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**2018 Groundwater Monitoring Report  
Destruction Bay Solid Waste Disposal Facility  
Waste Management Permit No.: 80-009**

**Destruction Bay, YT**

**March 2019  
SLR Ref: 234.01022.00001**



**2018 GROUNDWATER MONITORING REPORT  
DESTRUCTION BAY SOLID WASTE DISPOSAL FACILITY  
WASTE MANAGEMENT PERMIT NO.: 80-009  
Destruction Bay, YT  
SLR Project No.: 234.01022.00001**

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## EXECUTIVE SUMMARY

On behalf of the Yukon Government Site Assessment and Remediation Unit (SARU), SLR Consulting (Canada) Ltd. (SLR) completed two groundwater and surface water monitoring and sampling programs at the Destruction Bay Solid Waste Disposal Facility (the site) in June and September 2018. Groundwater samples were collected from three monitoring wells and from two surface water locations and were analyzed as per the requirements of the Waste Management Permit (WMP) #80-009 (March 2017). Drawings, tables and appendices follow the text for reference.

The results of the groundwater and surface water monitoring and sampling program showed the following:

- The three monitoring wells were in good condition.
- The depth to groundwater ranged from 18.14 to 23.92 mbg (metres below grade) during the September 12, 2018 monitoring event. Groundwater wells were dry during the June 11, 2018 monitoring event.
- The inferred groundwater flow direction is to the east/northeast with an estimated velocity between  $1 \times 10^{-5}$  m/s to  $4 \times 10^{-6}$ . This is consistent with previous studies.
- Groundwater samples were collected from each of the three monitoring wells (DB-MW16-04, DB-MW16-05, DB-MW16-06) during September 2018. No samples were collected during the June 2018 sampling event, because the groundwater wells were dry. The samples were analyzed for the full suite parameters listed in the Section 9.9 of the permit.
- Historically, prior to 2016, Golder inferred groundwater flow direction was to the north (Golder 2015). However, in the most recent Golder and SLR groundwater monitoring events completed in 2016, 2017 and 2018, inferred groundwater flow direction is to the east/northeast. Based on the groundwater contours and inferred flow direction (Drawing 3), none of the existing wells are considered down-gradient from the site.
- One surface water sample was collected from Kluane Lake on June 11, 2018 and one from Lewis Creek on September 14, 2018.
- Based on the results of the 2018 monitoring and sampling program, groundwater quality meets the requirements of Waste Management Permit #80-009 and there is no evidence of landfill leachate impacts to groundwater at the Destruction Bay facility or the surface water collected from Kluane Lake and Lewis Lake.

Recommendations for the groundwater monitoring and sampling program include:

- All wells at the site should be resurveyed using GPS in 2019 to confirm the groundwater flow direction is accurately determined.
- If it is determined that groundwater flow direction is consistently to the north/northeast, installation of a new down-gradient monitoring well should be considered.

- Results of 13 groundwater sampling events conducted since 2012 and the two monitoring events completed in June and September 2018 confirm that concentrations of several parameters including petroleum hydrocarbons and VOCs are not detectable in groundwater collected from any of the four wells during any of the sampling events. Concentrations of several PAH parameters were detectable in one sample in September, however remained below the CSR applicable standards. It is therefore recommended to modify the suite of parameters currently listed in the permit to target landfill leachate indicator parameters, including: total dissolved solids, total organic carbon in surface water, dissolved organic carbon in groundwater water, sulphate, chloride, ammonia, sodium, pH, nitrate, nitrite, dissolved metals in groundwater and total metals in surface water.

The statements made in this Executive Summary are subject to the same limitations included in the Limitations section of this report and are to be read in conjunction with the remainder of this report.

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## LIST OF ACRONYMS

AW	Aquatic Life Water Use (Site Specific)
AWF	Freshwater Aquatic Life use (site specific)
AWM	Marin water Aquatic Life use (site specific)
BETX	Benzene, Ethylbenzene, Toluene, and Xylenes
BFD	Blind Field Duplicate
CCME	Canadian Council of Ministers of the Environment
COC(s)	Contaminant(s) of Concern
COD	Chemical Oxygen Demand
CSR	Contaminated Sites Regulation
DO	Dissolved Oxygen
DOC	Dissolved Organic Carbon
DUP	Duplicate
DW	Drinking Water
EHw <sub>10-19</sub>	extractable petroleum hydrocarbons in water (C <sub>10-19</sub> ), not corrected for PAH constituents
EMA	Environmental Management Act
GPS	Global Positioning System
Ha	Hectares
HASP	Health and Safety Plan
HEPH	Heavy Extractable Petroleum Hydrocarbons
HSVL	Headspace Vapour Level
i	horizontal hydraulic gradient in m/m
IW	Irrigation Water Use (Site Specific)
K	hydraulic conductivity in m/s
LEL	Lower Explosive Limit
LEPH	Light Extractable Petroleum Hydrocarbons
LMDL	Laboratory Method Detection Limit
LTDL	Less Than Detection Limit
LW	Livestock Water Use (Site Specific)
m	Metres
m/s	Metre Per Second
mbg	Metres Below Grade
mbtop	Metres Below Top of Pipe
mm	Millimetres
MTBE	Methyl Tertiary Butyl Ether
MW	Monitoring Well
NAPL	Non-Aqueous Phase Liquid
NA	Not Applicable
NC	Not Calculated
NS	No Standard
NWU	No Water Use (Site Specific)

ORP	Oxidation-Reduction Potential
PAH	Polycyclic Aromatic Hydrocarbons
PHC	petroleum hydrocarbon constituent
PPM	parts per million
PPMV	Parts Per Million by Volume
PVC	Polyvinyl Chloride
QA	Quality Assurance
QC	Quality Control
RPD	Relative Percent Difference
SARU	Yukon Government Site Assessment and Remediation Unit
TDS	Total Dissolved Solids
TKN	Total Kjeldahl Nitrogen
v	Groundwater Velocity in Metre Per Second (m/s)
VH	Volatile Petroleum Hydrocarbons, including BETX
VHw <sub>6-10</sub>	volatile petroleum hydrocarbons in water (C <sub>6-10</sub> ) not corrected for BETX constituents
VPH	Volatile Petroleum Hydrocarbons, excluding BETX
VOC	Volatile Organic Compounds
WMP	Waste Management Permit
YT	Yukon
η	Effective Porosity of Soil



## **1.0 INTRODUCTION**

### **1.1 General**

On behalf of the Yukon Government Site Assessment and Remediation Unit (SARU), SLR Consulting (Canada) Ltd. (SLR) completed two groundwater and surface water monitoring and sampling programs at the Destruction Bay Solid Waste Disposal Facility (the site) in June and September 2018. The objective of the program was to assess current groundwater/surface water conditions, as per the requirements of the Waste Management Permit (WMP) # 80-009 (March 2017). Drawings, tables and appendices follow the text for reference.

### **1.2 Site Location**

The site is in southwestern Yukon along the western shore of Kluane Lake at latitude 61°17' 24" N and longitude 138°51'33" W (Drawing 1). The site is in a former gravel pit on Federal Reserve land, held for the Government of Yukon (Parcel ID. # 115G07-00000-00012), in Ruby Ranges Ecological region, and in Kluane First Nation traditional territory (Golder, 2013). Access to the site is via a gravel road located on the east side of Yukon Highway 1 (Alaska Highway), approximately 265 km northwest of Whitehorse, YT.

### **1.3 Background**

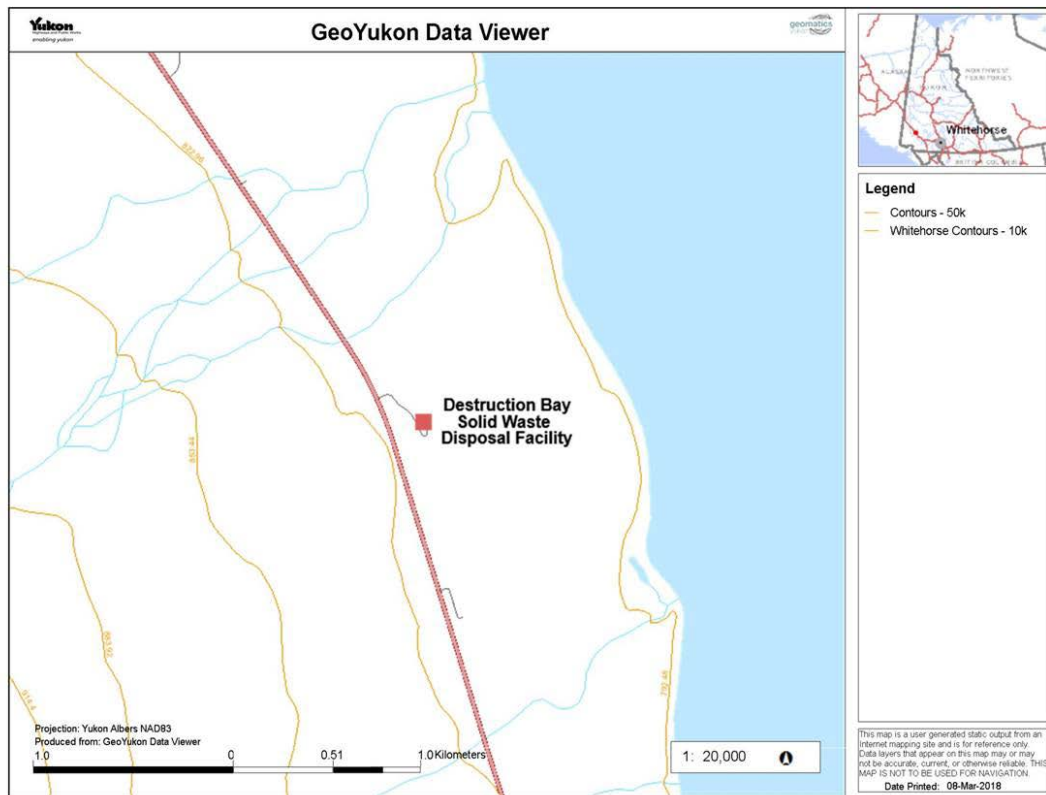
The site is within a former gravel pit and primarily accepts construction debris, demolition debris, and scrap metal including household appliances, waste oil and batteries. As of October 2011, the site serves as a transfer station for domestic waste for the communities of Destruction Bay, Burwash Landing, and nearby Kluane First Nations residents (Golder, 2013).

In accordance with the requirements of Waste Management Permit #80-009 (the permit), Golder Associates (Golder) completed a hydrogeological assessment for the site in 2012 and installed three groundwater monitoring wells for the detection of potential impacts to groundwater from facility operations. Groundwater monitoring requirements stipulated in the permit include collection of samples on a semi-annual basis and analysis for parameters listed in Section 9.9 of the permit.

Since 2012, the semi-annual groundwater monitoring and sampling programs have been completed by: Golder in 2012 and from 2014 to 2016; Hemmera Envirochem Inc. (Hemmera) in 2013; and, SLR in 2017 and 2018. The reports prepared for these groundwater sampling events are referenced in Section 10.0 of this report.

### **1.4 Site Hydrogeology**

The Destruction Bay Solid Waste Disposal Facility (the facility) has an elevation of 815 m above sea level (asl) and is in a gently west to east sloping glacial outwash plain (Golder 2013) as seen in Figure 1-1. The site is in the Kluane Lake watershed, 875 m west of Kluane Lake and 475 m south of Lewis Creek. The regional hydraulic gradient near the site is expected to follow the regional topography, which slopes east/northeast towards Kluane Lake.



**Figure 1-1: Regional Topography of Destruction Bay**

Three groundwater monitoring wells (DB-MW12-01 through DB-MW12-03) were installed at the site in 2012 at depths of between 23.2 and 26.5 metres below grade (mbg). The monitoring wells were decommissioned on August 26, 2016 and three new monitoring wells installed (DB-MW16-04 through DB-MW16-06). Groundwater monitoring well locations are shown on Drawing 2.

The climate normals from the Burwash Airport station (the closest station, approximately 13.5 km to the northwest) indicate the area receives a relatively low amount of precipitation of approximately 274 millimetres (Environment Canada, 2018). This suggests that infiltration of precipitation through the facility waste and soil to the ground water aquifer below is relatively low. The site is estimated to have 50% to 60% probability of continuous permafrost in the soil (Bonnaventure, PP, 2012). The depth and thickness of the layer are not known and no permafrost was encountered during the 2012 or 2016 drilling programs (Golder, 2013 & 2017).

## 2.0 SCOPE OF WORK

As per the approved scope of work, SLR conducted the following:

- Developed a site-specific Health and Safety Plan (HASP) in accordance with Yukon Occupational Health and Safety Regulations.
- Reviewed the applicable solid waste permits and other relevant documents.
- Reviewed all available historical data from previous sampling events, compared to current applicable standards, and updated the data tables.
- Attended a project start-up meeting with the Contract Project Manager.
- Identified the location of the wells through Global Positioning System (GPS) coordinates and inspected the monitoring wells for their condition.
- Conducted well repair(s) as needed.
- Monitored for presence/absence of non-aqueous phase liquids (NAPL) in the monitoring wells.
- Measured depth to groundwater and depth to the bottom of the monitoring wells, below the top of the PVC casing.
- Monitored groundwater field parameters including temperature, pH, conductivity, dissolved oxygen (DO), Oxidation-Reduction Potential (ORP), total dissolved solids (TDS), odour, and colour.
- Collected groundwater samples using low-flow sampling methods in accordance with Protocol 7<sup>1</sup> of the Yukon (YT) Contaminated Sites Regulation (CSR), along with collected surface water samples from Kluane Lake and Lewis Creek.
- Submitted the water samples to CARO Analytical Services (CARO), of Richmond, BC for laboratory analyses in accordance with the applicable permit and all protocols and guidance under the Yukon CSR.
- Collected field duplicates and submitted the duplicated sample along with travel blank sample analysis for QA/QC purposes.
- Provided email updates of the field activities to the Contract Project Manager.
- Prepared this technical report detailing the results of the monitoring.

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<sup>1</sup> Environment Yukon. Protocol for the Contaminated Sites Regulation under the *Environment Act*. Protocol No. 7. Groundwater Monitoring Well Installation, Sampling and Decommissioning.

### 3.0 REGULATORY STANDARDS

Numerical standards for substances in water in the CSR are presented in Schedule 3. The numerical standards are referenced to four classes of water use: Aquatic Life (AW), Irrigation (IW), Livestock (LW), and Drinking Water (DW).

Yukon Environment Protocol No. 6<sup>2</sup> specifies that AW, DW, IW and LW standards generally apply for the evaluation of groundwater quality where receiving waters are used by aquatic life are located within 1.5 km radius, potable water wells or intakes are present on the site or within a 1 km radius, where groundwater is used for irrigation or livestock watering within 1.5 km radius, respectively. Site-specific aspects of the applicable water use standards are noted below.

In addition, YT CSR Schedule 3 water quality standards for volatile hydrocarbons and light extractable hydrocarbons (VHw<sub>6-10</sub> and EHw<sub>10-19</sub>, respectively) apply to all sites in Yukon irrespective of water use.

#### 3.1 Aquatic Life

A review of Google Earth imagery and GeoYukon data viewer by SLR on November 14, 2018, indicated Lewis Creek is approximately 475 m to the northwest of the site and Kluane Lake is approximately 875 m to northeast of site (shortest distance). Therefore, YT CSR freshwater AW standards (AWF) are applicable to the site.

#### 3.2 Drinking Water

A review of the Groundwater Information Network by SLR on November 14, 2018 indicated no there are no registered drinking water wells in a 1.5 km radius of the site. A review of Google Earth imagery and GeoYukon data viewer indicates the closest community, Destruction Bay, YT, is located approximately 5 km southeast of the site. Therefore, YT CSR DW standards are not applicable to the site.

#### 3.3 Irrigation

A review of the Groundwater Information Network by SLR on November 14, 2018, indicated there were no wells listed for irrigation use or otherwise, within a 1.5 km radius of the site. A review of Google Earth imagery and GeoYukon data viewer indicates there is no apparent agricultural land use within 1.5 km as of 2010 satellite imagery. Therefore, YT CSR IW standards are not applicable to the site.

#### 3.4 Livestock

A review of the Groundwater Information Network by SLR on November 14, 2018, indicated there were no wells listed, for livestock watering or otherwise, within a 1.5 km radius of the site. A review of Google Earth imagery and GeoYukon data viewer indicated there were no apparent livestock agricultural land use within 1.5 km as of 2010 satellite imagery. Therefore, YT CSR LW standards are not applicable to the site.

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<sup>2</sup> *Application of Water Quality Standards*. Protocol No. 6 for the Contaminated Sites Regulation, OIC 2002/171, under the Environment Act.

## **4.0 FIELD METHODOLOGIES**

### **4.1 Groundwater and Surface Water Monitoring**

On June 11 and September 12, 2018, SLR inspected well conditions prior to conducting field measurements and/or collecting groundwater samples.

Monitoring wells were monitored for depth to NAPL (if any) and for depth to groundwater using a Heron probe. Between measurements, the interface probe was cleaned using a solution of distilled water and Alconox and then rinsed with distilled water to prevent cross-contamination.

As Lewis Creek was dry in June 2018, the surface water monitoring point at Kluane Lake was observed on June 11, 2018 for evidence of sheen related to petroleum hydrocarbons. In addition, surface water pH, specific conductance, temperature, ORP, dissolved oxygen and total dissolved solids were measured prior to sampling. On September 12, 2018 the surface water monitoring point at Lewis Creek was observed for evidence of sheen related to petroleum hydrocarbons and pH, specific conductance, temperature, ORP, dissolved oxygen and total dissolved solids were measured prior to sampling.

### **4.2 Groundwater and Surface Water Sampling**

Groundwater monitoring wells were sampled using a low flow method. Due to the depth of the groundwater table (> 9 mbg) groundwater samples were collected using a bladder pump. Prior to the collection of a groundwater sample, the well was purged by the field parameter stabilization method. Field parameters (temperature, pH, conductivity, DO, ORP, and TDS) were monitored using a handheld multi-parameter instrument (YSI Professional Plus with Quattro) with a flow-through cell.

Purging is considered complete when pH, temperature, and conductivity have stabilized. Stabilization is defined by three successive readings that meet the following requirements:

- pH:  $\pm 0.2$  units;
- temperature:  $\pm 0.1^{\circ}\text{C}$ ;
- Conductivity:  $\pm 3\%$ ;
- ORP:  $\pm 20$  mV; and
- DO:  $\pm 0.2$  mg/L.

Groundwater and surface water samples were placed in laboratory-prepared glass or plastic bottles with appropriate preservatives, where required, and stored in an ice-filled cooler. The samples and completed Chain-of-Custody forms were subsequently transported to CARO via Air North Cargo.

### **4.3 Analytical Tests**

As per the WMP #80-009 requirements and in accordance with CSR Protocols 2 and 5, groundwater and surface water samples collected in June and September 2018 were submitted to CARO for analysis of one or more of the following parameters:

- Major Ions (calcium, magnesium, sodium, potassium, chloride, sulphate, nitrite nitrogen, nitrite nitrogen, phosphate);

- Dissolved Metals, including mercury;
- Total metals, including mercury<sup>3</sup>;
- Hardness;
- Alkalinity;
- Carbonate;
- Bicarbonate;
- pH;
- Specific Conductance;
- TDS;
- Ammonia;
- Dissolved Organic Carbon (DOC);
- Total Organic Carbon (TOC)<sup>3</sup>;
- Volatile Organic Compounds (VOC);
- Volatile Petroleum Hydrocarbons (VPH);
- Biological Oxygen Demand (BOD)<sup>3</sup>;
- Chemical Oxygen Demand (COD);
- EH<sub>w10-19</sub> - extractable petroleum hydrocarbons in water (C10-19), not corrected for PAH constituents;
- VH<sub>w6-10</sub> - volatile petroleum hydrocarbons in water (C6-10) not corrected for BETX constituents;
- BETX - benzene, ethylbenzene, toluene, xylenes; and
- PAH - polycyclic aromatic hydrocarbons.

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<sup>3</sup> Parameter was only analyzed for in surface water samples

## 5.0 MONITORING AND SAMPLING RESULTS

### 5.1 Groundwater and Surface Water Field Observations

On June 11 and September 12, 2018, SLR monitored existing wells for standpipe HSVLs, depth to groundwater, and for the presence/absence of NAPL. A surface water sample was collected from Kluane Lake on June 11, 2018 and from Lewis Creek on September 14, 2018. The field observations are presented in Table 1 and are summarized as follows:

- Lewis Creek was dry on June 11, 2018.
- The depth to groundwater ranged from 796.95 metres above sea level (masl) in DB-MW16-05 on September 12, 2018 to 794.78 masl in DB-MW16-05 on June 11, 2018.
- NAPL was not observed in any of the monitored wells and no visible sheen was noted in the surface water samples.

Groundwater monitoring and sampling field sheets are included in Appendix A.

### 5.2 Groundwater Flow Direction and Velocity

Based on the groundwater levels measured on September 11, 2018, the inferred groundwater flow direction is to the east/northeast with an average horizontal hydraulic gradient of 0.007 m/m, which is consistent with the 2017 calculated gradient of 0.005 m/m (SLR, 2018). The inferred groundwater flow direction is based on three monitoring points; local variation of groundwater flow direction is expected. Single well response tests performed by others in 2012 and 2016 indicated the hydraulic conductivity of the shallow aquifer underlying the site ranged from approximately  $2 \times 10^{-4}$  m/s to  $5 \times 10^{-4}$  m/s (Golder, 2017). The range of hydraulic conductivities calculated is in the expected range for the sand and gravel stratigraphy encountered at the site.

The average linear groundwater velocity was calculated using the following equation based on Darcy's Law (Domenico and Schwartz, 1990):

$$v = (Ki)/\eta$$

where:  $v$  is the groundwater velocity in metre per second (m/s)  
 $K$  is the hydraulic conductivity in m/s as determined by past slug tests  
 $i$  is the horizontal hydraulic gradient in m/m  
 $\eta$  is the effective porosity of the soil, estimated to be 35% for sand and gravel

The calculated groundwater velocity is estimated to be approximately  $1 \times 10^{-5}$  m/s to  $4 \times 10^{-6}$  m/s (125 m/year to 315 m/year). This is consistent with past year's estimates. Groundwater may flow faster or slower than this estimate due to seasonal variations.

Historically, prior to 2016, Golder inferred groundwater flow was to the north. However, in the most recent Golder and SLR groundwater monitoring events, groundwater appears to be flowing to the east/northeast. Based on the groundwater contours and inferred flow direction (Drawing 3), none of the existing wells are considered down-gradient. All wells at the site should

be resurveyed in 2019 to confirm the groundwater flow direction is accurately determined. If it is determined that groundwater flow direction is consistently to the north/northeast, installation of a new down-gradient monitoring well should be considered.

### 5.3 Groundwater and Surface Water Analytical Results

Thirteen groundwater and surface water sampling events have been conducted since 2012: August 2012 by Golder, July and September 2013 by Hemmera, August and October 2014 by Golder, July and September 2015 by Golder, June and September 2016 by Golder, and August and September 2017 by SLR. In June and September 2018, SLR completed two groundwater sampling events to satisfy WMP #80-009 requirements.

Three groundwater samples and one duplicate sample were collected during the September 2018 event and submitted for chemical analysis. All groundwater wells were dry during June, 2018, and no samples were collected. Lewis Creek was dry in June 2018; therefore, one surface water sample was collected from Kluane Lake during the June 11, 2018 event and one surface water sample collected from Lewis Creek during the September 14, 2018 event. Groundwater analytical data and surface water analytical data are presented in Tables 2 through 9 attached. Copies of the laboratory analytical reports are included in Appendix B.

#### 5.3.1 Landfill Leachate Indicator Parameter Concentrations

To identify the potential for contamination of groundwater and surface water with landfill leachate, the available data for 12 landfill leachate indicator parameters (ammonia, chloride, iron, manganese, magnesium, nitrate, nitrite, sodium, sulphate, TDS, pH, and DOC) are summarized in the following table and discussed in the following sections.

**Table 5-1: 2018 Groundwater Analytical Results  
– Leachate Indicator Parameters (µg/L)**

Sample ID	DB-MW16-04	DB-MW16-05	DB-MW16-06		DB-Kluane Lake	DB-Lewis Creek
Date	13-Sep-18	13-Sep-18	13-Sep-18	13-Sep-18 / DB-DUP1	11-Jun-18	14-Sep-18
pH	7.75	7.34	7.72	7.65	7.76	7.94
Ammonia (mg/L)	0.034	0.060	0.025	0.050	< 0.020	0.074
Chloride (mg/L)	0.75	0.63	2.30	2.26	1.60	0.26
Dissolved Iron (µg/L)	< 10	< 10	< 10	< 10	--	--
Total Iron (µg/L)	--	--	--	--	768	6620
Dissolved Magnesium (mg/L)	39.9	36.4	36.0	35.9	--	--
Total Magnesium (mg/L)	--	--	--	--	12.5	42.6
Dissolved Manganese (µg/L)	0.45	1.43	0.45	0.47	--	--
Total Manganese (µg/L)	--	--	--	--	19.7	134



**Table 5-1: 2018 Groundwater Analytical Results  
– Leachate Indicator Parameters (µg/L)**

Sample ID	DB-MW16-04	DB-MW16-05	DB-MW16-06		DB-Kluane Lake	DB-Lewis Creek
Date	13-Sep-18	13-Sep-18	13-Sep-18	13-Sep-18 / DB-DUP1	11-Jun-18	14-Sep-18
Dissolved Sodium (mg/L)	7.26	7.42	7.38	7.32	--	--
Total Sodium (mg/L)	--	--	--	--	3.11	10.8
Nitrate (mg/L)	0.361	0.337	0.385	0.379	< 0.010	0.213
Nitrite (mg/L)	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Sulphate (mg/L)	211	216	207	208	58.8	260
Total Dissolved Solids (mg/L)	436	444	433	437	177	489
Dissolved Organic Carbon (mg/L)	1.04	0.76	1.630	0.90	--	--
Total Organic Carbon (mg/L)	--	--	--	--	1.62	3.05

#### 5.3.1.1 Ammonia

The concentrations of ammonia in groundwater in 2018 range from 0.025 mg/L in DB-MW16-06 to 0.060 mg/L in DB-MW16-05. Ammonia concentrations were slightly elevated in 2018 but comparable to the concentrations during the sampling events in 2012 to 2017 (ranging from non-detectable to a maximum of 0.020 mg/L), and significantly below the standard for protection of freshwater aquatic life (AWF) (11.3 mg/L at pH 7.5 to 8).

Therefore, the ammonia concentrations in groundwater from the wells sampled are not indicative of landfill leachate.

#### 5.3.1.2 Chloride

Chloride concentrations in groundwater measured in 2018 ranged between 0.63 mg/L at DB-MW16-04 and 2.3 mg/L at DB-MW16-06. Chloride concentrations in groundwater from DB-MW16-04 and DB-MW16-05 remain low. Concentrations of chloride in groundwater from DB-MW16-06 have remained generally consistent since 2016.

Therefore, the chloride concentrations in groundwater from the wells sampled are not indicative of landfill leachate.

#### 5.3.1.3 *Iron*

Iron concentrations in groundwater are consistently low, decreasing at DB-MW16-04 and DB-MW16-05 to below the laboratory method detection limit (LMDL) of 10 µg/L. Concentrations of iron in groundwater at DB-MW16-06 have remained <10 µg/L since 2016. There are no CSR AW standards for iron and iron concentrations are an order of magnitude lower than the most stringent CSR water quality standard, the DW standard of 300 µg/L.

Therefore, the iron concentrations in groundwater from the wells sampled are not indicative of landfill leachate.

#### 5.3.1.4 *Magnesium*

Magnesium concentrations in groundwater have been generally consistent, ranging from 35.8 mg/L to 39.9 mg/L in the newer wells (MW16 series) and ranging from 26.9 mg/L to 30.1 mg/L in the historical decommissioned wells (MW12 series). Concentrations of magnesium in groundwater from all wells are comparable, with no evidence of elevated magnesium concentrations. The magnesium concentrations are not inferred to be due to landfill leachate.

#### 5.3.1.5 *Manganese*

Manganese concentrations in groundwater at the site have been consistent. Following the installation of the new monitoring wells in 2016, manganese concentration were higher than previously measured, and have continued to decrease to concentrations similar to the MW12 series monitoring wells. The detectible manganese concentrations in groundwater from the wells sampled are not inferred to be due to landfill leachate.

#### 5.3.1.6 *Nitrate and Nitrite*

Nitrite concentrations in groundwater continued to be less than the LMDL (< 0.01 mg/L) in all wells at the site.

The nitrate concentrations have remained consistently low (ranging from 0.337 mg/L at DB-MW16-05 to 0.385 mg/L at DB-MW16-06) and remain below the CSR AWF standard of 400 mg/L. The nitrate concentrations are noted to be similar in all monitoring wells at the site. Therefore, the nitrate concentrations in groundwater from the wells sampled are not indicative of landfill leachate.

#### 5.3.1.7 *Sodium*

Sodium concentrations in groundwater have been consistent since 2012 and comparable between all the groundwater wells. The concentrations have generally ranged between 7.2 and 8.41 mg/L, except for concentrations of 21.8 and 22.0 mg/L in DB-MW16-05 in 2016. Sodium concentrations at DB-MW16-05 in 2017 and 2018 were within the historical range of sodium concentrations at the site and continued to decrease in the September 2018 event. There are no CSR AW standards for sodium, and sodium concentrations in groundwater from all wells are a lower than the most stringent CSR water quality standard, the DW standard of 200 mg/L. Therefore, the sodium concentrations in groundwater from the wells sampled are not indicative of landfill leachate.

#### 5.3.1.8 *Sulphate*

Sulphate concentrations in groundwater have been consistent (ranging from 171 to 218 mg/L) since 2012. The concentrations were slightly higher in the September 2018 event at DB-MW16-04 and DB-MW16-05 (211 and 216 mg/L, respectively), but remain below the CSR AW standard of 1,000 mg/L and are low compared with the most stringent CSR standard of 500 mg/L for drinking water use.

The sulphate concentrations in groundwater from the wells sampled are therefore not indicative of landfill leachate.

#### 5.3.1.9 *Total Dissolved Solids*

TDS concentrations in 2018 ranged from 433 to 444 mg/L and are consistent with historical data. The TDS concentrations in groundwater from the wells sampled are therefore not indicative of landfill leachate

#### 5.3.1.10 *pH*

Levels of pH in groundwater at the site have been consistently between 7.7 and 8.1 since monitoring began in 2012 and therefore not indicative of landfill leachate (typically more acidic pH levels).

#### 5.3.1.11 *Dissolved Organic Carbon*

Dissolved Organic Carbon concentrations in groundwater have remained consistent (ranging between <0.5 and 2.6 mg/L since 2012). Concentrations of DOC in September 2018 were within the historical range for the site.

The dissolved organic carbon concentrations in groundwater from the wells sampled are therefore not indicative of landfill leachate.

### 5.3.2 ***Metals Concentrations***

Groundwater concentrations of dissolved metals reported since 2012 show comparable results between the monitoring wells. The concentrations of dissolved metals in groundwater from the wells sampled are generally low indicating naturally occurring levels in groundwater and therefore not indicative of landfill leachate.

### 5.3.3 ***Petroleum Hydrocarbons and VOCs Concentrations***

Since 2012, concentrations of BTEX, VPH<sub>w6-10</sub>, VH<sub>w6-19</sub>, EH<sub>w10-19</sub>, LEPHW, and VOCs have not been detectable in groundwater collected from either the three decommissioned wells (2012 series) or the three current monitoring wells (2016 series).

Several PAH parameters (benz(a)anthracene, benzo(a)pyrene, benzo(g,h,i)perylene, benzo(k)fluoranthene, benzo(b+j)fluoranthenes, chrysene, dibenz(a,h)anthracene, and indeno(1,2,3-c,d)pyrene) had detectable results at DB-MW16-05 but remained below the CSR AWF standards.

Petroleum hydrocarbon and chlorinated organic parameters are therefore not a concern for groundwater quality at the site.

#### **5.3.4 Surface Water Sampling**

The analytical results from the surface water sample collected from Kluane Lake on June 11, 2018 indicates no parameters exceed the CSR AW standards, and are comparable to the concentrations from the sample collected in September 2017. Petroleum hydrocarbons parameters were below the analytical method detection limits.

The analytical results from the surface water sample collected from Lewis Creek on September 14, 2018 meet the CSR AWF standards, except for cadmium, cobalt, copper, selenium, titanium, and sulphate. Since the dissolved metals concentrations in groundwater onsite meet the YT CSR AWF standards, the surface water metals concentrations are unlikely to be a result of site activities and may be related to regional background concentrations/geochemistry. The concentrations from the September 2018 event are consistent or lower than the June 2016 sampling event.

## **6.0 QUALITY ASSURANCE/QUALITY CONTROL (QA/QC)**

A quality assurance and quality control (QA/QC) program was followed to ensure that the sampling and analytical data were interpretable, meaningful and reproducible. Two stages of QA/QC were completed: one by CARO and the other as part of field procedures performed by SLR.

The samples were analyzed by CARO Analytical Services of Burnaby, BC. CARO is a Canadian Association for Laboratory Accreditation (CALA) accredited laboratory that use Environment Yukon recognized methods to conduct laboratory analyses.

As conveyed by the laboratory, method blanks, control standards samples, certified reference material (CRM) standards, method spikes, replicates, duplicates and instrument blanks are routinely analyzed as part of their QA/QC programs.

SLR followed standardized field procedures to maintain consistency in data collection and prevent cross-contamination, e.g., nitrile gloves were replaced between samples. The procedures adopted were based on generally accepted environmental engineering practices and Government of Yukon guidelines for site characterization.

SLR submitted one groundwater blind field duplicate sample for laboratory analysis for each monitoring event. The relative percent difference (RPD – the absolute difference between the two values, divided by the mean) of duplicate analyses is used to evaluate the sample result variability. The RPD is not calculated when the concentration of a parameter is less than five times the laboratory method detection limit.

The results of the QA/QC investigation are summarized in the laboratory analytical data, included in Table 10 attached. The RPDs were within SLR's internal acceptance criteria. To be conservative, SLR relied on the higher concentrations for each of the parameters in the duplicate set. The overall QA/QC results indicate an acceptable quality of sample collection.

One trip blank sample was also submitted for laboratory analysis during the September 2018 event. The analytical results indicated that no VOC constituent was detected (Table 11).

Based on these QA/QC results, the data collected from the investigations can be relied upon.

## 7.0 CONCLUSIONS AND RECOMMENDATIONS

On behalf of the Yukon Government Site Assessment and Remediation Unit (SARU), SLR Consulting (Canada) Ltd. (SLR) completed two groundwater and surface water monitoring and sampling events at the Destruction Bay Solid Waste Disposal Facility (the site) in June and September 2018. Groundwater samples were collected from three monitoring wells and from two surface water locations and were analyzed as per the requirements of the Waste Management Permit (WMP) #80-009 (March 2017).

### 7.1 Conclusions

The results of the groundwater monitoring and sampling program showed the following:

- The three monitoring wells are in good condition.
- The inferred groundwater flow direction is to the east/northeast with an estimated velocity between  $1 \times 10^{-5}$  m/s to  $4 \times 10^{-6}$ . This is consistent with previous studies.
- Headspace vapour level measurements were below detection limits at all three wells and non-aqueous phase liquids (NAPL) were not observed in any of the monitoring wells.
- Groundwater samples were collected from each of the three monitoring wells (DB-MW16-04, DB-MW16-05, DB-MW16-06) during September 2018. No samples were collected during the June 2018 sampling event, because the groundwater wells were dry. The samples were analyzed for the full suite parameters listed in the Section 9.9 of the permit, including leachate indicators, dissolved metals, petroleum hydrocarbons, PAHs and VOCs. The results of analysis showed that concentrations of chemical parameters in groundwater from each of the three monitoring wells were:
  - Either not detectible or at low concentrations indicative of naturally occurring groundwater conditions.
  - Present at concentrations that have remained consistent since groundwater sampling began in 2012. Detectible concentrations are comparable at all well locations.
- Historically, prior to 2016, Golder inferred groundwater flow direction was to the north (Golder 2015). However, in the Golder and SLR groundwater monitoring events completed in 2016, 2017 and 2018, inferred groundwater flow direction is to the east/northeast. Based on the groundwater contours and inferred flow direction (Drawing 3), none of the existing wells are considered down-gradient from the site.
- One surface water sample was collected from Kluane Lake on June 11, 2018 and one from Lewis Creek on September 14, 2018.
- Based on the results of the 2018 monitoring and sampling program, groundwater quality meets the requirements of Waste Management Permit #80-009 and there is no evidence of landfill leachate impacts to groundwater at the Destruction Bay facility or the surface water collected from Kluane Lake and Lewis Lake.

## 7.2 Recommendations

Recommendations for the groundwater monitoring and sampling program include:

- All wells at the site should be resurveyed using GPS in 2019 to confirm the groundwater flow direction is accurately determined.
- If it is determined that groundwater flow direction is consistently to the north/northeast, installation of a new down-gradient monitoring well should be considered.
- Results of 13 groundwater sampling events conducted since 2012 and the 2 monitoring events completed in June and September 2018 confirm that concentrations of several parameters including petroleum hydrocarbons, and VOCs are not detectable in groundwater collected from any of the three wells during any of the sampling events. Concentrations of several PAH parameters were detectable in one sample in September, however remained below the CSR applicable standards. It is therefore recommended to modify the suite of parameters currently listed in the permit to target landfill leachate indicator parameters, including: TDS, TOC in surface water, DOC in groundwater water, sulphate, chloride, ammonia, sodium, pH, nitrate, nitrite, dissolved metals in groundwater and total metals in surface water.

## 8.0 SITE-SPECIFIC MONITORING PLAN

The site-specific monitoring plan is recommended as follows:

**Table 8-1: Site-Specific Monitoring Plan**

Well ID	Classification <sup>1</sup>	Recommendation	Analytical Suite
DB-MW16-04	Cross-gradient	Semi-annual sampling for landfill leachate indicator parameters	Landfill Leachate Indicators <sup>2</sup>
DB-MW16-05	Cross-gradient	Semi-annual sampling for landfill leachate indicator parameters	Landfill Leachate Indicators
DB-MW16-06	Cross-gradient	Semi-annual sampling for landfill leachate indicator parameters	Landfill Leachate Indicators
Lewis Creek	Surface Water	Semi-annual sampling for landfill leachate indicator parameters	Landfill Leachate Indicators
Kluane Lake	Surface Water	Semi-annual sampling for landfill leachate indicator parameters if Lewis Creek is dry	Landfill Leachate Indicators

Notes: <sup>1</sup> Classification of the monitoring wells is based on the groundwater flow direction in relation the site.

<sup>2</sup> Landfill Leachate Indicators include: TDS, DOC, sulphate, chloride, ammonia, sodium, pH, nitrate, nitrite and dissolved metals in groundwater and total metals in surface water

## 9.0 STATEMENT OF LIMITATIONS

This report has been prepared and the work referred to in this report has been undertaken by SLR for Environment Yukon Site Assessment and Remediation Unit (SARU) and completed in compliance with Contract Number SARU-2017-SOA-SLR and Call up #C00039877. Under the Environment Yukon SARU Standing Offer SARU-2017-SOA-SLR, Environment Yukon SARU has the exclusive right to copy and redistribute this report.

This report has been prepared for specific application to this site and site conditions existing at the time work for the report was completed. Any conclusions or recommendations made in this report reflect SLR's professional opinion based on limited investigations including: visual observation of the site, surface and subsurface investigation at discrete locations and depths, and laboratory analysis of specific chemical parameters. The results cannot be extended to previous or future site conditions, portions of the site that were unavailable for direct investigation, subsurface locations which were not investigated directly, or chemical parameters and materials that were not addressed. Substances other than those addressed by the investigation may exist within the site; and substances addressed by the investigation may exist in areas of the site not investigated in concentrations that differ from those reported. SLR does not warranty information from third party sources used in the development of investigations and subsequent reporting.

Nothing in this report is intended to constitute or provide a legal opinion. SLR expresses no warranty to the accuracy of laboratory methodologies and analytical results. SLR makes no representation as to the requirements of compliance with environmental laws, rules, regulations or policies established by federal, provincial or local government bodies. Revisions to the regulatory standards referred to in this report may be expected over time. As a result, modifications to the findings, conclusions and recommendations in this report may be necessary.

Environment Yukon SARU may submit this report to the Environment Yukon and/or related Yukon environmental regulatory authorities or persons for review and comment purposes.



