ 8" _____ Other _____ ( )

Casing Volume: (gallons per foot) (0.17) (0.38) (0.67) (1.02) (1.50) (2.60)

DEPTH TO BOTTOM (feet) = _____ CASING VOLUME (gal) = _____

DEPTH TO WATER (feet) = _____ CALCULATED PURGE (gal) = _____

WATER COLUMN HEIGHT (feet) = _____ ACTUAL PURGE (gal) = _____

FIELD MEASUREMENTS

DATE	TIME (2400hr)	VOLUME (L)	TEMP. (degrees C)	CONDUCTIVITY (µS/cm)	pH (units)	DO	ORP	TURBIDITY (visual)
	1359		12.56	0.067	6.84	4.57	-10.4	1+ Cloudy
	1401		13.17	0.063	7.13	1.38	-13.5	5+ Cloudy
	1403		13.36	0.062	7.17	1.32	-22.1	"
	1405		13.40	0.061	7.11	1.60	-36.4	clear

SAMPLE INFORMATION

SAMPLE DEPTH TO WATER: _____ SAMPLE TURBIDITY: _____

80% RECHARGE: ___ YES ___ NO ANALYSES: _____

ODOR: _____ SAMPLE VESSEL / PRESERVATIVE: _____

PURGING EQUIPMENT

___ Bladder Pump
___ Centrifugal Pump
___ Submersible Pump
___ Peristalic Pump
___ Bailer (Teflon)
___ Bailer (PVC)
___ Bailer (Stainless Steel)
___ Dedicated _____

Other: _____

Pump Depth: _____

SAMPLING EQUIPMENT

___ Bladder Pump
___ Centrifugal Pump
___ Submersible Pump
___ Peristalic Pump
___ Bailer (Teflon)
___ Bailer (___ PVC or ___ disposable)
___ Bailer (Stainless Steel)
___ Dedicated _____

Other: _____

WELL INTEGRITY: _____ LOCK#: _____

REMARKS: _____

Page ___ of ___

SIGNATURE: _____

SLR International Corp

GROUNDWATER SAMPLING FIELD DATA SHEET

'ROJECT #: 008.0205.00020 PURGED BY: CK + RF WELL I.D.: MW-19N

CLIENT NAME: Crowley Marine Services SAMPLED BY: CK + RF SAMPLE I.D.: MW-19N

LOCATION: Vancouver, WA QA SAMPLES: _____

DATE PURGED 2/9/10 START (2400hr) 11:11 END (2400hr) _____

DATE SAMPLED 2/9/10 SAMPLE TIME (2400hr) 11:21

SAMPLE TYPE: Groundwater X Surface Water _____ Treatment Effluent _____ Other _____

CASING DIAMETER: 2" _____ 3" _____ 4" _____ 5" _____ 6" _____ 8" _____ Other _____

Casing Volume: (gallons per foot) (0.17) (0.38) (0.67) (1.02) (1.50) (2.60) ( )

DEPTH TO BOTTOM (feet) = _____ CASING VOLUME (gal) = _____

DEPTH TO WATER (feet) = _____ CALCULATED PURGE (gal) = _____

WATER COLUMN HEIGHT (feet) = _____ ACTUAL PURGE (gal) = _____

FIELD MEASUREMENTS

DATE	TIME (2400hr)	VOLUME (L)	TEMP. (degrees C)	CONDUCTIVITY (µS/cm)	pH (units)	DO	ORP	TURBIDITY (visual)
2/9/10	11:13	1	16.22	0.530	5.76	4.10	37.6	clear
"	11:15	2	16.33	0.523	5.71	1.41	38.0	clear
"	11:17	3	16.34	0.519	5.71	0.85	35.1	clear
"	11:19	4	16.46	0.337	5.74	0.68	29.5	clear

SAMPLE INFORMATION

SAMPLE DEPTH TO WATER: _____ SAMPLE TURBIDITY: _____

80% RECHARGE: ___ YES ___ NO ANALYSES: _____

ODOR: _____ SAMPLE VESSEL / PRESERVATIVE: _____

PURGING EQUIPMENT

___ Bladder Pump
___ Centrifugal Pump
___ Submersible Pump
___ Peristalic Pump
___ Bailer (Teflon)
___ Bailer (PVC)
___ Bailer (Stainless Steel)
___ Dedicated _____

Other: _____

Pump Depth: _____

SAMPLING EQUIPMENT

___ Bladder Pump
___ Centrifugal Pump
___ Submersible Pump
___ Peristalic Pump
___ Bailer (Teflon)
___ Bailer (___ PVC or ___ disposable)
___ Bailer (Stainless Steel)
___ Dedicated _____

Other: _____

WELL INTEGRITY: _____ LOCK#: _____

REMARKS: Slight petroleum odor.

SIGNATURE: _____

SLR International Corp

Reviewing Reports - Roles and Expectations

SLR International Corp.

ROJECT #: 008.0205.00020 PURGED BY: CK/RF WELL I.D.: MW-21

CLIENT NAME: Growley Marine Services SAMPLED BY: CK/RF SAMPLE I.D.: MW-21

LOCATION: Vancouver, WA QA SAMPLES:

Before reviewing any report, ask the project manager for timing and budget to perform the review.

Report Preparer/Junior Level Review

DATE PURGED 2/9/10 START (2400hr) 12:49 END (2400hr)

DATE SAMPLED 2/9/10 SAMPLING TIME (2400hr) 13:59

SAMPLE TYPE: Groundwater X Surface Water Treatment Effluent Other

CASING DIAMETER: 2" 3" 4" 5" 6" 8" Other ( )

Casing Volume: (gallons per foot) (0.17) (0.38) (0.67) (1.02) (1.50) (2.60)

DEPTH TO BOTTOM (feet)

DEPTH TO WATER (feet)

WATER COLUMN HEIGHT (feet)

CALCULATED PURGE (gal) =

ACTUAL PURGE (gal) =

DATE	TIME (2400hr)	VOLUME (L)	TEMP. (degrees C)	FIELD MEASUREMENTS CONDUCTIVITY (mS/cm)	pH (units)	DO	ORP	TURBIDITY (visual)
2/9/10	12:53	2	11.80	0.057	7.04	9.85	-67.9	clear
	12:55	3	11.33	0.057	7.05	9.11	-22.2	clear
	12:57	4	11.34	0.056	7.35	9.17	-22.0	clear

- Using a template, ensure that the proper template is being used and change any applicable language/sections (don't over use template)
- Ensure that consistent language is used compared to similar reports
- Verify that the cover page information is correct including the client name, address, project number, and date
- Compare the Table of Contents against the text, tables, figures, and appendices/attachments
- Compare the information in the tables and figures against the backup data in the appendices/ attachments (**no self-checks**)
- Make sure all tables, figures, and appendices/attachments are referenced in the text
- Make sure all tables, figures, and appendices/attachments are numbered in the text in order of first reference
- Look for consistency in use of fonts, sizing, and other formatting elements
- Verify that all acronyms are defined when first mentioned and abbreviated thereafter
- Ensure that all calculations/numbers (including phone numbers) have been checked and are correct
- If calculations are included, determine if the appropriate calculation is being used
- Ensure that the language tense is consistent throughout document
- Ensure that headers/footers are on all pages and are correct

Project/Associate Level Review

SAMPLE INFORMATION

SAMPLE DEPTH TO WATER: SAMPLE TURBIDITY:

80% RECHARGE: YES NO ANALYSES:

ODOR: SAMPLE VESSEL / PRESERVATIVE:

PURGING EQUIPMENT SAMPLING EQUIPMENT

- Read the entire report to ensure that all of the required elements of the report have been included
- Verify that overall formatting of the report is correct
- Ensure that the grammar and punctuation are correct
- Ensure that the report reads well/flows and is easy to comprehend

___ Bladder Pump ___ Bailer (Teflon)
___ Centrifugal Pump ___ Bailer (PVC)
___ Submersible Pump ___ Bailer (Stainless Steel)
___ Peristalic Pump ___ Dedicated _____
Other: _____

___ Bladder Pump ___ Bailer (Teflon)
___ Centrifugal Pump ___ Bailer (___ PVC or ___ disposable)
___ Submersible Pump ___ Bailer (Stainless Steel)
___ Peristalic Pump ___ Dedicated _____
Other: _____

Pump Depth:

Principal Level Review

- Review the report for general content and report logic
- Ensure that the report is being written for the proper audience (agency vs. client) and fulfilling the proper objective
- Ensure that the summary and conclusions are as expected
- Ensure the cc list is correct
- Determine if report should be sent out as draft or final

WELL INTEGRITY:

REMARKS:

SIGNATURE:

SLR International Corp

GROUNDWATER SAMPLING FIELD DATA SHEET

ROJECT #: 008.0205.00020 PURGED BY: _____ WELL I.D.: MW-22

CLIENT NAME: Crowley Marine Services SAMPLED BY: _____ SAMPLE I.D.: _____

LOCATION: Vancouver, WA QA SAMPLES: _____

DATE PURGED _____ START (2400hr) 1226 END (2400hr) _____

DATE SAMPLED _____ SAMPLE TIME (2400hr) 1236

SAMPLE TYPE: Groundwater X Surface Water ____ Treatment Effluent ____ Other _____

CASING DIAMETER: 2" ____ (0.17) 3" ____ (0.38) 4" ____ (0.67) 5" ____ (1.02) 6" ____ (1.50) 8" ____ (2.60) Other ____ ( )
Casing Volume: (gallons per foot)

DEPTH TO BOTTOM (feet) = _____ CASING VOLUME (gal) = _____

DEPTH TO WATER (feet) = _____ CALCULATED PURGE (gal) = _____

WATER COLUMN HEIGHT (feet) = _____ ACTUAL PURGE (gal) = _____

FIELD MEASUREMENTS

DATE	TIME (2400hr)	VOLUME (L)	TEMP. (degrees C)	CONDUCTIVITY (µS/cm)	pH (units)	DO	ORP	TURBIDITY (visual)
7/10/10	1228		12.83	1.418	7.02	5.02	-65.6	Yellow
	1230		13.53	1.425	7.12	1.35	-78.5	"
	1232		13.77	1.426	7.02	0.83	-80.9	"
	1234		13.88	1.431	6.97	0.60	-82.0	

SAMPLE INFORMATION

SAMPLE DEPTH TO WATER: _____ SAMPLE TURBIDITY: _____

80% RECHARGE: ___ YES ___ NO ANALYSES: _____

ODOR: _____ SAMPLE VESSEL / PRESERVATIVE: _____

PURGING EQUIPMENT

___ Bladder Pump
___ Centrifugal Pump
___ Submersible Pump
___ Peristalic Pump
___ Bailer (Teflon)
___ Bailer (PVC)
___ Bailer (Stainless Steel)
___ Dedicated _____

Other: _____

Pump Depth: _____

SAMPLING EQUIPMENT

___ Bladder Pump
___ Centrifugal Pump
___ Submersible Pump
___ Peristalic Pump
___ Bailer (Teflon)
___ Bailer (___ PVC or ___ disposable)
___ Bailer (Stainless Steel)
___ Dedicated _____

Other: _____

WELL INTEGRITY: _____ LOCK#: _____

REMARKS: Duplicate collected @ 1238

Page ___ of ___

SIGNATURE: _____

SLR International Corp

GROUNDWATER SAMPLING FIELD DATA SHEET

PROJECT #: 008.0205.00020
CLIENT NAME: Crowley Marine Services
LOCATION: Vancouver, WA

PURGED BY: RF+CK
SAMPLED BY: RF+CK

WELL I.D.: MW-23
SAMPLE I.D.: MW-23
QA SAMPLES: _____

DATE PURGED 2/9/10
DATE SAMPLED 2/9/10
SAMPLE TYPE: Groundwater X Surface Water ____ Treatment Effluent ____ Other ____

