September 28, 2016 Project No. 923-1000-002.R273

Mr. Bill Kombol
Palmer Coking Coal Company
31407 Highway 169
PO Box 10
Black Diamond, WA 98010

RE: LANDSBURG MINE SITE INTERIM GROUNDWATER MONITORING REPORT – JUNE 2016

Dear Bill:

Golder Associates Inc. (Golder) completed an interim groundwater monitoring event at the Landsburg Mine Site during June 2016. Groundwater samples were collected from monitoring wells LMW-2, LMW-3, LMW-4, LMW-5, LMW-6, LMW-7, LMW-8, LMW-9, LMW-10, and LMW-11 (Figure 1). Monitoring wells LMW-2, LMW-4 and LMW-10 are completed to monitor shallow and deeper zones within the north end of the Rogers Coal Mine subsidence trench. Monitoring wells LMW-3 and LMW-5 are completed to monitor the shallow (~40 feet depth) and deeper zone (~250 feet depth), respectively, within the Rogers Coal Seam at the south end of the mine. Figure 2 presents a cross-section along the strike at the coal seam that also depicts the location of the monitoring wells. Monitoring well LMW-8 is receiving groundwater before discharge from Portal 3 and the mine access incline at the south end of the Rogers Coal Mine. These wells lay along the primary pathways for detection of a chemical release from the mine, were one to occur. Groundwater samples were also collected from well LMW-9 and the deep well LMW-11, which monitor groundwater from within the Rogers Coal Mine near its south end. Wells LMW-9 and LMW-11 are receiving groundwater from near the top of the water table and near the bottom of the mine, respectively. Wells LMW-6 and LMW-7 monitor groundwater from the Frasier and Landsburg Coal Mines to the west and east of the Rogers Coal Mine, respectively.

Groundwater sampling was conducted in accordance with the *Draft Interim Groundwater Monitoring Plan, Landsburg Mine Site* (Golder 1997)[1], and included the following activities:

- Measurement of static water levels at monitoring wells.
- Well purging to insure sample representativeness with the currently installed dedicated pumping systems.
- Measurement of field parameters including: pH, specific conductance, temperature, dissolved oxygen, Eh, and turbidity.
- Collection of representative samples in appropriate containers; dissolved metals samples were field filtered (total metals were not filtered). The dissolved metals samples were not analyzed.
- Analyses of groundwater for volatile organic compounds (VOCs; United States Environmental Protection Agency [EPA] Method 8260C), priority pollutant metals (EPA Method 6010C/200.8/7470A Series), and a petroleum hydrocarbon identification scan (NWTPH-HCID).

[1] Golder Associates Inc. (Golder). 1997. Draft Interim Groundwater Monitoring Plan, Landsburg Mine Site. Prepared for the Landsburg PLP Steering Committee, Redmond, Washington.

Golder Associates Inc.
18300 NE Union Hill Road, Suite 200
Redmond, WA 98052 USA
Tel: (425) 883-0777 Fax: (425) 882-5498 www.golder.com

Appendix A presents the laboratory analytical reports for all analyses. Sampling activities were documented on Sample Integrity Data Sheets (SIDS). Copies of the completed SIDS are provided in Appendix B. Appendix C shows the validated data with added qualifiers. Table 1 presents water depth measurements and elevations that were collected from wells prior to sampling activities. Groundwater levels are similar to previous monitoring periods and indicate that groundwater is discharging out both ends of the Rogers Coal Mine.

Following sample collection, all bottles were sealed, labeled, and placed in an iced cooler until delivery to the laboratory. All groundwater samples from monitoring wells were transported under chain-of-custody procedures to Analytical Resources Incorporated (ARI), of Tukwila, Washington, for analyses. Screening levels are based on maximum contaminant levels (MCLs) or State of Washington Model Toxics Control Act (MTCA) Method B groundwater cleanup levels, whichever value is less. In cases where an established MCL or Method B Cleanup Level does not exist, a similar (surrogate) compound regulatory screening level is identified for comparison.

The analytical results indicate no significant changes in groundwater conditions from those observed during the remedial investigation (RI) and on-going interim groundwater monitoring. Table 2 presents the field parameter measurements and laboratory analytical results for each groundwater sample. Laboratory analyses did not detect any VOCs or petroleum hydrocarbon (HCID) in any of the groundwater samples.

The laboratory data packages underwent data validation. Items of note are provided in a validation memorandum in Appendix C. In general, data were found to be acceptable with minor qualification. Methylene chloride was detected at 1.0 micrograms per liter (µg/L) in the trip blank sample TripBlank-060716, and total copper was detected at 9 micrograms per liter (µg/L) in the equipment blank sample EB0616, both above the reporting limit (RL). Data validation indicates that these detections do not affect the sample results since neither methylene chloride nor total copper were detected in any of the groundwater samples or in the method blanks.

The primary parameters detected in groundwater samples during this sampling event were metals that are naturally occurring. The method reporting limits (MRLs) and MDLs for all analytes were at or below acceptable concentrations under the MTCA.

Several groundwater samples from site wells contained iron and manganese concentrations above State of Washington secondary drinking water levels (SMCLs) of 0.3 milligrams per liter (mg/L) and 0.05 mg/L, respectively, which are not health-based standards, but are protective of aesthetic qualities of water. Iron and manganese have been detected in mine groundwater above MTCA cleanup levels in every monitoring event at the site and are naturally occurring metals that are typically associated with groundwater from coal mines (Fuste et al. 1983)[2]. The concentrations of iron and manganese detected during the May 2015 sampling event are similar to concentrations detected during the RI (Golder 1996)[3] and the Interim Groundwater Sampling events previously conducted at the site.

The groundwater sample from the deep well (LMW-11) contained total arsenic at a concentration of 6.9 µg/L (0.0069 mg/L), which is less than the Washington State primary drinking water MCL and greater than the MTCA groundwater cleanup level of 10 µg/L and 5 µg/L, respectively. Arsenic also has been detected in groundwater from LMW-11 near or above MTCA cleanup levels during every monitoring event since LMW-11 was installed. Arsenic is also a naturally occurring metal commonly detectable in groundwater, especially in older more stagnant groundwater having low reduction-oxidation (REDOX) and dissolved oxygen levels. The MTCA groundwater cleanup level is based on typical groundwater background levels in the State of Washington. It is believed that the arsenic concentrations are naturally occurring deep within the mine where groundwater is more stagnant and its geochemistry may be different than shallow groundwater within the mine.

[2] Fuste, L.A., F.A. Packard, M.O.Fretwell, and D.P. Garland. 1983. Data Supplement To: Quality of Coal Mine Drainage in Washington, 1975-77. Open-File Report 83-205. Tacoma, Washington: US Geological Survey.

[3] Golder Associates Inc. (Golder). 1996. Remedial Investigation and Feasibility Study for the Landsburg Mine Site. Landsburg PLP Steering Committee.

If you have any questions or require any additional information, please contact Douglas Morell at (425) 883-0777.

Sincerely,

GOLDER ASSOCIATES INC.

For

Jason S. Yabandeh
Staff Environmental Scientist

Gary L. Zimmerman
Principal

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JSY/GLZ/sb

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Table 1: Groundwater Elevation Data Collection June 3, 2016 Landsburg Mine Site

	UNITS	LMW-1	LMW-1a	LMW-2	LMW-3	LMW-4[1]	LMW-5	LMW-6	LMW-7[1]	LMW-8	LMW-9	LMW-10	LMW-11	P-2	Water Drainage	Frazier Seam Tunnel
Water Depths																
Time of data collection	ft bgs	10:20 AM	10:10 AM	12:30 PM	11:17 AM	12:36 PM	11:26 AM	9:56 AM	12:10 PM	11:31 AM	10:57 AM	12:41 PM	10:40 AM	11:36 AM	NA	NA
Measured to Top of PVC	ft bgs	144.14	142.19	8.11	12.82	9.63	14.35	29.30	210.34	5.02	100.18	0.04	158.01	7.42	NA	NA
Measured to Top of Monument	ft bgs	144.96	142.42	8.82	13.62	10.35	15.07	30.02	210.90	6.03	100.47	NA	158.38	7.81	NA	NA
Surveyed Elevation																
Top of PVC	ft asl	765.16	759.51	617.73	656.75	619.26	658.27	632.33	771.51	646.97	743.99	618.87	801.87	651.37	NA	NA
Top of Monument	ft asl	765.89	NC	618.29	657.48	619.85	658.87	633.00	771.88	NC	NC	NC	802.20	NC	NA	NA
Ground Level	ft asl	762.90	756.59	615.35	654.40	617.09	655.63	629.95	768.79	645.25	741.13	615.75	799.50	648.54	551.38	542.15
Corrected Water Elevation																
Using PVC elevation	ft asl	**621.02**	**617.32**	**609.62**	**643.93**	**609.63**	**643.92**	**603.03**	**561.17**	**641.95**	**643.81**	**618.83**	**643.86**	**643.95**	NA	NA
Using Monument elevation	ft asl	620.93	NA	609.47	643.86	609.50	643.80	602.98	560.98	NA	NA	NA	643.82	NA	NA	NA

Notes:
[1] Data corrected to accommodate well inclination of 20° from vertical
NA = Not applicable
NC = Data not collected
ft bgs = feet below ground surface
ft asl = feet above sea level

Table 2: June 2016 Groundwater Analytical Results Landsburg Mine Site

ANALYTE	UNITS	LMW-2		LMW-3		LMW-4		LMW-5		LMW-6		LMW-7		LMW-8		LMW-9		LMW-10		LMW-11		LMW-11 Duplicate		Equipment Blank		Trip Blank		Trip Blank		Trip Blank	
		6/8/2016		6/7/2016		6/8/2016		6/7/2016		6/7/2016		6/7/2016		6/6/2016		6/6/2016		6/8/2016		6/6/2016		6/6/2016		6/6/2016		6/6/2016		6/7/2016		6/8/2016	
Field Parameter																															
pH	stnd	6.91		7.68		6.92		6.87		6.82		7.07		6.73		6.97		8.63		7.26		NA		NA		NA		NA		NA	
Conductivity	uS/cm	927		336		937		762		257.7		563		613		708		381		578		NA		NA		NA		NA		NA	
Dissolved Oxygen	mg/L	0.10		0.03		0.11		0.00		0.10		0.02		0.06		0.17		0.03		0.33		NA		NA		NA		NA		NA	
Temperature	^{o}C	10.7		11.1		10.8		11.1		10.0		12.8		14.1		11.9		11.1		12.1		NA		NA		NA		NA		NA	
E_h	Rel mV	104.7		160.4		49.1		78.8		118.9		102.0		108.2		148.1		51.8		119.6		NA		NA		NA		NA		NA	
Turbidity	NTU	0.64		1.28		0.59		1.45		1.20		1.23		2.70		0.65		0.76		0.99		NA		NA		NA		NA		NA	
Metals (Total)																															
Aluminum	mg/L	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	NA		NA		NA	
Antimony	mg/L	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	NA		NA		NA	
Arsenic	mg/L	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	**0.0069**		**0.0068**		0.003	U	NA		NA		NA	
Barium	mg/L	0.500	U	0.5	U	0.5	U	0.5	U	0.5	U	**0.525**		0.500	U	0.5	U	0.500	U	0.5	U	0.5	U	0.5	U	NA		NA		NA	
Beryllium	mg/L	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	NA		NA		NA	
Cadmium	mg/L	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	NA		NA		NA	
Calcium	mg/L	**110**		**37.5**		**108**		**94.2**		**26**		**55.5**		**69**		**83.7**		**6.69**		**52.5**		**54.8**		0.5	U	NA		NA		NA	
Chromium	mg/L	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	NA		NA		NA	
Cobalt	mg/L	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	NA		NA		NA	
Copper	mg/L	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	**0.009**		NA		NA		NA	
Iron	mg/L	0.200	U	0.2	U	**0.79**		0.2	U	**2.26**		**1.12**		**15.7**		**1.58**		0.20	U	**1.52**		**1.59**		0.2	U	NA		NA		NA	
Lead	mg/L	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	NA		NA		NA	
Magnesium	mg/L	**68.7**		**15.7**		**67**		**54**		**13.3**		**26.3**		**37.5**		**46.8**		**3.06**		**26.6**		**27.7**		1	U	NA		NA		NA	
Manganese	mg/L	**0.190**		**0.072**		**0.159**		**0.23**		**0.03**		**0.149**		**0.559**		**0.168**		0.02	U	**0.115**		**0.120**		0.02	U	NA		NA		NA	
Mercury	mg/L	0.00002	U	0.00002	U	0.00002	U	0.00002	U	0.00002	U	0.00002	U	0.00002	U	0.00002	U	0.00002	U	0.00002	U	0.00002	U	0.00002	U	NA		NA		NA	
Nickel	mg/L	0.02000	U	0.02000	U	0.02000	U	0.02000	U	0.02000	U	0.02000	U	0.02	U	0.02000	U	0.02	U	0.02	U	0.02	U	0.02	U	NA		NA		NA	
Potassium	mg/L	**3.57**		**1.74**		**3.75**		**2.85**		**0.7**		**3.16**		**2.27**		**2.6**		**1.33**		**2.04**		**2.09**		0.5	U	NA		NA		NA	
Selenium	mg/L	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	NA		NA		NA	
Silver	mg/L	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	NA		NA		NA	
Sodium	mg/L	**20**		**10.4**		**26.2**		**15.7**		**6.75**		**39.2**		**11.6**		**15.2**		**82.2**		**31.2**		**32.2**		0.500	U	NA		NA		NA	
Thallium	mg/L	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	NA		NA		NA	
Vanadium	mg/L	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	NA		NA		NA	
Zinc	mg/L	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U	NA		NA		NA	
Volatile Organic Compounds (VOCs)																															
Acetone	µg/L	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
Acrolein	µg/L	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
Acrylonitrile	µg/L	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Benzene	µg/L	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Bromobenzene	µg/L	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Bromochloromethane	µg/L	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Bromodichloromethane	µg/L	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Bromoethane	µg/L	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Bromoform	µg/L	0.2	UJ	0.2	UJ	0.2	UJ	0.2	UJ	0.2	UJ	0.2	UJ	0.2	UJ	0.2	UJ	0.2	UJ	0.2	UJ	0.2	UJ	0.2	U	0.2	U	0.2	U	0.2	U
Bromomethane	µg/L	1	UJ	1	UJ	1	UJ	1	UJ	1	UJ	1	UJ	1	UJ	1	UJ	1	UJ	1	UJ	1	UJ	1	U	1	U	1	U	1	U
2-Butanone	µg/L	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
n-Butylbenzene	µg/L	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
sec-Butylbenzene	µg/L	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.200	U	0.2	U	0.2	U	0.2	U
tert-Butylbenzene	µg/L	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Carbon Disulfide	µg/L	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Carbon Tetrachloride	µg/L	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Chlorobenzene	µg/L	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U

Golder Associates

Table 2: June 2016 Groundwater Analytical Results Landsburg Mine Site

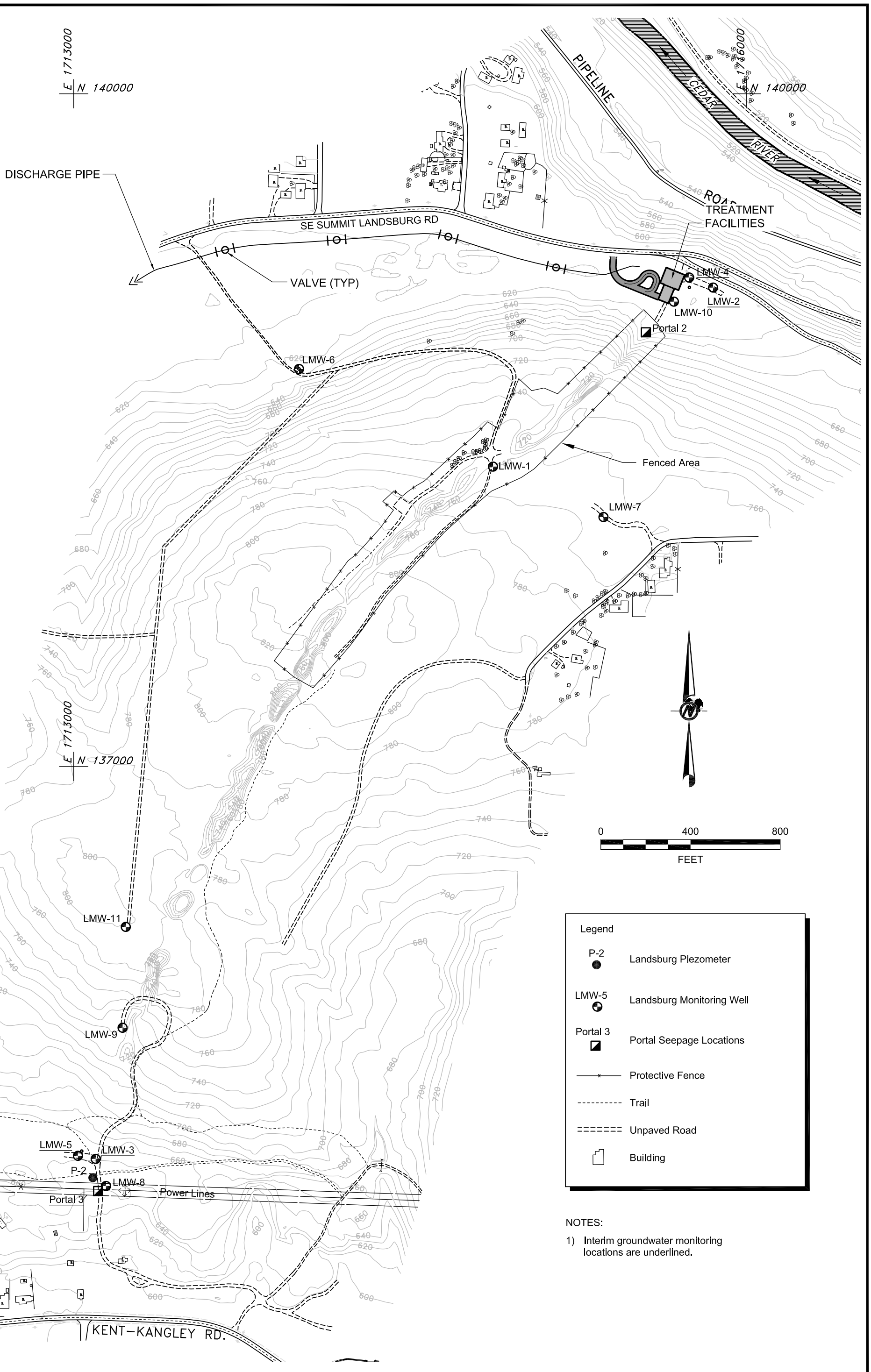
ANALYTE	UNITS	LMW-2	LMW-3	LMW-4	LMW-5	LMW-6	LMW-7	LMW-8	LMW-9	LMW-10	LMW-11	LMW-11 Duplicate	Equipment Blank	Trip Blank	Trip Blank	Trip Blank
		6/8/2016	6/7/2016	6/8/2016	6/7/2016	6/7/2016	6/7/2016	6/6/2016	6/6/2016	6/8/2016	6/6/2016	6/6/2016	6/6/2016	6/6/2016	6/7/2016	6/8/2016
Chloroethane	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
2-Chloroethylvinylether	µg/L	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 U	0.5 U	0.5 U	0.5 U
Chloroform	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Chloromethane	µg/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
2-Chlorotoluene	µg/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
4-Chlorotoluene	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Dibromochloromethane	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,2-Dibromo-3-chloropropane	µg/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-Dibromoethane	µg/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Dibromomethane	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,2-Dichlorobenzene	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,3-Dichlorobenzene	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,4-Dichlorobenzene	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
trans-1,4-Dichloro-2-butene	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethane	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,2-Dichloroethane	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,1-Dichloroethene	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
cis-1,2-Dichloroethene	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
trans-1,2-Dichloroethene	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,2-Dichloropropane	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,3-Dichloropropane	µg/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
2,2-Dichloropropane	µg/L	0.1 U	0.1 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,1-Dichloropropene	µg/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
cis-1,3-Dichloropropene	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
trans-1,3-Dichloropropene	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Ethylbenzene	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Hexachlorobutadiene	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
2-Hexanone	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Iodomethane	µg/L	0.5 U	0.5 U	0.5 UJ	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Isopropylbenzene	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
4-Isopropyltoluene	µg/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Methylene Chloride	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**1**	1 U	1 U
4-Methyl-2-pentanone	µg/L	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Naphthalene	µg/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
n-Propylbenzene	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Styrene	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,2,3-Trichlorobenzene	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,2,4-Trichlorobenzene	µg/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1,1,2-Tetrachloroethane	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,1,2,2-Tetrachloroethane	µg/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Tetrachloroethene	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Toluene	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,1,1-Trichloroethane	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,1,2-Trichloroethane	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Trichloroethene	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Trichlorofluoromethane	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
CFC-113	µg/L	0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ	0.2 U	0.2 U	0.2 U	0.2 U
1,2,3-Trichloropropane	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,2,4-Trimethylbenzene	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U

Table 2: June 2016 Groundwater Analytical Results Landsburg Mine Site

ANALYTE	UNITS	LMW-2	LMW-3	LMW-4	LMW-5	LMW-6	LMW-7	LMW-8	LMW-9	LMW-10	LMW-11	LMW-11 Duplicate	Equipment Blank	Trip Blank	Trip Blank	Trip Blank
		6/8/2016	6/7/2016	6/8/2016	6/7/2016	6/7/2016	6/7/2016	6/6/2016	6/6/2016	6/8/2016	6/6/2016	6/6/2016	6/6/2016	6/6/2016	6/7/2016	6/8/2016
1,3,5-Trimethylbenzene	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Vinyl Acetate	µg/L	0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ	0.2 U	0.2 U	0.2 U	0.2 U
Vinyl Chloride	µg/L	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 U
m, p-Xylene	µg/L	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U
O-Xylene	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Xylenes, Total	µg/L	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U
Hydrocarbon Identification																
Diesel Range Organics	mg/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	NA	NA	NA
Gasoline Range Organics	mg/L	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	NA	NA	NA
Lube Oil	mg/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	NA	NA	NA

Notes:
NA = Not Analyzed
U - The analyte was not detected above the level of the reporting limit.
UJ - The analyte was not detected above the reporting limit and is estimated.
uS/cm = microsiemens per centimeter
mg/L = milligrams per liter
Rel mV = relative millivolts
NTU = nephelometric turbidity unit
µg/L = micrograms per liter

FIGURES



NOTES:

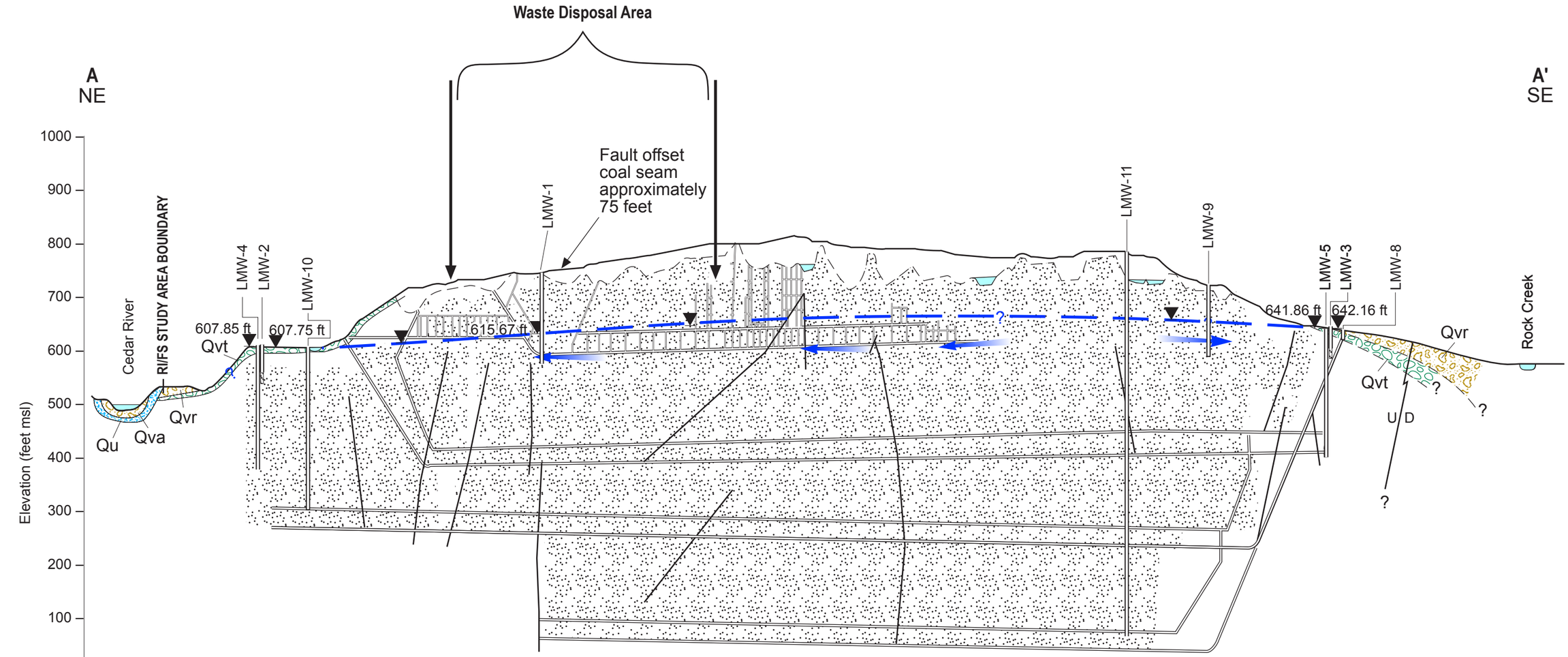
1) Interim groundwater monitoring locations are underlined.

FIGURE **1**

GROUNDWATER MONITORING LOCATIONS

PALMER/LANDSBURG MINE/WA

Golder Associates



EXPLANATION

- Potentiometric surface
- Outline of trench bottom
- Water Level (ft. amsl) 2/23/94
- Qvt Till, compact mixture of gravel occasional boulders in clayey silty sand matrix
- Sandstone
- Surface water feature
- Anticipated collapsed zone within mine
- Qu Drift, till, fluvial sand and gravel, lacustrine sand, silt, clay and peat
- Qvr Recessional outwash, well sorted sand and pebble-cobble
- Qva Advanced outwash pebble-cobble gravel may include very fine sand
- Monitoring Interval
- Groundwater Flow Direction

0 500
SCALE IN FEET

Sources for the Geology and Mine Information:
J.E. Luzier 1969; surficial geology
State of Washington, Water Well reports
Mine Superintendant's Records
Landsburg Well Logs

NOTE: Vertical to horizontal scale ratio is 2.5:1
Wells are project normal into the strike of the Cross-Section A-A'

Assuming groundwater discharge at the north and south end of mine.

FIGURE **2**
CROSS-SECTION ALONG STRIKE AT COAL SEAM
PALMER/LANDSBURG MINE/WA

9231000002R273fig05.ai | Mod: 06/30/15 | AMP

Golder Associates

APPENDIX A
LABORATORY ANALYTICAL REPORTS

Analytical Resources, Incorporated
Analytical Chemists and Consultants

June 23, 2016

Gary Zimmerman
Golder Associates Inc.
18300 NE Union Hill Road, Suite 200
Redmond, WA 98052-3333

Client Project Name: Landsburg Mine
Client Project Number: 923-1000-002.R273
ARI ID: BBS5

Dear Mr. Zimmerman:

Please find enclosed Chain-of-Custody (COC) record, sample receipt documentation, and the final results for the project referenced above. Analytical Resources, Inc. (ARI) accepted twelve water samples trip blanks in good condition on June 8, 2016. There were no discrepancies between the COC and the sample containers' labels. Per client request, the metals reporting limits were raised to meet client required limits.

The samples were analyzed for VOCs, HCID, Total Metals, as requested on the COC. Quality control analyses are included for your review.

The VOCs CCALs are out of control low for all associated FORM III "Q" flagged analytes with the exception of 1,1-Dichloroethene, Iodomethane and carbon disulfide which are out of control high. All associated samples that contain analyte have been flagged with a "Q" qualifier.

The VOCs LCS and/or LCSD are out of control high for several analytes. The associated samples were non-detect.

The VOCs matrix spike and/or matrix spike duplicate are out of control low and/or high for several analytes.

The matrix spike was not recovered for chromium due to elevated RLs.

No other analytical complications were noted.

An electronic copy of this report and all supporting raw data will remain on file at ARI. Please feel free to contact me if you have any questions or require any additional information.

Respectfully,

ANALYTICAL RESOURCES, INC.

Kelly Bottem
Client Services Manager
(206) 695-6211
kellyb@arilabs.com

1 of 75

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: BBS5	Turn-around Requested: Standard	Page: 1 of 2	
ARI Client Company: Golder	Phone: 425-883-0777	Date: 6/6/2016	Ice Present?
Client Contact: Gary Zimmerman, Aaron Rydecki (1°)		No. of Coolers: 5	Cooler Temps: 0.1 - 3.5
Client Project Name: Landsburg			
Client Project #: 923100000002.R273	Samplers: JMiller / A.Rydecki		

Analytical Resources, Incorporated
Analytical Chemists and Consultants
4611 South 134th Place, Suite 100
Tukwila, WA 98168
206-695-6200 206-695-6201 (fax)
www.arilabs.com

Sample ID	Date	Time	Matrix	No. Containers	Analysis Requested: VOCs Client list	TPH-HCID	TAML Total Metals	Dissolved Metals (Field Filtered) w/ 0.45um filter					Notes/Comments
TripBlank-060616	6/6/16	—	W	3	X								
LMW-11-0616	6/6/16	1035	W	11	X	X	X	HOLD					
LMW-11-0616-D		1045	W	11	X	X	X						
LMW-9-0616		1340	W	11	X	X	X						
LMW-8-0616		1510	W	11	X	X	X						
EB0616		1530	W	11	X	X	X						
LMW-3-0616	6/7/16	1035	W	11	X	X	X	HOLD					
LMW-5-0616		1145	W	11	X	X	X						
LMW-6-0616		1330	W	11	X	X	X						
LMW-7-0616		1525	W	11	X	X	X						

Comments/Special Instructions	Relinquished by: (Signature)	Received by: (Signature)	Relinquished by: (Signature)	Received by: (Signature)
Please analyse under existing MSA between Golder and ARI. -Ecology EIM EDD *Client Specific RL's and Analyte list ** Please cc arydecki@golder.com; Gary_Zimmerman@golder.com	Printed Name: Aaron Rydecki	Printed Name: Josh Meyer	Printed Name:	Printed Name:
	Company: Golder Associates Inc.	Company: ARI	Company:	Company:
	Date & Time: 6/8/2016 @ 1535	Date & Time: 6/8/16 1535	Date & Time:	Date & Time:

BBS5 : 00002

Limits of Liability: *ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.*

Sample Retention Policy: All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: BBS5	Turn-around Requested: Standard	Page: 2 of 2	
ARI Client Company: Golder	Phone: 425-883-0777	Date: 6/7/2016	Ice Present?
Client Contact: Gary Zimmerman, Aaron Rydecki (1")		No. of Coolers: 5	Cooler Temps: 0.1-3.5
Client Project Name: Landsburg			
Client Project #: 923-10000-02.R273	Samplers: J.Miller / A.Rydecki		

Analytical Resources, Incorporated
Analytical Chemists and Consultants
4611 South 134th Place, Suite 100
Tukwila, WA 98168
206-695-6200 206-695-6201 (fax)
www.arilabs.com

Sample ID	Date	Time	Matrix	No. Containers	Analysis Requested: VOCs Client List	TPH-HCID	TAML Total Metals	Dissolved Metals (Field Filtered w/ 0.45um filter)					Notes/Comments
TripBlank-060716	6/7/16	—	W	3	~~HOLD~~								HOLD
LMW-10-~~060~~0616	6/8/16	1005	W	11	X	X	X	HOLD					
LMW-2-0616	"	1130	W	11	X	X	X	HOLD					
LMW-4-0616	"	1320	W	27	X	X	X	HOLD					MS/MSD Volume
TripBlank-060816	6/8/16	—	W	3	~~HOLD~~								HOLD

Comments/Special Instructions	Relinquished by: (Signature)	Received by: (Signature)	Relinquished by: (Signature)	Received by: (Signature)
Please analyze under existing MSA b/w Golder and ARI. - Ecology EIM EDD - *Client specific RL's and Analyte list** Please cc: aarydecki@golder.com Gary_Zimmerman@golder.com	Printed Name: Aaron Rydecki	Printed Name: Justin Meyer	Printed Name:	Printed Name:
	Company: Golder Associates Inc.	Company: ARI	Company:	Company:
	Date & Time: 6/8/2016 @ 1535	Date & Time: 6/8/16 1535	Date & Time:	Date & Time:

BBS5 0003

Limits of Liability: *ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.*

Sample Retention Policy: All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: Golder

Project Name: Landsburg

COC No(s): _____ NA

Delivered by: Fed-Ex UPS Courier (Hand Delivered) Other: _____

Assigned ARI Job No: BBS5

Tracking No: _____ NA

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler?	YES	(NO)
Were custody papers included with the cooler?	(YES)	NO
Were custody papers properly filled out (ink, signed, etc.)	(YES)	NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry): 1.5 3.5 1.6 0.1 1.9

Time: _____

If cooler temperature is out of compliance fill out form 00070F

Temp Gun ID#: D00527A

Cooler Accepted by: JM Date: 6-8-16 Time: 1535

Complete custody forms and attach all shipping documents

Log-In Phase:

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

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

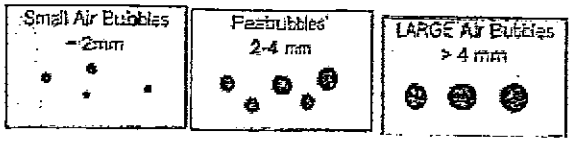
Samples Logged by: JM Date: 6/8/16 Time: _____

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

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

Additional Notes, Discrepancies, & Resolutions:

By: Date:



Small → "sm" (< 2 mm)
Peabubbles → "pb" (2 to < 4 mm)
Large → "lg" (4 to < 6 mm)
Headspace → "hs" (> 6 mm)

Sample ID Cross Reference Report

ANALYTICAL RESOURCES INCORPORATED

ARI Job No: BBS5
Client: Golder Associates
Project Event: 9231000002.R273
Project Name: Landsburg

	Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1.	LMW-11-0616	BBS5A	16-8648	Water	06/06/16 10:35	06/08/16 15:35
2.	LMW-11-0616-D	BBS5B	16-8649	Water	06/06/16 10:45	06/08/16 15:35
3.	LMW-9-0616	BBS5C	16-8650	Water	06/06/16 13:40	06/08/16 15:35
4.	LMW-8-0616	BBS5D	16-8651	Water	06/06/16 15:10	06/08/16 15:35
5.	EB0616	BBS5E	16-8652	Water	06/06/16 15:30	06/08/16 15:35
6.	LMW-3-0616	BBS5F	16-8653	Water	06/07/16 10:35	06/08/16 15:35
7.	LMW-5-0616	BBS5G	16-8654	Water	06/07/16 11:45	06/08/16 15:35
8.	LMW-6-0616	BBS5H	16-8655	Water	06/07/16 13:30	06/08/16 15:35
9.	LMW-7-0616	BBS5I	16-8656	Water	06/07/16 15:25	06/08/16 15:35
10.	LMW-10-0616	BBS5J	16-8657	Water	06/08/16 10:05	06/08/16 15:35
11.	LMW-2-0616	BBS5K	16-8658	Water	06/08/16 11:30	06/08/16 15:35
12.	LMW-4-0616	BBS5L	16-8659	Water	06/08/16 13:20	06/08/16 15:35
13.	Trip Blank-060616	BBS5M	16-8660	Water	06/06/16 10:35	06/08/16 15:35
14.	Trip Blank-060716	BBS5N	16-8661	Water	06/06/16 10:35	06/08/16 15:35
15.	Trip Blank-060816	BBS5O	16-8662	Water	06/06/16 10:35	06/08/16 15:35
16.	LMW-11-0616	BBS5P	16-8678	Water	06/06/16 10:35	06/09/16 15:35
17.	LMW-11-0616-D	BBS5Q	16-8679	Water	06/06/16 10:45	06/09/16 15:35
18.	LMW-9-0616	BBS5R	16-8680	Water	06/06/16 13:40	06/09/16 15:35
19.	LMW-8-0616	BBS5S	16-8681	Water	06/06/16 15:10	06/09/16 15:35
20.	EB0616	BBS5T	16-8682	Water	06/06/16 15:30	06/09/16 15:35
21.	LMW-3-0616	BBS5U	16-8683	Water	06/06/16 10:35	06/09/16 15:35
22.	LMW-5-0616	BBS5V	16-8684	Water	06/06/16 11:45	06/09/16 15:35
23.	LMW-6-0616	BBS5W	16-8685	Water	06/06/16 13:30	06/09/16 15:35
24.	LMW-7-0616	BBS5X	16-8686	Water	06/06/16 15:25	06/09/16 15:35
25.	LMW-10-0616	BBS5Y	16-8687	Water	06/06/16 10:05	06/09/16 15:35
26.	LMW-2-0616	BBS5Z	16-8688	Water	06/06/16 11:30	06/09/16 15:35
27.	LMW-4-0616	BBS5AA	16-8689	Water	06/06/16 13:20	06/09/16 15:35