## 10.0 REFERENCES

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5. Destruction Bay\1 - Destruction Bay 2018 GW Report\_2019-03-11.docx

## **TABLES**

2018 Groundwater Monitoring Report  
Destruction Bay Solid Waste Disposal Facility  
Waste Management Permit No.: 80-009  
Destruction Bay, YT  
SLR Project No.: 234.01022.00001

**TABLE 1: GROUNDWATER OBSERVATIONS**

Monitoring Zone	Monitoring Well ID	Well Screen Interval (mbg)	T.O.C. Elevation	Date	Depth to Water (below T.O.C)	Depth to Water (below grade)	LNAPL Thickness (mm)	Groundwater Elevation
Destruction Bay SWF	DB-MW16-04	16.5 - 19.5	814.75	2016-Sep-27	16.70	n.m	-	798.05
				2017-Sep-1	17.58	n.m	-	797.17
				2017-Sep-21	18.16	n.m	-	796.59
				2018-Jun-11	dry	dry	-	dry
				2018-Sep-12	18.14	n.m	-	796.61
Destruction Bay SWF	DB-MW16-05	19.1 - 23.6	819.16	2016-Sep-27	20.73	n.m	-	798.43
				2017-Sep-1	21.67	n.m	-	797.49
				2017-Sep-21	22.30	n.m	-	796.86
				2018-Jun-11	24.38	n.m	-	794.78
				2018-Sep-12	22.21	n.m	-	796.95
Destruction Bay SWF	DB-MW16-06	20.6 - 25.2	820.69	2016-Sep-27	21.96	n.m	-	798.73
				2017-Sep-1	23.22	n.m	-	797.47
				2017-Sep-21	23.70	n.m	-	796.99
				2018-Jun-11	25.89	n.m	-	794.80
				2018-Sep-12	23.92	n.m	-	796.77
Destruction Bay SWF	DB-MW12-01	23.5 - 26.5	817.94	2012-Aug-23	19.98	n.m	-	797.96
				2013-Jul-24	21.45	n.m	-	796.49
				2013-Sep-24	20.07	n.m	-	797.87
				2014-Aug-23	22.49	n.m	-	795.45
				2014-Oct-8	22.06	n.m	-	795.88
				2015-Jul-28	24.51	n.m	-	793.43
				2015-Sep-25	21.20	n.m	-	796.74
				2016-Jun-22	24.18	n.m	-	793.76
Destruction Bay SWF	DB-MW12-02	20.1 - 23.2	812.91	2012-Aug-23	15.35	n.m	-	797.56
				2013-Jul-24	16.81	n.m	-	796.10
				2013-Sep-24	16.64	n.m	-	796.27
				2014-Aug-23	17.92	n.m	-	794.99
				2014-Oct-8	17.58	n.m	-	795.33
				2015-Jul-28	20.90	n.m	-	792.01
				2015-Sep-25	16.51	n.m	-	796.40
Destruction Bay SWF	DB-MW12-03	22.6 - 25.6	814.92	2012-Aug-23	17.31	n.m	-	797.61
				2013-Jul-24	18.73	n.m	-	796.19
				2013-Sep-24	17.47	n.m	-	797.45
				2014-Aug-23	19.78	n.m	-	795.14
				2014-Oct-8	19.39	n.m	-	795.53
				2015-Jul-28	21.73	n.m	-	793.19
				2015-Sep-25	18.48	n.m	-	796.44
				2016-Jun-22	21.40	n.m	-	793.52

**Notes:**

m - metres

n.m. - not measured

ppmv - parts per million by volume

LTDL - less than detection limit of combustible vapour monitoring instrument

LNAPL - light non-aqueous phase liquid

TOC - top of monitoring well casing

**TABLE 2: GROUNDWATER/ SURFACE WATER -  
FIELD MEASUREMENTS**

Field					
Temp (Field)	pH (Field)	EC (field)	TDS (Field)	ORP	DO (Field)
oC	pH_Units	µS/cm	mg/L	mV	mg/L

Site ID	Site Area	Sample Location	Well Screen Depth (mbg)	Sample Date	Sample ID						
SARU - Yukon Group 3 SWF	Destruction Bay SWF	DB-MW16-04	16.5-19.5	2016-Sep-27	7734-03	3.29	7.78	674	-	-76.1	13.29
				2017-Sep-1	DB-MW16-04	4.43	7.9	658	-	175.3	14.09
				2017-Sep-21	DB-MW16-04	3.9	7.96	708.3	460.2	79.2	11.8
					DB-DUP1	3.9	7.96	708.3	460.2	79.2	11.8
		DB-MW16-05	19.1-23.6	2018-Sep-13	DB-MW16-04	3.66	7.81	681	-	164.3	11.85
				2016-Sep-27	7734-01	3.45	7.8	709	-	-76.1	11.94
					7734-02	3.45	7.8	709	-	-76.1	11.94
				2017-Aug-31	DB-MW16-05	3.95	8	676	-	194.9	12.44
					DB-DUP1	3.95	8	676	-	194.9	12.44
				2017-Sep-21	DB-MW16-05	3.8	7.95	717.6	466.7	80	11.2
				2018-Sep-13	DB-MW16-05	3.8	7.77	685	-	140.9	11.22
		DB-MW16-06	20.6-25.2	2016-Sep-27	7734-04	3.14	7.8	684	-	-75	11.66
				2017-Aug-31	DB-MW16-06	4.25	8	671	-	190.7	12.13
				2017-Sep-21	DB-MW16-06	3.3	7.9	706.2	458.9	64.5	11.12
				2018-Sep-12	DB-MW16-06	4.45	7.84	679	-	129.5	10.71
		DB-MW12-01	23.5-26.5		DB-DUP1	4.45	7.84	679	-	129.5	10.71
				2012-Aug-23	L1199825-10	4.3	7.81	609	-	-	-
				2014-Aug-23	20720-02	8.88	7.62	1370	-	-75.9	13.15
				2014-Oct-8	20724-04	3.34	7.85	963	-	-52.4	11.89
				2015-Jul-28	7608-03	3.93	7.55	850	-	-68.5	11.31
					7608-04	3.93	7.55	850	-	-68.5	11.31
				2015-Sep-25	7624-05	3.56	7.74	576	-	145	12.57
					7694-02	4.14	7.69	552	-	-53.6	12.32
				2016-Jun-22	7694-03	4.14	7.69	552	-	-53.6	12.32
SARU - Yukon Group 3 SWF	Destruction Bay SWF	DB-MW12-02	20.1-23.2	2012-Aug-23	L1199825-11	5.1	7.87	572	-	-	-
				2014-Aug-23	20720-03	5.1	7.52	1377	-	-69.9	9.92
					20720-04	5.1	7.52	1377	-	-69.9	9.92
				2014-Oct-8	20724-01	3.26	7.83	965	-	-51.7	11.27
					20724-02	3.26	7.83	965	-	-51.7	11.27
				2015-Jul-28	7608-01	4	7.43	850	-	-62.2	12.46
				2015-Sep-25	7624-02	3.74	7.76	576	-	21	11.84
					7624-03	3.74	7.76	576	-	21	11.84
		DB-MW12-03	22.6-25.6	2012-Aug-23	L1199825-12	5.5	7.9	580	-	-	-
				2014-Aug-23	20720-05	6.56	7.65	1365	-	-76.8	13.92
				2014-Oct-8	20724-03	3.44	7.43	968	-	-29	11.65
				2015-Jul-28	7608-02	3.9	7.6	577	-	-71.7	11.41
				2015-Sep-25	7624-04	3.72	7.73	848	-	-24.8	11.2
				2016-Jun-22	7694-01	4.16	7.69	548	-	-52.7	12.5
				Surface Water							
		DB-Lewis Creek	-	2015-Sep-25	7624-01	1.12	7.6	743	12	-98.4	10.28
				2016-Jun-21	7694-04	10.68	8.08	534	-	-77.6	13.18
				2018-Sep-14	DB-Lewis Creek	3.68	8.17	695	-	121.5	12.05
		DB-Kluane Lake	-	2017-Sep-21	DB-Kluane Lk	9	8.22	280.9	-	119.2	9.17
				2018-Jun-11	DB-Kluane Lake	9	8.34	292.1	192.4	95.3	10.7

**Notes:**

mbg - metres below grade

µg/L - micrograms per litre

mg/L - milligrams per litre

< - less than reported detection limit

'-' - sample not analyzed for parameter indicated

- formatting of cells indicates exceedances of like-formatted standards
- formatting indicates the least stringent standard/guideline exceeded
- samples collected at the same location and date are blind field duplicate / parent pairs

TABLE 3: GROUNDWATER / SURFACE WATER -  
PHYSICAL PARAMETERS

TABLE 3: GROUNDWATER / SURFACE WATER - PHYSICAL PARAMETERS						Physical Parameters						
						Alkalinity (Bicarbonate as CaCO3)	Alkalinity (Carbonate as CaCO3)	Alkalinity (Hydroxide) as CaCO3	Alkalinity (P)	Alkalinity (total) as CaCO3	EC (lab)	Total Dissolved Solids (Filtered)
						mg/L	mg/L	mg/L	mg/L	mg/L	µS/cm	mg/L
Reportable Detection Limit						1	1	1	1	1	1	

Site ID	Site Area	Sample Location	Well Screen Depth (mbg)	Sample Date	Sample ID								
SARU - Yukon Group 3 SWF	Destruction Bay SWF	DB-MW16-04	16.5-19.5	2016-Sep-27	7734-03	164	-	-	-	-	-	445	
				2017-Sep-1	DB-MW16-04	168	<1	-	-	168	672	475	
				2017-Sep-21	DB-MW16-04	173	<1	<1	-	173	682	475	
					DB-DUP1	173	<1	<1	-	173	681	495	
				2018-Sep-13	DB-MW16-04	172	<1	<1	<1	172	687	436	
		DB-MW16-05	19.1-23.6	2016-Sep-27	7734-01	162	-	-	-	-	-	470	
					7734-02	162	-	-	-	-	-	470	
				2017-Aug-31	DB-MW16-05	171	<1	-	-	171	687	492	
					DB-DUP1	171	<1	-	-	171	687	500	
				2017-Sep-21	DB-MW16-05	170	<1	<1	-	170	686	478	
				2018-Sep-13		175	<1	<1	<1	175	693	444	
		DB-MW16-06	20.6-25.2	2016-Sep-27	7734-04	178	-	-	-	-	-	442	
				2017-Aug-31	DB-MW16-06	175	<1	-	-	175	676	522	
				2017-Sep-21		190	<1	<1	-	190	671	452	
				2018-Sep-12	DB-MW16-06	169	<1	<1	<1	169	685	433	
					DB-DUP1	176	<1	<1	<1	176	686	437	
		DB-MW12-01	23.5-26.5	2012-Aug-23	L1199825-10	161	-	-	-	-	-	449	
				2014-Aug-23	20720-02	162	-	-	-	-	-	403	
				2014-Oct-8	20724-04	166	-	-	-	-	-	400	
				2015-Jul-28	7608-03	157	-	-	-	-	-	423	
					7608-04	156	-	-	-	-	-	418	
				2015-Sep-25	7624-05	159	-	-	-	-	-	410	
				2016-Jun-22	7694-02	151	-	-	-	-	-	432	
					7694-03	151	-	-	-	-	-	432	
		DB-MW12-02	20.1-23.2	2012-Aug-23	L1199825-11	154	-	-	-	-	-	465	
				2014-Aug-23	20720-03	161	-	-	-	-	-	405	
					20720-04	169	-	-	-	-	-	408	
				2014-Oct-8	20724-01	169	-	-	-	-	-	395	
					20724-02	169	-	-	-	-	-	400	
				2015-Jul-28	7608-01	156	-	-	-	-	-	420	
				2015-Sep-25	7624-02	159	-	-	-	-	-	420	
					7624-03	156	-	-	-	-	-	408	
		DB-MW12-03	22.6-25.6	2012-Aug-23	L1199825-12	155	-	-	-	-	-	457	
				2014-Aug-23	20720-05	162	-	-	-	-	-	405	
				2014-Oct-8	20724-03	165	-	-	-	-	-	385	
				2015-Jul-28	7608-02	157	-	-	-	-	-	418	
				2015-Sep-25	7624-04	155	-	-	-	-	-	415	
				2016-Jun-22	7694-01	148	-	-	-	-	-	418	
		Surface Water											
		DB-Lewis Creek	-	2015-Sep-25	7624-01	220	-	-	-	-	-	570	
				2016-Jun-21	7694-04	121	-	-	-	-	-	415	
				2018-Sep-14	DB-Lewis Creek	143	<1	<1	<1	143	713	489	
		DB-Kluane Lake	-	2017-Sep-21	DB-Kluane Lk	86	<1	<1	-	86	290	185	
				2018-Jun-11	DB-Kluane Lake	88.6	<1	<1	<1	88.6	300	177	

- Notes:**
- mbg - metres below grade
  - µg/L - micrograms per litre
  - mg/L - milligrams per litre
  - < - less than reported detection limit
  - '-' - sample not analyzed for parameter indicated
  - formatting of cells indicates exceedances of like-formatted standards
  - formatting indicates the least stringent standard/guideline exceeded
  - samples collected at the same location and date are blind field duplicate / parent pairs

TABLE 4: GROUNDWATER / SURFACE WATER -  
ORGANIC CARBON

	Total Organic Carbon	Dissolved Organic Carbon (Filtered)
	mg/L	mg/L
Reportable Detection Limit	0.5	

		Well Screen						
Site ID	Site Area	Sample Location	Depth (mbg)	Sample Date	Sample ID			
SARU - Yukon Group 3 SWF	Destruction Bay SWF	DB-MW16-04	16.5-19.5	2016-Sep-27	7734-03	-	1	
				2017-Sep-1	DB-MW16-04	-	1.3	
				2017-Sep-21	DB-MW16-04	-	0.8	
					DB-DUP1	-	0.8	
		2018-Sep-13	DB-MW16-04	-	1.04			
		DB-MW16-05	19.1-23.6	2016-Sep-27	7734-01	-	1.3	
					7734-02	-	2.1	
				2017-Aug-31	DB-MW16-05	-	1.5	
					DB-DUP1	-	0.9	
				2017-Sep-21	DB-MW16-05	-	1.2	
						2018-Sep-13	-	0.76
		DB-MW16-06	20.6-25.2	2016-Sep-27	7734-04	-	1.2	
				2017-Aug-31	DB-MW16-06	-	1.8	
						2017-Sep-21	-	1.2
				2018-Sep-12	DB-MW16-06	-	1.3	
					DB-DUP1	-	0.9	
				DB-MW12-01	23.5-26.5	2012-Aug-23	L1199825-10	-
		2014-Aug-23	20720-02			-	2.3	
		2014-Oct-8	20724-04			-	1.7	
		2015-Jul-28	7608-03			-	0.5	
			7608-04			-	<0.5	
		2015-Sep-25	7624-05			-	0.7	
		2016-Jun-22	7694-02			-	0.7	
			7694-03			-	0.7	
		DB-MW12-02	20.1-23.2	2012-Aug-23	L1199825-11	-	<0.5	
				2014-Aug-23	20720-03	-	1.9	
					20720-04	-	0.7	
				2014-Oct-8	20724-01	-	1.8	
					20724-02	-	0.6	
				2015-Jul-28	7608-01	-	0.6	
				2015-Sep-25	7624-02	-	0.6	
					7624-03	-	0.6	
		DB-MW12-03	22.6-25.6	2012-Aug-23	L1199825-12	-	0.5	
				2014-Aug-23	20720-05	-	2.3	
				2014-Oct-8	20724-03	-	1	
				2015-Jul-28	7608-02	-	0.6	
				2015-Sep-25	7624-04	-	2.6	
				2016-Jun-22	7694-01	-	0.5	
		Surface Water						
		DB-Lewis Creek	-	2015-Sep-25	7624-01	-	1.8	
				2016-Jun-21	7694-04	-	2	
				2018-Sep-14	DB-Lewis Creek	3.05	-	
		DB-Kluane Lake	-	2017-Sep-21	DB-Kluane Lk	1.2	-	
				2018-Jun-11	DB-Kluane Lake	1.62	-	

- Notes:**
- mbg - metres below grade
  - µg/L - micrograms per litre
  - mg/L - milligrams per litre
  - < - less than reported detection limit
  - '-' - sample not analyzed for parameter indicated
  - formatting of cells indicates exceedances of like-formatted standards
  - formatting indicates the least stringent standard/guideline exceeded
  - samples collected at the same location and date are blind field duplicate / parent pairs

TABLE 5: GROUNDWATER / SURFACE WATER -  
PETROLEUM HYDROCARBONS

TABLE 5: GROUNDWATER / SURFACE WATER - PETROLEUM HYDROCARBONS						Petroleum Hydrocarbons											
						Benzene	Toluene	Ethylbenzene	Xylenes Total	Styrene	MTBE	VH C6-C10	VPHW	EHw(10-19)	LEPHW	EHw(19-32)	HEPHW
						µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Reportable Detection Limit						0.5	0.5	0.5	1	0.5	1	100	100	100	100	100	100
Yukon CSR Schedule 3 AW (Fresh)						4000	390	2000		720		15000	1500	5000	500		
Surface Water - Yukon CSR Schedule 3 AW (Fresh) Divided by 10						400	39	200		72	0	1500	150	500	50		

Site ID	Site Area	Sample Location	Well Screen Depth (mbg)	Sample Date	Sample ID												
SARU - Yukon Group 3 SWF	Destruction Bay SWF	DB-MW16-04	16.5-19.5	2016-Sep-27	7734-03	<0.5	<0.5	<0.5	<1	<0.5	-	<100	<100	-	-	-	-
				2017-Sep-1	DB-MW16-04	<0.5	<0.5	<0.5	<1	<0.5	<1	<100	<100	<100	<100	<100	<100
				2017-Sep-21	DB-MW16-04	<0.5	<0.5	<0.5	<1	<0.5	<1	<100	<100	<100	<100	<100	<100
					DB-DUP1	<0.5	<0.5	<0.5	<1	<0.5	<1	<100	<100	<100	<100	<100	<100
				2018-Sep-13	DB-MW16-04	<0.5	<1	<1	<2	<1	<1	<100	<100	<250	<250	<250	<250
		DB-MW16-05	19.1-23.6	2016-Sep-27	7734-01	<0.5	<0.5	<0.5	<1	<0.5	-	<100	<100	-	-	-	-
					7734-02	<0.5	<0.5	<0.5	<1	<0.5	-	<100	<100	-	-	-	-
				2017-Aug-31	DB-MW16-05	<0.5	<0.5	<0.5	<1	<0.5	<1	<100	<100	<100	<100	<100	<100
					DB-DUP1	<0.5	<0.5	<0.5	<1	<0.5	<1	<100	<100	<100	<100	<100	<100
				2017-Sep-21	DB-MW16-05	<0.5	<0.5	<0.5	<1	<0.5	<1	<100	<100	<100	<100	<100	<100
				2018-Sep-13	DB-MW16-05	<0.5	<1	<1	<2	<1	<1	<100	<100	<250	<250	<250	<250
		DB-MW16-06	20.6-25.2	2016-Sep-27	7734-04	<0.5	<0.5	<0.5	<1	<0.5	-	<100	<100	-	-	-	-
				2017-Aug-31	DB-MW16-06	<0.5	<0.5	<0.5	<1	<0.5	<1	<100	<100	<100	<100	<100	<100
				2017-Sep-21	DB-MW16-06	<0.5	<0.5	<0.5	<1	<0.5	<1	<100	<100	<100	<100	<100	<100
				2018-Sep-12	DB-MW16-06	<0.5	<1	<1	<2	<1	<1	<100	<100	<250	<250	<250	<250
					DB-DUP1	<0.5	<1	<1	<2	<1	<1	<100	<100	<250	<250	<250	<250
		DB-MW12-01	23.5-26.5	2012-Aug-23	L1199825-10	<0.5	<0.5	<0.5	<0.75	<0.5	-	<100	<100	-	-	-	-
				2014-Aug-23	20720-02	<0.5	<0.5	<0.5	<1	<0.5	-	<100	<100	-	-	-	-
				2014-Oct-8	20724-04	<0.5	<0.5	<0.5	<1	<0.5	-	<100	<100	-	-	-	-
				2015-Jul-28	7608-03	<0.5	<0.5	<0.5	<1	<0.5	-	<100	<100	-	-	-	-
					7608-04	<0.5	<0.5	<0.5	<1	<0.5	-	<100	<100	-	-	-	-
				2015-Sep-25	7624-05	<0.5	<0.5	<0.5	<1	<0.5	-	<100	<100	-	-	-	-
				2016-Jun-22	7694-02	<0.5	<0.5	<0.5	<1	<0.5	-	<100	<100	-	-	-	-
					7694-03	<0.5	<0.5	<0.5	<1	<0.5	-	<100	<100	-	-	-	-
		DB-MW12-02	20.1-23.2	2012-Aug-23	L1199825-11	<0.5	<0.5	<0.5	<0.75	<0.5	-	<100	<100	-	-	-	-
				2014-Aug-23	20720-03	<0.5	<0.5	<0.5	<1	<0.5	-	<100	<100	-	-	-	-
					20720-04	<0.5	<0.5	<0.5	<1	<0.5	-	<100	<100	-	-	-	-
				2014-Oct-8	20724-01	<0.5	<0.5	<0.5	<1	<0.5	-	<100	<100	-	-	-	-
					20724-02	<0.5	<0.5	<0.5	<1	<0.5	-	<100	<100	-	-	-	-
				2015-Jul-28	7608-01	<0.5	<0.5	<0.5	<1	<0.5	-	<100	<100	-	-	-	-
				2015-Sep-25	7624-02	<0.5	<0.5	<0.5	<1	<0.5	-	<100	<100	-	-	-	-
					7624-03	<0.5	<0.5	<0.5	<1	<0.5	-	<100	<100	-	-	-	-
		DB-MW12-03	22.6-25.6	2012-Aug-23	L1199825-12	<0.5	<0.5	<0.5	<0.75	<0.5	-	<100	<100	-	-	-	-
				2014-Aug-23	20720-05	<0.5	<0.5	<0.5	<1	<0.5	-	<100	<100	-	-	-	-
				2014-Oct-8	20724-03	<0.5	<0.5	<0.5	<1	<0.5	-	<100	<100	-	-	-	-
				2015-Jul-28	7608-02	<0.5	<0.5	<0.5	<1	<0.5	-	<100	<100	-	-	-	-
				2015-Sep-25	7624-04	<0.5	<0.5	<0.5	<1	<0.5	-	<100	<100	-	-	-	-
				2016-Jun-22	7694-01	<0.5	<0.5	<0.5	<1	<0.5	-	<100	<100	-	-	-	-
Surface Water																	
DB-Lewis Creek		-	2015-Sep-25	7624-01	<0.5	<0.5	<0.5	<1	<0.5	<1	<100	<100	<100	<100	<100	<100	
			2016-Jun-21	7694-04	<0.5	<0.5	<0.5	<1	<0.5	<1	<100	<100	<100	<100	<100	<100	
			2018-Sep-14	DB-Lewis Creek	<0.5	<1	<1	<2	<1	<1	<100	<100	<250	<250	<250	<250	
DB-Kluane Lake		-	2017-Sep-21	DB-Kluane Lk	<0.5	<0.5	<0.5	<1	<0.5	<1	<100	<100	<100	<100	<100	<100	
			2018-Jun-11	DB-Kluane Lake	<0.5	<1	<1	<2	<1	<1	<100	<100	<250	<250	<250	<250	

**Standards / Guidelines Descriptions:**

- Yukon CSR Schedule 3 AW (Fresh):Yukon Contaminated Sites Regulation Schedule 3 Generic Numerical Water Standards, Freshwater Aquatic Life (September 2002)
- Yukon CSR Schedule 3 AW (Fresh) Divided by 10: Surface Water Specific Yukon Contaminated Sites Regulation Schedule 3 Generic Numerical Water Standards (Divided by 10), Freshwater Aquatic Life

**Notes:**

mbg - metres below grade

µg/L - micrograms per litre

mg/L - milligrams per litre

< - less than reported detection limit

'-' - sample not analyzed for parameter indicated

- formatting of cells indicates exceedances of like-formatted standards
- formatting indicates the least stringent standard/guideline exceeded
- samples collected at the same location and date are blind field duplicate / parent pairs

BTEX - benzene, toluene, ethylbenzene, xylenes

EHw10-19 - light extractable petroleum hydrocarbons (nC10-nC19)

LEPHw – Light Extractable Petroleum Hydrocarbons in water: EPHw10-19 minus PAH compounds: acenaphthene, acridine, anthracene, fluorene, naphthalene and phenanthrene

EHw19-32 – Extractable Petroleum Hydrocarbons (nC19-nC32) in water

HEPH - EPH(19-32) minus PAH compounds: benz(a)anthracene, benzo(a)pyrene, fluoranthene and pyrene

MTBE - methyl tert-butyl ether

PAH - polycyclic aromatic hydrocarbons

VHw6-10 – Volatile Hydrocarbons (nC6-nC10) in water

VPHw – Volatile Petroleum Hydrocarbons in water: VHw6-10 minus BTEX and styrene

TABLE 6: GROUNDWATER / SURFACE WATER -  
POLYCYCLIC AROMATIC HYDROCARBONS

TABLE 6: GROUNDWATER / SURFACE WATER - POLYCYCLIC AROMATIC HYDROCARBONS						PAHs																											
						2-chloronaphthalene	Acenaphthene	Acenaphthylene	Acridine	Anthracene	Benz(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Benzo(j)fluoranthene	Benzo(b+i)fluoranthenes	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	1-methylnaphthalene	2-methylnaphthalene	Naphthalene	Phenanthrene	Pyrene	Quinoline					
Reportable Detection Limit						0.1	0.05	0.05	0.05	0.01	0.01	0.01	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.01	0.03	0.05	0.1	0.1	0.05	0.05	0.02	0.05					
Yukon CSR Schedule 3 AW (Fresh)							60		0.5	1	1	0.1							1		2	120				10	3	0.2	34				
Yukon CSR Schedule 3 AW (Fresh) Divided by 10							6		0.05	0.1	0.1	0.01							0.1		0.2	12				1	0.3	0.02	3.4				
Site ID	Site Area	Sample Location	Well Screen Depth (mbg)	Sample Date	Sample ID																												
SARU - Yukon Group 3 SWF	Destruction Bay SWF	DB-MW16-04	16.5-19.5	2016-Sep-27	7734-03	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	<0.05	<0.05	<0.02	<0.1					
				2017-Sep-1	DB-MW16-04	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	<0.05	<0.05	<0.02	<0.1					
				2017-Sep-21	DB-MW16-04	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	<0.05	<0.05	<0.02	<0.1					
				2018-Sep-13	DB-DUP1	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	<0.05	<0.05	<0.02	<0.1					
		DB-MW16-05	19.1-23.6	2018-Sep-13	DB-MW16-04	<0.1	<0.05	<0.2	<0.05	<0.01	<0.01	<0.01	-	<0.05	<0.05	-	<0.05	<0.05	<0.01	<0.03	<0.05	<0.05	<0.05	<0.1	<0.1	<0.2	<0.1	<0.02	<0.05				
				2016-Sep-27	7734-01	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	<0.05	<0.05	<0.02	<0.1					
				2017-Aug-31	7734-02	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	<0.05	<0.05	<0.02	<0.1					
				2017-Aug-31	DB-MW16-05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	<0.05	<0.05	<0.02	<0.1					
		DB-MW16-06	20.6-25.2	2017-Sep-21	DB-DUP1	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	<0.05	<0.05	<0.02	<0.1					
				2017-Sep-21	DB-MW16-05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	<0.05	<0.05	<0.02	<0.1					
				2018-Sep-13	DB-MW16-05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	<0.05	<0.05	<0.02	<0.1					
				2018-Sep-13	DB-MW16-05	<0.1	<0.05	<0.2	<0.05	<0.01	0.065	0.072	-	0.077	0.09	-	0.182	0.075	0.074	<0.03	<0.05	0.074	<0.1	<0.1	<0.2	<0.1	<0.02	<0.05					
		DB-MW16-06	20.6-25.2	2016-Sep-27	7734-04	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	<0.05	<0.05	<0.02	<0.1					
				2017-Aug-31	DB-MW16-06	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	<0.05	<0.05	<0.02	<0.1					
				2017-Sep-21	DB-MW16-06	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	<0.05	<0.05	<0.02	<0.1					
				2018-Sep-12	DB-MW16-06	<0.1	<0.05	<0.2	<0.05	<0.01	<0.01	<0.01	-	<0.05	<0.05	-	<0.05	<0.05	<0.01	<0.03	<0.05	<0.05	<0.1	<0.1	<0.2	<0.1	<0.02	<0.05					
		DB-MW12-01	23.5-26.5	2018-Sep-12	DB-DUP1	<0.1	<0.05	<0.2	<0.05	<0.01	<0.01	<0.01	-	<0.05	<0.05	-	<0.05	<0.05	<0.01	<0.03	<0.05	<0.05	<0.1	<0.1	<0.2	<0.1	<0.02	<0.05					
				2012-Aug-23	L1199825-10	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	<0.05	<0.05	<0.05	<0.05					
				2014-Aug-23	20720-02	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	<0.05	<0.05	<0.02	<0.1					
				2014-Oct-8	20724-04	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	<0.05	<0.05	<0.02	<0.1					
				2015-Jul-28	7608-03	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	<0.05	<0.05	<0.02	<0.1					
				2015-Jul-28	7608-04	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	<0.05	<0.05	<0.02	<0.1					
				2015-Sep-25	7624-05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	<0.05	<0.05	<0.02	<0.1					
				2016-Jun-22	7694-02	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	<0.05	<0.05	<0.02	<0.1					
		DB-MW12-02	20.1-23.2	2016-Jun-22	7694-03	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	<0.05	<0.05	<0.02	<0.1					
				2012-Aug-23	L1199825-11	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	<0.05	<0.05	<0.05	<0.05					
				2014-Aug-23	20720-03	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	<0.05	<0.05	<0.02	<0.1					
				2014-Aug-23	20720-04	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	<0.05	<0.05	<0.02	<0.1					
				2014-Oct-8	20724-01	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	<0.05	<0.05	<0.02	<0.1					
				2014-Oct-8	20724-02	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	<0.05	<0.05	<0.02	<0.1					
				2015-Jul-28	7608-01	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	<0.05	<0.05	<0.02	<0.1					
				2015-Sep-25	7624-02	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	<0.05	<0.05	<0.02	<0.1					
		DB-MW12-03	22.6-25.6	2015-Sep-25	7624-03	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	<0.05	<0.05	<0.02	<0.1					
				2012-Aug-23	L1199825-12	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	<0.05	<0.05	<0.05	<0.05					
				2014-Aug-23	20720-05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	<0.05	<0.05	<0.02	<0.1					
				2014-Oct-8	20724-03	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	<0.05	<0.05	<0.02	<0.1					
		DB-MW12-03	22.6-25.6	2015-Jul-28	7608-02	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	<0.05	<0.05	<0.02	<0.1					
				2015-Sep-25	7624-04	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05																					



TABLE 7: GROUNDWATER / SURFACE WATER -  
VOLATILE ORGANIC COMPOUNDS

TABLE 7: GROUNDWATER / SURFACE WATER - VOLATILE ORGANIC COMPOUNDS						VOCs																																				
						Acetone	Bromodichloromethane	Bromoform	Bromomethane	Carbon tetrachloride	Chlorobenzene	Chlorodibromomethane	Chloroethane	Chloroform	Chloromethane	cis-1,2-dichloroethylene	cis-1,3-dichloropropene	1,2-dibromoethane	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene	1,1-dichloroethane	1,1-dichloroethylene	1,2-dichloroethane	1,2-dichloropropane	1,3-Dichloropropene	4-Methyl-2-pentanone	1,1,1,2-tetrachloroethane	1,1,2,2-tetrachloroethane	1,2,4-trichlorobenzene	1,1,1-trichloroethane	1,1,2-trichloroethane	Dibromomethane	Dichloromethane	Methyl Ethyl Ketone	Tetrachloroethylene	trans-1,2-dichloroethylene	trans-1,3-dichloropropene	Trichloroethylene	Trichlorofluoromethane	Trihalomethanes	Vinyl chloride
						µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Reportable Detection Limit						10	1	1	1	0.5	1	1	1	1	1	1	1	0.3	0.5	0.5	0.5	1	1	1	1	1	1	1	1	1	1	1	10	1	1	1	1	1	2	1		
Yukon CSR Schedule 3 AW (Fresh)										130	13			20					7	1500	260			1000				240				980		1100			200					
Yukon CSR Schedule 3 AW (Fresh) Divided by 10										13	1.3			2					0.7	150	26			100							98		110			20						

Site ID	Site Area	Sample Location	Well Screen Depth (mbg)	Sample Date	Sample ID																																							
SARU - Yukon Group 3 SWF	Destruction Bay SWF	DB-MW16-04	16.5-19.5	2017-Sep-1	DB-MW16-04	<10	<1	<1	<1	<0.5	<1	<1	<1	<1	<1	<1	<1	<0.3	<0.5	<0.5	<0.5	<1	<1	<1	<1	<1	-	<10	<1	<1	<1	<1	<1	-	<1	<10	<1	<1	<1	<1	<1	<2	<1	
				2017-Sep-21	DB-MW16-04	<10	<1	<1	<1	<0.5	<1	<1	<1	<1	<1	<1	<1	<0.3	<0.5	<0.5	<0.5	<1	<1	<1	<1	<1	<1	-	<10	<0.8	<1	<1	<1	<1	-	<1	<10	<1	<1	<1	<1	<1	<2	<1
				2018-Sep-13	DB-MW16-04	-	<1	<1	-	<0.5	<1	<1	<2	<1	-	<1	-	<0.3	<0.5	<1	<1	<1	<1	<1	<1	<1	<1	-	-	<0.5	-	<1	<1	<1	<3	-	<1	<1	-	<1	<1	-	<1	
		DB-MW16-05	19.1-23.6	2017-Aug-31	DB-MW16-05	<10	<1	<1	<1	<0.5	<1	<1	<1	<1	<1	<1	<1	<0.3	<0.5	<0.5	<0.5	<1	<1	<1	<1	<1	-	<10	<1	<1	<1	<1	<1	-	<1	<10	<1	<1	<1	<1	<1	<1	<2	<1
				2017-Sep-21	DB-MW16-05	<10	<1	<1	<1	<0.5	<1	<1	<1	<1	<1	<1	<1	<0.3	<0.5	<0.5	<0.5	<1	<1	<1	<1	<1	-	<10	<1	<1	<1	<1	<1	-	<1	<10	<1	<1	<1	<1	<1	<2	<1	
				2018-Sep-13	DB-MW16-05	-	<1	<1	-	<0.5	<1	<1	<2	<1	-	<1	-	<0.3	<0.5	<1	<1	<1	<1	<1	<1	<1	-	-	<0.5	-	<1	<1	<1	<3	-	<1	<1	-	<1	<1	-	<1		
				2017-Aug-31	DB-MW16-06	<10	<1	<1	<1	<0.5	<1	<1	<1	<1	<1	<1	<1	<1	<0.3	<0.5	<0.5	<0.5	<1	<1	<1	<1	<1	-	<10	<1	<1	<1	<1	<1	-	<1	<10	<1	<1	<1	<1	<1	<2	<1
		DB-MW16-06	20.6-25.2	2017-Sep-21	DB-MW16-06	<10	<1	<1	<1	<0.5	<1	<1	<1	<1	<1	<1	<1	<0.3	<0.5	<0.5	<0.5	<1	<1	<1	<1	<1	-	<10	<1	<1	<1	<1	<1	-	<1	<10	<1	<1	<1	<1	<1	<1	<2	<1
				2017-Sep-21	DB-MW16-06	<10	<1	<1	<1	<0.5	<1	<1	<1	<1	<1	<1	<1	<1	<0.3	<0.5	<0.5	<0.5	<1	<1	<1	<1	<1	-	<10	<0.8	<1	<1	<1	<1	-	<1	<10	<1	<1	<1	<1	<1	<2	<1
				2018-Sep-12	DB-MW16-06	-	<1	<1	-	<0.5	<1	<1	<2	<1	-	<1	-	<0.3	<0.5	<1	<1	<1	<1	<1	<1	<1	<1	-	-	<0.5	-	<1	<1	<1	<3	-	<1	<1	-	<1	<1	-	<1	
		Surface Water																																										
		DB-Kluane Lake	-	2017-Sep-21	DB-Kluane Lk	<10	<1	<1	<1	<0.5	<1	<1	<1	<1	<1	<1	<1	<0.3	<0.5	<0.5	<0.5	<1	<1	<1	<1	<1	-	<10	<0.8	<1	<1	<1	<1	-	<1	<10	<1	<1	<1	<1	<1	<2	<1	
				2018-Jun-11	DB-Kluane Lake	-	<1	<1	-	<0.5	<1	<1	<2	<1	-	<1	-	<0.3	<0.5	<1	<1	<1	<1	<1	<1	<1	<1	-	-	<0.5	-	<1	<1	<1	<3	-	<1	<1	-	<1	<1	-	<1	

- Standards / Guidelines Descriptions:**
- Yukon CSR Schedule 3 AW (Fresh):Yukon Contaminated Sites Regulation Schedule 3 Generic Numerical Water Standards, Freshwater Aquatic Life (September 2002)
  - Yukon CSR Schedule 3 AW (Fresh) Divided by 10: Surface Water Specific Yukon Contaminated Sites Regulation Schedule 3 Generic Numerical Water Standards (Divided by 10), Freshwater Aquatic Life (September 2002)

- Notes:**
- mbg - metres below grade
  - µg/L - micrograms per litre
  - mg/L - milligrams per litre
  - < - less than reported detection limit
  - '-' - sample not analyzed for parameter indicated
  - formatting of cells indicates exceedances of like-formatted standards
  - formatting indicates the least stringent standard/guideline exceeded
  - samples collected at the same location and date are blind field duplicate / parent pairs
  - VOCs - volatile organic compounds





TABLE 9: GROUNDWATER / SURFACE WATER -  
INORGANICS

TABLE 9: GROUNDWATER / SURFACE WATER - INORGANICS						Inorganics																				
						Ammonia	Bicarbonate	BOD	Bromide	Calcium Carbonate	Carbonate	Chloride	COD	Fluoride	Kjeldahl Nitrogen Total	Nitrate (as N)	Nitrite (as N)	ORTHOPHOSPHATE (PO4-P)	Phosphate	Phosphorus	Phosphorus (Filtered)	Silicon	Silicon (Filtered)	Sulphate	Sulphur as S	Sulphur as S (Filtered)
Reportable Detection Limit						0.01		2	0.05	0.05		0.05	10	0.02		0.005	0.005	0.001	0.005	0.002		1		0.5	3	
Yukon CSR Schedule 3 AW (Fresh)						1.31 - 18.5 *								2 - 3 *		400	0.2 - 1.2 *							1000		
Yukon CSR Schedule 3 AW (Fresh) Divided by 10						0.131 - 1.85 *								0.2 - 0.3 *		40	0.02 - 0.12 *							100		

