



Yukon Observation Well Network

2017 Report



November 19, 2019

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Department of Environment
Government of Yukon

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Executive Summary

The Yukon Observation Well Network (YOWN) is a groundwater monitoring program operated by the Yukon Government, Department of Environment, Water Resources Branch (“WRB”) and is used to monitor groundwater levels and groundwater quality across the territory. The monitoring results are used to help manage groundwater resources, enhance understanding of the key aquifers, evaluate the impact of human activities on groundwater and evaluate long-term groundwater trends due to climate change. The network was formed from the Yukon-wide Long-Term Groundwater Monitoring Program that started in 2001, which focused on short-term and long-term trends in groundwater in areas where infrastructure is present. Under the action items set out in the 2014 *Yukon Water Strategy and Action Plan* (Government of Yukon), the network was renamed and the project scope broadened to increasing our understanding of groundwater across the territory. The YOWN grew from eight wells in 2013 to 43 wells by the end of 2017. Therefore, the duration of monitoring at each observation well ranges from 16 years to less than one year. This report focuses on groundwater quality results observed in 2017 and also includes manual groundwater level measurements made in 2017.

Groundwater samples are collected from the wells periodically and tested for a variety of parameters, including: general chemistry, major ions, nutrients, total and/or dissolved metals, volatile organic compounds (VOCs) and radiological parameters. A portion of the YOWN wells were sampled for isotopic and dissolved gas analyses for a study completed by the University of Calgary and Natural Sciences and Engineering Research Council of Canada. The study aimed to develop baseline testing methods for potential environmental impacts of oil and gas development.

The groundwater quality results were assessed by comparing the values against both the Guidelines for Canadian Drinking Water Quality (GCDWQ, 2017), which are developed by the Federal-Provincial-Territorial Committee on Drinking Water and have been published by Health Canada since 1968; and the Yukon Contaminated Sites Regulation (CSR, 2002) Generic Numerical Water Standards for the protection of aquatic life (CSR-AW). Please note that the GCDWQ were used for comparison purpose only; the YOWN wells located in Yukon campgrounds provide raw water for campground users, rather than drinking water. None of the YOWN wells should be considered drinking water supply wells.

Laboratory results collected in 2017 are presented in this report.

In 2017, seven wells were observed to contain parameters (one or more of arsenic, lead, uranium and/or zinc) at concentrations that exceeded health-based drinking water guidelines (i.e.

maximum acceptable concentrations) for total metals and the operational guidance value for aluminum. In 2017, ten wells were observed to contain parameters (one or more of iron, manganese, sodium, sulphate and/or total dissolved solids) at concentrations that exceeded aesthetic objectives.

One well contained nutrients (ammonium nitrogen and nitrate nitrogen) and dissolved sulphate at concentrations exceeding the CSR-AW and one well contained fluoride at a concentration that exceeded the CSR-AW.

Radiological parameters (lead, radium and uranium) exceeding the CDWQ guidelines were reported in two wells.

The analytical results for the remaining parameters, including dissolved metals and total petroleum hydrocarbons, were within acceptable limits for both CDWQ guidelines and CSR-AW.

WRB has commenced deployment of dataloggers to monitor groundwater level, temperature, and, for select wells, electrical conductivity at a high frequency. However, the data generated from these loggers is not reported herein. WRB is currently developing a process for managing, validating, interpreting, and reporting on these data and intends to publish them in a future report.

Please direct any questions or data requests related to this report to water.resources@gov.yk.ca

Acknowledgements

We are indebted to the late Ric Janowicz, who created the Yukon-wide Long Term Groundwater Monitoring Program in 2001, and to John Miller, who evolved and expanded that program to become the Yukon Observation Well Network (YOWN). This report and the operation of the YOWN have benefited from the valuable input of many organizations. In particular, we gratefully acknowledge the contributions of Yukon Parks Branch. Use of their abandoned wells and their insight into the history of the wells have been immensely valuable for the expansion of the YOWN. We also gratefully acknowledge the Department of Geoscience at University of Calgary for conducting isotopic and dissolved gas analyses for the network and including our wells in an environmental baseline study. In addition, the Champagne and Aishihik First Nations (CAFN), White River First Nation (WRFN), Northern Cross and EFLO Energy Yukon Ltd., City of Whitehorse and Government of Yukon Community Services have made significant contributions to the expansion and operation of the YOWN.

List of Abbreviations

AO – Aesthetic Objective

bgs – Below Ground Surface

BTEX – Benzene, Toluene, Ethylbenzene, Xylene

CAFN – Champagne and Aishihik First Nations

CDWQ – Canadian Drinking Water Quality

CSR – Yukon Contaminated Sites Regulation

CSR-AW – Numerical Water Standards for the protection of aquatic life

DIC – Dissolved Inorganic Carbon

DOC – Dissolved Organic Carbon

GCDWQ – Guidelines for Canadian Drinking Water Quality

MAC – Maximum Acceptable Concentration

m bTOC – Meters Below Top of Casing

NSERC – Natural Sciences and Engineering Research Council

OG – Operational Guidance

PAH – Polycyclic Aromatic Hydrocarbons

TDS – Total Dissolved Solids

TIC – Total Inorganic Carbon

TOC – Top of Casing

TOC – Total Organic Carbon

TSS – Total Suspended Solids

VH – Volatile Hydrocarbons

VPH – Volatile Petroleum Hydrocarbons

VOCs – Volatile Organic Compounds

WRB – Water Resources Branch (Government of Yukon)

WRFN – White River First Nation

YG – Government of Yukon

YOWN – Yukon Observation Well Network

YP – Yukon Parks

YWWR – Yukon Water Well Registry

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1. Introduction

1.1 Overview

Groundwater is an essential source of water in the Yukon with approximately 97% of Yukoners relying on this resource for their domestic needs. Understanding the Yukon's groundwater systems and how they are likely to change over time contributes to responsible management of these resources. The Yukon Observation Well Network (YOWN) was created in response to the 2014 Yukon Water Strategy and Action Plan, which called for a formalized groundwater monitoring program and an improved understanding of groundwater across the territory.

The network was adapted from the Yukon-wide Long Term Groundwater Monitoring Program, which began in 2001 with the installation of one observation well in the Wolf Creek drainage basin. Four more observation wells were added to the program in 2008; two within the Whitehorse city limits, one in Dawson, and one in Faro. The objective of the added wells was to collect information on both short-term and long-term trends in groundwater in areas where there is pre-existing infrastructure (country residential subdivisions). The program was renamed the YOWN in 2014 when a formal groundwater program was added to the Water Resources Branch (WRB) and the network objective expanded to include the understanding of groundwater across the territory. The YOWN grew from eight wells in 2013 to 43 wells by the end of 2017.

The YOWN is operated by Government of Yukon (YG), Department of Environment, WRB and is used to monitor groundwater levels and groundwater quality across the territory. The monitoring results are used to help manage groundwater resources (i.e. drinking water), enhance understanding of the key aquifers, evaluate the impact of human activities on groundwater, and evaluate long-term groundwater trends due to climate change. This annual report presents groundwater quality results and manual measurements of groundwater level to the end of 2017.

1.2 Activities completed in 2017

Six wells were added to the YOWN in 2017 (numbers 38-43 in **Table 1.1**, page A-4). Two of the new wells were previously used for water supply at YG campgrounds and, being deemed suitable for groundwater monitoring purposes, were converted to observation wells; three wells were drilled by WRB in partnership with Champagne and Aishihik First Nations; and one well was drilled by WRB in partnership with Yukon College.

Each of the wells in the YOWN was visited on an approximate six-month basis. During these site visits, the condition of the well was visually assessed, datalogger data were downloaded, and manual water level measurements were conducted. In addition to these routine activities, water quality sampling was carried out in 2017 at the wells shown in Table 5.1.

1.3 Description of current network

As of December 31, 2017 the YOWN consisted of 43 observation wells. These wells are listed below in **Table 1.1** and the well locations are shown in **Figure 1.1**. The wells are listed in the order they were added to the YOWN.

Where applicable, observation wells in the network were named according to the campground in which they are located. All other observation wells are named after the nearest town except for the wells located in Whitehorse, which are named after the nearest street or subdivision. The majority of the wells in the YOWN were pre-existing for other purposes and were acquired by WRB for the YOWN. Consequently, there is limited information on these wells including well logs or installation dates. Therefore, wells were assigned four-digit site codes based on when they were added to the network. The first two digits of the code are based on the year the well was added to the YOWN and the final two digits are based on the order in which the well was added in that year. For example, Dawson Well (YOWN-0803) is located in Dawson City, and was the third well added to the YOWN in 2008.

YOWN-1601 was added and removed within the year. This well is located on private property and was removed due to limitations associated with accessing it.

Information on Yukon wells was retrieved from the Yukon Water Well Registry (YWWR) where applicable. The YWWR was established by YG and is a database and map of borehole logs and hydrogeological information in the territory.

A total of 32 wells in the network are instrumented with dataloggers that measure water level and temperature; twenty-eight of these loggers also measure specific conductance (see Table 5.1). Nine observation wells are actively being used to supply raw water in Yukon Parks (YP) campgrounds; therefore, they are not instrumented and are used for water quality monitoring only. One well is flowing artesian and is capped (Tagish Campground); one well is used by the Yukon College and is not instrumented by WRB.

One of the six wells added to the network in 2017 has not yet been sampled (YOWN-1706 at Yukon College).

Table 1.1: Wells included in YOWN (as of December 31, 2017).

No.	Well code	Well name	Years monitored
1	YOWN-0101	Wolf Creek Well	16
2	YOWN-0801	Whitehorse Copper Well	9
3	YOWN-0802	Faro Well	9
4	YOWN-0803	Dawson Well	9
5	YOWN-0804	Selkirk Well	9
6	YOWN-0805	Watson Lake Well	9
7	YOWN-1101	McRae Creeks Well	5
8	YOWN-1301	Beaver Creek Well	4
9	YOWN-1401	Eagle Plains Well	3
10	YOWN-1501	Marsh Lake Recreation Site Well	2
11	YOWN-1502	Marsh Lake Campground Well	2
12	YOWN-1503	Champagne Well (CAFN-GW-1)	2
13	YOWN-1504	Grizzly Valley Well	2
14	YOWN-1505	Deep Creek Well	2
15	YOWN-1506	Million Dollar Falls Campground Well	2
16	YOWN-1507	Kotaneelee Gas Plant Well	2
17	YOWN-1508	Nahanni Range Road Campground Well	2
18	YOWN-1509	Simpson Lake Campground Well #1	2
19	YOWN-1510	Simpson Lake Campground Well #2	2
20	YOWN-1511	Watson Lake Campground Well #1	2
21	YOWN-1512	Watson Lake Campground Well #2	2
22	YOWN-1513	Big Creek Campground Well	2
23	YOWN-1514	Kusawa Campground Well #1	2
24	YOWN-1515	Kusawa Campground Well #2	2
25	YOWN-1602	Faro Observation Well	1
26	YOWN-1603	Johnson Lake Campground Well	1
27	YOWN-1604	Pine Lake Campground Well	1
28	YOWN-1605	Pine Lake Day Use Well	1
29	YOWN-1606	Snag Campground Well	1
30	YOWN-1607	Lake Creek Campground Well	1
31	YOWN-1608	Klondike Campground Well	1
32	YOWN-1609	Yukon River Campground Well	1
33	YOWN-1610	Judas Creek Campground Well	1
34	YOWN-1611	Tagish Campground Well	1
35	YOWN-1612	Morely Lake Rec. Site Well	1
36	YOWN-1613	Watson Lake Campground Well #3	1
37	YOWN-1614	Wellgreen Mill Well	1
38	YOWN- 1701	Johnson Lake Campground Well #2	0
39	YOWN- 1702	Congdon Creek Campground Well #3	0
40	YOWN- 1703	Champagne & Aishihik First Nation (CAFN) MW-01	0
41	YOWN- 1704	CAFN MW-02	0
42	YOWN- 1705	CAFN MW-03	0
43	YOWN- 1706	Yukon College Well #1	0

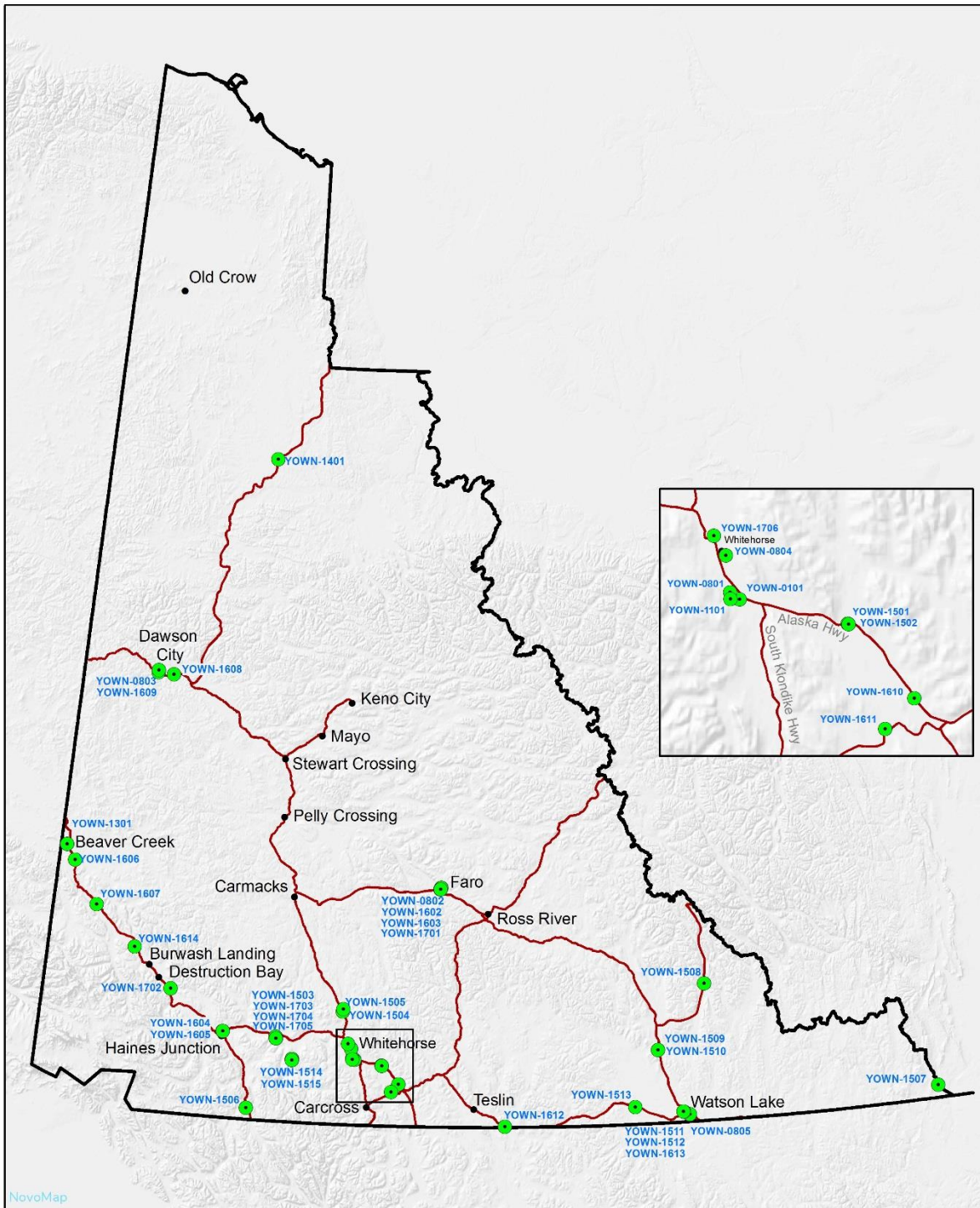


Figure 1.1: YOWN well locations as of December 31, 2017.

2. Methods

2.1 Groundwater quality monitoring

Field methods

Groundwater samples were generally collected using a Grundfos RediFlo2 submersible pump. Exceptions include the Dawson and Eagle Plains Wells, which were sampled using Waterra tubing and D-25 foot-valves (because the well casing setup at those wells did not allow deployment of the Grundfos submersible pump) and active campground drinking water wells, which were sampled using the existing hand pump. The Hydra-sleeve sampling technique was used at the Deep Creek, Grizzly Valley, Whitehorse Copper and Marsh Lake Campground wells, due to equipment (generator) failure at the time of the sampling event.

Prior to collecting the samples, each well was purged by removing three well volumes or by purging until in situ parameters became stable. Temperature, pH, electrical conductivity, oxidation reduction potential, and dissolved oxygen concentration were measured after every 20 L purged using an YSI™ multi-parameter water quality Sonde to identify if parameters were stabilizing.

When groundwater volume allowed for sampling, samples were collected and placed in laboratory supplied bottles and stored in an ice-chilled cooler until delivered to the lab within the specified holding times. Samples were submitted to the laboratory accompanied by chains of custody. Samples for dissolved constituent analysis (i.e. dissolved metals and dissolved organic carbon) were filtered in the field. Following filtration, the samples were preserved as per laboratory specifications. Nutrient samples were preserved with sulphuric acid; total and dissolved organic carbon (TOC/DOC), and total and dissolved mercury samples were preserved with hydrochloric acid; total and dissolved metals, and radiological parameter samples were preserved with nitric acid; benzene, toluene, ethylbenzene, xylene [BTEX] and styrene, volatile hydrocarbons [VH] and volatile petroleum hydrocarbons [VPH] vials were pre-preserved with sodium bisulphate; and polycyclic aromatic hydrocarbons [PAH] samples were preserved with sodium azide. Exova Laboratory of Surrey, BC, conducted the YOWN water quality assays.

Samples were analyzed for the following analytes:

- Conventional parameters: pH, specific conductivity, hardness, alkalinity, total dissolved solids (TDS), total suspended solids (TSS), TOC, DOC, total inorganic carbon (TIC), and dissolved inorganic carbon (DIC);

- Major ions: bicarbonate, bromide, calcium, carbonate, chloride, fluoride, hydroxide, magnesium, potassium, sodium, and sulphate;
- Nutrients: nitrate, nitrite, nitrate+nitrite, total ammonia, total Kjeldahl nitrogen, total nitrogen, total phosphorus, dissolved phosphorus, and dissolved phosphorus as phosphate;
- Total and dissolved metals;
- Volatile organic hydrocarbons: (BTEX, VH and VPH) and PAHs;
- Radiological parameters (actinium228, bismuth212, bismuth214, lead210, lead211, lead212, lead214, potassium40, radium223, radium226, radium228, radon219, thallium208, thorium227, thorium228, thorium230, thorium234, and uranium235);
- Environmental isotopes (carbon-13 in dissolved inorganic carbon, oxygen-18 in sulphate, oxygen-18 and deuterium in water, and sulphur-34 in sulphate); and
- Dissolved gases: oxygen, nitrogen, methane, ethane, propane and higher n-alkanes

Samples for isotopic and dissolved gas analysis were collected starting in March 2015. These samples were used in a Natural Sciences and Engineering Research Council of Canada (NSERC) funded study through the University of Calgary to develop baseline testing approaches for assessing potential environmental impacts of oil and gas development.

Data assessment

Results collected in 2017 are included in this report.

The groundwater quality results were assessed by comparing the values against both the Guidelines for Canadian Drinking Water Quality (GCDWQ, 2017), which are developed by the Federal-Provincial-Territorial Committee on Drinking Water and have been published by Health Canada since 1968; and the Yukon Contaminated Sites Regulation (CSR, 2002) Generic Numerical Water Standards for the protection of Aquatic Life (CSR-AW). Guidelines for chemical and physical parameters listed in the GCDWQ are health-based and listed as maximum acceptable concentrations (MAC), aesthetics-based and listed as aesthetic objectives (AO), or are established based on operational considerations and listed as operational guidance values (OG). Aesthetic quality guidelines address parameters which may affect consumer acceptance of drinking water, such as taste, colour and odour. Operational guidance values are outlined for aluminum only and apply to treatment plants using aluminum-based coagulants. A summary of the laboratory analytical results is presented in **Appendix A**, attached to this report, where results exceeding GDCWQ guidelines are bolded and results exceeding Yukon CSR-AW are underlined *Italic font*. Standards that are dependent on toxicity-modifying factors (such as pH, hardness, chloride content, etc.) are marked as an asterisk.

A summary of the field data measurements, including depth to groundwater, total well depth, well casing stickup (the portion of the well casing that extends above the ground surface), groundwater temperature, dissolved oxygen concentrations, specific conductance, pH, oxidation-reduction potential, and turbidity, is attached to this report in **Appendix B**.

Borehole logs are presented in **Appendix C** and laboratory certificates of analysis are included in **Appendix D**.

2.2 Groundwater level monitoring

Field methods

The wells are visited approximately every six months to visually assess the well condition and to conduct manual water level measurements. Manual water level measurements are conducted during site visits using an electronic water level meter.

WRB has commenced deployment of dataloggers to monitor groundwater level, temperature, and, for select wells, electrical conductivity at a high frequency. However, the data generated from these loggers is not reported herein. WRB is currently developing a process for managing, validating, interpreting, and reporting on these data and intends to publish them in a future report.

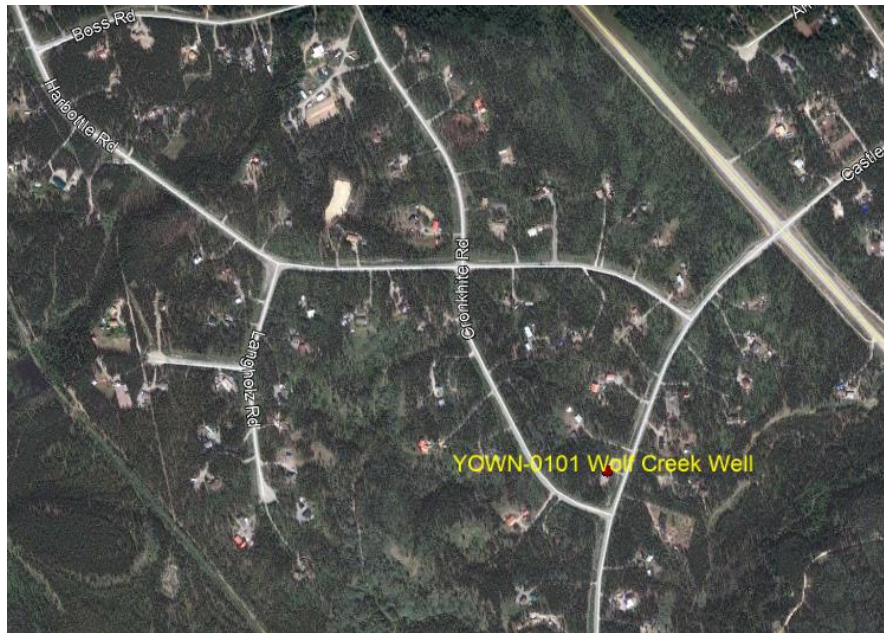
Groundwater level and temperature measurements are currently monitored using Solinst™ Leveloggers. The monitoring wells are equipped with a Levelogger installed within the water column. These self-contained dataloggers use a temperature sensor and pressure transducer to record the water level and temperature at defined time intervals. Most wells have been upgraded to the Levelogger Edge 3001, which also records electrical conductivity. Efforts were made to equip all wells with loggers capable of measuring conductivity and direct-read cables. Direct-read cables are used on Leveloggers to allow for data download without removing or disturbing the data loggers, which increases both the accuracy and consistency of the data obtained.

Solinst™ Barologgers are installed above the water surface in wells and measure atmospheric pressure to allow for the Levelogger calculations to be adjusted to account for atmospheric pressure fluctuations. One Barologger can be used to compensate all Leveloggers in a 30 km radius and/or with every 300 m change in elevation.

3. Yukon Observation Well Network Summary

3.1 YOWN-0101

Well Name: Wolf Creek Well	UTM Zone: 8	
Well Log Available: Yes	Easting (m): 502041	
Yukon Water Well Registry ID: 204100382	Northing (m): 6719006	
Well Depth (m bTOC): 48.8	Aquifer Material: Basalt	
Well Diameter (cm): 15.24	Year Monitoring Started: 2001	
<p>Well Description: The Wolf Creek well was installed on April 1, 2001 by Midnight Sun Drilling Company Limited. The well is located on Dawson Road in the Wolf Creek subdivision, approximately 14 km south of downtown Whitehorse. It is an open-hole observation well with an estimated production capacity of 0.6 L/s (Driller's Log).</p> <p>The well is installed in basalt, similar to the McRae Creeks well (YOWN-1101), located approximately 2.4 km to the west, and the Whitehorse Copper well (YOWN-0801), located approximately 2.8 km to the northwest.</p>		
Data Available:	Dates:	Comments:
Continuous Water Level and Temperature	May 2001 - Present	
Continuous Conductivity	June 2015 - Present	
Laboratory Analytical Data	10-Jun-2015	Not sampled in 2017



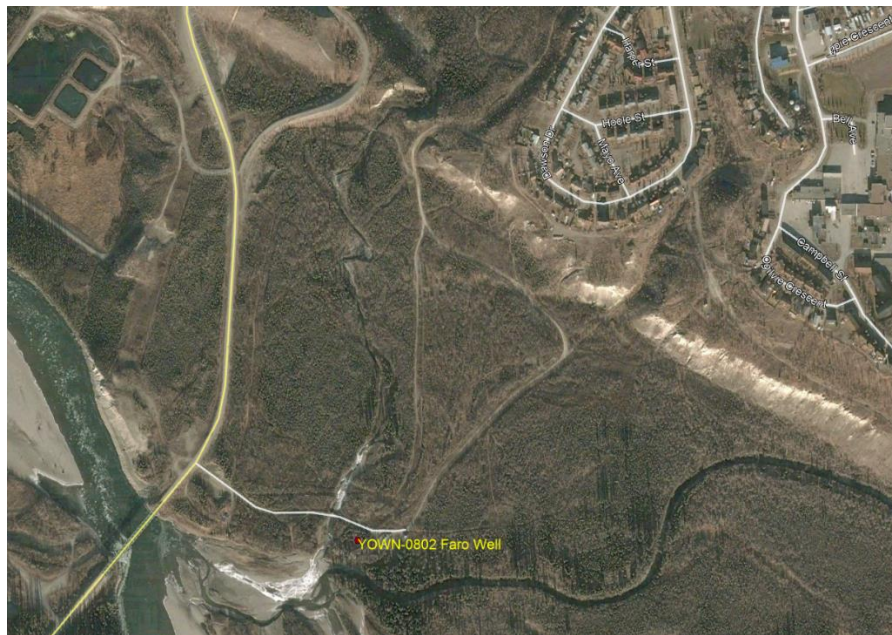
3.2 YOWN-0801

Well Name: Whitehorse Copper Well	UTM Zone: 8	
Well Log Available: Yes	Easting (m): 499520	
Yukon Water Well Registry ID: 204110124	Northing (m): 6720685	
Well Depth (m bTOC): 27.4	Aquifer Material: Basalt	
Well Diameter (cm): 15.24	Year Monitoring Started: 2008	
<p>Well Description: The Whitehorse Copper well was instrumented in 2008. The well is located on Serac Court in the Whitehorse Copper subdivision, approximately 11 km from downtown Whitehorse. The well is located in close proximity to active residential groundwater wells and therefore the aquifer levels are anticipated to be influenced by local groundwater use.</p> <p>The well is installed in basalt, similar to the McRae Creeks well (YOWN-1101), located approximately 1.7 km to the southwest, and the Wolf Creek well (YOWN-0101), located approximately 2.9 km to the southeast.</p>		
Data Available:	Dates:	Comments
Continuous Water Level and Temperature	Mar 2008 – Present	Gaps: Dec 2008-April 2009, Jan 2010-Nov 2010, Mar 2011-May 2011, Dec 2012-July 2013
Continuous Conductivity	N/A	
Laboratory Analytical Data	12-Jun-2015	Not sampled in 2017



3.3 YOWN-0802

Well Name: Faro Well	UTM Zone: 8	
Well Log Available: No	Easting (m): 584759	
Yukon Water Well Registry ID: N/A	Northing (m): 6899941	
Well Depth (m bTOC): 9.02	Aquifer Material: Unknown	
Well Diameter (cm): 15.24	Year Monitoring Started: 2008	
<p>Well Description: The Faro Well is located approximately six km south of the town of Faro, near the community water supply wells.</p> <p>There is no stratigraphic information for this well. The closest YOWN well is Johnson Lake Campground Well-2 (YOWN-1701), which is installed in a gravel/sand unit overlaying bedrock. YOWN-1701 is located approximately 1.6 km to the south.</p>		
Data Available:	Dates:	Comments
Continuous Water Level and Temperature	Mar 2008 - Present	Gaps: Dec 2008-Feb 2009, Feb 2010-Feb 2011, Apr 2012-Jun 2012
Continuous Conductivity	May 2015 - Present	
Laboratory Analytical Data	20-May-2016; 02-Oct-2017	



3.4 YOWN-0803

Well Name: Dawson Well	UTM Zone: 7	
Well Log Available: No	Easting (m): 576185	
Yukon Water Well Registry ID: N/A	Northing (m): 7104243	
Well Depth (m bTOC): 9.61	Aquifer Material: Unknown	
Well Diameter (cm): 15.24	Year Monitoring Started: 2008	
Well Description: The Dawson Well is located at the Dawson Waste Water Treatment Plant in Dawson City, Yukon.		
There is no information on stratigraphy and well screen installation for this monitoring well.		
Data Available:	Dates:	Comments
Continuous Water Level and Temperature	March 2008-Present	Gaps: Dec 2008-Apr 2009, Jan 2010-May 2011, Jul 2013-Aug 2013
Continuous Conductivity	May 2015-Present	
Laboratory Analytical Data	19-April-2016	Not sampled in 2017



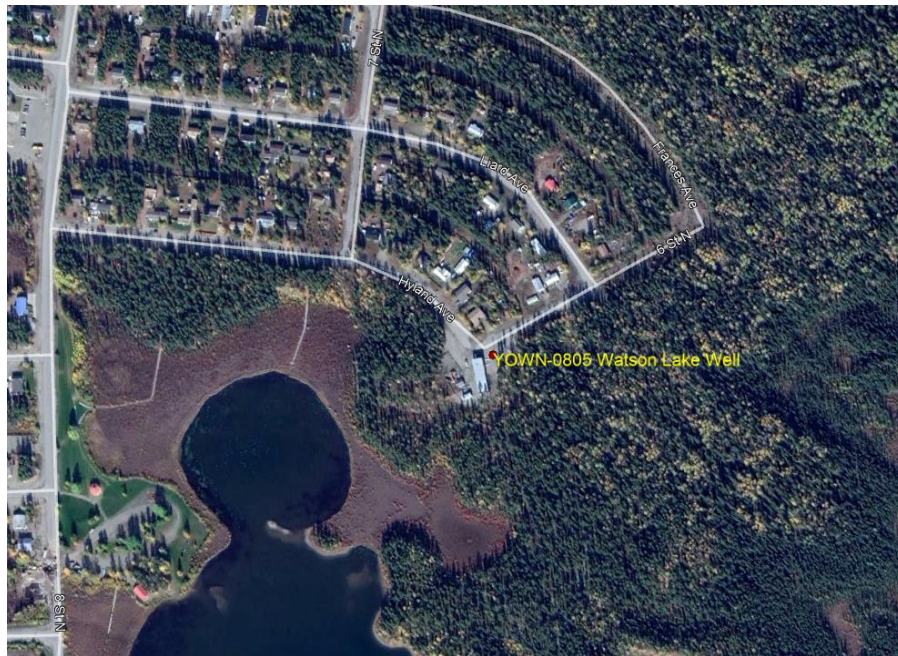
3.5 YOWN-0804

Well Name: Selkirk Well	UTM Zone: 8	
Well Log Available: Yes	Easting (m): 576185	
Yukon Water Well Registry ID: 204110174	Northing (m): 7104243	
Well Depth (m bTOC): 63.1	Aquifer Material: Gravelly Sand	
Well Diameter (cm): 16.83	Year Monitoring Started: 2008	
<p>Well Description: The Selkirk well was installed on October 10, 1997 by Midnight Sun Drilling Company Limited. The well is situated in Riverdale, near the end of Selkirk Street. The well can be found 100 m off the road, with an orange pipe extending two meters from the top in order to be identified in the foliage. The City of Whitehorse also uses this well in their groundwater monitoring program.</p> <p>Stratigraphic information for other monitoring wells installed in this area is not currently available.</p>		
Data Available:	Dates:	Comments:
Continuous Water Level and Temperature	June 2008- Present	Gaps: Apr 2009-Nov 2009, Mar 2011-Jan 2012, May 2012- Jun 2012, Dec 2015-Jan 2016, Aug 2016-Dec 2016
Continuous Conductivity	N/A	
Laboratory Analytical Data	N/A	Not sampled in 2017



3.6 YOWN-0805

Well Name: Watson Lake Well	UTM Zone: 4	
Well Log Available: Yes	Easting (m): 516875	
Yukon Water Well Registry ID: 201020003	Northing (m): 6658980	
Well Depth (m bTOC): 12.20	Aquifer Material: Unknown	
Well Diameter (cm): 11.40	Year Monitoring Started: 2008	
<p>Well Description: The Watson Lake well was installed in 1963 on 6th St North in Watson Lake. The well is located near Lot 6, block 22 at Watson Lake Way.</p> <p>There is no information on borehole stratigraphy, only well screen installation details. Watson Lake Campground well #2 (YOWN-1512), located approximately 7.2 km to the northwest, is installed in a clay/silt/gravel unit.</p>		
Data Available:	Dates:	Comments:
Continuous Water Level and Temperature	Oct 2011-Present	
Continuous Conductivity	May 2015-Present	
Laboratory Analytical Data	29-Aug-2017	



3.7 YOWN-1101

Well Name: McRae Creeks Well	UTM Zone: 8	
Well Log Available: Yes	Easting (m): 499626	
Yukon Water Well Registry ID: 204110124	Northing (m): 6718968	
Well Depth (m bTOC): 33.5	Aquifer Material: Till and Basalt	
Well Diameter (cm): 15.24	Year Monitoring Started: 2011	
<p>Well Description: The McRae Creeks Well is located 1 km west of the Wolf Creek subdivision. The well was originally drilled by Midnight Sun Drilling in 1977 for Golder Associates. The well has an estimated production rate of 0.75 L/s.</p> <p>The well is installed in basalt, similar to the Whitehorse Copper well (YOWN-0801), located approximately 1.7 km to the northeast, and the Wolf Creek well (YOWN-0101), located approximately 2.4 km to the east.</p>		
Data Available:	Dates:	Comments
Continuous Water Level and Temperature	Jun 2011-Present	
Continuous Conductivity	N/A	
Laboratory Analytical Data	17-Oct-2017	



3.8 YOWN-1301

Well Name: Beaver Creek Well	UTM Zone: 7	
Well Log Available: No	Easting (m): 506153	
Yukon Water Well Registry ID: N/A	Northing (m): 6916405	
Well Depth (m bTOC): 17.15	Aquifer Material: Unknown	
Well Diameter (cm): 15.24	Year Monitoring Started: 2013	
<p>Well Description: The Beaver Creek well is located behind the Mary Jane Blair Keteneje Wellness Center in Beaver Creek, Yukon. This well was previously used by the White River First Nation until the well was transferred to YG.</p> <p>There is no information on stratigraphy and well screen installation for this monitoring well and no other YOWN wells are located in this area.</p>		
Data Available:	Dates:	Comments:
Continuous Water Level and Temperature	Oct 2013-Present	
Continuous Conductivity	Oct 2014-Present	
Laboratory Analytical Data	11-Oct-2017	



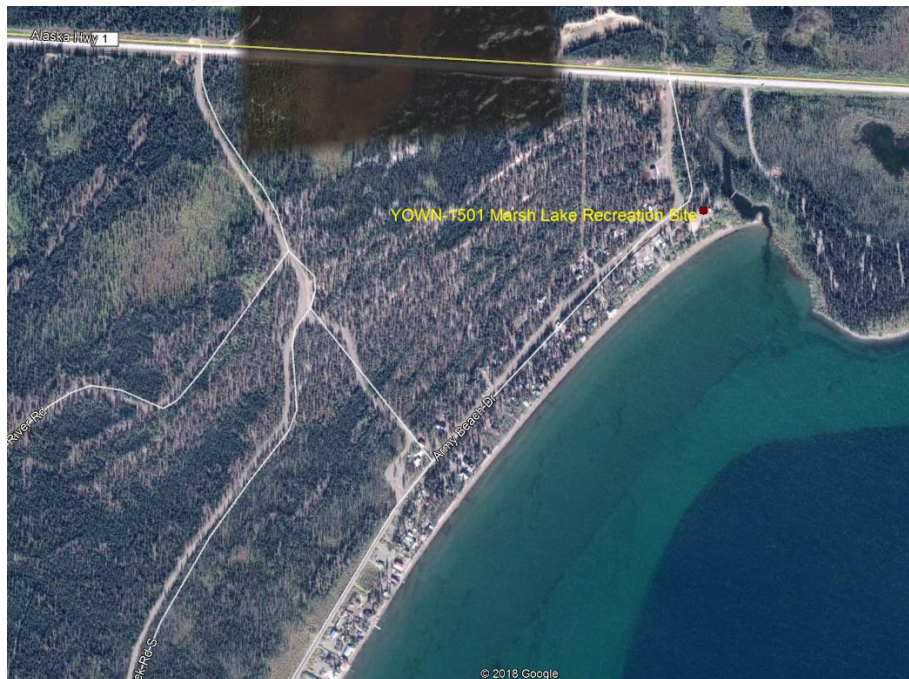
3.9 YOWN-1401

Well Name: Eagle Plains Well	UTM Zone: 8	
Well Log Available: Yes	Easting (m): 398625	
Yukon Water Well Registry ID: 809030001	Northing (m): 7335447	
Well Depth (m bTOC): 45.00	Aquifer Material: Clay	
Well Diameter (cm): 15.24	Year Monitoring Started: 2014	
<p>Well Description: The Eagle Plains well was installed on October 23, 2011 in the Northern Cross Camp on the Dempster Highway, km 325.</p> <p>The well is an open hole with no screen and is installed in bedrock, which was encountered at 3.9 m bgs. No other YOWN monitoring wells are located in this area.</p>		
Data Available:	Dates:	Comments:
Continuous Water Level and Temperature	Mar 2014-Present	
Continuous Conductivity	Mar 2014-Present	
Laboratory Analytical Data	28-Aug-2013, 18-Mar-2016, 22-Sep-2016; 5-Mar-2017; 21-Sep-2017	



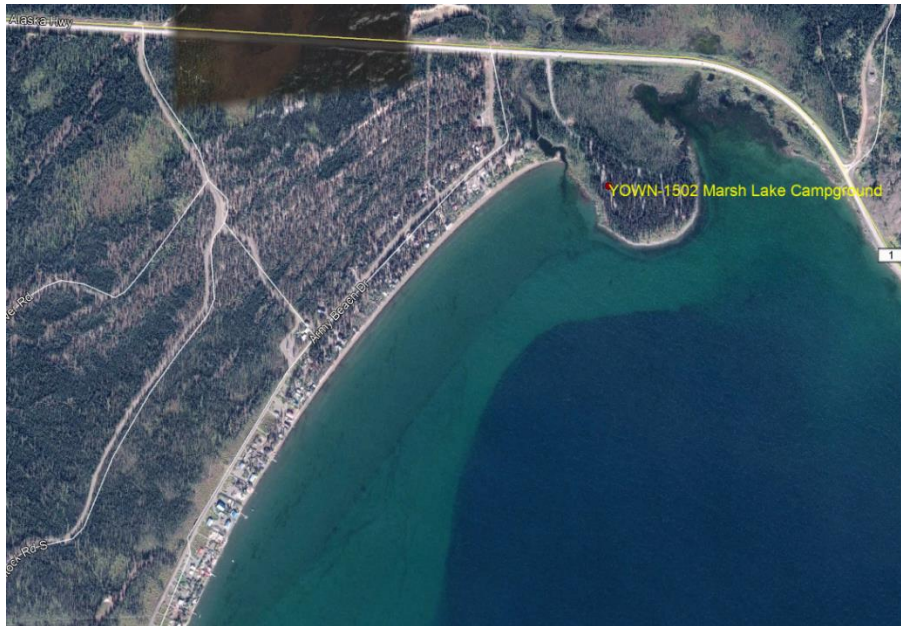
3.10 YOWN-1501

Well Name: Marsh Lake Recreation Site Well	UTM Zone: 8	
Well Log Available: No	Easting (m): 530165	
Yukon Water Well Registry ID: N/A	Northing (m): 6713778	
Well Depth (m bTOC): 2.46	Aquifer Material: Unknown	
Well Diameter (cm): 15.24	Year Monitoring Started: 2015	
<p>Well Description: The Marsh Lake Recreation Site well is located in the Marsh Lake Campground day use area. The well was drilled in 1980 by Midnight Sun Drilling Company Ltd. The well was added to the YOWN program in 2015 by converting an existing water well to a groundwater monitoring well. The well appears to be silted based on the shallow depth and limited volume of groundwater.</p>		
Data Available:	Dates:	Comments:
Continuous Water Level and Temperature	Nov 2016 – Present	
Continuous Conductivity	N/A	
Laboratory Analytical Data	N/A	Not sampled in 2017



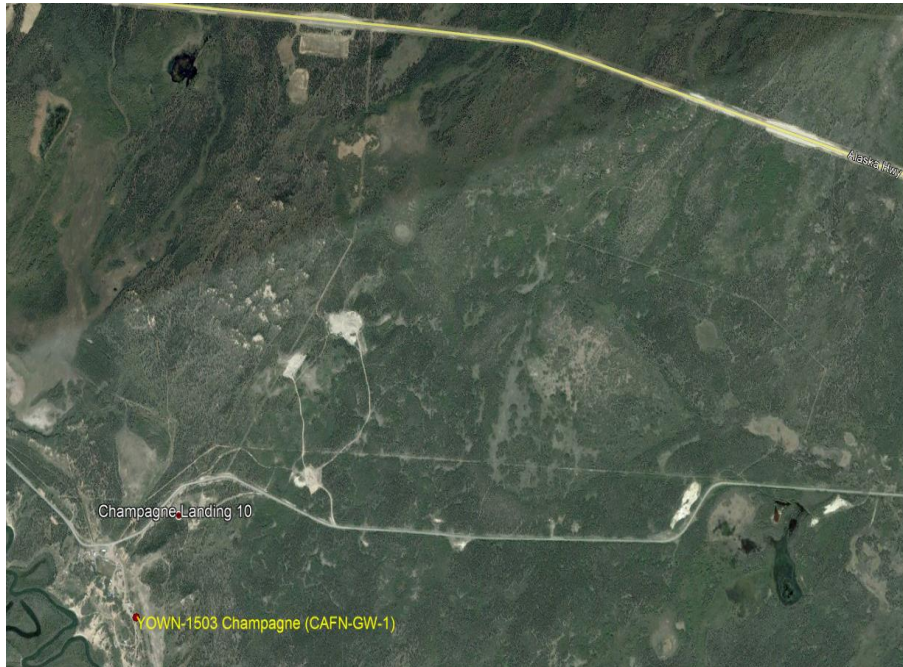
3.11 YOWN-1502

Well Name: Marsh Lake Campground Well	UTM Zone: 8	
Well Log Available: Yes	Easting (m): 530423	
Yukon Water Well Registry ID: 204090019	Northing (m): 6713679	
Well Depth (m bTOC): 52.86	Aquifer Material: Till - Clay/Silt	
Well Diameter (cm): 15.24	Year Monitoring Started: 2015	
<p>Well Description: The Marsh Lake Campground well is located in the campground across from a cooking shelter and beside a wood storage box. This well was installed on March 6, 1980 by Midnight Sun Drilling Company Limited and has an estimated production rate of 0.76 L/s.</p> <p>The soil stratigraphy consist of cobbles, gravel and clay. The well appears to be installed in clay, as an open hole. Field well depth measurements (52.8 m bTOC) do not match the borehole log information (101.8 m bTOC), suggesting that the well walls have sloughed.</p>		
Data Available:	Dates:	Comments:
Continuous Water Level and Temperature	Jul 2015 – Present	
Continuous Conductivity	Jul 2015 – Present	
Laboratory Analytical Data	26-Oct-2017	



3.12 YOWN-1503

Well Name: Champagne Well	UTM Zone: 8	
Well Log Available: No	Easting (m): 419537	
Yukon Water Well Registry ID: N/A	Northing (m): 6739581	
Well Depth (m bTOC): 17.90	Aquifer Material: Unknown	
Well Diameter (cm): 15.24	Year Monitoring Started: 2015	
<p>Well Description: The Champagne well is located in the village of Champagne near the community center and playground. This well is fitted with a custom cap due its semi-circle shape at the top of the casing.</p> <p>Monitoring wells YOWN-1703, YOWN-1704 and YOWN-1705 are located approximately 1.7 km to the south and installed to similar depth; these wells are installed in a coarse sand and gravel unit.</p>		
Data Available:	Dates:	Comments:
Continuous Water Level and Temperature	Mar 2015-Present	
Continuous Conductivity	Jul 2016-Present	
Laboratory Analytical Data	17-Mar-2015, 27-Jul-2016	Not sampled in 2017



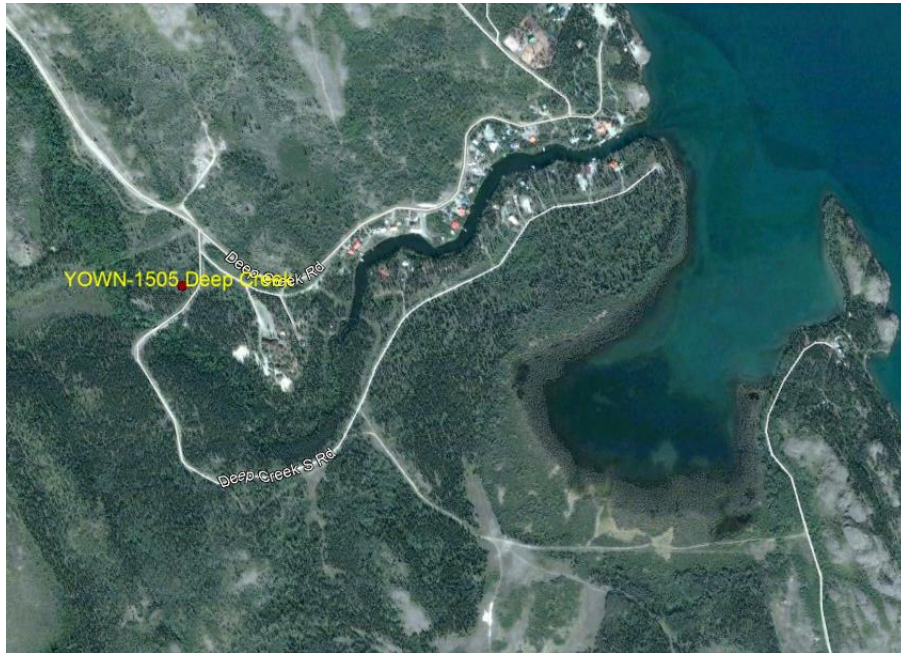
3.13 YOWN-1504

Well Name: Grizzly Valley	UTM Zone: 8	
Well Log Available: Yes	Easting (m): 487803	
Yukon Water Well Registry ID: 204140384	Northing (m): 6768194	
Well Depth (m bTOC): 101.50	Aquifer Material: Bedrock	
Well Diameter (cm): 15.24	Year Monitoring Started: 2015	
<p>Well Description: The Grizzly Valley well was drilled on August 31, 2012 by Double D Drilling of Terrace, BC. The well is located at the entrance to the Grizzly Lake subdivision in the Takhini Valley region. The hydraulic conductivity was reported to be 2.8×10^{-5} m/s.</p> <p>The well was drilled in an attempt to select a suitable site for a bulk truck fill station to supply residents of the Ta'an Kwäch'än Council, Horse Creek, Grizzly Valley and Deep Creek areas. The water quality at this well was deemed unsuitable for domestic purposes due to hardness and exceedances of aesthetic objectives. The well was abandoned and later acquired by Water Resource Branch of Environment Yukon.</p>		
Data Available:	Dates:	Comments:
Continuous Water Level and Temperature	Mar 2015-Present	Gap: Oct 2015-Nov 2015
Continuous Conductivity	July 2016-Present	
Laboratory Analytical Data	20-Sep-2012; 02-Nov-2017	



3.14 YOWN-1505

Well Name: Deep Creek Well	UTM Zone: 8	
Well Log Available: Yes	Easting (m): 488393	
Yukon Water Well Registry ID: 204140308	Northing (m): 6770798	
Well Depth (m bTOC): 101.5	Aquifer Material: Unknown	
Well Diameter (cm): 15.24	Year Monitoring Started: 2015	
<p>Well Description: The Deep Creek Well was drilled August 26, 2012 by Double D Drilling of Terrace, BC. The well is located in the Deep Creek area of Lake Laberge subdivision.</p> <p>The well was installed for a bulk truck fill station to supply citizens of the Ta'an Kwäch'än Council, in the Horse Creek, Grizzly Valley and Deep Creek areas. The water quality at this well was deemed unsuitable for domestic purposes due to hardness and exceedances of aesthetic objectives. The hydraulic conductivity was reported to be 5.6×10^{-7} m/s.</p>		
Data Available:	Dates:	Comments:
Continuous Water Level and Temperature	July 2015-Present	
Continuous Conductivity	July 2015-Present	
Laboratory Analytical Data	7-Sep-2012; 02-Nov-2017	



3.15 YOWN-1506

Well Name: Million Dollar Falls Campground Well	UTM Zone: 8	
Well Log Available: Yes	Easting (m): 396502	
Yukon Water Well Registry ID: 1010200011	Northing (m): 6653076	
Well Depth (m bTOC): 16.65	Aquifer Material: Till/ Sandstone/Conglomerates	
Well Diameter (cm): 14.60	Year Monitoring Started: 2015	
<p>Well Description: The Million Dollar Falls Campground well was drilled by Midnight Sun Drilling Company Limited.</p> <p>Borehole stratigraphy indicates a silt/sand/gravel unit overlaying sandstone/conglomerates. Field well depth measurements (16.65 m bTOC) do not match the borehole log information (195 m bTOC), suggesting that the well walls have sloughed.</p>		
Data Available:	Dates:	Comments:
Continuous Water Level and Temperature	Aug 2016-Present	
Continuous Conductivity	Aug 2016-Present	
Laboratory Analytical Data	17-Oct-2017	



3.16 YOWN-1507

Well Name: Kotaneelee Gas Plant Well	UTM Zone: 10	
Well Log Available: No	Easting (m): 441306	
Yukon Water Well Registry ID: N/A	Northing (m): 6664889	
Well Depth (m bTOC): 5.93	Aquifer Material: Unknown	
Well Diameter (cm): 15.24	Year Monitoring Started: 2015	
<p>Well Description: The Kotaneelee Gas Plant well is located in the south-east Yukon at the former Kotaneelee Gas Plant. The well was used for drinking water when the plant was in operation and has since been used in the YOWN.</p> <p>There is no information on soil stratigraphy and well screen installation; no other YOWN wells are located in this area.</p>		
Data Available:	Dates:	Comments:
Continuous Water Level and Temperature	Aug 2015-Present	
Continuous Conductivity	Aug 2015-Present	
	5-Aug-2015; 3-Nov-2015, 19-Aug-2016; 9-Nov-2016; 23-Aug-2017; 08-Nov-2017	



3.17 YOWN-1508

Well Name: Nahanni Range Road CG Well	UTM Zone: 9	
Well Log Available: No	Easting (m): 538804	
Yukon Water Well Registry ID: N/A	Northing (m): 6793104	
Well Depth (m bTOC): 18.30	Aquifer Material: Unknown	
Well Diameter (cm): 15.24	Year Monitoring Started: 2015	
<p>Well Description: This well is located in the Nahanni Range Road Campground in southeast Yukon.</p> <p>There is no information on soil stratigraphy and well screen installation; no other YOWN wells are located in this area.</p>		
Data Available:	Dates:	Comments:
Continuous Water Level and Temperature	Aug 2015-Present	
Continuous Conductivity	Aug 2015-Present	
Laboratory Analytical Data	25-Aug-2015, 17-Aug-2016	Not sampled in 2017



3.18 YOWN-1509

Well Name: Simpson Lake Campground Well-1	UTM Zone: 9	
Well Log Available: No	Easting (m): 487465	
Yukon Water Well Registry ID: N/A	Northing (m): 6726905	
Well Depth (m bTOC): Unknown	Aquifer Material: Unknown	
Well Diameter (cm): 15.24	Year Monitoring Started: 2015	
<p>Well Description: This well is an active drinking water well used in the Simpson Lake Campground located on the Robert Campbell Highway. This well is not equipped with data loggers and is only used for testing water quality.</p> <p>There is no information on soil stratigraphy and well screen installation. No other YOWN wells are located in this area.</p>		
Data Available:	Dates:	Comments:
Continuous Water Level and Temperature	N/A	Well is not instrumented
Continuous Conductivity	N/A	Well is not instrumented
Laboratory Analytical Data	24-Aug-2015; 09-Oct-2015; 07-Aug-2016; 08-May-2017; 28-Aug-2017	



3.19 YOWN-1510

Well Name: Simpson Lake Campground Well-2	UTM Zone: 9	
Well Log Available: No	Easting (m): 487389	
Yukon Water Well Registry ID: N/A	Northing (m): 6726938	
Well Depth (m bTOC): 21.75	Aquifer Material: Unknown	
Well Diameter (cm): 15.24	Year Monitoring Started: 2015	
<p>Well Description: This well is located in the Simpson Lake Campground near the cook shelter and boat launch. This well was instrumented in August 2015.</p> <p>There is no information on soil stratigraphy and well screen installation. No other YOWN wells are located in this area.</p>		
Data Available:	Dates:	Comments:
Continuous Water Level and Temperature	Aug 2015 - Present	
Continuous Conductivity	Aug 2015 - Present	
Laboratory Analytical Data	18-Aug-2016; 29 Aug-2017	



3.20 YOWN-1511

Well Name: Watson Lake Campground Well-1	UTM Zone: 9	
Well Log Available: No	Easting (m): 511040	
Yukon Water Well Registry ID: N/A	Northing (m): 6661751	
Well Depth (m bTOC): Unknown	Aquifer Material: Unknown	
Well Diameter (cm): 15.24	Year Monitoring Started: 2015	
<p>Well Description: This well is located in the Watson Lake Campground in a small shed previously used to fill drinking water tanks.</p> <p>There is no information on soil stratigraphy. Watson Lake Campground well #2 (YOWN-1512), located approximately 0.9 km to the northwest, is installed in a clay/silt/gravel unit.</p>		
Data Available:	Dates:	Comments:
Continuous Water Level and Temperature	Aug 2015-Present	
Continuous Conductivity	Aug 2015-Present	
Laboratory Analytical Data	29-Aug-2015	Not sampled in 2017



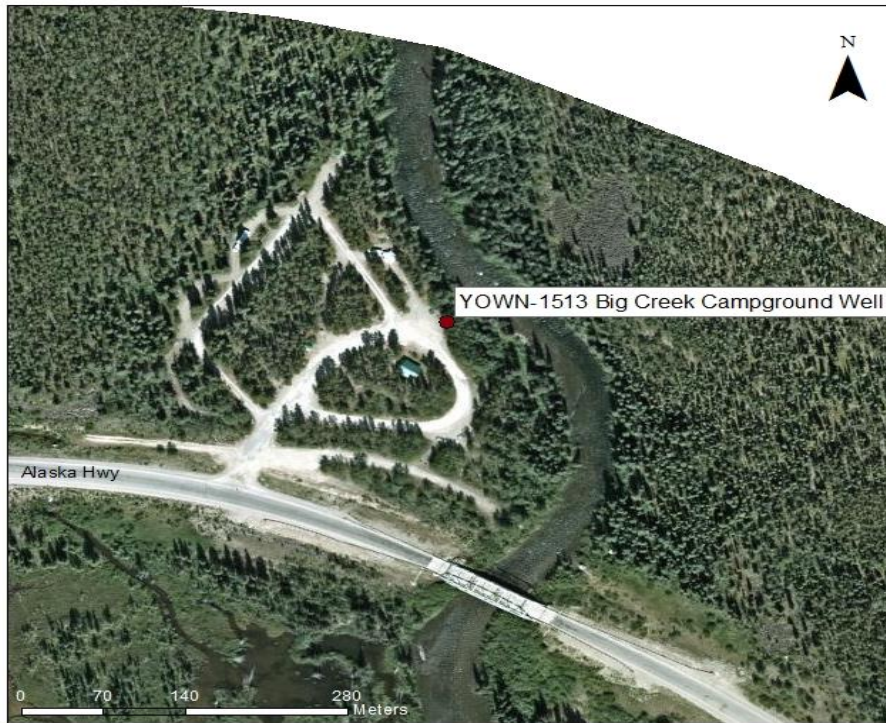
3.21 YOWN-1512

Well Name: Watson Lake Campground Well-2	UTM Zone: 9	
Well Log Available: Yes	Easting (m): 510263	
Yukon Water Well Registry ID: N/A	Northing (m): 6662148	
Well Depth (m bTOC): Unknown	Aquifer Material: Unknown	
Well Diameter (cm): 15.24	Year Monitoring Started: 2015	
<p>Well Description: This well is an active drinking water well in the Watson Lake Campground. This well is not equipped with data loggers and is only used for testing water quality.</p> <p>The well is installed in a clay/silt/gravel unit; the bottom of screen is installed at 20.1 m bTOC. No other YOWN wells with known soil stratigraphy are present in this area.</p>		
Data Available:	Dates:	Comments:
Continuous Water Level and Temperature	N/A	Not instrumented
Continuous Conductivity	N/A	Not instrumented
Laboratory Analytical Data	18-Aug-2016; 09-May-2017; 29-Aug-2017	



3.22 YOWN-1513

Well Name: Big Creek Campground Well	UTM Zone: 9	
Well Log Available: No	Easting (m): 460852	
Yukon Water Well Registry ID: N/A	Northing (m): 6669348	
Well Depth (m bTOC): Unknown	Aquifer Material: Unknown	
Well Diameter (cm): 15.24	Year Monitoring Started: 2015	
<p>Well Description: This well is an active drinking water well in Big Creek Campground. This well is not equipped with data loggers and is only used for testing water quality.</p> <p>There is no information on soil stratigraphy. The closest YOWN well is Watson Lake Campground well #2 (YOWN-1512), located approximately 50 km to the west.</p>		
Data Available:	Dates:	Comments:
Continuous Water Level and Temperature	N/A	Not instrumented
Continuous Conductivity	N/A	Not instrumented
Laboratory Analytical Data	29-Aug-2015; 09-Oct-2015; 16-Aug-2016; 09-May-2017; 29-Aug-2017	



3.23 YOWN-1514

Well Name: Kusawa Campground Well-1	UTM Zone: 8	
Well Log Available: No	Easting (m): 437275	
Yukon Water Well Registry ID: N/A	Northing (m): 6717195	
Well Depth (m bTOC): 20.60	Aquifer Material: Unknown	
Well Diameter (cm): 15.24	Year Monitoring Started: 2015	
<p>Well Description: This well is located in the northern region of the Kusawa Campground near the playground and beach.</p> <p>There is no information on soil stratigraphy. The closest YOWN well is the Kusawa Campground Well-2 (YOWN-1515), which is located approximately 1.1 km to the south and installed in a gravel/sand unit.</p>		
Data Available:	Dates:	Comments:
Continuous Water Level and Temperature	Sept 2015-Present	
Continuous Conductivity	Sept 2015-Present	
Laboratory Analytical Data	17-Oct-2017	

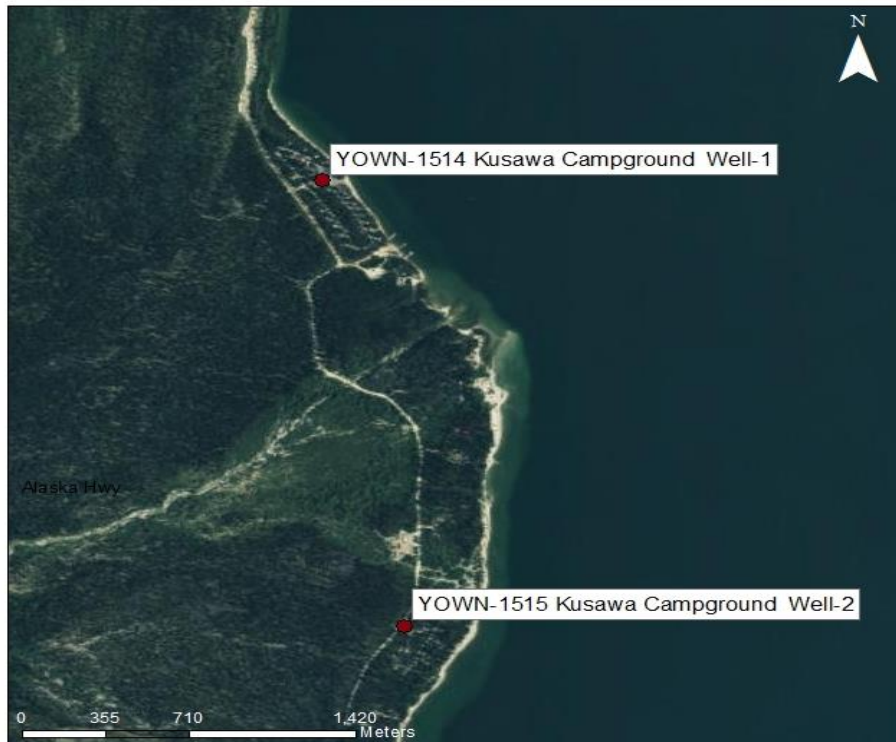
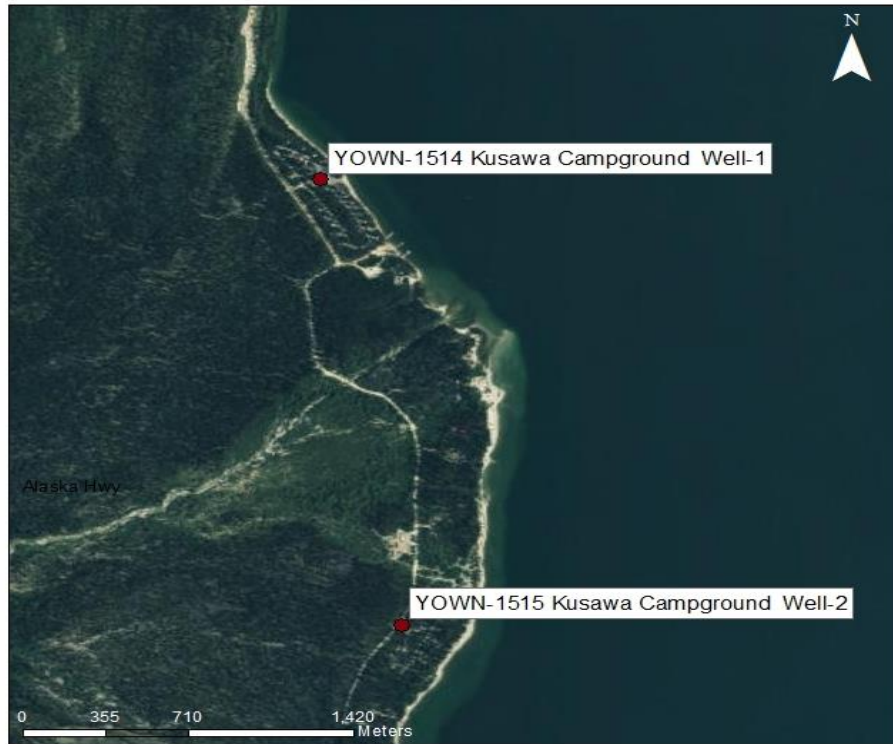


Figure 3.1: Station Map

3.24 YOWN-1515

Well Name Kusawa Campground Well-2	UTM Zone: 8	
Well Log Available: Yes	Easting (m): 437427	
Yukon Water Well Registry ID: 101090001	Northing (m): 6716054	
Well Depth (m bTOC): 12.55	Aquifer Material: - Gravel	
Well Diameter (cm): 15.24	Year Monitoring Started: 2015	
Well Description: This well is located in the southern loop of the Kusawa Campground near the entrance sign. The well is installed in a gravel/sand unit. It has a 1.2 m screen, with the bottom of the screen installed at 12.5 m bTOC.		
Data Available:	Dates:	Comments:
Continuous Water Level and Temperature	Nov 2016-Present	
Continuous Conductivity	Nov 2016-Present	
Laboratory Analytical Data	17-Oct-2017	



3.25 YOWN-1602

Well Name: Faro Observation Well	UTM Zone: 8	
Well Log Available: No	Easting (m): 584769	
Yukon Water Well Registry ID: N/A	Northing (m): 6899944	
Well Depth (m bTOC): 6.25	Aquifer Material: Unknown	
Well Diameter (cm): 2.54	Year Monitoring Started: 2016	
<p>Well Description: The Faro Observation Well is located approximately 3 m away from YOWN-0802, near the community water supply wells south of Faro.</p> <p>There is no information on soil stratigraphy. The closest YOWN well is Johnson Lake Campground Well-2 (YOWN-1701), which is located approximately 1.6 km to the south and installed in a gravel/sand unit overlaying bedrock.</p>		
Data Available:	Dates:	Comments:
Continuous Water Level and Temperature	May 2016-Present	
Continuous Conductivity	N/A	
Laboratory Analytical Data	02-Oct-2017	