PRESERVATION VERIFICATION 06/08/16
Page 1 of 1

ANALYTICAL RESOURCES INCORPORATED

ARI Job No: **BBS5**

Inquiry Number: NONE
Analysis Requested: 06/08/16
Contact: Zimmerman, Gary
Client: Golder Associates
Logged by: JM
Sample Set Used: Yes-481
Validatable Package: No
Deliverables:

PC: Mary Lou
VTSR: 06/08/16

Project #: 9231000002.R273
Project: Landsburg
Sample Site:
SDG No:
Analytical Protocol: In-house

LOGNUM ARI ID	CLIENT ID	CN >12	WAD >12	NH3 <2	COD <2	FOG <2	MET <2	PHEN <2	PHOS <2	TKN <2	NO23 <2	TOC <2	S2 >9	TPHD <2	BT <2	Fe2+ <2	DMET FLT	DOC FLT	PARAMETER	ADJUSTED TO	LOT NUMBER	AMOUNT ADDED	DATE/BY
16-8648 **BBS5A**	LMW-11-0616						TOT pass										Y						
16-8649 **BBS5B**	LMW-11-0616-D						TOT pass										Y						
16-8650 **BBS5C**	LMW-9-0616						TOT P										Y						
16-8651 **BBS5D**	LMW-8-0616						TOT P										Y						
16-8652 **BBS5E**	EB0616						TOT P										Y						
16-8653 **BBS5F**	LMW-3-0616						TOT P										Y						
16-8654 **BBS5G**	LMW-5-0616						TOT P										Y						
16-8655 **BBS5H**	LMW-6-0616						TOT P										Y						
16-8656 **BBS5I**	LMW-7-0616						TOT P										Y						
16-8657 **BBS5J**	LMW-10-0616						TOT P										Y						
16-8658 **BBS5K**	LMW-2-0616						TOT P										Y						
16-8659 **BBS5L**	LMW-4-0616						TOT P										Y						

BBS5 90005

Checked By JM Date 6/8/16

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: Golder

Project Name: Landsburg

COC No(s): _____ NA

Delivered by: Fed-Ex UPS Courier Hand Delivered Other: Night Drop

Assigned ARI Job No: BBS5

Tracking No: _____ NA

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler? YES (NO)

Were custody papers included with the cooler? YES (NO)

Were custody papers properly filled out (ink, signed, etc.) YES (NO)

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry)

Time: _____ 1.1 ___ ___ ___ ___ ___

If cooler temperature is out of compliance fill out form 00070F

Temp Gun ID#: D005276

Cooler Accepted by: AV Date: 6/9/16 Time: 735

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler? YES (NO)

What kind of packing material was used? ... Bubble Wrap (Wet Ice) Gel Packs Baggies Foam Block Paper Other: _____

Was sufficient ice used (if appropriate)?	NA	(YES)	NO
Were all bottles sealed in individual plastic bags?		(YES)	NO
Did all bottles arrive in good condition (unbroken)?		(YES)	NO
Were all bottle labels complete and legible?		(YES)	NO
Did the number of containers listed on COC match with the number of containers received?		(YES)	NO
Did all bottle labels and tags agree with custody papers?		(YES)	NO
Were all bottles used correct for the requested analyses?		(YES)	NO
Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)...	NA	(YES)	NO
Were all VOC vials free of air bubbles?	(NA)	YES	NO
Was sufficient amount of sample sent in each bottle?		(YES)	NO
Date VOC Trip Blank was made at ARI	(NA)		

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

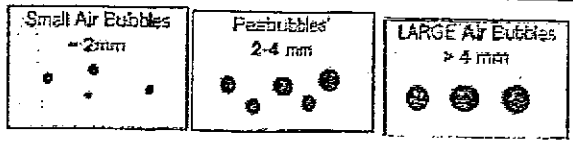
Samples Logged by: Jm Date: 6/9/16 Time: 10:00

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

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

Additional Notes, Discrepancies, & Resolutions:

By: Date:



Small → "sm" (< 2 mm)
Peabubbles → "pb" (2 to < 4 mm)
Large → "lg" (4 to < 6 mm)
Headspace → "hs" (> 6 mm)

Analytical Method Information

8260C VOA (EPA 8260C) in Water
Preservation: pH<2; HCL, Cool <6°C
Container: VOA Vial, Clear, 40 mL, HCL — **Minimum Sample Volume:** 120 mL — **Hold Time:** 14 days

Analyte	DL	LOD	LOQ / RL	Surrogate %R	Duplicate RPD	Matrix Spike %R	Matrix Spike RPD	Blank Spike / LCS %R	Blank Spike / LCS RPD
Chloromethane	0.0948 ug/L	0.250 ug/L	0.500 ug/L		30	60 - 138	30	60 - 138	30
Vinyl Chloride	0.0572 ug/L	0.100 ug/L	0.200 ug/L		30	66 - 133	30	66 - 133	30
Bromomethane	0.252 ug/L	0.500 ug/L	1.00 ug/L		30	72 - 131	30	72 - 131	30
Chloroethane	0.0861 ug/L	0.100 ug/L	0.200 ug/L		30	60 - 155	30	60 - 155	30
Trichlorofluoromethane	0.0375 ug/L	0.100 ug/L	0.200 ug/L		30	80 - 129	30	80 - 129	30
Acrolein	2.48 ug/L	2.50 ug/L	5.00 ug/L		30	52 - 144	30	52 - 144	30
1,1,2-Trichloro-1,2,2-Trifluoroethane	0.0429 ug/L	0.100 ug/L	0.200 ug/L		30	76 - 129	30	76 - 129	30
Acetone	2.06 ug/L	2.50 ug/L	5.00 ug/L		30	58 - 142	30	58 - 142	30
1,1-Dichloroethene	0.0540 ug/L	0.100 ug/L	0.200 ug/L		30	69 - 135	30	69 - 135	30
Bromoethane	0.0412 ug/L	0.100 ug/L	0.200 ug/L		30	78 - 128	30	78 - 128	30
Iodomethane	0.227 ug/L	0.500 ug/L	1.00 ug/L		30	56 - 147	30	56 - 147	30
Methylene Chloride	0.485 ug/L	0.500 ug/L	1.00 ug/L		30	65 - 135	30	65 - 135	30
Acrylonitrile	0.604 ug/L	1.00 ug/L	1.00 ug/L		30	64 - 134	30	64 - 134	30
Carbon Disulfide	0.0370 ug/L	0.100 ug/L	0.200 ug/L		30	78 - 125	30	78 - 125	30
trans-1,2-Dichloroethene	0.0485 ug/L	0.100 ug/L	0.200 ug/L		30	78 - 128	30	78 - 128	30
Vinyl Acetate	0.0688 ug/L	0.100 ug/L	0.200 ug/L		30	55 - 138	30	55 - 138	30
1,1-Dichloroethane	0.0533 ug/L	0.100 ug/L	0.200 ug/L		30	76 - 124	30	76 - 124	30
2-Butanone	0.814 ug/L	2.50 ug/L	5.00 ug/L		30	61 - 140	30	61 - 140	30
2,2-Dichloropropane	0.0518 ug/L	0.100 ug/L	0.200 ug/L		30	78 - 125	30	78 - 125	30
cis-1,2-Dichloroethene	0.0427 ug/L	0.100 ug/L	0.200 ug/L		30	80 - 121	30	80 - 121	30
Chloroform	0.0273 ug/L	0.100 ug/L	0.200 ug/L		30	80 - 122	30	80 - 122	30
Bromochloromethane	0.0607 ug/L	0.100 ug/L	0.200 ug/L		30	80 - 121	30	80 - 121	30
1,1,1-Trichloroethane	0.0408 ug/L	0.100 ug/L	0.200 ug/L		30	79 - 123	30	79 - 123	30
1,1-Dichloropropene	0.0340 ug/L	0.100 ug/L	0.200 ug/L		30	80 - 120	30	80 - 120	30
Carbon tetrachloride	0.0439 ug/L	0.100 ug/L	0.200 ug/L		30	53 - 137	30	53 - 137	30

BBS5 : 00008

Analytical Method Information

Analyte	DL	LOD	LOQ / RL	Surrogate %R	Duplicate RPD	Matrix Spike %R	Matrix Spike RPD	Blank Spike / LCS %R	Blank Spike / LCS RPD
1,2-Dichloroethane	0.0717 ug/L	0.100 ug/L	0.200 ug/L		30	75 - 123	30	75 - 123	30
Benzene	0.0266 ug/L	0.100 ug/L	0.200 ug/L		30	80 - 120	30	80 - 120	30
Trichloroethene	0.0489 ug/L	0.100 ug/L	0.200 ug/L		30	80 - 120	30	80 - 120	30
1,2-Dichloropropane	0.0352 ug/L	0.100 ug/L	0.200 ug/L		30	80 - 120	30	80 - 120	30
Bromodichloromethane	0.0506 ug/L	0.100 ug/L	0.200 ug/L		30	80 - 121	30	80 - 121	30
Dibromomethane	0.145 ug/L	0.200 ug/L	0.200 ug/L		30	80 - 120	30	80 - 120	30
2-Chloroethyl vinyl ether	0.250 ug/L	0.500 ug/L	1.00 ug/L		30	74 - 127	30	74 - 127	30
4-Methyl-2-Pentanone	0.974 ug/L	2.50 ug/L	5.00 ug/L		30	67 - 133	30	67 - 133	30
cis-1,3-Dichloropropene	0.0610 ug/L	0.100 ug/L	0.200 ug/L		30	80 - 124	30	80 - 124	30
Toluene	0.0399 ug/L	0.100 ug/L	0.200 ug/L		30	80 - 120	30	80 - 120	30
trans-1,3-Dichloropropene	0.0815 ug/L	0.100 ug/L	0.200 ug/L		30	71 - 127	30	71 - 127	30
2-Hexanone	0.902 ug/L	2.50 ug/L	5.00 ug/L		30	69 - 133	30	69 - 133	30
1,1,2-Trichloroethane	0.129 ug/L	0.200 ug/L	0.200 ug/L		30	80 - 121	30	80 - 121	30
1,3-Dichloropropane	0.0622 ug/L	0.100 ug/L	0.200 ug/L		30	80 - 120	30	80 - 120	30
Tetrachloroethene	0.0474 ug/L	0.100 ug/L	0.200 ug/L		30	80 - 120	30	80 - 120	30
Dibromochloromethane	0.0481 ug/L	0.100 ug/L	0.200 ug/L		30	65 - 135	30	65 - 135	30
1,2-Dibromoethane	0.0745 ug/L	0.100 ug/L	0.200 ug/L		30	80 - 121	30	80 - 121	30
Chlorobenzene	0.0230 ug/L	0.100 ug/L	0.200 ug/L		30	80 - 120	30	80 - 120	30
Ethylbenzene	0.0371 ug/L	0.100 ug/L	0.200 ug/L		30	80 - 120	30	80 - 120	30
1,1,1,2-Tetrachloroethane	0.0396 ug/L	0.100 ug/L	0.200 ug/L		30	80 - 120	30	80 - 120	30
m,p-Xylene	0.0522 ug/L	0.200 ug/L	0.400 ug/L		30	80 - 121	30	80 - 121	30
o-Xylene	0.0349 ug/L	0.100 ug/L	0.200 ug/L		30	80 - 121	30	80 - 121	30
Xylenes, total	0.0871 ug/L	0.300 ug/L	0.600 ug/L		30	76 - 127	30	76 - 127	30
Styrene	0.0454 ug/L	0.100 ug/L	0.200 ug/L		30	80 - 124	30	80 - 124	30
Bromoform	0.0618 ug/L	0.100 ug/L	0.200 ug/L		30	51 - 134	30	51 - 134	30
1,1,2,2-Tetrachloroethane	0.0598 ug/L	0.100 ug/L	0.200 ug/L		30	77 - 123	30	77 - 123	30
1,2,3-Trichloropropane	0.131 ug/L	0.250 ug/L	0.500 ug/L		30	76 - 125	30	76 - 125	30
trans-1,4-Dichloro 2-Butene	0.324 ug/L	0.500 ug/L	1.00 ug/L		30	55 - 129	30	55 - 129	30

Analytical Method Information

Analyte	DL	LOD	LOQ / RL	Surrogate %R	Duplicate RPD	Matrix Spike %R	Matrix Spike RPD	Blank Spike / LCS %R	Blank Spike / LCS RPD
n-Propylbenzene	0.0235 ug/L	0.100 ug/L	0.200 ug/L		30	78 - 130	30	78 - 130	30
Bromobenzene	0.0605 ug/L	0.100 ug/L	0.200 ug/L		30	80 - 120	30	80 - 120	30
Isopropyl Benzene	0.0212 ug/L	0.100 ug/L	0.200 ug/L		30	80 - 128	30	80 - 128	30
2-Chlorotoluene	0.0236 ug/L	0.100 ug/L	0.200 ug/L		30	78 - 122	30	78 - 122	30
4-Chlorotoluene	0.0159 ug/L	0.100 ug/L	0.200 ug/L		30	80 - 121	30	80 - 121	30
t-Butylbenzene	0.0256 ug/L	0.100 ug/L	0.200 ug/L		30	78 - 125	30	78 - 125	30
1,3,5-Trimethylbenzene	0.0150 ug/L	0.100 ug/L	0.200 ug/L		30	80 - 129	30	80 - 129	30
1,2,4-Trimethylbenzene	0.0243 ug/L	0.100 ug/L	0.200 ug/L		30	80 - 127	30	80 - 127	30
s-Butylbenzene	0.0237 ug/L	0.100 ug/L	0.200 ug/L		30	78 - 129	30	78 - 129	30
4-Isopropyl Toluene	0.0263 ug/L	0.100 ug/L	0.200 ug/L		30	79 - 130	30	79 - 130	30
1,3-Dichlorobenzene	0.0362 ug/L	0.100 ug/L	0.200 ug/L		30	80 - 120	30	80 - 120	30
1,4-Dichlorobenzene	0.0397 ug/L	0.100 ug/L	0.200 ug/L		30	80 - 120	30	80 - 120	30
n-Butylbenzene	0.0248 ug/L	0.100 ug/L	0.200 ug/L		30	74 - 129	30	74 - 129	30
1,2-Dichlorobenzene	0.0365 ug/L	0.100 ug/L	0.200 ug/L		30	80 - 120	30	80 - 120	30
1,2-Dibromo-3-chloropropane	0.366 ug/L	0.500 ug/L	0.500 ug/L		30	62 - 123	30	62 - 123	30
1,2,4-Trichlorobenzene	0.107 ug/L	0.250 ug/L	0.500 ug/L		30	64 - 124	30	64 - 124	30
Hexachloro-1,3-Butadiene	0.0734 ug/L	0.250 ug/L	0.500 ug/L		30	58 - 123	30	58 - 123	30
Naphthalene	0.118 ug/L	0.250 ug/L	0.500 ug/L		30	50 - 134	30	50 - 134	30
1,2,3-Trichlorobenzene	0.110 ug/L	0.250 ug/L	0.500 ug/L		30	49 - 133	30	49 - 133	30
Dichlorodifluoromethane	0.0521 ug/L	0.100 ug/L	0.200 ug/L		30	48 - 147	30	48 - 147	30
Methyl tert-butyl Ether	0.0729 ug/L	0.250 ug/L	0.500 ug/L		30	71 - 132	30	71 - 132	30
n-Hexane	0.100 ug/L	0.100 ug/L	0.200 ug/L		30	70 - 130	30	70 - 130	30
2-Pentanone	5.00 ug/L	5.00 ug/L	5.00 ug/L		30	69 - 134	30	69 - 134	30
surr: Dibromofluoromethane				80 - 120					
surr: 1,2-Dichloroethane-d4				80 - 129					
surr: Toluene-d8				80 - 120					
surr: 4-Bromofluorobenzene				80 - 120					
surr: 1,2-Dichlorobenzene-d4				80 - 120					

BBS5 : 00010

Analytical Method Information

Analyte	DL	LOD	LOQ / RL	Surrogate %R	Duplicate RPD	Matrix Spike %R	Matrix Spike RPD	Blank Spike / LCS %R	Blank Spike / LCS RPD
Pentafluorobenzene									
Chlorobenzene-d5									
1,4-Difluorobenzene									
1,4-Dichlorobenzene-d4									

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by P&T GC/MS-Method SW8260C **Sample ID: LMW-11-0616**
Page 1 of 2 **SAMPLE**

Lab Sample ID: BBS5A
LIMS ID: 16-8648
Matrix: Water
Data Release Authorized: MW
Reported: 06/21/16

QC Report No: BBS5-Golder Associates
Project: Landsburg
9231000002.R273
Date Sampled: 06/06/16
Date Received: 06/08/16

Instrument/Analyst: NT2/PAB
Date Analyzed: 06/15/16 15:11

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	DL	LOQ	Result
74-87-3	Chloromethane	0.09	0.50	< 0.50 U
74-83-9	Bromomethane	0.25	1.0	< 1.0 U
75-01-4	Vinyl Chloride	0.06	0.10	< 0.10 U
75-00-3	Chloroethane	0.09	0.20	< 0.20 U
75-09-2	Methylene Chloride	0.48	1.0	< 1.0 U
67-64-1	Acetone	2.1	5.0	< 5.0 U
75-15-0	Carbon Disulfide	0.04	0.20	< 0.20 U
75-35-4	1,1-Dichloroethene	0.05	0.20	< 0.20 U
75-34-3	1,1-Dichloroethane	0.05	0.20	< 0.20 U
156-60-5	trans-1,2-Dichloroethene	0.05	0.20	< 0.20 U
156-59-2	cis-1,2-Dichloroethene	0.04	0.20	< 0.20 U
67-66-3	Chloroform	0.03	0.20	< 0.20 U
107-06-2	1,2-Dichloroethane	0.07	0.20	< 0.20 U
78-93-3	2-Butanone	0.81	5.0	< 5.0 U
71-55-6	1,1,1-Trichloroethane	0.04	0.20	< 0.20 U
56-23-5	Carbon Tetrachloride	0.04	0.20	< 0.20 U
108-05-4	Vinyl Acetate	0.07	0.20	< 0.20 U
75-27-4	Bromodichloromethane	0.05	0.20	< 0.20 U
78-87-5	1,2-Dichloropropane	0.04	0.20	< 0.20 U
10061-01-5	cis-1,3-Dichloropropene	0.06	0.20	< 0.20 U
79-01-6	Trichloroethene	0.05	0.20	< 0.20 U
124-48-1	Dibromochloromethane	0.05	0.20	< 0.20 U
79-00-5	1,1,2-Trichloroethane	0.13	0.20	< 0.20 U
71-43-2	Benzene	0.03	0.20	< 0.20 U
10061-02-6	trans-1,3-Dichloropropene	0.08	0.20	< 0.20 U
110-75-8	2-Chloroethylvinylether	0.25	0.50	< 0.50 U
75-25-2	Bromoform	0.06	0.20	< 0.20 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	0.97	2.5	< 2.5 U
591-78-6	2-Hexanone	0.90	5.0	< 5.0 U
127-18-4	Tetrachloroethene	0.05	0.20	< 0.20 U
79-34-5	1,1,2,2-Tetrachloroethane	0.06	0.10	< 0.10 U
108-88-3	Toluene	0.04	0.20	< 0.20 U
108-90-7	Chlorobenzene	0.02	0.20	< 0.20 U
100-41-4	Ethylbenzene	0.04	0.20	< 0.20 U
100-42-5	Styrene	0.05	0.20	< 0.20 U
75-69-4	Trichlorofluoromethane	0.04	0.20	< 0.20 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.04	0.20	< 0.20 U
179601-23-1	m,p-Xylene	0.05	0.40	< 0.40 U
95-47-6	o-Xylene	0.03	0.20	< 0.20 U
95-50-1	1,2-Dichlorobenzene	0.04	0.20	< 0.20 U
541-73-1	1,3-Dichlorobenzene	0.04	0.20	< 0.20 U
106-46-7	1,4-Dichlorobenzene	0.04	0.20	< 0.20 U
107-02-8	Acrolein	2.5	2.5	< 2.5 U
74-88-4	Iodomethane	0.23	0.50	< 0.50 U
74-96-4	Bromoethane	0.04	0.20	< 0.20 U
107-13-1	Acrylonitrile	0.60	1.0	< 1.0 U
563-58-6	1,1-Dichloropropene	0.03	0.10	< 0.10 U
74-95-3	Dibromomethane	0.14	0.20	< 0.20 U
630-20-6	1,1,1,2-Tetrachloroethane	0.04	0.20	< 0.20 U
96-12-8	1,2-Dibromo-3-chloropropane	0.04	0.50	< 0.50 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by P&T GC/MS-Method SW8260C **Sample ID: LMW-11-0616**
 SAMPLE

Lab Sample ID: BBS5A
LIMS ID: 16-8648
Matrix: Water
Date Analyzed: 06/15/16 15:11

QC Report No: BBS5-Golder Associates
Project: Landsburg
9231000002.R273

CAS Number	Analyte	DL	LOQ	Result
96-18-4	1,2,3-Trichloropropane	0.13	0.20	< 0.20 U
110-57-6	trans-1,4-Dichloro-2-butene	0.32	1.0	< 1.0 U
108-67-8	1,3,5-Trimethylbenzene	0.02	0.20	< 0.20 U
95-63-6	1,2,4-Trimethylbenzene	0.02	0.20	< 0.20 U
87-68-3	Hexachlorobutadiene	0.07	0.20	< 0.20 U
106-93-4	1,2-Dibromoethane	0.07	0.10	< 0.10 U
74-97-5	Bromochloromethane	0.06	0.20	< 0.20 U
594-20-7	2,2-Dichloropropane	0.05	0.10	< 0.10 U
142-28-9	1,3-Dichloropropane	0.06	0.10	< 0.10 U
98-82-8	Isopropylbenzene	0.02	0.20	< 0.20 U
103-65-1	n-Propylbenzene	0.02	0.20	< 0.20 U
108-86-1	Bromobenzene	0.06	0.20	< 0.20 U
95-49-8	2-Chlorotoluene	0.02	0.10	< 0.10 U
106-43-4	4-Chlorotoluene	0.02	0.20	< 0.20 U
98-06-6	tert-Butylbenzene	0.03	0.20	< 0.20 U
135-98-8	sec-Butylbenzene	0.02	0.20	< 0.20 U
99-87-6	4-Isopropyltoluene	0.03	0.10	< 0.10 U
104-51-8	n-Butylbenzene	0.02	0.20	< 0.20 U
120-82-1	1,2,4-Trichlorobenzene	0.11	0.50	< 0.50 U
91-20-3	Naphthalene	0.12	0.50	< 0.50 U
87-61-6	1,2,3-Trichlorobenzene	0.11	0.20	< 0.20 U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	107%
d8-Toluene	95.0%
Bromofluorobenzene	95.0%
d4-1,2-Dichlorobenzene	104%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by P&T GC/MS-Method SW8260C **Sample ID: LMW-11-0616-D**
 SAMPLE

Lab Sample ID: BBS5B
LIMS ID: 16-8649
Matrix: Water
Data Release Authorized: MW
Reported: 06/21/16

QC Report No: BBS5-Golder Associates
Project: Landsburg
9231000002.R273
Date Sampled: 06/06/16
Date Received: 06/08/16

Instrument/Analyst: NT2/PAB
Date Analyzed: 06/15/16 15:31

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	DL	LOQ	Result
74-87-3	Chloromethane	0.09	0.50	< 0.50 U
74-83-9	Bromomethane	0.25	1.0	< 1.0 U
75-01-4	Vinyl Chloride	0.06	0.10	< 0.10 U
75-00-3	Chloroethane	0.09	0.20	< 0.20 U
75-09-2	Methylene Chloride	0.48	1.0	< 1.0 U
67-64-1	Acetone	2.1	5.0	< 5.0 U
75-15-0	Carbon Disulfide	0.04	0.20	< 0.20 U
75-35-4	1,1-Dichloroethene	0.05	0.20	< 0.20 U
75-34-3	1,1-Dichloroethane	0.05	0.20	< 0.20 U
156-60-5	trans-1,2-Dichloroethene	0.05	0.20	< 0.20 U
156-59-2	cis-1,2-Dichloroethene	0.04	0.20	< 0.20 U
67-66-3	Chloroform	0.03	0.20	< 0.20 U
107-06-2	1,2-Dichloroethane	0.07	0.20	< 0.20 U
78-93-3	2-Butanone	0.81	5.0	< 5.0 U
71-55-6	1,1,1-Trichloroethane	0.04	0.20	< 0.20 U
56-23-5	Carbon Tetrachloride	0.04	0.20	< 0.20 U
108-05-4	Vinyl Acetate	0.07	0.20	< 0.20 U
75-27-4	Bromodichloromethane	0.05	0.20	< 0.20 U
78-87-5	1,2-Dichloropropane	0.04	0.20	< 0.20 U
10061-01-5	cis-1,3-Dichloropropene	0.06	0.20	< 0.20 U
79-01-6	Trichloroethene	0.05	0.20	< 0.20 U
124-48-1	Dibromochloromethane	0.05	0.20	< 0.20 U
79-00-5	1,1,2-Trichloroethane	0.13	0.20	< 0.20 U
71-43-2	Benzene	0.03	0.20	< 0.20 U
10061-02-6	trans-1,3-Dichloropropene	0.08	0.20	< 0.20 U
110-75-8	2-Chloroethylvinylether	0.25	0.50	< 0.50 U
75-25-2	Bromoform	0.06	0.20	< 0.20 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	0.97	2.5	< 2.5 U
591-78-6	2-Hexanone	0.90	5.0	< 5.0 U
127-18-4	Tetrachloroethene	0.05	0.20	< 0.20 U
79-34-5	1,1,2,2-Tetrachloroethane	0.06	0.10	< 0.10 U
108-88-3	Toluene	0.04	0.20	< 0.20 U
108-90-7	Chlorobenzene	0.02	0.20	< 0.20 U
100-41-4	Ethylbenzene	0.04	0.20	< 0.20 U
100-42-5	Styrene	0.05	0.20	< 0.20 U
75-69-4	Trichlorofluoromethane	0.04	0.20	< 0.20 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.04	0.20	< 0.20 U
179601-23-1	m,p-Xylene	0.05	0.40	< 0.40 U
95-47-6	o-Xylene	0.03	0.20	< 0.20 U
95-50-1	1,2-Dichlorobenzene	0.04	0.20	< 0.20 U
541-73-1	1,3-Dichlorobenzene	0.04	0.20	< 0.20 U
106-46-7	1,4-Dichlorobenzene	0.04	0.20	< 0.20 U
107-02-8	Acrolein	2.5	2.5	< 2.5 U
74-88-4	Iodomethane	0.23	0.50	< 0.50 U
74-96-4	Bromoethane	0.04	0.20	< 0.20 U
107-13-1	Acrylonitrile	0.60	1.0	< 1.0 U
563-58-6	1,1-Dichloropropene	0.03	0.10	< 0.10 U
74-95-3	Dibromomethane	0.14	0.20	< 0.20 U
630-20-6	1,1,1,2-Tetrachloroethane	0.04	0.20	< 0.20 U
96-12-8	1,2-Dibromo-3-chloropropane	0.04	0.50	< 0.50 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by P&T GC/MS-Method SW8260C **Sample ID: LMW-11-0616-D**
Page 2 of 2 **SAMPLE**

Lab Sample ID: BBS5B
LIMS ID: 16-8649
Matrix: Water
Date Analyzed: 06/15/16 15:31

QC Report No: BBS5-Golder Associates
Project: Landsburg
9231000002.R273

CAS Number	Analyte	DL	LOQ	Result
96-18-4	1,2,3-Trichloropropane	0.13	0.20	< 0.20 U
110-57-6	trans-1,4-Dichloro-2-butene	0.32	1.0	< 1.0 U
108-67-8	1,3,5-Trimethylbenzene	0.02	0.20	< 0.20 U
95-63-6	1,2,4-Trimethylbenzene	0.02	0.20	< 0.20 U
87-68-3	Hexachlorobutadiene	0.07	0.20	< 0.20 U
106-93-4	1,2-Dibromoethane	0.07	0.10	< 0.10 U
74-97-5	Bromochloromethane	0.06	0.20	< 0.20 U
594-20-7	2,2-Dichloropropane	0.05	0.10	< 0.10 U
142-28-9	1,3-Dichloropropane	0.06	0.10	< 0.10 U
98-82-8	Isopropylbenzene	0.02	0.20	< 0.20 U
103-65-1	n-Propylbenzene	0.02	0.20	< 0.20 U
108-86-1	Bromobenzene	0.06	0.20	< 0.20 U
95-49-8	2-Chlorotoluene	0.02	0.10	< 0.10 U
106-43-4	4-Chlorotoluene	0.02	0.20	< 0.20 U
98-06-6	tert-Butylbenzene	0.03	0.20	< 0.20 U
135-98-8	sec-Butylbenzene	0.02	0.20	< 0.20 U
99-87-6	4-Isopropyltoluene	0.03	0.10	< 0.10 U
104-51-8	n-Butylbenzene	0.02	0.20	< 0.20 U
120-82-1	1,2,4-Trichlorobenzene	0.11	0.50	< 0.50 U
91-20-3	Naphthalene	0.12	0.50	< 0.50 U
87-61-6	1,2,3-Trichlorobenzene	0.11	0.20	< 0.20 U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	107%
d8-Toluene	94.6%
Bromofluorobenzene	95.2%
d4-1,2-Dichlorobenzene	102%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by P&T GC/MS-Method SW8260C **Sample ID: LMW-9-0616**
Page 1 of 2 **SAMPLE**

Lab Sample ID: BBS5C
LIMS ID: 16-8650
Matrix: Water
Data Release Authorized: MW
Reported: 06/21/16

QC Report No: BBS5-Golder Associates
Project: Landsburg
9231000002.R273
Date Sampled: 06/06/16
Date Received: 06/08/16

Instrument/Analyst: NT2/PAB
Date Analyzed: 06/15/16 15:52

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	DL	LOQ	Result
74-87-3	Chloromethane	0.09	0.50	< 0.50 U
74-83-9	Bromomethane	0.25	1.0	< 1.0 U
75-01-4	Vinyl Chloride	0.06	0.10	< 0.10 U
75-00-3	Chloroethane	0.09	0.20	< 0.20 U
75-09-2	Methylene Chloride	0.48	1.0	< 1.0 U
67-64-1	Acetone	2.1	5.0	< 5.0 U
75-15-0	Carbon Disulfide	0.04	0.20	< 0.20 U
75-35-4	1,1-Dichloroethene	0.05	0.20	< 0.20 U
75-34-3	1,1-Dichloroethane	0.05	0.20	< 0.20 U
156-60-5	trans-1,2-Dichloroethene	0.05	0.20	< 0.20 U
156-59-2	cis-1,2-Dichloroethene	0.04	0.20	< 0.20 U
67-66-3	Chloroform	0.03	0.20	< 0.20 U
107-06-2	1,2-Dichloroethane	0.07	0.20	< 0.20 U
78-93-3	2-Butanone	0.81	5.0	< 5.0 U
71-55-6	1,1,1-Trichloroethane	0.04	0.20	< 0.20 U
56-23-5	Carbon Tetrachloride	0.04	0.20	< 0.20 U
108-05-4	Vinyl Acetate	0.07	0.20	< 0.20 U
75-27-4	Bromodichloromethane	0.05	0.20	< 0.20 U
78-87-5	1,2-Dichloropropane	0.04	0.20	< 0.20 U
10061-01-5	cis-1,3-Dichloropropene	0.06	0.20	< 0.20 U
79-01-6	Trichloroethene	0.05	0.20	< 0.20 U
124-48-1	Dibromochloromethane	0.05	0.20	< 0.20 U
79-00-5	1,1,2-Trichloroethane	0.13	0.20	< 0.20 U
71-43-2	Benzene	0.03	0.20	< 0.20 U
10061-02-6	trans-1,3-Dichloropropene	0.08	0.20	< 0.20 U
110-75-8	2-Chloroethylvinylether	0.25	0.50	< 0.50 U
75-25-2	Bromoform	0.06	0.20	< 0.20 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	0.97	2.5	< 2.5 U
591-78-6	2-Hexanone	0.90	5.0	< 5.0 U
127-18-4	Tetrachloroethene	0.05	0.20	< 0.20 U
79-34-5	1,1,2,2-Tetrachloroethane	0.06	0.10	< 0.10 U
108-88-3	Toluene	0.04	0.20	< 0.20 U
108-90-7	Chlorobenzene	0.02	0.20	< 0.20 U
100-41-4	Ethylbenzene	0.04	0.20	< 0.20 U
100-42-5	Styrene	0.05	0.20	< 0.20 U
75-69-4	Trichlorofluoromethane	0.04	0.20	< 0.20 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.04	0.20	< 0.20 U
179601-23-1	m,p-Xylene	0.05	0.40	< 0.40 U
95-47-6	o-Xylene	0.03	0.20	< 0.20 U
95-50-1	1,2-Dichlorobenzene	0.04	0.20	< 0.20 U
541-73-1	1,3-Dichlorobenzene	0.04	0.20	< 0.20 U
106-46-7	1,4-Dichlorobenzene	0.04	0.20	< 0.20 U
107-02-8	Acrolein	2.5	2.5	< 2.5 U
74-88-4	Iodomethane	0.23	0.50	< 0.50 U
74-96-4	Bromoethane	0.04	0.20	< 0.20 U
107-13-1	Acrylonitrile	0.60	1.0	< 1.0 U
563-58-6	1,1-Dichloropropene	0.03	0.10	< 0.10 U
74-95-3	Dibromomethane	0.14	0.20	< 0.20 U
630-20-6	1,1,1,2-Tetrachloroethane	0.04	0.20	< 0.20 U
96-12-8	1,2-Dibromo-3-chloropropane	0.04	0.50	< 0.50 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by P&T GC/MS-Method SW8260C **Sample ID: LMW-9-0616**
 SAMPLE

Lab Sample ID: BBS5C
LIMS ID: 16-8650
Matrix: Water
Date Analyzed: 06/15/16 15:52

QC Report No: BBS5-Golder Associates
Project: Landsburg
9231000002.R273

CAS Number	Analyte	DL	LOQ	Result
96-18-4	1,2,3-Trichloropropane	0.13	0.20	< 0.20 U
110-57-6	trans-1,4-Dichloro-2-butene	0.32	1.0	< 1.0 U
108-67-8	1,3,5-Trimethylbenzene	0.02	0.20	< 0.20 U
95-63-6	1,2,4-Trimethylbenzene	0.02	0.20	< 0.20 U
87-68-3	Hexachlorobutadiene	0.07	0.20	< 0.20 U
106-93-4	1,2-Dibromoethane	0.07	0.10	< 0.10 U
74-97-5	Bromochloromethane	0.06	0.20	< 0.20 U
594-20-7	2,2-Dichloropropane	0.05	0.10	< 0.10 U
142-28-9	1,3-Dichloropropane	0.06	0.10	< 0.10 U
98-82-8	Isopropylbenzene	0.02	0.20	< 0.20 U
103-65-1	n-Propylbenzene	0.02	0.20	< 0.20 U
108-86-1	Bromobenzene	0.06	0.20	< 0.20 U
95-49-8	2-Chlorotoluene	0.02	0.10	< 0.10 U
106-43-4	4-Chlorotoluene	0.02	0.20	< 0.20 U
98-06-6	tert-Butylbenzene	0.03	0.20	< 0.20 U
135-98-8	sec-Butylbenzene	0.02	0.20	< 0.20 U
99-87-6	4-Isopropyltoluene	0.03	0.10	< 0.10 U
104-51-8	n-Butylbenzene	0.02	0.20	< 0.20 U
120-82-1	1,2,4-Trichlorobenzene	0.11	0.50	< 0.50 U
91-20-3	Naphthalene	0.12	0.50	< 0.50 U
87-61-6	1,2,3-Trichlorobenzene	0.11	0.20	< 0.20 U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	113%
d8-Toluene	96.6%
Bromofluorobenzene	92.6%
d4-1,2-Dichlorobenzene	101%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by P&T GC/MS-Method SW8260C **Sample ID: LMW-8-0616**
Page 1 of 2 **SAMPLE**

Lab Sample ID: BBS5D
LIMS ID: 16-8651
Matrix: Water
Data Release Authorized: MW
Reported: 06/21/16

QC Report No: BBS5-Golder Associates
Project: Landsburg
9231000002.R273
Date Sampled: 06/06/16
Date Received: 06/08/16