Site ID	Site Area	Sample Location	Well Screen Depth (mbg)	Sample Date	Sample ID																						
SARU - Yukon Group 3 SWF	Destruction Bay SWF	DB-MW16-04	16.5-19.5	2016-Sep-27	7734-03	0.01	-	-	<0.05	-	-	3.04	<10	0.1	<0.1	0.393	<0.005	0.001	-	-	-	-	-	-	185	-	-
				2017-Sep-1	DB-MW16-04	<0.01	-	-	<0.05	-	-	0.79	<10	0.1	-	0.404	<0.005	0.005	-	-	-	-	-	-	200	-	-
				2017-Sep-21	DB-DUP1	<0.01	-	-	<0.05	-	-	1.65	<10	0.11	-	0.409	<0.005	0.007	-	-	-	-	-	-	199	-	-
				2018-Sep-13	DB-MW16-04	0.034	-	-	-	-	-	0.75	-	-	-	0.361	<0.01	-	<0.005	-	<0.05	-	4.7	-	211	-	70.3
		DB-MW16-05	19.1-23.6	2016-Sep-27	7734-01	0.02	-	-	<0.05	-	-	4.66	<10	0.1	0.1	0.487	<0.005	0.002	-	-	-	-	-	-	218	-	-
				7734-02	0.02	-	-	<0.05	-	-	4.62	<10	0.07	<0.1	0.465	<0.005	0.001	-	-	-	-	-	-	207	-	-	
				2017-Aug-31	DB-MW16-05	<0.01	-	-	<0.05	-	-	1.08	<10	0.1	-	0.399	<0.005	0.005	-	-	-	-	-	-	204	-	-
				DB-DUP1	<0.01	-	-	<0.05	-	-	1.14	<10	0.11	-	0.407	<0.005	0.005	-	-	-	-	-	-	205	-	-	
		DB-MW16-06	20.6-25.2	2017-Sep-21	DB-MW16-05	0.02	-	-	<0.05	-	-	1.39	<10	0.1	-	0.368	<0.005	0.008	-	-	-	-	-	-	206	-	-
				2018-Sep-13	DB-MW16-05	0.06	-	-	-	-	-	0.63	-	-	-	0.337	<0.01	-	<0.005	-	<0.05	-	4.8	-	216	-	72.3
				2016-Sep-27	7734-04	0.01	-	-	<0.05	-	-	2.2	<10	0.08	0.1	0.594	<0.005	0.001	-	-	-	-	-	-	174	-	-
				2017-Aug-31	DB-MW16-06	<0.01	-	-	<0.05	-	-	2.52	<10	0.1	-	0.448	<0.005	0.005	-	-	-	-	-	-	194	-	-
		DB-MW16-06	20.6-25.2	2017-Sep-21	DB-MW16-06	<0.01	-	-	<0.05	-	-	3.21	<10	0.1	-	0.771	<0.005	0.007	-	-	-	-	-	-	171	-	-
				2018-Sep-12	DB-MW16-06	0.025	-	-	-	-	-	2.3	-	-	-	0.385	<0.01	-	<0.005	-	<0.05	-	4.7	-	207	-	68.9
				DB-DUP1	0.05	-	-	-	-	-	2.26	-	-	-	0.379	<0.01	-	<0.005	-	<0.05	-	4.6	-	208	-	68.9	
				2012-Aug-23	L1199825-10	0.0054	-	-	-	-	-	<0.5	<20	0.058	0.052	0.398	<0.001	-	-	-	-	-	-	-	186	-	-
		DB-MW12-01	23.5-26.5	2014-Aug-23	20720-02	<0.01	-	-	<0.05	-	-	0.39	10	0.12	0.2	0.312	<0.005	0.01	-	-	-	-	-	-	180	-	-
				2014-Oct-8	20724-04	<0.01	-	-	<0.05	-	-	0.37	<10	0.06	<0.1	0.32	<0.005	0.002	-	-	-	-	-	-	177	-	-
				2015-Jul-28	7608-03	0.02	157	-	-	-	<1	0.31	12	-	<0.1	0.277	<0.005	<0.001	-	-	-	-	-	-	176	-	-
				7608-04	0.01	156	-	-	-	<1	0.32	13	-	<0.1	0.274	<0.005	<0.001	-	-	-	-	-	-	176	-	-	
		DB-MW12-01	23.5-26.5	2015-Sep-25	7624-05	<0.01	159	-	-	-	<1	0.35	<10	-	1	0.217	<0.005	0.001	-	-	-	-	-	-	178	-	-
				7694-02	<0.01	-	-	<0.05	-	-	0.35	<10	0.07	<0.1	0.29	<0.005	0.003	-	-	-	-	-	-	175	-	-	
				2016-Jun-22	7694-03	<0.01	-	-	<0.05	-	-	0.35	<10	0.06	<0.1	0.296	<0.005	0.003	-	-	-	-	-	-	175	-	-
				2012-Aug-23	L1199825-11	<0.005	-	-	-	-	-	<0.5	<20	0.058	<0.05	0.316	<0.001	-	-	-	-	-	-	-	195	-	-
		DB-MW12-02	20.1-23.2	2014-Aug-23	20720-03	<0.01	-	-	<0.05	-	-	0.31	20	0.1	0.1	0.299	<0.005	0.012	-	-	-	-	-	-	180	-	-
				20720-04	<0.01	-	-	<0.05	-	-	0.42	10	0.1	<0.1	0.32	<0.005	0.006	-	-	-	-	-	-	180	-	-	
				2014-Oct-8	20724-01	<0.01	-	-	<0.05	-	-	0.33	30	0.05	0.1	0.274	<0.005	0.002	-	-	-	-	-	-	175	-	-
				20724-02	<0.01	-	-	<0.05	-	-	0.33	20	0.07	<0.1	0.278	<0.005	<0.001	-	-	-	-	-	-	174	-	-	
		DB-MW12-02	20.1-23.2	2015-Jul-28	7608-01	<0.01	156	-	-	-	<1	0.32	<10	-	<0.1	0.267	<0.005	<0.001	-	-	-	-	-	-	179	-	-
				2015-Sep-25	7624-02	<0.01	159	-	-	-	<1	0.33	<10	-	0.3	0.214	<0.005	0.001	-	-	-	-	-	-	181	-	-
				7624-03	<0.01	156	-	-	-	<1	0.31	<10	-	0.3	0.216	<0.005	0.001	-	-	-	-	-	-	183	-	-	
				2012-Aug-23	L1199825-12	0.0054	-	-	-	-	-	0.5	<20	0.057	0.05	0.358	0.001	-	-	-	-	-	-	-	195	-	-
		DB-MW12-03	22.6-25.6	2014-Aug-23	20720-05	<0.01	-	-	<0.05	-	-	0.51	10	0.11	0.1	0.337	<0.005	<0.001	-	-	-	-	-	-	179	-	-
				2014-Oct-8	20724-03	<0.01	-	-	<0.05	-	-	0.35	20	0.07	<0.1	0.27	<0.005	<0.001	-	-	-	-	-	-	177	-	-
				2015-Jul-28	7608-02	0.01	157	-	-	-	<1	0.32	13	-	<0.1	0.276	<0.005	<0.001	-	-	-	-	-	-	176	-	-
				2015-Sep-25	7624-04	<0.01	155	-	-	-	<1	0.3	<10	-	0.5	0.219	<0.005	0.001	-	-	-	-	-	-	178	-	-
		DB-MW12-03	22.6-25.6	2016-Jun-22	7694-01	<0.01	-	-	<0.05	-	-	0.43	<10	0.07	<0.1	0.294	<0.005	0.005	-	-	-	-	-	-	173	-	-
				Surface Water																							
		DB-Lewis Creek	-	2015-Sep-25	7624-01	<0.01	220	<4	-	-	<1	0.28	<10	-	0.2	<0.005	<0.005	<0.001	-	-	-	-	-	-	256	-	-
				2016-Jun-21	7694-04	<0.01	-	<4	<0.05	-	-	0.38	13	0.09	<0.1	0.163	<0.005	0.003	-	-	-	-	-	-	191	-	-
				2018-Sep-14	DB-Lewis Creek	0.074	-	<2	-	-	-	0.26	24	-	-	0.213	<0.01	-	<0.005	0.114	-	7.5	-	-	260	79	-
		DB-Kluane Lake	-	2017-Sep-21	DB-Kluane Lk	<0.01	-	<4	<0.05	41.1	-	0.4	<10	0.11	-	0.008	<0.005	0.005	-	-	-	-	-	-	59.7	-	-
				2018-Jun-11	DB-Kluane Lake	<0.02	-	<5.8	-	-	-	1.6	<20	-	-	<0.01	<0.01	-	<0.005	<0.05 - 0.0186	-	1.6	-	-	58.8	23.3	-

**Standards / Guidelines Descriptions:**

- Yukon CSR Schedule 3 AW (Fresh):Yukon Contaminated Sites Regulation Schedule 3 Generic Numerical Water Standards, Freshwater Aquatic Life (September 2002)
- Yukon CSR Schedule 3 AW (Fresh) Divided by 10: Surface Water Specific Yukon Contaminated Sites Regulation Schedule 3 Generic Numerical Water Standards (Divided by 10), Freshwater Aquatic Life (September 2002)

**Notes:**

mbg - metres below grade  
µg/L - micrograms per litre  
mg/L - milligrams per litre  
< - less than reported detection limit  
'-' - sample not analyzed for parameter indicated

- formatting of cells indicates exceedances of like-formatted standards
- formatting indicates the least stringent standard/guideline exceeded
- samples collected at the same location and date are blind field duplicate / parent pairs
- H - hardness in mg/L of calcium carbonate (CaCO<sub>3</sub>)
- nitrate and nitrite measured in mg/L of N
- nitrate standards dependent on chloride concentration
- ammonia standards dependent on pH
- pH- and temperature-dependent guidelines compared to field measured pH values

TABLE 10: QAQC - Groundwater RPDs

Lab Report Number	8091582	8091582	
Field ID	DB-MW16-06	DB-DUP1	
Sample Date	2018-Sep-12	2018-Sep-12	RPD (%)

Group	Parameter	Units	EQL			
Physical Parameters	Alkalinity (Bicarbonate as CaCO3)	mg/l	1	169	176	4
	Alkalinity (Carbonate as CaCO3)	mg/l	1	<1	<1	NC
	Alkalinity (Hydroxide) as CaCO3	mg/l	1	<1	<1	NC
	Alkalinity (P)	mg/l	1	<1	<1	NC
	Alkalinity (total) as CaCO3	mg/l	1	169	176	4
	EC (lab)	µS/cm	2	685	686	0
	Total Dissolved Solids (Filtered)	mg/l	10	433	437	1
Carbon	Dissolved Organic Carbon (Filtered)	mg/l	0.5	1.3	0.9	NC
Petroleum Hydrocarbons	Benzene	µg/L	0.5	<0.5	<0.5	NC
	Ethylbenzene	µg/L	1	<1	<1	NC
	Toluene	µg/L	1	<1	<1	NC
	Xylenes Total	µg/L	2	<2	<2	NC
	Styrene	µg/L	1	<1	<1	NC
	MTBE	µg/L	1	<1	<1	NC
	VH C6-C10	µg/L	100	<100	<100	NC
	VPH	µg/L	100	<100	<100	NC
	EPH(10-19)	µg/L	250	<250	<250	NC
	LEPH	µg/L	250	<250	<250	NC
	EPH(19-32)	µg/L	250	<250	<250	NC
	HEPH	µg/L	250	<250	<250	NC
PAHs	2-chloronaphthalene	µg/L	0.1	<0.1	<0.1	NC
	Acenaphthene	µg/L	0.05	<0.05	<0.05	NC
	Acenaphthylene	µg/L	0.2	<0.2	<0.2	NC
	Acridine	µg/L	0.05	<0.05	<0.05	NC
	Anthracene	µg/L	0.01	<0.01	<0.01	NC
	Benz(a)anthracene	µg/L	0.01	<0.01	<0.01	NC
	Benzo(a)pyrene	µg/L	0.01	<0.01	<0.01	NC
	Benzo(g,h,i)perylene	µg/L	0.05	<0.05	<0.05	NC
	Benzo(k)fluoranthene	µg/L	0.05	<0.05	<0.05	NC
	Benzo(b+j)fluoranthenes	µg/L	0.05	<0.05	<0.05	NC
	Chrysene	µg/L	0.05	<0.05	<0.05	NC
	Dibenz(a,h)anthracene	µg/L	0.01	<0.01	<0.01	NC
	Fluoranthene	µg/L	0.03	<0.03	<0.03	NC
	Fluorene	µg/L	0.05	<0.05	<0.05	NC
	Indeno(1,2,3-c,d)pyrene	µg/L	0.05	<0.05	<0.05	NC
	1-methylnaphthalene	µg/L	0.1	<0.1	<0.1	NC
	2-methylnaphthalene	µg/L	0.1	<0.1	<0.1	NC
	Naphthalene	µg/L	0.2	<0.2	<0.2	NC
	Phenanthrene	µg/L	0.1	<0.1	<0.1	NC
	Pyrene	µg/L	0.02	<0.02	<0.02	NC
	Quinoline	µg/L	0.05	<0.05	<0.05	NC
VOCs	Bromodichloromethane	µg/L	1	<1	<1	NC
	Bromoform	µg/L	1	<1	<1	NC
	Carbon tetrachloride	µg/L	0.5	<0.5	<0.5	NC
	Chlorobenzene	µg/L	1	<1	<1	NC
	Chlorodibromomethane	µg/L	1	<1	<1	NC
	Chloroethane	µg/L	2	<2	<2	NC
	Chloroform	µg/L	1	<1	<1	NC
	cis-1,2-dichloroethylene	µg/L	1	<1	<1	NC
	1,2-dibromoethane	µg/L	0.3	<0.3	<0.3	NC
	1,2-dichlorobenzene	µg/L	0.5	<0.5	<0.5	NC
	1,3-dichlorobenzene	µg/L	1	<1	<1	NC
	1,4-dichlorobenzene	µg/L	1	<1	<1	NC
	1,1-dichloroethane	µg/L	1	<1	<1	NC
	1,1-dichloroethylene	µg/L	1	<1	<1	NC
	1,2-dichloroethane	µg/L	1	<1	<1	NC
	1,2-dichloropropane	µg/L	1	<1	<1	NC
	1,3-Dichloropropene	µg/L	1	<1	<1	NC
	1,1,2,2-tetrachloroethane	µg/L	0.5	<0.5	<0.5	NC
	1,1,1-trichloroethane	µg/L	1	<1	<1	NC
	1,1,2-trichloroethane	µg/L	1	<1	<1	NC
	Dibromomethane	µg/L	1	<1	<1	NC
	Dichloromethane	µg/L	3	<3	<3	NC
	Tetrachloroethylene	µg/L	1	<1	<1	NC
	trans-1,2-dichloroethylene	µg/L	1	<1	<1	NC
	Trichloroethylene	µg/L	1	<1	<1	NC
	Trichlorofluoromethane	µg/L	1	<1	<1	NC
	Vinyl chloride	µg/L	1	<1	<1	NC

TABLE 10: QAQC - Groundwater RPDs

Lab Report Number	8091582	8091582	
Field ID	DB-MW16-06	DB-DUP1	
Sample Date	2018-Sep-12	2018-Sep-12	RPD (%)

Group	Parameter	Units	EQL			
Total / Dissolved Metals	Hardness as CaCO3	mg/l	0.5	334	330	1
	pH (Lab)	pH_Units	0.1	7.72	7.65	1
	Aluminum (Filtered)	µg/l	5	5.8	<5	NC
	Antimony (Filtered)	µg/l	0.2	<0.2	<0.2	NC
	Arsenic (Filtered)	µg/l	0.5	<0.5	<0.5	NC
	Barium (Filtered)	µg/l	5	33.1	32.7	1
	Beryllium (Filtered)	µg/l	0.1	<0.1	<0.1	NC
	Bismuth (Filtered)	µg/l	0.1	<0.1	<0.1	NC
	Boron (Filtered)	µg/l	5	125	127	2
	Cadmium (Filtered)	µg/l	0.01	<0.01	<0.01	NC
	Calcium (Filtered)	mg/l	0.2	74.2	73	2
	Chromium (III+VI) (Filtered)	µg/l	0.5	3.42	3.35	2
	Cobalt (Filtered)	µg/l	0.1	<0.1	<0.1	NC
	Copper (Filtered)	µg/l	0.4	0.82	0.72	NC
	Iron (Filtered)	µg/l	10	<10	<10	NC
Total / Dissolved Metals	Lead (Filtered)	µg/l	0.2	<0.2	<0.2	NC
	Lithium (Filtered)	µg/l	0.1	2.97	2.83	5
	Magnesium (Filtered)	mg/l	0.01	36	35.9	0
	Manganese (Filtered)	µg/l	0.2	0.45	0.47	NC
	Mercury (Filtered)	µg/l	0.01	<0.01	<0.01	NC
	Molybdenum (Filtered)	µg/l	0.1	2.16	2.14	1
	Nickel (Filtered)	µg/l	0.4	0.85	0.81	NC
	Potassium (Filtered)	µg/l	100	1710	1700	1
	Selenium (Filtered)	µg/l	0.5	6.89	7.13	3
	Silver (Filtered)	µg/l	0.05	<0.05	<0.05	NC
	Sodium (Filtered)	mg/l	0.1	7.38	7.32	1
	Strontium (Filtered)	µg/l	1	342	336	2
	tellurium (Filtered)	µg/l	0.5	<0.5	<0.5	NC
	Thallium (Filtered)	µg/l	0.02	<0.02	<0.02	NC
	Thorium (Filtered)	µg/l	0.1	<0.1	<0.1	NC
	Tin (Filtered)	µg/l	0.2	<0.2	<0.2	NC
	Titanium (Filtered)	µg/l	5	<5	<5	NC
	Tungsten (Filtered)	µg/l	1	<1	<1	NC
	Uranium (Filtered)	µg/l	0.02	0.94	0.91	3
	Vanadium (Filtered)	µg/l	1	<1	<1	NC
Inorganics	Zinc (Filtered)	µg/l	4	<4	<4	NC
	Zirconium (Filtered)	µg/l	0.1	<0.1	<0.1	NC
	Ammonia	mg/l	0.02	0.025	0.05	NC
	Chloride	mg/l	0.1	2.3	2.26	2
	Nitrate (as N)	mg/l	0.01	0.385	0.379	2
	Nitrite (as N)	mg/l	0.01	<0.01	<0.01	NC
	Phosphate	mg/l	0.005	<0.005	<0.005	NC
	Phosphorus (Filtered)	mg/l	0.05	<0.05	<0.05	NC
	Silicon (Filtered)	mg/l	1	4.7	4.6	NC
	Sulphate	mg/l	10	207	208	0
	Sulphur as S (Filtered)	mg/l	3	68.9	68.9	0

Notes:  
SDG - sample delivery group  
RPD - relative percent difference  
RDL - reportable detection limit  
RPD calculation = absolute value of difference divided by average of results x 100%  
NC - RPD not calculated

- BOLD**
- RPD calculations not performed where results are less than 5 times the RDL
  - acceptance limits for Water are as follows: general hydrocarbons (45%), PAH - (75%), inorganics and metals (30%)

**TABLE 11: QAQC - Trip Blanks**

<b>Lab Report Number</b>	8060749	8091575
<b>Field ID</b>	Trip Blank	Trip Blank
<b>Sample Date</b>	2018-Jun-6	2018-Sep-17

Group	Parameter	Units	EQL		
Petroleum Hydrocarbons	Benzene	µg/L	0.5	<0.5	<0.5
	Ethylbenzene	µg/L	1	<1	<1
	Toluene	µg/L	1	<1	<1
	Xylenes Total	µg/L	2	<2	<2
	Styrene	µg/L	1	<1	<1
	MTBE	µg/L	1	<1	<1
	VHw C6-C10	µg/L	100	<100	<100
	VPHw	µg/L	100	<100	<100
VOCs	Bromodichloromethane	µg/L	1	<1	<1
	Bromoform	µg/L	1	<1	<1
	Carbon tetrachloride	µg/L	0.5	<0.5	<0.5
	Chlorobenzene	µg/L	1	<1	<1
	Chlorodibromomethane	µg/L	1	<1	<1
	Chloroethane	µg/L	2	<2	<2
	Chloroform	µg/L	1	<1	<1
	cis-1,2-dichloroethylene	µg/L	1	<1	<1
	1,2-dibromoethane	µg/L	0.3	<0.3	<0.3
	1,2-dichlorobenzene	µg/L	0.5	<0.5	<0.5
	1,3-dichlorobenzene	µg/L	1	<1	<1
	1,4-dichlorobenzene	µg/L	1	<1	<1
	1,1-dichloroethane	µg/L	1	<1	<1
	1,1-dichloroethylene	µg/L	1	<1	<1
	1,2-dichloroethane	µg/L	1	<1	<1
	1,2-dichloropropane	µg/L	1	<1	<1
	1,3-Dichloropropene	µg/L	1	<1	<1
	1,1,2,2-tetrachloroethane	µg/L	0.5	<0.5	<0.5
	1,1,1-trichloroethane	µg/L	1	<1	<1
	1,1,2-trichloroethane	µg/L	1	<1	<1
	Dibromomethane	µg/L	1	<1	<1
	Dichloromethane	µg/L	3	<3	<3
	Tetrachloroethylene	µg/L	1	<1	<1
	trans-1,2-dichloroethylene	µg/L	1	<1	<1
	Trichloroethylene	µg/L	1	<1	<1
	Trichlorofluoromethane	µg/L	1	<1	<1
	Vinyl chloride	µg/L	1	<1	<1

**Notes:**

µg/L - micrograms per litre

mg/L - milligrams per litre

< - less than reported detection limit

'-' - sample not analyzed for parameter indicated

BTEX - benzene, toluene, ethylbenzene, xylenes

MTBE - methyl tert-butyl ether

PAH - polycyclic aromatic hydrocarbons

VHw6-10 – Volatile Hydrocarbons (nC6-nC10) in water

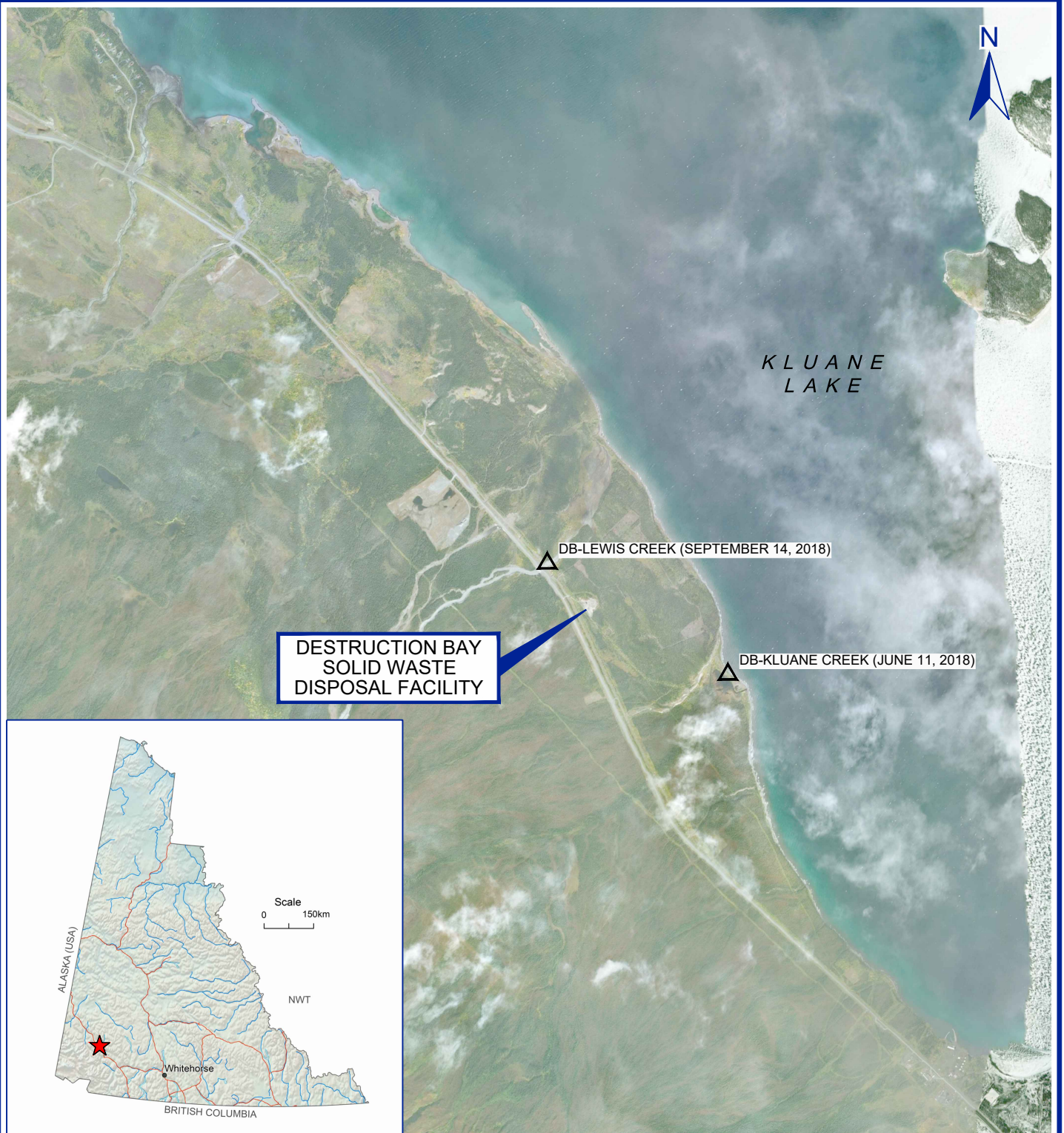
VPHw – Volatile Petroleum Hydrocarbons in water: VHw6-10 minus BTEX and styrene

VOCs - volatile organic compounds

## **DRAWINGS**

2018 Groundwater Monitoring Report  
Destruction Bay Solid Waste Disposal Facility  
Waste Management Permit No.: 80-009  
Destruction Bay, YT  
SLR Project No.: 234.01022.00001





NOTES:  
NOT A LEGAL SURVEY. DO NOT USE FOR CONSTRUCTION.

REFERENCED FROM GEOYUKON IMAGERY AND DATA AND SITE RECONNAISSANCE INFORMATION. IMAGERY: ESRI WMS, DIGITAL GLOBE, GEOEYE, EARTHSTAR GEOGRAPHICS, CNES/AIRBUS DS, USDA, USGS, AEX, GETMAPPING, AEROGRIID, IGN, IGP, SWISSTOPO, AND THE GIS COMMUNITY, ACCESSED JANUARY 2018

LEGEND:



SURFACE WATER SAMPLE

0 0.5 1 2 3 km

SCALE 1:50,000

WHEN PLOTTED CORRECTLY ON A 11 x 17 PAGE LAYOUT

NAD 1983 UTM Zone 8 U

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

# GOVERNMENT OF YUKON DESTRUCTION BAY SOLID WASTE DISPOSAL FACILITY

61°17'24" N, 138°51'33" W  
DESTRUCTION BAY, YUKON

## 2018 GROUNDWATER MONITORING REPORT

## REGIONAL MAP AND SURFACE WATER SAMPLING LOCATIONS

Date: October 18, 2018

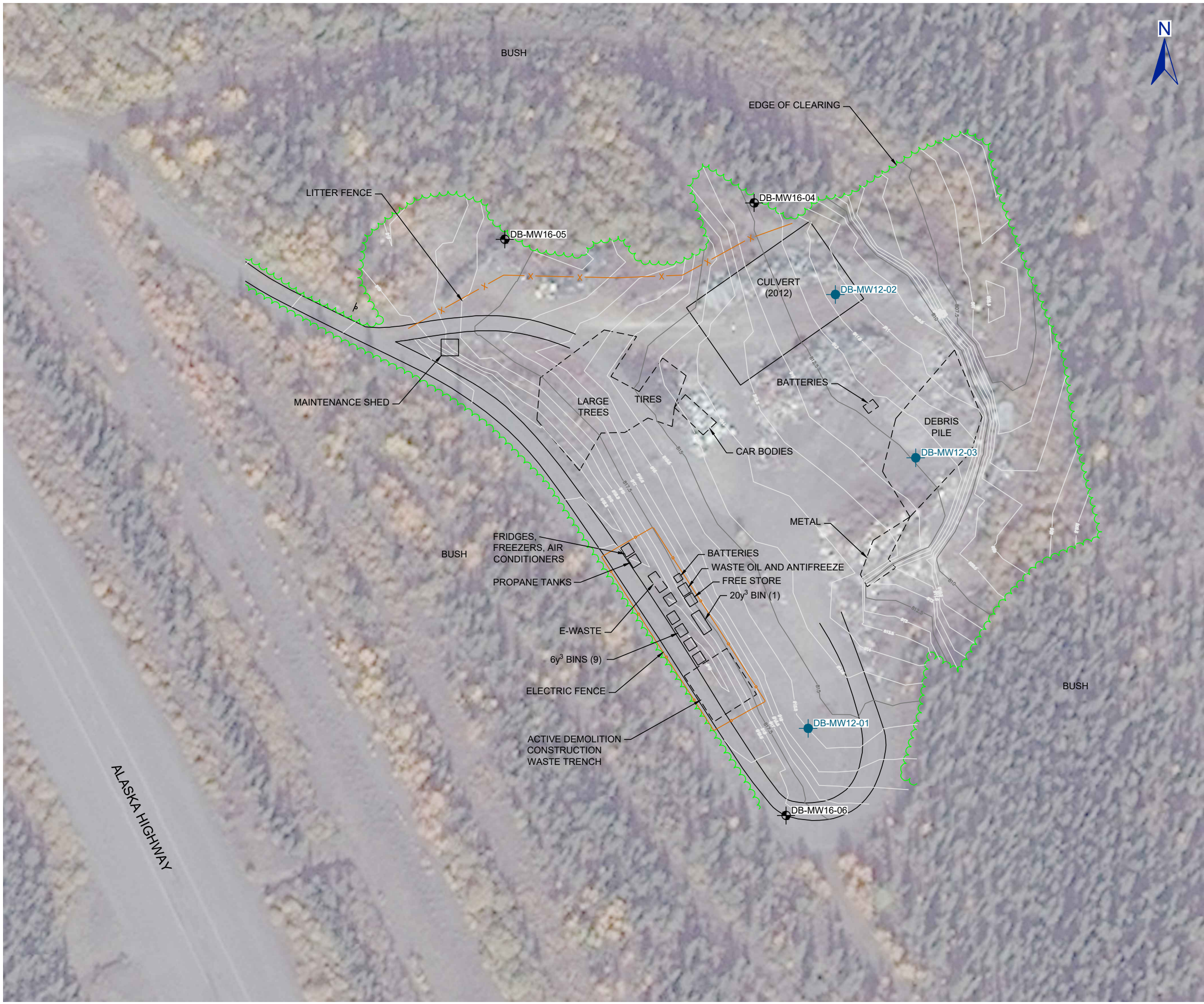
Project No. 234.01022.00001

Drawing No.

1



Cadfile name: S\_234-01022-00001-A4.dwg



NOTES:  
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REFERENCED FROM GEOYUKON IMAGERY, GOLDER ASSOCIATES *SITE PLAN* (PROJECT 1411208) AND DATA AND SITE RECONNAISSANCE INFORMATION. IMAGERY: ESRI WMS, DIGITAL GLOBE, GEOEYE, EARTHSTAR GEOGRAPHICS, CNES/AIRBUS DS, USDA, USGS, AEX, GETMAPPING, AEROGRID, IGN, IGP, SWISSTOPO, AND THE GIS COMMUNITY, ACCESSED JANUARY 2018

LEGEND:

- BOREHOLE COMPLETED AS A MONITORING WELL (OTHERS)
- BOREHOLE COMPLETED AS A MONITORING WELL (OTHERS) (DECOMMISSIONED)



SCALE 1:1,000  
WHEN PLOTTED CORRECTLY ON A 11 x 17 PAGE LAYOUT  
NAD 1983 UTM Zone 8 U

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GOVERNMENT OF YUKON  
DESTRUCTION BAY SOLID WASTE DISPOSAL FACILITY  
61°17'24" N, 138°51'33" W  
DESTRUCTION BAY, YUKON

2018 GROUNDWATER MONITORING REPORT

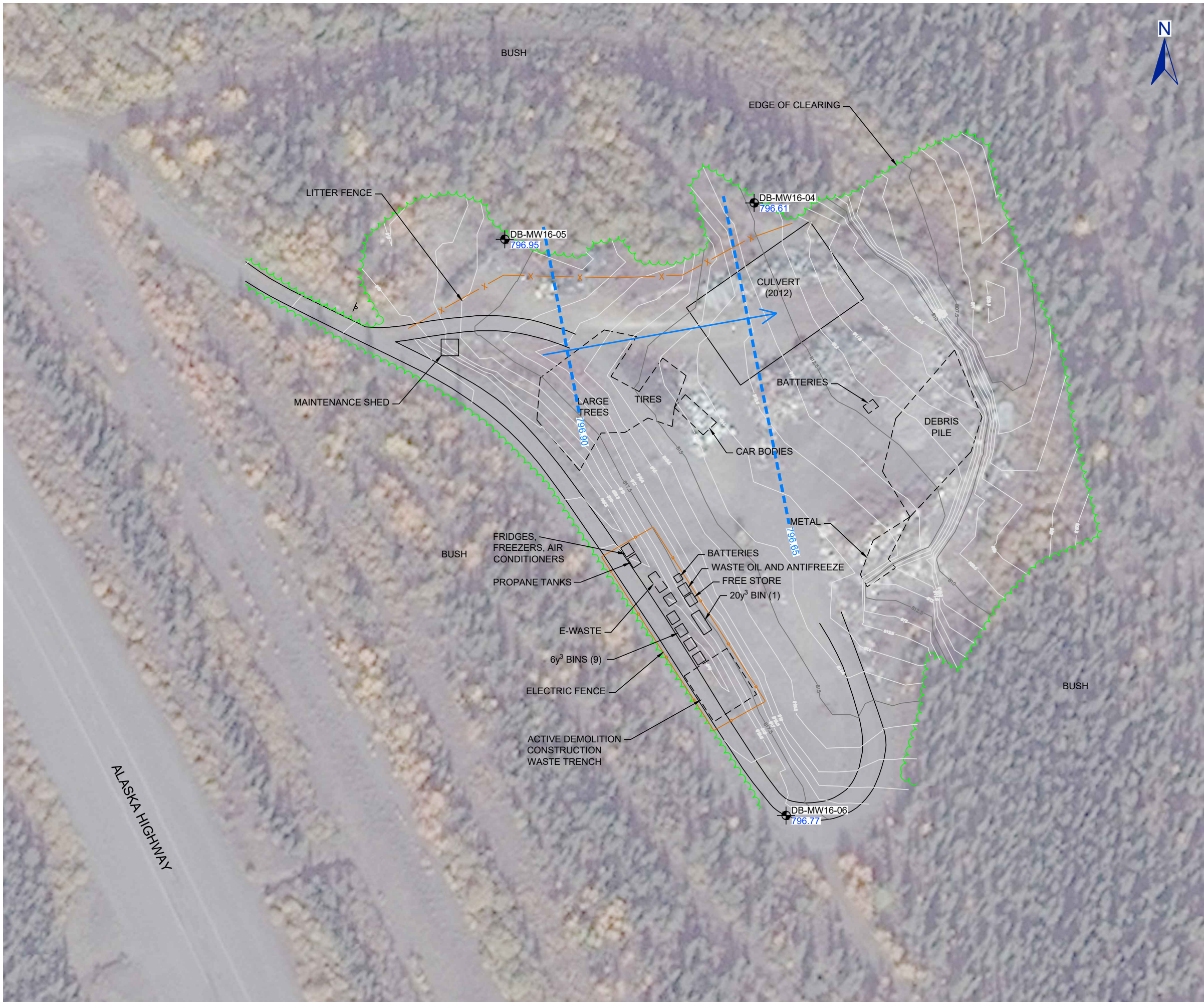
SITE PLAN

Date:	October 18, 2018	Drawing No. <b>2</b>
Project No.	234.01022.00001	





Cadfile name: S\_234-01022-00001-A4.dwg



NOTES:  
NOT A LEGAL SURVEY. DO NOT USE FOR CONSTRUCTION.