3.26 YOWN-1603

Well Name: Johnson Lake Campground	UTM Zone: 8	
Well Log Available: Yes	Easting (m): 583935	
Yukon Water Well Registry ID: 211030014	Northing (m): 6898287	
Well Depth (m bTOC): 26.30	Aquifer Material: Sand/Gravel	
Well Diameter (cm): 15.24	Year Monitoring Started: 2016	
<p>Well Description: This well is located in Johnson Lake Campground near the boat launch, in very close proximity to active outhouses.</p> <p>The borehole log indicates a sand/gravel (till) unit overlaying sandstone/ conglomerate. There is no information regarding screen installation; it is possible that the well is installed as an open hole in bedrock below 19 m bgs. The soil stratigraphy description is similar to the stratigraphy encountered at YOWN-1701, located approximately 0.3 km to the east.</p>		
Data Available:	Dates:	Comments:
Continuous Water Level and Temperature	May 2016- Present	
Continuous Conductivity	May 2016- Present	
Laboratory Analytical Data	20-May-2016; 02-Oct-2017	



3.27 YOWN-1604

Well Name: Pine Lake Campground	UTM Zone: 8	
Well Log Available: Yes	Easting (m): 364623	
Yukon Water Well Registry ID: 101130006	Northing (m): 6743126	
Well Depth (m bTOC): 112.80	Aquifer Material: Till / Bedrock	
Well Diameter (cm): 15.24	Year Monitoring Started: 2016	
<p>Well Description: This well is located in the Pine Lake Campground near the entrance and pay-station. It is in close proximity to an active outhouse.</p> <p>Soil stratigraphy consist of a sand/gravel/clay (till) unit overlaying bedrock at 13.4 m bgs. There is no information on the screen installation; the well is assumed to be installed as an open hole in bedrock to 112.8 m bTOC.</p>		
Data Available:	Dates:	Comments
Continuous Water Level and Temperature	July 2016- Present	
Continuous Conductivity	July 2016- Present	
Laboratory Analytical Data	5-Jul-2016; 18-Oct-2017	



3.28 YOWN-1605

Well Name: Pine Lake Day Use Area	UTM Zone: 8	
Well Log Available: No	Easting (m): 364792	
Yukon Water Well Registry ID: N/A	Northing (m): 6743226	
Well Depth (m bTOC): 31.5	Aquifer Material: Unknown	
Well Diameter (cm): 15.24	Year Monitoring Started: 2016	
<p>Well Description: This well is located on the beach in the day use area of Pine Lake Campground, approximately 10 m from the lake. This well is flowing artesian (i.e. the water level exceeds the level of the ground surface); however, the water level is slow to recover and has not been observed to exceed the top of casing. A controlled cap is not currently installed.</p> <p>There is no information on soil stratigraphy. The closest YOWN well is the Pine Lake Campground Well (YOWN-1604), which is located approximately 0.2 km to the southwest and is installed in a till unit overlaying bedrock.</p>		
Data Available:	Dates:	Comments:
Continuous Water Level and Temperature	July 2016- Present	
Continuous Conductivity	July 2016- Present	
Laboratory Analytical Data	N/A	Not sampled in 2017



3.29 YOWN-1606

Well Name: Snag Campground	UTM Zone: 7	
Well Log Available: No	Easting (m): 516516	
Yukon Water Well Registry ID: N/A	Northing (m): 6900970	
Well Depth (m bTOC): 6.68 (frozen/ permafrost)	Aquifer Material: Unknown	
Well Diameter (cm): 15.24	Year Monitoring Started: 2016	
<p>Well Description: This well is located in the Snag Campground, approximately 20 km south of Beaver Creek. The well was instrumented in Aug, 2016 when the well was believed to contain meltwater perched on top of a frozen water column. Consequently, the loggers were not installed in the true water column and continuous water level, water temperature or conductivity measurements are not usable. Additionally, no water quality samples were able to be collected, but in-situ parameters were recorded.</p>		
Data Available:	Dates:	Comments:
Continuous Water Level and Temperature	N/A	Frozen
Continuous Conductivity	N/A	Frozen
Laboratory Analytical Data	N/A	Not Sampled in 2017



3.30 YOWN-1607

Well Name: Lake Creek Campground	UTM Zone: 7	
Well Log Available: No	Easting (m): 544547	
Yukon Water Well Registry ID: N/A	Northing (m): 6858323	
Well Depth (m bTOC): 9.61	Aquifer Material: Unknown	
Well Diameter (cm): 15.24	Year Monitoring Started: 2016	
<p>Well Description: This well is located in the Lake Creek Campground, approximately 20 m east of the creek and 25 m north of the campground kitchen.</p> <p>There is no information on soil stratigraphy and screen installation. The closest YOWN well is Klauene Harvest Camp well (YOWN-1802), which is located approximately 0.8 km to the southeast and installed in a sand/silt/gravel unit.</p>		
Data Available:	Dates:	Comments:
Continuous Water Level and Temperature	Aug 2016- Present	
Continuous Conductivity	Aug 2016- Present	
Laboratory Analytical Data	11-Oct-2017	



3.31 YOWN-1608

Well Name: Klondike Campground	UTM Zone: 7	
Well Log Available: No	Easting (m): 592192	
Yukon Water Well Registry ID: N/A	Northing (m): 7104158	
Well Depth (m bTOC): 3.80	Aquifer Material: Unknown	
Well Diameter (cm): 15.24	Year Monitoring Started: 2016	
<p>Well Description: This well is located in the Klondike campground near the playground area by the entrance. This well is a dug open hole well without a stickup (the top of casing is flush with the concrete pad).</p> <p>Based on the shallow depth of the well, it is possible that the well is silted; no representative groundwater is observed (very limited volume, and turbid; possible rain and/or melted snow).</p>		
Data Available:	Dates:	Comments:
Continuous Water Level and Temperature	Sept 2016-Present	
Continuous Conductivity	Sept 2016-Present	
Laboratory Analytical Data	08-Nov-2017	



3.32 YOWN-1609

Well Name: Yukon River Campground	UTM Zone: 7	
Well Log Available: Yes	Easting (m): 576164	
Yukon Water Well Registry ID: 802030038	Northing (m): 7106431	
Well Depth (m bTOC): 6.20	Aquifer Material: Gravel	
Well Diameter (cm): 15.24	Year Monitoring Started: 2016	
<p>Well Description: This well is located in the Yukon River Campground approximately 50 m west of the Yukon River, across from the playground. The top of casing is flush with the concrete pad, with a well seal installed on top.</p> <p>The borehole stratigraphy is described as silty sand/gravel unit (till); the screen is installed from 9.1 m bTOC to 10.6 m bTOC.</p>		
Data Available:	Dates:	Comments:
Continuous Water Level and Temperature	Sept 2016- Present	Gaps: Nov 2016-Dec 2016 (Water dropped below logger)
Continuous Conductivity	Sept 2016- Present	Gaps: Nov 2016-Dec 2016 (Water dropped below logger)
Laboratory Analytical Data	N/A	Not Sampled in 2017



3.33 YOWN-1610

Well Name: Judas Creek Campground	UTM Zone: 8	
Well Log Available: No	Easting (m): 548085	
Yukon Water Well Registry ID: N/A	Northing (m): 6695163	
Well Depth (m bTOC): 13.20	Aquifer Material: Unknown	
Well Diameter (cm): 15.24	Year Monitoring Started: 2016	
<p>Well Description: This well is located in an abandoned campground near Judas Creek.</p> <p>There is no information on soil stratigraphy and screen installation. The closest YOWN well with an available borehole log is the Marsh Lake Campground well (YOWN-1502), which is located approximately 25.6 km to the northwest and installed in a cobble, gravel and clay unit.</p>		
Data Available:	Dates:	Comments:
Continuous Water Level and Temperature	August 2016-Present	
Continuous Conductivity	August 2016-Present	
Laboratory Analytical Data	5-Aug-2016; 26-Oct-2017	



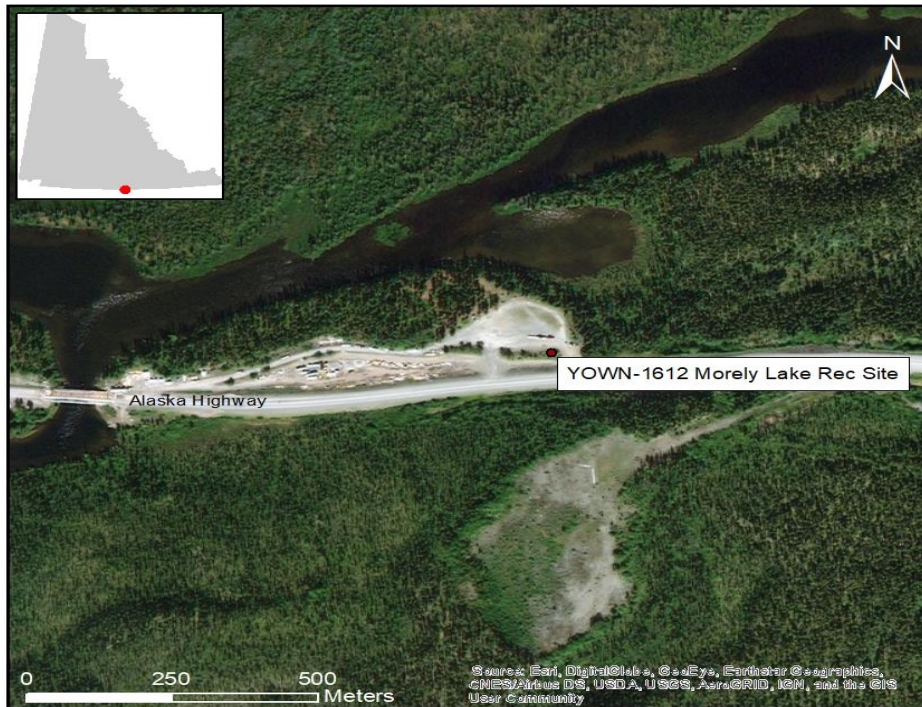
3.34 YOWN-1611

Well Name: Tagish Campground	UTM Zone: 8	
Well Log Available: Yes	Easting (m): 540932	
Yukon Water Well Registry ID: 204080022	Northing (m): 6686909	
Well Depth (m bTOC): 105.20	Aquifer Material: Gravel/Sand/Silt	
Well Diameter (cm): 15.24	Year Monitoring Started: 2016	
<p>Well Description: This well is located in the Tagish Campground, approximately 0.3 km east of the Tagish River. This well is flowing artesian and is temporarily welded shut until a well cap fitted with a control valve is installed. It is not instrumented, so no water level or temperature measurements are available.</p> <p>The well is installed in a gravel/sand/silt unit overlaid by a clay unit.</p>		
Data Available:	Dates:	Comments:
Continuous Water Level and Temperature	N/A	Not instrumented
Continuous Conductivity	N/A	Not instrumented
Laboratory Analytical Data	N/A	Not Sampled



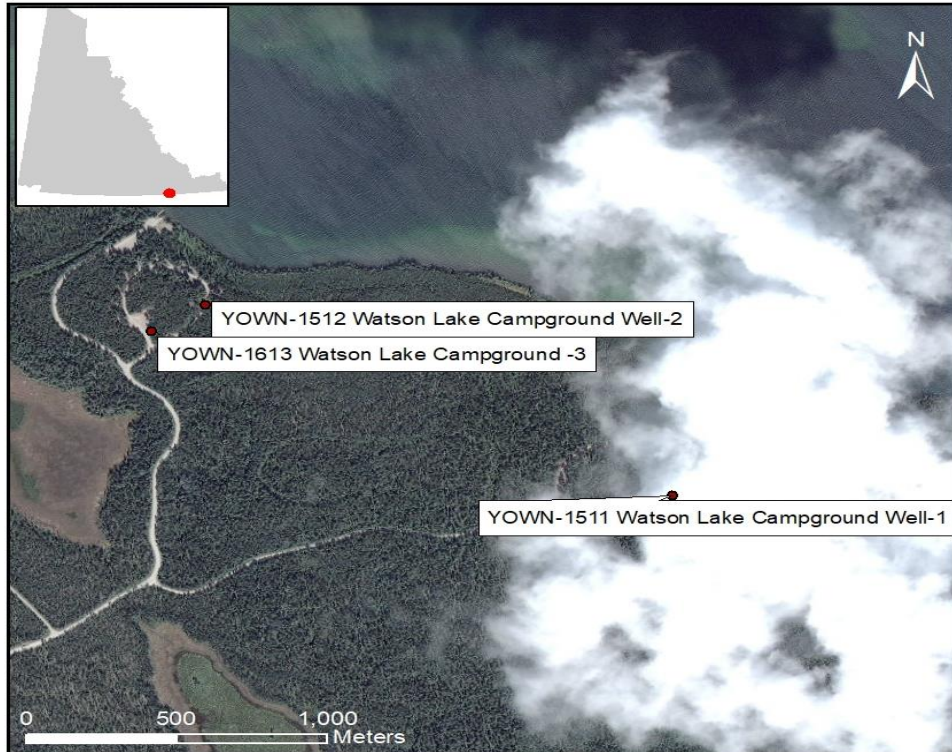
3.35 YOWN-1612

Well Name: Morely Lake Recreation Site	UTM Zone: 8	
Well Log Available: No	Easting (m): 659649	
Yukon Water Well Registry ID: N/A	Northing (m): 6655686	
Well Depth (m bTOC): Unknown	Aquifer Material: Unknown	
Well Diameter (cm): 15.24	Year Monitoring Started:	
<p>Well Description: This well is located in in the Morely Lake Recreation Site approximately 100 m south of the Morely River.</p> <p>This well was used as a drinking water well. The pump handle was removed to prevent water consumption due to various exceedances of the GCDWQ guidelines. The well is not instrumented, so no water level or temperature measurements are available.</p> <p>There are no other YOWN monitoring wells located in this area.</p>		
Data Available:	Dates:	Comments:
Continuous Water Level and Temperature	N/A	Not instrumented
Continuous Conductivity	N/A	Not instrumented
Laboratory Analytical Data	10-Nov-2016; 06-Apr-2017	



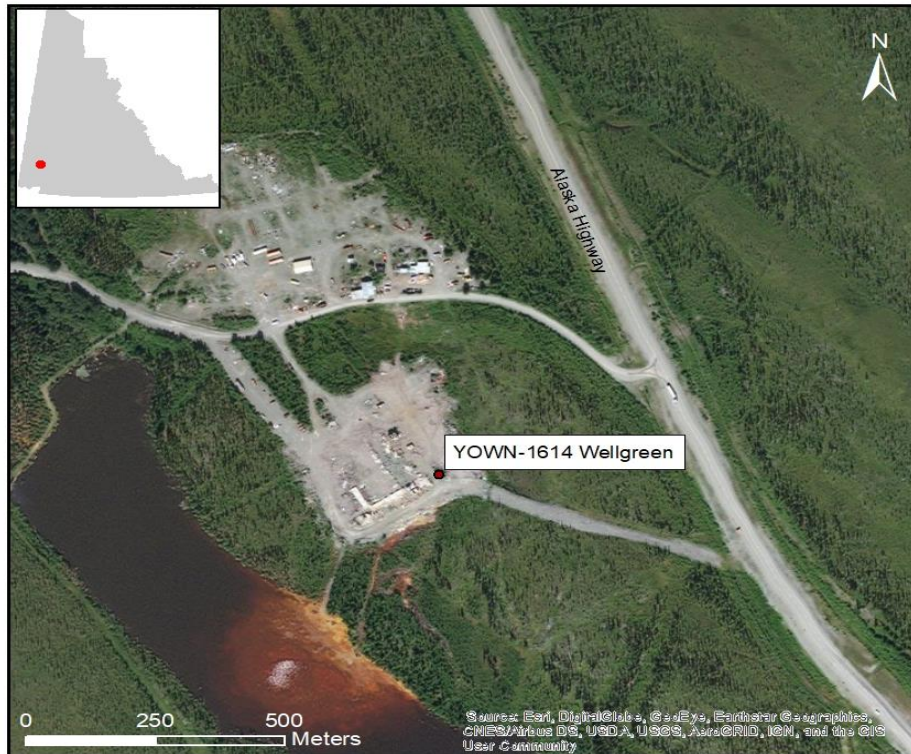
3.36 YOWN-1613

Well Name: Watson Lake Campground -3	UTM Zone: 9	
Well Log Available: No	Easting (m): 510173	
Yukon Water Well Registry ID: N/A	Northing (m): 6662092	
Well Depth (m bTOC): 19.40	Aquifer Material: Unknown	
Well Diameter (cm): 15.24	Year Monitoring Started: 2016	
<p>Well Description: This well is located in the Watson Lake Campground. The top of casing is flush with the concrete pad and capped with a well seal. This well is not instrumented.</p> <p>There is no information on soil stratigraphy. The Watson Lake Campground well #2 (YOWN-1512), located approximately 100 m to the east-northeast, is installed in a clay/silt/gravel unit.</p>		
Data Available:	Dates:	Comments:
Continuous Water Level and Temperature	N/A	Not instrumented
Continuous Conductivity	N/A	Not instrumented
Laboratory Analytical Data	29-Aug-2017	



3.37 YOWN-1614

Well Name: Wellgreen	UTM Zone: 7	
Well Log Available: No	Easting (m): 589530	
Yukon Water Well Registry ID: N/A	Northing (m): 6820455	
Well Depth (m bTOC): >100	Aquifer Material: Unknown	
Well Diameter (cm): 28	Year Monitoring Started: 2016	
<p>Well Description: This well is located south of the site office and the site access road, in the southeast quadrant of the cleared area (the former Mill site).</p> <p>There are no other YOWN monitoring wells located in this area. Other monitoring wells installed in this area by others are relatively shallow (14 m bTOC) and installed in a silty clay/sand/gravel unit.</p>		
Data Available:	Dates:	Comments:
Continuous Water Level and Temperature	Aug 2016-Present	
Continuous Conductivity	Aug 2016-Present	
Laboratory Analytical Data	11-Oct-2017	



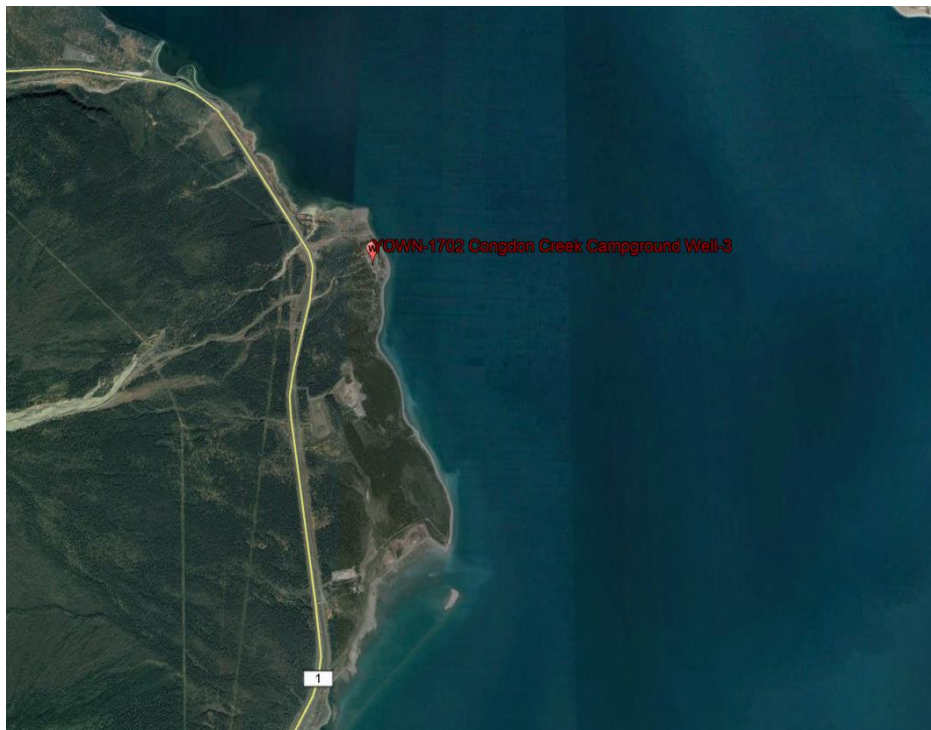
3.38 YOWN-1701

Well Name: Johnson Lake CG Well-2	UTM Zone: 8	
Well Log Available: Yes	Easting (m): 584165	
Yukon Water Well Registry ID: 211030015	Northing (m): 6898252	
Well Depth (m bTOC): 24.30 (?)	Aquifer Material: Sand/Gravel	
Well Diameter (cm): 15.24	Year Monitoring Started: 2017	
<p>Well Description: This well is located in Johnson Lake Campground approximately 75 m north of the shoreline. The well was used as a drinking water well but the pump handle was removed to prevent use due to metal concentrations exceeding the CSR-AW.</p> <p>The borehole log indicates a sand/gravel (till) unit overlaying sandstone/ conglomerate. There is no information regarding the screen installation; it is possible the well was installed as an open hole in bedrock below 21 m bgs. The soil stratigraphy description is similar to stratigraphy encountered at YOWN-1603, located approximately 0.3 km to the west.</p>		
Data Available:	Dates:	Comments:
Continuous Water Level and Temperature	Aug 2017-Present	
Continuous Conductivity	Aug 2017-Present	
Laboratory Analytical Data	03-May-2017	



3.39 YOWN-1702

Well Name: Congdon Creek CG Well-3	UTM Zone: 7	
Well Log Available: Yes	Easting (m): 631951	
Yukon Water Well Registry ID: 107020001	Northing (m): 6782275	
Well Depth (m bTOC): 18.3	Aquifer Material: Silty Sand/ Gravel	
Well Diameter (cm): 15.24	Year Monitoring Started: 2017	
<p>Well Description: This well is located in Congdon Creek Campground, approximately 45 m south of the campground kitchen. The well is an active drinking water well, so the well is not instrumented.</p> <p>The well is installed in a sand/gravel/silt unit with the screen installed in gravel. There are no other YOWN wells in this area.</p>		
Data Available:	Dates:	Comments:
Continuous Water Level and Temperature	N/A	
Continuous Conductivity	N/A	
Laboratory Analytical Data	18-Oct-2017	



3.40 YOWN-1703

Well Name: Champagne (CAFN-MW-01)	UTM Zone: 8	
Well Log Available: Yes	Easting (m): 419799	
Yukon Water Well Registry ID: 101160007	Northing (m): 6737852	
Well Depth (m bTOC): 18.60	Aquifer Material: Sand	
Well Diameter (cm): 5	Year Monitoring Started: 2017	
<p>Well Description: This well is located south of the Village of Champagne, near Champagne Creek.</p> <p>The well is installed in an unconfined aquifer. The stratigraphy consists of glacial till overlaid by alluvium and a layer of aeolian sand.</p>		
Data Available:	Dates:	Comments:
Continuous Water Level and Temperature	Aug 2017-Present	
Continuous Conductivity	Aug 2017-Present	
Laboratory Analytical Data	7-Jun-2017	



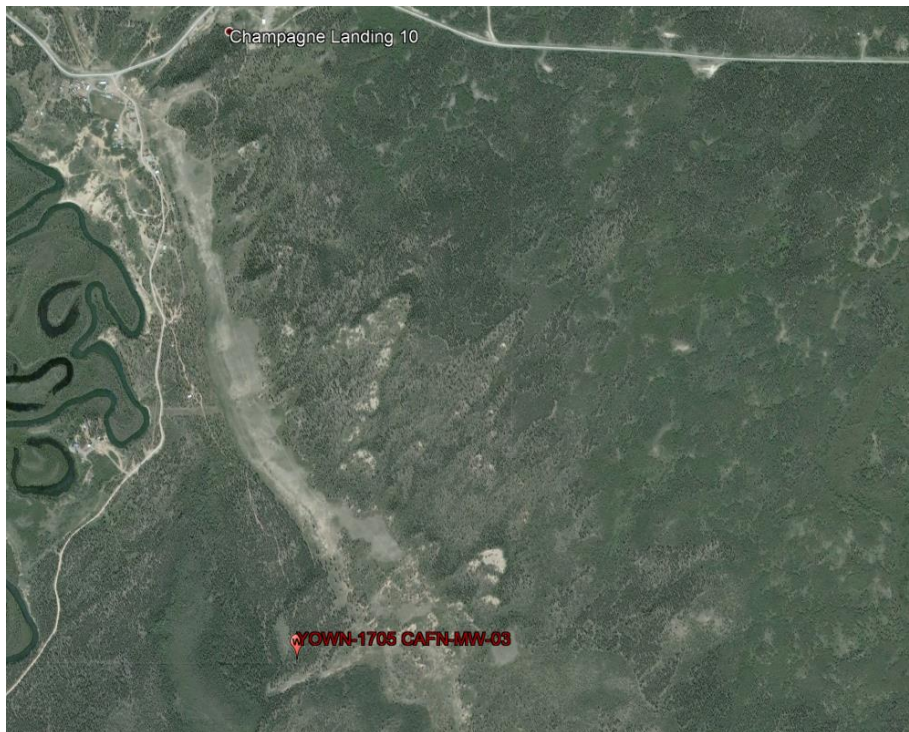
3.41 YOWN-1704

Well Name: Champagne (CAFN-MW-02)	UTM Zone: 8	
Well Log Available: Yes	Easting (m): 419832	
Yukon Water Well Registry ID: 101160008	Northing (m): 6737804	
Well Depth (m bTOC): 10.65	Aquifer Material: Sand	
Well Diameter (cm): 5	Year Monitoring Started: 2017	
<p>Well Description: This well is located south of the Village of Champagne, near Champagne Creek.</p> <p>The well is installed in an unconfined aquifer. The stratigraphy consists of glacial till overlaid by alluvium and a layer of aeolian sand.</p>		
Data Available:	Dates:	Comments:
Continuous Water Level and Temperature	Aug 2017-Present	
Continuous Conductivity	Aug 2017-Present	
Laboratory Analytical Data	7-Jun-2017	



3.42 YOWN-1705

Well Name: Champagne (CAFN-MW-03)	UTM Zone: 8	
Well Log Available: Yes	Easting (m): 419765	
Yukon Water Well Registry ID: 101160009	Northing (m): 6737855	
Well Depth (m bTOC): 9.30	Aquifer Material: Sand/ Silty sand	
Well Diameter (cm): 5	Year Monitoring Started: 2017	
<p>Well Description: This well is located south of the Village of Champagne, near Champagne Creek.</p> <p>The well is installed in an unconfined aquifer. The stratigraphy consists of glacial till overlaid by alluvium and a layer of aeolian sand.</p>		
Data Available:	Dates:	Comments:
Continuous Water Level and Temperature	Aug 2017-Present	
Continuous Conductivity	Aug 2017-Present	
Laboratory Analytical Data	7-Jun-2017	



3.43 YOWN-1706

Well Name: Yukon College #1		UTM Zone: 8
Well Log Available: Yes		Easting (m): 494719
Yukon Water Well Registry ID: TBA		Northing (m): 6735147
Well Depth (m bTOC): 54.50		Aquifer Material: Gravel
Well Diameter (cm): 15.24		Year Monitoring Started: 2017
Well Description: This well is located at the end of the College Drive, in the parking area located north of the T-Wing building.		
Data Available:	Dates:	Comments:
Continuous Water Level and Temperature	Aug 2017-Present	
Continuous Conductivity	Aug 2017-Present	
Laboratory Analytical Data	N/A	Not sampled



4. Laboratory Analytical Results

A total of 30 YOWN stations were sampled in 2017.

Below is a summary of groundwater samples exceeding the Guidelines for Canadian Drinking Water Quality (GCDWQ).

pH

Three of the analyzed samples exceeded the GCDWQ for pH:

- YOWN-1506 (Million Dollar Falls Campground): pH 9.09 (field measured);
- YOWN-1510 (Simpson Lake Campground Well-2): pH 9.05 (field measured); and
- YOWN-1514 (Kusawa Campground Well-1): pH 9.19 (field measured).

Total Dissolved Solids

Concentrations of total solids in groundwater exceeded the GCDWQ of 500 mg/L were reported in four of the analyzed samples:

- YOWN-1401 (Eagle Plains): 7180 mg/L (March 2017) and 7400 mg/L (September 2017);
- YOWN-1504 (Grizzly Valley): 1600 mg/L;
- YOWN-1506 (Million Dollar Falls Campground): 1000 mg/L; and
- YOWN-1514 (Johnson Lake Campground Well-2): 1700 mg/L.

Dissolved Metals

None of the groundwater samples collected during the 2017 YOWN sampling event exceeded the GCDWQ for dissolved metals.

Total Metals

Parameters exceeding GCDWQ for total metals concentrations were reported in groundwater samples collected at 11 YOWN stations. A summary of total metal exceedances is presented in Table 4.1 below:

Table 4.1: GCDWQ Total Metal exceedances in groundwater samples.

Parameter	Units	Guideline	YOWN Stations
Aluminum	mg/L	0.1 ^{OG}	YOWN-1401 (Eagle Plains): 0.3 mg/L; YOWN-1507 (Kotaneelee Gas Plant): 0.69 mg/L (Aug. 2017); and 0.86 mg/L (Nov. 2017); YOWN-1509 (Simpson Lake Campground Well-1): 0.51 mg/L; YOWN-1701 (Johnson Lake Campground Well-2): 0.45 mg/L; YOWN-1703 (Champagne MW-01): 0.2 mg/L; YOWN-1704 (Champagne MW-02): 0.98 mg/L; YOWN-1705 (Champagne MW-03): 2.8 mg/L
Arsenic	mg/L	0.010 ^{MAC}	YOWN-1509 (Simpson Lake Campground Well-1): 0.02 mg/L; YOWN-1512 (Watson Lake Campground Well-2): 0.017 mg/L; YOWN-1701 (Johnson Lake Campground Well-2): 0.22 mg/L
Iron	mg/L	0.30 ^{AO}	YOWN-1401 (Eagle Plains): 85.4 mg/L (March 2017); and 45 mg/L (March 2017); YOWN-1507 (Kotaneelee Gas Plant): 20 mg/L (Aug. 2017); and 54 mg/L (Nov. 2017); YOWN-1509 (Simpson Lake Campground Well-1): 12 mg/L (May 2017); and 3.2 mg/L (Aug. 2017); YOWN-1512 (Watson Lake Campground Well-2): 6.6 mg/L (May 2017); and 1.9 mg/L (Aug. 2017); YOWN-1513 (Big Creek Campground Well): 6.5 mg/L (May 2017); and 4.9 mg/L (Aug. 2017); YOWN-1612 (Morely Lake Recreational Site): 10 mg/L (Apr. 2017); and 1.4 mg/L (May 2017); YOWN-1701 (Johnson Lake Campground Well-2): 29 mg/L; YOWN-1702 (Congdon Creek Campground Well-3): 0.96 mg/L; YOWN-1704 (Champagne MW-02): 0.97 mg/L; YOWN-1705 (Champagne MW-03): 2.7 mg/L
Manganese	mg/L	0.05 ^{AO}	YOWN-1401 (Eagle Plains): 0.9 mg/L (March 2017); and 0.65 mg/L (Sept. 2017); YOWN-1507 (Kotaneelee Gas Plant): 0.42 mg/L (Aug. 2017); and 0.66 mg/L (Nov. 2017); YOWN-1509 (Simpson Lake Campground Well-1): 0.23 mg/L (May 2017); and 0.14 mg/L (Aug. 2017); YOWN-1512 (Watson Lake Campground Well-2): 0.42 mg/L (May 2017); and 0.32 mg/L (Aug. 2017); YOWN-1513 (Big Creek Campground Well): 0.065 mg/L (May 2017); YOWN-1612 (Morely Lake Recreational Site): 0.06 mg/L (Apr. 2017); YOWN-1701 (Johnson Lake Campground Well-2): 0.31 mg/L; YOWN-1703 (Champagne MW-01): 0.064 mg/L; YOWN-1704 (Champagne MW-02): 0.059 mg/L; YOWN-1705 (Champagne MW-03): 0.065 mg/L
Lead	mg/L	0.01 ^{MAC}	YOWN-1612 (Morely Lake Recreational Site): 0.043 mg/L (Apr. 2017); and 0.014 mg/L (May 2017); YOWN-1701 (Johnson Lake Campground Well-2): 0.032 mg/L
Uranium	mg/L	0.02 ^{MAC}	YOWN-1701 (Johnson Lake Campground Well-2): 0.074 mg/L
Zinc	mg/L	5 ^{AO}	YOWN-1701 (Johnson Lake Campground Well-2): 6 mg/L

AO = Aesthetic Objective

MAC = Maximum Acceptable Concentration

OG = Operational Guidance Value

Dissolved Sulphate

Parameters exceeding dissolved sulphate GCDWQ of 500 mg/L were reported in two groundwater samples collected at YOWN-1504 (Grizzly Valley): 853 mg/L; and YOWN-1701 (Johnson Lake Campground Well-2): 900 mg/L.

Isotopes

The GCDWQ value of 0.2 becquerel (Bq)/L for Lead₂₁₀ was exceeded in samples YOWN-1401 (Eagle Plains): <4 Bq/L; and YOWN-1507 (Kotaneelee Gas Plant): <4 Bq/L.

The GCDWQ value of 0.5 Bq/L for Barium₂₂₆ was exceeded in samples YOWN-1401 (Eagle Plains): <5 Bq/L; and YOWN-1507 (Kotaneelee Gas Plant): <5 Bq/L.

The GCDWQ value of 0.02 Bq/L for Uranium₂₃₅ was exceeded in samples YOWN-1401 (Eagle Plains): <1 Bq/L; and YOWN-1507 (Kotaneelee Gas Plant): <1 Bq/L.

Below is a summary of groundwater samples exceeding the standards for Yukon Contaminated Sites Regulation, Generic Numerical Water Standards for the protection of Aquatic Life (CSR-AW)

Dissolved Metals

Groundwater sample collected at YOWN-1401 (Eagle Plains) had a reported concentration of dissolved selenium of <0.02 mg/L, exceeded the CSR-AW of 0.01 mg/L.

Total Metals

There are no CSR-AW standards for concentrations of total metals in groundwater.

Dissolved Sulphate

Dissolved sulphate concentrations of 4600 mg/L and 4450 mg/L were reported in YOWN-1401 (Eagle Plains) during the March 2017 and September 2017 sampling events, exceeding the 1000 mg/L CSR-AW standard.

Nutrients

- Ammonium nitrogen concentrations of 4.12 mg/L and 4.55 mg/L were reported in YOWN-1401 (Eagle Plains) during the March 2017 and September 2017 sampling events, exceeding the 2.3 mg/L CSR-AW standard;

- Nitrate nitrogen concentration of <1 mg/L, exceeded the 0.2 mg/L CSR-AW standard (note: standard varies with chloride concentration) were reported in YOWN-1401(Eagle Plains) during the March 2017 and September 2017 sampling events.

Anions

- Fluoride concentrations of 31 mg/L were reported in YOWN-1506 (Million Dollar Falls Campground) exceeding the 2 mg/L CSR-AW standard.

5. Summary and Conclusions

A summary of the types of data collected from each monitoring well in the network as of December 31, 2017 is presented in **Table 5.1**, below.

Table 5.1: Types of data collected at each monitoring well.

Well code	Water Level	Temperature	Specific Conductance	Water Quality
YOWN-0101	✓	✓	✓	
YOWN-0801	✓	✓		
YOWN-0802	✓	✓	✓	✓
YOWN-0803	✓	✓	✓	
YOWN-0804	✓	✓		
YOWN-0805	✓	✓	✓	✓
YOWN-1101	✓	✓		✓
YOWN-1301	✓	✓	✓	✓
YOWN-1401	✓	✓	✓	✓
YOWN-1501	✓	✓		
YOWN-1502	✓	✓	✓	✓
YOWN-1503	✓	✓	✓	
YOWN-1504	✓	✓	✓	✓
YOWN-1505	✓	✓	✓	✓
YOWN-1506	✓	✓	✓	✓
YOWN-1507	✓	✓	✓	✓
YOWN-1508	✓	✓	✓	
YOWN-1509				✓
YOWN-1510	✓	✓	✓	✓
YOWN-1511	✓	✓	✓	
YOWN-1512				✓
YOWN-1513				✓
YOWN-1514	✓	✓	✓	✓
YOWN-1515	✓	✓	✓	✓
YOWN-1602	✓	✓		✓
YOWN-1603	✓	✓	✓	✓
YOWN-1604	✓	✓	✓	✓
YOWN-1605	✓	✓	✓	
YOWN-1606				
YOWN-1607	✓	✓	✓	✓
YOWN-1608	✓	✓	✓	✓
YOWN-1609	✓	✓	✓	
YOWN-1610	✓	✓	✓	✓
YOWN-1612	✓	✓	✓	✓
YOWN-1613	✓	✓	✓	✓
YOWN-1614	✓	✓	✓	✓
YOWN-1701				✓
YOWN-1702				✓
YOWN-1703	✓	✓	✓	✓
YOWN-1704	✓	✓	✓	✓
YOWN-1705	✓	✓		✓
YOWN-1706				

5.1 Water Quality

A summary of the 2017 groundwater quality exceedances is presented in **Table 5.2**, below. Complete results are presented in **Appendix A** attached to this report. Of the 30 wells sampled in 2017, 13 exceeded at least one guideline (GCDWQ) or standard (Yukon CSR_{AL}). However, it should be noted that the majority of the wells that had no exceedances were only sampled for dissolved parameters and the GCDWQ are primarily set for total constituent analysis. More consistency in sampling analytes will allow for more valuable comparison.

Yukon Contaminated Sites Regulation

Eagle Plains / YOWN-1401

- Ammonium nitrogen concentrations of 4.12 mg/L and 4.55 mg/L were reported in YOWN-1401 during the March 2017 and September 2017, respectively, exceeding the 2.3 mg/L YCSR_{AL} standard;
- Dissolved sulphate concentrations of 4600 mg/L and 4450 mg/L were reported in YOWN-1401 during the March 2017 and September 2017, respectively, exceeding the 1000 mg/L YCSR_{AL} standard;
- Dissolved selenium concentration of <0.02 mg/L, exceeded the 0.01 mg/L YCSR_{AL} standard for this constituent. However, this exceedance can be attributed to the laboratory detection limit being above the YCSR standard;
- Nitrate nitrogen concentration of <1 mg/L, exceeded the 0.2 mg/L YCSR_{AL} standard (note: standard varies with chloride concentration) for this constituent. However, this exceedance can be attributed to the laboratory detection limit being above the YCSR standard.

Million Dollar Falls Campground / YOWN-1506

- Fluoride concentrations of 31 mg/L were reported in YOWN-1506 exceeding the 2 mg/L YCSR_{AL} standard.

Guidelines for Canadian Drinking Water Quality

The analytical results indicates that none of the samples collected at the observation wells in 2017 exceeded the GCDWQ for nutrients, dissolved metals and VPHs. A summary of the observation wells that had groundwater concentrations exceeding the GCDWQ is presented in **Table 5.2**, below.

Table 5.2: Summary of GCDWQ water quality exceedances.

Well	Parameters exceeding GCDWQ Health-Based Guidelines	Parameters Exceeding GCDWQ Non-Health Guidelines (AO, OG)
YOWN-1401 (Eagle Plains)	Total Aluminum; Total Copper; Lead ₂₁₀ ; Radium ₂₂₆ ; Uranium ₂₃₅	Total Dissolved Solids; Total Iron; Total Manganese; Total Sodium
YOWN-1504 (Grizzly Valley)	Dissolved Sulphate	Total Dissolved Solids
YOWN-1506 (Million Dollar Falls Campground)		Total Dissolved Solids
YOWN-1507 (Kotaneelee Gas Plant)	Total Aluminum; Lead ₂₁₀ ; Radium ₂₂₆ ; Uranium ₂₃₅	Total Iron; Total Manganese
YOWN-1509 (Simpson Lake Campground Well-1)	Total Aluminum; Total Arsenic	Total Iron; Total Manganese
YOWN-1512 (Watson Lake Campground Well-2)	Total Arsenic	Total Iron; Total Manganese
YOWN-1513 (Big Creek Campground Well)		Total Iron; Total Manganese
YOWN-1612 (Morely Lake Recreational Site)	Total Lead	Total Iron; Total Manganese
YOWN-1701 (Johnson Lake Campground Well-2):	Total Aluminum; Total Arsenic; Total Lead; Total Uranium; Total Zinc; Dissolved Sulphate	Total Dissolved Solids; Total Iron; Total Manganese
YOWN-1703 (Champagne MW-01)	Total Aluminum;	Total Iron; Total Manganese
YOWN-1704 (Champagne MW-02)	Total Aluminum;	Total Iron; Total Manganese
YOWN-1705 (Champagne MW-03)	Total Aluminum;	Total Iron; Total Manganese

Volatile Petroleum Hydrocarbons samples were collected at observation wells where the presence of hydrocarbon contamination may be suspected.

A number of the YOWN wells were sampled for isotopic and dissolved gas analyses for a study completed by the University of Calgary and Natural Sciences and Engineering Research Council of Canada. The study aimed to develop baseline testing methods for potential environmental impacts of oil and gas development. Complete results for these parameters are presented in Appendix A.

5.2 Water Levels

Manual groundwater level measurements are reported in Appendix B. As discussed above, WRB has commenced deployment of dataloggers to monitor groundwater level at a high frequency; however, the data generated from these loggers is not reported herein. WRB is currently developing a process for managing, validating, interpreting, and reporting on these data and intends to publish them in a future report.

5. References

- Government of Yukon. (2002). Environmental Act – Contaminated Sites Regulation. (O.I.C. 2002/171). Retrieved from the Environment Yukon website:
http://www.gov.yk.ca/legislation/regs/oic2002_171.pdf
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- USGS, 2003. Rupture in South-Central Alaska – The Denali Fault Earthquake of 2002. USGS Fact Sheet 014-03.

APPENDIX A
2017 Laboratory Analytical Results

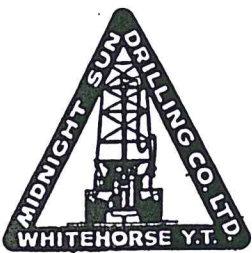
APPENDIX B
2017 Field Measurements Summary

Well ID	Well Name	Date	Depth to Groundwater (m bTOC)	Well Depth (m bTOC)	Well Casing Stickup (m)	Groundwater Temperature (C°)	Dissolved Oxygen (mg/L)	Specific Conductance (uS/cm)	pH	Oxidation-Reduction Potential (mV)	Turbidity (NTU)
YOWN-0101	Wolf Creek Well	15-Feb-17	16.2	54.7	-	-	-	-	-	-	-
YOWN-0801	Whitehorse Copper Well	15-Feb-17	6.79	28.17	0.65	-	-	-	-	-	-
YOWN-0802	Faro Well	31-Jan-17	4.94	-	1.32	-	-	-	-	-	-
YOWN-0802	Faro Well	02-Oct-17	4.294	-	-	5.1	5.75	157.8	8.44	-114.9	24.3
YOWN-0803	Dawson Well	09-Nov-17	9.57	6.12	-	PVC casing bent; not able to access the well					
YOWN-0804	Selkirk Well	17-Feb-17	6.09	55.13	0.32	-	-	-	-	-	-
YOWN-0805	Watson Lake Well	08-Feb-17	6.81	-	0.98	-	-	-	-	-	-
YOWN-0805	Watson Lake Well	29-Aug-17	6.49	-	-	7	4.48	432	7.66	-109	-
YOWN-1101	McRae Creeks Well	18-Jan-17	11.72	15.92	0.83	-	-	-	-	-	-
YOWN-1101	McRae Creeks Well	24-Oct-17	11.896	15.46	-	2.2	9.77	835	7.82	154	OR
YOWN-1301	Beaver Creek Well	21-Feb-17	14.48	17.63	0.65	-	-	-	-	-	-
YOWN-1301	Beaver Creek Well	11-Oct-17	12.514	-	0.68	2	2.82	149.9	6.93	-	7.9
YOWN-1401	Eagle Plains Well	05-Mar-17	9.906	-	-	-0.1	2.01	9280	8.43	-221.5	-
YOWN-1401	Eagle Plains Well	20-Sep-17	9.875	-	-	1.2	2.7	9102	8.95	-231	60.2
YOWN-1501	Marsh Lake Recreation Site Well	14-Feb-17	2.3	Frozen (?)	0.62	-	-	-	-	-	-
YOWN-1501	Marsh Lake Recreation Site Well	26-Oct-17	2.308	2.46	0.62	Mucky water; monitoring well casing likely silted					
YOWN-1502	Marsh Lake Campground Well	14-Feb-17	0.89 (ice)	-	0.59	-	-	-	-	-	-
YOWN-1502	Marsh Lake Campground Well	26-Oct-17	1.005	52.86	0.61	3.2	1.5	700	9	-17.9	22.8
YOWN-1503	Champagne Well (CAFN-GW-1)	21-Feb-17	10.3	17.89	0.53	-	-	-	-	-	-
YOWN-1504	Grizzly Valley Well	18-Jan-17	7.69	>100	0.59	-	-	-	-	-	-
YOWN-1504	Grizzly Valley Well	02-Nov-17	7.64	>100	0.59	1.4	3.25	2040	7.56	-33.6	2.5
YOWN-1505	Deep Creek Well	18-Jan-17	4.47	>100	0.59	-	-	-	-	-	-
YOWN-1505	Deep Creek Well	02-Nov-17	4.608	>100	0.6	1.9	2.42	872	8.18	-45.2	9.3
YOWN-1506	Million Dollar Falls Campground Well	21-Feb-17	2.39	16.83	0.74	-	-	-	-	-	-
YOWN-1506	Million Dollar Falls Campground Well	17-Oct-17	1.969	16.55	0.75	3.7	1.45	1638	9.09	99.1	31.3
YOWN-1507	Kotanelee Gas Plant Well	23-Aug-17	1.88	-	-	7.9	2.3	592	7.55	-181	-
YOWN-1508	Nahanni Range Road Campground Well	30-Aug-17	9.67	18.3	-	8.14	3.21	252	8.4	-8.8	-
YOWN-1509	Simpson Lake Campground Well-1	28-Aug-17	1.39	n.a.	n.a.	4.7	3.83	514	7.87	-165.5	5.8
YOWN-1510	Simpson Lake Campground Well-2	08-Feb-17	1.51	-	0.23	-	-	-	-	-	-
YOWN-1510	Simpson Lake Campground Well-2	29-Aug-17	1.39	-	-	5.9	4.61	137.6	9.05	-151	-
YOWN-1511	Watson Lake Campground Well-1	07-Feb-17	39.97	n.a.	n.a.	-	-	-	-	-	-
YOWN-1511	Watson Lake Campground Well-1	09-May-17	n.a.	n.a.	n.a.	3.7	4.83	586	7.89	-187	8.5
YOWN-1512	Watson Lake Campground Well-2	29-Aug-17	n.a.	n.a.	n.a.	4.5	2.87	568	7.5	-127.7	-
YOWN-1513	Big Creek Campground Well	09-May-17	5.35	8	-	2.2	9	550	7.75	-15.9	433
YOWN-1513	Big Creek Campground Well	29-Aug-17	-	-	-	4.9	9.1	476	7.37	-50	-
YOWN-1514	Kusawa Campground Well-1	20-Feb-17	3.38	20.63	0.64	-	-	-	-	-	-
YOWN-1514	Kusawa Campground Well-1	17-Oct-17	2.631	19.89	0.635	2.2	1.73	70.1	9.19	-299.6	39.5
YOWN-1515	Kusawa Campground Well-2	20-Feb-17	5.98	12.6	0.65	-	-	-	-	-	-
YOWN-1515	Kusawa Campground Well-2	17-Oct-17	4.472	12.555	-	2	1.75	30.8	8.85	-9.9	43.5
YOWN-1602	Faro Observation Well	31-Jan-17	4.55	6.38	0.66	-	-	-	-	-	-
YOWN-1602	Faro Observation Well	02-Oct-17	3.845	3.877	-	6.2	3.55	148.1	8.64	37.6	25.4
YOWN-1603	Johnson Lake Campground Well	02-Oct-17	8.497	26.1	-	2.4	5.1	757	7.51	-137.8	635
YOWN-1604	Pine Lake Campground Well	21-Feb-17	2	-	0.54	Well frozen					
YOWN-1604	Pine Lake Campground Well	18-Oct-17	2.102	>100	-	YSI battery dead					
YOWN-1605	Pine Lake Day Use Well	18-Oct-17	Artesian	-	0.47	Ice cap on top of well casing					
YOWN-1606	Snag Campground Well	21-Feb-17	DRY	6.69	0.85	Well installed in permafrost; frozen year-round; some silt/sand slush on top of ice					
YOWN-1606	Snag Campground Well	11-Oct-17	DRY	6.68	-	Well installed in permafrost; frozen year-round; some silt/sand slush on top of ice					
YOWN-1607	Lake Creek Campground Well	21-Feb-17	2.48	9.82	0.64	-	-	-	-	-	-
YOWN-1607	Lake Creek Campground Well	11-Oct-17	2.474	9.617	0.64	4.2	2.46	144	7.86	-	-64
YOWN-1608	Klondike Campground Well	08-Nov-17	0.59	3.367	0.59	1.5	6.78	1256	Sensor not working; water too turbid		
YOWN-1609	Yukon River Campground Well	16-May-17	n.a.	n.a.	n.a.	2	2.9	646	6.91	-38.2	1.8
YOWN-1610	Judas Creek Campground Well	14-Feb-17	4.82	13.31	0.91	-	-	-	-	-	-
YOWN-1610	Judas Creek Campground Well	26-Oct-17	5.039	13.204	0.944	3.1	1.28	631	7.92	-167.2	45.6
YOWN-1611	Tagish Campground Well	-	-	-	-	Artesian well; well casing welded shut					
YOWN-1612	Morely Lake Rec. Site Well	06-Apr-17	-	-	-	5.5	8.9	418	6.28	145	-
YOWN-1613	Watson Lake Campground Well-3	07-Feb-17	12.73	19.4	-	-	-	-	-	-	-
YOWN-1614	Wellgreen Well	20-Feb-17	9.71	>100	0.39	-	-	-	-	-	-
YOWN-1614	Wellgreen Well	11-Oct-17	10.442	>100	-	2.2	2.2	292.7	8.47	-	3.2
YOWN-1701	Johnson Lake Campground Well-2	03-May-17	9.43	21	-	2.3	5.68	1862	7.36	121.7	9.04
YOWN-1702	Congdon Creek Campground Well-3	25-Apr-17	8.89	13.5	-	4.3	7.3	919	7.24	-25	40
YOWN-1703	CAFN MW-01	07-Jun-17	7.495	-	-	6.7	4.75	226	7.3	79	6.9
YOWN-1704	CAFN MW-02	07-Jun-17	7.988	-	-	7	7.1	136	7.47	118	43
YOWN-1705	CAFN MW-03	07-Jun-17	7.288	-	-	12.9	10.38	-	7.5	103	-
YOWN-1706	Yukon College Well-1	-	-	-	-	-	-	-	-	-	-

*Elevations were approximated based on a handheld GPS reading and should not be held for reference.



APPENDIX C
Borehole Logs



WHITEHORSE Y.T.
PH. 633-3070
13 Mac Donald Rd.
WHITEHORSE, YUKON
Y1A 4L1

Field Report

204100382

T01-1-2

Started. February 23/01

Completed. February 23/01

NAME AND ADDRESS OF CLIENT	DESCRIPTION OF WORK	LOCATION OF WORK
Rick Janawicz Government of Canada Indian & Northern Affairs	water well	Wolf Creek, YT

FORMATION LOG			DESCRIPTION OF WORK	TIME			
FROM	TO	FORMATION		DATE	FROM	TO	HOUR
			MOVE mob / demob - Feb. 23/01	Feb. 23/01			
0'	2'	Fill					
2'	29'	coarse gravel with sand					
29'	44'	Brown T911					
44'	69'	Gray T911					
69'	108'	wet, silty, fine sand					
108'	111'	fine, silty sand, some gravel					
111'	132'	fine, silty sand with clay					
132'	139'	silty, clay T911					
139'	144'	fine, silty sand w/ gravel					
144'	160'	Basalt					

Drill Hours - 2.5
1 - casing shoe
0 - screens
= welded cap

Rc'd. of Casing & Pipe				Remarks:	Static Level 56'	Total Rig Time 2.5 hrs.
Size	Type	Size	Type			
6 3/8 x 2.50	wall			- 6 - U.S. gallons/minute	Ground Level	Total Standby hrs.
Feet	Inch	Feet	Inch		Top Of Casing	Drilling Mud

SIGNATURES

MIDNIGHT SUN.....

CLIENT.....

TITLE.....

TITLE.....



Environment
Yukon Water Well Registry
Water Resources Branch
Box 1703, Whitehorse, Yukon, Y1A 2C6

WATER WELL DRILLING REPORT

Printed on 2011 Jun 24

The data contained in this report is supplied by the Driller. The Government of Yukon disclaims responsibility for its accuracy. The information contained in this "Water Well Drilling Report" has not been verified by the Water Resources Branch. If fields are empty, then no information was provided by the driller.

WELL LOCATION

Well Name: BH 77-4

The well name is simply an informal name given to a well upon it's completion.

Address (e.g., street, lot):

Town/Village/Hamlet/Area: WHSE - Whitehorse

UTM Coordinates of Well Location: 499701 m E 6719071 m N
NAD83 Zone 8

Accuracy of Well Location: 4 +/- m

Given that the well location may not be accurate, the above accuracy value represents the approximate error that might be associated with the actual well location.

The well was drilled for the following purpose: Water exploration test hole

Date the well was completed:

The method used to drill the well:

Sketch of Well Location

This sketch has been provided by the driller and should be considered as an approximation of well location only.

LOG OF OVERBURDEN AND BEDROCK MATERIALS

The following section describes the geological materials (as recorded by the driller) that were encountered when the well was first drilled.

Depth (m)		General Colour	Most Common Material	Secondary Materials	General Description
From	To				
0	2.4		Silty sand and GRAVEL		
2.4	4		TILL, v. silty		
4	6.7		BASALT, hard (boulder?)		
6.7	11.9		TILL, sandy fine, silt		
11.9	29.6		BASALT, fine, hard		
29.6	33.5		BASALT, rusty silt in fract		

While drilling the well, was permafrost encountered? If yes, the depth interval was: from: m to m

WELL CONSTRUCTION

Monitor ID: 2041401241

The following section provides information about the well construction details.

For administrative purposes only

In what geological material (i.e. sand and gravel or bedrock) is the water producing zone of the well completed?

The outside diameter of the well casing: 152.5 cm

The casing material is made out of:

The casing wall thickness is: mm

The casing extends in a depth below ground surface of: m

Other comments that were provided by the driller regarding the casing:

Surface/Environmental Seal

A surface seal provides an impermeable seal between the casing and the ground in the upper 3 metres. This seal helps prevent surface water from leaking downward and into the well water.

Seal Material Type: Diameter of Seal: m Seal Depth from: m Seal Depth to: m

Well ID: 204110124

Gravel Pack A gravel pack is sometimes installed by the driller around the well screen. The purpose of a gravel pack could be to reduce sand production in the well water or to increase well yield.

Is there a gravel pack on the well?

Gravel pack details (as provided by the driller): _____

Well Screen Information

The outside diameter of the screen is: _____ mm

The screen is made of: _____

The type of screen is: Open Hole

There are many types of well screens on the market. Wells with no screens or wells constructed in bedrock are called "OPEN HOLE".

Screened Interval from: 4 m to: 33.5 m

Screen 1 Length: 29.5 m Slot Size 1: _____ thou. inch

Screen 2 Length: _____ m Slot Size 2: _____ thou. inch

Screen 3 Length: _____ m Slot Size 3: _____ thou. inch

Other useful comments about the screen:

Open Hole

WELL DEVELOPMENT AND STATUS

Following well construction, the well is developed or clean-out until clear groundwater is produced. Depending on the well yield and water quality, the well status is determined (i.e. the well is put into production or the well is abandoned). The following section provides information about Well Development and Status.

The well was developed by: Air surging

Once the well was constructed the following completion or "tie in" was constructed: _____

The height of the well casing above ground surface construction (i.e. Well Stick-up) is: _____ m AGS

The static water level (i.e. non pumping condition) below top of casing is: _____ m

The estimated yield or production rate of the well is: 0.75 L/s

After constructing and developing the well, the Well Status was: Not in use

If the well was abandoned, was the well properly filled (i.e. sealed) with bentonite grout? If YES, date: _____

Method used to estimate the well yield: _____

PUMPING TEST RECORD AND GROUNDWATER QUALITY

Following well construction, the well may have been assessed for quality and/or tested to determine well yield or production rate. The following section provides this information if such assessment was done.

Pumping Test Information

Pumping Test Start Date: 6/30/1977

Static Water Level (SWL): _____ m

Pump was set at a depth of: _____ m

Duration of pumping test: _____ min

Final Water Level (FWL) at end of pumping test _____ m

If the well is flowing naturally under artesian pressure, the flow rate is: _____ L/s

Recommended Pump Depth and Flow Rate

Pump depth: _____ m

Pump rate: _____ L/s

Well Water Level Drawdown Data

Drawdown	
Time (min)	Level (m)

Groundwater Quality

Electrical Conductivity: _____ uS pH: _____ Temperature: _____ C

Date Measurements Taken: _____

Was Bacteria Testing Conducted? Date Sample Taken _____ Laboratory that conducted analysis: _____

Was Chemical Analysis Conducted? Date Sample Taken _____ Laboratory that conducted analysis: _____

Groundwater Type (i.e. salty, rotten egg smell, iron staining): _____

Turbidity/sand content after development: _____

Well Disinfection: _____

Following well construction the well should be disinfected. Above briefly describes the method of disinfection.

WELL CONTRACTOR The well contractor that drilled and constructed the well.

Name of Contractor/Drilling Company: Midnight Sun Drilling Company Limited

Name of Driller(s): _____

CONSULTANT Consultants that may have been associated with the drilling/well construction.

Company Name: _____

Company Address: _____

Report Reference: _____



WATER WELL DRILLING REPORT

Environment
 Yukon Water Well Registry
 Water Resources Branch
 Box 1703, Whitehorse, Yukon, Y1A 2C6

Printed on 2016 Mar 22

The data contained in this report is supplied by the Driller. The Government of Yukon disclaims responsibility for its accuracy. The information contained in this "Water Well Drilling Report" has not been verified by the Water Resources Branch. If fields are empty, then no information was provided by the driller.

WELL LOCATION

Well Name: TH 1-97

The well name is simply an informal name given to a well upon it's completion.

Address (e.g., street, lot): Selkirk Street, Riverdale

Town/Village/Hamlet/Area: WHSE - Whitehorse

UTM Coordinates of Well Location: m E m N
 NAD83 Zone

Accuracy of Well Location: +/- m

Given that the well location may not be accurate, the above accuracy value represents the approximate error that might be associated with the actual well location.

The well was drilled for the following purpose: Water exploration test hole

Date the well was completed:

The method used to drill the well:

Sketch of Well Location

This sketch has been provided by the driller and should be considered as an approximation of well location only.

LOG OF OVERBURDEN AND BEDROCK MATERIALS

The following section describes the geological materials (as recorded by the driller) that were encountered when the well was first drilled.

Depth (m)		General Colour	Most Common Material	Secondary Materials	General Description
From	To				
0	8.5		SAND fine		
8.5	16.1		SAND some gravel		
16.1	19.8		SAND		
19.8	45.7		GRAVEL and SAND sub.		
45.7	48.8		silty SAND		
48.8	52.1		gravelly SAND		
52.1	58.5		Bedrock - Basalt		
58.5	59.1		SAND		
59.1	63.1		Bedrock - Basalt		

While drilling the well, was permafrost encountered? If yes, the depth interval was: from: m to m

WELL CONSTRUCTION

The following section provides information about the well construction details.

Monitor ID:

For administrative purposes only

In what geological material (i.e. sand and gravel or bedrock) is the water producing zone of the well completed?

The outside diameter of the well casing: cm

The casing material is made out of:

The casing wall thickness is: mm

The casing extends in a depth below ground surface of: m

Other comments that were provided by the driller regarding the casing:

Surface/Environmental Seal

A surface seal provides an impermeable seal between the casing and the ground in the upper 3 metres. This seal helps prevent surface water from leaking downward and into the well water.

Seal Material Type: Diameter of Seal: m Seal Depth from: m Seal Depth to: m

Gravel Pack A gravel pack is sometimes installed by the driller around the well screen. The purpose of a gravel pack could be to reduce sand production in the well water or to increase well yield.

Is there a gravel pack on the well?

Gravel pack details (as provided by the driller):

Well Screen Information

Screened Interval from: 49.1 m to: 51.5 m

The outside diameter of the screen is: mm

Screen 1 Length: 2.4 m Slot Size 1: 100 thou. inch

The screen is made of: Steel

Screen 2 Length: m Slot Size 2: thou. inch

The type of screen is: Wire wrapped or continuous slot

Screen 3 Length: m Slot Size 3: thou. inch

Other useful comments about the screen:

There are many types of well screens on the market. Wells with no screens or wells constructed in bedrock are called "OPEN HOLE".

100 slot SS

WELL DEVELOPMENT AND STATUS

Following well construction, the well is developed or clean-out until clear groundwater is produced. Depending on the well yield and water quality, the well status is determined (i.e. the well is put into production or the well is abandoned). The following section provides information about Well Development and Status.

The well was developed by: Air surging

Once the well was constructed the following completion or "tie in" was constructed:

The height of the well casing above ground surface construction (i.e. Well Stick-up) is: m AGS

The static water level (i.e. non pumping condition) below top of casing is: m

The estimated yield or production rate of the well is: L/s

After constructing and developing the well, the Well Status was: Not in use

If the well was abandoned, was the well properly filled (i.e. sealed) with bentonite grout? If YES, date:

Method used to estimate the well yield:

PUMPING TEST RECORD AND GROUNDWATER QUALITY

Following well construction, the well may have been assessed for quality and/or tested to determine well yield or production rate. The following section provides this information if such assessment was done.

Pumping Test Information

Recommended Pump Depth and Flow Rate

Well Water Level Drawdown Data

Pumping Test Start Date: 1997-10-31

Static Water Level (SWL): m

Pump depth: m

Pump was set at a depth of: m

Pump rate: L/s

Duration of pumping test: min

Final Water Level (FWL) at end of pumping test m

If the well is flowing naturally under artesian pressure, the flow rate is: L/s

Drawdown	
Time (min)	Level (m)

Groundwater Quality

Electrical Conductivity: uS pH: Temperature: C

Date Measurements Taken:

Was Bacteria Testing Conducted? Date Sample Taken Laboratory that conducted analysis:

Was Chemical Analysis Conducted? Date Sample Taken Laboratory that conducted analysis:

Groundwater Type (i.e. salty, rotten egg smell, iron staining):

Turbidity/sand content after development:

Well Disinfection:

Following well construction the well should be disinfected. Above briefly describes the method of disinfection.

WELL CONTRACTOR The well contractor that drilled and constructed the well.

CONSULTANT Consultants that may have been associated with the drilling/well construction.

Name of Contractor/Drilling Company: Midnight Sun Drilling Company Limited

Company Name:

Name of Driller(s):

Company Address:

Report Reference: Gartner Lee Limited



Yukon Water Well Registry
Water Resources Branch
Box 1703, Whitehorse, Yukon, Y1A 2C6

WATER WELL DRILLING REPORT

Printed on 2016 Mar 22

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WELL LOCATION

Well Name: Observation Well

The well name is simply an informal name given to a well upon it's completion.

Address (e.g., street, lot): Near Lot 6, Block 22, Watson Lake Wye

Town/Village/Hamlet/Area: WTSN - Watson Lake

UTM Coordinates of Well Location: 516856 m E 6658953 m N
NAD83 Zone 9

Accuracy of Well Location: 30-100 +/- m

Given that the well location may not be accurate, the above accuracy value represents the approximate error that might be associated with the actual well location.

The well was drilled for the following purpose: Level/head - Observation well

Date the well was completed:

The method used to drill the well:

Sketch of Well Location

This sketch has been provided by the driller and should be considered as an approximation of well location only.

LOG OF OVERBURDEN AND BEDROCK MATERIALS

No geological information was provided for this record

The following section describes the geological materials (as recorded by the driller) that were encountered when the well was first drilled.

Depth (m)		General Colour	Most Common Material	Secondary Materials	General Description
From	To				

While drilling the well, was permafrost encountered? If yes, the depth interval was: from: m to m

WELL CONSTRUCTION

The following section provides information about the well construction details.

Monitor ID: 2010200031

For administrative purposes only

In what geological material (i.e. sand and gravel or bedrock) is the water producing zone of the well completed?

The outside diameter of the well casing: 11.4 cm

The casing material is made out of:

The casing wall thickness is: mm

The casing extends in a depth below ground surface of: m

Other comments that were provided by the driller regarding the casing:

Surface/Environmental Seal

A surface seal provides an impermeable seal between the casing and the ground in the upper 3 metres. This seal helps prevent surface water from leaking downward and into the well water.

Seal Material Type: Diameter of Seal: m Seal Depth from: m Seal Depth to: m

Gravel Pack A gravel pack is sometimes installed by the driller around the well screen. The purpose of a gravel pack could be to reduce sand production in the well water or to increase well yield.

