July 29, 2019 Project No. 923-1000.005.2019

Mr. Bill Kombol
Landsburg PLP Group
31407 Highway 169
PO Box 10
Black Diamond, WA 98010

LANDSBURG MINE SITE INTERIM GROUNDWATER MONITORING REPORT MAY 2019 SAMPLING

Dear Bill,

Golder Associates Inc. (Golder) completed a quarterly interim groundwater monitoring event at the Landsburg Mine Site during May 2019. 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, LMW-11, LMW-12, LMW-13R, LMW-14 and LMW-15 (Figure 1). Figure 2 presents a cross-section along the strike at the coal seam that also depicts the location of the monitoring wells. Monitoring wells LMW-2, LMW-4, LMW-10, LMW-12 and LMW-13R are completed to monitor shallow, middle, and deeper zones within the north end of the Rogers Coal Mine subsidence trench. Monitoring wells LMW-3, LMW-5, LMW-8, LMW-9, LMW-11, LMW-14 and LMW-15 are completed to monitor shallow, middle and deeper zones along the southern half of the Rogers Coal Mine. LMW-14 was installed in April 2019 as a dual-purpose south sentinel well and to provide groundwater elevation data at a location immediately south of the trench areas that will be backfilled and capped as part of the Site remedial action. This sampling round is the first groundwater samples collected from LMW-14 since the well drilling and installation was completed. 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 *Compliance Monitoring Plan, Landsburg Mine Site* (Ecology 2017)[1], and included the following activities:

- Measurement of static water levels at monitoring wells.
- Well purging with the dedicated pumping systems installed in each well to ensure sample representativeness.

[1] Washington State Department of Ecology (Ecology). 2017. Exhibit D of the Consent Decree – Compliance Monitoring Plan Landsburg Mine Site MTCA Remediation Project, Ravensdale, Washington. Prepared by Golder Associates Inc. June 7.

- Measurement of field parameters including: pH, specific conductance, temperature, dissolved oxygen, oxidation-reduction potential (ORP) and turbidity.
- Collection of representative samples in appropriate containers provided by the analytical laboratory.
- Analyses of groundwater samples for volatile organic compounds (VOCs; United States Environmental Protection Agency [EPA] Method 8260C), 1,4-Dioxane (EPA Method 8270D), pollutant metals (EPA Method 6010C/200.8/7470A Series), and a petroleum hydrocarbon identification scan (NWTPH-HCID).

Appendix A presents the laboratory analytical reports for all analyses. Field sampling activities were documented on Sample Integrity Data Sheets (SIDS). Copies of the completed SIDS are provided in Appendix B. Appendix A provides the data validation report with added data qualifiers noted. Table 1 presents depth to groundwater measured on May 20, 2019 and calculated static water level elevations.

Following sample collection, all bottles were sealed, labeled, and placed in an iced cooler until delivery to the laboratory. Groundwater samples were transported under chain-of-custody procedures to Analytical Resources Incorporated (ARI), of Tukwila, Washington, for analyses.

The laboratory data packages underwent data validation. Items of note are provided in a validation memorandum in Appendix A. In general, data were found to be acceptable with minor qualification. Acetone was detected in several of the samples including the trip blank. Investigation by laboratory indicated that some of the preserved sampling vials they provided contained acetone contamination. All acetone detections were rejected during data validation. Data qualifiers are defined, and all data qualifiers assigned under the data validation process are presented in the Appendix A data validation memorandum.

Table 2 presents the field parameter measurements and laboratory analytical results for each groundwater sample. Laboratory analyses did not detect any total petroleum hydrocarbon in any of the groundwater samples.

The only parameters detected in groundwater samples above the reporting limit during this sampling event were metals, benzene, carbon disulfide, 1,1-dichloroethane, ethylbenzene, toluene, xylenes, and 1,4-dioxane. Of these detections, only 1,4-dioxane was detected at a concentration exceeding cleanup levels. As described below metals concentrations detected were consistent with previous rounds and typical of concentrations detected in groundwater from coal mines.

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 2019 sampling event are similar to concentrations detected during the RI (Golder 1996)[3] and the Interim Groundwater Sampling events previously conducted at the Site.

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

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

The groundwater sample from the deep well (LMW-11) contained total arsenic at a concentration of 10.4 µg/L (0.0104 mg/L), which is equivalent to the Washington State primary drinking water MCL (10 µg/L) and greater than the MTCA Method A groundwater cleanup level (5 µg/L). Arsenic 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. The groundwater sample from the south sentinel well LMW-15 (located near LMW-11) contained total arsenic at a concentration of 3.4 µg/L (0.0034 mg/L), which is less than the MCL (10 µg/L) and less than the MTCA Method A groundwater cleanup level (5 µg/L). Arsenic was not detected in any other Site wells.

Carbon disulfide was detected in LMW-10 (0.11 µg/L) and LMW-15 (0.94 µg/L). All detected concentrations of carbon disulfide are considerably lower than the MTCA Method A groundwater cleanup level of 800 µg/L. Carbon disulfide has been detected at these low levels in Site groundwater in previous sampling events. The detection of carbon disulfide is attributed to being present in the coal bed material as a natural constituent.

1,1-Dichloroethane (1,1-DCA) was detected in LMW-12 at a concentration of 0.27 µg/L. The detected concentration is consistent with previous concentrations of 1,1-DCA detected in LMW-12 and are significantly less than the MTCA Method B groundwater cleanup level of 7.68 µg/L.

Trace concentrations of benzene, ethylbenzene, toluene and xylenes were detected in LMW-14. All detections were at least 10 times lower than their respective MTCA Method A groundwater cleanup levels.

1,4-Dioxane was detected in LMW-2 (1.5 µg/L), LMW-4 (2 µg/L), and LMW-12 (1.4 µg/L). The MTCA Method B groundwater cleanup level for 1,4-dioxane is 0.438 µg/L. 1,4-dioxane was initially detected in LMW-2 and LMW-4 in the November 2017 sampling event, which is the first sampling round that included analysis of 1,4-dioxane at the Site. 1,4-dioxane concentrations detected are consistent with historic concentrations detected at the Site since November 2017. 1,4-dioxane is detected in LMW-12 at low concentrations but has not been detected in LMW-13R. 1,4-Dioxane has not been detected in any other Site monitoring wells. The 1,4-dioxane detection is being addressed by the Group in cooperation with Ecology.

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

Sincerely,

Golder Associates Inc.

Joseph Xi
Senior Project Engineer

Gary Zimmerman
Principal

JX/GZ/sb

Attachments: Table 1: Groundwater Elevation Data Collection May 20, 2019 Landsburg Mine Site
Table 2: May 2019 Groundwater Analytical Results Landsburg Mine Site
Figure 1: Groundwater Monitoring Locations
Figure 2: Cross-Section along Strike at Coal Seam
Appendix A: Laboratory Analytical Reports Data Validation and Quality Assurance / Quality Control Review Memorandum and May 2019 Laboratory Analytical Report
Appendix B: Sample Integrity Data Sheets (SIDS)

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Tables

Table 1: Groundwater Elevation Data Collection May 20, 2019 Landsburg Mine Site

	UNITS	LMW-1	LMW-2	LMW-3	LMW-4[1]	LMW-5	LMW-6	LMW-7[1]	LMW-8	LMW-9	LMW-10	LMW-11	LMW-12	LMW-13R	LMW-14[1]	LMW-15	LMW-20	LMW-21	LMW-22
Water Depths																			
Time of data collection		11:04 AM	10:33 AM	8:53 AM	10:30 AM	9:04 AM	10:50 AM	9:37 AM	9:09 AM	8:35 AM	10:36 AM	11:40 AM	10:16 AM	10:20 AM	11:25 AM	11:33 AM	9:53 AM	9:50 AM	9:58 AM
Measured to Top of PVC	ft btc	140.97	7.47	12.05	8.94	13.59	24.35	208.97	4.26	99.34	0.11	157.13	9.30	9.8	159.70	151.09	15.66	10.43	11.69
Surveyed Elevation																			
Top of PVC	ft asl	765.36	617.79	656.75	619.27	658.27	632.33	771.51	646.97	743.99	618.98	802.19	625.35	625.86	805.12	796.46	546.8	544.09	542.86
Top of Monument	ft asl	766.16	618.38	657.48	619.89	658.87	633.00	771.88	NC	NC	619.10	802.51	625.49	625.91	805.14	796.61	546.92	544.36	543.13
Ground Level	ft asl	763.02	614.92	654.40	617.37	655.63	629.95	768.79	645.25	741.13	615.78	799.89	621.90	622.07	802.22	792.64	543.24	540.58	540.00
Corrected Water Elevation																			
Using PVC elevation	ft asl	**624.39**	**610.32**	**644.70**	**610.33**	**644.68**	**607.98**	**562.54**	**642.71**	**644.65**	**618.87**	**645.06**	**616.05**	**616.06**	**645.42**	**645.37**	**531.14**	**533.66**	**531.17**

Notes:
[1] Data corrected to accommodate well inclination from vertical
NA = Not applicable
NC = Data not collected
ft btc = feet below top of casing
ft btm = feet below top of monument
ft asl = feet above sea level

Table 2: May 2019 Groundwater Analytical Results Landsburg Mine Site

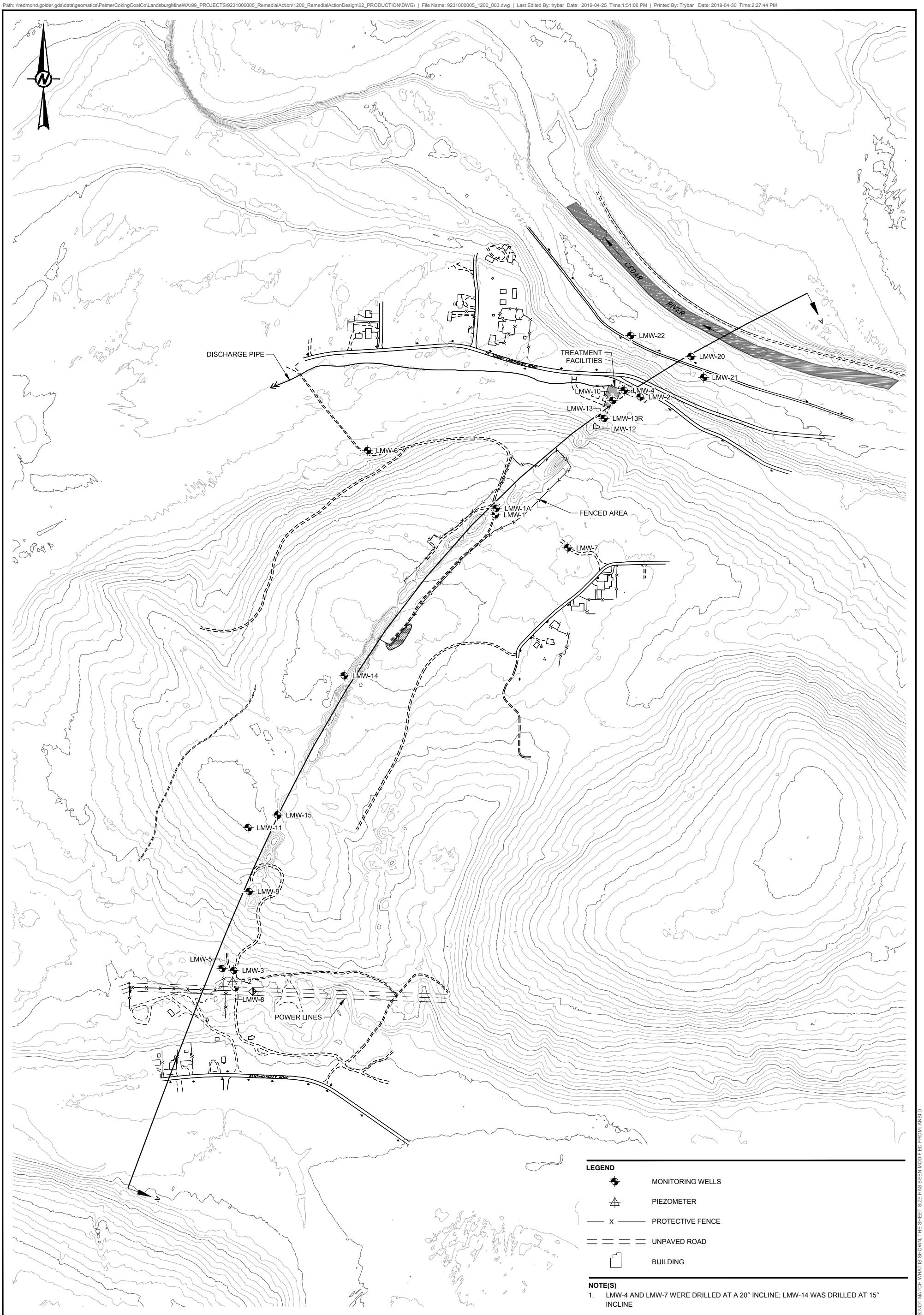
ANALYTE	UNITS	LMW-2	LMW-3	LMW-4	LMW-4 Duplicate	LMW-5	LMW-6	LMW-7	LMW-8	LMW-9	LMW-10	LMW-11	LMW-12	LMW-13R	LMW-14	LMW-15	Equipment Blank	Trip Blank
		5/22/2019	5/21/2019	5/22/2019	5/22/2019	5/21/2019	5/22/2019	5/21/2019	5/21/2019	5/21/2019	5/22/2019	5/20/2019	5/22/2019	5/22/2019	5/20/2019	5/20/2019	5/21/2019	5/20/2019
Field Parameter																		
Temperature	°C	10.8	10.5	10.5	-	10.6	9.4	13.0	11.1	10.2	10.4	9.8	10.1	10.2	10.0	9.5	-	-
pH	stnd	6.89	7.73	6.92	-	6.92	6.8	7.15	6.79	6.99	8.64	7.21	6.80	7.37	6.72	7.56	-	-
Conductivity	uS/cm	677	235	697	-	548	180	419	429	507	266	390	667	656	1159	356	-	-
Dissolved Oxygen	mg/L	0.50	0.52	0.53	-	0.48	0.57	0.59	0.53	0.69	0.52	0.78	0.54	0.57	0.88	0.82	-	-
E_h	Rel mV	-109.8	-72.6	-120.5	-	-121.3	-55.3	-77.5	-103.7	-67.4	-210.4	-137.1	-105.8	-157.0	-78.9	-157.2	-	-
Turbidity	NTU	0.31	0.49	0.64	-	0.16	1.95	3.71	3.77	2.48	0.84	0.77	4.11	1.29	1.59	7.15	-	-
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	1 U	1 U	1 U	1 U	NA
Antimony	mg/L	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.0031 U	NA
Arsenic	mg/L	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	**0.0104**	0.003 U	0.003 U	0.003 U	**0.0034**	0.0031 U	NA
Barium	mg/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	NA
Beryllium	mg/L	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	NA
Cadmium	mg/L	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	NA
Calcium	mg/L	**109**	**36.3**	**108**	**110**	**89.3**	**27.2**	**47.1**	**64**	**80.9**	**6.52**	**60.2**	**104**	**86.9**	**194**	**57.4**	0.5 U	NA
Chromium	mg/L	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	NA
Cobalt	mg/L	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	NA
Copper	mg/L	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	**0.0054**	NA
Iron	mg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	**2.12**	**0.931**	**14.1**	**1.49**	0.2 U	**0.615**	**16.5**	**1.56**	**11.1**	**1.91**	0.2 U	NA
Lead	mg/L	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.0103 U	NA
Magnesium	mg/L	**67.8**	**15.4**	**66.4**	**67.7**	**50.3**	**13.6**	**21.8**	**34.1**	**44.7**	**2.89**	**27.2**	**69**	**40.8**	**119**	**25.7**	0.5 U	NA
Manganese	mg/L	**0.189**	**0.0447**	**0.154**	**0.157**	**0.231**	**0.0331**	**0.107**	**0.455**	**0.173**	0.01 U	**0.174**	**0.588**	**0.051**	**0.79**	**0.366**	0.01 U	NA
Mercury	mg/L	0.00002 U	0.00002 U	0.00002 U	0.00002 U	0.00002 U	0.00002 U	0.00002 U	0.00002 U	0.00002 U	0.00002 U	0.00002 U	0.00002 U	0.00002 U	0.00002 U	0.00002 U	**0.000012 J**	NA
Nickel	mg/L	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.0145	0.01 U	0.01 U	NA
Potassium	mg/L	**3.34**	**1.6**	**3.46**	3.59 U	**2.49**	**0.649**	**2.63**	**1.8**	**2.35**	**1.2**	**2**	**3.9**	**3.35**	**6.82**	**2.4**	0.5 U	NA
Selenium	mg/L	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.0259 U	NA
Silver	mg/L	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	NA
Sodium	mg/L	**18.1**	**9.68**	**23.6**	23.8 U	**14**	**6.84**	**40.9**	**10**	**14.1**	**80.6**	**22.8**	**16.7**	**73.8**	**26.9**	**17.1**	0.5 U	NA
Thallium	mg/L	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.00207 U	NA
Vanadium	mg/L	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	NA
Zinc	mg/L	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	NA
Volatile Organic Compounds (VOCs)																		
Acetone	ug/L	2.17 R	2.77 R	5 U	62.4 R	10.5 R	2.11 R	5 U	5 U	87.1 R	5 U	5 U	5 U	5 U	39.9 R	4.92 R	5 U	**2.35 J**
Acrolein	ug/L	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Acrylonitrile	ug/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 U	1 U
Benzene	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	**0.05 J**	**0.29**	0.2 U	0.2 U	0.2 U
Bromobenzene	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Bromochloromethane	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Bromoethane	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Bromoform	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Bromomethane	ug/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 U	1 U
methyl ethyl ketone	ug/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	**4.84 J**	5 U	5 U	5 U
n-Butylbenzene	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	**0.03 J**
Sec-Butylbenzene	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
tert-butylbenzene	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Carbon Disulfide	ug/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	**0.11**	0.1 U	0.1 U	0.1 U	0.1 U	**0.94**	0.1 U	0.1 U
Carbon Tetrachloride	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Chlorobenzene	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Chloroethane	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
2-Chloroethyl vinyl ether	ug/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Chloroform	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	**0.12 J**	**0.1 J**	0.2 U	0.2 U
Chloromethane	ug/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
2-Chlorotoluene	ug/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
4-Chlorotoluene	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Dichlorodifluoromethane	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,2-Dibromo-3-Chloropropane	ug/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Ethylene Dibromide	ug/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Dibromomethane	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,2-Dichlorobenzene	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U

Table 2: May 2019 Groundwater Analytical Results Landsburg Mine Site

ANALYTE	UNITS	LMW-2	LMW-3	LMW-4	LMW-4 Duplicate	LMW-5	LMW-6	LMW-7	LMW-8	LMW-9	LMW-10	LMW-11	LMW-12	LMW-13R	LMW-14	LMW-15	Equipment Blank	Trip Blank
1,3-Dichlorobenzene	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,4-Dichlorobenzene	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Trans-1,4-Dichloro-2-butene	ug/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 U	1 U
1,1-Dichloroethane	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	**0.27**	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,2-Dichloroethane	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,1-Dichloroethene	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Cis-1,2-Dichloroethene	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Trans-1,2-Dichloroethene	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,2-Dichloropropane	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,3-Dichloropropane	ug/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
2,2-Dichloropropane	ug/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,1-Dichloropropene	ug/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Cis-1,3-Dichloropropene	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Trans-1,3-Dichloropropene	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Ethylbenzene	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	**0.27**	0.2 U	0.2 U	0.2 U
Hexachlorobutadiene	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
2-Hexanone	ug/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	5 U	5 U
Iodomethane	ug/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Cumene	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
p-Isopropyltoluene	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	**0.11 J**	0.2 U	0.2 U	0.2 U
Methylene Chloride	ug/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 U	1 U
Methyl isobutyl ketone	ug/L	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Naphthalene	ug/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
n-Propylbenzene	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Styrene	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,2,3-Trichlorobenzene	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,2,4-Trichlorobenzene	ug/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1,1,2-Tetrachloroethane	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,1,2,2-Tetrachloroethane	ug/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Tetrachloroethene	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Toluene	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	**0.05 J**	**1.9**	0.2 U	0.2 U	0.2 U
1,1,1-Trichloroethane	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,1,2-Trichloroethane	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Trichloroethene	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
CFC-113	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,2,3-Trichloropropane	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,2,4-Trimethylbenzene	ug/L	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	**0.04 J**	0.04 U
1,3,5-Trimethylbenzene	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Vinyl Acetate	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Vinyl Chloride	ug/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
m, p-Xylene	ug/L	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	**0.4 J**	0.4 U	0.4 U	0.4 U
o-Xylene	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	**0.21**	0.2 U	0.2 U	0.2 U
Total Xylenes	ug/L	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	**0.61**	0.6 U	0.6 U	0.6 U
Semi-Volatile Organic Compounds (SVOCs)																		
1,4-Dioxane	ug/L	**1.5**	0.4 U	**2 J**	**1.5 J**	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	**1.4**	0.4 U	0.4 U	0.4 U	0.4 U	NA
Hydrocarbon Identification																		
Diesel Range	mg/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	NA
Gas Range	mg/L	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	NA
Lube Oil Range	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	1 U	1 U	1 U	1 U	NA

Notes:
U - Analyte was not detected above the Reporting Limit (RL).
J - Analyte was detected above the Method Detection Limit (MDL) but below the RL.
R - Analytical result is unusable because certain data quality criteria were not met.

Figures



LEGEND

- MONITORING WELLS
- PIEZOMETER
- PROTECTIVE FENCE
- UNPAVED ROAD
- BUILDING

NOTE(S)

1. LMW-4 AND LMW-7 WERE DRILLED AT A 20° INCLINE; LMW-14 WAS DRILLED AT 15° INCLINE

0 300 600
1" = 300' FEET

CLIENT
LANDSBURG MINE SITE PLP GROUP

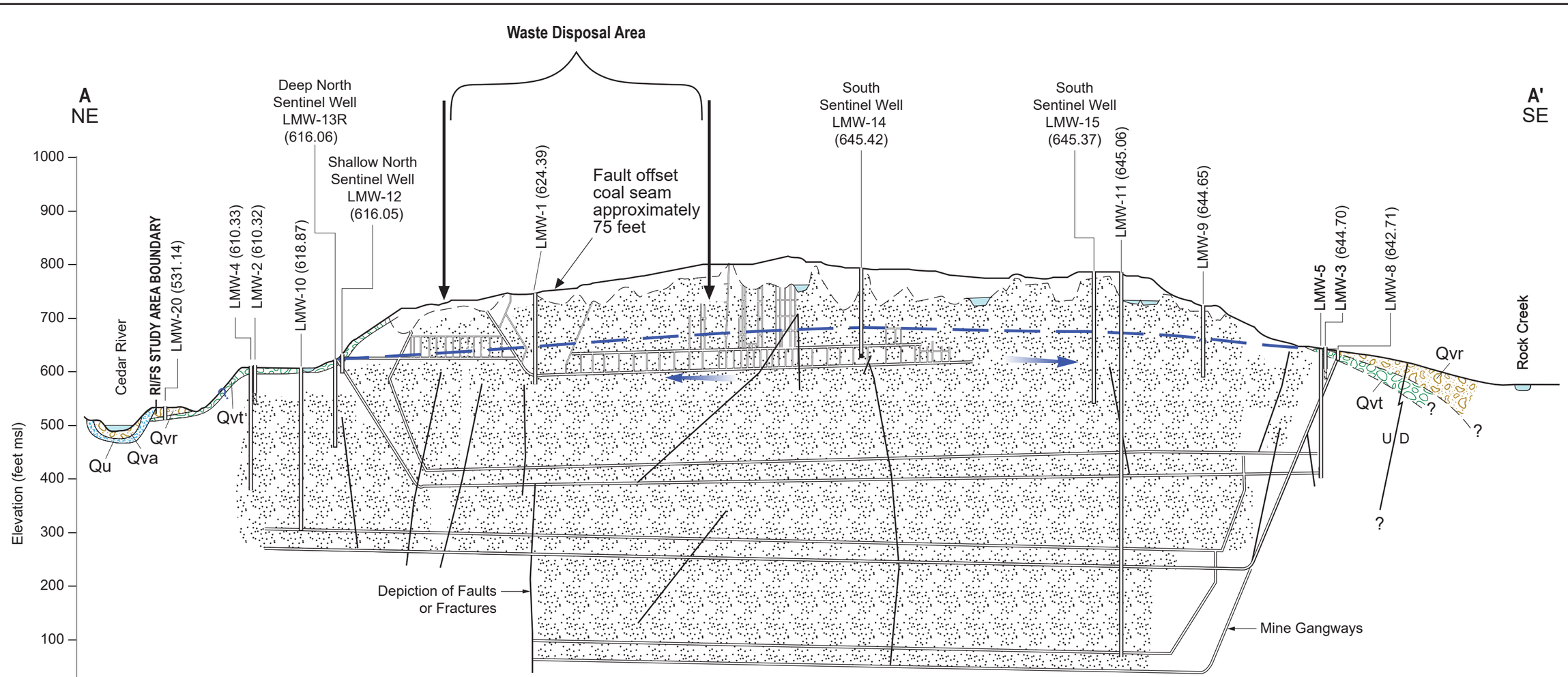
CONSULTANT
GOLDER

YYYY-MM-DD	2019-04-25
DESIGNED	XXX
PREPARED	XXX
REVIEWED	XXX
APPROVED	XXX

PROJECT
LANDSBURG MINE SITE
MTCA REMEDIAL ACTION

TITLE
SITE MAP

PROJECT NO.	PHASE	REV.	SHEET
9231000005	1200	A	1



EXPLANATION

- Potentiometric surface
- Outline of trench bottom
- LMW-2 (610.32) Well ID (water level in ft. amsl)
- Qvt Till, compact mixture of gravel occasional boulders in clayey silty sand matrix
- Sandstone
- Surface water feature
- Anticipated collapsed zone within mine
- Qu Drift, till, fluvial sand and gravel, lacustrine sand, silt, clay and peat
- Qvr Recessional outwash, well sorted sand and pebble-cobble
- Qva Advanced outwash pebble-cobble gravel may include very fine sand
- Monitoring Interval
- Groundwater Flow Direction

0 500
FEET

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

NOTE: Vertical to horizontal scale ratio is 2.5:1
Wells are project normal into the strike of the Cross-Section A-A'
Groundwater elevation obtained 5/20/2019

CLIENT: LANDSBURG PLP GROUP
CONSULTANT: GOLDER
YYYY-MM-DD: 2019-04-29
PREPARED: REDMOND
DESIGN:
REVIEW:
APPROVED:
PROJECT: LANDSBURG MINE SITE
TITLE: **CROSS-SECTION ALONG STRIKE AT COAL SEAM CROSS-SECTION A-A'**
PROJECT No.: 923-1000
PHASE: 2019
FIGURE: 2

G:\Palmer Coking Coal Co\Landsburg Mine WA\99_PROJECTS\923100000002_Ph1_Remediation\R154102_PRODUCTION\INDD\923100_002_R154_003.indd

APPENDIX A

Laboratory Analytical Reports Data Validation and Quality Assurance / Quality Control Review Memorandum and May 2019 Laboratory Analytical Report

TECHNICAL MEMORANDUM

DATE July 16, 2019 **Project No.** 923-1000-005.2019

TO Bill Kombol, Palmer Coking Coal Company

CC Gary Zimmerman

FROM Joseph XI **EMAIL Jing_Song@Golder.com**

LANDSBURG MINE SITE MAY 2019 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 from May 20, 21, and 22, 2019 at the Landsburg Mine Site in Washington (Site) as part of the Landsburg Groundwater sampling project. Samples in the laboratory sample delivery group (SDG) 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.

Fourteen water samples, 1 field duplicate sample, 1 trip blank, and 1 equipment blank were collected by Golder Associates, Inc. (Golder). Samples were analyzed by Analytical Resources Inc. of Tukwila, Washington for the following parameters:

- Volatile Organic Compounds (VOCs) following United States Environmental Protection Agency (USEPA) USEPA SW-846[1] Method 8260C, Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)
- 1,4-Dioxane following USEPA SW-846 Method 8270D, Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)
- Northwest Total Petroleum Hydrocarbons – Hydrocarbon Identification Scan by NWTPH-HCID
- Total Metals by USEPA SW-846 Method 200.8 and SW-846 6010C
- Total Mercury by USEPA SW-846 Method 7470A

Quality assurance / quality control (QA/QC) reviews of laboratory data were performed in the laboratory in accordance with the laboratory quality assurance program plan (QAPP). The data validation QA/QC review focused primarily on laboratory results and quality control data to ensure that work plan data quality objectives were met for the project.

[1] USEPA. 2015. Test methods for evaluating solid waste, physical/chemical methods (SW-846): 3rd edition, and subsequent updates, Environmental Protection Agency, National Center for Environmental Publications, Cincinnati, Ohio, accessed at URL http://www.epa.gov/epaoswer/hazwaste/test/sw846.htm

Golder Associates Inc.
18300 NE Union Hill Road, Suite 200, Redmond, Washington, USA 98052 T: +1 425 883-0777 F: +1 425 882-5498

Data validation was conducted by Informa LLC in accordance with the criteria outlined in the National Functional Guidelines for Organic Review (USEPA 2017[2]) and the National Functional Guidelines for Inorganic Review (USEPA 2017), modified to include method specific requirements of the laboratory and laboratory standard operating procedures. 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.

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

Data Qualifier Definitions

J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

J+ The result is an estimated quantity, but the result may be biased high.

U The analyte was analyzed for but was not detected.

R The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.

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

- Data package completeness assessment
- Verification of required deliverables
- Evaluation of holding times
- Laboratory narrative evaluation
- Evaluation and qualification of QC elements for surrogates, matrix spike samples, laboratory control samples, blanks (method, equipment, and trip blank) laboratory duplicate samples and field duplicate samples
- Evaluation of detection limits

Raw data and calibration elements, including GC instrument tuning and performance check, initial and continuing calibration, internal standard performance, and analyte identification, were not provided by the lab. Data review and validation was performed by an experienced QA 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. Table 2 is a summary of the qualifiers applied to the data. For details about the data validation, refer to the data validation checklist in Attachment A. The following bulleted items highlight comments and/or qualifications to specific parameters.

[2] USEPA. 2017. USEPA Contract Laboratory Program, National Functional Guidelines for Organic Superfund Methods Data Review. OLEM 9355.0-136. EPA-540-R-2017—001/002, January. Available on the Web at: https://www.epa.gov/clp/superfund-clp-national-functional-guidelines-data-review (accessed June 26, 2019)

- USEPA Method 8260C: Acetone detections (above and below the reporting limit) are rejected (R) and are not usable due to laboratory suspected acetone contamination in random VOC vials prior to sample collection. Acetone was not detected in the associated method or equipment blanks and was detected at a low level in the Trip Blank. Golder indicated that review of historical results shows that elevated acetone detections are not consistent with historical results. ARI has advised Golder to submit VOC samples in unpreserved vials until the source of the contamination has been resolved and/or corrective action has been implemented.
- EPA Methods 8260C and 7470A: Samples were qualified as non-detect (U) at the reporting limits for mercury, carbon disulfide, and 1,2,4-trimethylbenzene due to method and/or equipment blank contamination.
- EPA Method 8270D: Primary and field duplicate sample were qualified as estimated (J) for 1,4-dioxane due to field duplicate precision exceeding QAPP criteria.
- The QAPP stipulated field blank was not collected. No action was taken other than to note this.
- The QAPP stipulated matrix spike analysis was performed along with metals analysis. Matrix spike analysis was not performed along with the VOCs or SVOCs. No action is taken since adequate accuracy and precision data are provided.
- The QAPP stipulated completeness goal of 90% was achieved.

Attachments

Table 1: Sample Collection and Analysis Summary
Table 2: Qualifier Summary Table
Attachment A: Level 2A Data Validation Checklists

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Tables

Table 1: Sample Collection and Analysis Summary
Landsburg Mine Water Sampling Investigation - May 2019

						Analyses			
SDG	**Field Identification**	**Collection Date**	**Lab Identification**	**Matrix**	**QC Samples**	**VOCs (8260C)**	**SVOCs; 1,4-Dioxane (8270D)**	**GasolineTPH-HCID (NWTPH-HCID)**	**Total TAML Metals (200.8/6010C/7470A)**
19E0324	LMW-11-0519	05/20/2019	19E0324-01	GW	-	X	X	X	X
19E0324	LMW-15-0519	05/20/2019	19E0324-02	GW	-	X	X	X	X
19E0324	LMW-14-0519	05/20/2019	19E0324-03	GW	-	X	X	X	X
19E0324	LMW-9-0519	05/21/2019	19E0324-04	GW	-	X	X	X	X
19E0324	LMW-3-0519	05/21/2019	19E0324-05	GW	-	X	X	X	X
19E0324	LMW-5-0519	05/21/2019	19E0324-06	GW	-	X	X	X	X
19E0324	LMW-8-0519	05/21/2019	19E0324-07	GW	-	X	X	X	X
19E0324	EB-0519	05/21/2019	19E0324-08	WQ	EB	X	X	X	X
19E0324	LMW-7-0519	05/21/2019	19E0324-09	GW	-	X	X	X	X
19E0324	LMW-6-0519	05/22/2019	19E0324-10	GW	-	X	X	X	X
19E0324	LMW-13R-0519	05/22/2019	19E0324-11	GW	-	X	X	X	X
19E0324	LMW-12-0519	05/22/2019	19E0324-12	GW	-	X	X	X	X
19E0324	LMW-10-0519	05/22/2019	19E0324-13	GW	-	X	X	X	X
19E0324	LMW-4-0519	05/22/2019	19E0324-14	GW	-	X	X	X	X
19E0324	LMW-4-0519-D	05/22/2019	19E0324-15	GW	FD (LMW-4-0519)	X	X	X	X
19E0324	LMW-2-0519	05/22/2019	19E0324-16	GW	-	X	X	X	X
19E0324	TripBlank-0519	05/20/2019	19E0324-17	WQ	TB	X	-	-	-

Notes:
All analyses performed by Analytical Resources, Incorporated (ARI), Tukwila WA

Abbreviations:
EB - Equipment Blank
FD - Field Duplicate
QC - Quality Control
SDG - Sample Delivery Group
GW - Groundwater
TB - Trip Blank
WQ - Water Quality
MS - Matrix Spike
NWTPH - Northwest Total Petroleum Hydrocarbon
SVOCs - Semivolatile Organic Compounds
TAML - Target Analyte Metals List
TPH-HCID - Total Petroleum Hydrocarbons - Hydrocarbon Identification Method
VOCs - Volatile Organic Compounds

Table 2: Qualifier Summary Table
Landsburg Mine Water Sampling Investigation - May 2019

SDG	Sample Name	Constituent	New Result	New RL	Qualifier	Reason
19E0324	LMW-11-0519	Mercury	0.00002	-	U	Equipment and/or method blank contamination
19E0324	LMW-15-0519	Mercury	0.00002	-	U	Equipment and/or method blank contamination
19E0324	LMW-14-0519	Mercury	0.00002	-	U	Equipment and/or method blank contamination
19E0324	LMW-9-0519	Mercury	0.00002	-	U	Equipment and/or method blank contamination
19E0324	LMW-3-0519	Mercury	0.00002	-	U	Equipment and/or method blank contamination
19E0324	LMW-5-0519	Mercury	0.00002	-	U	Equipment and/or method blank contamination
19E0324	LMW-8-0519	Mercury	0.00002	-	U	Equipment and/or method blank contamination
19E0324	LMW-7-0519	Mercury	0.00002	-	U	Equipment and/or method blank contamination
19E0324	LMW-6-0519	Mercury	0.00002	-	U	Equipment and/or method blank contamination
19E0324	LMW-13R-0519	Mercury	0.00002	-	U	Equipment and/or method blank contamination
19E0324	LMW-12-0519	Mercury	0.00002	-	U	Equipment and/or method blank contamination
19E0324	LMW-10-0519	Mercury	0.00002	-	U	Equipment and/or method blank contamination
19E0324	LMW-4-0519	Mercury	0.00002	-	U	Equipment and/or method blank contamination
19E0324	LMW-4-0519-D	Mercury	0.00002	-	U	Equipment and/or method blank contamination
19E0324	LMW-2-0519	Mercury	0.00002	-	U	Equipment and/or method blank contamination
19E0324	LMW-11-0519	1,2,4-Trimethylbenzene	0.04	-	U	Equipment, trip, and/or method blank contamination
19E0324	LMW-15-0519	1,2,4-Trimethylbenzene	0.04	-	U	Equipment, trip, and/or method blank contamination
19E0324	LMW-14-0519	1,2,4-Trimethylbenzene	0.04		U	Equipment, trip, and/or method blank contamination
19E0324	LMW-9-0519	1,2,4-Trimethylbenzene	0.04	-	U	Equipment, trip, and/or method blank contamination
19E0324	LMW-3-0519	1,2,4-Trimethylbenzene	0.04	-	U	Equipment, trip, and/or method blank contamination
19E0324	LMW-5-0519	1,2,4-Trimethylbenzene	0.04	-	U	Equipment, trip, and/or method blank contamination
19E0324	LMW-8-0519	1,2,4-Trimethylbenzene	0.04	-	U	Equipment, trip, and/or method blank contamination
19E0324	LMW-7-0519	1,2,4-Trimethylbenzene	0.04	-	U	Equipment, trip, and/or method blank contamination
19E0324	LMW-6-0519	1,2,4-Trimethylbenzene	0.04	-	U	Equipment, trip, and/or method blank contamination
19E0324	LMW-13R-0519	1,2,4-Trimethylbenzene	0.04	-	U	Equipment, trip, and/or method blank contamination
19E0324	LMW-12-0519	1,2,4-Trimethylbenzene	0.04	-	U	Equipment, trip, and/or method blank contamination
19E0324	LMW-10-0519	1,2,4-Trimethylbenzene	0.04	-	U	Equipment, trip, and/or method blank contamination
19E0324	LMW-4-0519	1,2,4-Trimethylbenzene	0.04	-	U	Equipment, trip, and/or method blank contamination
19E0324	LMW-4-0519-D	1,2,4-Trimethylbenzene	0.04	-	U	Equipment, trip, and/or method blank contamination
19E0324	LMW-2-0519	1,2,4-Trimethylbenzene	0.04	-	U	Equipment, trip, and/or method blank contamination
19E0324	LMW-15-0519	Acetone	-	-	R	Preserved vial contamination
19E0324	LMW-14-0519	Acetone	-	-	R	Preserved vial contamination

Table 2: Qualifier Summary Table
Landsburg Mine Water Sampling Investigation - May 2019

SDG	Sample Name	Constituent	New Result	New RL	Qualifier	Reason
19E0324	LMW-9-0519	Acetone	-	-	R	Preserved vial contamination
19E0324	LMW-3-0519	Acetone	-	-	R	Preserved vial contamination
19E0324	LMW-5-0519	Acetone	-	-	R	Preserved vial contamination
19E0324	LMW-6-0519	Acetone	-	-	R	Preserved vial contamination
19E0324	LMW-4-0519-D	Acetone	-	-	R	Preserved vial contamination
19E0324	LMW-2-0519	Acetone	-	-	R	Preserved vial contamination
19E0324	LMW-11-0519	Carbon Disulfide	0.10	-	U	Method blank contamination
19E0324	LMW-14-0519	Carbon Disulfide	0.10	-	U	Method blank contamination
19E0324	LMW-13R-0519	Carbon Disulfide	0.10	-	U	Method blank contamination
19E0324	LMW-12-0519	Carbon Disulfide	0.10	-	U	Method blank contamination
19E0324	LMW-4-0519-D	Carbon Disulfide	0.10	-	U	Method blank contamination
19E0324	LMW-2-0519	Carbon Disulfide	0.10	-	U	Method blank contamination
19E0324	LMW-4-0519	1,4-Dioxane	-	-	J	Field duplicate precison
19E0324	LMW-4-0519-D	1,4-Dioxane	-	-	J	Field duplicate precison
19E0324	All Samples	All Results	-	-	-	Laboratory applied U-qualifiers indicating non-detect results and J-qualifiers indicating results below the reporting limit are retained unless other qualifications are indicated in this table. All other laboratory qualifiers are removed.