REFERENCED FROM GEOYUKON IMAGERY, GOLDER ASSOCIATES *SITE PLAN* (PROJECT 1411208) AND DATA AND SITE RECONNAISSANCE INFORMATION. IMAGERY: ESRI WMS, DIGITAL GLOBE, GEOEYE, EARTHSTAR GEOGRAPHICS, CNES/AIRBUS DS, USDA, USGS, AEX, GETMAPPING, AEROGRID, IGN, IGP, SWISSTOPO, AND THE GIS COMMUNITY, ACCESSED JANUARY 2018

LEGEND:

- BOREHOLE COMPLETED AS A MONITORING WELL (OTHERS)
- GROUNDWATER MONITORING RESULTS**  
GROUNDWATER ELEVATION (m)
- 796.61**
- 796.65** — — — — — INFERRED GROUNDWATER ELEVATION CONTOUR (INTERVAL 0.35 m)
- INFERRED GROUNDWATER FLOW DIRECTION



SCALE 1:1,000  
WHEN PLOTTED CORRECTLY ON A 11 x 17 PAGE LAYOUT  
NAD 1983 UTM Zone 8 U

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

GOVERNMENT OF YUKON  
DESTRUCTION BAY SOLID WASTE DISPOSAL FACILITY  
61°17'24" N, 138°51'33" W  
DESTRUCTION BAY, YUKON

2018 GROUNDWATER MONITORING REPORT

**INFERRED GROUNDWATER CONTOUR PLAN -  
SEPTEMBER 11, 2018**

Date: October 18, 2018	Drawing No. <b>3</b>
Project No. 234.01022.00001	



**APPENDIX A**  
**Groundwater / Surface Water Field Sampling Sheets**

2018 Groundwater Monitoring Report  
Destruction Bay Solid Waste Disposal Facility  
Waste Management Permit No.: 80-009  
Destruction Bay, YT  
SLR Project No.: 234.01022.00001





# Groundwater Sampling Record (Regular) Field Parameter Stabilization Method

Project Number.: 234.01022.00001  
Project Name: Xukon SWFs  
Address: Destruction Bay SWF

Date: June 11 /18  
Weather: Sun /cloud, wind, 10°C  
Field Staff: RP /CB

Rental Location Hoskin 1 or  
pH ID \_\_\_\_\_ Water Probe ID \_\_\_\_\_  
PP ID \_\_\_\_\_

Well ID	Duplicate ID	Monitoring Data					Purge Water Parameter Stabilization Data										Sampling Data			Comments					
		Headspace (ppm/%)	Depth (m)			Single Well Volume (L)	Purge Method	Start Time	Elapsed Purge Time	Cumul. Purge Vol. (l)	T (°C)	pH	Conductivity (uS/cm)	DO (mg/L)	Colour	Depth (m)	Sampling Method	Time	Analysis	Parameter	GW Observations (Circle)				
			to Prod.	to GW	to EOH																Sheen	Heavy	Moderate	Slight	None
DB-MW16-05																				Sheen	Heavy	Moderate	Slight	None	
																				Odour	Strong	Moderate	Slight	None	
																				Turbidity	Very Mirky	Mirky	Slight	Clear	
																				EOH	Silty @ bottom of well				Not Silty
																				Other					
																				Other					
DB-MW16-06																				Sheen	Heavy	Moderate	Slight	None	
																				Odour	Strong	Moderate	Slight	None	
																				Turbidity	Very Mirky	Mirky	Slight	Clear	
																				EOH	Silty				Not Silty
																				Other	Sand in bailer				
																				Other	Brown				
DB-MW16-04																				Sheen	Heavy	Moderate	Slight	None	
																				Odour	Strong	Moderate	Slight	None	
																				Turbidity	Very Mirky	Mirky	Slight	Clear	
																				EOH	Silty				Not Silty
																				Other	dry				
																				Other					

Note: EOH - end of hole  
All depth measurements from top of pipe  
Do not monitor EOH if free-product is present in well

Parameter Stabilization Guidelines: pH: +/- 0.2 units  
Temp: +/- 0.1°C  
Conductivity: +/- 3%

## Well volume Calculation:

One standing volume of water in well and annulus =  $V_w + V_a$

$$V_w = \pi r_i^2 (H) \times 1000$$

$$V_a = \pi R^2 (H) \times 300 - (\pi r_o^2 (H) \times 300)$$

$V_w$  = one well volume (L)

$V_a$  = one standing volume (annulus)(L)

$r_i$  = radius of well inside of pipe (m)

$r_o$  = radius of well outside of pipe (m)

R = radius of the borehole (m)

H = distance from static water level to bottom of well (m)

2" casing has 2.032 L/m; 1" casing has 0.509 L/m

8" sandpack has 9.271 L/m; 6 5/8" sandpack has 6.35 L/m

SLR

# Groundwater Sampling Record (Regular)

## Field Parameter Stabilization Method

2 of 2

Project Number: 234.01022.00001

Date: Jun 11/18

Rental Location

Project Name: Yukon SWF

Weather: Sun/cloud, 10°C

pH ID

Water Probe ID

Address: Destruction Bay SWF

Field Staff: RP/UB

PP ID

Well ID	Duplicate ID	Monitoring Data					Purge Water Parameter Stabilization Data							Sampling Data			Comments						
		Headspace (ppm%)	Depth (m)			Single Well Volume (L.)	Purge Method	Start Time	Elapsed Purge Time	Cumul. Purge Vol. (l)	T (°C)	pH	Conductivity (uS/cm)	Colour	ODP (m)	Sampling Method	Time	Analysis	GW Observations (Circle)				
			to Prod.	to GW	to EOH														Parameter				
DB-Kuane Lake								+ 10	✓	9.0	8.22	220.9	9.17	19.2	Grab	1308	see permit	Sheen	Heavy	Moderate	Slight	None	
							+ 5							Odour				Strong	Moderate	Slight	None		
							+ 5							Turbidity				Very Mirky	Mirky	Slight	Clear		
							+ 5							EOH				Silty		Not Silty			
							+ 5							Other				Surface water					
							+ 5							Other									
							+ 10																
							+ 5											Sheen	Heavy	Moderate	Slight	None	
							+ 5											Odour	Strong	Moderate	Slight	None	
							+ 5											Turbidity	Very Mirky	Mirky	Slight	Clear	
							+ 5											EOH	Silty		Not Silty		
							+ 5											Other					
							+ 5											Other					
							+ 10											Sheen	Heavy	Moderate	Slight	None	
							+ 5											Odour	Strong	Moderate	Slight	None	
							+ 5											Turbidity	Very Mirky	Mirky	Slight	Clear	
							+ 5											EOH	Silty		Not Silty		
							+ 5											Other					
							+ 5											Other					

Note: EOH - end of hole  
 All depth measurements from top of pipe  
 Do not monitor EOH if free-product is present in well

Parameter Stabilization Guidelines: pH: +/- 0.2 units  
 Temp: +/- 0.1°C  
 Conductivity: +/- 3%

## Well volume Calculation:

One standing volume of water in well and annulus =  $V_w + V_a$ 

$$V_w = \pi r_i^2 (H) \times 1000$$

$$V_a = \pi R^2 (H) \times 300 - (\pi r_o^2 (H) \times 300)$$

 $V_w$  = one well volume (L) $V_a$  = one standing volume (annulus)(L) $r_i$  = radius of well inside of pipe (m) $r_o$  = radius of well outside of pipe (m) $R$  = radius of the borehole (m) $H$  = distance from static water level to bottom of well (m)

2" casing has 2.032 L/m; 1" casing has 0.509 L/m

8" sandpack has 9.271 L/m; 6 5/8" sandpack has 6.35 L/m



SLR

# Groundwater Sampling Record (Regular)

## Field Parameter Stabilization Method

Project Number: 234.01022.00001

Date: Sept 12 + 13/18

Project Name: Yukon SWF

Weather: rain, 10°C

Address: Destruction Bay  
SWF

Field Staff: RVP/CB

Rental Location

pH ID

Water Probe ID

PP ID

1 of 2

Well ID	Duplicate ID	Monitoring Data					Purge Water Parameter Stabilization Data							Sampling Data			Comments						
		Headspace (ppm/%)	Depth (m)			Single Well Volume (L)	Purge Method	Start Time	Elapsed Purge Time	Cumul. Purge Vol. (L)	T (°C)	pH	Conductivity (uS/cm)	ORP (mV)	Colour (mg/l)	Sampling Method	Time	Analysis	Parameter	GW Observations (Circle)			
			to Prod.	to GW	to EOH															Sheen	Heavy	Moderate	Slight
DB-MW16-06	DB-DU-01	—	—	23.919	26.16	—	bladder pump	17:16	+10	2.5	4.05	7.67	681	144.8	11.17	bladder pump	17:41	see report	Sheen	Heavy	Moderate	Slight	None
									+5	3.25	4.09	7.75	681	136.8	11.18			Odour	Strong	Moderate	Slight	None	
									+5	4.5	4.30	7.81	579	131.6	11.21			Turbidity	Very Milky	Milky	Slight	Clear	
									+5	5.0	4.45	7.84	674	129.9	11.21			EOH	Silty		Not Silty		
									+5									Other	Sept 12				
									+5									Other					
DB-MW16-05	—	—	—	20.214	24.54	—	—	08:40	+10	3.0	3.83	7.66	688	155.0	11.88	—	—	Sheen	Heavy	Moderate	Slight	None	
									+5	5.0	3.80	7.72	686	146.0	11.42			Odour	Strong	Moderate	Slight	None	
									+5	6.0	3.80	7.77	685	140.9	11.22			Turbidity	Very Milky	Milky	Slight	Clear	
									+5									EOH	Silty		Not Silty		
									+5									Other	Milky white @ beginning				
									+5									Other	Sept 13 sampled				
DB-MW16-04	—	—	—	18.140	19.245	—	—	10:03	+10	1.5	4.50	7.85	685	185.1	12.22	—	—	Sheen	Heavy	Moderate	Slight	None	
									+5	3.5	3.78	7.74	682	176.3	11.92			Odour	Strong	Moderate	Slight	None	
									+5	4.5	3.68	7.75	681	170.4	11.90			Turbidity	Very Milky	Milky	Slight	Clear	
									+5	6.0	3.66	7.81	681	164.3	11.85			EOH	Silty		Not Silty		
									+5									Other					
									+5									Other	Sept 13 sampled				

Note: EOH - end of hole

All depth measurements from top of pipe

Do not monitor EOH if free-product is present in well

Parameter Stabilization Guidelines:

pH: +/- 0.2 units

Temp: +/- 0.1°C

Conductivity: +/- 3%

Well volume Calculation:

One standing volume of water in well and annulus =  $V_w + V_a$  $V_w = \pi r_i^2 (H) \times 1000$  $V_a = \pi R^2 (H) \times 300 - (\pi r_o^2 (H) \times 300)$  $V_w$  = one well volume (L) $V_a$  = one standing volume (annulus) (L) $r_i$  = radius of well inside of pipe (m) $r_o$  = radius of well outside of pipe (m)

R = radius of the borehole (m)

H = distance from static water level to bottom of well (m)

2" casing has 2.032 L/m; 1" casing has 0.509 L/m

8" sandpack has 9.271 L/m; 6 5/8" sandpack has 6.35 L/m

SLR

Groundwater Sampling Record (Regular)  
Field Parameter Stabilization Method

2 of 2

Project Number.: \_\_\_\_\_

Date:

Sept 14/18

Rental Location

Project Name: \_\_\_\_\_

Weather: \_\_\_\_\_

Address: Destruction Bay

Field Staff: \_\_\_\_\_

pH ID

Water Probe ID

PP ID

Well ID	Duplicate ID	Monitoring Data					Purge Water Parameter Stabilization Data								Sampling Data			Comments					
		Headspace (ppm/%)	to Prod.	to GW	to EOH	Single Well Volume (L)	Purge Method	Start Time	Elapsed Purge Time	Cumul. Purge Vol. (L)	T (°C)	pH	Conductivity (uS/cm)	ODP	Colour	Sampling Method	Time	Analysis	GW Observations (Circle)				
																			Parameter	Sheen	Heavy	Moderate	Slight
DB-Lewis Creek								+ 10			3.68	8.17	695	121.5	12.05	grab	0853	see permit	Sheen	Heavy	Moderate	Slight	None
							+ 5								Odour				Strong	Moderate	Slight	None	
							+ 5								Turbidity				Very Milky	Mirky	Slight	Clear	
							+ 5								EOH				Silty	Not Silty	N/A		
							+ 5								Other				Surface water				
							+ 5								Other				JV 0614348 6797400				
								+ 10											Sheen	Heavy	Moderate	Slight	None
							+ 5								Odour				Strong	Moderate	Slight	None	
							+ 5								Turbidity				Very Milky	Mirky	Slight	Clear	
							+ 5								EOH				Silty	Not Silty			
							+ 5								Other								
							+ 5								Other								
								+ 10											Sheen	Heavy	Moderate	Slight	None
							+ 5								Odour				Strong	Moderate	Slight	None	
							+ 5								Turbidity				Very Milky	Mirky	Slight	Clear	
							+ 5								EOH				Silty	Not Silty			
							+ 5								Other								
							+ 5								Other								

Note: EOH - end of hole  
All depth measurements from top of pipe  
Do not monitor EOH if free-product is present in well

Parameter Stabilization Guidelines: pH: +/- 0.2 units  
Temp: +/- 0.1°C  
Conductivity: +/- 3%

## Well volume Calculation:

One standing volume of water in well and annulus =  $V_w + V_a$ 

$$V_w = \pi r_i^2 (H) \times 1000$$

$$V_a = \pi R^2 (H) \times 300 - (\pi r_o^2 (H) \times 300)$$

 $V_w$  = one well volume (L) $V_a$  = one standing volume (annulus)(L) $r_i$  = radius of well inside of pipe (m) $r_o$  = radius of well outside of pipe (m) $R$  = radius of the borehole (m) $H$  = distance from static water level to bottom of well (m)

2" casing has 2.032 L/m; 1" casing has 0.509 L/m

8" sandpack has 9.271 L/m; 6 5/8" sandpack has 6.35 L/m



**APPENDIX B**  
**CARO Analytical Services Certificate of Analysis**

2018 Groundwater Monitoring Report  
Destruction Bay Solid Waste Disposal Facility  
Waste Management Permit No.: 80-009  
Destruction Bay, YT  
SLR Project No.: 234.01022.00001

## CERTIFICATE OF ANALYSIS

**REPORTED TO** SLR Consulting (Whitehorse)  
6131 6th Avenue  
Whitehorse, YT Y1A 1N2

**ATTENTION** Charles Shewen

**PO NUMBER** WIN1577

**PROJECT** 234.01022.00001

**PROJECT INFO**

**WORK ORDER** 8061229

**RECEIVED / TEMP** 2018-06-13 10:35 / 4°C  
**REPORTED** 2018-06-20 16:53

### Introduction:

CARO Analytical Services is a testing laboratory full of smart, engaged scientists driven to make the world a safer and healthier place. Through our clients' projects we become an essential element for a better world. We employ methods conducted in accordance with recognized professional standards using accepted testing methodologies and quality control efforts. CARO is accredited by the Canadian Association for Laboratories Accreditation (CALA) to ISO 17025:2005 for specific tests listed in the scope of accreditation approved by CALA.

#### *Big Picture Sidekicks*



You know that the sample you collected after snowshoeing to site, digging 5 meters, and racing to get it on a plane so you can submit it to the lab for time sensitive results needed to make important and expensive decisions (whew) is VERY important. We know that too.

#### *We've Got Chemistry*



It's simple. We figure the more you enjoy working with our fun and engaged team members; the more likely you are to give us continued opportunities to support you.

#### *Ahead of the Curve*



Through research, regulation knowledge, and instrumentation, we are your analytical centre for the technical knowledge you need, BEFORE you need it, so you can stay up to date and in the know.

If you have any questions or concerns, please contact me at [machan@caro.ca](mailto:machan@caro.ca)

### Authorized By:

Maggie Chan, DipT  
Client Service Representative

1-888-311-8846 | [www.caro.ca](http://www.caro.ca)

#110 4011 Viking Way Richmond, BC V6V 2K9 | #102 3677 Highway 97N Kelowna, BC V1X 5C3 | 17225 109 Avenue Edmonton, AB T5S 1H7

## TEST RESULTS

**REPORTED TO PROJECT** SLR Consulting (Whitehorse)  
234.01022.00001

**WORK ORDER REPORTED** 8061229  
2018-06-20 16:53

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>DB-Kluane Lake (8061229-01)   Matrix: Water   Sampled: 2018-06-11 13:08</b>					
<b>Anions</b>					
Chloride	1.60	0.10	mg/L	2018-06-15	
Nitrate (as N)	< 0.010	0.010	mg/L	2018-06-15	HT1
Nitrite (as N)	< 0.010	0.010	mg/L	2018-06-15	HT1
Phosphate (as P)	< 0.0050	0.0050	mg/L	2018-06-15	HT1
Sulfate	58.8	1.0	mg/L	2018-06-15	
<b>General Parameters</b>					
Alkalinity, Total (as CaCO <sub>3</sub> )	88.6	1.0	mg/L	2018-06-15	
Alkalinity, Phenolphthalein (as CaCO <sub>3</sub> )	< 1.0	1.0	mg/L	2018-06-15	
Alkalinity, Bicarbonate (as CaCO <sub>3</sub> )	88.6	1.0	mg/L	2018-06-15	
Alkalinity, Carbonate (as CaCO <sub>3</sub> )	< 1.0	1.0	mg/L	2018-06-15	
Alkalinity, Hydroxide (as CaCO <sub>3</sub> )	< 1.0	1.0	mg/L	2018-06-15	
Ammonia, Total (as N)	< 0.020	0.020	mg/L	2018-06-16	
BOD, 5-day	< 5.8	2.0	mg/L	2018-06-19	
Carbon, Total Organic	1.62	0.50	mg/L	2018-06-15	
Chemical Oxygen Demand	< 20	20	mg/L	2018-06-15	
Conductivity (EC)	300	2.0	µS/cm	2018-06-15	
pH	7.76	0.10	pH units	2018-06-15	HT2
Phosphorus, Total (as P)	0.0186	0.0020	mg/L	2018-06-16	
<b>Calculated Parameters</b>					
Hardness, Total (as CaCO <sub>3</sub> )	161	0.500	mg/L	N/A	
Solids, Total Dissolved	177	10	mg/L	2018-06-20	
<b>Total Metals</b>					
Aluminum, total	0.337	0.0050	mg/L	2018-06-18	
Antimony, total	0.00036	0.00020	mg/L	2018-06-18	
Arsenic, total	0.00103	0.00050	mg/L	2018-06-18	
Barium, total	0.0325	0.0050	mg/L	2018-06-18	
Beryllium, total	< 0.00010	0.00010	mg/L	2018-06-18	
Bismuth, total	< 0.00010	0.00010	mg/L	2018-06-18	
Boron, total	0.0535	0.0050	mg/L	2018-06-18	
Cadmium, total	0.000029	0.000010	mg/L	2018-06-18	
Calcium, total	43.9	0.20	mg/L	2018-06-18	
Chromium, total	0.00136	0.00050	mg/L	2018-06-18	
Cobalt, total	0.00049	0.00010	mg/L	2018-06-18	
Copper, total	0.00355	0.00040	mg/L	2018-06-18	
Iron, total	0.768	0.010	mg/L	2018-06-18	
Lead, total	0.00049	0.00020	mg/L	2018-06-18	
Lithium, total	0.00452	0.00010	mg/L	2018-06-18	
Magnesium, total	12.5	0.010	mg/L	2018-06-18	
Manganese, total	0.0197	0.00020	mg/L	2018-06-18	
Mercury, total	< 0.000010	0.000010	mg/L	2018-06-19	

## TEST RESULTS

**REPORTED TO PROJECT** SLR Consulting (Whitehorse)  
234.01022.00001

**WORK ORDER REPORTED** 8061229  
2018-06-20 16:53

Analyte	Result	RL	Units	Analyzed	Qualifier
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### DB-Kluane Lake (8061229-01) | Matrix: Water | Sampled: 2018-06-11 13:08, Continued

#### Total Metals, Continued

Molybdenum, total	0.00132	0.00010	mg/L	2018-06-18	
Nickel, total	0.00209	0.00040	mg/L	2018-06-18	
Phosphorus, total	< 0.050	0.050	mg/L	2018-06-18	
Potassium, total	2.63	0.10	mg/L	2018-06-18	
Selenium, total	0.00099	0.00050	mg/L	2018-06-18	
Silicon, total	1.6	1.0	mg/L	2018-06-18	
Silver, total	< 0.000050	0.000050	mg/L	2018-06-18	
Sodium, total	3.11	0.10	mg/L	2018-06-18	
Strontium, total	0.219	0.0010	mg/L	2018-06-18	
Sulfur, total	23.3	3.0	mg/L	2018-06-18	
Tellurium, total	< 0.00050	0.00050	mg/L	2018-06-18	
Thallium, total	0.000029	0.000020	mg/L	2018-06-18	
Thorium, total	< 0.00010	0.00010	mg/L	2018-06-18	
Tin, total	< 0.00020	0.00020	mg/L	2018-06-18	
Titanium, total	0.0173	0.0050	mg/L	2018-06-18	
Tungsten, total	< 0.0010	0.0010	mg/L	2018-06-18	
Uranium, total	0.000869	0.000020	mg/L	2018-06-18	
Vanadium, total	0.0017	0.0010	mg/L	2018-06-18	
Zinc, total	0.0058	0.0040	mg/L	2018-06-18	
Zirconium, total	< 0.00010	0.00010	mg/L	2018-06-18	

#### BCMOE Aggregate Hydrocarbons

VHw (6-10)	< 100	100	µg/L	2018-06-17	
VPHw	< 100	100	µg/L	N/A	
EPHw10-19	< 250	250	µg/L	2018-06-17	
EPHw19-32	< 250	250	µg/L	2018-06-17	
LEPHw	< 250	250	µg/L	N/A	
HEPHw	< 250	250	µg/L	N/A	
Surrogate: 2-Methylnonane (EPH/F2-4)	69	60-140	%	2018-06-17	

#### Polycyclic Aromatic Hydrocarbons (PAH)

Acenaphthene	< 0.050	0.050	µg/L	2018-06-18	
Acenaphthylene	< 0.200	0.200	µg/L	2018-06-18	
Acridine	< 0.050	0.050	µg/L	2018-06-18	
Anthracene	< 0.010	0.010	µg/L	2018-06-18	
Benz(a)anthracene	< 0.010	0.010	µg/L	2018-06-18	
Benzo(a)pyrene	< 0.010	0.010	µg/L	2018-06-18	
Benzo(b+j)fluoranthene	< 0.050	0.050	µg/L	2018-06-18	
Benzo(g,h,i)perylene	< 0.050	0.050	µg/L	2018-06-18	
Benzo(k)fluoranthene	< 0.050	0.050	µg/L	2018-06-18	
2-Chloronaphthalene	< 0.100	0.100	µg/L	2018-06-18	
Chrysene	< 0.050	0.050	µg/L	2018-06-18	
Dibenz(a,h)anthracene	< 0.010	0.010	µg/L	2018-06-18	

## TEST RESULTS

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234.01022.00001

**WORK ORDER REPORTED** 8061229  
2018-06-20 16:53

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>DB-Kluane Lake (8061229-01)   Matrix: Water   Sampled: 2018-06-11 13:08, Continued</b>					
<i>Polycyclic Aromatic Hydrocarbons (PAH), Continued</i>					
Fluoranthene	< 0.030	0.030	µg/L	2018-06-18	
Fluorene	< 0.050	0.050	µg/L	2018-06-18	
Indeno(1,2,3-cd)pyrene	< 0.050	0.050	µg/L	2018-06-18	
1-Methylnaphthalene	< 0.100	0.100	µg/L	2018-06-18	
2-Methylnaphthalene	< 0.100	0.100	µg/L	2018-06-18	
Naphthalene	< 0.200	0.200	µg/L	2018-06-18	
Phenanthrene	< 0.100	0.100	µg/L	2018-06-18	
Pyrene	< 0.020	0.020	µg/L	2018-06-18	
Quinoline	< 0.050	0.050	µg/L	2018-06-18	
Surrogate: Acridine-d9	56	50-140	%	2018-06-18	
Surrogate: Naphthalene-d8	95	50-140	%	2018-06-18	
Surrogate: Perylene-d12	81	50-140	%	2018-06-18	
<i>Volatile Organic Compounds (VOC)</i>					
Benzene	< 0.5	0.5	µg/L	2018-06-17	
Bromodichloromethane	< 1.0	1.0	µg/L	2018-06-17	
Bromoform	< 1.0	1.0	µg/L	2018-06-17	
Carbon tetrachloride	< 0.5	0.5	µg/L	2018-06-17	
Chlorobenzene	< 1.0	1.0	µg/L	2018-06-17	
Chloroethane	< 2.0	2.0	µg/L	2018-06-17	
Chloroform	< 1.0	1.0	µg/L	2018-06-17	
Dibromochloromethane	< 1.0	1.0	µg/L	2018-06-17	
1,2-Dibromoethane	< 0.3	0.3	µg/L	2018-06-17	
Dibromomethane	< 1.0	1.0	µg/L	2018-06-17	
1,2-Dichlorobenzene	< 0.5	0.5	µg/L	2018-06-17	
1,3-Dichlorobenzene	< 1.0	1.0	µg/L	2018-06-17	
1,4-Dichlorobenzene	< 1.0	1.0	µg/L	2018-06-17	
1,1-Dichloroethane	< 1.0	1.0	µg/L	2018-06-17	
1,2-Dichloroethane	< 1.0	1.0	µg/L	2018-06-17	
1,1-Dichloroethylene	< 1.0	1.0	µg/L	2018-06-17	
cis-1,2-Dichloroethylene	< 1.0	1.0	µg/L	2018-06-17	
trans-1,2-Dichloroethylene	< 1.0	1.0	µg/L	2018-06-17	
Dichloromethane	< 3.0	3.0	µg/L	2018-06-17	
1,2-Dichloropropane	< 1.0	1.0	µg/L	2018-06-17	
1,3-Dichloropropene (cis + trans)	< 1.0	1.0	µg/L	2018-06-17	
Ethylbenzene	< 1.0	1.0	µg/L	2018-06-17	
Methyl tert-butyl ether	< 1.0	1.0	µg/L	2018-06-17	
Styrene	< 1.0	1.0	µg/L	2018-06-17	
1,1,2,2-Tetrachloroethane	< 0.5	0.5	µg/L	2018-06-17	
Tetrachloroethylene	< 1.0	1.0	µg/L	2018-06-17	
Toluene	< 1.0	1.0	µg/L	2018-06-17	
1,1,1-Trichloroethane	< 1.0	1.0	µg/L	2018-06-17	
1,1,2-Trichloroethane	< 1.0	1.0	µg/L	2018-06-17	

## TEST RESULTS

**REPORTED TO PROJECT** SLR Consulting (Whitehorse)  
234.01022.00001

**WORK ORDER REPORTED** 8061229  
2018-06-20 16:53

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>DB-Kluane Lake (8061229-01)   Matrix: Water   Sampled: 2018-06-11 13:08, Continued</b>					
<i>Volatile Organic Compounds (VOC), Continued</i>					
Trichloroethylene	< 1.0	1.0	µg/L	2018-06-17	
Trichlorofluoromethane	< 1.0	1.0	µg/L	2018-06-17	
Vinyl chloride	< 1.0	1.0	µg/L	2018-06-17	
Xylenes (total)	< 2.0	2.0	µg/L	2018-06-17	
Surrogate: Toluene-d8	86	70-130	%	2018-06-17	
Surrogate: 4-Bromofluorobenzene	96	70-130	%	2018-06-17	
Surrogate: 1,4-Dichlorobenzene-d4	94	70-130	%	2018-06-17	

### Sample Qualifiers:

HT1 The sample was prepared and/or analyzed past the recommended holding time.  
HT2 The 15 minute recommended holding time (from sampling to analysis) has been exceeded - field analysis is recommended.

## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** SLR Consulting (Whitehorse)  
234.01022.00001

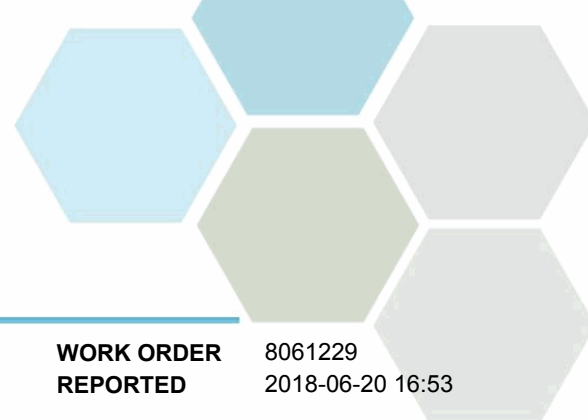
**WORK ORDER REPORTED** 8061229  
2018-06-20 16:53

Analysis Description	Method Ref.	Technique	Location
Alkalinity in Water	SM 2320 B* (2011)	Titration with H2SO4	Kelowna
Ammonia, Total in Water	SM 4500-NH3 G* (2011)	Automated Colorimetry (Phenate)	Kelowna
Anions in Water	SM 4110 B (2011)	Ion Chromatography	Kelowna
Biochemical Oxygen Demand in Water	SM 5210 B (2011)	Dissolved Oxygen Meter	Kelowna
Carbon, Total Organic in Water	SM 5310 B (2011)	Combustion, Infrared CO2 Detection	Kelowna
Chemical Oxygen Demand in Water	SM 5220 D* (2011)	Closed Reflux, Colorimetry	Kelowna
Conductivity in Water	SM 2510 B (2011)	Conductivity Meter	Kelowna
EPH in Water	EPA 3511* / BCMOE EPHw	Hexane MicroExtraction (Base/Neutral) / Gas Chromatography (GC-FID)	Richmond
Hardness in Water	SM 2340 B* (2011)	Calculation: 2.497 [total Ca] + 4.118 [total Mg] (Est)	N/A
HEPHw in Water	BCMOE LEPH/HEPH	Calculation	N/A
LEPHw in Water	BCMOE LEPH/HEPH	Calculation	N/A
Mercury, total in Water	EPA 245.7*	BrCl2 Oxidation / Cold Vapor Atomic Fluorescence Spectrometry (CVAFS)	Richmond
pH in Water	SM 4500-H+ B (2011)	Electrometry	Kelowna
Phosphorus, Total in Water	SM 4500-P B.5* (2011) / SM 4500-P F (2011)	Persulfate Digestion / Automated Colorimetry (Ascorbic Acid)	Kelowna
Polycyclic Aromatic Hydrocarbons in Water	EPA 3511* / EPA 8270D	Hexane MicroExtraction (Base/Neutral) / GC-MSD (SIM)	Richmond
Solids, Total Dissolved in Water	SM 1030 E (2011)	Calculation: $100 \times ([\text{Cations}] - [\text{Anions}] / ([\text{Cations}] + [\text{Anions}]))$	N/A
Total Metals in Water	EPA 200.2* / EPA 6020B	HNO3+HCl Hot Block Digestion / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	Richmond
VH in Water	EPA 5030B / BCMOE VHW	Purge&Trap / Gas Chromatography (GC-FID)	Richmond
Volatile Organic Compounds in Water	EPA 5030B / EPA 8260D	Purge&Trap / GC-MSD (SIM)	Richmond
VPHw in Water	BCMOE VPH	Calculation: VH - (Benzene + Toluene + Ethylbenzene + Xylenes + Styrene)	N/A

*Note: An asterisk in the Method Reference indicates that the CARO method has been modified from the reference method*

### Glossary of Terms:

RL	Reporting Limit (default)
<	Less than the specified Reporting Limit (RL) - the actual RL may be higher than the default RL due to various factors
mg/L	Milligrams per litre
pH units	pH < 7 = acidic, pH > 7 = basic
µg/L	Micrograms per litre
µS/cm	Microsiemens per centimetre
BCMOE	British Columbia Environmental Laboratory Manual, British Columbia Ministry of Environment
EPA	United States Environmental Protection Agency Test Methods
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO** SLR Consulting (Whitehorse)  
**PROJECT** 234.01022.00001

**WORK ORDER** 8061229  
**REPORTED** 2018-06-20 16:53

### General Comments:

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. CARO is not responsible for any loss or damage resulting directly or indirectly from error or omission in the conduct of testing. Liability is limited to the cost of analysis. Samples will be disposed of 30 days after the test report has been issued unless otherwise agreed to in writing.



## APPENDIX 2: QUALITY CONTROL RESULTS

**REPORTED TO PROJECT** SLR Consulting (Whitehorse)  
234.01022.00001

**WORK ORDER REPORTED** 8061229  
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The following section displays the quality control (QC) data that is associated with your sample data. Groups of samples are prepared in "batches" and analyzed in conjunction with QC samples that ensure your data is of the highest quality. Common QC types include:

- **Method Blank (Blk):** A blank sample that undergoes sample processing identical to that carried out for the test samples. Method blank results are used to assess contamination from the laboratory environment and reagents.
- **Duplicate (Dup):** An additional or second portion of a randomly selected sample in the analytical run carried through the entire analytical process. Duplicates provide a measure of the analytical method's precision (reproducibility).
- **Blank Spike (BS):** A sample of known concentration which undergoes processing identical to that carried out for test samples, also referred to as a laboratory control sample (LCS). Blank spikes provide a measure of the analytical method's accuracy.
- **Matrix Spike (MS):** A second aliquot of sample is fortified with with a known concentration of target analytes and carried through the entire analytical process. Matrix spikes evaluate potential matrix effects that may affect the analyte recovery.
- **Reference Material (SRM):** A homogenous material of similar matrix to the samples, certified for the parameter(s) listed. Reference Materials ensure that the analytical process is adequate to achieve acceptable recoveries of the parameter(s) tested.

Each QC type is analyzed at a 5-10% frequency, i.e. one blank/duplicate/spike for every 10-20 samples. For all types of QC, the specified recovery (% Rec) and relative percent difference (RPD) limits are derived from long-term method performance averages and/or prescribed by the reference method.

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
<b>Anions, Batch B8F1138</b>									
<b>Blank (B8F1138-BLK1)</b>					Prepared: 2018-06-15, Analyzed: 2018-06-15				
Chloride	< 0.10	0.10 mg/L							
Nitrate (as N)	< 0.010	0.010 mg/L							
Nitrite (as N)	< 0.010	0.010 mg/L							
Phosphate (as P)	< 0.0050	0.0050 mg/L							
Sulfate	< 1.0	1.0 mg/L							
<b>Blank (B8F1138-BLK2)</b>					Prepared: 2018-06-15, Analyzed: 2018-06-15				
Chloride	< 0.10	0.10 mg/L							
Nitrate (as N)	< 0.010	0.010 mg/L							
Nitrite (as N)	< 0.010	0.010 mg/L							
Phosphate (as P)	< 0.0050	0.0050 mg/L							
Sulfate	< 1.0	1.0 mg/L							
<b>Blank (B8F1138-BLK3)</b>					Prepared: 2018-06-15, Analyzed: 2018-06-15				
Chloride	< 0.10	0.10 mg/L							
Nitrate (as N)	< 0.010	0.010 mg/L							
Nitrite (as N)	< 0.010	0.010 mg/L							
Phosphate (as P)	< 0.0050	0.0050 mg/L							
Sulfate	< 1.0	1.0 mg/L							
<b>LCS (B8F1138-BS1)</b>					Prepared: 2018-06-14, Analyzed: 2018-06-14				
Chloride	16.0	0.10 mg/L	16.0		100	90-110			
Nitrate (as N)	4.17	0.010 mg/L	4.00		104	93-108			
Nitrite (as N)	2.05	0.010 mg/L	2.00		103	85-114			
Phosphate (as P)	0.973	0.0050 mg/L	1.00		97	80-120			
Sulfate	16.1	1.0 mg/L	16.0		100	91-109			
<b>LCS (B8F1138-BS2)</b>					Prepared: 2018-06-15, Analyzed: 2018-06-15				
Chloride	16.0	0.10 mg/L	16.0		100	90-110			
Nitrate (as N)	4.12	0.010 mg/L	4.00		103	93-108			
Nitrite (as N)	2.06	0.010 mg/L	2.00		103	85-114			
Phosphate (as P)	1.03	0.0050 mg/L	1.00		103	80-120			
Sulfate	16.4	1.0 mg/L	16.0		102	91-109			
<b>LCS (B8F1138-BS3)</b>					Prepared: 2018-06-15, Analyzed: 2018-06-15				
Chloride	15.8	0.10 mg/L	16.0		99	90-110			

## APPENDIX 2: QUALITY CONTROL RESULTS

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**WORK ORDER REPORTED** 8061229  
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Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
<b>Anions, Batch B8F1138, Continued</b>									
<b>LCS (B8F1138-BS3), Continued</b>				Prepared: 2018-06-15, Analyzed: 2018-06-15					
Nitrate (as N)	4.08	0.010 mg/L	4.00		102	93-108			
Nitrite (as N)	2.05	0.010 mg/L	2.00		102	85-114			
Phosphate (as P)	1.05	0.0050 mg/L	1.00		105	80-120			
Sulfate	16.1	1.0 mg/L	16.0		100	91-109			
<b>Duplicate (B8F1138-DUP3)</b>				<b>Source: 8061229-01</b>		Prepared: 2018-06-15, Analyzed: 2018-06-15			
Chloride	1.49	0.10 mg/L		1.60			7	10	
Nitrate (as N)	< 0.010	0.010 mg/L		< 0.010				10	
Nitrite (as N)	< 0.010	0.010 mg/L		< 0.010				6	
Phosphate (as P)	< 0.0050	0.0050 mg/L		< 0.0050				20	
Sulfate	59.8	1.0 mg/L		58.8			2	6	
<b>Matrix Spike (B8F1138-MS3)</b>				<b>Source: 8061229-01</b>		Prepared: 2018-06-15, Analyzed: 2018-06-15			
Chloride	17.1	0.10 mg/L	16.0	1.60	97	75-125			
Nitrate (as N)	3.99	0.010 mg/L	4.00	< 0.010	100	75-125			
Nitrite (as N)	1.95	0.010 mg/L	2.00	< 0.010	97	80-120			
Phosphate (as P)	0.937	0.0050 mg/L	1.00	< 0.0050	93	70-130			
Sulfate	78.7	1.0 mg/L	16.0	58.8	124	75-125			
<b>BCMOE Aggregate Hydrocarbons, Batch B8F1364</b>									
<b>Blank (B8F1364-BLK1)</b>				Prepared: 2018-06-16, Analyzed: 2018-06-16					
VHw (6-10)	< 100	100 µg/L							
<b>LCS (B8F1364-BS2)</b>				Prepared: 2018-06-16, Analyzed: 2018-06-16					
VHw (6-10)	2410	100 µg/L	3280		73	70-130			
<b>BCMOE Aggregate Hydrocarbons, Batch B8F1391</b>									
<b>Blank (B8F1391-BLK1)</b>				Prepared: 2018-06-16, Analyzed: 2018-06-17					
EPHw10-19	< 250	250 µg/L							
EPHw19-32	< 250	250 µg/L							
Surrogate: 2-Methylnonane (EPH/F2-4)	267	µg/L	442		60	60-140			
<b>LCS (B8F1391-BS2)</b>				Prepared: 2018-06-16, Analyzed: 2018-06-17					
EPHw10-19	12500	250 µg/L	15500		81	70-130			
EPHw19-32	17700	250 µg/L	22100		80	70-130			
Surrogate: 2-Methylnonane (EPH/F2-4)	282	µg/L	442		64	60-140			
<b>General Parameters, Batch B8F1115</b>									
<b>Blank (B8F1115-BLK1)</b>				Prepared: 2018-06-14, Analyzed: 2018-06-19					
BOD, 5-day	< 2.0	2.0 mg/L							
<b>LCS (B8F1115-BS1)</b>				Prepared: 2018-06-14, Analyzed: 2018-06-19					
BOD, 5-day	197	2.0 mg/L	198		100	85-115			
<b>General Parameters, Batch B8F1186</b>									
<b>Blank (B8F1186-BLK2)</b>				Prepared: 2018-06-14, Analyzed: 2018-06-16					
Phosphorus, Total (as P)	< 0.0020	0.0020 mg/L							
<b>Blank (B8F1186-BLK3)</b>				Prepared: 2018-06-14, Analyzed: 2018-06-16					
Phosphorus, Total (as P)	< 0.0020	0.0020 mg/L							

## APPENDIX 2: QUALITY CONTROL RESULTS

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Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
<b>General Parameters, Batch B8F1186, Continued</b>									
<b>LCS (B8F1186-BS2)</b>				Prepared: 2018-06-14, Analyzed: 2018-06-16					
Phosphorus, Total (as P)	0.104	0.0020 mg/L	0.100		104	80-112			
<b>LCS (B8F1186-BS3)</b>				Prepared: 2018-06-14, Analyzed: 2018-06-16					
Phosphorus, Total (as P)	0.105	0.0020 mg/L	0.100		105	80-112			
<b>General Parameters, Batch B8F1192</b>									
<b>Blank (B8F1192-BLK1)</b>				Prepared: 2018-06-15, Analyzed: 2018-06-15					
Chemical Oxygen Demand	< 20	20 mg/L							
<b>LCS (B8F1192-BS1)</b>				Prepared: 2018-06-15, Analyzed: 2018-06-15					
Chemical Oxygen Demand	496	20 mg/L	500		99	89-115			
<b>General Parameters, Batch B8F1233</b>									
<b>Blank (B8F1233-BLK1)</b>				Prepared: 2018-06-16, Analyzed: 2018-06-16					
Ammonia, Total (as N)	< 0.020	0.020 mg/L							
<b>Blank (B8F1233-BLK2)</b>				Prepared: 2018-06-16, Analyzed: 2018-06-16					
Ammonia, Total (as N)	< 0.020	0.020 mg/L							
<b>Blank (B8F1233-BLK3)</b>				Prepared: 2018-06-16, Analyzed: 2018-06-16					
Ammonia, Total (as N)	< 0.020	0.020 mg/L							
<b>LCS (B8F1233-BS1)</b>				Prepared: 2018-06-16, Analyzed: 2018-06-16					
Ammonia, Total (as N)	1.00	0.020 mg/L	1.00		100	90-115			
<b>LCS (B8F1233-BS2)</b>				Prepared: 2018-06-16, Analyzed: 2018-06-16					
Ammonia, Total (as N)	1.01	0.020 mg/L	1.00		101	90-115			
<b>LCS (B8F1233-BS3)</b>				Prepared: 2018-06-16, Analyzed: 2018-06-16					
Ammonia, Total (as N)	1.05	0.020 mg/L	1.00		105	90-115			
<b>General Parameters, Batch B8F1247</b>									
<b>Blank (B8F1247-BLK1)</b>				Prepared: 2018-06-15, Analyzed: 2018-06-15					
Carbon, Total Organic	< 0.50	0.50 mg/L							
<b>Blank (B8F1247-BLK2)</b>				Prepared: 2018-06-15, Analyzed: 2018-06-15					
Carbon, Total Organic	< 0.50	0.50 mg/L							
<b>Blank (B8F1247-BLK3)</b>				Prepared: 2018-06-15, Analyzed: 2018-06-15					
Carbon, Total Organic	< 0.50	0.50 mg/L							
<b>Blank (B8F1247-BLK4)</b>				Prepared: 2018-06-15, Analyzed: 2018-06-15					
Carbon, Total Organic	< 0.50	0.50 mg/L							
<b>LCS (B8F1247-BS1)</b>				Prepared: 2018-06-15, Analyzed: 2018-06-15					
Carbon, Total Organic	9.17	0.50 mg/L	10.0		92	78-116			
<b>LCS (B8F1247-BS2)</b>				Prepared: 2018-06-15, Analyzed: 2018-06-15					
Carbon, Total Organic	9.81	0.50 mg/L	10.0		98	78-116			
<b>LCS (B8F1247-BS3)</b>				Prepared: 2018-06-15, Analyzed: 2018-06-15					
Carbon, Total Organic	9.89	0.50 mg/L	10.0		99	78-116			

