

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 from within the Rogers Coal Mine near its south end. Wells LMW-11, which monitor groundwater from within the Rogers Coal Mine near its south end. Wells LMW-9 and LMW-11, which monitor 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).

Golder Associates Inc. 18300 NE Union Hill Road, Suite 200 Redmond, WA 98052 USA

092816jsy1_gw report june 2016.doc



Tel: (425) 883-0777 Fax: (425) 882-5498 www.golder.com Golder Associates: Operations in Africa, Asia, Australasia, Europe, North America and South America

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

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.

2

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 (μ g/L) in the trip blank sample TripBlank-060716, and total copper was detected at 9 micrograms per liter (μ g/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 μ g/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 μ g/L and 5 μ g/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.

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



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.

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

3

Sincerely,

GOLDER ASSOCIATES INC.

For

Jason S. Yabandeh Staff Environmental Scientist

Zinhmerman Gar Principal

List of Tables

Table 1	Groundwater Elevation Data Collection June 3, 2016 Landsburg Mine Site
Table 2	June 2016 Groundwater Analytical Results Landsburg Mine Site

List of Figures

Figure 1	Groundwater Monitoring Locations
Figure 2	Cross-Section along Strike at Coal Seam

List of Appendices

- Appendix A Laboratory Analytical Reports
- Appendix B Sample Integrity Data Sheets (SIDS)
- Appendix C Landsburg Mine Site June 2016 Data Validation and Quality Assurance / Quality Control Review Memorandum

JSY/GLZ/sb



TABLES

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 Duplicat	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																
рН	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	°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	NA	NA	NA							
Arsenic	mg/L	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	NA	NA	NA							
Cadmium	mg/L	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	NA	NA	NA							
Copper	mg/L	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	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	ma/L	0.00002 U	0.00002 U	0.00002 U	0.00002	U 0.00002 U	NA	NA	NA							
Nickel	mg/L	0.02000 U	0.02 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	ma/L	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	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	NA	NA	NA							
Vanadium	mg/L	0.003 U	0.003 U	0.003 U	0.003	U 0.003 U	NA	NA	NA							
Zinc	mg/L	0.02 11	0.02 11					0.02 U	0.02 U		0.02	0.02		NA	NA	NA
Volatile Organic Compounds (VOCs)	g/ =	0.02 0	0.02 0	0.02 0	0.02 0	0.02 0	0.02 0	0.02 0	0.02 0	0.02 0	0.02 0	0.02	0 0.02 0		101	
Acetone	ua/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	ug/l	25 U	25 U	25 U	2.5	U 25 U	25 U	2.5 U	25 U							
Acrylonitrile	ug/l	1 U	<u> </u>	0 U	<u>0</u> U	<u> </u>	<u>0</u>	1	U 1 U	<u> </u>	1 U	<u> </u>				
Benzene	ug/l	02 U	02 U	02 U	0.2	U 02 U	02 U	02 U	02 U							
Bromobenzene	ug/L	0.2 U	0.2 U	0.2 U	0.2	U 02 U	0.2 U	0.2 U	0.2 U							
Bromochloromethane	μ <u>g</u> /L	0.2 U	0.2 U	0.2 U	0.2	U 02 U	0.2 U	0.2 U	0.2 U							
Bromodichloromethane	μ <u>g</u> /L	0.2 U	0.2 U	0.2 0	0.2 0	0.2 U	0.2 0	0.2 1	0.2 0		0.2 0	0.2		0.2 0	0.2 11	0.2 1
Bromoethane	µg/L	0.2 0	0.2 0	0.2 0	0.2 0	0.2 0	0.2 0	0.2 0	0.2 0		0.2 0	0.2		0.2 0	0.2 0	0.2 0
Bromoform	µg/L	0.20	0.2 0	0.20	0.20	0.2 0	0.2 0	0.2 0	0.2 0	0.20	0.20	0.2		0.2 0	0.2 0	0.2 0
Bromomethane	µg/L	0.2 00			0.2 00			1 11			1 11	J 0.2			1 11	
2-Butanone	<u>рус</u> ца/I	5 11	5 11	5 11	5 11	5 11	5 11	5 11	5 11	5 11	5 1	, 1		5 11	5 11	5 11
n-Butylbenzene	μ <u>η</u> γμ μα/Ι											0.2		0211		
sec-Buty/benzene	μ <u>η</u> γμ μα/Ι	0.2 0	0.2 0	0.2 0	0.2 0			0.2 0	0.2 0			0.2				
tort-Butylbenzene	μg/L	0.2 0	0.2 0					0.2 0				0.2				0.20
	μg/L	0.2 0	0.2 0									0.2				
	μ <u>α</u> /L	0.2 0										0.2				
	μg/L	0.2 0										0.2				
CHIOLODEHZEITE	µy/L	0.2 0	0.2 0	0.20	0.20	0.2 0	0.2 0	0.2 0	0.20	0.2 0	0.2 0	0.2	0.20	0.20	0.20	0.20



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										
2-Chloroethylvinylether	μg/L	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										
Chloromethane	μg/L	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										
4-Chlorotoluene	µg/L	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										
1,2-Dibromo-3-chloropropane	μg/L	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										
Dibromomethane	μg/L	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										
1,3-Dichlorobenzene	μg/L	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										
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										
1,2-Dichloroethane	μg/L	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										
cis-1,2-Dichloroethene	μg/L	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										
1,2-Dichloropropane	μg/L	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										
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							
1,1-Dichloropropene	µg/L	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										
trans-1,3-Dichloropropene	µg/L	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										
Hexachlorobutadiene	µg/L	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
lodomethane	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							
Isopropylbenzene	μg/L	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										
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 U	1	1 U
4-Methyl-2-pentanone	μg/L	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										
n-Propylbenzene	μg/L	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										
1,2,3-Trichlorobenzene	μg/L	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										
1,1,1,2-Tetrachloroethane	µg/L	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										
Tetrachloroethene	μg/L	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										
1,1,1-Trichloroethane	μg/L	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										
Trichloroethene	µg/L	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										
CFC-113	μg/L	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										
1,2,4-Trimethylbenzene	µg/L	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										
Vinyl Acetate	µg/L	0.2 UJ	0.2 U	0.2 U	0.2 U	0.2 U										
Vinyl Chloride	µg/L	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										
O-Xylene	µg/L	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										
Hydrocarbon Identification																
Diesel Range Organics	mg/L	0.5 U	0.5 U	NA	NA	NA										
Gasoline Range Organics	mg/L	0.25 U	0.25 U	NA	NA	NA										
Lube Oil	mg/L	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

 μ g/L = micrograms per liter



FIGURES



	Trail
======	= Unpaved Road
	Building

Golder Associates

K:\CAD\Projects\1992\9231000\x002\R273\923_1000_002_R273_F01.dwg_08/19/2010, 09:19 Layout: Fig 1



APPENDIX A LABORATORY ANALYTICAL REPORTS



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 nondetect.

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

Request
Analysis
Laboratory
/ Record &
of Custody
Chain o

ARI Assigned Number: 0	Turn-around	Requested:			Page:		oţ		(Analytical Kesources, Incorpora	ited
599 222	Stend	2			B	1		7		Analytical Chemists and Consult 4611 South 134th Place Suite 1	tants
ARI Client Company:		Phone:	-		Date:	170	80			Tukwila, WA 98168	3
Gouder	425		77 7		21919	9 6	Fresen	. .		206-695-6200 206-695-6201 (f	(ax)
Client Contact:	onRydec	r: (•)			No. of Coolers:	S	Cooler Temps:	0, [-3,5		www.arilabs.com	
Client Project Name:							4	malysis Requested		Notes/Comments	Π
Landeburg					-	<	2	<u>-भा</u> (।			
Client Project #: 4231 000002. 8273	Samplers:	A.Ruded	1		431		، اوايوا	n n n hered			
Sample ID	Date	Time	Matrix	No. Containers	cirent 1 10Cs	H-HJT	4 LotoT	۲۹۱۵ (۲۹۱۹ ۲۰ کیده کیده			
TripBlank-Oboolb	616116	1	3	ю	Х						
LMW-11-0616	eleke	1035	3	11	Х	Х	X	Horp			
LMW-11-0616-D		1045	3	11	X	X	Х				
LMW-9-0616		0H&V	3	11	×	Х	Х				
LMW-8-0616		1510	3	11	×	Х	X				
EBOGIG	-1	1530	3	11	Х	Х	X		1		
LMW-3-0616	01776	1035	3	11	Х	Х	Х	duble			
LMW-5-0616		1145	3	11	Х	Х	Х				
LMW-6-0616		1330	3	11	Х	Х	Х				
-2-2-5-616	1	1525	3	11	X	Х	Х	T			
Comments/Special Instructions	Relinquished by (Signature	A.	Jul	Received by (Signature)		June C	<u> </u>	telinquished by: Signature)		Received by: (Signature)	
MSA between Golderund ARI.	Printed Name:	Ruderk:		Printed Name:	A.	46		rinted Name:		Printed Name:	
- ccology car colo #Clicat Specific RL's and Analysic list ##	Company:	R Answer	restuc,	Company:	Hit	-		company:		Company:	
Please cc and estimated ber	Bate & Time:	2016@1	535	Date & Time:	6/16	$\overline{\overline{v}}$	\$2	late & Time:		Date & Time:	

Limits of Llability: 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 consider 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.

_
<u>n</u>
Φ
Э.
σ
۵,
Ē.
<u>(</u>)
6
5
-
ā
5
<
-
C
ō
¥.
ġ,
5
Q
_
Q.
_
-14
త
00
s S S S S S S S S S S S S S S S S S S S
ord &
cord &
ecord &
Record &
r Record &
ly Record &
dy Record &
ody Record &
stody Record &
ustody Record &
Sustody Record &
Custody Record &
of Custody Record &
of Custody Record &
n of Custody Record &
in of Custody Record &
ain of Custody Record &
hain of Custody Record &
Chain of Custody Record &

ARI Assigned Number: RRCC	Turn-around	I Requested:			Page:	6	م م			Analyt i Analyti	ical Resources, Incorporat Ical Chemists and Consulta	rg g
	JANO	54				1	1			4611 S	outh 134th Place, Suite 10	~
ARI Client Company:		Phone:			Date:		Ice Dreemt?			Tukwil	a, WA 98168	
GOLDER	-	125-803-	t t o		6175	2016)	206-65	95-6200 206-695-6201 (fa	.
Client Contact:					No. of	(Cooler	1.25		www.a	irilabs.com	
Gay Zmerenan, Aaron	Rybecki	(1.)			COORES	¢	Sdulai	<u> </u>	-			- 1
Client Project Name:	-						Ana	Iysis Requeste		-	Notes/Comments	
Landsburg						C	و.	- <u>1</u>				
Client Project #: J	Samplers:				-1:	.	<u>}</u>	<u>ት ግ</u> የእ				
923 1000002, R273	J Miller	- /A.R.	icki		<u>۲- ب</u>) †)	- 9 10 (en s M				
Sample ID	Date	Time	Matrix	No. Containers	רוידיד אסרז	-497	10047 101210 1022210	<u>के ज / ज न क</u> भ (१२७) अभ्ययम				
TripBlank-060716	617/KG	1	3	ъ	Beto						Herb	
LMW-10-066000 0616	610116	1005	3	11	X	Х	± X	210				
LMW-2-0616		1130	3	11	X	X	± X	du o				
LMW-4-0616	1	1320	3	±2	X	X	± X	gna			MS/MSD Volume	
TryBlank - OGOB16	91/8/9	1	3	М	5179 1						Hero	
Comments/Special Instructions	Relinquished by			Received by			Relir	iquished by:	-	Received b		
Please analyze under eviding	(Signature)	Pron 8	July	(3i gnature)	- MAR		(Sigr	lature)		(Signature)		
mer blw Golder and ART.	Printed Name:	, Rydeck		Printed Name:	کم جر 1 جر	Meren	Prin .	ed Name:		Printed Nar		
And here specific RL'S and	Company: Golock	Mesucar	tes tuc.	Company:	H H		Com	pany:		Company:		
Pleise cc: any dectrice galderun	Date & Time:	0 20% @	1535	Date & Time:	8 /1 k	153	Date D	& Time:		Date & Tim	ö	
 Limits of Liability: ARI will perform a meets standards for the industry. The said services. The acceptance by the c signed agreement between ARI and th 	ll requested s total liability c dient of a proj e Client.	ervices in acc of ARI, its offic posal for serv	cordance with cers, agents, e ices by ARI re	appropriate m mployees, or s lease ARI fron	ethodology i uccessors, 1 any liability	following AF arising out c v in excess i	Il Standard C of or in conne thereof, not w	perating Proce ction with the re ithstanding any	fures and the ARI (quested services, provision to the co	Quality Assur shall not exce ntrary in any	ance Program. This program 9ed the Invoiced amount for contract, purchase order or c	Å

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, Incorporate Analytical Chemists and Consulta	ed Cooler Red	ceipt Form	
ARI Client: Golder COC No(s): Assigned ARI Job No: BBS5 Preliminary Examination Phase:	Project Name: Longles NA Delivered by: Fed-Ex UPS Co Tracking No:	Urier Hand Delivered Other.	NA
Were intact, properly signed and dated custody seals	attached to the outside of to cooler?	YES	NO
Were custody papers included with the cooler?		VEC	NO
Were custody papers properly filled out (ink, signed, e Temperature of Cooler(s) (°C) (recommended 2.0-6.0 Time:	etc.) 1°C for chemistry) 1.5 3.5 00070F Date: $G - 8 - 16$	$\frac{1.6}{1.6} \begin{array}{c} 0.1 \\ 0.1 \\ 0.1 \\ 0.65 $	NO 27 &
Complete custo	ody forms and attach all shipping documents	e:	
Was a temperature black include the U			
What kind of packing metadal use used		YES	NO
Was sufficient ice used /if contractula/2	ubble Wrap Wet De Gel Packs Baggies Foan	Block Paper Other	
Were all bottles sealed in individual plantia base?		NA CES	NO
Did all bottles artive in good condition (unbroken)?		(YES)	NO
Were all bottle labels complete and legiblo?		TES	NO
Did the number of containers listed on COC match with	h the number of the termination of termina	Ś	. NO
Did all bottle labels and tens agree with custody paper	m the number of containers received?	(YES)	NO
Were all bottles used correct for the requested analysis	a:	(Y <u>₹</u> 8 ²	NO
Do any of the analyses (bottles) require preservation?	(attach preservation short such that the	(YES)	NO
Were all VOC vials free of air bubbles?	reactive preservation sneet, excluding VOCs)	NA CES	NO
Was sufficient amount of sample sent in each bottle?		NA YES	00
Date VOC Trip Blank was made at ARI		ES	NO
Was Sample Split by ARI : NA YES Date		NA	
Samples Logged by:	Date:Time: Date:Time:TIME: TIME:	Split by:	
Sample ID on Bottle			
Sample ID on	Sample ID on Bottle	Sample ID on CO	C
	·		

Additional Notes, Discrepancies, & Resolutions: By: Date: Small Air Buibles Small → "sm" (<2 mm) Perbubbles LARGE AT BULLIES =:2¤un **2-4** mm > 4 mm Peabubbles → "pb" (2 to <4 mm) 6 **ه و** ₽ 2 Large → "lg" (4 to < 6 mm) 8 Headspace \rightarrow "hs" (>6 mm)

Revision 014

Sample ID Cross Reference Report



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	BBS51	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	BBS50	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

Printed 06/09/16 Page 1 of 1

PRESERVATION VERIFICATION 06/08/16 1 of 1 Page

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:



ARI Job No: BBS5

PC: Mary Lou VTSR: 06/08/16

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

LOGNUM ARI ID	CLIENT ID	CN 1	WAD 1 >12 <	NH3 (72 CD	200 10 10 10	1ET PH €2 <	CEN PH	SS 2 Z	KN NO2 2 <2	23 53	2 C	2 TPH	D ABT	Fe2+ <2	FLT	DOC FLT	PARAMETER	ADJUSTED TO 1	LOT NUMBER	AMOUNT ADDED	DATE/BY
16-8648 BBS5A	LMW-11-0616					چ ٦	Г С				 					$\boldsymbol{\succ}$						
16-8649 BBS5B	LMW-11-0616-D					<u> </u>	TOT Σζ									>						
16-8650 BBS5C	LMW-9-0616						E.								 							
16-8651 BBS5D	LMW-8-0616						т. Т.									<u></u>						
16-8652 BBS5E	EB0616					E-	įۍ									- <u>></u>						
16-8653 BBS5F	17MM-3-0616					. Et	<u>ل</u> م									~						
16-8654 BBS5G	LMW-5-0616						E.C.															
16-8655 BBS5H	9190-9-MWI					L-1 34 (2	5 C						-									
16-8656 BBS51	TMM-7-0616						P [±]		.							-						
16-8657 BBS5J	LMW-10-0616					г ¹	į.										<u> </u>					
U16-8658	LMW-2-0616					F (}-	COT 2									7						
BBS5L	LMW-4-0616						ы Б				<u> </u>											

checked By \mathcal{ZM} Date $\frac{\mathcal{U}/\mathcal{S}}{\mathcal{N}}|\mathcal{C}$