Instrument/Analyst: NT2/PAB
Date Analyzed: 06/15/16 16:12

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	DL	LOQ	Result
74-87-3	Chloromethane	0.09	0.50	< 0.50 U
74-83-9	Bromomethane	0.25	1.0	< 1.0 U
75-01-4	Vinyl Chloride	0.06	0.10	< 0.10 U
75-00-3	Chloroethane	0.09	0.20	< 0.20 U
75-09-2	Methylene Chloride	0.48	1.0	< 1.0 U
67-64-1	Acetone	2.1	5.0	< 5.0 U
75-15-0	Carbon Disulfide	0.04	0.20	< 0.20 U
75-35-4	1,1-Dichloroethene	0.05	0.20	< 0.20 U
75-34-3	1,1-Dichloroethane	0.05	0.20	< 0.20 U
156-60-5	trans-1,2-Dichloroethene	0.05	0.20	< 0.20 U
156-59-2	cis-1,2-Dichloroethene	0.04	0.20	< 0.20 U
67-66-3	Chloroform	0.03	0.20	< 0.20 U
107-06-2	1,2-Dichloroethane	0.07	0.20	< 0.20 U
78-93-3	2-Butanone	0.81	5.0	< 5.0 U
71-55-6	1,1,1-Trichloroethane	0.04	0.20	< 0.20 U
56-23-5	Carbon Tetrachloride	0.04	0.20	< 0.20 U
108-05-4	Vinyl Acetate	0.07	0.20	< 0.20 U
75-27-4	Bromodichloromethane	0.05	0.20	< 0.20 U
78-87-5	1,2-Dichloropropane	0.04	0.20	< 0.20 U
10061-01-5	cis-1,3-Dichloropropene	0.06	0.20	< 0.20 U
79-01-6	Trichloroethene	0.05	0.20	< 0.20 U
124-48-1	Dibromochloromethane	0.05	0.20	< 0.20 U
79-00-5	1,1,2-Trichloroethane	0.13	0.20	< 0.20 U
71-43-2	Benzene	0.03	0.20	< 0.20 U
10061-02-6	trans-1,3-Dichloropropene	0.08	0.20	< 0.20 U
110-75-8	2-Chloroethylvinylether	0.25	0.50	< 0.50 U
75-25-2	Bromoform	0.06	0.20	< 0.20 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	0.97	2.5	< 2.5 U
591-78-6	2-Hexanone	0.90	5.0	< 5.0 U
127-18-4	Tetrachloroethene	0.05	0.20	< 0.20 U
79-34-5	1,1,2,2-Tetrachloroethane	0.06	0.10	< 0.10 U
108-88-3	Toluene	0.04	0.20	< 0.20 U
108-90-7	Chlorobenzene	0.02	0.20	< 0.20 U
100-41-4	Ethylbenzene	0.04	0.20	< 0.20 U
100-42-5	Styrene	0.05	0.20	< 0.20 U
75-69-4	Trichlorofluoromethane	0.04	0.20	< 0.20 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.04	0.20	< 0.20 U
179601-23-1	m,p-Xylene	0.05	0.40	< 0.40 U
95-47-6	o-Xylene	0.03	0.20	< 0.20 U
95-50-1	1,2-Dichlorobenzene	0.04	0.20	< 0.20 U
541-73-1	1,3-Dichlorobenzene	0.04	0.20	< 0.20 U
106-46-7	1,4-Dichlorobenzene	0.04	0.20	< 0.20 U
107-02-8	Acrolein	2.5	2.5	< 2.5 U
74-88-4	Iodomethane	0.23	0.50	< 0.50 U
74-96-4	Bromoethane	0.04	0.20	< 0.20 U
107-13-1	Acrylonitrile	0.60	1.0	< 1.0 U
563-58-6	1,1-Dichloropropene	0.03	0.10	< 0.10 U
74-95-3	Dibromomethane	0.14	0.20	< 0.20 U
630-20-6	1,1,1,2-Tetrachloroethane	0.04	0.20	< 0.20 U
96-12-8	1,2-Dibromo-3-chloropropane	0.04	0.50	< 0.50 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by P&T GC/MS-Method SW8260C **Sample ID: LMW-8-0616**
Page 2 of 2 **SAMPLE**

Lab Sample ID: BBS5D
LIMS ID: 16-8651
Matrix: Water
Date Analyzed: 06/15/16 16:12

QC Report No: BBS5-Golder Associates
Project: Landsburg
9231000002.R273

CAS Number	Analyte	DL	LOQ	Result
96-18-4	1,2,3-Trichloropropane	0.13	0.20	< 0.20 U
110-57-6	trans-1,4-Dichloro-2-butene	0.32	1.0	< 1.0 U
108-67-8	1,3,5-Trimethylbenzene	0.02	0.20	< 0.20 U
95-63-6	1,2,4-Trimethylbenzene	0.02	0.20	< 0.20 U
87-68-3	Hexachlorobutadiene	0.07	0.20	< 0.20 U
106-93-4	1,2-Dibromoethane	0.07	0.10	< 0.10 U
74-97-5	Bromochloromethane	0.06	0.20	< 0.20 U
594-20-7	2,2-Dichloropropane	0.05	0.10	< 0.10 U
142-28-9	1,3-Dichloropropane	0.06	0.10	< 0.10 U
98-82-8	Isopropylbenzene	0.02	0.20	< 0.20 U
103-65-1	n-Propylbenzene	0.02	0.20	< 0.20 U
108-86-1	Bromobenzene	0.06	0.20	< 0.20 U
95-49-8	2-Chlorotoluene	0.02	0.10	< 0.10 U
106-43-4	4-Chlorotoluene	0.02	0.20	< 0.20 U
98-06-6	tert-Butylbenzene	0.03	0.20	< 0.20 U
135-98-8	sec-Butylbenzene	0.02	0.20	< 0.20 U
99-87-6	4-Isopropyltoluene	0.03	0.10	< 0.10 U
104-51-8	n-Butylbenzene	0.02	0.20	< 0.20 U
120-82-1	1,2,4-Trichlorobenzene	0.11	0.50	< 0.50 U
91-20-3	Naphthalene	0.12	0.50	< 0.50 U
87-61-6	1,2,3-Trichlorobenzene	0.11	0.20	< 0.20 U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	112%
d8-Toluene	98.6%
Bromofluorobenzene	93.8%
d4-1,2-Dichlorobenzene	103%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by P&T GC/MS-Method SW8260C **Sample ID: EB0616**
Page 1 of 2 **SAMPLE**

Lab Sample ID: BBS5E
LIMS ID: 16-8652
Matrix: Water
Data Release Authorized:
Reported: 06/21/16

QC Report No: BBS5-Golder Associates
Project: Landsburg
9231000002.R273
Date Sampled: 06/06/16
Date Received: 06/08/16

Instrument/Analyst: NT2/PAB
Date Analyzed: 06/15/16 16:33

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	DL	LOQ	Result
74-87-3	Chloromethane	0.09	0.50	< 0.50 U
74-83-9	Bromomethane	0.25	1.0	< 1.0 U
75-01-4	Vinyl Chloride	0.06	0.10	< 0.10 U
75-00-3	Chloroethane	0.09	0.20	< 0.20 U
75-09-2	Methylene Chloride	0.48	1.0	< 1.0 U
67-64-1	Acetone	2.1	5.0	< 5.0 U
75-15-0	Carbon Disulfide	0.04	0.20	< 0.20 U
75-35-4	1,1-Dichloroethene	0.05	0.20	< 0.20 U
75-34-3	1,1-Dichloroethane	0.05	0.20	< 0.20 U
156-60-5	trans-1,2-Dichloroethene	0.05	0.20	< 0.20 U
156-59-2	cis-1,2-Dichloroethene	0.04	0.20	< 0.20 U
67-66-3	Chloroform	0.03	0.20	< 0.20 U
107-06-2	1,2-Dichloroethane	0.07	0.20	< 0.20 U
78-93-3	2-Butanone	0.81	5.0	< 5.0 U
71-55-6	1,1,1-Trichloroethane	0.04	0.20	< 0.20 U
56-23-5	Carbon Tetrachloride	0.04	0.20	< 0.20 U
108-05-4	Vinyl Acetate	0.07	0.20	< 0.20 U
75-27-4	Bromodichloromethane	0.05	0.20	< 0.20 U
78-87-5	1,2-Dichloropropane	0.04	0.20	< 0.20 U
10061-01-5	cis-1,3-Dichloropropene	0.06	0.20	< 0.20 U
79-01-6	Trichloroethene	0.05	0.20	< 0.20 U
124-48-1	Dibromochloromethane	0.05	0.20	< 0.20 U
79-00-5	1,1,2-Trichloroethane	0.13	0.20	< 0.20 U
71-43-2	Benzene	0.03	0.20	< 0.20 U
10061-02-6	trans-1,3-Dichloropropene	0.08	0.20	< 0.20 U
110-75-8	2-Chloroethylvinylether	0.25	0.50	< 0.50 U
75-25-2	Bromoform	0.06	0.20	< 0.20 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	0.97	2.5	< 2.5 U
591-78-6	2-Hexanone	0.90	5.0	< 5.0 U
127-18-4	Tetrachloroethene	0.05	0.20	< 0.20 U
79-34-5	1,1,2,2-Tetrachloroethane	0.06	0.10	< 0.10 U
108-88-3	Toluene	0.04	0.20	< 0.20 U
108-90-7	Chlorobenzene	0.02	0.20	< 0.20 U
100-41-4	Ethylbenzene	0.04	0.20	< 0.20 U
100-42-5	Styrene	0.05	0.20	< 0.20 U
75-69-4	Trichlorofluoromethane	0.04	0.20	< 0.20 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.04	0.20	< 0.20 U
179601-23-1	m,p-Xylene	0.05	0.40	< 0.40 U
95-47-6	o-Xylene	0.03	0.20	< 0.20 U
95-50-1	1,2-Dichlorobenzene	0.04	0.20	< 0.20 U
541-73-1	1,3-Dichlorobenzene	0.04	0.20	< 0.20 U
106-46-7	1,4-Dichlorobenzene	0.04	0.20	< 0.20 U
107-02-8	Acrolein	2.5	2.5	< 2.5 U
74-88-4	Iodomethane	0.23	0.50	< 0.50 U
74-96-4	Bromoethane	0.04	0.20	< 0.20 U
107-13-1	Acrylonitrile	0.60	1.0	< 1.0 U
563-58-6	1,1-Dichloropropene	0.03	0.10	< 0.10 U
74-95-3	Dibromomethane	0.14	0.20	< 0.20 U
630-20-6	1,1,1,2-Tetrachloroethane	0.04	0.20	< 0.20 U
96-12-8	1,2-Dibromo-3-chloropropane	0.04	0.50	< 0.50 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by P&T GC/MS-Method SW8260C **Sample ID: EB0616**
 SAMPLE

Lab Sample ID: BBS5E
LIMS ID: 16-8652
Matrix: Water
Date Analyzed: 06/15/16 16:33

QC Report No: BBS5-Golder Associates
Project: Landsburg
9231000002.R273

CAS Number	Analyte	DL	LOQ	Result
96-18-4	1,2,3-Trichloropropane	0.13	0.20	< 0.20 U
110-57-6	trans-1,4-Dichloro-2-butene	0.32	1.0	< 1.0 U
108-67-8	1,3,5-Trimethylbenzene	0.02	0.20	< 0.20 U
95-63-6	1,2,4-Trimethylbenzene	0.02	0.20	< 0.20 U
87-68-3	Hexachlorobutadiene	0.07	0.20	< 0.20 U
106-93-4	1,2-Dibromoethane	0.07	0.10	< 0.10 U
74-97-5	Bromochloromethane	0.06	0.20	< 0.20 U
594-20-7	2,2-Dichloropropane	0.05	0.10	< 0.10 U
142-28-9	1,3-Dichloropropane	0.06	0.10	< 0.10 U
98-82-8	Isopropylbenzene	0.02	0.20	< 0.20 U
103-65-1	n-Propylbenzene	0.02	0.20	< 0.20 U
108-86-1	Bromobenzene	0.06	0.20	< 0.20 U
95-49-8	2-Chlorotoluene	0.02	0.10	< 0.10 U
106-43-4	4-Chlorotoluene	0.02	0.20	< 0.20 U
98-06-6	tert-Butylbenzene	0.03	0.20	< 0.20 U
135-98-8	sec-Butylbenzene	0.02	0.20	< 0.20 U
99-87-6	4-Isopropyltoluene	0.03	0.10	< 0.10 U
104-51-8	n-Butylbenzene	0.02	0.20	< 0.20 U
120-82-1	1,2,4-Trichlorobenzene	0.11	0.50	< 0.50 U
91-20-3	Naphthalene	0.12	0.50	< 0.50 U
87-61-6	1,2,3-Trichlorobenzene	0.11	0.20	< 0.20 U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	107%
d8-Toluene	94.4%
Bromofluorobenzene	98.0%
d4-1,2-Dichlorobenzene	100%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by P&T GC/MS-Method SW8260C **Sample ID: LMW-3-0616**
Page 1 of 2 **SAMPLE**

Lab Sample ID: BBS5F
LIMS ID: 16-8653
Matrix: Water
Data Release Authorized:
Reported: 06/21/16

QC Report No: BBS5-Golder Associates
Project: Landsburg
9231000002.R273
Date Sampled: 06/07/16
Date Received: 06/08/16

Instrument/Analyst: NT2/PAB
Date Analyzed: 06/15/16 16:53

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	DL	LOQ	Result
74-87-3	Chloromethane	0.09	0.50	< 0.50 U
74-83-9	Bromomethane	0.25	1.0	< 1.0 U
75-01-4	Vinyl Chloride	0.06	0.10	< 0.10 U
75-00-3	Chloroethane	0.09	0.20	< 0.20 U
75-09-2	Methylene Chloride	0.48	1.0	< 1.0 U
67-64-1	Acetone	2.1	5.0	< 5.0 U
75-15-0	Carbon Disulfide	0.04	0.20	< 0.20 U
75-35-4	1,1-Dichloroethene	0.05	0.20	< 0.20 U
75-34-3	1,1-Dichloroethane	0.05	0.20	< 0.20 U
156-60-5	trans-1,2-Dichloroethene	0.05	0.20	< 0.20 U
156-59-2	cis-1,2-Dichloroethene	0.04	0.20	< 0.20 U
67-66-3	Chloroform	0.03	0.20	< 0.20 U
107-06-2	1,2-Dichloroethane	0.07	0.20	< 0.20 U
78-93-3	2-Butanone	0.81	5.0	< 5.0 U
71-55-6	1,1,1-Trichloroethane	0.04	0.20	< 0.20 U
56-23-5	Carbon Tetrachloride	0.04	0.20	< 0.20 U
108-05-4	Vinyl Acetate	0.07	0.20	< 0.20 U
75-27-4	Bromodichloromethane	0.05	0.20	< 0.20 U
78-87-5	1,2-Dichloropropane	0.04	0.20	< 0.20 U
10061-01-5	cis-1,3-Dichloropropene	0.06	0.20	< 0.20 U
79-01-6	Trichloroethene	0.05	0.20	< 0.20 U
124-48-1	Dibromochloromethane	0.05	0.20	< 0.20 U
79-00-5	1,1,2-Trichloroethane	0.13	0.20	< 0.20 U
71-43-2	Benzene	0.03	0.20	< 0.20 U
10061-02-6	trans-1,3-Dichloropropene	0.08	0.20	< 0.20 U
110-75-8	2-Chloroethylvinylether	0.25	0.50	< 0.50 U
75-25-2	Bromoform	0.06	0.20	< 0.20 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	0.97	2.5	< 2.5 U
591-78-6	2-Hexanone	0.90	5.0	< 5.0 U
127-18-4	Tetrachloroethene	0.05	0.20	< 0.20 U
79-34-5	1,1,2,2-Tetrachloroethane	0.06	0.10	< 0.10 U
108-88-3	Toluene	0.04	0.20	< 0.20 U
108-90-7	Chlorobenzene	0.02	0.20	< 0.20 U
100-41-4	Ethylbenzene	0.04	0.20	< 0.20 U
100-42-5	Styrene	0.05	0.20	< 0.20 U
75-69-4	Trichlorofluoromethane	0.04	0.20	< 0.20 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.04	0.20	< 0.20 U
179601-23-1	m,p-Xylene	0.05	0.40	< 0.40 U
95-47-6	o-Xylene	0.03	0.20	< 0.20 U
95-50-1	1,2-Dichlorobenzene	0.04	0.20	< 0.20 U
541-73-1	1,3-Dichlorobenzene	0.04	0.20	< 0.20 U
106-46-7	1,4-Dichlorobenzene	0.04	0.20	< 0.20 U
107-02-8	Acrolein	2.5	2.5	< 2.5 U
74-88-4	Iodomethane	0.23	0.50	< 0.50 U
74-96-4	Bromoethane	0.04	0.20	< 0.20 U
107-13-1	Acrylonitrile	0.60	1.0	< 1.0 U
563-58-6	1,1-Dichloropropene	0.03	0.10	< 0.10 U
74-95-3	Dibromomethane	0.14	0.20	< 0.20 U
630-20-6	1,1,1,2-Tetrachloroethane	0.04	0.20	< 0.20 U
96-12-8	1,2-Dibromo-3-chloropropane	0.04	0.50	< 0.50 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by P&T GC/MS-Method SW8260C **Sample ID: LMW-3-0616**
 SAMPLE

Lab Sample ID: BBS5F
LIMS ID: 16-8653
Matrix: Water
Date Analyzed: 06/15/16 16:53

QC Report No: BBS5-Golder Associates
Project: Landsburg
9231000002.R273

CAS Number	Analyte	DL	LOQ	Result
96-18-4	1,2,3-Trichloropropane	0.13	0.20	< 0.20 U
110-57-6	trans-1,4-Dichloro-2-butene	0.32	1.0	< 1.0 U
108-67-8	1,3,5-Trimethylbenzene	0.02	0.20	< 0.20 U
95-63-6	1,2,4-Trimethylbenzene	0.02	0.20	< 0.20 U
87-68-3	Hexachlorobutadiene	0.07	0.20	< 0.20 U
106-93-4	1,2-Dibromoethane	0.07	0.10	< 0.10 U
74-97-5	Bromochloromethane	0.06	0.20	< 0.20 U
594-20-7	2,2-Dichloropropane	0.05	0.10	< 0.10 U
142-28-9	1,3-Dichloropropane	0.06	0.10	< 0.10 U
98-82-8	Isopropylbenzene	0.02	0.20	< 0.20 U
103-65-1	n-Propylbenzene	0.02	0.20	< 0.20 U
108-86-1	Bromobenzene	0.06	0.20	< 0.20 U
95-49-8	2-Chlorotoluene	0.02	0.10	< 0.10 U
106-43-4	4-Chlorotoluene	0.02	0.20	< 0.20 U
98-06-6	tert-Butylbenzene	0.03	0.20	< 0.20 U
135-98-8	sec-Butylbenzene	0.02	0.20	< 0.20 U
99-87-6	4-Isopropyltoluene	0.03	0.10	< 0.10 U
104-51-8	n-Butylbenzene	0.02	0.20	< 0.20 U
120-82-1	1,2,4-Trichlorobenzene	0.11	0.50	< 0.50 U
91-20-3	Naphthalene	0.12	0.50	< 0.50 U
87-61-6	1,2,3-Trichlorobenzene	0.11	0.20	< 0.20 U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	112%
d8-Toluene	96.2%
Bromofluorobenzene	93.0%
d4-1,2-Dichlorobenzene	103%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by P&T GC/MS-Method SW8260C **Sample ID: LMW-5-0616**
Page 1 of 2 **SAMPLE**

Lab Sample ID: BBS5G
LIMS ID: 16-8654
Matrix: Water
Data Release Authorized:
Reported: 06/21/16

QC Report No: BBS5-Golder Associates
Project: Landsburg
9231000002.R273
Date Sampled: 06/07/16
Date Received: 06/08/16

Instrument/Analyst: NT2/PAB
Date Analyzed: 06/15/16 17:14

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	DL	LOQ	Result
74-87-3	Chloromethane	0.09	0.50	< 0.50 U
74-83-9	Bromomethane	0.25	1.0	< 1.0 U
75-01-4	Vinyl Chloride	0.06	0.10	< 0.10 U
75-00-3	Chloroethane	0.09	0.20	< 0.20 U
75-09-2	Methylene Chloride	0.48	1.0	< 1.0 U
67-64-1	Acetone	2.1	5.0	< 5.0 U
75-15-0	Carbon Disulfide	0.04	0.20	< 0.20 U
75-35-4	1,1-Dichloroethene	0.05	0.20	< 0.20 U
75-34-3	1,1-Dichloroethane	0.05	0.20	< 0.20 U
156-60-5	trans-1,2-Dichloroethene	0.05	0.20	< 0.20 U
156-59-2	cis-1,2-Dichloroethene	0.04	0.20	< 0.20 U
67-66-3	Chloroform	0.03	0.20	< 0.20 U
107-06-2	1,2-Dichloroethane	0.07	0.20	< 0.20 U
78-93-3	2-Butanone	0.81	5.0	< 5.0 U
71-55-6	1,1,1-Trichloroethane	0.04	0.20	< 0.20 U
56-23-5	Carbon Tetrachloride	0.04	0.20	< 0.20 U
108-05-4	Vinyl Acetate	0.07	0.20	< 0.20 U
75-27-4	Bromodichloromethane	0.05	0.20	< 0.20 U
78-87-5	1,2-Dichloropropane	0.04	0.20	< 0.20 U
10061-01-5	cis-1,3-Dichloropropene	0.06	0.20	< 0.20 U
79-01-6	Trichloroethene	0.05	0.20	< 0.20 U
124-48-1	Dibromochloromethane	0.05	0.20	< 0.20 U
79-00-5	1,1,2-Trichloroethane	0.13	0.20	< 0.20 U
71-43-2	Benzene	0.03	0.20	< 0.20 U
10061-02-6	trans-1,3-Dichloropropene	0.08	0.20	< 0.20 U
110-75-8	2-Chloroethylvinylether	0.25	0.50	< 0.50 U
75-25-2	Bromoform	0.06	0.20	< 0.20 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	0.97	2.5	< 2.5 U
591-78-6	2-Hexanone	0.90	5.0	< 5.0 U
127-18-4	Tetrachloroethene	0.05	0.20	< 0.20 U
79-34-5	1,1,2,2-Tetrachloroethane	0.06	0.10	< 0.10 U
108-88-3	Toluene	0.04	0.20	< 0.20 U
108-90-7	Chlorobenzene	0.02	0.20	< 0.20 U
100-41-4	Ethylbenzene	0.04	0.20	< 0.20 U
100-42-5	Styrene	0.05	0.20	< 0.20 U
75-69-4	Trichlorofluoromethane	0.04	0.20	< 0.20 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.04	0.20	< 0.20 U
179601-23-1	m,p-Xylene	0.05	0.40	< 0.40 U
95-47-6	o-Xylene	0.03	0.20	< 0.20 U
95-50-1	1,2-Dichlorobenzene	0.04	0.20	< 0.20 U
541-73-1	1,3-Dichlorobenzene	0.04	0.20	< 0.20 U
106-46-7	1,4-Dichlorobenzene	0.04	0.20	< 0.20 U
107-02-8	Acrolein	2.5	2.5	< 2.5 U
74-88-4	Iodomethane	0.23	0.50	< 0.50 U
74-96-4	Bromoethane	0.04	0.20	< 0.20 U
107-13-1	Acrylonitrile	0.60	1.0	< 1.0 U
563-58-6	1,1-Dichloropropene	0.03	0.10	< 0.10 U
74-95-3	Dibromomethane	0.14	0.20	< 0.20 U
630-20-6	1,1,1,2-Tetrachloroethane	0.04	0.20	< 0.20 U
96-12-8	1,2-Dibromo-3-chloropropane	0.04	0.50	< 0.50 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by P&T GC/MS-Method SW8260C **Sample ID: LMW-5-0616**
 SAMPLE

Lab Sample ID: BBS5G
LIMS ID: 16-8654
Matrix: Water
Date Analyzed: 06/15/16 17:14

QC Report No: BBS5-Golder Associates
Project: Landsburg
9231000002.R273

CAS Number	Analyte	DL	LOQ	Result
96-18-4	1,2,3-Trichloropropane	0.13	0.20	< 0.20 U
110-57-6	trans-1,4-Dichloro-2-butene	0.32	1.0	< 1.0 U
108-67-8	1,3,5-Trimethylbenzene	0.02	0.20	< 0.20 U
95-63-6	1,2,4-Trimethylbenzene	0.02	0.20	< 0.20 U
87-68-3	Hexachlorobutadiene	0.07	0.20	< 0.20 U
106-93-4	1,2-Dibromoethane	0.07	0.10	< 0.10 U
74-97-5	Bromochloromethane	0.06	0.20	< 0.20 U
594-20-7	2,2-Dichloropropane	0.05	0.10	< 0.10 U
142-28-9	1,3-Dichloropropane	0.06	0.10	< 0.10 U
98-82-8	Isopropylbenzene	0.02	0.20	< 0.20 U
103-65-1	n-Propylbenzene	0.02	0.20	< 0.20 U
108-86-1	Bromobenzene	0.06	0.20	< 0.20 U
95-49-8	2-Chlorotoluene	0.02	0.10	< 0.10 U
106-43-4	4-Chlorotoluene	0.02	0.20	< 0.20 U
98-06-6	tert-Butylbenzene	0.03	0.20	< 0.20 U
135-98-8	sec-Butylbenzene	0.02	0.20	< 0.20 U
99-87-6	4-Isopropyltoluene	0.03	0.10	< 0.10 U
104-51-8	n-Butylbenzene	0.02	0.20	< 0.20 U
120-82-1	1,2,4-Trichlorobenzene	0.11	0.50	< 0.50 U
91-20-3	Naphthalene	0.12	0.50	< 0.50 U
87-61-6	1,2,3-Trichlorobenzene	0.11	0.20	< 0.20 U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	113%
d8-Toluene	94.2%
Bromofluorobenzene	92.6%
d4-1,2-Dichlorobenzene	103%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by P&T GC/MS-Method SW8260C **Sample ID: LMW-6-0616**
Page 1 of 2 **SAMPLE**

Lab Sample ID: BBS5H
LIMS ID: 16-8655
Matrix: Water
Data Release Authorized:
Reported: 06/21/16

QC Report No: BBS5-Golder Associates
Project: Landsburg
9231000002.R273
Date Sampled: 06/07/16
Date Received: 06/08/16

Instrument/Analyst: NT2/PAB
Date Analyzed: 06/15/16 17:34

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	DL	LOQ	Result
74-87-3	Chloromethane	0.09	0.50	< 0.50 U
74-83-9	Bromomethane	0.25	1.0	< 1.0 U
75-01-4	Vinyl Chloride	0.06	0.10	< 0.10 U
75-00-3	Chloroethane	0.09	0.20	< 0.20 U
75-09-2	Methylene Chloride	0.48	1.0	< 1.0 U
67-64-1	Acetone	2.1	5.0	< 5.0 U
75-15-0	Carbon Disulfide	0.04	0.20	< 0.20 U
75-35-4	1,1-Dichloroethene	0.05	0.20	< 0.20 U
75-34-3	1,1-Dichloroethane	0.05	0.20	< 0.20 U
156-60-5	trans-1,2-Dichloroethene	0.05	0.20	< 0.20 U
156-59-2	cis-1,2-Dichloroethene	0.04	0.20	< 0.20 U
67-66-3	Chloroform	0.03	0.20	< 0.20 U
107-06-2	1,2-Dichloroethane	0.07	0.20	< 0.20 U
78-93-3	2-Butanone	0.81	5.0	< 5.0 U
71-55-6	1,1,1-Trichloroethane	0.04	0.20	< 0.20 U
56-23-5	Carbon Tetrachloride	0.04	0.20	< 0.20 U
108-05-4	Vinyl Acetate	0.07	0.20	< 0.20 U
75-27-4	Bromodichloromethane	0.05	0.20	< 0.20 U
78-87-5	1,2-Dichloropropane	0.04	0.20	< 0.20 U
10061-01-5	cis-1,3-Dichloropropene	0.06	0.20	< 0.20 U
79-01-6	Trichloroethene	0.05	0.20	< 0.20 U
124-48-1	Dibromochloromethane	0.05	0.20	< 0.20 U
79-00-5	1,1,2-Trichloroethane	0.13	0.20	< 0.20 U
71-43-2	Benzene	0.03	0.20	< 0.20 U
10061-02-6	trans-1,3-Dichloropropene	0.08	0.20	< 0.20 U
110-75-8	2-Chloroethylvinylether	0.25	0.50	< 0.50 U
75-25-2	Bromoform	0.06	0.20	< 0.20 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	0.97	2.5	< 2.5 U
591-78-6	2-Hexanone	0.90	5.0	< 5.0 U
127-18-4	Tetrachloroethene	0.05	0.20	< 0.20 U
79-34-5	1,1,2,2-Tetrachloroethane	0.06	0.10	< 0.10 U
108-88-3	Toluene	0.04	0.20	< 0.20 U
108-90-7	Chlorobenzene	0.02	0.20	< 0.20 U
100-41-4	Ethylbenzene	0.04	0.20	< 0.20 U
100-42-5	Styrene	0.05	0.20	< 0.20 U
75-69-4	Trichlorofluoromethane	0.04	0.20	< 0.20 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.04	0.20	< 0.20 U
179601-23-1	m,p-Xylene	0.05	0.40	< 0.40 U
95-47-6	o-Xylene	0.03	0.20	< 0.20 U
95-50-1	1,2-Dichlorobenzene	0.04	0.20	< 0.20 U
541-73-1	1,3-Dichlorobenzene	0.04	0.20	< 0.20 U
106-46-7	1,4-Dichlorobenzene	0.04	0.20	< 0.20 U
107-02-8	Acrolein	2.5	2.5	< 2.5 U
74-88-4	Iodomethane	0.23	0.50	< 0.50 U
74-96-4	Bromoethane	0.04	0.20	< 0.20 U
107-13-1	Acrylonitrile	0.60	1.0	< 1.0 U
563-58-6	1,1-Dichloropropene	0.03	0.10	< 0.10 U
74-95-3	Dibromomethane	0.14	0.20	< 0.20 U
630-20-6	1,1,1,2-Tetrachloroethane	0.04	0.20	< 0.20 U
96-12-8	1,2-Dibromo-3-chloropropane	0.04	0.50	< 0.50 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by P&T GC/MS-Method SW8260C

Sample ID: LMW-6-0616
SAMPLE

Lab Sample ID: BBS5H
LIMS ID: 16-8655
Matrix: Water
Date Analyzed: 06/15/16 17:34

QC Report No: BBS5-Golder Associates
Project: Landsburg
9231000002.R273

CAS Number	Analyte	DL	LOQ	Result
96-18-4	1,2,3-Trichloropropane	0.13	0.20	< 0.20 U
110-57-6	trans-1,4-Dichloro-2-butene	0.32	1.0	< 1.0 U
108-67-8	1,3,5-Trimethylbenzene	0.02	0.20	< 0.20 U
95-63-6	1,2,4-Trimethylbenzene	0.02	0.20	< 0.20 U
87-68-3	Hexachlorobutadiene	0.07	0.20	< 0.20 U
106-93-4	1,2-Dibromoethane	0.07	0.10	< 0.10 U
74-97-5	Bromochloromethane	0.06	0.20	< 0.20 U
594-20-7	2,2-Dichloropropane	0.05	0.10	< 0.10 U
142-28-9	1,3-Dichloropropane	0.06	0.10	< 0.10 U
98-82-8	Isopropylbenzene	0.02	0.20	< 0.20 U
103-65-1	n-Propylbenzene	0.02	0.20	< 0.20 U
108-86-1	Bromobenzene	0.06	0.20	< 0.20 U
95-49-8	2-Chlorotoluene	0.02	0.10	< 0.10 U
106-43-4	4-Chlorotoluene	0.02	0.20	< 0.20 U
98-06-6	tert-Butylbenzene	0.03	0.20	< 0.20 U
135-98-8	sec-Butylbenzene	0.02	0.20	< 0.20 U
99-87-6	4-Isopropyltoluene	0.03	0.10	< 0.10 U
104-51-8	n-Butylbenzene	0.02	0.20	< 0.20 U
120-82-1	1,2,4-Trichlorobenzene	0.11	0.50	< 0.50 U
91-20-3	Naphthalene	0.12	0.50	< 0.50 U
87-61-6	1,2,3-Trichlorobenzene	0.11	0.20	< 0.20 U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	111%
d8-Toluene	99.2%
Bromofluorobenzene	97.4%
d4-1,2-Dichlorobenzene	108%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by P&T GC/MS-Method SW8260C

Sample ID: LMW-7-0616
SAMPLE

Lab Sample ID: BBS5I
LIMS ID: 16-8656
Matrix: Water
Data Release Authorized: MW
Reported: 06/21/16

QC Report No: BBS5-Golder Associates
Project: Landsburg
9231000002.R273
Date Sampled: 06/07/16
Date Received: 06/08/16

Instrument/Analyst: NT2/PAB
Date Analyzed: 06/15/16 17:55

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	DL	LOQ	Result
74-87-3	Chloromethane	0.09	0.50	< 0.50 U
74-83-9	Bromomethane	0.25	1.0	< 1.0 U
75-01-4	Vinyl Chloride	0.06	0.10	< 0.10 U
75-00-3	Chloroethane	0.09	0.20	< 0.20 U
75-09-2	Methylene Chloride	0.48	1.0	< 1.0 U
67-64-1	Acetone	2.1	5.0	< 5.0 U
75-15-0	Carbon Disulfide	0.04	0.20	< 0.20 U
75-35-4	1,1-Dichloroethene	0.05	0.20	< 0.20 U
75-34-3	1,1-Dichloroethane	0.05	0.20	< 0.20 U
156-60-5	trans-1,2-Dichloroethene	0.05	0.20	< 0.20 U
156-59-2	cis-1,2-Dichloroethene	0.04	0.20	< 0.20 U
67-66-3	Chloroform	0.03	0.20	< 0.20 U
107-06-2	1,2-Dichloroethane	0.07	0.20	< 0.20 U
78-93-3	2-Butanone	0.81	5.0	< 5.0 U
71-55-6	1,1,1-Trichloroethane	0.04	0.20	< 0.20 U
56-23-5	Carbon Tetrachloride	0.04	0.20	< 0.20 U
108-05-4	Vinyl Acetate	0.07	0.20	< 0.20 U
75-27-4	Bromodichloromethane	0.05	0.20	< 0.20 U
78-87-5	1,2-Dichloropropane	0.04	0.20	< 0.20 U
10061-01-5	cis-1,3-Dichloropropene	0.06	0.20	< 0.20 U
79-01-6	Trichloroethene	0.05	0.20	< 0.20 U
124-48-1	Dibromochloromethane	0.05	0.20	< 0.20 U
79-00-5	1,1,2-Trichloroethane	0.13	0.20	< 0.20 U
71-43-2	Benzene	0.03	0.20	< 0.20 U
10061-02-6	trans-1,3-Dichloropropene	0.08	0.20	< 0.20 U
110-75-8	2-Chloroethylvinylether	0.25	0.50	< 0.50 U
75-25-2	Bromoform	0.06	0.20	< 0.20 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	0.97	2.5	< 2.5 U
591-78-6	2-Hexanone	0.90	5.0	< 5.0 U
127-18-4	Tetrachloroethene	0.05	0.20	< 0.20 U
79-34-5	1,1,2,2-Tetrachloroethane	0.06	0.10	< 0.10 U
108-88-3	Toluene	0.04	0.20	< 0.20 U
108-90-7	Chlorobenzene	0.02	0.20	< 0.20 U
100-41-4	Ethylbenzene	0.04	0.20	< 0.20 U
100-42-5	Styrene	0.05	0.20	< 0.20 U
75-69-4	Trichlorofluoromethane	0.04	0.20	< 0.20 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.04	0.20	< 0.20 U
179601-23-1	m,p-Xylene	0.05	0.40	< 0.40 U
95-47-6	o-Xylene	0.03	0.20	< 0.20 U
95-50-1	1,2-Dichlorobenzene	0.04	0.20	< 0.20 U
541-73-1	1,3-Dichlorobenzene	0.04	0.20	< 0.20 U
106-46-7	1,4-Dichlorobenzene	0.04	0.20	< 0.20 U
107-02-8	Acrolein	2.5	2.5	< 2.5 U
74-88-4	Iodomethane	0.23	0.50	< 0.50 U
74-96-4	Bromoethane	0.04	0.20	< 0.20 U
107-13-1	Acrylonitrile	0.60	1.0	< 1.0 U
563-58-6	1,1-Dichloropropene	0.03	0.10	< 0.10 U
74-95-3	Dibromomethane	0.14	0.20	< 0.20 U
630-20-6	1,1,1,2-Tetrachloroethane	0.04	0.20	< 0.20 U
96-12-8	1,2-Dibromo-3-chloropropane	0.04	0.50	< 0.50 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by P&T GC/MS-Method SW8260C **Sample ID: LMW-7-0616**
 SAMPLE

Lab Sample ID: BBS5I
LIMS ID: 16-8656
Matrix: Water
Date Analyzed: 06/15/16 17:55