Abbreviations
QC - Quality Control
SDG - Sample Delivery Group
RL - Reporting Limit

Qualifier Definitions
J - Estimated result
U - Non-detect result
R - The data are rejected and unusable.

ATTACHMENT A

Level 2A Data Validation Checklists

QA LEVEL II - DATA EVALUATION CHECKLIST

Company Name: Golder Associates, Inc. | Project Manager: Joe Miller
Project Name: Landsburg Groundwater 2019-05 | Project Number: 923-1000-005.2019
Validated by Jessie Compeau/Informa LLC | Validation Date: June 24, 2019
Reviewed by _____ | Review Date: _____
Laboratory: Analytical Resources, Inc. (ARI) in Tukwila, WA | SDG #: 19E0324
Analytical Method (type and no.): See DUSR Table 1
Matrix: ☐ Air ☐ Soil/Sed. ☒ Water ☐ Waste ☐ Other _____

Work Plan or QAPP reference: Compliance Monitoring Plan and QAPP for Landsburg Mine Site (Exhibit D, to the Consent Decree, 2017).

Applicable Data Validation Guidance:

- National Functional Guidelines for Organic Review, USEPA 2017
- National Functional Guidelines for Inorganic Review, USEPA 2017

Sample Information: See Table 1 (attached)

Field/COC Information	**YES**	**NO**	**NA**	**COMMENTS**
a) Sampling dates noted?	☒	☐	☐	
b) Sampling team indicated?	☒	☐	☐	
c) Sample location noted?	☒	☐	☐	
d) Sample type indicated (grab/composite)?	☐	☒	☐	COC does not request this information
e) Field QC noted?	☒	☐	☐	See Table 1
f) Field parameters collected (note types)?	☐	☐	☒	
g) Was the COC signed by both field and laboratory personnel?	☒	☐	☐	
h) Were samples received in good condition?	☐	☒	☐	See Notes 1 and 2
i) Were the correct preservatives used?	☒	☐	☐	
j) Was the sample cooler temperature within QC limits?	☒	☐	☐	

Laboratory Case Narrative

a) Does the laboratory narrative indicate deficiencies?	☒	☐	☐	See Notes 2, 3, and 4

General (reference QAPP or Method)	**YES**	**NO**	**NA**	**COMMENTS**
a) Were hold times met for sample pretreatment?	☒	☐	☐	
b) Were hold times met for sample analysis?	☒	☐	☐	
c) Was the correct method used?	☒	☐	☐	
d) Were appropriate reporting limits achieved?	☒	☐	☐	See Note 5
e) Were any sample dilutions noted?	☐	☒	☐	
f) Were any matrix problems noted?	☐	☒	☐	

QA LEVEL II - DATA EVALUATION CHECKLIST

Blanks	**YES**	**NO**	**NA**	**COMMENTS**
a) Were analytes detected in the method blank(s)?	☒	☐	☐	See Note 6
b) Was a method blank analysis performed according to the method used?	☒	☐	☐	
c) Was a method blank analysis performed for each instrument used for sample analyses?	☒	☐	☐	
d) Were analytes detected in the instrument blank(s)?	☐	☐	☒	
e) Were analytes detected in the field blank(s)?	☐	☐	☒	
f) Were analytes detected in the equipment blank(s)?	☒	☐	☐	EB-0519; See Note 6
g) Were analytes detected in the trip blank(s)?	☒	☐	☐	TripBlank-0519; See Note 6
h) Were analytes detected in the storage blank(s)?	☐	☐	☒	

Surrogate (System Monitoring) Compounds	**YES**	**NO**	**NA**	**COMMENTS**
a) Were surrogate compounds added to all samples?	☒	☐	☐	
b) Were recoveries within control limits?	☒	☐	☐	
c) Were surrogate recoveries not calculated due to dilutions?	☐	☒	☐	
d) Were recoveries not calculated due to interference?	☐	☒	☐	

Laboratory Control Sample	**YES**	**NO**	**NA**	**COMMENTS**
a) Was an LCS analyzed once per SDG?	☒	☐	☐	
b) Were the proper compounds included in the LCS?	☒	☐	☐	
c) Was the LCS accuracy criteria met?	☒	☐	☐	

Matrix Spike/Matrix Spike Duplicate	**YES**	**NO**	**NA**	**COMMENTS**
a) Was MS accuracy criteria met (note %R)?	☒	☐	☐	
Recovery could not be calculated since sample contained high concentration of analyte?	☐	☒	☐	
b) Was MSD accuracy criteria met (note %R)?	☒	☐	☐	
Recovery could not be calculated since sample contained high concentration of analyte?	☐	☒	☐	
c) Were MS/MSD precision criteria met (note RPD)?	☒	☐	☐	

Duplicates	**YES**	**NO**	**NA**	**COMMENTS**
a) Were field duplicates collected (note original and duplicate sample names)?	☒	☐	☐	LMW-4-0519 and LMW-4-0519-D
b) Were field dup. precision criteria met (30%)?	☐	☒	☐	See Note 7
c) Were lab duplicates analyzed?	☒	☐	☐	
d) Were lab dup. precision criteria met (note RPD)?	☒	☐	☐	

ICP Serial Dilution (SD)	**YES**	**NO**	**NA**	**COMMENTS**
a) Was an ICP SD analyzed once per SDG?	☐	☐	☒	
b) Was the ICP SD criteria met?	☐	☐	☒	

QA LEVEL II - DATA EVALUATION CHECKLIST

Comments/Notes:

1. As reported on the Cooler Receipt Form chain of custody seals were not affixed to the outside of the cooler. Sample notes indicate that the samples were received in good condition. No action is taken in this case other than to note that the samples were received in good condition at the laboratory and to recommend that Golder affix COC seals (signed and dated) to cooler exterior in future sampling events.

2. As shown in the table below, the laboratory noted in their Cooler Receipt Forms and Preservation Confirmation forms for SDG 19E0324 that two samples vials for the VOC analysis were received with headspace. The laboratory case narrative indicates that no VOC vials containing air bubbles or headspace were used in the analyses. Therefore, no further action was required other than to note.

Lab ID	Sample Name	# Bottles Affected (out of 5)
19E0324-11	LMW-13R-0519	2; Vials H and I
19E0324-15	LMW-4-0519-D	1; Vial H

3. Case narrative notes indicate that VOC continuing calibration (CCAL) are below laboratory acceptance criteria for three analytes (bromoform, trans-1,4-dichloro-2-butene, and 1,2-dibromo-3-chloropropane) and laboratory qualified (Q). Review of the data shows that associated samples are not impacted and only LCS/LCSD results are laboratory qualified (Q). No further action was taken other than to note.

4. Case narrative notes indicate that VOC vials may have been previously contaminated with acetone based on testing on empty vials from the same QC lot and random acetone detections. ARI recommends collecting samples in unpreserved vials for future sampling events (VOC holding time without preservative will be reduced to 7 days) until the situation is resolved and corrective action is implemented. All positively detected acetone results above and below the reporting level are rejected and qualified (R) due to a) ARI's case narrative notes on random acetone preservative contamination and b) elevated acetone detections in this SDG are not consistent with historical data (Golder, 2019).

Sample Name	Parameter	Analyte	Result	Laboratory qualification	RL	Units
LMW-15-0519	EPA 8260C	Acetone	4.92	J	5	µg/L
LMW-14-0519	EPA 8260C	Acetone	39.9		5	µg/L
LMW-9-0519	EPA 8260C	Acetone	87.1		5	µg/L
LMW-3-0519	EPA 8260C	Acetone	2.77	J	5	µg/L
LMW-5-0519	EPA 8260C	Acetone	10.5		5	µg/L
LMW-6-0519	EPA 8260C	Acetone	2.11	J	5	µg/L
LMW-4-0519-D	EPA 8260C	Acetone	62.4		5	µg/L
LMW-2-0519	EPA 8260C	Acetone	2.17	J	5	µg/L

5. QAPP stipulated reporting limits are met for requested compounds and RLs. ARI analyzed or reported three additional VOC compounds (dichlorodifluoromethane (CFC-12), bromoethane, and Total Xylenes). In addition, Golder requested compound 1,4-dioxane to be analyzed by EPA Method 8270D (addendum in WP to the 2017 QAPP per Golder).

6. Analytes were detected in the method, equipment, and trip blanks, as shown in the table below. When contamination was found in more than one blank associated with a given sample, the blank with the highest concentration was used to qualify the data. Following Guidelines, when blank contamination was below the MRL, associated detections greater than the MRL did not require qualification. Associated results detected at or below the MRL were qualified at the MRL as non-detect (U). Associated non-detect results and results greater than 10x the blank concentration did not require qualification.

Blank ID	Method	Analyte	Result	Qualifier	MRL	Units
BHE0615-BLK1	EPA 8260C	Carbon Disulfide	0.06	J	0.10	µg/L
BHE0615-BLK1	EPA 8260C	1,2,4-Trimethylbenzene	0.04	J	0.20	µg/L
BHE0615-BLK1	EPA 8260C	1,4-Dichlorobenzene	0.04	J	0.20	µg/L
BHE0598-BLK1	EPA 7470A	Total Mercury	0.018	J	0.020	µg/L
EB-0519	EPA 8260C	1,2,4-Trimethylbenzene	0.04	J	0.20	µg/L
EB-0519	EPA 6010C	Total Copper	5.4		3.0	µg/L
EB-0519	EPA 7470A	Total Mercury	0.012	J	0.020	µg/L

TripBlank-0519	EPA 8260C	Acetone	2.35	J	5.00	µg/L
TripBlank-0519	EPA 8260C	1,2,4-Trimethylbenzene	0.04	J	0.20	µg/L
TripBlank-0519	EPA 8260C	n-Butylbenzene	0.03	J	0.20	µg/L

7. Field duplicate results that are outside of precision acceptance criteria identified in the QAPP (20%) are shown in the table below. Following the Guidelines and using professional judgment, detections in the parent and field duplicate samples are qualified as estimated (J/UJ) when either 1) both the sample and duplicate results are greater than the RL and the RPD is greater than 20% or 2) the sample and/or duplicate results are less than the MRL and the absolute difference between the two results is greater than the MRL. Results which met these criteria did not require qualification.

Sample Name	Analyte	Primary / Duplicate Sample Results (µg/L)	RL (µg/L)	RPD (%) or <1XRL	QC Criteria
LMW-4-0519	1,4-Dioxane	2.0 / 1.5	0.4	>1XRL	20 or <1XRL

Data Qualification: See Table 2 (attached)

Definitions:

SDG: Sample Delivery Group
COC: Chain of Custody
VOC: Volatile Organic Compound
TCL: Target Compound List
%D: Percent Difference
LCS: Laboratory Control Sample
LCSD: Laboratory Control Sample Duplicate
MS/MSD: Matrix Spike/Matrix Spike Duplicate
MDL: Method Detection Limit
%R: Percent Recovery
CC: Continuing Calibration
RRF: Relative Response Factor
TCLP: Toxicity Characteristic Leaching Procedure
QC: Quality Control
QAPP: Quality Assurance Project Plan
SVOC: Semivolatile Organic Compound
DMC: Deuterated Monitoring Compound
RPD: Relative Percent Difference
RSD: Relative Standard Deviation
CRQL: Contract Required Quantitation Limit
RL: Reporting Limit
PEM: Performance Evaluation Mixture
SPCC: System Performance Check Compound
RT: Retention Time
SPLP: Synthetic Precipitation Leaching Procedure

Analytical Resources, Incorporated
Analytical Chemists and Consultants

14 June 2019

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

RE: Landsburg

Please find enclosed sample receipt documentation and analytical results for samples from the project referenced above.

Sample analyses were performed according to ARI's Quality Assurance Plan and any provided project specific Quality Assurance Plan. Each analytical section of this report has been approved and reviewed by an analytical peer, the appropriate Laboratory Supervisor or qualified substitute, and a technical reviewer.

Should you have any questions or problems, please feel free to contact us at your convenience.

Associated Work Order(s)	Associated SDG ID(s)
19E0324	N/A

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the enclose Narrative. ARI, an accredited laboratory, certifies that the report results for which ARI is accredited meets all the requirements of the accrediting body. A list of certified analyses, accreditations, and expiration dates is included in this report.

Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Analytical Resources, Inc.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

ACCREDITED IN ACCORDANCE WITH nelac
Cert# 100006

PJLA Testing
Accreditation # 66169

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: 19E0324	Turn-around Requested: Standard	Page: 1 of 2	
ARI Client Company: Golder	Phone: 425-883-0777	Date: 5/20/19 - 5/22/19	Ice Present? 5/22/19
Client Contact: Gary Zimmerman		No. of Coolers: 7 ~~8~~	Cooler Temps: 4.6 2.8 2.3 5.8 3.7 3.8 -0.7
Client Project Name: Landsburg			
Client Project #: 923100000 5.2019	Samplers: Joe Miller / Eric Adams		

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

Sample ID	Date	Time	Matrix	No. Containers	Analysis Requested: VOC Client List *	TPH-HCID +Follow-Ups	TAML Metals Total	1,4-Dioxane (8270D)					Notes/Comments
LMW-11-0519	5/20/19	1245	W	12	X	X	X	X					Please analyze under current MSA w/Golder
LMW-15-0519	"	1400	W	12	X	X	X	X					
LMW-14-0519	"	1535	W	12	X	X	X	X					
LMW-9-0519	5/21/19	0900	W	12	X	X	X	X					
LMW-3-0519	"	1015	W	12	X	X	X	X					
LMW-5-0519	"	1120	W	12	X	X	X	X					
LMW-8-0519	"	1230	W	12	X	X	X	X					
EB-0519	"	1300	W	12	X	X	X	X					
LMW-7-0519	"	1440	W	12	X	X	X	X					
LMW-6-0519	5/22/19	0845	W	12	X	X	X	X					

Comments/Special Instructions	Relinquished by: (Signature)	Received by: (Signature)	Relinquished by: (Signature)	Received by: (Signature)
- Ecology EIM EDD * Client specific RLs + analyte list pls cc: gzimmerman@golder.com jcmiller@golder.com	Printed Name: Joe Miller	Printed Name: Erin Salle	Printed Name:	Printed Name:
	Company: Golder	Company: ARI	Company:	Company:
	Date & Time: 5/22/19 1540	Date & Time: 5/22/19 1540	Date & Time:	Date & Time:

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

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

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: 19E0324	Turn-around Requested: Standard	Page: 2 of 2	
ARI Client Company: Golder	Phone: 425-883-0777	Date: 5/20/19 - 5/22/19	Ice Present?
Client Contact: Gary Zimmerman		No. of Coolers:	Cooler Temps:
Client Project Name: Landsburg			
Client Project #: 923100000.5.2019	Samplers: JM/EA		

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

Sample ID	Date	Time	Matrix	No. Containers	Analysis Requested: VOC Client List	TPH-HCID + Followups	TAL Metals Total	1,4 Dioxane (8270D)					Notes/Comments
LMW-13R-0519	5/22/19	0950	W	12	X	X	X	X					Please analyze under current MSA w/ Golder
LMW-12-0519	"	1045	W	12	X	X	X	X					
LMW-10-0519	"	1155	W	12	X	X	X	X					
LMW-4-0519	"	1310	W	12	X	X	X	X					
LMW-4-0519-D	"	1320	W	12	X	X	X	X					
LMW-2-0519	"	1420	W	12	X	X	X	X					
TripBlank-0519	—	—	W	6	X								

Comments/Special Instructions
- Ecology EIM EDD
* Client Specific RL + analyte List
pls cc: gzimmerman@golder.com
jcmiller@golder.com

Relinquished by: (Signature)	Printed Name:	Company:	Date & Time:	Received by: (Signature)	Printed Name:	Company:	Date & Time:
	Joe Miller	Golder	5/22/19 1540		Erin Salle	ARI	5/22/19 1540
Relinquished by: (Signature)	Printed Name:	Company:	Date & Time:	Received by: (Signature)	Printed Name:	Company:	Date & Time:

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

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

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
LMW-11-0519	19E0324-01	Water	20-May-2019 12:45	22-May-2019 15:40
LMW-15-0519	19E0324-02	Water	20-May-2019 14:00	22-May-2019 15:40
LMW-14-0519	19E0324-03	Water	20-May-2019 15:35	22-May-2019 15:40
LMW-9-0519	19E0324-04	Water	21-May-2019 09:00	22-May-2019 15:40
LMW-3-0519	19E0324-05	Water	21-May-2019 10:15	22-May-2019 15:40
LMW-5-0519	19E0324-06	Water	21-May-2019 11:20	22-May-2019 15:40
LMW-8-0519	19E0324-07	Water	21-May-2019 12:30	22-May-2019 15:40
EB-0519	19E0324-08	Water	21-May-2019 13:00	22-May-2019 15:40
LMW-7-0519	19E0324-09	Water	21-May-2019 14:40	22-May-2019 15:40
LMW-6-0519	19E0324-10	Water	22-May-2019 08:45	22-May-2019 15:40
LMW-13R-0519	19E0324-11	Water	22-May-2019 09:50	22-May-2019 15:40
LMW-12-0519	19E0324-12	Water	22-May-2019 10:45	22-May-2019 15:40
LMW-10-0519	19E0324-13	Water	22-May-2019 11:55	22-May-2019 15:40
LMW-4-0519	19E0324-14	Water	22-May-2019 13:10	22-May-2019 15:40
LMW-4-0519-D	19E0324-15	Water	22-May-2019 13:20	22-May-2019 15:40
LMW-2-0519	19E0324-16	Water	22-May-2019 14:20	22-May-2019 15:40
TripBlank-0519	19E0324-17	Water	20-May-2019 12:45	22-May-2019 15:40

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

Work Order Case Narrative

Volatiles - EPA Method SW8260C

The sample(s) were run within the recommended holding times.

Initial and continuing calibrations were within method requirements with the exception of all associated "Q" flagged analytes which
are out of control low in the CCAL. All associated samples that containanalyte have been flagged with a "Q" quailifer.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The LCS/LCSD percent recoveries and RPD were within control limits.

No vials were used that contained air bubbles.

The lab thinks the current lot of vials may be subject to acetone contamination. The lot has been certified as clean however while running the associated samples the analyst noted that he felt the acetone hits were random in the samples. The analyst tested several empty vials from the same lot and identified random hits of acetone in the vials. It is recommended that unpreserved vials are used for future site work as ARI thinks the vendor may have contaminated acid that is added to the vials for preservation.

Total Metals - EPA Method 6010C and 7470

The sample(s) were digested and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The method blank(s) were clean at the reporting limits.

The LCS percent recoveries were within control limits.

1,4-Dioxane- EPA Method SW8270D

The sample(s) were extracted and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The LCS percent recoveries were within control limits.

HCID - WA-Ecology

The sample(s) were extracted and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

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Analytical Resources, Incorporated
Analytical Chemists and Consultants

Printed: 5/22/2019 5:24:22PM

WORK ORDER

19E0324

Client: Golder Associates | **Project Manager: Kelly Bottem**

Project: Landsburg | **Project Number: Landsburg**

Report To:
Golder Associates
Gary Zimmerman
18300 NE Union Hill Road Suite 200
Redmond, WA 98052-3333
Phone: 425-883-0777
Fax: -

Invoice To:
Golder Associates
Gary Zimmerman
18300 NE Union Hill Road Suite 200
Redmond, WA 98052-3333
Phone :425-883-0777
Fax: -

Date Due:	07-Jun-2019 18:00 (10 day TAT)		
Received By:	Erin I. Salle	Date Received:	22-May-2019 15:40
Logged In By:	Jacob Walter	Date Logged In:	22-May-2019 17:14

Samples Received at: **4.6°C**

Intact, properly signed and dated custody seals attached to outside of cooler(s)	No	Custody papers included with the cooler	Yes
Custody papers properly filled out (in, signed, analyses requested, etc)	Yes	Was a temperature blank included in the cooler	No
Was sufficient ice used (if appropriate)	Yes	All bottles sealed in individual plastic bags	Yes
All bottles arrived in good condition (unbroken)	Yes	All bottle labels complete and legible	Yes
Number of containers listed on COC match number received	Yes	Bottle labels and tags agree with COC	Yes
Correct bottles used for the requested analyses	Yes	All VOC vials free of air bubbles	No
Analyses/bottles require preservation (attach preservation sheet excluding VOC)	Yes	Sufficient amount of sample sent in each bottle	Yes
Sample split at ARI	No		

Reviewed By

Date

WORK ORDER

19E0324

Client: Golder Associates | **Project Manager:** Kelly Bottem

Project: Landsburg | **Project Number:** Landsburg

Analysis	Due	TAT	Expires	Comments
19E0324-01 LMW-11-0519 [Water] Sampled 20-May-2019 12:45				
Met 6010C - Be	06/07/2019	10	11/16/2019	
Met 6010C - Co	06/07/2019	10	11/16/2019	
8270D 1,4-Dioxane (Low Level H2O or Soli	06/07/2019	10	5/27/2019	
Met 200.8 - Pb	06/07/2019	10	11/16/2019	
Met 200.8 - As UCT	06/07/2019	10	11/16/2019	
Met 200.8 - Sb	06/07/2019	10	11/16/2019	
Met 200.8 - Se UCT	06/07/2019	10	11/16/2019	
Met 200.8 - Tl	06/07/2019	10	11/16/2019	
Met 6010C - Ag	06/07/2019	10	11/16/2019	
8260C VOA	06/07/2019	10	6/3/2019	
Met 6010C - Ba	06/07/2019	10	11/16/2019	
Met 6010C - Zn	06/07/2019	10	11/16/2019	
Met 6010C - Fe	06/07/2019	10	11/16/2019	
Met 6010C - Cd	06/07/2019	10	11/16/2019	
Met 6010C - Na	06/07/2019	10	11/16/2019	
Met 6010C - Mn	06/07/2019	10	11/16/2019	
Met 6010C - Ni	06/07/2019	10	11/16/2019	
Met 6010C - V	06/07/2019	10	11/16/2019	
Met 7470A Hg Low Level	06/07/2019	10	6/17/2019	
Met 6010C - Ca	06/07/2019	10	11/16/2019	
Met 6010C - Al	06/07/2019	10	11/16/2019	
TPH_NW HCID	06/07/2019	10	5/27/2019	
Met 6010C - Cu	06/07/2019	10	11/16/2019	
Met 6010C - K	06/07/2019	10	11/16/2019	
Met 6010C - Mg	06/07/2019	10	11/16/2019	
Met 6010C - Cr	06/07/2019	10	11/16/2019	
19E0324-02 LMW-15-0519 [Water] Sampled 20-May-2019 14:00				
Met 200.8 - As UCT	06/07/2019	10	11/16/2019	
Met 6010C - Ni	06/07/2019	10	11/16/2019	
Met 6010C - Na	06/07/2019	10	11/16/2019	
Met 6010C - Mn	06/07/2019	10	11/16/2019	
8260C VOA	06/07/2019	10	6/3/2019	
Met 200.8 - Sb	06/07/2019	10	11/16/2019	
8270D 1,4-Dioxane (Low Level H2O or Soli	06/07/2019	10	5/27/2019	
Met 200.8 - Pb	06/07/2019	10	11/16/2019	
Met 7470A Hg Low Level	06/07/2019	10	6/17/2019	
Met 6010C - V	06/07/2019	10	11/16/2019	
TPH_NW HCID	06/07/2019	10	5/27/2019	
Met 6010C - Be	06/07/2019	10	11/16/2019	

Reviewed By

Date

WORK ORDER

19E0324

Client: Golder Associates | **Project Manager:** Kelly Bottem

Project: Landsburg | **Project Number:** Landsburg

Analysis	Due	TAT	Expires	Comments
Met 6010C - K	06/07/2019	10	11/16/2019	
Met 6010C - Zn	06/07/2019	10	11/16/2019	
Met 6010C - Mg	06/07/2019	10	11/16/2019	
Met 6010C - Al	06/07/2019	10	11/16/2019	
Met 6010C - Fe	06/07/2019	10	11/16/2019	
Met 6010C - Cu	06/07/2019	10	11/16/2019	
Met 6010C - Cr	06/07/2019	10	11/16/2019	
Met 6010C - Co	06/07/2019	10	11/16/2019	
Met 200.8 - Tl	06/07/2019	10	11/16/2019	
Met 6010C - Ca	06/07/2019	10	11/16/2019	
Met 6010C - Ba	06/07/2019	10	11/16/2019	
Met 6010C - Ag	06/07/2019	10	11/16/2019	
Met 6010C - Cd	06/07/2019	10	11/16/2019	
Met 200.8 - Se UCT	06/07/2019	10	11/16/2019	
19E0324-03 LMW-14-0519 [Water] Sampled 20-May-2019 15:35				
Met 6010C - Al	06/07/2019	10	11/16/2019	
Met 200.8 - Pb	06/07/2019	10	11/16/2019	
Met 200.8 - As UCT	06/07/2019	10	11/16/2019	
8270D 1,4-Dioxane (Low Level H2O or Soli	06/07/2019	10	5/27/2019	
8260C VOA	06/07/2019	10	6/3/2019	
Met 200.8 - Se UCT	06/07/2019	10	11/16/2019	
Met 200.8 - Tl	06/07/2019	10	11/16/2019	
Met 6010C - Ag	06/07/2019	10	11/16/2019	
Met 6010C - Cr	06/07/2019	10	11/16/2019	
Met 6010C - Cd	06/07/2019	10	11/16/2019	
Met 6010C - Co	06/07/2019	10	11/16/2019	
Met 6010C - Ni	06/07/2019	10	11/16/2019	
Met 6010C - Be	06/07/2019	10	11/16/2019	
Met 6010C - Na	06/07/2019	10	11/16/2019	
Met 6010C - V	06/07/2019	10	11/16/2019	
Met 6010C - Fe	06/07/2019	10	11/16/2019	
Met 6010C - Ca	06/07/2019	10	11/16/2019	
TPH_NW HCID	06/07/2019	10	5/27/2019	
Met 200.8 - Sb	06/07/2019	10	11/16/2019	
Met 6010C - Ba	06/07/2019	10	11/16/2019	
Met 6010C - Cu	06/07/2019	10	11/16/2019	
Met 6010C - Mg	06/07/2019	10	11/16/2019	
Met 7470A Hg Low Level	06/07/2019	10	6/17/2019	
Met 6010C - Mn	06/07/2019	10	11/16/2019	
Met 6010C - Zn	06/07/2019	10	11/16/2019	

Reviewed By _____ Date _____

WORK ORDER

19E0324

Client: Golder Associates | **Project Manager:** Kelly Bottem

Project: Landsburg | **Project Number:** Landsburg

Analysis	Due	TAT	Expires	Comments
Met 6010C - K	06/07/2019	10	11/16/2019	
19E0324-04 LMW-9-0519 [Water] Sampled 21-May-2019 09:00				
Met 6010C - Ni	06/07/2019	10	11/17/2019	
Met 6010C - Na	06/07/2019	10	11/17/2019	
TPH_NW HCID	06/07/2019	10	5/28/2019	
Met 6010C - Co	06/07/2019	10	11/17/2019	
Met 6010C - V	06/07/2019	10	11/17/2019	
Met 6010C - Mg	06/07/2019	10	11/17/2019	
Met 6010C - Be	06/07/2019	10	11/17/2019	
Met 6010C - Zn	06/07/2019	10	11/17/2019	
Met 7470A Hg Low Level	06/07/2019	10	6/18/2019	
Met 6010C - Cd	06/07/2019	10	11/17/2019	
Met 6010C - Ca	06/07/2019	10	11/17/2019	
Met 6010C - Fe	06/07/2019	10	11/17/2019	
8270D 1,4-Dioxane (Low Level H2O or Soli	06/07/2019	10	5/28/2019	
Met 6010C - Cu	06/07/2019	10	11/17/2019	
Met 200.8 - Se UCT	06/07/2019	10	11/17/2019	
Met 200.8 - Tl	06/07/2019	10	11/17/2019	
Met 6010C - Al	06/07/2019	10	11/17/2019	
8260C VOA	06/07/2019	10	6/4/2019	
Met 6010C - Cr	06/07/2019	10	11/17/2019	
Met 6010C - K	06/07/2019	10	11/17/2019	
Met 6010C - Mn	06/07/2019	10	11/17/2019	
Met 200.8 - Sb	06/07/2019	10	11/17/2019	
Met 200.8 - As UCT	06/07/2019	10	11/17/2019	
Met 200.8 - Pb	06/07/2019	10	11/17/2019	
Met 6010C - Ag	06/07/2019	10	11/17/2019	
Met 6010C - Ba	06/07/2019	10	11/17/2019	
19E0324-05 LMW-3-0519 [Water] Sampled 21-May-2019 10:15				
Met 6010C - Ca	06/07/2019	10	11/17/2019	
Met 6010C - Cd	06/07/2019	10	11/17/2019	
Met 6010C - Al	06/07/2019	10	11/17/2019	
Met 200.8 - Tl	06/07/2019	10	11/17/2019	
Met 6010C - Be	06/07/2019	10	11/17/2019	
TPH_NW HCID	06/07/2019	10	5/28/2019	
Met 6010C - Cr	06/07/2019	10	11/17/2019	
Met 6010C - Ba	06/07/2019	10	11/17/2019	
Met 6010C - Cu	06/07/2019	10	11/17/2019	
Met 6010C - Ag	06/07/2019	10	11/17/2019	
Met 6010C - Fe	06/07/2019	10	11/17/2019	

Reviewed By _____ Date _____

WORK ORDER

19E0324

Client: Golder Associates | **Project Manager:** Kelly Bottem

Project: Landsburg | **Project Number:** Landsburg

Analysis	Due	TAT	Expires	Comments
Met 6010C - Co	06/07/2019	10	11/17/2019	
Met 6010C - K	06/07/2019	10	11/17/2019	
Met 6010C - Mg	06/07/2019	10	11/17/2019	
Met 6010C - V	06/07/2019	10	11/17/2019	
Met 7470A Hg Low Level	06/07/2019	10	6/18/2019	
Met 6010C - Ni	06/07/2019	10	11/17/2019	
Met 6010C - Na	06/07/2019	10	11/17/2019	
Met 200.8 - Se UCT	06/07/2019	10	11/17/2019	
8260C VOA	06/07/2019	10	6/4/2019	
8270D 1,4-Dioxane (Low Level H2O or Soli	06/07/2019	10	5/28/2019	
Met 6010C - Mn	06/07/2019	10	11/17/2019	
Met 200.8 - Pb	06/07/2019	10	11/17/2019	
Met 200.8 - As UCT	06/07/2019	10	11/17/2019	
Met 200.8 - Sb	06/07/2019	10	11/17/2019	
Met 6010C - Zn	06/07/2019	10	11/17/2019	
19E0324-06 LMW-5-0519 [Water] Sampled 21-May-2019 11:20				
Met 200.8 - Se UCT	06/07/2019	10	11/17/2019	
Met 6010C - Ni	06/07/2019	10	11/17/2019	
Met 7470A Hg Low Level	06/07/2019	10	6/18/2019	
8260C VOA	06/07/2019	10	6/4/2019	
8270D 1,4-Dioxane (Low Level H2O or Soli	06/07/2019	10	5/28/2019	
Met 200.8 - As UCT	06/07/2019	10	11/17/2019	
Met 6010C - Zn	06/07/2019	10	11/17/2019	
Met 6010C - Al	06/07/2019	10	11/17/2019	
Met 200.8 - Pb	06/07/2019	10	11/17/2019	
Met 6010C - V	06/07/2019	10	11/17/2019	
Met 200.8 - Tl	06/07/2019	10	11/17/2019	
Met 200.8 - Sb	06/07/2019	10	11/17/2019	
Met 6010C - Ag	06/07/2019	10	11/17/2019	
Met 6010C - K	06/07/2019	10	11/17/2019	
Met 6010C - Ba	06/07/2019	10	11/17/2019	
Met 6010C - Be	06/07/2019	10	11/17/2019	
Met 6010C - Ca	06/07/2019	10	11/17/2019	
Met 6010C - Cd	06/07/2019	10	11/17/2019	
Met 6010C - Co	06/07/2019	10	11/17/2019	
Met 6010C - Cu	06/07/2019	10	11/17/2019	
Met 6010C - Na	06/07/2019	10	11/17/2019	
TPH_NW HCID	06/07/2019	10	5/28/2019	
Met 6010C - Cr	06/07/2019	10	11/17/2019	
Met 6010C - Mg	06/07/2019	10	11/17/2019	

Reviewed By

Date

WORK ORDER

19E0324

Client: Golder Associates | **Project Manager:** Kelly Bottem

Project: Landsburg | **Project Number:** Landsburg

Analysis	Due	TAT	Expires	Comments
Met 6010C - Mn	06/07/2019	10	11/17/2019	
Met 6010C - Fe	06/07/2019	10	11/17/2019	
19E0324-07 LMW-8-0519 [Water] Sampled 21-May-2019 12:30				
Met 7470A Hg Low Level	06/07/2019	10	6/18/2019	
Met 6010C - Mg	06/07/2019	10	11/17/2019	
Met 6010C - Al	06/07/2019	10	11/17/2019	
TPH_NW HCID	06/07/2019	10	5/28/2019	
Met 200.8 - Tl	06/07/2019	10	11/17/2019	
Met 6010C - Co	06/07/2019	10	11/17/2019	
Met 6010C - Ag	06/07/2019	10	11/17/2019	
Met 6010C - Ni	06/07/2019	10	11/17/2019	
Met 6010C - Cd	06/07/2019	10	11/17/2019	
Met 6010C - K	06/07/2019	10	11/17/2019	
Met 6010C - Na	06/07/2019	10	11/17/2019	
Met 6010C - Fe	06/07/2019	10	11/17/2019	
Met 6010C - Cr	06/07/2019	10	11/17/2019	
Met 6010C - Mn	06/07/2019	10	11/17/2019	
Met 6010C - V	06/07/2019	10	11/17/2019	
Met 6010C - Ba	06/07/2019	10	11/17/2019	
8270D 1,4-Dioxane (Low Level H2O or Soli	06/07/2019	10	5/28/2019	
Met 6010C - Zn	06/07/2019	10	11/17/2019	
Met 200.8 - As UCT	06/07/2019	10	11/17/2019	
Met 200.8 - Pb	06/07/2019	10	11/17/2019	
Met 6010C - Ca	06/07/2019	10	11/17/2019	
Met 200.8 - Sb	06/07/2019	10	11/17/2019	
8260C VOA	06/07/2019	10	6/4/2019	
Met 6010C - Be	06/07/2019	10	11/17/2019	
Met 200.8 - Se UCT	06/07/2019	10	11/17/2019	
Met 6010C - Cu	06/07/2019	10	11/17/2019	
19E0324-08 EB-0519 [Water] Sampled 21-May-2019 13:00				
Met 6010C - Ba	06/07/2019	10	11/17/2019	
Met 6010C - Cr	06/07/2019	10	11/17/2019	
Met 200.8 - Se UCT	06/07/2019	10	11/17/2019	
8260C VOA	06/07/2019	10	6/4/2019	
Met 7470A Hg Low Level	06/07/2019	10	6/18/2019	
Met 6010C - Mg	06/07/2019	10	11/17/2019	
Met 6010C - Ag	06/07/2019	10	11/17/2019	
TPH_NW HCID	06/07/2019	10	5/28/2019	
Met 6010C - Zn	06/07/2019	10	11/17/2019	
Met 200.8 - Tl	06/07/2019	10	11/17/2019	