00006



Analytical Resources, Incorporated Analytical Chemists and Consultants

Cooler Receipt Form

\wedge	1.		1.		
ARI Client:	<u>alv</u>	Project Name: Loud	sould		
COC No(s):	NA	Delivered by: Fed-Ex UPS C	ourier Hand Deliv	Net Other	Night Dr
Assigned ARI Job No:	, <u>B35</u>	Tracking No:	Current	cjed Other.	
Preliminary Examination Phas	e:				NA
Were intact, properly signed ar	id dated custody seals attached to	the outside of to cooler?			
Were custody papers included	with the cooler?			YES	
Were custody papers properly	filled out (ink, signed, etc.)			YES	NO
Temperature of Cooler(s) (°C)	recommended 2.0-6.0 °C for chem	nistry)		YES	(NO)
If cooler temperature is out of c	ompliance fill out form 00070F		Temp Gun ID		
Cooler Accepted by:	A	Data: (alalu -		#. <u>440</u> ,	of The
	Complete custody forms a	pd attach all shipping down	ne: <u>+ 35</u>		
Log-In Phase:		nd attach an shipping document	s		
			-		
Was a temperature blank includ	ed in the cooler?			YES	(NO)
Was sufficient to used (if each	was used? Bubble Wrap	Vet loe Gel Packs Baggies Foar	m Block Paper C	ther:	
Was sufficient foe used (if appro	phate)?		NA	(ES)	NO
Did all bottles arriva is good and	Juai plastic bags?			YES	NO
Wate all bottle labels complete .	aluon (Undroken)?			(YES)	NO
Did the number of containors lis				(ES)	. NO
Did all bottle labels and tags and	ee on COC match with the numbe	r of containers received?	-	¢	NO
Were all bottles used correct for	the converted spectrum of the sectors of the sector			(ES)	NO
Do any of the analyses (botties)	require procession 2 (attack			ES .	NO
Were all VOC viais free of air bu	helee?	ervation sheet, excluding VOCs)	NA	YES	NO
Was sufficient amount of sample	sent in each bottle?		NÁ	YES	NO
Date VOC Trip Blank was made	at ARI		\sim	(YES	NO
Was Sample Solit by ARI - (N	2 YES Deta/Time		(NA)		
		Equipment	<u> </u>	Split by:	·
amples Logge d by:	Date:	6/9/16 Time:	10,00		
	** Notify Project Manager (of discrepancies or concerns **		<u>) </u>	
Sample ID on Bottle	Sample ID on COC	Sample ID an Datily	· · · · · · · · · · · · · · · · · · ·	·	
			Sampl	e ID on CO	00
		<u> </u>			
			<u> </u>		
	· · · · · · · · · · · · · · · · · · ·	<u> </u>			
Additional Notes, Discrepancie	s, & Resolutions:	<u> </u>			
					· · · · · · · · · · · · · · · · · · ·

By:	Date:		
Small Air Eubbles 2mm	Peribubbles' 2-4 mm 2 2 2	LARGE AJ EUtolas	Small → "sm" (<2 mm) Peabubbles → "pb" (2 to <4 mm) Large → "lg" (4 to <6 mm) Headspace → "hs" (>6 mm)

Printed: 6/23/2016

Analytical Resources, Incorporated Analytical Chemists and Consultants Analytical Method Information

Analyte	DL	LOD	5 LOQ/RL	Surrogate %R	Duplicate RPD	Matrix Sp %R F	sike RPD	Blank Spike %R	/LCS RPD
8260C VOA (EPA 8260C) in Water									
Preservation: pH<2; HCL, Cool <6°C Container: VOA Vial. Clear. 40 n	nL. HCL	Minimum Samc	de Volume: 120 mL		Hold Time: 14 c	SVE			
Chloromethane	0.0948 ug/L	0.250 ug/L	0.500 ug/L		30	60 - 138	30	60 - 138	30
Vinyi 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

Page 1 of 4

BBS5:00008

Printed: 6/23/2016

Analytical Resources, Incorporated Analytical Chemists and Consultants

Analytical Method Information

Analyte	DL	LOD	LOQ/RL	Surrogate %R	Duplicate RPD	Matrix S %R	pike RPD	Blank Spike %R	/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-Hcxanone	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

Page 2 of 4

Printed: 6/23/2016

Analytical Resources, Incorporated Analytical Chemists and Consultants Analytical Method Information

Analyte	DL	LOD	LOQ/RL	Surrogate %R	Duplicate RPD	Matrix S %R	pike RPD	Blank Spike %R	/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
Isopropyi 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					

Page 3 of 4

BBS5:00010

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

Analytical Resources, Incorporated Analytical Chemists and Consultants Page 4 of 4



ANALYTICAL RESOURCES INCORPORATED

Sample ID: LMW-11-0616 SAMPLE

Lab Sample ID: BBS5A LIMS ID: 16-8648 Matrix: Water Data Release Authorized: NWN 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

CAS Number	Analyte	DL	LOQ	Result
74-87-3	Chloromethane	0.09	0.50	< 0.50 Ŭ
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 Ū
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 0
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

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



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 $\mu g/L$ (ppb)

Volatile Surrogate Recovery

107%
95.0%
95.0%
104%

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

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

Page 1 of 2

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

Instrument/Analyst: NT2/PAB Date Analyzed: 06/15/16 15:31 QC Report No: BBS5-Golder Associates
 Project: Landsburg
 9231000002.R273
 Date Sampled: 06/06/16
 Date Received: 06/08/16

SAMPLE

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	Vinvl Acetate	0.07	0.20	< 0.20 T
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	Trichlorgethene	0.05	0.20	< 0.20 U
124-48-1	Dibromochloromethane	0.05	0.20	< 0.20 0
79-00-5	1.1.2-Trichloroethane	0.00	0.20	< 0.20 0
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	0.20	
75-25-2	Bromoform	0.06	0.00	
108-10-1	4-Methyl-2-Pentanone (MIBK)	0.00	2 5	< 2.5 E
591-78-6	2-Hexanone	0.90	5.0	< 2.5 0 H
127-18-4	Tetrachloroethene	0.05	0.20	
79-34-5	1 1 2 2-Tetrachloroethane	0.05	0.20	
108-88-3	Toluene	0.00	0,10	
108-90-7	Chlorobenzene	0.04	0.20	< 0.20 U
100-41-4	Ethylbenzene	0.02	0.20	< 0.20 0
100-42-5	Styrene	0.04	0.20	< 0.20 0
75-69-4	Trichlorofluoromethane	0.03	0.20	
76-13-1	1.1.2-Trichloro-1.2.2-trifluoroe	0.04	0.20	< 0.20 U
179601-23-1	m.n-Xylene	0.05	0.20	
95-47-6	o-Xylene	0.03	0.40	< 0.40 0
95-50-1	1 2-Dichlorobenzene	0.05	0.20	
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	< 0.20 U
74-88-4	Todomethane	0.23	2.5	< 0 50 H
74-96-4	Bromoethane	0.20	0.00	
107-13-1	Acrylonitrile	0.04	1 0	
563-58-6	1 1-Dichloropropene	0.00	1 O	
74-95-3	Dibromomethane	0.00	0.10	
630-20-6	1.1.1.2-Tetrachloroethene	0.14	0.20	
96-12-8	1 2-Dibromo-3-chloropropano	0.04	0.20	
	TAS PIPIONO D CHIDIOPIOPANE	0.04	0.00	< 0.00 U



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

Sample ID: LMW-11-0616-D SAMPLE

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

I.

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 Ŭ
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



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

Sample ID: LMW-9-0616 SAMPLE

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

Instrument/Analyst: NT2/PAB Date Analyzed: 06/15/16 15:52 QC Report No: BBS5-Golder Associates
 Project: Landsburg
 9231000002.R273
 Date Sampled: 06/06/16
 Date Received: 06/08/16

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 []
79-00-5	1,1,2-Trichloroethane	0.13	0.20	< 0.20 0
71-43-2	Benzene	0.03	0.20	< 0.20 []
10061-02-6	trans-1,3-Dichloropropene	0.08	0.20	< 0.20 0
110-75-8	2-Chloroethylvinylether	0.25	0.50	< 0.50 D
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

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

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 $\mu g/L$ (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.

BBS5:00017



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

Sample ID: LMW-8-0616 SAMPLE

Lab Sample ID: BBS5D LIMS ID: 16-8651 Matrix: Water Data Release Authorized: WWW 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

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 Ŭ
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 0
67-66-3	Chloroform	0.03	0.20	< 0.20 U
107-06-2	1,2-Dichloroethane	0.07	0.20	< 0.20 D
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	Vinvl Acetate	0.07	0.20	< 0.20 U
75-27-4	Bromodichloromethane	0.05	0.20	< 0.20 П
78-87-5	1.2-Dichloropropane	0.04	0.20	< 0.20 U
10061-01-5	cis-1.3-Dichlaropropene	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	
71-43-2	Benzene	0.03	0.20	< 0.20 U
10061-02-6	trans-1.3-Dichloropropene	0.08	0.20	< 0.20 0
110-75-8	2-Chloroethylyinylether	0.25	0.50	
75-25-2	Bromoform	0.06	0.20	< 0.20 []
108-10-1	4-Methvl-2-Pentanone (MIBK)	0.97	2.5	< 2.5 II
591-78-6	2-Hexanone	0,90	5.0	< 5.0 D
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 II
100-41-4	Ethylbenzene	0.04	0.20	< 0.20 II
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-Xvlene	0.03	0.20	< 0.20 U
95-50-1	1,2-Dichlorobenzene	0.04	0.20	< 0.20 Ŭ
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



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

Sample ID: LMW-8-0616 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.



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

Sample ID: EB0616 SAMPLE

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

Instrument/Analyst: NT2/PAB Date Analyzed: 06/15/16 16:33 QC Report No: BBS5-Golder Associates
 Project: Landsburg
 9231000002.R273
 Date Sampled: 06/06/16
 Date Received: 06/08/16

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 Ū
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 1
56-23-5	Carbon Tetrachloride	0.04	0.20	< 0.20 U
108-05-4	Vinvl Acetate	0.07	0.20	< 0.20 U
75-27-4	Bromcdichloromethane	0.05	0.20	< 0.20 U
78-87-5	1.2-Dichloropropane	0.04	0.20	< 0 20 T
10061+0 1 -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 T
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-Chloroethvlvinvlether	0.25	0.50	< 0.50 11
75-25-2	Bromoform	0.06	0.20	< 0.20 []
108-10-1	4-Methvl-2-Pentanone (MTBK)	0.97	2.5	< 2.5 []
591-78-6	2-Hexanone	0.90	5.0	< 5 0 H
127-18-4	Tetrachloroethene	0.05	0.20	< 0.20 II
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	
100-42-5	Stvrene	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-Xvlene	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 1
106-46-7	1,4-Dichlorobenzene	0.04	0.20	< 0.20 II
107-02-8	Acrolein	2.5	2.5	< 2.5 U
74-88-4	Iodomethane	0.23	0.50	< 0.50 0
74-96-4	Bromoethane	0.04	0.20	< 0.20 1
107-13-1	Acrylonitrile	0.60	1.0	< 1 0 1
563-58-6	1,1-Dichloropropene	0.03	0.10	< 0.10 1
74-95-3	Dibromomethane	0.14	0.20	< 0.20 1
630-20-6	1,1,1,2-Tetrachloroethane	0.04	0.20	< 0.20 T
96-12-8	1,2-Dibromo-3-chloropropane	0.04	0.50	< 0.50 U



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

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 Ū
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 Ū

Reported in $\mu g/L$ (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.



ORGANICS ANALYSIS DATA SHEET

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

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

Instrument/Analyst: NT2/PAB Date Analyzed: 06/15/16 16:53 QC Report No: BBS5-Golder Associates
 Project: Landsburg
 9231000002.R273
 Date Sampled: 06/07/16
 Date Received: 06/08/16

CAS Number	Analyte	DL	LOO	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	Vinvl 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 Ŭ
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 -2 3-1	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

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

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

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



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

Page 1 of 2

Sample ID: LMW-5-0616 SAMPLE

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

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

CAS Number	Analyte	\mathbf{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	Vinvl 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 []
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	< 0.20 U
75-25-2	Bromoform	0.06	0.20	< 0.20 1
108-10-1	4-Methyl-2-Pentanone (MIBK)	0.97	2 5	< 2.5 11
591-78- 6	2-Hexanone	0.90	5.0	< 5.0 U
127-18-4	Tetrachloroethene	0.05	0.20	< 0.20 II
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	Stvrene	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-Xvlene	0.05	0.40	< 0.40 U
95-47-6	o-Xvlene	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 II
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 0
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 Ŭ


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 Ū
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

Sample ID: LMW-6-0616 SAMPLE

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

Instrument/Analyst: NT2/PAB Date Analyzed: 06/15/16 17:34 QC Report No: BBS5-Golder Associates
 Project: Landsburg
 9231000002.R273
 Date Sampled: 06/07/16
 Date Received: 06/08/16

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	Methvlene Chloride	0.48	1.0	< 1.0 U
67-64-1	Acetone	2.1	5.0	< 5.0 1
75 - 15-0	Carbon Disulfide	0.04	0.20	< 0.20 H
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 0
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 []
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 11
71-55-6	1.1.1-Trichloroethane	0 04	0.20	< 0.20 11
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-Dichloropropape	0.00	0.20	< 0.20 U
10061-01-5	cis-1.3-Dichloropropene	0.04	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 0
79-00-5	1.1.2-Trichloroethane	0.00	0.20	
71-43-2	Benzene	0.13	0.20	< 0.20 U
10061-02-6	trans-1.3-Dichloropropepe	0.03	0.20	< 0.20 U
110-75-8	2-Chloroethylvinylether	0.25	0.20	< 0.20 U
75-25-2	Bromoform	0.20	0.00	
108-10-1	4-Methyl-2-Pentanone (MIBK)	0,00	2 5	
591-78-6	2-Hexanone	0.90	5.0	< 2.5 0
127-18-4	Tetrachloroethene	0.05	0.20	
79-34-5	1.1.2.2-Tetrachloroethane	0.05	0.10	
108-88-3	Toluene	0.00	0.10	< 0.10 U
108-90-7	Chlorobenzene	0.02	0.20	< 0.20 U
100-41-4	Ethylbenzene	0.02	0.20	< 0.20 U
100-42-5	Styrepe	0.04	0.20	< 0.20 U
75-69-4	Trichlorofluoromethane	0.03	0.20	
76-13-1	1.1.2-Trichloro-1.2.2-trifluoroe	0.04	0.20	< 0.20 U
179601-23-1	m.p-Xvlene	0.05	0.20	
95-47-6	o-Xylene	0.03	0.40	
95-50-1	1.2-Dichlorobenzene	0.03	0.20	
541-73-1	1.3-Dichlorobenzene	0.04	0.20	
106-46-7	1,4-Dichlorobenzene	0.04	0.20	< 0.20 U
107-02-8	Acrolein	2 5	2 5	< 2 5 II
74-88-4	Iodomethane	0.23	0 50	
74-96-4	Bromoethane	0.20	0.00	
107-13-1	Acrylonitrile	0.04	1 0	
563-58-6	1.1-Dichloropropene	0.00	Δ 1Λ	
74-95-3	Dibromomethane	0.14	0.20	
630-20-6	1,1,2-Tetrachloroethane	0.04	0.20	
96-12-8	1,2-Dibromo-3-chloropropane	0.04	0.50	< 0.50 U



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 ប
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

111%
99.2%
97.4%
108%

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



Page 1 of 2

Sample ID: LMW-7-0616 SAMPLE

Lab Sample ID: BBS5I LIMS ID: 16-8656 Matrix: Water Data Release Authorized: WW 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 Ŭ
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 0
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	0.03	0.20	< 0.20 U
78-93-3	2-Butanone	0.81	5.0	< 0.20 U
71-55-6	1 1 1-Trichloroethane	0.01	0.20	
56-23-5	Carbon Tetrachlorido	0.04	0.20	< 0.20 U
108-05-4	Vipul Agetato	0.04	0,20	
75-27-4	Promodichleremethane	0.07	0.20	< 0.20 0
78-87-5	1 2-Dichleronrepane	0.05	0.20	< 0.20 U
10061-01-5	1,2-Dichioropropane	0.04	0.20	< 0.20 U
79.01 6	Cis-1, 5-Dichtoropropene	0.06	0.20	< 0.20 0
104 40 1	Dibase - Discourse base	0.05	0.20	< 0.20 U
	Dibromochioromethane	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
/5-25-2	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 0
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 T
74-95-3	Dibromomethane	0.14	0.20	< 0.20 T
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



Sample ID: LMW-7-0616 SAMPLE

Lab Sample ID: BBS51 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 $\mu g/L$ (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.