QC Report No: BBS5-Golder Associates
Project: Landsburg
9231000002.R273

CAS Number	Analyte	DL	LOQ	Result
96-18-4	1,2,3-Trichloropropane	0.13	0.20	< 0.20 U
110-57-6	trans-1,4-Dichloro-2-butene	0.32	1.0	< 1.0 U
108-67-8	1,3,5-Trimethylbenzene	0.02	0.20	< 0.20 U
95-63-6	1,2,4-Trimethylbenzene	0.02	0.20	< 0.20 U
87-68-3	Hexachlorobutadiene	0.07	0.20	< 0.20 U
106-93-4	1,2-Dibromoethane	0.07	0.10	< 0.10 U
74-97-5	Bromochloromethane	0.06	0.20	< 0.20 U
594-20-7	2,2-Dichloropropane	0.05	0.10	< 0.10 U
142-28-9	1,3-Dichloropropane	0.06	0.10	< 0.10 U
98-82-8	Isopropylbenzene	0.02	0.20	< 0.20 U
103-65-1	n-Propylbenzene	0.02	0.20	< 0.20 U
108-86-1	Bromobenzene	0.06	0.20	< 0.20 U
95-49-8	2-Chlorotoluene	0.02	0.10	< 0.10 U
106-43-4	4-Chlorotoluene	0.02	0.20	< 0.20 U
98-06-6	tert-Butylbenzene	0.03	0.20	< 0.20 U
135-98-8	sec-Butylbenzene	0.02	0.20	< 0.20 U
99-87-6	4-Isopropyltoluene	0.03	0.10	< 0.10 U
104-51-8	n-Butylbenzene	0.02	0.20	< 0.20 U
120-82-1	1,2,4-Trichlorobenzene	0.11	0.50	< 0.50 U
91-20-3	Naphthalene	0.12	0.50	< 0.50 U
87-61-6	1,2,3-Trichlorobenzene	0.11	0.20	< 0.20 U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	110%
d8-Toluene	95.0%
Bromofluorobenzene	94.4%
d4-1,2-Dichlorobenzene	104%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by P&T GC/MS-Method SW8260C **Sample ID: LMW-10-0616**
Page 1 of 2 **SAMPLE**

Lab Sample ID: BBS5J
LIMS ID: 16-8657
Matrix: Water
Data Release Authorized:
Reported: 06/21/16

QC Report No: BBS5-Golder Associates
Project: Landsburg
9231000002.R273
Date Sampled: 06/08/16
Date Received: 06/08/16

Instrument/Analyst: NT2/PAB
Date Analyzed: 06/15/16 18:15

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	DL	LOQ	Result
74-87-3	Chloromethane	0.09	0.50	< 0.50 U
74-83-9	Bromomethane	0.25	1.0	< 1.0 U
75-01-4	Vinyl Chloride	0.06	0.10	< 0.10 U
75-00-3	Chloroethane	0.09	0.20	< 0.20 U
75-09-2	Methylene Chloride	0.48	1.0	< 1.0 U
67-64-1	Acetone	2.1	5.0	< 5.0 U
75-15-0	Carbon Disulfide	0.04	0.20	< 0.20 U
75-35-4	1,1-Dichloroethene	0.05	0.20	< 0.20 U
75-34-3	1,1-Dichloroethane	0.05	0.20	< 0.20 U
156-60-5	trans-1,2-Dichloroethene	0.05	0.20	< 0.20 U
156-59-2	cis-1,2-Dichloroethene	0.04	0.20	< 0.20 U
67-66-3	Chloroform	0.03	0.20	< 0.20 U
107-06-2	1,2-Dichloroethane	0.07	0.20	< 0.20 U
78-93-3	2-Butanone	0.81	5.0	< 5.0 U
71-55-6	1,1,1-Trichloroethane	0.04	0.20	< 0.20 U
56-23-5	Carbon Tetrachloride	0.04	0.20	< 0.20 U
108-05-4	Vinyl Acetate	0.07	0.20	< 0.20 U
75-27-4	Bromodichloromethane	0.05	0.20	< 0.20 U
78-87-5	1,2-Dichloropropane	0.04	0.20	< 0.20 U
10061-01-5	cis-1,3-Dichloropropene	0.06	0.20	< 0.20 U
79-01-6	Trichloroethene	0.05	0.20	< 0.20 U
124-48-1	Dibromochloromethane	0.05	0.20	< 0.20 U
79-00-5	1,1,2-Trichloroethane	0.13	0.20	< 0.20 U
71-43-2	Benzene	0.03	0.20	< 0.20 U
10061-02-6	trans-1,3-Dichloropropene	0.08	0.20	< 0.20 U
110-75-8	2-Chloroethylvinylether	0.25	0.50	< 0.50 U
75-25-2	Bromoform	0.06	0.20	< 0.20 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	0.97	2.5	< 2.5 U
591-78-6	2-Hexanone	0.90	5.0	< 5.0 U
127-18-4	Tetrachloroethene	0.05	0.20	< 0.20 U
79-34-5	1,1,2,2-Tetrachloroethane	0.06	0.10	< 0.10 U
108-88-3	Toluene	0.04	0.20	< 0.20 U
108-90-7	Chlorobenzene	0.02	0.20	< 0.20 U
100-41-4	Ethylbenzene	0.04	0.20	< 0.20 U
100-42-5	Styrene	0.05	0.20	< 0.20 U
75-69-4	Trichlorofluoromethane	0.04	0.20	< 0.20 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.04	0.20	< 0.20 U
179601-23-1	m,p-Xylene	0.05	0.40	< 0.40 U
95-47-6	o-Xylene	0.03	0.20	< 0.20 U
95-50-1	1,2-Dichlorobenzene	0.04	0.20	< 0.20 U
541-73-1	1,3-Dichlorobenzene	0.04	0.20	< 0.20 U
106-46-7	1,4-Dichlorobenzene	0.04	0.20	< 0.20 U
107-02-8	Acrolein	2.5	2.5	< 2.5 U
74-88-4	Iodomethane	0.23	0.50	< 0.50 U
74-96-4	Bromoethane	0.04	0.20	< 0.20 U
107-13-1	Acrylonitrile	0.60	1.0	< 1.0 U
563-58-6	1,1-Dichloropropene	0.03	0.10	< 0.10 U
74-95-3	Dibromomethane	0.14	0.20	< 0.20 U
630-20-6	1,1,1,2-Tetrachloroethane	0.04	0.20	< 0.20 U
96-12-8	1,2-Dibromo-3-chloropropane	0.04	0.50	< 0.50 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by P&T GC/MS-Method SW8260C **Sample ID: LMW-10-0616**
 SAMPLE

Lab Sample ID: BBS5J
LIMS ID: 16-8657
Matrix: Water
Date Analyzed: 06/15/16 18:15

QC Report No: BBS5-Golder Associates
Project: Landsburg
9231000002.R273

CAS Number	Analyte	DL	LOQ	Result
96-18-4	1,2,3-Trichloropropane	0.13	0.20	< 0.20 U
110-57-6	trans-1,4-Dichloro-2-butene	0.32	1.0	< 1.0 U
108-67-8	1,3,5-Trimethylbenzene	0.02	0.20	< 0.20 U
95-63-6	1,2,4-Trimethylbenzene	0.02	0.20	< 0.20 U
87-68-3	Hexachlorobutadiene	0.07	0.20	< 0.20 U
106-93-4	1,2-Dibromoethane	0.07	0.10	< 0.10 U
74-97-5	Bromochloromethane	0.06	0.20	< 0.20 U
594-20-7	2,2-Dichloropropane	0.05	0.10	< 0.10 U
142-28-9	1,3-Dichloropropane	0.06	0.10	< 0.10 U
98-82-8	Isopropylbenzene	0.02	0.20	< 0.20 U
103-65-1	n-Propylbenzene	0.02	0.20	< 0.20 U
108-86-1	Bromobenzene	0.06	0.20	< 0.20 U
95-49-8	2-Chlorotoluene	0.02	0.10	< 0.10 U
106-43-4	4-Chlorotoluene	0.02	0.20	< 0.20 U
98-06-6	tert-Butylbenzene	0.03	0.20	< 0.20 U
135-98-8	sec-Butylbenzene	0.02	0.20	< 0.20 U
99-87-6	4-Isopropyltoluene	0.03	0.10	< 0.10 U
104-51-8	n-Butylbenzene	0.02	0.20	< 0.20 U
120-82-1	1,2,4-Trichlorobenzene	0.11	0.50	< 0.50 U
91-20-3	Naphthalene	0.12	0.50	< 0.50 U
87-61-6	1,2,3-Trichlorobenzene	0.11	0.20	< 0.20 U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	111%
d8-Toluene	95.6%
Bromofluorobenzene	92.8%
d4-1,2-Dichlorobenzene	105%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by P&T GC/MS-Method SW8260C

Sample ID: LMW-2-0616
SAMPLE

Lab Sample ID: BBS5K
LIMS ID: 16-8658
Matrix: Water
Data Release Authorized: MW
Reported: 06/21/16

QC Report No: BBS5-Golder Associates
Project: Landsburg
9231000002.R273
Date Sampled: 06/08/16
Date Received: 06/08/16

Instrument/Analyst: NT2/PAB
Date Analyzed: 06/15/16 18:36

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	DL	LOQ	Result
74-87-3	Chloromethane	0.09	0.50	< 0.50 U
74-83-9	Bromomethane	0.25	1.0	< 1.0 U
75-01-4	Vinyl Chloride	0.06	0.10	< 0.10 U
75-00-3	Chloroethane	0.09	0.20	< 0.20 U
75-09-2	Methylene Chloride	0.48	1.0	< 1.0 U
67-64-1	Acetone	2.1	5.0	< 5.0 U
75-15-0	Carbon Disulfide	0.04	0.20	< 0.20 U
75-35-4	1,1-Dichloroethene	0.05	0.20	< 0.20 U
75-34-3	1,1-Dichloroethane	0.05	0.20	< 0.20 U
156-60-5	trans-1,2-Dichloroethene	0.05	0.20	< 0.20 U
156-59-2	cis-1,2-Dichloroethene	0.04	0.20	< 0.20 U
67-66-3	Chloroform	0.03	0.20	< 0.20 U
107-06-2	1,2-Dichloroethane	0.07	0.20	< 0.20 U
78-93-3	2-Butanone	0.81	5.0	< 5.0 U
71-55-6	1,1,1-Trichloroethane	0.04	0.20	< 0.20 U
56-23-5	Carbon Tetrachloride	0.04	0.20	< 0.20 U
108-05-4	Vinyl Acetate	0.07	0.20	< 0.20 U
75-27-4	Bromodichloromethane	0.05	0.20	< 0.20 U
78-87-5	1,2-Dichloropropane	0.04	0.20	< 0.20 U
10061-01-5	cis-1,3-Dichloropropene	0.06	0.20	< 0.20 U
79-01-6	Trichloroethene	0.05	0.20	< 0.20 U
124-48-1	Dibromochloromethane	0.05	0.20	< 0.20 U
79-00-5	1,1,2-Trichloroethane	0.13	0.20	< 0.20 U
71-43-2	Benzene	0.03	0.20	< 0.20 U
10061-02-6	trans-1,3-Dichloropropene	0.08	0.20	< 0.20 U
110-75-8	2-Chloroethylvinylether	0.25	0.50	< 0.50 U
75-25-2	Bromoform	0.06	0.20	< 0.20 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	0.97	2.5	< 2.5 U
591-78-6	2-Hexanone	0.90	5.0	< 5.0 U
127-18-4	Tetrachloroethene	0.05	0.20	< 0.20 U
79-34-5	1,1,2,2-Tetrachloroethane	0.06	0.10	< 0.10 U
108-88-3	Toluene	0.04	0.20	< 0.20 U
108-90-7	Chlorobenzene	0.02	0.20	< 0.20 U
100-41-4	Ethylbenzene	0.04	0.20	< 0.20 U
100-42-5	Styrene	0.05	0.20	< 0.20 U
75-69-4	Trichlorofluoromethane	0.04	0.20	< 0.20 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.04	0.20	< 0.20 U
179601-23-1	m,p-Xylene	0.05	0.40	< 0.40 U
95-47-6	o-Xylene	0.03	0.20	< 0.20 U
95-50-1	1,2-Dichlorobenzene	0.04	0.20	< 0.20 U
541-73-1	1,3-Dichlorobenzene	0.04	0.20	< 0.20 U
106-46-7	1,4-Dichlorobenzene	0.04	0.20	< 0.20 U
107-02-8	Acrolein	2.5	2.5	< 2.5 U
74-88-4	Iodomethane	0.23	0.50	< 0.50 U
74-96-4	Bromoethane	0.04	0.20	< 0.20 U
107-13-1	Acrylonitrile	0.60	1.0	< 1.0 U
563-58-6	1,1-Dichloropropene	0.03	0.10	< 0.10 U
74-95-3	Dibromomethane	0.14	0.20	< 0.20 U
630-20-6	1,1,1,2-Tetrachloroethane	0.04	0.20	< 0.20 U
96-12-8	1,2-Dibromo-3-chloropropane	0.04	0.50	< 0.50 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by P&T GC/MS-Method SW8260C **Sample ID: LMW-2-0616**
 SAMPLE

Lab Sample ID: BBS5K
LIMS ID: 16-8658
Matrix: Water
Date Analyzed: 06/15/16 18:36

QC Report No: BBS5-Golder Associates
Project: Landsburg
9231000002.R273

CAS Number	Analyte	DL	LOQ	Result
96-18-4	1,2,3-Trichloropropane	0.13	0.20	< 0.20 U
110-57-6	trans-1,4-Dichloro-2-butene	0.32	1.0	< 1.0 U
108-67-8	1,3,5-Trimethylbenzene	0.02	0.20	< 0.20 U
95-63-6	1,2,4-Trimethylbenzene	0.02	0.20	< 0.20 U
87-68-3	Hexachlorobutadiene	0.07	0.20	< 0.20 U
106-93-4	1,2-Dibromoethane	0.07	0.10	< 0.10 U
74-97-5	Bromochloromethane	0.06	0.20	< 0.20 U
594-20-7	2,2-Dichloropropane	0.05	0.10	< 0.10 U
142-28-9	1,3-Dichloropropane	0.06	0.10	< 0.10 U
98-82-8	Isopropylbenzene	0.02	0.20	< 0.20 U
103-65-1	n-Propylbenzene	0.02	0.20	< 0.20 U
108-86-1	Bromobenzene	0.06	0.20	< 0.20 U
95-49-8	2-Chlorotoluene	0.02	0.10	< 0.10 U
106-43-4	4-Chlorotoluene	0.02	0.20	< 0.20 U
98-06-6	tert-Butylbenzene	0.03	0.20	< 0.20 U
135-98-8	sec-Butylbenzene	0.02	0.20	< 0.20 U
99-87-6	4-Isopropyltoluene	0.03	0.10	< 0.10 U
104-51-8	n-Butylbenzene	0.02	0.20	< 0.20 U
120-82-1	1,2,4-Trichlorobenzene	0.11	0.50	< 0.50 U
91-20-3	Naphthalene	0.12	0.50	< 0.50 U
87-61-6	1,2,3-Trichlorobenzene	0.11	0.20	< 0.20 U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	113%
d8-Toluene	97.6%
Bromofluorobenzene	96.4%
d4-1,2-Dichlorobenzene	102%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by P&T GC/MS-Method SW8260C **Sample ID: LMW-4-0616**
Page 1 of 2 **SAMPLE**

Lab Sample ID: BBS5L
LIMS ID: 16-8659
Matrix: Water
Data Release Authorized: MW
Reported: 06/21/16

QC Report No: BBS5-Golder Associates
Project: Landsburg
9231000002.R273
Date Sampled: 06/08/16
Date Received: 06/08/16

Instrument/Analyst: NT2/PAB
Date Analyzed: 06/15/16 18:56

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	DL	LOQ	Result
74-87-3	Chloromethane	0.09	0.50	< 0.50 U
74-83-9	Bromomethane	0.25	1.0	< 1.0 U
75-01-4	Vinyl Chloride	0.06	0.10	< 0.10 U
75-00-3	Chloroethane	0.09	0.20	< 0.20 U
75-09-2	Methylene Chloride	0.48	1.0	< 1.0 U
67-64-1	Acetone	2.1	5.0	< 5.0 U
75-15-0	Carbon Disulfide	0.04	0.20	< 0.20 U
75-35-4	1,1-Dichloroethene	0.05	0.20	< 0.20 U
75-34-3	1,1-Dichloroethane	0.05	0.20	< 0.20 U
156-60-5	trans-1,2-Dichloroethene	0.05	0.20	< 0.20 U
156-59-2	cis-1,2-Dichloroethene	0.04	0.20	< 0.20 U
67-66-3	Chloroform	0.03	0.20	< 0.20 U
107-06-2	1,2-Dichloroethane	0.07	0.20	< 0.20 U
78-93-3	2-Butanone	0.81	5.0	< 5.0 U
71-55-6	1,1,1-Trichloroethane	0.04	0.20	< 0.20 U
56-23-5	Carbon Tetrachloride	0.04	0.20	< 0.20 U
108-05-4	Vinyl Acetate	0.07	0.20	< 0.20 U
75-27-4	Bromodichloromethane	0.05	0.20	< 0.20 U
78-87-5	1,2-Dichloropropane	0.04	0.20	< 0.20 U
10061-01-5	cis-1,3-Dichloropropene	0.06	0.20	< 0.20 U
79-01-6	Trichloroethene	0.05	0.20	< 0.20 U
124-48-1	Dibromochloromethane	0.05	0.20	< 0.20 U
79-00-5	1,1,2-Trichloroethane	0.13	0.20	< 0.20 U
71-43-2	Benzene	0.03	0.20	< 0.20 U
10061-02-6	trans-1,3-Dichloropropene	0.08	0.20	< 0.20 U
110-75-8	2-Chloroethylvinylether	0.25	0.50	< 0.50 U
75-25-2	Bromoform	0.06	0.20	< 0.20 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	0.97	2.5	< 2.5 U
591-78-6	2-Hexanone	0.90	5.0	< 5.0 U
127-18-4	Tetrachloroethene	0.05	0.20	< 0.20 U
79-34-5	1,1,2,2-Tetrachloroethane	0.06	0.10	< 0.10 U
108-88-3	Toluene	0.04	0.20	< 0.20 U
108-90-7	Chlorobenzene	0.02	0.20	< 0.20 U
100-41-4	Ethylbenzene	0.04	0.20	< 0.20 U
100-42-5	Styrene	0.05	0.20	< 0.20 U
75-69-4	Trichlorofluoromethane	0.04	0.20	< 0.20 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.04	0.20	< 0.20 U
179601-23-1	m,p-Xylene	0.05	0.40	< 0.40 U
95-47-6	o-Xylene	0.03	0.20	< 0.20 U
95-50-1	1,2-Dichlorobenzene	0.04	0.20	< 0.20 U
541-73-1	1,3-Dichlorobenzene	0.04	0.20	< 0.20 U
106-46-7	1,4-Dichlorobenzene	0.04	0.20	< 0.20 U
107-02-8	Acrolein	2.5	2.5	< 2.5 U
74-88-4	Iodomethane	0.23	0.50	< 0.50 U
74-96-4	Bromoethane	0.04	0.20	< 0.20 U
107-13-1	Acrylonitrile	0.60	1.0	< 1.0 U
563-58-6	1,1-Dichloropropene	0.03	0.10	< 0.10 U
74-95-3	Dibromomethane	0.14	0.20	< 0.20 U
630-20-6	1,1,1,2-Tetrachloroethane	0.04	0.20	< 0.20 U
96-12-8	1,2-Dibromo-3-chloropropane	0.04	0.50	< 0.50 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by P&T GC/MS-Method SW8260C **Sample ID: LMW-4-0616**
 SAMPLE

Lab Sample ID: BBS5L
LIMS ID: 16-8659
Matrix: Water
Date Analyzed: 06/15/16 18:56

QC Report No: BBS5-Golder Associates
Project: Landsburg
9231000002.R273

CAS Number	Analyte	DL	LOQ	Result
96-18-4	1,2,3-Trichloropropane	0.13	0.20	< 0.20 U
110-57-6	trans-1,4-Dichloro-2-butene	0.32	1.0	< 1.0 U
108-67-8	1,3,5-Trimethylbenzene	0.02	0.20	< 0.20 U
95-63-6	1,2,4-Trimethylbenzene	0.02	0.20	< 0.20 U
87-68-3	Hexachlorobutadiene	0.07	0.20	< 0.20 U
106-93-4	1,2-Dibromoethane	0.07	0.10	< 0.10 U
74-97-5	Bromochloromethane	0.06	0.20	< 0.20 U
594-20-7	2,2-Dichloropropane	0.05	0.10	< 0.10 U
142-28-9	1,3-Dichloropropane	0.06	0.10	< 0.10 U
98-82-8	Isopropylbenzene	0.02	0.20	< 0.20 U
103-65-1	n-Propylbenzene	0.02	0.20	< 0.20 U
108-86-1	Bromobenzene	0.06	0.20	< 0.20 U
95-49-8	2-Chlorotoluene	0.02	0.10	< 0.10 U
106-43-4	4-Chlorotoluene	0.02	0.20	< 0.20 U
98-06-6	tert-Butylbenzene	0.03	0.20	< 0.20 U
135-98-8	sec-Butylbenzene	0.02	0.20	< 0.20 U
99-87-6	4-Isopropyltoluene	0.03	0.10	< 0.10 U
104-51-8	n-Butylbenzene	0.02	0.20	< 0.20 U
120-82-1	1,2,4-Trichlorobenzene	0.11	0.50	< 0.50 U
91-20-3	Naphthalene	0.12	0.50	< 0.50 U
87-61-6	1,2,3-Trichlorobenzene	0.11	0.20	< 0.20 U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	113%
d8-Toluene	95.8%
Bromofluorobenzene	93.0%
d4-1,2-Dichlorobenzene	106%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by P&T GC/MS-Method SW8260C

Sample ID: LMW-4-0616
MATRIX SPIKE

Lab Sample ID: BBS5L
LIMS ID: 16-8659
Matrix: Water
Data Release Authorized: MW
Reported: 06/21/16

QC Report No: BBS5-Golder Associates
Project: Landsburg
9231000002.R273
Date Sampled: 06/08/16
Date Received: 06/08/16

Instrument/Analyst: NT2/PAB
Date Analyzed: 06/15/16 19:17

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	DL	LOQ	Result
74-87-3	Chloromethane	0.09	0.50	---
74-83-9	Bromomethane	0.25	1.0	---
75-01-4	Vinyl Chloride	0.06	0.10	---
75-00-3	Chloroethane	0.09	0.20	---
75-09-2	Methylene Chloride	0.48	1.0	---
67-64-1	Acetone	2.1	5.0	---
75-15-0	Carbon Disulfide	0.04	0.20	---
75-35-4	1,1-Dichloroethene	0.05	0.20	---
75-34-3	1,1-Dichloroethane	0.05	0.20	---
156-60-5	trans-1,2-Dichloroethene	0.05	0.20	---
156-59-2	cis-1,2-Dichloroethene	0.04	0.20	---
67-66-3	Chloroform	0.03	0.20	---
107-06-2	1,2-Dichloroethane	0.07	0.20	---
78-93-3	2-Butanone	0.81	5.0	---
71-55-6	1,1,1-Trichloroethane	0.04	0.20	---
56-23-5	Carbon Tetrachloride	0.04	0.20	---
108-05-4	Vinyl Acetate	0.07	0.20	---
75-27-4	Bromodichloromethane	0.05	0.20	---
78-87-5	1,2-Dichloropropane	0.04	0.20	---
10061-01-5	cis-1,3-Dichloropropene	0.06	0.20	---
79-01-6	Trichloroethene	0.05	0.20	---
124-48-1	Dibromochloromethane	0.05	0.20	---
79-00-5	1,1,2-Trichloroethane	0.13	0.20	---
71-43-2	Benzene	0.03	0.20	---
10061-02-6	trans-1,3-Dichloropropene	0.08	0.20	---
110-75-8	2-Chloroethylvinylether	0.25	0.50	---
75-25-2	Bromoform	0.06	0.20	---
108-10-1	4-Methyl-2-Pentanone (MIBK)	0.97	2.5	---
591-78-6	2-Hexanone	0.90	5.0	---
127-18-4	Tetrachloroethene	0.05	0.20	---
79-34-5	1,1,2,2-Tetrachloroethane	0.06	0.10	---
108-88-3	Toluene	0.04	0.20	---
108-90-7	Chlorobenzene	0.02	0.20	---
100-41-4	Ethylbenzene	0.04	0.20	---
100-42-5	Styrene	0.05	0.20	---
75-69-4	Trichlorofluoromethane	0.04	0.20	---
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.04	0.20	---
179601-23-1	m,p-Xylene	0.05	0.40	---
95-47-6	o-Xylene	0.03	0.20	---
95-50-1	1,2-Dichlorobenzene	0.04	0.20	---
541-73-1	1,3-Dichlorobenzene	0.04	0.20	---
106-46-7	1,4-Dichlorobenzene	0.04	0.20	---
107-02-8	Acrolein	2.5	2.5	---
74-88-4	Iodomethane	0.23	0.50	---
74-96-4	Bromoethane	0.04	0.20	---
107-13-1	Acrylonitrile	0.60	1.0	---
563-58-6	1,1-Dichloropropene	0.03	0.10	---
74-95-3	Dibromomethane	0.14	0.20	---
630-20-6	1,1,1,2-Tetrachloroethane	0.04	0.20	---
96-12-8	1,2-Dibromo-3-chloropropane	0.04	0.50	---

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by P&T GC/MS-Method SW8260C

Sample ID: LMW-4-0616
MATRIX SPIKE

Lab Sample ID: BBS5L
LIMS ID: 16-8659
Matrix: Water
Date Analyzed: 06/15/16 19:17

QC Report No: BBS5-Golder Associates
Project: Landsburg
9231000002.R273

CAS Number	Analyte	DL	LOQ	Result
96-18-4	1,2,3-Trichloropropane	0.13	0.20	---
110-57-6	trans-1,4-Dichloro-2-butene	0.32	1.0	---
108-67-8	1,3,5-Trimethylbenzene	0.02	0.20	---
95-63-6	1,2,4-Trimethylbenzene	0.02	0.20	---
87-68-3	Hexachlorobutadiene	0.07	0.20	---
106-93-4	1,2-Dibromoethane	0.07	0.10	---
74-97-5	Bromochloromethane	0.06	0.20	---
594-20-7	2,2-Dichloropropane	0.05	0.10	---
142-28-9	1,3-Dichloropropane	0.06	0.10	---
98-82-8	Isopropylbenzene	0.02	0.20	---
103-65-1	n-Propylbenzene	0.02	0.20	---
108-86-1	Bromobenzene	0.06	0.20	---
95-49-8	2-Chlorotoluene	0.02	0.10	---
106-43-4	4-Chlorotoluene	0.02	0.20	---
98-06-6	tert-Butylbenzene	0.03	0.20	---
135-98-8	sec-Butylbenzene	0.02	0.20	---
99-87-6	4-Isopropyltoluene	0.03	0.10	---
104-51-8	n-Butylbenzene	0.02	0.20	---
120-82-1	1,2,4-Trichlorobenzene	0.11	0.50	---
91-20-3	Naphthalene	0.12	0.50	---
87-61-6	1,2,3-Trichlorobenzene	0.11	0.20	---

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	105%
d8-Toluene	101%
Bromofluorobenzene	100%
d4-1,2-Dichlorobenzene	102%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by P&T GC/MS-Method SW8260C
Page 1 of 2

Sample ID: LMW-4-0616
MATRIX SPIKE DUPLICATE

Lab Sample ID: BBS5L
LIMS ID: 16-8659
Matrix: Water
Data Release Authorized: MW
Reported: 06/21/16

QC Report No: BBS5-Golder Associates
Project: Landsburg
9231000002.R273
Date Sampled: 06/08/16
Date Received: 06/08/16

Instrument/Analyst: NT2/PAB
Date Analyzed: 06/15/16 19:38

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	DL	LOQ	Result
74-87-3	Chloromethane	0.09	0.50	---
74-83-9	Bromomethane	0.25	1.0	---
75-01-4	Vinyl Chloride	0.06	0.10	---
75-00-3	Chloroethane	0.09	0.20	---
75-09-2	Methylene Chloride	0.48	1.0	---
67-64-1	Acetone	2.1	5.0	---
75-15-0	Carbon Disulfide	0.04	0.20	---
75-35-4	1,1-Dichloroethene	0.05	0.20	---
75-34-3	1,1-Dichloroethane	0.05	0.20	---
156-60-5	trans-1,2-Dichloroethene	0.05	0.20	---
156-59-2	cis-1,2-Dichloroethene	0.04	0.20	---
67-66-3	Chloroform	0.03	0.20	---
107-06-2	1,2-Dichloroethane	0.07	0.20	---
78-93-3	2-Butanone	0.81	5.0	---
71-55-6	1,1,1-Trichloroethane	0.04	0.20	---
56-23-5	Carbon Tetrachloride	0.04	0.20	---
108-05-4	Vinyl Acetate	0.07	0.20	---
75-27-4	Bromodichloromethane	0.05	0.20	---
78-87-5	1,2-Dichloropropane	0.04	0.20	---
10061-01-5	cis-1,3-Dichloropropene	0.06	0.20	---
79-01-6	Trichloroethene	0.05	0.20	---
124-48-1	Dibromochloromethane	0.05	0.20	---
79-00-5	1,1,2-Trichloroethane	0.13	0.20	---
71-43-2	Benzene	0.03	0.20	---
10061-02-6	trans-1,3-Dichloropropene	0.08	0.20	---
110-75-8	2-Chloroethylvinylether	0.25	0.50	---
75-25-2	Bromoform	0.06	0.20	---
108-10-1	4-Methyl-2-Pentanone (MIBK)	0.97	2.5	---
591-78-6	2-Hexanone	0.90	5.0	---
127-18-4	Tetrachloroethene	0.05	0.20	---
79-34-5	1,1,2,2-Tetrachloroethane	0.06	0.10	---
108-88-3	Toluene	0.04	0.20	---
108-90-7	Chlorobenzene	0.02	0.20	---
100-41-4	Ethylbenzene	0.04	0.20	---
100-42-5	Styrene	0.05	0.20	---
75-69-4	Trichlorofluoromethane	0.04	0.20	---
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.04	0.20	---
179601-23-1	m,p-Xylene	0.05	0.40	---
95-47-6	o-Xylene	0.03	0.20	---
95-50-1	1,2-Dichlorobenzene	0.04	0.20	---
541-73-1	1,3-Dichlorobenzene	0.04	0.20	---
106-46-7	1,4-Dichlorobenzene	0.04	0.20	---
107-02-8	Acrolein	2.5	2.5	---
74-88-4	Iodomethane	0.23	0.50	---
74-96-4	Bromoethane	0.04	0.20	---
107-13-1	Acrylonitrile	0.60	1.0	---
563-58-6	1,1-Dichloropropene	0.03	0.10	---
74-95-3	Dibromomethane	0.14	0.20	---
630-20-6	1,1,1,2-Tetrachloroethane	0.04	0.20	---
96-12-8	1,2-Dibromo-3-chloropropane	0.04	0.50	---

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by P&T GC/MS-Method SW8260C

Sample ID: LMW-4-0616
MATRIX SPIKE DUPLICATE

Lab Sample ID: BBS5L
LIMS ID: 16-8659
Matrix: Water
Date Analyzed: 06/15/16 19:38

QC Report No: BBS5-Golder Associates
Project: Landsburg
9231000002.R273

CAS Number	Analyte	DL	LOQ	Result
96-18-4	1,2,3-Trichloropropane	0.13	0.20	---
110-57-6	trans-1,4-Dichloro-2-butene	0.32	1.0	---
108-67-8	1,3,5-Trimethylbenzene	0.02	0.20	---
95-63-6	1,2,4-Trimethylbenzene	0.02	0.20	---
87-68-3	Hexachlorobutadiene	0.07	0.20	---
106-93-4	1,2-Dibromoethane	0.07	0.10	---
74-97-5	Bromochloromethane	0.06	0.20	---
594-20-7	2,2-Dichloropropane	0.05	0.10	---
142-28-9	1,3-Dichloropropane	0.06	0.10	---
98-82-8	Isopropylbenzene	0.02	0.20	---
103-65-1	n-Propylbenzene	0.02	0.20	---
108-86-1	Bromobenzene	0.06	0.20	---
95-49-8	2-Chlorotoluene	0.02	0.10	---
106-43-4	4-Chlorotoluene	0.02	0.20	---
98-06-6	tert-Butylbenzene	0.03	0.20	---
135-98-8	sec-Butylbenzene	0.02	0.20	---
99-87-6	4-Isopropyltoluene	0.03	0.10	---
104-51-8	n-Butylbenzene	0.02	0.20	---
120-82-1	1,2,4-Trichlorobenzene	0.11	0.50	---
91-20-3	Naphthalene	0.12	0.50	---
87-61-6	1,2,3-Trichlorobenzene	0.11	0.20	---

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	110%
d8-Toluene	97.6%
Bromofluorobenzene	103%
d4-1,2-Dichlorobenzene	100%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by P&T GC/MS-Method SW8260C
Page 1 of 2

Sample ID: Trip Blank-060616
SAMPLE

Lab Sample ID: BBS5M
LIMS ID: 16-8660
Matrix: Water
Data Release Authorized:
Reported: 06/21/16

QC Report No: BBS5-Golder Associates
Project: Landsburg
9231000002.R273
Date Sampled: 06/06/16
Date Received: 06/08/16

Instrument/Analyst: NT2/PAB
Date Analyzed: 06/15/16 14:09

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	DL	LOQ	Result
74-87-3	Chloromethane	0.09	0.50	< 0.50 U
74-83-9	Bromomethane	0.25	1.0	< 1.0 U
75-01-4	Vinyl Chloride	0.06	0.10	< 0.10 U
75-00-3	Chloroethane	0.09	0.20	< 0.20 U
75-09-2	Methylene Chloride	0.48	1.0	< 1.0 U
67-64-1	Acetone	2.1	5.0	< 5.0 U
75-15-0	Carbon Disulfide	0.04	0.20	< 0.20 U
75-35-4	1,1-Dichloroethene	0.05	0.20	< 0.20 U
75-34-3	1,1-Dichloroethane	0.05	0.20	< 0.20 U
156-60-5	trans-1,2-Dichloroethene	0.05	0.20	< 0.20 U
156-59-2	cis-1,2-Dichloroethene	0.04	0.20	< 0.20 U
67-66-3	Chloroform	0.03	0.20	< 0.20 U
107-06-2	1,2-Dichloroethane	0.07	0.20	< 0.20 U
78-93-3	2-Butanone	0.81	5.0	< 5.0 U
71-55-6	1,1,1-Trichloroethane	0.04	0.20	< 0.20 U
56-23-5	Carbon Tetrachloride	0.04	0.20	< 0.20 U
108-05-4	Vinyl Acetate	0.07	0.20	< 0.20 U
75-27-4	Bromodichloromethane	0.05	0.20	< 0.20 U
78-87-5	1,2-Dichloropropane	0.04	0.20	< 0.20 U
10061-01-5	cis-1,3-Dichloropropene	0.06	0.20	< 0.20 U
79-01-6	Trichloroethene	0.05	0.20	< 0.20 U
124-48-1	Dibromochloromethane	0.05	0.20	< 0.20 U
79-00-5	1,1,2-Trichloroethane	0.13	0.20	< 0.20 U
71-43-2	Benzene	0.03	0.20	< 0.20 U
10061-02-6	trans-1,3-Dichloropropene	0.08	0.20	< 0.20 U
110-75-8	2-Chloroethylvinylether	0.25	0.50	< 0.50 U
75-25-2	Bromoform	0.06	0.20	< 0.20 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	0.97	2.5	< 2.5 U
591-78-6	2-Hexanone	0.90	5.0	< 5.0 U
127-18-4	Tetrachloroethene	0.05	0.20	< 0.20 U
79-34-5	1,1,2,2-Tetrachloroethane	0.06	0.10	< 0.10 U
108-88-3	Toluene	0.04	0.20	< 0.20 U
108-90-7	Chlorobenzene	0.02	0.20	< 0.20 U
100-41-4	Ethylbenzene	0.04	0.20	< 0.20 U
100-42-5	Styrene	0.05	0.20	< 0.20 U
75-69-4	Trichlorofluoromethane	0.04	0.20	< 0.20 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.04	0.20	< 0.20 U
179601-23-1	m,p-Xylene	0.05	0.40	< 0.40 U
95-47-6	o-Xylene	0.03	0.20	< 0.20 U
95-50-1	1,2-Dichlorobenzene	0.04	0.20	< 0.20 U
541-73-1	1,3-Dichlorobenzene	0.04	0.20	< 0.20 U
106-46-7	1,4-Dichlorobenzene	0.04	0.20	< 0.20 U
107-02-8	Acrolein	2.5	2.5	< 2.5 U
74-88-4	Iodomethane	0.23	0.50	< 0.50 U
74-96-4	Bromoethane	0.04	0.20	< 0.20 U
107-13-1	Acrylonitrile	0.60	1.0	< 1.0 U
563-58-6	1,1-Dichloropropene	0.03	0.10	< 0.10 U
74-95-3	Dibromomethane	0.14	0.20	< 0.20 U
630-20-6	1,1,1,2-Tetrachloroethane	0.04	0.20	< 0.20 U
96-12-8	1,2-Dibromo-3-chloropropane	0.04	0.50	< 0.50 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by P&T GC/MS-Method SW8260C

Sample ID: Trip Blank-060616
SAMPLE

Lab Sample ID: BBS5M
LIMS ID: 16-8660
Matrix: Water
Date Analyzed: 06/15/16 14:09