## APPENDIX 2: QUALITY CONTROL RESULTS

**REPORTED TO** SLR Consulting (Whitehorse)  
**PROJECT** 234.01022.00001

**WORK ORDER** 8061229  
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Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
<b>General Parameters, Batch B8F1247, Continued</b>									
<b>LCS (B8F1247-BS4)</b>				Prepared: 2018-06-15, Analyzed: 2018-06-15					
Carbon, Total Organic	9.29	0.50 mg/L	10.0		93	78-116			
<b>General Parameters, Batch B8F1328</b>									
<b>Blank (B8F1328-BLK1)</b>				Prepared: 2018-06-15, Analyzed: 2018-06-15					
Alkalinity, Total (as CaCO <sub>3</sub> )	< 1.0	1.0 mg/L							
Alkalinity, Phenolphthalein (as CaCO <sub>3</sub> )	< 1.0	1.0 mg/L							
Alkalinity, Bicarbonate (as CaCO <sub>3</sub> )	< 1.0	1.0 mg/L							
Alkalinity, Carbonate (as CaCO <sub>3</sub> )	< 1.0	1.0 mg/L							
Alkalinity, Hydroxide (as CaCO <sub>3</sub> )	< 1.0	1.0 mg/L							
Conductivity (EC)	< 2.0	2.0 µS/cm							
<b>Blank (B8F1328-BLK2)</b>				Prepared: 2018-06-15, Analyzed: 2018-06-15					
Alkalinity, Total (as CaCO <sub>3</sub> )	< 1.0	1.0 mg/L							
Alkalinity, Phenolphthalein (as CaCO <sub>3</sub> )	< 1.0	1.0 mg/L							
Alkalinity, Bicarbonate (as CaCO <sub>3</sub> )	< 1.0	1.0 mg/L							
Alkalinity, Carbonate (as CaCO <sub>3</sub> )	< 1.0	1.0 mg/L							
Alkalinity, Hydroxide (as CaCO <sub>3</sub> )	< 1.0	1.0 mg/L							
Conductivity (EC)	< 2.0	2.0 µS/cm							
<b>Blank (B8F1328-BLK3)</b>				Prepared: 2018-06-15, Analyzed: 2018-06-15					
Alkalinity, Total (as CaCO <sub>3</sub> )	< 1.0	1.0 mg/L							
Alkalinity, Phenolphthalein (as CaCO <sub>3</sub> )	< 1.0	1.0 mg/L							
Alkalinity, Bicarbonate (as CaCO <sub>3</sub> )	< 1.0	1.0 mg/L							
Alkalinity, Carbonate (as CaCO <sub>3</sub> )	< 1.0	1.0 mg/L							
Alkalinity, Hydroxide (as CaCO <sub>3</sub> )	< 1.0	1.0 mg/L							
Conductivity (EC)	< 2.0	2.0 µS/cm							
<b>LCS (B8F1328-BS1)</b>				Prepared: 2018-06-15, Analyzed: 2018-06-15					
Alkalinity, Total (as CaCO <sub>3</sub> )	101	1.0 mg/L	100		101	92-106			
<b>LCS (B8F1328-BS2)</b>				Prepared: 2018-06-15, Analyzed: 2018-06-15					
Alkalinity, Total (as CaCO <sub>3</sub> )	101	1.0 mg/L	100		101	92-106			
<b>LCS (B8F1328-BS3)</b>				Prepared: 2018-06-15, Analyzed: 2018-06-15					
Alkalinity, Total (as CaCO <sub>3</sub> )	100	1.0 mg/L	100		100	92-106			
<b>LCS (B8F1328-BS4)</b>				Prepared: 2018-06-15, Analyzed: 2018-06-15					
Conductivity (EC)	1400	2.0 µS/cm	1410		99	95-104			
<b>LCS (B8F1328-BS5)</b>				Prepared: 2018-06-15, Analyzed: 2018-06-15					
Conductivity (EC)	1390	2.0 µS/cm	1410		99	95-104			
<b>LCS (B8F1328-BS6)</b>				Prepared: 2018-06-15, Analyzed: 2018-06-15					
Conductivity (EC)	1380	2.0 µS/cm	1410		98	95-104			
<b>Reference (B8F1328-SRM1)</b>				Prepared: 2018-06-15, Analyzed: 2018-06-15					
pH	6.98	0.10 pH units	7.01		100	98-102			HT2
<b>Reference (B8F1328-SRM2)</b>				Prepared: 2018-06-15, Analyzed: 2018-06-15					
pH	6.96	0.10 pH units	7.01		99	98-102			HT2
<b>Reference (B8F1328-SRM3)</b>				Prepared: 2018-06-15, Analyzed: 2018-06-15					
pH	6.95	0.10 pH units	7.01		99	98-102			HT2

**Polycyclic Aromatic Hydrocarbons (PAH), Batch B8F1391**

## APPENDIX 2: QUALITY CONTROL RESULTS

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234.01022.00001

**WORK ORDER REPORTED** 8061229  
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Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
<b>Polycyclic Aromatic Hydrocarbons (PAH), Batch B8F1391, Continued</b>									
<b>Blank (B8F1391-BLK1)</b>					Prepared: 2018-06-16, Analyzed: 2018-06-17				
Acenaphthene	< 0.050	0.050 µg/L							
Acenaphthylene	< 0.200	0.200 µg/L							
Acridine	< 0.050	0.050 µg/L							
Anthracene	< 0.010	0.010 µg/L							
Benz(a)anthracene	< 0.010	0.010 µg/L							
Benzo(a)pyrene	< 0.010	0.010 µg/L							
Benzo(b+j)fluoranthene	< 0.050	0.050 µg/L							
Benzo(g,h,i)perylene	< 0.050	0.050 µg/L							
Benzo(k)fluoranthene	< 0.050	0.050 µg/L							
2-Chloronaphthalene	< 0.100	0.100 µg/L							
Chrysene	< 0.050	0.050 µg/L							
Dibenz(a,h)anthracene	< 0.010	0.010 µg/L							
Fluoranthene	< 0.030	0.030 µg/L							
Fluorene	< 0.050	0.050 µg/L							
Indeno(1,2,3-cd)pyrene	< 0.050	0.050 µg/L							
1-Methylnaphthalene	< 0.100	0.100 µg/L							
2-Methylnaphthalene	< 0.100	0.100 µg/L							
Naphthalene	< 0.200	0.200 µg/L							
Phenanthrene	< 0.100	0.100 µg/L							
Pyrene	< 0.020	0.020 µg/L							
Quinoline	< 0.050	0.050 µg/L							
Surrogate: Acridine-d9	2.92	µg/L	4.44		66	50-140			
Surrogate: Naphthalene-d8	3.80	µg/L	4.49		85	50-140			
Surrogate: Perylene-d12	3.31	µg/L	4.49		74	50-140			
<b>LCS (B8F1391-BS1)</b>					Prepared: 2018-06-16, Analyzed: 2018-06-17				
Acenaphthene	3.31	0.050 µg/L	4.40		75	58-125			
Acenaphthylene	3.56	0.200 µg/L	4.40		81	54-128			
Acridine	2.97	0.050 µg/L	4.44		67	50-112			
Anthracene	3.55	0.010 µg/L	4.44		80	66-125			
Benz(a)anthracene	3.93	0.010 µg/L	4.44		88	59-123			
Benzo(a)pyrene	3.41	0.010 µg/L	4.40		78	62-116			
Benzo(b+j)fluoranthene	6.97	0.050 µg/L	8.89		78	69-121			
Benzo(g,h,i)perylene	3.57	0.050 µg/L	4.40		81	58-129			
Benzo(k)fluoranthene	3.53	0.050 µg/L	4.44		79	67-128			
2-Chloronaphthalene	3.38	0.100 µg/L	4.44		76	50-140			
Chrysene	3.72	0.050 µg/L	4.42		84	58-125			
Dibenz(a,h)anthracene	3.66	0.010 µg/L	4.42		83	58-126			
Fluoranthene	4.64	0.030 µg/L	4.36		107	67-133			
Fluorene	3.51	0.050 µg/L	4.40		80	55-122			
Indeno(1,2,3-cd)pyrene	3.61	0.050 µg/L	4.44		81	62-126			
1-Methylnaphthalene	3.92	0.100 µg/L	4.38		89	53-125			
2-Methylnaphthalene	4.03	0.100 µg/L	4.36		92	52-122			
Naphthalene	4.19	0.200 µg/L	4.44		94	50-130			
Phenanthrene	3.84	0.100 µg/L	4.40		87	67-127			
Pyrene	4.59	0.020 µg/L	4.44		103	68-133			
Quinoline	6.19	0.050 µg/L	4.44		139	51-140			
Surrogate: Acridine-d9	3.15	µg/L	4.44		71	50-140			
Surrogate: Naphthalene-d8	4.14	µg/L	4.49		92	50-140			
Surrogate: Perylene-d12	3.83	µg/L	4.49		85	50-140			
<b>LCS Dup (B8F1391-BSD1)</b>					Prepared: 2018-06-16, Analyzed: 2018-06-17				
Acenaphthene	3.22	0.050 µg/L	4.40		73	58-125	3	16	
Acenaphthylene	3.50	0.200 µg/L	4.40		79	54-128	2	16	
Acridine	2.96	0.050 µg/L	4.44		67	50-112	< 1	26	
Anthracene	3.38	0.010 µg/L	4.44		76	66-125	5	14	

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**WORK ORDER REPORTED** 8061229  
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Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
<b>Polycyclic Aromatic Hydrocarbons (PAH), Batch B8F1391, Continued</b>									
<b>LCS Dup (B8F1391-BSD1), Continued</b>					Prepared: 2018-06-16, Analyzed: 2018-06-17				
Benz(a)anthracene	3.90	0.010 µg/L	4.44		88	59-123	< 1	23	
Benzo(a)pyrene	3.28	0.010 µg/L	4.40		75	62-116	4	16	
Benzo(b+j)fluoranthene	6.63	0.050 µg/L	8.89		75	69-121	5	14	
Benzo(g,h,i)perylene	3.32	0.050 µg/L	4.40		75	58-129	7	25	
Benzo(k)fluoranthene	3.68	0.050 µg/L	4.44		83	67-128	4	18	
2-Chloronaphthalene	3.29	0.100 µg/L	4.44		74	50-140	3	30	
Chrysene	3.68	0.050 µg/L	4.42		83	58-125	1	24	
Dibenz(a,h)anthracene	3.51	0.010 µg/L	4.42		79	58-126	4	23	
Fluoranthene	4.47	0.030 µg/L	4.36		103	67-133	4	18	
Fluorene	3.40	0.050 µg/L	4.40		77	55-122	3	16	
Indeno(1,2,3-cd)pyrene	3.37	0.050 µg/L	4.44		76	62-126	7	22	
1-Methylnaphthalene	3.80	0.100 µg/L	4.38		87	53-125	3	16	
2-Methylnaphthalene	3.92	0.100 µg/L	4.36		90	52-122	3	17	
Naphthalene	4.01	0.200 µg/L	4.44		90	50-130	5	18	
Phenanthrene	3.67	0.100 µg/L	4.40		83	67-127	5	14	
Pyrene	4.37	0.020 µg/L	4.44		98	68-133	5	18	
Quinoline	6.14	0.050 µg/L	4.44		138	51-140	< 1	12	
Surrogate: Acridine-d9	3.17	µg/L	4.44		71	50-140			
Surrogate: Naphthalene-d8	4.14	µg/L	4.49		92	50-140			
Surrogate: Perylene-d12	3.70	µg/L	4.49		82	50-140			

### Total Metals, Batch B8F1417

<b>Blank (B8F1417-BLK1)</b>			Prepared: 2018-06-18, Analyzed: 2018-06-18						
Aluminum, total	< 0.0050	0.0050 mg/L							
Antimony, total	< 0.00020	0.00020 mg/L							
Arsenic, total	< 0.00050	0.00050 mg/L							
Barium, total	< 0.0050	0.0050 mg/L							
Beryllium, total	< 0.00010	0.00010 mg/L							
Bismuth, total	< 0.00010	0.00010 mg/L							
Boron, total	< 0.0050	0.0050 mg/L							
Cadmium, total	< 0.000010	0.000010 mg/L							
Calcium, total	< 0.20	0.20 mg/L							
Chromium, total	< 0.00050	0.00050 mg/L							
Cobalt, total	< 0.00010	0.00010 mg/L							
Copper, total	< 0.00040	0.00040 mg/L							
Iron, total	< 0.010	0.010 mg/L							
Lead, total	< 0.00020	0.00020 mg/L							
Lithium, total	< 0.00010	0.00010 mg/L							
Magnesium, total	< 0.010	0.010 mg/L							
Manganese, total	< 0.00020	0.00020 mg/L							
Molybdenum, total	< 0.00010	0.00010 mg/L							
Nickel, total	< 0.00040	0.00040 mg/L							
Phosphorus, total	< 0.050	0.050 mg/L							
Potassium, total	< 0.10	0.10 mg/L							
Selenium, total	< 0.00050	0.00050 mg/L							
Silicon, total	< 1.0	1.0 mg/L							
Silver, total	< 0.000050	0.000050 mg/L							
Sodium, total	< 0.10	0.10 mg/L							
Strontium, total	< 0.0010	0.0010 mg/L							
Sulfur, total	< 3.0	3.0 mg/L							
Tellurium, total	< 0.00050	0.00050 mg/L							
Thallium, total	< 0.000020	0.000020 mg/L							
Thorium, total	< 0.00010	0.00010 mg/L							
Tin, total	< 0.00020	0.00020 mg/L							

## APPENDIX 2: QUALITY CONTROL RESULTS

**REPORTED TO PROJECT** SLR Consulting (Whitehorse)  
234.01022.00001

**WORK ORDER REPORTED** 8061229  
2018-06-20 16:53

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
<b>Total Metals, Batch B8F1417, Continued</b>									
<b>Blank (B8F1417-BLK1), Continued</b>					Prepared: 2018-06-18, Analyzed: 2018-06-18				
Titanium, total	< 0.0050	0.0050 mg/L							
Tungsten, total	< 0.0010	0.0010 mg/L							
Uranium, total	< 0.000020	0.000020 mg/L							
Vanadium, total	< 0.0010	0.0010 mg/L							
Zinc, total	< 0.0040	0.0040 mg/L							
Zirconium, total	< 0.00010	0.00010 mg/L							
<b>LCS (B8F1417-BS1)</b>					Prepared: 2018-06-18, Analyzed: 2018-06-20				
Aluminum, total	0.0214	0.0050 mg/L	0.0200		107	80-120			
Antimony, total	0.0214	0.00020 mg/L	0.0200		107	80-120			
Arsenic, total	0.0206	0.00050 mg/L	0.0200		103	80-120			
Barium, total	0.0198	0.0050 mg/L	0.0200		99	80-120			
Beryllium, total	0.0223	0.00010 mg/L	0.0200		111	80-120			
Bismuth, total	0.0215	0.00010 mg/L	0.0200		108	80-120			
Boron, total	0.0223	0.0050 mg/L	0.0200		112	80-120			
Cadmium, total	0.0212	0.000010 mg/L	0.0200		106	80-120			
Calcium, total	2.09	0.20 mg/L	2.00		104	80-120			
Chromium, total	0.0205	0.00050 mg/L	0.0200		102	80-120			
Cobalt, total	0.0205	0.00010 mg/L	0.0200		103	80-120			
Copper, total	0.0217	0.00040 mg/L	0.0200		109	80-120			
Iron, total	2.06	0.010 mg/L	2.00		103	80-120			
Lead, total	0.0215	0.00020 mg/L	0.0200		107	80-120			
Lithium, total	0.0225	0.00010 mg/L	0.0200		112	80-120			
Magnesium, total	2.21	0.010 mg/L	2.00		110	80-120			
Manganese, total	0.0205	0.00020 mg/L	0.0200		102	80-120			
Molybdenum, total	0.0200	0.00010 mg/L	0.0200		100	80-120			
Nickel, total	0.0210	0.00040 mg/L	0.0200		105	80-120			
Phosphorus, total	2.11	0.050 mg/L	2.00		106	80-120			
Potassium, total	2.14	0.10 mg/L	2.00		107	80-120			
Selenium, total	0.0222	0.00050 mg/L	0.0200		111	80-120			
Silicon, total	2.0	1.0 mg/L	2.00		102	80-120			
Silver, total	0.0211	0.000050 mg/L	0.0200		106	80-120			
Sodium, total	2.16	0.10 mg/L	2.00		108	80-120			
Strontium, total	0.0200	0.0010 mg/L	0.0200		100	80-120			
Sulfur, total	4.5	3.0 mg/L	5.00		90	80-120			
Tellurium, total	0.0210	0.00050 mg/L	0.0200		105	80-120			
Thallium, total	0.0214	0.000020 mg/L	0.0200		107	80-120			
Thorium, total	0.0203	0.00010 mg/L	0.0200		102	80-120			
Tin, total	0.0209	0.00020 mg/L	0.0200		105	80-120			
Titanium, total	0.0202	0.0050 mg/L	0.0200		101	80-120			
Tungsten, total	0.0160	0.0010 mg/L	0.0200		80	80-120			
Uranium, total	0.0201	0.000020 mg/L	0.0200		100	80-120			
Vanadium, total	0.0200	0.0010 mg/L	0.0200		100	80-120			
Zinc, total	0.0221	0.0040 mg/L	0.0200		111	80-120			
Zirconium, total	0.0221	0.00010 mg/L	0.0200		110	80-120			
<b>Reference (B8F1417-SRM1)</b>					Prepared: 2018-06-18, Analyzed: 2018-06-18				
Aluminum, total	0.330	0.0050 mg/L	0.303		109	82-114			
Antimony, total	0.0480	0.00020 mg/L	0.0511		94	88-115			
Arsenic, total	0.124	0.00050 mg/L	0.118		105	88-111			
Barium, total	0.737	0.0050 mg/L	0.823		89	83-110			
Beryllium, total	0.0538	0.00010 mg/L	0.0496		108	80-119			
Boron, total	3.45	0.0050 mg/L	3.45		100	80-118			
Cadmium, total	0.0488	0.000010 mg/L	0.0495		99	90-110			
Calcium, total	12.2	0.20 mg/L	11.6		105	85-113			
Chromium, total	0.249	0.00050 mg/L	0.250		99	88-111			



## APPENDIX 2: QUALITY CONTROL RESULTS

**REPORTED TO PROJECT** SLR Consulting (Whitehorse)  
234.01022.00001

**WORK ORDER REPORTED** 8061229  
2018-06-20 16:53

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
<b>Total Metals, Batch B8F1417, Continued</b>									
<b>Reference (B8F1417-SRM1), Continued</b>				Prepared: 2018-06-18, Analyzed: 2018-06-18					
Cobalt, total	0.0410	0.00010 mg/L	0.0377		109	90-114			
Copper, total	0.535	0.00040 mg/L	0.486		110	90-117			
Iron, total	0.543	0.010 mg/L	0.488		111	90-116			
Lead, total	0.205	0.00020 mg/L	0.204		101	90-110			
Lithium, total	0.429	0.00010 mg/L	0.403		106	79-118			
Magnesium, total	4.29	0.010 mg/L	3.79		113	88-116			
Manganese, total	0.118	0.00020 mg/L	0.109		108	88-108			
Molybdenum, total	0.195	0.00010 mg/L	0.198		98	88-110			
Nickel, total	0.261	0.00040 mg/L	0.249		105	90-112			
Phosphorus, total	0.224	0.050 mg/L	0.227		99	72-118			
Potassium, total	8.38	0.10 mg/L	7.21		116	87-116			
Selenium, total	0.140	0.00050 mg/L	0.121		116	90-122			
Sodium, total	8.61	0.10 mg/L	7.54		114	86-118			
Strontium, total	0.379	0.0010 mg/L	0.375		101	86-110			
Thallium, total	0.0837	0.000020 mg/L	0.0805		104	90-113			
Uranium, total	0.0296	0.000020 mg/L	0.0306		97	88-112			
Vanadium, total	0.405	0.0010 mg/L	0.386		105	87-110			
Zinc, total	2.67	0.0040 mg/L	2.49		107	90-113			

### Total Metals, Batch B8F1490

<b>Blank (B8F1490-BLK1)</b>				Prepared: 2018-06-18, Analyzed: 2018-06-19					
Mercury, total	< 0.000010	0.000010 mg/L							
<b>Reference (B8F1490-SRM1)</b>				Prepared: 2018-06-18, Analyzed: 2018-06-19					
Mercury, total	0.00410	0.000010 mg/L	0.00489		84	80-120			

### Volatile Organic Compounds (VOC), Batch B8F1364

<b>Blank (B8F1364-BLK1)</b>				Prepared: 2018-06-16, Analyzed: 2018-06-16					
Benzene	< 0.5	0.5 µg/L							
Bromodichloromethane	< 1.0	1.0 µg/L							
Bromoform	< 1.0	1.0 µg/L							
Carbon tetrachloride	< 0.5	0.5 µg/L							
Chlorobenzene	< 1.0	1.0 µg/L							
Chloroethane	< 2.0	2.0 µg/L							
Chloroform	< 1.0	1.0 µg/L							
Dibromochloromethane	< 1.0	1.0 µg/L							
1,2-Dibromoethane	< 0.3	0.3 µg/L							
Dibromomethane	< 1.0	1.0 µg/L							
1,2-Dichlorobenzene	< 0.5	0.5 µg/L							
1,3-Dichlorobenzene	< 1.0	1.0 µg/L							
1,4-Dichlorobenzene	< 1.0	1.0 µg/L							
1,1-Dichloroethane	< 1.0	1.0 µg/L							
1,2-Dichloroethane	< 1.0	1.0 µg/L							
1,1-Dichloroethylene	< 1.0	1.0 µg/L							
cis-1,2-Dichloroethylene	< 1.0	1.0 µg/L							
trans-1,2-Dichloroethylene	< 1.0	1.0 µg/L							
Dichloromethane	< 3.0	3.0 µg/L							
1,2-Dichloropropane	< 1.0	1.0 µg/L							
1,3-Dichloropropene (cis + trans)	< 1.0	1.0 µg/L							
Ethylbenzene	< 1.0	1.0 µg/L							
Methyl tert-butyl ether	< 1.0	1.0 µg/L							
Styrene	< 1.0	1.0 µg/L							
1,1,2,2-Tetrachloroethane	< 0.5	0.5 µg/L							



## APPENDIX 2: QUALITY CONTROL RESULTS

**REPORTED TO PROJECT** SLR Consulting (Whitehorse)  
234.01022.00001

**WORK ORDER REPORTED** 8061229  
2018-06-20 16:53

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
<b>Volatile Organic Compounds (VOC), Batch B8F1364, Continued</b>									
<b>Blank (B8F1364-BLK1), Continued</b>					Prepared: 2018-06-16, Analyzed: 2018-06-16				
Tetrachloroethylene	< 1.0	1.0 µg/L							
Toluene	< 1.0	1.0 µg/L							
1,1,1-Trichloroethane	< 1.0	1.0 µg/L							
1,1,2-Trichloroethane	< 1.0	1.0 µg/L							
Trichloroethylene	< 1.0	1.0 µg/L							
Trichlorofluoromethane	< 1.0	1.0 µg/L							
Vinyl chloride	< 1.0	1.0 µg/L							
Xylenes (total)	< 2.0	2.0 µg/L							
Surrogate: Toluene-d8	23.0	µg/L	26.2		88	70-130			
Surrogate: 4-Bromofluorobenzene	23.8	µg/L	25.0		95	70-130			
Surrogate: 1,4-Dichlorobenzene-d4	23.6	µg/L	25.0		95	70-130			
<b>LCS (B8F1364-BS1)</b>					Prepared: 2018-06-16, Analyzed: 2018-06-16				
Benzene	23.2	0.5 µg/L	20.0		116	70-130			
Bromodichloromethane	23.4	1.0 µg/L	20.0		117	70-130			
Bromoform	21.2	1.0 µg/L	20.2		105	70-130			
Carbon tetrachloride	22.4	0.5 µg/L	20.1		111	70-130			
Chlorobenzene	23.3	1.0 µg/L	20.1		116	70-130			
Chloroethane	64.4	2.0 µg/L	20.0		322	60-140			SPK
Chloroform	23.6	1.0 µg/L	20.2		117	70-130			
Dibromochloromethane	23.1	1.0 µg/L	20.1		115	70-130			
1,2-Dibromoethane	23.5	0.3 µg/L	20.0		118	70-130			
Dibromomethane	23.2	1.0 µg/L	20.0		116	70-130			
1,2-Dichlorobenzene	23.1	0.5 µg/L	20.2		115	70-130			
1,3-Dichlorobenzene	22.8	1.0 µg/L	20.2		113	70-130			
1,4-Dichlorobenzene	22.8	1.0 µg/L	20.1		113	70-130			
1,1-Dichloroethane	23.5	1.0 µg/L	20.1		117	70-130			
1,2-Dichloroethane	23.0	1.0 µg/L	20.2		114	70-130			
1,1-Dichloroethylene	20.8	1.0 µg/L	20.1		104	70-130			
cis-1,2-Dichloroethylene	22.6	1.0 µg/L	20.0		113	70-130			
trans-1,2-Dichloroethylene	21.7	1.0 µg/L	20.1		108	70-130			
Dichloromethane	22.4	3.0 µg/L	20.1		111	70-130			
1,2-Dichloropropane	22.4	1.0 µg/L	20.1		111	70-130			
1,3-Dichloropropane (cis + trans)	41.7	1.0 µg/L	40.2		104	70-130			
Ethylbenzene	23.0	1.0 µg/L	20.0		115	70-130			
Methyl tert-butyl ether	31.2	1.0 µg/L	20.0		156	70-130			SPK
Styrene	22.9	1.0 µg/L	20.0		114	70-130			
1,1,2,2-Tetrachloroethane	22.8	0.5 µg/L	20.2		113	70-130			
Tetrachloroethylene	22.6	1.0 µg/L	20.1		112	70-130			
Toluene	23.1	1.0 µg/L	20.0		116	70-130			
1,1,1-Trichloroethane	22.4	1.0 µg/L	20.1		111	70-130			
1,1,2-Trichloroethane	23.5	1.0 µg/L	20.1		117	70-130			
Trichloroethylene	23.3	1.0 µg/L	20.1		116	70-130			
Trichlorofluoromethane	53.6	1.0 µg/L	20.0		268	60-140			SPK
Vinyl chloride	22.4	1.0 µg/L	20.0		112	60-140			
Xylenes (total)	67.1	2.0 µg/L	60.0		112	70-130			
Surrogate: Toluene-d8	24.6	µg/L	26.2		94	70-130			
Surrogate: 4-Bromofluorobenzene	24.4	µg/L	25.0		98	70-130			
Surrogate: 1,4-Dichlorobenzene-d4	24.1	µg/L	25.0		96	70-130			

## APPENDIX 2: QUALITY CONTROL RESULTS

**REPORTED TO** SLR Consulting (Whitehorse)  
**PROJECT** 234.01022.00001

**WORK ORDER** 8061229  
**REPORTED** 2018-06-20 16:53

**QC Qualifiers:**

HT2 The 15 minute recommended holding time (from sampling to analysis) has been exceeded - field analysis is recommended.

SPK The recovery of this analyte was outside of established control limits.

## CERTIFICATE OF ANALYSIS

**REPORTED TO** SLR Consulting (Whitehorse)  
6131 6th Avenue  
Whitehorse, YT Y1A 1N2

**ATTENTION** Charles Shewen

**PO NUMBER** YEL159

**PROJECT** 234.01022.00001

**PROJECT INFO** Yukon Gov. SARU Contract C0042661

**WORK ORDER** 8091582

**RECEIVED / TEMP REPORTED** 2018-09-17 16:00 / 10°C  
2018-10-01 15:08

**COC NUMBER** No Number

### Introduction:

CARO Analytical Services is a testing laboratory full of smart, engaged scientists driven to make the world a safer and healthier place. Through our clients' projects we become an essential element for a better world. We employ methods conducted in accordance with recognized professional standards using accepted testing methodologies and quality control efforts. CARO is accredited by the Canadian Association for Laboratories Accreditation (CALA) to ISO 17025:2005 for specific tests listed in the scope of accreditation approved by CALA.

#### Big Picture Sidekicks



You know that the sample you collected after snowshoeing to site, digging 5 meters, and racing to get it on a plane so you can submit it to the lab for time sensitive results needed to make important and expensive decisions (whew) is VERY important. We know that too.

#### We've Got Chemistry



It's simple. We figure the more you enjoy working with our fun and engaged team members; the more likely you are to give us continued opportunities to support you.

#### Ahead of the Curve



Through research, regulation knowledge, and instrumentation, we are your analytical centre for the technical knowledge you need, BEFORE you need it, so you can stay up to date and in the know.

If you have any questions or concerns, please contact me at [bshaw@caro.ca](mailto:bshaw@caro.ca)

#### Authorized By:

Bryan Shaw, Ph.D., P.Chem.  
Client Service Coordinator



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#110 4011 Viking Way Richmond, BC V6V 2K9 | #102 3677 Highway 97N Kelowna, BC V1X 5C3 | 17225 109 Avenue Edmonton, AB T5S 1H7

## TEST RESULTS

**REPORTED TO PROJECT** SLR Consulting (Whitehorse)  
234.01022.00001

**WORK ORDER REPORTED** 8091582  
2018-10-01 15:08

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>DB-MW16-06 (8091582-01)   Matrix: Water   Sampled: 2018-09-12 17:41</b>					
<b>Anions</b>					
Chloride	2.30	0.10	mg/L	2018-09-20	
Nitrate (as N)	0.385	0.010	mg/L	2018-09-20	HT1
Nitrite (as N)	< 0.010	0.010	mg/L	2018-09-20	HT1
Phosphate (as P)	< 0.0050	0.0050	mg/L	2018-09-20	HT1
Sulfate	207	1.0	mg/L	2018-09-20	
<b>BCMOE Aggregate Hydrocarbons</b>					
VHw (6-10)	< 100	100	µg/L	2018-09-25	
VPHw	< 100	100	µg/L	N/A	
EPHw10-19	< 250	250	µg/L	2018-09-24	S09
EPHw19-32	< 250	250	µg/L	2018-09-24	S09
LEPHw	< 250	250	µg/L	N/A	
HEPHw	< 250	250	µg/L	N/A	
Surrogate: 2-Methylnonane (EPH/F2-4)	46	60-140	%	2018-09-24	S09
<b>Calculated Parameters</b>					
Hardness, Total (as CaCO <sub>3</sub> )	334	0.500	mg/L	N/A	
Solids, Total Dissolved	433	10	mg/L	2018-09-25	
<b>Dissolved Metals</b>					
Aluminum, dissolved	0.0058	0.0050	mg/L	2018-09-22	
Antimony, dissolved	< 0.00020	0.00020	mg/L	2018-09-22	
Arsenic, dissolved	< 0.00050	0.00050	mg/L	2018-09-22	
Barium, dissolved	0.0331	0.0050	mg/L	2018-09-22	
Beryllium, dissolved	< 0.00010	0.00010	mg/L	2018-09-22	
Bismuth, dissolved	< 0.00010	0.00010	mg/L	2018-09-22	
Boron, dissolved	0.125	0.0050	mg/L	2018-09-22	
Cadmium, dissolved	< 0.000010	0.000010	mg/L	2018-09-22	
Calcium, dissolved	74.2	0.20	mg/L	2018-09-22	
Chromium, dissolved	0.00342	0.00050	mg/L	2018-09-22	
Cobalt, dissolved	< 0.00010	0.00010	mg/L	2018-09-22	
Copper, dissolved	0.00082	0.00040	mg/L	2018-09-22	
Iron, dissolved	< 0.010	0.010	mg/L	2018-09-22	
Lead, dissolved	< 0.00020	0.00020	mg/L	2018-09-22	
Lithium, dissolved	0.00297	0.00010	mg/L	2018-09-22	
Magnesium, dissolved	36.0	0.010	mg/L	2018-09-22	
Manganese, dissolved	0.00045	0.00020	mg/L	2018-09-22	
Mercury, dissolved	< 0.000010	0.000010	mg/L	2018-09-20	
Molybdenum, dissolved	0.00216	0.00010	mg/L	2018-09-22	
Nickel, dissolved	0.00085	0.00040	mg/L	2018-09-22	
Phosphorus, dissolved	< 0.050	0.050	mg/L	2018-09-22	
Potassium, dissolved	1.71	0.10	mg/L	2018-09-22	
Selenium, dissolved	0.00689	0.00050	mg/L	2018-09-22	

## TEST RESULTS

**REPORTED TO PROJECT** SLR Consulting (Whitehorse)  
234.01022.00001

**WORK ORDER REPORTED** 8091582  
2018-10-01 15:08

Analyte	Result	RL	Units	Analyzed	Qualifier
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### DB-MW16-06 (8091582-01) | Matrix: Water | Sampled: 2018-09-12 17:41, Continued

#### Dissolved Metals, Continued

Silicon, dissolved	4.7	1.0	mg/L	2018-09-22	
Silver, dissolved	< 0.000050	0.000050	mg/L	2018-09-22	
Sodium, dissolved	7.38	0.10	mg/L	2018-09-22	
Strontium, dissolved	0.342	0.0010	mg/L	2018-09-22	
Sulfur, dissolved	68.9	3.0	mg/L	2018-09-22	
Tellurium, dissolved	< 0.00050	0.00050	mg/L	2018-09-22	
Thallium, dissolved	< 0.000020	0.000020	mg/L	2018-09-22	
Thorium, dissolved	< 0.00010	0.00010	mg/L	2018-09-22	
Tin, dissolved	< 0.00020	0.00020	mg/L	2018-09-22	
Titanium, dissolved	< 0.0050	0.0050	mg/L	2018-09-22	
Tungsten, dissolved	< 0.0010	0.0010	mg/L	2018-09-22	
Uranium, dissolved	0.000940	0.000020	mg/L	2018-09-22	
Vanadium, dissolved	< 0.0010	0.0010	mg/L	2018-09-22	
Zinc, dissolved	< 0.0040	0.0040	mg/L	2018-09-22	
Zirconium, dissolved	< 0.00010	0.00010	mg/L	2018-09-22	

#### General Parameters

Alkalinity, Total (as CaCO <sub>3</sub> )	169	1.0	mg/L	2018-09-20	
Alkalinity, Phenolphthalein (as CaCO <sub>3</sub> )	< 1.0	1.0	mg/L	2018-09-20	
Alkalinity, Bicarbonate (as CaCO <sub>3</sub> )	169	1.0	mg/L	2018-09-20	
Alkalinity, Carbonate (as CaCO <sub>3</sub> )	< 1.0	1.0	mg/L	2018-09-20	
Alkalinity, Hydroxide (as CaCO <sub>3</sub> )	< 1.0	1.0	mg/L	2018-09-20	
Ammonia, Total (as N)	0.025	0.020	mg/L	2018-09-21	
Carbon, Dissolved Organic	1.30	0.50	mg/L	2018-09-21	
Conductivity (EC)	685	2.0	µS/cm	2018-09-20	
pH	7.72	0.10	pH units	2018-09-20	HT2

#### Polycyclic Aromatic Hydrocarbons (PAH)

Acenaphthene	< 0.050	0.050	µg/L	2018-09-27	
Acenaphthylene	< 0.200	0.200	µg/L	2018-09-27	
Acridine	< 0.050	0.050	µg/L	2018-09-27	
Anthracene	< 0.010	0.010	µg/L	2018-09-27	
Benz(a)anthracene	< 0.010	0.010	µg/L	2018-09-27	
Benzo(a)pyrene	< 0.010	0.010	µg/L	2018-09-27	
Benzo(b+j)fluoranthene	< 0.050	0.050	µg/L	2018-09-27	
Benzo(g,h,i)perylene	< 0.050	0.050	µg/L	2018-09-27	
Benzo(k)fluoranthene	< 0.050	0.050	µg/L	2018-09-27	
2-Chloronaphthalene	< 0.100	0.100	µg/L	2018-09-27	
Chrysene	< 0.050	0.050	µg/L	2018-09-27	
Dibenz(a,h)anthracene	< 0.010	0.010	µg/L	2018-09-27	
Fluoranthene	< 0.030	0.030	µg/L	2018-09-27	
Fluorene	< 0.050	0.050	µg/L	2018-09-27	
Indeno(1,2,3-cd)pyrene	< 0.050	0.050	µg/L	2018-09-27	

## TEST RESULTS

**REPORTED TO PROJECT** SLR Consulting (Whitehorse)  
234.01022.00001

**WORK ORDER REPORTED** 8091582  
2018-10-01 15:08

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>DB-MW16-06 (8091582-01)   Matrix: Water   Sampled: 2018-09-12 17:41, Continued</b>					
<i>Polycyclic Aromatic Hydrocarbons (PAH), Continued</i>					
1-Methylnaphthalene	< 0.100	0.100	µg/L	2018-09-27	
2-Methylnaphthalene	< 0.100	0.100	µg/L	2018-09-27	
Naphthalene	< 0.200	0.200	µg/L	2018-09-27	
Phenanthrene	< 0.100	0.100	µg/L	2018-09-27	
Pyrene	< 0.020	0.020	µg/L	2018-09-27	
Quinoline	< 0.050	0.050	µg/L	2018-09-27	
Surrogate: Acridine-d9	81	50-140	%	2018-09-27	
Surrogate: Naphthalene-d8	117	50-140	%	2018-09-27	
Surrogate: Perylene-d12	42	50-140	%	2018-09-27	S02
<i>Volatile Organic Compounds (VOC)</i>					
Benzene	< 0.5	0.5	µg/L	2018-09-25	
Bromodichloromethane	< 1.0	1.0	µg/L	2018-09-25	
Bromoform	< 1.0	1.0	µg/L	2018-09-25	
Carbon tetrachloride	< 0.5	0.5	µg/L	2018-09-25	
Chlorobenzene	< 1.0	1.0	µg/L	2018-09-25	
Chloroethane	< 2.0	2.0	µg/L	2018-09-25	
Chloroform	< 1.0	1.0	µg/L	2018-09-25	
Dibromochloromethane	< 1.0	1.0	µg/L	2018-09-25	
1,2-Dibromoethane	< 0.3	0.3	µg/L	2018-09-25	
Dibromomethane	< 1.0	1.0	µg/L	2018-09-25	
1,2-Dichlorobenzene	< 0.5	0.5	µg/L	2018-09-25	
1,3-Dichlorobenzene	< 1.0	1.0	µg/L	2018-09-25	
1,4-Dichlorobenzene	< 1.0	1.0	µg/L	2018-09-25	
1,1-Dichloroethane	< 1.0	1.0	µg/L	2018-09-25	
1,2-Dichloroethane	< 1.0	1.0	µg/L	2018-09-25	
1,1-Dichloroethylene	< 1.0	1.0	µg/L	2018-09-25	
cis-1,2-Dichloroethylene	< 1.0	1.0	µg/L	2018-09-25	
trans-1,2-Dichloroethylene	< 1.0	1.0	µg/L	2018-09-25	
Dichloromethane	< 3.0	3.0	µg/L	2018-09-25	
1,2-Dichloropropane	< 1.0	1.0	µg/L	2018-09-25	
1,3-Dichloropropene (cis + trans)	< 1.0	1.0	µg/L	2018-09-25	
Ethylbenzene	< 1.0	1.0	µg/L	2018-09-25	
Methyl tert-butyl ether	< 1.0	1.0	µg/L	2018-09-25	
Styrene	< 1.0	1.0	µg/L	2018-09-25	
1,1,2,2-Tetrachloroethane	< 0.5	0.5	µg/L	2018-09-25	
Tetrachloroethylene	< 1.0	1.0	µg/L	2018-09-25	
Toluene	< 1.0	1.0	µg/L	2018-09-25	
1,1,1-Trichloroethane	< 1.0	1.0	µg/L	2018-09-25	
1,1,2-Trichloroethane	< 1.0	1.0	µg/L	2018-09-25	
Trichloroethylene	< 1.0	1.0	µg/L	2018-09-25	
Trichlorofluoromethane	< 1.0	1.0	µg/L	2018-09-25	
Vinyl chloride	< 1.0	1.0	µg/L	2018-09-25	

## TEST RESULTS

**REPORTED TO PROJECT** SLR Consulting (Whitehorse)  
234.01022.00001

**WORK ORDER REPORTED** 8091582  
2018-10-01 15:08

Analyte	Result	RL	Units	Analyzed	Qualifier
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### DB-MW16-06 (8091582-01) | Matrix: Water | Sampled: 2018-09-12 17:41, Continued

#### Volatile Organic Compounds (VOC), Continued

Xylenes (total)	< 2.0	2.0	µg/L	2018-09-25	
Surrogate: Toluene-d8	120	70-130	%	2018-09-25	
Surrogate: 4-Bromofluorobenzene	103	70-130	%	2018-09-25	
Surrogate: 1,4-Dichlorobenzene-d4	94	70-130	%	2018-09-25	

### DB-DUP1 (8091582-02) | Matrix: Water | Sampled: 2018-09-12 17:41

#### Anions

Chloride	2.26	0.10	mg/L	2018-09-20	
Nitrate (as N)	0.379	0.010	mg/L	2018-09-20	HT1
Nitrite (as N)	< 0.010	0.010	mg/L	2018-09-20	HT1
Phosphate (as P)	< 0.0050	0.0050	mg/L	2018-09-20	HT1
Sulfate	208	1.0	mg/L	2018-09-20	

#### BCMOE Aggregate Hydrocarbons

VHw (6-10)	< 100	100	µg/L	2018-09-26	
VPHw	< 100	100	µg/L	N/A	
EPHw10-19	< 250	250	µg/L	2018-09-24	S09
EPHw19-32	< 250	250	µg/L	2018-09-24	S09
LEPHw	< 250	250	µg/L	N/A	
HEPHw	< 250	250	µg/L	N/A	
Surrogate: 2-Methylnonane (EPH/F2-4)	52	60-140	%	2018-09-24	S09

#### Calculated Parameters

Hardness, Total (as CaCO3)	330	0.500	mg/L	N/A	
Solids, Total Dissolved	437	10	mg/L	2018-09-25	