Is there a gravel pack on the well? []

Gravel pack details (as provided by the driller):

Well Screen Information

Screened Interval from: 7.300000 m to: 12.20000 m

The outside diameter of the screen is: mm

Screen 1 Length: 4.9 m Slot Size 1: thou. inch

The screen is made of:

Screen 2 Length: m Slot Size 2: thou. inch

The type of screen is:

Screen 3 Length: m Slot Size 3: thou. inch

Other useful comments about the screen:

There are many types of well screens on the market. Wells with no screens or wells constructed in bedrock are called "OPEN HOLE".

WELL DEVELOPMENT AND STATUS

Following well construction, the well is developed or clean-out until clear groundwater is produced. Depending on the well yield and water quality, the well status is determined (i.e. the well is put into production or the well is abandoned). The following section provides information about Well Development and Status.

The well was developed by:

Once the well was constructed the following completion or "tie in" was constructed:

The height of the well casing above ground surface construction (i.e. Well Stick-up) is: m AGS

The static water level (i.e. non pumping condition) below top of casing is: m

The estimated yield or production rate of the well is: L/s

After constructing and developing the well, the Well Status was: New, in use for intended purpose

If the well was abandoned, was the well properly filled (i.e. sealed) with bentonite grout? [] If YES, date:

Method used to estimate the well yield:

PUMPING TEST RECORD AND GROUNDWATER QUALITY

Following well construction, the well may have been assessed for quality and/or tested to determine well yield or production rate. The following section provides this information if such assessment was done.

Pumping Test Information

Recommended Pump Depth and Flow Rate

Well Water Level Drawdown Data

Pumping Test Start Date: 1963-01-01

Static Water Level (SWL): m

Pump depth: m

Pump was set at a depth of: m

Pump rate: L/s

Duration of pumping test: min

Final Water Level (FWL) at end of pumping test m

If the well is flowing naturally under artesian pressure, the flow rate is: L/s

Table with 2 columns: Time (min), Level (m)

G1 Groundwater Quality

Electrical Conductivity: 560 uS pH: 7.3 Temperature: 5.15 C

Date Measurements Taken: 2002-12-12

Was Bacteria Testing Conducted? [] Date Sample Taken Laboratory that conducted analysis:

Was Chemical Analysis Conducted? [] Date Sample Taken Laboratory that conducted analysis:

Groundwater Type (i.e. salty, rotten egg smell, iron staining):

Turbidity/sand content after development:

Well Disinfection:

Following well construction the well should be disinfected. Above briefly describes the method of disinfection.

WELL CONTRACTOR

The well contractor that drilled and constructed the well.

CONSULTANT

Consultants that may have been associated with the drilling/well construction.

Name of Contractor/Drilling Company: Other

Company Name:

Name of Driller(s):

Company Address:

Report Reference:



Yukon Water Well Registry
Water Resources Branch
Box 1703, Whitehorse, Yukon, Y1A 2C6

WATER WELL DRILLING REPORT

Printed on 2011 Jun 24

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WELL LOCATION

Well Name: BH 77-4

The well name is simply an informal name given to a well upon its completion.

Address (e.g., street, lot):

Town/Village/Hamlet/Area: WHSE - Whitehorse

UTM Coordinates of Well Location: 499701 m E 6719071 m N
NAD83 Zone 8

Accuracy of Well Location: 30-100 +/- m

Given that the well location may not be accurate, the above accuracy value represents the approximate error that might be associated with the actual well location.

The well was drilled for the following purpose: Water exploration test hole

Date the well was completed:

The method used to drill the well:

Sketch of Well Location

This sketch has been provided by the driller and should be considered as an approximation of well location only.

LOG OF OVERBURDEN AND BEDROCK MATERIALS

The following section describes the geological materials (as recorded by the driller) that were encountered when the well was first drilled.

Depth (m)		General Colour	Most Common Material	Secondary Materials	General Description
From	To				
0	2.4		Silty sand and GRAVEL		
2.4	4		TILL, v. silty		
4	6.7		BASALT, hard (boulder?)		
6.7	11.9		TILL, sandy fine, silt		
11.9	29.6		BASALT, fine, hard		
29.6	33.5		BASALT, rusty silt in fract		

While drilling the well, was permafrost encountered? If yes, the depth interval was: from: m to m

WELL CONSTRUCTION

The following section provides information about the well construction details.

Monitor ID: 2041401241

For administrative purposes only

In what geological material (i.e. sand and gravel or bedrock) is the water producing zone of the well completed?

The outside diameter of the well casing: 15.25 cm

The casing material is made out of:

The casing wall thickness is: mm

The casing extends in a depth below ground surface of: m

Other comments that were provided by the driller regarding the casing:

Surface/Environmental Seal A surface seal provides an impermeable seal between the casing and the ground in the upper 3 metres. This seal helps prevent surface water from leaking downward and into the well water.

Seal Material Type: Diameter of Seal: m Seal Depth from: m Seal Depth to: m

Gravel Pack A gravel pack is sometimes installed by the driller around the well screen. The purpose of a gravel pack could be to reduce sand production in the well water or to increase well yield.

Is there a gravel pack on the well?

Gravel pack details (as provided by the driller):

Well Screen Information

Screened Interval from: 4 m to: 33.5 m

The outside diameter of the screen is: mm

Screen 1 Length: 29.5 m Slot Size 1: thou. inch

The screen is made of:

Screen 2 Length: m Slot Size 2: thou. inch

The type of screen is: Open Hole

Screen 3 Length: m Slot Size 3: thou. inch

Other useful comments about the screen:

There are many types of well screens on the market. Wells with no screens or wells constructed in bedrock are called "OPEN HOLE".

Open Hole

WELL DEVELOPMENT AND STATUS

Following well construction, the well is developed or clean-out until clear groundwater is produced. Depending on the well yield and water quality, the well status is determined (i.e. the well is put into production or the well is abandoned). The following section provides information about Well Development and Status.

The well was developed by: Air surging

Once the well was constructed the following completion or "tie in" was constructed:

The height of the well casing above ground surface construction (i.e. Well Stick-up) is: m AGS

The static water level (i.e. non pumping condition) below top of casing is: m

The estimated yield or production rate of the well is: 0.75 L/s

After constructing and developing the well, the Well Status was: Not in use

If the well was abandoned, was the well properly filled (i.e. sealed) with bentonite grout? If YES, date:

Method used to estimate the well yield:

PUMPING TEST RECORD AND GROUNDWATER QUALITY

Following well construction, the well may have been assessed for quality and/or tested to determine well yield or production rate. The following section provides this information if such assessment was done.

Pumping Test Information

Recommended Pump Depth and Flow Rate

Well Water Level Drawdown Data

Pumping Test Start Date: 6/30/1977

Static Water Level (SWL): m

Pump depth: m

Pump was set at a depth of: m

Pump rate: L/s

Duration of pumping test: min

Final Water Level (FWL) at end of pumping test: m

If the well is flowing naturally under artesian pressure, the flow rate is: L/s

Table with 2 columns: Time (min), Level (m). Header: Drawdown.

Groundwater Quality

Electrical Conductivity: uS pH: Temperature: C

Date Measurements Taken:

Was Bacteria Testing Conducted? Date Sample Taken Laboratory that conducted analysis:

Was Chemical Analysis Conducted? Date Sample Taken Laboratory that conducted analysis:

Groundwater Type (i.e. salty, rotten egg smell, iron staining):

Turbidity/sand content after development:

Well Disinfection:

Following well construction the well should be disinfected. Above briefly describes the method of disinfection.

WELL CONTRACTOR

The well contractor that drilled and constructed the well.

CONSULTANT

Consultants that may have been associated with the drilling/well construction.

Name of Contractor/Drilling Company: Midnight Sun Drilling Company Limited

Company Name:

Name of Driller(s):

Company Address:

Report Reference:

80903000

815120011 (see 815120014)

116I03



Ministry of Environment
 Well Construction Report
 Well Closure Report
 Well Alteration Report

Ministry Well ID Plate Number
 Ministry Well Tag Number
 Confirmation/Alternative specs. attached
 Original well construction report attached

Red lettering indicates minimum mandatory information. See reverse for notes & definitions of abbreviations.

Owner name: NORTH VAN CRESS
 Mailing address: _____ Town: _____ Prov: _____ Postal Code: _____
 Well Location (see note 2): Address: Street no. _____ Street name _____ Town: _____
 Legal description: Lot _____ Plan _____ D.L. _____ Block _____ Sec. _____ Twp. _____ Rg. _____ Land District _____
 PID: _____ Description of well location (attach sketch, if nec.): _____
 NAD 83 Zone: 08 UTM Easting: 398628 m Latitude (see note 4): _____
 (see note 3) UTM Northing: 7335446 m Longitude: _____
 Method of drilling: rotary dual rotary cable tool mud rotary auger driving jetting other (specify): _____
 Orientation of well: vertical horizontal 2009 ft (asl) Method (see note 5): _____
 Class of well (see note 6): Water Sample Sub-class of well: Non Domestic
 Water supply wells: indicate intended water use: private domestic water supply system irrigation commercial or industrial other (specify) Comp

Lithologic description (see notes 8-13) or closure description (see notes 14 and 15)

From ft (bgl)	To ft (bgl)	Surficial Material										Bedrock Material						Colour					Hardness			Water Content		Observations (e.g. other geological materials (e.g. boulders), est. water bearing flow (USgpm), or closure details)							
		Clay	Silt	Fill	Sand with clay/silt	Sand, fine-med	Sand, med-coarse	Sand with gravel	Siltstone/shale	Sandstone	Conglomerate	Limestone	Basalt	Volcanic	Crystalline	Other Surficial Bedrock	Red	Orange	Brown	Light Grey	Blue	Green	Dark Grey	Very Hard	Hard	Dense/Shell	Loose		Dry	Moist	Wcl	High Production	Low Circulation	Not Available	
0	3																																		
3	5																																		
5	13																																		
13	16.5																																		

165 ft

Casing details				Screen details						
From ft (bgl)	To ft (bgl)	Dia in	Casing Material/Open Hole (see note 17)	Wall Thickness in	Drive Shoe	From ft (bgl)	To ft (bgl)	Dia in	Type (see note 18)	Slot Size
0	85.6	6	Steel	.250	Ry	0	85.6	6	Slot	1.375 - 90 - 20



Surface seal: Type: Non-vented Depth: 1.65 ft
 Method of installation: Poured Pumped Thickness: 1.65 in
 Backfill: Type: _____ Depth: _____ ft
 Liner: PVC Other (specify): _____
 Diameter: _____ in Thickness: _____ in
 From: _____ ft (bgl) To: _____ ft (bgl) Perforated: From: _____ ft (bgl) To: _____ ft (bgl)
 Intake: Screen Open bottom Uncased hole
 Screen type: Telescope Pipe size
 Screen material: Stainless steel Plastic Other (specify): _____
 Screen opening: Continuous slot Slotted Perforated pipe
 Screen bottom: Ball Plug Plate Other (specify): _____
 Filter pack: From: _____ ft To: _____ ft Thickness: _____ in
 Type and size of material: _____

Spare Pump.

Developed by:
 Air lifting Surging Jetting Pumping Bailing
 Other (specify): _____ Total duration: 5 hrs
 Notes: _____
 Well yield estimated by:
 Pumping Air lifting Bailing Other (specify): _____
 Rate: 38 USgpm Duration: _____ hrs
 SWL before test: _____ ft (bloc) Pumping water level: _____ ft (bloc)

Final well completion data:
 Total depth drilled: 160 ft Finished well depth: 160 ft (bgl)
 Final stick up: 20 in Depth to bedrock: 13 ft (bgl)
 SWL: 165.6 ft (bloc) Estimated well yield: 43 USgpm
 Artesian flow: _____ USgpm, or Artesian pressure: _____ ft
 Type of well cap: Plate Well disinfected: Yes No
 Where well ID plate is attached: T.C.C.

Obvious water quality characteristics:
 Fresh Salty Clear Cloudy Sediment Gas
 Colour/odour: _____ Water sample collected:
 Well driller (print clearly): _____
 Name (first, last) (see note 19): Paul Mackenzie
 Registration no. (see note 20): 0421501
 Consultant (if applicable, name and company): _____

Well closure information:
 Reason for closure: _____
 Method of closure: Poured Pumped
 Sealant material: _____ Backfill material: _____
 Details of closure (see note 16): _____

DECLARATION: Well construction, well alteration or well closure, as the case may be, has been done in accordance with the requirements in the Water Act and the Ground Water Protection Regulation.
 Signature of Driller Responsible: _____
 Date of work (YYYY/MM/DD): _____
 Started: 11/10/23 Completed: 11/10/23
 Comments: _____

General

1. Requirements for well construction and well closure reports are found in Part 5 of the *Water Act* and the Ground Water Protection Regulation. Part 5 of the act and regulation are available at: http://www.env.gov.bc.ca/wsd/plan_protect_sustain/groundwater/index.html#leg
2. A minimum of one of the well location descriptors must be completed (e.g. Address OR Legal OR PID) plus the description of the well location.
3. The current Ministry standard datum for mapping and geodetic use is the North American Datum of 1983 (NAD 83). To determine GPS coordinates using a Global Positioning System (GPS), set the datum to NAD 83.
4. For latitude and longitude coordinates, provide coordinates either in degree, minutes and seconds (e.g., 50° 2' 21.037") or decimal degrees (e.g., 50.039175°).
5. For the method of determining ground elevation, enter: GPS, differential GPS, level, altimeter, 1:50,000 map, 1:20,000 map, 1:10,000 map or 1:5,000 map.
6. The classes and sub-classes of wells are shown below:

Class	Sub-class (if applicable)
Water supply	Domestic; Non-domestic
Monitoring.....	Temporary; Permanent
Recharge or injection	
Dewatering or drainage.....	Temporary; Permanent
Remediation	Temporary; Permanent
Geotechnical	Borehole; Test pit;
	Special type of hole;
	Closed loop geothermal
7. Well reports submitted to the Deputy Comptroller, or retained by the person responsible, as required under the *Water Act* and the Ground Water Protection Regulation, shall be considered part of the Provincial Government records and is subject to the *Freedom of Information and Protection of Privacy Act*.

How to Fill Out the Lithologic Description Table

8. Each row in the lithologic description table represents either a depth interval or depth in the well.
9. A row could represent a depth interval (e.g., from 0 feet to 12 feet), such as for a geologic stratum or a specific depth (e.g., 120 feet), such as for a depth location of a water-bearing fracture.
10. For each depth interval, indicate with a check mark (✓) or X the hardness, colour, and type of surficial material or bedrock material. Only make one selection for each class.

The classification system for surficial material, bedrock material, colour and hardness has been adopted with permission from *The Guide for Using the Hydrogeologic Classification System for Logging Water Well Boreholes* (Thomas M. Hanna, RPG, 2006).
11. "Crystalline" bedrock material includes granitic rocks, such as granodiorite, or metamorphic rocks, such as gneiss or schist.
12. For a depth interval, if the type of surficial material or bedrock material is not listed in the table indicate with a check mark (✓) or X and specify the geologic material encountered in the Observation field.
13. If a water-bearing fracture is encountered, the depth of the fracture the estimated flow of water in the fracture should be recorded in the Observations column.

How to Fill Out the Closure Description Table and the Well Closure Information Section

14. Each row in the closure description table represents either a depth interval (e.g., from 0 feet to 12 feet) or depth (e.g., 120 feet) in the well
15. For a depth interval, enter the type of backfill or sealant material(s) in the Observations column.
16. Indicate in "Details of closure" whether casing(s) or screen(s) were pulled or left in place. If casing(s) were left in place, indicate whether it was perforated or ripped.

Casing Details

17. "Casing Material / Open hole" includes cement, plastic, steel other, open hole, or casing pulled

If a surface seal is required, details of the casing used to create the annular space for the surface seal can be entered in the first row of the table. Enter the depth interval, casing diameter, and record "casing pulled" under "Casing Material / Open hole".

Screen Details

18. "Type" includes riser pipe, K-packer, screen, screen blank, or tail pipe.

Well Driller

19. Fill in the name of the driller who constructed the well.

Registration Number of Driller Responsible

20. Fill in the registration number on the Qualified Well Driller identification card. If the work was completed by a driller who is not registered as a Qualified Well Driller, the Qualified Well Driller who is directly supervising the work should fill in their registration number on their Qualified Well Driller identification card. The Qualified Well Driller signs the form.

Definitions of Abbreviations

- asl.....above sea level
- bgl.....below ground level
- btoc.....below top of casing
- Dia.....Diameter
- D.L.....District Lot
- ft.....feet
- hrs.....hours
- in.....inches
- NAD 83.....North American Datum (1983)
- PID.....Parcel Identifier
- Rg.....Range
- Sec.....Section
- SWL.....static water level
- Twp.....Township
- USgpm.....US gallons per minute
- UTM.....Universal Transverse Mercator Grid

Return Completed Forms to:
 Ground Water Data Technician
 Water Stewardship Division, Ministry of Environment
 PO Box 9362 SIn Prov Govt
 Victoria BC V8W 9M2



P.O. Box 4391

FIELD REPORT

YWWR
204090019

Started. Feb. 26... 1982

Completed. MARCH 2... 1982

NAME AND ADDRESS OF CLIENT	DESCRIPTION OF WORK	LOCATION OF WORK
PARKS AND HISTORIC BUSINESS BANK	water well	Marsh Lake Camp Ground.

FORMATION LOG			DESCRIPTION OF WORK	TIME			
FROM	TO	FORMATION		DATE	FROM	TO	HOURS
			MOVE				
			Traveling	Feb 26	10:00	11:00	1
			moving or setting up	..	11:00	12:00	1
0'	6'	sand Gr silt		..	12:00	6:00	6
6'	14'	Till					
14'	16'	rock					
16'	18'	till					
			bent casing moved back 4'				
0'	7'	sand Gr. silt		Feb 27	8:00	5:00	9
7'	8'	rock					
8'	78'	till clay silt 6" to 8" rock					
78'	97'	clay cobbles					
97'	150'	clay cobbles		Feb 28	8:00	6:00	10
150'	179'	clay cobbles		Feb 29	8:00	7:00	11
179'	204'	silty fine sand.					
204'	220'	clay some Gr.					

Rcd. of Casing & Pipe
Size Type Size Type

Remarks:

Feet Inch Feet Inch

lost 16' casing in first hole.
bits - 2.
shoes - 2.

STATIC LEVEL

Total Rig Time hrs.

Ground level

Total Standby hrs.

Top of casing

Drilling Mud sacks

SIGNATURES

MIDNIGHT SUN.....

CLIENT.....

TITLE.....

TITLE.....



P.O. Box 4391

FIELD REPORT

Started... Feb... 26. 19. 80

Completed..... 19....

NAME AND ADDRESS OF CLIENT	DESCRIPTION OF WORK	LOCATION OF WORK
		marsh Lake Camp Ground

FORMATION LOG			DESCRIPTION OF WORK	TIME			
FROM	TO	FORMATION		DATE	FROM	TO	HOURS
			MOVE				
220	223	clay some Gr.		Mar 1	8:30	2:30	9
223	258	silt					
258	279	silt	water more off to shops	Mar 2	7:30	3:30	8
				"	8:30	4:30	1

Rcrd. of Casing & Pipe			
Size	Type	Size	Type
Feet	Inch	Feet	Inch
279			

Remarks:	
STATIC LEVEL	Total Rig Time hrs.
Ground level	Total Standby hrs.
Top of casing	Drilling Mud sacks

SIGNATURES

MIDNIGHT SUN.....
TITLE.....

CLIENT.....
TITLE.....

FIELD REPORT



PH. 667-6144

P.O. Box 4391

Started June 2 1981

Completed.....19.....

NAME AND ADDRESS OF CLIENT	DESCRIPTION OF WORK	LOCATION OF WORK
	W/W	Marsh Lake Camp Ground

FORMATION LOG			DESCRIPTION OF WORK	TIME			
FROM	TO	FORMATION		DATE	FROM	TO	HOURS
			MOVE				
			Loading	June 2	10:00	2:30	4.5
			Traveling	"	3:30	4:30	1
			Moving on setting up	"	4:30	7:30	(3)
			Tripping in to bottom	"	7:30	8:30	(1)
299'	299'	silt clay					
299'	299'	Till					
294'	300'	silt sand some clay					
300'	309'	silt sand some clay		June 3	7:00	2:30	7.5
309'	318'	silty fine sand					
318'	319'	Till					
319'	325'	sand some clay					
325'	336'	fine to coarse sand					
336'	340'	Clay Gr.					
			setting screen	"	2:30	6:30	4.0
			Developing	"	6:30	8:30	2
			Moving off	"	8:30	9:30	1
			Traveling to shop	"	9:30	10:30	1

Rcd. of Casing & Pipe
Size Type Size Type

Remarks:

Feet	Inch	Feet	Inch	Remarks
334'				Bottom of screen 334'
				2' riser lead packer
				5 7/8 bit pipe
				15 slot
				Developed at 10 G.P.M.

STATIC LEVEL	Total Rig Time	25 hrs.
Ground level	Total Standby	hrs.
Top of casing 135 rising	Drilling Mud	sacks

SIGNATURES

MIDNIGHT SUN.....
TITLE.....

CLIENT.....
TITLE.....

105 D 14



Government
Department of Environment
Water Resources Section V-310
Yukon Water Well Registry
Box 2703 Whitehorse, Yukon Y1A 2C6

Well ID: **204140384**
To be assigned by Dept. Of Environment

INSTRUCTIONS FOR COMPLETING THE FORM

- 1. Additional information is provided at the bottom of this form on page 2.
- 2. Question can be directed to Water Resources at 867 667-3171.
- 3. All well construction measurements shall be reported to 0.1 m or 0.3 ft.
- 4. Please print clearly in blue or black ink.
- 5. Completion and submission of this form is the responsibility of the drilling contractor.
- 6. Please specify metric or imperial units for all measurements.

WELL LOCATION AND OWNER'S INFORMATION

A1 Well Name: Grizzly Valley Optional (i.e. City Well No. 2)

A2 Drilled For: [Redacted] Company / Department / Organization: YIG

A3 Street Address of Well Location: GRIZZLY VALLEY

A4 Town / Village / Area / Lot #: _____

A5 UTM Coordinates (using handheld GPS): NAD 8 | 3 Zone N

0487803 Easting 6768194 Northing

A6 Elevation of Top of Casing: 741 m ft ASL

A7 Accuracy of GPS: 10 m ft

A8 Purpose of Wells

- Domestic Test Well Irrigation Environmental (Quality)
- Commercial Municipal Observation - Water Level Other (please identify use)
- Industrial Agricultural Public/Recreational

Sketch of Well Location
In sketch, indicate distances from property line, septic field, fuel tank(s) and building. Please include North arrow.

LOG OF OVERBURDEN AND BEDROCK MATERIALS (All depths are below ground surface, circle appropriate units, use descriptors provided)

EXAMPLE ONLY		(brown, grey, green, black, redish, beige, olive, yellowish)	CLAY, SILT, SAND, GRAVEL, COBBLES, BOULDERS, BEDROCK	trace* <10% (i.e. SILT trace gravel) "some" 10-20% (i.e. SAND some gravel) "silty / sandy / gravelly" 20-30% (i.e. silty SAND) "and sand" or "and gravel" 35-50%	MOISTURE: dry / moist / saturated (wet) HARDNESS: soft / hard / very hard
Depth (m) (ft)		brown	SAND	trace gravel some silt	soft and saturated
B2 From	B3 To	B4 General Colour	B5 Most Common Material	B6 Secondary Materials	B7 General Description
0	16	BRN	TILL		MED. SOFT
16	30	GRY	TILL		MED.
30	41	GRY	BRKN. ROCK		MED.
41	333	GY / WHT	BEDROCK		MED. HARD.

B8 Permafrost Encountered: NO YES If yes, Indicated depth (m / ft): from: _____ to: _____

WELL CONSTRUCTION (Continues on Page 2)

Date Well Completed 2012 08 31
Y Y Y Y M M D D

Example: 2005 01 31

C1 Drilling Method Air Rotary (Conventional) Dug Other (please specify)
 Reverse Air Rotary Cable Tool
 Mud Rotary Auger (Hollow / Solid Stem)

C2 Well Type: In what geological material is the water producing zone located?
 OVERBURDEN BEDROCK

Casing (depth below ground surface, please circle appropriate units)

C3 Outside Diameter 2.625 (cm) (in)
C4 Casing Material Steel Plastic Other _____
C5 Casing Wall Thickness 2.50 (cm/in)
C6 Casing Depth to: 41 (m) (ft)

C7 Other Comments Regarding Casing:

Clear Form Print Form

Surface / Environmental Seal (depth below ground surface, please circle appropriate units)

C8 Seal Material Type: 310 BENT (i.e. Bentonite)
 C9 Diameter of Seal: 4 (cm / in)
 C10 Seal Depth from: 0 (m / ft)
 C11 Seal Depth to: 20 (m / ft)
 C12 Volume Placed: _____ (m³ / ft³)

Gravel Pack (depth below ground surface, please circle appropriate units)

C13 Gravel Pack: NO If yes, Indicated depth (m / ft): _____
 YES From: _____ to: _____ Indicate diameter of material: _____ (mm / inches) Material type: _____ (i.e. silica)

Well Screen Information (depth below ground surface, please circle appropriate units)

C14 Outside Diameter (cm / in): 4.94
 C15 Screen Material: Stainless Steel Steel Plastic N/A Other _____
 C16 Screen Type: Continuous Wire Wrap Louver Screen Perforated Slotted Open Hole
 C17 Depth from: _____ (m / ft) C18 Depth to: 33.5 (m / ft) Slot Size / Perforation Dia: 0.20 Thou. / mm / inches
 Screen 1: _____ (m / ft) _____ (m / ft) _____ Thou. / mm / inches
 Screen 2: _____ (m / ft) _____ (m / ft) _____ Thou. / mm / inches
 Screen 3: _____ (m / ft) _____ (m / ft) _____ Thou. / mm / inches
 C19 Screen Comments: 6" THREADED CAP BOTTOM

WELL DEVELOPMENT AND STATUS

D1 Well Developed by: Surge Block Water Jetting Air Jetting / Air Lifting Bailing Pumping 4BR Other: _____
 D2 Well Head Completion: Well House Pitless Adaptor Depth of adaptor: _____ (m / ft) Well Pit (NOT PERMITTED) None (well not completed) WELDED HINGE PLATE
 D3 Well Head Stick-up (above ground surface): 2 (m / ft) (Use negative if below grade)
 D4 Static Water Level (below top of casing): 24 (m / ft) (Use negative if below grade)
 D5 Well Yield Estimate: 20 (Lps / gpm)
 D6 Well Status: Water Supply (in use) Stand by (Back-up) Observation Not in use Deepened Other: _____
 Abandoned Dry Poor Quality Insufficient Yield Artesian conditions
 D7 Well Abandonment Status: Was the well properly decommissioned with bentonite grout? YES NO If YES, Indicate Date: _____
 D8 Method Used to Estimate Well Yield: Air Lifting Bailing Pumping Test (If test conducted, complete Pumping Test Record)

PUMPING TEST RECORD AND GROUNDWATER QUALITY

(All depths below ground, circle appropriate units)

E1 Pumping Test Information

Pumping Test Start Date: 2012 09 04
 Y Y Y Y M M D D

Static Water Level (SWL): 24 (m / ft)

Pump Intake Set at: 294 (m / ft)

Duration of pumping: 48 hrs 240 min STEP TEST

Final Water Level (FWL) at end of Pumping Test: 54.30 (m / ft)

G1 GROUNDWATER QUALITY

Field Data
 Date Measurements Taken: 2012/09/10
 Y Y Y Y M M D D

Electrical Conductivity: 1803 uS
 pH: 7.80
 Temperature: 30.0 °C

Groundwater Type

- Salty
- Sulphur / Egg Odour
- Organic Taste / Odour
- Metallic Taste
- Other: _____

RECOMMENDATIONS

Recomm. Pump Depth: _____ (m / ft)
 Recomm. Pumping Rate: _____ (Lps / gpm)
 If flowing, provide rate: _____ (Lps / gpm)

Turbidity/Sand Content

- Clear
- Slightly turbid/cloudy
- Moderately turbid/cloudy
- Turbid/cloudy
- Trace sand present
- No sand present

Well Disinfection

Was the well disinfected upon completion of the pump installation? YES NO

Briefly describe method of well disinfection.

F1 Well Water Level Drawdown/Recovery DATA

Time (min)	Drawdown		Time (min)	Recovery	
	Time (min)	Water Level (m / ft)		Time (min)	Water Level (m / ft)
0 (SWL)	10.80	0 (FWL)	54.30		
1	17.23	1			
2	20.28	2			
3	22.41	3			
4	23.72	4			
5	24.79	5			
10	27.15	10			
15	28.40	15			
20	29.23	20			
25	29.67	25			
30	29.89	30			
40	30.18	40			
50	30.27	50			
60	30.48	60			

Bacteria Testing

Was a sample taken? YES NO If yes, indicate the name of the laboratory.

Date Sample Taken: 2012/09/06 Env. Health
 Y Y Y Y M M D D

Chemical Analysis of Water

Was a sample taken? YES NO If yes, indicate the name of the laboratory.

Date Sample Taken: 2012/09/06 EXOVA
 Y Y Y Y M M D D

Clear Form

Print Form

WELL CONTRACTOR

H1 Name of Contractor / Drilling Company: Suber Drilling
 H2 Name of Driller(s): Rob Strick
 H3 Address of Driller: 2404 BRACE ST YERKES
 Signature of Primary Driller: _____
 Date Submitted to Dept. Of Environment: _____

CONSULTANT (If applicable)

I1 Company Name: EPAS ENGINEERING
 I2 Company Address: _____
 I3 Report Reference: _____
 I4 Report Date: _____

ADDITIONAL INSTRUCTIONS

Upon completing this form, please mail or fax it to:

Water Resources Section (V-310),
 Department of Environment,
 Government of Yukon Box 2703,
 Whitehorse, Yukon, Canada Y1A 2C6

Please feel free to contact us at:
 Phone: (867) 667-3171, Toll free (in Yukon): (1-800) 661-0408, local 3171)
 Fax: (867) 667-3195 E-mail: Water.Resources@gov.yk.ca

Personal information contained on this form is collected under the authority of the Access to Information and Protection of Privacy (ATIP) Act, Section 29 (c) and will be used to compile a public database of well and ground water information. For further information contact the Manager of Hydrology, Water Resources at (867) 667-3223, toll free within Yukon 1-800-661-0408 Ext 3223.

I have read the above clause and understand the purpose for collection of personal information.

Signature of Well Owner

Well ID: 20414 0308
To be assigned by Dept. Of Environment

WATER WELL DRILLERS FORM

Metric Imperial

INSTRUCTIONS FOR COMPLETING THE FORM

- Additional information is provided at the bottom of this form on page 2.
- Question can be directed to Water Resources at 867 667-3171.
- All well construction measurements shall be reported to 0.1 m or 0.3 ft.
- Please print clearly in blue or black ink.
- Completion and submission of this form is the responsibility of the drilling contractor.
- Please specify metric or imperial units for all measurements.

105014

WELL LOCATION AND OWNER'S INFORMATION

A1 Well Name: Deep Creek Optional (i.e. City Well No. 2)

A2 Drilled For: First Name TOM Last Name RENWICK Company / Department / Organization YTG

A3 Street Address of Well Location: Deep Creek

Sketch of Well Location
In sketch, indicate distances from property line, septic field, fuel tank(s) and building. Please include North arrow.

A4 Town / Village / Area / Lot #: _____

A5 UTM Coordinates (using handheld GPS): NAD 8 | 3 Zone 8N

0488393 Easting 6770798 Northing

A6 Elevation of Top of Casing: 066 m ASL

A7 Accuracy of GPS: 10 +/- m/ft

A8 Purpose of Wells

- Domestic Test Well Irrigation Environmental (Quality)
 Commercial Municipal Observation - Water Level Other (please identify use)
 Industrial Agricultural Public/Recreational

LOG OF OVERBURDEN AND BEDROCK MATERIALS (All depths are below ground surface, circle appropriate units, use descriptors provided)

Depth (m/ft)	B2 From	B3 To	B4 General Colour <small>(brown, grey, green, black, red, beige, olive, yellowish)</small>	B5 Most Common Material <small>CLAY, SILT, SAND, GRAVEL, COBBLES, BOULDERS, BEDROCK</small>	B6 Secondary Materials <small>trace <10% (i.e. SILT trace gravel) "some" 10-20% (i.e. SAND some gravel) "silty / sandy / gravelly" 20-30% (i.e. silty SAND) "and sand" or "and gravel" 35-50%</small>		B7 General Description <small>MOISTURE: dry / moist / saturated (wet) HARDNESS: soft / hard / very hard</small>
					trace gravel	some silt	
0	17		GRN/BLK	FRACTURED			HARD / DRY
17	180		WHY/BLK	BEDROCK			HARD / SATURATED
180	255		BLK	BEDROCK			
255	333		GREY	BEDROCK			

B8 Permafrost Encountered: NO YES If yes, indicated depth (m/ft): from: _____ to: _____

WELL CONSTRUCTION (Continues on Page 2)

Date Well Completed: 2012 08 26
Y Y Y Y M M D D

Example: 2005 01 31

C1 Drilling Method: Air Rotary (Conventional) Dug Other (please specify)
 Reverse Air Rotary Cable Tool
 Mud Rotary Auger (Hollow / Solid Stem)

C2 Well Type: In what geological material is the water producing zone located?
 OVERBURDEN BEDROCK

Casing (depth below ground surface, please circle appropriate units)
 C3 Outside Diameter: 6.25 (cm) (in)
 C4 Casing Material: Steel Plastic Other _____
 C5 Casing Wall Thickness: 2.50 (cm) (in)
 C6 Casing Depth to: 33 (m) (ft)

C7 Other Comments Regarding Casing: _____

Surface / Environmental Seal (depth below ground surface, please circle appropriate units)

C8 Seal Material Type: BENTONITE (i.e. Bentonite)
 C9 Diameter of Seal: 4 (cm / in)
 C10 Seal Depth from: 0 (m / ft)
 C11 Seal Depth to: 20 (m / ft)
 C12 Volume Placed: _____ (m³ / ft³)

Gravel Pack (depth below ground surface, please circle appropriate units)

C13 Gravel Pack: NO YES
 If yes, indicated depth (m / ft): from: _____ to: _____
 Indicate diameter of material: _____ (mm / inches)
 Material type: _____ (i.e. silica)

Well Screen Information (depth below ground surface, please circle appropriate units)

C14 Outside Diameter: 4.94 (cm / in)
 C15 Screen Material: Plastic
 C16 Screen Type: Perforated
 C17 Depth from: 133 (m / ft)
 C18 Depth to: 32.29 (m / ft)
 Slot Size / Perforation Dia: 1.00 Thou. / mm / inches
 Screen 1: _____ (m / ft) _____ (m / ft) _____ Thou. / mm / inches
 Screen 2: _____ (m / ft) _____ (m / ft) _____ Thou. / mm / inches
 Screen 3: _____ (m / ft) _____ (m / ft) _____ Thou. / mm / inches
 C19 Screen Comments: 6" THREADED CAP BOTTOM

WELL DEVELOPMENT AND STATUS

D1 Well Developed by: Surge Block Water Jetting Air Jetting / Air Lifting Bailing Pumping 48HR
 D2 Well Head Completion: Well House Pitless Adaptor Well Pit (NOT PERMITTED) None (well not completed)
 D3 Well Head Stick-up: 2 (m / ft)
 D4 Static Water Level: 12 (m / ft)
 D5 Well Yield Estimate: 20 (L / gpm)
 D6 Final Well Status: Water Supply (in use) Not in use Abandoned Dry Stand by (Back-up) Deepened Poor Quality Observation Other: _____
 D7 Well Abandonment Status: Was the well properly decommissioned with bentonite grout? YES NO
 D8 Method Used to Estimate Well Yield: Air Lifting Bailing Pumping Test (If test conducted, complete Pumping Test Record)
 Y Y Y Y M M D D

PUMPING TEST RECORD AND GROUNDWATER QUALITY

(All depths below ground, circle appropriate units)

E1 Pumping Test Information

Pumping Test Start Date: 20120104
 Y Y Y Y M M D D

Static Water Level (SWL): 12 (m / ft)

Pump Intake Set at: 294 (m / ft)

Duration of pumping: 48 hrs 240 min STEP TEST

Final Water Level (FWL) at end of Pumping Test: 32.29 (m / ft)

G1 GROUNDWATER QUALITY

Field Data
 Date Measurements Taken: 2012/09/10
 Y Y Y Y M M D D

Electrical Conductivity: 1078 uS
 pH: 8.27
 Temperature: 5.6 °C

Groundwater Type

- Salty
- Sulphur / Egg Odour
- Organic Taste / Odour
- Metallic Taste
- Other: _____

Turbidity/Sand Content

- Clear
- Slightly turbid/cloudy
- Moderately turbid/cloudy
- Turbid/cloudy
- Trace sand present
- No sand present

Well Disinfection

Was the well disinfected upon completion of the pump installation? YES NO

Briefly describe method of well disinfection:

F1 Well Water Level Drawdown/Recovery DATA

Drawdown		Recovery	
Time (min)	Water Level (m / ft)	Time (min)	Water Level (m / ft)
0 (SWL)	4.97	0 (FWL)	32.29
1	8.03	1	28.31
2	9.69	2	26.44
3	10.93	3	25.28
4	11.90	4	24.59
5	12.65	5	24.10
10	15.39	10	22.82
16	16.57	16	22.06
20	17.79	20	21.21
25	19.04	25	20.83
30	19.86	30	20.21
40	21.03	40	19.69
50	21.96	50	19.22
60	22.71	60	19.22

Bacteria Testing

Was a sample taken? YES NO
 Date Sample Taken: 2012/09/10
 Y Y Y Y M M D D
 If yes, indicate the name of the laboratory: Environmental Health

Chemical Analysis of Water

Was a sample taken? YES NO
 Date Sample Taken: 2012/09/10
 Y Y Y Y M M D D
 If yes, indicate the name of the laboratory: EXOVA

Clear Form

Print Form

WELL CONTRACTOR

H1 Name of Contractor / Drilling Company: DRILLING
 H2 Name of Driller(s): BOB STANICE
 H3 Address of Driller: 2407 DEAN ST. REGENCY
 Signature of Primary Driller: _____
 Y Y Y Y M M D D

CONSULTANT (If applicable)

I1 Company Name: EBA ENGINEERING
 I2 Company Address: _____
 I3 Report Reference: _____
 I4 Report Date: _____
 Y Y Y Y M M D D

ADDITIONAL INSTRUCTIONS

Upon completing this form, please mail or fax it to:
 Water Resources Section (V-310),
 Department of Environment,
 Government of Yukon Box 2703,
 Whitehorse, Yukon, Canada Y1A 2C6
 Please feel free to contact us at:
 Phone: (867) 667-3171, Toll free (in Yukon): (1-800) 661-0408, local 3171
 Fax: (867) 667-3195 E-mail: Water.Resources@gov.yk.ca

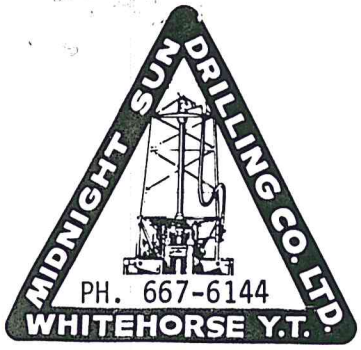
Personal information contained on this form is collected under the authority of the Access to Information and Protection of Privacy (ATIP/PA) Act, Section 23 (c) and will be used to compile a public database of well and ground water information. For further information contact the Manager of Hydrology, Water Resources at (867) 667-3223, toll free within Yukon 1-800-661-0408 Ext 3223.
 I have read the above clause and understand the purpose for collection of personal information.
 Signature of Well Owner: _____

File

FIELD REPORT

BID 101020001

Feb-9/05



P.O. Box 4391

Started June 23 1981

Completed June 26 1981

Names Rol

NAME AND ADDRESS OF CLIENT	DESCRIPTION OF WORK	LOCATION OF WORK
Revised	W/W	Million Dollar Falls Camp Grounds

FORMATION LOG			DESCRIPTION OF WORK	TIME			
FROM	TO	FORMATION		DATE	FROM	TO	HOURS
			MOVE				
			loading (repair Rig)	June 23	7:30	12:30	5
			Travel to Lodge	"	2:00	5:30	3.5
			travel to Million Dollar Falls	"	6:00	7:00	1
			move on set up	"	7:00	8:00	1
0'	5'	silt sand Gr.		"	8:00	10:00	2
5'	8'	clay silt Gr.					
8'	20'	Till					
20'	60'	Bed rock					
			15' under to bearing point Travel	"	10:00	11:00	1
			Travel	June 24	8:00	8:30	.5
60'	240'	bed rock		"	8:30	12:30	4
			Develop Flush hole	"	12:30	2:00	1.5
240'	360'	bed rock		"	2:00	5:00	3
			Develop	"	5:00	7:00	2
			Travel	"	7:00	7:30	.5

Rcrd. of Casing & Pipe		Size		Type	
Feet	Inch	Feet	Inch		

Remarks:
 22' casing ✓
 1 - drive shoe.
 Rock - 5 3/4" Hole.

STATIC LEVEL	Total Rig Time	25 hrs.
Ground level	Total Standby	hrs.
Top of casing	Drilling Mud	sacks

SIGNATURES

MIDNIGHT SUN.....
 TITLE..... 660
 2003

CLIENT.....
 TITLE.....



P.O. Box 4391

FIELD REPORT

Started June 22....1981

Completed June 26...1981

②

NAME AND ADDRESS OF CLIENT	DESCRIPTION OF WORK	LOCATION OF WORK
	W / W	Million Dollar Falls Camp Ground

FORMATION LOG			DESCRIPTION OF WORK	TIME			
FROM	TO	FORMATION		DATE	FROM	TO	HOURS
			MOVE				
			Travel	June 25	8:30	9:00	.5
			Triped Hole	"	9:00	1:00	4
			repairs	"	1:00	3:00	2
360'	500'	rock		"	3:00	7:00	4
			Develop	"	9:00	8:00	1-
			Travel	"	8:00	8:30	.5
			Travel	June 26	7:30	8:00	.5
500'	640'	rock		"	8:00	1:00	5
			Develop	"	1:00	4:00	3-
			Trip out	"	4:00	5:30	1.5-
			move off to main road	"	5:30	6:00	.5-
			main road to hodge	"	6:00	6:30	.5
			Travel to whitehorse	"	8:00	11:00	3

Rcd. of Casing & Pipe				Remarks:
Size	Type	Size	Type	
Feet	Inch	Feet	Inch	less than 1/2 G.P.M. Rock 5 3/4" Hole.
STATIC LEVEL				Total Rig Time <u>26</u> hrs.
Ground level				Total Standby hrs.
Top of casing				Drilling Mud sacks

SIGNATURES

MIDNIGHT SUN.....
TITLE.....

CLIENT.....
TITLE.....

Fredelana Enterprises Ltd.

6570-5

WATER WELL DRILLING

P.O. Box 4899
10 McPherson Road
Whitehorse, Yukon Y1A 4N6

Phone: 633-2121

WELLS LOG

OWNER Y.T.G.

ADDRESS _____

LOCATION WATSON LAKE CAMPGROUND

WELL # 2.

AUG 17 1982

Date Begun AUG 12, 1982 Completed AUG 14, 1982

Yield 5 Gallons per minute

Static Water Level 42 feet from surface

Pumping Water Level 56 feet from surface

Casing Used 188 WALL

Bottom of Casing 63 feet from surface

Stick-up above ground 1.5 feet

Screen Used 20 SHOT

Top of Screen 62.5 feet from surface

Bottom of Screen 66 feet from surface

Sources of Water 5 ~~5.5~~ g.p.m. at 62.5 to 66 feet

Sources of Water _____ g.p.m. at _____ feet

Sources of Water _____ g.p.m. at _____ feet

Sources of Water _____ g.p.m. at _____ feet

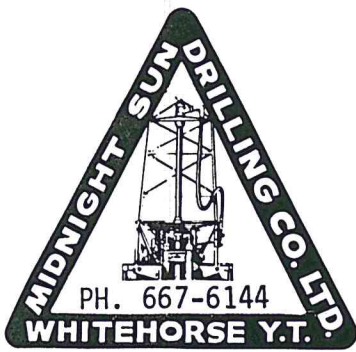
Rig No. 1

Driller Fred Anuroff

RECOMMENDED PUMP SET AT 64 FT. RATE 5 G.P.M.

0	TOP SOIL.
4	GRAVEL
8	TILL
35	SAND + GRAVEL.
38	CLAY, SAND + GRAVEL
43	CLAY + GRAVEL.
50	SILT + CLAY. (COLOR BLACK)
55	CLAY, SILT, SAND GRAVEL.
66	

~~water @ 60 ft~~



P.O. Box 4391

FIELD REPORT

B-ID 101090001

Feb 9/05

Started Nov. 27.....19??

Completed. Nov. 27. 19??

NAME AND ADDRESS OF CLIENT	DESCRIPTION OF WORK	LOCATION OF WORK
PARKS AND HISTORIC RESOURCES F.R.C.		MOSAWA LAKE KAWASGAT campground.

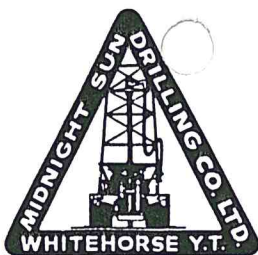
FORMATION LOG			DESCRIPTION OF WORK	TIME			
FROM	TO	FORMATION		DATE	FROM	TO	HOURS
			MOVE				
			loading	Nov. 27	10:00	12:00	2
			travelling	"	1:00	4:00	3
			setting up	"	4:00	4:30	.5
3	5	Sand		"	4:30	6:30	2
5	14	Frozen sand Gravel/Cobbles					
14	32	Silty Gravel + sand.					
32	41	Gr. sand.					
			setting screen	"	6:30	7:00	.5
			Developing	"	7:00	7:00	2
			Travelling	"	9:00	11:30	2.5

Rcd. of Casing & Pipe				Remarks:
Size	Type	Size	Type	
Feet	Inch	Feet	Inch	Bottom of screen 41'
37'				20 slot
				2 1/2" pipe lead packer
				4 1/2 bit pin
				Developed at 7 A.M.
STATIC LEVEL				Total Rig Time 11.5 hrs.
Ground level				Total Standby hrs.
Top of casing 13' 10"				Drilling Mud sacks

SIGNATURES

MIDNIGHT SUN.....
TITLE.....

CLIENT.....
TITLE.....



Field Report

PH. 633-3070 TELEX 036-8496
P.O. BOX 4391
WHITEHORSE, YUKON

YUWPR
211030014

Started... Jan... 1988

Completed... Jan... 26... 1988

NAME AND ADDRESS OF CLIENT	DESCRIPTION OF WORK	LOCATION OF WORK
RENEWABLE RESOURCES PARASITIC PLANT RES. SCHEMATA LARGE CAMPUS FARO	W/W LOCATED 1A NAB CAMPUS OF CAMPUS	Scherson Lake Campground

FORMATION LOG			DESCRIPTION OF WORK	TIME			
FROM	TO	FORMATION		DATE	FROM	TO	HOURS
			MOVE #1				
			Loadling	Jan 19	8:00	1:00	5
			Travel To Faro	"	1:30	8:30	7
			move on set up	Jan 20	7:00	11:00	4
0	15	sand		"	11:00	3:00	4
15	64	Till Grey					
64	80	BR.					
			Develop	"	3:00	5:30	2.5
			move off	"	5:30	7:00	1.5
			omit → Pull Axels and DIS	"	7:00	10:00	3
			Lock				
			locate site #2	"	10:00	11:00	1

crd. of Casing & Pipe				Remarks:
Size	Type	Size	Type	
6				1- 5 3/8" Tricone 1 - GPM.
Feet	Inch	Feet	Inch	
66				(1) Drive Sitor
				Static Level
				Total Rig Time
				hrs.
				Ground Level
				Total Standby
				hrs.
				Top Of Casing
				Drilling Mud
				sacks

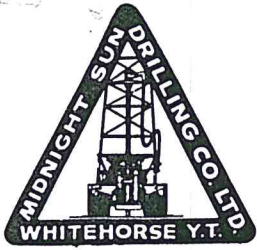
SIGNATURES

MIDNIGHT SUN... *[Signature]*
TITLE... *[Signature]*

CLIENT.....
TITLE.....

B-ID 101130006

Field Report



PH. 633-3070 TELEX 036-8496
 P.O. BOX 4391
 WHITEHORSE, YUKON

Started. June...5...19.89

Completed. June...9...19.89

NAME AND ADDRESS OF CLIENT	DESCRIPTION OF WORK	LOCATION OF WORK
Dept of Resources Rossmore	W/W Mainst Jet Pinc Lake Campground	Hains Jct Camp Ground 89-1A-6

FORMATION LOG			DESCRIPTION OF WORK	TIME			
FROM	TO	FORMATION		DATE	FROM	TO	HOURS
			MOVE				
			heading	June 5	1:00	5:00	4
			Travel	June 6	7:00	10:00	3
			move on set up	"	10:00	12:00	2
0'	5'	clay silt		"	12:00	7:30	7.5
5'	80'	Till	clay layers 1.5 hrs 4 3/8" Pilot hole from 40'				
			Replace orings in Hyd Bank	"	7:30	10:30	3
80'	120'	Till	clay layers 4 3/8" Pilot	June 7	8:00	10:00	2
			cased 40' to 120	"	10:00	3:00	5
120'	138'	silt					
38'	144'	Till					
44'	150'	BR.					

Sched. of Casing & Pipe				Remarks:		
Size	Type	Size	Type			
6				1- 6" o/c x shoe screen size		
Feet	Inch	Feet	Inch			
154						
				Static Level	Total Rig Time	hrs.
				Ground Level	Total Standby	hrs.
				Top Of Casing	Drilling Mud	sacks

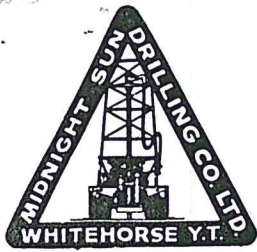
SIGNATURES

MIDNIGHT SUN.....

CLIENT.....

TITLE.....

TITLE.....



Field Report

PH. 633-3070 TELEX 036-8496
 P.O. BOX 4391
 WHITEHORSE, YUKON

Started June 5 1989

Completed June 9 1989

NAME AND ADDRESS OF CLIENT	DESCRIPTION OF WORK	LOCATION OF WORK
DEPT. OF REVENUE RUSQUAS	WJLW HAINS ICE PIPE LAMP CAMPGROUND	Hains St Camp Ground

FORMATION LOG			DESCRIPTION OF WORK	TIME			
FROM	TO	FORMATION		DATE	FROM	TO	HOURS
			MOVE				
150	300	BR		June 8	8:00	7:00	11
300	370	BR		June 9	8:00	1:00	5
			move off	"	1:00	3:30	2.5
			Travel to whse	"	3:30	6:00	2.5

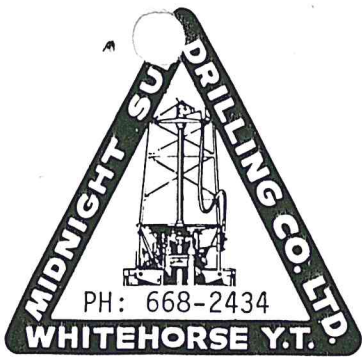
Recd. of Casing & Pipe				Remarks:
Size	Type	Size	Type	
Feet	Inch	Feet	Inch	

Static Level	Total Rig Time	hrs.
Ground Level	Total Standby	hrs.
Top Of Casing	Drilling Mud	sacks

SIGNATURES

MIDNIGHT SUN.....
 TITLE.....

CLIENT.....
 TITLE.....



P.O. Box 4391

FIELD REPORT

*YWWR
802030038*

Started. Oct. 18.....19.75

Completed. Oct. 18.....19.75

NAME AND ADDRESS OF CLIENT	DESCRIPTION OF WORK	LOCATION OF WORK
Tourism and Information	water well	Campgrounds
		Dawson, Y.T.

FORMATION LOG			DESCRIPTION OF WORK	TIME			
FROM	TO	FORMATION		DATE	FROM	TO	HOURS
			MOVE				
0'	3'	Peat		Oct 18	8am	6:30pm	10.5
3'	10'	silty sand					
10'	20'	gravel					
20'	30'	gravel till					
30'	35'	gravel					
35'	36'	rock					

Rcprd. of Casing & Pipe				Remarks: Perforated 30' ---35' Bottom closed. Top of casing to ground 8"	
Size	Type	Size	Type		
6"					
Feet	Inch	Feet	Inch		
20'	0"				
16'	0"				
36'	0"				
STATIC LEVEL				Total Rig Time	hrs.
Ground level 20' 8"				Total Standby	hrs.
Top of casing 20' 10"				Drilling Mud	2 sacks

SIGNATURES

MIDNIGHT SUN. Nery Tull
TITLE.....

CLIENT.....
TITLE.....

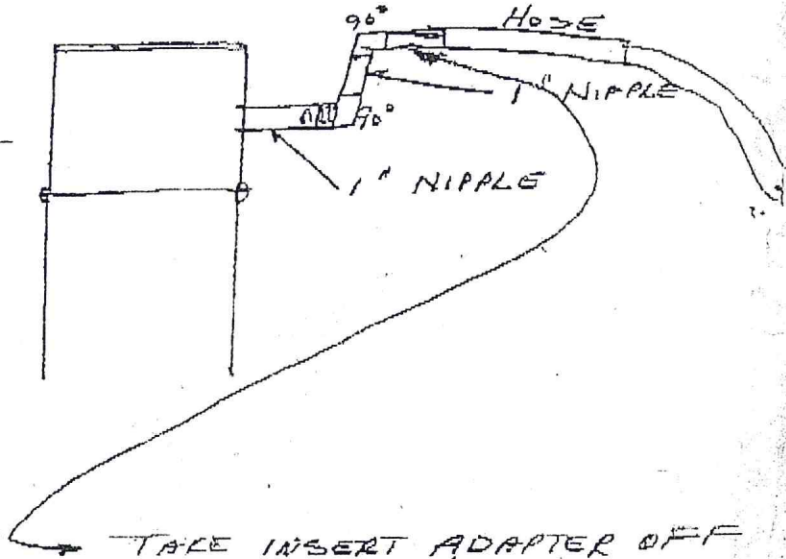


JUNE 26, 1987
TAGISH LAKE CAMPGROUND,
WATER WELL LOG.

- 0 - 138' CLAY.
- 138 - 150' CLAY WITH TILL LAYERS
- 150 - 340 CLAY, SILT LAYERS, & THIN LAYERS OF TILL
- 340 - 345 GRAVEL, SAND, SOME SILT & CLAY MUDS

DEPTH - 345'
 SCREEN - 18 SLOT EXPOSED 3 1/2'
 STATIC WATER LEVEL - PLUS 11'
 WELL IS FLOWING @ 4 L.P.M. (US?)

WELDED CAP & 1" NIPPLE TO TAKE CARE OF FLOW.

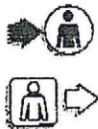


TAKE INSERT ADAPTER OFF AND INSTALL GATE VALVE FOR SUMMER CONTROL.

PREPARED BY: [REDACTED] LTD.



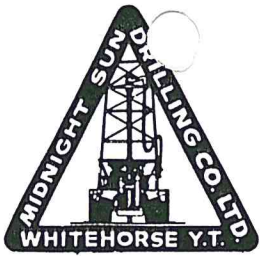
FAX



1

DATE: Aug 23 '04

Post-It Note



Field Report

PH. 633-3070 TELEX 036-8496
 P.O. BOX 4391
 WHITEHORSE, YUKON

*YVWR
211030015*

Started *Jan 19* 19*88*

Completed *Jan 26* 19*88*

NAME AND ADDRESS OF CLIENT	DESCRIPTION OF WORK	LOCATION OF WORK
<i>Renowned Resources</i>	<i>W / W</i>	<i>Johnson Lake</i>
<i>So</i>		<i>Camp ground</i>
	<i>Location near Entrance</i>	

FORMATION LOG			DESCRIPTION OF WORK	TIME			
FROM	TO	FORMATION		DATE	FROM	TO	HOURS
			<i>MOVE # 2</i>				
			<i>Move on set up</i>	<i>Jan 21</i>	<i>8:00</i>	<i>11:00</i>	<i>3</i>
<i>0</i>	<i>28</i>	<i>Sand</i>	<i>Gr silt</i>	<i>11</i>	<i>11:00</i>	<i>1:00</i>	<i>2</i>
<i>28</i>	<i>30</i>	<i>Gr.</i>	<i>sand Till</i>				
			<i>check motor found</i>	<i>11</i>	<i>1:00</i>	<i>3:00</i>	<i>2</i>
			<i>Anti freeze in oil</i>				
			<i>Trip out move off</i>	<i>11</i>	<i>3:00</i>	<i>7:00</i>	<i>4</i>
			<i>travel to whse.</i>	<i>11</i>	<i>8:00</i>	<i>3:00</i>	<i>7</i>
			<i>travel to Fero.</i>	<i>Jan 26</i>	<i>6:30</i>	<i>12:30</i>	<i>6</i>
			<i>move on set up</i>	<i>11</i>	<i>12:30</i>	<i>2:00</i>	<i>1.5</i>
<i>30</i>	<i>69</i>	<i>Till</i>		<i>11</i>	<i>2:00</i>	<i>4:30</i>	<i>2.5</i>
<i>69</i>	<i>80</i>	<i>VERY SOFT BEDROCK</i>	<i>move off</i>	<i>11</i>	<i>4:30</i>	<i>6:00</i>	<i>1.5</i>
			<i>travel to whse</i>	<i>11</i>	<i>6:00</i>	<i>12:00</i>	<i>6</i>
			<i>No WATER</i>				
			<i>WELL NEED TO BE</i>				
			<i>CASED OR LINED</i>				

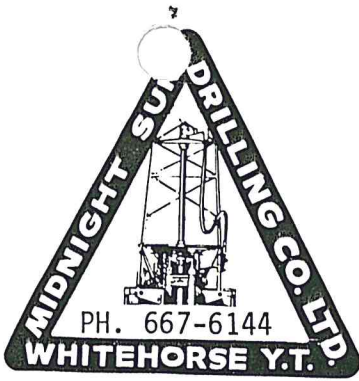
Rcd. of Casing & Pipe				Remarks:
Size	Type	Size	Type	
Feet	Inch	Feet	Inch	
<i>6</i>				<i>1 - drive shoe.</i>
<i>70'</i>				

Static Level	Total Rig Time	hrs.
Ground Level	Total Standby	hrs.
Top Of Casing	Drilling Mud	sacks

SIGNATURES

MIDNIGHT SUN. *Lee... Johnson*
 TITLE *TEP... CARDWRIGHT*

CLIENT.....
 TITLE.....



FIELD REPORT

Started July 30.....1979
 Completed July 31....1979

*YWR
107020001*

NAME AND ADDRESS OF CLIENT	DESCRIPTION OF WORK	LOCATION OF WORK
Camp Ground Cowdon Creek	W/W	

FORMATION LOG			DESCRIPTION OF WORK	TIME			
FROM	TO	FORMATION		DATE	FROM	TO	HOURS
			MOVE				
			loading repairs	July 30	8:00	12:00	4
			traveling	"	3:00	8:00	5
			moving on setting up.	July 31	7:30	8:30	1
0'	1'	silt		"	8:30	10:30	2
1'	6'	Gr.					
6'	17'	Gr. sand					
17'	22'	sand Gr. silt					
22'	31'	Gr. some silt					
31'	33'	silt					
33'	44'	silty Gr.					
44'	60'	Gr.					
			setting screen	"	10:30	11:00	0.5
			Developing	"	11:00	1:00	2
			moving off	"	1:00	1:30	0.5
			Traveling	"	1:30	6:00	4.5

Rcord. of Casing & Pipe				Remarks:
Size	Type	Size	Type	
Feet	Inch	Feet	Inch	Bottom of screen 60'
56'	2"			5 7/8 bit pin
				20 slot
				2' riser lead packer.
				developed at 30 G.P.M.
STATIC LEVEL				Total Rig Time 17.5 hrs.
Ground level				Total Standby hrs.
Top of casing 23'				Drilling Mud sacks

SIGNATURES

MIDNIGHT SUN.....
 TITLE.....

CLIENT.....
 TITLE.....