QC Report No: BBS5-Golder Associates
Project: Landsburg
9231000002.R273

CAS Number	Analyte	DL	LOQ	Result
96-18-4	1,2,3-Trichloropropane	0.13	0.20	< 0.20 U
110-57-6	trans-1,4-Dichloro-2-butene	0.32	1.0	< 1.0 U
108-67-8	1,3,5-Trimethylbenzene	0.02	0.20	< 0.20 U
95-63-6	1,2,4-Trimethylbenzene	0.02	0.20	< 0.20 U
87-68-3	Hexachlorobutadiene	0.07	0.20	< 0.20 U
106-93-4	1,2-Dibromoethane	0.07	0.10	< 0.10 U
74-97-5	Bromochloromethane	0.06	0.20	< 0.20 U
594-20-7	2,2-Dichloropropane	0.05	0.10	< 0.10 U
142-28-9	1,3-Dichloropropane	0.06	0.10	< 0.10 U
98-82-8	Isopropylbenzene	0.02	0.20	< 0.20 U
103-65-1	n-Propylbenzene	0.02	0.20	< 0.20 U
108-86-1	Bromobenzene	0.06	0.20	< 0.20 U
95-49-8	2-Chlorotoluene	0.02	0.10	< 0.10 U
106-43-4	4-Chlorotoluene	0.02	0.20	< 0.20 U
98-06-6	tert-Butylbenzene	0.03	0.20	< 0.20 U
135-98-8	sec-Butylbenzene	0.02	0.20	< 0.20 U
99-87-6	4-Isopropyltoluene	0.03	0.10	< 0.10 U
104-51-8	n-Butylbenzene	0.02	0.20	< 0.20 U
120-82-1	1,2,4-Trichlorobenzene	0.11	0.50	< 0.50 U
91-20-3	Naphthalene	0.12	0.50	< 0.50 U
87-61-6	1,2,3-Trichlorobenzene	0.11	0.20	< 0.20 U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	106%
d8-Toluene	92.6%
Bromofluorobenzene	99.4%
d4-1,2-Dichlorobenzene	103%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by P&T GC/MS-Method SW8260C

Sample ID: Trip Blank-060716
SAMPLE

Lab Sample ID: BBS5N
LIMS ID: 16-8661
Matrix: Water
Data Release Authorized: MW
Reported: 06/21/16

QC Report No: BBS5-Golder Associates
Project: Landsburg
9231000002.R273
Date Sampled: 06/06/16
Date Received: 06/08/16

Instrument/Analyst: NT2/PAB
Date Analyzed: 06/15/16 14:30

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	DL	LOQ	Result
74-87-3	Chloromethane	0.09	0.50	< 0.50 U
74-83-9	Bromomethane	0.25	1.0	< 1.0 U
75-01-4	Vinyl Chloride	0.06	0.10	< 0.10 U
75-00-3	Chloroethane	0.09	0.20	< 0.20 U
75-09-2	**Methylene Chloride**	**0.48**	**1.0**	**1.0**
67-64-1	Acetone	2.1	5.0	< 5.0 U
75-15-0	Carbon Disulfide	0.04	0.20	< 0.20 U
75-35-4	1,1-Dichloroethene	0.05	0.20	< 0.20 U
75-34-3	1,1-Dichloroethane	0.05	0.20	< 0.20 U
156-60-5	trans-1,2-Dichloroethene	0.05	0.20	< 0.20 U
156-59-2	cis-1,2-Dichloroethene	0.04	0.20	< 0.20 U
67-66-3	Chloroform	0.03	0.20	< 0.20 U
107-06-2	1,2-Dichloroethane	0.07	0.20	< 0.20 U
78-93-3	2-Butanone	0.81	5.0	< 5.0 U
71-55-6	1,1,1-Trichloroethane	0.04	0.20	< 0.20 U
56-23-5	Carbon Tetrachloride	0.04	0.20	< 0.20 U
108-05-4	Vinyl Acetate	0.07	0.20	< 0.20 U
75-27-4	Bromodichloromethane	0.05	0.20	< 0.20 U
78-87-5	1,2-Dichloropropane	0.04	0.20	< 0.20 U
10061-01-5	cis-1,3-Dichloropropene	0.06	0.20	< 0.20 U
79-01-6	Trichloroethene	0.05	0.20	< 0.20 U
124-48-1	Dibromochloromethane	0.05	0.20	< 0.20 U
79-00-5	1,1,2-Trichloroethane	0.13	0.20	< 0.20 U
71-43-2	Benzene	0.03	0.20	< 0.20 U
10061-02-6	trans-1,3-Dichloropropene	0.08	0.20	< 0.20 U
110-75-8	2-Chloroethylvinylether	0.25	0.50	< 0.50 U
75-25-2	Bromoform	0.06	0.20	< 0.20 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	0.97	2.5	< 2.5 U
591-78-6	2-Hexanone	0.90	5.0	< 5.0 U
127-18-4	Tetrachloroethene	0.05	0.20	< 0.20 U
79-34-5	1,1,2,2-Tetrachloroethane	0.06	0.10	< 0.10 U
108-88-3	Toluene	0.04	0.20	< 0.20 U
108-90-7	Chlorobenzene	0.02	0.20	< 0.20 U
100-41-4	Ethylbenzene	0.04	0.20	< 0.20 U
100-42-5	Styrene	0.05	0.20	< 0.20 U
75-69-4	Trichlorofluoromethane	0.04	0.20	< 0.20 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.04	0.20	< 0.20 U
179601-23-1	m,p-Xylene	0.05	0.40	< 0.40 U
95-47-6	o-Xylene	0.03	0.20	< 0.20 U
95-50-1	1,2-Dichlorobenzene	0.04	0.20	< 0.20 U
541-73-1	1,3-Dichlorobenzene	0.04	0.20	< 0.20 U
106-46-7	1,4-Dichlorobenzene	0.04	0.20	< 0.20 U
107-02-8	Acrolein	2.5	2.5	< 2.5 U
74-88-4	Iodomethane	0.23	0.50	< 0.50 U
74-96-4	Bromoethane	0.04	0.20	< 0.20 U
107-13-1	Acrylonitrile	0.60	1.0	< 1.0 U
563-58-6	1,1-Dichloropropene	0.03	0.10	< 0.10 U
74-95-3	Dibromomethane	0.14	0.20	< 0.20 U
630-20-6	1,1,1,2-Tetrachloroethane	0.04	0.20	< 0.20 U
96-12-8	1,2-Dibromo-3-chloropropane	0.04	0.50	< 0.50 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by P&T GC/MS-Method SW8260C

Sample ID: Trip Blank-060716
SAMPLE

Lab Sample ID: BBS5N
LIMS ID: 16-8661
Matrix: Water
Date Analyzed: 06/15/16 14:30

QC Report No: BBS5-Golder Associates
Project: Landsburg
9231000002.R273

CAS Number	Analyte	DL	LOQ	Result
96-18-4	1,2,3-Trichloropropane	0.13	0.20	< 0.20 U
110-57-6	trans-1,4-Dichloro-2-butene	0.32	1.0	< 1.0 U
108-67-8	1,3,5-Trimethylbenzene	0.02	0.20	< 0.20 U
95-63-6	1,2,4-Trimethylbenzene	0.02	0.20	< 0.20 U
87-68-3	Hexachlorobutadiene	0.07	0.20	< 0.20 U
106-93-4	1,2-Dibromoethane	0.07	0.10	< 0.10 U
74-97-5	Bromochloromethane	0.06	0.20	< 0.20 U
594-20-7	2,2-Dichloropropane	0.05	0.10	< 0.10 U
142-28-9	1,3-Dichloropropane	0.06	0.10	< 0.10 U
98-82-8	Isopropylbenzene	0.02	0.20	< 0.20 U
103-65-1	n-Propylbenzene	0.02	0.20	< 0.20 U
108-86-1	Bromobenzene	0.06	0.20	< 0.20 U
95-49-8	2-Chlorotoluene	0.02	0.10	< 0.10 U
106-43-4	4-Chlorotoluene	0.02	0.20	< 0.20 U
98-06-6	tert-Butylbenzene	0.03	0.20	< 0.20 U
135-98-8	sec-Butylbenzene	0.02	0.20	< 0.20 U
99-87-6	4-Isopropyltoluene	0.03	0.10	< 0.10 U
104-51-8	n-Butylbenzene	0.02	0.20	< 0.20 U
120-82-1	1,2,4-Trichlorobenzene	0.11	0.50	< 0.50 U
91-20-3	Naphthalene	0.12	0.50	< 0.50 U
87-61-6	1,2,3-Trichlorobenzene	0.11	0.20	< 0.20 U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	108%
d8-Toluene	98.6%
Bromofluorobenzene	97.0%
d4-1,2-Dichlorobenzene	102%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by P&T GC/MS-Method SW8260C

Sample ID: Trip Blank-060816
SAMPLE

Lab Sample ID: BBS5O
LIMS ID: 16-8662
Matrix: Water
Data Release Authorized: MW
Reported: 06/21/16

QC Report No: BBS5-Golder Associates
Project: Landsburg
9231000002.R273
Date Sampled: 06/06/16
Date Received: 06/08/16

Instrument/Analyst: NT2/PAB
Date Analyzed: 06/15/16 14:50

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	DL	LOQ	Result
74-87-3	Chloromethane	0.09	0.50	< 0.50 U
74-83-9	Bromomethane	0.25	1.0	< 1.0 U
75-01-4	Vinyl Chloride	0.06	0.10	< 0.10 U
75-00-3	Chloroethane	0.09	0.20	< 0.20 U
75-09-2	Methylene Chloride	0.48	1.0	< 1.0 U
67-64-1	Acetone	2.1	5.0	< 5.0 U
75-15-0	Carbon Disulfide	0.04	0.20	< 0.20 U
75-35-4	1,1-Dichloroethene	0.05	0.20	< 0.20 U
75-34-3	1,1-Dichloroethane	0.05	0.20	< 0.20 U
156-60-5	trans-1,2-Dichloroethene	0.05	0.20	< 0.20 U
156-59-2	cis-1,2-Dichloroethene	0.04	0.20	< 0.20 U
67-66-3	Chloroform	0.03	0.20	< 0.20 U
107-06-2	1,2-Dichloroethane	0.07	0.20	< 0.20 U
78-93-3	2-Butanone	0.81	5.0	< 5.0 U
71-55-6	1,1,1-Trichloroethane	0.04	0.20	< 0.20 U
56-23-5	Carbon Tetrachloride	0.04	0.20	< 0.20 U
108-05-4	Vinyl Acetate	0.07	0.20	< 0.20 U
75-27-4	Bromodichloromethane	0.05	0.20	< 0.20 U
78-87-5	1,2-Dichloropropane	0.04	0.20	< 0.20 U
10061-01-5	cis-1,3-Dichloropropene	0.06	0.20	< 0.20 U
79-01-6	Trichloroethene	0.05	0.20	< 0.20 U
124-48-1	Dibromochloromethane	0.05	0.20	< 0.20 U
79-00-5	1,1,2-Trichloroethane	0.13	0.20	< 0.20 U
71-43-2	Benzene	0.03	0.20	< 0.20 U
10061-02-6	trans-1,3-Dichloropropene	0.08	0.20	< 0.20 U
110-75-8	2-Chloroethylvinylether	0.25	0.50	< 0.50 U
75-25-2	Bromoform	0.06	0.20	< 0.20 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	0.97	2.5	< 2.5 U
591-78-6	2-Hexanone	0.90	5.0	< 5.0 U
127-18-4	Tetrachloroethene	0.05	0.20	< 0.20 U
79-34-5	1,1,2,2-Tetrachloroethane	0.06	0.10	< 0.10 U
108-88-3	Toluene	0.04	0.20	< 0.20 U
108-90-7	Chlorobenzene	0.02	0.20	< 0.20 U
100-41-4	Ethylbenzene	0.04	0.20	< 0.20 U
100-42-5	Styrene	0.05	0.20	< 0.20 U
75-69-4	Trichlorofluoromethane	0.04	0.20	< 0.20 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.04	0.20	< 0.20 U
179601-23-1	m,p-Xylene	0.05	0.40	< 0.40 U
95-47-6	o-Xylene	0.03	0.20	< 0.20 U
95-50-1	1,2-Dichlorobenzene	0.04	0.20	< 0.20 U
541-73-1	1,3-Dichlorobenzene	0.04	0.20	< 0.20 U
106-46-7	1,4-Dichlorobenzene	0.04	0.20	< 0.20 U
107-02-8	Acrolein	2.5	2.5	< 2.5 U
74-88-4	Iodomethane	0.23	0.50	< 0.50 U
74-96-4	Bromoethane	0.04	0.20	< 0.20 U
107-13-1	Acrylonitrile	0.60	1.0	< 1.0 U
563-58-6	1,1-Dichloropropene	0.03	0.10	< 0.10 U
74-95-3	Dibromomethane	0.14	0.20	< 0.20 U
630-20-6	1,1,1,2-Tetrachloroethane	0.04	0.20	< 0.20 U
96-12-8	1,2-Dibromo-3-chloropropane	0.04	0.50	< 0.50 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by P&T GC/MS-Method SW8260C

Sample ID: Trip Blank-060816
SAMPLE

Lab Sample ID: BBS5O
LIMS ID: 16-8662
Matrix: Water
Date Analyzed: 06/15/16 14:50

QC Report No: BBS5-Golder Associates
Project: Landsburg
9231000002.R273

CAS Number	Analyte	DL	LOQ	Result
96-18-4	1,2,3-Trichloropropane	0.13	0.20	< 0.20 U
110-57-6	trans-1,4-Dichloro-2-butene	0.32	1.0	< 1.0 U
108-67-8	1,3,5-Trimethylbenzene	0.02	0.20	< 0.20 U
95-63-6	1,2,4-Trimethylbenzene	0.02	0.20	< 0.20 U
87-68-3	Hexachlorobutadiene	0.07	0.20	< 0.20 U
106-93-4	1,2-Dibromoethane	0.07	0.10	< 0.10 U
74-97-5	Bromochloromethane	0.06	0.20	< 0.20 U
594-20-7	2,2-Dichloropropane	0.05	0.10	< 0.10 U
142-28-9	1,3-Dichloropropane	0.06	0.10	< 0.10 U
98-82-8	Isopropylbenzene	0.02	0.20	< 0.20 U
103-65-1	n-Propylbenzene	0.02	0.20	< 0.20 U
108-86-1	Bromobenzene	0.06	0.20	< 0.20 U
95-49-8	2-Chlorotoluene	0.02	0.10	< 0.10 U
106-43-4	4-Chlorotoluene	0.02	0.20	< 0.20 U
98-06-6	tert-Butylbenzene	0.03	0.20	< 0.20 U
135-98-8	sec-Butylbenzene	0.02	0.20	< 0.20 U
99-87-6	4-Isopropyltoluene	0.03	0.10	< 0.10 U
104-51-8	n-Butylbenzene	0.02	0.20	< 0.20 U
120-82-1	1,2,4-Trichlorobenzene	0.11	0.50	< 0.50 U
91-20-3	Naphthalene	0.12	0.50	< 0.50 U
87-61-6	1,2,3-Trichlorobenzene	0.11	0.20	< 0.20 U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	109%
d8-Toluene	95.0%
Bromofluorobenzene	98.0%
d4-1,2-Dichlorobenzene	103%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by P&T GC/MS-Method SW8260C

Sample ID: MB-061516A
METHOD BLANK

Lab Sample ID: MB-061516A
LIMS ID: 16-8659
Matrix: Water
Data Release Authorized: MW
Reported: 06/21/16

QC Report No: BBS5-Golder Associates
Project: Landsburg
9231000002.R273
Date Sampled: NA
Date Received: NA

Instrument/Analyst: NT2/PAB
Date Analyzed: 06/15/16 13:49

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	DL	LOQ	Result
74-87-3	Chloromethane	0.09	0.50	< 0.50 U
74-83-9	Bromomethane	0.25	1.0	< 1.0 U
75-01-4	Vinyl Chloride	0.06	0.10	< 0.10 U
75-00-3	Chloroethane	0.09	0.20	< 0.20 U
75-09-2	Methylene Chloride	0.48	1.0	< 1.0 U
67-64-1	Acetone	2.1	5.0	< 5.0 U
75-15-0	Carbon Disulfide	0.04	0.20	< 0.20 U
75-35-4	1,1-Dichloroethene	0.05	0.20	< 0.20 U
75-34-3	1,1-Dichloroethane	0.05	0.20	< 0.20 U
156-60-5	trans-1,2-Dichloroethene	0.05	0.20	< 0.20 U
156-59-2	cis-1,2-Dichloroethene	0.04	0.20	< 0.20 U
67-66-3	Chloroform	0.03	0.20	< 0.20 U
107-06-2	1,2-Dichloroethane	0.07	0.20	< 0.20 U
78-93-3	2-Butanone	0.81	5.0	< 5.0 U
71-55-6	1,1,1-Trichloroethane	0.04	0.20	< 0.20 U
56-23-5	Carbon Tetrachloride	0.04	0.20	< 0.20 U
108-05-4	Vinyl Acetate	0.07	0.20	< 0.20 U
75-27-4	Bromodichloromethane	0.05	0.20	< 0.20 U
78-87-5	1,2-Dichloropropane	0.04	0.20	< 0.20 U
10061-01-5	cis-1,3-Dichloropropene	0.06	0.20	< 0.20 U
79-01-6	Trichloroethene	0.05	0.20	< 0.20 U
124-48-1	Dibromochloromethane	0.05	0.20	< 0.20 U
79-00-5	1,1,2-Trichloroethane	0.13	0.20	< 0.20 U
71-43-2	Benzene	0.03	0.20	< 0.20 U
10061-02-6	trans-1,3-Dichloropropene	0.08	0.20	< 0.20 U
110-75-8	2-Chloroethylvinylether	0.25	0.50	< 0.50 U
75-25-2	Bromoform	0.06	0.20	< 0.20 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	0.97	2.5	< 2.5 U
591-78-6	2-Hexanone	0.90	5.0	< 5.0 U
127-18-4	Tetrachloroethene	0.05	0.20	< 0.20 U
79-34-5	1,1,2,2-Tetrachloroethane	0.06	0.10	< 0.10 U
108-88-3	Toluene	0.04	0.20	< 0.20 U
108-90-7	Chlorobenzene	0.02	0.20	< 0.20 U
100-41-4	Ethylbenzene	0.04	0.20	< 0.20 U
100-42-5	Styrene	0.05	0.20	< 0.20 U
75-69-4	Trichlorofluoromethane	0.04	0.20	< 0.20 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.04	0.20	< 0.20 U
179601-23-1	m,p-Xylene	0.05	0.40	< 0.40 U
95-47-6	o-Xylene	0.03	0.20	< 0.20 U
95-50-1	1,2-Dichlorobenzene	0.04	0.20	< 0.20 U
541-73-1	1,3-Dichlorobenzene	0.04	0.20	< 0.20 U
106-46-7	1,4-Dichlorobenzene	0.04	0.20	< 0.20 U
107-02-8	Acrolein	2.5	2.5	< 2.5 U
74-88-4	Iodomethane	0.23	0.50	< 0.50 U
74-96-4	Bromoethane	0.04	0.20	< 0.20 U
107-13-1	Acrylonitrile	0.60	1.0	< 1.0 U
563-58-6	1,1-Dichloropropene	0.03	0.10	< 0.10 U
74-95-3	Dibromomethane	0.14	0.20	< 0.20 U
630-20-6	1,1,1,2-Tetrachloroethane	0.04	0.20	< 0.20 U
96-12-8	1,2-Dibromo-3-chloropropane	0.04	0.50	< 0.50 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by P&T GC/MS-Method SW8260C

Sample ID: MB-061516A
METHOD BLANK

Lab Sample ID: MB-061516A
LIMS ID: 16-8659
Matrix: Water
Date Analyzed: 06/15/16 13:49

QC Report No: BBS5-Golder Associates
Project: Landsburg
9231000002.R273

CAS Number	Analyte	DL	LOQ	Result
96-18-4	1,2,3-Trichloropropane	0.13	0.20	< 0.20 U
110-57-6	trans-1,4-Dichloro-2-butene	0.32	1.0	< 1.0 U
108-67-8	1,3,5-Trimethylbenzene	0.02	0.20	< 0.20 U
95-63-6	1,2,4-Trimethylbenzene	0.02	0.20	< 0.20 U
87-68-3	Hexachlorobutadiene	0.07	0.20	< 0.20 U
106-93-4	1,2-Dibromoethane	0.07	0.10	< 0.10 U
74-97-5	Bromochloromethane	0.06	0.20	< 0.20 U
594-20-7	2,2-Dichloropropane	0.05	0.10	< 0.10 U
142-28-9	1,3-Dichloropropane	0.06	0.10	< 0.10 U
98-82-8	Isopropylbenzene	0.02	0.20	< 0.20 U
103-65-1	n-Propylbenzene	0.02	0.20	< 0.20 U
108-86-1	Bromobenzene	0.06	0.20	< 0.20 U
95-49-8	2-Chlorotoluene	0.02	0.10	< 0.10 U
106-43-4	4-Chlorotoluene	0.02	0.20	< 0.20 U
98-06-6	tert-Butylbenzene	0.03	0.20	< 0.20 U
135-98-8	sec-Butylbenzene	0.02	0.20	< 0.20 U
99-87-6	4-Isopropyltoluene	0.03	0.10	< 0.10 U
104-51-8	n-Butylbenzene	0.02	0.20	< 0.20 U
120-82-1	1,2,4-Trichlorobenzene	0.11	0.50	< 0.50 U
91-20-3	Naphthalene	0.12	0.50	< 0.50 U
87-61-6	1,2,3-Trichlorobenzene	0.11	0.20	< 0.20 U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	104%
d8-Toluene	98.4%
Bromofluorobenzene	95.0%
d4-1,2-Dichlorobenzene	102%

ANALYTICAL RESOURCES INCORPORATED

VOA SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: BBS5-Golder Associates
Project: Landsburg
9231000002.R273

ARI ID	Client ID	PV	DCE	TOL	BFB	DCB	TOT OUT
BBS5A	LMW-11-0616	10	107%	95.0%	95.0%	104%	0
BBS5B	LMW-11-0616-D	10	107%	94.6%	95.2%	102%	0
BBS5C	LMW-9-0616	10	113%	96.6%	92.6%	101%	0
BBS5D	LMW-8-0616	10	112%	98.6%	93.8%	103%	0
BBS5E	EB0616	10	107%	94.4%	98.0%	100%	0
BBS5F	LMW-3-0616	10	112%	96.2%	93.0%	103%	0
BBS5G	LMW-5-0616	10	113%	94.2%	92.6%	103%	0
BBS5H	LMW-6-0616	10	111%	99.2%	97.4%	108%	0
BBS5I	LMW-7-0616	10	110%	95.0%	94.4%	104%	0
BBS5J	LMW-10-0616	10	111%	95.6%	92.8%	105%	0
BBS5K	LMW-2-0616	10	113%	97.6%	96.4%	102%	0
MB-061516A	Method Blank	10	104%	98.4%	95.0%	102%	0
LCS-061516A	Lab Control	10	104%	98.2%	99.6%	99.8%	0
LCSD-061516A	Lab Control Dup	10	108%	99.2%	102%	101%	0
BBS5L	LMW-4-0616	10	113%	95.8%	93.0%	106%	0
BBS5LMS	LMW-4-0616	10	105%	101%	100%	102%	0
BBS5LMSD	LMW-4-0616	10	110%	97.6%	103%	100%	0
BBS5M	Trip Blank-060616	10	106%	92.6%	99.4%	103%	0
BBS5N	Trip Blank-060716	10	108%	98.6%	97.0%	102%	0
BBS5O	Trip Blank-060816	10	109%	95.0%	98.0%	103%	0

SW8260C	LCS/MB LIMITS	QC LIMITS
(DCE) = d4-1,2-Dichloroethane	(80-129)	(80-129)
(TOL) = d8-Toluene	(80-120)	(80-120)
(BFB) = Bromofluorobenzene	(80-120)	(80-120)
(DCB) = d4-1,2-Dichlorobenzene	(80-120)	(80-120)

Prep Method: SW5030B
Log Number Range: 16-8648 to 16-8662

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by P&T GC/MS-Method SW8260C

Sample ID: LCS-061516A
LAB CONTROL SAMPLE

Lab Sample ID: LCS-061516A
LIMS ID: 16-8659
Matrix: Water
Data Release Authorized: NW
Reported: 06/21/16

QC Report No: BBS5-Golder Associates
Project: Landsburg
9231000002.R273
Date Sampled: NA
Date Received: NA

Instrument/Analyst LCS: NT2/PAB
LCSD: NT2/PAB
Date Analyzed LCS: 06/15/16 13:08
LCSD: 06/15/16 13:29

Sample Amount LCS: 10.0 mL
LCSD: 10.0 mL
Purge Volume LCS: 10.0 mL
LCSD: 10.0 mL

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Chloromethane	10.0	10.0	100%	10.6	10.0	106%	5.8%
Bromomethane	7.24 Q	10.0	72.4%	9.13 Q	10.0	91.3%	23.1%
Vinyl Chloride	10.6	10.0	106%	11.5	10.0	115%	8.1%
Chloroethane	10.8	10.0	108%	11.8	10.0	118%	8.8%
Methylene Chloride	10.2	10.0	102%	10.6	10.0	106%	3.8%
Acetone	47.4	50.0	94.8%	55.3	50.0	111%	15.4%
Carbon Disulfide	12.9 Q	10.0	129%	10.9 Q	10.0	109%	16.8%
1,1-Dichloroethene	14.8 Q	10.0	148%	10.9 Q	10.0	109%	30.4%
1,1-Dichloroethane	10.2	10.0	102%	11.0	10.0	110%	7.5%
trans-1,2-Dichloroethene	10.2	10.0	102%	11.0	10.0	110%	7.5%
cis-1,2-Dichloroethene	10.2	10.0	102%	11.1	10.0	111%	8.5%
Chloroform	10.2	10.0	102%	11.1	10.0	111%	8.5%
1,2-Dichloroethane	9.56	10.0	95.6%	10.6	10.0	106%	10.3%
2-Butanone	45.3	50.0	90.6%	52.7	50.0	105%	15.1%
1,1,1-Trichloroethane	10.6	10.0	106%	11.6	10.0	116%	9.0%
Carbon Tetrachloride	10.8	10.0	108%	11.6	10.0	116%	7.1%
Vinyl Acetate	7.90 Q	10.0	79.0%	9.42 Q	10.0	94.2%	17.6%
Bromodichloromethane	10.2	10.0	102%	11.4	10.0	114%	11.1%
1,2-Dichloropropane	9.75	10.0	97.5%	10.6	10.0	106%	8.4%
cis-1,3-Dichloropropene	11.2	10.0	112%	12.1	10.0	121%	7.7%
Trichloroethene	9.83	10.0	98.3%	10.7	10.0	107%	8.5%
Dibromochloromethane	8.35	10.0	83.5%	9.67	10.0	96.7%	14.7%
1,1,2-Trichloroethane	9.85	10.0	98.5%	11.0	10.0	110%	11.0%
Benzene	9.79	10.0	97.9%	10.5	10.0	105%	7.0%
trans-1,3-Dichloropropene	8.66	10.0	86.6%	9.58	10.0	95.8%	10.1%
2-Chloroethylvinylether	7.73 Q	10.0	77.3%	8.96 Q	10.0	89.6%	14.7%
Bromoform	7.80 Q	10.0	78.0%	9.03 Q	10.0	90.3%	14.6%
4-Methyl-2-Pentanone (MIBK)	45.1	50.0	90.2%	54.5	50.0	109%	18.9%
2-Hexanone	46.5	50.0	93.0%	58.5	50.0	117%	22.9%
Tetrachloroethene	9.79	10.0	97.9%	10.5	10.0	105%	7.0%
1,1,2,2-Tetrachloroethane	9.99	10.0	99.9%	12.0	10.0	120%	18.3%
Toluene	9.16	10.0	91.6%	10.2	10.0	102%	10.7%
Chlorobenzene	9.81	10.0	98.1%	10.9	10.0	109%	10.5%
Ethylbenzene	9.98	10.0	99.8%	10.8	10.0	108%	7.9%
Styrene	11.0	10.0	110%	12.2	10.0	122%	10.3%
Trichlorofluoromethane	8.96	10.0	89.6%	11.0	10.0	110%	20.4%
1,1,2-Trichloro-1,2,2-trifluoroetha	13.8 Q	10.0	138%	10.7 Q	10.0	107%	25.3%
m,p-Xylene	20.2	20.0	101%	22.3	20.0	112%	9.9%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by P&T GC/MS-Method SW8260C

Sample ID: LCS-061516A
LAB CONTROL SAMPLE

Lab Sample ID: LCS-061516A
LIMS ID: 16-8659
Matrix: Water

QC Report No: BBS5-Golder Associates
Project: Landsburg
9231000002.R273

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
o-Xylene	10.3	10.0	103%	11.4	10.0	114%	10.1%
1,2-Dichlorobenzene	9.92	10.0	99.2%	10.9	10.0	109%	9.4%
1,3-Dichlorobenzene	10.0	10.0	100%	10.8	10.0	108%	7.7%
1,4-Dichlorobenzene	9.50	10.0	95.0%	10.3	10.0	103%	8.1%
Acrolein	47.6	50.0	95.2%	54.7	50.0	109%	13.9%
Iodomethane	16.8 Q	10.0	168%	14.0 Q	10.0	140%	18.2%
Bromoethane	9.62	10.0	96.2%	10.6	10.0	106%	9.7%
Acrylonitrile	9.79	10.0	97.9%	10.7	10.0	107%	8.9%
1,1-Dichloropropene	10.3	10.0	103%	10.9	10.0	109%	5.7%
Dibromomethane	9.40	10.0	94.0%	10.8	10.0	108%	13.9%
1,1,1,2-Tetrachloroethane	10.9	10.0	109%	12.3	10.0	123%	12.1%
1,2-Dibromo-3-chloropropane	8.54	10.0	85.4%	10.8	10.0	108%	23.4%
1,2,3-Trichloropropane	9.94	10.0	99.4%	11.4	10.0	114%	13.7%
trans-1,4-Dichloro-2-butene	9.62	10.0	96.2%	11.1	10.0	111%	14.3%
1,3,5-Trimethylbenzene	10.9	10.0	109%	11.7	10.0	117%	7.1%
1,2,4-Trimethylbenzene	11.0	10.0	110%	11.8	10.0	118%	7.0%
Hexachlorobutadiene	9.48	10.0	94.8%	10.4	10.0	104%	9.3%
1,2-Dibromoethane	8.48	10.0	84.8%	10.1	10.0	101%	17.4%
Bromochloromethane	10.2	10.0	102%	11.3	10.0	113%	10.2%
2,2-Dichloropropane	8.57	10.0	85.7%	9.41	10.0	94.1%	9.3%
1,3-Dichloropropane	10.6	10.0	106%	12.1	10.0	121%	13.2%
Isopropylbenzene	11.1	10.0	111%	12.0	10.0	120%	7.8%
n-Propylbenzene	10.9	10.0	109%	11.6	10.0	116%	6.2%
Bromobenzene	10.1	10.0	101%	11.0	10.0	110%	8.5%
2-Chlorotoluene	10.5	10.0	105%	11.4	10.0	114%	8.2%
4-Chlorotoluene	10.4	10.0	104%	11.1	10.0	111%	6.5%
tert-Butylbenzene	10.8	10.0	108%	11.7	10.0	117%	8.0%
sec-Butylbenzene	11.1	10.0	111%	11.8	10.0	118%	6.1%
4-Isopropyltoluene	11.4	10.0	114%	12.3	10.0	123%	7.6%
n-Butylbenzene	10.9	10.0	109%	11.6	10.0	116%	6.2%
1,2,4-Trichlorobenzene	10.0	10.0	100%	11.0	10.0	110%	9.5%
Naphthalene	10.1	10.0	101%	11.9	10.0	119%	16.4%
1,2,3-Trichlorobenzene	10.0	10.0	100%	11.3	10.0	113%	12.2%

Reported in µg/L (ppb)

RPD calculated using sample concentrations per SW846.

Volatile Surrogate Recovery

	LCS	LCSD
d4-1,2-Dichloroethane	104%	108%
d8-Toluene	98.2%	99.2%
Bromofluorobenzene	99.6%	102%
d4-1,2-Dichlorobenzene	99.8%	101%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by P&T GC/MS-Method SW8260C

Sample ID: LMW-4-0616
MATRIX SPIKE

Lab Sample ID: BBS5L
LIMS ID: 16-8659
Matrix: Water
Data Release Authorized: MW
Reported: 06/21/16

QC Report No: BBS5-Golder Associates
Project: Landsburg
9231000002.R273
Date Sampled: 06/08/16
Date Received: 06/08/16

Instrument/Analyst MS: NT2/PAB
MSD: NT2/PAB
Date Analyzed MS: 06/15/16 19:17
MSD: 06/15/16 19:38

Sample Amount MS: 10.0 mL
MSD: 10.0 mL
Purge Volume MS: 10.0 mL
MSD: 10.0 mL

Analyte	Sample	MS	Spike Added-MS	MS Recovery	MSD	Spike Added-MSD	MSD Recovery	RPD
Chloromethane	< 0.50 U	8.21	10.0	82.1%	9.19	10.0	91.9%	11.3%
Bromomethane	< 1.0 U	2.69 Q	10.0	26.9%	2.88 Q	10.0	28.8%	6.8%
Vinyl Chloride	< 0.10 U	8.02	10.0	80.2%	10.8	10.0	108%	29.5%
Chloroethane	< 0.20 U	12.4	10.0	124%	13.2	10.0	132%	6.2%
Methylene Chloride	< 1.0 U	10.0	10.0	100%	11.6	10.0	116%	14.8%
Acetone	< 5.0 U	52.2	50.0	104%	58.8	50.0	118%	11.9%
Carbon Disulfide	< 0.20 U	9.39 Q	10.0	93.9%	10.6 Q	10.0	106%	12.1%
1,1-Dichloroethene	< 0.20 U	9.72 Q	10.0	97.2%	10.8 Q	10.0	108%	10.5%
1,1-Dichloroethane	< 0.20 U	9.93	10.0	99.3%	10.8	10.0	108%	8.4%
trans-1,2-Dichloroethene	< 0.20 U	9.91	10.0	99.1%	11.1	10.0	111%	11.3%
cis-1,2-Dichloroethene	< 0.20 U	10.3	10.0	103%	11.2	10.0	112%	8.4%
Chloroform	< 0.20 U	9.94	10.0	99.4%	11.2	10.0	112%	11.9%
1,2-Dichloroethane	< 0.20 U	10.5	10.0	105%	10.5	10.0	105%	0.0%
2-Butanone	< 5.0 U	49.4	50.0	98.8%	54.8	50.0	110%	10.4%
1,1,1-Trichloroethane	< 0.20 U	9.88	10.0	98.8%	11.2	10.0	112%	12.5%
Carbon Tetrachloride	< 0.20 U	9.54	10.0	95.4%	10.4	10.0	104%	8.6%
Vinyl Acetate	< 0.20 U	7.94 Q	10.0	79.4%	9.24 Q	10.0	92.4%	15.1%
Bromodichloromethane	< 0.20 U	10.4	10.0	104%	10.6	10.0	106%	1.9%
1,2-Dichloropropane	< 0.20 U	10.5	10.0	105%	10.5	10.0	105%	0.0%
cis-1,3-Dichloropropene	< 0.20 U	10.8	10.0	108%	10.8	10.0	108%	0.0%
Trichloroethene	< 0.20 U	10.1	10.0	101%	10.3	10.0	103%	2.0%
Dibromochloromethane	< 0.20 U	8.00	10.0	80.0%	8.70	10.0	87.0%	8.4%
1,1,2-Trichloroethane	< 0.20 U	11.0	10.0	110%	10.9	10.0	109%	0.9%
Benzene	< 0.20 U	10.2	10.0	102%	10.2	10.0	102%	0.0%
trans-1,3-Dichloropropene	< 0.20 U	8.62	10.0	86.2%	8.43	10.0	84.3%	2.2%
2-Chloroethylvinylether	< 0.50 U	6.42 Q	10.0	64.2%	6.44 Q	10.0	64.4%	0.3%
Bromoform	< 0.20 U	7.06 Q	10.0	70.6%	7.89 Q	10.0	78.9%	11.1%
4-Methyl-2-Pentanone (MIBK)	< 2.5 U	54.5	50.0	109%	54.9	50.0	110%	0.7%
2-Hexanone	< 5.0 U	55.0	50.0	110%	58.3	50.0	117%	5.8%
Tetrachloroethene	< 0.20 U	9.60	10.0	96.0%	9.88	10.0	98.8%	2.9%
1,1,2,2-Tetrachloroethane	< 0.10 U	11.6	10.0	116%	12.1	10.0	121%	4.2%
Toluene	< 0.20 U	10.0	10.0	100%	9.62	10.0	96.2%	3.9%
Chlorobenzene	< 0.20 U	9.82	10.0	98.2%	10.4	10.0	104%	5.7%
Ethylbenzene	< 0.20 U	9.91	10.0	99.1%	10.4	10.0	104%	4.8%
Styrene	< 0.20 U	11.2	10.0	112%	11.6	10.0	116%	3.5%
Trichlorofluoromethane	< 0.20 U	9.86	10.0	98.6%	10.9	10.0	109%	10.0%
1,1,2-Trichloro-1,2,2-trifl	< 0.20 U	8.43 Q	10.0	84.3%	9.86 Q	10.0	98.6%	15.6%
m,p-Xylene	< 0.40 U	20.4	20.0	102%	21.6	20.0	108%	5.7%
o-Xylene	< 0.20 U	10.3	10.0	103%	10.8	10.0	108%	4.7%
1,2-Dichlorobenzene	< 0.20 U	10.0	10.0	100%	10.6	10.0	106%	5.8%
1,3-Dichlorobenzene	< 0.20 U	10.0	10.0	100%	10.6	10.0	106%	5.8%
1,4-Dichlorobenzene	< 0.20 U	9.65	10.0	96.5%	10.0	10.0	100%	3.6%
Acrolein	< 2.5 U	46.1	50.0	92.2%	49.0	50.0	98.0%	6.1%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by P&T GC/MS-Method SW8260C
Page 2 of 2