START (2400hr) 13:20
SAMPLE TIME (2400hr) 13:30
END (2400hr) _____

CASING DIAMETER: 2" (0.17) 3" (0.38) 4" (0.67) 5" (1.02) 6" (1.50) 8" (2.60) Other ( )
Casing Volume: (gallons per foot)

DEPTH TO BOTTOM (feet) = _____
DEPTH TO WATER (feet) = _____
WATER COLUMN HEIGHT (feet) = _____

CASING VOLUME (gal) = _____
CALCULATED PURGE (gal) = _____
ACTUAL PURGE (gal) = _____

FIELD MEASUREMENTS

DATE	TIME (2400hr)	VOLUME (L)	TEMP. (degrees C)	CONDUCTIVITY (mS/cm)	pH (units)	DO	ORP	TURBIDITY (visual)
2/9/10	13:22	1	12.91	1.167	7.54	2.66	-112.1	clear
	13:24	2	12.86	1.171	7.81	1.39	-109.0	clear
	13:26	3	12.75	1.180	7.76	0.86	-106.9	clear
↓	13:28	4	12.74	1.181	7.94	0.65	-106.6	clear

SAMPLE INFORMATION

SAMPLE DEPTH TO WATER: _____
SAMPLE TURBIDITY: _____

80% RECHARGE: ___ YES ___ NO
ANALYSES: _____

ODOR: _____
SAMPLE VESSEL / PRESERVATIVE: _____

PURGING EQUIPMENT

___ Bladder Pump
___ Centrifugal Pump
___ Submersible Pump
___ Peristaltic Pump
___ Bailer (Teflon)
___ Bailer (PVC)
___ Bailer (Stainless Steel)
___ Dedicated _____
Other: _____
Pump Depth: _____

SAMPLING EQUIPMENT

___ Bladder Pump
___ Centrifugal Pump
___ Submersible Pump
___ Peristaltic Pump
___ Bailer (Teflon)
___ Bailer (___ PVC or ___ disposable)
___ Bailer (Stainless Steel)
___ Dedicated _____
Other: _____

WELL INTEGRITY: _____
LOCK#: _____

REMARKS: petroleum smell

SIGNATURE: _____

SLR International Corp

GROUNDWATER SAMPLING FIELD DATA SHEET

PROJECT #: 008.0205.00020
CLIENT NAME: Crowley Marine Services
LOCATION: Vancouver, WA

PURGED BY: RF + CK
SAMPLED BY: RF + CK

WELL I.D.: MW-24
SAMPLE I.D.: MW-24
QA SAMPLES:

DATE PURGED 2/9/10
DATE SAMPLED 2/9/10
SAMPLE TYPE: Groundwater X Surface Water ____ Treatment Effluent ____ Other ____

START (2400hr) 13:46
SAMPLE TIME (2400hr) 13:55
END (2400hr) ____

CASING DIAMETER: 2" ____ 3" ____ 4" ____ 5" ____ 6" ____ 8" ____ Other ____ ( )
Casing Volume: (gallons per foot) (0.17) (0.38) (0.67) (1.02) (1.50) (2.60)

DEPTH TO BOTTOM (feet) = ____
DEPTH TO WATER (feet) = ____
WATER COLUMN HEIGHT (feet) = ____

CASING VOLUME (gal) = ____
CALCULATED PURGE (gal) = ____
ACTUAL PURGE (gal) = ____

FIELD MEASUREMENTS

DATE	TIME (2400hr)	VOLUME (L)	TEMP. (degrees C)	CONDUCTIVITY (mS/cm)	pH (units)	DO	ORP	TURBIDITY (visual)
2/9/10	13:47	1	13.30	0.464	5.89	10.84	47.0	clear
	13:49	2	13.27	0.445	5.62	3.99	50.8	clear
↓	13:51	3	13.22	0.442	5.60	3.49	49.7	clear
	~~13:45~~							

SAMPLE INFORMATION

SAMPLE DEPTH TO WATER: ____
SAMPLE TURBIDITY: ____

80% RECHARGE: ___ YES ___ NO
ANALYSES: ____

ODOR: ____
SAMPLE VESSEL / PRESERVATIVE: ____

PURGING EQUIPMENT

___ Bladder Pump
___ Centrifugal Pump
___ Submersible Pump
___ Peristaltic Pump
___ Bailer (Teflon)
___ Bailer (PVC)
___ Bailer (Stainless Steel)
___ Dedicated ____
Other: ____
Pump Depth: ____

SAMPLING EQUIPMENT

___ Bladder Pump
___ Centrifugal Pump
___ Submersible Pump
___ Peristaltic Pump
___ Bailer (Teflon)
___ Bailer (___ PVC or ___ disposable)
___ Bailer (Stainless Steel)
___ Dedicated ____
Other: ____

WELL INTEGRITY: ____
LOCK#: ____

REMARKS: ____

SIGNATURE: ____

SLR International Corp

GROUNDWATER SAMPLING FIELD DATA SHEET

ROJECT #: 008.0205.00020 PURGED BY: CK RF WELL I.D.: RW-1

CLIENT NAME: Crowley Marine Services SAMPLED BY: CK RF SAMPLE I.D.: RW-1

LOCATION: Vancouver, WA QA SAMPLES: _____

DATE PURGED 2/10/10 START (2400hr) 12:54 END (2400hr) _____

DATE SAMPLED 2/10/10 SAMPLE TIME (2400hr) 13:15

SAMPLE TYPE: Groundwater X Surface Water ____ Treatment Effluent ____ Other _____

CASING DIAMETER: 2" 3" 4" 5" 6" 8" Other ( )

Casing Volume: (gallons per foot) (0.17) (0.38) (0.67) (1.02) (1.50) (2.60)

DEPTH TO BOTTOM (feet) = _____ CASING VOLUME (gal) = _____

DEPTH TO WATER (feet) = _____ CALCULATED PURGE (gal) = _____

WATER COLUMN HEIGHT (feet) = _____ ACTUAL PURGE (gal) = _____

FIELD MEASUREMENTS

DATE	TIME (2400hr)	VOLUME (L)	TEMP. (degrees C)	CONDUCTIVITY (µS/cm)	pH (units)	DO	ORP	TURBIDITY (visual)
2/10/10	1506	1	12.14	0.491	6.53	1.17	-32.5	clear
	1509	2	12.41	0.502	6.78	0.47	-46.1	clear
	1510	3	12.54	0.520	6.98	0.34	-55.6	clear

SAMPLE INFORMATION

SAMPLE DEPTH TO WATER: _____ SAMPLE TURBIDITY: _____

80% RECHARGE: ___ YES ___ NO ANALYSES: _____

ODOR: _____ SAMPLE VESSEL / PRESERVATIVE: _____

PURGING EQUIPMENT

___ Bladder Pump
___ Centrifugal Pump
___ Submersible Pump
___ Peristalic Pump
___ Bailer (Teflon)
___ Bailer (PVC)
___ Bailer (Stainless Steel)
___ Dedicated _____

Other: _____

Pump Depth: _____

SAMPLING EQUIPMENT

___ Bladder Pump
___ Centrifugal Pump
___ Submersible Pump
___ Peristalic Pump
___ Bailer (Teflon)
___ Bailer (___ PVC or ___ disposable)
___ Bailer (Stainless Steel)
___ Dedicated _____

Other: _____

WELL INTEGRITY: _____ LOCK#: _____

REMARKS: _____

Page ___ of ___

SIGNATURE: _____

APPENDIX C

LABORATORY ANALYTICAL REPORTS

SLR International Corp. - West Linn, OR
1800 Blankenship Road. Suite 440
West Linn,OR 97068

Billing information:
Accounts Payable
1800 Blankenship Rd, Ste 440
West Linn,OR 97068

Report to: **Chris Kramer**
Email: **ckramer@slrcorp.com, shami**

Project Description: **Crowley-Vancouver**
City/State Collected: **Vancouver, WA**

Phone: **(503) 723-4423**
FAX:
Client Project #: **008.0205.00020**
Lab Project #: **SLRWLOR-CROWLEYVAN**

Collected by (print): **Rachel Frazier**
Site/Facility ID#: **VANCOUVER, WA**
P.O.#: **008.0205.00020**

Collected by (signature):

Immediately Packed on Ice N__ Y X

Rush? (Lab MUST Be Notified)
__ Same Day 200%
__ Next Day.....100%
__ Two Day 50%
__ Three Day 25%

Date Results Needed

Email? __No X Yes
FAX? __No __Yes

Analysis/Container/Preservative

D164

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	No. of Cntrs	ALK 500mlHDPE-NoPres	FERUSFE 250mlAmb-HCl	MNDG 500mlHDPE-HNO3	NWTPHDX 1L-Amb-Add HCl	NWTPHGX 40mlAmb HCl	Nitrate / Sulfate 125mlHDPE-NoPres	RSK 175 40mlAmb-NoPres	Remarks/Contaminant	Sample # (lab only)
MW-1		GW		2/9/10	~~14:56~~	11	X	X	X	X	X	X	X		LRVV110-01
MW-3		GW		2/9/10	14:55	11	X	X	X	X	X	X	X		02
MW-7N		GW		2/9/10	10:55	11	X	X	X	X	X	X	X		03
MW-8N		GW		2/9/10	10:27	11	X	X	X	X	X	X	X		04
~~MW-11~~ MW-24		GW		2/9/10	13:55	11	X	X	X	X	X	X	X		05
MW-13		GW		2/9/10	14:25	11	X	X	X	X	X	X	X		06
MW-19N		GW		2/9/10	11:21	11	X	X	X	X	X	X	X		07
MW-21		GW		2/9/10	12:59	11	X	X	X	X	X	X	X		08
MW-23		GW		29/10	13:30	11	X	X	X	X	X	X	X		09

*Matrix: **SS** - Soil **GW** - Groundwater **WW** - WasteWater **DW** - Drinking Water **OT** - Other_____

Remarks:

pH _____ Temp _____
Flow _____ Other _____

Chain of Custody
Page 1 of 1

ESC LAB SCIENCES
12065 Lebanon Road
Mt. Juliet, TN 37122
Phone: (800) 767-5859
Phone: (615) 758-5858
Fax: (615) 758-5859

(lab use only)
Acctnum: **SLRWLOR**
Template/Prelogin: **T62780/P310372**
Cooler #: 2/3/10 TRC
Shipped Via: **FedEX Saver**

4/35-9295-9820

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Rachel Frazier	2/9/10	4:00	
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)

Samples returned via: ☐ UPS ☒ FedEx ☐ Courier ☐
Temp: 3.2°C Bottles Received: 94+3TB
Date: 2/10/10 Time: 0900

Condition: 01 (lab use only)
COC Seal Intact: ___ Y ___ N ___ NA
pH Checked: 22 NCF:

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Tax I.D. 62-0814289

Est. 1970

Chris Kramer
SLR International Corp. - West Linn, OR
1800 Blankenship Road, Suite 440

West Linn, OR 97068

Report Summary

Wednesday February 17, 2010

Report Number: L444110
Samples Received: 02/10/10
Client Project: 008.0205.00020

Description: Crowley-Vancouver

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By: Jarred Willis, ESC Representative

Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - I-2327, CT - PH-0197, FL - E87487
GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016, NC - ENV375,DW21704, ND - R-140
NJ - TN002, NJ NELAP - TN002, SC - 84004, TN - 2006, VA - 00109, WV - 233
AZ - 0612, MN - 047-999-395, NY - 11742, WI - 998093910

Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.