#### Dissolved Metals

Aluminum, dissolved	< 0.0050	0.0050	mg/L	2018-09-22	
Antimony, dissolved	< 0.00020	0.00020	mg/L	2018-09-22	
Arsenic, dissolved	< 0.00050	0.00050	mg/L	2018-09-22	
Barium, dissolved	0.0327	0.0050	mg/L	2018-09-22	
Beryllium, dissolved	< 0.00010	0.00010	mg/L	2018-09-22	
Bismuth, dissolved	< 0.00010	0.00010	mg/L	2018-09-22	
Boron, dissolved	0.127	0.0050	mg/L	2018-09-22	
Cadmium, dissolved	< 0.000010	0.000010	mg/L	2018-09-22	
Calcium, dissolved	73.0	0.20	mg/L	2018-09-22	
Chromium, dissolved	0.00335	0.00050	mg/L	2018-09-22	
Cobalt, dissolved	< 0.00010	0.00010	mg/L	2018-09-22	
Copper, dissolved	0.00072	0.00040	mg/L	2018-09-22	
Iron, dissolved	< 0.010	0.010	mg/L	2018-09-22	
Lead, dissolved	< 0.00020	0.00020	mg/L	2018-09-22	
Lithium, dissolved	0.00283	0.00010	mg/L	2018-09-22	

## TEST RESULTS

**REPORTED TO PROJECT** SLR Consulting (Whitehorse)  
234.01022.00001

**WORK ORDER REPORTED** 8091582  
2018-10-01 15:08

Analyte	Result	RL	Units	Analyzed	Qualifier
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### DB-DUP1 (8091582-02) | Matrix: Water | Sampled: 2018-09-12 17:41, Continued

#### Dissolved Metals, Continued

Magnesium, dissolved	35.9	0.010	mg/L	2018-09-22	
Manganese, dissolved	0.00047	0.00020	mg/L	2018-09-22	
Mercury, dissolved	< 0.000010	0.000010	mg/L	2018-09-20	
Molybdenum, dissolved	0.00214	0.00010	mg/L	2018-09-22	
Nickel, dissolved	0.00081	0.00040	mg/L	2018-09-22	
Phosphorus, dissolved	< 0.050	0.050	mg/L	2018-09-22	
Potassium, dissolved	1.70	0.10	mg/L	2018-09-22	
Selenium, dissolved	0.00713	0.00050	mg/L	2018-09-22	
Silicon, dissolved	4.6	1.0	mg/L	2018-09-22	
Silver, dissolved	< 0.000050	0.000050	mg/L	2018-09-22	
Sodium, dissolved	7.32	0.10	mg/L	2018-09-22	
Strontium, dissolved	0.336	0.0010	mg/L	2018-09-22	
Sulfur, dissolved	68.9	3.0	mg/L	2018-09-22	
Tellurium, dissolved	< 0.00050	0.00050	mg/L	2018-09-22	
Thallium, dissolved	< 0.000020	0.000020	mg/L	2018-09-22	
Thorium, dissolved	< 0.00010	0.00010	mg/L	2018-09-22	
Tin, dissolved	< 0.00020	0.00020	mg/L	2018-09-22	
Titanium, dissolved	< 0.0050	0.0050	mg/L	2018-09-22	
Tungsten, dissolved	< 0.0010	0.0010	mg/L	2018-09-22	
Uranium, dissolved	0.000910	0.000020	mg/L	2018-09-22	
Vanadium, dissolved	< 0.0010	0.0010	mg/L	2018-09-22	
Zinc, dissolved	< 0.0040	0.0040	mg/L	2018-09-22	
Zirconium, dissolved	< 0.00010	0.00010	mg/L	2018-09-22	

#### General Parameters

Alkalinity, Total (as CaCO <sub>3</sub> )	176	1.0	mg/L	2018-09-20	
Alkalinity, Phenolphthalein (as CaCO <sub>3</sub> )	< 1.0	1.0	mg/L	2018-09-20	
Alkalinity, Bicarbonate (as CaCO <sub>3</sub> )	176	1.0	mg/L	2018-09-20	
Alkalinity, Carbonate (as CaCO <sub>3</sub> )	< 1.0	1.0	mg/L	2018-09-20	
Alkalinity, Hydroxide (as CaCO <sub>3</sub> )	< 1.0	1.0	mg/L	2018-09-20	
Ammonia, Total (as N)	0.050	0.020	mg/L	2018-09-21	
Carbon, Dissolved Organic	0.90	0.50	mg/L	2018-09-21	
Conductivity (EC)	686	2.0	µS/cm	2018-09-20	
pH	7.65	0.10	pH units	2018-09-20	HT2

#### Polycyclic Aromatic Hydrocarbons (PAH)

Acenaphthene	< 0.050	0.050	µg/L	2018-09-27	
Acenaphthylene	< 0.200	0.200	µg/L	2018-09-27	
Acridine	< 0.050	0.050	µg/L	2018-09-27	
Anthracene	< 0.010	0.010	µg/L	2018-09-27	
Benz(a)anthracene	< 0.010	0.010	µg/L	2018-09-27	
Benzo(a)pyrene	< 0.010	0.010	µg/L	2018-09-27	
Benzo(b+j)fluoranthene	< 0.050	0.050	µg/L	2018-09-27	



## TEST RESULTS

**REPORTED TO PROJECT** SLR Consulting (Whitehorse)  
234.01022.00001

**WORK ORDER REPORTED** 8091582  
2018-10-01 15:08

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>DB-DUP1 (8091582-02)   Matrix: Water   Sampled: 2018-09-12 17:41, Continued</b>					
<i>Polycyclic Aromatic Hydrocarbons (PAH), Continued</i>					
Benzo(g,h,i)perylene	< 0.050	0.050	µg/L	2018-09-27	
Benzo(k)fluoranthene	< 0.050	0.050	µg/L	2018-09-27	
2-Chloronaphthalene	< 0.100	0.100	µg/L	2018-09-27	
Chrysene	< 0.050	0.050	µg/L	2018-09-27	
Dibenz(a,h)anthracene	< 0.010	0.010	µg/L	2018-09-27	
Fluoranthene	< 0.030	0.030	µg/L	2018-09-27	
Fluorene	< 0.050	0.050	µg/L	2018-09-27	
Indeno(1,2,3-cd)pyrene	< 0.050	0.050	µg/L	2018-09-27	
1-Methylnaphthalene	< 0.100	0.100	µg/L	2018-09-27	
2-Methylnaphthalene	< 0.100	0.100	µg/L	2018-09-27	
Naphthalene	< 0.200	0.200	µg/L	2018-09-27	
Phenanthrene	< 0.100	0.100	µg/L	2018-09-27	
Pyrene	< 0.020	0.020	µg/L	2018-09-27	
Quinoline	< 0.050	0.050	µg/L	2018-09-27	
Surrogate: Acridine-d9	61	50-140	%	2018-09-27	
Surrogate: Naphthalene-d8	116	50-140	%	2018-09-27	
Surrogate: Perylene-d12	51	50-140	%	2018-09-27	
<i>Volatile Organic Compounds (VOC)</i>					
Benzene	< 0.5	0.5	µg/L	2018-09-26	
Bromodichloromethane	< 1.0	1.0	µg/L	2018-09-26	
Bromoform	< 1.0	1.0	µg/L	2018-09-26	
Carbon tetrachloride	< 0.5	0.5	µg/L	2018-09-26	
Chlorobenzene	< 1.0	1.0	µg/L	2018-09-26	
Chloroethane	< 2.0	2.0	µg/L	2018-09-26	
Chloroform	< 1.0	1.0	µg/L	2018-09-26	
Dibromochloromethane	< 1.0	1.0	µg/L	2018-09-26	
1,2-Dibromoethane	< 0.3	0.3	µg/L	2018-09-26	
Dibromomethane	< 1.0	1.0	µg/L	2018-09-26	
1,2-Dichlorobenzene	< 0.5	0.5	µg/L	2018-09-26	
1,3-Dichlorobenzene	< 1.0	1.0	µg/L	2018-09-26	
1,4-Dichlorobenzene	< 1.0	1.0	µg/L	2018-09-26	
1,1-Dichloroethane	< 1.0	1.0	µg/L	2018-09-26	
1,2-Dichloroethane	< 1.0	1.0	µg/L	2018-09-26	
1,1-Dichloroethylene	< 1.0	1.0	µg/L	2018-09-26	
cis-1,2-Dichloroethylene	< 1.0	1.0	µg/L	2018-09-26	
trans-1,2-Dichloroethylene	< 1.0	1.0	µg/L	2018-09-26	
Dichloromethane	< 3.0	3.0	µg/L	2018-09-26	
1,2-Dichloropropane	< 1.0	1.0	µg/L	2018-09-26	
1,3-Dichloropropene (cis + trans)	< 1.0	1.0	µg/L	2018-09-26	
Ethylbenzene	< 1.0	1.0	µg/L	2018-09-26	
Methyl tert-butyl ether	< 1.0	1.0	µg/L	2018-09-26	
Styrene	< 1.0	1.0	µg/L	2018-09-26	

## TEST RESULTS

**REPORTED TO PROJECT** SLR Consulting (Whitehorse)  
234.01022.00001

**WORK ORDER REPORTED** 8091582  
2018-10-01 15:08

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>DB-DUP1 (8091582-02)   Matrix: Water   Sampled: 2018-09-12 17:41, Continued</b>					
<i>Volatile Organic Compounds (VOC), Continued</i>					
1,1,2,2-Tetrachloroethane	< 0.5	0.5	µg/L	2018-09-26	
Tetrachloroethylene	< 1.0	1.0	µg/L	2018-09-26	
Toluene	< 1.0	1.0	µg/L	2018-09-26	
1,1,1-Trichloroethane	< 1.0	1.0	µg/L	2018-09-26	
1,1,2-Trichloroethane	< 1.0	1.0	µg/L	2018-09-26	
Trichloroethylene	< 1.0	1.0	µg/L	2018-09-26	
Trichlorofluoromethane	< 1.0	1.0	µg/L	2018-09-26	
Vinyl chloride	< 1.0	1.0	µg/L	2018-09-26	
Xylenes (total)	< 2.0	2.0	µg/L	2018-09-26	
Surrogate: Toluene-d8	106	70-130	%	2018-09-26	
Surrogate: 4-Bromofluorobenzene	105	70-130	%	2018-09-26	
Surrogate: 1,4-Dichlorobenzene-d4	98	70-130	%	2018-09-26	

### DB-MW16-05 (8091582-03) | Matrix: Water | Sampled: 2018-09-13 08:55

#### Anions

Chloride	0.63	0.10	mg/L	2018-09-20	
Nitrate (as N)	0.337	0.010	mg/L	2018-09-20	HT1
Nitrite (as N)	< 0.010	0.010	mg/L	2018-09-20	HT1
Phosphate (as P)	< 0.0050	0.0050	mg/L	2018-09-20	HT1
Sulfate	216	1.0	mg/L	2018-09-20	

#### BCMOE Aggregate Hydrocarbons

VHw (6-10)	< 100	100	µg/L	2018-09-27	
VPHw	< 100	100	µg/L	N/A	
EPHw10-19	< 250	250	µg/L	2018-09-23	
EPHw19-32	< 250	250	µg/L	2018-09-23	
LEPHw	< 250	250	µg/L	N/A	
HEPHw	< 250	250	µg/L	N/A	
Surrogate: 2-Methylnonane (EPH/F2-4)	63	60-140	%	2018-09-23	

#### Calculated Parameters

Hardness, Total (as CaCO3)	335	0.500	mg/L	N/A	
Solids, Total Dissolved	444	10	mg/L	2018-09-25	

#### Dissolved Metals

Aluminum, dissolved	0.0076	0.0050	mg/L	2018-09-22	
Antimony, dissolved	< 0.00020	0.00020	mg/L	2018-09-22	
Arsenic, dissolved	< 0.00050	0.00050	mg/L	2018-09-22	
Barium, dissolved	0.0286	0.0050	mg/L	2018-09-22	
Beryllium, dissolved	< 0.00010	0.00010	mg/L	2018-09-22	
Bismuth, dissolved	< 0.00010	0.00010	mg/L	2018-09-22	
Boron, dissolved	0.121	0.0050	mg/L	2018-09-22	

## TEST RESULTS

**REPORTED TO PROJECT** SLR Consulting (Whitehorse)  
234.01022.00001

**WORK ORDER REPORTED** 8091582  
2018-10-01 15:08

Analyte	Result	RL	Units	Analyzed	Qualifier
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### DB-MW16-05 (8091582-03) | Matrix: Water | Sampled: 2018-09-13 08:55, Continued

#### Dissolved Metals, Continued

Cadmium, dissolved	< 0.000010	0.000010	mg/L	2018-09-22	
Calcium, dissolved	74.1	0.20	mg/L	2018-09-22	
Chromium, dissolved	0.00337	0.00050	mg/L	2018-09-22	
Cobalt, dissolved	< 0.00010	0.00010	mg/L	2018-09-22	
Copper, dissolved	< 0.00040	0.00040	mg/L	2018-09-22	
Iron, dissolved	< 0.010	0.010	mg/L	2018-09-22	
Lead, dissolved	< 0.00020	0.00020	mg/L	2018-09-22	
Lithium, dissolved	0.00288	0.00010	mg/L	2018-09-22	
Magnesium, dissolved	36.4	0.010	mg/L	2018-09-22	
Manganese, dissolved	0.00143	0.00020	mg/L	2018-09-22	
Mercury, dissolved	< 0.000010	0.000010	mg/L	2018-09-20	
Molybdenum, dissolved	0.00224	0.00010	mg/L	2018-09-22	
Nickel, dissolved	0.00061	0.00040	mg/L	2018-09-22	
Phosphorus, dissolved	< 0.050	0.050	mg/L	2018-09-22	
Potassium, dissolved	1.60	0.10	mg/L	2018-09-22	
Selenium, dissolved	0.00750	0.00050	mg/L	2018-09-22	
Silicon, dissolved	4.8	1.0	mg/L	2018-09-22	
Silver, dissolved	< 0.000050	0.000050	mg/L	2018-09-22	
Sodium, dissolved	7.42	0.10	mg/L	2018-09-22	
Strontium, dissolved	0.347	0.0010	mg/L	2018-09-22	
Sulfur, dissolved	72.3	3.0	mg/L	2018-09-22	
Tellurium, dissolved	< 0.00050	0.00050	mg/L	2018-09-22	
Thallium, dissolved	< 0.000020	0.000020	mg/L	2018-09-22	
Thorium, dissolved	< 0.00010	0.00010	mg/L	2018-09-22	
Tin, dissolved	< 0.00020	0.00020	mg/L	2018-09-22	
Titanium, dissolved	< 0.0050	0.0050	mg/L	2018-09-22	
Tungsten, dissolved	< 0.0010	0.0010	mg/L	2018-09-22	
Uranium, dissolved	0.000815	0.000020	mg/L	2018-09-22	
Vanadium, dissolved	< 0.0010	0.0010	mg/L	2018-09-22	
Zinc, dissolved	< 0.0040	0.0040	mg/L	2018-09-22	
Zirconium, dissolved	< 0.00010	0.00010	mg/L	2018-09-22	

#### General Parameters

Alkalinity, Total (as CaCO <sub>3</sub> )	175	1.0	mg/L	2018-09-20	
Alkalinity, Phenolphthalein (as CaCO <sub>3</sub> )	< 1.0	1.0	mg/L	2018-09-20	
Alkalinity, Bicarbonate (as CaCO <sub>3</sub> )	175	1.0	mg/L	2018-09-20	
Alkalinity, Carbonate (as CaCO <sub>3</sub> )	< 1.0	1.0	mg/L	2018-09-20	
Alkalinity, Hydroxide (as CaCO <sub>3</sub> )	< 1.0	1.0	mg/L	2018-09-20	
Ammonia, Total (as N)	0.060	0.020	mg/L	2018-09-21	
Carbon, Dissolved Organic	0.76	0.50	mg/L	2018-09-21	
Conductivity (EC)	693	2.0	µS/cm	2018-09-20	
pH	7.64	0.10	pH units	2018-09-20	HT2

## TEST RESULTS

**REPORTED TO PROJECT** SLR Consulting (Whitehorse)  
234.01022.00001

**WORK ORDER REPORTED** 8091582  
2018-10-01 15:08

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>DB-MW16-05 (8091582-03)   Matrix: Water   Sampled: 2018-09-13 08:55, Continued</b>					
<b>Polycyclic Aromatic Hydrocarbons (PAH)</b>					
Acenaphthene	< 0.050	0.050	µg/L	2018-10-01	
Acenaphthylene	< 0.200	0.200	µg/L	2018-10-01	
Acridine	< 0.050	0.050	µg/L	2018-10-01	
Anthracene	< 0.010	0.010	µg/L	2018-10-01	
Benz(a)anthracene	<b>0.065</b>	0.010	µg/L	2018-10-01	
Benzo(a)pyrene	<b>0.072</b>	0.010	µg/L	2018-10-01	
Benzo(b+j)fluoranthene	<b>0.182</b>	0.050	µg/L	2018-10-01	
Benzo(g,h,i)perylene	<b>0.077</b>	0.050	µg/L	2018-10-01	
Benzo(k)fluoranthene	<b>0.090</b>	0.050	µg/L	2018-10-01	
2-Chloronaphthalene	< 0.100	0.100	µg/L	2018-10-01	
Chrysene	<b>0.075</b>	0.050	µg/L	2018-10-01	
Dibenz(a,h)anthracene	<b>0.074</b>	0.010	µg/L	2018-10-01	
Fluoranthene	< 0.030	0.030	µg/L	2018-10-01	
Fluorene	< 0.050	0.050	µg/L	2018-10-01	
Indeno(1,2,3-cd)pyrene	<b>0.074</b>	0.050	µg/L	2018-10-01	
1-Methylnaphthalene	< 0.100	0.100	µg/L	2018-10-01	
2-Methylnaphthalene	< 0.100	0.100	µg/L	2018-10-01	
Naphthalene	< 0.200	0.200	µg/L	2018-10-01	
Phenanthrene	< 0.100	0.100	µg/L	2018-10-01	
Pyrene	< 0.020	0.020	µg/L	2018-10-01	
Quinoline	< 0.050	0.050	µg/L	2018-10-01	
Surrogate: Acridine-d9	73	50-140	%	2018-10-01	
Surrogate: Naphthalene-d8	109	50-140	%	2018-10-01	
Surrogate: Perylene-d12	43	50-140	%	2018-10-01	S02
<b>Volatile Organic Compounds (VOC)</b>					
Benzene	< 0.5	0.5	µg/L	2018-09-27	
Bromodichloromethane	< 1.0	1.0	µg/L	2018-09-27	
Bromoform	< 1.0	1.0	µg/L	2018-09-27	
Carbon tetrachloride	< 0.5	0.5	µg/L	2018-09-27	
Chlorobenzene	< 1.0	1.0	µg/L	2018-09-27	
Chloroethane	< 2.0	2.0	µg/L	2018-09-27	
Chloroform	< 1.0	1.0	µg/L	2018-09-27	
Dibromochloromethane	< 1.0	1.0	µg/L	2018-09-27	
1,2-Dibromoethane	< 0.3	0.3	µg/L	2018-09-27	
Dibromomethane	< 1.0	1.0	µg/L	2018-09-27	
1,2-Dichlorobenzene	< 0.5	0.5	µg/L	2018-09-27	
1,3-Dichlorobenzene	< 1.0	1.0	µg/L	2018-09-27	
1,4-Dichlorobenzene	< 1.0	1.0	µg/L	2018-09-27	
1,1-Dichloroethane	< 1.0	1.0	µg/L	2018-09-27	
1,2-Dichloroethane	< 1.0	1.0	µg/L	2018-09-27	
1,1-Dichloroethylene	< 1.0	1.0	µg/L	2018-09-27	
cis-1,2-Dichloroethylene	< 1.0	1.0	µg/L	2018-09-27	

## TEST RESULTS

**REPORTED TO PROJECT** SLR Consulting (Whitehorse)  
234.01022.00001

**WORK ORDER REPORTED** 8091582  
2018-10-01 15:08

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>DB-MW16-05 (8091582-03)   Matrix: Water   Sampled: 2018-09-13 08:55, Continued</b>					
<i>Volatile Organic Compounds (VOC), Continued</i>					
trans-1,2-Dichloroethylene	< 1.0	1.0	µg/L	2018-09-27	
Dichloromethane	< 3.0	3.0	µg/L	2018-09-27	
1,2-Dichloropropane	< 1.0	1.0	µg/L	2018-09-27	
1,3-Dichloropropene (cis + trans)	< 1.0	1.0	µg/L	2018-09-27	
Ethylbenzene	< 1.0	1.0	µg/L	2018-09-27	
Methyl tert-butyl ether	< 1.0	1.0	µg/L	2018-09-27	
Styrene	< 1.0	1.0	µg/L	2018-09-27	
1,1,2,2-Tetrachloroethane	< 0.5	0.5	µg/L	2018-09-27	
Tetrachloroethylene	< 1.0	1.0	µg/L	2018-09-27	
Toluene	< 1.0	1.0	µg/L	2018-09-27	
1,1,1-Trichloroethane	< 1.0	1.0	µg/L	2018-09-27	
1,1,2-Trichloroethane	< 1.0	1.0	µg/L	2018-09-27	
Trichloroethylene	< 1.0	1.0	µg/L	2018-09-27	
Trichlorofluoromethane	< 1.0	1.0	µg/L	2018-09-27	
Vinyl chloride	< 1.0	1.0	µg/L	2018-09-27	
Xylenes (total)	< 2.0	2.0	µg/L	2018-09-27	
Surrogate: Toluene-d8	106	70-130	%	2018-09-27	
Surrogate: 4-Bromofluorobenzene	144	70-130	%	2018-09-27	S02
Surrogate: 1,4-Dichlorobenzene-d4	144	70-130	%	2018-09-27	S02

### DB-MW16-04 (8091582-04) | Matrix: Water | Sampled: 2018-09-13 10:26

#### Anions

Chloride	0.75	0.10	mg/L	2018-09-20	
Nitrate (as N)	0.361	0.010	mg/L	2018-09-20	HT1
Nitrite (as N)	< 0.010	0.010	mg/L	2018-09-20	HT1
Phosphate (as P)	< 0.0050	0.0050	mg/L	2018-09-20	HT1
Sulfate	211	1.0	mg/L	2018-09-20	

#### BCMOE Aggregate Hydrocarbons

VHw (6-10)	< 100	100	µg/L	2018-09-27	
VPHw	< 100	100	µg/L	N/A	
EPHw10-19	< 250	250	µg/L	2018-09-23	
EPHw19-32	< 250	250	µg/L	2018-09-23	
LEPHw	< 250	250	µg/L	N/A	
HEPHw	< 250	250	µg/L	N/A	
Surrogate: 2-Methylnonane (EPH/F2-4)	40	60-140	%	2018-09-23	

#### Calculated Parameters

Hardness, Total (as CaCO3)	338	0.500	mg/L	N/A	
Solids, Total Dissolved	436	10	mg/L	2018-09-25	

#### Dissolved Metals

## TEST RESULTS

**REPORTED TO PROJECT** SLR Consulting (Whitehorse)  
234.01022.00001

**WORK ORDER REPORTED** 8091582  
2018-10-01 15:08

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>DB-MW16-04 (8091582-04)   Matrix: Water   Sampled: 2018-09-13 10:26, Continued</b>					
<i>Dissolved Metals, Continued</i>					
Aluminum, dissolved	< 0.0050	0.0050	mg/L	2018-09-22	
Antimony, dissolved	< 0.00020	0.00020	mg/L	2018-09-22	
Arsenic, dissolved	< 0.00050	0.00050	mg/L	2018-09-22	
Barium, dissolved	<b>0.0247</b>	0.0050	mg/L	2018-09-22	
Beryllium, dissolved	< 0.00010	0.00010	mg/L	2018-09-22	
Bismuth, dissolved	< 0.00010	0.00010	mg/L	2018-09-22	
Boron, dissolved	<b>0.132</b>	0.0050	mg/L	2018-09-22	
Cadmium, dissolved	< 0.000010	0.000010	mg/L	2018-09-22	
Calcium, dissolved	<b>69.5</b>	0.20	mg/L	2018-09-22	
Chromium, dissolved	<b>0.00367</b>	0.00050	mg/L	2018-09-22	
Cobalt, dissolved	< 0.00010	0.00010	mg/L	2018-09-22	
Copper, dissolved	< 0.00040	0.00040	mg/L	2018-09-22	
Iron, dissolved	< 0.010	0.010	mg/L	2018-09-22	
Lead, dissolved	< 0.00020	0.00020	mg/L	2018-09-22	
Lithium, dissolved	<b>0.00285</b>	0.00010	mg/L	2018-09-22	
Magnesium, dissolved	<b>39.9</b>	0.010	mg/L	2018-09-22	
Manganese, dissolved	<b>0.00045</b>	0.00020	mg/L	2018-09-22	
Mercury, dissolved	< 0.000010	0.000010	mg/L	2018-09-20	
Molybdenum, dissolved	<b>0.00261</b>	0.00010	mg/L	2018-09-22	
Nickel, dissolved	<b>0.00067</b>	0.00040	mg/L	2018-09-22	
Phosphorus, dissolved	< 0.050	0.050	mg/L	2018-09-22	
Potassium, dissolved	<b>1.53</b>	0.10	mg/L	2018-09-22	
Selenium, dissolved	<b>0.00754</b>	0.00050	mg/L	2018-09-22	
Silicon, dissolved	<b>4.7</b>	1.0	mg/L	2018-09-22	
Silver, dissolved	< 0.000050	0.000050	mg/L	2018-09-22	
Sodium, dissolved	<b>7.26</b>	0.10	mg/L	2018-09-22	
Strontium, dissolved	<b>0.324</b>	0.0010	mg/L	2018-09-22	
Sulfur, dissolved	<b>70.3</b>	3.0	mg/L	2018-09-22	
Tellurium, dissolved	< 0.00050	0.00050	mg/L	2018-09-22	
Thallium, dissolved	< 0.000020	0.000020	mg/L	2018-09-22	
Thorium, dissolved	< 0.00010	0.00010	mg/L	2018-09-22	
Tin, dissolved	< 0.00020	0.00020	mg/L	2018-09-22	
Titanium, dissolved	< 0.0050	0.0050	mg/L	2018-09-22	
Tungsten, dissolved	< 0.0010	0.0010	mg/L	2018-09-22	
Uranium, dissolved	<b>0.000738</b>	0.000020	mg/L	2018-09-22	
Vanadium, dissolved	< 0.0010	0.0010	mg/L	2018-09-22	
Zinc, dissolved	< 0.0040	0.0040	mg/L	2018-09-22	
Zirconium, dissolved	< 0.00010	0.00010	mg/L	2018-09-22	

### General Parameters

Alkalinity, Total (as CaCO3)	<b>172</b>	1.0	mg/L	2018-09-20	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L	2018-09-20	
Alkalinity, Bicarbonate (as CaCO3)	<b>172</b>	1.0	mg/L	2018-09-20	

## TEST RESULTS

**REPORTED TO PROJECT** SLR Consulting (Whitehorse)  
234.01022.00001

**WORK ORDER REPORTED** 8091582  
2018-10-01 15:08

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>DB-MW16-04 (8091582-04)   Matrix: Water   Sampled: 2018-09-13 10:26, Continued</b>					
<b>General Parameters, Continued</b>					
Alkalinity, Carbonate (as CaCO <sub>3</sub> )	< 1.0	1.0	mg/L	2018-09-20	
Alkalinity, Hydroxide (as CaCO <sub>3</sub> )	< 1.0	1.0	mg/L	2018-09-20	
Ammonia, Total (as N)	<b>0.034</b>	0.020	mg/L	2018-09-21	
Carbon, Dissolved Organic	<b>1.04</b>	0.50	mg/L	2018-09-21	
Conductivity (EC)	<b>687</b>	2.0	µS/cm	2018-09-20	
pH	<b>7.75</b>	0.10	pH units	2018-09-20	HT2
<b>Polycyclic Aromatic Hydrocarbons (PAH)</b>					
Acenaphthene	< 0.050	0.050	µg/L	2018-09-29	
Acenaphthylene	< 0.200	0.200	µg/L	2018-09-29	
Acridine	< 0.050	0.050	µg/L	2018-09-29	
Anthracene	< 0.010	0.010	µg/L	2018-09-29	
Benz(a)anthracene	< 0.010	0.010	µg/L	2018-09-29	
Benzo(a)pyrene	< 0.010	0.010	µg/L	2018-09-29	
Benzo(b+j)fluoranthene	< 0.050	0.050	µg/L	2018-09-29	
Benzo(g,h,i)perylene	< 0.050	0.050	µg/L	2018-09-29	
Benzo(k)fluoranthene	< 0.050	0.050	µg/L	2018-09-29	
2-Chloronaphthalene	< 0.100	0.100	µg/L	2018-09-29	
Chrysene	< 0.050	0.050	µg/L	2018-09-29	
Dibenz(a,h)anthracene	< 0.010	0.010	µg/L	2018-09-29	
Fluoranthene	< 0.030	0.030	µg/L	2018-09-29	
Fluorene	< 0.050	0.050	µg/L	2018-09-29	
Indeno(1,2,3-cd)pyrene	< 0.050	0.050	µg/L	2018-09-29	
1-Methylnaphthalene	< 0.100	0.100	µg/L	2018-09-29	
2-Methylnaphthalene	< 0.100	0.100	µg/L	2018-09-29	
Naphthalene	< 0.200	0.200	µg/L	2018-09-29	
Phenanthrene	< 0.100	0.100	µg/L	2018-09-29	
Pyrene	< 0.020	0.020	µg/L	2018-09-29	
Quinoline	< 0.050	0.050	µg/L	2018-09-29	
Surrogate: Acridine-d <sub>9</sub>	68	50-140	%	2018-09-29	
Surrogate: Naphthalene-d <sub>8</sub>	121	50-140	%	2018-09-29	
Surrogate: Perylene-d <sub>12</sub>	41	50-140	%	2018-09-29	S02
<b>Volatile Organic Compounds (VOC)</b>					
Benzene	< 0.5	0.5	µg/L	2018-09-27	
Bromodichloromethane	< 1.0	1.0	µg/L	2018-09-27	
Bromoform	< 1.0	1.0	µg/L	2018-09-27	
Carbon tetrachloride	< 0.5	0.5	µg/L	2018-09-27	
Chlorobenzene	< 1.0	1.0	µg/L	2018-09-27	
Chloroethane	< 2.0	2.0	µg/L	2018-09-27	
Chloroform	< 1.0	1.0	µg/L	2018-09-27	
Dibromochloromethane	< 1.0	1.0	µg/L	2018-09-27	
1,2-Dibromoethane	< 0.3	0.3	µg/L	2018-09-27	



## TEST RESULTS

**REPORTED TO PROJECT** SLR Consulting (Whitehorse)  
234.01022.00001

**WORK ORDER REPORTED** 8091582  
2018-10-01 15:08

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>DB-MW16-04 (8091582-04)   Matrix: Water   Sampled: 2018-09-13 10:26, Continued</b>					
<i>Volatile Organic Compounds (VOC), Continued</i>					
Dibromomethane	< 1.0	1.0	µg/L	2018-09-27	
1,2-Dichlorobenzene	< 0.5	0.5	µg/L	2018-09-27	
1,3-Dichlorobenzene	< 1.0	1.0	µg/L	2018-09-27	
1,4-Dichlorobenzene	< 1.0	1.0	µg/L	2018-09-27	
1,1-Dichloroethane	< 1.0	1.0	µg/L	2018-09-27	
1,2-Dichloroethane	< 1.0	1.0	µg/L	2018-09-27	
1,1-Dichloroethylene	< 1.0	1.0	µg/L	2018-09-27	
cis-1,2-Dichloroethylene	< 1.0	1.0	µg/L	2018-09-27	
trans-1,2-Dichloroethylene	< 1.0	1.0	µg/L	2018-09-27	
Dichloromethane	< 3.0	3.0	µg/L	2018-09-27	
1,2-Dichloropropane	< 1.0	1.0	µg/L	2018-09-27	
1,3-Dichloropropene (cis + trans)	< 1.0	1.0	µg/L	2018-09-27	
Ethylbenzene	< 1.0	1.0	µg/L	2018-09-27	
Methyl tert-butyl ether	< 1.0	1.0	µg/L	2018-09-27	
Styrene	< 1.0	1.0	µg/L	2018-09-27	
1,1,2,2-Tetrachloroethane	< 0.5	0.5	µg/L	2018-09-27	
Tetrachloroethylene	< 1.0	1.0	µg/L	2018-09-27	
Toluene	< 1.0	1.0	µg/L	2018-09-27	
1,1,1-Trichloroethane	< 1.0	1.0	µg/L	2018-09-27	
1,1,2-Trichloroethane	< 1.0	1.0	µg/L	2018-09-27	
Trichloroethylene	< 1.0	1.0	µg/L	2018-09-27	
Trichlorofluoromethane	< 1.0	1.0	µg/L	2018-09-27	
Vinyl chloride	< 1.0	1.0	µg/L	2018-09-27	
Xylenes (total)	< 2.0	2.0	µg/L	2018-09-27	
Surrogate: Toluene-d8	102	70-130	%	2018-09-27	
Surrogate: 4-Bromofluorobenzene	140	70-130	%	2018-09-27	S02
Surrogate: 1,4-Dichlorobenzene-d4	140	70-130	%	2018-09-27	S02

### DB-Lewis Creek (8091582-05) | Matrix: Water | Sampled: 2018-09-14 08:53

#### Anions

Chloride	0.26	0.10	mg/L	2018-09-21	
Nitrate (as N)	0.213	0.010	mg/L	2018-09-21	HT1
Nitrite (as N)	< 0.010	0.010	mg/L	2018-09-21	HT1
Phosphate (as P)	< 0.0050	0.0050	mg/L	2018-09-21	HT1
Sulfate	260	1.0	mg/L	2018-09-21	

#### BCMOE Aggregate Hydrocarbons

VHw (6-10)	< 100	100	µg/L	2018-09-27	
VPHw	< 100	100	µg/L	N/A	
EPHw10-19	< 250	250	µg/L	2018-09-23	
EPHw19-32	< 250	250	µg/L	2018-09-23	
LEPHw	< 250	250	µg/L	N/A	



## TEST RESULTS

**REPORTED TO PROJECT** SLR Consulting (Whitehorse)  
234.01022.00001

**WORK ORDER REPORTED** 8091582  
2018-10-01 15:08

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>DB-Lewis Creek (8091582-05)   Matrix: Water   Sampled: 2018-09-14 08:53, Continued</b>					
<b>BCMOE Aggregate Hydrocarbons, Continued</b>					
HEPHw	< 250	250	µg/L	N/A	
Surrogate: 2-Methylnonane (EPH/F2-4)	39	60-140	%	2018-09-23	
<b>Calculated Parameters</b>					
Hardness, Total (as CaCO <sub>3</sub> )	391	0.500	mg/L	N/A	
Solids, Total Dissolved	489	10	mg/L	2018-09-25	
<b>General Parameters</b>					
Alkalinity, Total (as CaCO <sub>3</sub> )	143	1.0	mg/L	2018-09-20	
Alkalinity, Phenolphthalein (as CaCO <sub>3</sub> )	< 1.0	1.0	mg/L	2018-09-20	
Alkalinity, Bicarbonate (as CaCO <sub>3</sub> )	143	1.0	mg/L	2018-09-20	
Alkalinity, Carbonate (as CaCO <sub>3</sub> )	< 1.0	1.0	mg/L	2018-09-20	
Alkalinity, Hydroxide (as CaCO <sub>3</sub> )	< 1.0	1.0	mg/L	2018-09-20	
Ammonia, Total (as N)	0.074	0.020	mg/L	2018-09-21	
BOD, 5-day	< 2.0	2.0	mg/L	2018-09-24	BOD2, HT1
Carbon, Total Organic	3.05	0.50	mg/L	2018-09-21	
Chemical Oxygen Demand	24	20	mg/L	2018-09-21	
Conductivity (EC)	713	2.0	µS/cm	2018-09-20	
pH	7.94	0.10	pH units	2018-09-20	HT2
<b>Polycyclic Aromatic Hydrocarbons (PAH)</b>					
Acenaphthene	< 0.050	0.050	µg/L	2018-09-29	
Acenaphthylene	< 0.200	0.200	µg/L	2018-09-29	
Acridine	< 0.050	0.050	µg/L	2018-09-29	
Anthracene	< 0.010	0.010	µg/L	2018-09-29	
Benz(a)anthracene	0.055	0.010	µg/L	2018-09-29	
Benzo(a)pyrene	< 0.010	0.010	µg/L	2018-09-29	
Benzo(b+j)fluoranthene	< 0.050	0.050	µg/L	2018-09-29	
Benzo(g,h,i)perylene	< 0.050	0.050	µg/L	2018-09-29	
Benzo(k)fluoranthene	< 0.050	0.050	µg/L	2018-09-29	
2-Chloronaphthalene	< 0.100	0.100	µg/L	2018-09-29	
Chrysene	0.059	0.050	µg/L	2018-09-29	
Dibenz(a,h)anthracene	< 0.010	0.010	µg/L	2018-09-29	
Fluoranthene	< 0.030	0.030	µg/L	2018-09-29	
Fluorene	< 0.050	0.050	µg/L	2018-09-29	
Indeno(1,2,3-cd)pyrene	< 0.050	0.050	µg/L	2018-09-29	
1-Methylnaphthalene	< 0.100	0.100	µg/L	2018-09-29	
2-Methylnaphthalene	< 0.100	0.100	µg/L	2018-09-29	
Naphthalene	< 0.200	0.200	µg/L	2018-09-29	
Phenanthrene	< 0.100	0.100	µg/L	2018-09-29	
Pyrene	< 0.020	0.020	µg/L	2018-09-29	
Quinoline	< 0.050	0.050	µg/L	2018-09-29	
Surrogate: Acridine-d9	65	50-140	%	2018-09-29	

## TEST RESULTS

**REPORTED TO PROJECT** SLR Consulting (Whitehorse)  
234.01022.00001

**WORK ORDER REPORTED** 8091582  
2018-10-01 15:08

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>DB-Lewis Creek (8091582-05)   Matrix: Water   Sampled: 2018-09-14 08:53, Continued</b>					
<i>Polycyclic Aromatic Hydrocarbons (PAH), Continued</i>					
Surrogate: Naphthalene-d8	123	50-140	%	2018-09-29	
Surrogate: Perylene-d12	41	50-140	%	2018-09-29	S02
<b>Total Metals</b>					
Aluminum, total	3.24	0.0050	mg/L	2018-09-22	
Antimony, total	0.00035	0.00020	mg/L	2018-09-22	
Arsenic, total	0.00283	0.00050	mg/L	2018-09-22	
Barium, total	0.0697	0.0050	mg/L	2018-09-22	
Beryllium, total	< 0.00010	0.00010	mg/L	2018-09-22	
Bismuth, total	< 0.00010	0.00010	mg/L	2018-09-22	
Boron, total	0.164	0.0050	mg/L	2018-09-22	
Cadmium, total	0.000157	0.000010	mg/L	2018-09-22	
Calcium, total	86.1	0.20	mg/L	2018-09-22	
Chromium, total	0.0196	0.00050	mg/L	2018-09-22	
Cobalt, total	0.00440	0.00010	mg/L	2018-09-22	
Copper, total	0.0170	0.00040	mg/L	2018-09-22	
Iron, total	6.62	0.010	mg/L	2018-09-22	
Lead, total	0.00137	0.00020	mg/L	2018-09-22	
Lithium, total	0.00758	0.00010	mg/L	2018-09-22	
Magnesium, total	42.6	0.010	mg/L	2018-09-22	
Manganese, total	0.134	0.00020	mg/L	2018-09-22	
Mercury, total	< 0.000010	0.000010	mg/L	2018-09-20	
Molybdenum, total	0.00186	0.00010	mg/L	2018-09-22	
Nickel, total	0.0205	0.00040	mg/L	2018-09-22	
Phosphorus, total	0.114	0.050	mg/L	2018-09-22	
Potassium, total	1.22	0.10	mg/L	2018-09-22	
Selenium, total	0.00702	0.00050	mg/L	2018-09-22	
Silicon, total	7.5	1.0	mg/L	2018-09-22	
Silver, total	< 0.000050	0.000050	mg/L	2018-09-22	
Sodium, total	10.8	0.10	mg/L	2018-09-22	
Strontium, total	0.497	0.0010	mg/L	2018-09-22	
Sulfur, total	79.0	3.0	mg/L	2018-09-22	
Tellurium, total	< 0.00050	0.00050	mg/L	2018-09-22	
Thallium, total	0.000028	0.000020	mg/L	2018-09-22	
Thorium, total	0.00013	0.00010	mg/L	2018-09-22	
Tin, total	< 0.00020	0.00020	mg/L	2018-09-22	
Titanium, total	0.139	0.0050	mg/L	2018-09-22	
Tungsten, total	< 0.0010	0.0010	mg/L	2018-09-22	
Uranium, total	0.000552	0.000020	mg/L	2018-09-22	
Vanadium, total	0.0131	0.0010	mg/L	2018-09-22	
Zinc, total	0.0216	0.0040	mg/L	2018-09-22	
Zirconium, total	0.00022	0.00010	mg/L	2018-09-22	

## TEST RESULTS

**REPORTED TO PROJECT** SLR Consulting (Whitehorse)  
234.01022.00001

**WORK ORDER REPORTED** 8091582  
2018-10-01 15:08

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>DB-Lewis Creek (8091582-05)   Matrix: Water   Sampled: 2018-09-14 08:53, Continued</b>					
<i>Volatile Organic Compounds (VOC)</i>					
Benzene	< 0.5	0.5	µg/L	2018-09-27	
Ethylbenzene	< 1.0	1.0	µg/L	2018-09-27	
Methyl tert-butyl ether	< 1.0	1.0	µg/L	2018-09-27	
Styrene	< 1.0	1.0	µg/L	2018-09-27	
Toluene	< 1.0	1.0	µg/L	2018-09-27	
Xylenes (total)	< 2.0	2.0	µg/L	2018-09-27	
Surrogate: Toluene-d8	107	70-130	%	2018-09-27	
Surrogate: 4-Bromofluorobenzene	146	70-130	%	2018-09-27	S02

### Sample Qualifiers:

BOD2 The sample dilutions set-up for the BOD analysis did not meet the oxygen depletion criterion of at least 2 mg/L.