**MONITORING WELL DEVELOPMENT,
PURGING & SAMPLING RECORDS**

Well ID CAFN MW-01 Well Diameter 2"
 Project Name _____ Total Depth of Well 61 ft
 Project Number _____ Initial Depth to Water _____ Time _____
 Date March 30, 2017 1 Casing Volume 40L
 Prepared By: Midnight Sun Drilling Inc 3 Casing Volume 120L
 Sample ID _____ Duplicate ID _____ Depth to Water After Purging _____ Time _____
 Sample Depth 56 Method of Purging Grundfos Rediflow (2")
 Activity Performed at Well: Method of Sampling _____
 Development Purging Sampling Method of Development GRUNDFOS 2" REDIFLO

time	intake depth (feet) metres	pumping rate gpm (Lpm)	cumulative volume (litres) gallons	temp. F (C)	pH (units)	specific conductance (µmhos/cm)	comments odour, colour, sediment load, well condition, presence of product
12:22	56	2.22	20	4.4	8.39	404.5	grey in colour, turbid (choc. milk), no odour
12:42	56	1.82	60	3.9	7.6	347	grey, less turbid, can't see bottom of bucket
13:31	56	3.33	220	3.7	7.4	241	light grey, turbid
14:01	56	5.0	320	3.7	7.1	224	almost clear enough to see bottom of bucket
14:27	56	4.0	420	3.7	7.1	220	
14:40	56	3.33	460	3.6	7.0	210	
14:52	56	3.33	500	3.6	7.0	209	
15:03	56	4.0	540	3.6	7.0	209	
15:16	56	3.33	580	3.6	7.0	207	NTU ~ 19
15:35	56	2.90	640	3.5	7.0	204	NTU ~ 14

container size and composition	preservative	number of containers	analyses	time	laboratory

pH calibration		(choose two)			zero check setting
time	buffer solution	pH 4.0	pH 7.0	pH 10.0	
start of day:	temp. (C)				
	instrument reading				
	should read/calibrated to				
end of day:	temp. (C)				
	instrument reading				

specific conductance calibration				zero & redline check
time	KCl solution (µmhos/cm @ 25 C)	1413		
start of day:	temp. (C)			
	instrument reading			
	should read			
end of day:	temp. (C)			
	instrument reading			
	should read			

notes _____
 USED 85 GAL DURING DRILLING - PURGED THIS WATER (320L)

Well ID CAFN MW-01 Site Location Champagne
 Project Name Champagne Field Personnel John Miller, K. Pfeifer,
 Project Number _____ Recorded By Katie Hender

Permit Number _____
 Installation Date(s) March 28/29, 2017
 Drilling Method Hollow stem auger
 Drilling Contractor Midnight Sun Drilling Inc
 Driller Willy Palahicky
 Drilling Fluid water
 Fluid Loss During Drilling 85 Litres (Gallons)

Materials Used

Riser Pipe: Length _____ metres/feet
 Diameter _____ cm/inches
 Construction PVC schedule 40
 Stainless Steel
 Galvanized Steel

Slotted Area: Length 20 metres/feet
 Diameter 2 cm/inches
 Construction PVC schedule 40
 Stainless Steel } BOTTOM 10' PRE-SCREENED STAINLESS
 Galvanized Steel

Silt Trap Used YES NO
 Filter Sock Used YES NO

Bottom End Cap: Male Female
 PVC schedule _____
 Stainless Steel
 Galvanized Steel

Top Cap: Male Female Slip J Plug
 PVC schedule _____
 Stainless Steel
 Galvanized Steel

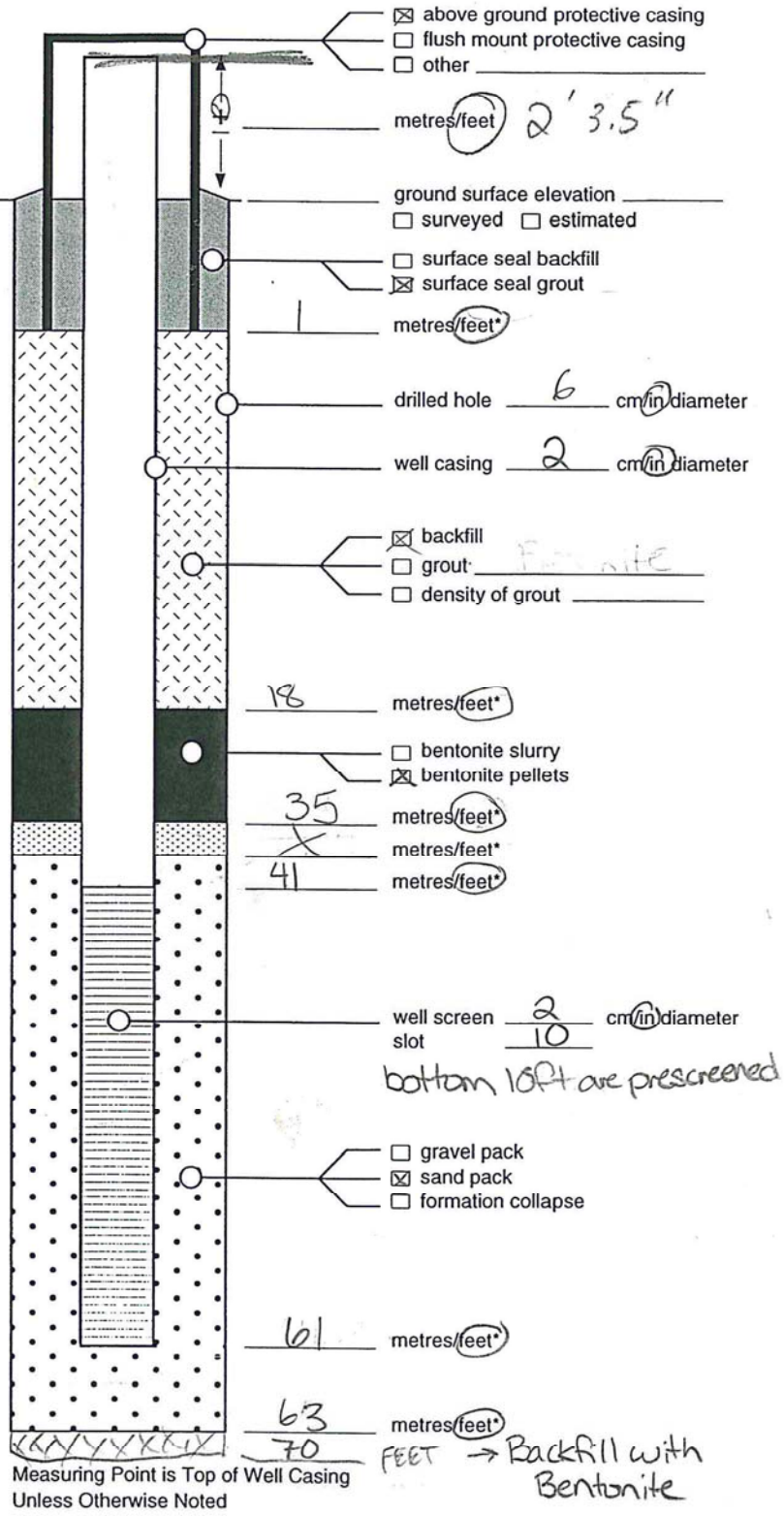
Protective Casing: Length _____ metres/feet
 Diameter _____ cm/inches
 Construction Cast Aluminum
 Cast Steel
 Steel

Casing Installation: YES (see page 2)
 NO

Sandpack:
 Coarse Sand: 111 bags of 50 kg/lb per bag Sand Gradation 10-20
 Fine Sand: _____ bags of _____ kg/lb per bag Sand Gradation _____

Seal:
 Bentonite Pellets: _____ bags of 50 kg/lb per bag Type Holeplug
 Bentonite Slurry: _____ bags of _____ kg/lb per bag Type _____

Grout:
 Cement: 1 bags of _____ kg/lb per bag Type _____
 Bentonite: _____ bags of _____ kg/lb per bag Type _____



*Depth Below Ground Surface

SAMPLE/CORE LOG OF BORING

Borehole ID CAFN MW01 Project Name _____ Page 1 of 2
 Date March 28, 2017 Project Number _____
 Recorded By Katie Heiler

Sample/Core Depth (m(ft) below ground surface)		Core Recovery m(ft)	Time/Hydraulic Pressure or Blows <u>24 cm/in</u>	Sample/Core Description	Unified Soils Class.	Sample Number
From	To					
0	5			silty, clay clumps, grey-brown		1
5	7	1.5	56	grey, iron oxid. staining, silty, platy texture, fine sand		2
10	12	1.8	37	platy, more moisture, silty, very fine sand ↳ iron staining at 10 ft for 2 inches		3
14				moist silt, in cuttings		
15	17	15	38	↳ 16.5 - 15 very moist silt, iron staining at interface btwn moist & dry at 16.5. ↳ confining layer, more dense at 16.5 ↳ 17 - 16.5, fine sand, homogen., light grey, dry		4
	19			moist silt in cuttings		
20	22	13"	20	↳ 20 - wet silty sand, around 21 ft it is more silty 21 - 22 it is wetter and sandier		5
25	27	24"	20	moist sand, homogeneous, grey 25 - 26 ft is wetter (saturated)		6
30	32	17"	33	wet homog. sand, light grey, ^{med} coarse		7
35	37	10"	14	wet ^{coarse} sand, heterogen., sub rounded to rounded gravels (coarse & fine)		8
40	42	16"	35	coarse sand (40-41) & peagravel (41-42)		9
45	47	1.5 ft	29	homog. coarse sand, light grey, unoxidized		10
50	52	1 ft	28	at 51' an inch of silt/fine sand (lense) 51-52's med sand, at 52' coarse sand (2") wet, light grey		11



Environment Yukon 203-1191 Front St
 Water Resources Branch Whitehorse, YT, Y1A 0K5
 (867) 667-3104

YWWR = 101160008

**MONITORING WELL DEVELOPMENT,
 PURGING & SAMPLING RECORDS**

Well ID CAFN - MW-02 Well Diameter 2"
 Project Name CHAMPAGNE Total Depth of Well 10.65 mbtoc
 Project Number _____ Initial Depth to Water 7.91 mbtoc Time 11:21
 Date MARCH 31/17 1 Casing Volume 5.4 L
 Prepared By: JOHN MILLS / KATE REIFEL 3 Casing Volume 16 L
 Sample ID _____ Duplicate ID _____ Depth to Water After Purging 9.06 mbtoc Time 15:01
 Sample Depth _____ Method of Purging 2" GRUNDFOS REDIFLO
 Activity Performed at Well: Method of Sampling _____
 Development Purging Sampling Method of Development 2" GRUNDFOS REDIFLO

time	intake depth feet (metres)	pumping rate gpm (Lpm)	cumulative volume litres (gallons)	temp. F (C)	pH (units)	specific conductance (µmhos/cm)	comments odour, colour, sediment load, well condition, presence of product
12:01	10.3	5.0	20	5.8	7.9	287	brown/grey, extremely turbid (choc. milk)
12:16	10.3	5.0	80	4.6	7.1	242	~40 NTU, less turbid
12:39	10.3	5.0	160	4.6	7.0	190	
13:43	10.3	4.0	240	4.8	7.0	176	water level = 8.93 mbtoc (pump stopped and restarted btwn 12:57-13:43)
14:05	10.3	4.0	320	5.3	7.2	163	∇ = 8.99 mbtoc
14:31	10.3	4.0	380	4.7	6.9	152	Generator ran out of fuel, stopped and restarted
14:38	10.3	4.0	400	4.4	6.8	147	∇ = 9.04 mbtoc at 14:41
14:47	10.3	4.0	440	4.3	6.6	147	∇ = 9.06 mbtoc at 14:52
15:01	10.3	4.0	500	4.2	6.7	143	∇ = 9.06 mbtoc at 15:01

container size and composition	preservative	number of containers	analyses	time	laboratory

pH calibration		(choose two)			zero check setting
time	buffer solution	pH 4.0	pH 7.0	pH 10.0	
start of day:	temp. (C)				
	instrument reading				
	should read/calibrated to				
end of day:	temp. (C)				
	instrument reading				

specific conductance calibration				zero & redline check
time	KCl solution (µmhos/cm @ 25 C)	1413		
start of day:	temp. (C)			
	instrument reading			
	should read			
end of day:	temp. (C)			
	instrument reading			
	should read			

notes 120 GALLONS USED DURING DRILLING → PURGE 120 GALLON PLUS 5 CASING VOLUMES = 500 L = 125 GALLONS

Well ID CAFN-MW2 Site Location CHAMPAGNE
 Project Name CHAMPAGNE FLOODING Field Personnel JOHN MILLER KATIE PFEIFER
 Project Number _____ Recorded By JOHN MILLER

Permit Number _____
 Installation Date(s) MARCH 30, 2017
 Drilling Method HOLLOW STEM AUGER
 Drilling Contractor MIDNIGHT SUN
 Driller RYAN
 Drilling Fluid WATER
 Fluid Loss During Drilling 120 Litres/Gallons

Materials Used

Riser Pipe: Length _____ metres/feet
 Diameter 2 cm/inches
 Construction PVC schedule 40
 Stainless Steel
 Galvanized Steel

Slotted Area: Length 5 metres/feet
 Diameter 2 cm/inches
 Construction PVC schedule 40
 Stainless Steel
 Galvanized Steel

Silt Trap Used YES NO
 Filter Sock Used YES NO

Bottom End Cap: Male Female
 PVC schedule 40
 Stainless Steel
 Galvanized Steel

Top Cap: Male Female Slip J Plug
 PVC schedule _____
 Stainless Steel
 Galvanized Steel

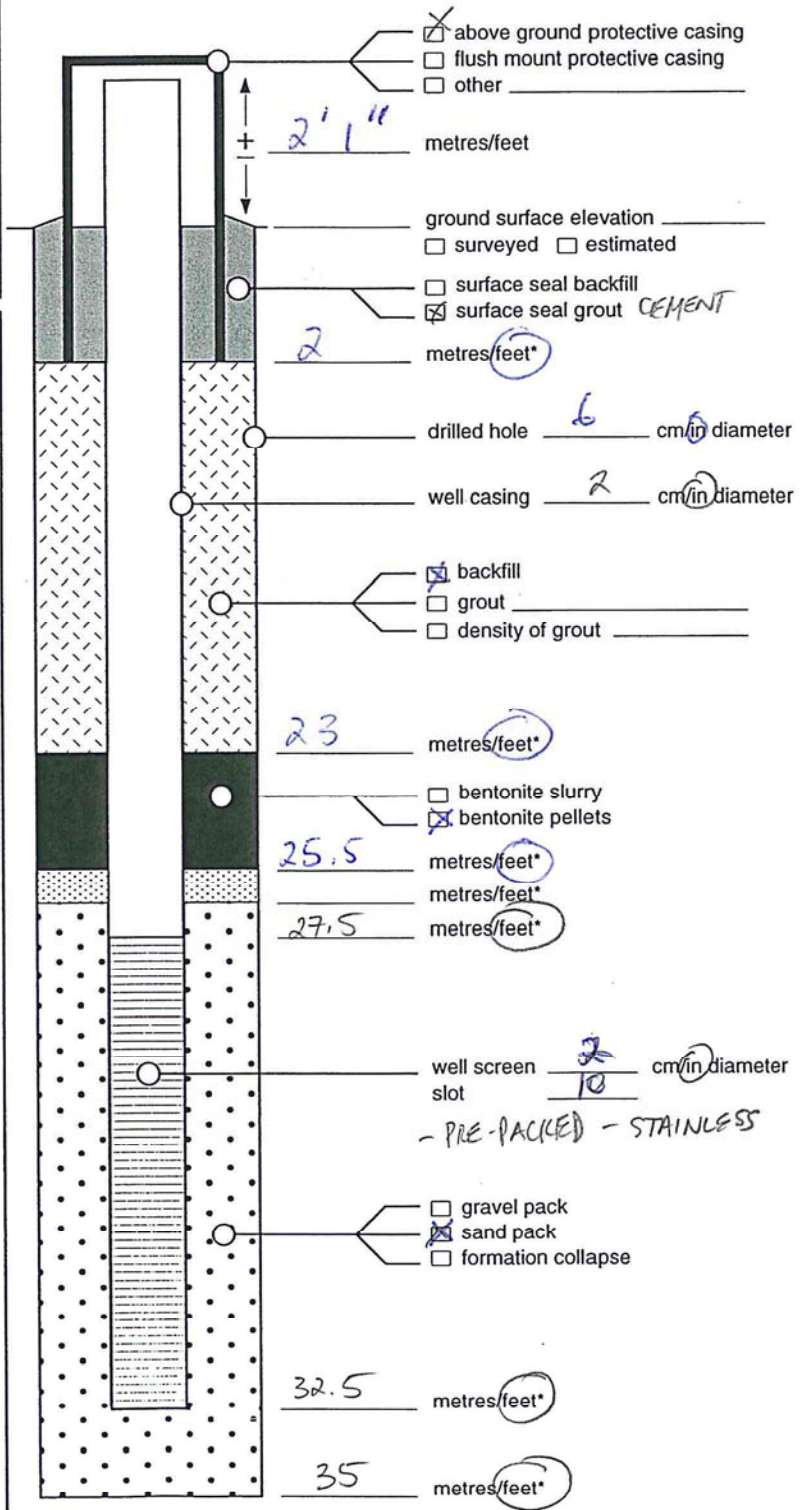
Protective Casing: Length _____ metres/feet
 Diameter _____ cm/inches
 Construction Cast Aluminum
 Cast Steel
 Steel

Casing Installation: YES (see page 2)
 NO

Sandpack:
 Coarse Sand: _____ bags of _____ kg/lb per bag Sand Gradation _____
 Fine Sand: _____ bags of _____ kg/lb per bag Sand Gradation _____

Seal:
 Bentonite Pellets: _____ bags of _____ kg/lb per bag Type _____
 Bentonite Slurry: _____ bags of _____ kg/lb per bag Type _____

Grout:
 Cement: _____ bags of _____ kg/lb per bag Type _____
 Bentonite: _____ bags of _____ kg/lb per bag Type _____



Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Ground Surface



**MONITORING WELL DEVELOPMENT,
 PURGING & SAMPLING RECORDS**

Well ID CAFN-MW-03 Well Diameter 2"
 Project Name Champagne Total Depth of Well 30.5 ft below ground
 Project Number _____ Initial Depth to Water 7.19 mbtc Time 16:05
 Date March 31, 2017 1 Casing Volume 1.2 gallons
 Prepared By: John Miller / Katre Pfeifer 3 Casing Volume 3.7 gallons
 Sample ID _____ Duplicate ID _____ Depth to Water After Purging _____ Time _____
 Sample Depth _____ Method of Purging 2" Grundfos Rediflow / Waterra and foot valve
 Activity Performed at Well: Method of Sampling _____
 Development Purging Sampling Method of Development 2" Grundfos Rediflow / Waterra and foot valve

time	intake depth	pumping rate	cumulative volume	temp.	pH	specific conductance	comments
	feet / metres	gpm / Lpm	litres (gallons)	F / (C)	(units)	(µmhos/cm)	odour, colour, sediment load, well condition, presence of product
16:37	/	/	5	6.1	7.1	410	well kept going dry

container size and composition	preservative	number of containers	analyses	time	laboratory

pH calibration		(choose two)			zero check setting
time	buffer solution	pH 4.0	pH 7.0	pH 10.0	
start of day:	temp. (C)				
	instrument reading				
	should read/calibrated to				
end of day:	temp. (C)				
	instrument reading				

specific conductance calibration			zero & redline check
time	KCl solution (µmhos/cm @ 25 C)	1413	
start of day:	temp. (C)		
	instrument reading		
	should read		
end of day:	temp. (C)		
	instrument reading		
	should read		

notes 20 gallons added during drilling
↳ must purge 25 gallons

Yukon Water Resources: 10116009

WELL CONSTRUCTION • PAGE 1

Well ID CAFN-MW-03 Site Location Champagne
 Project Name CHAMPAGNE Field Personnel _____
 Project Number _____ Recorded By K. Pfeifer / J. Miller

Permit Number _____
 Installation Date(s) March 31, 2017
 Drilling Method Open stem auger
 Drilling Contractor Midnight Sun Drillers
 Driller Ryan
 Drilling Fluid Water
 Fluid Loss During Drilling 20 Litres/Gallons

Materials Used:

Riser Pipe: Length _____ metres/feet
 Diameter 2 cm/inches
 Construction PVC schedule 40
 Stainless Steel
 Galvanized Steel

Slotted Area: Length 5 metres/feet
 Diameter 2 cm/inches
 Construction PVC schedule 40
 Stainless Steel
 Galvanized Steel

Silt Trap Used YES NO
 Filter Sock Used YES NO

Bottom End Cap: Male Female
 PVC schedule 40
 Stainless Steel
 Galvanized Steel

Top Cap: Male Female Slip J Plug
 PVC schedule _____
 Stainless Steel
 Galvanized Steel

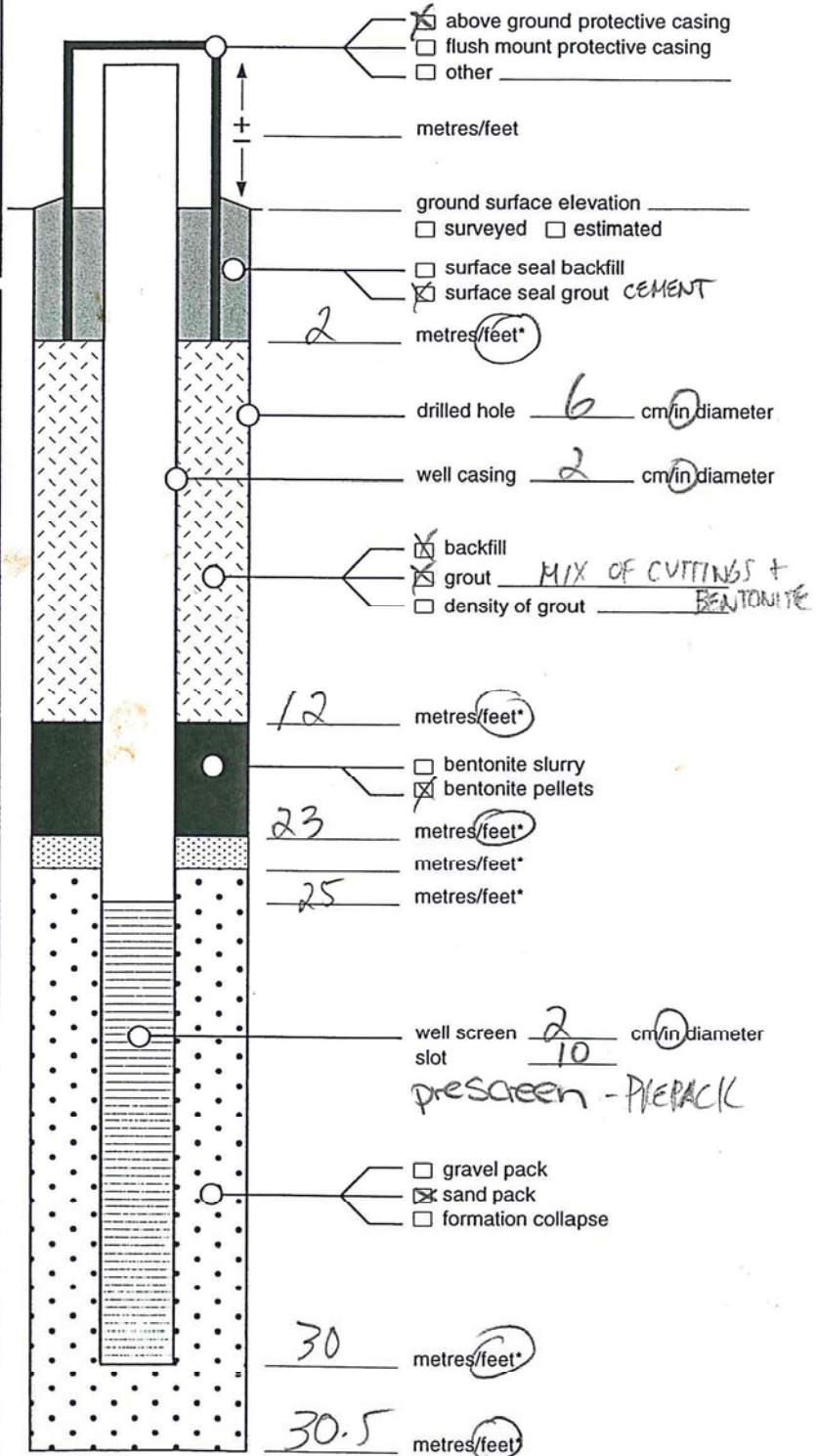
Protective Casing: Length 5 metres/feet
 Diameter _____ cm/inches
 Construction Cast Aluminum
 Cast Steel
 Steel

Casing Installation: YES (see page 2)
 NO

Sandpack:
 Coarse Sand: _____ bags of _____ kg/lb per bag Sand Gradation _____
 Fine Sand: _____ bags of _____ kg/lb per bag Sand Gradation _____

Seal:
 Bentonite Pellets: _____ bags of _____ kg/lb per bag Type _____
 Bentonite Slurry: _____ bags of _____ kg/lb per bag Type _____

Grout:
 Cement: _____ bags of _____ kg/lb per bag Type _____
 Bentonite: _____ bags of _____ kg/lb per bag Type _____



Measuring Point is Top of Well Casing
Unless Otherwise Noted

*Depth Below Ground Surface

WATER RESOURCES BRANCH
WATER WELL DRILLERS FORM

Well ID:

To be assigned by Dept. Of Environment

Metric Imperial

INSTRUCTIONS FOR COMPLETING THE FORM

- Additional information is provided at the bottom of this form on page 2.
- Question can be directed to Water Resources at 867 667-3171.
- All well construction measurements shall be reported to 0.1 m or 0.3 ft.
- Please print clearly in blue or black ink.
- Completion and submission of this form is the responsibility of the drilling contractor.
- Please specify metric or imperial units for all measurements.

WELL LOCATION AND OWNER'S INFORMATION

A1 Well Name: College #1 Optional (i.e. City Well No. 2)

A2 Drilled For: First Name Yukon College Last Name Company / Department / Organization

A3 Street Address of Well Location:

A4 Town / Village / Area / Lot #:

A5 UTM Coordinates (using handheld GPS): NAD 8 | 3 Zone

Easting Northing

A6 Elevation of Top of Casing: m / ft ASL

A7 Accuracy of GPS: +/- m / ft

A8 Purpose of Wells

- Domestic Test Well Irrigation Environmental (Quality)
 Commercial Municipal Observation - Water Level Other (please identify use)
 Industrial Agricultural Public/Recreational

Sketch of Well Location
In sketch, indicate distances from property line, septic field, fuel tank(s) and building. Please include North arrow.

LOG OF OVERBURDEN AND BEDROCK MATERIALS (All depths are below ground surface, circle appropriate units, use descriptors provided)

EXAMPLE ONLY		(brown, grey, green, black, reddish, beige, olive, yellowish)	CLAY, SILT, SAND, GRAVEL, COBBLES, BOULDERS, BEDROCK	"trace" <10% (i.e. SILT trace gravel) "some" 10-20% (i.e. SAND some gravel) "silty / sandy / gravelly" 20-30% (i.e. silty SAND) "and sand" or "and gravel" 35-50%	MOISTURE: dry / moist / saturated (wet) HARDNESS: soft / hard / very hard
		brown	SAND	trace gravel some silt	soft and saturated
Depth (m / ft)		B4 General Colour	B5 Most Common Material	B6 Secondary Materials	B7 General Description
B2 From	B3 To				
0	12	blown	Gravel	Sand	Med-Fine
12	16	blown	Sand	Gravel	Med-Fine
16	54	blown	Gravel	Sand	Coarse Gravel
54	58	blown	Sand	Gravel	
58	67	blown	Gravel	Sand	Coarse Sand
67	97	blown	Gravel	Sand	Very hard wet 136
97	155	Coast	Gravel	Sand	Coarse Loose Gravel
155	165	blown	Gravel	Sand	Med-Fine Sand
165	178	blown	Gravel	Little Sand	Loose Conductive Gravel

B8 Permafrost Encountered: NO YES If yes, indicated depth (m / ft): from: to:

WELL CONSTRUCTION (Continues on Page 2)

Date Well Completed 2017 10 26
Y Y Y Y M M D D

Example: 2005 01 31

C1 Drilling Method Air Rotary (Conventional) Dug Other (please specify)
 Reverse Air Rotary Cable Tool
 Mud Rotary Auger (Hollow / Solid Stem)

C2 Well Type: In what geological material is the water producing zone located?
 OVERBURDEN BEDROCK

Casing (depth below ground surface, please circle appropriate units)

C3 Outside Diameter 6.5 (cm) (in)
 C4 Casing Material Steel Plastic Other
 C5 Casing Wall Thickness 2.5 (cm) (in)
 C6 Casing Depth to: 168 (m) (ft)

C7 Other Comments Regarding Casing:

Surface / Environmental Seal (depth below ground surface, please circle appropriate units)

C8 Seal Material Type: bentonite (i.e. Bentonite)
C9 Diameter of Seal: 2 (cm/in)
C10 Seal Depth from: 20 (m/ft)
C11 Seal Depth to: 0 (m/ft)
C12 Volume Placed: 90 (m³/ft³) 60 gallons

Gravel Pack (depth below ground surface, please circle appropriate units)

C13 Gravel Pack: [X] NO If yes, indicated depth (m/ft): from: to: Indicate diameter of material: (mm/inches) Material type: (i.e. silica)

Well Screen Information (depth below ground surface, please circle appropriate units)

C14 Outside Diameter: 5.8 (cm/in)
C15 Screen Material: [X] Stainless Steel
C16 Screen Type: [X] Continuous Wire Wrap
C17 Depth from: 172 (m/ft)
C18 Depth to: 168 (m/ft)
Slot Size / Perforation Dia: 100 Thou. / mm / inches

WELL DEVELOPMENT AND STATUS

D1 Well Developed by: [X] Air Jetting / Air Lifting
D2 Well Head Completion: [X] Well House
D3 Well Head Stick-up: 30 (m/ft)
D4 Static Water Level: 133 (m/ft)
D5 Well Yield Estimate: 200 (Lps/gpm)
D6 Final Well Status: [X] Observation
D7 Well Abandonment Status: YES
D8 Method Used to Estimate Well Yield: [X] Pumping Test

PUMPING TEST RECORD AND GROUNDWATER QUALITY

(All depths below ground, circle appropriate units)

E1 Pumping Test Information

Pumping Test Start Date: Y Y Y Y M M D D

Static Water Level (SWL): (m/ft)

Pump Intake Set at: (m/ft)

Duration of pumping: hrs min

Final Water Level (FWL) at end of Pumping Test: (m/ft)

G1 GROUNDWATER QUALITY

Field Data Date Measurements Taken: Y Y Y Y M M D D

Electrical Conductivity: uS
pH:
Temperature: °C

Groundwater Type: [] Salty, [] Sulphur / Egg Odour, [] Organic Taste / Odour, [] Metallic Taste, [] Other:

RECOMMENDATIONS

Recomm. Pump Depth: (m/ft)
Recomm. Pumping Rate: (Lps/gpm)
If flowing, provide rate: (Lps/gpm)

Turbidity/Sand Content

[] Clear, [] Slightly turbid/cloudy, [] Moderately turbid/cloudy, [] Turbid/cloudy, [] Trace sand present, [] No sand present

Well Disinfection

Was the well disinfected upon completion of the pump installation? [] YES [] NO

Briefly describe method of well disinfection.

F1 Well Water Level Drawdown/Recovery DATA

Table with columns for Time (min), Water Level (m/ft), and Recovery (min, m/ft). Rows include 0 (SWL), 1, 2, 3, 4, 5, 10, 15, 20, 25, 30, 40, 50, 60.

Bacteria Testing

Was a sample taken? [] YES [] NO
Date Sample Taken: Y Y Y Y M M D D

Chemical Analysis of Water

Was a sample taken? [] YES [] NO
Date Sample Taken: Y Y Y Y M M D D

WELL CONTRACTOR

H1 Name of Contractor / Drilling Company: Midnight Sun Drilling
H2 Name of Driller(s): Carl Mackenzie
H3 Address of Driller: 806 Black St. Whitehorse
Signature of Primary Driller

CONSULTANT (If applicable)

I 1 Company Name:
I 2 Company Address:
I 3 Report Reference:
I 4 Report Date: Y Y Y Y M M D D

ADDITIONAL INSTRUCTIONS

Upon completing this form, please mail or fax it to: Water Resources Section (V-310), Department of Environment, Government of Yukon Box 2703, Whitehorse, Yukon, Canada Y1A 2C6

Personal information contained on this form is collected under the authority of the Access to Information and Protection of Privacy (ATIPP) Act, Section 29 (c) and will be used to compile a public database of well and ground water information.

I have read the above clause and understand the purpose for collection of personal information. Signature of Well Owner

APPENDIX D

Certificate of Laboratory Analysis

Report Transmission Cover Page

Bill To: YTG DOE - Water Resources	Project:	Lot ID: 1190468
Report To: YTG DOE - Water Resources	ID: EPB	Control Number:
202, 419 Range Road	Name: Eagle Plains Baseline	Date Received: Mar 9, 2017
Whitehorse, YT, Canada	Survey	Date Reported: Mar 28, 2017
Y1A 3V1	Location: Yukon	Report Number: 2173962
Attn: John Miller	LSD:	
Sampled By: John Miller	P.O.: C00032908	
Company: YG-Environment	Acct code:	

Contact & Affiliation	Address	Delivery Commitments
Jean Beckerton YTG DOE - Water Resources	202, 419 Range Road Whitehorse, Yukon Territory Y1A 3V1 Phone: (867) 667-3233 Fax: (867) 667-3194 Email: jean.beckerton@gov.yk.ca	On [Report Approval] send (Test Report) by Email - Multiple Reports By Lot On [Report Approval] send (COC, Test Report) by Email - Merge Reports On [Lot Approval and Final Test Report Approval] send (Invoice) by Email - Single Report
John Miller YTG DOE - Water Resources	202, 419 Range Road Whitehorse, Yukon Territory Y1A 3V1 Phone: (867) 667-3233 Fax: (867) 667-3194 Email: john.miller@gov.yk.ca	On [Lot Verification] send (COA) by Email - Single Report On [Lot Approval and Final Test Report Approval] send (Invoice) by Email - Single Report

Notes To Clients:

- Reduction of analytical volume was necessary for suspended solids analysis due to matrix effects in sample #1190468-1. Detection limits are adjusted accordingly.
- Reduction of analytical volume was necessary for Trace Metals analysis due to matrix effects in sample #1190468-1. Detection limits are adjusted accordingly.
- Reduction of analytical volume was necessary for magnesium, sodium and sulfur analysis to bring results within the analytical range for sample #1190468-1. Detection limits are adjusted accordingly.
- Reduction of analytical volume was necessary for Trace Metals analysis due to matrix effects in sample #1190468-1. Detection limits are adjusted accordingly.
- Radiochemistry analysis was performed by a subcontract laboratory. See attached 2 page report 2017-2649.

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Analytical Report

Bill To: YTG DOE - Water Resources
 Report To: YTG DOE - Water Resources
 202, 419 Range Road
 Whitehorse, YT, Canada
 Y1A 3V1
 Attn: John Miller
 Sampled By: John Miller
 Company: YG-Environment

Project:
 ID: EPB
 Name: Eagle Plains Baseline
 Survey
 Location: Yukon
 LSD:
 P.O.: C00032908
 Acct code:

Lot ID: **1190468**
 Control Number:
 Date Received: Mar 9, 2017
 Date Reported: Mar 28, 2017
 Report Number: 2173962

Reference Number 1190468-1
Sample Date Mar 05, 2017
Sample Time 18:15
Sample Location
Sample Description Yown-1401 /
 2017008 / Northern
 Cross Camp Well / B

Analyte	Matrix	Units	Results	Results	Nominal Detection Limit
Inorganic Nonmetallic Parameters					
Nitrogen	Total	mg/L	5.00		0.06
Organic Carbon	Total Nonpurgeable	mg/L	3.4		0.5
Organic Carbon	Dissolved Nonpurgeable	mg/L	2.6		0.5
Inorganic carbon	Total	mg/L	212		0.5
Inorganic carbon	Dissolved	mg/L	199		0.5
Ammonia - N		mg/L	4.12		0.01
Phosphorus	Total	mg/L	0.041		0.003
Metals Dissolved					
Mercury	Dissolved	mg/L	<0.00001		0.00001
Metals Total					
Calcium	Total	mg/L	33.9		0.01
Magnesium	Total	mg/L	234		0.02
Potassium	Total	mg/L	9.1		0.04
Silicon	Total	mg/L	1.80		0.005
Sulfur	Total	mg/L	1640		0.02
Sodium	Total	mg/L	2180		0.1
Titanium	Total	mg/L	0.008		0.002
Digestion	Preparation		Field Pres, digest as total Hg		
Mercury	Total	mg/L	<0.00001		0.00001
Physical and Aggregate Properties					
Solids	Total Suspended	mg/L	184		2
Solids	Total Dissolved	mg/L	7280		5
Routine Water					
pH - Holding Time			Exceeded		
pH	at 25 °C		8.09		
Electrical Conductivity		µS/cm at 25 C	8970		1
Calcium	Dissolved	mg/L	26.6		0.01
Magnesium	Dissolved	mg/L	246		0.02
Potassium	Dissolved	mg/L	9.2		0.04
Silicon	Dissolved	mg/L	1.39		0.005
Sodium	Dissolved	mg/L	2150		0.1
Sulfur	Dissolved	mg/L	1570		0.02
Bicarbonate		mg/L	1020		5
Carbonate		mg/L	<6		6

Analytical Report

Bill To: YTG DOE - Water Resources
 Report To: YTG DOE - Water Resources
 202, 419 Range Road
 Whitehorse, YT, Canada
 Y1A 3V1
 Attn: John Miller
 Sampled By: John Miller
 Company: YG-Environment

Project:
 ID: EPB
 Name: Eagle Plains Baseline
 Survey
 Location: Yukon
 LSD:
 P.O.: C00032908
 Acct code:

Lot ID: **1190468**
 Control Number:
 Date Received: Mar 9, 2017
 Date Reported: Mar 28, 2017
 Report Number: 2173962

Reference Number 1190468-1
Sample Date Mar 05, 2017
Sample Time 18:15
Sample Location
Sample Description Yown-1401 /
 2017008 / Northern
 Cross Camp Well / B

Matrix Water

Analyte	Units	Results	Results	Results	Nominal Detection Limit
Routine Water - Continued					
Hydroxide	mg/L	<5			5
P-Alkalinity	as CaCO3 mg/L	<5			5
T-Alkalinity	as CaCO3 mg/L	833			5
Bromide	Dissolved mg/L	<2.0			0.02
Chloride	Dissolved mg/L	<5.0			0.05
Nitrate - N	Dissolved mg/L	<1			0.01
Nitrite - N	Dissolved mg/L	<1			0.01
Sulfate (SO4)	Dissolved mg/L	4600			0.1
Hardness	as CaCO3 (dissolved) mg/L	1080			5
Total Dissolved Solids	Calculated Value mg/L	7540			1
Ionic Balance	Dissolved %	103			
Mono-Aromatic Hydrocarbons - Water					
Benzene	ug/L	<0.5			0.5
Ethylbenzene	ug/L	<0.5			0.5
Methyl t-Butyl Ether	ug/L	<0.5			0.5
Styrene	ug/L	<0.5			0.5
Toluene	ug/L	7.6			0.5
Total Xylenes (m,p,o)	ug/L	<0.5			0.5
Volatile Petroleum Hydrocarbons - Water					
VPHw (VHw6-10 minus BTEX)	ug/L	<50			50
VHw6-10	ug/L	<50			50
Trace Metals Dissolved					
Digestion	Dissolved		Field filtered and Pres Dissol		
Titanium	Dissolved mg/L	0.004			0.002
Aluminum	Dissolved mg/L	0.1525			0.001
Antimony	Dissolved mg/L	<0.0020			0.00002
Arsenic	Dissolved mg/L	<0.01			0.0001
Barium	Dissolved mg/L	<0.01			0.0001
Beryllium	Dissolved mg/L	<0.0050			0.00005
Bismuth	Dissolved mg/L	<0.01			0.0001
Boron	Dissolved mg/L	0.4			0.002
Cadmium	Dissolved mg/L	<0.001			0.00001
Chromium	Dissolved mg/L	<0.0050			0.00005

Analytical Report

Bill To: YTG DOE - Water Resources
 Report To: YTG DOE - Water Resources
 202, 419 Range Road
 Whitehorse, YT, Canada
 Y1A 3V1
 Attn: John Miller
 Sampled By: John Miller
 Company: YG-Environment

Project:
 ID: EPB
 Name: Eagle Plains Baseline
 Survey
 Location: Yukon
 LSD:
 P.O.: C00032908
 Acct code:

Lot ID: **1190468**
 Control Number:
 Date Received: Mar 9, 2017
 Date Reported: Mar 28, 2017
 Report Number: 2173962

Reference Number 1190468-1
Sample Date Mar 05, 2017
Sample Time 18:15
Sample Location
Sample Description Yown-1401 /
 2017008 / Northern
 Cross Camp Well / B

Matrix Water

Analyte		Units	Results	Results	Results	Nominal Detection Limit
Trace Metals Dissolved - Continued						
Cobalt	Dissolved	mg/L	<0.0020			0.00002
Copper	Dissolved	mg/L	<0.05			0.0005
Iron	Dissolved	mg/L	0.5			0.002
Lead	Dissolved	mg/L	0.0027			0.00001
Lithium	Dissolved	mg/L	0.18			0.0005
Manganese	Dissolved	mg/L	0.4			0.001
Molybdenum	Dissolved	mg/L	0.0071			0.00002
Nickel	Dissolved	mg/L	<0.02			0.0002
Selenium	Dissolved	mg/L	<0.02			0.0002
Silver	Dissolved	mg/L	<0.001			0.00001
Strontium	Dissolved	mg/L	0.06			0.0001
Tellurium	Dissolved	mg/L	<0.0050			0.00005
Thallium	Dissolved	mg/L	<0.001			0.00001
Thorium	Dissolved	mg/L	<0.0050			0.00005
Tin	Dissolved	mg/L	0.33			0.0001
Uranium	Dissolved	mg/L	<0.001			0.00001
Vanadium	Dissolved	mg/L	<0.0050			0.00005
Zinc	Dissolved	mg/L	0.37			0.0005
Zirconium	Dissolved	mg/L	<0.01			0.0001
Trace Metals Total						
Aluminum	Total	mg/L	0.3			0.001
Antimony	Total	mg/L	0.0050			0.00002
Arsenic	Total	mg/L	<0.01			0.0001
Barium	Total	mg/L	0.02			0.0001
Beryllium	Total	mg/L	<0.0050			0.00005
Bismuth	Total	mg/L	<0.01			0.0001
Boron	Total	mg/L	0.3			0.002
Cadmium	Total	mg/L	<0.001			0.00001
Chromium	Total	mg/L	<0.0050			0.00005
Cobalt	Total	mg/L	0.0057			0.00002
Copper	Total	mg/L	<0.02			0.0002
Iron	Total	mg/L	85.4			0.002
Lead	Total	mg/L	0.0051			0.00001
Lithium	Total	mg/L	0.15			0.0005
Manganese	Total	mg/L	0.9			0.001

Analytical Report

Bill To: YTG DOE - Water Resources
 Report To: YTG DOE - Water Resources
 202, 419 Range Road
 Whitehorse, YT, Canada
 Y1A 3V1
 Attn: John Miller
 Sampled By: John Miller
 Company: YG-Environment

Project:
 ID: EPB
 Name: Eagle Plains Baseline
 Survey
 Location: Yukon
 LSD:
 P.O.: C00032908
 Acct code:

Lot ID: **1190468**
 Control Number:
 Date Received: Mar 9, 2017
 Date Reported: Mar 28, 2017
 Report Number: 2173962

Reference Number 1190468-1
Sample Date Mar 05, 2017
Sample Time 18:15
Sample Location
Sample Description Yown-1401 /
 2017008 / Northern
 Cross Camp Well / B

Matrix Water

Analyte	Units	Results	Results	Results	Nominal Detection Limit
Trace Metals Total - Continued					
Molybdenum	Total	mg/L	0.0065		0.00002
Nickel	Total	mg/L	0.04		0.0002
Selenium	Total	mg/L	<0.02		0.0002
Silver	Total	mg/L	0.0010		0.00001
Strontium	Total	mg/L	0.1		0.0001
Tellurium	Total	mg/L	<0.0050		0.00005
Thallium	Total	mg/L	<0.001		0.00001
Thorium	Total	mg/L	<0.0050		0.00005
Tin	Total	mg/L	1.00		0.0001
Uranium	Total	mg/L	0.0035		0.00001
Vanadium	Total	mg/L	<0.0050		0.00005
Zinc	Total	mg/L	0.43		0.0005
Zirconium	Total	mg/L	<0.01		0.0001
Subcontracted Analysis					
Subcontractor Report Id	SRC		Done		

Approved by: 
 Mathieu Simoneau
 Operations Manager

Data have been validated by Analytical Quality Control and Exova's Integrated Data Validation System (IDVS).

Generation and distribution of the report, and approval by the digitized signature above, are performed through a secure and controlled automatic process.

Methodology and Notes

Bill To: YTG DOE - Water Resources	Project:	Lot ID: 1190468
Report To: YTG DOE - Water Resources	ID: EPB	Control Number:
202, 419 Range Road	Name: Eagle Plains Baseline	Date Received: Mar 9, 2017
Whitehorse, YT, Canada	Location: Yukon	Date Reported: Mar 28, 2017
Y1A 3V1	LSD:	Report Number: 2173962
Attn: John Miller	P.O.: C00032908	
Sampled By: John Miller	Acct code:	
Company: YG-Environment		

Method of Analysis

Method Name	Reference	Method	Date Analysis Started	Location
Alk, pH, EC, Turb in water (Surrey)	APHA	* Alkalinity - Titration Method, 2320 B	10-Mar-17	Exova Surrey
Alk, pH, EC, Turb in water (Surrey)	APHA	* Conductivity, 2510 B	10-Mar-17	Exova Surrey
Alk, pH, EC, Turb in water (Surrey)	APHA	* pH - Electrometric Method, 4500-H+ B	10-Mar-17	Exova Surrey
Ammonia-N in Water (Surrey)	APHA	* Flow Injection Analysis, 4500-NH3 H	10-Mar-17	Exova Surrey
Anions by IEC in water (Surrey)	APHA	* Ion Chromatography with Chemical Suppression of Eluent Cond., 4110 B	10-Mar-17	Exova Surrey
Anions by IEC in water (Surrey)	APHA	* Single-Column Ion Chromatography with Electronic Suppression, 4110 C	10-Mar-17	Exova Surrey
BTEX-VPH - Water (MS) (Surrey)	B.C.M.O.E	* Volatile Hydrocarbons in Waters by GC/FID (April, 2007), CSR	13-Mar-17	Exova Surrey
BTEX-VPH - Water (MS) (Surrey)	BCELM	* Volatile Hydrocarbons in Water by GC/FID, VH Water	13-Mar-17	Exova Surrey
Carbon Inorganic (Dissolved) in water(DIC)	APHA	High-Temperature Combustion Method, 5310 B	15-Mar-17	Exova Edmonton
Carbon Inorganic (Total) in water (TIC)	APHA	High-Temperature Combustion Method, 5310 B	15-Mar-17	Exova Edmonton
Carbon Organic (Dissolved) in water (DOC)	APHA	High-Temperature Combustion Method, 5310 B	13-Mar-17	Exova Edmonton
Carbon Organic (Total) in water (TOC)	APHA	High-Temperature Combustion Method, 5310 B	13-Mar-17	Exova Edmonton
Mercury Low Level (Dissolved) in water (Surrey)	EPA	* Mercury in Water by Cold Vapor Atomic Fluorescence Spectrometry, 245.7	15-Mar-17	Exova Surrey
Mercury Low Level (Total) in water (Surrey)	EPA	* Mercury in Water by Cold Vapor Atomic Fluorescence Spectrometry, 245.7	14-Mar-17	Exova Surrey
Metals SemiTrace (Dissolved) in water (Surrey)	US EPA	* Metals & Trace Elements by ICP-AES, 6010C	10-Mar-17	Exova Surrey
Metals SemiTrace (Total) in Water (Surrey)	US EPA	* Metals & Trace Elements by ICP-AES, 6010C	13-Mar-17	Exova Surrey
Phosphorus - total by Smartchem (Surrey)	APHA	* Persulfate digestion method, 4500-P B5	10-Mar-17	Exova Surrey
Solids Dissolved (Total, Fixed and Volatile) - Surrey	APHA	* Total Dissolved Solids Dried at 180 C, 2540 C	10-Mar-17	Exova Surrey
Solids Suspended (Total, Fixed and Volatile) - Surrey	APHA	* Total Suspended Solids Dried at 103-105°C, 2540 D	10-Mar-17	Exova Surrey
Sublet to SRC Analytical	Ext. Lab	See attached test report,	20-Mar-17	Saskatchewan Research Council
Total and Kjeldahl Nitrogen (Total) in Water	ISO	* Water Quality - Determination of nitrogen, ISO/TR 11905-2	13-Mar-17	Exova Edmonton
Trace Metals (dissolved) in Water (Surrey)	US EPA	* Determination of Trace Elements in Waters and Wastes by ICP-MS, 200.8	10-Mar-17	Exova Surrey
Trace Metals (Total) in Water (Surrey)	US EPA	* Determination of Trace Elements in Waters and Wastes by ICP-MS, 200.8	13-Mar-17	Exova Surrey

* Reference Method Modified

Methodology and Notes

Bill To: YTG DOE - Water Resources	Project:	Lot ID: 1190468
Report To: YTG DOE - Water Resources	ID: EPB	Control Number:
202, 419 Range Road	Name: Eagle Plains Baseline	Date Received: Mar 9, 2017
Whitehorse, YT, Canada	Location: Yukon	Date Reported: Mar 28, 2017
Y1A 3V1	LSD:	Report Number: 2173962
Attn: John Miller	P.O.: C00032908	
Sampled By: John Miller	Acct code:	
Company: YG-Environment		

References

APHA	Standard Methods for the Examination of Water and Wastewater
B.C.M.O.E	B.C. Ministry of Environment
BCELM	B.C. Environmental Laboratory Manual
EPA	Environmental Protection Agency Test Methods - US
Ext. Lab	External Laboratory
ISO	International Organization for Standardization
US EPA	US Environmental Protection Agency Test Methods

Comments:

- Reduction of analytical volume was necessary for suspended solids analysis due to matrix effects in sample #1190468-1. Detection limits are adjusted accordingly.
- Reduction of analytical volume was necessary for Trace Metals analysis due to matrix effects in sample #1190468-1. Detection limits are adjusted accordingly.
- Reduction of analytical volume was necessary for magnesium, sodium and sulfur analysis to bring results within the analytical range for sample #1190468-1. Detection limits are adjusted accordingly.
- Reduction of analytical volume was necessary for Trace Metals analysis due to matrix effects in sample #1190468-1. Detection limits are adjusted accordingly.
- Radiochemistry analysis was performed by a subcontract laboratory. See attached 2 page report 2017-2649.

Please direct any inquiries regarding this report to our Client Services group.

Results relate only to samples as submitted.

The test report shall not be reproduced except in full, without the written approval of the laboratory.

SRC Group # 2017-2649

Mar 20, 2017

EXOVA
104-19575 55A Avenue
Surrey, BC V3S 8P8
Attn: Client Services

Date Samples Received: Mar-13-2017

Client P.O.: POC101427

This is a final report.

Lab Section 1 results have been authorized by Keith Gipman QP, Supervisor
Lab Section 2 results have been authorized by Melissa Tackaberry-Syed QP, Supervisor
Lab Section 3 results have been authorized by Pat Moser QP, Supervisor
Lab Sections 4 and 5 results have been authorized by Vicky Snook QP, Supervisor
Lab Section 6 results have been authorized by Marion McConnell QP, Supervisor

QP: Qualified Person in accordance with the Saskatchewan Environmental Code, Corrective Action Plan Chapter, for the purposes of certifying a laboratory analysis

- * Test methods and data are validated by the laboratory's Quality Assurance Program.
- * Routine methods follow recognized procedures from sources such as
 - * Standard Methods for the Examination of Water and Wastewater APHA AWWA WEF
 - * Environment Canada
 - * US EPA
 - * CANMET
- * The results reported relate only to the test samples as provided by the client.
- * Samples will be kept for 30 days after the final report is sent. Please contact the lab if you have any special requirements.
- * Additional information is available upon request.

SRC Group # 2017-2649

Mar 20, 2017

EXOVA

104-19575 55A Avenue
Surrey, BC V3S 8P8
Attn: Client Services

Date Samples Received: Mar-13-2017

Client P.O.: POC101427

8182 03/05/2017 1190468-1 NORTHERN CROSS CAMP WELL B YOWN-1401 2017008 *WATER*

Analyte	Units	8182
Lab Section 4 (Radiochemistry)		
Radium-226	Bq/L	<0.01
Thorium-234	Bq/L	<4
Thorium-230	Bq/L	<30
Radium-226	Bq/L	<5
Lead-214	Bq/L	<0.5
Bismuth-214	Bq/L	<0.5
Lead-210	Bq/L	<4
Actinium-228	Bq/L	<0.9
Lead-212	Bq/L	0.4
Bismuth-212	Bq/L	<0.9
Thallium-208	Bq/L	0.5
Uranium-235	Bq/L	<1
Thorium-227	Bq/L	<0.8
Radium-223	Bq/L	<1
Radon-219	Bq/L	<0.7
Lead-211	Bq/L	<4
Potassium-40	Bq/L	18

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Gamma spectroscopy detection limits are influenced by several factors. "Less than" values reported above represent the lowest detection limits achievable for the sample.

Report Transmission Cover Page

Bill To: YTG DOE - Water Resources 202, 419 Range Road Whitehorse, YT, Canada Y1A 3V1 Attn: Holly Goulding	Project: ID: YOWN Name: Congdon Creek CG Location: Congdon Creek CG LSD: P.O.: C00037999 Acct code:	Lot ID: 1199062 Control Number: Date Received: Apr 27, 2017 Date Reported: May 11, 2017 Report Number: 2185791
Sampled By: KP/DB Company: YG-Environment		

Contact & Affiliation	Address	Delivery Commitments
John Miller YTG DOE - Water Resources	202, 419 Range Road Whitehorse, Yukon Territory Y1A 3V1 Phone: (867) 667-3233 Fax: (867) 667-3194 Email: john.miller@gov.yk.ca	On [Lot Verification] send (COA) by Email - Single Report On [Lot Verification] send (COA) by Email - Single Report On [Report Approval] send (Test Report) by Email - Multiple Reports By Lot On [Report Approval] send (Test Report, COC) by Email - Multiple Reports By Lot On [Lot Creation] send (COR) by Email - Single Report
Holly Goulding YTG DOE - Water Resources	202, 419 Range Road Whitehorse, Yukon Territory Y1A 3V1 Phone: (867) 456-6583 Fax: (867) 667-3194 Email: holly.goulding@gov.yk.ca	On [Report Approval] send (Test Report) by Email - Single Report On [Report Approval] send (Test Report, COC) by Email - Merge Reports On [Lot Approval and Final Test Report Approval] send (Invoice) by Email - Single Report

Notes To Clients:

- Reduction of analytical volume was necessary for Trace Metals analysis to bring results within the analytical range for samples #1199062-1 through 3. Detection limits are adjusted accordingly.
- Radium analysis was performed by a subcontract laboratory. See attached 2 page report 2017-4779.
- Sample 1199062-2; 5702348 Reduction of analytical volume was necessary for anions due to matrix effects in sample 1199062-2 and 1199062-3. Detection limits are adjusted accordingly.

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Analytical Report

Bill To: YTG DOE - Water Resources	Project:	Lot ID: 1199062
202, 419 Range Road	ID: YOWN	Control Number:
Whitehorse, YT, Canada	Name: Congdon Creek CG	Date Received: Apr 27, 2017
Y1A 3V1	Location: Congdon Creek CG	Date Reported: May 11, 2017
Attn: Holly Goulding	LSD:	Report Number: 2185791
Sampled By: KP/DB	P.O.: C00037999	
Company: YG-Environment	Acct code:	

Reference Number	1199062-1	1199062-2	1199062-3
Sample Date	Apr 06, 2017	Apr 25, 2017	Apr 25, 2017
Sample Time	14:58	14:44	16:05
Sample Location			
Sample Description	YOWN-1612 / 2017046 / 3 °C / B	2017047 / 3 °C / B	2017048 / 3 °C / B

Analyte	Matrix	Units	Water	Water	Water	Nominal Detection Limit
			Results	Results	Results	
Metals Total						
Calcium	Total	mg/L	64	140	99	0.01
Magnesium	Total	mg/L	13	44	42	0.02
Potassium	Total	mg/L	2.1	3.0	3.0	0.04
Silicon	Total	mg/L	6.4	7.2	7.6	0.005
Sulfur	Total	mg/L	2.2	97	52	0.02
Sodium	Total	mg/L	6.3	17	10	0.1
Titanium	Total	mg/L	0.014	0.023	0.018	0.002
Trace Metals Total						
Aluminum	Total	mg/L	0.018	0.0096	0.003	0.001
Antimony	Total	mg/L	0.00012	0.00019	0.000038	0.00002
Arsenic	Total	mg/L	0.0006	0.0014	0.0061	0.0001
Barium	Total	mg/L	0.11	0.080	0.10	0.0001
Beryllium	Total	mg/L	<0.000050	<0.000050	<0.000050	0.00005
Bismuth	Total	mg/L	<0.0001	<0.0001	<0.0001	0.0001
Boron	Total	mg/L	0.004	0.42	0.36	0.002
Cadmium	Total	mg/L	0.000043	0.000089	0.000055	0.00001
Chromium	Total	mg/L	0.0042	0.0058	0.00075	0.00005
Cobalt	Total	mg/L	0.00069	0.00040	0.00013	0.00002
Copper	Total	mg/L	0.0058	0.0052	0.0012	0.0002
Iron	Total	mg/L	10	18	3.3	0.002
Lead	Total	mg/L	0.043	0.0045	0.00087	0.00001
Lithium	Total	mg/L	0.0013	0.0052	0.0021	0.0005
Manganese	Total	mg/L	0.060	0.065	0.32	0.001
Molybdenum	Total	mg/L	0.0010	0.0023	0.0015	0.00002
Nickel	Total	mg/L	0.0021	0.0063	0.0008	0.0002
Selenium	Total	mg/L	0.0005	0.0056	<0.0002	0.0002
Silver	Total	mg/L	0.000017	<0.000010	<0.000010	0.00001
Strontium	Total	mg/L	0.22	0.44	0.40	0.0001
Tellurium	Total	mg/L	<0.000050	<0.000050	<0.000050	0.00005
Thallium	Total	mg/L	<0.000010	<0.000010	<0.000010	0.00001
Thorium	Total	mg/L	0.000059	0.000091	0.000056	0.00005
Tin	Total	mg/L	<0.0001	<0.0001	<0.0001	0.0001
Uranium	Total	mg/L	0.00090	0.0023	0.00092	0.00001
Vanadium	Total	mg/L	0.0011	0.0023	0.00037	0.00005
Zinc	Total	mg/L	0.85	0.90	0.59	0.0005

Analytical Report

Bill To: YTG DOE - Water Resources 202, 419 Range Road Whitehorse, YT, Canada Y1A 3V1	Project: ID: YOWN Name: Congdon Creek CG Location: Congdon Creek CG LSD: P.O.: C00037999 Acct code:	Lot ID: 1199062 Control Number: Date Received: Apr 27, 2017 Date Reported: May 11, 2017 Report Number: 2185791
Attn: Holly Goulding Sampled By: KP/DB Company: YG-Environment		

	Reference Number	1199062-1	1199062-2	1199062-3		
	Sample Date	Apr 06, 2017	Apr 25, 2017	Apr 25, 2017		
	Sample Time	14:58	14:44	16:05		
	Sample Location					
	Sample Description	YOWN-1612 / 2017046 / 3 °C / B	2017047 / 3 °C / B	2017048 / 3 °C / B		
	Matrix	Water	Water	Water		
Analyte	Units	Results	Results	Results	Nominal Detection Limit	
Trace Metals Total - Continued						
Zirconium	Total	mg/L	<0.0001	<0.0001	<0.0001	0.0001

Analytical Report

Bill To: YTG DOE - Water Resources 202, 419 Range Road Whitehorse, YT, Canada Y1A 3V1	Project: ID: YOWN Name: Congdon Creek CG Location: Congdon Creek CG LSD: P.O.: C00037999 Acct code:	Lot ID: 1199062 Control Number: Date Received: Apr 27, 2017 Date Reported: May 11, 2017 Report Number: 2185791
Attn: Holly Goulding Sampled By: KP/DB Company: YG-Environment		

		Reference Number	1199062-2	1199062-3	
		Sample Date	Apr 25, 2017	Apr 25, 2017	
		Sample Time	14:44	16:05	
		Sample Location			
		Sample Description	2017047 / 3 °C / B	2017048 / 3 °C / B	
		Matrix	Water	Water	
Analyte	Units	Results	Results	Results	Nominal Detection Limit
Inorganic Nonmetallic Parameters					
Nitrogen	Total	mg/L	0.32	0.22	0.06
Organic Carbon	Total Nonpurgeable	mg/L	<0.5	1.0	0.5
Organic Carbon	Dissolved Nonpurgeable	mg/L	<0.5	<0.5	0.5
Inorganic carbon	Total	mg/L	61.0	61.2	0.5
Inorganic carbon	Dissolved	mg/L	60.2	60.8	0.5
Ammonia - N		mg/L	0.02	0.15	0.01
Phosphorus	Total	mg/L	0.011	0.011	0.003
Physical and Aggregate Properties					
Solids	Total Suspended	mg/L	20.0	18.5	2
Solids	Total Dissolved	mg/L	650	390	5
Routine Water					
pH - Holding Time			Exceeded	Exceeded	
pH	at 25 °C		7.54	7.91	
Electrical Conductivity		µS/cm at 25 °C	893	600	1
Calcium	Dissolved	mg/L	120	110	0.01
Magnesium	Dissolved	mg/L	40	39	0.02
Potassium	Dissolved	mg/L	2.6	2.6	0.04
Silicon	Dissolved	mg/L	5.4	7.6	0.005
Sodium	Dissolved	mg/L	14	8.8	0.1
Sulfur	Dissolved	mg/L	87	53	0.02
Bicarbonate		mg/L	316	265	5
Carbonate		mg/L	<6	<6	6
Hydroxide		mg/L	<5	<5	5
P-Alkalinity	as CaCO3	mg/L	<5	<5	5
T-Alkalinity	as CaCO3	mg/L	260	217	5
Bromide	Dissolved	mg/L	<0.20	<0.20	0.02
Chloride	Dissolved	mg/L	5.01	4.23	0.05
Fluoride	Dissolved	mg/L	0.12	<0.10	0.01
Nitrate - N	Dissolved	mg/L	<0.10	<0.10	0.01
Nitrite - N	Dissolved	mg/L	<0.10	<0.10	0.01
Sulfate (SO4)	Dissolved	mg/L	269	121	0.1
Hardness	as CaCO3 (dissolved)	mg/L	480	430	5
Trace Metals Dissolved					
Digestion	Dissolved		Field filtered and Pres Dissol	Field filtered and Pres Dissol	
Titanium	Dissolved	mg/L	0.021	0.019	0.002

Analytical Report

Bill To: YTG DOE - Water Resources 202, 419 Range Road Whitehorse, YT, Canada Y1A 3V1	Project: ID: YOWN Name: Congdon Creek CG Location: Congdon Creek CG LSD: P.O.: C00037999 Acct code:	Lot ID: 1199062 Control Number: Date Received: Apr 27, 2017 Date Reported: May 11, 2017 Report Number: 2185791
Attn: Holly Goulding Sampled By: KP/DB Company: YG-Environment		

Reference Number	1199062-2	1199062-3
Sample Date	Apr 25, 2017	Apr 25, 2017
Sample Time	14:44	16:05
Sample Location		
Sample Description	2017047 / 3 °C / B	2017048 / 3 °C / B

Matrix	Water	Water
---------------	-------	-------

Analyte	Units	Results	Results	Results	Nominal Detection Limit
Trace Metals Dissolved - Continued					
Aluminum	Dissolved mg/L	0.001	0.002		0.001
Antimony	Dissolved mg/L	0.000093	<0.000020		0.00002
Arsenic	Dissolved mg/L	0.0002	0.0051		0.0001
Barium	Dissolved mg/L	0.0684	0.1186		0.0001
Beryllium	Dissolved mg/L	<0.000050	<0.000050		0.00005
Bismuth	Dissolved mg/L	<0.0001	<0.0001		0.0001
Boron	Dissolved mg/L	0.426	0.366		0.002
Cadmium	Dissolved mg/L	0.000012	0.000012		0.00001
Chromium	Dissolved mg/L	0.000973	0.000348		0.00005
Cobalt	Dissolved mg/L	0.000026	0.000033		0.00002
Copper	Dissolved mg/L	<0.0005	<0.0005		0.0005
Iron	Dissolved mg/L	0.182	1.48		0.002
Lead	Dissolved mg/L	0.000147	0.000439		0.00001
Lithium	Dissolved mg/L	0.0047	0.0019		0.0005
Manganese	Dissolved mg/L	0.016	0.375		0.001
Molybdenum	Dissolved mg/L	0.001563	0.001457		0.00002
Nickel	Dissolved mg/L	0.0030	0.0003		0.0002
Selenium	Dissolved mg/L	0.0054	0.0003		0.0002
Silver	Dissolved mg/L	<0.000010	<0.000010		0.00001
Strontium	Dissolved mg/L	0.4103	0.4108		0.0001
Tellurium	Dissolved mg/L	<0.000050	<0.000050		0.00005
Thallium	Dissolved mg/L	<0.000010	<0.000010		0.00001
Thorium	Dissolved mg/L	<0.000050	<0.000050		0.00005
Tin	Dissolved mg/L	<0.0001	<0.0001		0.0001
Uranium	Dissolved mg/L	0.001909	0.000963		0.00001
Vanadium	Dissolved mg/L	0.000236	0.000285		0.00005
Zinc	Dissolved mg/L	0.0733	0.1125		0.0005
Zirconium	Dissolved mg/L	<0.0001	0.0001		0.0001

Subcontracted Analysis

Subcontractor Report Id	SRC	Done	Done
-------------------------	-----	------	------

Analytical Report

Bill To: YTG DOE - Water Resources
202, 419 Range Road
Whitehorse, YT, Canada
Y1A 3V1
Attn: Holly Goulding
Sampled By: KP/DB
Company: YG-Environment

Project:
ID: YOWN
Name: Congdon Creek CG
Location: Congdon Creek CG
LSD:
P.O.: C00037999
Acct code:

Lot ID: **1199062**
Control Number:
Date Received: Apr 27, 2017
Date Reported: May 11, 2017
Report Number: 2185791

Reference Number 1199062-3
Sample Date Apr 25, 2017
Sample Time 16:05
Sample Location
Sample Description 2017048 / 3 °C / B

Matrix Water

Analyte	Units	Results	Results	Results	Nominal Detection Limit
Mono-Aromatic Hydrocarbons - Water					
Benzene	µg/L	<0.5			0.5
Ethylbenzene	µg/L	<0.5			0.5
Methyl t-Butyl Ether	µg/L	<0.5			0.5
Styrene	µg/L	<0.5			0.5
Toluene	µg/L	<0.5			0.5
Total Xylenes (m,p,o)	µg/L	<0.5			0.5
Volatile Petroleum Hydrocarbons - Water					
VPHw (VHw6-10 minus BTEX)	µg/L	<50			50
VHw6-10	µg/L	<50			50

Approved by: 
Mathieu Simoneau
Operations Manager

Data have been validated by Analytical Quality Control and Exova's Integrated Data Validation System (IDVS).

Generation and distribution of the report, and approval by the digitized signature above, are performed through a secure and controlled automatic process.