Page 1 of 2

Sample ID: LMW-10-0616 SAMPLE

ANALYTICA RESOURCES

INCORPORATED

Lab Sample ID: BBS5J LIMS ID: 16-8657 Matrix: Water Data Release Authorized:

Reported: 06/21/16

Instrument/Analyst: NT2/PAB Date Analyzed: 06/15/16 18:15 QC Report No: BBS5-Golder Associates Project: Landsburg 9231000002.R273 Date Sampled: 06/08/16 Date Received: 06/08/16

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 Ŭ
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 1
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 1
79-01-6	Trichloroethene	0.05	0.20	< 0.20 U
124-48- 1	Dibromochloromethane	0.05	0.20	< 0.20 T
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 II
108-10-1	4-Methvl-2-Pentanone (MIBK)	0.97	2.5	< 2.5 II
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 17
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



Volatiles by P&T GC/MS-Method SW8260C Page 2 of 2 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	\mathtt{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 Ŭ
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 $\mu g/L$ (ppb)

Volatile Surrogate Recovery

111%
95.6%
92.8%
105%

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



ANALYTICAL RESOURCES INCORPORATED

Page 1 of 2

Sample ID: LMW-2-0616 SAMPLE

Lab Sample ID: BBS5K LIMS ID: 16-8658 Matrix: Water Data Release Authorized:

Reported: 06/21/16

Instrument/Analyst: NT2/PAB Date Analyzed: 06/15/16 18:36 QC Report No: BBS5-Golder Associates Project: Landsburg *9231000002.R273 Date Sampled: 06/08/16 Date Received: 06/08/16

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 11
71-55-6	1,1.1-Trichloroethane	0.04	0.20	< 0.20 []
56-23-5	Carbon Tetrachloride	0.04	0 20	< 0.20 U
108-05-4	Vinvl Acetate	0.07	0,20	< 0.20 U
75-27-4	Bromodichloromethane	0.05	0.20	< 0.20 0
78-87-5	1.2-Dichloropropane	0.02	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	0.03	0.20	< 0.20 U
71-43-2	Benzene	0.13	0.20	< 0.20 U
10061-02-6	trans-1 3-Dichloropropene	0.03	0.20	< 0.20 U
110-75-8	2-Chloroethylvinylether	0.00	0.20	< 0.200
75-25-2	Bromoform	0.25	0.00	< 0.30 U
108-10-1	4-Methyl-2-Pentanone (MTBK)	0.00	2 5	< 0.20 0
591-78-6	2-Hexapone	0.97	2.5	
127-18-4	Tetrachloroethene	0.90	0.20	
79-34-5	1 1 2 2-Tetrachloroethano	0.05	0.20	< 0.20 U
108-88-3	Toluene	0.00	0.10	< 0.10 U
108-90-7	Chlorobenzene	0.04	0.20	< 0.20 U
100-41-4	Fthulbenzene	0.02	0.20	
100-42-5	Styrene	0.04	0.20	
75-69-4	Trichlorofluoromethane	0.03	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 n - Xy and	0.04	0.20	< 0.20 U
95-47-6	0-Yvlene	0.03	0.40	< 0.400
95-50-1	1 2-Dichlorobenzene	0.03	0.20	< 0.20 U
541-73-1	1,2 Dichlorobenzene	0.04	0.20	< 0.200
106-46-7	1,5 Dichlorobonzono	0.04	0.20	< 0.20 0
107-02-8	Accoloin	0.04	0.20	
74-88-4	Iodomethana	0.22		
74-96-4	Bromoethane	0.23	0.00	
107-13-1	Acrylonitrilo	0.04	0.20	
563-58-6	1 1-Dichloropropono	0.00	1.U	
74-95-3	libromomethane	0.03	0.20	
630-20-6	1 1 2-Tetrachlaroothana	0.14	0.20	
96-12-8	1 2-Dibromo-3-chloropropano	0.04	0.20	
	r, z proromo-p-chroropropane	0.04	0.00	< 0.50 U

ANALYTICAL RESOURCES

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 Ū
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.



Sample ID: LMW-4-0616 SAMPLE

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

Instrument/Analyst: NT2/PAB Date Analyzed: 06/15/16 18:56 QC Report No: BBS5-Golder Associates
 Project: Landsburg
 9231000002.R273
 Date Sampled: 06/08/16
 Date Received: 06/08/16

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 []
108-05-4	Vinvl Acetate	0.07	0.20	< 0.20 0
75-27-4	Bromodichloromethane	0.05	0,20	< 0.20 0
78-87-5	1.2-Dichloropropane	0.04	0.20	< 0.20 0
10061-01-5	cis-1.3-Dichloropropene	0.06	0.20	
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-Tricbloroethane	0.00	0.20	
71-43-2	Benzene	0.03	0.20	< 0.20 0
10061-02-6	trans-1.3-Dichloropropene	0.08	0.20	
110-75-8	2-Chloroethylyinylether	0.00	0.20	
75-25-2	Bromoform	0.25	0.30	< 0.00 U
108-10-1	4-Methyl-2-Pentanone (MTBK)	0.00	2 5	< 0.20 U
591-78-6	2-Hexanone	0.90	50	< 5 0 H
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 []
108-88-3	Toluene	0.04	0.20	< 0.20 []
108-90-7	Chlorobenzene	0.02	0.20	< 0.20 U
100-41-4	Ethylbenzene	0.04	0.20	< 0.20 0
100-42-5	Styrene	0.05	0.20	< 0.20 0
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-Xvlene	0.05	0.40	< 0.40 U
95-47-6	o-Xvlene	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 []
107-13-1	Acrylonitrile	0.60	1.0	< 1 0 1
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



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 $\mu g/L$ (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.

ORGANICS ANALYSIS DATA SHEET

Volatiles by P&T GC/MS-Method SW8260C Page 1 of 2 Sample ID: LMW-4-0616 MATRIX SPIKE

Lab Sample ID: BBS5L LIMS ID: 16-8659 Matrix: Water Data Release Authorized: WW 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	Vinvl Acetate	0.07	0.20	
75-27-4	Bromodichloromethane	0.05	0.20	
78-87-5	1.2-Dichloropropane	0.03	0.20	
10061-01-5	cis+1.3-Dichloropropene	0.04	0.20	
79-01-6	Trichloroethene	0.00	0.20	
124-48-1	Dibromochloromethano	0.05	0.20	
79-00-5	1 1 2-Trichloroothane	0.05	0.20	
71-43-2	Benzene	0.13	0.20	
10061-02-6	trans-1 3-Dichloropropere	0.03	0.20	
110-75-8	2-Chloroothuluipulothor	0.08	0.20	
75-25+2	2 Childidethyivinyiethei Bromoform	0.25	0.50	
108-20-1	A-Methyl=2-Poptanone (MIPK)	0.06	0.20	
591-78-6	2-Hoverono	0.97	2.5	
127-18-4	Z nexanone Tetrachloroothono	0.90	5.0	
79-34-5	1 1 2 2-Totrachloroothano	0.05	0.20	
108-88-3	Teluene	0.06	0.10	
108-90-7	Chlorobonzono	0.04	0.20	
100+41-4	Ethulbonzene	0.02	0.20	
100 41 4	Sturana	0.04	0.20	
75-69-4	Styrene Trichlorofluoromathana	0.05	0.20	
76-13-1	1 1 2 Trichland 1 2 2 trifluorus	0.04	0.20	
179601-22-1	r, 1, Z-111Chioro-1, 2, Z-trifluoroe	0.04	0.20	
95-47-6	m, p-xyrene	0.05	0.40	
95-47-0	0-Ayrene 1 2-Dichlemehannen	0.03	0.20	
50-50-1 541-72 1	1,2-Dichlenchenzene	0.04	0.20	
106-46-7	1, 3-Dichlorobenzene	0.04	0.20	~=-
107-02-0	1,4-Dichioropenzene	0.04	0.20	
107-02-0 74 99 4	Acrolein	2.5	2.5	
74-88-4	lodomethane	0.23	0,50	
14-96-4	Bromoetnane	0.04	0.20	
10/~13-1	Acrylonitrile	0.60	1.0	
303-30-6 74 05 3	1,1-Dichloropropene	0.03	0.10	
14-95-3	Ulbromomethane	0.14	0.20	
030-20-6	1,1,1,2-Tetrachloroethane	0.04	0.20	
90-12-8	1,2-Dibromo-3-chloropropane	0.04	0.50	

BBS5:00036



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-Butvlbenzene	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%

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: 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	Number Analyte		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	0.04	0.20		
75-27-4	Bromodichloromethane	0.07	0.20		
78-87-5	1.2-Dichloropropage	0.03	0.20		
10061-01-5	cis-1 3-Dichloropropene	0.04	0.20		
79-01-6	Trichloroethene	0.00	0.20		
124-48-1	Dibromochloromethane	0.05	0.20		
79-00-5	1 1 2-Trighloroothane	0.03	0.20		
71-43-2	Benzene	0.13	0.20		
10061-02-6	trans-1 3-Dichlerenrenene	0.03	0.20	<u> </u>	
110-75-8	2-Chloroothuluinulathan	0.08	0,20		
75-25-2	Bromoform	0.25	0.50		
108-10-1	A-Mothul-2-Pontanona (MIRK)	0.00	0.20		
591-78-6	2-Hevanono	0.97	Z.5 E.0		
127-18-4	Z nexanone Tetrachlereethere	0.90	5.0		
79-31-5	1 1 2 2-Wetreachlereethere	0.05	0.20		
108-88-3	T, 1, 2, 2-Tetrachioroethane	0.06	0.10		
108-90-7	Chlorobongono	0.04	0.20		
100 - 41 - 4	Ethylbongono	0,02	0.20		
100-41-4	Sturopo	0.04	0.20		
75-69-1	Juichlerofluerenethene	0.05	0.20		
76-13-1	1 1 2 Trichland 1 2 2 Fuifluance	0.04	0.20		
179601_22_1	T, 1, 2-IIICHIOTO-1, 2, 2-UTIILUOTOE	0.04	0.20		
179001-20-1 05-47-6	m, p-xyrene	0.05	0.40		
95-47-0	0-Xylene	0.03	0.20		
90-00-1 541 70 1	1,2-Dichloropenzene	0.04	0.20		
541-75-1 106 46 7	1,3-Dichlorobenzene	0.04	0.20		
105-46-7	1,4-Dichlorobenzene	0.04	0.20		
107-02-8	Acrolein	2.5	2.5		
74-88-4	Iodomethane	0.23	0.50		
/4-90-4	Bromoethane	0.04	0.20	-	
107-13-1	Acrylonitrile	0.60	1.0		
263-58-6 74 05 2	1,1-Dichloropropene	0.03	0.10		
/4-95-3 COO OO C	Dibromomethane	0.14	0.20		
630-20-6 06 10 0	1,1,1,2-Tetrachloroethane	0.04	0.20		
96-12-8	1,2-Dibromo-3-chloropropane	0.04	0.50		





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 $\mu g/L$ (ppb)

Volatile Surrogate Recovery

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

Page 1 of 2

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

Data Release Authorized: WW

Lab Sample ID: BBS5M

LIMS ID: 16-8660

Matrix: Water

Reported: 06/21/1	6	Date Received:	06/08/16		
Instrument/Analyst: NT2/PAB Date Analyzed: 06/15/16 14:09		Sample Amount: Purge Volume:	10.0 mL 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	9	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 11

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 Ū
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

Sample ID: Trip Blank-060616 SAMPLE

INCOR 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.