Reviewed By _____ Date _____

WORK ORDER

19E0324

Client: Golder Associates | **Project Manager:** Kelly Bottem

Project: Landsburg | **Project Number:** Landsburg

Analysis	Due	TAT	Expires	Comments
Met 6010C - V	06/07/2019	10	11/17/2019	
Met 6010C - Ni	06/07/2019	10	11/17/2019	
Met 6010C - Cu	06/07/2019	10	11/17/2019	
Met 6010C - Fe	06/07/2019	10	11/17/2019	
Met 6010C - Na	06/07/2019	10	11/17/2019	
Met 6010C - Mn	06/07/2019	10	11/17/2019	
Met 6010C - K	06/07/2019	10	11/17/2019	
Met 6010C - Al	06/07/2019	10	11/17/2019	
Met 6010C - Co	06/07/2019	10	11/17/2019	
Met 200.8 - Pb	06/07/2019	10	11/17/2019	
Met 6010C - Cd	06/07/2019	10	11/17/2019	
Met 200.8 - As UCT	06/07/2019	10	11/17/2019	
8270D 1,4-Dioxane (Low Level H2O or Soli	06/07/2019	10	5/28/2019	
Met 6010C - Be	06/07/2019	10	11/17/2019	
Met 6010C - Ca	06/07/2019	10	11/17/2019	
Met 200.8 - Sb	06/07/2019	10	11/17/2019	
19E0324-09 LMW-7-0519 [Water] Sampled 21-May-2019 14:40				
8260C VOA	06/07/2019	10	6/4/2019	
8270D 1,4-Dioxane (Low Level H2O or Soli	06/07/2019	10	5/28/2019	
Met 200.8 - Tl	06/07/2019	10	11/17/2019	
Met 200.8 - Se UCT	06/07/2019	10	11/17/2019	
Met 6010C - Cr	06/07/2019	10	11/17/2019	
Met 200.8 - Sb	06/07/2019	10	11/17/2019	
Met 6010C - Zn	06/07/2019	10	11/17/2019	
Met 6010C - Ni	06/07/2019	10	11/17/2019	
TPH_NW HCID	06/07/2019	10	5/28/2019	
Met 6010C - Co	06/07/2019	10	11/17/2019	
Met 6010C - Cd	06/07/2019	10	11/17/2019	
Met 6010C - Ca	06/07/2019	10	11/17/2019	
Met 6010C - Mg	06/07/2019	10	11/17/2019	
Met 200.8 - Pb	06/07/2019	10	11/17/2019	
Met 200.8 - As UCT	06/07/2019	10	11/17/2019	
Met 6010C - Cu	06/07/2019	10	11/17/2019	
Met 6010C - Ag	06/07/2019	10	11/17/2019	
Met 6010C - K	06/07/2019	10	11/17/2019	
Met 6010C - Al	06/07/2019	10	11/17/2019	
Met 6010C - Mn	06/07/2019	10	11/17/2019	
Met 6010C - Na	06/07/2019	10	11/17/2019	
Met 6010C - Be	06/07/2019	10	11/17/2019	
Met 6010C - V	06/07/2019	10	11/17/2019	

Reviewed By

Date

WORK ORDER

19E0324

Client: Golder Associates | **Project Manager:** Kelly Bottem

Project: Landsburg | **Project Number:** Landsburg

Analysis	Due	TAT	Expires	Comments
Met 6010C - Ba	06/07/2019	10	11/17/2019	
Met 7470A Hg Low Level	06/07/2019	10	6/18/2019	
Met 6010C - Fe	06/07/2019	10	11/17/2019	
19E0324-10 LMW-6-0519 [Water] Sampled 22-May-2019 08:45				
Met 6010C - Be	06/07/2019	10	11/18/2019	
TPH_NW HCID	06/07/2019	10	5/29/2019	
Met 6010C - Zn	06/07/2019	10	11/18/2019	
Met 6010C - Ni	06/07/2019	10	11/18/2019	
Met 6010C - Na	06/07/2019	10	11/18/2019	
Met 6010C - Mn	06/07/2019	10	11/18/2019	
Met 6010C - Mg	06/07/2019	10	11/18/2019	
Met 6010C - K	06/07/2019	10	11/18/2019	
Met 6010C - Fe	06/07/2019	10	11/18/2019	
Met 6010C - Cu	06/07/2019	10	11/18/2019	
Met 6010C - Cr	06/07/2019	10	11/18/2019	
Met 6010C - Co	06/07/2019	10	11/18/2019	
Met 7470A Hg Low Level	06/07/2019	10	6/19/2019	
Met 6010C - Ba	06/07/2019	10	11/18/2019	
Met 200.8 - Tl	06/07/2019	10	11/18/2019	
Met 6010C - Cd	06/07/2019	10	11/18/2019	
8260C VOA	06/07/2019	10	6/5/2019	
Met 6010C - Al	06/07/2019	10	11/18/2019	
Met 6010C - Ca	06/07/2019	10	11/18/2019	
Met 6010C - V	06/07/2019	10	11/18/2019	
8270D 1,4-Dioxane (Low Level H2O or Soli	06/07/2019	10	5/29/2019	
Met 200.8 - As UCT	06/07/2019	10	11/18/2019	
Met 200.8 - Pb	06/07/2019	10	11/18/2019	
Met 200.8 - Sb	06/07/2019	10	11/18/2019	
Met 200.8 - Se UCT	06/07/2019	10	11/18/2019	
Met 6010C - Ag	06/07/2019	10	11/18/2019	
19E0324-11 LMW-13R-0519 [Water] Sampled 22-May-2019 09:50				
Met 6010C - Be	06/07/2019	10	11/18/2019	
Met 200.8 - Tl	06/07/2019	10	11/18/2019	
Met 200.8 - Se UCT	06/07/2019	10	11/18/2019	
Met 200.8 - Sb	06/07/2019	10	11/18/2019	
Met 200.8 - Pb	06/07/2019	10	11/18/2019	
Met 6010C - Ag	06/07/2019	10	11/18/2019	
Met 200.8 - As UCT	06/07/2019	10	11/18/2019	
8270D 1,4-Dioxane (Low Level H2O or Soli	06/07/2019	10	5/29/2019	
Met 6010C - Al	06/07/2019	10	11/18/2019	

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19E0324

Client: Golder Associates | **Project Manager:** Kelly Bottem

Project: Landsburg | **Project Number:** Landsburg

Analysis	Due	TAT	Expires	Comments
8260C VOA	06/07/2019	10	6/5/2019	
Met 6010C - Zn	06/07/2019	10	11/18/2019	
Met 6010C - Ca	06/07/2019	10	11/18/2019	
Met 6010C - V	06/07/2019	10	11/18/2019	
Met 6010C - Fe	06/07/2019	10	11/18/2019	
Met 7470A Hg Low Level	06/07/2019	10	6/19/2019	
Met 6010C - Cd	06/07/2019	10	11/18/2019	
Met 6010C - Co	06/07/2019	10	11/18/2019	
Met 6010C - Cu	06/07/2019	10	11/18/2019	
TPH_NW HCID	06/07/2019	10	5/29/2019	
Met 6010C - K	06/07/2019	10	11/18/2019	
Met 6010C - Mg	06/07/2019	10	11/18/2019	
Met 6010C - Mn	06/07/2019	10	11/18/2019	
Met 6010C - Na	06/07/2019	10	11/18/2019	
Met 6010C - Ni	06/07/2019	10	11/18/2019	
Met 6010C - Ba	06/07/2019	10	11/18/2019	
Met 6010C - Cr	06/07/2019	10	11/18/2019	
19E0324-12 LMW-12-0519 [Water] Sampled 22-May-2019 10:45				
Met 6010C - Ba	06/07/2019	10	11/18/2019	
Met 200.8 - Tl	06/07/2019	10	11/18/2019	
Met 6010C - K	06/07/2019	10	11/18/2019	
Met 6010C - Cr	06/07/2019	10	11/18/2019	
Met 6010C - Ca	06/07/2019	10	11/18/2019	
Met 6010C - Cu	06/07/2019	10	11/18/2019	
Met 6010C - Fe	06/07/2019	10	11/18/2019	
Met 6010C - Zn	06/07/2019	10	11/18/2019	
TPH_NW HCID	06/07/2019	10	5/29/2019	
8260C VOA	06/07/2019	10	6/5/2019	
8270D 1,4-Dioxane (Low Level H2O or Soli	06/07/2019	10	5/29/2019	
Met 200.8 - As UCT	06/07/2019	10	11/18/2019	
Met 200.8 - Pb	06/07/2019	10	11/18/2019	
Met 200.8 - Sb	06/07/2019	10	11/18/2019	
Met 200.8 - Se UCT	06/07/2019	10	11/18/2019	
Met 6010C - Al	06/07/2019	10	11/18/2019	
Met 7470A Hg Low Level	06/07/2019	10	6/19/2019	
Met 6010C - V	06/07/2019	10	11/18/2019	
Met 6010C - Be	06/07/2019	10	11/18/2019	
Met 6010C - Cd	06/07/2019	10	11/18/2019	
Met 6010C - Co	06/07/2019	10	11/18/2019	
Met 6010C - Mg	06/07/2019	10	11/18/2019	

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WORK ORDER

19E0324

Client: Golder Associates | **Project Manager:** Kelly Bottem

Project: Landsburg | **Project Number:** Landsburg

Analysis	Due	TAT	Expires	Comments
Met 6010C - Mn	06/07/2019	10	11/18/2019	
Met 6010C - Na	06/07/2019	10	11/18/2019	
Met 6010C - Ni	06/07/2019	10	11/18/2019	
Met 6010C - Ag	06/07/2019	10	11/18/2019	
19E0324-13 LMW-10-0519 [Water] Sampled 22-May-2019 11:55				
8260C VOA	06/07/2019	10	6/5/2019	
Met 6010C - Ag	06/07/2019	10	11/18/2019	
Met 6010C - Al	06/07/2019	10	11/18/2019	
TPH_NW HCID	06/07/2019	10	5/29/2019	
Met 7470A Hg Low Level	06/07/2019	10	6/19/2019	
Met 6010C - Mn	06/07/2019	10	11/18/2019	
Met 6010C - Mg	06/07/2019	10	11/18/2019	
Met 6010C - K	06/07/2019	10	11/18/2019	
Met 6010C - Fe	06/07/2019	10	11/18/2019	
Met 6010C - Ca	06/07/2019	10	11/18/2019	
Met 200.8 - Pb	06/07/2019	10	11/18/2019	
Met 6010C - Ba	06/07/2019	10	11/18/2019	
8270D 1,4-Dioxane (Low Level H2O or Soli	06/07/2019	10	5/29/2019	
Met 200.8 - Se UCT	06/07/2019	10	11/18/2019	
Met 6010C - Be	06/07/2019	10	11/18/2019	
Met 6010C - V	06/07/2019	10	11/18/2019	
Met 200.8 - Sb	06/07/2019	10	11/18/2019	
Met 200.8 - Tl	06/07/2019	10	11/18/2019	
Met 6010C - Cd	06/07/2019	10	11/18/2019	
Met 6010C - Co	06/07/2019	10	11/18/2019	
Met 6010C - Cr	06/07/2019	10	11/18/2019	
Met 6010C - Cu	06/07/2019	10	11/18/2019	
Met 6010C - Zn	06/07/2019	10	11/18/2019	
Met 6010C - Ni	06/07/2019	10	11/18/2019	
Met 6010C - Na	06/07/2019	10	11/18/2019	
Met 200.8 - As UCT	06/07/2019	10	11/18/2019	
19E0324-14 LMW-4-0519 [Water] Sampled 22-May-2019 13:10				
Met 6010C - Mn	06/07/2019	10	11/18/2019	
Met 6010C - Ag	06/07/2019	10	11/18/2019	
Met 200.8 - Tl	06/07/2019	10	11/18/2019	
8270D 1,4-Dioxane (Low Level H2O or Soli	06/07/2019	10	5/29/2019	
8260C VOA	06/07/2019	10	6/5/2019	
Met 200.8 - As UCT	06/07/2019	10	11/18/2019	
Met 6010C - Na	06/07/2019	10	11/18/2019	
Met 6010C - Ni	06/07/2019	10	11/18/2019	

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19E0324

Client: Golder Associates | **Project Manager:** Kelly Bottem

Project: Landsburg | **Project Number:** Landsburg

Analysis	Due	TAT	Expires	Comments
Met 6010C - Mg	06/07/2019	10	11/18/2019	
Met 6010C - Co	06/07/2019	10	11/18/2019	
Met 6010C - Cd	06/07/2019	10	11/18/2019	
Met 6010C - Ca	06/07/2019	10	11/18/2019	
Met 6010C - Be	06/07/2019	10	11/18/2019	
Met 6010C - V	06/07/2019	10	11/18/2019	
Met 6010C - Cr	06/07/2019	10	11/18/2019	
Met 200.8 - Se UCT	06/07/2019	10	11/18/2019	
Met 6010C - Fe	06/07/2019	10	11/18/2019	
Met 6010C - K	06/07/2019	10	11/18/2019	
Met 6010C - Cu	06/07/2019	10	11/18/2019	
Met 6010C - Zn	06/07/2019	10	11/18/2019	
Met 7470A Hg Low Level	06/07/2019	10	6/19/2019	
TPH_NW HCID	06/07/2019	10	5/29/2019	
Met 6010C - Ba	06/07/2019	10	11/18/2019	
Met 6010C - Al	06/07/2019	10	11/18/2019	
Met 200.8 - Pb	06/07/2019	10	11/18/2019	
Met 200.8 - Sb	06/07/2019	10	11/18/2019	
19E0324-15 LMW-4-0519-D [Water] Sampled 22-May-2019 13:20				
Met 6010C - K	06/07/2019	10	11/18/2019	
8260C VOA	06/07/2019	10	6/5/2019	
Met 200.8 - Se UCT	06/07/2019	10	11/18/2019	
Met 6010C - Mn	06/07/2019	10	11/18/2019	
Met 6010C - Mg	06/07/2019	10	11/18/2019	
Met 6010C - Ag	06/07/2019	10	11/18/2019	
Met 6010C - Fe	06/07/2019	10	11/18/2019	
Met 6010C - Ca	06/07/2019	10	11/18/2019	
Met 6010C - Be	06/07/2019	10	11/18/2019	
Met 6010C - Ba	06/07/2019	10	11/18/2019	
Met 200.8 - Pb	06/07/2019	10	11/18/2019	
Met 200.8 - Tl	06/07/2019	10	11/18/2019	
Met 6010C - Al	06/07/2019	10	11/18/2019	
Met 6010C - Cd	06/07/2019	10	11/18/2019	
Met 6010C - Co	06/07/2019	10	11/18/2019	
Met 6010C - Cr	06/07/2019	10	11/18/2019	
Met 6010C - Cu	06/07/2019	10	11/18/2019	
Met 6010C - Na	06/07/2019	10	11/18/2019	
Met 6010C - Ni	06/07/2019	10	11/18/2019	
Met 6010C - V	06/07/2019	10	11/18/2019	
Met 6010C - Zn	06/07/2019	10	11/18/2019	

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19E0324

Client: Golder Associates | **Project Manager:** Kelly Bottem

Project: Landsburg | **Project Number:** Landsburg

Analysis	Due	TAT	Expires	Comments
Met 7470A Hg Low Level	06/07/2019	10	6/19/2019	
Met 200.8 - As UCT	06/07/2019	10	11/18/2019	
Met 200.8 - Sb	06/07/2019	10	11/18/2019	
8270D 1,4-Dioxane (Low Level H2O or Soli	06/07/2019	10	5/29/2019	
TPH_NW HCID	06/07/2019	10	5/29/2019	
19E0324-16 LMW-2-0519 [Water] Sampled 22-May-2019 14:20				
Met 200.8 - As UCT	06/07/2019	10	11/18/2019	
Met 6010C - Co	06/07/2019	10	11/18/2019	
8260C VOA	06/07/2019	10	6/5/2019	
Met 6010C - Cr	06/07/2019	10	11/18/2019	
Met 200.8 - Pb	06/07/2019	10	11/18/2019	
Met 200.8 - Sb	06/07/2019	10	11/18/2019	
Met 200.8 - Se UCT	06/07/2019	10	11/18/2019	
Met 200.8 - Tl	06/07/2019	10	11/18/2019	
Met 6010C - Ag	06/07/2019	10	11/18/2019	
Met 6010C - Al	06/07/2019	10	11/18/2019	
Met 6010C - Ba	06/07/2019	10	11/18/2019	
Met 6010C - Be	06/07/2019	10	11/18/2019	
Met 6010C - Cu	06/07/2019	10	11/18/2019	
8270D 1,4-Dioxane (Low Level H2O or Soli	06/07/2019	10	5/29/2019	
Met 6010C - Cd	06/07/2019	10	11/18/2019	
Met 6010C - Fe	06/07/2019	10	11/18/2019	
Met 6010C - K	06/07/2019	10	11/18/2019	
Met 6010C - Mg	06/07/2019	10	11/18/2019	
Met 6010C - Mn	06/07/2019	10	11/18/2019	
Met 6010C - Na	06/07/2019	10	11/18/2019	
Met 6010C - Ni	06/07/2019	10	11/18/2019	
Met 6010C - V	06/07/2019	10	11/18/2019	
Met 6010C - Zn	06/07/2019	10	11/18/2019	
Met 7470A Hg Low Level	06/07/2019	10	6/19/2019	
TPH_NW HCID	06/07/2019	10	5/29/2019	
Met 6010C - Ca	06/07/2019	10	11/18/2019	
19E0324-17 TripBlank-0519 [Water] Sampled 20-May-2019 12:45				
8260C VOA	06/07/2019	10	6/3/2019	

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19E0324

Client: Golder Associates | **Project Manager:** Kelly Bottem

Project: Landsburg | **Project Number:** Landsburg

Preservation Confirmation

Container ID	Container Type	pH	
19E0324-01 A	Glass NM, Amber, 500 mL		
19E0324-01 B	Glass NM, Amber, 500 mL		
19E0324-01 C	Glass NM, Amber, 500 mL		
19E0324-01 D	Glass NM, Amber, 500 mL		
19E0324-01 E	Glass NM, Amber, 500 mL		
19E0324-01 F	Glass NM, Amber, 500 mL		
19E0324-01 G	HDPE NM, 500 mL, 1:1 HNO3	< 2	Pass
19E0324-01 H	VOA Vial, Clear, 40 mL, HCL		
19E0324-01 I	VOA Vial, Clear, 40 mL, HCL		
19E0324-01 J	VOA Vial, Clear, 40 mL, HCL		
19E0324-01 K	VOA Vial, Clear, 40 mL, HCL		
19E0324-01 L	VOA Vial, Clear, 40 mL, HCL		
19E0324-02 A	Glass NM, Amber, 500 mL		
19E0324-02 B	Glass NM, Amber, 500 mL		
19E0324-02 C	Glass NM, Amber, 500 mL		
19E0324-02 D	Glass NM, Amber, 500 mL		
19E0324-02 E	Glass NM, Amber, 500 mL		
19E0324-02 F	Glass NM, Amber, 500 mL		
19E0324-02 G	HDPE NM, 500 mL, 1:1 HNO3	< 2	Pass
19E0324-02 H	VOA Vial, Clear, 40 mL, HCL		
19E0324-02 I	VOA Vial, Clear, 40 mL, HCL		
19E0324-02 J	VOA Vial, Clear, 40 mL, HCL		
19E0324-02 K	VOA Vial, Clear, 40 mL, HCL		
19E0324-02 L	VOA Vial, Clear, 40 mL, HCL		
19E0324-03 A	Glass NM, Amber, 500 mL		
19E0324-03 B	Glass NM, Amber, 500 mL		
19E0324-03 C	Glass NM, Amber, 500 mL		
19E0324-03 D	Glass NM, Amber, 500 mL		
19E0324-03 E	Glass NM, Amber, 500 mL		
19E0324-03 F	Glass NM, Amber, 500 mL		
19E0324-03 G	HDPE NM, 500 mL, 1:1 HNO3	< 2	Pass
19E0324-03 H	VOA Vial, Clear, 40 mL, HCL		
19E0324-03 I	VOA Vial, Clear, 40 mL, HCL		
19E0324-03 J	VOA Vial, Clear, 40 mL, HCL		
19E0324-03 K	VOA Vial, Clear, 40 mL, HCL		

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19E0324

Client: Golder Associates | **Project Manager:** Kelly Bottem

Project: Landsburg | **Project Number:** Landsburg

19E0324-03 L	VOA Vial, Clear, 40 mL, HCL		
19E0324-04 A	Glass NM, Amber, 500 mL		
19E0324-04 B	Glass NM, Amber, 500 mL		
19E0324-04 C	Glass NM, Amber, 500 mL		
19E0324-04 D	Glass NM, Amber, 500 mL		
19E0324-04 E	Glass NM, Amber, 500 mL		
19E0324-04 F	Glass NM, Amber, 500 mL		
19E0324-04 G	HDPE NM, 500 mL, 1:1 HNO3	<2	Pass
19E0324-04 H	VOA Vial, Clear, 40 mL, HCL		
19E0324-04 I	VOA Vial, Clear, 40 mL, HCL		
19E0324-04 J	VOA Vial, Clear, 40 mL, HCL		
19E0324-04 K	VOA Vial, Clear, 40 mL, HCL		
19E0324-04 L	VOA Vial, Clear, 40 mL, HCL		
19E0324-05 A	Glass NM, Amber, 500 mL		
19E0324-05 B	Glass NM, Amber, 500 mL		
19E0324-05 C	Glass NM, Amber, 500 mL		
19E0324-05 D	Glass NM, Amber, 500 mL		
19E0324-05 E	Glass NM, Amber, 500 mL		
19E0324-05 F	Glass NM, Amber, 500 mL		
19E0324-05 G	HDPE NM, 500 mL, 1:1 HNO3	<2	Pass
19E0324-05 H	VOA Vial, Clear, 40 mL, HCL		
19E0324-05 I	VOA Vial, Clear, 40 mL, HCL		
19E0324-05 J	VOA Vial, Clear, 40 mL, HCL		
19E0324-05 K	VOA Vial, Clear, 40 mL, HCL		
19E0324-05 L	VOA Vial, Clear, 40 mL, HCL		
19E0324-06 A	Glass NM, Amber, 500 mL		
19E0324-06 B	Glass NM, Amber, 500 mL		
19E0324-06 C	Glass NM, Amber, 500 mL		
19E0324-06 D	Glass NM, Amber, 500 mL		
19E0324-06 E	Glass NM, Amber, 500 mL		
19E0324-06 F	Glass NM, Amber, 500 mL		
19E0324-06 G	HDPE NM, 500 mL, 1:1 HNO3	<2	Pass
19E0324-06 H	VOA Vial, Clear, 40 mL, HCL		
19E0324-06 I	VOA Vial, Clear, 40 mL, HCL		
19E0324-06 J	VOA Vial, Clear, 40 mL, HCL		
19E0324-06 K	VOA Vial, Clear, 40 mL, HCL		
19E0324-06 L	VOA Vial, Clear, 40 mL, HCL		

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19E0324

Client: Golder Associates	**Project Manager: Kelly Bottem**
Project: Landsburg	**Project Number: Landsburg**

19E0324-07 A	Glass NM, Amber, 500 mL		
19E0324-07 B	Glass NM, Amber, 500 mL		
19E0324-07 C	Glass NM, Amber, 500 mL		
19E0324-07 D	Glass NM, Amber, 500 mL		
19E0324-07 E	Glass NM, Amber, 500 mL		
19E0324-07 F	Glass NM, Amber, 500 mL		
19E0324-07 G	HDPE NM, 500 mL, 1:1 HNO3	C2	Pass
19E0324-07 H	VOA Vial, Clear, 40 mL, HCL		
19E0324-07 I	VOA Vial, Clear, 40 mL, HCL		
19E0324-07 J	VOA Vial, Clear, 40 mL, HCL		
19E0324-07 K	VOA Vial, Clear, 40 mL, HCL		
19E0324-07 L	VOA Vial, Clear, 40 mL, HCL		
19E0324-08 A	Glass NM, Amber, 500 mL		
19E0324-08 B	Glass NM, Amber, 500 mL		
19E0324-08 C	Glass NM, Amber, 500 mL		
19E0324-08 D	Glass NM, Amber, 500 mL		
19E0324-08 E	Glass NM, Amber, 500 mL		
19E0324-08 F	Glass NM, Amber, 500 mL		
19E0324-08 G	HDPE NM, 500 mL, 1:1 HNO3	C2	Pass
19E0324-08 H	VOA Vial, Clear, 40 mL, HCL		
19E0324-08 I	VOA Vial, Clear, 40 mL, HCL		
19E0324-08 J	VOA Vial, Clear, 40 mL, HCL		
19E0324-08 K	VOA Vial, Clear, 40 mL, HCL		
19E0324-08 L	VOA Vial, Clear, 40 mL, HCL		
19E0324-09 A	Glass NM, Amber, 500 mL		
19E0324-09 B	Glass NM, Amber, 500 mL		
19E0324-09 C	Glass NM, Amber, 500 mL		
19E0324-09 D	Glass NM, Amber, 500 mL		
19E0324-09 E	Glass NM, Amber, 500 mL		
19E0324-09 F	Glass NM, Amber, 500 mL		
19E0324-09 G	HDPE NM, 500 mL, 1:1 HNO3	C2	Pass
19E0324-09 H	VOA Vial, Clear, 40 mL, HCL		
19E0324-09 I	VOA Vial, Clear, 40 mL, HCL		
19E0324-09 J	VOA Vial, Clear, 40 mL, HCL		
19E0324-09 K	VOA Vial, Clear, 40 mL, HCL		
19E0324-09 L	VOA Vial, Clear, 40 mL, HCL		
19E0324-10 A	Glass NM, Amber, 500 mL		

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19E0324

Client: Golder Associates | **Project Manager:** Kelly Bottem

Project: Landsburg | **Project Number:** Landsburg

19E0324-10 B	Glass NM, Amber, 500 mL		
19E0324-10 C	Glass NM, Amber, 500 mL		
19E0324-10 D	Glass NM, Amber, 500 mL		
19E0324-10 E	Glass NM, Amber, 500 mL		
19E0324-10 F	Glass NM, Amber, 500 mL		
19E0324-10 G	HDPE NM, 500 mL, 1:1 HNO3	<2	Pass
19E0324-10 H	VOA Vial, Clear, 40 mL, HCL		
19E0324-10 I	VOA Vial, Clear, 40 mL, HCL		
19E0324-10 J	VOA Vial, Clear, 40 mL, HCL		
19E0324-10 K	VOA Vial, Clear, 40 mL, HCL		
19E0324-10 L	VOA Vial, Clear, 40 mL, HCL		
19E0324-11 A	Glass NM, Amber, 500 mL		
19E0324-11 B	Glass NM, Amber, 500 mL		
19E0324-11 C	Glass NM, Amber, 500 mL		
19E0324-11 D	Glass NM, Amber, 500 mL		
19E0324-11 E	Glass NM, Amber, 500 mL		
19E0324-11 F	Glass NM, Amber, 500 mL		
19E0324-11 G	HDPE NM, 500 mL, 1:1 HNO3	<2	Pass
19E0324-11 H	VOA Vial, Clear, 40 mL, HCL	Bubble	
19E0324-11 I	VOA Vial, Clear, 40 mL, HCL	Bubble	
19E0324-11 J	VOA Vial, Clear, 40 mL, HCL		
19E0324-11 K	VOA Vial, Clear, 40 mL, HCL		
19E0324-11 L	VOA Vial, Clear, 40 mL, HCL		
19E0324-12 A	Glass NM, Amber, 500 mL		
19E0324-12 B	Glass NM, Amber, 500 mL		
19E0324-12 C	Glass NM, Amber, 500 mL		
19E0324-12 D	Glass NM, Amber, 500 mL		
19E0324-12 E	Glass NM, Amber, 500 mL		
19E0324-12 F	Glass NM, Amber, 500 mL		
19E0324-12 G	HDPE NM, 500 mL, 1:1 HNO3	<2	Pass
19E0324-12 H	VOA Vial, Clear, 40 mL, HCL		
19E0324-12 I	VOA Vial, Clear, 40 mL, HCL		
19E0324-12 J	VOA Vial, Clear, 40 mL, HCL		
19E0324-12 K	VOA Vial, Clear, 40 mL, HCL		
19E0324-12 L	VOA Vial, Clear, 40 mL, HCL		
19E0324-13 A	Glass NM, Amber, 500 mL		
19E0324-13 B	Glass NM, Amber, 500 mL		

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19E0324

Client: Golder Associates	**Project Manager: Kelly Bottem**
Project: Landsburg	**Project Number: Landsburg**

19E0324-13 C	Glass NM, Amber, 500 mL		
19E0324-13 D	Glass NM, Amber, 500 mL		
19E0324-13 E	Glass NM, Amber, 500 mL		
19E0324-13 F	Glass NM, Amber, 500 mL		
19E0324-13 G	HDPE NM, 500 mL, 1:1 HNO3	<2	Pass
19E0324-13 H	VOA Vial, Clear, 40 mL, HCL		
19E0324-13 I	VOA Vial, Clear, 40 mL, HCL		
19E0324-13 J	VOA Vial, Clear, 40 mL, HCL		
19E0324-13 K	VOA Vial, Clear, 40 mL, HCL		
19E0324-13 L	VOA Vial, Clear, 40 mL, HCL		
19E0324-14 A	Glass NM, Amber, 500 mL		
19E0324-14 B	Glass NM, Amber, 500 mL		
19E0324-14 C	Glass NM, Amber, 500 mL		
19E0324-14 D	Glass NM, Amber, 500 mL		
19E0324-14 E	Glass NM, Amber, 500 mL		
19E0324-14 F	Glass NM, Amber, 500 mL		
19E0324-14 G	HDPE NM, 500 mL, 1:1 HNO3	<2	Pass
19E0324-14 H	VOA Vial, Clear, 40 mL, HCL		
19E0324-14 I	VOA Vial, Clear, 40 mL, HCL		
19E0324-14 J	VOA Vial, Clear, 40 mL, HCL		
19E0324-14 K	VOA Vial, Clear, 40 mL, HCL		
19E0324-14 L	VOA Vial, Clear, 40 mL, HCL		
19E0324-15 A	Glass NM, Amber, 500 mL		
19E0324-15 B	Glass NM, Amber, 500 mL		
19E0324-15 C	Glass NM, Amber, 500 mL		
19E0324-15 D	Glass NM, Amber, 500 mL		
19E0324-15 E	Glass NM, Amber, 500 mL		
19E0324-15 F	Glass NM, Amber, 500 mL		
19E0324-15 G	HDPE NM, 500 mL, 1:1 HNO3	<2	Pass
19E0324-15 H	VOA Vial, Clear, 40 mL, HCL	Bubble	
19E0324-15 I	VOA Vial, Clear, 40 mL, HCL		
19E0324-15 J	VOA Vial, Clear, 40 mL, HCL		
19E0324-15 K	VOA Vial, Clear, 40 mL, HCL		
19E0324-15 L	VOA Vial, Clear, 40 mL, HCL		
19E0324-16 A	Glass NM, Amber, 500 mL		
19E0324-16 B	Glass NM, Amber, 500 mL		
19E0324-16 C	Glass NM, Amber, 500 mL		

Reviewed By

Date

WORK ORDER

19E0324

Client: Golder Associates	**Project Manager: Kelly Bottem**
Project: Landsburg	**Project Number: Landsburg**

19E0324-16 D	Glass NM, Amber, 500 mL		
19E0324-16 E	Glass NM, Amber, 500 mL		
19E0324-16 F	Glass NM, Amber, 500 mL		
19E0324-16 G	HDPE NM, 500 mL, 1:1 HNO3	Cl	Pass
19E0324-16 H	VOA Vial, Clear, 40 mL, HCL		
19E0324-16 I	VOA Vial, Clear, 40 mL, HCL		
19E0324-16 J	VOA Vial, Clear, 40 mL, HCL		
19E0324-16 K	VOA Vial, Clear, 40 mL, HCL		
19E0324-16 L	VOA Vial, Clear, 40 mL, HCL		
19E0324-17 A	VOA Vial, Clear, 40 mL, HCL		
19E0324-17 B	VOA Vial, Clear, 40 mL, HCL		
19E0324-17 C	VOA Vial, Clear, 40 mL, HCL		
19E0324-17 D	VOA Vial, Clear, 40 mL, HCL		
19E0324-17 E	VOA Vial, Clear, 40 mL, HCL		
19E0324-17 F	VOA Vial, Clear, 40 mL, HCL		

JBm — Preservation Confirmed By

05/22/19 — Date

Reviewed By

Date

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: Golder

COC No(s): ~~NA~~

Assigned ARI Job No: 1960324

Project Name: Landsburg

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

Tracking No: _____ NA

Preliminary Examination Phase:

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

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

4.6 2.8 2.3 5.8 3.7 3.8 -0.7

Time 1540

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

Temp Gun ID#: D00 2565

Cooler Accepted by: _____ Date: 5/22/19 Time: 1540

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler?		YES	NO
What kind of packing material was used?	Bubble Wrap Wet Ice Gel Packs Baggies Foam Block Paper Other: _____		
Was sufficient ice used (if appropriate)?	NA	YES	NO
How were bottles sealed in plastic bags?	Individually	Grouped	Not
Did all bottles arrive in good condition (unbroken)?		YES	NO
Were all bottle labels complete and legible?		YES	NO
Did the number of containers listed on COC match with the number of containers received?		YES	NO
Did all bottle labels and tags agree with custody papers?		YES	NO
Were all bottles used correct for the requested analyses?		YES	NO
Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)	NA	YES	NO
Were all VOC vials free of air bubbles?	NA	YES	NO
Was sufficient amount of sample sent in each bottle?		YES	NO
Date VOC Trip Blank was made at ARI	NA	5/13/19	

Were the sample(s) split by ARI? NA YES Date/Time: _____ Equipment: _____ Split by: _____

Samples Logged by: JJm Date: 05/22/19 Time: 1712 Labels checked by: JJm

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

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

Additional Notes, Discrepancies, & Resolutions:

vials w/ air bubbles marked on preservation sheet. Lab to determine sizes. No frozen volume found in cooler #7.