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REPORT OF ANALYSIS

February 17, 2010

Chris Kramer
SLR International Corp. - West Linn
1800 Blankenship Road, Suite 440
West Linn, OR 97068

ESC Sample # : L444110-01

Date Received : February 10, 2010
Description : Crowley-Vancouver

Site ID : VANCOUVER, WA

Project # : 008.0205.00020

Sample ID : MW-1

Collected By : Raechel Fragner
Collection Date : 02/09/10 09:56

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Nitrate	1500	31.	100	ug/l		9056	02/10/10	1
Sulfate	99000	1100	25000	ug/l		9056	02/12/10	5
Alkalinity	19000	3000	20000	ug/l	J	2320B	02/16/10	1
Methane	32.	2.0	10.	ug/l		RSK175	02/15/10	1
Ethane	U	4.0	13.	ug/l		RSK175	02/15/10	1
Ethene	U	5.7	13.	ug/l		RSK175	02/15/10	1
Ferrous Iron	440	12.	50.	ug/l		3500Fe-	02/10/10	1
Manganese,Dissolved	390	0.25	2.0	ug/l		6020	02/10/10	1
Gasoline Range Organics-NWTPH	U	33.	100	ug/l		NWTPHGX	02/10/10	1
Surrogate Recovery a,a,a-Trifluorotoluene(FID)	96.8			% Rec.		NWTPHGX	02/10/10	1
Diesel Range Organics (DRO)	910	33.	100	ug/l	J	NWTPHDX	02/15/10	1
Residual Range Organics (RRO)	150	82.	250	ug/l		NWTPHDX	02/15/10	1
Surrogate Recovery o-Terphenyl	82.0			% Rec.		NWTPHDX	02/15/10	1

U = ND (Not Detected)
RDL = Reported Detection Limit = LOQ = PQL = EQL
MDL = Minimum Detection Limit = LOD = SQL(TRRP)
Note:
The reported analytical results relate only to the sample submitted.
This report shall not be reproduced, except in full, without the written approval from ESC.

Reported: 02/17/10 10:02 Printed: 02/17/10 10:03

ESC LABORATORY SCIENCES
YOUR LAB OF CHOICE

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Mt. Juliet, TN 37122
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REPORT OF ANALYSIS

February 17, 2010

Chris Kramer
SLR International Corp. - West Linn
1800 Blankenship Road, Suite 440
West Linn, OR 97068

ESC Sample # : L444110-02

Date Received : February 10, 2010
Description : Crowley-Vancouver

Site ID : VANCOUVER, WA

Sample ID : MW-3

Project # : 008.0205.00020

Collected By :
Collection Date : 02/09/10 14:55

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Nitrate	420	31.	100	ug/l		9056	02/10/10	1
Sulfate	14000	210	5000	ug/l		9056	02/10/10	1
Alkalinity	120000	3000	20000	ug/l		2320B	02/16/10	1
Methane	260	2.0	10.	ug/l		RSK175	02/15/10	1
Ethane	U	4.0	13.	ug/l		RSK175	02/15/10	1
Ethene	U	5.7	13.	ug/l		RSK175	02/15/10	1
Ferrous Iron	22000	600	2500	ug/l		3500Fe-	02/10/10	50
Manganese,Dissolved	1000	0.25	2.0	ug/l		6020	02/10/10	1
Gasoline Range Organics-NWTPH	U	33.	100	ug/l		NWTPHGX	02/10/10	1
Surrogate Recovery a,a,a-Trifluorotoluene(FID)	97.3			% Rec.		NWTPHGX	02/10/10	1
Diesel Range Organics (DRO)	4500	33.	100	ug/l		NWTPHDX	02/15/10	1
Residual Range Organics (RRO)	910	82.	250	ug/l		NWTPHDX	02/15/10	1
Surrogate Recovery o-Terphenyl	88.4			% Rec.		NWTPHDX	02/15/10	1

U = ND (Not Detected)
RDL = Reported Detection Limit = LOQ = PQL = EQL
MDL = Minimum Detection Limit = LOD = SQL(TRRP)
Note:
The reported analytical results relate only to the sample submitted.

Reported: 02/17/10 10:02 Printed: 02/17/10 10:03

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REPORT OF ANALYSIS

February 17, 2010

Chris Kramer
SLR International Corp. - West Linn
1800 Blankenship Road, Suite 440
West Linn, OR 97068

ESC Sample # : L444110-03

Date Received : February 10, 2010
Description : Crowley-Vancouver

Site ID : VANCOUVER, WA

Sample ID : MW-7N

Project # : 008.0205.00020

Collected By :
Collection Date : 02/09/10 10:55

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Nitrate	U	31.	100	ug/l		9056	02/10/10	1
Sulfate	370000	2100	50000	ug/l		9056	02/12/10	10
Alkalinity	150000	3000	20000	ug/l		2320B	02/16/10	1
Methane	500	2.0	10.	ug/l		RSK175	02/15/10	1
Ethane	U	4.0	13.	ug/l		RSK175	02/15/10	1
Ethene	U	5.7	13.	ug/l		RSK175	02/15/10	1
Ferrous Iron	100000	600	2500	ug/l		3500Fe-	02/10/10	50
Manganese,Dissolved	6200	1.2	10.	ug/l		6020	02/10/10	5
Gasoline Range Organics-NWTPH	190	33.	100	ug/l		NWTPHGX	02/10/10	1
Surrogate Recovery a,a,a-Trifluorotoluene(FID)	97.3			% Rec.		NWTPHGX	02/10/10	1
Diesel Range Organics (DRO)	10000	660	2000	ug/l		NWTPHDX	02/16/10	20
Residual Range Organics (RRO)	1600	82.	250	ug/l		NWTPHDX	02/15/10	1
Surrogate Recovery o-Terphenyl	0.00			% Rec.	J7	NWTPHDX	02/16/10	20

U = ND (Not Detected)
RDL = Reported Detection Limit = LOQ = PQL = EQL
MDL = Minimum Detection Limit = LOD = SQL(TRRP)
Note:
The reported analytical results relate only to the sample submitted.

Reported: 02/17/10 10:02 Printed: 02/17/10 10:03

ESC LAB SCIENCES
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REPORT OF ANALYSIS

February 17, 2010

Chris Kramer
SLR International Corp. - West Linn
1800 Blankenship Road, Suite 440
West Linn, OR 97068

ESC Sample # : L444110-04

Date Received : February 10, 2010
Description : Crowley-Vancouver

Site ID : VANCOUVER, WA

Sample ID : MW-8N

Project # : 008.0205.00020

Collected By : Raechel Fragner
Collection Date : 02/09/10 10:27

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Nitrate	U	31.	100	ug/l		9056	02/10/10	1
Sulfate	110000	420	10000	ug/l		9056	02/12/10	2
Alkalinity	310000	3000	20000	ug/l		2320B	02/16/10	1
Methane	350	2.0	10.	ug/l		RSK175	02/15/10	1
Ethane	U	4.0	13.	ug/l		RSK175	02/15/10	1
Ethene	U	5.7	13.	ug/l		RSK175	02/15/10	1
Ferrous Iron	140000	600	2500	ug/l		3500Fe-	02/10/10	50
Manganese,Dissolved	5500	1.2	10.	ug/l		6020	02/10/10	5
Gasoline Range Organics-NWTPH	U	33.	100	ug/l		NWTPHGX	02/10/10	1
Surrogate Recovery a,a,a-Trifluorotoluene(FID)	99.0			% Rec.		NWTPHGX	02/10/10	1
Diesel Range Organics (DRO)	9600	660	2000	ug/l		NWTPHDX	02/16/10	20
Residual Range Organics (RRO)	2000	82.	250	ug/l		NWTPHDX	02/15/10	1
Surrogate Recovery o-Terphenyl	0.00			% Rec.	J7	NWTPHDX	02/16/10	20

U = ND (Not Detected)
RDL = Reported Detection Limit = LOQ = PQL = EQL
MDL = Minimum Detection Limit = LOD = SQL(TRRP)
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REPORT OF ANALYSIS

February 17, 2010

Chris Kramer
SLR International Corp. - West Linn
1800 Blankenship Road, Suite 440
West Linn, OR 97068

ESC Sample # : L444110-05

Date Received : February 10, 2010
Description : Crowley-Vancouver

Site ID : VANCOUVER, WA

Sample ID : MW-24

Project # : 008.0205.00020

Collected By : Raechel Fragner
Collection Date : 02/09/10 13:55

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Nitrate	13000	310	1000	ug/l		9056	02/10/10	10
Sulfate	100000	2100	50000	ug/l		9056	02/10/10	10
Alkalinity	36000	3000	20000	ug/l		2320B	02/16/10	1
Methane	U	2.0	10.	ug/l		RSK175	02/15/10	1
Ethane	U	4.0	13.	ug/l		RSK175	02/15/10	1
Ethene	U	5.7	13.	ug/l		RSK175	02/15/10	1
Ferrous Iron	650	12.	50.	ug/l		3500Fe-	02/10/10	1
Manganese,Dissolved	230	0.25	2.0	ug/l		6020	02/10/10	1
Gasoline Range Organics-NWTPH	520	33.	100	ug/l		NWTPHGX	02/10/10	1
Surrogate Recovery a,a,a-Trifluorotoluene(FID)	98.0			% Rec.		NWTPHGX	02/10/10	1
Diesel Range Organics (DRO)	2800	33.	100	ug/l		NWTPHDX	02/15/10	1
Residual Range Organics (RRO)	380	82.	250	ug/l		NWTPHDX	02/15/10	1
Surrogate Recovery o-Terphenyl	78.6			% Rec.		NWTPHDX	02/15/10	1

U = ND (Not Detected)
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MDL = Minimum Detection Limit = LOD = SQL(TRRP)
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REPORT OF ANALYSIS

February 17, 2010

Chris Kramer
SLR International Corp. - West Linn
1800 Blankenship Road, Suite 440
West Linn, OR 97068

ESC Sample # : L444110-06

Date Received : February 10, 2010
Description : Crowley-Vancouver

Site ID : VANCOUVER, WA

Sample ID : MW-13

Project # : 008.0205.00020

Collected By :
Collection Date : 02/09/10 14:25

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Nitrate	350	31.	100	ug/l		9056	02/10/10	1
Sulfate	1500	210	5000	ug/l	J	9056	02/10/10	1
Alkalinity	220000	3000	20000	ug/l		2320B	02/16/10	1
Methane	21.	2.0	10.	ug/l		RSK175	02/15/10	1
Ethane	U	4.0	13.	ug/l		RSK175	02/15/10	1
Ethene	U	5.7	13.	ug/l		RSK175	02/15/10	1
Ferrous Iron	280	12.	50.	ug/l		3500Fe-	02/10/10	1
Manganese,Dissolved	310	0.25	2.0	ug/l		6020	02/10/10	1
Gasoline Range Organics-NWTPH	U	33.	100	ug/l		NWTPHGX	02/10/10	1
Surrogate Recovery a,a,a-Trifluorotoluene(FID)	96.8			% Rec.		NWTPHGX	02/10/10	1
Diesel Range Organics (DRO)	220	33.	100	ug/l		NWTPHDX	02/15/10	1
Residual Range Organics (RRO)	U	82.	250	ug/l		NWTPHDX	02/15/10	1
Surrogate Recovery o-Terphenyl	91.3			% Rec.		NWTPHDX	02/15/10	1

U = ND (Not Detected)
RDL = Reported Detection Limit = LOQ = PQL = EQL
MDL = Minimum Detection Limit = LOD = SQL(TRRP)
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REPORT OF ANALYSIS