HT1 The sample was prepared and/or analyzed past the recommended holding time.

HT2 The 15 minute recommended holding time (from sampling to analysis) has been exceeded - field analysis is recommended.

S02 Surrogate recovery outside of control limits. Data accepted based on acceptable recovery of other surrogates.

S09 The surrogate recovery for this sample is outside of established control limits .

## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** SLR Consulting (Whitehorse)  
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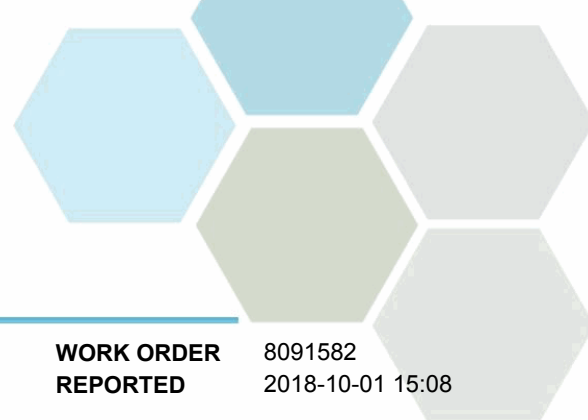
**WORK ORDER REPORTED** 8091582  
2018-10-01 15:08

Analysis Description	Method Ref.	Technique	Location
Alkalinity in Water	SM 2320 B* (2011)	Titration with H2SO4	Kelowna
Ammonia, Total in Water	SM 4500-NH3 G* (2011)	Automated Colorimetry (Phenate)	Kelowna
Anions in Water	SM 4110 B (2011)	Ion Chromatography	Kelowna
Biochemical Oxygen Demand in Water	SM 5210 B (2011)	Dissolved Oxygen Meter	Richmond
BTEX in Water	EPA 5030B / EPA 8260D	Purge&Trap / GC-MSD (SIM)	Richmond
Carbon, Dissolved Organic in Water	SM 5310 B (2011)	Combustion, Infrared CO2 Detection	Kelowna
Carbon, Total Organic in Water	SM 5310 B (2011)	Combustion, Infrared CO2 Detection	Kelowna
Chemical Oxygen Demand in Water	SM 5220 D* (2011)	Closed Reflux, Colorimetry	Kelowna
Conductivity in Water	SM 2510 B (2011)	Conductivity Meter	Kelowna
Dissolved Metals in Water	EPA 200.8 / EPA 6020B	0.45 µm Filtration / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	Richmond
EPH in Water	EPA 3511* / BCMOE EPHw	Hexane MicroExtraction (Base/Neutral) / Gas Chromatography (GC-FID)	Richmond
Hardness in Water	SM 2340 B (2011)	Calculation: 2.497 [diss Ca] + 4.118 [diss Mg]	N/A
HEPHw in Water	BCMOE LEPH/HEPH	Calculation	N/A
LEPHw in Water	BCMOE LEPH/HEPH	Calculation	N/A
Mercury, dissolved in Water	EPA 245.7*	BrCl2 Oxidation / Cold Vapor Atomic Fluorescence Spectrometry (CVAFS)	Richmond
Mercury, total in Water	EPA 245.7*	BrCl2 Oxidation / Cold Vapor Atomic Fluorescence Spectrometry (CVAFS)	Richmond
pH in Water	SM 4500-H+ B (2011)	Electrometry	Kelowna
Polycyclic Aromatic Hydrocarbons in Water	EPA 3511* / EPA 8270D	Hexane MicroExtraction (Base/Neutral) / GC-MSD (SIM)	Richmond
Solids, Total Dissolved in Water	SM 1030 E (2011)	Calculation: $100 \times ([\text{Cations}] - [\text{Anions}] / ([\text{Cations}] + [\text{Anions}]))$	N/A
Total Metals in Water	EPA 200.2* / EPA 6020B	HNO3+HCl Hot Block Digestion / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	Richmond
VH in Water	EPA 5030B / BCMOE VHw	Purge&Trap / Gas Chromatography (GC-FID)	Richmond
Volatile Organic Compounds in Water	EPA 5030B / EPA 8260D	Purge&Trap / GC-MSD (SIM)	Richmond
VPHw in Water	BCMOE VPH	Calculation: VH - (Benzene + Toluene + Ethylbenzene + Xylenes + Styrene)	N/A

*Note: An asterisk in the Method Reference indicates that the CARO method has been modified from the reference method*

### Glossary of Terms:

RL	Reporting Limit (default)
<	Less than the specified Reporting Limit (RL) - the actual RL may be higher than the default RL due to various factors
mg/L	Milligrams per litre
pH units	pH < 7 = acidic, pH > 7 = basic
µg/L	Micrograms per litre
µS/cm	Microsiemens per centimetre



## APPENDIX 1: SUPPORTING INFORMATION

<b>REPORTED TO PROJECT</b>	SLR Consulting (Whitehorse) 234.01022.00001	<b>WORK ORDER REPORTED</b>	8091582 2018-10-01 15:08
BCMOE	British Columbia Environmental Laboratory Manual, British Columbia Ministry of Environment		
EPA	United States Environmental Protection Agency Test Methods		
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association		

### General Comments:

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. CARO is not responsible for any loss or damage resulting directly or indirectly from error or omission in the conduct of testing. Liability is limited to the cost of analysis. Samples will be disposed of 30 days after the test report has been issued unless otherwise agreed to in writing.

## APPENDIX 2: QUALITY CONTROL RESULTS

**REPORTED TO** SLR Consulting (Whitehorse)  
**PROJECT** 234.01022.00001

**WORK ORDER** 8091582  
**REPORTED** 2018-10-01 15:08

The following section displays the quality control (QC) data that is associated with your sample data. Groups of samples are prepared in "batches" and analyzed in conjunction with QC samples that ensure your data is of the highest quality. Common QC types include:

- **Method Blank (BLK):** A blank sample that undergoes sample processing identical to that carried out for the test samples. Method blank results are used to assess contamination from the laboratory environment and reagents.
- **Duplicate (Dup):** An additional or second portion of a randomly selected sample in the analytical run carried through the entire analytical process. Duplicates provide a measure of the analytical method's precision (reproducibility).
- **Blank Spike (BS):** A sample of known concentration which undergoes processing identical to that carried out for test samples, also referred to as a laboratory control sample (LCS). Blank spikes provide a measure of the analytical method's accuracy.
- **Matrix Spike (MS):** A second aliquot of sample is fortified with with a known concentration of target analytes and carried through the entire analytical process. Matrix spikes evaluate potential matrix effects that may affect the analyte recovery.
- **Reference Material (SRM):** A homogenous material of similar matrix to the samples, certified for the parameter(s) listed. Reference Materials ensure that the analytical process is adequate to achieve acceptable recoveries of the parameter(s) tested.

Each QC type is analyzed at a 5-10% frequency, i.e. one blank/duplicate/spike for every 10-20 samples. For all types of QC, the specified recovery (% Rec) and relative percent difference (RPD) limits are derived from long-term method performance averages and/or prescribed by the reference method.

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
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### Anions, Batch B8I1424

<b>Blank (B8I1424-BLK1)</b>			Prepared: 2018-09-20, Analyzed: 2018-09-20						
Chloride	< 0.10	0.10 mg/L							
Nitrate (as N)	< 0.010	0.010 mg/L							
Nitrite (as N)	< 0.010	0.010 mg/L							
Phosphate (as P)	< 0.0050	0.0050 mg/L							
Sulfate	< 1.0	1.0 mg/L							

<b>Blank (B8I1424-BLK2)</b>			Prepared: 2018-09-21, Analyzed: 2018-09-21						
Chloride	< 0.10	0.10 mg/L							
Nitrate (as N)	< 0.010	0.010 mg/L							
Nitrite (as N)	< 0.010	0.010 mg/L							
Phosphate (as P)	< 0.0050	0.0050 mg/L							
Sulfate	< 1.0	1.0 mg/L							

<b>LCS (B8I1424-BS1)</b>			Prepared: 2018-09-20, Analyzed: 2018-09-20						
Chloride	15.7	0.10 mg/L	16.0		98	90-110			
Nitrate (as N)	4.02	0.010 mg/L	4.00		101	93-108			
Nitrite (as N)	1.93	0.010 mg/L	2.00		96	85-114			
Phosphate (as P)	0.955	0.0050 mg/L	1.00		96	80-120			
Sulfate	15.9	1.0 mg/L	16.0		100	91-109			

<b>LCS (B8I1424-BS2)</b>			Prepared: 2018-09-20, Analyzed: 2018-09-21						
Chloride	16.0	0.10 mg/L	16.0		100	90-110			
Nitrate (as N)	4.15	0.010 mg/L	4.00		104	93-108			
Nitrite (as N)	2.06	0.010 mg/L	2.00		103	85-114			
Phosphate (as P)	1.06	0.0050 mg/L	1.00		106	80-120			
Sulfate	16.0	1.0 mg/L	16.0		100	91-109			

### BCMOE Aggregate Hydrocarbons, Batch B8I1620

<b>Blank (B8I1620-BLK1)</b>			Prepared: 2018-09-22, Analyzed: 2018-09-23						S09
EPHw10-19	< 250	250 µg/L							
EPHw19-32	< 250	250 µg/L							
Surrogate: 2-Methylnonane (EPH/F2-4)	122	µg/L	444		27	60-140			

## APPENDIX 2: QUALITY CONTROL RESULTS

**REPORTED TO PROJECT** SLR Consulting (Whitehorse)  
234.01022.00001

**WORK ORDER REPORTED** 8091582  
2018-10-01 15:08

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
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### BCMOE Aggregate Hydrocarbons, Batch B8I1620, Continued

<b>LCS (B8I1620-BS2)</b>			Prepared: 2018-09-22, Analyzed: 2018-09-23						
EPHw10-19	15900	250 µg/L	15400		103	70-130			
EPHw19-32	22400	250 µg/L	22200		101	70-130			
Surrogate: 2-Methylnonane (EPH/F2-4)	480	µg/L	444		108	60-140			

### BCMOE Aggregate Hydrocarbons, Batch B8I1632

<b>Blank (B8I1632-BLK1)</b>			Prepared: 2018-09-22, Analyzed: 2018-09-24						
EPHw10-19	< 250	250 µg/L							S09
EPHw19-32	< 250	250 µg/L							S09
Surrogate: 2-Methylnonane (EPH/F2-4)	167	µg/L	444		38	60-140			S09
<b>LCS (B8I1632-BS2)</b>			Prepared: 2018-09-22, Analyzed: 2018-09-24						
EPHw10-19	15900	250 µg/L	15400		103	70-130			
EPHw19-32	22400	250 µg/L	22200		101	70-130			
Surrogate: 2-Methylnonane (EPH/F2-4)	375	µg/L	444		84	60-140			

### BCMOE Aggregate Hydrocarbons, Batch B8I1688

<b>Blank (B8I1688-BLK1)</b>			Prepared: 2018-09-25, Analyzed: 2018-09-25						
VHw (6-10)	< 100	100 µg/L							
<b>LCS (B8I1688-BS2)</b>			Prepared: 2018-09-25, Analyzed: 2018-09-25						
VHw (6-10)	2160	100 µg/L	3280		66	70-130			SPK

### BCMOE Aggregate Hydrocarbons, Batch B8I1862

<b>Blank (B8I1862-BLK1)</b>			Prepared: 2018-09-26, Analyzed: 2018-09-26						
VHw (6-10)	< 100	100 µg/L							
<b>LCS (B8I1862-BS2)</b>			Prepared: 2018-09-26, Analyzed: 2018-09-26						
VHw (6-10)	2510	100 µg/L	3280		76	70-130			
<b>Duplicate (B8I1862-DUP1)</b>			<b>Source: 8091582-02</b>		Prepared: 2018-09-26, Analyzed: 2018-09-26				
VHw (6-10)	< 100	100 µg/L		< 100				19	

### BCMOE Aggregate Hydrocarbons, Batch B8I1889

<b>Blank (B8I1889-BLK1)</b>			Prepared: 2018-09-27, Analyzed: 2018-09-27						
VHw (6-10)	< 100	100 µg/L							
<b>LCS (B8I1889-BS2)</b>			Prepared: 2018-09-27, Analyzed: 2018-09-27						
VHw (6-10)	4280	100 µg/L	3280		130	70-130			

### Dissolved Metals, Batch B8I1322

<b>Blank (B8I1322-BLK1)</b>			Prepared: 2018-09-22, Analyzed: 2018-09-22						
Aluminum, dissolved	< 0.0050	0.0050 mg/L							
Antimony, dissolved	< 0.00020	0.00020 mg/L							
Arsenic, dissolved	< 0.00050	0.00050 mg/L							
Barium, dissolved	< 0.0050	0.0050 mg/L							
Beryllium, dissolved	< 0.00010	0.00010 mg/L							
Bismuth, dissolved	< 0.00010	0.00010 mg/L							
Boron, dissolved	< 0.0050	0.0050 mg/L							
Cadmium, dissolved	< 0.000010	0.000010 mg/L							

## APPENDIX 2: QUALITY CONTROL RESULTS

**REPORTED TO PROJECT** SLR Consulting (Whitehorse)  
234.01022.00001

**WORK ORDER REPORTED** 8091582  
2018-10-01 15:08

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
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### Dissolved Metals, Batch B81322, Continued

#### Blank (B81322-BLK1), Continued

Prepared: 2018-09-22, Analyzed: 2018-09-22

Calcium, dissolved	< 0.20	0.20 mg/L							
Chromium, dissolved	< 0.00050	0.00050 mg/L							
Cobalt, dissolved	< 0.00010	0.00010 mg/L							
Copper, dissolved	< 0.00040	0.00040 mg/L							
Iron, dissolved	< 0.010	0.010 mg/L							
Lead, dissolved	< 0.00020	0.00020 mg/L							
Lithium, dissolved	< 0.00010	0.00010 mg/L							
Magnesium, dissolved	< 0.010	0.010 mg/L							
Manganese, dissolved	< 0.00020	0.00020 mg/L							
Molybdenum, dissolved	< 0.00010	0.00010 mg/L							
Nickel, dissolved	< 0.00040	0.00040 mg/L							
Phosphorus, dissolved	< 0.050	0.050 mg/L							
Potassium, dissolved	< 0.10	0.10 mg/L							
Selenium, dissolved	< 0.00050	0.00050 mg/L							
Silicon, dissolved	< 1.0	1.0 mg/L							
Silver, dissolved	< 0.000050	0.000050 mg/L							
Sodium, dissolved	< 0.10	0.10 mg/L							
Strontium, dissolved	< 0.0010	0.0010 mg/L							
Sulfur, dissolved	< 3.0	3.0 mg/L							
Tellurium, dissolved	< 0.00050	0.00050 mg/L							
Thallium, dissolved	< 0.000020	0.000020 mg/L							
Thorium, dissolved	< 0.00010	0.00010 mg/L							
Tin, dissolved	< 0.00020	0.00020 mg/L							
Titanium, dissolved	< 0.0050	0.0050 mg/L							
Tungsten, dissolved	< 0.0010	0.0010 mg/L							
Uranium, dissolved	< 0.000020	0.000020 mg/L							
Vanadium, dissolved	< 0.0010	0.0010 mg/L							
Zinc, dissolved	< 0.0040	0.0040 mg/L							
Zirconium, dissolved	< 0.00010	0.00010 mg/L							

#### LCS (B81322-BS1)

Prepared: 2018-09-22, Analyzed: 2018-09-22

Aluminum, dissolved	0.0196	0.0050 mg/L	0.0200	98	80-120
Antimony, dissolved	0.0211	0.00020 mg/L	0.0200	106	80-120
Arsenic, dissolved	0.0197	0.00050 mg/L	0.0200	99	80-120
Barium, dissolved	0.0219	0.0050 mg/L	0.0200	109	80-120
Beryllium, dissolved	0.0218	0.00010 mg/L	0.0200	109	80-120
Bismuth, dissolved	0.0201	0.00010 mg/L	0.0200	101	80-120
Boron, dissolved	0.0181	0.0050 mg/L	0.0200	90	80-120
Cadmium, dissolved	0.0210	0.000010 mg/L	0.0200	105	80-120
Calcium, dissolved	1.75	0.20 mg/L	2.00	88	80-120
Chromium, dissolved	0.0186	0.00050 mg/L	0.0200	93	80-120
Cobalt, dissolved	0.0188	0.00010 mg/L	0.0200	94	80-120
Copper, dissolved	0.0193	0.00040 mg/L	0.0200	97	80-120
Iron, dissolved	1.80	0.010 mg/L	2.00	90	80-120
Lead, dissolved	0.0202	0.00020 mg/L	0.0200	101	80-120
Lithium, dissolved	0.0221	0.00010 mg/L	0.0200	111	80-120
Magnesium, dissolved	1.88	0.010 mg/L	2.00	94	80-120
Manganese, dissolved	0.0193	0.00020 mg/L	0.0200	97	80-120
Molybdenum, dissolved	0.0190	0.00010 mg/L	0.0200	95	80-120
Nickel, dissolved	0.0188	0.00040 mg/L	0.0200	94	80-120
Phosphorus, dissolved	1.91	0.050 mg/L	2.00	95	80-120
Potassium, dissolved	1.69	0.10 mg/L	2.00	84	80-120
Selenium, dissolved	0.0186	0.00050 mg/L	0.0200	93	80-120
Silicon, dissolved	1.9	1.0 mg/L	2.00	93	80-120
Silver, dissolved	0.0199	0.000050 mg/L	0.0200	99	80-120
Sodium, dissolved	1.88	0.010 mg/L	2.00	94	80-120



## APPENDIX 2: QUALITY CONTROL RESULTS

**REPORTED TO PROJECT** SLR Consulting (Whitehorse)  
234.01022.00001

**WORK ORDER REPORTED** 8091582  
2018-10-01 15:08

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
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### Dissolved Metals, Batch B81322, Continued

<b>LCS (B81322-BS1), Continued</b>			Prepared: 2018-09-22, Analyzed: 2018-09-22						
Strontium, dissolved	0.0205	0.0010 mg/L	0.0200		103	80-120			
Sulfur, dissolved	4.1	3.0 mg/L	5.00		82	80-120			
Tellurium, dissolved	0.0231	0.00050 mg/L	0.0200		115	80-120			
Thallium, dissolved	0.0205	0.000020 mg/L	0.0200		103	80-120			
Thorium, dissolved	0.0190	0.00010 mg/L	0.0200		95	80-120			
Tin, dissolved	0.0213	0.00020 mg/L	0.0200		107	80-120			
Titanium, dissolved	0.0186	0.0050 mg/L	0.0200		93	80-120			
Tungsten, dissolved	0.0185	0.0010 mg/L	0.0200		92	80-120			
Uranium, dissolved	0.0193	0.000020 mg/L	0.0200		96	80-120			
Vanadium, dissolved	0.0182	0.0010 mg/L	0.0200		91	80-120			
Zinc, dissolved	0.0233	0.0040 mg/L	0.0200		117	80-120			
Zirconium, dissolved	0.0192	0.00010 mg/L	0.0200		96	80-120			

<b>Reference (B81322-SRM1)</b>			Prepared: 2018-09-22, Analyzed: 2018-09-22						
Aluminum, dissolved	0.219	0.0050 mg/L	0.233		94	79-114			
Antimony, dissolved	0.0501	0.00020 mg/L	0.0430		117	89-123			
Arsenic, dissolved	0.448	0.00050 mg/L	0.438		102	87-113			
Barium, dissolved	3.44	0.0050 mg/L	3.35		103	85-114			
Beryllium, dissolved	0.231	0.00010 mg/L	0.213		108	79-122			
Boron, dissolved	1.59	0.0050 mg/L	1.74		92	79-117			
Cadmium, dissolved	0.238	0.000010 mg/L	0.224		106	89-112			
Calcium, dissolved	7.27	0.20 mg/L	7.69		95	85-120			
Chromium, dissolved	0.409	0.00050 mg/L	0.437		94	87-113			
Cobalt, dissolved	0.120	0.00010 mg/L	0.128		94	90-117			
Copper, dissolved	0.782	0.00040 mg/L	0.844		93	90-115			
Iron, dissolved	1.19	0.010 mg/L	1.29		93	86-112			
Lead, dissolved	0.114	0.00020 mg/L	0.112		102	90-113			
Lithium, dissolved	0.111	0.00010 mg/L	0.104		107	77-127			
Magnesium, dissolved	6.30	0.010 mg/L	6.92		91	84-116			
Manganese, dissolved	0.329	0.00020 mg/L	0.345		95	85-113			
Molybdenum, dissolved	0.412	0.00010 mg/L	0.426		97	87-112			
Nickel, dissolved	0.792	0.00040 mg/L	0.840		94	90-114			
Phosphorus, dissolved	0.469	0.050 mg/L	0.495		95	74-119			
Potassium, dissolved	2.58	0.10 mg/L	3.19		81	78-119			
Selenium, dissolved	0.0325	0.00050 mg/L	0.0331		98	89-123			
Sodium, dissolved	16.5	0.10 mg/L	19.1		86	81-117			
Strontium, dissolved	0.943	0.0010 mg/L	0.916		103	82-111			
Thallium, dissolved	0.0405	0.000020 mg/L	0.0393		103	90-113			
Uranium, dissolved	0.253	0.000020 mg/L	0.266		95	87-113			
Vanadium, dissolved	0.804	0.0010 mg/L	0.869		92	85-110			
Zinc, dissolved	0.938	0.0040 mg/L	0.881		106	88-114			

### Dissolved Metals, Batch B81387

<b>Blank (B81387-BLK1)</b>			Prepared: 2018-09-20, Analyzed: 2018-09-20						
Mercury, dissolved	< 0.000010	0.000010 mg/L							
<b>Blank (B81387-BLK2)</b>			Prepared: 2018-09-20, Analyzed: 2018-09-20						
Mercury, dissolved	< 0.000010	0.000010 mg/L							
<b>Matrix Spike (B81387-MS2)</b>			<b>Source: 8091582-01</b>		Prepared: 2018-09-20, Analyzed: 2018-09-20				
Mercury, dissolved	0.000194	0.000010 mg/L	0.000250	< 0.000010	78	70-130			
<b>Reference (B81387-SRM1)</b>			Prepared: 2018-09-20, Analyzed: 2018-09-20						
Mercury, dissolved	0.00461	0.000010 mg/L	0.00489		94	80-120			

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Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
<b>Dissolved Metals, Batch B8I1387, Continued</b>									
<b>Reference (B8I1387-SRM2)</b>				Prepared: 2018-09-20, Analyzed: 2018-09-20					
Mercury, dissolved	0.00429	0.000010 mg/L	0.00489		88	80-120			
<b>General Parameters, Batch B8I1249</b>									
<b>Blank (B8I1249-BLK1)</b>				Prepared: 2018-09-19, Analyzed: 2018-09-19					
Ammonia, Total (as N)	< 0.020	0.020 mg/L							
<b>Blank (B8I1249-BLK2)</b>				Prepared: 2018-09-19, Analyzed: 2018-09-19					
Ammonia, Total (as N)	< 0.020	0.020 mg/L							
<b>Blank (B8I1249-BLK3)</b>				Prepared: 2018-09-21, Analyzed: 2018-09-21					
Ammonia, Total (as N)	< 0.020	0.020 mg/L							
<b>LCS (B8I1249-BS1)</b>				Prepared: 2018-09-19, Analyzed: 2018-09-19					
Ammonia, Total (as N)	1.02	0.020 mg/L	1.00		102	90-115			
<b>LCS (B8I1249-BS2)</b>				Prepared: 2018-09-19, Analyzed: 2018-09-19					
Ammonia, Total (as N)	1.00	0.020 mg/L	1.00		100	90-115			
<b>LCS (B8I1249-BS3)</b>				Prepared: 2018-09-21, Analyzed: 2018-09-21					
Ammonia, Total (as N)	1.03	0.020 mg/L	1.00		103	90-115			
<b>General Parameters, Batch B8I1298</b>									
<b>Blank (B8I1298-BLK1)</b>				Prepared: 2018-09-20, Analyzed: 2018-09-20					
Alkalinity, Total (as CaCO <sub>3</sub> )	< 1.0	1.0 mg/L							
Alkalinity, Phenolphthalein (as CaCO <sub>3</sub> )	< 1.0	1.0 mg/L							
Alkalinity, Bicarbonate (as CaCO <sub>3</sub> )	< 1.0	1.0 mg/L							
Alkalinity, Carbonate (as CaCO <sub>3</sub> )	< 1.0	1.0 mg/L							
Alkalinity, Hydroxide (as CaCO <sub>3</sub> )	< 1.0	1.0 mg/L							
Conductivity (EC)	< 2.0	2.0 µS/cm							
<b>Blank (B8I1298-BLK2)</b>				Prepared: 2018-09-20, Analyzed: 2018-09-20					
Alkalinity, Total (as CaCO <sub>3</sub> )	< 1.0	1.0 mg/L							
Alkalinity, Phenolphthalein (as CaCO <sub>3</sub> )	< 1.0	1.0 mg/L							
Alkalinity, Bicarbonate (as CaCO <sub>3</sub> )	< 1.0	1.0 mg/L							
Alkalinity, Carbonate (as CaCO <sub>3</sub> )	< 1.0	1.0 mg/L							
Alkalinity, Hydroxide (as CaCO <sub>3</sub> )	< 1.0	1.0 mg/L							
Conductivity (EC)	< 2.0	2.0 µS/cm							
<b>LCS (B8I1298-BS1)</b>				Prepared: 2018-09-20, Analyzed: 2018-09-20					
Alkalinity, Total (as CaCO <sub>3</sub> )	101	1.0 mg/L	100		101	92-106			
<b>LCS (B8I1298-BS2)</b>				Prepared: 2018-09-20, Analyzed: 2018-09-20					
Alkalinity, Total (as CaCO <sub>3</sub> )	101	1.0 mg/L	100		101	92-106			
<b>LCS (B8I1298-BS3)</b>				Prepared: 2018-09-20, Analyzed: 2018-09-20					
Conductivity (EC)	1400	2.0 µS/cm	1410		99	95-104			
<b>LCS (B8I1298-BS4)</b>				Prepared: 2018-09-21, Analyzed: 2018-09-21					
Conductivity (EC)	1420	2.0 µS/cm	1410		101	95-104			
<b>Reference (B8I1298-SRM1)</b>				Prepared: 2018-09-20, Analyzed: 2018-09-20					
pH	6.98	0.10 pH units	7.01		100	98-102			

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Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
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### General Parameters, Batch B8I1298, Continued

<b>Reference (B8I1298-SRM2)</b>				Prepared: 2018-09-20, Analyzed: 2018-09-20					
pH	6.97	0.10 pH units	7.01		99	98-102			

### General Parameters, Batch B8I1328

<b>Blank (B8I1328-BLK1)</b>				Prepared: 2018-09-21, Analyzed: 2018-09-21					
Carbon, Total Organic	< 0.50	0.50 mg/L							
Carbon, Dissolved Organic	< 0.50	0.50 mg/L							

<b>Blank (B8I1328-BLK2)</b>				Prepared: 2018-09-21, Analyzed: 2018-09-21					
Carbon, Total Organic	< 0.50	0.50 mg/L							
Carbon, Dissolved Organic	< 0.50	0.50 mg/L							

<b>Blank (B8I1328-BLK3)</b>				Prepared: 2018-09-21, Analyzed: 2018-09-21					
Carbon, Total Organic	< 0.50	0.50 mg/L							
Carbon, Dissolved Organic	< 0.50	0.50 mg/L							

<b>Blank (B8I1328-BLK4)</b>				Prepared: 2018-09-21, Analyzed: 2018-09-21					
Carbon, Total Organic	< 0.50	0.50 mg/L							
Carbon, Dissolved Organic	< 0.50	0.50 mg/L							

<b>LCS (B8I1328-BS1)</b>				Prepared: 2018-09-21, Analyzed: 2018-09-21					
Carbon, Total Organic	9.61	0.50 mg/L	10.0		96	78-116			
Carbon, Dissolved Organic	9.61	0.50 mg/L	10.0		96	78-116			

<b>LCS (B8I1328-BS2)</b>				Prepared: 2018-09-21, Analyzed: 2018-09-21					
Carbon, Total Organic	10.2	0.50 mg/L	10.0		102	78-116			
Carbon, Dissolved Organic	9.08	0.50 mg/L	10.0		91	78-116			

<b>LCS (B8I1328-BS3)</b>				Prepared: 2018-09-21, Analyzed: 2018-09-21					
Carbon, Total Organic	9.54	0.50 mg/L	10.0		95	78-116			
Carbon, Dissolved Organic	9.34	0.50 mg/L	10.0		93	78-116			

### General Parameters, Batch B8I1354

<b>Blank (B8I1354-BLK1)</b>				Prepared: 2018-09-19, Analyzed: 2018-09-24					
BOD, 5-day	< 2.0	2.0 mg/L							

<b>LCS (B8I1354-BS1)</b>				Prepared: 2018-09-19, Analyzed: 2018-09-24					
BOD, 5-day	209	49.3 mg/L	198		106	85-115			

<b>Reference (B8I1354-SRM1)</b>				Prepared: 2018-09-19, Analyzed: 2018-09-24					
BOD, 5-day	213	49.3 mg/L	198		108	75-125			

### General Parameters, Batch B8I1421

<b>Blank (B8I1421-BLK1)</b>				Prepared: 2018-09-21, Analyzed: 2018-09-21					
Chemical Oxygen Demand	< 20	20 mg/L							

<b>LCS (B8I1421-BS1)</b>				Prepared: 2018-09-21, Analyzed: 2018-09-21					
Chemical Oxygen Demand	499	20 mg/L	500		100	89-115			

### Polycyclic Aromatic Hydrocarbons (PAH), Batch B8I1620

<b>Blank (B8I1620-BLK1)</b>				Prepared: 2018-09-22, Analyzed: 2018-09-23					
Acenaphthene	< 0.050	0.050 µg/L							

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Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
<b>Polycyclic Aromatic Hydrocarbons (PAH), Batch B8I1620, Continued</b>									
<b>Blank (B8I1620-BLK1), Continued</b>					Prepared: 2018-09-22, Analyzed: 2018-09-23				
Acenaphthylene	< 0.200	0.200 µg/L							
Acridine	< 0.050	0.050 µg/L							
Anthracene	< 0.010	0.010 µg/L							
Benz(a)anthracene	< 0.010	0.010 µg/L							
Benzo(a)pyrene	< 0.010	0.010 µg/L							
Benzo(b+j)fluoranthene	< 0.050	0.050 µg/L							
Benzo(g,h,i)perylene	< 0.050	0.050 µg/L							
Benzo(k)fluoranthene	< 0.050	0.050 µg/L							
2-Chloronaphthalene	< 0.100	0.100 µg/L							
Chrysene	< 0.050	0.050 µg/L							
Dibenz(a,h)anthracene	< 0.010	0.010 µg/L							
Fluoranthene	< 0.030	0.030 µg/L							
Fluorene	< 0.050	0.050 µg/L							
Indeno(1,2,3-cd)pyrene	< 0.050	0.050 µg/L							
1-Methylnaphthalene	< 0.100	0.100 µg/L							
2-Methylnaphthalene	< 0.100	0.100 µg/L							
Naphthalene	< 0.200	0.200 µg/L							
Phenanthrene	< 0.100	0.100 µg/L							
Pyrene	< 0.020	0.020 µg/L							
Quinoline	< 0.050	0.050 µg/L							
Surrogate: Acridine-d9	4.05	µg/L	4.44		91	50-140			
Surrogate: Naphthalene-d8	4.43	µg/L	4.44		100	50-140			
Surrogate: Perylene-d12	2.24	µg/L	4.44		50	50-140			
<b>LCS (B8I1620-BS1)</b>					Prepared: 2018-09-22, Analyzed: 2018-09-23				
Acenaphthene	4.28	0.050 µg/L	4.40		97	58-125			
Acenaphthylene	4.63	0.200 µg/L	4.40		105	54-128			
Acridine	4.56	0.050 µg/L	4.44		103	50-112			
Anthracene	4.74	0.010 µg/L	4.44		107	66-125			
Benz(a)anthracene	4.69	0.010 µg/L	4.44		105	59-123			
Benzo(a)pyrene	4.78	0.010 µg/L	4.40		109	62-116			
Benzo(b+j)fluoranthene	9.14	0.050 µg/L	8.89		103	69-121			
Benzo(g,h,i)perylene	4.82	0.050 µg/L	4.40		110	58-129			
Benzo(k)fluoranthene	4.03	0.050 µg/L	4.44		91	67-128			
2-Chloronaphthalene	4.22	0.100 µg/L	4.44		95	50-140			
Chrysene	4.75	0.050 µg/L	4.42		107	58-125			
Dibenz(a,h)anthracene	4.59	0.010 µg/L	4.42		104	58-126			
Fluoranthene	4.61	0.030 µg/L	4.36		106	67-133			
Fluorene	4.40	0.050 µg/L	4.40		100	55-122			
Indeno(1,2,3-cd)pyrene	4.50	0.050 µg/L	4.44		101	62-126			
1-Methylnaphthalene	4.26	0.100 µg/L	4.38		97	53-125			
2-Methylnaphthalene	4.15	0.100 µg/L	4.36		95	52-122			
Naphthalene	4.24	0.200 µg/L	4.44		95	50-130			
Phenanthrene	4.16	0.100 µg/L	4.40		95	67-127			
Pyrene	4.63	0.020 µg/L	4.44		104	68-133			
Quinoline	5.27	0.050 µg/L	4.44		119	51-140			
Surrogate: Acridine-d9	4.20	µg/L	4.44		95	50-140			
Surrogate: Naphthalene-d8	4.14	µg/L	4.44		93	50-140			
Surrogate: Perylene-d12	2.27	µg/L	4.44		51	50-140			
<b>LCS Dup (B8I1620-BSD1)</b>					Prepared: 2018-09-22, Analyzed: 2018-09-23				
Acenaphthene	4.27	0.050 µg/L	4.40		97	58-125	< 1	16	
Acenaphthylene	4.61	0.200 µg/L	4.40		105	54-128	< 1	16	
Acridine	4.55	0.050 µg/L	4.44		102	50-112	< 1	26	
Anthracene	4.70	0.010 µg/L	4.44		106	66-125	< 1	14	
Benz(a)anthracene	4.69	0.010 µg/L	4.44		105	59-123	< 1	23	

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Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
<b>Polycyclic Aromatic Hydrocarbons (PAH), Batch B8I1620, Continued</b>									
<b>LCS Dup (B8I1620-BSD1), Continued</b>					Prepared: 2018-09-22, Analyzed: 2018-09-23				
Benzo(a)pyrene	4.88	0.010 µg/L	4.40		111	62-116	2	16	
Benzo(b+j)fluoranthene	9.40	0.050 µg/L	8.89		106	69-121	3	14	
Benzo(g,h,i)perylene	4.87	0.050 µg/L	4.40		111	58-129	1	25	
Benzo(k)fluoranthene	4.84	0.050 µg/L	4.44		109	67-128	18	18	
2-Chloronaphthalene	4.23	0.100 µg/L	4.44		95	50-140	< 1	30	
Chrysene	4.78	0.050 µg/L	4.42		108	58-125	< 1	24	
Dibenz(a,h)anthracene	4.67	0.010 µg/L	4.42		106	58-126	2	23	
Fluoranthene	4.59	0.030 µg/L	4.36		105	67-133	< 1	18	
Fluorene	4.36	0.050 µg/L	4.40		99	55-122	< 1	16	
Indeno(1,2,3-cd)pyrene	4.62	0.050 µg/L	4.44		104	62-126	3	22	
1-Methylnaphthalene	4.29	0.100 µg/L	4.38		98	53-125	< 1	16	
2-Methylnaphthalene	4.19	0.100 µg/L	4.36		96	52-122	< 1	17	
Naphthalene	4.24	0.200 µg/L	4.44		95	50-130	< 1	18	
Phenanthrene	4.14	0.100 µg/L	4.40		94	67-127	< 1	14	
Pyrene	4.60	0.020 µg/L	4.44		104	68-133	< 1	18	
Quinoline	5.02	0.050 µg/L	4.44		113	51-140	5	12	
Surrogate: Acridine-d9	4.21	µg/L	4.44		95	50-140			
Surrogate: Naphthalene-d8	4.31	µg/L	4.44		97	50-140			
Surrogate: Perylene-d12	2.45	µg/L	4.44		55	50-140			

### Polycyclic Aromatic Hydrocarbons (PAH), Batch B8I1632

<b>Blank (B8I1632-BLK1)</b>			Prepared: 2018-09-22, Analyzed: 2018-09-26						
Acenaphthene	< 0.050	0.050 µg/L							
Acenaphthylene	< 0.200	0.200 µg/L							
Acridine	< 0.050	0.050 µg/L							
Anthracene	< 0.010	0.010 µg/L							
Benzo(a)anthracene	< 0.010	0.010 µg/L							
Benzo(a)pyrene	< 0.010	0.010 µg/L							
Benzo(b+j)fluoranthene	< 0.050	0.050 µg/L							
Benzo(g,h,i)perylene	< 0.050	0.050 µg/L							
Benzo(k)fluoranthene	< 0.050	0.050 µg/L							
2-Chloronaphthalene	< 0.100	0.100 µg/L							
Chrysene	< 0.050	0.050 µg/L							
Dibenz(a,h)anthracene	< 0.010	0.010 µg/L							
Fluoranthene	< 0.030	0.030 µg/L							
Fluorene	< 0.050	0.050 µg/L							
Indeno(1,2,3-cd)pyrene	< 0.050	0.050 µg/L							
1-Methylnaphthalene	< 0.100	0.100 µg/L							
2-Methylnaphthalene	< 0.100	0.100 µg/L							
Naphthalene	< 0.200	0.200 µg/L							
Phenanthrene	< 0.100	0.100 µg/L							
Pyrene	< 0.020	0.020 µg/L							
Quinoline	< 0.050	0.050 µg/L							
Surrogate: Acridine-d9	2.82	µg/L	4.44		64	50-140			
Surrogate: Naphthalene-d8	4.75	µg/L	4.44		107	50-140			
Surrogate: Perylene-d12	2.20	µg/L	4.44		50	50-140			

<b>LCS (B8I1632-BS1)</b>			Prepared: 2018-09-22, Analyzed: 2018-09-26						
Acenaphthene	4.34	0.050 µg/L	4.40		99	58-125			
Acenaphthylene	4.67	0.200 µg/L	4.40		106	54-128			
Acridine	4.76	0.050 µg/L	4.44		107	50-112			
Anthracene	4.57	0.010 µg/L	4.44		103	66-125			
Benzo(a)anthracene	4.53	0.010 µg/L	4.44		102	59-123			
Benzo(a)pyrene	4.83	0.010 µg/L	4.40		110	62-116			