ORGANICS ANALYSIS DATA SHEET

Volatiles by P&T GC/MS-Method SW8260C Page 1 of 2

INCORPORATED Sample ID: Trip Blank-060716 SAMPLE

ANALYTICAI RESOURCES

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

Instrument/Analyst: NT2/PAB

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

Sample Amount: 10.0 mL Date Analyzed: 06/15/16 14:30 Purge Volume: 10.0 mL

74-87-3Chloromethane 0.09 0.50 < 0.50 < 0.50 $74-83-9$ Bromomethane 0.25 1.0 < 1.00 $75-01-4$ Yinyl Chloride 0.06 0.10 < 0.100 $75-00-3$ Chloroethane 0.09 0.20 < 0.200 $75-09-2$ Methylene Chloride 0.48 1.0 1.0 $75-05-2$ Carbon Disulfide 0.04 0.20 < 0.200 $75-35-4$ $1, 1-Dichloroethene$ 0.05 0.200 < 0.200 $75-35-4$ $1, 1-Dichloroethene$ 0.05 0.200 < 0.200 $156-60-5$ trans- $1, 2-Dichloroethene$ 0.04 0.220 < 0.200 $156-659-2$ cis- $1, 2-Dichloroethene$ 0.04 0.220 < 0.200 $107-06-2$ $1, 2-Dichloroethane0.040.200< 0.200107-06-21, 2-Dichloroethane0.040.200< 0.200107-06-21, 1-1Trichloroethane0.040.200< 0.200107-06-21, 2-Dichloroethane0.040.200< 0.200107-06-21, 2-Dichloroethane0.040.200< 0.200107-06-21, 2-Dichloroethane0.040.200< 0.200107-06-21, 2-Dichloroethane0.040.200< 0.200107-06-21, 2-Dichloroethane0.040.200< 0.200107-06-21, 2-Dichloroethane0.040.200< 0.200107-07-21, 2-Dichloroethan$	CAS Number	Analyte	DL	LOQ	Result
74+83-9Bromomethane 0.25 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 0.10 < 0.10 < 0.10 < 0.10 < 0.10 < 0.10 < 0.10 < 0.10 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 <td>74-87-3</td> <td>Chloromethane</td> <td>0.09</td> <td>0.50</td> <td>< 0.50 U</td>	74-87-3	Chloromethane	0.09	0.50	< 0.50 U
$\begin{array}{llllllllllllllllllllllllllllllllllll$	74-83-9	Bromomethane	0.25	1.0	< 1.0 U
75-09-2Chloroethane 0.09 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 $< 0.$	75-01-4	Vinyl Chloride	0.06	0.10	< 0.10 U
75-09-2Methylene Chloride0.481.01.0 $67-64-1$ Acetone2.15.0< 5.0	75-00-3	Chloroethane	0.09	0.20	< 0.20 U
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	75-09-2	Methylene Chloride	0.48	1.0	1.0
75-15-0Carbon Disulfide0.040.20< 0.20 t75-35-41, 1-Dichloroethene0.050.20< 0.20 t	67-64-1	Acetone	2.1	5 0	< 5 0 U
75-35-41,1-Dichloroethene0.050.20< 0.20075-34-31,1-Dichloroethane0.050.20< 0.20	75-15-0	Carbon Disulfide	0.04	0 20	
75-34-3,1,1-Dichloroethane0.050.20< 0.200 $156-60-5$ trans-1,2-Dichloroethene0.040.20< 0.20	75-35-4	1,1-Dichloroethene	0.05	0.20	< 0.20 0
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	75-34-3	1.1-Dichloroethane	0.05	0.20	
156-59-2cis-1,2-Dichloroethene0.040.20< 0.20C67-66-3Chloroform0.030.20< 0.20	156-60-5	trans-1.2-Dichloroethene	0.05	0.20	
67-66-3Chloroform0.030.200.2	156-59-2	cis-1,2-Dichloroethene	0 04	0.20	
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	67-66-3	Chloroform	0.03	0.20	< 0.20 U
78-93-32-Butanone0.010.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20	107-06-2	1.2-Dichloroethane	0.00	0.20	< 0.20 U
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	78-93-3	2-Butanone	0.07	0.20	< 0.20 U
11.11	71-55-6	1.1.1-Trichlorgethane	0.01	0.20	
108-05-4Vinyl Acetate 0.04 0.20 </td <td>56-23-5</td> <td>Carbon Tetrachloride</td> <td>0.04</td> <td>0.20</td> <td>< 0.20 U</td>	56-23-5	Carbon Tetrachloride	0.04	0.20	< 0.20 U
1001	108-05-4	Vinv) Acetate	0.04	0.20	< 0.20 U
32.14District of the function of t	75-27-4	Bromodichloromothana	0.07	0.20	< 0.20 U
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	78-87-5	1 2-Dichloropropage	0.05	0.20	< 0.20 U
10001 01 0 C13-1, 2-Dichlotopropene 0.06 0.20 < 0.20	10061-01-5	cic-1 3-Dichloropropane	0.04	0.20	< 0.20 U
124-48-1 Dibromechloromethane 0.05 0.20 < 0.20	79-01-6	Trichleresthere	0.06	0.20	< 0.20 U
12443-1Dibromotion both forme thane0.050.20< 0.20C $79-00-5$ 1,1,2-Trichloroethane0.130.20< 0.20	124-49-1	Dibromochlevensthere	0.05	0.20	< 0.20 0
73-00-3 $1, 1, 2-11$ chlorobethane 0.13 0.20 < 0.20 0.20 $1, 1, 2-11$ $71-43-2$ Benzene 0.03 0.20 < 0.20 $0.$	79-00-5	1 1 2 mmishlawathawa	0.05	0.20	< 0.20 U
11-43-2Benzene 0.03 0.20 < 0.20 U $10061-02-6$ trans-1, 3-Dichloropropene 0.08 0.20 < 0.20 U $10-75-8$ 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 0.06 0.10 < 0.20 U $108-88-3$ Toluene 0.04 0.20 < 0.20 U $108-89-7$ Chlorobenzene 0.04 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 $100-42-5$ Styrene 0.05 0.20 < 0.20 U $100-42-5$ Styrene 0.04 0.20 < 0.20 U $79601-23-1$ $1, 1, 2-Trichloro-1, 2, 2-trifluoroe0.040.20< 0.20U95-50-11, 2-Dichlorobenzene0.040.20< 0.20U95-50-11, 2-Dichlorobenzene0.040.20< 0.20U107-02-8Acrolein2.52.5< 2.5U107-02-8Acrolein2.52.5< 2.5< 2.5< 2.5U107$	79-00-3	1,1,2-Trichloroethane	0.13	0.20	< 0.20 U
10061-02-6trans-1,3-Dichloropropene 0.08 0.20 < 0.20 t 110-75-82-Chloroethylvinylether 0.25 0.50 < 0.50 t 75-25-2Bromoform 0.06 0.20 < 0.20 t 108-10-14-Methyl-2-Pentanone 0.90 5.0 < 5.0 t 591-78-62-Hexanone 0.90 5.0 < 5.0 t 127-18-4Tetrachloroethene 0.06 0.10 0.20 < 0.20 t $19-34-5$ $1,1,2,2$ -Tetrachloroethane 0.06 0.10 < 0.10 t $108-88-3$ Toluene 0.04 0.20 < 0.20 t $108-90-7$ Chlorobenzene 0.04 0.20 < 0.20 t $100-41-4$ Ethylbenzene 0.04 0.20 < 0.20 t $100-42-5$ Styrene 0.04 0.20 < 0.20 t $100-42-5$ Styrene 0.05 0.40 < 0.20 < 0.20 t $100-42-5$ Styrene 0.05 0.40 < 0.20 < 0.20 t $100-42-5$ Styrene 0.03 0.20 < 0.20 t t $100-42-5$ Styrene 0.04 0.20 < 0.20 t t $100-42-5$ Styrene 0.04 0.20 < 0.20 t t $100-42-5$ Styrene 0.04 0.20 < 0.20 t t $100-42-5$ Styrene 0.03 0.20 < 0.20 t t </td <td>10061 00 6</td> <td>Benzene</td> <td>0.03</td> <td>0.20</td> <td>< 0.20 U</td>	10061 00 6	Benzene	0.03	0.20	< 0.20 U
110-75-82-Chloroethylvinylether0.250.50< 0.50U75-25-2Bromoform0.060.20< 0.20	10061-02-6	trans-1,3-Dichloropropene	0.08	0.20	< 0.20 U
75-25-2Bromoform 0.06 0.20 < 0.20	110-75-8	2-Chioroethylvinylether	0.25	0.50	< 0.50 U
108-10-1 $4-Methyl-2-Pentanone$ (MIBK) 0.97 2.5 < 2.5 < 2.5 < 2.5 < 2.5 < 2.5 < 2.5 < 2.5 < 2.5 < 2.5 < 2.5 < 2.5 < 2.5 < 2.5 < 2.5 < 2.5 < 2.5 < 2.5 < 2.5 < 2.5 < 2.5 < 2.5 < 2.5 < 2.5 < 2.5 < 2.5 < 2.5 < 2.5 < 2.5 < 2.5 < 2.5 < 2.5 < 2.5 < 2.5 < 2.5 < 2.5 < 2.5 < 2.5 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20	75-25-2	Bromoform	0.06	0.20	< 0.20 U
591-78-62-Hexanone 0.90 5.0 < 5.0 < 5.0 < 10.00 $127-18-4$ Tetrachloroethene 0.05 0.20 < 0.20 0.20 < 0.20 0.20 < 0.20 0.20 < 0.20 0.10 0.02 < 0.20 0.20 < 0.20 0.20 < 0.20 0.20 < 0.20 0.20 < 0.20 0.20 < 0.20 0.20 < 0.20 0.20 < 0.20 0.20 < 0.20 0.20 < 0.20 0.20 < 0.20 0.20 < 0.20 0.20 < 0.20 0.20 < 0.20 0.20 < 0.20 0.20 < 0.20 0.20 < 0.20 0.20 < 0.20 0.20 < 0.20 0.20 < 0.20 0.20 < 0.20 0.20 < 0.20 0.20 < 0.20 0.20 < 0.20 0.20 < 0.20 0.20 < 0.20 0.20 < 0.20 0.20 < 0.20 0.20 < 0.20 0.20 < 0.20 0.20 < 0.20 0.20 < 0.20 0.20 < 0.20 0.20 < 0.20 0.20 0.20 < 0.20 0.20 0.20 0.20 < 0.20 </td <td>108-10-1</td> <td>4-Methyl-2-Pentanone (MIBK)</td> <td>0.97</td> <td>2.5</td> <td>< 2.5 U</td>	108-10-1	4-Methyl-2-Pentanone (MIBK)	0.97	2.5	< 2.5 U
127-18-4Tetrachloroethene 0.05 0.20 < 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.10 0.10 0.10 0.10 0.10 0.10 0.10 0.10 0.10 0.10 0.10 0.10 0.20 0	591-78-6	2-Hexanone	0.90	5.0	< 5.0 U
79-34-51,1,2,2-Tetrachloroethane0.060.10< 0.10 <th< td=""><td>12/-18-4</td><td>Tetrachloroethene</td><td>0.05</td><td>0.20</td><td>< 0.20 U</td></th<>	12/-18-4	Tetrachloroethene	0.05	0.20	< 0.20 U
108-88-3Toluene 0.04 0.20 < 0.20 <	/9-34-5	1,1,2,2-Tetrachloroethane	0.06	0.10	< 0.10 U
108-90-7Chlorobenzene 0.02 0.20 < 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 < 2.5 U $74-96-4$ Bromoethane 0.04 0.20 < 0.20 U $107-13-1$ Acrylonitrile 0.60 1.0 < 0.20 < 0.20	108-88-3	Toluene	0.04	0.20	< 0.20 U
100-41-4Ethylbenzene 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 < 2.5 < 2.5 < 2.5 < 0.50 U $74-88-4$ Iodomethane 0.23 0.50 < 0.20 U 0.20 < 0.20 U $107-13-1$ Acrylonitrile 0.60 1.0 < 0.20 < 0.20 U	108-90-7	Chlorobenzene	0.02	0.20	< 0.20 U
100-42-5Styrene 0.05 0.20 < 0.20 0.20 < 0.20 0.20 < 0.20 0.20 < 0.20 0.20 < 0.20 0.20 < 0.20 0.20 < 0.20 0.20 < 0.20 0.20 < 0.20 0.20 < 0.20 0.20 < 0.20 0.20 < 0.20 0.20 < 0.20 0.20 < 0.20 0.20 < 0.20 0.20 < 0.20 0.20 < 0.20 0.20 < 0.20 0.20 < 0.20 0.20 < 0.20 0.20 < 0.20 0.20 < 0.20 0.20 < 0.20 0.20 < 0.20 0.20 < 0.20 0.20 < 0.20 0.20 < 0.20 0.20 < 0.20 0.20 < 0.20 0.20 < 0.20 0.20 < 0.20 0.20 < 0.20 0.20 < 0.20 0.20 < 0.20 0.20 < 0.20 0.20 < 0.20 0.20 < 0.20 0.20 < 0.20 0.20 < 0.20 0.20 < 0.20 0.20 < 0.20 0.20 < 0.20 0.20 < 0.20 0.20 < 0.20 0.20 < 0.20 0.20 < 0.20 0.20 < 0.20 0.20 < 0.20 0.20 < 0.20 0.20 < 0.20 0.20 < 0.20 0.20 < 0.20 0.20 < 0.20 0.20 < 0.20 0.20 < 0.20 0.20 < 0.20 0.20 < 0.20 0.20 < 0.20 0.20 < 0.20 0.20 < 0.20 0.20 < 0.20 0.20 < 0.20 <td>100-41-4</td> <td>Ethylbenzene</td> <td>0.04</td> <td>0.20</td> <td>< 0.20 U</td>	100-41-4	Ethylbenzene	0.04	0.20	< 0.20 U
75-69-4 Trichlorofluoromethane 0.04 0.20 < 0.20 U	100-42-5	Styrene	0.05	0.20	< 0.20 U
76-13-1 1,1,2-Trichloro-1,2,2-trifluoroe 0.04 0.20 < 0.20 U	/5-69-4	Trichlorofluoromethane	0.04	0.20	< 0.20 U
179601-23-1m,p-Xylene0.050.40< 0.40U95-47-6o-Xylene0.030.20< 0.20	76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.04	0.20	< 0.20 U
95-47-6 o-Xylene 0.03 0.20 < 0.20 U	179601-23-1	m,p-Xylene	0.05	0.40	< 0,40 U
95-50-1 1,2-Dichlorobenzene 0.04 0.20 < 0.20 U	95-47-6	o-Xylene	0.03	0.20	< 0.20 U
541-73-1 1,3-Dichlorobenzene 0.04 0.20 < 0.20 U	95-50-1	1,2-Dichlorobenzene	0.04	0.20	< 0.20 U
106-46-71,4-Dichlorobenzene0.040.20< 0.20U107-02-8Acrolein2.52.5< 2.5	541-73-1	1,3-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	106-46-7	1,4-Dichlorobenzene	0.04	0.20	< 0.20 U
74-88-4 Iodomethane 0.23 0.50 < 0.50 U 74-96-4 Bromoethane 0.04 0.20 < 0.20	107-02-8	Acrolein	2.5	2.5	< 2,5 U
74-96-4 Bromoethane 0.04 0.20 < 0.20 U 107-13-1 Acrylopitrile 0.60 1.0 <td< td=""><td>74-88-4</td><td>Iodomethane</td><td>0.23</td><td>0.50</td><td>< 0.50 U</td></td<>	74-88-4	Iodomethane	0.23	0.50	< 0.50 U
107-13-1 Acrylonitrile 0.60 1.0 click	74-96-4	Bromoethane	0.04	0.20	< 0.20 U
$$ 0.00 1.0 < 0.01	107-13-1	Acrylonitrile	0.60	1.0	< 1.0 U
563-58-6 1,1-Dichloropropene 0.03 0.10 < 0.10 U	563-58-6	1,1-Dichloropropene	0.03	0.10	< 0.10 U
74-95-3 Dibromomethane 0.14 0.20 < 0.20 H	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 H	630-20-6	1,1,1,2-Tetrachloroethane	0.04	0.20	< 0.20 T
96-12-8 1,2-Dibromo-3-chloropropane 0.04 0.50 < 0.50 U	96-12-8	1,2-Dibromo-3-chloropropane	0.04	0.50	< 0.50 U

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	ĎL	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 0
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.

Page 1 of 2

Sample ID: Trip Blank-060816 SAMPLE

Lab Sample ID: BBS50 LIMS ID: 16-8662 Matrix: Water Data Release Authorized: MAA 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

1

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 II
71-55-6	1.1.1-Trichloroethane	0.04	0.20	< 0.20 []
56-23-5	Carbon Tetrachloride	0.04	0.20	< 0.20 0
108-05-4	Vinvl Acetate	0.07	0.20	< 0.20 U
75-27-4	Bromodichloromethane	0.05	0.20	< 0.20 0
78-87-5	1.2-Díchloropropane	0.04	0.20	
10061-01-5	cis-1.3-Dichloropropene	0.06	0.20	
79-01-6	Trichloroethene	0,00	0.20	
124-48-1	Dibromochloromethane	0.05	0.20	
79-00-5	1 1 2-Trichloroethano	0.05	0.20	< 0.20 U
71-43-2	Banzana	0.13	0.20	< 0.20 U
10061-02-6	trans-1 3-Dichloropropano	0.03	0.20	< 0.20 U
110-75-8	2-Chloroothylyinylothor	0.00	0.20	< 0.20 U
75-25-2	Bromoform	0.20	0.50	< 0.50 U
108-10-1	A-Methyl=2-Poptanono (MIPK)	0.00	0.20	
591-78-6	2-Hovanone (MIBK)	0.97	Z, C E O	< 2.5 0
127+18-4	Tetrachloroothono	0.05	5.0	< 5.0 0
79-31-5	1 1 2 2-Metrachlereethane	0.05	0.20	< 0.20 0
108-88-3	Telucro	0.06	0.10	< 0.10 0
108-90-7	Chlarabangana	0.04	0.20	< 0.20 0
100-41-4	Ethulbonsono	0.02	0.20	< 0.20 U
100-41-4	Sturene	0.04	0.20	< 0.20 U
75-69-4	Styrene Thichleroflueremethane	0.05	0.20	< 0.20 U
76-13-1	1 1 2-Trichloro-1 2 2 triflueree	0.04	0.20	< 0.20 U
179601-23-1	m n Vulono	0.04	0.20	< 0.20 0
179001-20-1 95-17-6	m, p-Aylene	0.05	0,40	< 0.40 0
95-50-1	1 2 Dichlerchersene	0.03	0.20	< 0.20 0
90-00-1 541.72 1	1,2-Dichiorobenzene	0.04	0.20	< 0.20 U
106 46 7	1,3-Dichlorobenzene	0.04	0.20	< 0.20 U
105-46-7	1,4-Dichtoropenzene	0.04	0.20	< 0.20 0
107-0246	Acrolein	2.5	2.5	< 2.5 0
74-88-4	Lodomethane	0.23	0.50	< 0.50 U
1473074 107 12 1	Bromoethane Devulerituile	0.04	0.20	< 0.20 U
TO / - T 2 - T	ACTYIONITTILE	0.60	1.0	< 1.0 U
0-05-000	1,1-Dichioropropene	0.03	0.10	< 0.10 0
74-30-3 620-20-6	Dipromometnane	U.14 0.0:	0.20	< 0.20 U
050-20-0	1,1,1,2-Tetrachloroethane	0.04	0.20	< 0.20 Ŭ
20-12-0	1,Z-Dipromo-3-Chioropropane	0.04	0.50	< 0.50 Ŭ

ORGANICS ANALYSIS DATA SHEET

Volatiles by P&T GC/MS-Method SW8260C Page 2 of 2

Sample ID: Trip Blank-060816 SAMPLE

Lab Sample ID: BBS50 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 Ū
87-61-6	1,2,3-Trichlorobenzene	0.11	0.20	< 0.20 Ū

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.



Sample ID: MB-061516A METHOD BLANK

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

Instrument/Analyst: NT2/PAB

Date Analyzed: 06/15/16 13:49

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

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 0
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 11
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 T
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 0
108-05-4	Vinyl Acetate	0.04	0.20	
75-27-4	Bromodichloromethane	0.07	0.20	< 0.20 U
78-87-5	1.2-Dichloropropapa	0.05	0.20	< 0.20 U
10061-01-5	cis-1 3-Dichloropropono	0.04	0.20	< 0.20 U
79-01-6	Trighleroathero	0.05	0.20	< 0.20 U
124-48-1	Dibremechleremethere	0.05	0.20	< 0.20 U
79-00-5	Didromochioromethane	0.05	0.20	< 0.20 U
79-00-0	I,I,Z-IIIChioroethane	0.13	0.20	< 0.20 0
10061-02 C	benzene	0.03	0.20	< 0.20 0
10001-02-0	Chlessel, 3-Dichioropropene	0.08	0.20	< 0.20 0
75 25 2	2-Chloroethyivinylether	0.25	0.50	< 0.50 U
75=25=2	Bromolorm	0.06	0.20	< 0.20 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	0.97	2.5	< 2.5 U
591-78-b	2-Hexanone	0.90	5.0	< 5.0 U
127-18-4	Tetrachloroethene	0.05	0.20	< 0.20 Ŭ
79-34-5	1,1,2,2-Tetrachloroethane	0.06	0.10	< 0.10 U
100 00 7	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
/5-69-4	Trichlorofluoromethane	0.04	0.20	< 0.20 U
/6-13-1	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	l,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 Ū
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 Ū



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 II
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 0
108-86-1	Bromobenzene	0.06	0.20	< 0.20 II
95-49-8	2-Chlorotoluene	0.02	0.10	< 0.10 1
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 11
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 $\mu g/L$ (ppb)

Volatile Surrogate Recovery

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



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%	1028	0
BBS5LMSD	LMW-4-0616	10	110%	97.6%	103%	100%	0
BBS5M	Trip Blank-060616	10	106%	92.6%	99.48	103%	0
BBS5N	Trip Blank-060716	10	108%	98.6%	97.0%	102%	0
BBS50	Trip Blank-060816	10	109%	95.0%	98.0%	103%	0

	LCS/MB LIMITS	QC LIMITS
		_
d4-1,2-Dichloroethane	(80-129)	(80-129)
d8-Toluene	(80-120)	(80-120)
Bromofluorobenzene	(80-120)	(80-120)
d4-1,2-Dichlorobenzene	(80-120)	(80-120)
	d4-1,2-Dichloroethane d8-Toluene Bromofluorobenzene d4-1,2-Dichlorobenzene	LCS/MB LIMITS d4-1,2-Dichloroethane (80-129) d8-Toluene (80-120) Bromofluorobenzene (80-120) d4-1,2-Dichlorobenzene (80-120)

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

.

Page 1 of 2

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

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

LCSD: 10.0 mL

LCSD: 10.0 mL

Sample Amount LCS: 10.0 mL

Purge Volume LCS: 10.0 mL

Sample ID: LCS-061516A

LAB CONTROL SAMPLE

Inst	cument/Analyst	LCS:	NT2/	/ PAB
		LCSD:	NT2/	/ PAB
Date	Analyzed LCS:	06/15	5/16	13:08
	LCSD:	06/15	5/16	13:29

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 0	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	1118	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 Ō	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	1118	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%	9.98





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%	14.38
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	94.18	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	1178	8.0%
sec-Butylbenz e ne	11.1	10.0	111%	11.8	10.0	118%	6.1%
4-Isopropyltoluene	11.4	10.0	1148	12.3	10.0	123%	7.6%
n-Butylbenzen e	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 μ g/L (ppb)

RPD calculated using sample concentrations per SW846.