Sample ID: LMW-4-0616
MATRIX SPIKE

Lab Sample ID: BBS5L
LIMS ID: 16-8659
Matrix: Water

QC Report No: BBS5-Golder Associates
Project: Landsburg
9231000002.R273

Analyte	Sample	MS		Spike Added-MS	MS Recovery	MSD		Spike Added-MSD	MSD Recovery	RPD
Iodomethane	< 0.50 U	3.92	Q	10.0	39.2%	4.32	Q	10.0	43.2%	9.7%
Bromoethane	< 0.20 U	9.48		10.0	94.8%	10.1		10.0	101%	6.3%
Acrylonitrile	< 1.0 U	10.1		10.0	101%	11.4		10.0	114%	12.1%
1,1-Dichloropropene	< 0.10 U	10.4		10.0	104%	10.4		10.0	104%	0.0%
Dibromomethane	< 0.20 U	10.8		10.0	108%	10.8		10.0	108%	0.0%
1,1,1,2-Tetrachloroethane	< 0.20 U	10.4		10.0	104%	11.1		10.0	111%	6.5%
1,2-Dibromo-3-chloropropane	< 0.50 U	9.08		10.0	90.8%	9.87		10.0	98.7%	8.3%
1,2,3-Trichloropropane	< 0.20 U	11.3		10.0	113%	11.2		10.0	112%	0.9%
trans-1,4-Dichloro-2-butene	< 1.0 U	5.62		10.0	56.2%	7.09		10.0	70.9%	23.1%
1,3,5-Trimethylbenzene	< 0.20 U	10.8		10.0	108%	11.3		10.0	113%	4.5%
1,2,4-Trimethylbenzene	< 0.20 U	10.9		10.0	109%	11.5		10.0	115%	5.4%
Hexachlorobutadiene	< 0.20 U	9.63		10.0	96.3%	10.2		10.0	102%	5.7%
1,2-Dibromoethane	< 0.10 U	9.81		10.0	98.1%	10.0		10.0	100%	1.9%
Bromochloromethane	< 0.20 U	10.4		10.0	104%	11.7		10.0	117%	11.8%
2,2-Dichloropropane	< 0.10 U	6.55		10.0	65.5%	7.60		10.0	76.0%	14.8%
1,3-Dichloropropane	< 0.10 U	11.1		10.0	111%	11.7		10.0	117%	5.3%
Isopropylbenzene	< 0.20 U	11.0		10.0	110%	11.4		10.0	114%	3.6%
n-Propylbenzene	< 0.20 U	10.8		10.0	108%	11.2		10.0	112%	3.6%
Bromobenzene	< 0.20 U	10.0		10.0	100%	10.7		10.0	107%	6.8%
2-Chlorotoluene	< 0.10 U	10.3		10.0	103%	10.9		10.0	109%	5.7%
4-Chlorotoluene	< 0.20 U	10.2		10.0	102%	10.7		10.0	107%	4.8%
tert-Butylbenzene	< 0.20 U	10.7		10.0	107%	11.2		10.0	112%	4.6%
sec-Butylbenzene	< 0.20 U	11.0		10.0	110%	11.4		10.0	114%	3.6%
4-Isopropyltoluene	< 0.10 U	11.4		10.0	114%	12.1		10.0	121%	6.0%
n-Butylbenzene	< 0.20 U	10.8		10.0	108%	11.3		10.0	113%	4.5%
1,2,4-Trichlorobenzene	< 0.50 U	10.2		10.0	102%	11.0		10.0	110%	7.5%
Naphthalene	< 0.50 U	11.2		10.0	112%	11.8		10.0	118%	5.2%
1,2,3-Trichlorobenzene	< 0.20 U	10.8		10.0	108%	11.5		10.0	115%	6.3%

Reported in µg/L (ppb)

RPD calculated using sample concentrations per SW846.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
NWTPH-HCID Method by GC/FID
Extraction Method: SW3510C

QC Report No: BBS5-Golder Associates
Project: Landsburg
9231000002.R273

Matrix: Water

Data Release Authorized: MW
Reported: 06/13/16

ARI ID	Sample ID	Extraction Date	Analysis Date	DL	Range	Result
MB-061016 16-8648	Method Blank	06/10/16	06/10/16	1.0	Gas Diesel Oil o-Terphenyl	< 0.25 U < 0.50 U < 0.50 U 76.1%
BBS5A 16-8648	LMW-11-0616 HC ID: ---	06/10/16	06/10/16	1.0	Gas Diesel Oil o-Terphenyl	< 0.25 U < 0.50 U < 0.50 U 80.8%
BBS5B 16-8649	LMW-11-0616-D HC ID: ---	06/10/16	06/10/16	1.0	Gas Diesel Oil o-Terphenyl	< 0.25 U < 0.50 U < 0.50 U 77.1%
BBS5C 16-8650	LMW-9-0616 HC ID: ---	06/10/16	06/10/16	1.0	Gas Diesel Oil o-Terphenyl	< 0.25 U < 0.50 U < 0.50 U 75.1%
BBS5D 16-8651	LMW-8-0616 HC ID: ---	06/10/16	06/10/16	1.0	Gas Diesel Oil o-Terphenyl	< 0.25 U < 0.50 U < 0.50 U 80.8%
BBS5E 16-8652	EB0616 HC ID: ---	06/10/16	06/10/16	1.0	Gas Diesel Oil o-Terphenyl	< 0.25 U < 0.50 U < 0.50 U 82.9%
BBS5F 16-8653	LMW-3-0616 HC ID: ---	06/10/16	06/10/16	1.0	Gas Diesel Oil o-Terphenyl	< 0.25 U < 0.50 U < 0.50 U 79.7%
BBS5G 16-8654	LMW-5-0616 HC ID: ---	06/10/16	06/10/16	1.0	Gas Diesel Oil o-Terphenyl	< 0.25 U < 0.50 U < 0.50 U 83.9%
BBS5H 16-8655	LMW-6-0616 HC ID: ---	06/10/16	06/10/16	1.0	Gas Diesel Oil o-Terphenyl	< 0.25 U < 0.50 U < 0.50 U 81.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
NWTPH-HCID Method by GC/FID
Extraction Method: SW3510C

QC Report No: BBS5-Golder Associates
Project: Landsburg
9231000002.R273

Matrix: Water

Data Release Authorized: MW
Reported: 06/13/16

ARI ID	Sample ID	Extraction Date	Analysis Date	DL	Range	Result
BBS5I	LMW-7-0616	06/10/16	06/10/16	1.0	Gas	< 0.25 U
16-8656	HC ID: ---				Diesel	< 0.50 U
					Oil	< 0.50 U
					o-Terphenyl	84.5%
BBS5J	LMW-10-0616	06/10/16	06/10/16	1.0	Gas	< 0.25 U
16-8657	HC ID: ---				Diesel	< 0.50 U
					Oil	< 0.50 U
					o-Terphenyl	73.0%
BBS5K	LMW-2-0616	06/10/16	06/10/16	1.0	Gas	< 0.25 U
16-8658	HC ID: ---				Diesel	< 0.50 U
					Oil	< 0.50 U
					o-Terphenyl	82.2%
BBS5L	LMW-4-0616	06/10/16	06/11/16	1.0	Gas	< 0.25 U
16-8659	HC ID: ---				Diesel	< 0.50 U
					Oil	< 0.50 U
					o-Terphenyl	83.0%

Reported in mg/L (ppm)

Gas value based on total peaks in the range from Toluene to C12.
Diesel value based on the total peaks in the range from C12 to C24.
Oil value based on the total peaks in the range from C24 to C38.

HC ID: DRO/RRO indicates results of organics or additional hydrocarbons in ranges are not identifiable.

ANALYTICAL RESOURCES INCORPORATED

HCID SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: BBS5-Golder Associates
Project: Landsburg
9231000002.R273

Client ID	O-TER	TOT OUT
MB-061016	76.1%	0
LMW-11-0616	80.8%	0
LMW-11-0616-D	77.1%	0
LMW-9-0616	75.1%	0
LMW-8-0616	80.8%	0
EB0616	82.9%	0
LMW-3-0616	79.7%	0
LMW-5-0616	83.9%	0
LMW-6-0616	81.0%	0
LMW-7-0616	84.5%	0
LMW-10-0616	73.0%	0
LMW-2-0616	82.2%	0
LMW-4-0616	83.0%	0

	LCS/MB LIMITS	QC LIMITS
(O-TER) = o-Terphenyl	(50-150)	(50-150)

Prep Method: SW3510C
Log Number Range: 16-8648 to 16-8659

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: LMW-11-0616
SAMPLE

Lab Sample ID: BBS5A
LIMS ID: 16-8648
Matrix: Water
Data Release Authorized:
Reported: 06/22/16

QC Report No: BBS5-Golder Associates
Project: Landsburg
9231000002.R273
Date Sampled: 06/06/16
Date Received: 06/08/16

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	DL	LOQ	Result	Q
3010A	06/14/16	6010C	06/17/16	7429-90-5	Aluminum	5.0	1,000	1,000	U
200.8	06/14/16	200.8	06/16/16	7440-36-0	Antimony	0.020	3.0	3.0	U
200.8	06/14/16	200.8	06/15/16	**7440-38-2**	**Arsenic**	0.030	3.0	**6.9**	
3010A	06/14/16	6010C	06/17/16	7440-39-3	Barium	1.49	500	500	U
3010A	06/14/16	6010C	06/17/16	7440-41-7	Beryllium	0.06	2	2	U
3010A	06/14/16	6010C	06/17/16	7440-43-9	Cadmium	0.12	2	2	U
3010A	06/14/16	6010C	06/17/16	**7440-70-2**	**Calcium**	1.2	500	**52,500**	
3010A	06/14/16	6010C	06/17/16	7440-47-3	Chromium	0.47	1,000	1,000	U
3010A	06/14/16	6010C	06/17/16	7440-48-4	Cobalt	0.29	10	10	U
3010A	06/14/16	6010C	06/17/16	7440-50-8	Copper	0.25	3	3	U
3010A	06/14/16	6010C	06/17/16	**7439-89-6**	**Iron**	3.6	200	**1,520**	
200.8	06/14/16	200.8	06/15/16	7439-92-1	Lead	0.008	10.0	10.0	U
3010A	06/14/16	6010C	06/17/16	**7439-95-4**	**Magnesium**	7.0	1,000	**26,600**	
3010A	06/14/16	6010C	06/17/16	**7439-96-5**	**Manganese**	0.11	20	**115**	
3010A	06/14/16	6010C	06/17/16	7440-02-0	Nickel	2.0	20	20	U
3010A	06/14/16	6010C	06/17/16	**7440-09-7**	**Potassium**	15.0	500	**2,040**	
200.8	06/14/16	200.8	06/15/16	7782-49-2	Selenium	0.032	5.0	5.0	U
3010A	06/14/16	6010C	06/17/16	7440-22-4	Silver	0.4	3	3	U
3010A	06/14/16	6010C	06/17/16	**7440-23-5**	**Sodium**	4.2	500	**31,200**	
200.8	06/14/16	200.8	06/15/16	7440-28-0	Thallium	0.006	2.0	2.0	U
3010A	06/14/16	6010C	06/17/16	7440-62-2	Vanadium	0.13	3	3	U
3010A	06/14/16	6010C	06/17/16	7440-66-6	Zinc	1.6	20	20	U

Reported in ug/L (ppb).
U-Analyte undetected at given LOQ
LOQ-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
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Sample ID: LMW-11-0616-D
SAMPLE

Lab Sample ID: BBS5B
LIMS ID: 16-8649
Matrix: Water
Data Release Authorized: Kelly
Reported: 06/22/16

QC Report No: BBS5-Golder Associates
Project: Landsburg
9231000002.R273
Date Sampled: 06/06/16
Date Received: 06/08/16

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	DL	LOQ	Result	Q
3010A	06/14/16	6010C	06/17/16	7429-90-5	Aluminum	5.0	1,000	1,000	U
200.8	06/14/16	200.8	06/16/16	7440-36-0	Antimony	0.020	3.0	3.0	U
200.8	06/14/16	200.8	06/15/16	**7440-38-2**	**Arsenic**	0.030	3.0	**6.8**	
3010A	06/14/16	6010C	06/17/16	7440-39-3	Barium	1.49	500	500	U
3010A	06/14/16	6010C	06/17/16	7440-41-7	Beryllium	0.06	2	2	U
3010A	06/14/16	6010C	06/17/16	7440-43-9	Cadmium	0.12	2	2	U
3010A	06/14/16	6010C	06/17/16	**7440-70-2**	**Calcium**	1.2	500	**54,800**	
3010A	06/14/16	6010C	06/17/16	7440-47-3	Chromium	0.47	1,000	1,000	U
3010A	06/14/16	6010C	06/17/16	7440-48-4	Cobalt	0.29	10	10	U
3010A	06/14/16	6010C	06/17/16	7440-50-8	Copper	0.25	3	3	U
3010A	06/14/16	6010C	06/17/16	**7439-89-6**	**Iron**	3.6	200	**1,590**	
200.8	06/14/16	200.8	06/15/16	7439-92-1	Lead	0.008	10.0	10.0	U
3010A	06/14/16	6010C	06/17/16	**7439-95-4**	**Magnesium**	7.0	1,000	**27,700**	
3010A	06/14/16	6010C	06/17/16	**7439-96-5**	**Manganese**	0.11	20	**120**	
3010A	06/14/16	6010C	06/17/16	7440-02-0	Nickel	2.0	20	20	U
3010A	06/14/16	6010C	06/17/16	**7440-09-7**	**Potassium**	15.0	500	**2,090**	
200.8	06/14/16	200.8	06/15/16	7782-49-2	Selenium	0.032	5.0	5.0	U
3010A	06/14/16	6010C	06/17/16	7440-22-4	Silver	0.4	3	3	U
3010A	06/14/16	6010C	06/17/16	**7440-23-5**	**Sodium**	4.2	500	**32,200**	
200.8	06/14/16	200.8	06/15/16	7440-28-0	Thallium	0.006	2.0	2.0	U
3010A	06/14/16	6010C	06/17/16	7440-62-2	Vanadium	0.13	3	3	U
3010A	06/14/16	6010C	06/17/16	7440-66-6	Zinc	1.6	20	20	U

Reported in ug/L (ppb).
U-Analyte undetected at given LOQ
LOQ-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET

TOTAL METALS

Sample ID: LMW-9-0616
SAMPLE

Lab Sample ID: BBS5C
LIMS ID: 16-8650
Matrix: Water
Data Release Authorized: [signature]
Reported: 06/22/16

QC Report No: BBS5-Golder Associates
Project: Landsburg
9231000002.R273
Date Sampled: 06/06/16
Date Received: 06/08/16

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	DL	LOQ	Result	Q
3010A	06/14/16	6010C	06/17/16	7429-90-5	Aluminum	5.0	1,000	1,000	U
200.8	06/14/16	200.8	06/16/16	7440-36-0	Antimony	0.020	3.0	3.0	U
200.8	06/14/16	200.8	06/15/16	7440-38-2	Arsenic	0.030	3.0	3.0	U
3010A	06/14/16	6010C	06/17/16	7440-39-3	Barium	1.49	500	500	U
3010A	06/14/16	6010C	06/17/16	7440-41-7	Beryllium	0.06	2	2	U
3010A	06/14/16	6010C	06/17/16	7440-43-9	Cadmium	0.12	2	2	U
3010A	06/14/16	6010C	06/17/16	**7440-70-2**	**Calcium**	1.2	500	**83,700**	
3010A	06/14/16	6010C	06/17/16	7440-47-3	Chromium	0.47	1,000	1,000	U
3010A	06/14/16	6010C	06/17/16	7440-48-4	Cobalt	0.29	10	10	U
3010A	06/14/16	6010C	06/17/16	7440-50-8	Copper	0.25	3	3	U
3010A	06/14/16	6010C	06/17/16	**7439-89-6**	**Iron**	3.6	200	**1,580**	
200.8	06/14/16	200.8	06/15/16	7439-92-1	Lead	0.008	10.0	10.0	U
3010A	06/14/16	6010C	06/17/16	**7439-95-4**	**Magnesium**	7.0	1,000	**46,800**	
3010A	06/14/16	6010C	06/17/16	**7439-96-5**	**Manganese**	0.11	20	**168**	
3010A	06/14/16	6010C	06/17/16	7440-02-0	Nickel	2.0	20	20	U
3010A	06/14/16	6010C	06/17/16	**7440-09-7**	**Potassium**	15.0	500	**2,600**	
200.8	06/14/16	200.8	06/15/16	7782-49-2	Selenium	0.032	5.0	5.0	U
3010A	06/14/16	6010C	06/17/16	7440-22-4	Silver	0.4	3	3	U
3010A	06/14/16	6010C	06/17/16	**7440-23-5**	**Sodium**	4.2	500	**15,200**	
200.8	06/14/16	200.8	06/15/16	7440-28-0	Thallium	0.006	2.0	2.0	U
3010A	06/14/16	6010C	06/17/16	7440-62-2	Vanadium	0.13	3	3	U
3010A	06/14/16	6010C	06/17/16	7440-66-6	Zinc	1.6	20	20	U

Reported in ug/L (ppb).
U-Analyte undetected at given LOQ
LOQ-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: LMW-8-0616
SAMPLE

Lab Sample ID: BBS5D
LIMS ID: 16-8651
Matrix: Water
Data Release Authorized: Kelly
Reported: 06/22/16

QC Report No: BBS5-Golder Associates
Project: Landsburg
9231000002.R273
Date Sampled: 06/06/16
Date Received: 06/08/16

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	DL	LOQ	Result	Q
3010A	06/14/16	6010C	06/17/16	7429-90-5	Aluminum	5.0	1,000	1,000	U
200.8	06/14/16	200.8	06/16/16	7440-36-0	Antimony	0.020	3.0	3.0	U
200.8	06/14/16	200.8	06/15/16	7440-38-2	Arsenic	0.030	3.0	3.0	U
3010A	06/14/16	6010C	06/17/16	7440-39-3	Barium	1.49	500	500	U
3010A	06/14/16	6010C	06/17/16	7440-41-7	Beryllium	0.06	2	2	U
3010A	06/14/16	6010C	06/17/16	7440-43-9	Cadmium	0.12	2	2	U
3010A	06/14/16	6010C	06/17/16	**7440-70-2**	**Calcium**	1.2	500	**69,000**	
3010A	06/14/16	6010C	06/17/16	7440-47-3	Chromium	0.47	1,000	1,000	U
3010A	06/14/16	6010C	06/17/16	7440-48-4	Cobalt	0.29	10	10	U
3010A	06/14/16	6010C	06/17/16	7440-50-8	Copper	0.25	3	3	U
3010A	06/14/16	6010C	06/17/16	**7439-89-6**	**Iron**	3.6	200	**15,700**	
200.8	06/14/16	200.8	06/15/16	7439-92-1	Lead	0.008	10.0	10.0	U
3010A	06/14/16	6010C	06/17/16	**7439-95-4**	**Magnesium**	7.0	1,000	**37,500**	
3010A	06/14/16	6010C	06/17/16	**7439-96-5**	**Manganese**	0.11	20	**559**	
3010A	06/14/16	6010C	06/17/16	7440-02-0	Nickel	2.0	20	20	U
3010A	06/14/16	6010C	06/17/16	**7440-09-7**	**Potassium**	15.0	500	**2,270**	
200.8	06/14/16	200.8	06/15/16	7782-49-2	Selenium	0.032	5.0	5.0	U
3010A	06/14/16	6010C	06/17/16	7440-22-4	Silver	0.4	3	3	U
3010A	06/14/16	6010C	06/17/16	**7440-23-5**	**Sodium**	4.2	500	**11,600**	
200.8	06/14/16	200.8	06/15/16	7440-28-0	Thallium	0.006	2.0	2.0	U
3010A	06/14/16	6010C	06/17/16	7440-62-2	Vanadium	0.13	3	3	U
3010A	06/14/16	6010C	06/17/16	7440-66-6	Zinc	1.6	20	20	U

Reported in ug/L (ppb).
U-Analyte undetected at given LOQ
LOQ-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET

TOTAL METALS

Sample ID: EB0616

SAMPLE

Lab Sample ID: BBS5E
LIMS ID: 16-8652
Matrix: Water
Data Release Authorized: Kelly
Reported: 06/22/16

QC Report No: BBS5-Golder Associates
Project: Landsburg
9231000002.R273
Date Sampled: 06/06/16
Date Received: 06/08/16

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	DL	LOQ	Result	Q
3010A	06/14/16	6010C	06/17/16	7429-90-5	Aluminum	5.0	1,000	1,000	U
200.8	06/14/16	200.8	06/16/16	7440-36-0	Antimony	0.020	3.0	3.0	U
200.8	06/14/16	200.8	06/15/16	7440-38-2	Arsenic	0.030	3.0	3.0	U
3010A	06/14/16	6010C	06/17/16	7440-39-3	Barium	1.49	500	500	U
3010A	06/14/16	6010C	06/17/16	7440-41-7	Beryllium	0.06	2	2	U
3010A	06/14/16	6010C	06/17/16	7440-43-9	Cadmium	0.12	2	2	U
3010A	06/14/16	6010C	06/17/16	7440-70-2	Calcium	1.2	500	500	U
3010A	06/14/16	6010C	06/17/16	7440-47-3	Chromium	0.47	1,000	1,000	U
3010A	06/14/16	6010C	06/17/16	7440-48-4	Cobalt	0.29	10	10	U
3010A	06/14/16	6010C	06/17/16	**7440-50-8**	**Copper**	0.25	3	**9**	
3010A	06/14/16	6010C	06/17/16	7439-89-6	Iron	3.6	200	200	U
200.8	06/14/16	200.8	06/15/16	7439-92-1	Lead	0.008	10.0	10.0	U
3010A	06/14/16	6010C	06/17/16	7439-95-4	Magnesium	7.0	1,000	1,000	U
3010A	06/14/16	6010C	06/17/16	7439-96-5	Manganese	0.11	20	20	U
3010A	06/14/16	6010C	06/17/16	7440-02-0	Nickel	2.0	20	20	U
3010A	06/14/16	6010C	06/17/16	7440-09-7	Potassium	15.0	500	500	U
200.8	06/14/16	200.8	06/15/16	7782-49-2	Selenium	0.032	5.0	5.0	U
3010A	06/14/16	6010C	06/17/16	7440-22-4	Silver	0.4	3	3	U
3010A	06/14/16	6010C	06/17/16	7440-23-5	Sodium	4.2	500	500	U
200.8	06/14/16	200.8	06/15/16	7440-28-0	Thallium	0.006	2.0	2.0	U
3010A	06/14/16	6010C	06/17/16	7440-62-2	Vanadium	0.13	3	3	U
3010A	06/14/16	6010C	06/17/16	7440-66-6	Zinc	1.6	20	20	U

Reported in ug/L (ppb).
U-Analyte undetected at given LOQ
LOQ-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: LMW-3-0616
SAMPLE

Lab Sample ID: BBS5F
LIMS ID: 16-8653
Matrix: Water
Data Release Authorized: Kelly
Reported: 06/22/16

QC Report No: BBS5-Golder Associates
Project: Landsburg
9231000002.R273
Date Sampled: 06/07/16
Date Received: 06/08/16

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	DL	LOQ	Result	Q
3010A	06/14/16	6010C	06/17/16	7429-90-5	Aluminum	5.0	1,000	1,000	U
200.8	06/14/16	200.8	06/16/16	7440-36-0	Antimony	0.020	3.0	3.0	U
200.8	06/14/16	200.8	06/15/16	7440-38-2	Arsenic	0.030	3.0	3.0	U
3010A	06/14/16	6010C	06/17/16	7440-39-3	Barium	1.49	500	500	U
3010A	06/14/16	6010C	06/17/16	7440-41-7	Beryllium	0.06	2	2	U
3010A	06/14/16	6010C	06/17/16	7440-43-9	Cadmium	0.12	2	2	U
3010A	06/14/16	6010C	06/17/16	**7440-70-2**	**Calcium**	1.2	500	**37,500**	
3010A	06/14/16	6010C	06/17/16	7440-47-3	Chromium	0.47	1,000	1,000	U
3010A	06/14/16	6010C	06/17/16	7440-48-4	Cobalt	0.29	10	10	U
3010A	06/14/16	6010C	06/17/16	7440-50-8	Copper	0.25	3	3	U
3010A	06/14/16	6010C	06/17/16	7439-89-6	Iron	3.6	200	200	U
200.8	06/14/16	200.8	06/15/16	7439-92-1	Lead	0.008	10.0	10.0	U
3010A	06/14/16	6010C	06/17/16	**7439-95-4**	**Magnesium**	7.0	1,000	**15,700**	
3010A	06/14/16	6010C	06/17/16	**7439-96-5**	**Manganese**	0.11	20	**72**	
3010A	06/14/16	6010C	06/17/16	7440-02-0	Nickel	2.0	20	20	U
3010A	06/14/16	6010C	06/17/16	**7440-09-7**	**Potassium**	15.0	500	**1,740**	
200.8	06/14/16	200.8	06/15/16	7782-49-2	Selenium	0.032	5.0	5.0	U
3010A	06/14/16	6010C	06/17/16	7440-22-4	Silver	0.4	3	3	U
3010A	06/14/16	6010C	06/17/16	**7440-23-5**	**Sodium**	4.2	500	**10,400**	
200.8	06/14/16	200.8	06/15/16	7440-28-0	Thallium	0.006	2.0	2.0	U
3010A	06/14/16	6010C	06/17/16	7440-62-2	Vanadium	0.13	3	3	U
3010A	06/14/16	6010C	06/17/16	7440-66-6	Zinc	1.6	20	20	U

Reported in ug/L (ppb).
U-Analyte undetected at given LOQ
LOQ-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
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Sample ID: LMW-5-0616
SAMPLE

Lab Sample ID: BBS5G
LIMS ID: 16-8654
Matrix: Water
Data Release Authorized: Kelly
Reported: 06/22/16

QC Report No: BBS5-Golder Associates
Project: Landsburg
9231000002.R273
Date Sampled: 06/07/16
Date Received: 06/08/16

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	DL	LOQ	Result	Q
3010A	06/14/16	6010C	06/17/16	7429-90-5	Aluminum	5.0	1,000	1,000	U
200.8	06/14/16	200.8	06/16/16	7440-36-0	Antimony	0.020	3.0	3.0	U
200.8	06/14/16	200.8	06/15/16	7440-38-2	Arsenic	0.030	3.0	3.0	U
3010A	06/14/16	6010C	06/17/16	7440-39-3	Barium	1.49	500	500	U
3010A	06/14/16	6010C	06/17/16	7440-41-7	Beryllium	0.06	2	2	U
3010A	06/14/16	6010C	06/17/16	7440-43-9	Cadmium	0.12	2	2	U
3010A	06/14/16	6010C	06/17/16	**7440-70-2**	**Calcium**	1.2	500	**94,200**	
3010A	06/14/16	6010C	06/17/16	7440-47-3	Chromium	0.47	1,000	1,000	U
3010A	06/14/16	6010C	06/17/16	7440-48-4	Cobalt	0.29	10	10	U
3010A	06/14/16	6010C	06/17/16	7440-50-8	Copper	0.25	3	3	U
3010A	06/14/16	6010C	06/17/16	7439-89-6	Iron	3.6	200	200	U
200.8	06/14/16	200.8	06/15/16	7439-92-1	Lead	0.008	10.0	10.0	U
3010A	06/14/16	6010C	06/17/16	**7439-95-4**	**Magnesium**	7.0	1,000	**54,000**	
3010A	06/14/16	6010C	06/17/16	**7439-96-5**	**Manganese**	0.11	20	**230**	
3010A	06/14/16	6010C	06/17/16	7440-02-0	Nickel	2.0	20	20	U
3010A	06/14/16	6010C	06/17/16	**7440-09-7**	**Potassium**	15.0	500	**2,850**	
200.8	06/14/16	200.8	06/15/16	7782-49-2	Selenium	0.032	5.0	5.0	U
3010A	06/14/16	6010C	06/17/16	7440-22-4	Silver	0.4	3	3	U
3010A	06/14/16	6010C	06/17/16	**7440-23-5**	**Sodium**	4.2	500	**15,700**	
200.8	06/14/16	200.8	06/15/16	7440-28-0	Thallium	0.006	2.0	2.0	U
3010A	06/14/16	6010C	06/17/16	7440-62-2	Vanadium	0.13	3	3	U
3010A	06/14/16	6010C	06/17/16	7440-66-6	Zinc	1.6	20	20	U

Reported in ug/L (ppb).
U-Analyte undetected at given LOQ
LOQ-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: LMW-6-0616
SAMPLE

Lab Sample ID: BBS5H
LIMS ID: 16-8655
Matrix: Water
Data Release Authorized: Kelly
Reported: 06/22/16

QC Report No: BBS5-Golder Associates
Project: Landsburg
9231000002.R273
Date Sampled: 06/07/16
Date Received: 06/08/16

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	DL	LOQ	Result	Q
3010A	06/14/16	6010C	06/17/16	7429-90-5	Aluminum	5.0	1,000	1,000	U
200.8	06/14/16	200.8	06/16/16	7440-36-0	Antimony	0.020	3.0	3.0	U
200.8	06/14/16	200.8	06/15/16	7440-38-2	Arsenic	0.030	3.0	3.0	U
3010A	06/14/16	6010C	06/17/16	7440-39-3	Barium	1.49	500	500	U
3010A	06/14/16	6010C	06/17/16	7440-41-7	Beryllium	0.06	2	2	U
3010A	06/14/16	6010C	06/17/16	7440-43-9	Cadmium	0.12	2	2	U
3010A	06/14/16	6010C	06/17/16	**7440-70-2**	**Calcium**	1.2	500	**26,000**	
3010A	06/14/16	6010C	06/17/16	7440-47-3	Chromium	0.47	1,000	1,000	U
3010A	06/14/16	6010C	06/17/16	7440-48-4	Cobalt	0.29	10	10	U
3010A	06/14/16	6010C	06/17/16	7440-50-8	Copper	0.25	3	3	U
3010A	06/14/16	6010C	06/17/16	**7439-89-6**	**Iron**	3.6	200	**2,260**	
200.8	06/14/16	200.8	06/15/16	7439-92-1	Lead	0.008	10.0	10.0	U
3010A	06/14/16	6010C	06/17/16	**7439-95-4**	**Magnesium**	7.0	1,000	**13,300**	
3010A	06/14/16	6010C	06/17/16	**7439-96-5**	**Manganese**	0.11	20	**30**	
3010A	06/14/16	6010C	06/17/16	7440-02-0	Nickel	2.0	20	20	U
3010A	06/14/16	6010C	06/17/16	**7440-09-7**	**Potassium**	15.0	500	**700**	
200.8	06/14/16	200.8	06/15/16	7782-49-2	Selenium	0.032	5.0	5.0	U
3010A	06/14/16	6010C	06/17/16	7440-22-4	Silver	0.4	3	3	U
3010A	06/14/16	6010C	06/17/16	**7440-23-5**	**Sodium**	4.2	500	**6,750**	
200.8	06/14/16	200.8	06/15/16	7440-28-0	Thallium	0.006	2.0	2.0	U
3010A	06/14/16	6010C	06/17/16	7440-62-2	Vanadium	0.13	3	3	U
3010A	06/14/16	6010C	06/17/16	7440-66-6	Zinc	1.6	20	20	U

Reported in ug/L (ppb).
U-Analyte undetected at given LOQ
LOQ-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: LMW-7-0616
SAMPLE

Lab Sample ID: BBS5I
LIMS ID: 16-8656
Matrix: Water
Data Release Authorized: [signature]
Reported: 06/22/16

QC Report No: BBS5-Golder Associates
Project: Landsburg
9231000002.R273
Date Sampled: 06/07/16
Date Received: 06/08/16

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	DL	LOQ	Result	Q
3010A	06/14/16	6010C	06/17/16	7429-90-5	Aluminum	5.0	1,000	1,000	U
200.8	06/14/16	200.8	06/16/16	7440-36-0	Antimony	0.020	3.0	3.0	U
200.8	06/14/16	200.8	06/15/16	7440-38-2	Arsenic	0.030	3.0	3.0	U
3010A	06/14/16	6010C	06/17/16	**7440-39-3**	**Barium**	1.49	500	**525**	
3010A	06/14/16	6010C	06/17/16	7440-41-7	Beryllium	0.06	2	2	U
3010A	06/14/16	6010C	06/17/16	7440-43-9	Cadmium	0.12	2	2	U
3010A	06/14/16	6010C	06/17/16	**7440-70-2**	**Calcium**	1.2	500	**55,500**	
3010A	06/14/16	6010C	06/17/16	7440-47-3	Chromium	0.47	1,000	1,000	U
3010A	06/14/16	6010C	06/17/16	7440-48-4	Cobalt	0.29	10	10	U
3010A	06/14/16	6010C	06/17/16	7440-50-8	Copper	0.25	3	3	U
3010A	06/14/16	6010C	06/17/16	**7439-89-6**	**Iron**	3.6	200	**1,120**	
200.8	06/14/16	200.8	06/15/16	7439-92-1	Lead	0.008	10.0	10.0	U
3010A	06/14/16	6010C	06/17/16	**7439-95-4**	**Magnesium**	7.0	1,000	**26,300**	
3010A	06/14/16	6010C	06/17/16	**7439-96-5**	**Manganese**	0.11	20	**149**	
3010A	06/14/16	6010C	06/17/16	7440-02-0	Nickel	2.0	20	20	U
3010A	06/14/16	6010C	06/17/16	**7440-09-7**	**Potassium**	15.0	500	**3,160**	
200.8	06/14/16	200.8	06/15/16	7782-49-2	Selenium	0.032	5.0	5.0	U
3010A	06/14/16	6010C	06/17/16	7440-22-4	Silver	0.4	3	3	U
3010A	06/14/16	6010C	06/17/16	**7440-23-5**	**Sodium**	4.2	500	**39,200**	
200.8	06/14/16	200.8	06/15/16	7440-28-0	Thallium	0.006	2.0	2.0	U
3010A	06/14/16	6010C	06/17/16	7440-62-2	Vanadium	0.13	3	3	U
3010A	06/14/16	6010C	06/17/16	7440-66-6	Zinc	1.6	20	20	U

Reported in ug/L (ppb).
U-Analyte undetected at given LOQ
LOQ-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: LMW-10-0616
SAMPLE

Lab Sample ID: BBS5J
LIMS ID: 16-8657
Matrix: Water
Data Release Authorized: Kelly
Reported: 06/22/16

QC Report No: BBS5-Golder Associates
Project: Landsburg
9231000002.R273
Date Sampled: 06/08/16
Date Received: 06/08/16

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	DL	LOQ	Result	Q
3010A	06/14/16	6010C	06/17/16	7429-90-5	Aluminum	5.0	1,000	1,000	U
200.8	06/14/16	200.8	06/16/16	7440-36-0	Antimony	0.020	3.0	3.0	U
200.8	06/14/16	200.8	06/15/16	7440-38-2	Arsenic	0.030	3.0	3.0	U
3010A	06/14/16	6010C	06/17/16	7440-39-3	Barium	1.49	500	500	U
3010A	06/14/16	6010C	06/17/16	7440-41-7	Beryllium	0.06	2	2	U
3010A	06/14/16	6010C	06/17/16	7440-43-9	Cadmium	0.12	2	2	U
3010A	06/14/16	6010C	06/17/16	**7440-70-2**	**Calcium**	1.2	500	**6,690**	
3010A	06/14/16	6010C	06/17/16	7440-47-3	Chromium	0.47	1,000	1,000	U
3010A	06/14/16	6010C	06/17/16	7440-48-4	Cobalt	0.29	10	10	U
3010A	06/14/16	6010C	06/17/16	7440-50-8	Copper	0.25	3	3	U
3010A	06/14/16	6010C	06/17/16	7439-89-6	Iron	3.6	200	200	U
200.8	06/14/16	200.8	06/15/16	7439-92-1	Lead	0.008	10.0	10.0	U
3010A	06/14/16	6010C	06/17/16	**7439-95-4**	**Magnesium**	7.0	1,000	**3,060**	
3010A	06/14/16	6010C	06/17/16	7439-96-5	Manganese	0.11	20	20	U
3010A	06/14/16	6010C	06/17/16	7440-02-0	Nickel	2.0	20	20	U
3010A	06/14/16	6010C	06/17/16	**7440-09-7**	**Potassium**	15.0	500	**1,330**	
200.8	06/14/16	200.8	06/15/16	7782-49-2	Selenium	0.032	5.0	5.0	U
3010A	06/14/16	6010C	06/17/16	7440-22-4	Silver	0.4	3	3	U
3010A	06/14/16	6010C	06/17/16	**7440-23-5**	**Sodium**	4.2	500	**82,200**	
200.8	06/14/16	200.8	06/15/16	7440-28-0	Thallium	0.006	2.0	2.0	U
3010A	06/14/16	6010C	06/17/16	7440-62-2	Vanadium	0.13	3	3	U
3010A	06/14/16	6010C	06/17/16	7440-66-6	Zinc	1.6	20	20	U