February 17, 2010

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ESC Sample # : L444110-07

Date Received : February 10, 2010
Description : Crowley-Vancouver

Site ID : VANCOUVER, WA

Sample ID : MW-19N

Project # : 008.0205.00020

Collected By : Raechel Fragner
Collection Date : 02/09/10 11:21

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Nitrate	10000	150	500	ug/l		9056	02/10/10	5
Sulfate	150000	1100	25000	ug/l		9056	02/10/10	5
Alkalinity	49000	3000	20000	ug/l		2320B	02/16/10	1
Methane	240	2.0	10.	ug/l		RSK175	02/15/10	1
Ethane	U	4.0	13.	ug/l		RSK175	02/15/10	1
Ethene	U	5.7	13.	ug/l		RSK175	02/15/10	1
Ferrous Iron	11000	300	1300	ug/l		3500Fe-	02/10/10	25
Manganese,Dissolved	1700	0.25	2.0	ug/l		6020	02/10/10	1
Gasoline Range Organics-NWTPH	U	33.	100	ug/l		NWTPHGX	02/10/10	1
Surrogate Recovery a,a,a-Trifluorotoluene(FID)	99.3			% Rec.		NWTPHGX	02/10/10	1
Diesel Range Organics (DRO)	4700	33.	100	ug/l		NWTPHDX	02/15/10	1
Residual Range Organics (RRO)	670	82.	250	ug/l		NWTPHDX	02/15/10	1
Surrogate Recovery o-Terphenyl	104.			% Rec.		NWTPHDX	02/15/10	1

U = ND (Not Detected)
RDL = Reported Detection Limit = LOQ = PQL = EQL
MDL = Minimum Detection Limit = LOD = SQL(TRRP)
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REPORT OF ANALYSIS

February 17, 2010

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SLR International Corp. - West Linn
1800 Blankenship Road, Suite 440
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ESC Sample # : L444110-08

Date Received : February 10, 2010
Description : Crowley-Vancouver

Site ID : VANCOUVER, WA

Sample ID : MW-21

Project # : 008.0205.00020

Collected By :
Collection Date : 02/09/10 12:59

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Nitrate	410	31.	100	ug/l		9056	02/10/10	1
Sulfate	2800	210	5000	ug/l	J	9056	02/10/10	1
Alkalinity	16000	3000	20000	ug/l	J	2320B	02/16/10	1
Methane	U	2.0	10.	ug/l		RSK175	02/15/10	1
Ethane	U	4.0	13.	ug/l		RSK175	02/15/10	1
Ethene	U	5.7	13.	ug/l		RSK175	02/15/10	1
Ferrous Iron	72.	12.	50.	ug/l		3500Fe-	02/10/10	1
Manganese,Dissolved	2.8	0.25	2.0	ug/l		6020	02/10/10	1
Gasoline Range Organics-NWTPH	U	33.	100	ug/l		NWTPHGX	02/10/10	1
Surrogate Recovery a,a,a-Trifluorotoluene(FID)	99.0			% Rec.		NWTPHGX	02/10/10	1
Diesel Range Organics (DRO)	U	33.	100	ug/l		NWTPHDX	02/15/10	1
Residual Range Organics (RRO)	U	82.	250	ug/l		NWTPHDX	02/15/10	1
Surrogate Recovery o-Terphenyl	114.			% Rec.		NWTPHDX	02/15/10	1

U = ND (Not Detected)
RDL = Reported Detection Limit = LOQ = PQL = EQL
MDL = Minimum Detection Limit = LOD = SQL(TRRP)
Note:
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Reported: 02/17/10 10:02 Printed: 02/17/10 10:03

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REPORT OF ANALYSIS

February 17, 2010

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ESC Sample # : L444110-09

Date Received : February 10, 2010
Description : Crowley-Vancouver

Site ID : VANCOUVER, WA

Sample ID : MW-23

Project # : 008.0205.00020

Collected By : Raechel Fragner
Collection Date : 02/09/10 13:30

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Nitrate	U	31.	100	ug/l		9056	02/10/10	1
Sulfate	180000	1100	25000	ug/l		9056	02/12/10	5
Alkalinity	270000	3000	20000	ug/l		2320B	02/16/10	1
Methane	89.	2.0	10.	ug/l		RSK175	02/15/10	1
Ethane	U	4.0	13.	ug/l		RSK175	02/15/10	1
Ethene	U	5.7	13.	ug/l		RSK175	02/15/10	1
Ferrous Iron	120000	1200	5000	ug/l		3500Fe-	02/10/10	100
Manganese,Dissolved	5100	1.2	10.	ug/l	V	6020	02/10/10	5
Gasoline Range Organics-NWTPH	380	33.	100	ug/l		NWTPHGX	02/10/10	1
Surrogate Recovery a,a,a-Trifluorotoluene(FID)	99.0			% Rec.		NWTPHGX	02/10/10	1
Diesel Range Organics (DRO)	11000	660	2000	ug/l		NWTPHDX	02/16/10	20
Residual Range Organics (RRO)	1100	82.	250	ug/l		NWTPHDX	02/15/10	1
Surrogate Recovery o-Terphenyl	0.00			% Rec.	J7	NWTPHDX	02/16/10	20

U = ND (Not Detected)
RDL = Reported Detection Limit = LOQ = PQL = EQL
MDL = Minimum Detection Limit = LOD = SQL(TRRP)
Note:
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Reported: 02/17/10 10:02 Printed: 02/17/10 10:03

Attachment A
List of Analytes with QC Qualifiers

Sample Number	Work Group	Sample Type	Analyte	Run ID	Qualifier
L444110-01	WG463222	SAMP	Alkalinity	R1117588	J
	WG462882	SAMP	Residual Range Organics (RRO)	R1116310	J
L444110-03	WG462882	SAMP	o-Terphenyl	R1116310	J7
L444110-04	WG462882	SAMP	o-Terphenyl	R1116310	J7
L444110-06	WG462761	SAMP	Sulfate	R1110888	J
L444110-08	WG462761	SAMP	Sulfate	R1110888	J
	WG463222	SAMP	Alkalinity	R1117588	J
L444110-09	WG462785	SAMP	Manganese, Dissolved	R1110108	V
	WG462882	SAMP	o-Terphenyl	R1116310	J7

Attachment B
Explanation of QC Qualifier Codes

Qualifier	Meaning
J	(EPA) - Estimated value below the lowest calibration point. Confidence correlates with concentration.
J7	Surrogate recovery limits cannot be evaluated; surrogates were diluted out
V	(ESC) - Additional QC Info: The sample concentration is too high to evaluate accurate spike recoveries.

Qualifier Report Information

ESC utilizes sample and result qualifiers as set forth by the EPA Contract Laboratory Program and as required by most certifying bodies including NELAC. In addition to the EPA qualifiers adopted by ESC, we have implemented ESC qualifiers to provide more information pertaining to our analytical results. Each qualifier is designated in the qualifier explanation as either EPA or ESC. Data qualifiers are intended to provide the ESC client with more detailed information concerning the potential bias of reported data. Because of the wide range of constituents and variety of matrices incorporated by most EPA methods,it is common for some compounds to fall outside of established ranges. These exceptions are evaluated and all reported data is valid and useable unless qualified as 'R' (Rejected).

Definitions

Accuracy - The relationship of the observed value of a known sample to the true value of a known sample. Represented by percent recovery and relevant to samples such as: control samples, matrix spike recoveries, surrogate recoveries, etc.

Precision - The agreement between a set of samples or between duplicate samples. Relates to how close together the results are and is represented by Relative Percent Differrence.

Surrogate - Organic compounds that are similar in chemical composition, extraction, and chromotography to analytes of interest. The surrogates are used to determine the probable response of the group of analytes that are chemically related to the surrogate compound. Surrogates are added to the sample and carried through all stages of preparation and analyses.

TIC - Tentatively Identified Compound: Compounds detected in samples that are not target compounds, internal standards, system monitoring compounds, or surrogates.

Summary of Remarks For Samples Printed
02/17/10 at 10:03:17

TSR Signing Reports: 358
R5 - Desired TAT

Log all arsenic gw samples as ASG.

Sample: L444110-01 Account: SLRWLOR Received: 02/10/10 09:00 Due Date: 02/17/10 00:00 RPT Date: 02/17/10 10:02

Sample: L444110-02 Account: SLRWLOR Received: 02/10/10 09:00 Due Date: 02/17/10 00:00 RPT Date: 02/17/10 10:02

Sample: L444110-03 Account: SLRWLOR Received: 02/10/10 09:00 Due Date: 02/17/10 00:00 RPT Date: 02/17/10 10:02

Sample: L444110-04 Account: SLRWLOR Received: 02/10/10 09:00 Due Date: 02/17/10 00:00 RPT Date: 02/17/10 10:02

Sample: L444110-05 Account: SLRWLOR Received: 02/10/10 09:00 Due Date: 02/17/10 00:00 RPT Date: 02/17/10 10:02

Sample: L444110-06 Account: SLRWLOR Received: 02/10/10 09:00 Due Date: 02/17/10 00:00 RPT Date: 02/17/10 10:02

Sample: L444110-07 Account: SLRWLOR Received: 02/10/10 09:00 Due Date: 02/17/10 00:00 RPT Date: 02/17/10 10:02

Sample: L444110-08 Account: SLRWLOR Received: 02/10/10 09:00 Due Date: 02/17/10 00:00 RPT Date: 02/17/10 10:02

Sample: L444110-09 Account: SLRWLOR Received: 02/10/10 09:00 Due Date: 02/17/10 00:00 RPT Date: 02/17/10 10:02

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Chris Kramer
1800 Blankenship Road, Suite 440

West Linn, OR 97068

Quality Assurance Report
Level II

L444110

February 17, 2010

Laboratory Blank

Analyte	Result	Units	% Rec	Limit	Batch	Date Analyzed
Ferrous Iron	< .05	mg/l			WG462755	02/10/10 11:04
Manganese,Dissolved	< .002	mg/l			WG462785	02/10/10 19:20
Nitrate	< .1	mg/l			WG462761	02/10/10 11:03
Sulfate	< 5	mg/l			WG462761	02/10/10 11:03
Gasoline Range Organics-NWTPH	< .1	mg/l			WG462772	02/10/10 14:08
a,a,a-Trifluorotoluene(FID)		% Rec.	98.99	62-128	WG462772	02/10/10 14:08
Sulfate	< 5	mg/l			WG462997	02/12/10 00:02
Sulfate	< 5	mg/l			WG463119	02/12/10 10:26
Sulfate	< 5	mg/l			WG463098	02/12/10 11:04
Ethane	< .013	mg/l			WG463369	02/15/10 12:07
Ethene	< .013	mg/l			WG463369	02/15/10 12:07
Methane	< .01	mg/l			WG463369	02/15/10 12:07
Diesel Range Organics (DRO)	< .1	ppm			WG462882	02/15/10 11:39
o-Terphenyl		% Rec.	92.72	50-150	WG462882	02/15/10 11:39
Alkalinity	< 20	mg/l			WG463222	02/16/10 14:24

Duplicate

Analyte	Units	Result	Duplicate	RPD	Limit	Ref Samp	Batch
Ferrous Iron	mg/l	0.0750	0.0720	4.35	20	L444110-08	WG462755
Ferrous Iron	mg/l	4.40	4.40	0.913	20	L444122-01	WG462755
Manganese,Dissolved	mg/l	5.00	5.10	0.985	20	L444110-09	WG462785
Nitrate	mg/l	0.600	0.600	0.333	20	L444090-04	WG462761
Nitrate	mg/l	0	0	0	20	L444122-01	WG462761
Sulfate	mg/l	10.0	10.0	0	20	L444122-01	WG462761
Sulfate	mg/l	9.20	9.20	0.109	20	L444350-03	WG462997
Sulfate	mg/l	100.	99.0	2.00	20	L444110-01	WG462997
Sulfate	mg/l	180.	180.	1.65	20	L444110-09	WG463119
Sulfate	mg/l	24.0	24.0	0.837	20	L444174-01	WG463119
Sulfate	mg/l	110.	110.	0.913	20	L444110-04	WG463098

* Performance of this Analyte is outside of established criteria.
For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'

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Chris Kramer
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West Linn, OR 97068

Quality Assurance Report
Level II

L444110

February 17, 2010

Analyte	Units	Result	Duplicate Duplicate	RPD	Limit	Ref Samp	Batch
Alkalinity	mg/l	1000	1000	1.98	20	L444124-01	WG463222
Alkalinity	mg/l	18.0	19.0	7.76	20	L444110-01	WG463222