Volatile Surrogate Recovery

	LCS	LCSD
d4-1,2-Dichloroethane	1048	108%
d8-Toluene	98.2%	99.2%
Bromofluorobenzene	99.6%	102%
d4-1,2-Dichlorobenzene	99.8%	101%

ORGANICS ANALYSIS DATA SHEET

Volatiles by P&T GC/MS-Method SW8260C Page 1 of 2

MSD: NT2/PAB

Sample ID: LMW-4-0616 MATRIX SPIKE

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

Instrument/Analyst MS: NT2/PAB

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

Sample Amount MS: 10.0 mL MSD: 10.0 mL Date Analyzed MS: 06/15/16 19:17 Purge Volume MS: 10.0 mL MSD: 06/15/16 19:38 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%	11.38
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%	6.28
Methylene Chloride	< 1.0 U	10.0	10.0	100%	11.6	10.0	116%	14.8%
Acetone	< 5.0 Ŭ	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 0	10.0	106%	12.1%
1,1-Dichloroethene	< 0.20 U	9.72	Q 10.0	97.2%	10.8 õ	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	99.18	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	99.48	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 68
Vinyl Acetate	< 0.20 U	7.94	0 10.0	79.48	9.24 0	10.0	92 4%	15 19
Bromodichloromethane	< 0,20 U	10.4	10.0	104%	10.6	10.0	106%	1 92
1,2-Dichloropropane	< 0,20 U	10.5	10.0	105%	10.5	10.0	105%	1.20
cis-1,3-Dichloropropene	< 0.20 U	10.8	10.0	108%	10.8	10.0	1025	0.0%
Trichloroethene	< 0.20 U	10.1	10.0	101%	10.3	10.0	103%	2 02
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%	0.40
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%	2.28
2-Chloroethylvinylether	< 0.50 U	6.42	0 10.0	64.2%	6.44 0	10.0	64 4%	0.38
Bromoform	< 0.20 U	7.06	0 10.0	70.6%	7.89 0	10.0	78 9%	11 19
4-Methyl-2-Pentanone (MIBK)	< 2.5 U	54.5	50.0	109%	54.9	50 0	110%	11.18 ∩ 7%
2-Hexanone	< 5.0 U	55.0	50.0	110%	58.3	50.0	1179	5.89
Tetrachloroethene	< 0.20 U	9.60	10.0	96.0%	9.88	10.0	98 8%	2.00
1,1,2,2-Tetrachloroethane	< 0.10 U	11.6	10.0	116%	12.1	10.0	1212	1 23
Toluene	< 0.20 U	10.0	10.0	100%	9 62	10.0	96 28	3 02
Chlorobenzene	< 0.20 U	9.82	10.0	98.2%	10.4	10 0	104%	5 79
Ethylbenzene	< 0.20 U	9.91	10.0	99.1%	10.4	10.0	1048	J.78 1 Q9
Styrene	< 0.20 U	11.2	10.0	112%	11 6	10.0	116%	4.05 3.59
Trichlorofluoromethane	< 0.20 U	9.86	10.0	98.6%	10 9	10.0	109%	10 08
1,1,2-Trichloro-1,2,2-trifl	< 0.20 U	8.43 (0 10.0	84.3%	9.86 0	10.0	98 68	15 68
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%	1 72
1,2-Dichlorob e nzene	< 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 88
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%



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 0	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	1118	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%	23.18
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	1148	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	1148	3.6%
4-Isopropyltoluene	< 0.10 U	11.4	10.0	1148	12.1	10.0	121%	6.0%
n-Butylbenzen e	< 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.



ORGANICS ANALYSIS DATA SHEET

NWTPH-HCID Method by GC/FID Extraction Method: SW3510C Page 1 of 2 QC Report No: BBS5-Golder Associates Project: Landsburg 9231000002.R273

Matrix: Water

Data Release Authorized: **MAD** 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%



QC Report No: BBS5-Golder Associates

9231000002.R273

Project: Landsburg

ORGANICS ANALYSIS DATA SHEET

NWTPH-HCID Method by GC/FID Extraction Method: SW3510C Page 2 of 2

Matrix: Water

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

ARI ID	Sample ID	Extraction Date	Analysis Date	DL	Range	Result
BBS5I 16-8656	LMW-7-0616 HC ID:	06/10/16	06/10/16	1.0	Gas Diesel Oil o-Terphenyl	< 0.25 U < 0.50 U < 0.50 U 84.5%
BBS5J 16-8657	LMW-10-0616 HC ID:	06/10/16	06/10/16	1.0	Gas Diesel Oil o-Terphenyl	< 0.25 U < 0.50 U < 0.50 U 73.0%
BBS5K 16-8658	LMW-2-0616 HC ID:	06/10/16	06/10/16	1.0	Gas Diesel Oil o-Terphenyl	< 0.25 U < 0.50 U < 0.50 U 82.2%
BBS5L 16-8659	LMW-4-0616 HC ID:	06/10/16	06/11/16	1.0	Gas Diesel Oil o-Terphenyl	< 0.25 U < 0.50 U < 0.50 U 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: $\ensuremath{\mathsf{DRO}}\xspace/\ensuremath{\mathsf{RRO}}\xspace$ indicates results of organics or additional hydrocarbons in ranges are not identifiable.



HCID SURROGATE RECOVERY SUMMARY

Matrix: Water

T

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



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: With 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	Prep	Analysis	Analysis						
Meth	Date	Method	Date	CAS Number	Analyte	DL	LOQ	Result	Q
3010A	0 6 /14/16	6010C	06/17/16	7429-90-5	Aluminum	5.0	1,000	1,000	U
200.8	0 6/14/1 6	200.8	06/16/16	7440-36-0	Antimony	0.020	3.0	3.0	U
200.8	0 6 /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	0 6 /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	0 6 /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	0 6/ 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



INORGANICS ANALYSIS DATA SHEET TOTAL METALS

Page 1 of 1

Sample ID: LMW-11-0616-D SAMPLE

Lab Sample ID: BBS5B LIMS ID: 16-8649 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	6.8	
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



INORGANICS ANALYSIS DATA SHEET

TOTAL METALS Page 1 of 1

Sample ID: LMW-9-0616 SAMPLE

Lab Sample ID: BBS5C LIMS ID: 16-8650 Matrix: Water Data Release Authorized: With 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	Analysis	Analysis	CAS Number	analwto.	DT	100	Pecult	~
		Mechod	Date		Allaryte		T/\Z	Result	~~~
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	0 6 /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



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: XUH 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	TOÖ	Result	Q
3010A	0 6 /14/16	6010C	06/17/16	7429-90-5	Aluminum	5.0	1,000	1,000	U
200.8	0 6 /14/16	200.8	06/16/16	7440-36-0	Antimony	0.020	3.0	3.0	U
200.8	0 6 /14/16	200.8	06/15/16	7440-38-2	Arsenic	0.030	3.0	3.0	U
3010A	0 6 /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	0 6/ 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	0 6/ 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	υ
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	υ



INORGANICS ANALYSIS DATA SHEET TOTAL METALS

Page 1 of 1

Sample ID: EB0616 SAMPLE

Lab Sample ID: BBS5E LIMS ID: 16-8652 Matrix: Water Data Release Authorized: Kell-4 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	Analysis Method	Analysis	CAS Number	Appleto	DT	τœ	Pogul+	^
	Date	Method	Date		MIALYLE		TOĞ	Result	<u> </u>
3010A	0 6/ 14/16	6010C	06/17/16	7429-90-5	Aluminum	5.0	1,000	1,000	U
200.8	0 6/14/ 16	200.8	06/16/16	7440-36-0	Antimony	0.020	3.0	3.0	U
200.8	0 6 /14/16	200.8	06/15/16	7440-38-2	Arsenic	0.030	3.0	3.0	U
3010A	0 6 /14/16	6010C	06/17/16	7440-39-3	Barium	1.49	500	500	U
3010A	0 6 /14/16	6010C	06/17/16	7440-41-7	Beryllium	0.06	2	2	U
3010A	0 6/14/ 16	6010C	06/17/16	7440-43-9	Cadmium	0.12	2	2	U
3010A	0 6 /14/16	6010C	06/17/16	7440-70-2	Calcium	1.2	500	500	U
3010A	0 6 /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	0 6 /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	0 6/14/ 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	0 6/ 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	0 6 /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


Page 1 of 1

Sample ID: LMW-3-0616 SAMPLE

Lab Sample ID: BBS5F LIMS ID: 16-8653 Matrix: Water Data Release Authorized: Multi 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	Prep	Analysis	Analysis		_			_	
Meth	Date	Method	Date	CAS Number	Analyte	DL	roð	Result	Q
3010A	06/14/16	6010C	06/17/16	7429-90-5	Aluminum	5.0	1,000	1,000	U
200.8	0 6/ 14/16	200.8	06/16/16	7440-36-0	Antimony	0.020	3.0	3.0	U
200.8	0 6/ 14/16	200.8	06/15/16	7440-38-2	Arsenic	0.030	3.0	3.0	U
3010A	0 6 /14/16	6010C	06/17/16	7440-39-3	Barium	1.49	500	500	U
3010A	0 6 /14/16	6010C	06/17/16	7440-41-7	Beryllium	0.06	2	2	U
3010A	0 6/ 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	0 6/ 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



Page 1 of 1

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	Prep	Analysis	Analysis	and Merchan					~
Meth	Date	Method	Date	CAS NUMBER	Analyte	DL	TOŌ	Result	<u>Q</u>
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	υ
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	υ
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



Page 1 of 1

Sample ID: LMW-6-0616 SAMPLE

Lab Sample ID: BBS5H LIMS ID: 16-8655 Matrix: Water Data Release Authorized: Y.M.Y 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	Prep	Analysis	Analysis						
Meth	Date	Method	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	υ
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	υ
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	υ
3010A	06/14/16	6010C	06/17/16	7440-22-4	Silver	0.4	3	3	υ
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	υ
3010A	0 6 /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



Page 1 of 1

Sample ID: LMW-7-0616 SAMPLE

Lab Sample ID: BBS51 LIMS ID: 16-8656 Matrix: Water Data Release Authorized: XULL 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	Prep	Analysis	Analysis						
Meth	Date	Method	Date	CAS Number	Analyte	DL	LOQ	Result	Q
3010A	0 6/14/ 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	Ŭ
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



Page 1 of 1

Sample ID: LMW-10-0616 SAMPLE

Lab Sample ID: BBS5J LIMS ID: 16-8657 Matrix: Water Data Release Authorized: 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	זת.	100	Regult	0
			2400		mary co		202	1.65urc	×
3010A	0 6/ 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	0 6/14/ 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	υ
3010A	06/14/16	6010C	06/17/16	7440-43-9	Cadmium	0.12	2	2	υ
3010A	0 6/ 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	υ
3010A	0 6/ 14/16	6010C	06/17/16	7440-48-4	Cobalt	0.29	10	10	U
3010A	0 6 /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	0 6 /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	υ
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



Page 1 of 1

Sample ID: LMW-2-0616 SAMPLE

Lab Sample ID: BBS5K LIMS ID: 16-8658 Matrix: Water Data Release Authorized: Will 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	Analvte	DL	LOO	Result	0
					······································		*		
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	υ
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	υ
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



!

Page 1 of 1

Sample ID: LMW-4-0616 SAMPLE

Lab Sample ID: BBS5L LIMS ID: 16-8659 Matrix: Water Data Release Authorized: KUNA 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	Prep	Analysis	Analysis		_			_	
Meth	Date	Method	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	υ
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



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: المنابع المعامين الم معامين المعامين المعا 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

	Analysis						Control		
Analyte	Method	Sample		Duplica	te	RPD	Limit	Q	
	60100	1 000		1 000		0.00	. (1 000	-	
Aluminum	POINC	1,000	0	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	\mathbf{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	\mathbf{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	\mathbf{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	\mathbf{L}	
Vanadium	6010C	3	U	3	U	0.0%	+/- 3	L	
Zinc	6010C	20	U	20	U	0.0%	+/- 20	L	

Reported in $\mu g/L$

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



Page 1 of 1

Sample ID: LMW-4-0616 MATRIX SPIKE

Lab Sample ID: BBS5L LIMS ID: 16-8659 Matrix: Water Data Release Authorized: V 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 SPIKE QUALITY CONTROL REPORT

	Analysis				Spike	8	
Analyte	Method	Sample		Spike	Added	Recovery	Q
	6010 7			0.050		1000	
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	98.28	
Cadmium	6010C	2	U	507	500	101%	
Calcium	6010C	108,000		117,000	10,000	90.0%	Н
Chromium	6010C	1,000	U	1,000 U	500	NR	N
Cobalt	6010C	10	Ŭ	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%	Н
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 $\mu g/L$

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%



INORGANICS ANALYSIS DATA SHEET

TOTAL METALS

Sample ID: METHOD BLANK

Page 1 of 1

Lab Sample ID: BBS5MB LIMS ID: 16-8659 Matrix: Water Data Release Authorized: Xelly 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	Analvte	DL.	LOO	Result	0
	· · · · ·								
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



Data Release Authorized: الملاحظة Reported: 06/20/16

Page 1 of 1

Matrix: Water

LIMS ID: 16-8659

Lab Sample ID: BBS5LCS

Sample ID: LAB CONTROL

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

BLANK SPIKE QUALITY CONTROL REPORT

	Analysis	Spike	Spike	8		
Analyte	Method	Found	Added	Recovery	Q	
<u>م</u>	(0100	2050	0000	1003		
Aluminum	60100	2050	2000	1028		
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	97.28		
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%



Data Release Authorized: Reported: 06/20/16 TH Date Received: 06/09/16 C-Ju-46 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-11-061 6 -D BBS5Q 16 - 8 6 79	06/06/16	Water	06/14/16 06/16/16	2.60	20.0	20.0 U
LMW-9-0616 BBS5R 16-8 6 80	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 16-86 8 8	06/06/16	Water	06/14/16 06/16/16	2.60	20.0	20.0 U
LMW-4-0616 BBS5AA 16-8 6 89	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.



Sample ID: LMW-4-0616 DUPLICATE

Lab Sample ID: BBS5AA LIMS ID: 16-8689 Matrix: Water Data Release Authorized: 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



Page 1 of 1

Sample ID: LMW-4-0616 MATRIX SPIKE

Lab Sample ID: BBS5AA LIMS ID: 16-8689 Matrix: Water Data Release Authorized: 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

	Analysis			Spike	8	
Analyte	Method	Sample	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%



Page 1 of 1

Sample ID: LAB CONTROL

Lab Sample ID: BBS5LCS LIMS ID: 16-8689 Matrix: Water Data Release Authorized: Reported: 06/20/16 i_{0} -20-10 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	J/L				
N-Control limi	t not mot				

N-Control limit not met Control Limits: 80-120% APPENDIX B SAMPLE INTEGRITY DATA SHEETS (SIDS)

Sampling Location <u>Groundwater</u> Fechnical Procedure Reference(s) Fype of Sampler <u>Dedicated Pump</u> Date <u>682256</u> Viedia <u>Water</u>	Monitoring Well End of dedicated s) TP-1.4-6A, TP-1.2-20, TP-1.2-23) Grundfos Time 412(b	ampling tube		
Fechnical Procedure Reference(s) Fype of Sampler <u>Dedicated Pump</u> Date <u>යලි 2ගැය</u> Viedia <u>Water</u>) <u>TP-1.4-6A, TP-1.2-20, TP-1.2-23</u> Grundfos Time 413(b	/b% [[8:6]]		
Sype of Sampler _Dedicated Pump Date	Grundfos Timo 413/0	and the second		
Date <u>6812016</u> Media <u>Water</u>	Time 1120			
Media <u>Water</u>				
	Station LMW-2			
Sample Type: <u>grab</u>	nple Type: grab time composite			
<u>Screen Interval – 27.9-38.1 ft bgs</u> Sand Pack Interval – 24.8-38.1 ft bg	Monument: 2.94 ags Inner P gs (8-in hole) (~7.8 gal/sand pack v	VC: 2.38 ags vol)		
Packer Depth – NA (~22.3 gal/ca	sing vol) (~30.1 gal/total well vol)		
	perform protection and an experimental second second			
Field Measurements on Sample (p SEE FIELD PARAMETERS SHE	pH, conductivity, etc.) ET			
Field Measurements on Sample (p SEE FIELD PARAMETERS SHE	pH, conductivity, etc.) ET			
Field Measurements on Sample (p SEE FIELD PARAMETERS SHE SHE Aliquot Amount Analy	pH, conductivity, etc.) ET /sis Container	Preservation / Amount		
Field Measurements on Sample (p SEE FIELD PARAMETERS SHE Aliquot Amount Analy 3 – 40 mL VOA	pH, conductivity, etc.) ET ysis Container VOA Vial	Preservation / Amount HCl		
Field Measurements on Sample (p SEE FIELD PARAMETERS SHE Aliquot Amount Analy 3 – 40 mL VOA 1 – 500 mL Total	pH, conductivity, etc.) ET ysis Container VOA Vial Metals HDPE	Preservation / Amount HCl HNO3 (non)		
Field Measurements on Sample (p SEE FIELD PARAMETERS SHE Aliquot Amount Analy 5 – 40 mL VOA 1 – 500 mL Total 1 – 500 mL Disso	pH, conductivity, etc.) ET ysis Container VOA Vial Metals HDPE lved Metals HDPE	Preservation / Amount HCl HNO3 (non) HNO3 (filter)		