Reported in ug/L (ppb).
U-Analyte undetected at given LOQ
LOQ-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: LMW-2-0616
SAMPLE

Lab Sample ID: BBS5K
LIMS ID: 16-8658
Matrix: Water
Data Release Authorized: Kelly
Reported: 06/22/16

QC Report No: BBS5-Golder Associates
Project: Landsburg
9231000002.R273
Date Sampled: 06/08/16
Date Received: 06/08/16

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	DL	LOQ	Result	Q
3010A	06/14/16	6010C	06/17/16	7429-90-5	Aluminum	5.0	1,000	1,000	U
200.8	06/14/16	200.8	06/16/16	7440-36-0	Antimony	0.020	3.0	3.0	U
200.8	06/14/16	200.8	06/15/16	7440-38-2	Arsenic	0.030	3.0	3.0	U
3010A	06/14/16	6010C	06/17/16	7440-39-3	Barium	1.49	500	500	U
3010A	06/14/16	6010C	06/17/16	7440-41-7	Beryllium	0.06	2	2	U
3010A	06/14/16	6010C	06/17/16	7440-43-9	Cadmium	0.12	2	2	U
3010A	06/14/16	6010C	06/17/16	**7440-70-2**	**Calcium**	1.2	500	**110,000**	
3010A	06/14/16	6010C	06/17/16	7440-47-3	Chromium	0.47	1,000	1,000	U
3010A	06/14/16	6010C	06/17/16	7440-48-4	Cobalt	0.29	10	10	U
3010A	06/14/16	6010C	06/17/16	7440-50-8	Copper	0.25	3	3	U
3010A	06/14/16	6010C	06/17/16	7439-89-6	Iron	3.6	200	200	U
200.8	06/14/16	200.8	06/15/16	7439-92-1	Lead	0.008	10.0	10.0	U
3010A	06/14/16	6010C	06/17/16	**7439-95-4**	**Magnesium**	7.0	1,000	**68,700**	
3010A	06/14/16	6010C	06/17/16	**7439-96-5**	**Manganese**	0.11	20	**190**	
3010A	06/14/16	6010C	06/17/16	7440-02-0	Nickel	2.0	20	20	U
3010A	06/14/16	6010C	06/17/16	**7440-09-7**	**Potassium**	15.0	500	**3,570**	
200.8	06/14/16	200.8	06/15/16	7782-49-2	Selenium	0.032	5.0	5.0	U
3010A	06/14/16	6010C	06/17/16	7440-22-4	Silver	0.4	3	3	U
3010A	06/14/16	6010C	06/17/16	**7440-23-5**	**Sodium**	4.2	500	**20,000**	
200.8	06/14/16	200.8	06/15/16	7440-28-0	Thallium	0.006	2.0	2.0	U
3010A	06/14/16	6010C	06/17/16	7440-62-2	Vanadium	0.13	3	3	U
3010A	06/14/16	6010C	06/17/16	7440-66-6	Zinc	1.6	20	20	U

Reported in ug/L (ppb).
U-Analyte undetected at given LOQ
LOQ-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: LMW-4-0616
SAMPLE

Lab Sample ID: BBS5L
LIMS ID: 16-8659
Matrix: Water
Data Release Authorized: Kelly
Reported: 06/22/16

QC Report No: BBS5-Golder Associates
Project: Landsburg
9231000002.R273
Date Sampled: 06/08/16
Date Received: 06/08/16

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	DL	LOQ	Result	Q
3010A	06/14/16	6010C	06/17/16	7429-90-5	Aluminum	5.0	1,000	1,000	U
200.8	06/14/16	200.8	06/15/16	7440-36-0	Antimony	0.020	3.0	3.0	U
200.8	06/14/16	200.8	06/15/16	7440-38-2	Arsenic	0.030	3.0	3.0	U
3010A	06/14/16	6010C	06/17/16	7440-39-3	Barium	1.49	500	500	U
3010A	06/14/16	6010C	06/17/16	7440-41-7	Beryllium	0.06	2	2	U
3010A	06/14/16	6010C	06/17/16	7440-43-9	Cadmium	0.12	2	2	U
3010A	06/14/16	6010C	06/17/16	**7440-70-2**	**Calcium**	1.2	500	**108,000**	
3010A	06/14/16	6010C	06/17/16	7440-47-3	Chromium	0.47	1,000	1,000	U
3010A	06/14/16	6010C	06/17/16	7440-48-4	Cobalt	0.29	10	10	U
3010A	06/14/16	6010C	06/17/16	7440-50-8	Copper	0.25	3	3	U
3010A	06/14/16	6010C	06/17/16	**7439-89-6**	**Iron**	3.6	200	**790**	
200.8	06/14/16	200.8	06/15/16	7439-92-1	Lead	0.008	10.0	10.0	U
3010A	06/14/16	6010C	06/17/16	**7439-95-4**	**Magnesium**	7.0	1,000	**67,000**	
3010A	06/14/16	6010C	06/17/16	**7439-96-5**	**Manganese**	0.11	20	**159**	
3010A	06/14/16	6010C	06/17/16	7440-02-0	Nickel	2.0	20	20	U
3010A	06/14/16	6010C	06/17/16	**7440-09-7**	**Potassium**	15.0	500	**3,750**	
200.8	06/14/16	200.8	06/15/16	7782-49-2	Selenium	0.032	5.0	5.0	U
3010A	06/14/16	6010C	06/17/16	7440-22-4	Silver	0.4	3	3	U
3010A	06/14/16	6010C	06/17/16	**7440-23-5**	**Sodium**	4.2	500	**26,200**	
200.8	06/14/16	200.8	06/15/16	7440-28-0	Thallium	0.006	2.0	2.0	U
3010A	06/14/16	6010C	06/17/16	7440-62-2	Vanadium	0.13	3	3	U
3010A	06/14/16	6010C	06/17/16	7440-66-6	Zinc	1.6	20	20	U

Reported in ug/L (ppb).
U-Analyte undetected at given LOQ
LOQ-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: LMW-4-0616 DUPLICATE

Lab Sample ID: BBS5L
LIMS ID: 16-8659
Matrix: Water
Data Release Authorized:
Reported: 06/20/16

QC Report No: BBS5-Golder Associates
Project: Landsburg
9231000002.R273
Date Sampled: 06/08/16
Date Received: 06/08/16

MATRIX DUPLICATE QUALITY CONTROL REPORT

Analyte	Analysis Method	Sample	Duplicate	RPD	Control Limit	Q
Aluminum	6010C	1,000 U	1,000 U	0.0%	+/- 1,000	L
Antimony	200.8	3 U	3 U	0.0%	+/- 3	L
Arsenic	200.8	3 U	3 U	0.0%	+/- 3	L
Barium	6010C	500 U	500 U	0.0%	+/- 500	L
Beryllium	6010C	2 U	2 U	0.0%	+/- 2	L
Cadmium	6010C	2 U	2 U	0.0%	+/- 2	L
Calcium	6010C	108,000	109,000	0.9%	+/- 20%	
Chromium	6010C	1,000 U	1,000 U	0.0%	+/- 1,000	L
Cobalt	6010C	10 U	10 U	0.0%	+/- 10	L
Copper	6010C	3 U	3 U	0.0%	+/- 3	L
Iron	6010C	790	800	1.3%	+/- 200	L
Lead	200.8	10 U	10 U	0.0%	+/- 10	L
Magnesium	6010C	67,000	67,200	0.3%	+/- 20%	
Manganese	6010C	160	160	0.0%	+/- 20%	
Nickel	6010C	20 U	20 U	0.0%	+/- 20	L
Potassium	6010C	3,750	3,810	1.6%	+/- 20%	
Selenium	200.8	5 U	5 U	0.0%	+/- 5	L
Silver	6010C	3 U	3 U	0.0%	+/- 3	L
Sodium	6010C	26,200	26,700	1.9%	+/- 20%	
Thallium	200.8	2 U	2 U	0.0%	+/- 2	L
Vanadium	6010C	3 U	3 U	0.0%	+/- 3	L
Zinc	6010C	20 U	20 U	0.0%	+/- 20	L

Reported in µg/L

*-Control Limit Not Met
L-RPD Invalid, Limit = Detection Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: LMW-4-0616
MATRIX SPIKE

Lab Sample ID: BBS5L
LIMS ID: 16-8659
Matrix: Water
Data Release Authorized: TH
Reported: 06/20/16 6-20-16

QC Report No: BBS5-Golder Associates
Project: Landsburg
9231000002.R273
Date Sampled: 06/08/16
Date Received: 06/08/16

MATRIX SPIKE QUALITY CONTROL REPORT

Analyte	Analysis Method	Sample	Spike	Spike Added	% Recovery	Q
Aluminum	6010C	1,000 U	2,050	2,000	102%	
Antimony	200.8	3 U	22	25	88.0%	
Arsenic	200.8	3 U	28	25	112%	
Barium	6010C	500 U	2,430	2,000	122%	
Beryllium	6010C	2 U	491	500	98.2%	
Cadmium	6010C	2 U	507	500	101%	
Calcium	6010C	108,000	117,000	10,000	90.0%	H
Chromium	6010C	1,000 U	1,000 U	500	NR	N
Cobalt	6010C	10 U	489	500	97.8%	
Copper	6010C	3 U	504	500	101%	
Iron	6010C	790	2,720	2,000	96.5%	
Lead	200.8	10 U	20	25	80.0%	
Magnesium	6010C	67,000	75,300	10,000	83.0%	H
Manganese	6010C	159	618	500	91.8%	
Nickel	6010C	20 U	492	500	98.4%	
Potassium	6010C	3,750	14,000	10,000	102%	
Selenium	200.8	5 U	75	80	93.8%	
Silver	6010C	3 U	519	500	104%	
Sodium	6010C	26,200	36,400	10,000	102%	
Thallium	200.8	2 U	21	25	84.0%	
Vanadium	6010C	3 U	517	500	103%	
Zinc	6010C	20 U	470	500	94.0%	

Reported in µg/L

N-Control Limit Not Met
H-% Recovery Not Applicable, Sample Concentration Too High
NA-Not Applicable, Analyte Not Spiked
NR-Not Recovered

Percent Recovery Limits: 75-125%

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS **Sample ID: METHOD BLANK**

Lab Sample ID: BBS5MB
LIMS ID: 16-8659
Matrix: Water
Data Release Authorized: Kelly
Reported: 06/22/16

QC Report No: BBS5-Golder Associates
Project: Landsburg
9231000002.R273
Date Sampled: NA
Date Received: NA

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	DL	LOQ	Result	Q
3010A	06/14/16	6010C	06/17/16	7429-90-5	Aluminum	5.0	1,000	1,000	U
200.8	06/14/16	200.8	06/16/16	7440-36-0	Antimony	0.020	3.0	3.0	U
200.8	06/14/16	200.8	06/15/16	7440-38-2	Arsenic	0.030	3.0	3.0	U
3010A	06/14/16	6010C	06/17/16	7440-39-3	Barium	1.49	500	500	U
3010A	06/14/16	6010C	06/17/16	7440-41-7	Beryllium	0.06	2	2	U
3010A	06/14/16	6010C	06/17/16	7440-43-9	Cadmium	0.12	2	2	U
3010A	06/14/16	6010C	06/17/16	7440-70-2	Calcium	1.2	500	500	U
3010A	06/14/16	6010C	06/17/16	7440-47-3	Chromium	0.47	1,000	1,000	U
3010A	06/14/16	6010C	06/17/16	7440-48-4	Cobalt	0.29	10	10	U
3010A	06/14/16	6010C	06/17/16	7440-50-8	Copper	0.25	3	3	U
3010A	06/14/16	6010C	06/17/16	7439-89-6	Iron	3.6	200	200	U
200.8	06/14/16	200.8	06/15/16	7439-92-1	Lead	0.008	10.0	10.0	U
3010A	06/14/16	6010C	06/17/16	7439-95-4	Magnesium	7.0	1,000	1,000	U
3010A	06/14/16	6010C	06/17/16	7439-96-5	Manganese	0.11	20	20	U
3010A	06/14/16	6010C	06/17/16	7440-02-0	Nickel	2.0	20	20	U
3010A	06/14/16	6010C	06/17/16	7440-09-7	Potassium	15.0	500	500	U
200.8	06/14/16	200.8	06/15/16	7782-49-2	Selenium	0.032	5.0	5.0	U
3010A	06/14/16	6010C	06/17/16	7440-22-4	Silver	0.4	3	3	U
3010A	06/14/16	6010C	06/17/16	7440-23-5	Sodium	4.2	500	500	U
200.8	06/14/16	200.8	06/15/16	7440-28-0	Thallium	0.006	2.0	2.0	U
3010A	06/14/16	6010C	06/17/16	7440-62-2	Vanadium	0.13	3	3	U
3010A	06/14/16	6010C	06/17/16	7440-66-6	Zinc	1.6	20	20	U

Reported in ug/L (ppb).
U-Analyte undetected at given LOQ
LOQ-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS **Sample ID: LAB CONTROL**

Lab Sample ID: BBS5LCS
LIMS ID: 16-8659
Matrix: Water
Data Release Authorized: [signature] 6-20-16
Reported: 06/20/16

QC Report No: BBS5-Golder Associates
Project: Landsburg
9231000002.R273
Date Sampled: NA
Date Received: NA

BLANK SPIKE QUALITY CONTROL REPORT

Analyte	Analysis Method	Spike Found	Spike Added	% Recovery	Q
Aluminum	6010C	2050	2000	102%	
Antimony	200.8	25.8	25.0	103%	
Arsenic	200.8	25.9	25.0	104%	
Barium	6010C	2100	2000	105%	
Beryllium	6010C	486	500	97.2%	
Cadmium	6010C	496	500	99.2%	
Calcium	6010C	9790	10000	97.9%	
Chromium	6010C	512	500	102%	
Cobalt	6010C	498	500	99.6%	
Copper	6010C	481	500	96.2%	
Iron	6010C	1970	2000	98.5%	
Lead	200.8	25.1	25.0	100%	
Magnesium	6010C	10500	10000	105%	
Manganese	6010C	466	500	93.2%	
Nickel	6010C	510	500	102%	
Potassium	6010C	10100	10000	101%	
Selenium	200.8	74.3	80.0	92.9%	
Silver	6010C	521	500	104%	
Sodium	6010C	10100	10000	101%	
Thallium	200.8	24.9	25.0	99.6%	
Vanadium	6010C	519	500	104%	
Zinc	6010C	490	500	98.0%	

Reported in µg/L

N-Control limit not met
Control Limits: 80-120%

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
Total Mercury by Method SW7470A

Data Release Authorized: TH
Reported: 06/20/16 6-20-16
Date Received: 06/09/16
Page 1 of 1

QC Report No: BBS5-Golder Associates
Project: Landsburg
9231000002.R273

Client/ ARI ID	Date Sampled	Matrix	Prep Date Anal Date	DL	LOQ	Result
LMW-11-0616 BBS5P 16-8678	06/06/16	Water	06/14/16 06/16/16	2.60	20.0	20.0 U
LMW-11-0616-D BBS5Q 16-8679	06/06/16	Water	06/14/16 06/16/16	2.60	20.0	20.0 U
LMW-9-0616 BBS5R 16-8680	06/06/16	Water	06/14/16 06/16/16	2.60	20.0	20.0 U
LMW-8-0616 BBS5S 16-8681	06/06/16	Water	06/14/16 06/16/16	2.60	20.0	20.0 U
EB0616 BBS5T 16-8682	06/06/16	Water	06/14/16 06/16/16	2.60	20.0	20.0 U
LMW-3-0616 BBS5U 16-8683	06/06/16	Water	06/14/16 06/16/16	2.60	20.0	20.0 U
LMW-5-0616 BBS5V 16-8684	06/06/16	Water	06/14/16 06/16/16	2.60	20.0	20.0 U
LMW-6-0616 BBS5W 16-8685	06/06/16	Water	06/14/16 06/16/16	2.60	20.0	20.0 U
LMW-7-0616 BBS5X 16-8686	06/06/16	Water	06/14/16 06/16/16	2.60	20.0	20.0 U
LMW-10-0616 BBS5Y 16-8687	06/06/16	Water	06/14/16 06/16/16	2.60	20.0	20.0 U
LMW-2-0616 BBS5Z 16-8688	06/06/16	Water	06/14/16 06/16/16	2.60	20.0	20.0 U
LMW-4-0616 BBS5AA 16-8689	06/06/16	Water	06/14/16 06/16/16	2.60	20.0	20.0 U
MB-061416 Method Blank	NA	Water	06/14/16 06/16/16	2.60	20.0	20.0 U

Reported in ng/L

DL-Detection Limit
LOQ-Limit of Quantitation
U-Undetected at reported detection limit
J-Analyte detected between DL and LOQ

Results reported below the LOQ are for statistical purposes only and have not been evaluated by either an analyst or data reviewer.

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: LMW-4-0616
DUPLICATE

Lab Sample ID: BBS5AA
LIMS ID: 16-8689
Matrix: Water
Data Release Authorized: [signature] 6-20-16
Reported: 06/20/16

QC Report No: BBS5-Golder Associates
Project: Landsburg
9231000002.R273
Date Sampled: 06/06/16
Date Received: 06/09/16

MATRIX DUPLICATE QUALITY CONTROL REPORT

Analyte	Analysis Method	Sample	Duplicate	RPD	Control Limit	Q
Mercury	SW7470A	20.0 U	20.0 U	0.0%	+/- 20.0	L

Reported in ng/L

*-Control Limit Not Met
L-RPD Invalid, Limit = Detection Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: LMW-4-0616
MATRIX SPIKE

Lab Sample ID: BBS5AA
LIMS ID: 16-8689
Matrix: Water
Data Release Authorized: TH 6-20-16
Reported: 06/20/16

QC Report No: BBS5-Golder Associates
Project: Landsburg
9231000002.R273
Date Sampled: 06/06/16
Date Received: 06/09/16

MATRIX SPIKE QUALITY CONTROL REPORT

Analyte	Analysis Method	Sample	Spike	Spike Added	% Recovery	Q
Mercury	SW7470A	20.0 U	99.0	100	99.0%	

Reported in ng/L

N-Control Limit Not Met
H-% Recovery Not Applicable, Sample Concentration Too High
NA-Not Applicable, Analyte Not Spiked

Percent Recovery Limits: 75-125%

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS **Sample ID: LAB CONTROL**

Lab Sample ID: BBS5LCS
LIMS ID: 16-8689
Matrix: Water
Data Release Authorized: YK 6-20-16
Reported: 06/20/16

QC Report No: BBS5-Golder Associates
Project: Landsburg
9231000002.R273
Date Sampled: NA
Date Received: NA

BLANK SPIKE QUALITY CONTROL REPORT

Analyte	Analysis Method	Spike Found	Spike Added	% Recovery	Q
Mercury	SW7470A	194	200	97.0%	

Reported in ng/L

N-Control limit not met
Control Limits: 80-120%

APPENDIX B
SAMPLE INTEGRITY DATA SHEETS (SIDS)

SAMPLE INTEGRITY DATA SHEET

Plant/Site Landsburg Mine Site **Project No.** 923-1000-002

Site Location Ravensdale, WA **Sample ID** LMW-2-0616

Sampling Location Groundwater Monitoring Well End of dedicated sampling tube

Technical Procedure Reference(s) TP-1.4-6A, TP-1.2-20, TP-1.2-23

Type of Sampler Dedicated Pump Grundfos

Date 6/8/2016 **Time** 1130

Media Water **Station** LMW-2

Sample Type: **grab** time composite space composite

Sample Acquisition Measurements (depth, volume of static well water and purged water, etc.)

SWL – 8.11' ft below TOC (inner PVC at elev. X) (bottom at 38.1 ft bgs, 4-in casing) Measured on 6/3/16 @ 1230, [illegible]

Screen Interval – 27.9-38.1 ft bgs Monument: 2.94 ags Inner PVC: 2.38 ags

Sand Pack Interval – 24.8-38.1 ft bgs (8-in hole) (~7.8 gal/sand pack vol)

Packer Depth – NA (~22.3 gal/casing vol) (~30.1 gal/total well vol)

Sample Description PID=0.0 ppm; Clear, sulfur odor.

Field Measurements on Sample (pH, conductivity, etc.)

SEE FIELD PARAMETERS SHEET

Aliquot Amount	Analysis	Container	Preservation / Amount
3 – 40 mL	VOA	VOA Vial	HCl
1 – 500 mL	Total Metals	HDPE	HNO3 (non)
1 – 500 mL	Dissolved Metals	HDPE	HNO3 (filter)
4 – 500 mL, 2 – 40 mL	TPH-HCID	Glass Amber, VOA Vial	HCl

Sampler (signature) [signature] **Date** 6/8/2016

Supervisor (signature) [signature] **Date** 6-10-16

FIELD PARAMETERS SHEET

Well ID LMW-2
Date 6/8/2016
Time Begin Purge 1027
Time Collect Sample 1130

Water Level feet bmp	Time	Volume Purged	pH	Conductivity uS/cm	Temp. °C	DO mg/L	Turbidity NTU	Eh (pH) Rel mV
	1040		6.90	927	10.7	0.06	0.99	(+)150.1
	1050		6.90	928	10.7	0.09	1.59	(+)135.7
	1100		6.90	929	10.7	0.09	0.66	(+)124.3
	1110		6.91	927	10.7	0.05	0.75	(+)119.5
	1120		6.91	927	10.7	0.10	0.83	(+)110.9
	1130		6.91	927	10.7	0.10	0.64	(+)104.7

Comments:
PID = 0.0 ppm

GrundFos: 99 Hz

$\frac{5 \text{ gal}}{3.5 \text{ min}} = 1.42 \text{ gpm} \Rightarrow \frac{30 \text{ gal/well volume}}{1.42 \text{ gpm}} = 21 \text{ minutes/well volume} \times 3 = 63$ minute purge

Sampler's Initials AMR/JCM

SAMPLE INTEGRITY DATA SHEET

Plant/Site Landsburg Mine Site **Project No.** 923-1000-002

Site Location Ravensdale, WA **Sample ID** LMW-3-0616

Sampling Location Groundwater Monitoring Well End of dedicated sampling tube

Technical Procedure Reference(s) TP-1.4-6A, TP-1.2-20, TP-1.2-23

Type of Sampler Dedicated Pump Grundfos

Date 6/7/2016 **Time** 1035

Media Water **Station** LMW-3

Sample Type: **grab** time composite space composite

Sample Acquisition Measurements (depth, volume of static well water and purged water, etc.)

SWL – 12.76 ft below TOC (inner PVC at elev. X) (bottom at 64.8 ft bgs, 4-in casing)

Screen Interval – 49.8-64.8 ft bgs Monument: 3.08 ags Inner PVC: 2.35 ags

Sand Pack Interval – 47.1-64.8 ft bgs (8-in hole) (~10.4 gal/sand pack)

Packer Depth – 39.33 ft bgs (~36.1 gal/casing vol) (~16.6 gal/packer casing volume)

(~27.0 gal/total well vol below packer)

Sample Description PID = 0.0 ppm; Clear, no odor;

Field Measurements on Sample (pH, conductivity, etc.)

SEE FIELD PARAMETERS SHEET

Aliquot Amount	Analysis	Container	Preservation / Amount
✓3 – 40 mL	VOA	VOA Vial	HCl
✓1 – 500 mL	Total Metals	HDPE	HNO3 (non)
✓1 – 500 mL	Dissolved Metals	HDPE	HNO3 (filter)
✓4 – 500 mL, ✓2 – 40 mL	TPH-HCID	Glass Amber, VOA Vial	HCl

Sampler (signature) [signature] **Date** 6/7/2016

Supervisor (signature) [signature] **Date** 6-10-16

FIELD PARAMETERS SHEET

Well ID LMW-3
Date 6/7/2016
Time Begin Purge 0915
Time Collect Sample 1035

(pH)

Water Level feet bmp	Time	Volume Purged	pH	Conductivity uS/cm	Temp. °C	DO mg/L	Turbidity NTU	Eh Rel mV
22.72'	0930		7.79	317	11.2	0.08	0.93	(+)359.7
25.95'	0940		7.77	327	11.2	0.50	0.92	(+)289.8
26.41'	0950		7.74	332	11.0	0.01	1.38	(+)232.2
26.48'	1000		7.72	333	11.1	0.03	0.89	(+)212.6
26.53'	1010		7.68	334	11.1	0.02	1.25 ~~2.74~~	(+)191.1
26.56'	1020		7.68	334	11.1	0.02	0.93	(+)170.5
26.57'	1030		7.68	336	11.1	0.03	1.28	(+)160.4

Comments:
PID = 0.0 ppm
Packer = 110 psi (direct connect to N_2 tank/regulator)
Grundfos: 131.0 Hz

$\frac{5 \text{ gal}}{5 \text{ min}} = 1 \text{ gpm}$ $\quad \frac{27.0 \text{ gal/well volume}}{1 \text{ gpm}} = 27.0 \text{ min/well volume} \times 3 = 81 \text{ minute purge}$

-Initial purge rate observed to cause drawdown (@~2.5 gpm)
purge rate reduced to lower/limit drawdown (@~1.0 gpm)
*Contacted Jill Lambert (@ 1000) and discussed if obtaining water levels and if it is a necessary field parameter; Jill confirmed that due to packers presence at most of site wells, combined with the high purge rates, drawdown is not something to be overly concerned with.
* LMW-8 is the exception where water levels should be monitored while sampling w/ the peristaltic pump. Therefore we will no longer be recording water levels other than an initial static water level prior to purging; LMW-10 should also have water levels monitored during sampling/purging;

Sampler's Initials AMR/JCM

SAMPLE INTEGRITY DATA SHEET

Plant/Site Landsburg Mine Site **Project No.** 923-1000-002

Site Location Ravensdale, WA **Sample ID** LMW-4-0616

Sampling Location Groundwater Monitoring Well End of dedicated sampling tube

Technical Procedure Reference(s) TP-1.4-6A, TP-1.2-20, TP-1.2-23

Type of Sampler Dedicated Pump Grundfos

Date 6/8/2016 **Time** 1320

Media Water **Station** LMW-4

Sample Type: **grab** time composite space composite

Sample Acquisition Measurements (depth, volume of static well water and purged water, etc.)

SWL – 10.25 (Not corrected for inclination) ft below TOC (inner PVC at elev. X) (bottom at 209.7 ft bgs, 4-in casing) Measured on 6/3/16 @ 1230 MWR

Screen Interval – 195-209.7 ft bgs Monument: 2.76 ags Inner PVC: 2.17 ags

Sand Pack Interval – 189-209.7 ft bgs (8-in hole) (~12.3 gal/sand pack)

Packer Depth – 187.3 ft bgs (~133.3 gal/casing vol) (~14.6 gal/packer casing volume)

(~26.9 gal/total well vol below packer)

** Depths corrected for 70° inclination

Sample Description PID=0.0ppm; Clear, slight sulfur odor;

Field Measurements on Sample (pH, conductivity, etc.)

SEE FIELD PARAMETERS SHEET

Aliquot Amount	Analysis	Container	Preservation / Amount
3 – 40 mL x3 = 9 ✓	VOA	VOA Vial	HCl
1 – 500 mL x2 = 2 ✓	Total Metals	HDPE	HNO3 (non)
1 – 500 mL x2 = 2 ✓	Dissolved Metals	HDPE	HNO3 (filter)
4 – 500 mL, 2 – 40 mL x2=8 ✓ x3=6 ✓	TPH-HCID	Glass Amber, VOA Vial	HCl

27 total

MS/MSD volume

VOCs collected as triplicate; Metals and Amber-HCIDs as duplicates;

Sampler (signature) _____ **Date** 6/8/2016

Supervisor (signature) _____ **Date** 6-10-16

FIELD PARAMETERS SHEET

Well ID LMW-4
Date 6/8/2016
Time Begin Purge 1154
Time Collect Sample 1320

Water Level feet bmp	Time	Volume Purged	pH	Conductivity uS/cm	Temp. °C	DO mg/L	Turbidity NTU	Eh Rel mV (pH)
	1215		6.96	942	10.8	0.09	0.98	(+)88.4
	1225		6.95	945	10.8	0.09	0.77	(+)79.1
	1235		6.94	940	10.8	0.14	0.54	(+)70.9
	1245		6.93	938	10.8	0.10	0.85	(+)63.7
	1255		6.92	936	10.8	0.10	1.08	(+)57.9
	1305		6.92	938	10.8	0.11	0.85	(+)53.4
	1315		6.92	937	10.8	0.11	0.59	(+)49.1

Comments:
PID = 0.0 ppm
Packer = 140 psi
Grundfos = 109 Hz
5 gal / 5 min = 1.0 gpm
27 gal/well volume / 1.0 gpm = 27 minutes/well volume x 3 = 81 minute purge

* MS/MSD volume collected at this location
- Triplicate for VOCs (VOAs)
- Duplicate for Total + Dissolved Metals, and TPH-HCID

Sampler's Initials AWR/JCM

SAMPLE INTEGRITY DATA SHEET

Plant/Site Landsburg Mine Site **Project No.** 923-1000-002

Site Location Ravensdale, WA **Sample ID** LMW-5-0616

Sampling Location Groundwater Monitoring Well End of dedicated sampling tube

Technical Procedure Reference(s) TP-1.4-6A, TP-1.2-20, TP-1.2-23

Type of Sampler Dedicated Pump Grundfos

Date 6/7/2016 **Time** 1145

Media Water **Station** LMW-5

Sample Type: **grab** time composite space composite

Sample Acquisition Measurements (depth, volume of static well water and purged water, etc.)

SWL – 14.35 ft below TOC (inner PVC at elev. X) (bottom at 241.8 ft bgs, 4-in casing) Measured 6/13/16 @ 1126

Screen Interval – 231.8-241.8 ft bgs Monument: 3.24 ags Inner PVC: 2.64 ags

Sand Pack Interval – 231.8-241.8 ft bgs (8-in hole) (~5.9 gal/sand pack)

Packer Depth – 222.11 ft bgs (~150.8 gal/casing vol) (~12.9 gal/packer casing volume)

(~18.7 gal/total well vol below packer)

Sample Description PID = 0.0 ppm; clear; sulfur odor;

Field Measurements on Sample (pH, conductivity, etc.)

SEE FIELD PARAMETERS SHEET

Aliquot Amount	Analysis	Container	Preservation / Amount
✓ 3 – 40 mL	VOA	VOA Vial	HCl
✓ 1 – 500 mL	Total Metals	HDPE	HNO3 (non)
✓ 1 – 500 mL	Dissolved Metals	HDPE	HNO3 (filter)
✓ 4 – 500 mL, ✓ 2 – 40 mL	TPH-HCID	Glass Amber, VOA Vial	HCl

Sampler (signature) [signature] **Date** 6/7/2016

Supervisor (signature) [signature] **Date** 6-10-16

FIELD PARAMETERS SHEET

Well ID LMW-5
Date 6/7/2016
Time Begin Purge 1105
Time Collect Sample 1145

Water Level feet bmp	Time	Volume Purged	pH	Conductivity uS/cm	Temp. °C	DO mg/L	Turbidity NTU	Eh Rel mV (pH)
	1118		6.94	761	11.1	0.08	2.02	(+)103.1
	1123		6.91	762	11.1	0.01	1.41	(+)100.0
	1128		6.89	762	11.1	0.04	1.94	(+)91.7
	1133		6.88	762	11.1	0.01	1.24	+86.7
	1138		6.87	762	11.1	0.02	1.52	+82.3
	1143		6.87	762	11.1	0.00	1.45	+78.8

Comments:
PID = 0.0 ppm
Packer = 130 psi
Grundfos: 131 Hz

$\frac{5\ gal}{4\ min} = 1.25\ gpm \Rightarrow \frac{19\ gal/well\ volume}{1.25\ gpm} = 15.2\ minutes/well\ volume \times 3 \approx 46$ minute purge

Sampler's Initials AMW/JCM

SAMPLE INTEGRITY DATA SHEET

Plant/Site Landsburg Mine Site **Project No.** 923-1000-002

Site Location Ravensdale, WA **Sample ID** LMW-6-0616

Sampling Location Groundwater Monitoring Well End of dedicated sampling tube

Technical Procedure Reference(s) TP-1.4-6A, TP-1.2-20, TP-1.2-23

Type of Sampler Dedicated Pump Grundfos

Date 6/6/2016 6/7/2016 (mw) **Time** 1330

Media Water **Station** LMW-6

Sample Type: **grab** time composite space composite

Sample Acquisition Measurements (depth, volume of static well water and purged water, etc.)

SWL – 29.67' ft below TOC (inner PVC at elev. X) (bottom at 105.9 ft bgs, 4-in casing) Collected 6/6/16 @ 1145

Screen Interval – 90.9-105.9 ft bgs Monument: 3.05 ags Inner PVC: 2.38 ags

Sand Pack Interval – 82.5-105.9 ft bgs (8-in hole) (~13.7 gal/sand pack)

Packer Depth – 81.22 ft bgs (~53 gal/casing vol) (~16.1 gal/packer casing volume)

(~29.9 gal/total well vol below packer)

Sample Description PID = 0.0 ppm; Clear, no odor;

Field Measurements on Sample (pH, conductivity, etc.)

SEE FIELD PARAMETERS SHEET

Aliquot Amount	Analysis	Container	Preservation / Amount
✓ 3 – 40 mL	VOA	VOA Vial	HCl
✓ 1 – 500 mL	Total Metals	HDPE	HNO3 (non)
✓ 1 – 500 mL	Dissolved Metals	HDPE	HNO3 (filter)
✓ 4 – 500 mL, 2 – 40 mL	TPH-HCID	Glass Amber, VOA Vial	HCl

Sampler (signature) _____ **Date** 6/6/2016 6/7/2016 (mw)

Supervisor (signature) _____ **Date** 6-10-16

FIELD PARAMETERS SHEET

Well ID LMW-6
Date ~~6/6/2016~~ 6/7/2016 (AMR)
Time Begin Purge 1233
Time Collect Sample 1330

Water Level feet bmp	Time	Volume Purged	pH	Conductivity uS/cm	Temp. °C (pH)	DO mg/L	Turbidity NTU	Eh Rel mV
	1245		6.88	248.4	10.2	0.11	2.22	(+) 139.6
	1255		6.85	265.9	9.8	0.07	1.93	(+) 128.3
	1305		6.84	262.3	9.9	0.08	2.23	(+) 122.3
	1315		6.83	259.6	9.9	0.10	1.01	(+) 120.1
	1325		6.82	257.7	10.0	0.10	1.20	(+) 118.9

Comments:

PID = 0.0 ppm
Packer = 110 psi
Grundfos: 199Hz

$\frac{5 \text{ gal}}{3 \text{ min}} = 1.67 \text{ gpm} \Rightarrow \frac{\sim 30 \text{ gal/well volume}}{1.67 \text{ gpm}} = 18 \text{ minutes/well volume} \times 3 = 54 \text{ minute purge}$

Sampler's Initials AMR / JCM

SAMPLE INTEGRITY DATA SHEET

Plant/Site Landsburg Mine Site **Project No.** 923-1000-002

Site Location Ravensdale, WA **Sample ID** LMW-7-0616, ~~LMW-7-0616-D~~ (Dup)

Sampling Location Groundwater Monitoring Well End of dedicated sampling tube

Technical Procedure Reference(s) TP-1.4-6A, TP-1.2-20, TP-1.2-23

Type of Sampler Dedicated Pump Grundfos

Date 6/7/2017 **Time** 1525

Media Water **Station** LMW-7

Sample Type: **grab** time composite space composite

Sample Acquisition Measurements (depth, volume of static well water and purged water, etc.)

SWL – 223.84' ft below TOC (inner PVC at elev. X) (bottom at 253.7 ft bgs, 4-in casing) Measured 6/3/16 @ 1210 (AWR)

Screen Interval – 239.6-253.7 ft bgs Monument: 3.09 ags Inner PVC: 2.72 ags

Sand Pack Interval – NA

Packer Depth – NA (~28.3 gal/casing vol) ** Depths corrected for 70° inclination

Sample Description PID = 0.0 ppm; Clear, no odor.

Field Measurements on Sample (pH, conductivity, etc.)

SEE FIELD PARAMETERS SHEET

Aliquot Amount	Analysis	Container	Preservation / Amount
3 ~~6~~ – 40 mL	VOA	VOA Vial	HCl
1 ~~2~~ – 500 mL	Total Metals	HDPE	HNO3 (non)
1 ~~2~~ – 500 mL	Dissolved Metals	HDPE	HNO3 (filter)
4 ~~8~~ – 500 mL, ~~4~~ 2 – 40 mL	TPH-HCID	Glass Amber, VOA Vial	HCl

No Duplicate at this location this round (AWR)

Sampler (signature) [signature] **Date** 6/7/2016

Supervisor (signature) [signature] **Date** 6-10-16

FIELD PARAMETERS SHEET

Well ID LMW-7
Date 6/7/2016
Time Begin Purge 1400
Time Collect Sample 1525

Water Level feet bmp	Time	Volume Purged	pH	Conductivity uS/cm	Temp. °C	DO mg/L	Turbidity NTU	Eh (pH) Rel mV
	1415		7.34	452	12.6	0.26	2.21	(+)142.2
	1425		7.22	489	12.7	0.07	1.51	(+)122.5
	1435		7.12	522	12.8	0.00	1.61	(+)116.7
	1445		7.08	545	12.8	0.00	0.90	(+)112.0
	1455		7.07	561	12.8	0.01	1.18	(+)108.7
	1505		7.06	565	12.8	0.02	0.99	(+)106.8
	1515		7.07	560	12.8	0.00	1.03	(+)104.9
	1525		7.07	563	12.8	0.02	1.23	(+)102.0

Comments:
PID = 0.0 ppm

No Packer.