By: JJm Date: 05/22/19

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-11-0519

19E0324-01 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/20/2019 12:45

Instrument: NT2 Analyst: LH — Analyzed: 05/23/2019 14:54

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19E0324-01 H

Preparation Batch: BHE0615 — Sample Size: 10 mL

Prepared: 23-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.09	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.06	0.10	ND	ug/L	U
Bromomethane	74-83-9	1	0.25	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.09	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.04	0.20	ND	ug/L	U
Acrolein	107-02-8	1	2.48	2.50	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.04	0.20	ND	ug/L	U
Acetone	67-64-1	1	2.06	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.05	0.20	ND	ug/L	U
Bromoethane	74-96-4	1	0.04	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	0.23	0.50	ND	ug/L	U
Methylene Chloride	75-09-2	1	0.49	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	0.60	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.04	0.10	**0.04**	ug/L	J
trans-1,2-Dichloroethene	156-60-5	1	0.05	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.07	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.05	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	0.81	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.05	0.10	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.04	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.03	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.06	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.04	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.03	0.10	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.04	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.07	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.03	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.05	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.04	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.05	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.15	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	0.25	0.50	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	0.97	2.50	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.06	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.04	0.20	ND	ug/L	U
trans-1,3-Dichloropropene	10061-02-6	1	0.08	0.20	ND	ug/L	U

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-11-0519

19E0324-01 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/20/2019 12:45

Instrument: NT2 Analyst: LH — Analyzed: 05/23/2019 14:54

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
2-Hexanone	591-78-6	1	0.90	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.13	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.06	0.10	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.05	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.05	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.07	0.10	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.02	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.04	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.04	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.05	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.03	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.09	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.05	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.06	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.06	0.10	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.13	0.20	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	0.32	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.02	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.06	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.02	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.02	0.10	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.02	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.03	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.02	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.02	0.20	**0.04**	ug/L	J
s-Butylbenzene	135-98-8	1	0.02	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.03	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.04	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.04	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.02	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.04	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.37	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.11	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.07	0.20	ND	ug/L	U
Naphthalene	91-20-3	1	0.12	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.11	0.20	ND	ug/L	U
Dichlorodifluoromethane	75-71-8	1	0.05	0.20	ND	ug/L	U
Surrogate: Dibromofluoromethane				*80-120 %*	*102*	*%*	
Surrogate: 1,2-Dichloroethane-d4				*80-129 %*	*111*	*%*	

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-11-0519

19E0324-01 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/20/2019 12:45

Instrument: NT2 Analyst: LH — Analyzed: 05/23/2019 14:54

Analyte	CAS Number	Recovery Limits	Recovery	Units	Notes
Surrogate: Toluene-d8		*80-120 %*	*95.7*	*%*	
Surrogate: 4-Bromofluorobenzene		*80-120 %*	*93.4*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4		*80-120 %*	*101*	*%*	

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-11-0519

19E0324-01 (Water)

Semivolatile Organic Compounds

Method: EPA 8270D — Sampled: 05/20/2019 12:45

Instrument: NT6 Analyst: JZ — Analyzed: 06/03/2019 18:07

Sample Preparation: Preparation Method: EPA 3520C (Liq Liq) — Extract ID: 19E0324-01 B 01

Preparation Batch: BHE0602 — Sample Size: 500 mL

Prepared: 23-May-2019 — Final Volume: 1 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
1,4-Dioxane	123-91-1	1	0.2	0.4	ND	ug/L	U
Surrogate: 1,4-Dioxane-d8				*33.6-120 %*	*59.3*	*%*	

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-11-0519

19E0324-01 (Water)

Petroleum Hydrocarbons

Method: NWTPH-HCID — Sampled: 05/20/2019 12:45

Instrument: FID4 Analyst: JGR — Analyzed: 05/25/2019 04:12

Sample Preparation: Preparation Method: EPA 3510C SepF — Extract ID: 19E0324-01 A 01

Preparation Batch: BHE0593 — Sample Size: 500 mL

Prepared: 23-May-2019 — Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-C12)	GRO	1	0.25	ND	mg/L	U
Diesel Range Organics (C12-C24)	DRO	1	0.50	ND	mg/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	1.00	ND	mg/L	U
Surrogate: o-Terphenyl			*50-150 %*	*115*	*%*	
Surrogate: n-Triacontane			*50-150 %*	*122*	*%*	

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-11-0519

19E0324-01 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 05/20/2019 12:45

Instrument: ICPMS2 Analyst: MCB — Analyzed: 05/23/2019 22:07

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19E0324-01 G 01

Preparation Batch: BHE0597 — Sample Size: 25 mL

Prepared: 23-May-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	1	0.00300	ND	mg/L	U
Lead	7439-92-1	1	0.0100	ND	mg/L	U
Thallium	7440-28-0	1	0.00200	ND	mg/L	U

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-11-0519

19E0324-01 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 05/20/2019 12:45

Instrument: ICPMS2 Analyst: MCB — Analyzed: 05/23/2019 22:07

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19E0324-01 G 01

Preparation Batch: BHE0597 — Sample Size: 25 mL

Prepared: 23-May-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.00300	**0.0104**	mg/L	
Selenium	7782-49-2	1	0.0250	ND	mg/L	U

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-11-0519

19E0324-01 (Water)

Metals and Metallic Compounds

Method: EPA 6010C — Sampled: 05/20/2019 12:45

Instrument: ICP2 Analyst: TCH — Analyzed: 05/24/2019 16:13

Sample Preparation: Preparation Method: TWC EPA 3010A — Extract ID: 19E0324-01 G 02

Preparation Batch: BHE0599 — Sample Size: 25 mL

Prepared: 23-May-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Aluminum	7429-90-5	1	1.00	ND	mg/L	U
Barium	7440-39-3	1	0.500	ND	mg/L	U
Beryllium	7440-41-7	1	0.0100	ND	mg/L	U
Cadmium	7440-43-9	1	0.0020	ND	mg/L	U
Calcium	7440-70-2	1	0.500	**60.2**	mg/L	
Chromium	7440-47-3	1	0.0100	ND	mg/L	U
Cobalt	7440-48-4	1	0.0100	ND	mg/L	U
Copper	7440-50-8	1	0.0030	ND	mg/L	U
Iron	7439-89-6	1	0.200	**0.615**	mg/L	
Magnesium	7439-95-4	1	0.500	**27.2**	mg/L	
Manganese	7439-96-5	1	0.0100	**0.174**	mg/L	
Nickel	7440-02-0	1	0.0100	ND	mg/L	U
Potassium	7440-09-7	1	0.500	**2.00**	mg/L	
Silver	7440-22-4	1	0.0050	ND	mg/L	U
Sodium	7440-23-5	1	0.500	**22.8**	mg/L	
Vanadium	7440-62-2	1	0.0030	ND	mg/L	U
Zinc	7440-66-6	1	0.0200	ND	mg/L	U

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-11-0519

19E0324-01 (Water)

Metals and Metallic Compounds

Method: EPA 7470A — Sampled: 05/20/2019 12:45

Instrument: CVAA Analyst: SKM — Analyzed: 06/03/2019 14:20

Sample Preparation: Preparation Method: TLM EPA 7470A low level — Extract ID: 19E0324-01 G

Preparation Batch: BHE0598 — Sample Size: 20 mL

Prepared: 23-May-2019 — Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	0.000010	0.000020	**0.000012**	mg/L	J

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-15-0519

19E0324-02 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/20/2019 14:00

Instrument: NT2 Analyst: LH — Analyzed: 05/23/2019 15:14

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19E0324-02 H

Preparation Batch: BHE0615 — Sample Size: 10 mL

Prepared: 23-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.09	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.06	0.10	ND	ug/L	U
Bromomethane	74-83-9	1	0.25	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.09	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.04	0.20	ND	ug/L	U
Acrolein	107-02-8	1	2.48	2.50	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.04	0.20	ND	ug/L	U
Acetone	67-64-1	1	2.06	5.00	**4.92**	ug/L	J
1,1-Dichloroethene	75-35-4	1	0.05	0.20	ND	ug/L	U
Bromoethane	74-96-4	1	0.04	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	0.23	0.50	ND	ug/L	U
Methylene Chloride	75-09-2	1	0.49	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	0.60	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.04	0.10	**0.94**	ug/L	
trans-1,2-Dichloroethene	156-60-5	1	0.05	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.07	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.05	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	0.81	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.05	0.10	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.04	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.03	0.20	**0.10**	ug/L	J
Bromochloromethane	74-97-5	1	0.06	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.04	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.03	0.10	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.04	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.07	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.03	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.05	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.04	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.05	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.15	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	0.25	0.50	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	0.97	2.50	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.06	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.04	0.20	ND	ug/L	U
trans-1,3-Dichloropropene	10061-02-6	1	0.08	0.20	ND	ug/L	U

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-15-0519

19E0324-02 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/20/2019 14:00

Instrument: NT2 Analyst: LH — Analyzed: 05/23/2019 15:14

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
2-Hexanone	591-78-6	1	0.90	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.13	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.06	0.10	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.05	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.05	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.07	0.10	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.02	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.04	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.04	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.05	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.03	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.09	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.05	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.06	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.06	0.10	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.13	0.20	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	0.32	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.02	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.06	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.02	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.02	0.10	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.02	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.03	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.02	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.02	0.20	**0.04**	ug/L	J
s-Butylbenzene	135-98-8	1	0.02	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.03	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.04	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.04	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.02	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.04	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.37	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.11	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.07	0.20	ND	ug/L	U
Naphthalene	91-20-3	1	0.12	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.11	0.20	ND	ug/L	U
Dichlorodifluoromethane	75-71-8	1	0.05	0.20	ND	ug/L	U
Surrogate: Dibromofluoromethane				*80-120 %*	*104*	*%*	
Surrogate: 1,2-Dichloroethane-d4				*80-129 %*	*113*	*%*	

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-15-0519

19E0324-02 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/20/2019 14:00

Instrument: NT2 Analyst: LH — Analyzed: 05/23/2019 15:14

Analyte	CAS Number	Recovery Limits	Recovery	Units	Notes
Surrogate: Toluene-d8		*80-120 %*	*96.8*	*%*	
Surrogate: 4-Bromofluorobenzene		*80-120 %*	*93.0*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4		*80-120 %*	*104*	*%*	

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-15-0519

19E0324-02 (Water)

Semivolatile Organic Compounds

Method: EPA 8270D — Sampled: 05/20/2019 14:00
Instrument: NT6 Analyst: JZ — Analyzed: 06/03/2019 18:40

Sample Preparation: Preparation Method: EPA 3520C (Liq Liq) — Extract ID: 19E0324-02 B 01
Preparation Batch: BHE0602 — Sample Size: 500 mL
Prepared: 23-May-2019 — Final Volume: 1 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
1,4-Dioxane	123-91-1	1	0.2	0.4	ND	ug/L	U
Surrogate: 1,4-Dioxane-d8				*33.6-120 %*	*61.9*	*%*	

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-15-0519

19E0324-02 (Water)

Petroleum Hydrocarbons

Method: NWTPH-HCID — Sampled: 05/20/2019 14:00

Instrument: FID4 Analyst: JGR — Analyzed: 05/25/2019 04:33

Sample Preparation: Preparation Method: EPA 3510C SepF — Extract ID: 19E0324-02 A 01

Preparation Batch: BHE0593 — Sample Size: 500 mL

Prepared: 23-May-2019 — Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-C12)	GRO	1	0.25	ND	mg/L	U
Diesel Range Organics (C12-C24)	DRO	1	0.50	ND	mg/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	1.00	ND	mg/L	U
Surrogate: o-Terphenyl			*50-150 %*	*105*	*%*	
Surrogate: n-Triacontane			*50-150 %*	*116*	*%*	

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-15-0519

19E0324-02 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 05/20/2019 14:00

Instrument: ICPMS2 Analyst: MCB — Analyzed: 05/23/2019 22:12

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19E0324-02 G 01

Preparation Batch: BHE0597 — Sample Size: 25 mL

Prepared: 23-May-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	1	0.00300	ND	mg/L	U
Lead	7439-92-1	1	0.0100	ND	mg/L	U
Thallium	7440-28-0	1	0.00200	ND	mg/L	U

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-15-0519

19E0324-02 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 05/20/2019 14:00

Instrument: ICPMS2 Analyst: MCB — Analyzed: 05/23/2019 22:12

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19E0324-02 G 01

Preparation Batch: BHE0597 — Sample Size: 25 mL

Prepared: 23-May-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.00300	**0.00340**	mg/L	
Selenium	7782-49-2	1	0.0250	ND	mg/L	U

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Golder Associates	Project: Landsburg	
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Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-15-0519

19E0324-02 (Water)

Metals and Metallic Compounds

Method: EPA 6010C — Sampled: 05/20/2019 14:00

Instrument: ICP2 Analyst: TCH — Analyzed: 05/24/2019 16:00

Sample Preparation: Preparation Method: TWC EPA 3010A — Extract ID: 19E0324-02 G 02

Preparation Batch: BHE0599 — Sample Size: 25 mL

Prepared: 23-May-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Aluminum	7429-90-5	1	1.00	ND	mg/L	U
Barium	7440-39-3	1	0.500	ND	mg/L	U
Beryllium	7440-41-7	1	0.0100	ND	mg/L	U
Cadmium	7440-43-9	1	0.0020	ND	mg/L	U
Calcium	7440-70-2	1	0.500	**57.4**	mg/L	
Chromium	7440-47-3	1	0.0100	ND	mg/L	U
Cobalt	7440-48-4	1	0.0100	ND	mg/L	U
Copper	7440-50-8	1	0.0030	ND	mg/L	U
Iron	7439-89-6	1	0.200	**1.91**	mg/L	
Magnesium	7439-95-4	1	0.500	**25.7**	mg/L	
Manganese	7439-96-5	1	0.0100	**0.366**	mg/L	
Nickel	7440-02-0	1	0.0100	ND	mg/L	U
Potassium	7440-09-7	1	0.500	**2.40**	mg/L	
Silver	7440-22-4	1	0.0050	ND	mg/L	U
Sodium	7440-23-5	1	0.500	**17.1**	mg/L	
Vanadium	7440-62-2	1	0.0030	ND	mg/L	U
Zinc	7440-66-6	1	0.0200	ND	mg/L	U

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-15-0519

19E0324-02 (Water)

Metals and Metallic Compounds

Method: EPA 7470A — Sampled: 05/20/2019 14:00

Instrument: CVAA Analyst: SKM — Analyzed: 06/03/2019 14:23

Sample Preparation: Preparation Method: TLM EPA 7470A low level — Extract ID: 19E0324-02 G

Preparation Batch: BHE0598 — Sample Size: 20 mL

Prepared: 23-May-2019 — Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	0.000010	0.000020	**0.000013**	mg/L	J

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Golder Associates	Project: Landsburg	
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Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-14-0519

19E0324-03 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/20/2019 15:35
Instrument: NT2 Analyst: LH — Analyzed: 05/23/2019 15:35

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19E0324-03 H
Preparation Batch: BHE0615 — Sample Size: 10 mL
Prepared: 23-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.09	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.06	0.10	ND	ug/L	U
Bromomethane	74-83-9	1	0.25	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.09	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.04	0.20	ND	ug/L	U
Acrolein	107-02-8	1	2.48	2.50	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.04	0.20	ND	ug/L	U
Acetone	67-64-1	1	2.06	5.00	**39.9**	ug/L	
1,1-Dichloroethene	75-35-4	1	0.05	0.20	ND	ug/L	U
Bromoethane	74-96-4	1	0.04	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	0.23	0.50	ND	ug/L	U
Methylene Chloride	75-09-2	1	0.49	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	0.60	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.04	0.10	**0.10**	ug/L	J
trans-1,2-Dichloroethene	156-60-5	1	0.05	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.07	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.05	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	0.81	5.00	**4.84**	ug/L	J
2,2-Dichloropropane	594-20-7	1	0.05	0.10	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.04	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.03	0.20	**0.12**	ug/L	J
Bromochloromethane	74-97-5	1	0.06	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.04	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.03	0.10	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.04	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.07	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.03	0.20	**0.29**	ug/L	
Trichloroethene	79-01-6	1	0.05	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.04	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.05	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.15	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	0.25	0.50	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	0.97	2.50	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.06	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.04	0.20	**1.90**	ug/L	
trans-1,3-Dichloropropene	10061-02-6	1	0.08	0.20	ND	ug/L	U

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-14-0519

19E0324-03 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/20/2019 15:35

Instrument: NT2 Analyst: LH — Analyzed: 05/23/2019 15:35

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
2-Hexanone	591-78-6	1	0.90	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.13	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.06	0.10	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.05	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.05	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.07	0.10	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.02	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.04	0.20	**0.27**	ug/L	
1,1,1,2-Tetrachloroethane	630-20-6	1	0.04	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.05	0.40	**0.40**	ug/L	J
o-Xylene	95-47-6	1	0.03	0.20	**0.21**	ug/L	
Xylenes, total	1330-20-7	1	0.09	0.60	**0.61**	ug/L	
Styrene	100-42-5	1	0.05	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.06	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.06	0.10	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.13	0.20	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	0.32	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.02	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.06	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.02	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.02	0.10	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.02	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.03	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.02	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.02	0.20	**0.19**	ug/L	J
s-Butylbenzene	135-98-8	1	0.02	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.03	0.20	**0.11**	ug/L	J
1,3-Dichlorobenzene	541-73-1	1	0.04	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.04	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.02	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.04	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.37	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.11	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.07	0.20	ND	ug/L	U
Naphthalene	91-20-3	1	0.12	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.11	0.20	ND	ug/L	U
Dichlorodifluoromethane	75-71-8	1	0.05	0.20	ND	ug/L	U
Surrogate: Dibromofluoromethane				*80-120 %*	*103*	*%*	
Surrogate: 1,2-Dichloroethane-d4				*80-129 %*	*111*	*%*	

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-14-0519

19E0324-03 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/20/2019 15:35

Instrument: NT2 Analyst: LH — Analyzed: 05/23/2019 15:35

Analyte	CAS Number	Recovery Limits	Recovery	Units	Notes
Surrogate: Toluene-d8		*80-120 %*	*98.7*	*%*	
Surrogate: 4-Bromofluorobenzene		*80-120 %*	*97.3*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4		*80-120 %*	*104*	*%*	

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-14-0519

19E0324-03 (Water)

Semivolatile Organic Compounds

Method: EPA 8270D — Sampled: 05/20/2019 15:35

Instrument: NT6 Analyst: JZ — Analyzed: 06/03/2019 19:13

Sample Preparation: Preparation Method: EPA 3520C (Liq Liq) — Extract ID: 19E0324-03 B 01

Preparation Batch: BHE0602 — Sample Size: 500 mL

Prepared: 23-May-2019 — Final Volume: 1 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
1,4-Dioxane	123-91-1	1	0.2	0.4	ND	ug/L	U
Surrogate: 1,4-Dioxane-d8				*33.6-120 %*	*66.4*	*%*	

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-14-0519

19E0324-03 (Water)

Petroleum Hydrocarbons

Method: NWTPH-HCID — Sampled: 05/20/2019 15:35

Instrument: FID4 Analyst: JGR — Analyzed: 05/25/2019 04:53

Sample Preparation: Preparation Method: EPA 3510C SepF — Extract ID: 19E0324-03 A 01

Preparation Batch: BHE0593 — Sample Size: 500 mL

Prepared: 23-May-2019 — Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-C12)	GRO	1	0.25	ND	mg/L	U
Diesel Range Organics (C12-C24)	DRO	1	0.50	ND	mg/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	1.00	ND	mg/L	U
Surrogate: o-Terphenyl			*50-150 %*	*115*	*%*	
Surrogate: n-Triacontane			*50-150 %*	*126*	*%*	

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-14-0519

19E0324-03 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 05/20/2019 15:35

Instrument: ICPMS2 Analyst: MCB — Analyzed: 05/23/2019 22:17

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19E0324-03 G 01

Preparation Batch: BHE0597 — Sample Size: 25 mL

Prepared: 23-May-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	1	0.00300	ND	mg/L	U
Lead	7439-92-1	1	0.0100	ND	mg/L	U
Thallium	7440-28-0	1	0.00200	ND	mg/L	U

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-14-0519

19E0324-03 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 05/20/2019 15:35

Instrument: ICPMS2 Analyst: MCB — Analyzed: 05/23/2019 22:17

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19E0324-03 G 01

Preparation Batch: BHE0597 — Sample Size: 25 mL

Prepared: 23-May-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.00300	ND	mg/L	U
Selenium	7782-49-2	1	0.0250	ND	mg/L	U

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-14-0519

19E0324-03 (Water)

Metals and Metallic Compounds

Method: EPA 6010C — Sampled: 05/20/2019 15:35

Instrument: ICP2 Analyst: TCH — Analyzed: 05/24/2019 16:05

Sample Preparation: Preparation Method: TWC EPA 3010A — Extract ID: 19E0324-03 G 02

Preparation Batch: BHE0599 — Sample Size: 25 mL

Prepared: 23-May-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Aluminum	7429-90-5	1	1.00	ND	mg/L	U
Barium	7440-39-3	1	0.500	ND	mg/L	U
Beryllium	7440-41-7	1	0.0100	ND	mg/L	U
Cadmium	7440-43-9	1	0.0020	ND	mg/L	U
Calcium	7440-70-2	1	0.500	**194**	mg/L	
Chromium	7440-47-3	1	0.0100	ND	mg/L	U
Cobalt	7440-48-4	1	0.0100	ND	mg/L	U
Copper	7440-50-8	1	0.0030	ND	mg/L	U
Iron	7439-89-6	1	0.200	**11.1**	mg/L	
Magnesium	7439-95-4	1	0.500	**119**	mg/L	
Manganese	7439-96-5	1	0.0100	**0.790**	mg/L	
Nickel	7440-02-0	1	0.0100	**0.0145**	mg/L	
Potassium	7440-09-7	1	0.500	**6.82**	mg/L	
Silver	7440-22-4	1	0.0050	ND	mg/L	U
Sodium	7440-23-5	1	0.500	**26.9**	mg/L	
Vanadium	7440-62-2	1	0.0030	ND	mg/L	U
Zinc	7440-66-6	1	0.0200	ND	mg/L	U

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Golder Associates	Project: Landsburg	
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Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-14-0519

19E0324-03 (Water)

Metals and Metallic Compounds

Method: EPA 7470A — Sampled: 05/20/2019 15:35
Instrument: CVAA Analyst: SKM — Analyzed: 06/03/2019 14:26

Sample Preparation: Preparation Method: TLM EPA 7470A low level — Extract ID: 19E0324-03 G
Preparation Batch: BHE0598 — Sample Size: 20 mL
Prepared: 23-May-2019 — Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	0.000010	0.000020	**0.000014**	mg/L	J

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Golder Associates	Project: Landsburg	
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Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-9-0519

19E0324-04 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/21/2019 09:00

Instrument: NT2 Analyst: LH — Analyzed: 05/23/2019 15:55

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19E0324-04 I

Preparation Batch: BHE0615 — Sample Size: 10 mL

Prepared: 23-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.09	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.06	0.10	ND	ug/L	U
Bromomethane	74-83-9	1	0.25	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.09	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.04	0.20	ND	ug/L	U
Acrolein	107-02-8	1	2.48	2.50	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.04	0.20	ND	ug/L	U
Acetone	67-64-1	1	2.06	5.00	**87.1**	ug/L	
1,1-Dichloroethene	75-35-4	1	0.05	0.20	ND	ug/L	U
Bromoethane	74-96-4	1	0.04	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	0.23	0.50	ND	ug/L	U
Methylene Chloride	75-09-2	1	0.49	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	0.60	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.04	0.10	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.05	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.07	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.05	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	0.81	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.05	0.10	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.04	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.03	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.06	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.04	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.03	0.10	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.04	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.07	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.03	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.05	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.04	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.05	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.15	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	0.25	0.50	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	0.97	2.50	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.06	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.04	0.20	ND	ug/L	U
trans-1,3-Dichloropropene	10061-02-6	1	0.08	0.20	ND	ug/L	U

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-9-0519

19E0324-04 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/21/2019 09:00

Instrument: NT2 Analyst: LH — Analyzed: 05/23/2019 15:55

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
2-Hexanone	591-78-6	1	0.90	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.13	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.06	0.10	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.05	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.05	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.07	0.10	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.02	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.04	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.04	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.05	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.03	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.09	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.05	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.06	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.06	0.10	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.13	0.20	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	0.32	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.02	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.06	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.02	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.02	0.10	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.02	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.03	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.02	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.02	0.20	**0.03**	ug/L	J
s-Butylbenzene	135-98-8	1	0.02	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.03	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.04	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.04	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.02	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.04	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.37	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.11	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.07	0.20	ND	ug/L	U
Naphthalene	91-20-3	1	0.12	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.11	0.20	ND	ug/L	U
Dichlorodifluoromethane	75-71-8	1	0.05	0.20	ND	ug/L	U
Surrogate: Dibromofluoromethane				*80-120 %*	*104*	*%*	
Surrogate: 1,2-Dichloroethane-d4				*80-129 %*	*112*	*%*	

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-9-0519

19E0324-04 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/21/2019 09:00

Instrument: NT2 Analyst: LH — Analyzed: 05/23/2019 15:55

Analyte	CAS Number	Recovery Limits	Recovery	Units	Notes
Surrogate: Toluene-d8		*80-120 %*	*95.8*	*%*	
Surrogate: 4-Bromofluorobenzene		*80-120 %*	*92.8*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4		*80-120 %*	*102*	*%*	

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-9-0519

19E0324-04 (Water)

Semivolatile Organic Compounds

Method: EPA 8270D — Sampled: 05/21/2019 09:00
Instrument: NT6 Analyst: JZ — Analyzed: 06/03/2019 19:46

Sample Preparation: Preparation Method: EPA 3520C (Liq Liq) — Extract ID: 19E0324-04 B 01
Preparation Batch: BHE0602 — Sample Size: 500 mL
Prepared: 23-May-2019 — Final Volume: 1 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
1,4-Dioxane	123-91-1	1	0.2	0.4	ND	ug/L	U
Surrogate: 1,4-Dioxane-d8				*33.6-120 %*	*61.8*	*%*	

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-9-0519

19E0324-04 (Water)

Petroleum Hydrocarbons

Method: NWTPH-HCID — Sampled: 05/21/2019 09:00
Instrument: FID4 Analyst: JGR — Analyzed: 05/25/2019 05:14

Sample Preparation: Preparation Method: EPA 3510C SepF — Extract ID: 19E0324-04 A 01
Preparation Batch: BHE0593 — Sample Size: 500 mL
Prepared: 23-May-2019 — Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-C12)	GRO	1	0.25	ND	mg/L	U
Diesel Range Organics (C12-C24)	DRO	1	0.50	ND	mg/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	1.00	ND	mg/L	U
Surrogate: o-Terphenyl			*50-150 %*	*117*	*%*	
Surrogate: n-Triacontane			*50-150 %*	*130*	*%*	

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18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-9-0519

19E0324-04 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 05/21/2019 09:00

Instrument: ICPMS2 Analyst: MCB — Analyzed: 05/23/2019 22:22

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19E0324-04 G 01

Preparation Batch: BHE0597 — Sample Size: 25 mL

Prepared: 23-May-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	1	0.00300	ND	mg/L	U
Lead	7439-92-1	1	0.0100	ND	mg/L	U
Thallium	7440-28-0	1	0.00200	ND	mg/L	U

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-9-0519

19E0324-04 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 05/21/2019 09:00

Instrument: ICPMS2 Analyst: MCB — Analyzed: 05/23/2019 22:22

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19E0324-04 G 01

Preparation Batch: BHE0597 — Sample Size: 25 mL

Prepared: 23-May-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.00300	ND	mg/L	U
Selenium	7782-49-2	1	0.0250	ND	mg/L	U

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-9-0519

19E0324-04 (Water)

Metals and Metallic Compounds

Method: EPA 6010C — Sampled: 05/21/2019 09:00

Instrument: ICP2 Analyst: TCH — Analyzed: 05/24/2019 16:37

Sample Preparation: Preparation Method: TWC EPA 3010A — Extract ID: 19E0324-04 G 02

Preparation Batch: BHE0599 — Sample Size: 25 mL

Prepared: 23-May-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Aluminum	7429-90-5	1	1.00	ND	mg/L	U
Barium	7440-39-3	1	0.500	ND	mg/L	U
Beryllium	7440-41-7	1	0.0100	ND	mg/L	U
Cadmium	7440-43-9	1	0.0020	ND	mg/L	U
Calcium	7440-70-2	1	0.500	**80.9**	mg/L	
Chromium	7440-47-3	1	0.0100	ND	mg/L	U
Cobalt	7440-48-4	1	0.0100	ND	mg/L	U
Copper	7440-50-8	1	0.0030	ND	mg/L	U
Iron	7439-89-6	1	0.200	**1.49**	mg/L	
Magnesium	7439-95-4	1	0.500	**44.7**	mg/L	
Manganese	7439-96-5	1	0.0100	**0.173**	mg/L	
Nickel	7440-02-0	1	0.0100	ND	mg/L	U
Potassium	7440-09-7	1	0.500	**2.35**	mg/L	
Silver	7440-22-4	1	0.0050	ND	mg/L	U
Sodium	7440-23-5	1	0.500	**14.1**	mg/L	
Vanadium	7440-62-2	1	0.0030	ND	mg/L	U
Zinc	7440-66-6	1	0.0200	ND	mg/L	U

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-9-0519

19E0324-04 (Water)

Metals and Metallic Compounds

Method: EPA 7470A — Sampled: 05/21/2019 09:00

Instrument: CVAA Analyst: SKM — Analyzed: 06/03/2019 14:38

Sample Preparation: Preparation Method: TLM EPA 7470A low level — Extract ID: 19E0324-04 G

Preparation Batch: BHE0598 — Sample Size: 20 mL

Prepared: 23-May-2019 — Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	0.000010	0.000020	**0.000016**	mg/L	J

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-3-0519

19E0324-05 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/21/2019 10:15
Instrument: NT2 Analyst: LH — Analyzed: 05/23/2019 16:16

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19E0324-05 J
Preparation Batch: BHE0615 — Sample Size: 10 mL
Prepared: 23-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.09	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.06	0.10	ND	ug/L	U
Bromomethane	74-83-9	1	0.25	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.09	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.04	0.20	ND	ug/L	U
Acrolein	107-02-8	1	2.48	2.50	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.04	0.20	ND	ug/L	U
Acetone	67-64-1	1	2.06	5.00	**2.77**	ug/L	J
1,1-Dichloroethene	75-35-4	1	0.05	0.20	ND	ug/L	U
Bromoethane	74-96-4	1	0.04	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	0.23	0.50	ND	ug/L	U
Methylene Chloride	75-09-2	1	0.49	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	0.60	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.04	0.10	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.05	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.07	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.05	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	0.81	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.05	0.10	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.04	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.03	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.06	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.04	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.03	0.10	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.04	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.07	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.03	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.05	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.04	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.05	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.15	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	0.25	0.50	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	0.97	2.50	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.06	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.04	0.20	ND	ug/L	U
trans-1,3-Dichloropropene	10061-02-6	1	0.08	0.20	ND	ug/L	U

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-3-0519

19E0324-05 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/21/2019 10:15

Instrument: NT2 Analyst: LH — Analyzed: 05/23/2019 16:16

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
2-Hexanone	591-78-6	1	0.90	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.13	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.06	0.10	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.05	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.05	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.07	0.10	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.02	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.04	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.04	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.05	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.03	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.09	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.05	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.06	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.06	0.10	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.13	0.20	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	0.32	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.02	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.06	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.02	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.02	0.10	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.02	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.03	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.02	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.02	0.20	**0.03**	ug/L	J
s-Butylbenzene	135-98-8	1	0.02	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.03	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.04	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.04	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.02	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.04	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.37	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.11	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.07	0.20	ND	ug/L	U
Naphthalene	91-20-3	1	0.12	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.11	0.20	ND	ug/L	U
Dichlorodifluoromethane	75-71-8	1	0.05	0.20	ND	ug/L	U
Surrogate: Dibromofluoromethane				*80-120 %*	*105*	*%*	
Surrogate: 1,2-Dichloroethane-d4				*80-129 %*	*116*	*%*	

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-3-0519

19E0324-05 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/21/2019 10:15

Instrument: NT2 Analyst: LH — Analyzed: 05/23/2019 16:16

Analyte	CAS Number	Recovery Limits	Recovery	Units	Notes
Surrogate: Toluene-d8		*80-120 %*	*95.6*	*%*	
Surrogate: 4-Bromofluorobenzene		*80-120 %*	*91.6*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4		*80-120 %*	*103*	*%*	

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-3-0519

19E0324-05 (Water)

Semivolatile Organic Compounds

Method: EPA 8270D — Sampled: 05/21/2019 10:15

Instrument: NT6 Analyst: JZ — Analyzed: 06/03/2019 20:19

Sample Preparation: Preparation Method: EPA 3520C (Liq Liq) — Extract ID: 19E0324-05 B 01

Preparation Batch: BHE0602 — Sample Size: 500 mL

Prepared: 23-May-2019 — Final Volume: 1 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
1,4-Dioxane	123-91-1	1	0.2	0.4	ND	ug/L	U
Surrogate: 1,4-Dioxane-d8				*33.6-120 %*	*61.1*	*%*	

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-3-0519

19E0324-05 (Water)

Petroleum Hydrocarbons

Method: NWTPH-HCID — Sampled: 05/21/2019 10:15

Instrument: FID4 Analyst: JGR — Analyzed: 05/25/2019 05:34

Sample Preparation: Preparation Method: EPA 3510C SepF — Extract ID: 19E0324-05 A 01

Preparation Batch: BHE0593 — Sample Size: 500 mL

Prepared: 23-May-2019 — Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-C12)	GRO	1	0.25	ND	mg/L	U
Diesel Range Organics (C12-C24)	DRO	1	0.50	ND	mg/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	1.00	ND	mg/L	U
Surrogate: o-Terphenyl			*50-150 %*	*108*	*%*	
Surrogate: n-Triacontane			*50-150 %*	*121*	*%*	

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-3-0519

19E0324-05 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 05/21/2019 10:15

Instrument: ICPMS2 Analyst: MCB — Analyzed: 05/23/2019 22:27

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19E0324-05 G 01

Preparation Batch: BHE0597 — Sample Size: 25 mL

Prepared: 23-May-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	1	0.00300	ND	mg/L	U
Lead	7439-92-1	1	0.0100	ND	mg/L	U
Thallium	7440-28-0	1	0.00200	ND	mg/L	U

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-3-0519

19E0324-05 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 05/21/2019 10:15

Instrument: ICPMS2 Analyst: MCB — Analyzed: 05/23/2019 22:27

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19E0324-05 G 01

Preparation Batch: BHE0597 — Sample Size: 25 mL

Prepared: 23-May-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.00300	ND	mg/L	U
Selenium	7782-49-2	1	0.0250	ND	mg/L	U

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-3-0519

19E0324-05 (Water)

Metals and Metallic Compounds

Method: EPA 6010C — Sampled: 05/21/2019 10:15

Instrument: ICP2 Analyst: TCH — Analyzed: 05/24/2019 16:42

Sample Preparation: Preparation Method: TWC EPA 3010A — Extract ID: 19E0324-05 G 02

Preparation Batch: BHE0599 — Sample Size: 25 mL

Prepared: 23-May-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Aluminum	7429-90-5	1	1.00	ND	mg/L	U
Barium	7440-39-3	1	0.500	ND	mg/L	U
Beryllium	7440-41-7	1	0.0100	ND	mg/L	U
Cadmium	7440-43-9	1	0.0020	ND	mg/L	U
Calcium	7440-70-2	1	0.500	**36.3**	mg/L	
Chromium	7440-47-3	1	0.0100	ND	mg/L	U
Cobalt	7440-48-4	1	0.0100	ND	mg/L	U
Copper	7440-50-8	1	0.0030	ND	mg/L	U
Iron	7439-89-6	1	0.200	ND	mg/L	U
Magnesium	7439-95-4	1	0.500	**15.4**	mg/L	
Manganese	7439-96-5	1	0.0100	**0.0447**	mg/L	
Nickel	7440-02-0	1	0.0100	ND	mg/L	U
Potassium	7440-09-7	1	0.500	**1.60**	mg/L	
Silver	7440-22-4	1	0.0050	ND	mg/L	U
Sodium	7440-23-5	1	0.500	**9.68**	mg/L	
Vanadium	7440-62-2	1	0.0030	ND	mg/L	U
Zinc	7440-66-6	1	0.0200	ND	mg/L	U

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-3-0519

19E0324-05 (Water)

Metals and Metallic Compounds

Method: EPA 7470A — Sampled: 05/21/2019 10:15

Instrument: CVAA Analyst: SKM — Analyzed: 06/03/2019 14:41

Sample Preparation: Preparation Method: TLM EPA 7470A low level — Extract ID: 19E0324-05 G

Preparation Batch: BHE0598 — Sample Size: 20 mL

Prepared: 23-May-2019 — Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	0.000010	0.000020	**0.000014**	mg/L	J

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-5-0519

19E0324-06 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/21/2019 11:20
Instrument: NT2 Analyst: LH — Analyzed: 05/23/2019 16:36

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19E0324-06 I
Preparation Batch: BHE0615 — Sample Size: 10 mL
Prepared: 23-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.09	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.06	0.10	ND	ug/L	U
Bromomethane	74-83-9	1	0.25	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.09	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.04	0.20	ND	ug/L	U
Acrolein	107-02-8	1	2.48	2.50	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.04	0.20	ND	ug/L	U
Acetone	67-64-1	1	2.06	5.00	**10.5**	ug/L	
1,1-Dichloroethene	75-35-4	1	0.05	0.20	ND	ug/L	U
Bromoethane	74-96-4	1	0.04	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	0.23	0.50	ND	ug/L	U
Methylene Chloride	75-09-2	1	0.49	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	0.60	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.04	0.10	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.05	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.07	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.05	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	0.81	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.05	0.10	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.04	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.03	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.06	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.04	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.03	0.10	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.04	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.07	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.03	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.05	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.04	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.05	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.15	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	0.25	0.50	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	0.97	2.50	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.06	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.04	0.20	ND	ug/L	U
trans-1,3-Dichloropropene	10061-02-6	1	0.08	0.20	ND	ug/L	U

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-5-0519

19E0324-06 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/21/2019 11:20

Instrument: NT2 Analyst: LH — Analyzed: 05/23/2019 16:36

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
2-Hexanone	591-78-6	1	0.90	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.13	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.06	0.10	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.05	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.05	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.07	0.10	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.02	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.04	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.04	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.05	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.03	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.09	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.05	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.06	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.06	0.10	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.13	0.20	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	0.32	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.02	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.06	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.02	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.02	0.10	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.02	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.03	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.02	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.02	0.20	**0.04**	ug/L	J
s-Butylbenzene	135-98-8	1	0.02	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.03	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.04	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.04	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.02	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.04	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.37	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.11	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.07	0.20	ND	ug/L	U
Naphthalene	91-20-3	1	0.12	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.11	0.20	ND	ug/L	U
Dichlorodifluoromethane	75-71-8	1	0.05	0.20	ND	ug/L	U
Surrogate: Dibromofluoromethane				*80-120 %*	*105*	*%*	
Surrogate: 1,2-Dichloroethane-d4				*80-129 %*	*113*	*%*	

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-5-0519

19E0324-06 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/21/2019 11:20

Instrument: NT2 Analyst: LH — Analyzed: 05/23/2019 16:36

Analyte	CAS Number	Recovery Limits	Recovery	Units	Notes
Surrogate: Toluene-d8		*80-120 %*	*96.0*	*%*	
Surrogate: 4-Bromofluorobenzene		*80-120 %*	*92.4*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4		*80-120 %*	*103*	*%*	

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-5-0519

19E0324-06 (Water)

Semivolatile Organic Compounds

Method: EPA 8270D — Sampled: 05/21/2019 11:20
Instrument: NT6 Analyst: JZ — Analyzed: 06/03/2019 20:52