Analyte	Units	Laboratory Control Sample Known Val	Result	% Rec	Limit	Batch
Ferrous Iron	mg/l	1	1.01	101.	85-115	WG462755
Manganese,Dissolved	mg/l	.0567	0.0559	98.6	85-115	WG462785
Nitrate	mg/l	8	8.16	102.	90-110	WG462761
Sulfate	mg/l	40	39.6	99.0	90-110	WG462761
Gasoline Range Organics-NWTPH	mg/l	5.5	5.17	94.0	70-124	WG462772
a,a,a-Trifluorotoluene(FID)				97.89	62-128	WG462772
Sulfate	mg/l	40	38.9	97.3	90-110	WG462997
Sulfate	mg/l	40	38.3	95.8	90-110	WG463119
Sulfate	mg/l	40	39.0	97.5	90-110	WG463098
Ethane	mg/l	.645	0.637	98.7	70-130	WG463369
Ethene	mg/l	.635	0.593	93.4	70-130	WG463369
Methane	mg/l	.339	0.274	81.0	70-130	WG463369
Diesel Range Organics (DRO)	mg/l	.75	0.700	93.3	50-150	WG462882
Residual Range Organics (RRO)	mg/l	.75	0.506	67.5*	0-0	WG462882
o-Terphenyl				92.23	50-150	WG462882
Alkalinity	mg/l	40	41.5	104.	85-115	WG463222

Analyte	Units	Laboratory Control Sample Duplicate Result	Ref	%Rec	Limit	RPD	Limit	Batch
Ferrous Iron	mg/l	1.00	1.01	100.	85-115	0.995	20	WG462755
Nitrate	mg/l	8.16	8.16	102.	90-110	0	20	WG462761
Sulfate	mg/l	39.5	39.6	99.0	90-110	0.253	20	WG462761
Gasoline Range Organics-NWTPH	mg/l	5.12	5.17	93.0	70-124	1.03	20	WG462772
a,a,a-Trifluorotoluene(FID)				98.94	62-128			WG462772
Sulfate	mg/l	38.9	38.9	97.0	90-110	0	20	WG462997

* Performance of this Analyte is outside of established criteria.
For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'

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Chris Kramer
1800 Blankenship Road, Suite 440

West Linn, OR 97068

Quality Assurance Report
Level II

L444110

February 17, 2010

Analyte	Units	Laboratory Control Sample Result	Ref	%Rec	Limit	RPD	Limit	Batch
Sulfate	mg/l	38.2	38.3	96.0	90-110	0.261	20	WG463119
Sulfate	mg/l	39.1	39.0	98.0	90-110	0.256	20	WG463098
Ethane	mg/l	0.630	0.637	98.0	70-130	1.06	25	WG463369
Ethene	mg/l	0.587	0.593	92.0	70-130	1.03	25	WG463369
Methane	mg/l	0.272	0.274	80.0	70-130	0.749	25	WG463369
Diesel Range Organics (DRO)	mg/l	0.697	0.700	93.0	50-150	0.356	20	WG462882
Residual Range Organics (RRO)	mg/l	0.503	0.506	67*	-	0.590*	0	WG462882
o-Terphenyl				87.41	50-150			WG462882
Alkalinity	mg/l	42.0	41.5	105.	85-115	1.20	20	WG463222

Analyte	Units	Matrix Spike MS Res	Ref Res	TV	% Rec	Limit	Ref Samp	Batch
Ferrous Iron	mg/l	1.76	0.280	1.5	98.7	80-120	L444110-06	WG462755
Manganese,Dissolved	mg/l	5.19	5.10	.0113	159.*	75-125	L444110-09	WG462785
Nitrate	mg/l	5.48	0.410	5	101.	80-120	L444110-08	WG462761
Sulfate	mg/l	53.6	2.80	50	102.	80-120	L444110-08	WG462761
Gasoline Range Organics-NWTPH	mg/l	5.06	0.802	5.5	77.5	58-122	L443871-07	WG462772
a,a,a-Trifluorotoluene(FID)					98.34	62-128		WG462772
Sulfate	mg/l	85.0	33.0	50	104.	80-120	L444350-02	WG462997
Sulfate	mg/l	51.6	0	50	103.	80-120	L444680-08	WG463119
Sulfate	mg/l	62.6	11.0	50	103.	80-120	L444350-06	WG463098
Alkalinity	mg/l	232.	36.0	200	98.0	80-120	L444110-05	WG463222

Analyte	Units	Matrix Spike Duplicate MSD	Ref	%Rec	Limit	RPD	Limit	Ref Samp	Batch
Ferrous Iron	mg/l	1.75	1.76	98.0	80-120	0.570	20	L444110-06	WG462755
Manganese,Dissolved	mg/l	5.31	5.19	372.*	75-125	2.29	20	L444110-09	WG462785
Nitrate	mg/l	5.36	5.48	99.0	80-120	2.21	20	L444110-08	WG462761
Sulfate	mg/l	52.4	53.6	99.2	80-120	2.26	20	L444110-08	WG462761

* Performance of this Analyte is outside of established criteria.
For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'

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Chris Kramer
1800 Blankenship Road, Suite 440

West Linn, OR 97068

Quality Assurance Report
Level II

L444110

February 17, 2010

Analyte	Units	Matrix Spike MSD	Duplicate Ref	%Rec	Limit	RPD	Limit	Ref Samp	Batch
Gasoline Range Organics-NWTPH	mg/l	4.84	5.06	73.4	58-122	4.53	20	L443871-07	WG462772
a,a,a-Trifluorotoluene(FID)				98.36	62-128				WG462772
Sulfate	mg/l	83.5	85.0	101.	80-120	1.78	20	L444350-02	WG462997
Sulfate	mg/l	51.3	51.6	103.	80-120	0.583	20	L444680-08	WG463119
Sulfate	mg/l	62.7	62.6	103.	80-120	0.160	20	L444350-06	WG463098
Alkalinity	mg/l	236.	232.	100.	80-120	1.71	20	L444110-05	WG463222

Batch number /Run number / Sample number cross reference

WG462755: R1108668: L444110-01 02 03 04 05 06 07 08 09
WG462785: R1110108: L444110-01 02 03 04 05 06 07 08 09
WG462761: R1110888: L444110-01 02 03 04 05 06 07 08 09
WG462772: R1111090: L444110-01 02 03 04 05 06 07 08 09
WG462997: R1112248: L444110-01
WG463119: R1114008: L444110-09
WG463098: R1114028: L444110-03 04
WG463369: R1115708: L444110-01 02 03 04 05 06 07 08 09
WG462882: R1116310: L444110-01 02 03 04 05 06 07 08 09
WG463222: R1117588: L444110-01 02 03 04 05 06 07 08 09

* * Calculations are performed prior to rounding of reported values .
* Performance of this Analyte is outside of established criteria.
For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'

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West Linn, OR 97068

Quality Assurance Report
Level II

L444110

February 17, 2010

The data package includes a summary of the analytic results of the quality control samples required by the SW-846 or CWA methods. The quality control samples include a method blank, a laboratory control sample, and the matrix spike/matrix spike duplicate analysis. If a target parameter is outside the method limits, every sample that is effected is flagged with the appropriate qualifier in Appendix B of the analytic report.

Method Blank - an aliquot of reagent water carried through the entire analytic process. The method blank results indicate if any possible contamination exposure during the sample handling, digestion or extraction process, and analysis. Concentrations of target analytes above the reporting limit in the method blank are qualified with the "B" qualifier.

Laboratory Control Sample - is a sample of known concentration that is carried through the digestion/extraction and analysis process. The percent recovery, expressed as a percentage of the theoretical concentration, has statistical control limits indicating that the analytic process is "in control". If a target analyte is outside the control limits for the laboratory control sample or any other control sample, the parameter is flagged with a "J4" qualifier for all effected samples.

Matrix Spike and Matrix Spike Duplicate - is two aliquots of an environmental sample that is spiked with known concentrations of target analytes. The percent recovery of the target analytes also has statistical control limits. If any recoveries that are outside the method control limits, the sample that was selected for matrix spike/matrix spike duplicate analysis is flagged with either a "J5" or a "J6". The relative percent difference (%RPD) between the matrix spike and the matrix spike duplicate recoveries is all calculated. If the RPD is above the method limit, the effected samples are flagged with a "J3" qualifier.

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West Linn,OR 97068

Billing information:
Accounts Payable
1800 Blankenship Rd, Ste 440
West Linn,OR 97068

Report to: **Chris Kramer**
Email: **ckramer@slrcorp.com, shami**
Project Description: **Crowley-Vancouver**
City/State Collected: **WA**
Phone: **(503) 723-4423**
FAX:
Client Project #: **008.0205.00020**
Lab Project #: **SLRWLOR-CROWLEYVAN**
Collected by (print): **Chris Kramer**
Site/Facility ID#: **VANCOUVER, WA**
P.O.#: **008.0205.00020**
Collected by (signature):
Immediately Packed on Ice N__ Y X

Rush? (Lab MUST Be Notified)
__ Same Day 200%
__ Next Day.....100%
__ Two Day 50%
__ Three Day 25%

Date Results Needed
Email? __No X Yes
FAX? __No __Yes

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	No. of Cntrs	ALK 500mlHDPE-NoPres	FERUSFE 250mlAmb-HCl<2	MNDG 500mlHDPE-HNO3<2	NWTPHDX 1L-Amb-Add HCl <2	NWTPHGX 40mlAmb-HCl	Nitrate / Sulfate 125mlHDPE-NoPres	RSK175 40mlAmb-NoPres	Remarks/Contaminant	Sample # (lab only)
~~MW-24~~ MW-11		GW		2/10/10	830	11	X	X	X	X	X	X	X		L444418 - 01
MW-2		GW			1110	5				X	X				02
MW-4		GW			1135	5				X	X				03
MW-5		GW			1040	5				X	X				04
~~MW-6~~		~~GW~~				5				X	X				
MW-9		GW			1010	5				X	X				05
MW-10		GW			1148	5				X	X				06
MW-12		GW			935	5				X	X				07
MW-14		GW		✓	1340	5				X	X				08

*Matrix: **SS** - Soil **GW** - Groundwater **WW** - WasteWater **DW** - Drinking Water **OT** - Other_____

Remarks:

pH _____ Temp _____
Flow _____ Other _____

4355 9295 7792
4355 9295 7794

Chain of Custody Page 1 of 2
F090

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Phone: (615) 758-5858
Fax: (615) 758-5859

(lab use only)
Acctnum: SLRWLOR
Template/Prelogin: T62780 P310372
Cooler #: 2/3/10 JKC
Shipped Via: FedEx Saver

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Kristen Kramer	2/10/10	3:30	
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)
			Kamal Dhir

Samples returned via: ☐ UPS ☒ FedEx ☐ Courier ☐
Temp: 3.4°C Bottles Received: 7343B
Date: 2-11-10 Time: 0900
Condition: (lab use only)
COC Seal Intact: __Y __N __NA
pH Checked: NCF: ✓

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West Linn,OR 97068

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Chain of Custody
Page 1 of 1

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Phone: (615) 758-5858
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Report to: Chris Kramer
Email: ckramer@slrcorp.com, shami
Project Description: Crowley-Vancouver
City/State Collected: Vancouver, WA
Phone: (503) 723-4423
FAX:
Client Project #: 008.0205.00020
Lab Project #: SLRWLOR-CROWLEYVAN
Collected by (print): Chris Kramer
Site/Facility ID#: VANCOUVER, WA
P.O.#: 008.0205.00020
Collected by (signature):
Immediately Packed on Ice N__ Y X

Rush? (Lab MUST Be Notified)
__ Same Day 200%
__ Next Day.....100%
__ Two Day.....50%
__ Three Day.....25%

Date Results Needed
Email? __No X Yes
FAX? __No __Yes

(lab use only)
Acctnum: SLRWLOR
Template/Prelogin: T62780 P310372
Cooler #: 2/3/10 IRC
Shipped Via: FedEx Saver

Analysis/Container/Preservative

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	No. of Cntrs	ALK 500mlHDPE-NoPres	FERUSFE 250mlAmb-HCl	MNDG 500mlHDPE-HNO3	NWTPHDX 1L-Amb-Add HCl	NWTPHGX 40mlAmb HCl	Nitrate / Sulfate 125mlHDPE-NoPres	RSK175 40mlAmb-NoPres	Remarks/Contaminant	Sample # (lab only)
MW-16		GW		2/10/10	910	5				X	X				L444418-09
MW-17		GW			1407	5				X	X				10
~~MW-18~~		~~GW~~				5				X	X				
MW-22		GW			1236	5				X	X				11
RW-1		GW			1315	5				X	X				12
Rinsate (SCH)		GW			2:25	5				X	X				13
Duplicate		GW			12:38	5				X	X				14

*Matrix: SS - Soil GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other_____

Remarks:

pH _____ Temp _____
Flow _____ Other _____

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Raechel Flegner	2/10/10	3:30	
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)

4355 9295 9774

Samples returned via: ☐ UPS ☒ FedEx ☐ Courier ☐
Temp: 3.4°C
Bottles Received: 73 73 TB
Date: 2-11-10
Time: 0900

Condition: (lab use only)
COC Seal Intact: ___ Y ___ N ✓ NA
pH Checked:
NCF: ✓

ENVIRONMENTAL SCIENCE CORP.