Quality Control

Bill To: YTG DOE - Water Resources 202, 419 Range Road Whitehorse, YT, Canada Y1A 3V1	Project: ID: YOWN Name: Congdon Creek CG Location: Congdon Creek CG LSD: P.O.: C00037999 Acct code:	Lot ID: 1199062 Control Number: Date Received: Apr 27, 2017 Date Reported: May 11, 2017 Report Number: 2185791
Attn: Holly Goulding Sampled By: KP/DB Company: YG-Environment		

Inorganic Nonmetallic Parameters

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC	
Ammonium - N	µg/L	-5.429	-110.00	10.00	yes	
Phosphorus	mg/L	-0.0025	-0.003	0.003	yes	
Date Acquired: May 01, 2017						
Nitrogen	mg/L	0.03854	-0.04	0.08	yes	
Organic Carbon	mg/L	0.02797	-0.5	0.5	yes	
Inorganic carbon	mg/L	0.1836	-0.5	0.5	yes	
Date Acquired: May 02, 2017						
Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC	
Ammonium - N	µg/L	105.33	85	115	yes	
Phosphorus	mg/L	102.66	90	110	yes	
Date Acquired: May 01, 2017						
Ammonium - N	µg/L	118.68	70	130	yes	
Phosphorus	mg/L	103.00	80	120	yes	
Date Acquired: May 01, 2017						
Client Sample Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Nitrogen	mg/L	0.19	0.18	10	0.06	yes
Organic Carbon	mg/L	276	277	10	1.0	yes
Inorganic carbon	mg/L	61.0	60.9	10	1.0	yes
Date Acquired: May 02, 2017						
Ammonia - N	mg/L	19.9	19.9	20	50.00	yes
Date Acquired: May 03, 2017						
Control Sample	Units	Measured	Lower Limit	Upper Limit	Passed QC	
Organic Carbon	mg/L	<0.5	-0.5	0.5	yes	
Date Acquired: May 01, 2017						
Nitrogen	mg/L	125	103.74	137.28	yes	
Organic Carbon	mg/L	127	109.1	139.7	yes	
Inorganic carbon	mg/L	46.9	40.5	55.5	yes	
Date Acquired: May 02, 2017						
Nitrogen	mg/L	15.1	13.27	16.93	yes	
Organic Carbon	mg/L	15.1	12.8	17.2	yes	
Inorganic carbon	mg/L	15.6	14.1	18.3	yes	
Date Acquired: May 02, 2017						
Nitrogen	mg/L	1.04	0.89	1.25	yes	
Organic Carbon	mg/L	3.7	2.4	4.0	yes	
Inorganic carbon	mg/L	3.4	2.7	4.1	yes	
Date Acquired: May 02, 2017						
Phosphorus	mg/L	0.469	0.389	0.503	yes	
Date Acquired: May 01, 2017						

Metals Total

Quality Control

Bill To: YTG DOE - Water Resources 202, 419 Range Road Whitehorse, YT, Canada Y1A 3V1	Project: ID: YOWN Name: Congdon Creek CG Location: Congdon Creek CG LSD: P.O.: C00037999 Acct code:	Lot ID: 1199062 Control Number: Date Received: Apr 27, 2017 Date Reported: May 11, 2017 Report Number: 2185791
Attn: Holly Goulding Sampled By: KP/DB Company: YG-Environment		

Metals Total

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
Calcium	mg/L	-0.00101489	-0.010	0.010	yes
Magnesium	mg/L	0.00787671	-0.020	0.020	yes
Potassium	mg/L	0.00895563	-0.040	0.040	yes
Silicon	mg/L	0.00133071	-0.005	0.005	yes
Sodium	mg/L	0.0536421	-0.099	0.099	yes

Date Acquired: April 28, 2017

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
Calcium	mg/L	103.21	90	110	yes
Magnesium	mg/L	105.24	90	110	yes
Potassium	mg/L	103.16	90	110	yes
Silicon	mg/L	102.63	90	110	yes
Sodium	mg/L	102.68	90	110	yes
Titanium	mg/L	99.37	90	110	yes

Date Acquired: April 28, 2017

Calcium	mg/L	104.50	90	110	yes
Magnesium	mg/L	108.56	90	110	yes
Potassium	mg/L	102.80	90	110	yes
Silicon	mg/L	100.10	90	110	yes
Sodium	mg/L	104.54	90	110	yes
Titanium	mg/L	100.72	90	110	yes

Date Acquired: April 28, 2017

Client Sample Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Calcium	mg/L	200	190	20	0.050	yes
Magnesium	mg/L	9.6	9.4	20	0.050	yes
Potassium	mg/L	4.9	4.6	20	0.100	yes
Silicon	mg/L	4.4	4.3	20	0.100	yes
Sodium	mg/L	130	120	20	0.100	yes

Date Acquired: April 28, 2017

Mono-Aromatic Hydrocarbons - Water

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
Benzene	ng	0	-0.5	0.5	yes
Ethylbenzene	ng	0	-0.5	0.5	yes
Methyl t-Butyl Ether	ng	0	-0.5	0.5	yes
m,p-Xylene	ng	0	-0.5	0.5	yes
o-Xylene	ng	0	-0.5	0.5	yes
Styrene	ng	0	-0.5	0.5	yes
Toluene	ng	0	-0.5	0.5	yes
Total Xylenes (m,p,o)	ng	0	-0.5	0.5	yes

Date Acquired: May 01, 2017

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
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Quality Control

Bill To: YTG DOE - Water Resources	Project:	Lot ID: 1199062
202, 419 Range Road	ID: YOWN	Control Number:
Whitehorse, YT, Canada	Name: Congdon Creek CG	Date Received: Apr 27, 2017
Y1A 3V1	Location: Congdon Creek CG	Date Reported: May 11, 2017
Attn: Holly Goulding	LSD:	Report Number: 2185791
Sampled By: KP/DB	P.O.: C00037999	
Company: YG-Environment	Acct code:	

Mono-Aromatic Hydrocarbons - Water -

Continued

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
Benzene	ng	112.58	75	125	yes
Ethylbenzene	ng	109.81	75	125	yes
Methyl t-Butyl Ether	ng	119.92	75	125	yes
m,p-Xylene	ng	106.92	75	125	yes
o-Xylene	ng	114.54	75	125	yes
Styrene	ng	108.63	75	125	yes
Toluene	ng	113.91	75	125	yes
Total Xylenes (m,p,o)	ng	109.46	75	125	yes

Date Acquired: May 01, 2017

Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Benzene	µg/L	<0.5	<0.5	20	2.5	yes
Ethylbenzene	µg/L	<0.5	<0.5	20	2.5	yes
Methyl t-Butyl Ether	µg/L	<0.5	<0.5	20	2.5	yes
m,p-Xylene	µg/L	<0.5	<0.5	20	2.5	yes
o-Xylene	µg/L	<0.5	<0.5	20	2.5	yes
Styrene	µg/L	<0.5	<0.5	20	2.5	yes
Toluene	µg/L	<0.5	<0.5	20	2.5	yes
Total Xylenes (m,p,o)	µg/L	<0.5	<0.5	20	2.5	yes

Date Acquired: May 01, 2017

Matrix Spike	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
Benzene	µg/L	97	75	125	yes
Ethylbenzene	µg/L	101	75	125	yes
Methyl t-Butyl Ether	µg/L	105	75	125	yes
m,p-Xylene	µg/L	100	75	125	yes
o-Xylene	µg/L	106	75	125	yes
Styrene	µg/L	97	75	125	yes
Toluene	µg/L	109	75	125	yes
Total Xylenes (m,p,o)	µg/L	102	75	125	yes

Date Acquired: May 01, 2017

Physical and Aggregate Properties

Client Sample Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Solids	mg/L	36.0	36.5	30	10.000	yes

Date Acquired: May 02, 2017

Control Sample	Units	Measured	Lower Limit	Upper Limit	Passed QC
Solids	mg/L	380	263.000	575.000	yes

Date Acquired: May 02, 2017

Solids	mg/L	25.0	16.490	30.710	yes
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Date Acquired: May 02, 2017

Solids	mg/L	<5.0	-5.001	5.001	yes
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Quality Control

Bill To: YTG DOE - Water Resources 202, 419 Range Road Whitehorse, YT, Canada Y1A 3V1	Project: ID: YOWN Name: Congdon Creek CG Location: Congdon Creek CG LSD: P.O.: C00037999 Acct code:	Lot ID: 1199062 Control Number: Date Received: Apr 27, 2017 Date Reported: May 11, 2017 Report Number: 2185791
Attn: Holly Goulding Sampled By: KP/DB Company: YG-Environment		

Physical and Aggregate Properties -

Continued

Control Sample	Units	Measured	Lower Limit	Upper Limit	Passed QC
Date Acquired:	May 02, 2017				
Solids	mg/L	<2.0	-5.010	5.010	yes
Date Acquired:	May 02, 2017				

Routine Water

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
Calcium	mg/L	-0.00731801	-0.010	0.010	yes
Magnesium	mg/L	-0.0146193	-0.020	0.020	yes
Potassium	mg/L	-0.0123724	-0.040	0.040	yes
Silicon	mg/L	0.00419617	-0.005	0.005	yes
Sodium	mg/L	-0.00425553	-0.099	0.099	yes
Date Acquired:	April 28, 2017				
Bromide	mg/L	0	-0.099	0.099	yes
Chloride	mg/L	0.0117171	-0.201	0.201	yes
Fluoride	mg/L	0.00406685	-0.099	0.099	yes
Nitrate - N	mg/L	0.000858979	-0.010	0.010	yes
Nitrite - N	mg/L	0	-0.099	0.099	yes
Sulfate (SO4)	mg/L	0	-0.990	0.990	yes
Date Acquired:	April 28, 2017				

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
Calcium	mg/L	98.22	90	110	yes
Magnesium	mg/L	101.35	90	110	yes
Potassium	mg/L	99.05	90	110	yes
Silicon	mg/L	98.61	90	110	yes
Sodium	mg/L	99.17	90	110	yes
Date Acquired:	April 28, 2017				
Bromide	mg/L	98.14	90	110	yes
Chloride	mg/L	102.88	85	115	yes
Fluoride	mg/L	90.47	85	115	yes
Nitrate - N	mg/L	103.70	85	115	yes
Nitrite - N	mg/L	98.09	90	110	yes
Sulfate (SO4)	mg/L	98.61	85	115	yes
Date Acquired:	April 28, 2017				
Bromide	mg/L	103.74	90	110	yes
Chloride	mg/L	102.92	90	110	yes
Fluoride	mg/L	103.96	89	109	yes
Nitrate - N	mg/L	103.05	88	108	yes
Nitrite - N	mg/L	103.06	90	118	yes
Sulfate (SO4)	mg/L	100.01	90	110	yes
Date Acquired:	April 28, 2017				

Quality Control

Bill To: YTG DOE - Water Resources 202, 419 Range Road Whitehorse, YT, Canada Y1A 3V1	Project: ID: YOWN Name: Congdon Creek CG Location: Congdon Creek CG LSD: P.O.: C00037999 Acct code:	Lot ID: 1199062 Control Number: Date Received: Apr 27, 2017 Date Reported: May 11, 2017 Report Number: 2185791
Attn: Holly Goulding Sampled By: KP/DB Company: YG-Environment		

Routine Water - Continued

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
Calcium	mg/L	101.30	90	110	yes
Magnesium	mg/L	106.02	90	110	yes
Potassium	mg/L	100.92	90	110	yes
Sodium	mg/L	103.39	90	110	yes

Date Acquired: April 28, 2017

Certified Reference Material	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
T-Alkalinity	mg/L	10	10	8	12	yes

Date Acquired: April 29, 2017

Client Sample Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Calcium	mg/L	17	17	30	1.000	yes
Magnesium	mg/L	5.8	5.7	30	1.000	yes
Potassium	mg/L	8.0	8.0	30	1.000	yes
Silicon	mg/L	7.6	7.5	30	0.150	yes
Sodium	mg/L	7.1	7.1	30	1.000	yes
Sulfur	mg/L	53	52	30	3.000	yes

Date Acquired: April 28, 2017

Hardness	mg CaCO3/L	530	520	20	1.000	yes
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Date Acquired: April 28, 2017

pH		6.26	6.25	10		yes
Electrical Conductivity	dS/m at 25 °C	0.063	0.062	10	0.005	yes
Bicarbonate	mg/L	39	39	10	10	yes
Hydroxide	mg/L	<5	<5	10	10	yes
P-Alkalinity	mg/L	<5	<5	10	5	yes
T-Alkalinity	mg/L	32	32	10	5	yes
Chloride	mg/L	82.5	82.3	20	0.250	yes

Date Acquired: April 28, 2017

Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Chloride	mg/L	1.32	1.34	6	0.010	yes
Nitrate - N	mg/L	0.349	0.326	12	0.050	yes
Sulfate (SO4)	mg/L	4.4	4.4	6	0.010	yes

Date Acquired: April 28, 2017

Control Sample	Units	Measured	Lower Limit	Upper Limit	Passed QC
pH		10.19	9.17	10.81	yes
Electrical Conductivity	µS/cm at 25 °C	215	194	250	yes
P-Alkalinity	mg/L	44	7	55	yes
T-Alkalinity	mg/L	105	98	113	yes

Date Acquired: April 29, 2017

pH		4.02	3.88	4.12	yes
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Date Acquired: April 29, 2017

pH		7.95	7.88	8.12	yes
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Quality Control

Bill To: YTG DOE - Water Resources 202, 419 Range Road Whitehorse, YT, Canada Y1A 3V1	Project: ID: YOWN Name: Congdon Creek CG Location: Congdon Creek CG LSD: P.O.: C00037999 Acct code:	Lot ID: 1199062 Control Number: Date Received: Apr 27, 2017 Date Reported: May 11, 2017 Report Number: 2185791
Attn: Holly Goulding Sampled By: KP/DB Company: YG-Environment		

Routine Water - Continued

Control Sample	Units	Measured	Lower Limit	Upper Limit	Passed QC
Date Acquired:	April 29, 2017				
Electrical Conductivity	µS/cm at 25 °C	1390	1323	1503	yes
Date Acquired:	April 29, 2017				

Trace Metals Dissolved

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
Aluminum	µg/L	-0.31751	-0.990	0.990	yes
Antimony	µg/L	0	-0.020	0.020	yes
Arsenic	µg/L	0.00148743	-0.099	0.099	yes
Barium	µg/L	-0.00469461	-0.099	0.099	yes
Beryllium	µg/L	-0.00646584	-0.050	0.050	yes
Bismuth	µg/L	-0.00262303	-0.099	0.099	yes
Boron	µg/L	0.853327	-2.001	2.001	yes
Cadmium	µg/L	-0.00236334	-0.010	0.010	yes
Chromium	µg/L	-0.00510735	-0.050	0.050	yes
Cobalt	µg/L	-0.00604224	-0.020	0.020	yes
Copper	µg/L	-0.00593573	-0.050	0.050	yes
Iron	µg/L	-0.0978715	-2.001	2.001	yes
Lead	µg/L	-0.0023426	-0.010	0.010	yes
Lithium	µg/L	-7.15646e-005	-0.500	0.500	yes
Manganese	µg/L	-0.0510571	-0.990	0.990	yes
Molybdenum	µg/L	-0.0096556	-0.020	0.020	yes
Nickel	µg/L	-0.0140298	-0.200	0.200	yes
Selenium	µg/L	-0.0170068	-0.200	0.200	yes
Silver	µg/L	-0.00431974	-0.009	0.009	yes
Tellurium	µg/L	0	-0.050	0.050	yes
Thallium	µg/L	-0.00265395	-0.010	0.010	yes
Thorium	µg/L	-0.0310951	-0.050	0.050	yes
Tin	µg/L	-0.0055226	-0.099	0.099	yes
Titanium	µg/L	-0.024874	-0.099	0.099	yes
Uranium	µg/L	-0.00252242	-0.010	0.010	yes
Vanadium	µg/L	0.0318959	-0.050	0.050	yes
Zinc	µg/L	-0.361792	-0.500	0.500	yes
Zirconium	µg/L	-0.0135997	-0.099	0.099	yes

Date Acquired: April 28, 2017

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
Titanium	mg/L	96.58	90	110	yes
Date Acquired:	April 28, 2017				
Aluminum	µg/L	106.68	80	120	yes
Antimony	µg/L	98.02	90	110	yes
Arsenic	µg/L	98.53	90	110	yes

Quality Control

Bill To: YTG DOE - Water Resources	Project:	Lot ID: 1199062
202, 419 Range Road	ID: YOWN	Control Number:
Whitehorse, YT, Canada	Name: Congdon Creek CG	Date Received: Apr 27, 2017
Y1A 3V1	Location: Congdon Creek CG	Date Reported: May 11, 2017
Attn: Holly Goulding	LSD:	Report Number: 2185791
Sampled By: KP/DB	P.O.: C00037999	
Company: YG-Environment	Acct code:	

Trace Metals Dissolved - Continued

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
Barium	µg/L	97.90	90	110	yes
Beryllium	µg/L	108.91	90	110	yes
Boron	µg/L	104.26	70	130	yes
Cadmium	µg/L	105.02	90	110	yes
Chromium	µg/L	106.56	90	110	yes
Cobalt	µg/L	102.57	90	110	yes
Copper	µg/L	105.71	90	110	yes
Lead	µg/L	104.94	90	110	yes
Lithium	µg/L	106.12	90	110	yes
Molybdenum	µg/L	97.65	90	110	yes
Nickel	µg/L	106.86	90	110	yes
Selenium	µg/L	109.57	90	110	yes
Silver	µg/L	109.46	90	110	yes
Thorium	µg/L	100.26	90	110	yes
Tin	µg/L	107.95	90	110	yes
Titanium	µg/L	102.64	90	110	yes
Uranium	µg/L	103.08	90	110	yes
Vanadium	µg/L	106.46	90	110	yes
Zinc	µg/L	102.37	90	110	yes
Date Acquired: April 28, 2017					
Aluminum	µg/L	102.08	80	120	yes
Antimony	µg/L	101.80	90	110	yes
Arsenic	µg/L	96.84	90	110	yes
Barium	µg/L	98.57	90	110	yes
Beryllium	µg/L	105.43	90	110	yes
Boron	µg/L	102.19	80	120	yes
Cadmium	µg/L	108.47	90	110	yes
Chromium	µg/L	101.77	90	110	yes
Cobalt	µg/L	98.93	90	110	yes
Copper	µg/L	100.93	90	110	yes
Lead	µg/L	102.77	90	110	yes
Lithium	µg/L	100.22	90	110	yes
Molybdenum	µg/L	96.97	90	110	yes
Nickel	µg/L	103.23	90	110	yes
Selenium	µg/L	106.94	90	110	yes
Silver	µg/L	102.40	90	110	yes
Thallium	µg/L	106.50	90	110	yes
Thorium	µg/L	104.61	86	122	yes
Tin	µg/L	103.54	90	110	yes
Titanium	µg/L	98.68	90	110	yes
Uranium	µg/L	102.06	90	110	yes
Vanadium	µg/L	101.81	90	110	yes

Quality Control

Bill To: YTG DOE - Water Resources 202, 419 Range Road Whitehorse, YT, Canada Y1A 3V1	Project: ID: YOWN Name: Congdon Creek CG Location: Congdon Creek CG LSD: P.O.: C00037999 Acct code:	Lot ID: 1199062 Control Number: Date Received: Apr 27, 2017 Date Reported: May 11, 2017 Report Number: 2185791
Attn: Holly Goulding Sampled By: KP/DB Company: YG-Environment		

Trace Metals Dissolved - Continued

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC	
Zinc	µg/L	102.53	90	110	yes	
Date Acquired: April 28, 2017						
Client Sample Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Aluminum	µg/L	1	1	20	20.000	yes
Antimony	µg/L	0.325	0.434	20	1.000	yes
Arsenic	µg/L	0.6	0.6	20	1.000	yes
Barium	µg/L	66.4	67.2	20	5.000	yes
Beryllium	µg/L	<0.050	<0.050	20	1.000	yes
Boron	µg/L	7	8	20	5.000	yes
Cadmium	µg/L	0.270	0.282	20	0.500	yes
Chromium	µg/L	0.306	0.382	20	5.000	yes
Cobalt	µg/L	<0.020	0.023	20	0.500	yes
Copper	µg/L	0.95	0.9	20	5.000	yes
Iron	µg/L	<2	<2	20	50.000	yes
Lead	µg/L	0.024	0.033	20	0.500	yes
Lithium	µg/L	3.6	3.6	20	5.000	yes
Manganese	µg/L	<1	<1	20	0.500	yes
Molybdenum	µg/L	0.962	0.961	20	0.500	yes
Nickel	µg/L	1.2	1.2	20	5.000	yes
Selenium	µg/L	1.9	1.8	20	0.500	yes
Silver	µg/L	<0.010	<0.010	20	0.500	yes
Tellurium	µg/L	<0.050	0.071	20	0.500	yes
Thallium	µg/L	<0.010	0.010	20	0.100	yes
Thorium	µg/L	0.068	0.109	20	0.100	yes
Tin	µg/L	<0.1	<0.1	20	0.500	yes
Titanium	µg/L	<0.1	<0.1	20	0.500	yes
Uranium	µg/L	0.660	0.659	20	0.100	yes
Vanadium	µg/L	0.387	0.381	20	0.500	yes
Zinc	µg/L	1.6	1.6	20	5.000	yes
Zirconium	µg/L	<0.1	0.1	20	0.500	yes
Date Acquired: April 28, 2017						
Titanium	mg/L	0.019	0.018	30	0.012	yes
Date Acquired: April 28, 2017						

Trace Metals Total

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
Aluminum	µg/L	0	-0.990	0.990	yes
Antimony	µg/L	-0.00301878	-0.020	0.020	yes
Arsenic	µg/L	0.00650016	-0.099	0.099	yes
Barium	µg/L	0.00986129	-0.099	0.099	yes
Beryllium	µg/L	0.00776095	-0.050	0.050	yes



Quality Control

Bill To: YTG DOE - Water Resources	Project:	Lot ID: 1199062
202, 419 Range Road	ID: YOWN	Control Number:
Whitehorse, YT, Canada	Name: Congdon Creek CG	Date Received: Apr 27, 2017
Y1A 3V1	Location: Congdon Creek CG	Date Reported: May 11, 2017
Attn: Holly Goulding	LSD:	Report Number: 2185791
Sampled By: KP/DB	P.O.: C00037999	
Company: YG-Environment	Acct code:	

Trace Metals Total - Continued

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
Bismuth	µg/L	-0.0131509	-0.099	0.099	yes
Boron	µg/L	-0.241318	-2.001	2.001	yes
Cadmium	µg/L	-0.000980141	-0.010	0.010	yes
Chromium	µg/L	-0.0053658	-0.050	0.050	yes
Cobalt	µg/L	-0.00174559	-0.020	0.020	yes
Copper	µg/L	0.00818073	-0.501	0.501	yes
Iron	µg/L	1.63412	-2.001	2.001	yes
Lead	µg/L	0.0043936	-0.010	0.010	yes
Lithium	µg/L	-0.010028	-0.501	0.501	yes
Manganese	µg/L	-0.0386159	-0.990	0.990	yes
Molybdenum	µg/L	0	-0.020	0.020	yes
Nickel	µg/L	-0.015894	-0.201	0.201	yes
Selenium	µg/L	0.00198798	-0.201	0.201	yes
Silver	µg/L	-0.00178438	-0.010	0.010	yes
Strontium	µg/L	-0.0172826	-0.099	0.099	yes
Tellurium	µg/L	0	-0.050	0.050	yes
Thallium	µg/L	-0.000444936	-0.010	0.010	yes
Thorium	µg/L	0	-0.050	0.050	yes
Tin	µg/L	0.0871984	-0.099	0.099	yes
Titanium	µg/L	0	-0.099	0.099	yes
Uranium	µg/L	-0.00186244	-0.099	0.099	yes
Vanadium	µg/L	0.0325869	-0.050	0.050	yes
Zinc	µg/L	-0.0362994	-0.501	0.501	yes
Zirconium	µg/L	-0.0672915	-0.099	0.099	yes

Date Acquired: April 28, 2017

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
Aluminum	µg/L	105.65	80	120	yes
Antimony	µg/L	100.13	90	110	yes
Arsenic	µg/L	104.02	90	110	yes
Barium	µg/L	102.84	90	110	yes
Beryllium	µg/L	104.60	90	110	yes
Boron	µg/L	114.27	70	130	yes
Cadmium	µg/L	105.07	90	110	yes
Chromium	µg/L	104.17	90	110	yes
Cobalt	µg/L	108.66	90	110	yes
Copper	µg/L	107.89	90	110	yes
Lead	µg/L	109.42	90	110	yes
Lithium	µg/L	106.72	90	110	yes
Molybdenum	µg/L	103.61	90	110	yes
Nickel	µg/L	104.09	90	110	yes
Selenium	µg/L	105.78	90	110	yes
Silver	µg/L	106.91	90	110	yes

Quality Control

Bill To: YTG DOE - Water Resources	Project:	Lot ID: 1199062
202, 419 Range Road	ID: YOWN	Control Number:
Whitehorse, YT, Canada	Name: Congdon Creek CG	Date Received: Apr 27, 2017
Y1A 3V1	Location: Congdon Creek CG	Date Reported: May 11, 2017
Attn: Holly Goulding	LSD:	Report Number: 2185791
Sampled By: KP/DB	P.O.: C00037999	
Company: YG-Environment	Acct code:	

Trace Metals Total - Continued

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
Strontium	µg/L	95.68	90	110	yes
Thallium	µg/L	109.59	90	110	yes
Thorium	µg/L	109.29	90	110	yes
Tin	µg/L	99.14	90	110	yes
Titanium	µg/L	106.51	90	110	yes
Uranium	µg/L	107.70	90	110	yes
Vanadium	µg/L	105.70	90	110	yes
Zinc	µg/L	97.00	90	110	yes

Date Acquired: April 28, 2017

Aluminum	µg/L	101.40	80	120	yes
Antimony	µg/L	90.51	90	110	yes
Arsenic	µg/L	100.07	90	110	yes
Barium	µg/L	96.79	90	110	yes
Beryllium	µg/L	107.00	90	110	yes
Boron	µg/L	99.97	80	120	yes
Cadmium	µg/L	105.04	90	110	yes
Chromium	µg/L	102.43	90	110	yes
Cobalt	µg/L	102.38	90	110	yes
Copper	µg/L	102.94	90	110	yes
Lead	µg/L	104.64	90	110	yes
Lithium	µg/L	105.15	90	110	yes
Molybdenum	µg/L	100.09	90	110	yes
Nickel	µg/L	100.10	90	110	yes
Selenium	µg/L	104.93	90	110	yes
Silver	µg/L	105.50	90	110	yes
Strontium	µg/L	93.91	90	110	yes
Thallium	µg/L	105.62	90	110	yes
Thorium	µg/L	108.67	90	110	yes
Tin	µg/L	101.22	90	110	yes
Titanium	µg/L	98.65	90	110	yes
Uranium	µg/L	105.40	90	110	yes
Vanadium	µg/L	101.06	90	110	yes
Zinc	µg/L	106.75	90	110	yes

Date Acquired: April 28, 2017

Client Sample Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Aluminum	µg/L	1	1	20	100.000	yes
Antimony	µg/L	0.21	0.31	20	2.000	yes
Arsenic	µg/L	2.6	2.6	20	2.000	yes
Barium	µg/L	97	97	20	10.000	yes
Beryllium	µg/L	<0.050	<0.050	20	0.400	yes
Boron	µg/L	8	8	20	40.000	yes
Cadmium	µg/L	0.075	0.074	20	0.100	yes

Quality Control

Bill To: YTG DOE - Water Resources	Project:	Lot ID: 1199062
202, 419 Range Road	ID: YOWN	Control Number:
Whitehorse, YT, Canada	Name: Congdon Creek CG	Date Received: Apr 27, 2017
Y1A 3V1	Location: Congdon Creek CG	Date Reported: May 11, 2017
Attn: Holly Goulding	LSD:	Report Number: 2185791
Sampled By: KP/DB	P.O.: C00037999	
Company: YG-Environment	Acct code:	

Trace Metals Total - Continued

Client Sample	Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Chromium		µg/L	<0.050	<0.050	20	6.000	yes
Cobalt		µg/L	0.15	0.13	20	0.200	yes
Copper		µg/L	0.2	0.2	20	5.000	yes
Iron		µg/L	660	660	20	100.000	yes
Lead		µg/L	0.015	0.015	20	1.000	yes
Lithium		µg/L	3.6	3.6	20	10.000	yes
Manganese		µg/L	730	730	20	1.000	yes
Molybdenum		µg/L	6.4	6.6	20	0.200	yes
Nickel		µg/L	1.6	1.6	20	10.000	yes
Selenium		µg/L	<0.2	<0.2	20	5.000	yes
Silver		µg/L	<0.010	<0.010	20	0.100	yes
Strontium		µg/L	370	380	20	10.000	yes
Tellurium		µg/L	0.059	<0.050	20	0.500	yes
Thallium		µg/L	<0.010	<0.010	20	0.100	yes
Thorium		µg/L	0.16	0.24	20	1.000	yes
Tin		µg/L	<0.1	<0.1	20	1.000	yes
Titanium		µg/L	<0.1	<0.1	20	1.000	yes
Uranium		µg/L	1.6	1.6	20	1.000	yes
Vanadium		µg/L	0.23	0.24	20	0.400	yes
Zinc		µg/L	0.9	1.0	20	10.000	yes
Zirconium		µg/L	0.2	0.2	20	1.000	yes

Date Acquired: April 28, 2017

Volatile Petroleum Hydrocarbons - Water

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC	
VPHw (VHw6-10 minus)	ng	10.797	-50	50	yes	
VHw6-10	ng	10.797	-50	50	yes	
Date Acquired: May 01, 2017						
Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC	
VHw6-10	ng	102.92	75	125	yes	
Date Acquired: May 01, 2017						
Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
VPHw (VHw6-10 minus)	µg/L	<50	<50	20	100	yes
VHw6-10	µg/L	<50	<50	20	100	yes
Date Acquired: May 01, 2017						
Matrix Spike	Units	% Recovery	Lower Limit	Upper Limit	Passed QC	
VHw6-10	µg/L	87	75	125	yes	
Date Acquired: May 01, 2017						

Methodology and Notes

Bill To: YTG DOE - Water Resources 202, 419 Range Road Whitehorse, YT, Canada Y1A 3V1	Project: ID: YOWN Name: Congdon Creek CG Location: Congdon Creek CG LSD: P.O.: C00037999 Acct code:	Lot ID: 1199062 Control Number: Date Received: Apr 27, 2017 Date Reported: May 11, 2017 Report Number: 2185791
Attn: Holly Goulding Sampled By: KP/DB Company: YG-Environment		

Method of Analysis

Method Name	Reference	Method	Date Analysis Started	Location
Alk, pH, EC, Turb in water (Surrey)	APHA	* Alkalinity - Titration Method, 2320 B	29-Apr-17	Exova Surrey
Alk, pH, EC, Turb in water (Surrey)	APHA	* Conductivity, 2510 B	29-Apr-17	Exova Surrey
Alk, pH, EC, Turb in water (Surrey)	APHA	* pH - Electrometric Method, 4500-H+ B	29-Apr-17	Exova Surrey
Ammonia-N in Water (Surrey)	APHA	* Flow Injection Analysis, 4500-NH3 H	03-May-17	Exova Surrey
Anions by IEC in water (Surrey)	APHA	* Ion Chromatography with Chemical Suppression of Eluent Cond., 4110 B	28-Apr-17	Exova Surrey
Anions by IEC in water (Surrey)	APHA	* Single-Column Ion Chromatography with Electronic Suppression, 4110 C	28-Apr-17	Exova Surrey
BTEX-VPH - Water (MS) (Surrey)	B.C.M.O.E	* Volatile Hydrocarbons in Waters by GC/FID (April, 2007), CSR	01-May-17	Exova Surrey
BTEX-VPH - Water (MS) (Surrey)	BCELM	* Volatile Hydrocarbons in Water by GC/FID, VH Water	01-May-17	Exova Surrey
Carbon Inorganic (Dissolved) in water(DIC)	APHA	High-Temperature Combustion Method, 5310 B	02-May-17	Exova Edmonton
Carbon Inorganic (Total) in water (TIC)	APHA	High-Temperature Combustion Method, 5310 B	02-May-17	Exova Edmonton
Carbon Organic (Dissolved) in water (DOC)	APHA	High-Temperature Combustion Method, 5310 B	02-May-17	Exova Edmonton
Carbon Organic (Total) in water (TOC)	APHA	High-Temperature Combustion Method, 5310 B	01-May-17	Exova Edmonton
Metals SemiTrace (Dissolved) in water (Surrey)	US EPA	* Metals & Trace Elements by ICP-AES, 6010C	28-Apr-17	Exova Surrey
Metals SemiTrace (Total) in Water (Surrey)	US EPA	* Metals & Trace Elements by ICP-AES, 6010C	28-Apr-17	Exova Surrey
Phosphorus - total by Smartchem (Surrey)	APHA	* Persulfate digestion method, 4500-P B5	02-May-17	Exova Surrey
Solids Dissolved (Total, Fixed and Volatile) - Surrey	APHA	* Total Dissolved Solids Dried at 180 C, 2540 C	02-May-17	Exova Surrey
Solids Suspended (Total, Fixed and Volatile) - Surrey	APHA	* Total Suspended Solids Dried at 103-105°C, 2540 D	02-May-17	Exova Surrey
Sublet to SRC Analytical	Ext. Lab	See attached test report,	11-May-17	Saskatchewan Research Council
Total and Kjeldahl Nitrogen (Total) in Water	ISO	* Water Quality - Determination of nitrogen, ISO/TR 11905-2	01-May-17	Exova Edmonton
Trace Metals (dissolved) in Water (Surrey)	US EPA	* Determination of Trace Elements in Waters and Wastes by ICP-MS, 200.8	28-Apr-17	Exova Surrey
Trace Metals (Total) in Water (Surrey)	US EPA	* Determination of Trace Elements in Waters and Wastes by ICP-MS, 200.8	28-Apr-17	Exova Surrey

* Reference Method Modified

References

APHA Standard Methods for the Examination of Water and Wastewater
 B.C.M.O.E B.C. Ministry of Environment

Methodology and Notes

Bill To: YTG DOE - Water Resources	Project:	Lot ID: 1199062
202, 419 Range Road	ID: YOWN	Control Number:
Whitehorse, YT, Canada	Name: Congdon Creek CG	Date Received: Apr 27, 2017
Y1A 3V1	Location: Congdon Creek CG	Date Reported: May 11, 2017
Attn: Holly Goulding	LSD:	Report Number: 2185791
Sampled By: KP/DB	P.O.: C00037999	
Company: YG-Environment	Acct code:	

BCELM	B.C. Environmental Laboratory Manual
Ext. Lab	External Laboratory
ISO	International Organization for Standardization
US EPA	US Environmental Protection Agency Test Methods

Comments:

- Reduction of analytical volume was necessary for Trace Metals analysis to bring results within the analytical range for samples #1199062-1 through 3. Detection limits are adjusted accordingly.
- Radium analysis was performed by a subcontract laboratory. See attached 2 page report 2017-4779.
- Sample 1199062-2; 5702348 Reduction of analytical volume was necessary for anions due to matrix effects in sample 1199062-2 and 1199062-3. Detection limits are adjusted accordingly.

Please direct any inquiries regarding this report to our Client Services group.

Results relate only to samples as submitted.

The test report shall not be reproduced except in full, without the written approval of the laboratory.

SRC Group # 2017-4779

May 11, 2017

EXOVA
104-19575 55A Avenue
Surrey, BC V3S 8P8
Attn: Client Services

Date Samples Received: May-01-2017

Client P.O.: POC102713

All results have been reviewed and approved by a Qualified Person in accordance with the Saskatchewan Environmental Code, Corrective Action Plan Chapter, for the purposes of certifying a laboratory analysis

Results from Lab Sections 1 and 2 have been authorized by Keith Gipman, Supervisor
Results from Lab Section 3 have been authorized by Pat Moser, Supervisor
Results from Lab Sections 4 and 5 have been authorized by Vicky Snook, Supervisor
Results from Lab Section 6 have been authorized by Marion McConnell, Supervisor

-
- * Test methods and data are validated by the laboratory's Quality Assurance Program.
 - * Routine methods follow recognized procedures from sources such as
 - * Standard Methods for the Examination of Water and Wastewater APHA AWWA WEF
 - * Environment Canada
 - * US EPA
 - * CANMET
 - * The results reported relate only to the test samples as provided by the client.
 - * Samples will be kept for 30 days after the final report is sent. Please contact the lab if you have any special requirements.
 - * Additional information is available upon request.

This is a final report.

SRC Group # 2017-4779

May 11, 2017

EXOVA

104-19575 55A Avenue
Surrey, BC V3S 8P8
Attn: Client Services

Date Samples Received: May-01-2017

Client P.O.: POC102713

15327 04/25/2017 1199062-2 B 2017047 *WATER*
15328 04/25/2017 1199062-3 B 2017048 *WATER*

Analyte	Units	15327	15328
Lab Section 4 (Radiochemistry)			
Radium-226	Bq/L	0.01	0.01

Report Transmission Cover Page

Bill To: YTG DOE - Water Resources 202, 419 Range Road Whitehorse, YT, Canada Y1A 3V1	Project: ID: YOWN Name: Faro Area Location: Faro Area LSD: P.O.: Acct code:	Lot ID: 1200559 Control Number: Date Received: May 5, 2017 Date Reported: May 24, 2017 Report Number: 2187867
Attn: Holly Goulding		
Sampled By: Katie Pfeifer/KN		
Company: YG - Environment		

Contact & Affiliation	Address	Delivery Commitments
John Miller YTG DOE - Water Resources	202, 419 Range Road Whitehorse, Yukon Territory Y1A 3V1 Phone: (867) 667-3233 Fax: (867) 667-3194 Email: john.miller@gov.yk.ca	On [Lot Verification] send (COA) by Email - Single Report On [Report Approval] send (COC, Test Report) by Email - Multiple Reports By Lot On [Report Approval] send (Test Report) by Email - Multiple Reports By Lot On [Lot Creation] send (COR) by Email - Single Report
Holly Goulding YTG DOE - Water Resources	202, 419 Range Road Whitehorse, Yukon Territory Y1A 3V1 Phone: (867) 456-6583 Fax: (867) 667-3194 Email: holly.goulding@gov.yk.ca	On [Report Approval] send (COC, Test Report) by Email - Merge Reports On [Report Approval] send (Test Report) by Email - Single Report
Tyler Williams YTG DOE - Water Resources	202, 419 Range Road Whitehorse, Yukon Territory Y1A 3V1 Phone: (867) 667-3233 Fax: (867) 667-3194 Email: Tyler.Williams@gov.yk.ca	On [Report Approval] send (Test Report) by Email - Multiple Reports By Lot On [Report Approval] send (Test Report, COC) by Email - Multiple Reports By Lot

Notes To Clients:

- Reduction of analytical volume was necessary for Trace Metals analysis to bring results within the analytical range for samples #1200559-1 through 4. Detection limits are adjusted accordingly.
- RA226 analysis was performed by a subcontract laboratory. See attached 3 page report 2017-5029.
- Sample 1200559-1; 5708512 Reduction of analytical volume was necessary for anions due to matrix effects in sample 1200559-1, and 1200559-4. Detection limits are adjusted accordingly.
- Sample 1200559-1; 5708512 Reduction of analytical volume was necessary for sulfate to bring results within the analytical range for sample 1200559-1 and 1200559-4. Detection limits are adjusted accordingly.
- Sample 1200559-2; 5708513 Reduction of analytical volume was necessary for nitrate due to matrix effects in sample 1200559-2 and 1200559-3. Detection limits are adjusted accordingly.

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Analytical Report

Bill To: YTG DOE - Water Resources	Project:	Lot ID: 1200559
202, 419 Range Road	ID: YOWN	Control Number:
Whitehorse, YT, Canada	Name: Faro Area	Date Received: May 5, 2017
Y1A 3V1	Location: Faro Area	Date Reported: May 24, 2017
Attn: Holly Goulding	LSD:	Report Number: 2187867
Sampled By: Katie Pfeifer/KN	P.O.:	
Company: YG - Environment	Acct code:	

	Reference Number	1200559-1	1200559-2	1200559-3		
	Sample Date	May 03, 2017	May 03, 2017	May 03, 2017		
	Sample Time	09:35	11:50	13:20		
	Sample Location					
	Sample Description	2017054 / B	2017055 / B	2017056 / B		
	Matrix	Water	Water	Water		
Analyte	Units	Results	Results	Results	Nominal Detection Limit	
Inorganic Nonmetallic Parameters						
Nitrogen	Total	mg/L	0.44	0.15	0.31	0.06
Organic Carbon	Total Nonpurgeable	mg/L	2.4	0.7	1.3	0.5
Organic Carbon	Dissolved Nonpurgeable	mg/L	1.9	<0.5	1.0	0.5
Inorganic carbon	Total	mg/L	75.4	23	46	0.5
Inorganic carbon	Dissolved	mg/L	75.3	23	46	0.5
Ammonia - N		mg/L	0.07	0.01	0.02	0.01
Phosphorus	Total	mg/L	0.015	0.170	0.101	0.003
Metals Total						
Calcium	Total	mg/L	210	31	69	0.01
Magnesium	Total	mg/L	190	6.5	10	0.02
Potassium	Total	mg/L	6.5	0.79	1.8	0.04
Silicon	Total	mg/L	11	4.6	4.6	0.005
Sulfur	Total	mg/L	310	2.4	8.4	0.02
Sodium	Total	mg/L	16	1.9	2.4	0.1
Titanium	Total	mg/L	0.042	0.026	0.013	0.002
Physical and Aggregate Properties						
Solids	Total Suspended	mg/L	177	11.0	10.5	2
Solids	Total Dissolved	mg/L	1700	180	220	5
Routine Water						
pH - Holding Time			Exceeded	Exceeded	Exceeded	
pH	at 25 °C		7.68	7.82	7.62	
Electrical Conductivity		µS/cm at 25 °C	1848	178	375	1
Calcium	Dissolved	mg/L	210	27	64	0.01
Magnesium	Dissolved	mg/L	170	5.6	9.2	0.02
Potassium	Dissolved	mg/L	5.9	0.62	1.6	0.04
Silicon	Dissolved	mg/L	6.1	3.5	4.2	0.005
Sodium	Dissolved	mg/L	15	1.7	1.7	0.1
Sulfur	Dissolved	mg/L	300	2.3	7.8	0.02
Bicarbonate		mg/L	372	113	227	5
Carbonate		mg/L	<6	<6	<6	6
Hydroxide		mg/L	<5	<5	<5	5
P-Alkalinity	as CaCO3	mg/L	<5	<5	<5	5
T-Alkalinity	as CaCO3	mg/L	305	92	186	5
Bromide	Dissolved	mg/L	<0.20	<0.020	<0.020	0.02
Chloride	Dissolved	mg/L	1.30	0.072	2.20	0.05

Analytical Report

Bill To: YTG DOE - Water Resources 202, 419 Range Road Whitehorse, YT, Canada Y1A 3V1	Project: ID: YOWN Name: Faro Area Location: Faro Area LSD: P.O.: Acct code:	Lot ID: 1200559 Control Number: Date Received: May 5, 2017 Date Reported: May 24, 2017 Report Number: 2187867
Attn: Holly Goulding Sampled By: Katie Pfeifer/KN Company: YG - Environment		

	Reference Number	1200559-1	1200559-2	1200559-3		
	Sample Date	May 03, 2017	May 03, 2017	May 03, 2017		
	Sample Time	09:35	11:50	13:20		
	Sample Location					
	Sample Description	2017054 / B	2017055 / B	2017056 / B		
	Matrix	Water	Water	Water		
Analyte	Units	Results	Results	Results	Nominal Detection Limit	
Routine Water - Continued						
Fluoride	Dissolved	mg/L	0.25	0.054	0.111	0.01
Nitrate - N	Dissolved	mg/L	<0.10	<0.10	0.17	0.01
Nitrite - N	Dissolved	mg/L	<0.10	<0.010	<0.010	0.01
Sulfate (SO4)	Dissolved	mg/L	900	5.9	23.0	0.1
Hardness	as CaCO3 (dissolved)	mg/L	1240	89	200	5
Trace Metals Dissolved						
Digestion	Dissolved		Field filtered and Pres Dissol	Field filtered and Pres Dissol	Field filtered and Pres Dissol	
Titanium	Dissolved	mg/L	0.028	0.005	0.012	0.002
Aluminum	Dissolved	mg/L	0.002	<0.001	<0.001	0.001
Antimony	Dissolved	mg/L	0.000056	0.000055	0.000091	0.00002
Arsenic	Dissolved	mg/L	0.0050	0.0003	0.0003	0.0001
Barium	Dissolved	mg/L	0.0053	0.0814	0.0425	0.0001
Beryllium	Dissolved	mg/L	<0.000050	<0.000050	<0.000050	0.00005
Bismuth	Dissolved	mg/L	<0.0001	<0.0001	<0.0001	0.0001
Boron	Dissolved	mg/L	0.022	<0.002	<0.002	0.002
Cadmium	Dissolved	mg/L	0.000057	<0.000010	0.000016	0.00001
Chromium	Dissolved	mg/L	<0.000050	0.000236	0.000073	0.00005
Cobalt	Dissolved	mg/L	0.001115	0.000021	0.000069	0.00002
Copper	Dissolved	mg/L	<0.0005	<0.0005	<0.0005	0.0005
Iron	Dissolved	mg/L	1.58	0.016	0.072	0.002
Lead	Dissolved	mg/L	0.000191	0.000053	0.000024	0.00001
Lithium	Dissolved	mg/L	0.0349	0.0009	0.0008	0.0005
Manganese	Dissolved	mg/L	0.263	0.005	0.012	0.001
Molybdenum	Dissolved	mg/L	0.006841	0.000640	0.001280	0.00002
Nickel	Dissolved	mg/L	0.0062	0.0002	0.0006	0.0002
Selenium	Dissolved	mg/L	<0.0002	<0.0002	0.0007	0.0002
Silver	Dissolved	mg/L	0.000017	<0.000010	<0.000010	0.00001
Strontium	Dissolved	mg/L	0.9592	0.0804	0.1492	0.0001
Tellurium	Dissolved	mg/L	0.000071	<0.000050	<0.000050	0.00005
Thallium	Dissolved	mg/L	<0.000010	<0.000010	<0.000010	0.00001
Thorium	Dissolved	mg/L	0.000202	<0.000050	<0.000050	0.00005
Tin	Dissolved	mg/L	<0.0001	<0.0001	<0.0001	0.0001
Uranium	Dissolved	mg/L	0.06116	0.000675	0.003402	0.00001
Vanadium	Dissolved	mg/L	<0.000050	0.000140	<0.000050	0.00005
Zinc	Dissolved	mg/L	1.451	0.0186	0.0250	0.0005

Analytical Report

Bill To: YTG DOE - Water Resources	Project:	Lot ID: 1200559
202, 419 Range Road	ID: YOWN	Control Number:
Whitehorse, YT, Canada	Name: Faro Area	Date Received: May 5, 2017
Y1A 3V1	Location: Faro Area	Date Reported: May 24, 2017
Attn: Holly Goulding	LSD:	Report Number: 2187867
Sampled By: Katie Pfeifer/KN	P.O.:	
Company: YG - Environment	Acct code:	

	Reference Number	1200559-1	1200559-2	1200559-3		
	Sample Date	May 03, 2017	May 03, 2017	May 03, 2017		
	Sample Time	09:35	11:50	13:20		
	Sample Location					
	Sample Description	2017054 / B	2017055 / B	2017056 / B		
	Matrix	Water	Water	Water		
Analyte	Units	Results	Results	Results	Nominal Detection Limit	
Trace Metals Dissolved - Continued						
Zirconium	Dissolved	mg/L	0.0003	<0.0001	<0.0001	0.0001
Trace Metals Total						
Aluminum	Total	mg/L	0.45	0.40	0.029	0.001
Antimony	Total	mg/L	0.00070	0.00010	0.00017	0.00002
Arsenic	Total	mg/L	0.22	0.0008	0.0008	0.0001
Barium	Total	mg/L	0.038	0.12	0.049	0.0001
Beryllium	Total	mg/L	0.00023	0.000051	<0.000050	0.00005
Bismuth	Total	mg/L	<0.0001	<0.0001	<0.0001	0.0001
Boron	Total	mg/L	0.020	<0.002	<0.002	0.002
Cadmium	Total	mg/L	0.00097	0.000086	0.000055	0.00001
Chromium	Total	mg/L	0.0024	0.0013	0.0022	0.00005
Cobalt	Total	mg/L	0.0016	0.00043	0.00033	0.00002
Copper	Total	mg/L	0.0058	0.0041	0.0069	0.0002
Iron	Total	mg/L	29	6.1	5.1	0.002
Lead	Total	mg/L	0.032	0.0026	0.0017	0.00001
Lithium	Total	mg/L	0.036	0.0017	0.0008	0.0005
Manganese	Total	mg/L	0.31	0.078	0.037	0.001
Molybdenum	Total	mg/L	0.0064	0.00062	0.0016	0.00002
Nickel	Total	mg/L	0.0093	0.0017	0.0033	0.0002
Selenium	Total	mg/L	0.0019	<0.0002	0.0006	0.0002
Silver	Total	mg/L	0.000016	<0.000010	<0.000010	0.00001
Strontium	Total	mg/L	1.0	0.093	0.16	0.0001
Tellurium	Total	mg/L	<0.000050	<0.000050	<0.000050	0.00005
Thallium	Total	mg/L	0.000020	<0.000010	<0.000010	0.00001
Thorium	Total	mg/L	0.00039	0.00020	<0.000050	0.00005
Tin	Total	mg/L	0.0002	0.0002	0.0004	0.0001
Uranium	Total	mg/L	0.074	0.00076	0.0034	0.00001
Vanadium	Total	mg/L	0.0031	0.0016	0.00010	0.00005
Zinc	Total	mg/L	6.0	0.27	0.32	0.0005
Zirconium	Total	mg/L	0.0011	0.0008	<0.0001	0.0001
Subcontracted Analysis						
Subcontractor Report Id	SRC		Done	Done	Done	

Analytical Report

Bill To: YTG DOE - Water Resources 202, 419 Range Road Whitehorse, YT, Canada Y1A 3V1	Project: ID: YOWN Name: Faro Area Location: Faro Area LSD: P.O.:	Lot ID: 1200559 Control Number: Date Received: May 5, 2017 Date Reported: May 24, 2017 Report Number: 2187867
Attn: Holly Goulding Sampled By: Katie Pfeifer/KN Company: YG - Environment	Acct code:	

Reference Number	1200559-4
Sample Date	May 02, 2017
Sample Time	NA
Sample Location	
Sample Description	2017057 / B
Matrix	Water

Analyte	Units	Results	Results	Results	Nominal Detection Limit
Inorganic Nonmetallic Parameters					
Nitrogen	Total	mg/L	0.19		0.06
Organic Carbon	Total Nonpurgeable	mg/L	1.4		0.5
Organic Carbon	Dissolved Nonpurgeable	mg/L	1.0		0.5
Inorganic carbon	Total	mg/L	36		0.5
Inorganic carbon	Dissolved	mg/L	36		0.5
Ammonia - N		mg/L	0.09		0.01
Phosphorus	Total	mg/L	0.045		0.003
Metals Total					
Calcium	Total	mg/L	190		0.01
Magnesium	Total	mg/L	130		0.02
Potassium	Total	mg/L	3.2		0.04
Silicon	Total	mg/L	8.4		0.005
Sulfur	Total	mg/L	300		0.02
Sodium	Total	mg/L	55		0.1
Titanium	Total	mg/L	0.11		0.002
Physical and Aggregate Properties					
Solids	Total Suspended	mg/L	31.0		2
Solids	Total Dissolved	mg/L	1400		5
Routine Water					
pH - Holding Time			Exceeded		
pH	at 25 °C		7.50		
Electrical Conductivity		µS/cm at 25 °C	1645		1
Calcium	Dissolved	mg/L	170		0.01
Magnesium	Dissolved	mg/L	120		0.02
Potassium	Dissolved	mg/L	2.4		0.04
Silicon	Dissolved	mg/L	3.9		0.005
Sodium	Dissolved	mg/L	49		0.1
Sulfur	Dissolved	mg/L	280		0.02
Bicarbonate		mg/L	179		5
Carbonate		mg/L	<6		6
Hydroxide		mg/L	<5		5
P-Alkalinity	as CaCO3	mg/L	<5		5
T-Alkalinity	as CaCO3	mg/L	147		5
Bromide	Dissolved	mg/L	<0.20		0.02
Chloride	Dissolved	mg/L	4.72		0.05

Analytical Report

Bill To: YTG DOE - Water Resources
 202, 419 Range Road
 Whitehorse, YT, Canada
 Y1A 3V1
 Attn: Holly Goulding
 Sampled By: Katie Pfeifer/KN
 Company: YG - Environment

Project:
 ID: YOWN
 Name: Faro Area
 Location: Faro Area
 LSD:
 P.O.:
 Acct code:

Lot ID: **1200559**
 Control Number:
 Date Received: May 5, 2017
 Date Reported: May 24, 2017
 Report Number: 2187867

Reference Number 1200559-4
Sample Date May 02, 2017
Sample Time NA
Sample Location
Sample Description 2017057 / B
Matrix Water

Analyte	Units	Results	Results	Results	Nominal Detection Limit
Routine Water - Continued					
Fluoride	Dissolved	mg/L	<0.10		0.01
Nitrate - N	Dissolved	mg/L	<0.10		0.01
Nitrite - N	Dissolved	mg/L	<0.10		0.01
Sulfate (SO4)	Dissolved	mg/L	850		0.1
Hardness	as CaCO3 (dissolved)	mg/L	900		5
Trace Metals Dissolved					
Digestion	Dissolved		Field filtered and Pres Dissol		
Titanium	Dissolved	mg/L	0.024		0.002
Aluminum	Dissolved	mg/L	<0.001		0.001
Antimony	Dissolved	mg/L	<0.000020		0.00002
Arsenic	Dissolved	mg/L	0.0011		0.0001
Barium	Dissolved	mg/L	0.0077		0.0001
Beryllium	Dissolved	mg/L	<0.000050		0.00005
Bismuth	Dissolved	mg/L	<0.0001		0.0001
Boron	Dissolved	mg/L	0.024		0.002
Cadmium	Dissolved	mg/L	<0.000010		0.00001
Chromium	Dissolved	mg/L	0.000089		0.00005
Cobalt	Dissolved	mg/L	0.000146		0.00002
Copper	Dissolved	mg/L	<0.0005		0.0005
Iron	Dissolved	mg/L	2.95		0.002
Lead	Dissolved	mg/L	<0.000010		0.00001
Lithium	Dissolved	mg/L	0.0065		0.0005
Manganese	Dissolved	mg/L	0.163		0.001
Molybdenum	Dissolved	mg/L	0.002205		0.00002
Nickel	Dissolved	mg/L	0.0004		0.0002
Selenium	Dissolved	mg/L	<0.0002		0.0002
Silver	Dissolved	mg/L	<0.000010		0.00001
Strontium	Dissolved	mg/L	2.166		0.0001
Tellurium	Dissolved	mg/L	<0.000050		0.00005
Thallium	Dissolved	mg/L	<0.000010		0.00001
Thorium	Dissolved	mg/L	0.000094		0.00005
Tin	Dissolved	mg/L	<0.0001		0.0001
Uranium	Dissolved	mg/L	0.001401		0.00001
Vanadium	Dissolved	mg/L	<0.000050		0.00005
Zinc	Dissolved	mg/L	0.3526		0.0005

Analytical Report

Bill To: YTG DOE - Water Resources
 202, 419 Range Road
 Whitehorse, YT, Canada
 Y1A 3V1
 Attn: Holly Goulding
 Sampled By: Katie Pfeifer/KN
 Company: YG - Environment

Project:
 ID: YOWN
 Name: Faro Area
 Location: Faro Area
 LSD:
 P.O.:
 Acct code:

Lot ID: **1200559**
 Control Number:
 Date Received: May 5, 2017
 Date Reported: May 24, 2017
 Report Number: 2187867

Reference Number 1200559-4
Sample Date May 02, 2017
Sample Time NA
Sample Location
Sample Description 2017057 / B
Matrix Water

Analyte	Units	Results	Results	Results	Nominal Detection Limit
Trace Metals Dissolved - Continued					
Zirconium	Dissolved	mg/L	<0.0001		0.0001
Trace Metals Total					
Aluminum	Total	mg/L	1.4		0.001
Antimony	Total	mg/L	0.00013		0.00002
Arsenic	Total	mg/L	0.0040		0.0001
Barium	Total	mg/L	0.021		0.0001
Beryllium	Total	mg/L	0.000058		0.00005
Bismuth	Total	mg/L	<0.0001		0.0001
Boron	Total	mg/L	0.030		0.002
Cadmium	Total	mg/L	0.000037		0.00001
Chromium	Total	mg/L	0.0022		0.00005
Cobalt	Total	mg/L	0.00087		0.00002
Copper	Total	mg/L	0.0072		0.0002
Iron	Total	mg/L	8.0		0.002
Lead	Total	mg/L	0.0011		0.00001
Lithium	Total	mg/L	0.0083		0.0005
Manganese	Total	mg/L	0.21		0.001
Molybdenum	Total	mg/L	0.0024		0.00002
Nickel	Total	mg/L	0.0025		0.0002
Selenium	Total	mg/L	<0.0002		0.0002
Silver	Total	mg/L	<0.000010		0.00001
Strontium	Total	mg/L	2.3		0.0001
Tellurium	Total	mg/L	<0.000050		0.00005
Thallium	Total	mg/L	0.000011		0.00001
Thorium	Total	mg/L	0.00025		0.00005
Tin	Total	mg/L	0.0001		0.0001
Uranium	Total	mg/L	0.0016		0.00001
Vanadium	Total	mg/L	0.0034		0.00005
Zinc	Total	mg/L	0.89		0.0005
Zirconium	Total	mg/L	0.0005		0.0001
Subcontracted Analysis					
Subcontractor Report Id	SRC		Done		

Analytical Report

Bill To: YTG DOE - Water Resources
202, 419 Range Road
Whitehorse, YT, Canada
Y1A 3V1
Attn: Holly Goulding
Sampled By: Katie Pfeifer/KN
Company: YG - Environment

Project:
ID: YOWN
Name: Faro Area
Location: Faro Area
LSD:
P.O.:
Acct code:

Lot ID: **1200559**
Control Number:
Date Received: May 5, 2017
Date Reported: May 24, 2017
Report Number: 2187867

Approved by:



Mathieu Simoneau
Operations Manager

Data have been validated by Analytical Quality Control and Exova's Integrated Data Validation System (IDVS).

Generation and distribution of the report, and approval by the digitized signature above, are performed through a secure and controlled automatic process.