Sample Preparation: Preparation Method: EPA 3520C (Liq Liq) — Extract ID: 19E0324-06 B 01
Preparation Batch: BHE0602 — Sample Size: 500 mL
Prepared: 23-May-2019 — Final Volume: 1 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
1,4-Dioxane	123-91-1	1	0.2	0.4	ND	ug/L	U
Surrogate: 1,4-Dioxane-d8				*33.6-120 %*	*64.2*	*%*	

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-5-0519

19E0324-06 (Water)

Petroleum Hydrocarbons

Method: NWTPH-HCID — Sampled: 05/21/2019 11:20

Instrument: FID4 Analyst: JGR — Analyzed: 05/25/2019 05:54

Sample Preparation: Preparation Method: EPA 3510C SepF — Extract ID: 19E0324-06 A 01

Preparation Batch: BHE0593 — Sample Size: 500 mL

Prepared: 23-May-2019 — Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-C12)	GRO	1	0.25	ND	mg/L	U
Diesel Range Organics (C12-C24)	DRO	1	0.50	ND	mg/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	1.00	ND	mg/L	U
Surrogate: o-Terphenyl			*50-150 %*	*113*	*%*	
Surrogate: n-Triacontane			*50-150 %*	*127*	*%*	

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-5-0519

19E0324-06 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 05/21/2019 11:20

Instrument: ICPMS2 Analyst: MCB — Analyzed: 05/23/2019 22:32

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19E0324-06 G 01

Preparation Batch: BHE0597 — Sample Size: 25 mL

Prepared: 23-May-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	1	0.00300	ND	mg/L	U
Lead	7439-92-1	1	0.0100	ND	mg/L	U
Thallium	7440-28-0	1	0.00200	ND	mg/L	U

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-5-0519

19E0324-06 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 05/21/2019 11:20
Instrument: ICPMS2 Analyst: MCB — Analyzed: 05/23/2019 22:32

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19E0324-06 G 01
Preparation Batch: BHE0597 — Sample Size: 25 mL
Prepared: 23-May-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.00300	ND	mg/L	U
Selenium	7782-49-2	1	0.0250	ND	mg/L	U

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-5-0519

19E0324-06 (Water)

Metals and Metallic Compounds

Method: EPA 6010C — Sampled: 05/21/2019 11:20
Instrument: ICP2 Analyst: TCH — Analyzed: 05/24/2019 16:46

Sample Preparation: Preparation Method: TWC EPA 3010A — Extract ID: 19E0324-06 G 02
Preparation Batch: BHE0599 — Sample Size: 25 mL
Prepared: 23-May-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Aluminum	7429-90-5	1	1.00	ND	mg/L	U
Barium	7440-39-3	1	0.500	ND	mg/L	U
Beryllium	7440-41-7	1	0.0100	ND	mg/L	U
Cadmium	7440-43-9	1	0.0020	ND	mg/L	U
Calcium	7440-70-2	1	0.500	**89.3**	mg/L	
Chromium	7440-47-3	1	0.0100	ND	mg/L	U
Cobalt	7440-48-4	1	0.0100	ND	mg/L	U
Copper	7440-50-8	1	0.0030	ND	mg/L	U
Iron	7439-89-6	1	0.200	ND	mg/L	U
Magnesium	7439-95-4	1	0.500	**50.3**	mg/L	
Manganese	7439-96-5	1	0.0100	**0.231**	mg/L	
Nickel	7440-02-0	1	0.0100	ND	mg/L	U
Potassium	7440-09-7	1	0.500	**2.49**	mg/L	
Silver	7440-22-4	1	0.0050	ND	mg/L	U
Sodium	7440-23-5	1	0.500	**14.0**	mg/L	
Vanadium	7440-62-2	1	0.0030	ND	mg/L	U
Zinc	7440-66-6	1	0.0200	ND	mg/L	U

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-5-0519

19E0324-06 (Water)

Metals and Metallic Compounds

Method: EPA 7470A — Sampled: 05/21/2019 11:20
Instrument: CVAA Analyst: SKM — Analyzed: 06/03/2019 14:44

Sample Preparation: Preparation Method: TLM EPA 7470A low level — Extract ID: 19E0324-06 G
Preparation Batch: BHE0598 — Sample Size: 20 mL
Prepared: 23-May-2019 — Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	0.000010	0.000020	**0.000013**	mg/L	J

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-8-0519

19E0324-07 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/21/2019 12:30

Instrument: NT2 Analyst: LH — Analyzed: 05/23/2019 16:57

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19E0324-07 J

Preparation Batch: BHE0615 — Sample Size: 10 mL

Prepared: 23-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.09	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.06	0.10	ND	ug/L	U
Bromomethane	74-83-9	1	0.25	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.09	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.04	0.20	ND	ug/L	U
Acrolein	107-02-8	1	2.48	2.50	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.04	0.20	ND	ug/L	U
Acetone	67-64-1	1	2.06	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.05	0.20	ND	ug/L	U
Bromoethane	74-96-4	1	0.04	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	0.23	0.50	ND	ug/L	U
Methylene Chloride	75-09-2	1	0.49	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	0.60	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.04	0.10	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.05	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.07	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.05	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	0.81	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.05	0.10	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.04	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.03	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.06	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.04	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.03	0.10	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.04	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.07	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.03	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.05	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.04	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.05	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.15	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	0.25	0.50	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	0.97	2.50	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.06	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.04	0.20	ND	ug/L	U
trans-1,3-Dichloropropene	10061-02-6	1	0.08	0.20	ND	ug/L	U

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-8-0519

19E0324-07 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/21/2019 12:30

Instrument: NT2 Analyst: LH — Analyzed: 05/23/2019 16:57

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
2-Hexanone	591-78-6	1	0.90	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.13	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.06	0.10	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.05	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.05	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.07	0.10	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.02	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.04	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.04	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.05	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.03	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.09	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.05	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.06	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.06	0.10	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.13	0.20	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	0.32	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.02	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.06	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.02	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.02	0.10	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.02	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.03	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.02	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.02	0.20	**0.04**	ug/L	J
s-Butylbenzene	135-98-8	1	0.02	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.03	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.04	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.04	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.02	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.04	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.37	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.11	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.07	0.20	ND	ug/L	U
Naphthalene	91-20-3	1	0.12	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.11	0.20	ND	ug/L	U
Dichlorodifluoromethane	75-71-8	1	0.05	0.20	ND	ug/L	U
Surrogate: Dibromofluoromethane				*80-120 %*	*104*	*%*	
Surrogate: 1,2-Dichloroethane-d4				*80-129 %*	*114*	*%*	

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-8-0519

19E0324-07 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/21/2019 12:30

Instrument: NT2 Analyst: LH — Analyzed: 05/23/2019 16:57

Analyte	CAS Number	Recovery Limits	Recovery	Units	Notes
Surrogate: Toluene-d8		*80-120 %*	*95.2*	*%*	
Surrogate: 4-Bromofluorobenzene		*80-120 %*	*91.6*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4		*80-120 %*	*102*	*%*	

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-8-0519

19E0324-07 (Water)

Semivolatile Organic Compounds

Method: EPA 8270D — Sampled: 05/21/2019 12:30

Instrument: NT6 Analyst: JZ — Analyzed: 06/03/2019 21:25

Sample Preparation: Preparation Method: EPA 3520C (Liq Liq) — Extract ID: 19E0324-07 B 01

Preparation Batch: BHE0602 — Sample Size: 500 mL

Prepared: 23-May-2019 — Final Volume: 1 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
1,4-Dioxane	123-91-1	1	0.2	0.4	ND	ug/L	U
Surrogate: 1,4-Dioxane-d8				*33.6-120 %*	*57.4*	*%*	

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-8-0519

19E0324-07 (Water)

Petroleum Hydrocarbons

Method: NWTPH-HCID — Sampled: 05/21/2019 12:30

Instrument: FID4 Analyst: JGR — Analyzed: 05/25/2019 06:15

Sample Preparation: Preparation Method: EPA 3510C SepF — Extract ID: 19E0324-07 A 01

Preparation Batch: BHE0593 — Sample Size: 500 mL

Prepared: 23-May-2019 — Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-C12)	GRO	1	0.25	ND	mg/L	U
Diesel Range Organics (C12-C24)	DRO	1	0.50	ND	mg/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	1.00	ND	mg/L	U
Surrogate: o-Terphenyl			*50-150 %*	*116*	*%*	
Surrogate: n-Triacontane			*50-150 %*	*128*	*%*	

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-8-0519

19E0324-07 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 05/21/2019 12:30

Instrument: ICPMS2 Analyst: MCB — Analyzed: 05/23/2019 22:38

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19E0324-07 G 01

Preparation Batch: BHE0597 — Sample Size: 25 mL

Prepared: 23-May-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	1	0.00300	ND	mg/L	U
Lead	7439-92-1	1	0.0100	ND	mg/L	U
Thallium	7440-28-0	1	0.00200	ND	mg/L	U

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-8-0519

19E0324-07 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 05/21/2019 12:30
Instrument: ICPMS2 Analyst: MCB — Analyzed: 05/23/2019 22:38

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19E0324-07 G 01
Preparation Batch: BHE0597 — Sample Size: 25 mL
Prepared: 23-May-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.00300	ND	mg/L	U
Selenium	7782-49-2	1	0.0250	ND	mg/L	U

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-8-0519

19E0324-07 (Water)

Metals and Metallic Compounds

Method: EPA 6010C — Sampled: 05/21/2019 12:30

Instrument: ICP2 Analyst: TCH — Analyzed: 05/24/2019 16:50

Sample Preparation: Preparation Method: TWC EPA 3010A — Extract ID: 19E0324-07 G 02

Preparation Batch: BHE0599 — Sample Size: 25 mL

Prepared: 23-May-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Aluminum	7429-90-5	1	1.00	ND	mg/L	U
Barium	7440-39-3	1	0.500	ND	mg/L	U
Beryllium	7440-41-7	1	0.0100	ND	mg/L	U
Cadmium	7440-43-9	1	0.0020	ND	mg/L	U
Calcium	7440-70-2	1	0.500	**64.0**	mg/L	
Chromium	7440-47-3	1	0.0100	ND	mg/L	U
Cobalt	7440-48-4	1	0.0100	ND	mg/L	U
Copper	7440-50-8	1	0.0030	ND	mg/L	U
Iron	7439-89-6	1	0.200	**14.1**	mg/L	
Magnesium	7439-95-4	1	0.500	**34.1**	mg/L	
Manganese	7439-96-5	1	0.0100	**0.455**	mg/L	
Nickel	7440-02-0	1	0.0100	ND	mg/L	U
Potassium	7440-09-7	1	0.500	**1.80**	mg/L	
Silver	7440-22-4	1	0.0050	ND	mg/L	U
Sodium	7440-23-5	1	0.500	**10.0**	mg/L	
Vanadium	7440-62-2	1	0.0030	ND	mg/L	U
Zinc	7440-66-6	1	0.0200	ND	mg/L	U

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-8-0519

19E0324-07 (Water)

Metals and Metallic Compounds

Method: EPA 7470A — Sampled: 05/21/2019 12:30

Instrument: CVAA Analyst: SKM — Analyzed: 06/03/2019 14:47

Sample Preparation: Preparation Method: TLM EPA 7470A low level — Extract ID: 19E0324-07 G

Preparation Batch: BHE0598 — Sample Size: 20 mL

Prepared: 23-May-2019 — Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	0.000010	0.000020	**0.000015**	mg/L	J

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

EB-0519

19E0324-08 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/21/2019 13:00

Instrument: NT2 Analyst: LH — Analyzed: 05/23/2019 14:33

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19E0324-08 H

Preparation Batch: BHE0615 — Sample Size: 10 mL

Prepared: 23-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.09	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.06	0.10	ND	ug/L	U
Bromomethane	74-83-9	1	0.25	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.09	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.04	0.20	ND	ug/L	U
Acrolein	107-02-8	1	2.48	2.50	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.04	0.20	ND	ug/L	U
Acetone	67-64-1	1	2.06	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.05	0.20	ND	ug/L	U
Bromoethane	74-96-4	1	0.04	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	0.23	0.50	ND	ug/L	U
Methylene Chloride	75-09-2	1	0.49	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	0.60	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.04	0.10	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.05	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.07	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.05	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	0.81	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.05	0.10	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.04	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.03	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.06	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.04	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.03	0.10	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.04	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.07	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.03	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.05	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.04	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.05	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.15	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	0.25	0.50	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	0.97	2.50	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.06	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.04	0.20	ND	ug/L	U
trans-1,3-Dichloropropene	10061-02-6	1	0.08	0.20	ND	ug/L	U

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

EB-0519

19E0324-08 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/21/2019 13:00

Instrument: NT2 Analyst: LH — Analyzed: 05/23/2019 14:33

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
2-Hexanone	591-78-6	1	0.90	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.13	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.06	0.10	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.05	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.05	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.07	0.10	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.02	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.04	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.04	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.05	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.03	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.09	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.05	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.06	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.06	0.10	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.13	0.20	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	0.32	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.02	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.06	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.02	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.02	0.10	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.02	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.03	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.02	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.02	0.20	**0.04**	ug/L	J
s-Butylbenzene	135-98-8	1	0.02	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.03	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.04	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.04	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.02	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.04	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.37	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.11	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.07	0.20	ND	ug/L	U
Naphthalene	91-20-3	1	0.12	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.11	0.20	ND	ug/L	U
Dichlorodifluoromethane	75-71-8	1	0.05	0.20	ND	ug/L	U
Surrogate: Dibromofluoromethane				*80-120 %*	*101*	*%*	
Surrogate: 1,2-Dichloroethane-d4				*80-129 %*	*108*	*%*	

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

EB-0519

19E0324-08 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/21/2019 13:00

Instrument: NT2 Analyst: LH — Analyzed: 05/23/2019 14:33

Analyte	CAS Number	Recovery Limits	Recovery	Units	Notes
Surrogate: Toluene-d8		*80-120 %*	*95.9*	*%*	
Surrogate: 4-Bromofluorobenzene		*80-120 %*	*94.0*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4		*80-120 %*	*103*	*%*	

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

EB-0519

19E0324-08 (Water)

Semivolatile Organic Compounds

Method: EPA 8270D — Sampled: 05/21/2019 13:00

Instrument: NT6 Analyst: JZ — Analyzed: 06/03/2019 21:58

Sample Preparation: Preparation Method: EPA 3520C (Liq Liq) — Extract ID: 19E0324-08 B 01

Preparation Batch: BHE0602 — Sample Size: 500 mL

Prepared: 23-May-2019 — Final Volume: 1 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
1,4-Dioxane	123-91-1	1	0.2	0.4	ND	ug/L	U
Surrogate: 1,4-Dioxane-d8				*33.6-120 %*	*56.7*	*%*	

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

EB-0519

19E0324-08 (Water)

Petroleum Hydrocarbons

Method: NWTPH-HCID — Sampled: 05/21/2019 13:00
Instrument: FID4 Analyst: JGR — Analyzed: 05/25/2019 06:35

Sample Preparation: Preparation Method: EPA 3510C SepF — Extract ID: 19E0324-08 A 01
Preparation Batch: BHE0593 — Sample Size: 500 mL
Prepared: 23-May-2019 — Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-C12)	GRO	1	0.25	ND	mg/L	U
Diesel Range Organics (C12-C24)	DRO	1	0.50	ND	mg/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	1.00	ND	mg/L	U
Surrogate: o-Terphenyl			*50-150 %*	*116*	*%*	
Surrogate: n-Triacontane			*50-150 %*	*130*	*%*	

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

EB-0519

19E0324-08 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 05/21/2019 13:00

Instrument: ICPMS2 Analyst: MCB — Analyzed: 05/23/2019 22:58

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19E0324-08 G 01

Preparation Batch: BHE0597 — Sample Size: 25 mL

Prepared: 23-May-2019 — Final Volume: 25.86 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	1	0.00310	ND	mg/L	U
Lead	7439-92-1	1	0.0103	ND	mg/L	U
Thallium	7440-28-0	1	0.00207	ND	mg/L	U

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

EB-0519

19E0324-08 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 05/21/2019 13:00

Instrument: ICPMS2 Analyst: MCB — Analyzed: 05/23/2019 22:58

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19E0324-08 G 01

Preparation Batch: BHE0597 — Sample Size: 25 mL

Prepared: 23-May-2019 — Final Volume: 25.86 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.00310	ND	mg/L	U
Selenium	7782-49-2	1	0.0259	ND	mg/L	U

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

EB-0519

19E0324-08 (Water)

Metals and Metallic Compounds

Method: EPA 6010C — Sampled: 05/21/2019 13:00

Instrument: ICP2 Analyst: TCH — Analyzed: 05/24/2019 16:54

Sample Preparation: Preparation Method: TWC EPA 3010A — Extract ID: 19E0324-08 G 02

Preparation Batch: BHE0599 — Sample Size: 25 mL

Prepared: 23-May-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Aluminum	7429-90-5	1	1.00	ND	mg/L	U
Barium	7440-39-3	1	0.500	ND	mg/L	U
Beryllium	7440-41-7	1	0.0100	ND	mg/L	U
Cadmium	7440-43-9	1	0.0020	ND	mg/L	U
Calcium	7440-70-2	1	0.500	ND	mg/L	U
Chromium	7440-47-3	1	0.0100	ND	mg/L	U
Cobalt	7440-48-4	1	0.0100	ND	mg/L	U
Copper	7440-50-8	1	0.0030	**0.0054**	mg/L	
Iron	7439-89-6	1	0.200	ND	mg/L	U
Magnesium	7439-95-4	1	0.500	ND	mg/L	U
Manganese	7439-96-5	1	0.0100	ND	mg/L	U
Nickel	7440-02-0	1	0.0100	ND	mg/L	U
Potassium	7440-09-7	1	0.500	ND	mg/L	U
Silver	7440-22-4	1	0.0050	ND	mg/L	U
Sodium	7440-23-5	1	0.500	ND	mg/L	U
Vanadium	7440-62-2	1	0.0030	ND	mg/L	U
Zinc	7440-66-6	1	0.0200	ND	mg/L	U

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

EB-0519

19E0324-08 (Water)

Metals and Metallic Compounds

Method: EPA 7470A — Sampled: 05/21/2019 13:00

Instrument: CVAA Analyst: SKM — Analyzed: 06/03/2019 14:50

Sample Preparation: Preparation Method: TLM EPA 7470A low level — Extract ID: 19E0324-08 G

Preparation Batch: BHE0598 — Sample Size: 20 mL

Prepared: 23-May-2019 — Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	0.000010	0.000020	**0.000012**	mg/L	J

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-7-0519

19E0324-09 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/21/2019 14:40
Instrument: NT2 Analyst: LH — Analyzed: 05/23/2019 17:17

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19E0324-09 H
Preparation Batch: BHE0615 — Sample Size: 10 mL
Prepared: 23-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.09	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.06	0.10	ND	ug/L	U
Bromomethane	74-83-9	1	0.25	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.09	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.04	0.20	ND	ug/L	U
Acrolein	107-02-8	1	2.48	2.50	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.04	0.20	ND	ug/L	U
Acetone	67-64-1	1	2.06	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.05	0.20	ND	ug/L	U
Bromoethane	74-96-4	1	0.04	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	0.23	0.50	ND	ug/L	U
Methylene Chloride	75-09-2	1	0.49	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	0.60	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.04	0.10	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.05	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.07	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.05	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	0.81	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.05	0.10	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.04	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.03	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.06	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.04	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.03	0.10	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.04	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.07	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.03	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.05	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.04	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.05	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.15	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	0.25	0.50	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	0.97	2.50	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.06	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.04	0.20	ND	ug/L	U
trans-1,3-Dichloropropene	10061-02-6	1	0.08	0.20	ND	ug/L	U

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-7-0519

19E0324-09 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/21/2019 14:40

Instrument: NT2 Analyst: LH — Analyzed: 05/23/2019 17:17

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
2-Hexanone	591-78-6	1	0.90	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.13	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.06	0.10	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.05	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.05	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.07	0.10	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.02	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.04	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.04	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.05	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.03	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.09	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.05	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.06	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.06	0.10	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.13	0.20	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	0.32	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.02	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.06	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.02	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.02	0.10	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.02	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.03	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.02	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.02	0.20	**0.04**	ug/L	J
s-Butylbenzene	135-98-8	1	0.02	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.03	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.04	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.04	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.02	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.04	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.37	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.11	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.07	0.20	ND	ug/L	U
Naphthalene	91-20-3	1	0.12	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.11	0.20	ND	ug/L	U
Dichlorodifluoromethane	75-71-8	1	0.05	0.20	ND	ug/L	U
Surrogate: Dibromofluoromethane				*80-120 %*	*106*	*%*	
Surrogate: 1,2-Dichloroethane-d4				*80-129 %*	*114*	*%*	

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-7-0519

19E0324-09 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/21/2019 14:40

Instrument: NT2 Analyst: LH — Analyzed: 05/23/2019 17:17

Analyte	CAS Number	Recovery Limits	Recovery	Units	Notes
Surrogate: Toluene-d8		*80-120 %*	*96.1*	*%*	
Surrogate: 4-Bromofluorobenzene		*80-120 %*	*91.3*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4		*80-120 %*	*101*	*%*	

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-7-0519

19E0324-09 (Water)

Semivolatile Organic Compounds

Method: EPA 8270D — Sampled: 05/21/2019 14:40

Instrument: NT6 Analyst: JZ — Analyzed: 06/03/2019 22:31

Sample Preparation: Preparation Method: EPA 3520C (Liq Liq) — Extract ID: 19E0324-09 B 01

Preparation Batch: BHE0602 — Sample Size: 500 mL

Prepared: 23-May-2019 — Final Volume: 1 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
1,4-Dioxane	123-91-1	1	0.2	0.4	ND	ug/L	U
Surrogate: 1,4-Dioxane-d8				*33.6-120 %*	*59.7*	*%*	

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-7-0519

19E0324-09 (Water)

Petroleum Hydrocarbons

Method: NWTPH-HCID — Sampled: 05/21/2019 14:40

Instrument: FID4 Analyst: JGR — Analyzed: 05/25/2019 07:36

Sample Preparation: Preparation Method: EPA 3510C SepF — Extract ID: 19E0324-09 A 01

Preparation Batch: BHE0593 — Sample Size: 500 mL

Prepared: 23-May-2019 — Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-C12)	GRO	1	0.25	ND	mg/L	U
Diesel Range Organics (C12-C24)	DRO	1	0.50	ND	mg/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	1.00	ND	mg/L	U
Surrogate: o-Terphenyl			*50-150 %*	*108*	*%*	
Surrogate: n-Triacontane			*50-150 %*	*119*	*%*	

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-7-0519

19E0324-09 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 05/21/2019 14:40

Instrument: ICPMS2 Analyst: MCB — Analyzed: 05/23/2019 23:03

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19E0324-09 G 01

Preparation Batch: BHE0597 — Sample Size: 25 mL

Prepared: 23-May-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	1	0.00300	ND	mg/L	U
Lead	7439-92-1	1	0.0100	ND	mg/L	U
Thallium	7440-28-0	1	0.00200	ND	mg/L	U

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-7-0519

19E0324-09 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 05/21/2019 14:40

Instrument: ICPMS2 Analyst: MCB — Analyzed: 05/23/2019 23:03

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19E0324-09 G 01

Preparation Batch: BHE0597 — Sample Size: 25 mL

Prepared: 23-May-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.00300	ND	mg/L	U
Selenium	7782-49-2	1	0.0250	ND	mg/L	U

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-7-0519

19E0324-09 (Water)

Metals and Metallic Compounds

Method: EPA 6010C — Sampled: 05/21/2019 14:40

Instrument: ICP2 Analyst: TCH — Analyzed: 05/24/2019 16:59

Sample Preparation: Preparation Method: TWC EPA 3010A — Extract ID: 19E0324-09 G 02

Preparation Batch: BHE0599 — Sample Size: 25 mL

Prepared: 23-May-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Aluminum	7429-90-5	1	1.00	ND	mg/L	U
Barium	7440-39-3	1	0.500	ND	mg/L	U
Beryllium	7440-41-7	1	0.0100	ND	mg/L	U
Cadmium	7440-43-9	1	0.0020	ND	mg/L	U
Calcium	7440-70-2	1	0.500	**47.1**	mg/L	
Chromium	7440-47-3	1	0.0100	ND	mg/L	U
Cobalt	7440-48-4	1	0.0100	ND	mg/L	U
Copper	7440-50-8	1	0.0030	ND	mg/L	U
Iron	7439-89-6	1	0.200	**0.931**	mg/L	
Magnesium	7439-95-4	1	0.500	**21.8**	mg/L	
Manganese	7439-96-5	1	0.0100	**0.107**	mg/L	
Nickel	7440-02-0	1	0.0100	ND	mg/L	U
Potassium	7440-09-7	1	0.500	**2.63**	mg/L	
Silver	7440-22-4	1	0.0050	ND	mg/L	U
Sodium	7440-23-5	1	0.500	**40.9**	mg/L	
Vanadium	7440-62-2	1	0.0030	ND	mg/L	U
Zinc	7440-66-6	1	0.0200	ND	mg/L	U

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Golder Associates	Project: Landsburg	
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Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-7-0519

19E0324-09 (Water)

Metals and Metallic Compounds

Method: EPA 7470A — Sampled: 05/21/2019 14:40

Instrument: CVAA Analyst: SKM — Analyzed: 06/03/2019 14:53

Sample Preparation: Preparation Method: TLM EPA 7470A low level — Extract ID: 19E0324-09 G

Preparation Batch: BHE0598 — Sample Size: 20 mL

Prepared: 23-May-2019 — Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	0.000010	0.000020	**0.000013**	mg/L	J

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-6-0519

19E0324-10 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/22/2019 08:45
Instrument: NT2 Analyst: LH — Analyzed: 05/23/2019 17:37

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19E0324-10 H
Preparation Batch: BHE0615 — Sample Size: 10 mL
Prepared: 23-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.09	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.06	0.10	ND	ug/L	U
Bromomethane	74-83-9	1	0.25	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.09	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.04	0.20	ND	ug/L	U
Acrolein	107-02-8	1	2.48	2.50	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.04	0.20	ND	ug/L	U
Acetone	67-64-1	1	2.06	5.00	**2.11**	ug/L	J
1,1-Dichloroethene	75-35-4	1	0.05	0.20	ND	ug/L	U
Bromoethane	74-96-4	1	0.04	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	0.23	0.50	ND	ug/L	U
Methylene Chloride	75-09-2	1	0.49	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	0.60	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.04	0.10	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.05	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.07	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.05	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	0.81	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.05	0.10	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.04	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.03	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.06	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.04	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.03	0.10	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.04	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.07	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.03	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.05	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.04	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.05	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.15	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	0.25	0.50	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	0.97	2.50	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.06	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.04	0.20	ND	ug/L	U
trans-1,3-Dichloropropene	10061-02-6	1	0.08	0.20	ND	ug/L	U

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-6-0519

19E0324-10 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/22/2019 08:45

Instrument: NT2 Analyst: LH — Analyzed: 05/23/2019 17:37

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
2-Hexanone	591-78-6	1	0.90	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.13	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.06	0.10	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.05	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.05	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.07	0.10	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.02	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.04	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.04	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.05	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.03	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.09	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.05	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.06	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.06	0.10	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.13	0.20	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	0.32	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.02	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.06	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.02	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.02	0.10	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.02	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.03	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.02	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.02	0.20	**0.05**	ug/L	J
s-Butylbenzene	135-98-8	1	0.02	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.03	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.04	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.04	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.02	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.04	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.37	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.11	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.07	0.20	ND	ug/L	U
Naphthalene	91-20-3	1	0.12	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.11	0.20	ND	ug/L	U
Dichlorodifluoromethane	75-71-8	1	0.05	0.20	ND	ug/L	U
Surrogate: Dibromofluoromethane				*80-120 %*	*107*	*%*	
Surrogate: 1,2-Dichloroethane-d4				*80-129 %*	*116*	*%*	

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-6-0519

19E0324-10 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/22/2019 08:45

Instrument: NT2 Analyst: LH — Analyzed: 05/23/2019 17:37

Analyte	CAS Number	Recovery Limits	Recovery	Units	Notes
Surrogate: Toluene-d8		*80-120 %*	*95.7*	*%*	
Surrogate: 4-Bromofluorobenzene		*80-120 %*	*91.5*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4		*80-120 %*	*102*	*%*	

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-6-0519

19E0324-10 (Water)

Semivolatile Organic Compounds

Method: EPA 8270D — Sampled: 05/22/2019 08:45

Instrument: NT6 Analyst: JZ — Analyzed: 06/03/2019 23:04

Sample Preparation: Preparation Method: EPA 3520C (Liq Liq) — Extract ID: 19E0324-10 B 01

Preparation Batch: BHE0602 — Sample Size: 500 mL

Prepared: 23-May-2019 — Final Volume: 1 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
1,4-Dioxane	123-91-1	1	0.2	0.4	ND	ug/L	U
Surrogate: 1,4-Dioxane-d8				*33.6-120 %*	*67.7*	*%*	

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-6-0519

19E0324-10 (Water)

Petroleum Hydrocarbons

Method: NWTPH-HCID — Sampled: 05/22/2019 08:45

Instrument: FID4 Analyst: JGR — Analyzed: 05/25/2019 07:57

Sample Preparation: Preparation Method: EPA 3510C SepF — Extract ID: 19E0324-10 A 01

Preparation Batch: BHE0593 — Sample Size: 500 mL

Prepared: 23-May-2019 — Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-C12)	GRO	1	0.25	ND	mg/L	U
Diesel Range Organics (C12-C24)	DRO	1	0.50	ND	mg/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	1.00	ND	mg/L	U
Surrogate: o-Terphenyl			*50-150 %*	*105*	*%*	
Surrogate: n-Triacontane			*50-150 %*	*117*	*%*	

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-6-0519

19E0324-10 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 05/22/2019 08:45

Instrument: ICPMS2 Analyst: MCB — Analyzed: 05/23/2019 23:08

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19E0324-10 G 01

Preparation Batch: BHE0597 — Sample Size: 25 mL

Prepared: 23-May-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	1	0.00300	ND	mg/L	U
Lead	7439-92-1	1	0.0100	ND	mg/L	U
Thallium	7440-28-0	1	0.00200	ND	mg/L	U

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-6-0519

19E0324-10 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 05/22/2019 08:45

Instrument: ICPMS2 Analyst: MCB — Analyzed: 05/23/2019 23:08

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19E0324-10 G 01

Preparation Batch: BHE0597 — Sample Size: 25 mL

Prepared: 23-May-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.00300	ND	mg/L	U
Selenium	7782-49-2	1	0.0250	ND	mg/L	U

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-6-0519

19E0324-10 (Water)

Metals and Metallic Compounds

Method: EPA 6010C — Sampled: 05/22/2019 08:45

Instrument: ICP2 Analyst: TCH — Analyzed: 05/24/2019 17:03

Sample Preparation: Preparation Method: TWC EPA 3010A — Extract ID: 19E0324-10 G 02

Preparation Batch: BHE0599 — Sample Size: 25 mL

Prepared: 23-May-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Aluminum	7429-90-5	1	1.00	ND	mg/L	U
Barium	7440-39-3	1	0.500	ND	mg/L	U
Beryllium	7440-41-7	1	0.0100	ND	mg/L	U
Cadmium	7440-43-9	1	0.0020	ND	mg/L	U
Calcium	7440-70-2	1	0.500	**27.2**	mg/L	
Chromium	7440-47-3	1	0.0100	ND	mg/L	U
Cobalt	7440-48-4	1	0.0100	ND	mg/L	U
Copper	7440-50-8	1	0.0030	ND	mg/L	U
Iron	7439-89-6	1	0.200	**2.12**	mg/L	
Magnesium	7439-95-4	1	0.500	**13.6**	mg/L	
Manganese	7439-96-5	1	0.0100	**0.0331**	mg/L	
Nickel	7440-02-0	1	0.0100	ND	mg/L	U
Potassium	7440-09-7	1	0.500	**0.649**	mg/L	
Silver	7440-22-4	1	0.0050	ND	mg/L	U
Sodium	7440-23-5	1	0.500	**6.84**	mg/L	
Vanadium	7440-62-2	1	0.0030	ND	mg/L	U
Zinc	7440-66-6	1	0.0200	ND	mg/L	U

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-6-0519

19E0324-10 (Water)

Metals and Metallic Compounds

Method: EPA 7470A — Sampled: 05/22/2019 08:45

Instrument: CVAA Analyst: SKM — Analyzed: 06/03/2019 14:56

Sample Preparation: Preparation Method: TLM EPA 7470A low level — Extract ID: 19E0324-10 G

Preparation Batch: BHE0598 — Sample Size: 20 mL

Prepared: 23-May-2019 — Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	0.000010	0.000020	**0.000015**	mg/L	J

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-13R-0519

19E0324-11 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/22/2019 09:50

Instrument: NT2 Analyst: LH — Analyzed: 05/23/2019 17:57

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19E0324-11 I

Preparation Batch: BHE0615 — Sample Size: 10 mL

Prepared: 23-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.09	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.06	0.10	ND	ug/L	U
Bromomethane	74-83-9	1	0.25	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.09	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.04	0.20	ND	ug/L	U
Acrolein	107-02-8	1	2.48	2.50	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.04	0.20	ND	ug/L	U
Acetone	67-64-1	1	2.06	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.05	0.20	ND	ug/L	U
Bromoethane	74-96-4	1	0.04	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	0.23	0.50	ND	ug/L	U
Methylene Chloride	75-09-2	1	0.49	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	0.60	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.04	0.10	**0.08**	ug/L	J
trans-1,2-Dichloroethene	156-60-5	1	0.05	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.07	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.05	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	0.81	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.05	0.10	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.04	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.03	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.06	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.04	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.03	0.10	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.04	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.07	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.03	0.20	**0.05**	ug/L	J
Trichloroethene	79-01-6	1	0.05	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.04	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.05	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.15	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	0.25	0.50	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	0.97	2.50	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.06	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.04	0.20	**0.05**	ug/L	J
trans-1,3-Dichloropropene	10061-02-6	1	0.08	0.20	ND	ug/L	U

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-13R-0519

19E0324-11 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/22/2019 09:50

Instrument: NT2 Analyst: LH — Analyzed: 05/23/2019 17:57

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
2-Hexanone	591-78-6	1	0.90	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.13	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.06	0.10	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.05	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.05	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.07	0.10	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.02	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.04	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.04	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.05	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.03	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.09	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.05	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.06	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.06	0.10	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.13	0.20	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	0.32	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.02	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.06	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.02	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.02	0.10	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.02	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.03	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.02	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.02	0.20	**0.05**	ug/L	J
s-Butylbenzene	135-98-8	1	0.02	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.03	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.04	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.04	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.02	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.04	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.37	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.11	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.07	0.20	ND	ug/L	U
Naphthalene	91-20-3	1	0.12	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.11	0.20	ND	ug/L	U
Dichlorodifluoromethane	75-71-8	1	0.05	0.20	ND	ug/L	U
Surrogate: Dibromofluoromethane				*80-120 %*	*104*	*%*	
Surrogate: 1,2-Dichloroethane-d4				*80-129 %*	*110*	*%*	

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-13R-0519

19E0324-11 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/22/2019 09:50

Instrument: NT2 Analyst: LH — Analyzed: 05/23/2019 17:57

Analyte	CAS Number	Recovery Limits	Recovery	Units	Notes
Surrogate: Toluene-d8		*80-120 %*	*95.5*	*%*	
Surrogate: 4-Bromofluorobenzene		*80-120 %*	*90.2*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4		*80-120 %*	*103*	*%*	

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-13R-0519

19E0324-11 (Water)

Semivolatile Organic Compounds

Method: EPA 8270D — Sampled: 05/22/2019 09:50

Instrument: NT6 Analyst: JZ — Analyzed: 06/03/2019 23:36

Sample Preparation: Preparation Method: EPA 3520C (Liq Liq) — Extract ID: 19E0324-11 B 01

Preparation Batch: BHE0602 — Sample Size: 500 mL

Prepared: 23-May-2019 — Final Volume: 1 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
1,4-Dioxane	123-91-1	1	0.2	0.4	ND	ug/L	U
Surrogate: 1,4-Dioxane-d8				*33.6-120 %*	*68.9*	*%*	

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-13R-0519

19E0324-11 (Water)

Petroleum Hydrocarbons

Method: NWTPH-HCID — Sampled: 05/22/2019 09:50

Instrument: FID4 Analyst: JGR — Analyzed: 05/25/2019 08:18

Sample Preparation: Preparation Method: EPA 3510C SepF — Extract ID: 19E0324-11 A 01

Preparation Batch: BHE0593 — Sample Size: 500 mL

Prepared: 23-May-2019 — Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-C12)	GRO	1	0.25	ND	mg/L	U
Diesel Range Organics (C12-C24)	DRO	1	0.50	ND	mg/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	1.00	ND	mg/L	U
Surrogate: o-Terphenyl			*50-150 %*	*111*	*%*	
Surrogate: n-Triacontane			*50-150 %*	*122*	*%*	

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-13R-0519

19E0324-11 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 05/22/2019 09:50

Instrument: ICPMS2 Analyst: MCB — Analyzed: 05/23/2019 23:13

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19E0324-11 G 01

Preparation Batch: BHE0597 — Sample Size: 25 mL

Prepared: 23-May-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	1	0.00300	ND	mg/L	U
Lead	7439-92-1	1	0.0100	ND	mg/L	U
Thallium	7440-28-0	1	0.00200	ND	mg/L	U

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-13R-0519

19E0324-11 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 05/22/2019 09:50