Grundfos @ 345 Hz

$\frac{5 \text{ gallons}}{5 \text{ minutes}} = 1.0 \text{ gpm} \Rightarrow \frac{28.3 \text{ gal/well volume}}{1.0 \text{ gpm}} = 28.3 \text{ min/well volume} \times 3 \approx 85$ minute purge

Sampler's Initials AM / JCM

SAMPLE INTEGRITY DATA SHEET

Plant/Site Landsburg Mine Site **Project No.** 923-1000-002

Site Location Ravensdale, WA **Sample ID** LMW-8-0616

Sampling Location Groundwater Monitoring Well End of dedicated sampling tube

Technical Procedure Reference(s) TP-1.4-6A, TP-1.2-20, TP-1.2-23

Type of Sampler Dedicated Tubing and Peristaltic Pump, Bailer for VOC samples

Date 6/6/2016 **Time** 1510 /EB0616 @ 1530

Media Water **Station** LMW-8

Sample Type: **grab** time composite space composite

Sample Acquisition Measurements (depth, volume of static well water and purged water, etc.)

SWL – 5.08 ft below TOC (PVC at black notch) (bottom at 13 ft bgs, 2-in casing)

Screen Interval – 8-13 ft bgs PVC stickup: 1.72 ags

Sand Pack Interval – 6-13 ft bgs (8-in hole) (~5.1 gal/sand pack)

Packer Depth – NA (~1.9 gal/casing vol) (~7.0 gal/total well vol)

Sample Description PID = 0.0 ppm; Clear No Odor

Field Measurements on Sample (pH, conductivity, etc.)

SEE FIELD PARAMETERS SHEET

Aliquot Amount	Analysis	Container	Preservation / Amount
3 – 40 mL	VOA	VOA Vial	HCl
1 – 500 mL	Total Metals	HDPE	HNO3 (non)
1 – 500 mL	Dissolved Metals	HDPE	HNO3 (filter)
4 – 500 mL, 2 – 40 mL	TPH-HCID	Glass Amber, VOA Vial	HCl

Sampler (signature) _____ **Date** 6/6/2016

Supervisor (signature) _____ **Date** 6-10-16

FIELD PARAMETERS SHEET

Well ID LMW-8
Date 6/6/2016
Time Begin Purge 1437
Time Collect Sample 1510

Water Level feet bmp	Time	Volume Purged	pH	Conductivity uS/cm	Temp. °C	DO mg/L	Turbidity NTU	Eh (pH) Rel mV
7.23'	1445		6.80	450	14.5	0.12	13.4	(+)95.7
7.39'	1450		6.75	552	14.4	0.06	8.53	(+)107.2
7.66'	1455		6.76	553	14.3	0.02	7.45	(+)105.6
7.78'	1500		6.74	605	14.1	0.00	4.12	(+)106.9
7.88'	1505		6.73	611	14.0	0.01	3.92	(+)107.2
7.95'	1510		6.73	613	14.1	0.06	2.70	(+)108.2

Comments:
PID = 0.0 ppm
Flow Rate = ~260 mL/min
- VOCs + HCID, + Metals all collected from peristaltic poly tubing;

Sampler's Initials AMM/JCM

SAMPLE INTEGRITY DATA SHEET

Plant/Site Landsburg Mine Site **Project No.** 923-1000-002

Site Location Ravensdale, WA **Sample ID** EB0616

Sampling Location Groundwater Monitoring Well End of dedicated sampling tube

Technical Procedure Reference(s) TP-1.4-6A, TP-1.2-20, TP-1.2-23

Type of Sampler ~~Pump Grundfos and QED Bladder~~ Peristaltic Pump

Date 6/6/2016 **Time** 1530

Media Water **Station** ~~LMW-11~~ LMW-B

Sample Type: **grab** time composite space composite

Sample Acquisition Measurements (depth, volume of static well water and purged water, etc.)

SWL – NA

Screen Interval – NA

Sand Pack Interval – NA

Packer Depth – NA

Sample Description Lab Grade "VOC Free" DI water; sampled using tubing, tygon and 0.45um filter using peristaltic pump (as used at LMW-B);

Field Measurements on Sample (pH, conductivity, etc.)

SEE FIELD PARAMETERS SHEET

Aliquot Amount	Analysis	Container	Preservation / Amount
3 – 40 mL	VOA	VOA Vial	HCl
1 – 500 mL	Total Metals	HDPE	HNO3 (non)
1 – 500 mL	Dissolved Metals	HDPE	HNO3 (filter)
4 – 500 mL, 2 – 40 mL	TPH-HCID	Glass Amber, VOA Vial	HCl

Sampler (signature) _____ **Date** 6/6/2016

Supervisor (signature) _____ **Date** 6-10-16

FIELD PARAMETERS SHEET

Well ID @ LMW-8
Date 6/6/2016
Time Begin Purge N/A
Time Collect Sample 1530

Water Level feet bmp	Time	Volume Purged	pH	Conductivity uS/cm	Temp. °C	DO mg/L	Turbidity NTU	Eh Rel mV
			N/A					

Comments:
Collected EB through tubing (and filter (0.45 mm) for dissolved metals) using lab provided "VOC Free" DI water.

Sampler's Initials AMR/JCM

SAMPLE INTEGRITY DATA SHEET

Plant/Site Landsburg Mine Site **Project No.** 923-1000-002

Site Location Ravensdale, WA **Sample ID** LMW-9-0616

Sampling Location Groundwater Monitoring Well End of dedicated sampling tube

Technical Procedure Reference(s) TP-1.4-6A, TP-1.2-20, TP-1.2-23

Type of Sampler Pump Grundfos and Dedicated Tubing

Date 6/6/2016 **Time** 1340

Media Water **Station** LMW-9

Sample Type: **grab** time composite space composite

Sample Acquisition Measurements (depth, volume of static well water and purged water, etc.)

SWL – 100.24' ft below TOC (PVC at black notch) (bottom at 159 ft bgs, 2-in casing)

Screen Interval – 149-159 ft bgs PVC stickup: 2.86 ags

Sand Pack Interval – 143.5-159 ft bgs (8-in hole) (~11.4 gal/sand pack)

Packer Depth – NA (~10.2 gal/casing vol) (~21.6 gal/total well vol)

Sample Description PID = 0.0 ppm; clear, no odor

Field Measurements on Sample (pH, conductivity, etc.)

SEE FIELD PARAMETERS SHEET

Aliquot Amount	Analysis	Container	Preservation / Amount
3 – 40 mL ✓	VOA	VOA Vial	HCl
1 – 500 mL ✓	Total Metals	HDPE	HNO3 (non)
1 – 500 mL ✓	Dissolved Metals	HDPE	HNO3 (filter)
4 – 500 mL ✓, 2 – 40 mL ✓	TPH-HCID	Glass Amber, VOA Vial	HCl

Sampler (signature) _____ **Date** 6/6/2016

Supervisor (signature) _____ **Date** 6-10-16

FIELD PARAMETERS SHEET

Well ID LMW-9
Date 6/6/2016
Time Begin Purge 1258
Time Collect Sample 1340

Water Level feet bmp	Time	Volume Purged	pH	Conductivity uS/cm	Temp. °C (pH)	DO mg/L	Turbidity NTU	Eh Rel mV
100.24'	1305	—	—	—	—	—	—	—
100.32'	1320		6.99	715	12.0	0.22	3.45	(+)168.6
100.31'	1325		6.98	713	11.8	0.17	1.57	(+)189.4
100.34'	1330		6.98	712	11.8	0.17	0.76	(+)162.6
100.33'	1335		6.97	710	11.8	0.15	1.36	(+)150.8
100.33'	1340		6.97	708	11.9	0.17	0.65	(+)148.1

Comments:
PID = 0.0 ppm
Grundfos: 259 Hz

$\frac{5\ gal}{2.75\ min} = 1.81\ gpm \Rightarrow \frac{21.6\ gal/well\ volume}{1.81\ gpm} = 11.9\ (\sim 12.0)\ min/well\ volume$

$*3 \Rightarrow \therefore \sim 36$ minute purge time
(3 well volumes)

Sampler's Initials AMZ/JCM

SAMPLE INTEGRITY DATA SHEET

Plant/Site Landsburg Mine Site **Project No.** 923-1000-002

Site Location Ravensdale, WA **Sample ID** LMW-10-0616

Sampling Location Groundwater Monitoring Well End of dedicated sampling tube

Technical Procedure Reference(s) TP-1.4-6A, TP-1.2-20, TP-1.2-23

Type of Sampler QED Bladder

Date 6/8/2016 **Time** 1005

Media Water **Station** LMW-10

Sample Type: **grab** time composite space composite

Sample Acquisition Measurements (depth, volume of static well water and purged water, etc.)

SWL – @.64' ft below TOC (PVC) (bottom at 289 ft bgs, 4-in casing)

Screen Interval – 267-289 ft bgs PVC stickup: 3.12 ags

Sand Pack Interval – 258-289 ft bgs (9-in hole) (~18.2 gal/sand pack)

Packer Depth – NA (~191 gal/casing vol) (~209 gal/total well vol)

Sample Description PID = 0.0 ppm; Clear, no odor)

Field Measurements on Sample (pH, conductivity, etc.)

SEE FIELD PARAMETERS SHEET

Aliquot Amount	Analysis	Container	Preservation / Amount
✓3 – 40 mL	VOA	VOA Vial	HCl
✓1 – 500 mL	Total Metals	HDPE	HNO3 (non)
✓1 – 500 mL	Dissolved Metals	HDPE	HNO3 (filter)
✓4 – 500 mL, 2 – 40 mL	TPH-HCID	Glass Amber, VOA Vial	HCl

Sampler (signature) [signature] **Date** 6/8/2016

Supervisor (signature) [signature] **Date** 6-10-16

FIELD PARAMETERS SHEET

Well ID LMW-10
Date 6/8/2016
Time Begin Purge 0928
Time Collect Sample 1005

Water Level feet bmp	Time	Volume Purged	pH	Conductivity uS/cm	Temp. °C (pH)	DO mg/L	Turbidity NTU	Eh Rel mV
—	0940		8.64	386	10.9	0.02	0.88	(+) 275.4
5.43'	0945	~4.0 gal	8.62	385	10.9	0.05	0.78	(+) 214.3
5.68'	0950	~5.25 gal	8.61	384	11.1	0.05	0.63	(+) 140.2
6.88'	0955	~6.5 gal	8.60	382	11.1	0.00	0.76	(+) 76.8
8.19'	1000	~8.0 gal	8.63	381	11.1	0.03		(+) 51.8

Comments:
PID = 0.0 ppm
N_2 Regulator: 110 psi
Controller: 60 psi
Cycle ID: 2CPM ID*50 (20/20)
Purge Rate: ~840 ml/min

Sampler's Initials AMR/JCM

SAMPLE INTEGRITY DATA SHEET

Plant/Site Landsburg Mine Site **Project No.** 923-1000-002

Site Location Ravensdale, WA **Sample ID** LMW-11-0616 + LMW-11-0616-D

Sampling Location Groundwater Monitoring Well End of dedicated sampling tube

Technical Procedure Reference(s) TP-1.4-6A, TP-1.2-20, TP-1.2-23

Type of Sampler Pump Grundfos and QED Bladder

Date 6/6/2016 **Time** 1035 / 1045 (Field Duplicate)

Media Water **Station** LMW-11

Sample Type: **grab** time composite space composite

Sample Acquisition Measurements (depth, volume of static well water and purged water, etc.)

SWL – 158.04 ft below TOC (PVC) (bottom at 707 ft bgs, 4-in casing) @ 0920

Screen Interval – 696-707 ft bgs PVC stickup: 2.37 ags Outer metal Casing: 2.70 ags

Sand Pack Interval – 688-707 ft bgs (8-in hole) (~11.2 gal/sand pack)

Packer Depth – NA (~360.4 gal/casing vol) (~371.6 gal/total well vol)

Sample Description PID = 0.0 ppm (No odor); Clear;

Field Measurements on Sample (pH, conductivity, etc.)

SEE FIELD PARAMETERS SHEET

Aliquot Amount	Analysis	Container	Preservation / Amount
3 – 40 mL	VOA	VOA Vial	HCl
1 – 500 mL	Total Metals	HDPE	HNO3 (non)
1 – 500 mL	Dissolved Metals	HDPE	HNO3 (filter)
4 – 500 mL, 2 – 40 mL	TPH-HCID	Glass Amber, VOA Vial	HCl

x2 for Field Dup.

Sampler (signature) _____ **Date** 6/6/2016

Supervisor (signature) _____ **Date** 6-10-16

FIELD PARAMETERS SHEET

Well ID LMW-11
Date 6/6/2016
Time Begin Purge 0915 (Grundfos) / 1000 (Bladder Pump)
Time Collect Sample 1035 / 1045 (Field Duplicate)

Water Level feet bmp	Time	Volume Purged	pH	Conductivity (uS/cm)	Temp. °C	DO mg/L	Turbidity NTU	Eh (or pH) Rel mV
158.06'	1008		7.73	521	12.7	6.56	3.99	(+)164.9
158.07'	1013		7.30	562	12.4	1.26	1.87	(+)141.5
158.04'	1018		7.29	564	12.1	0.68	1.02	(+)128.1
158.07'	1023		7.30	572	12.2	0.51	0.85	(+)125.2
158.07'	1028		7.30	576	12.1	0.41	0.88	(+)121.6
158.06'	1033		7.26	578	12.1	0.33	0.99	(+)119.0

Comments:
0915 - Start pump (Grundfos) @ 0915, ~170' btoc; 300.0 Hz purge rate ~ 0.87 gpm
Ly dialed rate up to 305 Hz purge rate to get closer to ~1.25 gpm; or 5 gallons / 4 minutes.
1000 - Start bladder pump after ~45 minutes (PID = 0.0 ppm)

N2 Tank:
Tank: 1100 psi
Controller/Throttle: 110 psi
Cycle ID: 1 CPM ID#30 (30sec/30sec)
Rate: ~375 mL/min

Sampler's Initials AM / JCM

APPENDIX C
LANDSBURG MINE SITE MAY 2015 DATA VALIDATION
AND QUALITY ASSURANCE / QUALITY CONTROL REVIEW MEMORANDUM

TECHNICAL MEMORANDUM

Date:	July 14, 2016	**Project No.:**	923-1000-002.R273
To:	Bill Kombol	**Company:**	Palmer Coking Coal Company
From:	Jason Yabandeh, Environmental Chemist		
Email:	jyabandeh@golder.com		

RE: LANDSBURG MINE SITE JUNE 2016 DATA VALIDATION & QUALITY ASSURANCE / QUALITY CONTROL REVIEW

This Data Usability Summary Report (DUSR) presents the findings of the data quality assessment performed on the analyses of water samples collected June 6 to 8, 2016 in Landsburg Mine Site in Washington (Site) as part of the Landsburg Groundwater sampling project. Samples in the laboratory sample delivery groups (SDGs) as indicated in Table 1 were reviewed in this DUSR to identify quality issues which could affect the use of the sample data for decision making purposes.

A total of 15 water samples (including one field duplicate, three Trip Blanks and one Equipment Blank) were collected by Golder Associates Inc. (Golder). Samples were analyzed by Analytical Resources Inc. of Tukwila, Washington for the following:

- Volatile Organic Compounds (VOCs) by United States Environmental Protection Agency (EPA) Method 8260C
- Northwest Total Petroleum Hydrocarbon Identification Scan (NWTPH-HCID) by NWTPH-HCID Method
- Total Metals EPA Method 6010C and 200.8; and Mercury by EPA 7470A

Samples were analyzed in accordance with procedures described in Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (EPA SW-846, 3rd edition; methods 6010C, 7470A, 8260C, and 200.8), and for Northwest Total Petroleum Hydrocarbon Methods. Quality assurance / quality control (QA/QC) reviews of laboratory data were performed in the laboratory in accordance with the laboratory quality assurance program plan. The data validation QA/QC review focused primarily on laboratory result summary sheets and quality control summary sheets to ensure that work plan data quality objectives were met for the project. Data validation was conducted in accordance with the criteria outlined in the National Function Guidelines for Inorganic Review (EPA 2014a) and National Functional Guidelines for Organic Review (EPA 2014b), modified to include method specific requirements of the laboratory analytical methods and laboratory standard operating procedures (SOPs). Where there was a discrepancy between the QC criteria in the Guidelines and the QC criterion established in the analytic methodology, method-specific criteria, the QAPP, or professional judgment was used.

Golder Associates Inc.
18300 NE Union Hill Road, Suite 200
Redmond, WA 98052 USA
Tel: (425) 883-0777 Fax: (425) 882-5498 www.golder.com

In general, chemical results for the samples collected at the Site were evaluated on the basis of laboratory preservation, hold times, blank contamination, instrument calibration performance, outlying precision or accuracy parameters, or on the basis of professional judgment. The following definitions provide brief explanations of the qualifiers which may have been assigned to data during the data validation process.

The validation level for the data is Tier 2A, and included the following:

- Data Package Completeness
- Verification of required deliverables
- Evaluation of holding times
- Laboratory narrative evaluation
- Evaluation and qualification of quality control elements for: Surrogates, Matrix Spike, Laboratory Control samples, Laboratory Duplicates, Method Blanks, and Field Blank and Field Duplicate evaluation as applicable
- Evaluation of detection limits

Raw data was not provided and calibration elements, including Gas Chromatograph (GC) instrument tuning and performance check, initial and continuing calibration, internal standard performance, and compound identification, were not evaluated unless information was provided by the lab in the case narratives. Data review and validation was performed by an experienced quality assurance chemist independent of the analytical laboratory and not directly involved in the project. Data qualifiers that were applied by the laboratory have been removed from the data summary report sheets, when applicable, and superseded by data validation qualifiers. Overall, the data review showed that data are acceptable for use except where indicated by data qualifiers. For details about the data validation, refer to the data validation checklist in Attachment A. Table 2 is a summary of the qualifiers applied to the data.

Data Qualifier Definitions

U	The constituent was analyzed for, but was not detected above the reported sample quantitation limit.
J	The constituent was positively identified and detected; however, the concentration reported is an estimated value because the result is less than the quantitation limit or quality control criteria were not met.
J+	The constituent was positively identified and detected; however, the concentration reported is an estimated value because the result may be biased high.
J-	The constituent was positively identified and detected; however, the concentration reported is an estimated value because the result may be biased low.
UJ	The constituent was not detected; the associated quantitation limit is an estimated value because quality control criteria were not met.
R	Data are rejected due to significant exceedance of quality control criteria. The analyte may or may not be present. Additional sampling and analysis may be required to determine the presence or absence of the constituent. For statistical reasons, rejected values are not included in the database.
UR	The constituent is rejected at the reported quantitation limit.
DNR	Do Not Report. More than one set of results are reported due to re-analyses or re-reporting (below reporting level). This result should not be reported.

Tables

Table 1 Sample Collection and Analysis Summary

Table 2 Qualifier Summary Table

Attachments

Attachment A Level 2A Data Validation Checklist

References

United States Environmental Protection Agency (EPA). 2014a. USEPA Contract Laboratory Program, National Functional Guidelines for Inorganic Superfund Data Review. OSWER 9355.0-131.EPA-540-R-013-001, August.

EPA. 2014b. USEPA Contract Laboratory Program, National Functional Guidelines for Superfund Organic Methods Data Review. OSWER 9355.0-132.EPA-540-R-014-002, August.

USEPA. 2015. Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846. Third Edition. Washington DC: USEPA Office of Solid Waste. Available on the Web at: http://www.epa.gov/waste/hazard/testmethods/sw846/online/index.htm (accessed July 14, 2016).

TABLES

Table 1
Sample Collection and Analysis Summary
Landsburg Groundwater Monitoring - June 2016

							Analyses			
SDG	Field Identification	Collection Date	Location	Lab Identification	Matrix	QC Samples	VOCs by SW8260C	TPH Scan by NWTPH-HCID	Total Metals by 6010C and 200.8	Total Mercury by SW7470A
BBS5	LMW-11-0616	6/6/2016	LMW-11	BBS5A / BBS5P	Water	-	X	X	X	X
BBS5	LMW-11-0616-D	6/6/2016	LMW-11	BBS5B / BBS5Q	Water	FD (LMW-11-0616)	X	X	X	X
BBS5	LMW-9-0616	6/6/2016	LMW-9	BBS5C / BBS5R	Water	-	X	X	X	X
BBS5	LMW-8-0616	6/6/2016	LMW-8	BBS5D / BBS5S	Water	-	X	X	X	X
BBS5	EB0616	6/6/2016	LMW-8	BBS5E / BBS5T	Water	EB (LMW-8-0616)	X	X	X	X
BBS5	LMW-3-0616	6/7/2016	LMW-3	BBS5F / BBS5U	Water	-	X	X	X	X
BBS5	LMW-5-0616	6/7/2016	LMW-5	BBS5G / BBS5V	Water	-	X	X	X	X
BBS5	LMW-6-0616	6/7/2016	LMW-6	BBS5H / BBS5W	Water	-	X	X	X	X
BBS5	LMW-7-0616	6/7/2016	LMW-7	BBS5I / BBS5X	Water	-	X	X	X	X
BBS5	LMW-10-0616	6/8/2016	LMW-10	BBS5J / BBS5Y	Water	-	X	X	X	X
BBS5	LMW-2-0616	6/8/2016	LMW-2	BBS5K / BBS5Z	Water	-	X	X	X	X
BBS5	LMW-4-0616	6/8/2016	LMW-4	BBS5L / BBS5AA	Water	MS/MSD Volume	X	X	X	X
BBS5	TripBlank060616	6/6/2016	-	BBS5M	Water	TB	X			
BBS5	TripBlank060716	6/6/2016	-	BBS5N	Water	TB	X			
BBS5	TripBlank060816	6/6/2016	-	BBS5O	Water	TB	X			

Notes:
All analyses performed by ARI Laboratories

Abbreviations:
EB - Equipment Blank
FD - Field Duplicate
MS - Matrix Spike
MSD - Matrix Spike Duplicate
QC - Quality Control
SDG - Sample Delivery Group
TB - Trip Blank
TPH - Total Petroleum Hydrocarbon
VOC - Volatile Organic Compound

Table 2
Qualifier Summary Table
Landsburg Grounwater Monitoring - June 2016

SDG	Sample Name	Constituent	New Result	New RL	Qualifier	Reason
BBS5	LMW-11-0616	Bromomethane	-	-	UJ	CCAL out of control low
BBS5	LMW-11-0616	Vinyl Chloride	-	-	UJ	CCAL out of control low
BBS5	LMW-11-0616	Vinyl Acetate	-	-	UJ	CCAL out of control low
BBS5	LMW-11-0616	2-Chloroethylvinylether	-	-	UJ	CCAL out of control low
BBS5	LMW-11-0616	Bromoform	-	-	UJ	CCAL out of control low
BBS5	LMW-11-0616	CFC-113	-	-	UJ	CCAL out of control low
BBS5	LMW-9-0616	Bromomethane	-	-	UJ	CCAL out of control low
BBS5	LMW-9-0616	Vinyl Chloride	-	-	UJ	CCAL out of control low
BBS5	LMW-9-0616	Vinyl Acetate	-	-	UJ	CCAL out of control low
BBS5	LMW-9-0616	2-Chloroethylvinylether	-	-	UJ	CCAL out of control low
BBS5	LMW-9-0616	Bromoform	-	-	UJ	CCAL out of control low
BBS5	LMW-9-0616	CFC-113	-	-	UJ	CCAL out of control low
BBS5	LMW-8-0616	Bromomethane	-	-	UJ	CCAL out of control low
BBS5	LMW-8-0616	Vinyl Chloride	-	-	UJ	CCAL out of control low
BBS5	LMW-8-0616	Vinyl Acetate	-	-	UJ	CCAL out of control low
BBS5	LMW-8-0616	2-Chloroethylvinylether	-	-	UJ	CCAL out of control low
BBS5	LMW-8-0616	Bromoform	-	-	UJ	CCAL out of control low
BBS5	LMW-8-0616	CFC-113	-	-	UJ	CCAL out of control low
BBS5	LMW-8-0616	Bromomethane	-	-	UJ	CCAL out of control low
BBS5	LMW-8-0616	Vinyl Chloride	-	-	UJ	CCAL out of control low
BBS5	LMW-3-0616	Vinyl Acetate	-	-	UJ	CCAL out of control low
BBS5	LMW-3-0616	2-Chloroethylvinylether	-	-	UJ	CCAL out of control low
BBS5	LMW-3-0616	Bromoform	-	-	UJ	CCAL out of control low
BBS5	LMW-3-0616	CFC-113	-	-	UJ	CCAL out of control low
BBS5	LMW-5-0616	Bromomethane	-	-	UJ	CCAL out of control low
BBS5	LMW-5-0616	Vinyl Chloride	-	-	UJ	CCAL out of control low
BBS5	LMW-5-0616	Vinyl Acetate	-	-	UJ	CCAL out of control low
BBS5	LMW-5-0616	2-Chloroethylvinylether	-	-	UJ	CCAL out of control low
BBS5	LMW-5-0616	Bromoform	-	-	UJ	CCAL out of control low
BBS5	LMW-5-0616	CFC-113	-	-	UJ	CCAL out of control low
BBS5	LMW-6-0616	Bromomethane	-	-	UJ	CCAL out of control low
BBS5	LMW-6-0616	Vinyl Chloride	-	-	UJ	CCAL out of control low
BBS5	LMW-6-0616	Vinyl Acetate	-	-	UJ	CCAL out of control low
BBS5	LMW-6-0616	2-Chloroethylvinylether	-	-	UJ	CCAL out of control low
BBS5	LMW-6-0616	Bromoform	-	-	UJ	CCAL out of control low
BBS5	LMW-6-0616	CFC-113	-	-	UJ	CCAL out of control low
BBS5	LMW-7-0616	Bromomethane	-	-	UJ	CCAL out of control low
BBS5	LMW-7-0616	Vinyl Chloride	-	-	UJ	CCAL out of control low
BBS5	LMW-7-0616	Vinyl Acetate	-	-	UJ	CCAL out of control low
BBS5	LMW-7-0616	2-Chloroethylvinylether	-	-	UJ	CCAL out of control low
BBS5	LMW-7-0616	Bromoform	-	-	UJ	CCAL out of control low
BBS5	LMW-7-0616	CFC-113	-	-	UJ	CCAL out of control low
BBS5	LMW-10-0616	Bromomethane	-	-	UJ	CCAL out of control low
BBS5	LMW-10-0616	Vinyl Chloride	-	-	UJ	CCAL out of control low
BBS5	LMW-10-0616	Vinyl Acetate	-	-	UJ	CCAL out of control low
BBS5	LMW-10-0616	2-Chloroethylvinylether	-	-	UJ	CCAL out of control low
BBS5	LMW-10-0616	Bromoform	-	-	UJ	CCAL out of control low
BBS5	LMW-10-0616	CFC-113	-	-	UJ	CCAL out of control low
BBS5	LMW-2-0616	Bromomethane	-	-	UJ	CCAL out of control low
BBS5	LMW-2-0616	Vinyl Chloride	-	-	UJ	CCAL out of control low
BBS5	LMW-2-0616	Vinyl Acetate	-	-	UJ	CCAL out of control low
BBS5	LMW-2-0616	2-Chloroethylvinylether	-	-	UJ	CCAL out of control low
BBS5	LMW-2-0616	Bromoform	-	-	UJ	CCAL out of control low
BBS5	LMW-2-0616	CFC-113	-	-	UJ	CCAL out of control low
BBS5	LMW-4-0616	Bromomethane	-	-	UJ	CCAL out of control low
BBS5	LMW-4-0616	Vinyl Chloride	-	-	UJ	CCAL out of control low
BBS5	LMW-4-0616	Vinyl Acetate	-	-	UJ	CCAL out of control low
BBS5	LMW-4-0616	2-Chloroethylvinylether	-	-	UJ	CCAL out of control low
BBS5	LMW-4-0616	Bromoform	-	-	UJ	CCAL out of control low
BBS5	LMW-4-0616	CFC-113	-	-	UJ	CCAL out of control low
BBS5	LMW-4-0616	2,2-Dichloropropane	-	-	UJ	MS/MSD out of control low
BBS5	LMW-4-0616	Iodomethane	-	-	UJ	MS/MSD out of control low

Abbreviations
CCAL - Continuing Calibration
MS - Matrix Spike
MSD - Matrix Spike Duplicate
RL - Reporting Limit
SDG - Sample Delivery Group

Qualifier Definitions
UJ - estimated, non-detect

ATTACHMENT A
LEVEL 2A DATA VALIDATION CHECKLIST

DATA REVIEW CHECKLIST - QA LEVEL II

Reviewing Company: Golder Associates – Redmond
Project Manager: Gary Zimmerman
Project Name: Landsburg Groundwater 2016-06
Project Number: 923-1000-002.R273
Reviewer: Jason Yabandeh
Validation Date: July 13, 2016
Reviewed by: Jill Lamberts
Review Date: July 20, 2016
Laboratory: Analytical Resources, Inc (Tukwila, WA)
SDG #: BBS5
Analytical Method (type and no.): See Table 1
Matrix: ☐ Air ☐ Soil/Sed. ☒ Water ☐ Waste ☐ Other

Work Plan or QAPP reference: Draft Interim Groundwater Monitoring Plan, Landsburg Mine Site (Golder 1997).

Applicable Data Validation Guidance: National Functional Guidelines for Organic and Inorganic Review (USEPA 2014).

Sample Information: See Table 1 (attached)

Field/COC Information	**YES**	**NO**	**NA**	**COMMENTS**
a) Sampling dates noted?	☒	☐	☐	
b) Sampling team indicated?	☒	☐	☐	
c) Sample location noted?	☒	☐	☐	
d) Sample type indicated (grab/composite)?	☒	☐	☐	Grab
e) Field QC noted?	☒	☐	☐	
f) Field parameters collected (note types)?	☒	☐	☐	pH, temp, conductivity, turbidity, DO, ORP
g) Was the COC signed by both field and laboratory personnel?	☒	☐	☐	
h) Were samples received in good condition?	☒	☐	☐	
i) Were the correct preservatives used?	☒	☐	☐	
j) Was the sample cooler temperature within QC limits?	☒	☐	☐	1.5°C, 3.5°C, 1.6°C, 0.1°C, 1.9°C
Laboratory Case Narrative				
a) Does the laboratory narrative indicate deficiencies?	☒	☐	☐	See notes 2, 3, 4, and 6

Note Deficiencies:

These issues are addressed in the appropriate sections below.

General (reference QAPP or Method)	**YES**	**NO**	**NA**	**COMMENTS**
a) Was the correct method used?	☒	☐	☐	
b) Were hold times met for sample pretreatment?	☒	☐	☐	
c) Were hold times met for sample analysis?	☒	☐	☐	
d) Were appropriate reporting limits achieved?	☒	☐	☐	
e) Were any sample dilutions noted?	☐	☒	☐	
f) Were any matrix problems noted?	☐	☒	☐	

DATA REVIEW CHECKLIST - QA LEVEL II

Blanks	**YES**	**NO**	**NA**	**COMMENTS**
a) Were analytes detected in the method blank(s)?	☐	☒	☐	
b) Were analytes detected in the field blank(s)?	☐	☐	☒	
c) Were analytes detected in the equipment blank(s)?	☒	☐	☐	See note 1
d) Were analytes detected in the trip blank(s)?	☒	☐	☐	See note 1
e) Were analytes detected in the storage blank(s)?	☐	☐	☒	
Surrogate (System Monitoring) Compounds	**YES**	**NO**	**NA**	**COMMENTS**
a) Were surrogate compounds added to all samples?	☒	☐	☐	
b) Were recoveries within control limits?	☒	☐	☐	
c) Were surrogate recoveries not calculated due to dilutions?	☐	☐	☒	
d) Were recoveries not calculated due to interference?	☐	☐	☒	
Laboratory Control Sample	**YES**	**NO**	**NA**	**COMMENTS**
a) Was a LCS analyzed at the appropriate frequency?	☒	☐	☐	
b) Were the proper compounds included in the LCS?	☒	☐	☐	
c) Was the LCS accuracy criteria met?	☐	☒	☐	See note 3
Matrix Spike/Matrix Spike Duplicate	**YES**	**NO**	**NA**	**COMMENTS**
d) Was MS accuracy criteria met?	☐	☒	☐	See note 4, 5, and 6
Recovery could not be calculated since sample contained high concentration of analyte?	☒	☐	☐	
e) Was MSD accuracy criteria met?	☐	☒	☐	
Recovery could not be calculated since sample contained high concentration of analyte?	☐	☒	☐	
f) Were MS/MSD precision criteria met?	☒	☐	☐	
Duplicates	**YES**	**NO**	**NA**	**COMMENTS**
a) Were field duplicates collected (note original and duplicate sample names)?	☒	☐	☐	LMW-11-0616 and LMW-11-0616-D
b) Were field dup. precision criteria met (Note RPD)?	☒	☐	☐	
c) Were lab duplicates analyzed (note original and duplicate samples)?	☒	☐	☐	LMW-4-0616 (Metals only)
d) Were lab dup. precision criteria met (Note RPD)?	☒	☐	☐	
ICP Serial Dilution (SD)	**YES**	**NO**	**NA**	**COMMENTS**
a) Was an ICP SD analyzed once per SDG?	☐	☐	☒	
b) Was the ICP SD criteria met?	☐	☐	☒	
Overall Evaluation	**YES**	**NO**	**NA**	**COMMENTS**
c) Were there any other technical problems not previously addressed?	☐	☒	☐	

d) Checked for transcription errors? ☒ ☐ ☐ _____

e) Do target analytes fall within calibration ranges? ☒ ☐ ☐ _____

f) Data are acceptable and usable except as noted? ☒ ☐ ☐ _____

Comments/Notes:

1. See table below for summary of blank contamination. All associated samples are non-detect for the analytes exhibiting blank contamination, and thus, following the Guidelines for organic and inorganic analyses, no qualification is required.

Blank ID	Method	Analyte	Result (µg/L)	LOQ (µg/L)
EB0616	SW6010C	Copper, Total	9	3
TripBlank-060716	SW8260C	Methylene Chloride	1.0	1.0

2. Lab noted in the Case Narrative that the VOCs CCALs were out of control for several analytes (see table below for summary). Per the Guidelines, non-detected analytes with CCALs out of control low were qualified as estimated (UJ). Non-detected analytes with CCALs out of control high did not require qualification.

Method	Analyte	Out of Control Low or High?
SW8260C	Bromomethane	Low
SW8260C	Vinyl Chloride	Low
SW8260C	Carbon Disulfide	High
SW8260C	1,1-Dichloroethene	High
SW8260C	Vinyl Acetate	Low
SW8260C	2-Chloroethylvinylether	Low
SW8260C	Bromoform	Low
SW8260C	1,1,2-Trichloro-1,2,2-trifluoroethane	Low
SW8260C	Iodomethane	High

3. As noted by the lab in the Case Narrative, the VOCs LCS and/or LCSD are out of control high for several analytes. The associated samples are non-detect for the affected analytes, and, using professional judgment as there is no specific guidance for VOCs LCS/LCSDs, no qualification is necessary.
4. Lab noted in the Case Narrative that the matrix spike was not recovered for Chromium due to elevated reporting limits. The LCS is in control; no qualification is necessary.
5. The MS %Rs for Calcium and Magnesium were flagged as H by the laboratory because the sample concentration is greater than 4x the spike amount. No further action other than to note.
6. Lab noted in the Case Narrative the MS/MSD recoveries are out of control low and/or high for several analytes. Analytes that have already been qualified due to poor CCAL recovery do not require further qualification. MS/MSD recoveries for 2,2-Dichloropropane and Iodomethane are out of control low. Per the Guidelines, non-detects in the parent sample will be qualified as estimated (UJ).

Data Qualification: See Table 2.

Definitions:

SDG: Sample Delivery Group
COC: Chain of Custody
VOC: Volatile Organic Compound
TCL: Target Compound List
%D: Percent Difference
QC: Quality Control
QAPP: Quality Assurance Project Plan
SVOC: Semivolatile Organic Compound
PCB: Polychlorinated Biphenyl
RPD: Relative Percent Difference

DATA REVIEW CHECKLIST - QA LEVEL II

LCS: Laboratory Control Sample
MS/MSD: Matrix Spike/Matrix Spike Duplicate
MDL: Method Detection Limit
%R: Percent Recovery
CC: Continuing Calibration
RRF: Relative Response Factor
TCLP: Toxicity Characteristic Leaching Procedure
RSD: Relative Standard Deviation
CRDL: Contract Required Quantitation Limit
RL: Reporting Limit
PEM: Performance Evaluation Mixture
SPCC: System Performance Check Compound
RT: Retention Time
LOQ: Limit of Quantitation