SAMPLE NON-CONFORMANCE FORM

Login No.: L944418

Date: 2-11-10

Evaluated by: Kenneth

Client: SLR

Non-Conformance (check applicable items)

____	Chain of Custody is missing	X	Login Clarification Needed
____	Improper container type	____	Improper preservation
____	Chain of custody is incomplete	____	Container lid not intact
X	Parameter(s) past holding time	____	Improper temperature
____	Broken container(s) see below	____	Broken container: sufficient sample volume remains for analysis requested

____ Insufficient packing material around container

____ Insufficient packing material inside cooler

____ Improper handling by carrier (FedEx / UPS / Courier)

____ Sample was frozen

Comments: (1) Id MW-11 FeruSFE came in out of Hold (2) Received in cooler 3 vials and 1 Oro AMB LTR. Not on - Id Rinsate Tb chain, 3 vials 2 Oro AMB LTRS Id Duplicate

TSR Initials: QW / DK

Login Instructions:

Client informed by (call) / email / fax / voice mail date: 2/11 time: 1110

Client contact: Chris Kramer

(1) Run FERUSFE out of hold & qualify

(2) Log "Rinsate" + "Duplicate" samples for NWTPH GX + NWTPHDX

64

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West Linn, OR 97068

Report Summary

Wednesday February 17, 2010

Report Number: L444418
Samples Received: 02/11/10
Client Project: 008.0205.00020

Description: Crowley-Vancouver

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By: Jarred Willis, ESC Representative

Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - I-2327, CT - PH-0197, FL - E87487
GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016, NC - ENV375,DW21704, ND - R-140
NJ - TN002, NJ NELAP - TN002, SC - 84004, TN - 2006, VA - 00109, WV - 233
AZ - 0612, MN - 047-999-395, NY - 11742, WI - 998093910

Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.

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REPORT OF ANALYSIS

February 17, 2010

Chris Kramer
SLR International Corp. - West Linn
1800 Blankenship Road, Suite 440
West Linn, OR 97068

ESC Sample # : L444418-01

Date Received : February 11, 2010
Description : Crowley-Vancouver

Site ID : VANCOUVER, WA

Sample ID : MW-11

Project # : 008.0205.00020

Collected By : Chris Kramer
Collection Date : 02/10/10 08:30

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Nitrate	870	31.	100	ug/l		9056	02/12/10	1
Sulfate	6600	210	5000	ug/l		9056	02/12/10	1
Alkalinity	61000	3000	20000	ug/l		2320B	02/16/10	1
Methane	U	2.0	10.	ug/l		RSK175	02/15/10	1
Ethane	U	4.0	13.	ug/l		RSK175	02/15/10	1
Ethene	U	5.7	13.	ug/l		RSK175	02/15/10	1
Ferrous Iron	200	12.	50.	ug/l		3500Fe-	02/11/10	1
Manganese,Dissolved	89.	0.25	2.0	ug/l		6020	02/15/10	1
Gasoline Range Organics-NWTPH	U	33.	100	ug/l		NWTPHGX	02/11/10	1
Surrogate Recovery a,a,a-Trifluorotoluene(FID)	88.0			% Rec.		NWTPHGX	02/11/10	1
Diesel Range Organics (DRO)	6400	660	2000	ug/l		NWTPHDX	02/16/10	20
Residual Range Organics (RRO)	1800	82.	250	ug/l		NWTPHDX	02/15/10	1
Surrogate Recovery o-Terphenyl	0.00			% Rec.	J7	NWTPHDX	02/16/10	20

U = ND (Not Detected)
RDL = Reported Detection Limit = LOQ = PQL = EQL
MDL = Minimum Detection Limit = LOD = SQL(TRRP)
Note:
The reported analytical results relate only to the sample submitted.
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REPORT OF ANALYSIS

February 17, 2010

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West Linn, OR 97068

ESC Sample # : L444418-02

Site ID : VANCOUVER, WA

Project # : 008.0205.00020

Date Received : February 11, 2010
Description : Crowley-Vancouver

Sample ID : MW-2

Collected By : Chris Kramer
Collection Date : 02/10/10 11:10

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Gasoline Range Organics-NWTPH	45.	33.	100	ug/l	J	NWTPHGX	02/11/10	1
Surrogate Recovery a,a,a-Trifluorotoluene(FID)	88.9			% Rec.		NWTPHGX	02/11/10	1
Diesel Range Organics (DRO)	U	33.	100	ug/l		NWTPHDX	02/15/10	1
Residual Range Organics (RRO)	U	82.	250	ug/l		NWTPHDX	02/15/10	1
Surrogate Recovery o-Terphenyl	95.0			% Rec.		NWTPHDX	02/15/10	1

U = ND (Not Detected)
RDL = Reported Detection Limit = LOQ = PQL = EQL
MDL = Minimum Detection Limit = LOD = SQL(TRRP)
Note:
The reported analytical results relate only to the sample submitted.

Reported: 02/17/10 17:24 Printed: 02/17/10 17:25

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REPORT OF ANALYSIS

February 17, 2010

Chris Kramer
SLR International Corp. - West Linn
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West Linn, OR 97068

ESC Sample # : L444418-03

Date Received : February 11, 2010
Description : Crowley-Vancouver

Site ID : VANCOUVER, WA

Project # : 008.0205.00020

Sample ID : MW-4

Collected By : Chris Kramer
Collection Date : 02/10/10 11:35

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Gasoline Range Organics-NWTPH	U	33.	100	ug/l		NWTPHGX	02/11/10	1
Surrogate Recovery a,a,a-Trifluorotoluene(FID)	88.8			% Rec.		NWTPHGX	02/11/10	1
Diesel Range Organics (DRO)	730	33.	100	ug/l		NWTPHDX	02/15/10	1
Residual Range Organics (RRO)	100	82.	250	ug/l	J	NWTPHDX	02/15/10	1
Surrogate Recovery o-Terphenyl	82.3			% Rec.		NWTPHDX	02/15/10	1

U = ND (Not Detected)
RDL = Reported Detection Limit = LOQ = PQL = EQL
MDL = Minimum Detection Limit = LOD = SQL(TRRP)
Note:
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REPORT OF ANALYSIS

February 17, 2010

Chris Kramer
SLR International Corp. - West Linn
1800 Blankenship Road, Suite 440
West Linn, OR 97068

ESC Sample # : L444418-04

Site ID : VANCOUVER, WA

Project # : 008.0205.00020

Date Received : February 11, 2010
Description : Crowley-Vancouver

Sample ID : MW-5

Collected By : Chris Kramer
Collection Date : 02/10/10 10:40

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Gasoline Range Organics-NWTPH	U	33.	100	ug/l		NWTPHGX	02/11/10	1
Surrogate Recovery a,a,a-Trifluorotoluene(FID)	88.8			% Rec.		NWTPHGX	02/11/10	1
Diesel Range Organics (DRO)	7000	160	500	ug/l		NWTPHDX	02/16/10	5
Residual Range Organics (RRO)	1500	82.	250	ug/l		NWTPHDX	02/15/10	1
Surrogate Recovery o-Terphenyl	96.1			% Rec.		NWTPHDX	02/15/10	1

U = ND (Not Detected)
RDL = Reported Detection Limit = LOQ = PQL = EQL
MDL = Minimum Detection Limit = LOD = SQL(TRRP)
Note:
The reported analytical results relate only to the sample submitted.

Reported: 02/17/10 17:24 Printed: 02/17/10 17:25

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REPORT OF ANALYSIS

February 17, 2010

Chris Kramer
SLR International Corp. - West Linn
1800 Blankenship Road, Suite 440
West Linn, OR 97068

ESC Sample # : L444418-05

Site ID : VANCOUVER, WA

Project # : 008.0205.00020

Date Received : February 11, 2010
Description : Crowley-Vancouver

Sample ID : MW-9

Collected By : Chris Kramer
Collection Date : 02/10/10 10:10

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Gasoline Range Organics-NWTPH	U	33.	100	ug/l		NWTPHGX	02/11/10	1
Surrogate Recovery a,a,a-Trifluorotoluene(FID)	88.4			% Rec.		NWTPHGX	02/11/10	1
Diesel Range Organics (DRO)	600	33.	100	ug/l		NWTPHDX	02/15/10	1
Residual Range Organics (RRO)	740	82.	250	ug/l		NWTPHDX	02/15/10	1
Surrogate Recovery o-Terphenyl	70.7			% Rec.		NWTPHDX	02/15/10	1

U = ND (Not Detected)
RDL = Reported Detection Limit = LOQ = PQL = EQL
MDL = Minimum Detection Limit = LOD = SQL(TRRP)
Note:
The reported analytical results relate only to the sample submitted.
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REPORT OF ANALYSIS

February 17, 2010

Chris Kramer
SLR International Corp. - West Linn
1800 Blankenship Road, Suite 440
West Linn, OR 97068

ESC Sample # : L444418-06

Site ID : VANCOUVER, WA

Project # : 008.0205.00020

Date Received : February 11, 2010
Description : Crowley-Vancouver

Sample ID : MW-10

Collected By : Chris Kramer
Collection Date : 02/10/10 11:48

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Gasoline Range Organics-NWTPH	U	33.	100	ug/l		NWTPHGX	02/11/10	1
Surrogate Recovery a,a,a-Trifluorotoluene(FID)	89.2			% Rec.		NWTPHGX	02/11/10	1
Diesel Range Organics (DRO)	3500	33.	100	ug/l		NWTPHDX	02/15/10	1
Residual Range Organics (RRO)	940	82.	250	ug/l		NWTPHDX	02/15/10	1
Surrogate Recovery o-Terphenyl	83.5			% Rec.		NWTPHDX	02/15/10	1

U = ND (Not Detected)
RDL = Reported Detection Limit = LOQ = PQL = EQL
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REPORT OF ANALYSIS

February 17, 2010

Chris Kramer
SLR International Corp. - West Linn
1800 Blankenship Road, Suite 440
West Linn, OR 97068