Instrument: ICPMS2 Analyst: MCB — Analyzed: 05/23/2019 23:13

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19E0324-11 G 01

Preparation Batch: BHE0597 — Sample Size: 25 mL

Prepared: 23-May-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.00300	ND	mg/L	U
Selenium	7782-49-2	1	0.0250	ND	mg/L	U

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-13R-0519

19E0324-11 (Water)

Metals and Metallic Compounds

Method: EPA 6010C — Sampled: 05/22/2019 09:50

Instrument: ICP2 Analyst: TCH — Analyzed: 05/24/2019 17:07

Sample Preparation: Preparation Method: TWC EPA 3010A — Extract ID: 19E0324-11 G 02

Preparation Batch: BHE0599 — Sample Size: 25 mL

Prepared: 23-May-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Aluminum	7429-90-5	1	1.00	ND	mg/L	U
Barium	7440-39-3	1	0.500	ND	mg/L	U
Beryllium	7440-41-7	1	0.0100	ND	mg/L	U
Cadmium	7440-43-9	1	0.0020	ND	mg/L	U
Calcium	7440-70-2	1	0.500	**86.9**	mg/L	
Chromium	7440-47-3	1	0.0100	ND	mg/L	U
Cobalt	7440-48-4	1	0.0100	ND	mg/L	U
Copper	7440-50-8	1	0.0030	ND	mg/L	U
Iron	7439-89-6	1	0.200	**1.56**	mg/L	
Magnesium	7439-95-4	1	0.500	**40.8**	mg/L	
Manganese	7439-96-5	1	0.0100	**0.0510**	mg/L	
Nickel	7440-02-0	1	0.0100	ND	mg/L	U
Potassium	7440-09-7	1	0.500	**3.35**	mg/L	
Silver	7440-22-4	1	0.0050	ND	mg/L	U
Sodium	7440-23-5	1	50.0	**73.8**	mg/L	
Vanadium	7440-62-2	1	0.0030	ND	mg/L	U
Zinc	7440-66-6	1	0.0200	ND	mg/L	U

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-13R-0519

19E0324-11 (Water)

Metals and Metallic Compounds

Method: EPA 7470A — Sampled: 05/22/2019 09:50

Instrument: CVAA Analyst: SKM — Analyzed: 06/03/2019 14:59

Sample Preparation: Preparation Method: TLM EPA 7470A low level — Extract ID: 19E0324-11 G

Preparation Batch: BHE0598 — Sample Size: 20 mL

Prepared: 23-May-2019 — Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	0.000010	0.000020	**0.000016**	mg/L	J

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-12-0519

19E0324-12 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/22/2019 10:45
Instrument: NT2 Analyst: LH — Analyzed: 05/23/2019 18:17

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19E0324-12 I
Preparation Batch: BHE0615 — Sample Size: 10 mL
Prepared: 23-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.09	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.06	0.10	ND	ug/L	U
Bromomethane	74-83-9	1	0.25	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.09	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.04	0.20	ND	ug/L	U
Acrolein	107-02-8	1	2.48	2.50	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.04	0.20	ND	ug/L	U
Acetone	67-64-1	1	2.06	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.05	0.20	ND	ug/L	U
Bromoethane	74-96-4	1	0.04	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	0.23	0.50	ND	ug/L	U
Methylene Chloride	75-09-2	1	0.49	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	0.60	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.04	0.10	**0.04**	ug/L	J
trans-1,2-Dichloroethene	156-60-5	1	0.05	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.07	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.05	0.20	**0.27**	ug/L	
2-Butanone	78-93-3	1	0.81	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.05	0.10	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.04	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.03	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.06	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.04	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.03	0.10	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.04	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.07	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.03	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.05	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.04	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.05	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.15	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	0.25	0.50	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	0.97	2.50	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.06	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.04	0.20	ND	ug/L	U
trans-1,3-Dichloropropene	10061-02-6	1	0.08	0.20	ND	ug/L	U

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-12-0519

19E0324-12 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/22/2019 10:45

Instrument: NT2 Analyst: LH — Analyzed: 05/23/2019 18:17

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
2-Hexanone	591-78-6	1	0.90	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.13	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.06	0.10	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.05	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.05	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.07	0.10	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.02	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.04	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.04	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.05	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.03	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.09	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.05	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.06	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.06	0.10	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.13	0.20	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	0.32	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.02	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.06	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.02	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.02	0.10	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.02	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.03	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.02	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.02	0.20	**0.05**	ug/L	J
s-Butylbenzene	135-98-8	1	0.02	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.03	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.04	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.04	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.02	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.04	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.37	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.11	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.07	0.20	ND	ug/L	U
Naphthalene	91-20-3	1	0.12	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.11	0.20	ND	ug/L	U
Dichlorodifluoromethane	75-71-8	1	0.05	0.20	ND	ug/L	U
Surrogate: Dibromofluoromethane				*80-120 %*	*107*	*%*	
Surrogate: 1,2-Dichloroethane-d4				*80-129 %*	*116*	*%*	

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-12-0519

19E0324-12 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/22/2019 10:45

Instrument: NT2 Analyst: LH — Analyzed: 05/23/2019 18:17

Analyte	CAS Number	Recovery Limits	Recovery	Units	Notes
Surrogate: Toluene-d8		*80-120 %*	*95.3*	*%*	
Surrogate: 4-Bromofluorobenzene		*80-120 %*	*89.6*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4		*80-120 %*	*102*	*%*	

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-12-0519

19E0324-12 (Water)

Semivolatile Organic Compounds

Method: EPA 8270D — Sampled: 05/22/2019 10:45
Instrument: NT6 Analyst: JZ — Analyzed: 06/04/2019 00:09

Sample Preparation: Preparation Method: EPA 3520C (Liq Liq) — Extract ID: 19E0324-12 B 01
Preparation Batch: BHE0602 — Sample Size: 500 mL
Prepared: 23-May-2019 — Final Volume: 1 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
1,4-Dioxane	123-91-1	1	0.2	0.4	**1.4**	ug/L	
Surrogate: 1,4-Dioxane-d8				*33.6-120 %*	*63.3*	*%*	

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-12-0519

19E0324-12 (Water)

Petroleum Hydrocarbons

Method: NWTPH-HCID — Sampled: 05/22/2019 10:45

Instrument: FID4 Analyst: JGR — Analyzed: 05/25/2019 08:40

Sample Preparation: Preparation Method: EPA 3510C SepF — Extract ID: 19E0324-12 A 01

Preparation Batch: BHE0593 — Sample Size: 500 mL

Prepared: 23-May-2019 — Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-C12)	GRO	1	0.25	ND	mg/L	U
Diesel Range Organics (C12-C24)	DRO	1	0.50	ND	mg/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	1.00	ND	mg/L	U
Surrogate: o-Terphenyl			*50-150 %*	*99.5*	*%*	
Surrogate: n-Triacontane			*50-150 %*	*109*	*%*	

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-12-0519

19E0324-12 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 05/22/2019 10:45

Instrument: ICPMS2 Analyst: MCB — Analyzed: 05/23/2019 23:18

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19E0324-12 G 01

Preparation Batch: BHE0597 — Sample Size: 25 mL

Prepared: 23-May-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	1	0.00300	ND	mg/L	U
Lead	7439-92-1	1	0.0100	ND	mg/L	U
Thallium	7440-28-0	1	0.00200	ND	mg/L	U

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-12-0519

19E0324-12 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 05/22/2019 10:45

Instrument: ICPMS2 Analyst: MCB — Analyzed: 05/23/2019 23:18

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19E0324-12 G 01

Preparation Batch: BHE0597 — Sample Size: 25 mL

Prepared: 23-May-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.00300	ND	mg/L	U
Selenium	7782-49-2	1	0.0250	ND	mg/L	U

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-12-0519

19E0324-12 (Water)

Metals and Metallic Compounds

Method: EPA 6010C — Sampled: 05/22/2019 10:45

Instrument: ICP2 Analyst: TCH — Analyzed: 05/24/2019 17:11

Sample Preparation: Preparation Method: TWC EPA 3010A — Extract ID: 19E0324-12 G 02

Preparation Batch: BHE0599 — Sample Size: 25 mL

Prepared: 23-May-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Aluminum	7429-90-5	1	1.00	ND	mg/L	U
Barium	7440-39-3	1	0.500	ND	mg/L	U
Beryllium	7440-41-7	1	0.0100	ND	mg/L	U
Cadmium	7440-43-9	1	0.0020	ND	mg/L	U
Calcium	7440-70-2	1	0.500	**104**	mg/L	
Chromium	7440-47-3	1	0.0100	ND	mg/L	U
Cobalt	7440-48-4	1	0.0100	ND	mg/L	U
Copper	7440-50-8	1	0.0030	ND	mg/L	U
Iron	7439-89-6	1	0.200	**16.5**	mg/L	
Magnesium	7439-95-4	1	0.500	**69.0**	mg/L	
Manganese	7439-96-5	1	0.0100	**0.588**	mg/L	
Nickel	7440-02-0	1	0.0100	ND	mg/L	U
Potassium	7440-09-7	1	0.500	**3.90**	mg/L	
Silver	7440-22-4	1	0.0050	ND	mg/L	U
Sodium	7440-23-5	1	0.500	**16.7**	mg/L	
Vanadium	7440-62-2	1	0.0030	ND	mg/L	U
Zinc	7440-66-6	1	0.0200	ND	mg/L	U

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-12-0519

19E0324-12 (Water)

Metals and Metallic Compounds

Method: EPA 7470A — Sampled: 05/22/2019 10:45

Instrument: CVAA Analyst: SKM — Analyzed: 06/03/2019 15:02

Sample Preparation: Preparation Method: TLM EPA 7470A low level — Extract ID: 19E0324-12 G

Preparation Batch: BHE0598 — Sample Size: 20 mL

Prepared: 23-May-2019 — Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	0.000010	0.000020	**0.000015**	mg/L	J

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-10-0519

19E0324-13 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/22/2019 11:55

Instrument: NT2 Analyst: LH — Analyzed: 05/23/2019 18:37

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19E0324-13 I

Preparation Batch: BHE0615 — Sample Size: 10 mL

Prepared: 23-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.09	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.06	0.10	ND	ug/L	U
Bromomethane	74-83-9	1	0.25	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.09	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.04	0.20	ND	ug/L	U
Acrolein	107-02-8	1	2.48	2.50	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.04	0.20	ND	ug/L	U
Acetone	67-64-1	1	2.06	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.05	0.20	ND	ug/L	U
Bromoethane	74-96-4	1	0.04	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	0.23	0.50	ND	ug/L	U
Methylene Chloride	75-09-2	1	0.49	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	0.60	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.04	0.10	**0.11**	ug/L	
trans-1,2-Dichloroethene	156-60-5	1	0.05	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.07	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.05	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	0.81	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.05	0.10	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.04	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.03	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.06	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.04	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.03	0.10	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.04	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.07	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.03	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.05	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.04	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.05	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.15	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	0.25	0.50	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	0.97	2.50	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.06	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.04	0.20	ND	ug/L	U
trans-1,3-Dichloropropene	10061-02-6	1	0.08	0.20	ND	ug/L	U

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-10-0519

19E0324-13 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/22/2019 11:55

Instrument: NT2 Analyst: LH — Analyzed: 05/23/2019 18:37

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
2-Hexanone	591-78-6	1	0.90	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.13	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.06	0.10	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.05	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.05	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.07	0.10	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.02	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.04	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.04	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.05	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.03	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.09	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.05	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.06	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.06	0.10	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.13	0.20	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	0.32	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.02	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.06	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.02	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.02	0.10	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.02	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.03	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.02	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.02	0.20	**0.05**	ug/L	J
s-Butylbenzene	135-98-8	1	0.02	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.03	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.04	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.04	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.02	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.04	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.37	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.11	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.07	0.20	ND	ug/L	U
Naphthalene	91-20-3	1	0.12	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.11	0.20	ND	ug/L	U
Dichlorodifluoromethane	75-71-8	1	0.05	0.20	ND	ug/L	U
Surrogate: Dibromofluoromethane				*80-120 %*	*106*	*%*	
Surrogate: 1,2-Dichloroethane-d4				*80-129 %*	*115*	*%*	

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-10-0519

19E0324-13 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/22/2019 11:55

Instrument: NT2 Analyst: LH — Analyzed: 05/23/2019 18:37

Analyte	CAS Number	Recovery Limits	Recovery	Units	Notes
Surrogate: Toluene-d8		*80-120 %*	*95.1*	*%*	
Surrogate: 4-Bromofluorobenzene		*80-120 %*	*89.7*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4		*80-120 %*	*102*	*%*	

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-10-0519

19E0324-13 (Water)

Semivolatile Organic Compounds

Method: EPA 8270D — Sampled: 05/22/2019 11:55

Instrument: NT6 Analyst: JZ — Analyzed: 06/04/2019 00:42

Sample Preparation: Preparation Method: EPA 3520C (Liq Liq) — Extract ID: 19E0324-13 B 01

Preparation Batch: BHE0602 — Sample Size: 500 mL

Prepared: 23-May-2019 — Final Volume: 1 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
1,4-Dioxane	123-91-1	1	0.2	0.4	ND	ug/L	U
Surrogate: 1,4-Dioxane-d8				*33.6-120 %*	*72.0*	*%*	

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-10-0519

19E0324-13 (Water)

Petroleum Hydrocarbons

Method: NWTPH-HCID — Sampled: 05/22/2019 11:55

Instrument: FID4 Analyst: JGR — Analyzed: 05/25/2019 09:00

Sample Preparation: Preparation Method: EPA 3510C SepF — Extract ID: 19E0324-13 A 01

Preparation Batch: BHE0593 — Sample Size: 500 mL

Prepared: 23-May-2019 — Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-C12)	GRO	1	0.25	ND	mg/L	U
Diesel Range Organics (C12-C24)	DRO	1	0.50	ND	mg/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	1.00	ND	mg/L	U
Surrogate: o-Terphenyl			*50-150 %*	*104*	*%*	
Surrogate: n-Triacontane			*50-150 %*	*111*	*%*	

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-10-0519

19E0324-13 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 05/22/2019 11:55

Instrument: ICPMS2 Analyst: MCB — Analyzed: 05/23/2019 23:23

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19E0324-13 G 01

Preparation Batch: BHE0597 — Sample Size: 25 mL

Prepared: 23-May-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	1	0.00300	ND	mg/L	U
Lead	7439-92-1	1	0.0100	ND	mg/L	U
Thallium	7440-28-0	1	0.00200	ND	mg/L	U

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-10-0519

19E0324-13 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 05/22/2019 11:55

Instrument: ICPMS2 Analyst: MCB — Analyzed: 05/23/2019 23:23

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19E0324-13 G 01

Preparation Batch: BHE0597 — Sample Size: 25 mL

Prepared: 23-May-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.00300	ND	mg/L	U
Selenium	7782-49-2	1	0.0250	ND	mg/L	U

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-10-0519

19E0324-13 (Water)

Metals and Metallic Compounds

Method: EPA 6010C — Sampled: 05/22/2019 11:55

Instrument: ICP2 Analyst: TCH — Analyzed: 05/24/2019 17:15

Sample Preparation: Preparation Method: TWC EPA 3010A — Extract ID: 19E0324-13 G 02

Preparation Batch: BHE0599 — Sample Size: 25 mL

Prepared: 23-May-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Aluminum	7429-90-5	1	1.00	ND	mg/L	U
Barium	7440-39-3	1	0.500	ND	mg/L	U
Beryllium	7440-41-7	1	0.0100	ND	mg/L	U
Cadmium	7440-43-9	1	0.0020	ND	mg/L	U
Calcium	7440-70-2	1	0.500	**6.52**	mg/L	
Chromium	7440-47-3	1	0.0100	ND	mg/L	U
Cobalt	7440-48-4	1	0.0100	ND	mg/L	U
Copper	7440-50-8	1	0.0030	ND	mg/L	U
Iron	7439-89-6	1	0.200	ND	mg/L	U
Magnesium	7439-95-4	1	0.500	**2.89**	mg/L	
Manganese	7439-96-5	1	0.0100	ND	mg/L	U
Nickel	7440-02-0	1	0.0100	ND	mg/L	U
Potassium	7440-09-7	1	0.500	**1.20**	mg/L	
Silver	7440-22-4	1	0.0050	ND	mg/L	U
Sodium	7440-23-5	1	50.0	**80.6**	mg/L	
Vanadium	7440-62-2	1	0.0030	ND	mg/L	U
Zinc	7440-66-6	1	0.0200	ND	mg/L	U

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-10-0519

19E0324-13 (Water)

Metals and Metallic Compounds

Method: EPA 7470A — Sampled: 05/22/2019 11:55

Instrument: CVAA Analyst: SKM — Analyzed: 06/03/2019 15:05

Sample Preparation: Preparation Method: TLM EPA 7470A low level — Extract ID: 19E0324-13 G

Preparation Batch: BHE0598 — Sample Size: 20 mL

Prepared: 23-May-2019 — Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	0.000010	0.000020	**0.000012**	mg/L	J

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Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-4-0519

19E0324-14 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/22/2019 13:10

Instrument: NT2 Analyst: LH — Analyzed: 05/23/2019 18:58

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19E0324-14 J

Preparation Batch: BHE0615 — Sample Size: 10 mL

Prepared: 23-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.09	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.06	0.10	ND	ug/L	U
Bromomethane	74-83-9	1	0.25	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.09	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.04	0.20	ND	ug/L	U
Acrolein	107-02-8	1	2.48	2.50	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.04	0.20	ND	ug/L	U
Acetone	67-64-1	1	2.06	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.05	0.20	ND	ug/L	U
Bromoethane	74-96-4	1	0.04	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	0.23	0.50	ND	ug/L	U
Methylene Chloride	75-09-2	1	0.49	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	0.60	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.04	0.10	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.05	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.07	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.05	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	0.81	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.05	0.10	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.04	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.03	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.06	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.04	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.03	0.10	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.04	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.07	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.03	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.05	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.04	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.05	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.15	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	0.25	0.50	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	0.97	2.50	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.06	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.04	0.20	ND	ug/L	U
trans-1,3-Dichloropropene	10061-02-6	1	0.08	0.20	ND	ug/L	U

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-4-0519

19E0324-14 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/22/2019 13:10

Instrument: NT2 Analyst: LH — Analyzed: 05/23/2019 18:58

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
2-Hexanone	591-78-6	1	0.90	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.13	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.06	0.10	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.05	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.05	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.07	0.10	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.02	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.04	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.04	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.05	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.03	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.09	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.05	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.06	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.06	0.10	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.13	0.20	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	0.32	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.02	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.06	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.02	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.02	0.10	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.02	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.03	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.02	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.02	0.20	**0.03**	ug/L	J
s-Butylbenzene	135-98-8	1	0.02	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.03	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.04	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.04	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.02	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.04	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.37	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.11	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.07	0.20	ND	ug/L	U
Naphthalene	91-20-3	1	0.12	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.11	0.20	ND	ug/L	U
Dichlorodifluoromethane	75-71-8	1	0.05	0.20	ND	ug/L	U
Surrogate: Dibromofluoromethane				*80-120 %*	*109*	*%*	
Surrogate: 1,2-Dichloroethane-d4				*80-129 %*	*117*	*%*	

Golder Associates	Project: Landsburg	
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Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-4-0519

19E0324-14 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/22/2019 13:10

Instrument: NT2 Analyst: LH — Analyzed: 05/23/2019 18:58

Analyte	CAS Number	Recovery Limits	Recovery	Units	Notes
Surrogate: Toluene-d8		*80-120 %*	*96.9*	*%*	
Surrogate: 4-Bromofluorobenzene		*80-120 %*	*88.8*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4		*80-120 %*	*103*	*%*	

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-4-0519

19E0324-14 (Water)

Semivolatile Organic Compounds

Method: EPA 8270D — Sampled: 05/22/2019 13:10
Instrument: NT6 Analyst: JZ — Analyzed: 06/04/2019 01:15

Sample Preparation: Preparation Method: EPA 3520C (Liq Liq) — Extract ID: 19E0324-14 B 01
Preparation Batch: BHE0602 — Sample Size: 500 mL
Prepared: 23-May-2019 — Final Volume: 1 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
1,4-Dioxane	123-91-1	1	0.2	0.4	**2.0**	ug/L	
Surrogate: 1,4-Dioxane-d8				*33.6-120 %*	*64.1*	*%*	

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Golder Associates	Project: Landsburg	
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Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-4-0519

19E0324-14 (Water)

Petroleum Hydrocarbons

Method: NWTPH-HCID — Sampled: 05/22/2019 13:10

Instrument: FID4 Analyst: JGR — Analyzed: 05/25/2019 09:21

Sample Preparation: Preparation Method: EPA 3510C SepF — Extract ID: 19E0324-14 A 01

Preparation Batch: BHE0593 — Sample Size: 500 mL

Prepared: 23-May-2019 — Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-C12)	GRO	1	0.25	ND	mg/L	U
Diesel Range Organics (C12-C24)	DRO	1	0.50	ND	mg/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	1.00	ND	mg/L	U
Surrogate: o-Terphenyl			*50-150 %*	*104*	*%*	
Surrogate: n-Triacontane			*50-150 %*	*115*	*%*	

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-4-0519

19E0324-14 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 05/22/2019 13:10

Instrument: ICPMS2 Analyst: MCB — Analyzed: 05/23/2019 23:28

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19E0324-14 G 01

Preparation Batch: BHE0597 — Sample Size: 25 mL

Prepared: 23-May-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	1	0.00300	ND	mg/L	U
Lead	7439-92-1	1	0.0100	ND	mg/L	U
Thallium	7440-28-0	1	0.00200	ND	mg/L	U

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-4-0519

19E0324-14 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 05/22/2019 13:10

Instrument: ICPMS2 Analyst: MCB — Analyzed: 05/23/2019 23:28

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19E0324-14 G 01

Preparation Batch: BHE0597 — Sample Size: 25 mL

Prepared: 23-May-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.00300	ND	mg/L	U
Selenium	7782-49-2	1	0.0250	ND	mg/L	U

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-4-0519

19E0324-14 (Water)

Metals and Metallic Compounds

Method: EPA 6010C — Sampled: 05/22/2019 13:10

Instrument: ICP2 Analyst: TCH — Analyzed: 05/24/2019 17:36

Sample Preparation: Preparation Method: TWC EPA 3010A — Extract ID: 19E0324-14 G 02

Preparation Batch: BHE0599 — Sample Size: 25 mL

Prepared: 23-May-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Aluminum	7429-90-5	1	1.00	ND	mg/L	U
Barium	7440-39-3	1	0.500	ND	mg/L	U
Beryllium	7440-41-7	1	0.0100	ND	mg/L	U
Cadmium	7440-43-9	1	0.0020	ND	mg/L	U
Calcium	7440-70-2	1	0.500	**108**	mg/L	
Chromium	7440-47-3	1	0.0100	ND	mg/L	U
Cobalt	7440-48-4	1	0.0100	ND	mg/L	U
Copper	7440-50-8	1	0.0030	ND	mg/L	U
Iron	7439-89-6	1	0.200	ND	mg/L	U
Magnesium	7439-95-4	1	0.500	**66.4**	mg/L	
Manganese	7439-96-5	1	0.0100	**0.154**	mg/L	
Nickel	7440-02-0	1	0.0100	ND	mg/L	U
Potassium	7440-09-7	1	0.500	**3.46**	mg/L	
Silver	7440-22-4	1	0.0050	ND	mg/L	U
Sodium	7440-23-5	1	0.500	**23.6**	mg/L	
Vanadium	7440-62-2	1	0.0030	ND	mg/L	U
Zinc	7440-66-6	1	0.0200	ND	mg/L	U

Golder Associates	Project: Landsburg	
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Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-4-0519

19E0324-14 (Water)

Metals and Metallic Compounds

Method: EPA 7470A — Sampled: 05/22/2019 13:10

Instrument: CVAA Analyst: SKM — Analyzed: 06/03/2019 15:16

Sample Preparation: Preparation Method: TLM EPA 7470A low level — Extract ID: 19E0324-14 G

Preparation Batch: BHE0598 — Sample Size: 20 mL

Prepared: 23-May-2019 — Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	0.000010	0.000020	**0.000014**	mg/L	J

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Golder Associates	Project: Landsburg	
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Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-4-0519-D

19E0324-15 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/22/2019 13:20

Instrument: NT2 Analyst: LH — Analyzed: 05/23/2019 19:18

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19E0324-15 J

Preparation Batch: BHE0615 — Sample Size: 10 mL

Prepared: 23-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.09	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.06	0.10	ND	ug/L	U
Bromomethane	74-83-9	1	0.25	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.09	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.04	0.20	ND	ug/L	U
Acrolein	107-02-8	1	2.48	2.50	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.04	0.20	ND	ug/L	U
Acetone	67-64-1	1	2.06	5.00	**62.4**	ug/L	
1,1-Dichloroethene	75-35-4	1	0.05	0.20	ND	ug/L	U
Bromoethane	74-96-4	1	0.04	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	0.23	0.50	ND	ug/L	U
Methylene Chloride	75-09-2	1	0.49	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	0.60	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.04	0.10	**0.06**	ug/L	J
trans-1,2-Dichloroethene	156-60-5	1	0.05	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.07	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.05	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	0.81	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.05	0.10	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.04	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.03	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.06	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.04	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.03	0.10	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.04	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.07	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.03	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.05	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.04	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.05	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.15	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	0.25	0.50	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	0.97	2.50	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.06	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.04	0.20	ND	ug/L	U
trans-1,3-Dichloropropene	10061-02-6	1	0.08	0.20	ND	ug/L	U

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-4-0519-D

19E0324-15 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/22/2019 13:20

Instrument: NT2 Analyst: LH — Analyzed: 05/23/2019 19:18

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
2-Hexanone	591-78-6	1	0.90	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.13	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.06	0.10	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.05	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.05	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.07	0.10	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.02	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.04	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.04	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.05	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.03	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.09	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.05	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.06	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.06	0.10	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.13	0.20	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	0.32	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.02	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.06	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.02	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.02	0.10	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.02	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.03	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.02	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.02	0.20	**0.04**	ug/L	J
s-Butylbenzene	135-98-8	1	0.02	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.03	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.04	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.04	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.02	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.04	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.37	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.11	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.07	0.20	ND	ug/L	U
Naphthalene	91-20-3	1	0.12	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.11	0.20	ND	ug/L	U
Dichlorodifluoromethane	75-71-8	1	0.05	0.20	ND	ug/L	U
Surrogate: Dibromofluoromethane				*80-120 %*	*110*	*%*	
Surrogate: 1,2-Dichloroethane-d4				*80-129 %*	*117*	*%*	

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-4-0519-D

19E0324-15 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/22/2019 13:20

Instrument: NT2 Analyst: LH — Analyzed: 05/23/2019 19:18

Analyte	CAS Number	Recovery Limits	Recovery	Units	Notes
Surrogate: Toluene-d8		*80-120 %*	*95.7*	*%*	
Surrogate: 4-Bromofluorobenzene		*80-120 %*	*90.2*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4		*80-120 %*	*103*	*%*	

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-4-0519-D

19E0324-15 (Water)

Semivolatile Organic Compounds

Method: EPA 8270D — Sampled: 05/22/2019 13:20

Instrument: NT6 Analyst: JZ — Analyzed: 06/04/2019 01:48

Sample Preparation: Preparation Method: EPA 3520C (Liq Liq) — Extract ID: 19E0324-15 B 01

Preparation Batch: BHE0602 — Sample Size: 500 mL

Prepared: 23-May-2019 — Final Volume: 1 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
1,4-Dioxane	123-91-1	1	0.2	0.4	**1.5**	ug/L	
Surrogate: 1,4-Dioxane-d8				*33.6-120 %*	*62.6*	*%*	

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-4-0519-D

19E0324-15 (Water)

Petroleum Hydrocarbons

Method: NWTPH-HCID — Sampled: 05/22/2019 13:20

Instrument: FID4 Analyst: JGR — Analyzed: 05/25/2019 09:41

Sample Preparation: Preparation Method: EPA 3510C SepF — Extract ID: 19E0324-15 A 01

Preparation Batch: BHE0593 — Sample Size: 500 mL

Prepared: 23-May-2019 — Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-C12)	GRO	1	0.25	ND	mg/L	U
Diesel Range Organics (C12-C24)	DRO	1	0.50	ND	mg/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	1.00	ND	mg/L	U
Surrogate: o-Terphenyl			*50-150 %*	*104*	*%*	
Surrogate: n-Triacontane			*50-150 %*	*109*	*%*	

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-4-0519-D

19E0324-15 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 05/22/2019 13:20

Instrument: ICPMS2 Analyst: MCB — Analyzed: 05/23/2019 23:33

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19E0324-15 G 01

Preparation Batch: BHE0597 — Sample Size: 25 mL

Prepared: 23-May-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	1	0.00300	ND	mg/L	U
Lead	7439-92-1	1	0.0100	ND	mg/L	U
Thallium	7440-28-0	1	0.00200	ND	mg/L	U

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-4-0519-D

19E0324-15 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 05/22/2019 13:20

Instrument: ICPMS2 Analyst: MCB — Analyzed: 05/23/2019 23:33

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19E0324-15 G 01

Preparation Batch: BHE0597 — Sample Size: 25 mL

Prepared: 23-May-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.00300	ND	mg/L	U
Selenium	7782-49-2	1	0.0250	ND	mg/L	U

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-4-0519-D

19E0324-15 (Water)

Metals and Metallic Compounds

Method: EPA 6010C — Sampled: 05/22/2019 13:20

Instrument: ICP2 Analyst: TCH — Analyzed: 05/24/2019 17:40

Sample Preparation: Preparation Method: TWC EPA 3010A — Extract ID: 19E0324-15 G 02

Preparation Batch: BHE0599 — Sample Size: 25 mL

Prepared: 23-May-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Aluminum	7429-90-5	1	1.00	ND	mg/L	U
Barium	7440-39-3	1	0.500	ND	mg/L	U
Beryllium	7440-41-7	1	0.0100	ND	mg/L	U
Cadmium	7440-43-9	1	0.0020	ND	mg/L	U
Calcium	7440-70-2	1	0.500	**110**	mg/L	
Chromium	7440-47-3	1	0.0100	ND	mg/L	U
Cobalt	7440-48-4	1	0.0100	ND	mg/L	U
Copper	7440-50-8	1	0.0030	ND	mg/L	U
Iron	7439-89-6	1	0.200	ND	mg/L	U
Magnesium	7439-95-4	1	0.500	**67.7**	mg/L	
Manganese	7439-96-5	1	0.0100	**0.157**	mg/L	
Nickel	7440-02-0	1	0.0100	ND	mg/L	U
Potassium	7440-09-7	1	0.500	**3.59**	mg/L	
Silver	7440-22-4	1	0.0050	ND	mg/L	U
Sodium	7440-23-5	1	0.500	**23.8**	mg/L	
Vanadium	7440-62-2	1	0.0030	ND	mg/L	U
Zinc	7440-66-6	1	0.0200	ND	mg/L	U

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-4-0519-D

19E0324-15 (Water)

Metals and Metallic Compounds

Method: EPA 7470A — Sampled: 05/22/2019 13:20

Instrument: CVAA Analyst: SKM — Analyzed: 06/03/2019 15:19

Sample Preparation: Preparation Method: TLM EPA 7470A low level — Extract ID: 19E0324-15 G

Preparation Batch: BHE0598 — Sample Size: 20 mL

Prepared: 23-May-2019 — Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	0.000010	0.000020	**0.000017**	mg/L	J

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-2-0519

19E0324-16 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/22/2019 14:20
Instrument: NT2 Analyst: LH — Analyzed: 05/23/2019 19:38

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19E0324-16 K
Preparation Batch: BHE0615 — Sample Size: 10 mL
Prepared: 23-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.09	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.06	0.10	ND	ug/L	U
Bromomethane	74-83-9	1	0.25	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.09	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.04	0.20	ND	ug/L	U
Acrolein	107-02-8	1	2.48	2.50	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.04	0.20	ND	ug/L	U
Acetone	67-64-1	1	2.06	5.00	**2.17**	ug/L	J
1,1-Dichloroethene	75-35-4	1	0.05	0.20	ND	ug/L	U
Bromoethane	74-96-4	1	0.04	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	0.23	0.50	ND	ug/L	U
Methylene Chloride	75-09-2	1	0.49	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	0.60	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.04	0.10	**0.09**	ug/L	J
trans-1,2-Dichloroethene	156-60-5	1	0.05	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.07	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.05	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	0.81	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.05	0.10	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.04	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.03	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.06	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.04	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.03	0.10	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.04	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.07	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.03	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.05	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.04	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.05	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.15	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	0.25	0.50	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	0.97	2.50	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.06	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.04	0.20	ND	ug/L	U
trans-1,3-Dichloropropene	10061-02-6	1	0.08	0.20	ND	ug/L	U

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-2-0519

19E0324-16 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/22/2019 14:20

Instrument: NT2 Analyst: LH — Analyzed: 05/23/2019 19:38

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
2-Hexanone	591-78-6	1	0.90	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.13	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.06	0.10	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.05	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.05	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.07	0.10	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.02	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.04	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.04	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.05	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.03	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.09	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.05	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.06	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.06	0.10	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.13	0.20	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	0.32	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.02	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.06	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.02	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.02	0.10	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.02	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.03	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.02	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.02	0.20	**0.04**	ug/L	J
s-Butylbenzene	135-98-8	1	0.02	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.03	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.04	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.04	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.02	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.04	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.37	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.11	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.07	0.20	ND	ug/L	U
Naphthalene	91-20-3	1	0.12	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.11	0.20	ND	ug/L	U
Dichlorodifluoromethane	75-71-8	1	0.05	0.20	ND	ug/L	U
Surrogate: Dibromofluoromethane				*80-120 %*	*107*	*%*	
Surrogate: 1,2-Dichloroethane-d4				*80-129 %*	*115*	*%*	

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-2-0519

19E0324-16 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/22/2019 14:20

Instrument: NT2 Analyst: LH — Analyzed: 05/23/2019 19:38

Analyte	CAS Number	Recovery Limits	Recovery	Units	Notes
Surrogate: Toluene-d8		*80-120 %*	*96.3*	*%*	
Surrogate: 4-Bromofluorobenzene		*80-120 %*	*90.8*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4		*80-120 %*	*102*	*%*	

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-2-0519

19E0324-16 (Water)

Semivolatile Organic Compounds

Method: EPA 8270D — Sampled: 05/22/2019 14:20
Instrument: NT6 Analyst: JZ — Analyzed: 06/04/2019 02:21

Sample Preparation: Preparation Method: EPA 3520C (Liq Liq) — Extract ID: 19E0324-16 B 01
Preparation Batch: BHE0602 — Sample Size: 500 mL
Prepared: 23-May-2019 — Final Volume: 1 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
1,4-Dioxane	123-91-1	1	0.2	0.4	**1.5**	ug/L	
Surrogate: 1,4-Dioxane-d8				*33.6-120 %*	*61.6*	*%*	

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-2-0519

19E0324-16 (Water)

Petroleum Hydrocarbons

Method: NWTPH-HCID — Sampled: 05/22/2019 14:20

Instrument: FID4 Analyst: JGR — Analyzed: 05/25/2019 10:02

Sample Preparation: Preparation Method: EPA 3510C SepF — Extract ID: 19E0324-16 A 01

Preparation Batch: BHE0593 — Sample Size: 500 mL

Prepared: 23-May-2019 — Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-C12)	GRO	1	0.25	ND	mg/L	U
Diesel Range Organics (C12-C24)	DRO	1	0.50	ND	mg/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	1.00	ND	mg/L	U
Surrogate: o-Terphenyl			*50-150 %*	*107*	*%*	
Surrogate: n-Triacontane			*50-150 %*	*118*	*%*	

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-2-0519

19E0324-16 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 05/22/2019 14:20

Instrument: ICPMS2 Analyst: MCB — Analyzed: 05/23/2019 23:38

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19E0324-16 G 01

Preparation Batch: BHE0597 — Sample Size: 25 mL

Prepared: 23-May-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	1	0.00300	ND	mg/L	U
Lead	7439-92-1	1	0.0100	ND	mg/L	U
Thallium	7440-28-0	1	0.00200	ND	mg/L	U

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-2-0519

19E0324-16 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 05/22/2019 14:20

Instrument: ICPMS2 Analyst: MCB — Analyzed: 05/23/2019 23:38

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19E0324-16 G 01

Preparation Batch: BHE0597 — Sample Size: 25 mL

Prepared: 23-May-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.00300	ND	mg/L	U
Selenium	7782-49-2	1	0.0250	ND	mg/L	U

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-2-0519

19E0324-16 (Water)

Metals and Metallic Compounds

Method: EPA 6010C — Sampled: 05/22/2019 14:20

Instrument: ICP2 Analyst: TCH — Analyzed: 05/24/2019 17:45

Sample Preparation: Preparation Method: TWC EPA 3010A — Extract ID: 19E0324-16 G 02

Preparation Batch: BHE0599 — Sample Size: 25 mL

Prepared: 23-May-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Aluminum	7429-90-5	1	1.00	ND	mg/L	U
Barium	7440-39-3	1	0.500	ND	mg/L	U
Beryllium	7440-41-7	1	0.0100	ND	mg/L	U
Cadmium	7440-43-9	1	0.0020	ND	mg/L	U
Calcium	7440-70-2	1	0.500	**109**	mg/L	
Chromium	7440-47-3	1	0.0100	ND	mg/L	U
Cobalt	7440-48-4	1	0.0100	ND	mg/L	U
Copper	7440-50-8	1	0.0030	ND	mg/L	U
Iron	7439-89-6	1	0.200	ND	mg/L	U
Magnesium	7439-95-4	1	0.500	**67.8**	mg/L	
Manganese	7439-96-5	1	0.0100	**0.189**	mg/L	
Nickel	7440-02-0	1	0.0100	ND	mg/L	U
Potassium	7440-09-7	1	0.500	**3.34**	mg/L	
Silver	7440-22-4	1	0.0050	ND	mg/L	U
Sodium	7440-23-5	1	0.500	**18.1**	mg/L	
Vanadium	7440-62-2	1	0.0030	ND	mg/L	U
Zinc	7440-66-6	1	0.0200	ND	mg/L	U