Quality Control

Bill To: YTG DOE - Water Resources 202, 419 Range Road Whitehorse, YT, Canada Y1A 3V1	Project: ID: YOWN Name: Faro Area Location: Faro Area LSD: P.O.: Acct code:	Lot ID: 1200559 Control Number: Date Received: May 5, 2017 Date Reported: May 24, 2017 Report Number: 2187867
Attn: Holly Goulding Sampled By: Katie Pfeifer/KN Company: YG - Environment		

Inorganic Nonmetallic Parameters

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC	
Ammonium - N	µg/L	-18.619	-110.00	10.00	yes	
Phosphorus	mg/L	-0.0005	-0.003	0.003	yes	
Date Acquired: May 05, 2017						
Nitrogen	mg/L	0.03096	-0.04	0.08	yes	
Organic Carbon	mg/L	-0.00993	-0.5	0.5	yes	
Inorganic carbon	mg/L	0.1011	-0.5	0.5	yes	
Date Acquired: May 08, 2017						
Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC	
Ammonium - N	µg/L	107.74	85	115	yes	
Phosphorus	mg/L	105.94	90	110	yes	
Date Acquired: May 05, 2017						
Ammonium - N	µg/L	116.45	70	130	yes	
Phosphorus	mg/L	86.00	80	120	yes	
Date Acquired: May 05, 2017						
Client Sample Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Nitrogen	mg/L	1.63	1.60	10	0.06	yes
Organic Carbon	mg/L	3.1	2.9	10	1.0	yes
Inorganic carbon	mg/L	75.3	75.8	10	1.0	yes
Date Acquired: May 08, 2017						
Ammonia - N	mg/L	52.3	68.5	20	50.00	yes
Date Acquired: May 09, 2017						
Control Sample	Units	Measured	Lower Limit	Upper Limit	Passed QC	
Organic Carbon	mg/L	<0.5	-0.5	0.5	yes	
Date Acquired: May 08, 2017						
Nitrogen	mg/L	117	103.74	137.28	yes	
Organic Carbon	mg/L	125	109.1	139.7	yes	
Inorganic carbon	mg/L	47.5	39.0	57.0	yes	
Date Acquired: May 08, 2017						
Nitrogen	mg/L	14.9	13.27	16.93	yes	
Organic Carbon	mg/L	14.5	12.8	17.2	yes	
Inorganic carbon	mg/L	15.9	13.5	18.3	yes	
Date Acquired: May 08, 2017						
Nitrogen	mg/L	1.10	0.89	1.25	yes	
Organic Carbon	mg/L	3.1	2.4	4.0	yes	
Inorganic carbon	mg/L	3.5	2.7	3.9	yes	
Date Acquired: May 08, 2017						
Phosphorus	mg/L	0.478	0.389	0.503	yes	
Date Acquired: May 05, 2017						

Metals Total

Quality Control

Bill To: YTG DOE - Water Resources 202, 419 Range Road Whitehorse, YT, Canada Y1A 3V1	Project: ID: YOWN Name: Faro Area Location: Faro Area LSD: P.O.: Acct code:	Lot ID: 1200559 Control Number: Date Received: May 5, 2017 Date Reported: May 24, 2017 Report Number: 2187867
Attn: Holly Goulding Sampled By: Katie Pfeifer/KN Company: YG - Environment		

Metals Total

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
Calcium	mg/L	0.00314789	-0.010	0.010	yes
Magnesium	mg/L	0.00520919	-0.020	0.020	yes
Potassium	mg/L	-0.0139899	-0.040	0.040	yes
Silicon	mg/L	-3.23338e-005	-0.005	0.005	yes
Sodium	mg/L	0.009873	-0.099	0.099	yes

Date Acquired: May 08, 2017

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
Calcium	mg/L	102.16	90	110	yes
Magnesium	mg/L	104.42	90	110	yes
Potassium	mg/L	102.90	90	110	yes
Silicon	mg/L	100.83	90	110	yes
Sodium	mg/L	100.48	90	110	yes
Titanium	mg/L	98.29	90	110	yes

Date Acquired: May 08, 2017

Calcium	mg/L	99.95	90	110	yes
Magnesium	mg/L	107.92	90	110	yes
Potassium	mg/L	104.18	90	110	yes
Silicon	mg/L	99.71	90	110	yes
Sodium	mg/L	101.74	90	110	yes
Titanium	mg/L	99.95	90	110	yes

Date Acquired: May 08, 2017

Client Sample Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Calcium	mg/L	40	40	20	0.050	yes
Magnesium	mg/L	11	11	20	0.050	yes
Potassium	mg/L	3.2	3.1	20	0.100	yes
Silicon	mg/L	9.8	10	20	0.100	yes
Sodium	mg/L	30	29	20	0.100	yes

Date Acquired: May 08, 2017

Physical and Aggregate Properties

Client Sample Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Solids	mg/L	58	63.6	30	10.000	yes

Date Acquired: May 05, 2017

Control Sample	Units	Measured	Lower Limit	Upper Limit	Passed QC
Solids	mg/L	440	263.000	575.000	yes

Date Acquired: May 05, 2017

Solids	mg/L	22.0	16.490	30.710	yes
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Date Acquired: May 05, 2017

Solids	mg/L	<5.0	-5.001	5.001	yes
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Date Acquired: May 08, 2017

Quality Control

Bill To: YTG DOE - Water Resources	Project:	Lot ID: 1200559
202, 419 Range Road	ID: YOWN	Control Number:
Whitehorse, YT, Canada	Name: Faro Area	Date Received: May 5, 2017
Y1A 3V1	Location: Faro Area	Date Reported: May 24, 2017
Attn: Holly Goulding	LSD:	Report Number: 2187867
Sampled By: Katie Pfeifer/KN	P.O.:	
Company: YG - Environment	Acct code:	

Physical and Aggregate Properties -

Continued

Control Sample	Units	Measured	Lower Limit	Upper Limit	Passed QC
Solids	mg/L	<2.00	-5.010	5.010	yes
Date Acquired: May 05, 2017					

Routine Water

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
Calcium	mg/L	-0.00739154	-0.010	0.010	yes
Magnesium	mg/L	0.00652987	-0.020	0.020	yes
Potassium	mg/L	0.00413253	-0.040	0.040	yes
Silicon	mg/L	0.00175575	-0.005	0.005	yes
Sodium	mg/L	0.0950571	-0.099	0.099	yes
Date Acquired: May 08, 2017					
Chloride	mg/L	0	-0.201	0.201	yes
Fluoride	mg/L	0.00339959	-0.099	0.099	yes
Nitrate - N	mg/L	0.00256552	-0.010	0.010	yes
Nitrite - N	mg/L	0	-0.099	0.099	yes
Sulfate (SO4)	mg/L	0.00423765	-0.990	0.990	yes
Date Acquired: May 05, 2017					

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
Calcium	mg/L	96.78	90	110	yes
Magnesium	mg/L	98.74	90	110	yes
Potassium	mg/L	97.35	90	110	yes
Silicon	mg/L	97.38	90	110	yes
Sodium	mg/L	96.55	90	110	yes
Date Acquired: May 08, 2017					
Chloride	mg/L	103.42	85	115	yes
Fluoride	mg/L	93.82	85	115	yes
Nitrate - N	mg/L	104.28	85	115	yes
Nitrite - N	mg/L	100.56	90	110	yes
Sulfate (SO4)	mg/L	99.68	85	115	yes
Date Acquired: May 05, 2017					
Chloride	mg/L	98.18	90	110	yes
Fluoride	mg/L	102.78	89	109	yes
Nitrate - N	mg/L	97.76	88	108	yes
Nitrite - N	mg/L	98.82	90	118	yes
Sulfate (SO4)	mg/L	97.05	90	110	yes
Date Acquired: May 05, 2017					
Calcium	mg/L	97.14	90	110	yes
Magnesium	mg/L	101.98	90	110	yes
Potassium	mg/L	108.97	90	110	yes
Sodium	mg/L	109.07	90	110	yes

Quality Control

Bill To: YTG DOE - Water Resources 202, 419 Range Road Whitehorse, YT, Canada Y1A 3V1	Project: ID: YOWN Name: Faro Area Location: Faro Area LSD: P.O.: Acct code:	Lot ID: 1200559 Control Number: Date Received: May 5, 2017 Date Reported: May 24, 2017 Report Number: 2187867
Attn: Holly Goulding		
Sampled By: Katie Pfeifer/KN		
Company: YG - Environment		

Routine Water - Continued

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC	
Date Acquired:	May 08, 2017					
Certified Reference Material	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
T-Alkalinity	mg/L	10	10	8	12	yes
Date Acquired:	May 08, 2017					
Client Sample Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Calcium	mg/L	18	19	30	1.000	yes
Magnesium	mg/L	4.0	4.0	30	1.000	yes
Potassium	mg/L	5.3	5.3	30	1.000	yes
Silicon	mg/L	11	11	30	0.150	yes
Sodium	mg/L	7.4	7.4	30	1.000	yes
Sulfur	mg/L	0.29	0.28	30	3.000	yes
Date Acquired:	May 08, 2017					
Hardness	mg CaCO3/L	147	147	20	1.000	yes
Date Acquired:	May 08, 2017					
pH		9.44	9.50	10		yes
Chloride	mg/L	17.1	17.1	20	0.250	yes
Fluoride	mg/L	0.017	0.017	20	0.050	yes
Nitrate - N	mg/L	5.21	5.25	20	0.050	yes
Nitrite - N	mg/L	<0.010	<0.010	20	0.050	yes
Sulfate (SO4)	mg/L	13.9	13.9	20	0.500	yes
Date Acquired:	May 05, 2017					
Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Chloride	mg/L	1.36	1.36	6	0.010	yes
Nitrate - N	mg/L	0.297	0.295	12	0.050	yes
Sulfate (SO4)	mg/L	4.5	4.6	6	0.010	yes
Date Acquired:	May 05, 2017					
Control Sample	Units	Measured	Lower Limit	Upper Limit	Passed QC	
pH		9.98	9.17	10.81	yes	
Electrical Conductivity	µS/cm at 25 °C	210	194	250	yes	
P-Alkalinity	mg/L	38	7	55	yes	
T-Alkalinity	mg/L	108	98	113	yes	
Date Acquired:	May 08, 2017					
pH		4.04	3.88	4.12	yes	
Date Acquired:	May 08, 2017					
pH		7.94	7.88	8.12	yes	
Date Acquired:	May 08, 2017					
Electrical Conductivity	µS/cm at 25 °C	1390	1323	1503	yes	
Date Acquired:	May 08, 2017					

Trace Metals Dissolved

Quality Control

Bill To: YTG DOE - Water Resources	Project:	Lot ID: 1200559
202, 419 Range Road	ID: YOWN	Control Number:
Whitehorse, YT, Canada	Name: Faro Area	Date Received: May 5, 2017
Y1A 3V1	Location: Faro Area	Date Reported: May 24, 2017
Attn: Holly Goulding	LSD:	Report Number: 2187867
Sampled By: Katie Pfeifer/KN	P.O.:	
Company: YG - Environment	Acct code:	

Trace Metals Dissolved

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
Aluminum	µg/L	-0.101298	-0.990	0.990	yes
Antimony	µg/L	-0.0092029	-0.020	0.020	yes
Arsenic	µg/L	0.0172068	-0.099	0.099	yes
Barium	µg/L	-0.00721371	-0.099	0.099	yes
Beryllium	µg/L	-0.0344065	-0.050	0.050	yes
Bismuth	µg/L	0.000584517	-0.099	0.099	yes
Boron	µg/L	0.279689	-2.001	2.001	yes
Cadmium	µg/L	-0.000937545	-0.010	0.010	yes
Chromium	µg/L	-0.0335319	-0.050	0.050	yes
Cobalt	µg/L	0.00106031	-0.020	0.020	yes
Copper	µg/L	-0.0309484	-0.050	0.050	yes
Iron	µg/L	0.16795	-2.001	2.001	yes
Lead	µg/L	0	-0.010	0.010	yes
Lithium	µg/L	-0.000994052	-0.500	0.500	yes
Manganese	µg/L	-0.0362408	-0.990	0.990	yes
Molybdenum	µg/L	0.00151403	-0.020	0.020	yes
Nickel	µg/L	-0.0263098	-0.200	0.200	yes
Selenium	µg/L	0.0116312	-0.200	0.200	yes
Silver	µg/L	-0.00159588	-0.009	0.009	yes
Strontium	µg/L	0.0673328	-0.099	0.099	yes
Tellurium	µg/L	-0.0258846	-0.050	0.050	yes
Thallium	µg/L	0.000161099	-0.010	0.010	yes
Thorium	µg/L	0.00129457	-0.050	0.050	yes
Tin	µg/L	0.0032099	-0.099	0.099	yes
Titanium	µg/L	0.00529065	-0.099	0.099	yes
Uranium	µg/L	0.00140073	-0.010	0.010	yes
Vanadium	µg/L	0.00319306	-0.050	0.050	yes
Zinc	µg/L	0	-0.500	0.500	yes
Zirconium	µg/L	0.00618069	-0.099	0.099	yes

Date Acquired: May 08, 2017

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
Titanium	mg/L	93.81	90	110	yes
Date Acquired: May 08, 2017					
Aluminum	µg/L	96.14	80	120	yes
Antimony	µg/L	103.92	90	110	yes
Arsenic	µg/L	96.98	90	110	yes
Barium	µg/L	92.24	90	110	yes
Beryllium	µg/L	98.23	90	110	yes
Boron	µg/L	92.55	70	130	yes
Cadmium	µg/L	101.10	90	110	yes
Chromium	µg/L	101.95	90	110	yes
Cobalt	µg/L	98.95	90	110	yes

Quality Control

Bill To: YTG DOE - Water Resources	Project:	Lot ID: 1200559
202, 419 Range Road	ID: YOWN	Control Number:
Whitehorse, YT, Canada	Name: Faro Area	Date Received: May 5, 2017
Y1A 3V1	Location: Faro Area	Date Reported: May 24, 2017
Attn: Holly Goulding	LSD:	Report Number: 2187867
Sampled By: Katie Pfeifer/KN	P.O.:	
Company: YG - Environment	Acct code:	

Trace Metals Dissolved - Continued

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC	
Copper	µg/L	100.39	90	110	yes	
Lead	µg/L	102.89	90	110	yes	
Lithium	µg/L	104.68	90	110	yes	
Molybdenum	µg/L	101.05	90	110	yes	
Nickel	µg/L	96.16	90	110	yes	
Selenium	µg/L	104.32	90	110	yes	
Silver	µg/L	105.82	90	110	yes	
Strontium	µg/L	97.12	90	110	yes	
Thorium	µg/L	103.46	90	110	yes	
Tin	µg/L	99.44	90	110	yes	
Titanium	µg/L	93.89	90	110	yes	
Uranium	µg/L	102.31	90	110	yes	
Vanadium	µg/L	96.68	90	110	yes	
Zinc	µg/L	104.71	90	110	yes	
Date Acquired: May 08, 2017						
Aluminum	µg/L	98.38	80	120	yes	
Antimony	µg/L	91.94	90	110	yes	
Arsenic	µg/L	96.00	90	110	yes	
Barium	µg/L	92.06	90	110	yes	
Beryllium	µg/L	102.57	90	110	yes	
Boron	µg/L	103.62	80	120	yes	
Cadmium	µg/L	102.42	90	110	yes	
Chromium	µg/L	102.29	90	110	yes	
Cobalt	µg/L	100.85	90	110	yes	
Copper	µg/L	99.30	90	110	yes	
Lead	µg/L	101.85	90	110	yes	
Lithium	µg/L	104.07	90	110	yes	
Molybdenum	µg/L	99.79	90	110	yes	
Nickel	µg/L	95.78	90	110	yes	
Selenium	µg/L	102.15	90	110	yes	
Silver	µg/L	101.78	90	110	yes	
Strontium	µg/L	90.92	90	110	yes	
Thallium	µg/L	101.71	90	110	yes	
Thorium	µg/L	107.70	86	122	yes	
Tin	µg/L	94.17	90	110	yes	
Titanium	µg/L	98.67	90	110	yes	
Uranium	µg/L	104.47	90	110	yes	
Vanadium	µg/L	97.10	90	110	yes	
Zinc	µg/L	98.59	90	110	yes	
Date Acquired: May 08, 2017						
Client Sample Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Aluminum	µg/L	34	36	20	20.000	yes

Quality Control

Bill To: YTG DOE - Water Resources	Project:	Lot ID: 1200559
202, 419 Range Road	ID: YOWN	Control Number:
Whitehorse, YT, Canada	Name: Faro Area	Date Received: May 5, 2017
Y1A 3V1	Location: Faro Area	Date Reported: May 24, 2017
Attn: Holly Goulding	LSD:	Report Number: 2187867
Sampled By: Katie Pfeifer/KN	P.O.:	
Company: YG - Environment	Acct code:	

Trace Metals Dissolved - Continued

Client Sample	Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Antimony		µg/L	0.088	0.128	20	1.000	yes
Arsenic		µg/L	10.6	10.7	20	1.000	yes
Barium		µg/L	57.4	57.4	20	5.000	yes
Beryllium		µg/L	<0.050	<0.050	20	1.000	yes
Boron		µg/L	35	35	20	5.000	yes
Cadmium		µg/L	0.029	0.031	20	0.500	yes
Chromium		µg/L	0.842	0.938	20	5.000	yes
Cobalt		µg/L	7.214	7.119	20	0.500	yes
Copper		µg/L	<0.5	<0.5	20	5.000	yes
Iron		µg/L	39500	43000	20	50.000	yes
Lead		µg/L	<0.010	<0.010	20	0.500	yes
Lithium		µg/L	<0.5	<0.5	20	5.000	yes
Manganese		µg/L	2000	2300	20	0.500	yes
Molybdenum		µg/L	0.137	0.155	20	0.500	yes
Nickel		µg/L	0.6	0.6	20	5.000	yes
Selenium		µg/L	<0.2	<0.2	20	0.500	yes
Silver		µg/L	<0.010	<0.010	20	0.500	yes
Strontium		µg/L	90.6	91.6	20	0.500	yes
Tellurium		µg/L	0.066	0.130	20	0.500	yes
Thallium		µg/L	<0.010	<0.010	20	0.100	yes
Thorium		µg/L	0.117	0.169	20	0.100	yes
Tin		µg/L	<0.1	<0.1	20	0.500	yes
Titanium		µg/L	0.4	0.6	20	0.500	yes
Uranium		µg/L	<0.010	<0.010	20	0.100	yes
Vanadium		µg/L	3.376	3.404	20	0.500	yes
Zinc		µg/L	1.7	1.7	20	5.000	yes
Zirconium		µg/L	0.1	0.1	20	0.500	yes
Date Acquired:	May 08, 2017						
Titanium		mg/L	0.004	0.004	30	0.012	yes
Date Acquired:	May 08, 2017						

Trace Metals Total

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
Aluminum	µg/L	-0.483011	-0.990	0.990	yes
Antimony	µg/L	-0.000196138	-0.020	0.020	yes
Arsenic	µg/L	-0.0101129	-0.099	0.099	yes
Barium	µg/L	0.00166777	-0.099	0.099	yes
Beryllium	µg/L	0.0114393	-0.050	0.050	yes
Bismuth	µg/L	-0.00056203	-0.099	0.099	yes
Boron	µg/L	1.60882	-2.001	2.001	yes
Cadmium	µg/L	0.0010561	-0.010	0.010	yes
Chromium	µg/L	0.010331	-0.050	0.050	yes

Quality Control

Bill To: YTG DOE - Water Resources	Project:	Lot ID: 1200559
202, 419 Range Road	ID: YOWN	Control Number:
Whitehorse, YT, Canada	Name: Faro Area	Date Received: May 5, 2017
Y1A 3V1	Location: Faro Area	Date Reported: May 24, 2017
Attn: Holly Goulding	LSD:	Report Number: 2187867
Sampled By: Katie Pfeifer/KN	P.O.:	
Company: YG - Environment	Acct code:	

Trace Metals Total - Continued

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
Cobalt	µg/L	0.00366192	-0.020	0.020	yes
Copper	µg/L	0.0395127	-0.501	0.501	yes
Iron	µg/L	1.39947	-2.001	2.001	yes
Lead	µg/L	-0.00332808	-0.010	0.010	yes
Lithium	µg/L	-0.0115635	-0.501	0.501	yes
Manganese	µg/L	0.107623	-0.990	0.990	yes
Molybdenum	µg/L	-0.00500662	-0.020	0.020	yes
Nickel	µg/L	0.0104295	-0.201	0.201	yes
Selenium	µg/L	-0.0203658	-0.201	0.201	yes
Silver	µg/L	-0.000951356	-0.010	0.010	yes
Strontium	µg/L	0.000820965	-0.099	0.099	yes
Tellurium	µg/L	-0.0175011	-0.050	0.050	yes
Thallium	µg/L	-0.000623782	-0.010	0.010	yes
Thorium	µg/L	0	-0.050	0.050	yes
Tin	µg/L	-0.00546832	-0.099	0.099	yes
Titanium	µg/L	0	-0.099	0.099	yes
Uranium	µg/L	-0.000244759	-0.099	0.099	yes
Vanadium	µg/L	0.0421781	-0.050	0.050	yes
Zinc	µg/L	-0.0290357	-0.501	0.501	yes
Zirconium	µg/L	-0.0452423	-0.099	0.099	yes

Date Acquired: May 08, 2017

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
Aluminum	µg/L	106.71	80	120	yes
Antimony	µg/L	97.98	90	110	yes
Arsenic	µg/L	106.74	90	110	yes
Barium	µg/L	100.29	90	110	yes
Beryllium	µg/L	106.18	90	110	yes
Boron	µg/L	100.96	70	130	yes
Cadmium	µg/L	105.31	90	110	yes
Chromium	µg/L	103.14	90	110	yes
Cobalt	µg/L	99.91	90	110	yes
Copper	µg/L	105.04	90	110	yes
Lead	µg/L	105.22	90	110	yes
Lithium	µg/L	103.09	90	110	yes
Molybdenum	µg/L	96.83	90	110	yes
Nickel	µg/L	102.42	90	110	yes
Selenium	µg/L	105.49	90	110	yes
Silver	µg/L	104.70	90	110	yes
Strontium	µg/L	96.00	90	110	yes
Thallium	µg/L	106.38	90	110	yes
Thorium	µg/L	106.73	90	110	yes
Tin	µg/L	102.37	90	110	yes

Quality Control

Bill To: YTG DOE - Water Resources	Project:	Lot ID: 1200559
202, 419 Range Road	ID: YOWN	Control Number:
Whitehorse, YT, Canada	Name: Faro Area	Date Received: May 5, 2017
Y1A 3V1	Location: Faro Area	Date Reported: May 24, 2017
Attn: Holly Goulding	LSD:	Report Number: 2187867
Sampled By: Katie Pfeifer/KN	P.O.:	
Company: YG - Environment	Acct code:	

Trace Metals Total - Continued

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
Titanium	µg/L	102.65	90	110	yes
Uranium	µg/L	103.52	90	110	yes
Vanadium	µg/L	101.48	90	110	yes
Zinc	µg/L	91.75	90	110	yes
Date Acquired: May 08, 2017					
Aluminum	µg/L	98.66	80	120	yes
Antimony	µg/L	97.17	90	110	yes
Arsenic	µg/L	106.85	90	110	yes
Barium	µg/L	98.80	90	110	yes
Beryllium	µg/L	100.67	90	110	yes
Boron	µg/L	95.70	80	120	yes
Cadmium	µg/L	105.73	90	110	yes
Chromium	µg/L	100.66	90	110	yes
Cobalt	µg/L	98.48	90	110	yes
Copper	µg/L	103.01	90	110	yes
Lead	µg/L	100.98	90	110	yes
Lithium	µg/L	102.50	90	110	yes
Molybdenum	µg/L	96.68	90	110	yes
Nickel	µg/L	100.26	90	110	yes
Selenium	µg/L	100.88	90	110	yes
Silver	µg/L	104.77	90	110	yes
Strontium	µg/L	98.35	90	110	yes
Thallium	µg/L	102.55	90	110	yes
Thorium	µg/L	103.95	90	110	yes
Tin	µg/L	100.03	90	110	yes
Titanium	µg/L	101.97	90	110	yes
Uranium	µg/L	101.01	90	110	yes
Vanadium	µg/L	98.84	90	110	yes
Zinc	µg/L	104.68	90	110	yes

Date Acquired: May 08, 2017

Client Sample Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Aluminum	µg/L	77	78	20	100.000	yes
Antimony	µg/L	0.063	0.11	20	2.000	yes
Arsenic	µg/L	0.1	0.1	20	2.000	yes
Barium	µg/L	0.2	0.2	20	10.000	yes
Boron	µg/L	6	7	20	40.000	yes
Cadmium	µg/L	<0.010	<0.010	20	0.100	yes
Chromium	µg/L	0.26	0.27	20	6.000	yes
Copper	µg/L	0.6	0.6	20	5.000	yes
Lead	µg/L	<0.010	<0.010	20	1.000	yes
Selenium	µg/L	<0.2	<0.2	20	5.000	yes
Uranium	µg/L	<0.010	<0.010	20	1.000	yes

Quality Control

Bill To: YTG DOE - Water Resources 202, 419 Range Road Whitehorse, YT, Canada Y1A 3V1 Attn: Holly Goulding	Project: ID: YOWN Name: Faro Area Location: Faro Area LSD: P.O.: Acct code:	Lot ID: 1200559 Control Number: Date Received: May 5, 2017 Date Reported: May 24, 2017 Report Number: 2187867
Sampled By: Katie Pfeifer/KN Company: YG - Environment		

Trace Metals Total - Continued

Client Sample	Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Zinc		µg/L	<0.5	0.8	20	10.000	yes
Date Acquired:		May 08, 2017					

Methodology and Notes

Bill To: YTG DOE - Water Resources 202, 419 Range Road Whitehorse, YT, Canada Y1A 3V1	Project: ID: YOWN Name: Faro Area Location: Faro Area	Lot ID: 1200559 Control Number: Date Received: May 5, 2017 Date Reported: May 24, 2017 Report Number: 2187867
Attn: Holly Goulding	LSD:	
Sampled By: Katie Pfeifer/KN	P.O.:	
Company: YG - Environment	Acct code:	

Method of Analysis

Method Name	Reference	Method	Date Analysis Started	Location
Alk, pH, EC, Turb in water (Surrey)	APHA	* Alkalinity - Titration Method, 2320 B	08-May-17	Exova Surrey
Alk, pH, EC, Turb in water (Surrey)	APHA	* Conductivity, 2510 B	08-May-17	Exova Surrey
Alk, pH, EC, Turb in water (Surrey)	APHA	* pH - Electrometric Method, 4500-H+ B	08-May-17	Exova Surrey
Ammonia-N in Water (Surrey)	APHA	* Flow Injection Analysis, 4500-NH3 H	08-May-17	Exova Surrey
Anions by IEC in water (Surrey)	APHA	* Ion Chromatography with Chemical Suppression of Eluent Cond., 4110 B	09-May-17	Exova Surrey
Anions by IEC in water (Surrey)	APHA	* Single-Column Ion Chromatography with Electronic Suppression, 4110 C	09-May-17	Exova Surrey
Carbon Inorganic (Dissolved) in water(DIC)	APHA	High-Temperature Combustion Method, 5310 B	08-May-17	Exova Edmonton
Carbon Inorganic (Total) in water (TIC)	APHA	High-Temperature Combustion Method, 5310 B	08-May-17	Exova Edmonton
Carbon Organic (Dissolved) in water (DOC)	APHA	High-Temperature Combustion Method, 5310 B	08-May-17	Exova Edmonton
Carbon Organic (Total) in water (TOC)	APHA	High-Temperature Combustion Method, 5310 B	08-May-17	Exova Edmonton
Metals SemiTrace (Dissolved) in water (Surrey)	US EPA	* Metals & Trace Elements by ICP-AES, 6010C	08-May-17	Exova Surrey
Metals SemiTrace (Total) in Water (Surrey)	US EPA	* Metals & Trace Elements by ICP-AES, 6010C	08-May-17	Exova Surrey
Phosphorus - total by Smartchem (Surrey)	APHA	* Persulfate digestion method, 4500-P B5	08-May-17	Exova Surrey
Solids Dissolved (Total, Fixed and Volatile) - Surrey	APHA	* Total Dissolved Solids Dried at 180 C, 2540 C	08-May-17	Exova Surrey
Solids Suspended (Total, Fixed and Volatile) - Surrey	APHA	* Total Suspended Solids Dried at 103-105°C, 2540 D	05-May-17	Exova Surrey
Sublet to SRC Analytical	Ext. Lab	See attached test report,	18-May-17	Saskatchewan Research Council
Total and Kjeldahl Nitrogen (Total) in Water	ISO	* Water Quality - Determination of nitrogen, ISO/TR 11905-2	08-May-17	Exova Edmonton
Trace Metals (dissolved) in Water (Surrey)	US EPA	* Determination of Trace Elements in Waters and Wastes by ICP-MS, 200.8	08-May-17	Exova Surrey
Trace Metals (Total) in Water (Surrey)	US EPA	* Determination of Trace Elements in Waters and Wastes by ICP-MS, 200.8	08-May-17	Exova Surrey

* Reference Method Modified

References

APHA	Standard Methods for the Examination of Water and Wastewater
Ext. Lab	External Laboratory
ISO	International Organization for Standardization
US EPA	US Environmental Protection Agency Test Methods

Methodology and Notes

Bill To: YTG DOE - Water Resources	Project:	Lot ID: 1200559
202, 419 Range Road	ID: YOWN	Control Number:
Whitehorse, YT, Canada	Name: Faro Area	Date Received: May 5, 2017
Y1A 3V1	Location: Faro Area	Date Reported: May 24, 2017
Attn: Holly Goulding	LSD:	Report Number: 2187867
Sampled By: Katie Pfeifer/KN	P.O.:	
Company: YG - Environment	Acct code:	

Comments:

- Reduction of analytical volume was necessary for Trace Metals analysis to bring results within the analytical range for samples #1200559-1 through 4. Detection limits are adjusted accordingly.
- RA226 analysis was performed by a subcontract laboratory. See attached 3 page report 2017-5029.
- Sample 1200559-1; 5708512 Reduction of analytical volume was necessary for anions due to matrix effects in sample 1200559-1, and 1200559-4. Detection limits are adjusted accordingly.
- Sample 1200559-1; 5708512 Reduction of analytical volume was necessary for sulfate to bring results within the analytical range for sample 1200559-1 and 1200559-4. Detection limits are adjusted accordingly.
- Sample 1200559-2; 5708513 Reduction of analytical volume was necessary for nitrate due to matrix effects in sample 1200559-2 and 1200559-3. Detection limits are adjusted accordingly.

Please direct any inquiries regarding this report to our Client Services group.

Results relate only to samples as submitted.

The test report shall not be reproduced except in full, without the written approval of the laboratory.

SRC Group # 2017-5029

May 18, 2017

EXOVA
104-19575 55A Avenue
Surrey, BC V3S 8P8
Attn: Client Services

Date Samples Received: May-08-2017

Client P.O.: POC102913

All results have been reviewed and approved by a Qualified Person in accordance with the Saskatchewan Environmental Code, Corrective Action Plan Chapter, for the purposes of certifying a laboratory analysis

Results from Lab Sections 1 and 2 have been authorized by Keith Gipman, Supervisor
Results from Lab Section 3 have been authorized by Pat Moser, Supervisor
Results from Lab Sections 4 and 5 have been authorized by Vicky Snook, Supervisor
Results from Lab Section 6 have been authorized by Marion McConnell, Supervisor

-
- * Test methods and data are validated by the laboratory's Quality Assurance Program.
 - * Routine methods follow recognized procedures from sources such as
 - * Standard Methods for the Examination of Water and Wastewater APHA AWWA WEF
 - * Environment Canada
 - * US EPA
 - * CANMET
 - * The results reported relate only to the test samples as provided by the client.
 - * Samples will be kept for 30 days after the final report is sent. Please contact the lab if you have any special requirements.
 - * Additional information is available upon request.

This is a final report.

SRC Group # 2017-5029
May 18, 2017

EXOVA

104-19575 55A Avenue
Surrey, BC V3S 8P8
Attn: Client Services

Date Samples Received: May-08-2017

Client P.O.: POC102913

16999	05/03/2017	1200559-1 B	2017054	*WATER*
17000	05/03/2017	1200559-2 B	2017055	*WATER*
17001	05/03/2017	1200559-3 B	2017056	*WATER*

Analyte	Units	16999	17000	17001
Lab Section 4 (Radiochemistry)				
Radium-226	Bq/L	0.02	0.01	0.01

SRC Group # 2017-5029
May 18, 2017

EXOVA

17002 05/02/2017 1200559-4 B 2017057 *WATER*

Analyte	Units	17002
Lab Section 4 (Radiochemistry)		
Radium-226	Bq/L	0.008

Report Transmission Cover Page

Bill To: YTG DOE - Water Resources 202, 419 Range Road Whitehorse, YT, Canada Y1A 3V1	Project ID: KBS Project Name: Kotaneelee Baseline Survey Project Location: Kotaneelee Region LSD: P.O.:	Lot ID: 1273550 Control Number: Date Received: May 25, 2018 Date Reported: Jun 27, 2018 Report Number: 2290448
Attn: John Miller Sampled By: John Minder Company: YG - Environment	Proj. Acct. code:	

Contact	Company	Address
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Holly Goulding	YTG DOE - Water Resources	202, 419 Range Road Whitehorse, YT Y1A 3V1 Phone: (867) 456-6583 Fax: (867) 667-3194 Email: holly.goulding@gov.yk.ca
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Delivery	Format	Deliverables
Email - Merge Reports	PDF	COC / Test Report
Email - Single Report	EQWin	Test Report
Email - Single Report	PDF	Invoice

John Miller	YTG DOE - Water Resources	202, 419 Range Road Whitehorse, YT Y1A 3V1 Phone: (867) 667-3104 Fax: (867) 667-3194 Email: john.miller@gov.yk.ca
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Delivery	Format	Deliverables
Email - Multiple Reports By Lot	EQWin	Test Report
Email - Multiple Reports By Lot	PDF	COC / Test Report
Email - Single Report	PDF	COA
Email - Single Report	PDF	COR
Email - Single Report	PDF	Invoice

John Minder	YTG DOE - Water Resources	202, 419 Range Road Whitehorse, YT Y1A 3V1 Phone: (867) 667-3102 Fax: (867) 667-3194 Email: john.minder@gov.yk.ca
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Delivery	Format	Deliverables
Email - Multiple Reports By Lot	EQWin	Test Report
Email - Multiple Reports By Lot	PDF	COC / Test Report
Email - Single Report	PDF	COA
Email - Single Report	PDF	COR
Email - Single Report	PDF	Invoice

Tyler Williams	YTG DOE - Water Resources	202, 419 Range Road Whitehorse, YT Y1A 3V1 Phone: (867) 667-3233 Fax: (867) 667-3194 Email: Tyler.Williams@gov.yk.ca
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Delivery	Format	Deliverables
Email - Multiple Reports By Lot	EQWin	Test Report
Email - Multiple Reports By Lot	PDF	COC / Test Report

Notes To Clients:

- May 28, 2018 - Sample 1273550-1; 6111295: Analysis was performed on sample 1273550-1 and 1273550-2 that exceeded the recommended holding time for nitrite and nitrate analysis.
- May 29, 2018 - Reduction of analytical volume was necessary for metals analysis due to matrix effects in sample #1273550-1. Detection limits are adjusted accordingly.
- May 29, 2018 - Sample 1273550-1; 6111295: Reduction of analytical volume was necessary for TP analysis to bring results within the analytical range for sample # 1273550-1. Detection limits are adjusted accordingly.

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Report Transmission Cover Page

Bill To: YTG DOE - Water Resources 202, 419 Range Road Whitehorse, YT, Canada Y1A 3V1	Project ID: KBS	Lot ID: 1273550
Attn: John Miller	Project Name: Kotaneelee Baseline Survey	Control Number:
Sampled By: John Minder	Project Location: Kotaneelee Region	Date Received: May 25, 2018
Company: YG - Environment	LSD:	Date Reported: Jun 27, 2018
	P.O.:	Report Number: 2290448
	Proj. Acct. code:	

Notes To Clients:

- May 29, 2018 - Sample 1273550-1; 6111295: Reduction of analytical volume was necessary for anions due to matrix effects in sample 1273550-1 and 1273550-2. Detection limits are adjusted accordingly.
- May 30, 2018 - Reduction of analytical volume was necessary for iron and manganese analysis to bring results within the analytical range for samples #1273550-1 and 2. Detection limits are adjusted accordingly.
- Jun 08, 2018 - Reduction of analytical volume was necessary for total suspended solids due to matrix effects in samples 1273550-1 and 2. Detection limits are adjusted accordingly.

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Analytical Report

Bill To: YTG DOE - Water Resources 202, 419 Range Road Whitehorse, YT, Canada Y1A 3V1	Project ID: KBS Project Name: Kotaneelee Baseline Survey Project Location: Kotaneelee Region LSD: P.O.:	Lot ID: 1273550 Control Number: Date Received: May 25, 2018 Date Reported: Jun 27, 2018 Report Number: 2290448
Attn: John Miller Sampled By: John Minder Company: YG - Environment	Proj. Acct. code:	

Reference Number	1273550-1	1273550-2
Sample Date	May 23, 2018	May 23, 2018
Sample Time	15:15	17:48
Sample Location		
Sample Description	YOWN-1507 (Gas plant well) / 2018057 / B	LBRV-DP6 (Labiche River Drive Point Well #6) / 2018059 / B
Matrix	Water	Water

Analyte	Units	Results	Results	Results	Nominal Detection Limit
Inorganic Nonmetallic Parameters					
Nitrogen	Total	mg/L	0.39	1.61	0.06
Organic Carbon	Total Nonpurgeable	mg/L	20	11.7	0.5
Organic Carbon	Dissolved Nonpurgeable	mg/L	3.5	7.5	0.5
Inorganic carbon	Total	mg/L	68.5	122	0.5
Inorganic carbon	Dissolved	mg/L	67.2	114	0.5
Ammonia - N		mg/L	0.27	1.20	0.01
Phosphorus	Total	mg/L	1.16	0.040	0.003
Metals Dissolved					
Mercury	Dissolved	mg/L	<0.00001	<0.00001	0.00001
Metals Total					
Calcium	Total	mg/L	200	83	0.01
Magnesium	Total	mg/L	41	15	0.02
Potassium	Total	mg/L	62	4.4	0.04
Silicon	Total	mg/L	140	3.8	0.005
Sulfur	Total	mg/L	48	6.6	0.02
Sodium	Total	mg/L	16	130	0.1
Titanium	Total	mg/L	1.8	0.009	0.002
Digestion	Preparation		Field Pres, digest as total Hg	Field Pres, digest as total Hg	
Mercury	Total	mg/L	<0.00001	0.00001	0.00001
Physical and Aggregate Properties					
Solids	Total Suspended	mg/L	550	34	2
Solids	Total Dissolved	mg/L	460	580	5
Routine Water					
pH - Holding Time			Exceeded	Exceeded	
pH	at 25 °C		7.75	7.85	0.01
Electrical Conductivity		µS/cm at 25 °C	793	930	1
Calcium	Dissolved	mg/L	93	75	0.01
Magnesium	Dissolved	mg/L	23	14	0.02
Potassium	Dissolved	mg/L	45	4.2	0.04
Silicon	Dissolved	mg/L	2.4	3.9	0.005
Sodium	Dissolved	mg/L	16	130	0.1
Sulfur	Dissolved	mg/L	29	6.7	0.02
Bicarbonate		mg/L	365	571	5
Carbonate		mg/L	<6	<6	6
Hydroxide		mg/L	<5	<5	5

Analytical Report

Bill To: YTG DOE - Water Resources 202, 419 Range Road Whitehorse, YT, Canada Y1A 3V1 Attn: John Miller	Project ID: KBS Project Name: Kotaneelee Baseline Survey Project Location: Kotaneelee Region LSD: P.O.:	Lot ID: 1273550 Control Number: Date Received: May 25, 2018 Date Reported: Jun 27, 2018 Report Number: 2290448
Sampled By: John Minder Company: YG - Environment	Proj. Acct. code:	

		Reference Number	1273550-1	1273550-2		
		Sample Date	May 23, 2018	May 23, 2018		
		Sample Time	15:15	17:48		
		Sample Location				
		Sample Description	YOWN-1507 (Gas plant well) / 2018057 / B	LBRV-DP6 (Labiche River Drive Point Well #6) / 2018059 / B		
		Matrix	Water	Water		
Analyte	Units	Results	Results	Results	Nominal Detection Limit	
Routine Water - Continued						
P-Alkalinity	as CaCO3	mg/L	<5	<5		5
T-Alkalinity	as CaCO3	mg/L	299	468		5
Bromide	Dissolved	mg/L	<0.2	<0.2		0.02
Chloride	Dissolved	mg/L	14.7	3.4		0.05
Nitrate - N	Dissolved	mg/L	<0.1	<0.1		0.01
Nitrite - N	Dissolved	mg/L	<0.1	<0.1		0.01
Sulfate (SO4)	Dissolved	mg/L	93	19		0.1
Hardness	as CaCO3 (dissolved)	mg/L	330	250		5
Total Dissolved Solids	Calculated Value	mg/L	470	540		1
Ionic Balance	Dissolved	%	100	110		
Mono-Aromatic Hydrocarbons - Water						
Benzene		µg/L	<0.5	<0.5		0.5
Ethylbenzene		µg/L	<0.5	<0.5		0.5
Methyl t-Butyl Ether		µg/L	<0.5	<0.5		0.5
Styrene		µg/L	<0.5	<0.5		0.5
Toluene		µg/L	<0.5	<0.5		0.5
Total Xylenes (m,p,o)		µg/L	<0.5	<0.5		0.5
Volatile Petroleum Hydrocarbons - Water						
VPWh (VHw6-10 minus BTEX)		µg/L	<50	<50		50
VHw6-10		µg/L	<50	<50		50
Trace Metals Dissolved						
Digestion	Dissolved		Field filtered and Pres Dissol	Field filtered and Pres Dissol		
Titanium	Dissolved	mg/L	0.009	0.008		0.002
Aluminum	Dissolved	mg/L	<0.001	0.005		0.001
Antimony	Dissolved	mg/L	0.00014	<0.00002		0.00002
Arsenic	Dissolved	mg/L	0.0031	0.0031		0.0001
Barium	Dissolved	mg/L	0.2185	0.3188		0.0001
Beryllium	Dissolved	mg/L	<0.00005	<0.00005		0.00005
Bismuth	Dissolved	mg/L	<0.0001	<0.0001		0.0001
Boron	Dissolved	mg/L	0.164	0.086		0.002
Cadmium	Dissolved	mg/L	<0.00001	<0.00001		0.00001
Chromium	Dissolved	mg/L	<0.00005	<0.00005		0.00005
Cobalt	Dissolved	mg/L	0.00112	0.00070		0.00002
Copper	Dissolved	mg/L	<0.0005	<0.0005		0.0005
Iron	Dissolved	mg/L	10.5	15.8		0.002

Analytical Report

Bill To: YTG DOE - Water Resources 202, 419 Range Road Whitehorse, YT, Canada Y1A 3V1	Project ID: KBS Project Name: Kotaneelee Baseline Survey Project Location: Kotaneelee Region LSD: P.O.: Proj. Acct. code:	Lot ID: 1273550 Control Number: Date Received: May 25, 2018 Date Reported: Jun 27, 2018 Report Number: 2290448
Attn: John Miller Sampled By: John Minder Company: YG - Environment		

		Reference Number	1273550-1	1273550-2		
		Sample Date	May 23, 2018	May 23, 2018		
		Sample Time	15:15	17:48		
		Sample Location				
		Sample Description	YOWN-1507 (Gas plant well) / 2018057 / B	LBRV-DP6 (Labiche River Drive Point Well #6) / 2018059 / B		
		Matrix	Water	Water		
Analyte	Units	Results	Results	Results	Nominal Detection Limit	
Trace Metals Dissolved - Continued						
Lead	Dissolved	mg/L	<0.00001	0.00003	0.00001	
Lithium	Dissolved	mg/L	0.0050	0.0121	0.0005	
Manganese	Dissolved	mg/L	0.608	1.25	0.001	
Molybdenum	Dissolved	mg/L	0.00657	0.00503	0.00002	
Nickel	Dissolved	mg/L	0.0133	0.0020	0.0002	
Selenium	Dissolved	mg/L	<0.0002	<0.0002	0.0002	
Silver	Dissolved	mg/L	<0.00001	<0.00001	0.00001	
Strontium	Dissolved	mg/L	0.2533	0.2228	0.0001	
Tellurium	Dissolved	mg/L	<0.00005	<0.00005	0.00005	
Thallium	Dissolved	mg/L	<0.00001	<0.00001	0.00001	
Thorium	Dissolved	mg/L	0.00017	0.00022	0.00005	
Tin	Dissolved	mg/L	<0.0001	<0.0001	0.0001	
Uranium	Dissolved	mg/L	0.00061	0.00026	0.00001	
Vanadium	Dissolved	mg/L	<0.00005	0.00031	0.00005	
Zinc	Dissolved	mg/L	0.0007	0.1766	0.0005	
Zirconium	Dissolved	mg/L	<0.0001	0.0006	0.0001	
Trace Metals Total						
Aluminum	Total	mg/L	70	0.043	0.001	
Antimony	Total	mg/L	0.018	<0.00002	0.00002	
Arsenic	Total	mg/L	0.19	0.0031	0.0001	
Barium	Total	mg/L	1.3	0.35	0.0001	
Beryllium	Total	mg/L	0.0020	<0.00005	0.00005	
Bismuth	Total	mg/L	<0.0005	<0.0001	0.0001	
Boron	Total	mg/L	0.28	0.093	0.002	
Cadmium	Total	mg/L	0.0057	<0.00001	0.00001	
Chromium	Total	mg/L	0.35	0.00019	0.00005	
Cobalt	Total	mg/L	0.13	0.00080	0.00002	
Copper	Total	mg/L	1.2	<0.0002	0.0002	
Iron	Total	mg/L	1000	16	0.002	
Lead	Total	mg/L	0.082	0.00007	0.00001	
Lithium	Total	mg/L	0.051	0.014	0.0005	
Manganese	Total	mg/L	6.3	1.3	0.001	
Molybdenum	Total	mg/L	0.21	0.0058	0.00002	
Nickel	Total	mg/L	0.85	0.0023	0.0002	
Selenium	Total	mg/L	0.0050	<0.0002	0.0002	
Silver	Total	mg/L	0.00099	<0.00001	0.00001	

Analytical Report

Bill To: YTG DOE - Water Resources 202, 419 Range Road Whitehorse, YT, Canada Y1A 3V1	Project ID: KBS Project Name: Kotaneelee Baseline Survey Project Location: Kotaneelee Region LSD: P.O.: Proj. Acct. code:	Lot ID: 1273550 Control Number: Date Received: May 25, 2018 Date Reported: Jun 27, 2018 Report Number: 2290448
Attn: John Miller Sampled By: John Minder Company: YG - Environment		

	Reference Number	1273550-1	1273550-2		
	Sample Date	May 23, 2018	May 23, 2018		
	Sample Time	15:15	17:48		
	Sample Location				
	Sample Description	YOWN-1507 (Gas plant well) / 2018057 / B	LBRV-DP6 (Labiche River Drive Point Well #6) / 2018059 / B		
	Matrix	Water	Water		
Analyte	Units	Results	Results	Results	Nominal Detection Limit
Trace Metals Total - Continued					
Strontium	Total	mg/L	0.43	0.24	0.0001
Tellurium	Total	mg/L	<0.0003	<0.00005	0.00005
Thallium	Total	mg/L	0.00089	<0.00001	0.00001
Thorium	Total	mg/L	0.014	0.00021	0.00005
Tin	Total	mg/L	0.082	<0.0001	0.0001
Uranium	Total	mg/L	0.0087	0.00030	0.00001
Vanadium	Total	mg/L	0.16	0.00059	0.00005
Zinc	Total	mg/L	1.2	0.69	0.0005
Zirconium	Total	mg/L	0.025	0.0007	0.0001
Subcontracted Analysis					
Subcontractor Report Id	SRC		Done	Done	

Approved by: 
 Mathieu Simoneau
 Operations Manager

Quality Control

Bill To: YTG DOE - Water Resources 202, 419 Range Road Whitehorse, YT, Canada Y1A 3V1	Project ID: KBS Project Name: Kotaneelee Baseline Survey Project Location: Kotaneelee Region LSD: P.O.: Proj. Acct. code:	Lot ID: 1273550 Control Number: Date Received: May 25, 2018 Date Reported: Jun 27, 2018 Report Number: 2290448
Attn: John Miller Sampled By: John Minder Company: YG - Environment		

Inorganic Nonmetallic Parameters

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC	
Ammonium - N	µg/L	-14.778	-110.00	10.00	yes	
Phosphorus	mg/L	-0.0008	-0.003	0.003	yes	
Date Acquired: May 28, 2018						
Nitrogen	mg/L	0	-0.04	0.08	yes	
Organic Carbon	mg/L	0.3598	-0.5	0.5	yes	
Inorganic carbon	mg/L	0.08815	-0.5	0.5	yes	
Date Acquired: June 07, 2018						
Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC	
Ammonium - N	µg/L	93.03	85	115	yes	
Phosphorus	mg/L	101.70	90	110	yes	
Date Acquired: May 28, 2018						
Ammonium - N	µg/L	117.80	70	130	yes	
Phosphorus	mg/L	96.00	80	120	yes	
Date Acquired: May 28, 2018						
Client Sample Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Nitrogen	mg/L	0.26	0.26	10	0.06	yes
Organic Carbon	mg/L	9.8	9.5	10	1.0	yes
Inorganic carbon	mg/L	<0.5	<0.5	10	1.0	yes
Date Acquired: June 07, 2018						
Ammonia - N	mg/L	3.67	3.70	20	50.00	yes
Phosphorus	mg/L	0.086	0.087	20	0.010	yes
Date Acquired: May 28, 2018						
Control Sample	Units	Measured	Lower Limit	Upper Limit	Passed QC	
Organic Carbon	mg/L	<0.5	-0.5	0.5	yes	
Date Acquired: May 29, 2018						
Nitrogen	mg/L	114	103.74	137.28	yes	
Organic Carbon	mg/L	124	109.1	139.7	yes	
Inorganic carbon	mg/L	47.3	39.0	57.0	yes	
Date Acquired: June 07, 2018						
Nitrogen	mg/L	15.1	13.27	16.93	yes	
Organic Carbon	mg/L	15.5	12.8	17.2	yes	
Inorganic carbon	mg/L	14.4	13.5	18.3	yes	
Date Acquired: June 07, 2018						
Nitrogen	mg/L	1.07	0.89	1.25	yes	
Organic Carbon	mg/L	3.3	2.4	4.0	yes	
Inorganic carbon	mg/L	3.0	2.7	3.9	yes	
Date Acquired: June 07, 2018						

Metals Dissolved

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
Mercury	ng/L	-0.054	-9.99	9.99	yes
Date Acquired: May 29, 2018					

Quality Control

Bill To: YTG DOE - Water Resources 202, 419 Range Road Whitehorse, YT, Canada Y1A 3V1	Project ID: KBS Project Name: Kotaneelee Baseline Survey Project Location: Kotaneelee Region LSD: P.O.: Proj. Acct. code:	Lot ID: 1273550 Control Number: Date Received: May 25, 2018 Date Reported: Jun 27, 2018 Report Number: 2290448
Attn: John Miller Sampled By: John Minder Company: YG - Environment		

Metals Dissolved - Continued

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC	
Mercury	ng/L	98.11	90	110	yes	
Date Acquired: May 29, 2018						
Certified Reference Material	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Mercury	µg/L	0.03	0.03	0.02	0.05	yes
Date Acquired: May 29, 2018						
Client Sample Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Mercury	µg/L	<0.01	<0.01	20	0.05	yes
Date Acquired: May 29, 2018						

Metals Total

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC	
Calcium	mg/L	0	-0.010	0.010	yes	
Magnesium	mg/L	6.15429e-006	-0.020	0.020	yes	
Potassium	mg/L	0.0316069	-0.040	0.040	yes	
Silicon	mg/L	0.0017526	-0.005	0.005	yes	
Sodium	mg/L	0	-0.099	0.099	yes	
Date Acquired: May 28, 2018						
Mercury	ng/L	-0.866	-9.990	9.990	yes	
Date Acquired: May 29, 2018						
Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC	
Mercury	ng/L	98.11	90	110	yes	
Date Acquired: May 29, 2018						
Calcium	mg/L	109.92	90	110	yes	
Magnesium	mg/L	107.20	90	110	yes	
Potassium	mg/L	104.30	90	110	yes	
Silicon	mg/L	102.93	90	110	yes	
Sodium	mg/L	102.92	90	110	yes	
Titanium	mg/L	101.46	90	110	yes	
Date Acquired: May 28, 2018						
Calcium	mg/L	109.59	90	110	yes	
Magnesium	mg/L	104.44	90	110	yes	
Potassium	mg/L	105.50	90	110	yes	
Silicon	mg/L	101.39	90	110	yes	
Sodium	mg/L	90.72	90	110	yes	
Titanium	mg/L	100.37	90	110	yes	
Date Acquired: May 28, 2018						
Certified Reference Material	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Mercury	µg/L	0.03	0.035	0.023	0.047	yes
Date Acquired: May 29, 2018						
Client Sample Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Calcium	mg/L	32	32	20	0.050	yes
Magnesium	mg/L	9.6	9.3	20	0.050	yes

Quality Control

Bill To: YTG DOE - Water Resources 202, 419 Range Road Whitehorse, YT, Canada Y1A 3V1	Project ID: KBS Project Name: Kotaneelee Baseline Survey Project Location: Kotaneelee Region LSD: P.O.: Proj. Acct. code:	Lot ID: 1273550 Control Number: Date Received: May 25, 2018 Date Reported: Jun 27, 2018 Report Number: 2290448
Attn: John Miller Sampled By: John Minder Company: YG - Environment		

Metals Total - Continued

Client Sample	Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Potassium		mg/L	1.5	1.5	20	0.100	yes
Silicon		mg/L	5.0	5.0	20	0.100	yes
Sodium		mg/L	2.8	2.8	20	0.100	yes
Mercury		µg/L	<0.01	<0.01	20	0.050	yes

Date Acquired: May 29, 2018

Mono-Aromatic Hydrocarbons - Water

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
Benzene	ng	0	-0.5	0.5	yes
Ethylbenzene	ng	0	-0.5	0.5	yes
Methyl t-Butyl Ether	ng	0	-0.5	0.5	yes
m,p-Xylene	ng	0	-0.5	0.5	yes
o-Xylene	ng	0	-0.5	0.5	yes
Styrene	ng	0	-0.5	0.5	yes
Toluene	ng	0	-0.5	0.5	yes
Total Xylenes (m,p,o)	ng	0	-0.5	0.5	yes
Dibromofluoromethane	%	102.86	74.990	115.010	yes
Toluene-d8	%	106.32	80.000	110.000	yes
4-Bromofluorobenzene	%	110.6	85.000	115.000	yes

Date Acquired: June 01, 2018

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
Benzene	ng	102.76	80	120	yes
Ethylbenzene	ng	104.95	80	120	yes
Methyl t-Butyl Ether	ng	113.77	80	120	yes
m,p-Xylene	ng	104.73	80	120	yes
o-Xylene	ng	113.89	80	120	yes
Styrene	ng	102.53	80	120	yes
Toluene	ng	119.10	80	120	yes
Total Xylenes (m,p,o)	ng	107.78	80	120	yes
Dibromofluoromethane	%	100.32	80	120	yes
Toluene-d8	%	99.26	80	120	yes
4-Bromofluorobenzene	%	98.92	80	120	yes

Date Acquired: June 01, 2018

Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Benzene	µg/L	<0.5	<0.5	20	2.5	yes
Ethylbenzene	µg/L	<0.5	<0.5	20	2.5	yes
Methyl t-Butyl Ether	µg/L	<0.5	<0.5	20	2.5	yes
m,p-Xylene	µg/L	<0.5	<0.5	20	2.5	yes
o-Xylene	µg/L	<0.5	<0.5	20	2.5	yes
Styrene	µg/L	<0.5	<0.5	20	2.5	yes
Toluene	µg/L	<0.5	<0.5	20	2.5	yes
Total Xylenes (m,p,o)	µg/L	<0.5	<0.5	20	2.5	yes

Date Acquired: June 01, 2018

Quality Control

Bill To: YTG DOE - Water Resources 202, 419 Range Road Whitehorse, YT, Canada Y1A 3V1	Project ID: KBS Project Name: Kotaneelee Baseline Survey Project Location: Kotaneelee Region LSD: P.O.:	Lot ID: 1273550 Control Number: Date Received: May 25, 2018 Date Reported: Jun 27, 2018 Report Number: 2290448
Attn: John Miller Sampled By: John Minder Company: YG - Environment	Proj. Acct. code:	

Mono-Aromatic Hydrocarbons - Water - Continued

Matrix Spike	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
Benzene	µg/L	103	80	120	yes
Ethylbenzene	µg/L	102	80	120	yes
Methyl t-Butyl Ether	µg/L	99	80	120	yes
m,p-Xylene	µg/L	101	80	120	yes
o-Xylene	µg/L	114	80	120	yes
Styrene	µg/L	93	80	120	yes
Toluene	µg/L	112	80	120	yes
Total Xylenes (m,p,o)	µg/L	105	80	120	yes
Date Acquired: June 01, 2018					

Physical and Aggregate Properties

Client Sample Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Solids	mg/L	8	6	30	50.000	yes
Date Acquired: June 08, 2018						
Control Sample	Units	Measured	Lower Limit	Upper Limit	Passed QC	
Solids	mg/L	610	412.000	610.600	yes	
Date Acquired: June 08, 2018						
Solids	mg/L	24	18.000	37.200	yes	
Date Acquired: June 08, 2018						
Solids	mg/L	<5	-5.001	5.001	yes	
Date Acquired: June 08, 2018						
Solids	mg/L	<2	-5.010	5.010	yes	
Date Acquired: June 08, 2018						

Routine Water

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
Calcium	mg/L	-0.00936869	-0.010	0.010	yes
Magnesium	mg/L	0.00483726	-0.020	0.020	yes
Potassium	mg/L	0.0334458	-0.040	0.040	yes
Silicon	mg/L	-0.00319914	-0.005	0.005	yes
Sodium	mg/L	-0.0039022	-0.099	0.099	yes
Date Acquired: May 28, 2018					
Bromide	mg/L	0	-0.099	0.099	yes
Chloride	mg/L	0.0135914	-0.201	0.201	yes
Nitrate - N	mg/L	0	-0.010	0.010	yes
Nitrite - N	mg/L	0	-0.099	0.099	yes
Sulfate (SO4)	mg/L	0	-0.990	0.990	yes
Date Acquired: May 28, 2018					
Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
Calcium	mg/L	104.49	90	110	yes
Magnesium	mg/L	104.61	90	110	yes
Potassium	mg/L	102.74	90	110	yes

Quality Control

Bill To: YTG DOE - Water Resources 202, 419 Range Road Whitehorse, YT, Canada Y1A 3V1	Project ID: KBS Project Name: Kotaneelee Baseline Survey Project Location: Kotaneelee Region LSD: P.O.:	Lot ID: 1273550 Control Number: Date Received: May 25, 2018 Date Reported: Jun 27, 2018 Report Number: 2290448
Attn: John Miller Sampled By: John Minder Company: YG - Environment	Proj. Acct. code:	

Routine Water - Continued

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC	
Silicon	mg/L	107.01	90	110	yes	
Sodium	mg/L	107.72	90	110	yes	
Date Acquired: May 28, 2018						
Bromide	mg/L	100.73	90	110	yes	
Chloride	mg/L	103.84	85	115	yes	
Nitrate - N	mg/L	102.38	85	115	yes	
Nitrite - N	mg/L	97.39	90	110	yes	
Sulfate (SO4)	mg/L	106.03	85	115	yes	
Date Acquired: May 28, 2018						
Bromide	mg/L	103.13	90	110	yes	
Chloride	mg/L	103.76	90	110	yes	
Nitrate - N	mg/L	102.65	88	108	yes	
Nitrite - N	mg/L	101.77	90	118	yes	
Sulfate (SO4)	mg/L	108.07	90	110	yes	
Date Acquired: May 28, 2018						
Calcium	mg/L	103.03	90	110	yes	
Magnesium	mg/L	102.44	90	110	yes	
Potassium	mg/L	101.00	90	110	yes	
Sodium	mg/L	104.21	90	110	yes	
Date Acquired: May 28, 2018						
Certified Reference Material	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
T-Alkalinity	mg/L	9	10	9	11	yes
Date Acquired: May 30, 2018						
Client Sample Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Calcium	mg/L	84	88	30	1.000	yes
Magnesium	mg/L	24	25	30	1.000	yes
Date Acquired: May 28, 2018						
Hardness	mg CaCO3/L	120	118	20	1.000	yes
Date Acquired: May 28, 2018						
pH		7.90	7.87	10		yes
Electrical Conductivity	dS/m at 25 °C	0.270	0.269	10	0.005	yes
Bicarbonate	mg/L	120	120	10	10	yes
Hydroxide	mg/L	<5	<5	10	10	yes
P-Alkalinity	mg/L	<5	<5	10	5	yes
T-Alkalinity	mg/L	99	98	10	5	yes
Chloride	mg/L	28.9	28.9	20	0.250	yes
Nitrate - N	mg/L	5.37	5.36	20	0.050	yes
Nitrite - N	mg/L	<0.01	<0.01	20	0.050	yes
Sulfate (SO4)	mg/L	11.5	11.5	20	0.500	yes
Date Acquired: May 28, 2018						
Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Chloride	mg/L	1.34	1.35	6	0.010	yes

Quality Control

Bill To: YTG DOE - Water Resources 202, 419 Range Road Whitehorse, YT, Canada Y1A 3V1	Project ID: KBS Project Name: Kotaneelee Baseline Survey Project Location: Kotaneelee Region LSD: P.O.: Proj. Acct. code:	Lot ID: 1273550 Control Number: Date Received: May 25, 2018 Date Reported: Jun 27, 2018 Report Number: 2290448
Attn: John Miller Sampled By: John Minder Company: YG - Environment		

Routine Water - Continued

Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Nitrate - N	mg/L	0.31	0.31	12	0.050	yes
Sulfate (SO4)	mg/L	4.9	4.9	6	0.010	yes
Date Acquired: May 28, 2018						
Control Sample	Units	Measured	Lower Limit	Upper Limit		Passed QC
pH		10.08	9.17	10.81		yes
Electrical Conductivity	µS/cm at 25 °C	235	194	250		yes
P-Alkalinity	mg/L	37	7	55		yes
T-Alkalinity	mg/L	99	90	110		yes
Date Acquired: May 30, 2018						
pH		4.02	3.88	4.12		yes
Date Acquired: May 30, 2018						
pH		8.00	7.88	8.12		yes
Date Acquired: May 30, 2018						
Electrical Conductivity	µS/cm at 25 °C	1436	1323	1503		yes
Date Acquired: May 30, 2018						

Trace Metals Dissolved

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
Aluminum	µg/L	0.465807	-0.990	0.990	yes
Antimony	µg/L	0.00815761	-0.020	0.020	yes
Arsenic	µg/L	0.00557738	-0.099	0.099	yes
Barium	µg/L	-0.0200421	-0.099	0.099	yes
Beryllium	µg/L	0.00516476	-0.050	0.050	yes
Bismuth	µg/L	0.00300111	-0.099	0.099	yes
Boron	µg/L	0.521438	-2.001	2.001	yes
Cadmium	µg/L	0	-0.010	0.010	yes
Chromium	µg/L	0	-0.050	0.050	yes
Cobalt	µg/L	0.00182134	-0.020	0.020	yes
Copper	µg/L	-0.0375043	-0.050	0.050	yes
Iron	µg/L	-0.638401	-2.001	2.001	yes
Lead	µg/L	0.00275422	-0.010	0.010	yes
Lithium	µg/L	0.00490877	-0.500	0.500	yes
Manganese	µg/L	-0.0617191	-0.990	0.990	yes
Molybdenum	µg/L	0.00110579	-0.020	0.020	yes
Nickel	µg/L	-0.0727748	-0.200	0.200	yes
Selenium	µg/L	0.0114333	-0.200	0.200	yes
Silver	µg/L	0.000896842	-0.009	0.009	yes
Strontium	µg/L	-0.0111664	-0.099	0.099	yes
Tellurium	µg/L	-0.0187344	-0.050	0.050	yes
Thallium	µg/L	0.00632805	-0.010	0.010	yes
Thorium	µg/L	-0.0170755	-0.050	0.050	yes
Tin	µg/L	-0.0713387	-0.099	0.099	yes
Uranium	µg/L	0.00510549	-0.010	0.010	yes

Quality Control

Bill To: YTG DOE - Water Resources 202, 419 Range Road Whitehorse, YT, Canada Y1A 3V1	Project ID: KBS Project Name: Kotaneelee Baseline Survey Project Location: Kotaneelee Region LSD: P.O.:	Lot ID: 1273550 Control Number: Date Received: May 25, 2018 Date Reported: Jun 27, 2018 Report Number: 2290448
Attn: John Miller Sampled By: John Minder Company: YG - Environment	Proj. Acct. code:	

Trace Metals Dissolved - Continued

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
Vanadium	µg/L	0	-0.050	0.050	yes
Zinc	µg/L	-0.076036	-0.500	0.500	yes
Zirconium	µg/L	0.0131348	-0.099	0.099	yes
Titanium	µg/L	-0.00550152	-0.099	0.099	yes

Date Acquired: May 28, 2018

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
Titanium	mg/L	101.96	90	110	yes

Date Acquired: May 28, 2018

Aluminum	µg/L	85.22	80	120	yes
Antimony	µg/L	103.53	90	110	yes
Arsenic	µg/L	91.49	90	110	yes
Barium	µg/L	91.95	90	110	yes
Beryllium	µg/L	102.98	90	110	yes
Boron	µg/L	95.12	70	130	yes
Cadmium	µg/L	92.36	90	110	yes
Chromium	µg/L	94.20	90	110	yes
Cobalt	µg/L	95.42	90	110	yes
Copper	µg/L	91.07	90	110	yes
Lead	µg/L	94.41	90	110	yes
Lithium	µg/L	99.45	90	110	yes
Molybdenum	µg/L	94.04	90	110	yes
Nickel	µg/L	99.46	90	110	yes
Selenium	µg/L	94.50	90	110	yes
Silver	µg/L	91.27	90	110	yes
Strontium	µg/L	94.75	90	110	yes
Thorium	µg/L	91.94	90	110	yes
Tin	µg/L	92.58	90	110	yes
Uranium	µg/L	91.55	90	110	yes
Vanadium	µg/L	93.61	90	110	yes
Zinc	µg/L	109.65	90	110	yes
Titanium	µg/L	99.87	90	110	yes

Date Acquired: May 28, 2018

Aluminum	µg/L	91.65	80	120	yes
Antimony	µg/L	94.12	90	110	yes
Arsenic	µg/L	93.44	90	110	yes
Barium	µg/L	92.86	90	110	yes
Beryllium	µg/L	99.81	90	110	yes
Boron	µg/L	94.96	80	120	yes
Cadmium	µg/L	97.49	90	110	yes
Chromium	µg/L	94.15	90	110	yes
Cobalt	µg/L	97.31	90	110	yes
Copper	µg/L	92.04	90	110	yes
Lead	µg/L	95.13	90	110	yes

Quality Control

Bill To: YTG DOE - Water Resources 202, 419 Range Road Whitehorse, YT, Canada Y1A 3V1	Project ID: KBS Project Name: Kotaneelee Baseline Survey Project Location: Kotaneelee Region LSD: P.O.: Proj. Acct. code:	Lot ID: 1273550 Control Number: Date Received: May 25, 2018 Date Reported: Jun 27, 2018 Report Number: 2290448
Attn: John Miller Sampled By: John Minder Company: YG - Environment		

Trace Metals Dissolved - Continued

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
Lithium	µg/L	95.21	90	110	yes
Molybdenum	µg/L	94.33	90	110	yes
Nickel	µg/L	97.37	90	110	yes
Selenium	µg/L	95.57	90	110	yes
Silver	µg/L	94.55	90	110	yes
Strontium	µg/L	99.78	90	110	yes
Thallium	µg/L	92.39	90	110	yes
Thorium	µg/L	102.73	86	122	yes
Tin	µg/L	96.80	90	110	yes
Titanium	mg/L	100.82	90	110	yes
Uranium	µg/L	92.83	90	110	yes
Vanadium	µg/L	92.06	90	110	yes
Zinc	µg/L	98.37	90	110	yes
Titanium	µg/L	94.68	90	110	yes

Date Acquired: May 28, 2018

Client Sample Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Aluminum	µg/L	<1	<1	20	20.000	yes
Antimony	µg/L	0.03	0.05	20	1.000	yes
Arsenic	µg/L	<0.1	<0.1	20	1.000	yes
Barium	µg/L	<0.1	<0.1	20	5.000	yes
Beryllium	µg/L	<0.05	<0.05	20	1.000	yes
Boron	µg/L	<2	<2	20	5.000	yes
Cadmium	µg/L	<0.01	<0.01	20	0.500	yes
Chromium	µg/L	<0.05	<0.05	20	5.000	yes
Cobalt	µg/L	<0.02	<0.02	20	0.500	yes
Copper	µg/L	<0.5	<0.5	20	5.000	yes
Iron	µg/L	<2	<2	20	50.000	yes
Lead	µg/L	<0.01	<0.01	20	0.500	yes
Lithium	µg/L	<0.5	<0.5	20	5.000	yes
Manganese	µg/L	<1	<1	20	0.500	yes
Molybdenum	µg/L	<0.02	<0.02	20	0.500	yes
Nickel	µg/L	<0.2	<0.2	20	5.000	yes
Selenium	µg/L	<0.2	<0.2	20	0.500	yes
Silver	µg/L	<0.01	<0.01	20	0.500	yes
Strontium	µg/L	<0.1	<0.1	20	0.500	yes
Tellurium	µg/L	<0.05	<0.05	20	0.500	yes
Thallium	µg/L	<0.01	<0.01	20	0.100	yes
Thorium	µg/L	<0.05	0.06	20	0.100	yes
Tin	µg/L	<0.1	<0.1	20	0.500	yes
Uranium	µg/L	<0.01	<0.01	20	0.100	yes
Vanadium	µg/L	<0.05	<0.05	20	0.500	yes
Zinc	µg/L	<0.5	<0.5	20	5.000	yes
Zirconium	µg/L	<0.1	<0.1	20	0.500	yes
Titanium	µg/L	<0.1	<0.1	20	0.500	yes

Quality Control

Bill To: YTG DOE - Water Resources 202, 419 Range Road Whitehorse, YT, Canada Y1A 3V1	Project ID: KBS Project Name: Kotaneelee Baseline Survey Project Location: Kotaneelee Region LSD: P.O.: Proj. Acct. code:	Lot ID: 1273550 Control Number: Date Received: May 25, 2018 Date Reported: Jun 27, 2018 Report Number: 2290448
Attn: John Miller Sampled By: John Minder Company: YG - Environment		

Trace Metals Dissolved - Continued

Client Sample Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Date Acquired: May 28, 2018						

Trace Metals Total

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC	
Aluminum	µg/L	-0.11369	-0.990	0.990	yes	
Antimony	µg/L	-0.00286293	-0.020	0.020	yes	
Arsenic	µg/L	0.00340822	-0.099	0.099	yes	
Barium	µg/L	0.00906843	-0.099	0.099	yes	
Beryllium	µg/L	-0.00407208	-0.050	0.050	yes	
Bismuth	µg/L	-0.00387405	-0.099	0.099	yes	
Boron	µg/L	-0.465296	-2.001	2.001	yes	
Cadmium	µg/L	-0.00624551	-0.010	0.010	yes	
Chromium	µg/L	0	-0.050	0.050	yes	
Cobalt	µg/L	0.000128256	-0.020	0.020	yes	
Copper	µg/L	0.00984781	-0.501	0.501	yes	
Iron	µg/L	0.0566513	-2.001	2.001	yes	
Lead	µg/L	0.000339863	-0.010	0.010	yes	
Lithium	µg/L	0.02109	-0.501	0.501	yes	
Manganese	µg/L	-0.0334286	-0.990	0.990	yes	
Molybdenum	µg/L	-0.0144611	-0.020	0.020	yes	
Nickel	µg/L	0.0402953	-0.201	0.201	yes	
Selenium	µg/L	8.45514e-005	-0.201	0.201	yes	
Silver	µg/L	7.98654e-005	-0.010	0.010	yes	
Strontium	µg/L	0.00558076	-0.099	0.099	yes	
Tellurium	µg/L	-0.00701083	-0.050	0.050	yes	
Thallium	µg/L	-0.00101673	-0.010	0.010	yes	
Thorium	µg/L	-0.00508505	-0.050	0.050	yes	
Tin	µg/L	-0.00520573	-0.099	0.099	yes	
Titanium	µg/L	0.0808791	-0.099	0.099	yes	
Uranium	µg/L	-0.00122157	-0.099	0.099	yes	
Vanadium	µg/L	0	-0.050	0.050	yes	
Zinc	µg/L	0.0430033	-0.501	0.501	yes	
Zirconium	µg/L	-0.070399	-0.099	0.099	yes	
Date Acquired: May 28, 2018						

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
Aluminum	µg/L	103.04	80	120	yes
Antimony	µg/L	97.81	90	110	yes
Arsenic	µg/L	100.02	90	110	yes
Barium	µg/L	99.03	90	110	yes
Beryllium	µg/L	101.09	90	110	yes
Boron	µg/L	100.60	70	130	yes
Cadmium	µg/L	97.59	90	110	yes
Chromium	µg/L	104.73	90	110	yes
Cobalt	µg/L	100.61	90	110	yes

Quality Control

Bill To: YTG DOE - Water Resources 202, 419 Range Road Whitehorse, YT, Canada Y1A 3V1	Project ID: KBS Project Name: Kotaneelee Baseline Survey Project Location: Kotaneelee Region LSD: P.O.: Proj. Acct. code:	Lot ID: 1273550 Control Number: Date Received: May 25, 2018 Date Reported: Jun 27, 2018 Report Number: 2290448
Attn: John Miller Sampled By: John Minder Company: YG - Environment		