SIDS 0616.docx

Well ID LMW-2

Date 6/8/2016

Time Begin Purge 1/027

Time Collect Sample 1130

					(PH)			
Water Level feet bmp	Time	Volume Purged	pН	Conductivity uS/cm	Temp. ℃	DO mg/L	Turbidity NTU	Eh ReimV
-	1040		6.90	927	10.7	Q.Q6	0.99	⁺⁾ 150.1
	1050		6.90	92B	10.7	0.09	1.59	P(35.7
	1100		6.90	929	10.7	ወወዋ	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
		¥ *	is je				(*)	
			40	-				
	-				, 8	,		1 200
				<u>*</u> 1				
						at as a fa	- ^*	
		1.1 **			4 6	7.7	·	

Comments:

PID= 0.0 ppm

Grundfos; 99Hz 5 gal = 1.42 gpm = 1.42 gpm = 1.42 gpm = 1.42 gpm

Sampler's Initials mr./JCM_

Golder Associates

<u>Sample ID LN</u> <u>Ionitoring Well End of dedicated s</u>	AW-3-0616
<u>fonitoring Well End of dedicated s</u>	ampling tube
Trice i Conductive Conductive	
<u>TP-1.4-6A, TP-1.2-20, TP-1.2-23</u>	Bay I here
Grundfos	
Time <u>10</u>	35
Station LMW-3	
time composite	space composite
depth, volume of static well wate	er and purged water, etc.)
r PVC at elev. X) (bottom at 64.8 f	t bgs, 4-in casing)
Monument: 3.08 ags Inner PVC	2: 2.35 ags
s (8-in hole) (~10.4 gal/sand pack))
gal/casing vol) (~16.6 gal/packer	casing volume)
(~27.0 gal/total we	ell vol below packer)
H, conductivity, etc.)	
	stra stra
is Container	Preservation / Amount
is Container VOA Vial	Preservation / Amount
is Container VOA Vial Metals HDPE	Preservation / Amount HCl HNO3 (non)
is Container VOA Vial Metals HDPE ved Metals HDPE	Preservation / Amount HCl HNO3 (non) HNO3 (filter)
	Time <u>// 107</u> Station <u>LMW-3</u> time composite (depth, volume of static well water r PVC at elev. X) (bottom at 64.8 f Monument: 3.08 ags Inner PVC s (8-in hole) (~10.4 gal/sand pack gal/casing vol) (~16.6 gal/packer of (~27.0 gal/total water -; Clea-(wo of box-; H, conductivity, etc.) T

SIDS 0616.docx

1-11

Well ID LMW-3

Date 6(7/2016

Time Begin Purge <u>@ 915</u>

Time Collect Sample <u>1035</u>

					<u>(חץ)</u>	1		7
Water Level feet bmp	Time	Volume Purged	рH	Conductivity uS/cm	°C ℃	DO mg/L	Turbidity NTU	Eh ReimV
22.72.	0 430		7.79	317	11.2	0.08	0.93	+359.7
25.95'	0940	#)	7.77	327	11.2	0.50	0.42	(H) 289.8
26.45'	0950		7.74	332	11.0	0.01	1.38	+)232.2
26.48	1000		7.72	333	11.1	0.03	Ø 69	(4)212.6
26.531	1000		7.68	334	11.1	0.02	1.25	(+)
26.55'	1020	1	7.68	334	17.1	0.02	0.93	(+)170.5
26.57	1030		7.68	336	11.1	0.03	1.28	⁽⁺⁾ 160.4
-								
			i .		-		I	
								:
		100	_		—	F		
Ţ					T			
a a a	-							
							- 	
	<u> </u>						1	

Comments:

PID = 0.0ppm Picker = 110 psi (direct connect to Hz tank) tegedolon) Gundtos: 131.0Hz <u>5 gal</u> = 1 gpm 27.0 gal/well volume = 27.0 min/well olume x 3 = B1 minule puge Thitial purge rate observed to cause drawdom (Cr 2.5gpm) purge vale reduced to lawer/limit drawdom (Cr 1.0 gpm) **Contacted Jill humberts (@ 1000) and discussed if abtaining water levels and if it is a necessary field parameters Jill confirmed that due to packers posence at most of site wells, ambred with the high purge vales, drawdown it not something to be overally concerned with.

Sampler's Initials Aur_/JCM * LMW-B is the exception where we have been levels should be marchined while sampling w/ the perstaltic pump. Therefore we will be busines by the perstaltic pump. And

no langer be recording water levels offict than an initial stacking water level prior to purging; LMW-10 should also have water levels monitored during sampling/purging;

Golder Associates

Field_parameters_blank.xlsLandsburg

Site Location <u>Ravensdale</u> , WA		<u>IW-4-0016</u>
Sampling Location <u>Groundwater Mon</u>	itoring Well End of dedicated sa	mpling tube
Technical Procedure Reference(s) <u>TP</u>	-1.4-6A, TP-1.2-20, TP-1.2-23	1991
Type of Sampler Dedicated Pump Gru	ndfos	
Date 6/8/2010	Time <u>1320</u>	
Media Water	Station LMW-4	
Sample Type: grab	time composite	space composite
Sample Acquisition Measurements (d SWL - 10.25 ft below TOC (inner PV	epth, volume of static well water <u> </u>	t bgs, 4-in casing) @ 12
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 g	al/casing vol) (~14.6 gal/packer	casing volume)
	(~26.9 gal/total we	ll vol below packer)
** Depths corrected for 70° inclination		
Sample Description <u>Tto=0.0000;</u> C	lear, slight sultur oder;	
Field Measurements on Sample (pH, or SEE FIELD PARAMETERS SHEET	conductivity, etc.)	in the second
		the ter-
Aliquot Amount Analysis $3-40 \text{ mL} \times 3 = 9 \vee \text{VOA}$	Container VOA Vial	Preservation / Amount HCi
<u>5 40 mb</u>		
$\frac{1-500 \text{ mL}}{1-500 \text{ mL}} \approx 2 = 2\sqrt{70 \text{ Total Met}}$	als HDPE	
$\frac{1-500 \text{ mL}}{1-500 \text{ mL}} \approx 2 \approx 2^{17} \text{ Total Met}$	als HDPE Metals HDPE	HNO3 (filter)
$\frac{1-500 \text{ mL}}{2} \times 2 = 2$ Total Met $\frac{1-500 \text{ mL}}{2} \times 2 = 2$ Dissolved $\frac{1-500 \text{ mL}}{2} \times 2 = 2$ Dissolved $\frac{1-500 \text{ mL}}{2} \times 2 = 6$ TPH-HCI	als HDPE Metals HDPE D Glass Amber, VOA Vial	HNO3 (filter) HCl
$\frac{1-500 \text{ mL} \times 2}{1-500 \text{ mL} \times 2} = 2$ Total Met $\frac{1-500 \text{ mL} \times 2}{2} = 2$ Dissolved $\frac{1-500 \text{ mL} \times 2}{2} = 2$ D	als HDPE Metals HDPE D Glass Amber, VOA Vial Is and Amber HCID5 as dryphic	HNO3 (filter) HCl HCl
$\frac{1-500 \text{ mL} \times 2}{1-500 \text{ mL} \times 2} = 2$ Total Met $\frac{1-500 \text{ mL} \times 2}{2} = 2$ Dissolved $\frac{4-500 \text{ mL}}{2} = 40 \text{ mL}$ TPH-HCI VOCs callected as implicate; Metric Sampler (signature)	als HDPE Metals HDPE D Glass Amber, VOA Vial نه عسی Amber HCED 5 as کسمهاند Date Date	HNO3 (filter) HCl HCl stes;

Golder Associates

SIDS 0616.docx

Well ID LMW-4

Date 6/8/2616 Time Begin Purge 1154

Time Collect Sample 1320

					(pH)		Ψ	
Water Level feet bmp	Time	Volume Purged	рН	Conductivity uS/cm	Temp. ℃	DO mg/L	Turbidity NTU	Eh Rei mV
	1215		6.96	942	10.8	0.09	0.98	⁺⁾ 88.4
	12.25	<u>ل</u> ه	6.95	945	10.8	0.09	0.77	⁺⁾ 79.1
	1235		6.94	୧୳ଡ଼	10.8	0.14	0.54	(+)-70.9
	1245		6.93	୧୪୦	10.8	0.10	0.05	⁽⁺⁾ 63.7
	1255		6.92	936	10.8	0.10	1.00	⁽⁺⁾ 57,9
	1305	· · ·	6.92	938	10.8	0.11	0.85	H53.4
	1315		6.92	937	10.8	0.11	0.59	+249.1
~	=				-			8
	÷						-	
		21 • 7						
		-						

Comments:

PFD = 0.0 ppm Pecker = 140 psi Grund fost 109 Hz ZT-gal/wellvolume = 27 minuter/wellvolume to 3 = 81 purge 5 gal = 1.0 gpm 1.0 gpm 2.7 minuter/wellvolume to 3 = 81 purge * MS/MOD volume collected at this location = Tripticate for VOCs (VOAs) - Dupticate for Total + Dussolved Metrics, and TPH-HEID

Sampler's Initials Amedson

Golder Associates

Site Location <u>Ravensdale</u> , Sampling Location <u>Groun</u>	WA	Plant/Site Landsburg Mine Site Project No. 923-1000-002						
Sampling Location <u>Groun</u>		Sample ID LMW-5-0616						
Terris C. Manual Contractor States	ndwater Monite	oring Well End of dedicated	ng Well End of dedicated sampling tube					
Fechnical Procedure Refe	rence(s) <u>TP-</u> 1	1.4-6A, TP-1.2-20, TP-1.2-23	- 7V - 1994-1					
Type of Sampler Dedicate	d Pump Grun	dfos						
Date 6/7/2016		Time1145	4					
Media <u>Water</u>		Station <u>LMW-5</u>						
Sample Type: grab time composite space con								
Sample Acquisition Measu	urements (dep	oth, volume of static well wat	er and purged water, etc.)					
SWL - 14.35 ft below T	OC (inner PV	C at elev. X) (bottom at 241.	8 ft bgs, 4-in casing) 2137					
Screen Interval – 231.8-24	1.8 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 page	ck)					
Packer Depth – 222.11 ft bg	<u>gs (~150.8 gr</u>	al/casing vol) (~12.9 gal/pacl	ter casing volume)					
		(~18.7 gal/total w	ell vol below packer)					
Field Measurements on Sa SEE FIELD PARAMETER	ample (pH, co AS SHEET	nductivity, etc.)						
Field Measurements on Sa SEE FIELD PARAMETEF Aliquot Amount	ample (pH, co <u> </u>	nductivity, etc.) Container	Preservation / Amount					
Field Measurements on Sa SEE FIELD PARAMETEF Aliquot Amount	ample (pH, co <u> </u>	nductivity, etc.) Container VOA Vial	Preservation / Amount HCl					
Field Measurements on Sa SEE FIELD PARAMETER Aliquot Amount 4 – 40 mL 1 – 500 mL	ample (pH, co. <u> </u>	nductivity, etc.) Container VOA Vial s HDPE	Preservation / Amount HCl HNO3 (non)					
Field Measurements on Sa SEE FIELD PARAMETER Aliquot Amount - 40 mL 1 - 500 mL 1 - 500 mL	Analysis VOA Dissolved N	nductivity, etc.) Container VOA Vial s HDPE fetals HDPE	Preservation / Amount HCl HNO3 (non) HNO3 (filter)					

SIDS 0616.docx

Well ID LMW-5

Date 6/7/2016

Time Begin Purge 1105

Time Collect Sample 1145

					(ph)	24		
Water Level feet bmp	Time	Volume Purged	рН	Conductivity uS/cm	Temp. °C	DO mg/L	Turbidity NTU	Eh Rei mV
	1118	_	6.94	761	11.1	0,0B	2.02	¢)103.1
	1123		6.91	762	11.1	0.01 ···	1.41	^{e)} 100.0
	1128		6.89	762	161	6.64	1.94	A)91,7
	1133		6.88	762	11.1	0.61	1,24	+86.7
	1136		6.87	762	11.1	Ø.02	1.52	+82.3
	1143	-	6.87	762	Tal	1.00	1.45	778.8
							· /	9
			STE.					
-	14							
	2							

Comments:

PID = 0.0 ppn Packer = 130 psi Grundfos: 131Hz $\frac{5 \text{ gal}}{4 \text{ min}} = 1.25 \text{ gpn} = 7$ $\frac{19 \text{ gal/well volume}}{1.25 \text{ gpm}} = 15.2 \text{ minutes/well volume } \times 3 = 96 \text{ minute$ Purge

Sampler's Initials Amo-/Jrm

Golder Associates

	Int/Site Landsburg Mine Site Project No. 923-1000-002					
Site Location <u>Ravensdale</u> , WA Sample ID <u>LMW-6-0616</u>						
Sampling Location <u>Gre</u>	oundwater Moni	toring Well End of dedicated s	ampling tube			
Technical Procedure R	eference(s) <u>TP</u> .	- <u>1.4-6A, TP-1.2-20, TP-1.2-23</u>	Materic de la company			
Type of Sampler <u>Dedic</u>	ated Pump Grun	ndfos				
Date 61672016 6	17/2016min	<u> </u>				
Media <u>Water</u>		Station LMW-6				
Sample Type: gr	<u>ab</u>	time composite	space composite			
Sample Acquisition Me	asurements (de	pth, volume of static well wate	er and purged water, etc.)			
SWL - 29,67'ft below	TOC (inner PV	/C at elev. X) (bottom at 105.9	ft bgs, 4-in casing) 616/46			
Screen Interval - 90.9-1	05.9 ft bgs 1	Monument: 3.05 ags Inner PV	C: 2.38 ags			
Sand Pack Interval - 82.	<u>5-105.9 ft bgs (</u>	8-in hole) (~13.7 gal/sand pac	k)			
Packer Depth - 81.22 ft b	ogs (~53 gal/c	asing vol) (~16.1 gal/packer ca	using volume)			
		(~29.9 gal/total w	ell_vol below packer)			
Field Measurements on	Sample (pH, co	onductivity, etc.)				
SEE FIELD PARAMET	ERS SHEET					
			anonin			
Aliquot Amount	Analysis	Container	Preservation / Amount			
Aliquot Amount 3 – 40 mL	Analysis VOA	Container VOA Vial	Preservation / Amount HCl			
Aliquot Amount 3 – 40 mL 1 – 500 mL	Analysis VOA Total Meta	Container VOA Vial ls_HDPE	Preservation / Amount HCl HNO3 (non)			
Aliquot Amount 3 – 40 mL 1 – 500 mL 1 – 500 mL	Analysis VOA Total Meta Dissolved 1	Container VOA Vial ls HDPE Metals HDPE	Preservation / Amount HCl HNO3 (non) HNO3 (filter)			

A Thilled

L

L

SIDS 0616 docx

Well ID LMN -6 Date <u>6/6/2016</u> 6/7/2016 Time Begin Purge 1233 Time Collect Sample 1330

(pH) Temp. Water Level Volume Conductivity DO Turbidity Eh °C feet bmp Purged uS/cm mg/L NTU Rel mV Time pН +)139.6 0.11 2.22 6,88 10.2 1245 248.4 +)128.3 265.9 6,85 9.B 0.07 1255 1,93 +122.3 262.3 2,23 6.84 0.08 9.9 1305 +) 120.1 6.83 259.6 1315 9.9 0.10 1.01 (F)118.9 1.20 0.10 1325 6.82 257.7 10.0

Comments:

PID = 0.0 ppm Packer = 110 psi Grundlos: 199Hz $\frac{5}{3} \text{ gal} = 1.67 \text{ gpm} \Rightarrow \frac{-30 \text{ gal/well volume}}{1.67 \text{ gpm}} = 18 \text{ minutes/well volume } \times 3 = 54 \text{ minutes}}$