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

LMW-2-0519

19E0324-16 (Water)

Metals and Metallic Compounds

Method: EPA 7470A — Sampled: 05/22/2019 14:20

Instrument: CVAA Analyst: SKM — Analyzed: 06/03/2019 15:22

Sample Preparation: Preparation Method: TLM EPA 7470A low level — Extract ID: 19E0324-16 G

Preparation Batch: BHE0598 — Sample Size: 20 mL

Prepared: 23-May-2019 — Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	0.000010	0.000020	**0.000014**	mg/L	J

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

TripBlank-0519

19E0324-17 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/20/2019 12:45
Instrument: NT2 Analyst: LH — Analyzed: 05/23/2019 14:12

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19E0324-17 D
Preparation Batch: BHE0615 — Sample Size: 10 mL
Prepared: 23-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.09	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.06	0.10	ND	ug/L	U
Bromomethane	74-83-9	1	0.25	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.09	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.04	0.20	ND	ug/L	U
Acrolein	107-02-8	1	2.48	2.50	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.04	0.20	ND	ug/L	U
Acetone	67-64-1	1	2.06	5.00	**2.35**	ug/L	J
1,1-Dichloroethene	75-35-4	1	0.05	0.20	ND	ug/L	U
Bromoethane	74-96-4	1	0.04	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	0.23	0.50	ND	ug/L	U
Methylene Chloride	75-09-2	1	0.49	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	0.60	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.04	0.10	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.05	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.07	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.05	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	0.81	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.05	0.10	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.04	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.03	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.06	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.04	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.03	0.10	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.04	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.07	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.03	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.05	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.04	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.05	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.15	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	0.25	0.50	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	0.97	2.50	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.06	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.04	0.20	ND	ug/L	U
trans-1,3-Dichloropropene	10061-02-6	1	0.08	0.20	ND	ug/L	U

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

TripBlank-0519

19E0324-17 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/20/2019 12:45

Instrument: NT2 Analyst: LH — Analyzed: 05/23/2019 14:12

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
2-Hexanone	591-78-6	1	0.90	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.13	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.06	0.10	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.05	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.05	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.07	0.10	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.02	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.04	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.04	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.05	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.03	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.09	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.05	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.06	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.06	0.10	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.13	0.20	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	0.32	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.02	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.06	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.02	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.02	0.10	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.02	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.03	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.02	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.02	0.20	**0.04**	ug/L	J
s-Butylbenzene	135-98-8	1	0.02	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.03	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.04	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.04	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.02	0.20	**0.03**	ug/L	J
1,2-Dichlorobenzene	95-50-1	1	0.04	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.37	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.11	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.07	0.20	ND	ug/L	U
Naphthalene	91-20-3	1	0.12	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.11	0.20	ND	ug/L	U
Dichlorodifluoromethane	75-71-8	1	0.05	0.20	ND	ug/L	U
Surrogate: Dibromofluoromethane				*80-120 %*	*100*	*%*	
Surrogate: 1,2-Dichloroethane-d4				*80-129 %*	*107*	*%*	

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

TripBlank-0519

19E0324-17 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/20/2019 12:45

Instrument: NT2 Analyst: LH — Analyzed: 05/23/2019 14:12

Analyte	CAS Number	Recovery Limits	Recovery	Units	Notes
Surrogate: Toluene-d8		*80-120 %*	*95.7*	*%*	
Surrogate: 4-Bromofluorobenzene		*80-120 %*	*92.4*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4		*80-120 %*	*103*	*%*	

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

Volatile Organic Compounds - Quality Control

Batch BHE0615 - EPA 5030 (Purge and Trap)

Instrument: NT2 Analyst: LH

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHE0615-BLK1)				Prepared: 23-May-2019 Analyzed: 23-May-2019 13:52							
Chloromethane	ND	0.09	0.50	ug/L							U
Vinyl Chloride	ND	0.06	0.10	ug/L							U
Bromomethane	ND	0.25	1.00	ug/L							U
Chloroethane	ND	0.09	0.20	ug/L							U
Trichlorofluoromethane	ND	0.04	0.20	ug/L							U
Acrolein	ND	2.48	2.50	ug/L							U
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	0.04	0.20	ug/L							U
Acetone	ND	2.06	5.00	ug/L							U
1,1-Dichloroethene	ND	0.05	0.20	ug/L							U
Bromoethane	ND	0.04	0.20	ug/L							U
Iodomethane	ND	0.23	0.50	ug/L							U
Methylene Chloride	ND	0.49	1.00	ug/L							U
Acrylonitrile	ND	0.60	1.00	ug/L							U
Carbon Disulfide	0.06	0.04	0.10	ug/L							J
trans-1,2-Dichloroethene	ND	0.05	0.20	ug/L							U
Vinyl Acetate	ND	0.07	0.20	ug/L							U
1,1-Dichloroethane	ND	0.05	0.20	ug/L							U
2-Butanone	ND	0.81	5.00	ug/L							U
2,2-Dichloropropane	ND	0.05	0.10	ug/L							U
cis-1,2-Dichloroethene	ND	0.04	0.20	ug/L							U
Chloroform	ND	0.03	0.20	ug/L							U
Bromochloromethane	ND	0.06	0.20	ug/L							U
1,1,1-Trichloroethane	ND	0.04	0.20	ug/L							U
1,1-Dichloropropene	ND	0.03	0.10	ug/L							U
Carbon tetrachloride	ND	0.04	0.20	ug/L							U
1,2-Dichloroethane	ND	0.07	0.20	ug/L							U
Benzene	ND	0.03	0.20	ug/L							U
Trichloroethene	ND	0.05	0.20	ug/L							U
1,2-Dichloropropane	ND	0.04	0.20	ug/L							U
Bromodichloromethane	ND	0.05	0.20	ug/L							U
Dibromomethane	ND	0.15	0.20	ug/L							U
2-Chloroethyl vinyl ether	ND	0.25	0.50	ug/L							U
4-Methyl-2-Pentanone	ND	0.97	2.50	ug/L							U
cis-1,3-Dichloropropene	ND	0.06	0.20	ug/L							U
Toluene	ND	0.04	0.20	ug/L							U

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

Volatile Organic Compounds - Quality Control

Batch BHE0615 - EPA 5030 (Purge and Trap)

Instrument: NT2 Analyst: LH

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHE0615-BLK1)				Prepared: 23-May-2019 Analyzed: 23-May-2019 13:52							
trans-1,3-Dichloropropene	ND	0.08	0.20	ug/L							U
2-Hexanone	ND	0.90	5.00	ug/L							U
1,1,2-Trichloroethane	ND	0.13	0.20	ug/L							U
1,3-Dichloropropane	ND	0.06	0.10	ug/L							U
Tetrachloroethene	ND	0.05	0.20	ug/L							U
Dibromochloromethane	ND	0.05	0.20	ug/L							U
1,2-Dibromoethane	ND	0.07	0.10	ug/L							U
Chlorobenzene	ND	0.02	0.20	ug/L							U
Ethylbenzene	ND	0.04	0.20	ug/L							U
1,1,1,2-Tetrachloroethane	ND	0.04	0.20	ug/L							U
m,p-Xylene	ND	0.05	0.40	ug/L							U
o-Xylene	ND	0.03	0.20	ug/L							U
Xylenes, total	ND	0.09	0.60	ug/L							U
Styrene	ND	0.05	0.20	ug/L							U
Bromoform	ND	0.06	0.20	ug/L							U
1,1,2,2-Tetrachloroethane	ND	0.06	0.10	ug/L							U
1,2,3-Trichloropropane	ND	0.13	0.20	ug/L							U
trans-1,4-Dichloro 2-Butene	ND	0.32	1.00	ug/L							U
n-Propylbenzene	ND	0.02	0.20	ug/L							U
Bromobenzene	ND	0.06	0.20	ug/L							U
Isopropyl Benzene	ND	0.02	0.20	ug/L							U
2-Chlorotoluene	ND	0.02	0.10	ug/L							U
4-Chlorotoluene	ND	0.02	0.20	ug/L							U
t-Butylbenzene	ND	0.03	0.20	ug/L							U
1,3,5-Trimethylbenzene	ND	0.02	0.20	ug/L							U
1,2,4-Trimethylbenzene	0.04	0.02	0.20	ug/L							J
s-Butylbenzene	ND	0.02	0.20	ug/L							U
4-Isopropyl Toluene	ND	0.03	0.20	ug/L							U
1,3-Dichlorobenzene	ND	0.04	0.20	ug/L							U
1,4-Dichlorobenzene	0.04	0.04	0.20	ug/L							J
n-Butylbenzene	ND	0.02	0.20	ug/L							U
1,2-Dichlorobenzene	ND	0.04	0.20	ug/L							U
1,2-Dibromo-3-chloropropane	ND	0.37	0.50	ug/L							U
1,2,4-Trichlorobenzene	ND	0.11	0.50	ug/L							U
Hexachloro-1,3-Butadiene	ND	0.07	0.20	ug/L							U

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

Volatile Organic Compounds - Quality Control

Batch BHE0615 - EPA 5030 (Purge and Trap)

Instrument: NT2 Analyst: LH

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHE0615-BLK1)					Prepared: 23-May-2019 Analyzed: 23-May-2019 13:52						
Naphthalene	ND	0.12	0.50	ug/L							U
1,2,3-Trichlorobenzene	ND	0.11	0.20	ug/L							U
Dichlorodifluoromethane	ND	0.05	0.20	ug/L							U
Surrogate: Dibromofluoromethane	5.07			ug/L	*5.00*		*101*	*80-120*			
Surrogate: 1,2-Dichloroethane-d4	5.34			ug/L	*5.00*		*107*	*80-129*			
Surrogate: Toluene-d8	4.79			ug/L	*5.00*		*95.8*	*80-120*			
Surrogate: 4-Bromofluorobenzene	4.66			ug/L	*5.00*		*93.2*	*80-120*			
Surrogate: 1,2-Dichlorobenzene-d4	5.13			ug/L	*5.00*		*103*	*80-120*			
LCS (BHE0615-BS1)					Prepared: 23-May-2019 Analyzed: 23-May-2019 12:10						
Chloromethane	10.1	0.09	0.50	ug/L	10.0		101	60-138			
Vinyl Chloride	10.1	0.06	0.10	ug/L	10.0		101	66-133			
Bromomethane	10.1	0.25	1.00	ug/L	10.0		101	72-131			
Chloroethane	9.93	0.09	0.20	ug/L	10.0		99.3	60-155			
Trichlorofluoromethane	10.5	0.04	0.20	ug/L	10.0		105	80-129			
Acrolein	44.5	2.48	2.50	ug/L	50.0		89.0	52-144			
1,1,2-Trichloro-1,2,2-Trifluoroethane	9.74	0.04	0.20	ug/L	10.0		97.4	76-129			
Acetone	47.1	2.06	5.00	ug/L	50.0		94.2	58-142			
1,1-Dichloroethene	9.52	0.05	0.20	ug/L	10.0		95.2	69-135			
Bromoethane	9.47	0.04	0.20	ug/L	10.0		94.7	78-128			
Iodomethane	9.59	0.23	0.50	ug/L	10.0		95.9	56-147			
Methylene Chloride	9.05	0.49	1.00	ug/L	10.0		90.5	65-135			
Acrylonitrile	9.36	0.60	1.00	ug/L	10.0		93.6	64-134			
Carbon Disulfide	9.33	0.04	0.10	ug/L	10.0		93.3	78-125			
trans-1,2-Dichloroethene	9.38	0.05	0.20	ug/L	10.0		93.8	78-128			
Vinyl Acetate	8.50	0.07	0.20	ug/L	10.0		85.0	55-138			
1,1-Dichloroethane	9.66	0.05	0.20	ug/L	10.0		96.6	76-124			
2-Butanone	46.6	0.81	5.00	ug/L	50.0		93.2	61-140			
2,2-Dichloropropane	8.87	0.05	0.10	ug/L	10.0		88.7	78-125			
cis-1,2-Dichloroethene	9.64	0.04	0.20	ug/L	10.0		96.4	80-121			
Chloroform	9.49	0.03	0.20	ug/L	10.0		94.9	80-122			
Bromochloromethane	9.86	0.06	0.20	ug/L	10.0		98.6	80-121			
1,1,1-Trichloroethane	9.85	0.04	0.20	ug/L	10.0		98.5	79-123			
1,1-Dichloropropene	9.83	0.03	0.10	ug/L	10.0		98.3	80-120			
Carbon tetrachloride	9.98	0.04	0.20	ug/L	10.0		99.8	53-137			

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

Volatile Organic Compounds - Quality Control

Batch BHE0615 - EPA 5030 (Purge and Trap)

Instrument: NT2 Analyst: LH

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BHE0615-BS1)					Prepared: 23-May-2019 Analyzed: 23-May-2019 12:10						
1,2-Dichloroethane	9.40	0.07	0.20	ug/L	10.0		94.0	75-123			
Benzene	9.88	0.03	0.20	ug/L	10.0		98.8	80-120			
Trichloroethene	9.80	0.05	0.20	ug/L	10.0		98.0	80-120			
1,2-Dichloropropane	9.60	0.04	0.20	ug/L	10.0		96.0	80-120			
Bromodichloromethane	9.98	0.05	0.20	ug/L	10.0		99.8	80-121			
Dibromomethane	9.67	0.15	0.20	ug/L	10.0		96.7	80-120			
2-Chloroethyl vinyl ether	8.44	0.25	0.50	ug/L	10.0		84.4	74-127			
4-Methyl-2-Pentanone	49.7	0.97	2.50	ug/L	50.0		99.4	67-133			
cis-1,3-Dichloropropene	8.77	0.06	0.20	ug/L	10.0		87.7	80-124			
Toluene	9.49	0.04	0.20	ug/L	10.0		94.9	80-120			
trans-1,3-Dichloropropene	8.54	0.08	0.20	ug/L	10.0		85.4	71-127			
2-Hexanone	49.5	0.90	5.00	ug/L	50.0		99.0	69-133			
1,1,2-Trichloroethane	9.39	0.13	0.20	ug/L	10.0		93.9	80-121			
1,3-Dichloropropane	9.67	0.06	0.10	ug/L	10.0		96.7	80-120			
Tetrachloroethene	9.60	0.05	0.20	ug/L	10.0		96.0	80-120			
Dibromochloromethane	8.32	0.05	0.20	ug/L	10.0		83.2	65-135			
1,2-Dibromoethane	9.88	0.07	0.10	ug/L	10.0		98.8	80-121			
Chlorobenzene	9.66	0.02	0.20	ug/L	10.0		96.6	80-120			
Ethylbenzene	9.83	0.04	0.20	ug/L	10.0		98.3	80-120			
1,1,1,2-Tetrachloroethane	10.3	0.04	0.20	ug/L	10.0		103	80-120			
m,p-Xylene	20.2	0.05	0.40	ug/L	20.0		101	80-121			
o-Xylene	10.4	0.03	0.20	ug/L	10.0		104	80-121			
Xylenes, total	30.6	0.09	0.60	ug/L	30.0		102	76-127			
Styrene	10.5	0.05	0.20	ug/L	10.0		105	80-124			
Bromoform	7.38	0.06	0.20	ug/L	10.0		73.8	51-134			Q
1,1,2,2-Tetrachloroethane	9.76	0.06	0.10	ug/L	10.0		97.6	77-123			
1,2,3-Trichloropropane	9.59	0.13	0.20	ug/L	10.0		95.9	76-125			
trans-1,4-Dichloro 2-Butene	7.80	0.32	1.00	ug/L	10.0		78.0	55-129			Q
n-Propylbenzene	10.1	0.02	0.20	ug/L	10.0		101	78-130			
Bromobenzene	9.74	0.06	0.20	ug/L	10.0		97.4	80-120			
Isopropyl Benzene	10.4	0.02	0.20	ug/L	10.0		104	80-128			
2-Chlorotoluene	9.81	0.02	0.10	ug/L	10.0		98.1	78-122			
4-Chlorotoluene	9.89	0.02	0.20	ug/L	10.0		98.9	80-121			
t-Butylbenzene	10.4	0.03	0.20	ug/L	10.0		104	78-125			
1,3,5-Trimethylbenzene	10.2	0.02	0.20	ug/L	10.0		102	80-129			

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

Volatile Organic Compounds - Quality Control

Batch BHE0615 - EPA 5030 (Purge and Trap)

Instrument: NT2 Analyst: LH

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BHE0615-BS1)					Prepared: 23-May-2019 Analyzed: 23-May-2019 12:10						
1,2,4-Trimethylbenzene	9.85	0.02	0.20	ug/L	10.0		98.5	80-127			
s-Butylbenzene	10.2	0.02	0.20	ug/L	10.0		102	78-129			
4-Isopropyl Toluene	10.5	0.03	0.20	ug/L	10.0		105	79-130			
1,3-Dichlorobenzene	9.65	0.04	0.20	ug/L	10.0		96.5	80-120			
1,4-Dichlorobenzene	9.47	0.04	0.20	ug/L	10.0		94.7	80-120			
n-Butylbenzene	9.90	0.02	0.20	ug/L	10.0		99.0	74-129			
1,2-Dichlorobenzene	9.65	0.04	0.20	ug/L	10.0		96.5	80-120			
1,2-Dibromo-3-chloropropane	7.67	0.37	0.50	ug/L	10.0		76.7	62-123			Q
1,2,4-Trichlorobenzene	9.78	0.11	0.50	ug/L	10.0		97.8	64-124			
Hexachloro-1,3-Butadiene	8.77	0.07	0.20	ug/L	10.0		87.7	58-123			
Naphthalene	9.62	0.12	0.50	ug/L	10.0		96.2	50-134			
1,2,3-Trichlorobenzene	10.1	0.11	0.20	ug/L	10.0		101	49-133			
Dichlorodifluoromethane	9.69	0.05	0.20	ug/L	10.0		96.9	48-147			
Surrogate: Dibromofluoromethane	5.01			ug/L	*5.00*		*100*	*80-120*			
Surrogate: 1,2-Dichloroethane-d4	4.79			ug/L	*5.00*		*95.9*	*80-129*			
Surrogate: Toluene-d8	4.99			ug/L	*5.00*		*99.9*	*80-120*			
Surrogate: 4-Bromofluorobenzene	5.10			ug/L	*5.00*		*102*	*80-120*			
Surrogate: 1,2-Dichlorobenzene-d4	5.00			ug/L	*5.00*		*99.9*	*80-120*			
LCS Dup (BHE0615-BSD1)					Prepared: 23-May-2019 Analyzed: 23-May-2019 12:30						
Chloromethane	10.7	0.09	0.50	ug/L	10.0		107	60-138	5.84	30	
Vinyl Chloride	10.5	0.06	0.10	ug/L	10.0		105	66-133	3.97	30	
Bromomethane	10.3	0.25	1.00	ug/L	10.0		103	72-131	2.65	30	
Chloroethane	10.3	0.09	0.20	ug/L	10.0		103	60-155	3.92	30	
Trichlorofluoromethane	9.27	0.04	0.20	ug/L	10.0		92.7	80-129	12.70	30	
Acrolein	48.8	2.48	2.50	ug/L	50.0		97.6	52-144	9.29	30	
1,1,2-Trichloro-1,2,2-Trifluoroethane	10.3	0.04	0.20	ug/L	10.0		103	76-129	5.21	30	
Acetone	51.8	2.06	5.00	ug/L	50.0		104	58-142	9.49	30	
1,1-Dichloroethene	10.1	0.05	0.20	ug/L	10.0		101	69-135	5.51	30	
Bromoethane	9.94	0.04	0.20	ug/L	10.0		99.4	78-128	4.92	30	
Iodomethane	9.77	0.23	0.50	ug/L	10.0		97.7	56-147	1.79	30	
Methylene Chloride	9.47	0.49	1.00	ug/L	10.0		94.7	65-135	4.55	30	
Acrylonitrile	10.4	0.60	1.00	ug/L	10.0		104	64-134	10.60	30	
Carbon Disulfide	9.82	0.04	0.10	ug/L	10.0		98.2	78-125	5.10	30	
trans-1,2-Dichloroethene	9.91	0.05	0.20	ug/L	10.0		99.1	78-128	5.53	30	

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

Volatile Organic Compounds - Quality Control

Batch BHE0615 - EPA 5030 (Purge and Trap)

Instrument: NT2 Analyst: LH

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BHE0615-BSD1)					Prepared: 23-May-2019 Analyzed: 23-May-2019 12:30						
Vinyl Acetate	9.74	0.07	0.20	ug/L	10.0		97.4	55-138	13.60	30	
1,1-Dichloroethane	9.98	0.05	0.20	ug/L	10.0		99.8	76-124	3.27	30	
2-Butanone	55.7	0.81	5.00	ug/L	50.0		111	61-140	17.80	30	
2,2-Dichloropropane	9.17	0.05	0.10	ug/L	10.0		91.7	78-125	3.39	30	
cis-1,2-Dichloroethene	10.2	0.04	0.20	ug/L	10.0		102	80-121	5.48	30	
Chloroform	9.95	0.03	0.20	ug/L	10.0		99.5	80-122	4.76	30	
Bromochloromethane	10.4	0.06	0.20	ug/L	10.0		104	80-121	5.54	30	
1,1,1-Trichloroethane	10.2	0.04	0.20	ug/L	10.0		102	79-123	3.63	30	
1,1-Dichloropropene	10.3	0.03	0.10	ug/L	10.0		103	80-120	4.46	30	
Carbon tetrachloride	10.4	0.04	0.20	ug/L	10.0		104	53-137	4.23	30	
1,2-Dichloroethane	10.1	0.07	0.20	ug/L	10.0		101	75-123	7.09	30	
Benzene	10.5	0.03	0.20	ug/L	10.0		105	80-120	5.70	30	
Trichloroethene	10.4	0.05	0.20	ug/L	10.0		104	80-120	5.49	30	
1,2-Dichloropropane	10.3	0.04	0.20	ug/L	10.0		103	80-120	7.05	30	
Bromodichloromethane	10.5	0.05	0.20	ug/L	10.0		105	80-121	5.46	30	
Dibromomethane	10.5	0.15	0.20	ug/L	10.0		105	80-120	8.06	30	
2-Chloroethyl vinyl ether	9.71	0.25	0.50	ug/L	10.0		97.1	74-127	13.90	30	
4-Methyl-2-Pentanone	58.7	0.97	2.50	ug/L	50.0		117	67-133	16.60	30	
cis-1,3-Dichloropropene	9.48	0.06	0.20	ug/L	10.0		94.8	80-124	7.81	30	
Toluene	10.1	0.04	0.20	ug/L	10.0		101	80-120	6.12	30	
trans-1,3-Dichloropropene	9.27	0.08	0.20	ug/L	10.0		92.7	71-127	8.19	30	
2-Hexanone	59.5	0.90	5.00	ug/L	50.0		119	69-133	18.30	30	
1,1,2-Trichloroethane	10.3	0.13	0.20	ug/L	10.0		103	80-121	9.26	30	
1,3-Dichloropropane	10.6	0.06	0.10	ug/L	10.0		106	80-120	8.69	30	
Tetrachloroethene	10.1	0.05	0.20	ug/L	10.0		101	80-120	4.79	30	
Dibromochloromethane	8.91	0.05	0.20	ug/L	10.0		89.1	65-135	6.80	30	
1,2-Dibromoethane	11.2	0.07	0.10	ug/L	10.0		112	80-121	12.20	30	
Chlorobenzene	10.2	0.02	0.20	ug/L	10.0		102	80-120	5.14	30	
Ethylbenzene	10.3	0.04	0.20	ug/L	10.0		103	80-120	5.06	30	
1,1,1,2-Tetrachloroethane	10.9	0.04	0.20	ug/L	10.0		109	80-120	5.80	30	
m,p-Xylene	21.3	0.05	0.40	ug/L	20.0		106	80-121	5.09	30	
o-Xylene	11.0	0.03	0.20	ug/L	10.0		110	80-121	5.68	30	
Xylenes, total	32.2	0.09	0.60	ug/L	30.0		107	76-127	5.29	30	
Styrene	11.2	0.05	0.20	ug/L	10.0		112	80-124	5.78	30	
Bromoform	8.26	0.06	0.20	ug/L	10.0		82.6	51-134	11.20	30	Q

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

Volatile Organic Compounds - Quality Control

Batch BHE0615 - EPA 5030 (Purge and Trap)

Instrument: NT2 Analyst: LH

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BHE0615-BSD1)					Prepared: 23-May-2019 Analyzed: 23-May-2019 12:30						
1,1,2,2-Tetrachloroethane	10.9	0.06	0.10	ug/L	10.0		109	77-123	11.30	30	
1,2,3-Trichloropropane	10.6	0.13	0.20	ug/L	10.0		106	76-125	10.20	30	
trans-1,4-Dichloro 2-Butene	8.49	0.32	1.00	ug/L	10.0		84.9	55-129	8.54	30	Q
n-Propylbenzene	10.4	0.02	0.20	ug/L	10.0		104	78-130	3.74	30	
Bromobenzene	10.2	0.06	0.20	ug/L	10.0		102	80-120	4.71	30	
Isopropyl Benzene	10.9	0.02	0.20	ug/L	10.0		109	80-128	4.60	30	
2-Chlorotoluene	10.2	0.02	0.10	ug/L	10.0		102	78-122	3.60	30	
4-Chlorotoluene	10.2	0.02	0.20	ug/L	10.0		102	80-121	3.51	30	
t-Butylbenzene	11.0	0.03	0.20	ug/L	10.0		110	78-125	4.98	30	
1,3,5-Trimethylbenzene	10.7	0.02	0.20	ug/L	10.0		107	80-129	4.37	30	
1,2,4-Trimethylbenzene	10.3	0.02	0.20	ug/L	10.0		103	80-127	4.44	30	
s-Butylbenzene	10.7	0.02	0.20	ug/L	10.0		107	78-129	4.86	30	
4-Isopropyl Toluene	10.9	0.03	0.20	ug/L	10.0		109	79-130	3.73	30	
1,3-Dichlorobenzene	10.1	0.04	0.20	ug/L	10.0		101	80-120	4.31	30	
1,4-Dichlorobenzene	9.91	0.04	0.20	ug/L	10.0		99.1	80-120	4.52	30	
n-Butylbenzene	10.4	0.02	0.20	ug/L	10.0		104	74-129	4.41	30	
1,2-Dichlorobenzene	10.2	0.04	0.20	ug/L	10.0		102	80-120	5.32	30	
1,2-Dibromo-3-chloropropane	8.93	0.37	0.50	ug/L	10.0		89.3	62-123	15.30	30	Q
1,2,4-Trichlorobenzene	10.6	0.11	0.50	ug/L	10.0		106	64-124	7.76	30	
Hexachloro-1,3-Butadiene	9.35	0.07	0.20	ug/L	10.0		93.5	58-123	6.37	30	
Naphthalene	10.8	0.12	0.50	ug/L	10.0		108	50-134	11.40	30	
1,2,3-Trichlorobenzene	10.8	0.11	0.20	ug/L	10.0		108	49-133	6.66	30	
Dichlorodifluoromethane	9.70	0.05	0.20	ug/L	10.0		97.0	48-147	0.13	30	
Surrogate: Dibromofluoromethane	5.04			ug/L	*5.00*		*101*	*80-120*			
Surrogate: 1,2-Dichloroethane-d4	4.98			ug/L	*5.00*		*99.6*	*80-129*			
Surrogate: Toluene-d8	5.08			ug/L	*5.00*		*102*	*80-120*			
Surrogate: 4-Bromofluorobenzene	5.19			ug/L	*5.00*		*104*	*80-120*			
Surrogate: 1,2-Dichlorobenzene-d4	5.10			ug/L	*5.00*		*102*	*80-120*			

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

Semivolatile Organic Compounds - Quality Control

Batch BHE0602 - EPA 3520C (Liq Liq)

Instrument: NT6 Analyst: JZ

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHE0602-BLK1)				Prepared: 23-May-2019 Analyzed: 03-Jun-2019 16:27							
1,4-Dioxane	ND	0.2	0.4	ug/L							U
Surrogate: 1,4-Dioxane-d8	33.3			ug/L	*50.0*		*66.7*	*33.6-120*			
LCS (BHE0602-BS1)				Prepared: 23-May-2019 Analyzed: 03-Jun-2019 17:00							
1,4-Dioxane	30.8	0.2	0.4	ug/L	50.0		61.7	39.9-120			
Surrogate: 1,4-Dioxane-d8	31.7			ug/L	*50.0*		*63.3*	*33.6-120*			
LCS Dup (BHE0602-BSD1)				Prepared: 23-May-2019 Analyzed: 03-Jun-2019 17:34							
1,4-Dioxane	32.4	0.2	0.4	ug/L	50.0		64.7	39.9-120	4.84	30	
Surrogate: 1,4-Dioxane-d8	31.5			ug/L	*50.0*		*63.0*	*33.6-120*			

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

Petroleum Hydrocarbons - Quality Control

Batch BHE0593 - EPA 3510C SepF

Instrument: FID4 Analyst: JGR

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHE0593-BLK1)			Prepared: 23-May-2019 Analyzed: 25-May-2019 02:29							
Gasoline Range Organics (Tol-C12)	ND	0.25	mg/L							U
Diesel Range Organics (C12-C24)	ND	0.50	mg/L							U
Motor Oil Range Organics (C24-C38)	ND	1.00	mg/L							U
Surrogate: o-Terphenyl	0.235		mg/L	*0.225*		*105*	*50-150*			
Surrogate: n-Triacontane	0.258		mg/L	*0.225*		*115*	*50-150*			

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

Metals and Metallic Compounds - Quality Control

Batch BHE0597 - REN EPA 600/4-79-020 4.1.4 HNO3 matrix

Instrument: ICPMS2 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHE0597-BLK1)				Prepared: 23-May-2019 Analyzed: 23-May-2019 20:28							
Antimony	121	ND	0.00300	mg/L							U
Antimony	123	ND	0.00300	mg/L							U
Lead	208	ND	0.0100	mg/L							U
Thallium	205	ND	0.00200	mg/L							U
Arsenic	75a	ND	0.00300	mg/L							U
Selenium	78	ND	0.0250	mg/L							U
LCS (BHE0597-BS1)				Prepared: 23-May-2019 Analyzed: 23-May-2019 20:33							
Antimony	121	0.0252	0.00300	mg/L	0.0250		101	80-120			
Antimony	123	0.0249	0.00300	mg/L	0.0250		99.6	80-120			
Lead	208	0.0267	0.0100	mg/L	0.0250		107	80-120			
Thallium	205	0.0250	0.00200	mg/L	0.0250		100	80-120			
Arsenic	75a	0.0259	0.00300	mg/L	0.0250		103	80-120			
Selenium	78	0.0838	0.0250	mg/L	0.0800		105	80-120			

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

Metals and Metallic Compounds - Quality Control

Batch BHE0598 - TLM EPA 7470A low level

Instrument: CVAA Analyst: SKM

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHE0598-BLK1)				Prepared: 23-May-2019 Analyzed: 03-Jun-2019 13:59							
Mercury	0.000018	0.000010	0.00100	mg/L							J
LCS (BHE0598-BS1)				Prepared: 23-May-2019 Analyzed: 03-Jun-2019 14:02							
Mercury	0.000215	0.000010	0.00100	mg/L	0.000200		107	80-120			J

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

Metals and Metallic Compounds - Quality Control

Batch BHE0599 - TWC EPA 3010A

Instrument: ICP2 Analyst: TCH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHE0599-BLK1)				Prepared: 23-May-2019 Analyzed: 24-May-2019 15:48						
Aluminum	ND	1.00	mg/L							U
Barium	ND	0.500	mg/L							U
Beryllium	ND	0.0100	mg/L							U
Cadmium	ND	0.0020	mg/L							U
Calcium	ND	0.500	mg/L							U
Chromium	ND	0.0100	mg/L							U
Cobalt	ND	0.0100	mg/L							U
Copper	ND	0.0030	mg/L							U
Iron	ND	0.200	mg/L							U
Magnesium	ND	0.500	mg/L							U
Manganese	ND	0.0100	mg/L							U
Nickel	ND	0.0100	mg/L							U
Potassium	ND	0.500	mg/L							U
Silver	ND	0.0050	mg/L							U
Sodium	ND	0.500	mg/L							U
Sodium	ND	50.0	mg/L							U
Vanadium	ND	0.0030	mg/L							U
Zinc	ND	0.0200	mg/L							U
LCS (BHE0599-BS1)				Prepared: 23-May-2019 Analyzed: 24-May-2019 16:25						
Aluminum	1.93	1.00	mg/L	2.00		96.6	80-120			
Barium	1.92	0.500	mg/L	2.00		95.8	80-120			
Beryllium	0.491	0.0100	mg/L	0.500		98.3	80-120			
Cadmium	0.469	0.0020	mg/L	0.500		93.9	80-120			
Calcium	9.74	0.500	mg/L	10.0		97.4	80-120			
Chromium	0.475	0.0100	mg/L	0.500		94.9	80-120			
Cobalt	0.484	0.0100	mg/L	0.500		96.9	80-120			
Copper	0.470	0.0030	mg/L	0.500		94.1	80-120			
Iron	1.91	0.200	mg/L	2.00		95.6	80-120			
Magnesium	10.0	0.500	mg/L	10.0		100	80-120			
Manganese	0.491	0.0100	mg/L	0.500		98.2	80-120			
Nickel	0.476	0.0100	mg/L	0.500		95.2	80-120			
Potassium	9.38	0.500	mg/L	10.0		93.8	80-120			
Silver	0.500	0.0050	mg/L	0.500		100	80-120			
Sodium	9.51	0.500	mg/L	10.0		95.1	80-120			

Golder Associates	Project: Landsburg	
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Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

Metals and Metallic Compounds - Quality Control

Batch BHE0599 - TWC EPA 3010A

Instrument: ICP2 Analyst: TCH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BHE0599-BS1)				Prepared: 23-May-2019 Analyzed: 24-May-2019 16:25						
Vanadium	0.469	0.0030	mg/L	0.500		93.8	80-120			
Zinc	0.482	0.0200	mg/L	0.500		96.4	80-120			
Duplicate (BHE0599-DUP1)		**Source: 19E0324-01**		Prepared: 23-May-2019 Analyzed: 24-May-2019 16:09						
Aluminum	ND	1.00	mg/L		ND					U
Barium	ND	0.500	mg/L		ND					U
Beryllium	ND	0.0100	mg/L		ND					U
Cadmium	ND	0.0020	mg/L		ND					U
Calcium	60.4	0.500	mg/L		60.2			0.37	20	
Chromium	ND	0.0100	mg/L		ND					U
Cobalt	ND	0.0100	mg/L		ND					U
Copper	ND	0.0030	mg/L		ND					U
Iron	0.618	0.200	mg/L		0.615			0.53	20	
Magnesium	27.0	0.500	mg/L		27.2			0.56	20	
Manganese	0.173	0.0100	mg/L		0.174			0.69	20	
Nickel	ND	0.0100	mg/L		ND					U
Potassium	1.97	0.500	mg/L		2.00			1.38	20	
Silver	ND	0.0050	mg/L		ND					U
Sodium	22.8	0.500	mg/L		22.8			0.07	20	
Vanadium	ND	0.0030	mg/L		ND					U
Zinc	ND	0.0200	mg/L		ND					U
Matrix Spike (BHE0599-MS1)		**Source: 19E0324-01**		Prepared: 23-May-2019 Analyzed: 24-May-2019 16:17						
Aluminum	2.05	1.00	mg/L	2.00	ND	103	75-125			
Barium	2.32	0.500	mg/L	2.00	ND	100	75-125			
Beryllium	0.511	0.0100	mg/L	0.500	ND	102	75-125			
Cadmium	0.488	0.0020	mg/L	0.500	ND	97.5	75-125			
Calcium	68.5	0.500	mg/L	10.0	60.2	83.3	75-125			
Chromium	0.494	0.0100	mg/L	0.500	ND	98.3	75-125			
Cobalt	0.492	0.0100	mg/L	0.500	ND	98.4	75-125			
Copper	0.486	0.0030	mg/L	0.500	ND	97.3	75-125			
Iron	2.60	0.200	mg/L	2.00	0.615	99.4	75-125			
Magnesium	35.4	0.500	mg/L	10.0	27.2	82.6	75-125			
Manganese	0.662	0.0100	mg/L	0.500	0.174	97.7	75-125			
Nickel	0.484	0.0100	mg/L	0.500	ND	96.7	75-125			