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Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
<b>Polycyclic Aromatic Hydrocarbons (PAH), Batch B8I1632, Continued</b>									
<b>LCS (B8I1632-BS1), Continued</b>					Prepared: 2018-09-22, Analyzed: 2018-09-26				
Benzo(b+j)fluoranthene	9.73	0.050 µg/L	8.89		109	69-121			
Benzo(g,h,i)perylene	4.63	0.050 µg/L	4.40		105	58-129			
Benzo(k)fluoranthene	4.20	0.050 µg/L	4.44		95	67-128			
2-Chloronaphthalene	4.24	0.100 µg/L	4.44		95	50-140			
Chrysene	4.59	0.050 µg/L	4.42		104	58-125			
Dibenz(a,h)anthracene	4.64	0.010 µg/L	4.42		105	58-126			
Fluoranthene	4.45	0.030 µg/L	4.36		102	67-133			
Fluorene	4.39	0.050 µg/L	4.40		100	55-122			
Indeno(1,2,3-cd)pyrene	4.34	0.050 µg/L	4.44		98	62-126			
1-Methylnaphthalene	4.45	0.100 µg/L	4.38		102	53-125			
2-Methylnaphthalene	4.41	0.100 µg/L	4.36		101	52-122			
Naphthalene	4.61	0.200 µg/L	4.44		104	50-130			
Phenanthrene	4.17	0.100 µg/L	4.40		95	67-127			
Pyrene	4.44	0.020 µg/L	4.44		100	68-133			
Quinoline	4.91	0.050 µg/L	4.44		110	51-140			
Surrogate: Acridine-d9	4.22	µg/L	4.44		95	50-140			
Surrogate: Naphthalene-d8	5.26	µg/L	4.44		118	50-140			
Surrogate: Perylene-d12	2.09	µg/L	4.44		47	50-140			S02
<b>LCS Dup (B8I1632-BSD1)</b>					Prepared: 2018-09-22, Analyzed: 2018-09-26				
Acenaphthene	4.50	0.050 µg/L	4.40		102	58-125	4	16	
Acenaphthylene	4.81	0.200 µg/L	4.40		109	54-128	3	16	
Acridine	4.68	0.050 µg/L	4.44		105	50-112	2	26	
Anthracene	4.73	0.010 µg/L	4.44		107	66-125	3	14	
Benz(a)anthracene	4.59	0.010 µg/L	4.44		103	59-123	1	23	
Benzo(a)pyrene	4.89	0.010 µg/L	4.40		111	62-116	1	16	
Benzo(b+j)fluoranthene	9.51	0.050 µg/L	8.89		107	69-121	2	14	
Benzo(g,h,i)perylene	4.67	0.050 µg/L	4.40		106	58-129	< 1	25	
Benzo(k)fluoranthene	5.06	0.050 µg/L	4.44		114	67-128	18	18	
2-Chloronaphthalene	4.40	0.100 µg/L	4.44		99	50-140	4	30	
Chrysene	4.66	0.050 µg/L	4.42		105	58-125	2	24	
Dibenz(a,h)anthracene	4.70	0.010 µg/L	4.42		106	58-126	1	23	
Fluoranthene	4.62	0.030 µg/L	4.36		106	67-133	4	18	
Fluorene	4.51	0.050 µg/L	4.40		103	55-122	3	16	
Indeno(1,2,3-cd)pyrene	4.49	0.050 µg/L	4.44		101	62-126	3	22	
1-Methylnaphthalene	4.54	0.100 µg/L	4.38		104	53-125	2	16	
2-Methylnaphthalene	4.47	0.100 µg/L	4.36		103	52-122	1	17	
Naphthalene	4.57	0.200 µg/L	4.44		103	50-130	< 1	18	
Phenanthrene	4.31	0.100 µg/L	4.40		98	67-127	3	14	
Pyrene	4.60	0.020 µg/L	4.44		103	68-133	4	18	
Quinoline	5.16	0.050 µg/L	4.44		116	51-140	5	12	
Surrogate: Acridine-d9	4.05	µg/L	4.44		91	50-140			
Surrogate: Naphthalene-d8	5.00	µg/L	4.44		112	50-140			
Surrogate: Perylene-d12	2.05	µg/L	4.44		46	50-140			S02

### Total Metals, Batch B8I1379

<b>Blank (B8I1379-BLK1)</b>			Prepared: 2018-09-19, Analyzed: 2018-09-22		
Aluminum, total	< 0.0050	0.0050 mg/L			
Antimony, total	< 0.00020	0.00020 mg/L			
Arsenic, total	< 0.00050	0.00050 mg/L			
Barium, total	< 0.0050	0.0050 mg/L			
Beryllium, total	< 0.00010	0.00010 mg/L			
Bismuth, total	< 0.00010	0.00010 mg/L			
Boron, total	< 0.0050	0.0050 mg/L			



## APPENDIX 2: QUALITY CONTROL RESULTS

**REPORTED TO PROJECT** SLR Consulting (Whitehorse)  
234.01022.00001

**WORK ORDER REPORTED** 8091582  
2018-10-01 15:08

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
<b>Total Metals, Batch B811379, Continued</b>									
<b>Blank (B811379-BLK1), Continued</b>					Prepared: 2018-09-19, Analyzed: 2018-09-22				
Cadmium, total	< 0.000010	0.000010 mg/L							
Calcium, total	< 0.20	0.20 mg/L							
Chromium, total	< 0.00050	0.00050 mg/L							
Cobalt, total	< 0.00010	0.00010 mg/L							
Copper, total	< 0.00040	0.00040 mg/L							
Iron, total	< 0.010	0.010 mg/L							
Lead, total	< 0.00020	0.00020 mg/L							
Lithium, total	< 0.00010	0.00010 mg/L							
Magnesium, total	< 0.010	0.010 mg/L							
Manganese, total	< 0.00020	0.00020 mg/L							
Molybdenum, total	< 0.00010	0.00010 mg/L							
Nickel, total	< 0.00040	0.00040 mg/L							
Phosphorus, total	< 0.050	0.050 mg/L							
Potassium, total	< 0.10	0.10 mg/L							
Selenium, total	< 0.00050	0.00050 mg/L							
Silicon, total	< 1.0	1.0 mg/L							
Silver, total	< 0.000050	0.000050 mg/L							
Sodium, total	< 0.10	0.10 mg/L							
Strontium, total	< 0.0010	0.0010 mg/L							
Sulfur, total	< 3.0	3.0 mg/L							
Tellurium, total	< 0.00050	0.00050 mg/L							
Thallium, total	< 0.000020	0.000020 mg/L							
Thorium, total	< 0.00010	0.00010 mg/L							
Tin, total	< 0.00020	0.00020 mg/L							
Titanium, total	< 0.0050	0.0050 mg/L							
Tungsten, total	< 0.0010	0.0010 mg/L							
Uranium, total	< 0.000020	0.000020 mg/L							
Vanadium, total	< 0.0010	0.0010 mg/L							
Zinc, total	< 0.0040	0.0040 mg/L							
Zirconium, total	< 0.00010	0.00010 mg/L							
<b>LCS (B811379-BS1)</b>					Prepared: 2018-09-19, Analyzed: 2018-09-22				
Aluminum, total	0.0170	0.0050 mg/L	0.0200		85	80-120			
Antimony, total	0.0200	0.00020 mg/L	0.0200		100	80-120			
Arsenic, total	0.0186	0.00050 mg/L	0.0200		93	80-120			
Barium, total	0.0198	0.0050 mg/L	0.0200		99	80-120			
Beryllium, total	0.0217	0.00010 mg/L	0.0200		108	80-120			
Bismuth, total	0.0206	0.00010 mg/L	0.0200		103	80-120			
Boron, total	0.0167	0.0050 mg/L	0.0200		83	80-120			
Cadmium, total	0.0204	0.000010 mg/L	0.0200		102	80-120			
Calcium, total	1.94	0.20 mg/L	2.00		97	80-120			
Chromium, total	0.0181	0.00050 mg/L	0.0200		90	80-120			
Cobalt, total	0.0186	0.00010 mg/L	0.0200		93	80-120			
Copper, total	0.0193	0.00040 mg/L	0.0200		96	80-120			
Iron, total	1.89	0.010 mg/L	2.00		95	80-120			
Lead, total	0.0205	0.00020 mg/L	0.0200		103	80-120			
Lithium, total	0.0222	0.00010 mg/L	0.0200		111	80-120			
Magnesium, total	1.98	0.010 mg/L	2.00		99	80-120			
Manganese, total	0.0185	0.00020 mg/L	0.0200		93	80-120			
Molybdenum, total	0.0184	0.00010 mg/L	0.0200		92	80-120			
Nickel, total	0.0188	0.00040 mg/L	0.0200		94	80-120			
Phosphorus, total	1.79	0.050 mg/L	2.00		89	80-120			
Potassium, total	1.83	0.10 mg/L	2.00		91	80-120			
Selenium, total	0.0206	0.00050 mg/L	0.0200		103	80-120			
Silicon, total	1.7	1.0 mg/L	2.00		83	80-120			
Silver, total	0.0194	0.000050 mg/L	0.0200		97	80-120			

## APPENDIX 2: QUALITY CONTROL RESULTS

**REPORTED TO PROJECT** SLR Consulting (Whitehorse)  
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**WORK ORDER REPORTED** 8091582  
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Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
<b>Total Metals, Batch B8I1379, Continued</b>									
<b>LCS (B8I1379-BS1), Continued</b>					Prepared: 2018-09-19, Analyzed: 2018-09-22				
Sodium, total	1.93	0.10 mg/L	2.00		97	80-120			
Strontium, total	0.0184	0.0010 mg/L	0.0200		92	80-120			
Sulfur, total	4.1	3.0 mg/L	5.00		82	80-120			
Tellurium, total	0.0196	0.00050 mg/L	0.0200		98	80-120			
Thallium, total	0.0206	0.000020 mg/L	0.0200		103	80-120			
Thorium, total	0.0194	0.00010 mg/L	0.0200		97	80-120			
Tin, total	0.0202	0.00020 mg/L	0.0200		101	80-120			
Titanium, total	0.0171	0.0050 mg/L	0.0200		85	80-120			
Tungsten, total	0.0177	0.0010 mg/L	0.0200		88	80-120			
Uranium, total	0.0197	0.000020 mg/L	0.0200		99	80-120			
Vanadium, total	0.0175	0.0010 mg/L	0.0200		88	80-120			
Zinc, total	0.0211	0.0040 mg/L	0.0200		105	80-120			
Zirconium, total	0.0184	0.00010 mg/L	0.0200		92	80-120			

<b>Reference (B8I1379-SRM1)</b>					Prepared: 2018-09-19, Analyzed: 2018-09-22				
Aluminum, total	0.259	0.0050 mg/L	0.303		86	82-114			
Antimony, total	0.0514	0.00020 mg/L	0.0511		101	88-115			
Arsenic, total	0.110	0.00050 mg/L	0.118		93	88-111			
Barium, total	0.775	0.0050 mg/L	0.823		94	83-110			
Beryllium, total	0.0538	0.00010 mg/L	0.0496		108	80-119			
Boron, total	3.31	0.0050 mg/L	3.45		96	80-118			
Cadmium, total	0.0493	0.000010 mg/L	0.0495		100	90-110			
Calcium, total	10.6	0.20 mg/L	11.6		91	85-113			
Chromium, total	0.223	0.00050 mg/L	0.250		89	88-111			
Cobalt, total	0.0357	0.00010 mg/L	0.0377		95	90-114			
Copper, total	0.462	0.00040 mg/L	0.486		95	90-117			
Iron, total	0.472	0.010 mg/L	0.488		97	90-116			
Lead, total	0.203	0.00020 mg/L	0.204		100	90-110			
Lithium, total	0.428	0.00010 mg/L	0.403		106	79-118			
Magnesium, total	3.75	0.010 mg/L	3.79		99	88-116			
Manganese, total	0.0991	0.00020 mg/L	0.109		91	88-108			
Molybdenum, total	0.187	0.00010 mg/L	0.198		94	88-110			
Nickel, total	0.230	0.00040 mg/L	0.249		92	90-112			
Phosphorus, total	0.204	0.050 mg/L	0.227		90	72-118			
Potassium, total	6.72	0.10 mg/L	7.21		93	87-116			
Selenium, total	0.123	0.00050 mg/L	0.121		102	90-122			
Sodium, total	7.22	0.10 mg/L	7.54		96	86-118			
Strontium, total	0.337	0.0010 mg/L	0.375		90	86-110			
Thallium, total	0.0811	0.000020 mg/L	0.0805		101	90-113			
Uranium, total	0.0290	0.000020 mg/L	0.0306		95	88-112			
Vanadium, total	0.337	0.0010 mg/L	0.386		87	87-110			
Zinc, total	2.41	0.0040 mg/L	2.49		97	90-113			

### Total Metals, Batch B8I1386

<b>Blank (B8I1386-BLK1)</b>					Prepared: 2018-09-20, Analyzed: 2018-09-20				
Mercury, total	< 0.000010	0.000010 mg/L							
<b>Blank (B8I1386-BLK2)</b>					Prepared: 2018-09-20, Analyzed: 2018-09-20				
Mercury, total	< 0.000010	0.000010 mg/L							
<b>Reference (B8I1386-SRM1)</b>					Prepared: 2018-09-20, Analyzed: 2018-09-20				
Mercury, total	0.00461	0.000010 mg/L	0.00489		94	80-120			
<b>Reference (B8I1386-SRM2)</b>					Prepared: 2018-09-20, Analyzed: 2018-09-20				
Mercury, total	0.00445	0.000010 mg/L	0.00489		91	80-120			



## APPENDIX 2: QUALITY CONTROL RESULTS

**REPORTED TO PROJECT** SLR Consulting (Whitehorse)  
234.01022.00001

**WORK ORDER REPORTED** 8091582  
2018-10-01 15:08

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
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### Total Metals, Batch B81386, Continued

### Volatile Organic Compounds (VOC), Batch B81688

<b>Blank (B81688-BLK1)</b>			Prepared: 2018-09-25, Analyzed: 2018-09-25						
Benzene	< 0.5	0.5 µg/L							
Bromodichloromethane	< 1.0	1.0 µg/L							
Bromoform	< 1.0	1.0 µg/L							
Carbon tetrachloride	< 0.5	0.5 µg/L							
Chlorobenzene	< 1.0	1.0 µg/L							
Chloroethane	< 2.0	2.0 µg/L							
Chloroform	< 1.0	1.0 µg/L							
Dibromochloromethane	< 1.0	1.0 µg/L							
1,2-Dibromoethane	< 0.3	0.3 µg/L							
Dibromomethane	< 1.0	1.0 µg/L							
1,2-Dichlorobenzene	< 0.5	0.5 µg/L							
1,3-Dichlorobenzene	< 1.0	1.0 µg/L							
1,4-Dichlorobenzene	< 1.0	1.0 µg/L							
1,1-Dichloroethane	< 1.0	1.0 µg/L							
1,2-Dichloroethane	< 1.0	1.0 µg/L							
1,1-Dichloroethylene	< 1.0	1.0 µg/L							
cis-1,2-Dichloroethylene	< 1.0	1.0 µg/L							
trans-1,2-Dichloroethylene	< 1.0	1.0 µg/L							
Dichloromethane	< 3.0	3.0 µg/L							
1,2-Dichloropropane	< 1.0	1.0 µg/L							
1,3-Dichloropropene (cis + trans)	< 1.0	1.0 µg/L							
Ethylbenzene	< 1.0	1.0 µg/L							
Methyl tert-butyl ether	< 1.0	1.0 µg/L							
Styrene	< 1.0	1.0 µg/L							
1,1,2,2-Tetrachloroethane	< 0.5	0.5 µg/L							
Tetrachloroethylene	< 1.0	1.0 µg/L							
Toluene	< 1.0	1.0 µg/L							
1,1,1-Trichloroethane	< 1.0	1.0 µg/L							
1,1,2-Trichloroethane	< 1.0	1.0 µg/L							
Trichloroethylene	< 1.0	1.0 µg/L							
Trichlorofluoromethane	< 1.0	1.0 µg/L							
Vinyl chloride	< 1.0	1.0 µg/L							
Xylenes (total)	< 2.0	2.0 µg/L							
Surrogate: Toluene-d8	30.4	µg/L	26.2		116	70-130			
Surrogate: 4-Bromofluorobenzene	25.1	µg/L	25.0		100	70-130			
Surrogate: 1,4-Dichlorobenzene-d4	23.3	µg/L	25.0		93	70-130			

<b>LCS (B81688-BS1)</b>			Prepared: 2018-09-24, Analyzed: 2018-09-24						
Benzene	20.8	0.5 µg/L	20.0		104	70-130			
Bromodichloromethane	28.1	1.0 µg/L	20.2		139	70-130			SPK1
Bromoform	24.8	1.0 µg/L	20.1		123	70-130			
Carbon tetrachloride	28.7	0.5 µg/L	20.1		143	70-130			SPK1
Chlorobenzene	21.4	1.0 µg/L	20.2		106	70-130			
Chloroethane	40.1	2.0 µg/L	20.0		201	60-140			SPK1
Chloroform	25.4	1.0 µg/L	20.1		127	70-130			
Dibromochloromethane	27.3	1.0 µg/L	20.2		135	70-130			SPK1
1,2-Dibromoethane	23.8	0.3 µg/L	20.0		119	70-130			
Dibromomethane	24.6	1.0 µg/L	20.0		123	70-130			
1,2-Dichlorobenzene	24.8	0.5 µg/L	20.1		123	70-130			
1,3-Dichlorobenzene	23.9	1.0 µg/L	20.1		119	70-130			
1,4-Dichlorobenzene	23.6	1.0 µg/L	20.1		117	70-130			
1,1-Dichloroethane	22.7	1.0 µg/L	20.1		113	70-130			
1,2-Dichloroethane	28.1	1.0 µg/L	20.1		140	70-130			SPK1

## APPENDIX 2: QUALITY CONTROL RESULTS

**REPORTED TO PROJECT** SLR Consulting (Whitehorse)  
234.01022.00001

**WORK ORDER REPORTED** 8091582  
2018-10-01 15:08

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
<b>Volatile Organic Compounds (VOC), Batch B81688, Continued</b>									
<b>LCS (B81688-BS1), Continued</b>					Prepared: 2018-09-24, Analyzed: 2018-09-24				
1,1-Dichloroethylene	25.5	1.0 µg/L	20.1		127	70-130			
cis-1,2-Dichloroethylene	22.0	1.0 µg/L	20.0		110	70-130			
trans-1,2-Dichloroethylene	21.7	1.0 µg/L	20.1		108	70-130			
Dichloromethane	21.0	3.0 µg/L	20.1		104	70-130			
1,2-Dichloropropane	20.7	1.0 µg/L	20.2		102	70-130			
1,3-Dichloropropene (cis + trans)	52.6	1.0 µg/L	40.0		131	70-130			SPK1
Ethylbenzene	16.8	1.0 µg/L	20.0		84	70-130			
Methyl tert-butyl ether	21.0	1.0 µg/L	20.0		105	70-130			
Styrene	20.7	1.0 µg/L	20.0		104	70-130			
1,1,2,2-Tetrachloroethane	19.7	0.5 µg/L	20.2		98	70-130			
Tetrachloroethylene	23.0	1.0 µg/L	20.1		114	70-130			
Toluene	18.4	1.0 µg/L	20.1		92	70-130			
1,1,1-Trichloroethane	29.1	1.0 µg/L	20.2		144	70-130			SPK1
1,1,2-Trichloroethane	22.0	1.0 µg/L	20.1		110	70-130			
Trichloroethylene	18.1	1.0 µg/L	20.1		90	70-130			
Trichlorofluoromethane	39.6	1.0 µg/L	20.0		198	60-140			SPK1
Vinyl chloride	23.6	1.0 µg/L	20.0		118	60-140			
Xylenes (total)	53.5	2.0 µg/L	60.1		89	70-130			
Surrogate: Toluene-d8	33.1	µg/L	26.2		126	70-130			
Surrogate: 4-Bromofluorobenzene	26.5	µg/L	25.0		106	70-130			
Surrogate: 1,4-Dichlorobenzene-d4	25.0	µg/L	25.0		100	70-130			

### Volatile Organic Compounds (VOC), Batch B81862

<b>Blank (B81862-BLK1)</b>			Prepared: 2018-09-26, Analyzed: 2018-09-26						
Benzene	< 0.5	0.5 µg/L							
Bromodichloromethane	< 1.0	1.0 µg/L							
Bromoform	< 1.0	1.0 µg/L							
Carbon tetrachloride	< 0.5	0.5 µg/L							
Chlorobenzene	< 1.0	1.0 µg/L							
Chloroethane	< 2.0	2.0 µg/L							
Chloroform	< 1.0	1.0 µg/L							
Dibromochloromethane	< 1.0	1.0 µg/L							
1,2-Dibromoethane	< 0.3	0.3 µg/L							
Dibromomethane	< 1.0	1.0 µg/L							
1,2-Dichlorobenzene	< 0.5	0.5 µg/L							
1,3-Dichlorobenzene	< 1.0	1.0 µg/L							
1,4-Dichlorobenzene	< 1.0	1.0 µg/L							
1,1-Dichloroethane	< 1.0	1.0 µg/L							
1,2-Dichloroethane	< 1.0	1.0 µg/L							
1,1-Dichloroethylene	< 1.0	1.0 µg/L							
cis-1,2-Dichloroethylene	< 1.0	1.0 µg/L							
trans-1,2-Dichloroethylene	< 1.0	1.0 µg/L							
Dichloromethane	< 3.0	3.0 µg/L							
1,2-Dichloropropane	< 1.0	1.0 µg/L							
1,3-Dichloropropene (cis + trans)	< 1.0	1.0 µg/L							
Ethylbenzene	< 1.0	1.0 µg/L							
Methyl tert-butyl ether	< 1.0	1.0 µg/L							
Styrene	< 1.0	1.0 µg/L							
1,1,2,2-Tetrachloroethane	< 0.5	0.5 µg/L							
Tetrachloroethylene	< 1.0	1.0 µg/L							
Toluene	< 1.0	1.0 µg/L							
1,1,1-Trichloroethane	< 1.0	1.0 µg/L							
1,1,2-Trichloroethane	< 1.0	1.0 µg/L							
Trichloroethylene	< 1.0	1.0 µg/L							

## APPENDIX 2: QUALITY CONTROL RESULTS

**REPORTED TO PROJECT** SLR Consulting (Whitehorse)  
234.01022.00001

**WORK ORDER REPORTED** 8091582  
2018-10-01 15:08

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
<b>Volatile Organic Compounds (VOC), Batch B811862, Continued</b>									
<b>Blank (B811862-BLK1), Continued</b>				Prepared: 2018-09-26, Analyzed: 2018-09-26					
Trichlorofluoromethane	< 1.0	1.0 µg/L							
Vinyl chloride	< 1.0	1.0 µg/L							
Xylenes (total)	< 2.0	2.0 µg/L							
Surrogate: Toluene-d8	26.7	µg/L	26.2		102	70-130			
Surrogate: 4-Bromofluorobenzene	24.9	µg/L	25.0		100	70-130			
Surrogate: 1,4-Dichlorobenzene-d4	23.3	µg/L	25.0		93	70-130			
<b>LCS (B811862-BS1)</b>				Prepared: 2018-09-26, Analyzed: 2018-09-26					
Benzene	21.6	0.5 µg/L	20.0		108	70-130			
Bromodichloromethane	23.2	1.0 µg/L	20.2		115	70-130			
Bromoform	22.1	1.0 µg/L	20.1		110	70-130			
Carbon tetrachloride	23.7	0.5 µg/L	20.1		118	70-130			
Chlorobenzene	19.9	1.0 µg/L	20.2		98	70-130			
Chloroethane	32.2	2.0 µg/L	20.0		161	60-140			SPK1
Chloroform	21.6	1.0 µg/L	20.1		107	70-130			
Dibromochloromethane	22.7	1.0 µg/L	20.2		113	70-130			
1,2-Dibromoethane	19.4	0.3 µg/L	20.0		97	70-130			
Dibromomethane	19.9	1.0 µg/L	20.0		99	70-130			
1,2-Dichlorobenzene	23.5	0.5 µg/L	20.1		117	70-130			
1,3-Dichlorobenzene	22.9	1.0 µg/L	20.1		114	70-130			
1,4-Dichlorobenzene	22.5	1.0 µg/L	20.1		112	70-130			
1,1-Dichloroethane	18.8	1.0 µg/L	20.1		94	70-130			
1,2-Dichloroethane	22.9	1.0 µg/L	20.1		114	70-130			
1,1-Dichloroethylene	21.4	1.0 µg/L	20.1		106	70-130			
cis-1,2-Dichloroethylene	18.0	1.0 µg/L	20.0		90	70-130			
trans-1,2-Dichloroethylene	17.8	1.0 µg/L	20.1		89	70-130			
Dichloromethane	17.1	3.0 µg/L	20.1		85	70-130			
1,2-Dichloropropane	16.9	1.0 µg/L	20.2		84	70-130			
1,3-Dichloropropene (cis + trans)	43.0	1.0 µg/L	40.0		107	70-130			
Ethylbenzene	19.0	1.0 µg/L	20.0		95	70-130			
Methyl tert-butyl ether	16.0	1.0 µg/L	20.0		80	70-130			
Styrene	19.4	1.0 µg/L	20.0		97	70-130			
1,1,2,2-Tetrachloroethane	18.1	0.5 µg/L	20.2		89	70-130			
Tetrachloroethylene	19.7	1.0 µg/L	20.1		98	70-130			
Toluene	19.6	1.0 µg/L	20.1		97	70-130			
1,1,1-Trichloroethane	24.0	1.0 µg/L	20.2		119	70-130			
1,1,2-Trichloroethane	18.8	1.0 µg/L	20.1		94	70-130			
Trichloroethylene	15.2	1.0 µg/L	20.1		76	70-130			
Trichlorofluoromethane	32.7	1.0 µg/L	20.0		164	60-140			SPK1
Vinyl chloride	18.2	1.0 µg/L	20.0		91	60-140			
Xylenes (total)	58.3	2.0 µg/L	60.1		97	70-130			
Surrogate: Toluene-d8	29.0	µg/L	26.2		111	70-130			
Surrogate: 4-Bromofluorobenzene	25.8	µg/L	25.0		103	70-130			
Surrogate: 1,4-Dichlorobenzene-d4	24.3	µg/L	25.0		97	70-130			
<b>Duplicate (B811862-DUP1)</b>				Source: 8091582-02 Prepared: 2018-09-26, Analyzed: 2018-09-26					
Benzene	< 0.5	0.5 µg/L		< 0.5				22	
Bromodichloromethane	< 1.0	1.0 µg/L		< 1.0				23	
Bromoform	< 1.0	1.0 µg/L		< 1.0				23	
Carbon tetrachloride	< 0.5	0.5 µg/L		< 0.5				30	
Chlorobenzene	< 1.0	1.0 µg/L		< 1.0				26	
Chloroethane	< 2.0	2.0 µg/L		< 2.0				50	
Chloroform	< 1.0	1.0 µg/L		< 1.0				22	
Dibromochloromethane	< 1.0	1.0 µg/L		< 1.0				28	
1,2-Dibromoethane	< 0.3	0.3 µg/L		< 0.3				30	
Dibromomethane	< 1.0	1.0 µg/L		< 1.0				30	

## APPENDIX 2: QUALITY CONTROL RESULTS

**REPORTED TO PROJECT** SLR Consulting (Whitehorse)  
234.01022.00001

**WORK ORDER REPORTED** 8091582  
2018-10-01 15:08

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
<b>Volatile Organic Compounds (VOC), Batch B81862, Continued</b>									
<b>Duplicate (B81862-DUP1), Continued</b>		<b>Source: 8091582-02</b>		<b>Prepared: 2018-09-26, Analyzed: 2018-09-26</b>					
1,2-Dichlorobenzene	< 0.5	0.5 µg/L		< 0.5				27	
1,3-Dichlorobenzene	< 1.0	1.0 µg/L		< 1.0				30	
1,4-Dichlorobenzene	< 1.0	1.0 µg/L		< 1.0				30	
1,1-Dichloroethane	< 1.0	1.0 µg/L		< 1.0				24	
1,2-Dichloroethane	< 1.0	1.0 µg/L		< 1.0				24	
1,1-Dichloroethylene	< 1.0	1.0 µg/L		< 1.0				30	
cis-1,2-Dichloroethylene	< 1.0	1.0 µg/L		< 1.0				22	
trans-1,2-Dichloroethylene	< 1.0	1.0 µg/L		< 1.0				27	
Dichloromethane	< 3.0	3.0 µg/L		< 3.0				27	
1,2-Dichloropropane	< 1.0	1.0 µg/L		< 1.0				28	
1,3-Dichloropropene (cis + trans)	< 1.0	1.0 µg/L		< 1.0				30	
Ethylbenzene	< 1.0	1.0 µg/L		< 1.0				30	
Methyl tert-butyl ether	< 1.0	1.0 µg/L		< 1.0				20	
Styrene	< 1.0	1.0 µg/L		< 1.0				30	
1,1,2,2-Tetrachloroethane	< 0.5	0.5 µg/L		< 0.5				30	
Tetrachloroethylene	< 1.0	1.0 µg/L		< 1.0				30	
Toluene	< 1.0	1.0 µg/L		< 1.0				24	
1,1,1-Trichloroethane	< 1.0	1.0 µg/L		< 1.0				30	
1,1,2-Trichloroethane	< 1.0	1.0 µg/L		< 1.0				30	
Trichloroethylene	< 1.0	1.0 µg/L		< 1.0				27	
Trichlorofluoromethane	< 1.0	1.0 µg/L		< 1.0				50	
Vinyl chloride	< 1.0	1.0 µg/L		< 1.0				40	
Xylenes (total)	< 2.0	2.0 µg/L		< 2.0				29	
Surrogate: Toluene-d8	26.6	µg/L	26.2		102	70-130			
Surrogate: 4-Bromofluorobenzene	25.3	µg/L	25.0		101	70-130			
Surrogate: 1,4-Dichlorobenzene-d4	23.6	µg/L	25.0		94	70-130			
<b>Matrix Spike (B81862-MS1)</b>		<b>Source: 8091582-02</b>		<b>Prepared: 2018-09-26, Analyzed: 2018-09-26</b>					
Benzene	19.9	0.5 µg/L	20.0	< 0.5	100	70-130			
Bromodichloromethane	25.6	1.0 µg/L	20.2	< 1.0	127	70-130			
Bromoform	24.0	1.0 µg/L	20.1	< 1.0	120	70-130			
Carbon tetrachloride	26.0	0.5 µg/L	20.1	< 0.5	130	70-130			
Chlorobenzene	21.7	1.0 µg/L	20.2	< 1.0	107	70-130			
Chloroethane	37.1	2.0 µg/L	20.0	< 2.0	186	60-140			SPK1
Chloroform	23.6	1.0 µg/L	20.1	< 1.0	117	70-130			
Dibromochloromethane	24.9	1.0 µg/L	20.2	< 1.0	123	70-130			
1,2-Dibromoethane	21.8	0.3 µg/L	20.0	< 0.3	109	70-130			
Dibromomethane	22.3	1.0 µg/L	20.0	< 1.0	112	70-130			
1,2-Dichlorobenzene	25.1	0.5 µg/L	20.1	< 0.5	125	70-130			
1,3-Dichlorobenzene	24.4	1.0 µg/L	20.1	< 1.0	121	70-130			
1,4-Dichlorobenzene	24.1	1.0 µg/L	20.1	< 1.0	120	70-130			
1,1-Dichloroethane	21.1	1.0 µg/L	20.1	< 1.0	105	70-130			
1,2-Dichloroethane	25.7	1.0 µg/L	20.1	< 1.0	128	70-130			
1,1-Dichloroethylene	23.7	1.0 µg/L	20.1	< 1.0	118	70-130			
cis-1,2-Dichloroethylene	19.9	1.0 µg/L	20.0	< 1.0	99	70-130			
trans-1,2-Dichloroethylene	20.2	1.0 µg/L	20.1	< 1.0	100	70-130			
Dichloromethane	19.1	3.0 µg/L	20.1	< 3.0	95	70-130			
1,2-Dichloropropane	19.1	1.0 µg/L	20.2	< 1.0	95	70-130			
1,3-Dichloropropene (cis + trans)	48.1	1.0 µg/L	40.0	< 1.0	120	70-130			
Ethylbenzene	17.3	1.0 µg/L	20.0	< 1.0	86	70-130			
Methyl tert-butyl ether	18.6	1.0 µg/L	20.0	< 1.0	93	70-130			
Styrene	20.9	1.0 µg/L	20.0	< 1.0	105	70-130			
1,1,2,2-Tetrachloroethane	19.4	0.5 µg/L	20.2	< 0.5	96	70-130			
Tetrachloroethylene	21.2	1.0 µg/L	20.1	< 1.0	105	70-130			
Toluene	17.9	1.0 µg/L	20.1	< 1.0	86	70-130			
1,1,1-Trichloroethane	26.7	1.0 µg/L	20.2	< 1.0	132	70-130			SPK1

## APPENDIX 2: QUALITY CONTROL RESULTS

**REPORTED TO PROJECT** SLR Consulting (Whitehorse)  
234.01022.00001

**WORK ORDER REPORTED** 8091582  
2018-10-01 15:08

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
<b>Volatile Organic Compounds (VOC), Batch B81862, Continued</b>									
<b>Matrix Spike (B81862-MS1), Continued</b>		<b>Source: 8091582-02</b>		<b>Prepared: 2018-09-26, Analyzed: 2018-09-26</b>					
1,1,2-Trichloroethane	20.5	1.0 µg/L	20.1	< 1.0	102	70-130			
Trichloroethylene	16.9	1.0 µg/L	20.1	< 1.0	84	70-130			
Trichlorofluoromethane	35.8	1.0 µg/L	20.0	< 1.0	179	60-140			SPK1
Vinyl chloride	22.4	1.0 µg/L	20.0	< 1.0	112	60-140			
Xylenes (total)	55.7	2.0 µg/L	60.1	< 2.0	93	70-130			
Surrogate: Toluene-d8	29.3	µg/L	26.2		112	70-130			
Surrogate: 4-Bromofluorobenzene	26.1	µg/L	25.0		104	70-130			
Surrogate: 1,4-Dichlorobenzene-d4	24.5	µg/L	25.0		98	70-130			

### Volatile Organic Compounds (VOC), Batch B81889

<b>Blank (B81889-BLK1)</b>		<b>Prepared: 2018-09-27, Analyzed: 2018-09-27</b>							
Benzene	< 0.5	0.5 µg/L							
Bromodichloromethane	< 1.0	1.0 µg/L							
Bromoform	< 1.0	1.0 µg/L							
Carbon tetrachloride	< 0.5	0.5 µg/L							
Chlorobenzene	< 1.0	1.0 µg/L							
Chloroethane	< 2.0	2.0 µg/L							
Chloroform	< 1.0	1.0 µg/L							
Dibromochloromethane	< 1.0	1.0 µg/L							
1,2-Dibromoethane	< 0.3	0.3 µg/L							
Dibromomethane	< 1.0	1.0 µg/L							
1,2-Dichlorobenzene	< 0.5	0.5 µg/L							
1,3-Dichlorobenzene	< 1.0	1.0 µg/L							
1,4-Dichlorobenzene	< 1.0	1.0 µg/L							
1,1-Dichloroethane	< 1.0	1.0 µg/L							
1,2-Dichloroethane	< 1.0	1.0 µg/L							
1,1-Dichloroethylene	< 1.0	1.0 µg/L							
cis-1,2-Dichloroethylene	< 1.0	1.0 µg/L							
trans-1,2-Dichloroethylene	< 1.0	1.0 µg/L							
Dichloromethane	< 3.0	3.0 µg/L							
1,2-Dichloropropane	< 1.0	1.0 µg/L							
1,3-Dichloropropane (cis + trans)	< 1.0	1.0 µg/L							
Ethylbenzene	< 1.0	1.0 µg/L							
Methyl tert-butyl ether	< 1.0	1.0 µg/L							
Styrene	< 1.0	1.0 µg/L							
1,1,2,2-Tetrachloroethane	< 0.5	0.5 µg/L							
Tetrachloroethylene	< 1.0	1.0 µg/L							
Toluene	< 1.0	1.0 µg/L							
1,1,1-Trichloroethane	< 1.0	1.0 µg/L							
1,1,2-Trichloroethane	< 1.0	1.0 µg/L							
Trichloroethylene	< 1.0	1.0 µg/L							
Trichlorofluoromethane	< 1.0	1.0 µg/L							
Vinyl chloride	< 1.0	1.0 µg/L							
Xylenes (total)	< 2.0	2.0 µg/L							
Surrogate: Toluene-d8	29.8	µg/L	26.2		114	70-130			
Surrogate: 4-Bromofluorobenzene	37.2	µg/L	25.0		149	70-130			S02
Surrogate: 1,4-Dichlorobenzene-d4	38.1	µg/L	25.0		152	70-130			S02

<b>LCS (B81889-BS1)</b>		<b>Prepared: 2018-09-27, Analyzed: 2018-09-27</b>							
Benzene	19.4	0.5 µg/L	20.0		97	70-130			
Bromodichloromethane	23.5	1.0 µg/L	20.2		116	70-130			
Bromoform	23.3	1.0 µg/L	20.1		116	70-130			
Carbon tetrachloride	23.8	0.5 µg/L	20.1		118	70-130			
Chlorobenzene	20.7	1.0 µg/L	20.2		103	70-130			

## APPENDIX 2: QUALITY CONTROL RESULTS

**REPORTED TO PROJECT** SLR Consulting (Whitehorse)  
234.01022.00001

**WORK ORDER REPORTED** 8091582  
2018-10-01 15:08

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
<b>Volatile Organic Compounds (VOC), Batch B811889, Continued</b>									
<b>LCS (B811889-BS1), Continued</b>					Prepared: 2018-09-27, Analyzed: 2018-09-27				
Chloroethane	22.0	2.0 µg/L	20.0		110	60-140			
Chloroform	23.3	1.0 µg/L	20.1		116	70-130			
Dibromochloromethane	22.8	1.0 µg/L	20.2		113	70-130			
1,2-Dibromoethane	21.5	0.3 µg/L	20.0		107	70-130			
Dibromomethane	22.8	1.0 µg/L	20.0		114	70-130			
1,2-Dichlorobenzene	23.0	0.5 µg/L	20.1		114	70-130			
1,3-Dichlorobenzene	23.0	1.0 µg/L	20.1		115	70-130			
1,4-Dichlorobenzene	23.2	1.0 µg/L	20.1		115	70-130			
1,1-Dichloroethane	23.2	1.0 µg/L	20.1		115	70-130			
1,2-Dichloroethane	26.7	1.0 µg/L	20.1		133	70-130			SPK
1,1-Dichloroethylene	20.8	1.0 µg/L	20.1		103	70-130			
cis-1,2-Dichloroethylene	19.8	1.0 µg/L	20.0		99	70-130			
trans-1,2-Dichloroethylene	19.2	1.0 µg/L	20.1		96	70-130			
Dichloromethane	22.4	3.0 µg/L	20.1		112	70-130			
1,2-Dichloropropane	21.6	1.0 µg/L	20.2		107	70-130			
1,3-Dichloropropane (cis + trans)	37.0	1.0 µg/L	40.0		93	70-130			
Ethylbenzene	18.6	1.0 µg/L	20.0		93	70-130			
Methyl tert-butyl ether	20.0	1.0 µg/L	20.0		100	70-130			
Styrene	17.0	1.0 µg/L	20.0		85	70-130			
1,1,2,2-Tetrachloroethane	22.1	0.5 µg/L	20.2		109	70-130			
Tetrachloroethylene	24.4	1.0 µg/L	20.1		121	70-130			
Toluene	21.7	1.0 µg/L	20.1		108	70-130			
1,1,1-Trichloroethane	23.6	1.0 µg/L	20.2		117	70-130			
1,1,2-Trichloroethane	22.7	1.0 µg/L	20.1		113	70-130			
Trichloroethylene	23.6	1.0 µg/L	20.1		118	70-130			
Trichlorofluoromethane	28.8	1.0 µg/L	20.0		144	60-140			SPK
Vinyl chloride	18.2	1.0 µg/L	20.0		91	60-140			
Xylenes (total)	59.6	2.0 µg/L	60.1		99	70-130			
Surrogate: Toluene-d8	32.5	µg/L	26.2		124	70-130			
Surrogate: 4-Bromofluorobenzene	54.4	µg/L	25.0		217	70-130			S02
Surrogate: 1,4-Dichlorobenzene-d4	58.3	µg/L	25.0		233	70-130			S02

### QC Qualifiers:

- S02 Surrogate recovery outside of control limits. Data accepted based on acceptable recovery of other surrogates.
- S09 The surrogate recovery for this sample is outside of established control limits .
- SPK The recovery of this analyte was outside of established control limits.
- SPK1 The recovery of this analyte was outside of established control limits. The data was accepted based on performance of other batch QC.





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