Sampler's Initials Ame Jocm

		II0jeet II0.				
Site Location <u>Ravens</u>	dale, WA	Sample ID _LMW-7-0616,-LMW-7-0616-D				
Sampling Location <u>C</u>	Froundwater Monitoring	Well End of dedicated	d sampling tube			
Technical Procedure	Reference(s) <u>TP-1,4-6A</u>	A, TP-1.2-20, TP-1.2-2	23			
Type of Sampler <u>Ded</u>	licated Pump Grundfos					
Date 6/7/2017		Time <u>1525</u>	5% F (1)			
Media Water		Station LMW-7	7			
Sample Type:	grab tin	ne composite	space composite			
Sample Acquisition M	leasurements (depth, vo	lume of static well w	ater and purged water, etc.)			
SWL - 223 원' ft belo	w TOC (inner PVC at ele	ev. X) (bottom at 253	.7 ft bgs, 4-in casing) @ 12			
Screen Interval - 239.	6-253.7 ft bgs Monu	ment: 3.09 ags Inner	r PVC: 2.72 ags			
Sand Pack Interval - N	JA	Dela Deales				
	20.2 1/	** The state of 1.0	an 709 inclination			
Sample Description P	-28.3 gal/casing vol)	ne aloc.				
Packer Depth – NA () Sample Description ? Simple Description ? Field Measurements of SEE FIELD PARAME	-28.3 gal/casing vol) TO = 0.0 cpm; Clean on Sample (pH, conducti ETERS SHEET	vity, etc.)				
Packer Depth – NA () Sample Description ? Field Measurements of SEE FIELD PARAME Aliquot Amount	<u>معیاد میں میں میں میں میں میں میں میں میں میں</u>	vity, etc.)	Preservation / Amoun			
Packer Depth – NA () Sample Description ? Simple Description ? Field Measurements of SEE FIELD PARAME Aliquot Amount 5-40 mL	<u>معمواد (pH, conduction Sample (pH, conduction Sample (pH, conduction Sheer</u>	vity, etc.) tainer	Preservation / Amoun HCl			
Packer Depth – NA () Sample Description ? Simple Description ? Field Measurements of SEE FIELD PARAME Aliquot Amount S-40 mL 2 - 500 mL	<u>TO = ۵.۵ وومم: Clear</u> TO = ۵.۵ وومم: Clear on Sample (pH, conducti ETERS SHEET Analysis Con VOA VO Total Metals HE	tainer	Preservation / Amoun HCl HNO3 (non)			
Packer Deptn – NA () Sample Description ? Sample Description ? Field Measurements of SEE FIELD PARAME Aliquot Amount S= 40 mL 2 - 500 mL 2 - 500 mL	28.3 gal/casing vol) TO = 0.0 cpm; Clear on Sample (pH, conducti ETERS SHEET Analysis Con VOA VO Total Metals HD Dissolved Metals	vity, etc.) vity, etc.) tainer DA Vial DPE HDPE	Preservation / Amoun HCl HNO3 (non) HNO3 (filter)			
Field Measurements of SEE FIELD PARAME Aliquot Amount 5-40 mL 2-500 mL 2-500 mL 8-500 mL 40 mL 40 mL	-28.3 gal/casing vol) TO = 0.0 pport Clear on Sample (pH, conducti ETERS SHEET Analysis Con VOA VC Total Metals HE Dissolved Metals TPH-HCID Gla	vity, etc.) vity, etc.) tainer DA Vial DPE HDPE ass Amber, VOA Vial	Preservation / Amoun HCl HNO3 (non) HNO3 (filter) HCl			
Field Measurements of Sample Description \underline{P} Field Measurements of SEE FIELD PARAME Aliquot Amount $\underline{S} = 40 \text{ mL}$ $\underline{2} = 500 \text{ mL}$ $\underline{2} = 500 \text{ mL}$ $\underline{2} = 500 \text{ mL}$ $\underline{2} = 500 \text{ mL}$ $\underline{3} = 500 \text{ mL}$ $\underline{40 \text{ mL}}$ $\underline{3} = 500 \text{ mL}$ $\underline{3} = 500 \text{ mL}$	-28.3 gal/casing vol) TO = 0.0 ppm; Clear, on Sample (pH, conducti ETERS SHEET Analysis Con VOA VO Total Metals HE Dissolved Metals TPH-HCID Gla	<pre>vity, etc.)</pre>	Preservation / Amount HCl HNO3 (non) HNO3 (filter) HCl HCl HCl HCl			

SALADAR ARE SOLATING

Well ID LMW-7

Date 6/7/2016

Time Begin Purge <u>1400</u>

Time Collect Sample 1525

					<u>(PH)</u>			
Water Level feet bmp	Time	Volume Purged	рH	Conductivity uS/cm	Temp. ℃	DO mg/L	Turbidity NTU	Eh Rel mV
	1415		7.34	452	12.6	0.26	2.21	142.2
1 ×	1425	~	7.22	489	12.7	Ø.07	1.51	122.5
	1435	1.10	7.12	522	12.8	ወሳወ	1-61	H116.7
	1445		7.08	545	12.B	0.00	0.90	+112.0
	1455		7.07	561	12.8	0.01	1.18	(+)
	1505		7,06	565	12.8	0.02	0.99	(+)106.8
	1515		7.07	560	12.B	0.00	1.03	⁽⁺⁾ 104.9
	1525		7.07	563	12.B	0.02	1.23	^(†) 102.0
· · · ·	=	-						
							-	
				• • • • •			N A -	
			-			, ,	<u> </u>	
							í	

Comments: PID = 0.0 ppm NoPacker: Grund fos @ 345 Hz <u>5 gallons</u> = 10gpm => <u>28.3 gal/vellvolune</u> = 28.3 min/vellvolune x 3 = 85 min/vellvolune x

Sampler's Initials Am / JCM

Plant/Site Landsburg Mine	<u>Site</u>	Project No. <u>923-1000-002</u>				
Site Location <u>Ravensdale</u> ,	WA	Sample ID <u>LMW-8-0616</u>				
Sampling Location <u>Groun</u>	dwater Monitoring	Well End of dedicate	ed sampling tube			
100 100 BEER 01 00	(1000) (1000) (10000) (1000)	- 40 Th	1 1 Voices	Acres 1		
Technical Procedure Refe	rence(s) <u>TP-1.4-6A</u>	<u>., TP-1.2-20, TP-1.2-</u>	-23	-		
Type of Sampler <u>Dedicate</u>	d Tubing and Perist	altic Pump, Bailer fo	or VOC samples			
Date 6/6/2016		Time <u>1516</u>	/EB0616@15	30		
Media Water		Station <u>LMW-</u>	-8	The second		
Sample Type: grab	tim	e composite	space co	mposite		
Swn - 5. 9 ft below T	rements (depth, vo OC (PVC at black n	lume of static well w otch) (bottom at 13 f	vater and purged wate ft bgs, 2-in casing)	r, etc.)		
Screen Interval – 8-13 ft bg	s PVC stickup:	1.72 ags	0. 57.55			
Sand Pack Interval - 6-13 f	t 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	= 0.0 pom: Clear	No Odar				
Field Measurements on Sa	mple (pH. conducti	vity, etc.)				
SEE FIELD PARAMETER	S SHEET			_		
<u></u>			A THE CASE OF A DECK OF A DECK OF A			

Analysis	Container	Preservation / Amount
VOA	VOA Vial	HCl
Total Metals	HDPE	HNO3 (non)
Dissolved M	etals HDPE	HNO3 (filter)
TPH-HCID	Glass Amber, VOA Vial	HCl
	Analysis VOA Total Metals Dissolved Ma TPH-HCID	AnalysisContainerVOAVOA VialTotal MetalsHDPEDissolved Metals HDPETPH-HCIDGlass Amber, VOA Vial

Date 6/6/2016 Sampler (signature) Supervisor (signature)

SIDS 0616.docx

Well ID LMw-8

Date 6/6/2016

Time Begin Purge 1437

Time Collect Sample 1510

			A		(pH)			
Water Level feet bmp	Time	Volume Purged	pН	Conductivity uS/cm	Temp. ℃	DO mg/L	Turbidity NTU	Eh Rel mV
7.231	1445		6.80	450	14.5	0.12	13.4	(H) 95.7
7,39'	1450		6.75	552	14,4	0.06	8.53	(+)107.2
7.66'	1455		6.76	553	14.3	6.02	7.45	(H)105.6
7.70'	1500		6.74	605	14,1	0.00	4.12	A-106.9
7.88	1505		6.73	611	14.0	0, 01	3.92	(+)(07.2
7.95'	1510		6,73	613	14:1	0.06	2.70	⁽⁺⁾ 108.2
							5	
						-		
					-		*	
							2	
-								
	- -							
		1			A =0 D			-
								-

Comments:

PID=0.0ppm

Flow Rate=~260mL/min

- VOCS + HCID, + Metals all collected from peristaltic poly-lubing;

Sampler's Initials Am-/JCM

		Project	Project No. <u>923-1000-002</u>			
Site Location <u>Ravensdale</u>	, WA	Sample	Sample ID <u>EB0616</u>			
Sampling Location <u>Grou</u>	ndwater Monitor	ing Well End of ded	icated sam	pling tube		
Technical Procedure Ref	erence(s) <u>TP-1.</u>	1-6A, TP-1.2-20, TP	-1.2-23	The Party		
Type of Sampler <u>Pump C</u>	mundfos and QE	D-Bladder An Pe	istallic R	mp		
Date 6/6/2016		Time	530			
Media Water	1	Station _L	4W-11	LMW-B		
Sample Type: grai	2	time composite		space composite		
Sample Acquisition Meas	urements (depth	n, volume of static w	ell water a	nd purged water, etc.)		
SWL-NA	1			1		
Screen Interval - NA	1					
Sand Pack Interval – NA			1			
Packer Depth – NA		and the second second				
Field Measurements on S SEE FIELD PARAMETE	ample (pH, cond RS SHEET	luctivity, etc.)				
Aliquot Amount 3 – 40 mL	Analysis VOA	Container VOA Vial	niguna ana niguna ang nigina ang	Preservation / Amount HCl		
Aliquot Amount 3 - 40 mL 1 - 500 mL	Analysis VOA Total Metals	Container VOA Vial HDPE	40 januar - 1 10 januar - 10 j	Preservation / Amount HCl HNO3 (non)		
Aliquot Amount <u>3 – 40 mL</u> <u>1 – 500 mL</u> 1 – 500 mL	Analysis VOA Total Metals Dissolved Metals	Container VOA Vial HDPE etals HDPE		Preservation / Amount <u>HCl</u> HNO3 (non) HNO3 (filter)		
Aliquot Amount 3 - 40 mL 1 - 500 mL 1 - 500 mL 4 - 500 mL, $2 - 40 mL$	Analysis VOA Total Metals Dissolved Me TPH-HCID	Container VOA Vial HDPE tals HDPE Glass Amber, VOA	A Vial	Preservation / Amount <u>HCl</u> <u>HNO3 (non)</u> <u>HNO3 (filter)</u> HCl		

SIDS 0616.docx

Well ID @ LMW-8	
Date 6/6/2016	
Time Begin Purge <u>N/A</u>	22
Time Collect Sample 1530	_

Water Level feet bmp	Time	Volume Purged	рH	Conductivity uS/cm	Temp. ℃	DO ma/L	Turbidity NTU	Eh Reim V
			pr1			and a second	3	
		Net				-310 -310	SA:	
	<u> </u>	210 2107						
							<u> </u>	5 5
· · · · · · · · · · · · · · · · · · ·		23		·		<u> </u>		
			la.					
					X			
			<u> </u>			5-20°		
7.						H.		
				U)			=	-
		2			6 n			
			=			-		
/								

Comments:

Collected EB through hising (and filter (0.45 mm) for dissolved metals) using 145 provided "VOC Free" DEwater.

Sampler's Initials MR/ JCM

Golder Associates

Plant/Site Landsburg Mi	ine Site	Project No. <u>923-1000-002</u>				
Site Location Ravensdal	e, WA	Sample ID <u>LMW-9-0616</u>				
Sampling Location <u>Grou</u>	undwater Monitorir	ng Well End of dedicated	l sampling tube			
A LANKED CO			Nav Viet Viet			
Technical Procedure Re	ference(s) <u>TP-1.4-</u>	<u>6A, TP-1.2-20, TP-1.2-2</u>				
Type of Sampler <u>Pump</u>	Grundfos_and Dedic	cated Tubing				
Date 61612016		Time <u>1340</u>				
Media Water		Station <u>LMW-9</u>				
Sample Type: gra	<u>ıb</u>	time composite	space composite			
Sample Acquisition Mea	surements (depth,	volume of static well wa	ater and purged water, etc.)			
SWL - 100-24' ft below	TOC (PVC at black	k notch) (bottom at 159 f	t bgs, 2-in casing)			
Screen Interval - 149-159	9 ft bgs PVC st	ickup: 2.86 ags				
Sand Pack Interval - 143	.5-159 ft bgs (8-in h	nole) (~11.4 gal/sand pa	ck)			
Packer Depth - NA (~1)	0.2 gal/casing vol)	(~21.6 gal/total w	vell vol)			
Field Measurements on S	Sample (pH, condu	ctivity, etc.)				
SEE FIELD FARAIMET	<u>2K5 SHEET</u>					
			- 19 Q Q _ 0 F			
Aliquot Amount	Analysis C	ontainer	Preservation / Amount			
<u>-40 mL</u>	VOA	VOA Vial	<u>HCl</u>			
<u>1 – 500 mL</u>	Total Metals	HDPE	HNO3 (non)			
<u>1 – 500 mL</u>	Dissolved Meta	als HDPE	HNO3 (filter)			
<u>4 – 500 mĽ, 2 – 40 mĽ</u>	TPH-HCID	Glass Amber, VOA Vial	HCI			
Sampler (signature)	a. 120-	Date <u>6/6/</u>	2016			
Supervisor (signature)	2000-	Date U~	U TULESA same same			

Gold Gold

SIDS 0616.docx

Well ID LMW-9

Date <u>6/6/7שונה</u> Time Begin Purge <u>1258</u>

Time Collect Sample 1340

					(pH)			
Water Level feet bmp	Time	Volume Purged	pН	Conductivity uS/cm	Temp. ℃	DO mg/L	Turbidity NTU	Eh Rel mV
100.24	1305	/	1	/		/	_	1
100.32*	1326		6.99	715	12.0	0.22	3,45	(1)168.6
100.311	1325		6.98	713	11.B	0.17	1.57	(+)(B9,45
106.351	1330		ଜ୍ୟ	712	11.0	0.17	0.76	(4)162.6
100.331	1335		6.97	710	11.8	0.15	1-36	⁽⁺⁾ 150.8
100.33'	1340		6.47	708	11.9	0.17	6.65	⁽⁺⁾ 148.1
					_	1	-	
						- 7		
					0			
				-	6.14			
					2.5		-	
					_		-	
				2			·	

Comments:

PJD = 0.0 ppm
Gnundfos: 259 Hz

$$\frac{5gal}{2.75min} = 1.81 \text{ gpm} \Rightarrow \frac{21.6 \text{ gal/well volume}}{1.81 \text{ gpm}} = 11.9 \text{ min/well volume}$$

 $*3 \Rightarrow \cdot \cdot \cdot 36 \text{ minute puzze time}$
 $volumes$

Sampler's Initials_Martica

Plant/Site Landsburg]	Mine Site	Project No.	923-1000-002				
Site Location Ravense	lale, WA	Sample ID	Sample ID LMW-10-0616				
Sampling Location <u>G</u>	d sampling tube						
Technical Procedure I	Reference(s) <u>TP-1.</u>	4-6A, TP-1.2-20, TP-1.2-2	23				
Type of Sampler <u>OEE</u>	Bladder	and the second					
Date 6/8/2016			F				
Media Water		Station LMW-1	10				
Sample Type: g	rab	time composite	space composite				
SwL - 0.64' ft belo	easurements (dept	h, volume of static well w ttom at 289 ft bgs, 4-in cas	ater and purged water, etc.)				
Screen Interval - 267-2	89 ft bgs PVC	stickup: 3.12 ags					
Sand Pack Interval - 25	58-289 ft bgs (9-in l	nole) (~18.2 gal/sand pack	k)				
Packer Depth – NA (-	-191 gal/casing vol)	(~209 gal/total w	ell_vol)				
Sample Description <u>P</u>	50=0.0pm; (L	ecrying abor 1					
Field Measurements o SEE FIELD PARAME	n Sample (pH, con TERS SHEET	ductivity, etc.)					
Aliquot Amount	Analysis	Container	Preservation / Amount				
<u>3 – 40 mL</u>	VOA	VOA Vial	<u> </u>				
1 – 500 mL	Total Metals	HDPE	HNO3 (non)				

1 - 500 mLDissolved Metals HDPEHNO3 (filter)4 - 500 mL; 2 - 40 mLTPH-HCIDGlass Amber, VOA VialHCI

Sampler (signature) Date ____ 618/2016 6-Date Supervisor (signature) MERT DAVIN & MEY

Golder & Joursey

SIDS 0616.docx

Well ID LMw-10

Date 6/8/2016

Time Begin Purge 0928

Time Collect Sample 1005

					(PH)			
Water Level feet bmp	Time	Volume Purged	pН	Conductivity uS/cm	Temp. °C	DO mg/L	Turbidity NTU	Eh Rel mV
	oqyo		8.64	386	10.9	0.02	0.66	(+)275.4
5,431	6945	~4.0gal	9.62	365	10.9	0.05	0.76	⁽⁺⁾ 214.3
5.68'	Ø 950	~ 5.25 941	8.61	384	11.1	6.05	0,63	(+) 140.2
6.681	0955	~65gal	8.60	382	11.1	0.00	0.76	⁺⁾ 76,8
8-191	1000	~B.0.9al	8.63	381	11.1	0.03	1911	⁽⁺⁾ 51.8.
		=					125	
	×							
=								
					5			
		ļ			· · · ·			
						1		

Comments:

PID = 0.0 ppm N2Reg_labor; 110psi (unhaller: 60psi CycleID: 2CPM IO# 50 (20/20) RugeRate:~840ml/min