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Jun-2019 09:48

Metals and Metallic Compounds - Quality Control

Batch BHE0599 - TWC EPA 3010A

Instrument: ICP2 Analyst: TCH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike (BHE0599-MS1)	**Source: 19E0324-01**		Prepared: 23-May-2019 Analyzed: 24-May-2019 16:17							
Potassium	12.0	0.500	mg/L	10.0	2.00	100	75-125			
Silver	0.522	0.0050	mg/L	0.500	ND	104	75-125			
Sodium	32.2	0.500	mg/L	10.0	22.8	94.1	75-125			
Vanadium	0.490	0.0030	mg/L	0.500	ND	97.9	75-125			
Zinc	0.501	0.0200	mg/L	0.500	ND	99.7	75-125			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Matrix Spike Dup (BHE0599-MSD1)	**Source: 19E0324-01**		Prepared: 23-May-2019 Analyzed: 24-May-2019 16:21							
Aluminum	2.05	1.00	mg/L	2.00	ND	102	75-125	0.27	20	
Barium	2.31	0.500	mg/L	2.00	ND	100	75-125	0.46	20	
Beryllium	0.507	0.0100	mg/L	0.500	ND	101	75-125	0.91	20	
Cadmium	0.485	0.0020	mg/L	0.500	ND	97.0	75-125	0.51	20	
Calcium	68.5	0.500	mg/L	10.0	60.2	83.4	75-125	0.02	20	
Chromium	0.495	0.0100	mg/L	0.500	ND	98.5	75-125	0.15	20	
Cobalt	0.483	0.0100	mg/L	0.500	ND	96.6	75-125	1.89	20	
Copper	0.481	0.0030	mg/L	0.500	ND	96.1	75-125	1.19	20	
Iron	2.60	0.200	mg/L	2.00	0.615	99.3	75-125	0.15	20	
Magnesium	35.5	0.500	mg/L	10.0	27.2	83.1	75-125	0.13	20	
Manganese	0.659	0.0100	mg/L	0.500	0.174	97.0	75-125	0.47	20	
Nickel	0.485	0.0100	mg/L	0.500	ND	96.9	75-125	0.18	20	
Potassium	11.9	0.500	mg/L	10.0	2.00	98.6	75-125	1.51	20	
Silver	0.515	0.0050	mg/L	0.500	ND	103	75-125	1.35	20	
Sodium	32.2	0.500	mg/L	10.0	22.8	94.8	75-125	0.22	20	
Vanadium	0.483	0.0030	mg/L	0.500	ND	96.5	75-125	1.45	20	
Zinc	0.498	0.0200	mg/L	0.500	ND	99.2	75-125	0.49	20	

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

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Golder Associates	Project: Landsburg	
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Certified Analyses included in this Report

Analyte	Certifications
EPA 200.8 in Water	
Lead-208	NELAP,WADOE,WA-DW,DoD-ELAP
Antimony-121	NELAP,WADOE,WA-DW,DoD-ELAP
Thallium-205	NELAP,WADOE,WA-DW,DoD-ELAP
EPA 200.8 UCT-KED in Water	
Arsenic-75a	NELAP,WADOE,WA-DW,DoD-ELAP
Selenium-78	NELAP,WADOE,WA-DW,DoD-ELAP
EPA 6010C in Water	
Silver	WADOE,NELAP,DoD-ELAP
Aluminum	WADOE,NELAP,DoD-ELAP
Barium	WADOE,NELAP,DoD-ELAP,ADEC
Beryllium	WADOE,NELAP,DoD-ELAP
Calcium	WADOE,NELAP,DoD-ELAP
Cadmium	WADOE,NELAP,DoD-ELAP,ADEC
Cobalt	WADOE,NELAP,DoD-ELAP
Chromium	WADOE,NELAP,DoD-ELAP,ADEC
Copper	WADOE,NELAP,DoD-ELAP
Iron	WADOE,NELAP,DoD-ELAP
Potassium	WADOE,NELAP,DoD-ELAP
Magnesium	WADOE,NELAP,DoD-ELAP
Manganese	WADOE,NELAP,DoD-ELAP
Sodium	DoD-ELAP,WADOE,NELAP
Sodium-1	DoD-ELAP
Nickel	WADOE,NELAP,DoD-ELAP,ADEC
Vanadium	WADOE,NELAP,DoD-ELAP,ADEC
Zinc	WADOE,NELAP,DoD-ELAP
EPA 7470A in Water	
Mercury	WADOE,NELAP,DoD-ELAP,CALAP
EPA 8260C in Water	
Chloromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Vinyl Chloride	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Bromomethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Chloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Trichlorofluoromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Acrolein	DoD-ELAP,NELAP,CALAP,WADOE

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1,1,2-Trichloro-1,2,2-Trifluoroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Acetone	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,1-Dichloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Bromoethane	DoD-ELAP,NELAP,CALAP,WADOE
Iodomethane	DoD-ELAP,NELAP,CALAP,WADOE
Methylene Chloride	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Acrylonitrile	DoD-ELAP,NELAP,CALAP,WADOE
Carbon Disulfide	DoD-ELAP,NELAP,CALAP,WADOE
trans-1,2-Dichloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Vinyl Acetate	DoD-ELAP,NELAP,CALAP,WADOE
1,1-Dichloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
2-Butanone	DoD-ELAP,NELAP,CALAP,WADOE
2,2-Dichloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
cis-1,2-Dichloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Chloroform	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Bromochloromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,1,1-Trichloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,1-Dichloropropene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Carbon tetrachloride	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2-Dichloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Benzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Trichloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2-Dichloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Bromodichloromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Dibromomethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
2-Chloroethyl vinyl ether	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
4-Methyl-2-Pentanone	DoD-ELAP,NELAP,CALAP,WADOE
cis-1,3-Dichloropropene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Toluene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
trans-1,3-Dichloropropene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
2-Hexanone	DoD-ELAP,NELAP,CALAP,WADOE
1,1,2-Trichloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,3-Dichloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Tetrachloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Dibromochloromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2-Dibromoethane	DoD-ELAP,NELAP,CALAP,WADOE
Chlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Ethylbenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,1,1,2-Tetrachloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
m,p-Xylene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE

Golder Associates	Project: Landsburg	
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o-Xylene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Styrene	DoD-ELAP,NELAP,CALAP,WADOE
Bromoform	DoD-ELAP,NELAP,CALAP,WADOE
1,1,2,2-Tetrachloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2,3-Trichloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
trans-1,4-Dichloro 2-Butene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
n-Propylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
Bromobenzene	DoD-ELAP,NELAP,CALAP,WADOE
Isopropyl Benzene	DoD-ELAP,NELAP,CALAP,WADOE
2-Chlorotoluene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
4-Chlorotoluene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
t-Butylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
1,3,5-Trimethylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
1,2,4-Trimethylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
s-Butylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
4-Isopropyl Toluene	DoD-ELAP,NELAP,CALAP,WADOE
1,3-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,4-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
n-Butylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
1,2-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2-Dibromo-3-chloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2,4-Trichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Hexachloro-1,3-Butadiene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Naphthalene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2,3-Trichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Dichlorodifluoromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Methyl tert-butyl Ether	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
n-Hexane	WADOE
2-Pentanone	WADOE
EPA 8270D in Water	
1,4-Dioxane	WADOE,NELAP,DoD-ELAP
NWTPH-HCID in Water	
Gasoline Range Organics (Tol-C12)	NELAP,DoD-ELAP,WADOE
Diesel Range Organics (C12-C24)	NELAP,DoD-ELAP,WADOE
Motor Oil Range Organics (C24-C38)	NELAP,DoD-ELAP,WADOE

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Code	Description	Number	Expires
ADEC	Alaska Dept of Environmental Conservation	17-015	01/31/2021
CALAP	California Department of Public Health CAELAP	2748	06/30/2019
DoD-ELAP	DoD-Environmental Laboratory Accreditation Program	66169	01/01/2021
NELAP	ORELAP - Oregon Laboratory Accreditation Program	WA100006-012	05/12/2020
WADOE	WA Dept of Ecology	C558	06/30/2019
WA-DW	Ecology - Drinking Water	C558	06/30/2019

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Golder Associates	Project: Landsburg	
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Notes and Definitions

*	Flagged value is not within established control limits.
D	The reported value is from a dilution
J	Estimated concentration value detected below the reporting limit.
Q	Indicates a detected analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20% RSD, <20% drift or minimum RRF)
U	This analyte is not detected above the reporting limit (RL) or if noted, not detected above the limit of detection (LOD).
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
[2C]	Indicates this result was quantified on the second column on a dual column analysis.

APPENDIX B

Sample Integrity Data Sheets (SIDS)

SAMPLE INTEGRITY DATA SHEET

Plant/Site Landsburg Mine Site **Project No.** 923-1000-005.2019

Site Location Ravensdale, WA **Sample ID** LMW-2-0519

Sampling Location Groundwater Monitoring Well End of dedicated sampling tube

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

Type of Sampler Dedicated Pump Grundfos

Date 5/22/19 **Time** 1420

Media Water **Station** LMW-2

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

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

SWL – 7.49 ft below TOC (monument at elev. X) (bottom at 38.1 ft bgs, 4-in casing) @ 1339

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

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

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

Sample Description clear

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

SEE FIELD PARAMETERS SHEET

Aliquot Amount	Analysis	Container	Preservation / Amount
3 – 40 mL	VOA	VOA Vial	HCl
1 – 500 ml	Total Metals	HDPE	HNO3 (non-filter)
4 – 500 ml, 2 – 40 ml	TPH-HCID	Glass Amber, VOA Vial	HCl
2 – 500 mL	1,4-Dioxane	Glass Amber	none

Sampler (signature) [signature] **Date** 5/22/19

Supervisor (signature) [signature] **Date** 5-23-19

FIELD PARAMETERS SHEET

Well ID MW-2
Date 5/22/19
Time Begin Purge 1341
Time Collect Sample 1420

Water Level feet bmp	Time	Temp. °C	pH	Conductivity uS/cm	DO mg/L	ORP mV	Turbidity NTU
7.47	1351	~~6.43~~ 10.5	6.93	679	0.60	-95.6	~~2.70~~
7.49	1356	10.7	6.88	679	0.58	-101.5	0.32
7.49	1401	10.7	6.88	679	0.61	-103.9	0.33
7.49	1406	10.7	6.89	678	0.60	-106.2	0.32
7.49	1411	10.8	6.89	678	0.55	-108.6	0.32
7.49	1416	10.8	6.89	677	0.50	-109.8	0.31

Comments:

Grundfos 78 Hz

~1 gpm

Sampler's Initials JM

SAMPLE INTEGRITY DATA SHEET

Plant/Site Landsburg Mine Site **Project No.** 923-1000-005.2019

Site Location Ravensdale, WA **Sample ID** LMW-3-0519

Sampling Location Groundwater Monitoring Well End of dedicated sampling tube

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

Type of Sampler Dedicated Pump Grundfos

Date 5/21/19 **Time** 1015

Media Water **Station** LMW-3

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

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

SWL – 12.07 ft below TOC (monument at elev. X) (bottom at 64.8 ft bgs, 4-in casing) @ 0933

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

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

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

(~27.0 gal/total well vol below packer)

Sample Description clear

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

SEE FIELD PARAMETERS SHEET

Aliquot Amount	Analysis	Container	Preservation / Amount
3 – 40 mL	VOA	VOA Vial	HCl
1 – 500 ml	Total Metals	HDPE	HNO3 (non-filter)
4 – 500 ml, 2 – 40 ml	TPH-HCID	Glass Amber, VOA Vial	HCl
2 – 500 mL	1,4-Dioxane	Glass Amber	none

Sampler (signature) _____ **Date** 5/21/19

Supervisor (signature) _____ **Date** 5-23-19

FIELD PARAMETERS SHEET

Well ID LMW-3
Date 5/21/19
Time Begin Purge 0436
Time Collect Sample 1015

Water Level feet bmp	Time	Temp. °C	pH	Conductivity uS/cm	DO mg/L	ORP mV	Turbidity NTU
11.61	0446	10.5	7.77	231	0.72	-4.6	0.70
11.61	0451	10.5	7.77	230.6	0.61	-36.3	0.77
—	0456	10.5	7.76	230.6	0.57	-49.4	0.61
—	1001	10.5	7.75	231.7	0.54	-61.7	0.65
—	1006	10.5	7.74	233.5	0.55	-67.2	0.50
—	1011	10.5	7.73	234.7	0.52	-72.6	0.49

Comments:

Pump @ 110 psi
Grundfos 135 Hz
Rate ~ 1.25 gpm

Sampler's Initials JM

SAMPLE INTEGRITY DATA SHEET

Plant/Site Landsburg Mine Site **Project No.** 923-1000-005.2000

Site Location Ravensdale, WA **Sample ID** LMW-4-0519 ; LMW-4-0519-D

Sampling Location Groundwater Monitoring Well End of dedicated sampling tube

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

Type of Sampler Dedicated Pump Grundfos

Date 5/22/19 **Time** 1310 / 1320

Media Water **Station** LMW-4

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

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

SWL – 9.50 ft below TOC (monument at elev. X) (bottom at 209.7 ft bgs, 4-in casing) 1228

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

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

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

(~26.9 gal/total well vol below packer)

** Depths corrected for 70° inclination

Sample Description clear

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

SEE FIELD PARAMETERS SHEET

Aliquot Amount	Analysis	Container	Preservation / Amount
3 – 40 mL	VOA	VOA Vial	HCl
1 – 500 ml	Total Metals	HDPE	HNO3 (non-filter)
4 – 500 ml, 2 – 40 ml	TPH-HCID	Glass Amber, VOA Vial	HCl
2 – 500 mL	1,4-Dioxane	Glass Amber	none

Sampler (signature) Joe Miller **Date** 5/22/19

Supervisor (signature) **Date** 5-23-19

FIELD PARAMETERS SHEET

Well ID LMW-4
Date 5/22/19
Time Begin Purge 1230
Time Collect Sample 1310 1320

Water Level feet bmp	Time	Temp. °C	pH	Conductivity uS/cm	DO mg/L	ORP mV	Turbidity NTU
9.52	1240	10.4	6.95	707	0.69	-83.1	4.19
9.52	1245	10.4	6.93	704	0.61	-92.2	2.81
9.52	1250	10.4	6.93	702	0.58	-98.5	1.71
9.52	1255	10.4	6.92	699	0.55	-106.8	1.13
9.52	1300	10.4	6.92	697	0.54	-114.8	0.47
9.52	1305	10.5	6.92	697	0.53	-120.5	0.64

Comments:
Packer 110psi
Grundfos 80Hz
flow 1.5 gpm

Sampler's Initials JM

SAMPLE INTEGRITY DATA SHEET

Plant/Site Landsburg Mine Site **Project No.** 923-1000-005.2019

Site Location Ravensdale, WA **Sample ID** LMW-5-0519

Sampling Location Groundwater Monitoring Well End of dedicated sampling tube

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

Type of Sampler Dedicated Pump Grundfos

Date 5/21/19 **Time** 1120

Media Water **Station** LMW-5

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

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

SWL – 13.60 ft below TOC (monument at elev. X) (bottom at 241.8 ft bgs, 4-in casing) 1038

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

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

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

(~18.7 gal/total well vol below packer)

Sample Description Sulfur Odor

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

SEE FIELD PARAMETERS SHEET

Aliquot Amount	Analysis	Container	Preservation / Amount
3 – 40 mL	VOA	VOA Vial	HCl
1 – 500 ml	Total Metals	HDPE	HNO3 (non-filter)
4 – 500 ml, 2 – 40 ml	TPH-HCID	Glass Amber, VOA Vial	HCl
2 – 500 mL	1,4-Dioxane	Glass Amber	none

Sampler (signature) _____ **Date** 5/21/19

Supervisor (signature) _____ **Date** 5-23-19

FIELD PARAMETERS SHEET

Well ID MW-5-DS19
Date 5/21/19
Time Begin Purge 1040
Time Collect Sample 1120

Water Level feet bmp	Time	Temp. °C	pH	Conductivity uS/cm	DO mg/L	ORP mV	Turbidity NTU
13.60	1050	10.5	6.92	549	0.57	-102.5	1.14
13.60	1055	10.6	6.92	550	0.54	-107.9	0.67
13.60	1100	10.6	6.92	549	0.51	-112.5	0.72
13.60	1105	10.6	6.91	549	0.50	-116.2	0.38
13.60	1110	10.6	6.91	548	0.49	-119.0	0.15
13.60	1115	10.6	6.92	548	0.48	-121.3	0.16

Comments:

Grundfos: 135 Hz

Packer 100psi

Sampler's Initials JM / EA

SAMPLE INTEGRITY DATA SHEET

Plant/Site Landsburg Mine Site **Project No.** 923-1000-005.2019

Site Location Ravensdale, WA **Sample ID** LMW-6-0519

Sampling Location Groundwater Monitoring Well End of dedicated sampling tube

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

Type of Sampler Dedicated Pump Grundfos

Date 5/22/19 **Time** 0845

Media Water **Station** LMW-6

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

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

SWL – 24.73 ft below TOC (monument at elev. X) (bottom at 105.9 ft bgs, 4-in casing) @ 0800

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

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

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

(~29.9 gal/total well vol below packer)

Sample Description Clear

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

SEE FIELD PARAMETERS SHEET

Aliquot Amount	Analysis	Container	Preservation / Amount
3 – 40 mL	VOA	VOA Vial	HCl
1 – 500 ml	Total Metals	HDPE	HNO3 (non-filter)
4 – 500 ml, 2 – 40 ml	TPH-HCID	Glass Amber, VOA Vial	HCl
2 – 500 mL	1,4-Dioxane	Glass Amber	none

Sampler (signature) _____ **Date** 5/22/19

Supervisor (signature) _____ **Date** 5-23-19

Golder Associates Inc.

FIELD PARAMETERS SHEET

Well ID CMW-6
Date 5/22/19
Time Begin Purge 0810
Time Collect Sample 0845

Water Level feet bmp	Time	Temp. °C	pH	Conductivity uS/cm	DO mg/L	ORP mV	Turbidity NTU
24.29	0820	9.3	6.79	180.2	0.69	-38.5	4.33
24.30	0825	9.3	6.79	180.1	0.64	-46.4	2.21
24.30	0830	9.3	6.79	180.1	0.62	-50.2	2.48
24.30	0835	9.4	6.80	180.1	0.59	-53.3	1.95
24.30	0841	9.4	6.80	180.0	0.57	-55.3	1.95

Comments:

Packer 110 psi
Grundfos 180 Hz ~2 gpm
Initial purge turbid

Sampler's Initials JM

SAMPLE INTEGRITY DATA SHEET

Plant/Site Landsburg Mine Site **Project No.** 923-1000-005.2019

Site Location Ravensdale, WA **Sample ID** LMW-7-0519

Sampling Location Groundwater Monitoring Well End of dedicated sampling tube

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

Type of Sampler Dedicated Pump Grundfos

Date 5/21/19 **Time** 1440

Media Water **Station** LMW-7

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

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

SWL – 222.38 ft below TOC (monument at elev. X) (bottom at 253.7 ft bgs, 4-in casing) @ 1355

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

Sand Pack Interval – NA

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

Sample Description Clear

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

SEE FIELD PARAMETERS SHEET

Aliquot Amount	Analysis	Container	Preservation / Amount
3 – 40 mL	VOA	VOA Vial	HCl
1 – 500 ml	Total Metals	HDPE	HNO3 (nonfilter)
4 – 500 ml, 2 – 40 ml	TPH-HCID	Glass Amber, VOA Vial	HCl
2 – 500 mL	1,4-Dioxane	Glass Amber	none

Sampler (signature) _____ **Date** 5/21/19

Supervisor (signature) _____ **Date** 5-23-19

FIELD PARAMETERS SHEET

Well ID Lmw-7
Date 5-21-19
Time Begin Purge 1401
Time Collect Sample 1440

Water Level feet bmp	Time	Temp. °C	pH	Conductivity uS/cm	DO mg/L	ORP mV	Turbidity NTU
222.43	1411	12.5	7.29	377.6	0.80	8.8	4.66
222.43	1416	12.6	7.28	378.1	0.72	-26.5	4.06
222.43	1421	12.7	7.28	378.1	0.67	-61.9	2.91
222.43	1426	12.8	7.25	389.8	0.64	-65.0	4.92
222.43	1431	13.0	7.16	414.2	0.61	-74.2	4.89
222.44	1436	13.0	7.15	418.5	0.59	-77.5	3.71

Comments: Grundfos: 320 Hz

Sampler's Initials JM/EA

SAMPLE INTEGRITY DATA SHEET

Plant/Site Landsburg Mine Site **Project No.** 923-1000-005.2019

Site Location Ravensdale, WA **Sample ID** LMW-EB-0519

Sampling Location Groundwater Monitoring Well End of dedicated sampling tube

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

Type of Sampler Peristaltic Pump with new tubing

Date 5/21/19 **Time** 1300

Media Water **Station** LMW- 8

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

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

SWL – — ft below TOC (PVC)

Sample Description Lab provided DI through new tubing

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

SEE FIELD PARAMETERS SHEET

Aliquot Amount	Analysis	Container	Preservation / Amount
3 – 40 mL	VOA	VOA Vial	HCl
1 – 500 ml	Total Metals	HDPE	HNO3 (non-filter)
4 – 500 ml, 2 – 40 ml	TPH-HCID	Glass Amber, VOA Vial	HCl
2 – 500 mL	1,4-Dioxane	Glass Amber	none

Sampler (signature) [signature] **Date** 5/21/19

Supervisor (signature) [signature] **Date** 5-23-19

FIELD PARAMETERS SHEET

Well ID Equipment Blank
Date 5/21/19
Time Begin Purge —
Time Collect Sample 1300

Water Level feet bmp	Time	Temp. °C	pH	Conductivity uS/cm	DO mg/L	ORP mV	Turbidity NTU

Comments:
Lab DI water pumped thrugh new tubing

Sampler's Initials JM

SAMPLE INTEGRITY DATA SHEET

Plant/Site Landsburg Mine Site **Project No.** 923-1000-005.2019

Site Location Ravensdale, WA **Sample ID** LMW-8-0519

Sampling Location Groundwater Monitoring Well End of dedicated sampling tube

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

Type of Sampler New Tubing and Peristaltic Pump

Date 5/21/19 **Time** 1230

Media Water **Station** LMW-8

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

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

SWL – 4.32 ft below TOC (PVC at black notch) (bottom at 13 ft bgs, 2-in casing) @ 1151

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

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

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

Sample Description clear

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

SEE FIELD PARAMETERS SHEET

Aliquot Amount	Analysis	Container	Preservation / Amount
3 – 40 mL	VOA	VOA Vial	HCl
1 – 500 ml	Total Metals	HDPE	HNO3 (non-filter)
4 – 500 ml, 2 – 40 ml	TPH-HCID	Glass Amber, VOA Vial	HCl
2 – 500 mL	1,4-Dioxane	Glass Amber	none

Sampler (signature) [signature] **Date** 5/21/19

Supervisor (signature) [signature] **Date** 5-23-19

Golder Associates Inc.

FIELD PARAMETERS SHEET

Well ID MW-8
Date 5/21/19
Time Begin Purge 1152
Time Collect Sample 1230

Water Level feet bmp	Time	Temp. °C	pH	Conductivity uS/cm	DO mg/L	ORP mV	Turbidity NTU
6.72	1202	11.3	6.85	383.5	0.63	-118.6	45.0
6.93	1207	11.6	6.83	399.9	0.60	-120.6	42.6
7.08	1212	11.4	6.80	421.2	0.76	-99.4	22.1
7.27	1217	11.2	6.80	423.8	0.57	-104.8	16.4
7.38	1222	11.0	6.81	424.9	0.54	-105.2	12.7
7.48	1227	11.1	6.79	429.1	0.53	-103.7	8.45 *

Comments:
* Turb ~~direct from~~ 3.77 ntu
sample tube

Rate: ~250ml/min

Sampler's Initials JM

SAMPLE INTEGRITY DATA SHEET

Plant/Site Landsburg Mine Site **Project No.** 923-1000-005.2019

Site Location Ravensdale, WA **Sample ID** LMW-9-0519

Sampling Location Groundwater Monitoring Well End of dedicated sampling tube

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

Type of Sampler Dedicated QED Bladder

Date 5/21/19 **Time** 0900

Media Water **Station** LMW-9

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

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

SWL – 99.36 ft below TOC (PVC at black notch) (bottom at 159 ft bgs, 2-in casing) 0807

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

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

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

Sample Description Clear

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

SEE FIELD PARAMETERS SHEET

Aliquot Amount	Analysis	Container	Preservation / Amount
3 – 40 mL	VOA	VOA Vial	HCl
1 – 500 ml	Total Metals	HDPE	HNO3 (non-filter)
4 – 500 ml, 2 – 40 ml	TPH-HCID	Glass Amber, VOA Vial	HCl
2 – 500 mL	1,4-Dioxane	Glass Amber	none

Sampler (signature) _____ **Date** 5/21/19

Supervisor (signature) _____ **Date** 5-23-19

FIELD PARAMETERS SHEET

Well ID LMW-9
Date 5/21/19
Time Begin Purge 0824
Time Collect Sample 0900

Water Level feet bmp	Time	Temp. °C	pH	Conductivity uS/cm	DO mg/L	ORP mV	Turbidity NTU
99.35	0834	10.1	6.87	513	1.34	-8.8	4.33
99.35	0839	10.1	6.92	511	1.01	-39.4	2.36
99.35	0844	10.2	6.95	510	0.88	-50.3	1.33
99.35	0849	10.2	6.97	509	0.79	-58.4	1.74
99.35	0854	10.2	6.98	508	0.73	-63.3	2.45
99.35	0859	10.2	6.99	507	0.64	-67.4	2.48

Comments:

Tank 130
Throttle 95
CID 50
CPM 2

Rate: ~450ml/min

Sampler's Initials JM

SAMPLE INTEGRITY DATA SHEET

Plant/Site Landsburg Mine Site **Project No.** 923-1000-005.2019

Site Location Ravensdale, WA **Sample ID** LMW-10-0519

Sampling Location Groundwater Monitoring Well End of dedicated sampling tube

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

Type of Sampler Dedicated QED Bladder

Date 5/22/19 **Time** 1155

Media Water **Station** LMW-10

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

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

SWL – 0.4 ft below TOC (PVC) (bottom at 289 ft bgs, 4-in casing)

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

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

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

Sample Description clear

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

SEE FIELD PARAMETERS SHEET

Aliquot Amount	Analysis	Container	Preservation / Amount
3 – 40 mL	VOA	VOA Vial	HCl
1 – 500 ml	Total Metals	HDPE	HNO3 (non-filter)
4 – 500 ml, 2 – 40 ml	TPH-HCID	Glass Amber, VOA Vial	HCl
2 – 500 mL	1,4-Dioxane	Glass Amber	none

Sampler (signature) [signature] **Date** 5/22/19

Supervisor (signature) [signature] **Date** 5-23-19

FIELD PARAMETERS SHEET

Well ID LMW-10
Date 5/22/19
Time Begin Purge 1115
Time Collect Sample 1155

Water Level feet bmp	Time	Temp. °C	pH	Conductivity uS/cm	DO mg/L	ORP mV	Turbidity NTU
2.20	1125	10.6	8.63	263.8	0.69	-152.8	3.08
2.79	1130	10.6	8.64	264.7	0.61	-183.3	2.35
3.41	1135	10.6	8.64	265.8	0.56	-195.1	2.36
4.02	1140	10.5	8.64	265.3	0.54	-201.3	0.83
4.55	1145	10.5	8.64	265.6	0.52	-207.2	0.76
5.14	1150	10.4	8.64	265.7	0.52	-210.4	0.84

Comments:
Tank 110
Throttle 40
CPM 2
CID 50
Replaced air hose connector
400ml/min

Sampler's Initials

SAMPLE INTEGRITY DATA SHEET

Plant/Site Landsburg Mine Site **Project No.** 923-1000-005.2019

Site Location Ravensdale, WA **Sample ID** LMW-11-0519

Sampling Location Groundwater Monitoring Well End of dedicated sampling tube

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

Type of Sampler Dedicated QED Bladder

Date 5/20/19 **Time** 1245

Media Water **Station** LMW-11

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

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

SWL – 157.13 ft below TOC (PVC) (bottom at 707 ft bgs, 4-in casing)

Screen Interval – 696-707 ft bgs PVC stickup: 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 clear

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

SEE FIELD PARAMETERS SHEET

Aliquot Amount	Analysis	Container	Preservation / Amount
3 – 40 mL	VOA	VOA Vial	HCl
1 – 500 ml	Total Metals	HDPE	HNO3 (non-filter)
4 – 500 ml, 2 – 40 ml	TPH-HCID	Glass Amber, VOA Vial	HCl
2 – 500 mL	1,4-Dioxane	Glass Amber	none

Sampler (signature) _____ **Date** 5/20/19

Supervisor (signature) _____ **Date** 5-23-19

Golder Associates Inc.

FIELD PARAMETERS SHEET

Well ID MW-11
Date 5/20/16
Time Begin Purge 1304
Time Collect Sample 1245

Water Level feet bmp	Time	Temp. °C	pH	Conductivity uS/cm	DO mg/L	ORP mV	Turbidity NTU
157.15	1214	9.9	7.18	~~386.5~~ 386.5	1.24	-105.8	0.67
157.16	1219	9.8	7.18	389.0	1.04	-115.2	0.81
157.16	1224	9.8	7.19	390.5	0.94	-122.5	0.86
157.16	1229	9.8	7.20	390.7	0.86	-129.4	0.51
157.16	1234	9.8	7.21	390.6	0.82	-133.4	0.70
157.16	1239	9.8	7.21	389.6	0.78	-137.1	0.77

Comments:

Tank 130 ~400ml/min
Thru Hello
CPM1
CID30

Sampler's Initials JM

SAMPLE INTEGRITY DATA SHEET

Plant/Site Landsburg Mine Site **Project No.** 923-1000-005.2019

Site Location Ravensdale, WA **Sample ID** LMW-12-0519

Sampling Location Groundwater Monitoring Well End of dedicated sampling tube

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

Type of Sampler Dedicated QED Bladder

Date 5/22/19 **Time** 1045

Media Water **Station** LMW-12

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

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

SWL – 9.49 @ 1007

Screen Interval – 15-25

Sand Pack Interval – 11-25

Packer Depth – NA

Sample Description slight yellow tint

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

SEE FIELD PARAMETERS SHEET

Aliquot Amount	Analysis	Container	Preservation / Amount
3 – 40 mL	VOA	VOA Vial	HCl
1 – 500 ml	Total Metals	HDPE	HNO3 (non-filter)
4 – 500 ml, 2 – 40 ml	TPH-HCID	Glass Amber, VOA Vial	HCl
2 – 500 mL	1,4-Dioxane	Glass Amber	none

Sampler (signature) [signature] **Date** 5/22/19

Supervisor (signature) [signature] **Date** 5-23-19

Golder Associates Inc.

FIELD PARAMETERS SHEET

Well ID LMW-12
Date 5/22/19
Time Begin Purge 1010
Time Collect Sample 1045

Water Level feet bmp	Time	Temp. °C	pH	Conductivity uS/cm	DO mg/L	ORP mV	Turbidity NTU
9.50	1020	9.9	6.75	658	0.67	-97.6	8.20
9.50	1025	9.9	6.75	655	0.61	-99.5	7.63
9.50	1030	10.0	6.76	658	0.58	-101.8	7.72
9.50	1035	10.0	6.76	667	0.56	-104.1	5.63
9.50	1040	10.1	6.80	667	0.54	-105.8	4.11

Comments:

Tank 110
Throttle 20
2 cpm
CID 47
Rate 500 ml/min

Sampler's Initials JM

SAMPLE INTEGRITY DATA SHEET

Plant/Site Landsburg Mine Site **Project No.** 923-1000-005.2019

Site Location Ravensdale, WA **Sample ID** LMW-13R-0519

Sampling Location Groundwater Monitoring Well End of dedicated sampling tube

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

Type of Sampler Dedicated QED Bladder

Date 5/22/19 **Time** 0950

Media Water **Station** LMW-13R

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

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

SWL – 10.04 @ 0910

Screen Interval –115-140

Sand Pack Interval –110-150

Packer Depth – NA

Sample Description Slight sulfur odor

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

SEE FIELD PARAMETERS SHEET

Aliquot Amount	Analysis	Container	Preservation / Amount
3 – 40 mL	VOA	VOA Vial	HCl
1 – 500 ml	Total Metals	HDPE	HNO3 (non-filter)
4 – 500 ml, 2 – 40 ml	TPH-HCID	Glass Amber, VOA Vial	HCl
2 – 500 mL	1,4-Dioxane	Glass Amber	none

Sampler (signature) _____ **Date** 5/22/19

Supervisor (signature) _____ **Date** 5-23-19

FIELD PARAMETERS SHEET

Well ID LMW-13R
Date 5/22/19
Time Begin Purge 0914
Time Collect Sample 0950

Water Level feet bmp	Time	Temp. °C	pH	Conductivity uS/cm	DO mg/L	ORP mV	Turbidity NTU
10.24	0924	10.2	7.32	656	0.77	-126.8	4.57
10.15	0929	10.2	7.34	656	0.68	-137.6	4.52
10.15	0934	10.2	7.35	656	0.63	-145.5	6.04
10.15	0939	10.2	7.36	656	0.59	-151.9	2.37
10.15	0944	10.2	7.37	656	0.57	-157.0	1.29

Comments:

Tank 110
Throttle 30-35
CPM 2
CID 48

Rate 360ml/Min

Sampler's Initials

SAMPLE INTEGRITY DATA SHEET

Plant/Site Landsburg Mine Site **Project No.** 923-1000-005.2019

Site Location Ravensdale, WA **Sample ID** LMW-14-0519

Sampling Location Groundwater Monitoring Well End of dedicated sampling tube

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

Type of Sampler Dedicated QED Bladder

Date 5/20/19 **Time** 1535

Media Water **Station** LMW-14

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

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

SWL – 165.52 Stickup 2.90' ags

Screen Interval – 156.5-172.3' bgs

Sand Pack Interval – 152.5-175.8' bgs

Packer Depth – NA ** Depths corrected for 75° inclination

Sample Description clear

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

SEE FIELD PARAMETERS SHEET

Aliquot Amount	Analysis	Container	Preservation / Amount
3 – 40 mL	VOA	VOA Vial	HCl
1 – 500 ml	Total Metals	HDPE	HNO3 (non-filter)
4 – 500 ml, 2 – 40 ml	TPH-HCID	Glass Amber, VOA Vial	HCl
2 – 500 mL	1,4-Dioxane	Glass Amber	none

Sampler (signature) _____ **Date** 5/20/19

Supervisor (signature) _____ **Date** 5-23-19

FIELD PARAMETERS SHEET

Well ID MW-14
Date 5/30/19
Time Begin Purge 1446
Time Collect Sample 1535

Water Level feet bmp	Time	Temp. °C	pH	Conductivity uS/cm	DO mg/L	ORP mV	Turbidity NTU
165.53	1456	10.1	6.77	1234	1.48	-83.4	3.80
165.52	1501	10.0	6.75	1220	1.30	-81.2	3.70
165.52	1506	10.0	6.74	1201	1.17	-80.0	2.81
	1511	~~10.7~~	~~6.75~~	~~1218~~	~~1.22~~	~~78.8~~	
165.52	1516	10.1	6.75	1218	1.22	-78.8	2.64
165.52	1521	10.0	6.73	1170	1.13	-75.9	3.51
165.52	1526	10.0	6.73	1178	0.94	-76.7	2.27
165.52	1531	10.0	6.72	1159	0.88	-78.9	1.59

Comments:

☆ Missed Reading during tank surge @1511

Tank 140 400 mL/min
Throttle 115
CDM 2
CID 47

Sampler's Initials JM

SAMPLE INTEGRITY DATA SHEET

Plant/Site Landsburg Mine Site **Project No.** 923-1000-005.2019

Site Location Ravensdale, WA **Sample ID** LMW-15-0519

Sampling Location Groundwater Monitoring Well End of dedicated sampling tube

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

Type of Sampler Dedicated QED Bladder

Date 5/20/19 **Time** 1400

Media Water **Station** LMW-15

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

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

SWL – 15.28 @ 13:16

Screen Interval –235-245

Sand Pack Interval –231-245

Packer Depth – NA

Sample Description Sulfur odor

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

SEE FIELD PARAMETERS SHEET

Aliquot Amount	Analysis	Container	Preservation / Amount
3 – 40 mL	VOA	VOA Vial	HCl
1 – 500 ml	Total Metals	HDPE	HNO3 (non-filter)
4 – 500 ml, 2 – 40 ml	TPH-HCID	Glass Amber, VOA Vial	HCl
2 – 500 mL	1,4-Dioxane	Glass Amber	none

Sampler (signature) _____ **Date** 5/20/19

Supervisor (signature) _____ **Date** 5-23-19

FIELD PARAMETERS SHEET

Well ID LMW-15
Date 05/20/19
Time Begin Purge 1315
Time Collect Sample 1400

Water Level feet bmp	Time	Temp. °C	pH	Conductivity uS/cm	DO mg/L	ORP mV	Turbidity NTU
151.10	1325	9.3	7.46	350.9	1.21	-142.1	3.48
151.10	1330	9.3	7.49	352.3	0.97	-149.4	3.92
151.10	1335	9.3	7.52	354.0	0.83	-152.2	4.81
151.09	1340	9.3	7.54	354.5	0.76	-163.6	5.96
151.10	1345	9.3	7.55	354.9	0.73	-162.2	6.06
151.09	1350	9.4	7.56	356.2	0.78	-159.7	7.09
151.09	1355	9.5	7.56	356.6	0.82	-157.2	7.15

Comments:

Tank 130
Throttle 110
CPM 2
CID 50

~400 ml/min

1345 change to 1 cpm
CID
to Reduce turb
Throttle 100

Sampler's Initials JM