ESC Sample # : L444418-07

Date Received : February 11, 2010
Description : Crowley-Vancouver

Site ID : VANCOUVER, WA

Sample ID : MW-12

Project # : 008.0205.00020

Collected By : Chris Kramer
Collection Date : 02/10/10 09:35

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Gasoline Range Organics-NWTPH	U	33.	100	ug/l		NWTPHGX	02/11/10	1
Surrogate Recovery a,a,a-Trifluorotoluene(FID)	88.5			% Rec.		NWTPHGX	02/11/10	1
Diesel Range Organics (DRO)	4300	33.	100	ug/l		NWTPHDX	02/15/10	1
Residual Range Organics (RRO)	690	82.	250	ug/l		NWTPHDX	02/15/10	1
Surrogate Recovery o-Terphenyl	71.8			% Rec.		NWTPHDX	02/15/10	1

U = ND (Not Detected)
RDL = Reported Detection Limit = LOQ = PQL = EQL
MDL = Minimum Detection Limit = LOD = SQL(TRRP)
Note:
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REPORT OF ANALYSIS

February 17, 2010

Chris Kramer
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1800 Blankenship Road, Suite 440
West Linn, OR 97068

ESC Sample # : L444418-08

Date Received : February 11, 2010
Description : Crowley-Vancouver

Site ID : VANCOUVER, WA

Project # : 008.0205.00020

Sample ID : MW-14

Collected By : Chris Kramer
Collection Date : 02/10/10 13:40

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Gasoline Range Organics-NWTPH	U	33.	100	ug/l		NWTPHGX	02/11/10	1
Surrogate Recovery a,a,a-Trifluorotoluene(FID)	88.4			% Rec.		NWTPHGX	02/11/10	1
Diesel Range Organics (DRO)	500	33.	100	ug/l		NWTPHDX	02/16/10	1
Residual Range Organics (RRO)	130	82.	250	ug/l	J	NWTPHDX	02/16/10	1
Surrogate Recovery o-Terphenyl	85.3			% Rec.		NWTPHDX	02/16/10	1

U = ND (Not Detected)
RDL = Reported Detection Limit = LOQ = PQL = EQL
MDL = Minimum Detection Limit = LOD = SQL(TRRP)
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REPORT OF ANALYSIS

February 17, 2010

Chris Kramer
SLR International Corp. - West Linn
1800 Blankenship Road, Suite 440
West Linn, OR 97068

ESC Sample # : L444418-09

Date Received : February 11, 2010
Description : Crowley-Vancouver

Site ID : VANCOUVER, WA

Sample ID : MW-16

Project # : 008.0205.00020

Collected By : Chris Kramer
Collection Date : 02/10/10 09:10

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Gasoline Range Organics-NWTPH	U	33.	100	ug/l		NWTPHGX	02/11/10	1
Surrogate Recovery a,a,a-Trifluorotoluene(FID)	89.1			% Rec.		NWTPHGX	02/11/10	1
Diesel Range Organics (DRO)	U	33.	100	ug/l		NWTPHDX	02/15/10	1
Residual Range Organics (RRO)	U	82.	250	ug/l		NWTPHDX	02/15/10	1
Surrogate Recovery o-Terphenyl	101.			% Rec.		NWTPHDX	02/15/10	1

U = ND (Not Detected)
RDL = Reported Detection Limit = LOQ = PQL = EQL
MDL = Minimum Detection Limit = LOD = SQL(TRRP)
Note:
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REPORT OF ANALYSIS

February 17, 2010

Chris Kramer
SLR International Corp. - West Linn
1800 Blankenship Road, Suite 440
West Linn, OR 97068

ESC Sample # : L444418-10

Site ID : VANCOUVER, WA

Project # : 008.0205.00020

Date Received : February 11, 2010
Description : Crowley-Vancouver

Sample ID : MW-17

Collected By : Chris Kramer
Collection Date : 02/10/10 14:07

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Gasoline Range Organics-NWTPH	U	33.	100	ug/l		NWTPHGX	02/11/10	1
Surrogate Recovery a,a,a-Trifluorotoluene(FID)	88.5			% Rec.		NWTPHGX	02/11/10	1
Diesel Range Organics (DRO)	U	33.	100	ug/l		NWTPHDX	02/16/10	1
Residual Range Organics (RRO)	U	82.	250	ug/l		NWTPHDX	02/16/10	1
Surrogate Recovery o-Terphenyl	91.1			% Rec.		NWTPHDX	02/16/10	1

U = ND (Not Detected)
RDL = Reported Detection Limit = LOQ = PQL = EQL
MDL = Minimum Detection Limit = LOD = SQL(TRRP)
Note:
The reported analytical results relate only to the sample submitted.

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REPORT OF ANALYSIS

February 17, 2010

Chris Kramer
SLR International Corp. - West Linn
1800 Blankenship Road, Suite 440
West Linn, OR 97068

ESC Sample # : L444418-11

Date Received : February 11, 2010
Description : Crowley-Vancouver

Site ID : VANCOUVER, WA

Project # : 008.0205.00020

Sample ID : MW-22

Collected By : Chris Kramer
Collection Date : 02/10/10 12:36

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Gasoline Range Organics-NWTPH	200	33.	100	ug/l		NWTPHGX	02/11/10	1
Surrogate Recovery a,a,a-Trifluorotoluene(FID)	89.4			% Rec.		NWTPHGX	02/11/10	1
Diesel Range Organics (DRO)	14000	660	2000	ug/l		NWTPHDX	02/16/10	20
Residual Range Organics (RRO)	3100	82.	250	ug/l		NWTPHDX	02/15/10	1
Surrogate Recovery o-Terphenyl	0.00			% Rec.	J7	NWTPHDX	02/16/10	20

U = ND (Not Detected)
RDL = Reported Detection Limit = LOQ = PQL = EQL
MDL = Minimum Detection Limit = LOD = SQL(TRRP)
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REPORT OF ANALYSIS

February 17, 2010

Chris Kramer
SLR International Corp. - West Linn
1800 Blankenship Road, Suite 440
West Linn, OR 97068

ESC Sample # : L444418-12

Site ID : VANCOUVER, WA

Project # : 008.0205.00020

Date Received : February 11, 2010
Description : Crowley-Vancouver

Sample ID : RW-1

Collected By : Chris Kramer
Collection Date : 02/10/10 15:15

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Gasoline Range Organics-NWTPH	U	33.	100	ug/l		NWTPHGX	02/11/10	1
Surrogate Recovery a,a,a-Trifluorotoluene(FID)	89.4			% Rec.		NWTPHGX	02/11/10	1
Diesel Range Organics (DRO)	2900	160	500	ug/l		NWTPHDX	02/17/10	5
Residual Range Organics (RRO)	490	82.	250	ug/l		NWTPHDX	02/16/10	1
Surrogate Recovery o-Terphenyl	67.4			% Rec.		NWTPHDX	02/16/10	1

U = ND (Not Detected)
RDL = Reported Detection Limit = LOQ = PQL = EQL
MDL = Minimum Detection Limit = LOD = SQL(TRRP)
Note:
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REPORT OF ANALYSIS

February 17, 2010

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1800 Blankenship Road, Suite 440
West Linn, OR 97068

ESC Sample # : L444418-13

Date Received : February 11, 2010
Description : Crowley-Vancouver

Site ID : VANCOUVER, WA

Sample ID : RINSATE

Project # : 008.0205.00020

Collected By : Chris Kramer
Collection Date : 02/10/10 14:25

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Gasoline Range Organics-NWTPH	U	33.	100	ug/l		NWTPHGX	02/12/10	1
Surrogate Recovery a,a,a-Trifluorotoluene(FID)	87.7			% Rec.		NWTPHGX	02/12/10	1
Diesel Range Organics (DRO)	50.	33.	100	ug/l	J	NWTPHDX	02/16/10	1
Residual Range Organics (RRO)	U	82.	250	ug/l		NWTPHDX	02/16/10	1
Surrogate Recovery o-Terphenyl	93.4			% Rec.		NWTPHDX	02/16/10	1

U = ND (Not Detected)
RDL = Reported Detection Limit = LOQ = PQL = EQL
MDL = Minimum Detection Limit = LOD = SQL(TRRP)
Note:
The reported analytical results relate only to the sample submitted.

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REPORT OF ANALYSIS

February 17, 2010

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1800 Blankenship Road, Suite 440
West Linn, OR 97068

ESC Sample # : L444418-14

Date Received : February 11, 2010
Description : Crowley-Vancouver

Site ID : VANCOUVER, WA

Project # : 008.0205.00020

Sample ID : DUPLICATE

Collected By : Chris Kramer
Collection Date : 02/10/10 12:38

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Gasoline Range Organics-NWTPH	190	33.	100	ug/l		NWTPHGX	02/12/10	1
Surrogate Recovery a,a,a-Trifluorotoluene(FID)	90.2			% Rec.		NWTPHGX	02/12/10	1
Diesel Range Organics (DRO)	17000	660	2000	ug/l		NWTPHDX	02/17/10	20
Residual Range Organics (RRO)	3800	82.	250	ug/l		NWTPHDX	02/16/10	1
Surrogate Recovery o-Terphenyl	0.00			% Rec.	J7	NWTPHDX	02/17/10	20

U = ND (Not Detected)
RDL = Reported Detection Limit = LOQ = PQL = EQL
MDL = Minimum Detection Limit = LOD = SQL(TRRP)
Note:
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Reported: 02/17/10 17:24 Printed: 02/17/10 17:25

Attachment A
List of Analytes with QC Qualifiers

Sample Number	Work Group	Sample Type	Analyte	Run ID	Qualifier
L444418-01	WG462882	SAMP	o-Terphenyl	R1116310	J7
L444418-02	WG462946	SAMP	Gasoline Range Organics-NWTPH	R1117569	J
L444418-03	WG462882	SAMP	Residual Range Organics (RRO)	R1116310	J
L444418-08	WG463394	SAMP	Residual Range Organics (RRO)	R1118488	J
L444418-11	WG462882	SAMP	o-Terphenyl	R1116310	J7
L444418-13	WG463394	SAMP	Diesel Range Organics (DRO)	R1118488	J
L444418-14	WG463394	SAMP	o-Terphenyl	R1118488	J7

Attachment B
Explanation of QC Qualifier Codes

Qualifier	Meaning
J	(EPA) - Estimated value below the lowest calibration point. Confidence correlates with concentration.
J7	Surrogate recovery limits cannot be evaluated; surrogates were diluted out

Qualifier Report Information

ESC utilizes sample and result qualifiers as set forth by the EPA Contract Laboratory Program and as required by most certifying bodies including NELAC. In addition to the EPA qualifiers adopted by ESC, we have implemented ESC qualifiers to provide more information pertaining to our analytical results. Each qualifier is designated in the qualifier explanation as either EPA or ESC. Data qualifiers are intended to provide the ESC client with more detailed information concerning the potential bias of reported data. Because of the wide range of constituents and variety of matrices incorporated by most EPA methods,it is common for some compounds to fall outside of established ranges. These exceptions are evaluated and all reported data is valid and useable unless qualified as 'R' (Rejected).

Definitions

Accuracy - The relationship of the observed value of a known sample to the true value of a known sample. Represented by percent recovery and relevant to samples such as: control samples, matrix spike recoveries, surrogate recoveries, etc.

Precision - The agreement between a set of samples or between duplicate samples. Relates to how close together the results are and is represented by Relative Percent Differrence.

Surrogate - Organic compounds that are similar in chemical composition, extraction, and chromotography to analytes of interest. The surrogates are used to determine the probable response of the group of analytes that are chemically related to the surrogate compound. Surrogates are added to the sample and carried through all stages of preparation and analyses.

TIC - Tentatively Identified Compound: Compounds detected in samples that are not target compounds, internal standards, system monitoring compounds, or surrogates.

Summary of Remarks For Samples Printed
02/17/10 at 17:25:12

TSR Signing Reports: 358
R5 - Desired TAT

Log all arsenic gw samples as ASG.