Sampler's Initials Amedoca
SAMPLE INTEGRITY DATA SHEET

Technical Procedure Reference(s) <u>TP-1.4-6A, TP-1.2-20, TP-1.2-23</u> Type of Sampler <u>Pump Grundfos and QED Bladder</u> Date <u>6/6/2016</u> Time <u>1035 /1045 (File Depuester</u>) Media <u>Water</u> Station LMW-11 Sample Type: grab time composite space composit Sample Acquisition Measurements (depth, volume of static well water and purged water, etc.) SWL - 150, QB ft below TOC (PVC) (bottom at 707 ft bgs. 4-in casing) @ 0420 Screen Interval - 696-707 ft bgs PVC stickup: 2.37 ares 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) Packer Depth - NA (~360.4 gal/casing vol) (-371.6 gal/total well vol) Sample Description PID = 0.0 gpow Sample Description PID = 0.0 gpow (No scoord); (Leor;	MIS 101281 ST. 20	1 .000 1.000	Sugara Lens	VI The
Type of Sampler Pump Grundfos and OED Bladder Date 6/6/2016 Time 1035 / 1045 (1645 (File Depuezee Media Water Sample Type: grab time composite space composit Sample Acquisition Measurements (depth, volume of static well water and purged water, etc.) SWL - 158,09 ft below TOC (PVC) (bottom at 707 ft bgs, 4-in casing) @ 0428 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 (Dom (Maccdor); (Leor.;	Technical Procedure Re	ference(s) <u>TP-1.4-</u>	6A, TP-1.2-20, TP-1.2-23	The second second
Date	Type of Sampler <u>Pump (</u>	Grundfos and QED	Bladder	(2010-21)
Media Water Station LMW-11 Sample Type: grab time composite space composit Sample Acquisition Measurements (depth, volume of static well water and purged water, etc.) SWL - 158, 4 ft below TOC (PVC) (bottom at 707 ft bgs, 4-in casing) @ 0420 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 (pom (Nessdor)); (Leo-; Iteo-; Field Measurements on Sample (pH, conductivity, etc.)	Date <u>6/6/2016</u>	C. LANSING	Time <u>1035 /10</u>	45 (Field Deplease
Sample Type: grab time composite space composit Sample Acquisition Measurements (depth, volume of static well water and purged water, etc.) SWL - 458.49 ft below TOC (PVC) (bottom at 707 ft bgs, 4-in casing) @ 64249 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 (Ne cobm); (1eor; Field Measurements on Sample (pH, conductivity, etc.)	Media Water	Real Contraction	Station <u>LMW-11</u>	2 PL
Sample Acquisition Measurements (depth, volume of static well water and purged water, etc.) SWL - 458.49 ft below TOC (PVC) (bottom at 707 ft bgs, 4-in casing) @ 0420 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 (00 (00 (No color-)); (100-; Field Measurements on Sample (pH, conductivity, etc.) SEE FIELD PARAMETERS SHEET Aliquot Amount Analysis Container Preservation / Amour 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) Occul Culture Date 6 (6 (2016)	Sample Type: gra	1 <u>b</u>	time composite	space composit
SWL - 158,02 ft below TOC (PVC) (bottom at 707 ft bgs. 4-in casing) 20 0420. 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) Sample Description PTD = 0.0 (0.0 (No endor -)); (1eor; Field Measurements on Sample (pH, conductivity, etc.)	Sample Acquisition Mea	surements (depth,	volume of static well wate	r and purged water, etc.)
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) Sample Description PID = 0.0 ppm (No obor); (1eor; Field Measurements on Sample (pH, conductivity, etc.)	SWL - 158.99 ft below	TOC (PVC) (botto	m at 707 ft bgs, 4-in casin	g) @ 0928
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 = O.O (O	Screen Interval – 696-707	7 ft bgs PVC sti	ickup: 2.37 ags Outer met	al Casing: 2.70 ags
Packer Depth – NA (~360.4 gal/casing vol) (-371.6 gal/total well vol) Sample Description PID = Ø. Ø @ @ (No exdor); (Ne exdor); (Ne exdor); (Ne exdor); Field Measurements on Sample (pH, conductivity, etc.)	Sand Pack Interval - 688-	<u>-707 ft bgs (8-in ho</u>	le) (~11.2 gal/sand pack)	and and a state of the
Sample Description PID = O.O (Down (Noredor); (Yeor; Field Measurements on Sample (pH, conductivity, etc.) SEE FIELD PARAMETERS SHEET Aliquot Amount Analysis Container Preservation / Amount 3 - 40 mL VOA VOA 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)	Packer Depth – NA (~30	60.4 gal/casing vol)	(~371.6 gal/total v	vell_vol)
Field Measurements on Sample (pH, conductivity, etc.) SEE FIELD PARAMETERS SHEET Aliquot Amount Analysis Aliquot Amount Analysis 2 - 40 mL VOA VOA VOA VOA Vial HCl 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)				the second se
Aliquot Amount Analysis Container Preservation / Amount 3 - 40 mL VOA 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) Description Date 6 (6 (2016)	Sample Description <u>Pro</u>	>=0.0pm (No	odor); (leor;	
3-40 mL VOA VOA 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)	Sample Description <u>Pro</u> Field Measurements on S SEE FIELD PARAMETH	ک= ۵۰،۵ رومبر (۲۸۵ Sample (pH, condu ERS SHEET	ctivity, etc.)	
Server mill VOR VOR Vial Mod 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) Outoffedult Date 6/6/2016	Sample Description <u>Pro</u> Field Measurements on S SEE FIELD PARAMETH	Sample (pH, condu ERS SHEET	ctivity, etc.)	Preservation / A moun
1 - 500 mL Dissolved Metals HDPE HNO3 (filter) 4 - 500 mL, 2 - 40 mL TPH-HCID Glass Amber, VOA Vial HCl Sampler (signature)	Sample Description <u>Pro</u> Field Measurements on S <u>SEE FIELD PARAMETH</u> Aliquot Amount 3 – 40 mL	Sample (pH, condu ERS SHEET Analysis C	ctivity, etc.)	Preservation / Amoun
<u>4-500 mL, 2-40 mL TPH-HCID Glass Amber, VOA Vial HCl</u> Sampler (signature) <u>Our Todul</u> Date <u>6(6(2016</u>	Sample Description <u>Pro</u> Field Measurements on S <u>SEE FIELD PARAMETH</u> Aliquot Amount <u>3 - 40 mL</u> 1 - 500 mL	Sample (pH, condu ERS SHEET Analysis C VOA	ctivity, etc.) ontainer VOA Vial	Preservation / Amoun HCl HNO3 (non)
Sampler (signature) <u>Ocu If del</u> Date <u>6/6/2016</u>	Sample Description <u>Pro</u> Field Measurements on S <u>SEE FIELD PARAMETH</u> Aliquot Amount <u>3 - 40 mL</u> <u>1 - 500 mL</u> <u>1 - 500 mL</u>	Sample (pH, condu ERS SHEET Analysis C VOA Total Metals	ctivity, etc.) ontainer VOA Vial HDPE	Preservation / Amoun HCl HNO3 (non) HNO3 (filter)
Sampler (signature) <u>Auffidul</u> Date <u>6/6/2016</u>	Sample Description <u>Pro</u> Field Measurements on S <u>SEE FIELD PARAMETH</u> Aliquot Amount <u>3 - 40 mL</u> <u>1 - 500 mL</u> <u>1 - 500 mL</u> <u>4 - 500 mL</u> , <u>2 - 40 mL</u>	Sample (pH, condu ERS SHEET Analysis C VOA Total Metals Dissolved Meta TPH-HCID	ctivity, etc.) ontainer VOA Vial HDPE ils HDPE Glass Amber, VOA Vial	Preservation / Amoun HCl HNO3 (non) HNO3 (filter) HCl
	Sample Description <u>Pro</u> Field Measurements on S <u>SEE FIELD PARAMETH</u> Aliquot Amount <u>3 - 40 mL</u> <u>1 - 500 mL</u> <u>4 - 500 mL</u> , <u>2 - 40 mL</u>	Sample (pH, condu ERS SHEET Analysis C VOA Total Metals 1 Dissolved Meta TPH-HCID (ctivity, etc.) ontainer VOA Vial HDPE Ils HDPE Glass Amber, VOA Vial	Preservation / Amoun HCl HNO3 (non) HNO3 (filter) HCl

and and and and

SIDS 0616.docx

Golder Associates Inc.

FIELD PARAMETERS SHEET

(off)

Well ID LMW-11

Date 6/6/2016

Time Begin Purge 0915 (Grundbor / 1000 (Bladder Pump)

Time Collect Sample 1035/1045 (Field Duplicate)

Water Level	Time	Volume Purged	рН	Conductivity	Temp. ℃	DO ma/L	Turbidity NTU	Eh Rel mV
158.06	1008		1.73	521	12.7	6.56	3,99	(+)164.9
158.071	1013		7.30	562	12.4	1.26	1.87	±×141.5
158.04	(018		7.24	564	12.1	Ø.68	1.02	P128.1
158.03'	1023		7.30	572	12.2	Ø.51	Q.85	(H)125.2
158.07	1028		7.30	576	12.1	0.41	0.88	(⁺⁾ 121.6
158.00	1033		7.26	578	12.1	0.33	0.99	(+)119.0
		9 J						
								1
			· · · · ·				× 6	E
		-		s - 5		4		
					A 1 A A			
. <u> </u>						-		

Comments:

0915-Start pump (Grundros) @ 0915,~170'bloc-; 300.0Hz puge rule ~ 0.07 gpm Ly dealed rate up to 305Hz puge to get closer to ~ 1.25 gpm; or Sgudlowt 4 minutes , 1000- Stort blodder pump after ~ 45 minutes (PED=0.0 ppm)

N2 Tank: Tank: 110 psi (autoder/throuble, 110 psi (yole ID: 1 CPM ID= 30 (30500/30500) Rate: ~375 mbo/min

Sampler's Initials Im form

Golder Associates

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



TECHNICAL MEMORANDUM

Date: July 14, 2016

To: Bill Kombol

Project No.:923-1000-002.R273Company: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.

landsburg-bbs5-dusr-jsy.docx



Golder Associates: Operations in Africa, Asia, Australasia, Europe, North America and South America

Golder, Golder Associates and the GA globe design are trademarks of Golder Associates Corporation

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.

2

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.

3

- 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 1Sample Collection and Analysis SummaryTable 2Qualifier 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

								Ana	alyses	
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	-	Х	Х	Х	Х
BBS5	LMW-11-0616-D	6/6/2016	LMW-11	BBS5B / BBS5Q	Water	FD (LMW-11-0616)	Х	Х	Х	Х
BBS5	LMW-9-0616	6/6/2016	LMW-9	BBS5C / BBS5R	Water	-	Х	Х	Х	Х
BBS5	LMW-8-0616	6/6/2016	LMW-8	BBS5D / BBS5S	Water	-	Х	Х	Х	Х
BBS5	EB0616	6/6/2016	LMW-8	BBS5E / BBS5T	Water	EB (LMW-8-0616)	Х	Х	Х	Х
BBS5	LMW-3-0616	6/7/2016	LMW-3	BBS5F / BBS5U	Water	-	Х	Х	Х	Х
BBS5	LMW-5-0616	6/7/2016	LMW-5	BBS5G / BBS5V	Water	-	Х	Х	Х	Х
BBS5	LMW-6-0616	6/7/2016	LMW-6	BBS5H / BBS5W	Water	-	Х	Х	Х	Х
BBS5	LMW-7-0616	6/7/2016	LMW-7	BBS5I / BBS5X	Water	-	Х	Х	Х	Х
BBS5	LMW-10-0616	6/8/2016	LMW-10	BBS5J / BBS5Y	Water	-	Х	Х	Х	Х
BBS5	LMW-2-0616	6/8/2016	LMW-2	BBS5K / BBS5Z	Water	-	Х	Х	Х	Х
BBS5	LMW-4-0616	6/8/2016	LMW-4	BBS5L / BBS5AA	Water	MS/MSD Volume	Х	Х	Х	Х
BBS5	TripBlank060616	6/6/2016	-	BBS5M	Water	TB	Х			
BBS5	TripBlank060716	6/6/2016	-	BBS5N	Water	TB	Х			
BBS5	TripBlank060816	6/6/2016	-	BBS50	Water	TB	Х			

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	
BBS5	LMW-9-0616	Bromotorm	-	-	UJ	CCAL out of control low
DDOO	LIVIV-9-0616	CFC-113	-	-	UJ	
DDOO	LIVIV - 0-0010	Minul Chlorido	-	-	00	
BBS5	LMW-8-0616	Vinyl Chloride	-	-	03	CCAL out of control low
BBS5	LIVIV-8-0616	2-Chloroothylyinylothor	-	-	00	CCAL out of control low
BBS5	LMW-8-0616	Bromoform	-		111	CCAL out of control low
BBS5	LMW-8-0616	CEC-113	-		11.1	CCAL out of control low
BBS5	LMW-8-0616	Bromomethane	-	_	11.1	CCAL out of control low
BBS5	LMW-8-0616	Vinyl Chloride	-		11.1	CCAL out of control low
BBS5	LMW-3-0616	Vinyl Acetate	-	-		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	Vinvl 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	Vinyi Chioride	-	-	UJ	CCAL out of control low
BBS5	LMW-10-0616	Vinyl Acetate	-	-	UJ	
BBS5	LIVIV-10-0616	2-Chioroethylvinylether	-	-	UJ	
DDOO	LIVIV-10-0616	Bromororm	-	-	UJ	CCAL out of control low
DDOO	LIVIV-10-0616	Bromomothono	-	-	00	
BBS5	LMW-2-0616	Vipyl Chloride	-		00	CCAL out of control low
BBS5	LMW-2-0616	Vinyl Acetate	-	-	111	CCAL out of control low
BBS5	LMW-2-0616	2-Chloroethylyinylether	-		111	CCAL out of control low
BBS5	LMW-2-0616	Bromoform	-	-	U.I	CCAL out of control low
BBS5	LMW-2-0616	CEC-113	-	-	UJ	CCAL out of control low
BBS5	LMW-4-0616	Bromomethane	-	-	UJ	CCAL out of control low
BBS5	LMW-4-0616	Vinvl Chloride	-	-	UJ	CCAL out of control low
BBS5	LMW-4-0616	Vinyl Acetate	-	-	UJ	CCAL out of control low
BBS5	LMW-4-0616	2-Chloroethvlvinvlether	-	-	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	lodomethane	-	-	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

Review	ing Company: <u>Golder Associates – Redmond</u>		Proje	ect Mana	ger: _Gary Zimmerman	
Project	Name: Landsburg Groundwater 2016-06		Proje	ect Num	ber: <u>923-1000-002.R273</u>	
Review	er: Jason Yabandeh	Valid	Validation Date: July 13, 2016			
Review	ed by: Jill Lamberts		Revi	ew Date	: July 20, 2016	
Laborat	ory: Analytical Resources, Inc (Tukwila, WA)		SDG	;#: <u>BB</u>	S5	
Analytic	al Method (type and no.): <u>See Table 1</u>					
Matrix:	🗌 Air 🔲 Soil/Sed. 🛛 Water 🗌 Waste	0	ther			
Work P	lan or QAPP reference: <u>Draft Interim Groundwater N</u>	<u>/Ionito</u>	ring Plan, L	<u>_andsbu</u>	rg Mine Site (Golder 1997).	
Applica	ble Data Validation Guidance: National Functional G	uidelir	nes for Org	anic and	Inorganic Review (USEPA 2014).	
Sample	e Information: See Table 1 (attached)					
Field/C	OC Information	YES	NO	NA	COMMENTS	
a)	Sampling dates noted?	\boxtimes				
b)	Sampling team indicated?	\boxtimes				
c)	Sample location noted?	\boxtimes				
d)	Sample type indicated (grab/composite)?	\boxtimes			Grab	
e)	Field QC noted?	\bowtie				
f)	Field parameters collected (note types)?	\bowtie			pH, temp, conductivity, turbidity, DO, ORP	
g)	Was the COC signed by both field and laboratory personnel?	\boxtimes				
h)	Were samples received in good condition?	\boxtimes				
i)	Were the correct preservatives used?	\boxtimes				
j)	Was the sample cooler temperature within QC limits	\$?⊠			<u>1.5°C, 3.5°C, 1.6°C, 0.1°C, 1.9°C</u>	
Labora	tory Case Narrative					
a)	Does the laboratory narrative indicate deficiencies?	\boxtimes			See notes 2, 3, 4, and 6	
Note D	eficiencies:					
These i	ssues are addressed in the appropriate sections belo	w.				
Genera	I (reference QAPP or Method)	YES	NO	NA	COMMENTS	
a)	Was the correct method used?	\boxtimes				
b)	Were hold times met for sample pretreatment?	\bowtie				
c)	Were hold times met for sample analysis?	\bowtie				
d)	Were appropriate reporting limits achieved?	\boxtimes				
e)	Were any sample dilutions noted?		\boxtimes			
f)	Were any matrix problems noted?		\boxtimes			

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

d)	Checked for transcription errors?	\boxtimes		
e)	Do target analytes fall within calibration ranges?	\boxtimes		
f)	Data are acceptable and usable except as noted?	\boxtimes		

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

 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	lodomethane	High

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

V:\PROJECTS_1992 PROJECTS\923-1000\GW_DATA & Reports\2016\2016-06\Draft Report\Appendix C - DV\Landsburg-BBS5-DV-JSY.docx

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