Trace Metals Total - Continued

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
Copper	µg/L	99.56	90	110	yes
Lead	µg/L	101.74	90	110	yes
Lithium	µg/L	100.18	90	110	yes
Molybdenum	µg/L	99.77	90	110	yes
Nickel	µg/L	102.60	90	110	yes
Selenium	µg/L	102.52	90	110	yes
Silver	µg/L	101.51	90	110	yes
Strontium	µg/L	94.82	90	110	yes
Thallium	µg/L	101.49	90	110	yes
Thorium	µg/L	108.44	90	110	yes
Tin	µg/L	92.20	90	110	yes
Titanium	µg/L	108.17	90	110	yes
Uranium	µg/L	96.68	90	110	yes
Vanadium	µg/L	100.12	90	110	yes
Zinc	µg/L	105.60	90	110	yes
Date Acquired: May 28, 2018					
Aluminum	µg/L	97.01	80	120	yes
Antimony	µg/L	100.77	90	110	yes
Arsenic	µg/L	98.69	90	110	yes
Barium	µg/L	100.01	90	110	yes
Beryllium	µg/L	98.40	90	110	yes
Boron	µg/L	99.05	80	120	yes
Cadmium	µg/L	99.83	90	110	yes
Chromium	µg/L	101.35	90	110	yes
Cobalt	µg/L	101.00	90	110	yes
Copper	µg/L	96.23	90	110	yes
Lead	µg/L	99.69	90	110	yes
Lithium	µg/L	101.48	90	110	yes
Molybdenum	µg/L	101.77	90	110	yes
Nickel	µg/L	99.53	90	110	yes
Selenium	µg/L	101.29	90	110	yes
Silver	µg/L	100.93	90	110	yes
Strontium	µg/L	99.24	90	110	yes
Thallium	µg/L	100.93	90	110	yes
Thorium	µg/L	105.96	90	110	yes
Tin	µg/L	102.19	90	110	yes
Titanium	µg/L	100.89	90	110	yes
Uranium	µg/L	97.65	90	110	yes
Vanadium	µg/L	96.48	90	110	yes
Zinc	µg/L	90.35	90	110	yes
Date Acquired: May 28, 2018					

Client Sample Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Aluminum	µg/L	2900	2800	20	100.000	yes
Antimony	µg/L	0.06	0.07	20	2.000	yes

Quality Control

Bill To: YTG DOE - Water Resources 202, 419 Range Road Whitehorse, YT, Canada Y1A 3V1	Project ID: KBS Project Name: Kotaneelee Baseline Survey Project Location: Kotaneelee Region LSD: P.O.: Proj. Acct. code:	Lot ID: 1273550 Control Number: Date Received: May 25, 2018 Date Reported: Jun 27, 2018 Report Number: 2290448
Attn: John Miller Sampled By: John Minder Company: YG - Environment		

Trace Metals Total - Continued

Client Sample	Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Arsenic		µg/L	1.1	1.2	20	2.000	yes
Barium		µg/L	46	45	20	10.000	yes
Beryllium		µg/L	0.10	0.14	20	0.400	yes
Boron		µg/L	19	17	20	40.000	yes
Cadmium		µg/L	0.03	0.03	20	0.100	yes
Chromium		µg/L	4.4	4.3	20	6.000	yes
Cobalt		µg/L	0.96	1.0	20	0.200	yes
Copper		µg/L	2.7	2.9	20	5.000	yes
Iron		µg/L	3000	2800	20	100.000	yes
Lead		µg/L	1.2	1.2	20	1.000	yes
Lithium		µg/L	6.9	7.2	20	10.000	yes
Manganese		µg/L	36	37	20	1.000	yes
Molybdenum		µg/L	0.63	0.64	20	0.200	yes
Nickel		µg/L	4.9	5.1	20	10.000	yes
Selenium		µg/L	1.0	1.1	20	5.000	yes
Silver		µg/L	0.01	0.02	20	0.100	yes
Strontium		µg/L	57	57	20	10.000	yes
Tellurium		µg/L	<0.05	<0.05	20	0.500	yes
Thallium		µg/L	0.04	0.04	20	0.100	yes
Thorium		µg/L	0.70	0.67	20	1.000	yes
Tin		µg/L	0.1	0.1	20	1.000	yes
Titanium		µg/L	140	130	20	1.000	yes
Uranium		µg/L	0.48	0.48	20	1.000	yes
Vanadium		µg/L	9.7	9.3	20	0.400	yes
Zinc		µg/L	7.8	8.5	20	10.000	yes
Zirconium		µg/L	4.1	3.2	20	1.000	yes

Date Acquired: May 28, 2018

Volatile Petroleum Hydrocarbons - Water

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
VPHw (VHw6-10 minus)	ng	0	-50	50	yes
VHw6-10	ng	0	-50	50	yes

Date Acquired: June 01, 2018

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
VHw6-10	ng	106.92	80	120	yes

Date Acquired: June 01, 2018

Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
VPHw (VHw6-10 minus)	µg/L	<50	<50	20	100	yes
VHw6-10	µg/L	<50	<50	20	100	yes

Date Acquired: June 01, 2018

Matrix Spike	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
VHw6-10	µg/L	86	80	120	yes

Date Acquired: June 01, 2018

Methodology and Notes

Bill To: YTG DOE - Water Resources 202, 419 Range Road Whitehorse, YT, Canada Y1A 3V1	Project ID: KBS	Lot ID: 1273550
Attn: John Miller	Project Name: Kotaneelee Baseline Survey	Control Number:
Sampled By: John Minder	Project Location: Kotaneelee Region	Date Received: May 25, 2018
Company: YG - Environment	LSD:	Date Reported: Jun 27, 2018
	P.O.:	Report Number: 2290448
	Proj. Acct. code:	

Method of Analysis

Method Name	Reference	Method	Date Analysis Started	Location
Alk, pH, EC, Turb in water (BC)	APHA	* Alkalinity - Titration Method, 2320 B	May 30, 2018	Exova Surrey
Alk, pH, EC, Turb in water (BC)	APHA	* Conductivity, 2510 B	May 30, 2018	Exova Surrey
Alk, pH, EC, Turb in water (BC)	APHA	* pH - Electrometric Method, 4500-H+ B	May 30, 2018	Exova Surrey
Ammonia-N in Water (Surrey)	APHA	* Flow Injection Analysis, 4500-NH3 H	May 29, 2018	Exova Surrey
Anions by IEC in water (Surrey)	APHA	* Ion Chromatography with Chemical Suppression of Eluent Cond., 4110 B	May 29, 2018	Exova Surrey
Anions by IEC in water (Surrey)	APHA	* Single-Column Ion Chromatography with Electronic Suppression, 4110 C	May 29, 2018	Exova Surrey
BTEX-VPH - Water (MS) (Surrey)	B.C.M.O.E	* Volatile Hydrocarbons in Waters by GC/FID (April, 2007), CSR	May 29, 2018	Exova Surrey
BTEX-VPH - Water (MS) (Surrey)	BCELM	* Volatile Hydrocarbons in Water by GC/FID, VH Water	May 29, 2018	Exova Surrey
Carbon Inorganic (Dissolved) in water(DIC)	APHA	High-Temperature Combustion Method, 5310 B	Jun 7, 2018	Exova Edmonton
Carbon Inorganic (Total) in water (TIC)	APHA	High-Temperature Combustion Method, 5310 B	Jun 7, 2018	Exova Edmonton
Carbon Organic (Dissolved) in water (DOC)	APHA	High-Temperature Combustion Method, 5310 B	Jun 8, 2018	Exova Edmonton
Carbon Organic (Total) in water (TOC)	APHA	High-Temperature Combustion Method, 5310 B	May 29, 2018	Exova Edmonton
Mercury Low Level (Dissolved) in water (Surrey)	EPA	* Mercury in Water by Cold Vapor Atomic Fluorescence Spectrometry, 245.7	May 29, 2018	Exova Surrey
Mercury Low Level (Total) in water (Surrey)	EPA	* Mercury in Water by Cold Vapor Atomic Fluorescence Spectrometry, 245.7	May 29, 2018	Exova Surrey
Metals SemiTrace (Dissolved) in water (Surrey)	US EPA	* Metals & Trace Elements by ICP-AES, 6010C	May 28, 2018	Exova Surrey
Metals SemiTrace (Total) in Water (Surrey)	US EPA	* Metals & Trace Elements by ICP-AES, 6010C	May 28, 2018	Exova Surrey
Phosphorus - total by Smartchem (Surrey)	APHA	* Persulfate digestion method, 4500-P B5	May 28, 2018	Exova Surrey
Solids Dissolved (Total, Fixed and Volatile) - Surrey	APHA	* Total Dissolved Solids Dried at 180 C, 2540 C	Jun 8, 2018	Exova Surrey
Solids Suspended (Total, Fixed and Volatile) - Surrey	APHA	* Total Suspended Solids Dried at 103-105°C, 2540 D	Jun 8, 2018	Exova Surrey
Sublet to SRC Analytical	Ext. Lab	See attached test report,	Jun 7, 2018	Saskatchewan Research Council
Total and Kjeldahl Nitrogen (Total) in Water	ISO	* Water Quality - Determination of nitrogen, ISO/TR 11905-2	Jun 8, 2018	Exova Edmonton
Trace Metals (dissolved) in Water (Surrey)	US EPA	* Determination of Trace Elements in Waters and Wastes by ICP-MS, 200.8	May 28, 2018	Exova Surrey
Trace Metals (Total) in Water (Surrey)	US EPA	* Determination of Trace Elements in Waters and Wastes by ICP-MS, 200.8	May 28, 2018	Exova Surrey

* Reference Method Modified

Methodology and Notes

Bill To: YTG DOE - Water Resources 202, 419 Range Road Whitehorse, YT, Canada Y1A 3V1	Project ID: KBS Project Name: Kotaneelee Baseline Survey Project Location: Kotaneelee Region LSD: P.O.: Proj. Acct. code:	Lot ID: 1273550 Control Number: Date Received: May 25, 2018 Date Reported: Jun 27, 2018 Report Number: 2290448
Attn: John Miller Sampled By: John Minder Company: YG - Environment		

References

APHA	Standard Methods for the Examination of Water and Wastewater
B.C.M.O.E	B.C. Ministry of Environment
BCELM	B.C. Environmental Laboratory Manual
EPA	Environmental Protection Agency Test Methods - US
Ext. Lab	External Laboratory
ISO	International Organization for Standardization
US EPA	US Environmental Protection Agency Test Methods

Comments:

- May 28, 2018 - Sample 1273550-1; 6111295: Analysis was performed on sample 1273550-1 and 1273550-2 that exceeded the recommended holding time for nitrite and nitrate analysis.
- May 29, 2018 - Reduction of analytical volume was necessary for metals analysis due to matrix effects in sample #1273550-1. Detection limits are adjusted accordingly.
- May 29, 2018 - Sample 1273550-1; 6111295: Reduction of analytical volume was necessary for TP analysis to bring results within the analytical range for sample # 1273550-1. Detection limits are adjusted accordingly.
- May 29, 2018 - Sample 1273550-1; 6111295: Reduction of analytical volume was necessary for anions due to matrix effects in sample 1273550-1 and 1273550-2. Detection limits are adjusted accordingly.
- May 30, 2018 - Reduction of analytical volume was necessary for iron and manganese analysis to bring results within the analytical range for samples #1273550-1 and 2. Detection limits are adjusted accordingly.
- Jun 08, 2018 - Reduction of analytical volume was necessary for total suspended solids due to matrix effects in samples 1273550-1 and 2. Detection limits are adjusted accordingly.

Please direct any inquiries regarding this report to our Client Services Group or to the Operations Manager at the coordinates indicated at the top left of this page.

Results relate only to samples as submitted.

The test report shall not be reproduced except in full, without the written approval of the laboratory.

SRC Group # 2018-6248

Jun 07, 2018

EXOVA
104-19575 55A Avenue
Surrey, BC V3S 8P8
Attn: Client Services

Date Samples Received: May-29-2018

Client P.O.: POC111107

All results have been reviewed and approved by a Qualified Person in accordance with the Saskatchewan Environmental Code, Corrective Action Plan Chapter, for the purposes of certifying a laboratory analysis

Results from Lab Sections 1 and 2 have been authorized by Keith Gipman, Supervisor
Results from Lab Section 3 have been authorized by Pat Moser, Supervisor
Results from Lab Sections 4 and 5 have been authorized by Vicky Snook, Supervisor
Results from Lab Section 6 have been authorized by Marion McConnell, Supervisor

-
- * Test methods and data are validated by the laboratory's Quality Assurance Program.
 - * Routine methods follow recognized procedures from sources such as
 - * Standard Methods for the Examination of Water and Wastewater APHA AWWA WEF
 - * Environment Canada
 - * US EPA
 - * CANMET
 - * The results reported relate only to the test samples as provided by the client.
 - * Samples will be kept for 30 days after the final report is sent. Please contact the lab if you have any special requirements.
 - * Additional information is available upon request.

This is a final report.

SRC Group # 2018-6248

Jun 07, 2018

EXOVA

104-19575 55A Avenue
 Surrey, BC V3S 8P8
 Attn: Client Services

Date Samples Received: May-29-2018

Client P.O.: POC111107

19957 05/23/2018 1273550-1 B YOWN-1507 (GAS PLANT WELL) 2018057 *WATER*
 19958 05/23/2018 1273550-2 B LBCH-DP6 (LABICHE RIVER DRIVE POINT WELL #6) 2018059 *WATER*

Analyte	Units	19957	19958
Lab Section 4 (Radiochemistry)			
Radium-226	Bq/L	0.05	0.02
Thorium-234	Bq/L	<4	<4
Thorium-230	Bq/L	<30	<20
Radium-226	Bq/L	<5	<4
Lead-214	Bq/L	0.6	<0.6
Bismuth-214	Bq/L	0.7	0.8
Lead-210	Bq/L	<4	<5
Actinium-228	Bq/L	1.0	<0.8
Lead-212	Bq/L	<0.4	<0.4
Bismuth-212	Bq/L	<2	<2
Thallium-208	Bq/L	<0.2	<0.2
Uranium-235	Bq/L	<1	<1
Thorium-227	Bq/L	<1	<1
Radium-223	Bq/L	<0.8	<0.8
Radon-219	Bq/L	<1	<0.9
Lead-211	Bq/L	<3	<4
Potassium-40	Bq/L	<5	<5

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Report Transmission Cover Page

Bill To: YTG DOE - Water Resources 202, 419 Range Road Whitehorse, YT, Canada Y1A 3V1 Attn: John Miller Sampled By: JDM/KP Company: YG-Eenvironment	Project: ID: YOWN Name: Campground Well Sampling Location: Watson Lake Area LSD: P.O.: C00037999 Acct code:	Lot ID: 1201897 Control Number: Date Received: May 12, 2017 Date Reported: May 29, 2017 Report Number: 2190036
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Contact & Affiliation	Address	Delivery Commitments
John Miller YTG DOE - Water Resources	202, 419 Range Road Whitehorse, Yukon Territory Y1A 3V1 Phone: (867) 667-3233 Fax: (867) 667-3194 Email: john.miller@gov.yk.ca	On [Lot Verification] send (COA) by Email - Single Report On [Report Approval] send (Test Report) by Email - Multiple Reports By Lot On [Report Approval] send (COC, Test Report) by Email - Multiple Reports By Lot On [Lot Creation] send (COR) by Email - Single Report
Holly Goulding YTG DOE - Water Resources	202, 419 Range Road Whitehorse, Yukon Territory Y1A 3V1 Phone: (867) 456-6583 Fax: (867) 667-3194 Email: holly.goulding@gov.yk.ca	On [Report Approval] send (Test Report, COC) by Email - Merge Reports On [Report Approval] send (Test Report) by Email - Single Report On [Lot Approval and Final Test Report Approval] send (Invoice) by Email - Single Report
Tyler Williams YTG DOE - Water Resources	202, 419 Range Road Whitehorse, Yukon Territory Y1A 3V1 Phone: (867) 667-3233 Fax: (867) 667-3194 Email: Tyler.Williams@gov.yk.ca	On [Report Approval] send (Test Report) by Email - Multiple Reports By Lot On [Report Approval] send (Test Report, COC) by Email - Multiple Reports By Lot

Notes To Clients:

- Reduction of analytical volume was necessary for Trace Metals analysis to bring results within the analytical range for samples #1201897-1 through 6. Detection limits are adjusted accordingly.
- Total organic carbon was less than dissolved organic carbon for samples 1201897-5 and 6. The results were verified and are within expected measurement uncertainty.
- RA226 analysis was performed by a subcontract laboratory. See attached 3 page report 2017-5316.
- Sample 1201897-1; 5714858 Reduction of analytical volume was necessary for nitrate due to matrix effects in sample 1201897-1, 1201897-2, 1201897-3, 1201897-4, 1201897-5 and 1201897-6. Detection limits are adjusted accordingly.

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Analytical Report

Bill To: YTG DOE - Water Resources	Project:	Lot ID: 1201897
202, 419 Range Road	ID: YOWN	Control Number:
Whitehorse, YT, Canada	Name: Campground Well	Date Received: May 12, 2017
Y1A 3V1	Location: Watson Lake Area	Date Reported: May 29, 2017
Attn: John Miller	LSD:	Report Number: 2190036
Sampled By: JDM/KP	P.O.: C00037999	
Company: YG-Eenvironment	Acct code:	

		Reference Number	1201897-1	1201897-2	1201897-3	
		Sample Date	May 08, 2017	May 08, 2017	May 09, 2017	
		Sample Time	20:00	21:50	07:45	
		Sample Location				
		Sample Description	2017057 / 1.5 °C / B	YOWN-1509 / 2017058 / 1.5 °C / B	YOWN-1512 / 2017059 / 1.5 °C / B	
		Matrix	Water	Water	Water	
Analyte	Units	Results	Results	Results	Nominal Detection Limit	
Inorganic Nonmetallic Parameters						
Nitrogen	Total	mg/L	0.13	0.26	0.16	0.06
Organic Carbon	Total Nonpurgeable	mg/L	0.7	1.6	1.5	0.5
Organic Carbon	Dissolved Nonpurgeable	mg/L	<0.5	0.7	1.1	0.5
Inorganic carbon	Total	mg/L	25	61.6	82.0	0.5
Inorganic carbon	Dissolved	mg/L	25	60.2	80.9	0.5
Ammonia - N		mg/L	0.02	0.19	0.06	0.01
Phosphorus	Total	mg/L	0.016	0.315	0.089	0.003
Metals Total						
Calcium	Total	mg/L	30	92	96	0.01
Magnesium	Total	mg/L	9.8	20	21	0.02
Potassium	Total	mg/L	0.92	1.8	1.3	0.04
Silicon	Total	mg/L	2.5	7.6	8.1	0.005
Sulfur	Total	mg/L	4.9	9.5	1.2	0.02
Sodium	Total	mg/L	1.8	4.4	2.6	0.1
Titanium	Total	mg/L	0.006	0.038	0.015	0.002
Physical and Aggregate Properties						
Solids	Total Suspended	mg/L	31.5	199	9.50	2
Solids	Total Dissolved	mg/L	130	270	350	5
Routine Water						
pH - Holding Time			Exceeded	Exceeded	Exceeded	
pH	at 25 °C		7.90	7.94	7.95	
Electrical Conductivity		µS/cm at 25 °C	221	452	571	1
Calcium	Dissolved	mg/L	31	80	95	0.01
Magnesium	Dissolved	mg/L	9.6	18	21	0.02
Potassium	Dissolved	mg/L	0.89	1.6	1.2	0.04
Silicon	Dissolved	mg/L	1.6	5.6	7.5	0.005
Sodium	Dissolved	mg/L	1.7	4.2	2.6	0.1
Sulfur	Dissolved	mg/L	5.7	7.9	1.1	0.02
Bicarbonate		mg/L	125	299	419	5
Carbonate		mg/L	<6	<6	<6	6
Hydroxide		mg/L	<5	<5	<5	5
P-Alkalinity	as CaCO3	mg/L	<5	<5	<5	5
T-Alkalinity	as CaCO3	mg/L	103	245	344	5
Bromide	Dissolved	mg/L	<0.020	0.047	0.047	0.02
Chloride	Dissolved	mg/L	0.081	0.070	0.360	0.05

Analytical Report

Bill To: YTG DOE - Water Resources	Project:	Lot ID: 1201897
202, 419 Range Road	ID: YOWN	Control Number:
Whitehorse, YT, Canada	Name: Campground Well	Date Received: May 12, 2017
Y1A 3V1	Location: Watson Lake Area	Date Reported: May 29, 2017
Attn: John Miller	LSD:	Report Number: 2190036
Sampled By: JDM/KP	P.O.: C00037999	
Company: YG-Eenvironment	Acct code:	

	Reference Number	1201897-1	1201897-2	1201897-3		
	Sample Date	May 08, 2017	May 08, 2017	May 09, 2017		
	Sample Time	20:00	21:50	07:45		
	Sample Location					
	Sample Description	2017057 / 1.5 °C / B	YOWN-1509 / 2017058 / 1.5 °C / B	YOWN-1512 / 2017059 / 1.5 °C / B		
	Matrix	Water	Water	Water		
Analyte	Units	Results	Results	Results	Nominal Detection Limit	
Routine Water - Continued						
Fluoride	Dissolved	mg/L	0.072	0.076	0.142	0.01
Nitrate - N	Dissolved	mg/L	<0.10	<0.10	<0.10	0.01
Nitrite - N	Dissolved	mg/L	<0.010	<0.010	<0.010	0.01
Sulfate (SO4)	Dissolved	mg/L	14.7	15.8	<0.1	0.1
Hardness	as CaCO3 (dissolved)	mg/L	116	280	320	5
Trace Metals Dissolved						
Digestion	Dissolved		Field filtered and Pres Dissol	Field filtered and Pres Dissol	Field filtered and Pres Dissol	
Titanium	Dissolved	mg/L	0.006	0.014	0.015	0.002
Aluminum	Dissolved	mg/L	<0.001	<0.001	0.001	0.001
Antimony	Dissolved	mg/L	0.000206	0.000104	0.000060	0.00002
Arsenic	Dissolved	mg/L	0.0005	0.0125	0.0114	0.0001
Barium	Dissolved	mg/L	0.0943	0.3223	0.3123	0.0001
Beryllium	Dissolved	mg/L	<0.000050	<0.000050	<0.000050	0.00005
Bismuth	Dissolved	mg/L	<0.0001	<0.0001	<0.0001	0.0001
Boron	Dissolved	mg/L	0.004	0.005	0.004	0.002
Cadmium	Dissolved	mg/L	<0.000010	<0.000010	<0.000010	0.00001
Chromium	Dissolved	mg/L	0.000067	<0.000050	<0.000050	0.00005
Cobalt	Dissolved	mg/L	0.000263	0.0000984	0.000032	0.00002
Copper	Dissolved	mg/L	<0.0005	<0.0005	<0.0005	0.0005
Iron	Dissolved	mg/L	0.152	0.815	3.57	0.002
Lead	Dissolved	mg/L	0.000020	0.000047	0.0000970	0.00001
Lithium	Dissolved	mg/L	0.0021	0.0101	0.0040	0.0005
Manganese	Dissolved	mg/L	0.091	0.099	0.414	0.001
Molybdenum	Dissolved	mg/L	0.003352	0.003920	0.001344	0.00002
Nickel	Dissolved	mg/L	0.0083	0.0004	0.0002	0.0002
Selenium	Dissolved	mg/L	0.0003	<0.0002	<0.0002	0.0002
Silver	Dissolved	mg/L	<0.000010	<0.000010	<0.000010	0.00001
Strontium	Dissolved	mg/L	0.1285	0.5753	0.2680	0.0001
Tellurium	Dissolved	mg/L	0.000111	<0.000050	0.000061	0.00005
Thallium	Dissolved	mg/L	<0.000010	<0.000010	<0.000010	0.00001
Thorium	Dissolved	mg/L	<0.000050	<0.000050	<0.000050	0.00005
Tin	Dissolved	mg/L	<0.0001	<0.0001	0.0001	0.0001
Uranium	Dissolved	mg/L	0.000378	0.000258	0.000028	0.00001
Vanadium	Dissolved	mg/L	<0.000050	<0.000050	<0.000050	0.00005
Zinc	Dissolved	mg/L	0.0192	0.0499	0.1265	0.0005

Analytical Report

Bill To: YTG DOE - Water Resources	Project:	Lot ID: 1201897
202, 419 Range Road	ID: YOWN	Control Number:
Whitehorse, YT, Canada	Name: Campground Well	Date Received: May 12, 2017
Y1A 3V1	Location: Watson Lake Area	Date Reported: May 29, 2017
Attn: John Miller	LSD:	Report Number: 2190036
Sampled By: JDM/KP	P.O.: C00037999	
Company: YG-Eenvironment	Acct code:	

	Reference Number	1201897-1	1201897-2	1201897-3		
	Sample Date	May 08, 2017	May 08, 2017	May 09, 2017		
	Sample Time	20:00	21:50	07:45		
	Sample Location					
	Sample Description	2017057 / 1.5 °C / B	YOWN-1509 / 2017058 / 1.5 °C / B	YOWN-1512 / 2017059 / 1.5 °C / B		
	Matrix	Water	Water	Water		
Analyte	Units	Results	Results	Results	Nominal Detection Limit	
Trace Metals Dissolved - Continued						
Zirconium	Dissolved	mg/L	<0.0001	<0.0001	<0.0001	0.0001
Trace Metals Total						
Aluminum	Total	mg/L	0.014	0.51	0.004	0.001
Antimony	Total	mg/L	0.00047	0.000087	<0.000020	0.00002
Arsenic	Total	mg/L	0.0022	0.020	0.017	0.0001
Barium	Total	mg/L	0.14	0.41	0.35	0.0001
Beryllium	Total	mg/L	<0.000050	0.000061	<0.000050	0.00005
Bismuth	Total	mg/L	<0.0001	<0.0001	<0.0001	0.0001
Boron	Total	mg/L	0.004	0.005	0.002	0.002
Cadmium	Total	mg/L	0.00082	0.00011	0.000019	0.00001
Chromium	Total	mg/L	0.010	0.0019	0.00011	0.00005
Cobalt	Total	mg/L	0.0018	0.0012	0.000060	0.00002
Copper	Total	mg/L	0.055	0.0026	0.0006	0.0002
Iron	Total	mg/L	17	12	6.6	0.002
Lead	Total	mg/L	0.011	0.0064	0.0094	0.00001
Lithium	Total	mg/L	0.044	0.024	0.026	0.0005
Manganese	Total	mg/L	0.20	0.23	0.42	0.001
Molybdenum	Total	mg/L	0.0041	0.0037	0.0014	0.00002
Nickel	Total	mg/L	0.036	0.0048	0.0004	0.0002
Selenium	Total	mg/L	<0.0002	<0.0002	<0.0002	0.0002
Silver	Total	mg/L	<0.000010	<0.000010	<0.000010	0.00001
Strontium	Total	mg/L	0.13	0.63	0.28	0.0001
Tellurium	Total	mg/L	<0.000050	<0.000050	<0.000050	0.00005
Thallium	Total	mg/L	<0.000010	0.000011	0.000011	0.00001
Thorium	Total	mg/L	0.000078	0.00057	0.000069	0.00005
Tin	Total	mg/L	0.0021	<0.0001	<0.0001	0.0001
Uranium	Total	mg/L	0.0014	0.00065	0.000045	0.00001
Vanadium	Total	mg/L	0.00039	0.0019	<0.000050	0.00005
Zinc	Total	mg/L	1.2	1.6	0.98	0.0005
Zirconium	Total	mg/L	<0.0001	0.0003	<0.0001	0.0001
Subcontracted Analysis						
Subcontractor Report Id	SRC		Done	Done	Done	

Analytical Report

Bill To: YTG DOE - Water Resources 202, 419 Range Road Whitehorse, YT, Canada Y1A 3V1 Attn: John Miller Sampled By: JDM/KP Company: YG-Eenvironment	Project: ID: YOWN Name: Campground Well Sampling Location: Watson Lake Area LSD: P.O.: C00037999 Acct code:	Lot ID: 1201897 Control Number: Date Received: May 12, 2017 Date Reported: May 29, 2017 Report Number: 2190036
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Reference Number	1201897-4	1201897-5	1201897-6
Sample Date	May 09, 2017	May 09, 2017	May 09, 2017
Sample Time	09:10	11:25	14:10
Sample Location			
Sample Description	YOWN-1513 / 2017060 / 1.5 °C / B	YOWN-1612 / 2017061 / 1.5 °C / B	2017062 / 1.5 °C / B

Analyte	Matrix	Units	Results			Nominal Detection Limit
			Water	Water	Water	
Inorganic Nonmetallic Parameters						
Nitrogen	Total	mg/L	0.18	0.43	0.10	0.06
Organic Carbon	Total Nonpurgeable	mg/L	1.0	2.7	2.3	0.5
Organic Carbon	Dissolved Nonpurgeable	mg/L	0.6	2.8	2.3	0.5
Inorganic carbon	Total	mg/L	67.3	54.8	41	0.5
Inorganic carbon	Dissolved	mg/L	66.1	52.5	39	0.5
Ammonia - N		mg/L	<0.01	<0.01	0.01	0.01
Phosphorus	Total	mg/L	0.024	0.006	0.011	0.003
Metals Total						
Calcium	Total	mg/L	88	66	48	0.01
Magnesium	Total	mg/L	17	14	20	0.02
Potassium	Total	mg/L	1.2	2.2	1.5	0.04
Silicon	Total	mg/L	6.2	5.4	5.7	0.005
Sulfur	Total	mg/L	2.6	2.8	3.4	0.02
Sodium	Total	mg/L	9.1	6.3	3.0	0.1
Titanium	Total	mg/L	0.015	0.011	0.009	0.002
Physical and Aggregate Properties						
Solids	Total Suspended	mg/L	16.0	3.5	18.5	2
Solids	Total Dissolved	mg/L	330	220	210	5
Routine Water						
pH - Holding Time			Exceeded	Exceeded	Exceeded	
pH	at 25 °C		7.69	7.72	7.96	
Electrical Conductivity		µS/cm at 25 °C	543	421	377	1
Calcium	Dissolved	mg/L	84	64	46	0.01
Magnesium	Dissolved	mg/L	16	13	19	0.02
Potassium	Dissolved	mg/L	1.1	2.0	1.4	0.04
Silicon	Dissolved	mg/L	5.8	5.2	5.2	0.005
Sodium	Dissolved	mg/L	8.8	6.2	2.9	0.1
Sulfur	Dissolved	mg/L	2.6	2.8	3.4	0.02
Bicarbonate		mg/L	336	264	203	5
Carbonate		mg/L	<6	<6	<6	6
Hydroxide		mg/L	<5	<5	<5	5
P-Alkalinity	as CaCO3	mg/L	<5	<5	<5	5
T-Alkalinity	as CaCO3	mg/L	275	216	167	5
Bromide	Dissolved	mg/L	<0.020	<0.020	<0.020	0.02
Chloride	Dissolved	mg/L	19.9	10.4	21.3	0.05

Analytical Report

Bill To: YTG DOE - Water Resources 202, 419 Range Road Whitehorse, YT, Canada Y1A 3V1	Project: ID: YOWN Name: Campground Well Sampling Location: Watson Lake Area LSD: P.O.: C00037999 Acct code:	Lot ID: 1201897 Control Number: Date Received: May 12, 2017 Date Reported: May 29, 2017 Report Number: 2190036
Attn: John Miller Sampled By: JDM/KP Company: YG-Eenvironment		

		Reference Number	1201897-4	1201897-5	1201897-6	
		Sample Date	May 09, 2017	May 09, 2017	May 09, 2017	
		Sample Time	09:10	11:25	14:10	
		Sample Location				
		Sample Description	YOWN-1513 / 2017060 / 1.5 °C / B	YOWN-1612 / 2017061 / 1.5 °C / B	2017062 / 1.5 °C / B	
	Matrix		Water	Water	Water	
Analyte	Units	Results	Results	Results	Nominal Detection Limit	
Routine Water - Continued						
Fluoride	Dissolved	mg/L	0.057	0.0964	0.079	0.01
Nitrate - N	Dissolved	mg/L	<0.10	0.19	<0.10	0.01
Nitrite - N	Dissolved	mg/L	<0.010	<0.010	<0.010	0.01
Sulfate (SO4)	Dissolved	mg/L	4.4	5.7	8.0	0.1
Hardness	as CaCO3 (dissolved)	mg/L	280	210	190	5
Trace Metals Dissolved						
Digestion	Dissolved		Field filtered and Pres Dissol	Field filtered and Pres Dissol	Field filtered and Pres Dissol	
Titanium	Dissolved	mg/L	0.015	0.011	0.009	0.002
Aluminum	Dissolved	mg/L	0.002	0.001	0.002	0.001
Antimony	Dissolved	mg/L	0.000130	0.000077	0.000152	0.00002
Arsenic	Dissolved	mg/L	0.0006	0.0002	0.0007	0.0001
Barium	Dissolved	mg/L	0.2137	0.0840	0.2104	0.0001
Beryllium	Dissolved	mg/L	<0.000050	<0.000050	<0.000050	0.00005
Bismuth	Dissolved	mg/L	<0.0001	<0.0001	<0.0001	0.0001
Boron	Dissolved	mg/L	0.004	0.004	0.007	0.002
Cadmium	Dissolved	mg/L	<0.000010	0.000012	<0.000010	0.00001
Chromium	Dissolved	mg/L	0.000137	0.000484	0.001394	0.00005
Cobalt	Dissolved	mg/L	0.000228	0.000055	0.000055	0.00002
Copper	Dissolved	mg/L	0.0009	0.0010	0.0005	0.0005
Iron	Dissolved	mg/L	0.113	0.030	0.034	0.002
Lead	Dissolved	mg/L	0.000029	0.000177	0.000055	0.00001
Lithium	Dissolved	mg/L	0.0012	0.0013	0.0026	0.0005
Manganese	Dissolved	mg/L	0.013	0.007	0.007	0.001
Molybdenum	Dissolved	mg/L	0.000451	0.001808	0.002560	0.00002
Nickel	Dissolved	mg/L	0.0022	0.0013	0.0008	0.0002
Selenium	Dissolved	mg/L	<0.0002	0.0006	0.0006	0.0002
Silver	Dissolved	mg/L	<0.000010	<0.000010	<0.000010	0.00001
Strontium	Dissolved	mg/L	0.1815	0.2077	0.1659	0.0001
Tellurium	Dissolved	mg/L	<0.000050	<0.000050	<0.000050	0.00005
Thallium	Dissolved	mg/L	<0.000010	<0.000010	<0.000010	0.00001
Thorium	Dissolved	mg/L	<0.000050	<0.000050	<0.000050	0.00005
Tin	Dissolved	mg/L	0.0001	<0.0001	<0.0001	0.0001
Uranium	Dissolved	mg/L	0.000739	0.000838	0.001196	0.00001
Vanadium	Dissolved	mg/L	0.000127	0.000084	0.000464	0.00005
Zinc	Dissolved	mg/L	0.0805	0.1539	0.0412	0.0005

Analytical Report

Bill To: YTG DOE - Water Resources
 202, 419 Range Road
 Whitehorse, YT, Canada
 Y1A 3V1
 Attn: John Miller
 Sampled By: JDM/KP
 Company: YG-Eenvironment

Project:
 ID: YOWN
 Name: Campground Well
 Sampling
 Location: Watson Lake Area
 LSD:
 P.O.: C00037999
 Acct code:

Lot ID: **1201897**
 Control Number:
 Date Received: May 12, 2017
 Date Reported: May 29, 2017
 Report Number: 2190036

Reference Number	1201897-4	1201897-5	1201897-6
Sample Date	May 09, 2017	May 09, 2017	May 09, 2017
Sample Time	09:10	11:25	14:10
Sample Location			
Sample Description	YOWN-1513 / 2017060 / 1.5 °C / B	YOWN-1612 / 2017061 / 1.5 °C / B	2017062 / 1.5 °C / B

Analyte	Matrix	Units	Water			Nominal Detection Limit
			Results	Results	Results	
Trace Metals Dissolved - Continued						
Zirconium	Dissolved	mg/L	<0.0001	<0.0001	<0.0001	0.0001
Trace Metals Total						
Aluminum	Total	mg/L	0.009	0.003	0.021	0.001
Antimony	Total	mg/L	0.00016	0.000086	0.00017	0.00002
Arsenic	Total	mg/L	0.0011	0.0005	0.0011	0.0001
Barium	Total	mg/L	0.25	0.097	0.24	0.0001
Beryllium	Total	mg/L	<0.000050	<0.000050	<0.000050	0.00005
Bismuth	Total	mg/L	<0.0001	<0.0001	<0.0001	0.0001
Boron	Total	mg/L	0.004	0.003	0.007	0.002
Cadmium	Total	mg/L	<0.000010	0.000018	0.000032	0.00001
Chromium	Total	mg/L	0.0068	0.0015	0.0059	0.00005
Cobalt	Total	mg/L	0.00083	0.00015	0.00026	0.00002
Copper	Total	mg/L	0.012	0.0025	0.0032	0.0002
Iron	Total	mg/L	6.5	1.4	4.5	0.002
Lead	Total	mg/L	0.00089	0.014	0.0017	0.00001
Lithium	Total	mg/L	0.0071	0.0055	0.012	0.0005
Manganese	Total	mg/L	0.065	0.015	0.037	0.001
Molybdenum	Total	mg/L	0.00055	0.0018	0.0026	0.00002
Nickel	Total	mg/L	0.0061	0.0017	0.0024	0.0002
Selenium	Total	mg/L	<0.0002	0.0005	0.0006	0.0002
Silver	Total	mg/L	<0.000010	<0.000010	<0.000010	0.00001
Strontium	Total	mg/L	0.19	0.22	0.17	0.0001
Tellurium	Total	mg/L	<0.000050	<0.000050	<0.000050	0.00005
Thallium	Total	mg/L	<0.000010	<0.000010	<0.000010	0.00001
Thorium	Total	mg/L	<0.000050	<0.000050	<0.000050	0.00005
Tin	Total	mg/L	0.0005	<0.0001	0.0002	0.0001
Uranium	Total	mg/L	0.00087	0.00086	0.0013	0.00001
Vanadium	Total	mg/L	0.00067	0.00034	0.0012	0.00005
Zinc	Total	mg/L	0.15	0.19	0.20	0.0005
Zirconium	Total	mg/L	<0.0001	<0.0001	<0.0001	0.0001
Subcontracted Analysis						
Subcontractor Report Id	SRC		Done	Done	Done	

Analytical Report

Bill To: YTG DOE - Water Resources
202, 419 Range Road
Whitehorse, YT, Canada
Y1A 3V1
Attn: John Miller
Sampled By: JDM/KP
Company: YG-Eenvironment

Project:
ID: YOWN
Name: Campground Well
Sampling
Location: Watson Lake Area
LSD:
P.O.: C00037999
Acct code:

Lot ID: **1201897**
Control Number:
Date Received: May 12, 2017
Date Reported: May 29, 2017
Report Number: 2190036

Approved by:



Randy Neumann, BSc
Vice President

Data have been validated by Analytical Quality Control and Exova's Integrated Data Validation System (IDVS).

Generation and distribution of the report, and approval by the digitized signature above, are performed through a secure and controlled automatic process.

Quality Control

Bill To: YTG DOE - Water Resources 202, 419 Range Road Whitehorse, YT, Canada Y1A 3V1 Attn: John Miller	Project: ID: YOWN Name: Campground Well Sampling Location: Watson Lake Area LSD: P.O.: C00037999 Acct code:	Lot ID: 1201897 Control Number: Date Received: May 12, 2017 Date Reported: May 29, 2017 Report Number: 2190036
Sampled By: JDM/KP Company: YG-Eenvironment		

Inorganic Nonmetallic Parameters

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC	
Ammonium - N	µg/L	-19.152	-110.00	10.00	yes	
Phosphorus	mg/L	-0.0007	-0.003	0.003	yes	
Date Acquired: May 16, 2017						
Nitrogen	mg/L	0.05827	-0.04	0.08	yes	
Organic Carbon	mg/L	0.2357	-0.5	0.5	yes	
Inorganic carbon	mg/L	0.101	-0.5	0.5	yes	
Date Acquired: May 15, 2017						
Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC	
Ammonium - N	µg/L	103.17	85	115	yes	
Phosphorus	mg/L	100.32	90	110	yes	
Date Acquired: May 16, 2017						
Ammonium - N	µg/L	74.74	70	130	yes	
Phosphorus	mg/L	102.00	80	120	yes	
Date Acquired: May 16, 2017						
Client Sample Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Nitrogen	mg/L	10.7	10.4	10	0.06	yes
Organic Carbon	mg/L	0.7	0.7	10	1.0	yes
Inorganic carbon	mg/L	25	25	10	1.0	yes
Date Acquired: May 15, 2017						
Ammonia - N	mg/L	0.02	0.02	20	50.00	yes
Date Acquired: May 18, 2017						
Control Sample	Units	Measured	Lower Limit	Upper Limit	Passed QC	
Organic Carbon	mg/L	<0.5	-0.5	0.5	yes	
Date Acquired: May 15, 2017						
Nitrogen	mg/L	112	103.74	137.28	yes	
Organic Carbon	mg/L	127	109.1	139.7	yes	
Inorganic carbon	mg/L	46.7	39.0	57.0	yes	
Date Acquired: May 15, 2017						
Nitrogen	mg/L	14.7	13.27	16.93	yes	
Organic Carbon	mg/L	14.8	12.8	17.2	yes	
Inorganic carbon	mg/L	16.6	13.5	18.3	yes	
Date Acquired: May 15, 2017						
Nitrogen	mg/L	1.18	0.89	1.25	yes	
Organic Carbon	mg/L	3.5	2.4	4.0	yes	
Inorganic carbon	mg/L	3.7	2.7	3.9	yes	
Date Acquired: May 15, 2017						
Phosphorus	mg/L	0.454	0.389	0.503	yes	
Date Acquired: May 16, 2017						

Metals Total

Quality Control

Bill To: YTG DOE - Water Resources 202, 419 Range Road Whitehorse, YT, Canada Y1A 3V1 Attn: John Miller Sampled By: JDM/KP Company: YG-Eenvironment	Project: ID: YOWN Name: Campground Well Sampling Location: Watson Lake Area LSD: P.O.: C00037999 Acct code:	Lot ID: 1201897 Control Number: Date Received: May 12, 2017 Date Reported: May 29, 2017 Report Number: 2190036
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Metals Total

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
Calcium	mg/L	0	-0.010	0.010	yes
Magnesium	mg/L	-0.0107695	-0.020	0.020	yes
Potassium	mg/L	-0.021	-0.040	0.040	yes
Silicon	mg/L	0.00300553	-0.005	0.005	yes
Sodium	mg/L	0.0965076	-0.099	0.099	yes

Date Acquired: May 12, 2017

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
Calcium	mg/L	98.12	90	110	yes
Magnesium	mg/L	99.10	90	110	yes
Potassium	mg/L	97.42	90	110	yes
Silicon	mg/L	96.94	90	110	yes
Sodium	mg/L	97.01	90	110	yes
Titanium	mg/L	96.88	90	110	yes

Date Acquired: May 12, 2017

Calcium	mg/L	100.87	90	110	yes
Magnesium	mg/L	101.73	90	110	yes
Potassium	mg/L	97.50	90	110	yes
Silicon	mg/L	98.62	90	110	yes
Sodium	mg/L	94.96	90	110	yes
Titanium	mg/L	99.38	90	110	yes

Date Acquired: May 12, 2017

Client Sample Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Calcium	mg/L	0.066	0.072	20	0.050	yes
Magnesium	mg/L	3.1	3.1	20	0.050	yes
Potassium	mg/L	3.2	3.2	20	0.100	yes
Silicon	mg/L	0.034	0.037	20	0.100	yes
Sodium	mg/L	1.4	1.5	20	0.100	yes

Date Acquired: May 12, 2017

Physical and Aggregate Properties

Client Sample Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Solids	mg/L	130	140	30	50.000	yes

Date Acquired: May 15, 2017

Control Sample	Units	Measured	Lower Limit	Upper Limit	Passed QC
Solids	mg/L	470	263.000	575.000	yes

Date Acquired: May 15, 2017

Solids	mg/L	21.0	16.490	30.710	yes
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Date Acquired: May 15, 2017

Solids	mg/L	<5.0	-5.001	5.001	yes
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Date Acquired: May 15, 2017

Quality Control

Bill To: YTG DOE - Water Resources 202, 419 Range Road Whitehorse, YT, Canada Y1A 3V1 Attn: John Miller	Project: ID: YOWN Name: Campground Well Sampling Location: Watson Lake Area LSD: P.O.: C00037999 Acct code:	Lot ID: 1201897 Control Number: Date Received: May 12, 2017 Date Reported: May 29, 2017 Report Number: 2190036
Sampled By: JDM/KP Company: YG-Eenvironment		

Physical and Aggregate Properties -

Continued

Control Sample	Units	Measured	Lower Limit	Upper Limit	Passed QC
Solids	mg/L	<2.00	-5.010	5.010	yes
Date Acquired: May 15, 2017					

Routine Water

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
Calcium	mg/L	0	-0.010	0.010	yes
Magnesium	mg/L	-0.0165222	-0.020	0.020	yes
Potassium	mg/L	0.00776276	-0.040	0.040	yes
Silicon	mg/L	0.00248533	-0.005	0.005	yes
Sodium	mg/L	-0.00552229	-0.099	0.099	yes
Date Acquired: May 15, 2017					
Bromide	mg/L	0	-0.099	0.099	yes
Chloride	mg/L	0.0184293	-0.201	0.201	yes
Fluoride	mg/L	0	-0.099	0.099	yes
Nitrate - N	mg/L	0.00172781	-0.010	0.010	yes
Nitrite - N	mg/L	0	-0.099	0.099	yes
Sulfate (SO4)	mg/L	0	-0.990	0.990	yes
Date Acquired: May 12, 2017					

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
Calcium	mg/L	99.83	90	110	yes
Magnesium	mg/L	100.10	90	110	yes
Potassium	mg/L	99.98	90	110	yes
Silicon	mg/L	98.90	90	110	yes
Sodium	mg/L	100.08	90	110	yes
Date Acquired: May 15, 2017					
Bromide	mg/L	100.11	90	110	yes
Chloride	mg/L	98.24	85	115	yes
Fluoride	mg/L	91.44	85	115	yes
Nitrate - N	mg/L	95.95	85	115	yes
Nitrite - N	mg/L	94.91	90	110	yes
Sulfate (SO4)	mg/L	96.41	85	115	yes
Date Acquired: May 12, 2017					
Bromide	mg/L	107.20	90	110	yes
Chloride	mg/L	101.94	90	110	yes
Fluoride	mg/L	102.05	89	109	yes
Nitrate - N	mg/L	100.86	88	108	yes
Nitrite - N	mg/L	101.21	90	118	yes
Sulfate (SO4)	mg/L	98.54	90	110	yes
Date Acquired: May 12, 2017					
Calcium	mg/L	102.99	90	110	yes

Quality Control

Bill To: YTG DOE - Water Resources	Project:	Lot ID: 1201897
202, 419 Range Road	ID: YOWN	Control Number:
Whitehorse, YT, Canada	Name: Campground Well	Date Received: May 12, 2017
Y1A 3V1	Location: Watson Lake Area	Date Reported: May 29, 2017
Attn: John Miller	LSD:	Report Number: 2190036
Sampled By: JDM/KP	P.O.: C00037999	
Company: YG-Eenvironment	Acct code:	

Routine Water - Continued

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
Magnesium	mg/L	102.84	90	110	yes
Potassium	mg/L	104.64	90	110	yes
Sodium	mg/L	102.83	90	110	yes

Date Acquired: May 15, 2017

Certified Reference Material	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
T-Alkalinity	mg/L	10	10	8	12	yes

Date Acquired: May 12, 2017

Client Sample Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Hardness	mg CaCO3/L	13	13	20	1.000	yes
pH		7.69	7.68	10		yes
Electrical Conductivity	dS/m at 25 °C	0.543	0.512	10	0.005	yes
Bicarbonate	mg/L	336	334	10	10	yes
Hydroxide	mg/L	<5	<5	10	10	yes
P-Alkalinity	mg/L	<5	<5	10	5	yes
T-Alkalinity	mg/L	275	274	10	5	yes
Chloride	mg/L	9.55	9.55	20	0.250	yes
Fluoride	mg/L	0.072	0.073	20	0.050	yes
Nitrate - N	mg/L	<0.10	<0.10	20	0.050	yes
Nitrite - N	mg/L	<0.010	<0.010	20	0.050	yes
Sulfate (SO4)	mg/L	25.8	25.8	20	0.500	yes

Date Acquired: May 12, 2017

Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Chloride	mg/L	1.27	1.24	6	0.010	yes
Nitrate - N	mg/L	0.283	0.298	12	0.050	yes
Sulfate (SO4)	mg/L	4.4	4.3	6	0.010	yes

Date Acquired: May 12, 2017

Control Sample	Units	Measured	Lower Limit	Upper Limit	Passed QC
pH		10.06	9.17	10.81	yes
Electrical Conductivity	µS/cm at 25 °C	205	194	250	yes
P-Alkalinity	mg/L	40	7	55	yes
T-Alkalinity	mg/L	108	98	113	yes

Date Acquired: May 12, 2017

pH 4.03 3.88 4.12 yes

Date Acquired: May 12, 2017

pH 7.93 7.88 8.12 yes

Date Acquired: May 12, 2017

Electrical Conductivity 1397 1323 1503 yes

Date Acquired: May 12, 2017

Quality Control

Bill To: YTG DOE - Water Resources	Project:	Lot ID: 1201897
202, 419 Range Road	ID: YOWN	Control Number:
Whitehorse, YT, Canada	Name: Campground Well	Date Received: May 12, 2017
Y1A 3V1	Location: Watson Lake Area	Date Reported: May 29, 2017
Attn: John Miller	LSD:	Report Number: 2190036
Sampled By: JDM/KP	P.O.: C00037999	
Company: YG-Eenvironment	Acct code:	

Trace Metals Dissolved

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
Aluminum	µg/L	0.810478	-0.990	0.990	yes
Antimony	µg/L	0	-0.020	0.020	yes
Arsenic	µg/L	0.0121001	-0.099	0.099	yes
Barium	µg/L	0.00213819	-0.099	0.099	yes
Beryllium	µg/L	0.00608709	-0.050	0.050	yes
Bismuth	µg/L	0.00200278	-0.099	0.099	yes
Boron	µg/L	-0.053708	-2.001	2.001	yes
Cadmium	µg/L	-0.000154394	-0.010	0.010	yes
Chromium	µg/L	-0.0403878	-0.050	0.050	yes
Cobalt	µg/L	7.48936e-006	-0.020	0.020	yes
Copper	µg/L	0.00601762	-0.050	0.050	yes
Iron	µg/L	0.072655	-2.001	2.001	yes
Lead	µg/L	0	-0.010	0.010	yes
Lithium	µg/L	0.00579214	-0.500	0.500	yes
Manganese	µg/L	-0.0356701	-0.990	0.990	yes
Molybdenum	µg/L	0.00627733	-0.020	0.020	yes
Nickel	µg/L	0.0158876	-0.200	0.200	yes
Selenium	µg/L	-0.00533166	-0.200	0.200	yes
Silver	µg/L	0.000343192	-0.009	0.009	yes
Strontium	µg/L	-0.0229133	-0.099	0.099	yes
Tellurium	µg/L	0.0127176	-0.050	0.050	yes
Thallium	µg/L	0.000223336	-0.010	0.010	yes
Thorium	µg/L	0	-0.050	0.050	yes
Tin	µg/L	-0.00132602	-0.099	0.099	yes
Titanium	µg/L	0.0599431	-0.099	0.099	yes
Uranium	µg/L	0.000605551	-0.010	0.010	yes
Vanadium	µg/L	-0.0210488	-0.050	0.050	yes
Zinc	µg/L	-0.0886916	-0.500	0.500	yes
Zirconium	µg/L	0.0280897	-0.099	0.099	yes

Date Acquired: May 15, 2017

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
Titanium	mg/L	99.90	90	110	yes
Date Acquired: May 15, 2017					
Aluminum	µg/L	103.98	80	120	yes
Antimony	µg/L	98.15	90	110	yes
Arsenic	µg/L	100.23	90	110	yes
Barium	µg/L	100.19	90	110	yes
Beryllium	µg/L	91.41	90	110	yes
Boron	µg/L	115.03	70	130	yes
Cadmium	µg/L	101.74	90	110	yes
Chromium	µg/L	101.13	90	110	yes
Cobalt	µg/L	102.91	90	110	yes

Quality Control

Bill To: YTG DOE - Water Resources	Project:	Lot ID: 1201897
202, 419 Range Road	ID: YOWN	Control Number:
Whitehorse, YT, Canada	Name: Campground Well	Date Received: May 12, 2017
Y1A 3V1	Location: Watson Lake Area	Date Reported: May 29, 2017
Attn: John Miller	LSD:	Report Number: 2190036
Sampled By: JDM/KP	P.O.: C00037999	
Company: YG-Eenvironment	Acct code:	

Trace Metals Dissolved - Continued

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC	
Copper	µg/L	102.13	90	110	yes	
Lead	µg/L	105.67	90	110	yes	
Lithium	µg/L	108.78	90	110	yes	
Molybdenum	µg/L	104.87	90	110	yes	
Nickel	µg/L	108.08	90	110	yes	
Selenium	µg/L	106.25	90	110	yes	
Silver	µg/L	108.61	90	110	yes	
Strontium	µg/L	96.77	90	110	yes	
Thorium	µg/L	103.52	90	110	yes	
Tin	µg/L	104.46	90	110	yes	
Titanium	µg/L	101.32	90	110	yes	
Uranium	µg/L	99.62	90	110	yes	
Vanadium	µg/L	102.23	90	110	yes	
Zinc	µg/L	103.25	90	110	yes	
Date Acquired: May 15, 2017						
Aluminum	µg/L	100.61	80	120	yes	
Antimony	µg/L	93.48	90	110	yes	
Arsenic	µg/L	98.94	90	110	yes	
Barium	µg/L	96.71	90	110	yes	
Beryllium	µg/L	94.32	90	110	yes	
Boron	µg/L	100.29	80	120	yes	
Cadmium	µg/L	103.82	90	110	yes	
Chromium	µg/L	100.51	90	110	yes	
Cobalt	µg/L	100.56	90	110	yes	
Copper	µg/L	97.85	90	110	yes	
Lead	µg/L	106.55	90	110	yes	
Lithium	µg/L	103.16	90	110	yes	
Molybdenum	µg/L	101.41	90	110	yes	
Nickel	µg/L	103.06	90	110	yes	
Selenium	µg/L	104.54	90	110	yes	
Silver	µg/L	106.91	90	110	yes	
Strontium	µg/L	92.52	90	110	yes	
Thallium	µg/L	104.63	90	110	yes	
Thorium	µg/L	109.14	86	122	yes	
Tin	µg/L	97.95	90	110	yes	
Titanium	µg/L	99.32	90	110	yes	
Uranium	µg/L	104.89	90	110	yes	
Vanadium	µg/L	100.36	90	110	yes	
Zinc	µg/L	100.53	90	110	yes	
Date Acquired: May 15, 2017						
Client Sample Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Aluminum	µg/L	<1	<1	20	20.000	yes

Quality Control

Bill To: YTG DOE - Water Resources	Project:	Lot ID: 1201897
202, 419 Range Road	ID: YOWN	Control Number:
Whitehorse, YT, Canada	Name: Campground Well	Date Received: May 12, 2017
Y1A 3V1	Location: Watson Lake Area	Date Reported: May 29, 2017
Attn: John Miller	LSD:	Report Number: 2190036
Sampled By: JDM/KP	P.O.: C00037999	
Company: YG-Eenvironment	Acct code:	

Trace Metals Dissolved - Continued

Client Sample	Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Antimony		µg/L	0.206	0.265	20	1.000	yes
Arsenic		µg/L	0.5	0.5	20	1.000	yes
Barium		µg/L	94.3	95.7	20	5.000	yes
Beryllium		µg/L	<0.050	<0.050	20	1.000	yes
Boron		µg/L	4	4	20	5.000	yes
Cadmium		µg/L	<0.010	<0.010	20	0.500	yes
Chromium		µg/L	0.067	<0.050	20	5.000	yes
Cobalt		µg/L	0.263	0.269	20	0.500	yes
Copper		µg/L	<0.5	<0.5	20	5.000	yes
Iron		µg/L	152	151	20	50.000	yes
Lead		µg/L	0.020	0.026	20	0.500	yes
Lithium		µg/L	2.1	2.3	20	5.000	yes
Manganese		µg/L	91	90	20	0.500	yes
Molybdenum		µg/L	3.352	3.357	20	0.500	yes
Nickel		µg/L	8.3	8.3	20	5.000	yes
Selenium		µg/L	0.3	0.3	20	0.500	yes
Silver		µg/L	<0.010	<0.010	20	0.500	yes
Strontium		µg/L	128.5	126.3	20	0.500	yes
Tellurium		µg/L	0.111	0.105	20	0.500	yes
Thallium		µg/L	<0.010	<0.010	20	0.100	yes
Thorium		µg/L	<0.050	<0.050	20	0.100	yes
Tin		µg/L	<0.1	<0.1	20	0.500	yes
Titanium		µg/L	<0.1	<0.1	20	0.500	yes
Uranium		µg/L	0.378	0.373	20	0.100	yes
Vanadium		µg/L	<0.050	<0.050	20	0.500	yes
Zinc		µg/L	19.2	19.3	20	5.000	yes
Zirconium		µg/L	<0.1	<0.1	20	0.500	yes

Date Acquired: May 15, 2017

Trace Metals Total

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
Aluminum	µg/L	0.183002	-0.990	0.990	yes
Antimony	µg/L	-0.0123475	-0.020	0.020	yes
Arsenic	µg/L	0.00550195	-0.099	0.099	yes
Barium	µg/L	0.0020091	-0.099	0.099	yes
Beryllium	µg/L	0.0158118	-0.050	0.050	yes
Bismuth	µg/L	-0.0219287	-0.099	0.099	yes
Boron	µg/L	-0.351895	-2.001	2.001	yes
Cadmium	µg/L	2.64474e-005	-0.010	0.010	yes
Chromium	µg/L	-0.0230483	-0.050	0.050	yes
Cobalt	µg/L	-0.000820154	-0.020	0.020	yes
Copper	µg/L	-0.0110653	-0.501	0.501	yes

Quality Control

Bill To: YTG DOE - Water Resources	Project:	Lot ID: 1201897
202, 419 Range Road	ID: YOWN	Control Number:
Whitehorse, YT, Canada	Name: Campground Well	Date Received: May 12, 2017
Y1A 3V1	Location: Watson Lake Area	Date Reported: May 29, 2017
Attn: John Miller	LSD:	Report Number: 2190036
Sampled By: JDM/KP	P.O.: C00037999	
Company: YG-Eenvironment	Acct code:	

Trace Metals Total - Continued

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
Iron	µg/L	0.680531	-2.001	2.001	yes
Lead	µg/L	0.0029623	-0.010	0.010	yes
Lithium	µg/L	0.0056566	-0.501	0.501	yes
Manganese	µg/L	-0.0405317	-0.990	0.990	yes
Molybdenum	µg/L	-0.00422541	-0.020	0.020	yes
Nickel	µg/L	-0.0358453	-0.201	0.201	yes
Selenium	µg/L	-0.0384241	-0.201	0.201	yes
Silver	µg/L	0	-0.010	0.010	yes
Strontium	µg/L	0.00741035	-0.099	0.099	yes
Tellurium	µg/L	-0.0227293	-0.050	0.050	yes
Thallium	µg/L	-0.000558763	-0.010	0.010	yes
Thorium	µg/L	0	-0.050	0.050	yes
Tin	µg/L	0	-0.099	0.099	yes
Titanium	µg/L	0.00457699	-0.099	0.099	yes
Uranium	µg/L	-0.00304352	-0.099	0.099	yes
Vanadium	µg/L	-0.0372858	-0.050	0.050	yes
Zinc	µg/L	0.360349	-0.501	0.501	yes
Zirconium	µg/L	-0.0825637	-0.099	0.099	yes

Date Acquired: May 12, 2017

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
Aluminum	µg/L	101.18	80	120	yes
Antimony	µg/L	96.54	90	110	yes
Arsenic	µg/L	103.20	90	110	yes
Barium	µg/L	101.63	90	110	yes
Beryllium	µg/L	105.07	90	110	yes
Boron	µg/L	112.77	70	130	yes
Cadmium	µg/L	104.00	90	110	yes
Chromium	µg/L	109.10	90	110	yes
Cobalt	µg/L	104.77	90	110	yes
Copper	µg/L	105.19	90	110	yes
Lead	µg/L	105.62	90	110	yes
Lithium	µg/L	105.81	90	110	yes
Molybdenum	µg/L	104.18	90	110	yes
Nickel	µg/L	104.22	90	110	yes
Selenium	µg/L	107.53	90	110	yes
Silver	µg/L	102.57	90	110	yes
Strontium	µg/L	91.29	90	110	yes
Thallium	µg/L	105.81	90	110	yes
Thorium	µg/L	106.36	90	110	yes
Tin	µg/L	106.56	90	110	yes
Titanium	µg/L	105.02	90	110	yes
Uranium	µg/L	103.68	90	110	yes

Quality Control

Bill To: YTG DOE - Water Resources 202, 419 Range Road Whitehorse, YT, Canada Y1A 3V1	Project: ID: YOWN Name: Campground Well Sampling Location: Watson Lake Area LSD: P.O.: C00037999 Acct code:	Lot ID: 1201897 Control Number: Date Received: May 12, 2017 Date Reported: May 29, 2017 Report Number: 2190036
Attn: John Miller Sampled By: JDM/KP Company: YG-Eenvironment		

Trace Metals Total - Continued

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
Vanadium	µg/L	103.82	90	110	yes
Zinc	µg/L	108.61	90	110	yes
Date Acquired: May 12, 2017					
Aluminum	µg/L	99.96	80	120	yes
Antimony	µg/L	97.25	90	110	yes
Arsenic	µg/L	102.92	90	110	yes
Barium	µg/L	102.94	90	110	yes
Beryllium	µg/L	105.85	90	110	yes
Boron	µg/L	107.27	80	120	yes
Cadmium	µg/L	105.52	90	110	yes
Chromium	µg/L	107.27	90	110	yes
Cobalt	µg/L	103.13	90	110	yes
Copper	µg/L	102.24	90	110	yes
Lead	µg/L	101.02	90	110	yes
Lithium	µg/L	105.16	90	110	yes
Molybdenum	µg/L	105.54	90	110	yes
Nickel	µg/L	101.76	90	110	yes
Selenium	µg/L	106.49	90	110	yes
Silver	µg/L	104.65	90	110	yes
Strontium	µg/L	94.07	90	110	yes
Thallium	µg/L	102.55	90	110	yes
Thorium	µg/L	104.41	90	110	yes
Tin	µg/L	105.75	90	110	yes
Titanium	µg/L	98.55	90	110	yes
Uranium	µg/L	101.67	90	110	yes
Vanadium	µg/L	103.02	90	110	yes
Zinc	µg/L	96.33	90	110	yes

Date Acquired: May 12, 2017

Client Sample Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Aluminum	µg/L	1	<1	20	100.000	yes
Antimony	µg/L	0.18	0.22	20	2.000	yes
Arsenic	µg/L	<0.1	<0.1	20	2.000	yes
Barium	µg/L	0.5	0.5	20	10.000	yes
Beryllium	µg/L	<0.050	<0.050	20	0.400	yes
Boron	µg/L	<2	<2	20	40.000	yes
Cadmium	µg/L	<0.010	<0.010	20	0.100	yes
Chromium	µg/L	0.34	0.24	20	6.000	yes
Cobalt	µg/L	<0.020	<0.020	20	0.200	yes
Copper	µg/L	<0.2	<0.2	20	5.000	yes
Iron	µg/L	3	3	20	100.000	yes
Lead	µg/L	<0.010	<0.010	20	1.000	yes
Lithium	µg/L	<0.5	<0.5	20	10.000	yes

Quality Control

Bill To: YTG DOE - Water Resources	Project:	Lot ID: 1201897
202, 419 Range Road	ID: YOWN	Control Number:
Whitehorse, YT, Canada	Name: Campground Well	Date Received: May 12, 2017
Y1A 3V1	Location: Watson Lake Area	Date Reported: May 29, 2017
Attn: John Miller	LSD:	Report Number: 2190036
Sampled By: JDM/KP	P.O.: C00037999	
Company: YG-Eenvironment	Acct code:	

Trace Metals Total - Continued

Client Sample	Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Manganese		µg/L	<1	<1	20	1.000	yes
Molybdenum		µg/L	0.021	0.022	20	0.200	yes
Nickel		µg/L	<0.2	<0.2	20	10.000	yes
Selenium		µg/L	<0.2	<0.2	20	5.000	yes
Silver		µg/L	<0.010	<0.010	20	0.100	yes
Strontium		µg/L	0.2	0.2	20	10.000	yes
Tellurium		µg/L	0.069	0.13	20	0.500	yes
Thallium		µg/L	<0.010	<0.010	20	0.100	yes
Thorium		µg/L	0.13	0.20	20	1.000	yes
Tin		µg/L	<0.1	<0.1	20	1.000	yes
Titanium		µg/L	<0.1	<0.1	20	1.000	yes
Uranium		µg/L	<0.010	<0.010	20	1.000	yes
Vanadium		µg/L	<0.050	<0.050	20	0.400	yes
Zinc		µg/L	0.8	0.7	20	10.000	yes
Zirconium		µg/L	<0.1	<0.1	20	1.000	yes

Date Acquired: May 12, 2017

Methodology and Notes

Bill To: YTG DOE - Water Resources 202, 419 Range Road Whitehorse, YT, Canada Y1A 3V1 Attn: John Miller Sampled By: JDM/KP Company: YG-Eenvironment	Project: ID: YOWN Name: Campground Well Sampling Location: Watson Lake Area LSD: P.O.: C00037999 Acct code:	Lot ID: 1201897 Control Number: Date Received: May 12, 2017 Date Reported: May 29, 2017 Report Number: 2190036
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Method of Analysis

Method Name	Reference	Method	Date Analysis Started	Location
Alk, pH, EC, Turb in water (Surrey)	APHA	* Alkalinity - Titration Method, 2320 B	12-May-17	Exova Surrey
Alk, pH, EC, Turb in water (Surrey)	APHA	* Conductivity, 2510 B	12-May-17	Exova Surrey
Alk, pH, EC, Turb in water (Surrey)	APHA	* pH - Electrometric Method, 4500-H+ B	12-May-17	Exova Surrey
Ammonia-N in Water (Surrey)	APHA	* Flow Injection Analysis, 4500-NH3 H	18-May-17	Exova Surrey
Anions by IEC in water (Surrey)	APHA	* Ion Chromatography with Chemical Suppression of Eluent Cond., 4110 B	12-May-17	Exova Surrey
Anions by IEC in water (Surrey)	APHA	* Single-Column Ion Chromatography with Electronic Suppression, 4110 C	12-May-17	Exova Surrey
Carbon Inorganic (Dissolved) in water(DIC)	APHA	High-Temperature Combustion Method, 5310 B	15-May-17	Exova Edmonton
Carbon Inorganic (Total) in water (TIC)	APHA	High-Temperature Combustion Method, 5310 B	15-May-17	Exova Edmonton
Carbon Organic (Dissolved) in water (DOC)	APHA	High-Temperature Combustion Method, 5310 B	15-May-17	Exova Edmonton
Carbon Organic (Total) in water (TOC)	APHA	High-Temperature Combustion Method, 5310 B	15-May-17	Exova Edmonton
Metals SemiTrace (Dissolved) in water (Surrey)	US EPA	* Metals & Trace Elements by ICP-AES, 6010C	15-May-17	Exova Surrey
Metals SemiTrace (Total) in Water (Surrey)	US EPA	* Metals & Trace Elements by ICP-AES, 6010C	12-May-17	Exova Surrey
Phosphorus - total by Smartchem (Surrey)	APHA	* Persulfate digestion method, 4500-P B5	16-May-17	Exova Surrey
Solids Dissolved (Total, Fixed and Volatile) - Surrey	APHA	* Total Dissolved Solids Dried at 180 C, 2540 C	15-May-17	Exova Surrey
Solids Suspended (Total, Fixed and Volatile) - Surrey	APHA	* Total Suspended Solids Dried at 103-105°C, 2540 D	15-May-17	Exova Surrey
Sublet to SRC Analytical	Ext. Lab	See attached test report,	29-May-17	Saskatchewan Research Council
Total and Kjeldahl Nitrogen (Total) in Water	ISO	* Water Quality - Determination of nitrogen, ISO/TR 11905-2	15-May-17	Exova Edmonton
Trace Metals (dissolved) in Water (Surrey)	US EPA	* Determination of Trace Elements in Waters and Wastes by ICP-MS, 200.8	15-May-17	Exova Surrey
Trace Metals (Total) in Water (Surrey)	US EPA	* Determination of Trace Elements in Waters and Wastes by ICP-MS, 200.8	12-May-17	Exova Surrey

* Reference Method Modified

References

APHA	Standard Methods for the Examination of Water and Wastewater
Ext. Lab	External Laboratory
ISO	International Organization for Standardization
US EPA	US Environmental Protection Agency Test Methods

Methodology and Notes

Bill To:	YTG DOE - Water Resources	Project:		Lot ID:	1201897
	202, 419 Range Road	ID:	YOWN	Control Number:	
	Whitehorse, YT, Canada	Name:	Campground Well	Date Received:	May 12, 2017
	Y1A 3V1	Location:	Watson Lake Area	Date Reported:	May 29, 2017
Attn:	John Miller	LSD:		Report Number:	2190036
Sampled By:	JDM/KP	P.O.:	C00037999		
Company:	YG-Eenvironment	Acct code:			

Comments:

- Reduction of analytical volume was necessary for Trace Metals analysis to bring results within the analytical range for samples #1201897-1 through 6. Detection limits are adjusted accordingly.
- Total organic carbon was less than dissolved organic carbon for samples 1201897-5 and 6. The results were verified and are within expected measurement uncertainty.
- RA226 analysis was performed by a subcontract laboratory. See attached 3 page report 2017-5316.
- Sample 1201897-1; 5714858 Reduction of analytical volume was necessary for nitrate due to matrix effects in sample 1201897-1,1201897-2, 1201897-3, 1201897-4, 1201897-5 and 1201897-6 . Detection limits are adjusted accordingly.