Sample: L444418-01 Account: SLRWLOR Received: 02/11/10 09:00 Due Date: 02/18/10 00:00 RPT Date: 02/17/10 17:24
Run Ferruos Fe out of hold per NCF
Sample: L444418-02 Account: SLRWLOR Received: 02/11/10 09:00 Due Date: 02/18/10 00:00 RPT Date: 02/17/10 17:24
Sample: L444418-03 Account: SLRWLOR Received: 02/11/10 09:00 Due Date: 02/18/10 00:00 RPT Date: 02/17/10 17:24
Sample: L444418-04 Account: SLRWLOR Received: 02/11/10 09:00 Due Date: 02/18/10 00:00 RPT Date: 02/17/10 17:24
Sample: L444418-05 Account: SLRWLOR Received: 02/11/10 09:00 Due Date: 02/18/10 00:00 RPT Date: 02/17/10 17:24
Sample: L444418-06 Account: SLRWLOR Received: 02/11/10 09:00 Due Date: 02/18/10 00:00 RPT Date: 02/17/10 17:24
Sample: L444418-07 Account: SLRWLOR Received: 02/11/10 09:00 Due Date: 02/18/10 00:00 RPT Date: 02/17/10 17:24
Sample: L444418-08 Account: SLRWLOR Received: 02/11/10 09:00 Due Date: 02/18/10 00:00 RPT Date: 02/17/10 17:24
Sample: L444418-09 Account: SLRWLOR Received: 02/11/10 09:00 Due Date: 02/18/10 00:00 RPT Date: 02/17/10 17:24
Sample: L444418-10 Account: SLRWLOR Received: 02/11/10 09:00 Due Date: 02/18/10 00:00 RPT Date: 02/17/10 17:24
Sample: L444418-11 Account: SLRWLOR Received: 02/11/10 09:00 Due Date: 02/18/10 00:00 RPT Date: 02/17/10 17:24
Sample: L444418-12 Account: SLRWLOR Received: 02/11/10 09:00 Due Date: 02/18/10 00:00 RPT Date: 02/17/10 17:24
Sample: L444418-13 Account: SLRWLOR Received: 02/11/10 09:00 Due Date: 02/18/10 00:00 RPT Date: 02/17/10 17:24
Sample: L444418-14 Account: SLRWLOR Received: 02/11/10 09:00 Due Date: 02/18/10 00:00 RPT Date: 02/17/10 17:24

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Chris Kramer
1800 Blankenship Road, Suite 440

West Linn, OR 97068

Quality Assurance Report
Level II

L444418

February 17, 2010

Laboratory Blank

Analyte	Result	Units	% Rec	Limit	Batch	Date Analyzed
Ferrous Iron	< .05	mg/l			WG462938	02/11/10 11:36
Nitrate	< .1	mg/l			WG462904	02/11/10 23:28
Sulfate	< 5	mg/l			WG462904	02/11/10 23:28
Ethane	< .013	mg/l			WG463388	02/15/10 14:53
Ethene	< .013	mg/l			WG463388	02/15/10 14:53
Methane	< .01	mg/l			WG463388	02/15/10 14:53
Diesel Range Organics (DRO)	< .1	ppm	92.72	50-150	WG462882	02/15/10 11:39
o-Terphenyl		% Rec.			WG462882	02/15/10 11:39
Manganese,Dissolved	< .002	mg/l			WG463437	02/15/10 20:39
Gasoline Range Organics-NWTPH	< .1	mg/l			WG462946	02/11/10 16:14
a,a,a-Trifluorotoluene(FID)		% Rec.	89.03	62-128	WG462946	02/11/10 16:14
Alkalinity	< 20	mg/l			WG463223	02/16/10 16:37
Diesel Range Organics (DRO)	< .1	ppm			WG463394	02/16/10 15:46
o-Terphenyl		% Rec.	85.46	50-150	WG463394	02/16/10 15:46

Duplicate

Analyte	Units	Result	Duplicate	RPD	Limit	Ref Samp	Batch
Ferrous Iron	mg/l	1.10	1.10	1.83	20	L444384-03	WG462938
Nitrate	mg/l	0	0	0	20	L444384-01	WG462904
Sulfate	mg/l	0	4.00	NA	20	L444384-01	WG462904
Sulfate	mg/l	34.0	34.0	1.48	20	L444350-01	WG462904
Manganese,Dissolved	mg/l	0.0870	0.0890	2.27	20	L444418-01	WG463437
Alkalinity	mg/l	130.	130.	2.28	20	L444680-07	WG463223
Alkalinity	mg/l	310.	310.	0	20	L444384-04	WG463223

Laboratory Control Sample

Analyte	Units	Known Val	Result	% Rec	Limit	Batch
Ferrous Iron	mg/l	1	0.955	95.5	85-115	WG462938
Nitrate	mg/l	8	8.15	102.	90-110	WG462904
Sulfate	mg/l	40	39.8	99.5	90-110	WG462904
Ethane	mg/l	.645	0.628	97.4	70-130	WG463388
Ethene	mg/l	.635	0.586	92.3	70-130	WG463388
Methane	mg/l	.339	0.267	78.7	70-130	WG463388

* Performance of this Analyte is outside of established criteria.
For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'

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SLR International Corp. - West Linn, OR
Chris Kramer
1800 Blankenship Road, Suite 440

West Linn, OR 97068

Quality Assurance Report
Level II

L444418

February 17, 2010

Laboratory Control Sample

Analyte	Units	Known Val	Result	% Rec	Limit	Batch
Diesel Range Organics (DRO)	mg/l	.75	0.700	93.3	50-150	WG462882
Residual Range Organics (RRO)	mg/l	.75	0.506	67.5*	0-0	WG462882
o-Terphenyl				92.23	50-150	WG462882
Manganese,Dissolved	mg/l	.0567	0.0572	101.	85-115	WG463437
Gasoline Range Organics-NWTPH	mg/l	5.5	4.37	79.5	70-124	WG462946
a,a,a-Trifluorotoluene(FID)				94.64	62-128	WG462946
Alkalinity	mg/l	40	40.2	101.	85-115	WG463223
Diesel Range Organics (DRO)	mg/l	.75	0.689	91.9	50-150	WG463394
Residual Range Organics (RRO)	mg/l	.75	0.538	71.8*	0-0	WG463394
o-Terphenyl				90.38	50-150	WG463394

Laboratory Control Sample Duplicate

Analyte	Units	Result	Ref	%Rec	Limit	RPD	Limit	Batch
Ferrous Iron	mg/l	0.959	0.955	96.0	85-115	0.418	20	WG462938
Nitrate	mg/l	8.14	8.15	102.	90-110	0.123	20	WG462904
Sulfate	mg/l	39.7	39.8	99.0	90-110	0.252	20	WG462904
Ethane	mg/l	0.643	0.628	100.	70-130	2.35	25	WG463388
Ethene	mg/l	0.599	0.586	94.0	70-130	2.29	25	WG463388
Methane	mg/l	0.273	0.267	80.0	70-130	2.20	25	WG463388
Diesel Range Organics (DRO)	mg/l	0.697	0.700	93.0	50-150	0.356	20	WG462882
Residual Range Organics (RRO)	mg/l	0.503	0.506	67*	-	0.590*	0	WG462882
o-Terphenyl				87.41	50-150			WG462882
Gasoline Range Organics-NWTPH	mg/l	4.44	4.37	81.0	70-124	1.49	20	WG462946
a,a,a-Trifluorotoluene(FID)				94.84	62-128			WG462946
Alkalinity	mg/l	39.3	40.2	98.0	85-115	2.26	20	WG463223
Diesel Range Organics (DRO)	mg/l	0.688	0.689	92.0	50-150	0.191	20	WG463394
Residual Range Organics (RRO)	mg/l	0.543	0.538	72*	-	0.875*	0	WG463394
o-Terphenyl				83.86	50-150			WG463394

Matrix Spike

Analyte	Units	MS Res	Ref Res	TV	% Rec	Limit	Ref Samp	Batch
Ferrous Iron	mg/l	1.69	0.210	1.5	98.7	80-120	L444384-02	WG462938
Nitrate	mg/l	4.89	0	5	97.8	80-120	L444384-02	WG462904
Sulfate	mg/l	49.8	0	50	99.6	80-120	L444384-02	WG462904

* Performance of this Analyte is outside of established criteria.
For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'

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SLR International Corp. - West Linn, OR
Chris Kramer
1800 Blankenship Road, Suite 440

West Linn, OR 97068

Quality Assurance Report
Level II

L444418

February 17, 2010

Analyte	Units	Matrix Spike MS Res	Ref Res	TV	% Rec	Limit	Ref Samp	Batch
Manganese,Dissolved	mg/l	0.145	0.0890	.0567	98.8	75-125	L444418-01	WG463437
Gasoline Range Organics-NWTPH	mg/l	4.39	0	5.5	79.8	58-122	L444418-01	WG462946
a,a,a-Trifluorotoluene(FID)					94.86	62-128		WG462946
Alkalinity	mg/l	398.	300.	200	49.0*	80-120	L444643-02	WG463223

Analyte	Units	Matrix Spike Duplicate MSD	Ref	%Rec	Limit	RPD	Limit	Ref Samp	Batch
Ferrous Iron	mg/l	1.78	1.69	105.	80-120	5.19	20	L444384-02	WG462938
Nitrate	mg/l	4.86	4.89	97.2	80-120	0.615	20	L444384-02	WG462904
Sulfate	mg/l	49.6	49.8	99.2	80-120	0.402	20	L444384-02	WG462904
Manganese,Dissolved	mg/l	0.137	0.145	84.6	75-125	5.67	20	L444418-01	WG463437
Gasoline Range Organics-NWTPH	mg/l	4.42	4.39	80.4	58-122	0.743	20	L444418-01	WG462946
a,a,a-Trifluorotoluene(FID)				94.10	62-128				WG462946
Alkalinity	mg/l	398.	398.	49.0*	80-120	0	20	L444643-02	WG463223

Batch number /Run number / Sample number cross reference

WG462938: R1110988: L444418-01
WG462904: R1112469: L444418-01
WG463388: R1115728: L444418-01
WG462882: R1116310: L444418-01 02 03 04 05 06 07 09 11
WG463437: R1116888: L444418-01
WG462946: R1117569: L444418-01 02 03 04 05 06 07 08 09 10 11 12 13 14
WG463223: R1118048: L444418-01
WG463394: R1118488: L444418-08 10 12 13 14

* * Calculations are performed prior to rounding of reported values .
* Performance of this Analyte is outside of established criteria.
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The data package includes a summary of the analytic results of the quality control samples required by the SW-846 or CWA methods. The quality control samples include a method blank, a laboratory control sample, and the matrix spike/matrix spike duplicate analysis. If a target parameter is outside the method limits, every sample that is effected is flagged with the appropriate qualifier in Appendix B of the analytic report.

Method Blank - an aliquot of reagent water carried through the entire analytic process. The method blank results indicate if any possible contamination exposure during the sample handling, digestion or extraction process, and analysis. Concentrations of target analytes above the reporting limit in the method blank are qualified with the "B" qualifier.

Laboratory Control Sample - is a sample of known concentration that is carried through the digestion/extraction and analysis process. The percent recovery, expressed as a percentage of the theoretical concentration, has statistical control limits indicating that the analytic process is "in control". If a target analyte is outside the control limits for the laboratory control sample or any other control sample, the parameter is flagged with a "J4" qualifier for all effected samples.

Matrix Spike and Matrix Spike Duplicate - is two aliquots of an environmental sample that is spiked with known concentrations of target analytes. The percent recovery of the target analytes also has statistical control limits. If any recoveries that are outside the method control limits, the sample that was selected for matrix spike/matrix spike duplicate analysis is flagged with either a "J5" or a "J6". The relative percent difference (%RPD) between the matrix spike and the matrix spike duplicate recoveries is all calculated. If the RPD is above the method limit, the effected samples are flagged with a "J3" qualifier.