Please direct any inquiries regarding this report to our Client Services group.

Results relate only to samples as submitted.

The test report shall not be reproduced except in full, without the written approval of the laboratory.

SRC Group # 2017-5316

May 29, 2017

EXOVA
104-19575 55A Avenue
Surrey, BC V3S 8P8
Attn: Client Services

Date Samples Received: May-15-2017

Client P.O.: POC102913

All results have been reviewed and approved by a Qualified Person in accordance with the Saskatchewan Environmental Code, Corrective Action Plan Chapter, for the purposes of certifying a laboratory analysis

Results from Lab Sections 1 and 2 have been authorized by Keith Gipman, Supervisor
Results from Lab Section 3 have been authorized by Pat Moser, Supervisor
Results from Lab Sections 4 and 5 have been authorized by Vicky Snook, Supervisor
Results from Lab Section 6 have been authorized by Marion McConnell, Supervisor

-
- * Test methods and data are validated by the laboratory's Quality Assurance Program.
 - * Routine methods follow recognized procedures from sources such as
 - * Standard Methods for the Examination of Water and Wastewater APHA AWWA WEF
 - * Environment Canada
 - * US EPA
 - * CANMET
 - * The results reported relate only to the test samples as provided by the client.
 - * Samples will be kept for 30 days after the final report is sent. Please contact the lab if you have any special requirements.
 - * Additional information is available upon request.

This is a final report.

SRC Group # 2017-5316

May 29, 2017

EXOVA

104-19575 55A Avenue
Surrey, BC V3S 8P8
Attn: Client Services

Date Samples Received: May-15-2017

Client P.O.: POC102913

17982	05/08/2017 1201897-1 2017057 B *WATER*
17983	05/08/2017 1201897-2 2017058 B YOWN-1509 *WATER*
17984	05/09/2017 1201897-3 2017059 B YOWN-1512 *WATER*

Analyte	Units	17982	17983	17984
Lab Section 4 (Radiochemistry)				
Radium-226	Bq/L	0.01	0.03	0.008

SRC Group # 2017-5316
May 29, 2017

EXOVA

17985	05/09/2017 1201897-4 2017060 B YOWN-1513 *WATER*
17986	05/09/2017 1201897-5 2017061 B YOWN-1612 *WATER*
17987	05/09/2017 1201897-6 2017062 B *WATER*

Analyte	Units	17985	17986	17987
Lab Section 4 (Radiochemistry)				
Radium-226	Bq/L	0.01	0.01	0.007

Report Transmission Cover Page

Bill To: YTG DOE - Water Resources PO Box 2703 Whitehorse, YT, Canada Y1A 2C6 Attn: Accounts Payable	Project: ID: Champagne Name: CAFN Monitoring Wells Location: Champagne LSD: P.O.: C00037999 Acct code:	Lot ID: 1207543 Control Number: Date Received: Jun 9, 2017 Date Reported: Jul 7, 2017 Report Number: 2197492
Sampled By: JDM/KP Company: YG-Environment		

Contact & Affiliation	Address	Delivery Commitments
John Miller YTG DOE - Water Resources	202, 419 Range Road Whitehorse, Yukon Territory Y1A 3V1 Phone: (867) 667-3233 Fax: (867) 667-3194 Email: john.miller@gov.yk.ca	On [Lot Verification] send (COA) by Email - Single Report On [Report Approval] send (Test Report) by Email - Multiple Reports By Lot M On [Report Approval] send (COC, Test Report) by Email - Multiple Reports By Lot M On [Lot Creation] send (COR) by Email - Single Report
Holly Goulding YTG DOE - Water Resources	202, 419 Range Road Whitehorse, Yukon Territory Y1A 3V1 Phone: (867) 456-6583 Fax: (867) 667-3194 Email: holly.goulding@gov.yk.ca	On [Report Approval] send (COC, Test Report) by Email - Merge Reports M On [Report Approval] send (Test Report) by Email - Single Report M On [Lot Approval and Final Test Report Approval] send (Invoice) by Email - Single Report
Tyler Williams YTG DOE - Water Resources	202, 419 Range Road Whitehorse, Yukon Territory Y1A 3V1 Phone: (867) 667-3233 Fax: (867) 667-3194 Email: Tyler.Williams@gov.yk.ca	On [Report Approval] send (Test Report) by Email - Multiple Reports By Lot M On [Report Approval] send (COC, Test Report) by Email - Multiple Reports By Lot M

Notes To Clients:

- Reduction of analytical volume was necessary for Trace Metals analysis to bring results within the analytical range for sample #1207543-2. Detection limits are adjusted accordingly.
- Analysis was performed on sample 1207543-1 and 1207543-2, 1207543-3 and 1207543-4 that exceeded the recommended holding time for nitrate and nitrite analysis.
- NORM-W1 analysis was performed by a subcontract laboratory. See attached 6 page report 2017-6698.
- Sample 1207543-1; 5743530 Reduction of analytical volume was necessary for nitrate due to matrix effects in sample 1207543-1, 1207543-2 and 1207543-3. Detection limits are adjusted accordingly.

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Analytical Report

Bill To: YTG DOE - Water Resources	Project:	Lot ID: 1207543
PO Box 2703	ID: Champagne	Control Number:
Whitehorse, YT, Canada	Name: CAFN Monitoring Wells	Date Received: Jun 9, 2017
Y1A 2C6	Location: Champagne	Date Reported: Jul 7, 2017
Attn: Accounts Payable	LSD:	Report Number: 2197492
Sampled By: JDM/KP	P.O.: C00037999	
Company: YG-Environment	Acct code:	

		Reference Number	1207543-1	1207543-2	1207543-3	
		Sample Date	Jun 07, 2017	Jun 07, 2017	Jun 07, 2017	
		Sample Time	14:00	15:00	16:30	
		Sample Location				
		Sample Description	CAFN-MW-01 / 2017082 / 8.5 °C / B	CAFN-MW-03 / 2017083 / 8.5 °C / B	CAFN-MW-02 / 2017084 / 8.5 °C / B	
		Matrix	Water	Water	Water	
Analyte	Units	Results	Results	Results	Nominal Detection Limit	
Inorganic Nonmetallic Parameters						
Nitrogen	Total	mg/L	0.23	0.37	0.28	0.06
Organic Carbon	Total Nonpurgeable	mg/L	2.7	3.6	3.7	0.5
Organic Carbon	Dissolved Nonpurgeable	mg/L	2.1	3.5	3.2	0.5
Inorganic carbon	Total	mg/L	26.1	36.3	14.5	0.5
Inorganic carbon	Dissolved	mg/L	25.7	35.6	14.5	0.5
Ammonia - N		mg/L	<0.01	<0.01	<0.01	0.01
Phosphorus	Total	mg/L	0.016	0.207	0.019	0.003
Metals Dissolved						
Mercury	Dissolved	mg/L	<0.00001	<0.00001	<0.00001	0.00001
Metals Total						
Calcium	Total	mg/L	39	54	20	0.01
Magnesium	Total	mg/L	4.0	6.9	2.7	0.02
Potassium	Total	mg/L	2.8	3.8	2.6	0.04
Silicon	Total	mg/L	6.9	11	8.1	0.005
Sulfur	Total	mg/L	2.5	2.6	2.4	0.02
Sodium	Total	mg/L	2.6	5.5	2.4	0.1
Titanium	Total	mg/L	0.026	0.26	0.068	0.002
Digestion	Preparation		Field Pres, digest as total Hg	Field Pres, digest as total Hg	Field Pres, digest as total Hg	
Mercury	Total	mg/L	<0.00001	<0.00001	<0.00001	0.00001
Physical and Aggregate Properties						
Solids	Total Suspended	mg/L	4	197	16	2
Solids	Total Dissolved	mg/L	160	180	170	5
Routine Water						
pH - Holding Time			Exceeded	Exceeded	Exceeded	
Digestion	Dissolved		Field filtered and Pres Dissol	Field filtered and Pres Dissol	Field filtered and Pres Dissol	
pH	at 25 °C		7.37	7.69	6.95	
Electrical Conductivity		µS/cm at 25 °C	220	293	128	1
Calcium	Dissolved	mg/L	39	50	20	0.01
Magnesium	Dissolved	mg/L	3.9	5.8	2.4	0.02
Potassium	Dissolved	mg/L	2.6	3.2	2.2	0.04
Silicon	Dissolved	mg/L	6.3	5.0	5.6	0.005
Sodium	Dissolved	mg/L	2.6	5.0	2.3	0.1
Sulfur	Dissolved	mg/L	2.7	2.8	2.5	0.02

Analytical Report

Bill To: YTG DOE - Water Resources	Project:	Lot ID: 1207543
PO Box 2703	ID: Champagne	Control Number:
Whitehorse, YT, Canada	Name: CAFN Monitoring Wells	Date Received: Jun 9, 2017
Y1A 2C6	Location: Champagne	Date Reported: Jul 7, 2017
Attn: Accounts Payable	LSD:	Report Number: 2197492
Sampled By: JDM/KP	P.O.: C00037999	
Company: YG-Environment	Acct code:	

Reference Number	1207543-1	1207543-2	1207543-3
Sample Date	Jun 07, 2017	Jun 07, 2017	Jun 07, 2017
Sample Time	14:00	15:00	16:30
Sample Location			
Sample Description	CAFN-MW-01 / 2017082 / 8.5 °C / B	CAFN-MW-03 / 2017083 / 8.5 °C / B	CAFN-MW-02 / 2017084 / 8.5 °C / B

Analyte	Matrix	Units	Results			Nominal Detection Limit
			Water	Water	Water	
Routine Water - Continued						
Bicarbonate		mg/L	139	189	74	5
Carbonate		mg/L	<6	<6	<6	6
Hydroxide		mg/L	<5	<5	<5	5
P-Alkalinity	as CaCO3	mg/L	<5	<5	<5	5
T-Alkalinity	as CaCO3	mg/L	114	155	61	5
Bromide	Dissolved	mg/L	0.03	0.04	<0.02	0.02
Chloride	Dissolved	mg/L	0.14	0.47	0.13	0.05
Fluoride	Dissolved	mg/L	0.09	0.22	0.06	0.01
Nitrate - N	Dissolved	mg/L	<0.1	<0.1	<0.1	0.01
Nitrite - N	Dissolved	mg/L	<0.01	<0.01	<0.01	0.01
Sulfate (SO4)	Dissolved	mg/L	6.1	5.8	6.3	0.1
Hardness	as CaCO3 (dissolved)	mg/L	113	150	59	5
Mono-Aromatic Hydrocarbons - Water						
Benzene		µg/L	<0.5	<0.5	<0.5	0.5
Ethylbenzene		µg/L	<0.5	<0.5	<0.5	0.5
Methyl t-Butyl Ether		µg/L	<0.5	<0.5	<0.5	0.5
Styrene		µg/L	<0.5	<0.5	<0.5	0.5
Toluene		µg/L	<0.5	<0.5	<0.5	0.5
Total Xylenes (m,p,o)		µg/L	<0.5	<0.5	<0.5	0.5
Volatile Petroleum Hydrocarbons - Water						
VPHw (VHw6-10 minus BTEX)		µg/L	<50	<50	<50	50
VHw6-10		µg/L	<50	<50	<50	50
Trace Metals Dissolved						
Digestion	Dissolved		Field filtered and Pres Dissol	Field filtered and Pres Dissol	Field filtered and Pres Dissol	
Titanium	Dissolved	mg/L	0.008	0.0099	0.005	0.002
Aluminum	Dissolved	mg/L	0.003	0.005	0.012	0.001
Antimony	Dissolved	mg/L	0.00015	0.00019	0.00007	0.00002
Arsenic	Dissolved	mg/L	0.0005	0.0005	0.0001	0.0001
Barium	Dissolved	mg/L	0.0400	0.0226	0.0195	0.0001
Beryllium	Dissolved	mg/L	<0.00005	<0.00005	<0.00005	0.00005
Bismuth	Dissolved	mg/L	<0.0001	<0.0001	<0.0001	0.0001
Boron	Dissolved	mg/L	0.005	0.013	<0.002	0.002
Cadmium	Dissolved	mg/L	<0.00001	0.00003	0.00002	0.00001
Chromium	Dissolved	mg/L	0.00012	<0.00005	0.00019	0.00005

Analytical Report

Bill To: YTG DOE - Water Resources	Project:	Lot ID: 1207543
PO Box 2703	ID: Champagne	Control Number:
Whitehorse, YT, Canada	Name: CAFN Monitoring Wells	Date Received: Jun 9, 2017
Y1A 2C6	Location: Champagne	Date Reported: Jul 7, 2017
Attn: Accounts Payable	LSD:	Report Number: 2197492
Sampled By: JDM/KP	P.O.: C00037999	
Company: YG-Environment	Acct code:	

Reference Number	1207543-1	1207543-2	1207543-3
Sample Date	Jun 07, 2017	Jun 07, 2017	Jun 07, 2017
Sample Time	14:00	15:00	16:30
Sample Location			
Sample Description	CAFN-MW-01 / 2017082 / 8.5 °C / B	CAFN-MW-03 / 2017083 / 8.5 °C / B	CAFN-MW-02 / 2017084 / 8.5 °C / B

Analyte	Matrix	Units	Results			Nominal Detection Limit
			Water	Water	Water	
Trace Metals Dissolved - Continued						
Cobalt	Dissolved	mg/L	0.00009	0.00008	0.00044	0.00002
Copper	Dissolved	mg/L	0.0027	0.0054	0.0032	0.0005
Iron	Dissolved	mg/L	<0.002	0.006	0.014	0.002
Lead	Dissolved	mg/L	<0.00001	0.00001	<0.00001	0.00001
Lithium	Dissolved	mg/L	0.0009	0.0006	<0.0005	0.0005
Manganese	Dissolved	mg/L	0.058	0.022	0.044	0.001
Molybdenum	Dissolved	mg/L	0.00093	0.00122	0.00186	0.00002
Nickel	Dissolved	mg/L	0.0003	0.0007	0.0015	0.0002
Selenium	Dissolved	mg/L	0.0004	0.0005	<0.0002	0.0002
Silver	Dissolved	mg/L	<0.00001	<0.00001	<0.00001	0.00001
Strontium	Dissolved	mg/L	0.0963	0.1464	0.0679	0.0001
Tellurium	Dissolved	mg/L	<0.00005	<0.00005	<0.00005	0.00005
Thallium	Dissolved	mg/L	<0.00001	<0.00001	<0.00001	0.00001
Thorium	Dissolved	mg/L	<0.00005	<0.00005	<0.00005	0.00005
Tin	Dissolved	mg/L	<0.0001	0.0003	<0.0001	0.0001
Uranium	Dissolved	mg/L	0.00113	0.00393	0.00013	0.00001
Vanadium	Dissolved	mg/L	0.00014	0.00020	0.00019	0.00005
Zinc	Dissolved	mg/L	0.0015	0.0069	0.0031	0.0005
Zirconium	Dissolved	mg/L	<0.0001	<0.0001	<0.0001	0.0001
Trace Metals Total						
Aluminum	Total	mg/L	0.20	2.8	0.98	0.001
Antimony	Total	mg/L	0.00011	0.00029	0.00007	0.00002
Arsenic	Total	mg/L	0.0006	0.0012	0.0003	0.0001
Barium	Total	mg/L	0.048	0.055	0.034	0.0001
Beryllium	Total	mg/L	<0.00005	0.00008	<0.00005	0.00005
Bismuth	Total	mg/L	<0.0001	<0.0001	<0.0001	0.0001
Boron	Total	mg/L	0.008	0.015	<0.002	0.002
Cadmium	Total	mg/L	0.00001	0.00005	0.00003	0.00001
Chromium	Total	mg/L	0.00025	0.0058	0.0033	0.00005
Cobalt	Total	mg/L	0.00019	0.0011	0.00089	0.00002
Copper	Total	mg/L	0.0032	0.0096	0.0049	0.0002
Iron	Total	mg/L	0.21	2.7	0.97	0.002
Lead	Total	mg/L	0.000098	0.00098	0.00032	0.00001
Lithium	Total	mg/L	0.0011	0.0024	0.0007	0.0005
Manganese	Total	mg/L	0.064	0.065	0.059	0.001

Analytical Report

Bill To: YTG DOE - Water Resources	Project:	Lot ID: 1207543
PO Box 2703	ID: Champagne	Control Number:
Whitehorse, YT, Canada	Name: CAFN Monitoring Wells	Date Received: Jun 9, 2017
Y1A 2C6	Location: Champagne	Date Reported: Jul 7, 2017
Attn: Accounts Payable	LSD:	Report Number: 2197492
Sampled By: JDM/KP	P.O.: C00037999	
Company: YG-Environment	Acct code:	

Reference Number	1207543-1	1207543-2	1207543-3
Sample Date	Jun 07, 2017	Jun 07, 2017	Jun 07, 2017
Sample Time	14:00	15:00	16:30
Sample Location			
Sample Description	CAFN-MW-01 / 2017082 / 8.5 °C / B	CAFN-MW-03 / 2017083 / 8.5 °C / B	CAFN-MW-02 / 2017084 / 8.5 °C / B

Analyte	Matrix	Units	Results			Nominal Detection Limit
			Water	Water	Water	
Trace Metals Total - Continued						
Molybdenum	Total	mg/L	0.00085	0.0017	0.0023	0.00002
Nickel	Total	mg/L	0.0004	0.0046	0.0030	0.0002
Selenium	Total	mg/L	0.0002	0.0005	<0.0002	0.0002
Silver	Total	mg/L	0.00005	0.00007	0.00007	0.00001
Strontium	Total	mg/L	0.11	0.18	0.079	0.0001
Tellurium	Total	mg/L	<0.00005	<0.00005	<0.00005	0.00005
Thallium	Total	mg/L	0.00001	0.00003	0.00001	0.00001
Thorium	Total	mg/L	0.00007	0.00078	0.00023	0.00005
Tin	Total	mg/L	<0.0001	0.00096	<0.0001	0.0001
Uranium	Total	mg/L	0.0013	0.0045	0.00021	0.00001
Vanadium	Total	mg/L	0.00057	0.0075	0.0022	0.00005
Zinc	Total	mg/L	0.0017	0.012	0.0078	0.0005
Zirconium	Total	mg/L	<0.0001	0.0008	0.0002	0.0001

Analytical Report

Bill To: YTG DOE - Water Resources	Project:	Lot ID: 1207543
PO Box 2703	ID: Champagne	Control Number:
Whitehorse, YT, Canada	Name: CAFN Monitoring Wells	Date Received: Jun 9, 2017
Y1A 2C6	Location: Champagne	Date Reported: Jul 7, 2017
Attn: Accounts Payable	LSD:	Report Number: 2197492
Sampled By: JDM/KP	P.O.: C00037999	
Company: YG-Environment	Acct code:	

Reference Number 1207543-4
Sample Date Jun 07, 2017
Sample Time 17:20
Sample Location
Sample Description 2017085 / 8.5 °C / B

Matrix Water

Analyte	Units	Results	Results	Results	Nominal Detection Limit
Inorganic Nonmetallic Parameters					
Nitrogen	Total	mg/L	0.45		0.06
Organic Carbon	Total Nonpurgeable	mg/L	8.2		0.5
Organic Carbon	Dissolved Nonpurgeable	mg/L	7.7		0.5
Inorganic carbon	Total	mg/L	10.4		0.5
Inorganic carbon	Dissolved	mg/L	10.3		0.5
Ammonia - N		mg/L	<0.01		0.01
Phosphorus	Total	mg/L	0.009		0.003
Metals Dissolved					
Mercury	Dissolved	mg/L	<0.00001		0.00001
Metals Total					
Calcium	Total	mg/L	17		0.01
Magnesium	Total	mg/L	1.6		0.02
Potassium	Total	mg/L	2.0		0.04
Silicon	Total	mg/L	4.5		0.005
Sulfur	Total	mg/L	1.9		0.02
Sodium	Total	mg/L	1.8		0.1
Titanium	Total	mg/L	0.005		0.002
Digestion	Preparation		Field Pres, digest as total Hg		
Mercury	Total	mg/L	<0.00001		0.00001
Physical and Aggregate Properties					
Solids	Total Suspended	mg/L	<2		2
Solids	Total Dissolved	mg/L	74		5
Routine Water					
pH - Holding Time			Exceeded		
Digestion	Dissolved		Field filtered and Pres Dissol		
pH	at 25 °C		7.29		
Electrical Conductivity		µS/cm at 25 °C	103		1
Calcium	Dissolved	mg/L	17		0.01
Magnesium	Dissolved	mg/L	1.7		0.02
Potassium	Dissolved	mg/L	1.9		0.04
Silicon	Dissolved	mg/L	4.5		0.005
Sodium	Dissolved	mg/L	1.9		0.1
Sulfur	Dissolved	mg/L	2.0		0.02
Bicarbonate		mg/L	58		5

Analytical Report

Bill To: YTG DOE - Water Resources	Project:	Lot ID: 1207543
PO Box 2703	ID: Champagne	Control Number:
Whitehorse, YT, Canada	Name: CAFN Monitoring Wells	Date Received: Jun 9, 2017
Y1A 2C6	Location: Champagne	Date Reported: Jul 7, 2017
Attn: Accounts Payable	LSD:	Report Number: 2197492
Sampled By: JDM/KP	P.O.: C00037999	
Company: YG-Environment	Acct code:	

Reference Number 1207543-4
Sample Date Jun 07, 2017
Sample Time 17:20
Sample Location
Sample Description 2017085 / 8.5 °C / B

Matrix Water

Analyte	Units	Results	Results	Results	Nominal Detection Limit
Routine Water - Continued					
Carbonate	mg/L	<6			6
Hydroxide	mg/L	<5			5
P-Alkalinity	as CaCO3	mg/L	<5		5
T-Alkalinity	as CaCO3	mg/L	48		5
Bromide	Dissolved	mg/L	<0.02		0.02
Chloride	Dissolved	mg/L	0.12		0.05
Fluoride	Dissolved	mg/L	0.05		0.01
Nitrate - N	Dissolved	mg/L	0.12		0.01
Nitrite - N	Dissolved	mg/L	<0.01		0.01
Sulfate (SO4)	Dissolved	mg/L	4.8		0.1
Hardness	as CaCO3 (dissolved)	mg/L	50		5
Mono-Aromatic Hydrocarbons - Water					
Benzene	µg/L	<0.5			0.5
Ethylbenzene	µg/L	<0.5			0.5
Methyl t-Butyl Ether	µg/L	<0.5			0.5
Styrene	µg/L	<0.5			0.5
Toluene	µg/L	<0.5			0.5
Total Xylenes (m,p,o)	µg/L	<0.5			0.5
Volatile Petroleum Hydrocarbons - Water					
VPHw (VHw6-10 minus BTEX)	µg/L	<50			50
VHw6-10	µg/L	<50			50
Trace Metals Dissolved					
Digestion	Dissolved		Field filtered and Pres Dissol		
Titanium	Dissolved	mg/L	0.004		0.002
Aluminum	Dissolved	mg/L	0.018		0.001
Antimony	Dissolved	mg/L	0.00018		0.00002
Arsenic	Dissolved	mg/L	0.0002		0.0001
Barium	Dissolved	mg/L	0.0336		0.0001
Beryllium	Dissolved	mg/L	<0.00005		0.00005
Bismuth	Dissolved	mg/L	<0.0001		0.0001
Boron	Dissolved	mg/L	0.002		0.002
Cadmium	Dissolved	mg/L	<0.00001		0.00001
Chromium	Dissolved	mg/L	0.00014		0.00005
Cobalt	Dissolved	mg/L	0.00005		0.00002
Copper	Dissolved	mg/L	0.0015		0.0005

Analytical Report

Bill To: YTG DOE - Water Resources
 PO Box 2703
 Whitehorse, YT, Canada
 Y1A 2C6
 Attn: Accounts Payable
 Sampled By: JDM/KP
 Company: YG-Environment

Project:
 ID: Champagne
 Name: CAFN Monitoring Wells
 Location: Champagne
 LSD:
 P.O.: C00037999
 Acct code:

Lot ID: **1207543**
 Control Number:
 Date Received: Jun 9, 2017
 Date Reported: Jul 7, 2017
 Report Number: 2197492

Reference Number 1207543-4
Sample Date Jun 07, 2017
Sample Time 17:20
Sample Location
Sample Description 2017085 / 8.5 °C / B

Matrix Water

Analyte	Units	Results	Results	Results	Nominal Detection Limit
Trace Metals Dissolved - Continued					
Iron	Dissolved	mg/L	0.017		0.002
Lead	Dissolved	mg/L	0.00001		0.00001
Lithium	Dissolved	mg/L	0.0008		0.0005
Manganese	Dissolved	mg/L	<0.001		0.001
Molybdenum	Dissolved	mg/L	0.00084		0.00002
Nickel	Dissolved	mg/L	0.0011		0.0002
Selenium	Dissolved	mg/L	<0.0002		0.0002
Silver	Dissolved	mg/L	<0.00001		0.00001
Strontium	Dissolved	mg/L	0.0640		0.0001
Tellurium	Dissolved	mg/L	0.00006		0.00005
Thallium	Dissolved	mg/L	<0.00001		0.00001
Thorium	Dissolved	mg/L	0.00017		0.00005
Tin	Dissolved	mg/L	<0.0001		0.0001
Uranium	Dissolved	mg/L	0.00010		0.00001
Vanadium	Dissolved	mg/L	0.00037		0.00005
Zinc	Dissolved	mg/L	0.0018		0.0005
Zirconium	Dissolved	mg/L	0.0002		0.0001
Trace Metals Total					
Aluminum	Total	mg/L	0.024		0.001
Antimony	Total	mg/L	0.00002		0.00002
Arsenic	Total	mg/L	0.0002		0.0001
Barium	Total	mg/L	0.036		0.0001
Beryllium	Total	mg/L	<0.00005		0.00005
Bismuth	Total	mg/L	<0.0001		0.0001
Boron	Total	mg/L	<0.002		0.002
Cadmium	Total	mg/L	<0.00001		0.00001
Chromium	Total	mg/L	<0.00005		0.00005
Cobalt	Total	mg/L	0.00005		0.00002
Copper	Total	mg/L	0.0015		0.0002
Iron	Total	mg/L	0.039		0.002
Lead	Total	mg/L	<0.00001		0.00001
Lithium	Total	mg/L	0.0009		0.0005
Manganese	Total	mg/L	0.002		0.001
Molybdenum	Total	mg/L	0.00078		0.00002
Nickel	Total	mg/L	0.0004		0.0002
Selenium	Total	mg/L	<0.0002		0.0002

Analytical Report

Bill To: YTG DOE - Water Resources	Project:	Lot ID: 1207543
PO Box 2703	ID: Champagne	Control Number:
Whitehorse, YT, Canada	Name: CAFN Monitoring Wells	Date Received: Jun 9, 2017
Y1A 2C6	Location: Champagne	Date Reported: Jul 7, 2017
Attn: Accounts Payable	LSD:	Report Number: 2197492
Sampled By: JDM/KP	P.O.: C00037999	
Company: YG-Environment	Acct code:	

Reference Number 1207543-4
Sample Date Jun 07, 2017
Sample Time 17:20
Sample Location
Sample Description 2017085 / 8.5 °C / B

Matrix Water

Analyte	Units	Results	Results	Results	Nominal Detection Limit
Trace Metals Total - Continued					
Silver	Total	mg/L	<0.00001		0.00001
Strontium	Total	mg/L	0.064		0.0001
Tellurium	Total	mg/L	<0.00005		0.00005
Thallium	Total	mg/L	<0.00001		0.00001
Thorium	Total	mg/L	<0.00005		0.00005
Tin	Total	mg/L	<0.0001		0.0001
Uranium	Total	mg/L	0.00011		0.00001
Vanadium	Total	mg/L	0.00036		0.00005
Zinc	Total	mg/L	<0.0005		0.0005
Zirconium	Total	mg/L	0.0003		0.0001

Approved by: 
 Mathieu Simoneau
 Operations Manager

Data have been validated by Analytical Quality Control and Exova's Integrated Data Validation System (IDVS).

Generation and distribution of the report, and approval by the digitized signature above, are performed through a secure and controlled automatic process.

Quality Control

Bill To: YTG DOE - Water Resources	Project:	Lot ID: 1207543
PO Box 2703	ID: Champagne	Control Number:
Whitehorse, YT, Canada	Name: CAFN Monitoring Wells	Date Received: Jun 9, 2017
Y1A 2C6	Location: Champagne	Date Reported: Jul 7, 2017
Attn: Accounts Payable	LSD:	Report Number: 2197492
Sampled By: JDM/KP	P.O.: C00037999	
Company: YG-Environment	Acct code:	

Inorganic Nonmetallic Parameters

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC	
Ammonium - N	µg/L	-19.012	-110.00	10.00	yes	
Phosphorus	mg/L	0.0015	-0.003	0.003	yes	
Date Acquired: June 13, 2017						
Nitrogen	mg/L	0	-0.04	0.08	yes	
Organic Carbon	mg/L	-0.0844	-0.5	0.5	yes	
Inorganic carbon	mg/L	0.1141	-0.5	0.5	yes	
Date Acquired: June 16, 2017						
Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC	
Ammonium - N	µg/L	94.21	85	115	yes	
Phosphorus	mg/L	101.66	90	110	yes	
Date Acquired: June 13, 2017						
Ammonium - N	µg/L	74.60	70	130	yes	
Phosphorus	mg/L	105.00	80	120	yes	
Date Acquired: June 13, 2017						
Client Sample Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Nitrogen	mg/L	9.60	9.43	10	0.06	yes
Organic Carbon	mg/L	9.0	8.5	10	1.0	yes
Inorganic carbon	mg/L	36.0	36.2	10	1.0	yes
Date Acquired: June 16, 2017						
Ammonia - N	mg/L	17.6	17.6	20	50.00	yes
Date Acquired: June 14, 2017						
Control Sample	Units	Measured	Lower Limit	Upper Limit	Passed QC	
Organic Carbon	mg/L	<0.5	-0.5	0.5	yes	
Date Acquired: June 14, 2017						
Nitrogen	mg/L	115	103.74	137.28	yes	
Inorganic carbon	mg/L	44.6	39.0	57.0	yes	
Date Acquired: June 16, 2017						
Nitrogen	mg/L	15.0	13.27	16.93	yes	
Organic Carbon	mg/L	14.3	12.8	17.2	yes	
Inorganic carbon	mg/L	16.1	13.5	18.3	yes	
Date Acquired: June 16, 2017						
Nitrogen	mg/L	1.02	0.89	1.25	yes	
Organic Carbon	mg/L	3.7	2.4	4.0	yes	
Inorganic carbon	mg/L	3.6	2.7	3.9	yes	
Date Acquired: June 16, 2017						
Phosphorus	mg/L	0.448	0.389	0.503	yes	
Date Acquired: June 13, 2017						

Metals Dissolved

Quality Control

Bill To: YTG DOE - Water Resources	Project:	Lot ID: 1207543
PO Box 2703	ID: Champagne	Control Number:
Whitehorse, YT, Canada	Name: CAFN Monitoring Wells	Date Received: Jun 9, 2017
Y1A 2C6	Location: Champagne	Date Reported: Jul 7, 2017
Attn: Accounts Payable	LSD:	Report Number: 2197492
Sampled By: JDM/KP	P.O.: C00037999	
Company: YG-Environment	Acct code:	

Metals Dissolved

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC	
Mercury	ng/L	4.9	-9.99	9.99	yes	
Date Acquired: June 12, 2017						
Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC	
Mercury	ng/L	98.00	90	110	yes	
Date Acquired: June 12, 2017						
Certified Reference Material	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Mercury	µg/L	0.04	0.04	0.02	0.05	yes
Date Acquired: June 12, 2017						
Client Sample Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Mercury	µg/L	<0.1	<0.1	20	0.05	yes
Date Acquired: June 12, 2017						

Metals Total

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC	
Calcium	mg/L	-0.00515917	-0.010	0.010	yes	
Magnesium	mg/L	-0.0158244	-0.020	0.020	yes	
Potassium	mg/L	0.0024154	-0.040	0.040	yes	
Silicon	mg/L	0.00500108	-0.005	0.005	yes	
Sodium	mg/L	0	-0.099	0.099	yes	
Date Acquired: June 12, 2017						
Mercury	ng/L	2.5	-9.990	9.990	yes	
Date Acquired: June 12, 2017						
Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC	
Mercury	ng/L	103.80	90	110	yes	
Date Acquired: June 12, 2017						
Calcium	mg/L	104.14	90	110	yes	
Magnesium	mg/L	105.72	90	110	yes	
Potassium	mg/L	104.29	90	110	yes	
Silicon	mg/L	103.12	90	110	yes	
Sodium	mg/L	103.12	90	110	yes	
Titanium	mg/L	100.88	90	110	yes	
Date Acquired: June 12, 2017						
Calcium	mg/L	105.61	90	110	yes	
Magnesium	mg/L	107.50	90	110	yes	
Potassium	mg/L	105.68	90	110	yes	
Silicon	mg/L	102.01	90	110	yes	
Sodium	mg/L	105.52	90	110	yes	
Titanium	mg/L	103.59	90	110	yes	
Date Acquired: June 12, 2017						
Certified Reference Material	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC

Quality Control

Bill To: YTG DOE - Water Resources	Project:	Lot ID: 1207543
PO Box 2703	ID: Champagne	Control Number:
Whitehorse, YT, Canada	Name: CAFN Monitoring Wells	Date Received: Jun 9, 2017
Y1A 2C6	Location: Champagne	Date Reported: Jul 7, 2017
Attn: Accounts Payable	LSD:	Report Number: 2197492
Sampled By: JDM/KP	P.O.: C00037999	
Company: YG-Environment	Acct code:	

Metals Total - Continued

Certified Reference Material	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Mercury	µg/L	0.04	0.035	0.022	0.049	yes
Date Acquired: June 12, 2017						
Client Sample Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Calcium	mg/L	17	17	20	0.050	yes
Magnesium	mg/L	1.6	1.6	20	0.050	yes
Potassium	mg/L	2.0	2.0	20	0.100	yes
Silicon	mg/L	4.5	4.5	20	0.100	yes
Sodium	mg/L	1.8	1.8	20	0.100	yes
Mercury	µg/L	<0.01	<0.01	20	0.050	yes
Date Acquired: June 12, 2017						

Mono-Aromatic Hydrocarbons - Water

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
Benzene	ng	0	-0.5	0.5	yes
Ethylbenzene	ng	0	-0.5	0.5	yes
Methyl t-Butyl Ether	ng	0	-0.5	0.5	yes
m,p-Xylene	ng	0	-0.5	0.5	yes
o-Xylene	ng	0	-0.5	0.5	yes
Styrene	ng	0	-0.5	0.5	yes
Toluene	ng	0	-0.5	0.5	yes
Total Xylenes (m,p,o)	ng	0	-0.5	0.5	yes
Dibromofluoromethane	%	101.52	74.990	115.010	yes
Toluene-d8	%	96.34	80.000	110.000	yes
4-Bromofluorobenzene	%	101.54	85.000	115.000	yes
Date Acquired: June 14, 2017					

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
Benzene	ng	108.85	75	125	yes
Ethylbenzene	ng	111.43	75	125	yes
Methyl t-Butyl Ether	ng	107.13	75	125	yes
m,p-Xylene	ng	109.11	75	125	yes
o-Xylene	ng	102.05	75	125	yes
Styrene	ng	109.06	75	125	yes
Toluene	ng	105.55	75	125	yes
Total Xylenes (m,p,o)	ng	106.76	75	125	yes
Date Acquired: June 14, 2017					

Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Benzene	µg/L	<0.5	<0.5	20	2.5	yes
Ethylbenzene	µg/L	<0.5	<0.5	20	2.5	yes
Methyl t-Butyl Ether	µg/L	<0.5	<0.5	20	2.5	yes
m,p-Xylene	µg/L	<0.5	<0.5	20	2.5	yes
o-Xylene	µg/L	<0.5	<0.5	20	2.5	yes

Quality Control

Bill To: YTG DOE - Water Resources	Project:	Lot ID: 1207543
PO Box 2703	ID: Champagne	Control Number:
Whitehorse, YT, Canada	Name: CAFN Monitoring Wells	Date Received: Jun 9, 2017
Y1A 2C6	Location: Champagne	Date Reported: Jul 7, 2017
Attn: Accounts Payable	LSD:	Report Number: 2197492
Sampled By: JDM/KP	P.O.: C00037999	
Company: YG-Environment	Acct code:	

Mono-Aromatic Hydrocarbons - Water -

Continued

Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Styrene	µg/L	<0.5	<0.5	20	2.5	yes
Toluene	µg/L	<0.5	<0.5	20	2.5	yes
Total Xylenes (m,p,o)	µg/L	<0.5	<0.5	20	2.5	yes

Date Acquired: June 14, 2017

Matrix Spike	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
Benzene	µg/L	116	75	125	yes
Ethylbenzene	µg/L	109	75	125	yes
Methyl t-Butyl Ether	µg/L	116	75	125	yes
m,p-Xylene	µg/L	112	75	125	yes
o-Xylene	µg/L	106	75	125	yes
Styrene	µg/L	113	75	125	yes
Toluene	µg/L	107	75	125	yes
Total Xylenes (m,p,o)	µg/L	110	75	125	yes

Date Acquired: June 14, 2017

Physical and Aggregate Properties

Client Sample Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Solids	mg/L	4	4	30	10.000	yes

Date Acquired: June 13, 2017

Control Sample	Units	Measured	Lower Limit	Upper Limit	Passed QC
Solids	mg/L	393	263.000	575.000	yes
Solids	mg/L	25	16.490	30.710	yes
Solids	mg/L	<5	-5.001	5.001	yes
Solids	mg/L	<2	-5.010	5.010	yes

Date Acquired: June 13, 2017

Routine Water

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
Calcium	mg/L	0.000401801	-0.010	0.010	yes
Magnesium	mg/L	0.00609643	-0.020	0.020	yes
Potassium	mg/L	-0.0124899	-0.040	0.040	yes
Silicon	mg/L	0	-0.005	0.005	yes
Sodium	mg/L	0.00747966	-0.099	0.099	yes
Bromide	mg/L	0	-0.099	0.099	yes
Chloride	mg/L	0.00107729	-0.201	0.201	yes

Date Acquired: June 14, 2017

Quality Control

Bill To: YTG DOE - Water Resources	Project:	Lot ID: 1207543
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Y1A 2C6	Location: Champagne	Date Reported: Jul 7, 2017
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Sampled By: JDM/KP	P.O.: C00037999	
Company: YG-Environment	Acct code:	

Routine Water - Continued

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
Fluoride	mg/L	0.0263211	-0.099	0.099	yes
Nitrate - N	mg/L	0.000430095	-0.010	0.010	yes
Nitrite - N	mg/L	0	-0.099	0.099	yes
Sulfate (SO4)	mg/L	0.00256925	-0.990	0.990	yes
Date Acquired: June 12, 2017					

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
Calcium	mg/L	104.87	90	110	yes
Magnesium	mg/L	105.75	90	110	yes
Potassium	mg/L	105.38	90	110	yes
Silicon	mg/L	103.86	90	110	yes
Sodium	mg/L	105.66	90	110	yes
Date Acquired: June 14, 2017					

Bromide	mg/L	100.88	90	110	yes
Chloride	mg/L	99.19	85	115	yes
Fluoride	mg/L	96.97	85	115	yes
Nitrate - N	mg/L	93.97	85	115	yes
Nitrite - N	mg/L	95.68	90	110	yes
Sulfate (SO4)	mg/L	95.67	85	115	yes
Date Acquired: June 12, 2017					

Bromide	mg/L	102.19	90	110	yes
Chloride	mg/L	101.81	90	110	yes
Fluoride	mg/L	99.17	89	109	yes
Nitrate - N	mg/L	96.25	88	108	yes
Nitrite - N	mg/L	100.91	90	118	yes
Sulfate (SO4)	mg/L	100.05	90	110	yes
Date Acquired: June 12, 2017					

Calcium	mg/L	106.59	90	110	yes
Magnesium	mg/L	107.65	90	110	yes
Potassium	mg/L	108.72	90	110	yes
Sodium	mg/L	108.60	90	110	yes
Date Acquired: June 14, 2017					

Certified Reference Material	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
T-Alkalinity	mg/L	10	10	8	12	yes
Date Acquired: June 13, 2017						

Client Sample Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Hardness	mg CaCO3/L	49	49	20	1.000	yes
Date Acquired: June 12, 2017						
pH		5.59	5.57	10		yes
Electrical Conductivity	dS/m at 25 °C	0.058	0.057	10	0.005	yes
Bicarbonate	mg/L	<5	<5	10	10	yes

Quality Control

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Y1A 2C6	Location: Champagne	Date Reported: Jul 7, 2017
Attn: Accounts Payable	LSD:	Report Number: 2197492
Sampled By: JDM/KP	P.O.: C00037999	
Company: YG-Environment	Acct code:	

Routine Water - Continued

Client Sample	Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Hydroxide		mg/L	<5	<5	10	10	yes
P-Alkalinity		mg/L	<5	<5	10	5	yes
T-Alkalinity		mg/L	9	8	10	5	yes
Bromide		mg/L	0.04	0.04	20	0.100	yes
Chloride		mg/L	1.3	1.3	20	0.250	yes
Fluoride		mg/L	0.3	0.3	20	0.050	yes
Nitrate - N		mg/L	91	90	20	0.050	yes
Nitrite - N		mg/L	<0.1	<0.1	20	0.050	yes
Sulfate (SO4)		mg/L	43	43	20	0.500	yes

Date Acquired: June 12, 2017

Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Chloride	mg/L	1.25	1.25	6	0.010	yes
Nitrate - N	mg/L	0.30	0.30	12	0.050	yes
Sulfate (SO4)	mg/L	4.3	4.3	6	0.010	yes

Date Acquired: June 12, 2017

Control Sample	Units	Measured	Lower Limit	Upper Limit	Passed QC
pH		9.74	9.17	10.81	yes
Electrical Conductivity	µS/cm at 25 °C	201	194	250	yes
P-Alkalinity	mg/L	12	7	55	yes
T-Alkalinity	mg/L	107	98	113	yes

Date Acquired: June 13, 2017

pH 4.04 3.88 4.12 yes

Date Acquired: June 13, 2017

pH 7.97 7.88 8.12 yes

Date Acquired: June 13, 2017

Electrical Conductivity µS/cm at 25 °C 1400 1323 1503 yes

Date Acquired: June 13, 2017

Trace Metals Dissolved

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
Aluminum	µg/L	-0.588505	-0.990	0.990	yes
Antimony	µg/L	0.00831627	-0.020	0.020	yes
Arsenic	µg/L	0.00832048	-0.099	0.099	yes
Barium	µg/L	-0.0138326	-0.099	0.099	yes
Beryllium	µg/L	-0.00678748	-0.050	0.050	yes
Bismuth	µg/L	-0.000273696	-0.099	0.099	yes
Boron	µg/L	-0.502868	-2.001	2.001	yes
Cadmium	µg/L	0.00138084	-0.010	0.010	yes
Chromium	µg/L	-0.0161215	-0.050	0.050	yes
Cobalt	µg/L	-8.94528e-005	-0.020	0.020	yes
Copper	µg/L	0	-0.050	0.050	yes

Quality Control

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PO Box 2703	ID: Champagne	Control Number:
Whitehorse, YT, Canada	Name: CAFN Monitoring Wells	Date Received: Jun 9, 2017
Y1A 2C6	Location: Champagne	Date Reported: Jul 7, 2017
Attn: Accounts Payable	LSD:	Report Number: 2197492
Sampled By: JDM/KP	P.O.: C00037999	
Company: YG-Environment	Acct code:	

Trace Metals Dissolved - Continued

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
Iron	µg/L	-1.43887	-2.001	2.001	yes
Lead	µg/L	0	-0.010	0.010	yes
Lithium	µg/L	-0.000675921	-0.500	0.500	yes
Manganese	µg/L	0.736206	-0.990	0.990	yes
Molybdenum	µg/L	0.0147019	-0.020	0.020	yes
Nickel	µg/L	-0.0963008	-0.200	0.200	yes
Selenium	µg/L	0.00301378	-0.200	0.200	yes
Silver	µg/L	0.00064626	-0.009	0.009	yes
Strontium	µg/L	0.0176072	-0.099	0.099	yes
Tellurium	µg/L	-0.0198253	-0.050	0.050	yes
Thallium	µg/L	0.0015737	-0.010	0.010	yes
Thorium	µg/L	-0.00803745	-0.050	0.050	yes
Tin	µg/L	0.0104824	-0.099	0.099	yes
Titanium	µg/L	0.0104828	-0.099	0.099	yes
Uranium	µg/L	0.00144552	-0.010	0.010	yes
Vanadium	µg/L	0.0423905	-0.050	0.050	yes
Zinc	µg/L	0.265454	-0.500	0.500	yes
Zirconium	µg/L	-0.0130704	-0.099	0.099	yes

Date Acquired: June 14, 2017

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
Titanium	mg/L	102.96	90	110	yes
Date Acquired: June 14, 2017					
Aluminum	µg/L	90.22	80	120	yes
Antimony	µg/L	96.39	90	110	yes
Arsenic	µg/L	95.50	90	110	yes
Barium	µg/L	90.68	90	110	yes
Beryllium	µg/L	107.21	90	110	yes
Boron	µg/L	99.32	70	130	yes
Cadmium	µg/L	96.93	90	110	yes
Chromium	µg/L	99.11	90	110	yes
Cobalt	µg/L	97.31	90	110	yes
Copper	µg/L	98.90	90	110	yes
Lead	µg/L	97.03	90	110	yes
Lithium	µg/L	98.21	90	110	yes
Molybdenum	µg/L	90.42	90	110	yes
Nickel	µg/L	98.42	90	110	yes
Selenium	µg/L	98.83	90	110	yes
Silver	µg/L	98.42	90	110	yes
Strontium	µg/L	94.81	90	110	yes
Thorium	µg/L	92.64	90	110	yes
Tin	µg/L	91.13	90	110	yes
Titanium	µg/L	95.76	90	110	yes



Quality Control

Bill To: YTG DOE - Water Resources	Project:	Lot ID: 1207543
PO Box 2703	ID: Champagne	Control Number:
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Y1A 2C6	Location: Champagne	Date Reported: Jul 7, 2017
Attn: Accounts Payable	LSD:	Report Number: 2197492
Sampled By: JDM/KP	P.O.: C00037999	
Company: YG-Environment	Acct code:	

Trace Metals Dissolved - Continued

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
Uranium	µg/L	93.54	90	110	yes
Vanadium	µg/L	97.95	90	110	yes
Zinc	µg/L	107.01	90	110	yes
Date Acquired: June 14, 2017					
Aluminum	µg/L	93.85	80	120	yes
Antimony	µg/L	90.67	90	110	yes
Arsenic	µg/L	92.89	90	110	yes
Barium	µg/L	92.62	90	110	yes
Beryllium	µg/L	102.20	90	110	yes
Boron	µg/L	96.18	80	120	yes
Cadmium	µg/L	99.88	90	110	yes
Chromium	µg/L	96.63	90	110	yes
Cobalt	µg/L	95.52	90	110	yes
Copper	µg/L	94.96	90	110	yes
Lead	µg/L	96.28	90	110	yes
Lithium	µg/L	97.76	90	110	yes
Molybdenum	µg/L	90.60	90	110	yes
Nickel	µg/L	96.71	90	110	yes
Selenium	µg/L	96.68	90	110	yes
Silver	µg/L	98.26	90	110	yes
Strontium	µg/L	90.22	90	110	yes
Thallium	µg/L	102.74	90	110	yes
Thorium	µg/L	98.12	86	122	yes
Tin	µg/L	90.04	90	110	yes
Titanium	mg/L	104.80	90	110	yes
Uranium	µg/L	94.93	90	110	yes
Vanadium	µg/L	94.90	90	110	yes
Zinc	µg/L	97.81	90	110	yes
Date Acquired: June 14, 2017					

Trace Metals Total

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
Aluminum	µg/L	0.0428664	-0.990	0.990	yes
Antimony	µg/L	-0.00379564	-0.020	0.020	yes
Arsenic	µg/L	0.00166984	-0.099	0.099	yes
Barium	µg/L	-0.00610825	-0.099	0.099	yes
Beryllium	µg/L	-0.0245944	-0.050	0.050	yes
Bismuth	µg/L	-0.0182462	-0.099	0.099	yes
Boron	µg/L	-0.343474	-2.001	2.001	yes
Cadmium	µg/L	3.40451e-005	-0.010	0.010	yes
Chromium	µg/L	0.0110881	-0.050	0.050	yes
Cobalt	µg/L	-0.000199948	-0.020	0.020	yes

Quality Control

Bill To: YTG DOE - Water Resources	Project:	Lot ID: 1207543
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Y1A 2C6	Location: Champagne	Date Reported: Jul 7, 2017
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Sampled By: JDM/KP	P.O.: C00037999	
Company: YG-Environment	Acct code:	

Trace Metals Total - Continued

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
Copper	µg/L	-0.0234533	-0.501	0.501	yes
Iron	µg/L	0.595908	-2.001	2.001	yes
Lead	µg/L	0	-0.010	0.010	yes
Lithium	µg/L	-0.0244858	-0.501	0.501	yes
Manganese	µg/L	-0.0895564	-0.990	0.990	yes
Molybdenum	µg/L	-0.0191674	-0.020	0.020	yes
Nickel	µg/L	-0.167368	-0.201	0.201	yes
Selenium	µg/L	0.0050931	-0.201	0.201	yes
Silver	µg/L	-0.00157446	-0.010	0.010	yes
Strontium	µg/L	-0.00690528	-0.099	0.099	yes
Tellurium	µg/L	0	-0.050	0.050	yes
Thallium	µg/L	0.000159052	-0.010	0.010	yes
Thorium	µg/L	0	-0.050	0.050	yes
Tin	µg/L	0	-0.099	0.099	yes
Titanium	µg/L	0	-0.099	0.099	yes
Uranium	µg/L	-0.00126282	-0.099	0.099	yes
Vanadium	µg/L	-0.00252546	-0.050	0.050	yes
Zinc	µg/L	-0.0144627	-0.501	0.501	yes
Zirconium	µg/L	-0.0622344	-0.099	0.099	yes

Date Acquired: June 12, 2017

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
Aluminum	µg/L	104.94	80	120	yes
Antimony	µg/L	95.52	90	110	yes
Arsenic	µg/L	105.54	90	110	yes
Barium	µg/L	101.76	90	110	yes
Beryllium	µg/L	105.50	90	110	yes
Boron	µg/L	99.88	70	130	yes
Cadmium	µg/L	103.21	90	110	yes
Chromium	µg/L	100.76	90	110	yes
Cobalt	µg/L	103.05	90	110	yes
Copper	µg/L	104.22	90	110	yes
Lead	µg/L	109.86	90	110	yes
Lithium	µg/L	102.76	90	110	yes
Molybdenum	µg/L	96.71	90	110	yes
Nickel	µg/L	103.34	90	110	yes
Selenium	µg/L	103.90	90	110	yes
Silver	µg/L	103.85	90	110	yes
Strontium	µg/L	94.07	90	110	yes
Thallium	µg/L	109.40	90	110	yes
Thorium	µg/L	103.58	90	110	yes
Tin	µg/L	107.58	90	110	yes
Titanium	µg/L	108.42	90	110	yes

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Company: YG-Environment	Acct code:	

Trace Metals Total - Continued

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
Uranium	µg/L	102.11	90	110	yes
Vanadium	µg/L	101.67	90	110	yes
Zinc	µg/L	106.53	90	110	yes
Date Acquired: June 12, 2017					
Aluminum	µg/L	99.26	80	120	yes
Antimony	µg/L	92.65	90	110	yes
Arsenic	µg/L	99.94	90	110	yes
Barium	µg/L	98.72	90	110	yes
Beryllium	µg/L	100.12	90	110	yes
Boron	µg/L	100.48	80	120	yes
Cadmium	µg/L	104.53	90	110	yes
Chromium	µg/L	99.73	90	110	yes
Cobalt	µg/L	99.80	90	110	yes
Copper	µg/L	99.73	90	110	yes
Lead	µg/L	105.95	90	110	yes
Lithium	µg/L	101.88	90	110	yes
Molybdenum	µg/L	95.46	90	110	yes
Nickel	µg/L	102.33	90	110	yes
Selenium	µg/L	101.49	90	110	yes
Silver	µg/L	103.20	90	110	yes
Strontium	µg/L	90.76	90	110	yes
Thallium	µg/L	105.62	90	110	yes
Thorium	µg/L	101.26	90	110	yes
Tin	µg/L	98.72	90	110	yes
Titanium	µg/L	97.94	90	110	yes
Uranium	µg/L	100.65	90	110	yes
Vanadium	µg/L	99.76	90	110	yes
Zinc	µg/L	104.63	90	110	yes
Date Acquired: June 12, 2017					

Client Sample Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Aluminum	µg/L	3	3	20	100.000	yes
Antimony	µg/L	0.20	0.28	20	2.000	yes
Arsenic	µg/L	2.1	2.2	20	2.000	yes
Barium	µg/L	21	21	20	10.000	yes
Beryllium	µg/L	<0.05	<0.05	20	0.400	yes
Boron	µg/L	12	11	20	40.000	yes
Cadmium	µg/L	<0.01	<0.01	20	0.100	yes
Chromium	µg/L	<0.05	<0.05	20	6.000	yes
Cobalt	µg/L	<0.02	<0.02	20	0.200	yes
Copper	µg/L	22	22	20	5.000	yes
Iron	µg/L	7	7	20	100.000	yes
Lead	µg/L	0.52	0.52	20	1.000	yes

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Company: YG-Environment	Acct code:	

Trace Metals Total - Continued

Client Sample	Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Lithium		µg/L	3.0	3.0	20	10.000	yes
Manganese		µg/L	<1	<1	20	1.000	yes
Molybdenum		µg/L	3.0	3.0	20	0.200	yes
Nickel		µg/L	<0.2	<0.2	20	10.000	yes
Selenium		µg/L	0.4	0.4	20	5.000	yes
Silver		µg/L	<0.01	<0.01	20	0.100	yes
Strontium		µg/L	180	180	20	10.000	yes
Tellurium		µg/L	0.09	0.12	20	0.500	yes
Thallium		µg/L	0.02	0.03	20	0.100	yes
Thorium		µg/L	0.18	0.31	20	1.000	yes
Tin		µg/L	<0.1	<0.1	20	1.000	yes
Titanium		µg/L	<0.1	0.1	20	1.000	yes
Uranium		µg/L	6.0	6.0	20	1.000	yes
Vanadium		µg/L	0.81	0.81	20	0.400	yes
Zinc		µg/L	3.8	5.6	20	10.000	yes
Zirconium		µg/L	0.2	0.3	20	1.000	yes
Date Acquired: June 12, 2017							

Volatile Petroleum Hydrocarbons - Water

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC	
VPHw (VHw6-10 minus)	ng	0	-50	50	yes	
VHw6-10	ng	0	-50	50	yes	
Date Acquired: June 14, 2017						
Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC	
VHw6-10	ng	114.58	75	125	yes	
Date Acquired: June 14, 2017						
Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
VPHw (VHw6-10 minus)	µg/L	<50	<50	20	100	yes
VHw6-10	µg/L	<50	<50	20	100	yes
Date Acquired: June 14, 2017						
Matrix Spike	Units	% Recovery	Lower Limit	Upper Limit	Passed QC	
VHw6-10	µg/L	89	75	125	yes	
Date Acquired: June 14, 2017						

Methodology and Notes

Bill To: YTG DOE - Water Resources	Project:	Lot ID: 1207543
PO Box 2703	ID: Champagne	Control Number:
Whitehorse, YT, Canada	Name: CAFN Monitoring Wells	Date Received: Jun 9, 2017
Y1A 2C6	Location: Champagne	Date Reported: Jul 7, 2017
Attn: Accounts Payable	LSD:	Report Number: 2197492
Sampled By: JDM/KP	P.O.: C00037999	
Company: YG-Environment	Acct code:	

Method of Analysis

Method Name	Reference	Method	Date Analysis Started	Location
Alk, pH, EC, Turb in water (Surrey)	APHA	* Alkalinity - Titration Method, 2320 B	13-Jun-17	Exova Surrey
Alk, pH, EC, Turb in water (Surrey)	APHA	* Conductivity, 2510 B	13-Jun-17	Exova Surrey
Alk, pH, EC, Turb in water (Surrey)	APHA	* pH - Electrometric Method, 4500-H+ B	13-Jun-17	Exova Surrey
Ammonia-N in Water (Surrey)	APHA	* Flow Injection Analysis, 4500-NH3 H	14-Jun-17	Exova Surrey
Anions by IEC in water (Surrey)	APHA	* Ion Chromatography with Chemical Suppression of Eluent Cond., 4110 B	12-Jun-17	Exova Surrey
Anions by IEC in water (Surrey)	APHA	* Single-Column Ion Chromatography with Electronic Suppression, 4110 C	12-Jun-17	Exova Surrey
BTEX-VPH - Water (MS) (Surrey)	B.C.M.O.E	* Volatile Hydrocarbons in Waters by GC/FID (April, 2007), CSR	14-Jun-17	Exova Surrey
BTEX-VPH - Water (MS) (Surrey)	BCELM	* Volatile Hydrocarbons in Water by GC/FID, VH Water	14-Jun-17	Exova Surrey
Carbon Inorganic (Dissolved) in water(DIC)	APHA	High-Temperature Combustion Method, 5310 B	16-Jun-17	Exova Edmonton
Carbon Inorganic (Total) in water (TIC)	APHA	High-Temperature Combustion Method, 5310 B	15-Jun-17	Exova Edmonton
Carbon Organic (Dissolved) in water (DOC)	APHA	High-Temperature Combustion Method, 5310 B	14-Jun-17	Exova Edmonton
Carbon Organic (Total) in water (TOC)	APHA	High-Temperature Combustion Method, 5310 B	14-Jun-17	Exova Edmonton
Mercury Low Level (Dissolved) in water (Surrey)	EPA	* Mercury in Water by Cold Vapor Atomic Fluorescence Spectrometry, 245.7	12-Jun-17	Exova Surrey
Mercury Low Level (Total) in water (Surrey)	EPA	* Mercury in Water by Cold Vapor Atomic Fluorescence Spectrometry, 245.7	12-Jun-17	Exova Surrey
Metals SemiTrace (Dissolved) in water (Surrey)	US EPA	* Metals & Trace Elements by ICP-AES, 6010C	14-Jun-17	Exova Surrey
Metals SemiTrace (Total) in Water (Surrey)	US EPA	* Metals & Trace Elements by ICP-AES, 6010C	12-Jun-17	Exova Surrey
Phosphorus - total by Smartchem (Surrey)	APHA	* Persulfate digestion method, 4500-P B5	13-Jun-17	Exova Surrey
Solids Dissolved (Total, Fixed and Volatile) - Surrey	APHA	* Total Dissolved Solids Dried at 180 C, 2540 C	13-Jun-17	Exova Surrey
Solids Suspended (Total, Fixed and Volatile) - Surrey	APHA	* Total Suspended Solids Dried at 103-105°C, 2540 D	13-Jun-17	Exova Surrey
Total and Kjeldahl Nitrogen (Total) in Water	ISO	* Water Quality - Determination of nitrogen, ISO/TR 11905-2	13-Jun-17	Exova Edmonton
Trace Metals (dissolved) in Water (Surrey)	US EPA	* Determination of Trace Elements in Waters and Wastes by ICP-MS, 200.8	14-Jun-17	Exova Surrey
Trace Metals (dissolved) in Water (Surrey)	US EPA	* Determination of Trace Elements in Waters and Wastes by ICP-MS, 200.8	07-Jul-17	Exova Surrey
Trace Metals (Total) in Water (Surrey)	US EPA	* Determination of Trace Elements in Waters and Wastes by ICP-MS, 200.8	12-Jun-17	Exova Surrey

Methodology and Notes

Bill To: YTG DOE - Water Resources	Project:	Lot ID: 1207543
PO Box 2703	ID: Champagne	Control Number:
Whitehorse, YT, Canada	Name: CAFN Monitoring Wells	Date Received: Jun 9, 2017
Y1A 2C6	Location: Champagne	Date Reported: Jul 7, 2017
Attn: Accounts Payable	LSD:	Report Number: 2197492
Sampled By: JDM/KP	P.O.: C00037999	
Company: YG-Environment	Acct code:	

Method Name	Reference	Method	Date Analysis Started	Location
Trace Metals (Total) in Water (Surrey)	US EPA	* Determination of Trace Elements in Waters and Wastes by ICP-MS, 200.8 <i>* Reference Method Modified</i>	07-Jul-17	Exova Surrey

References

APHA	Standard Methods for the Examination of Water and Wastewater
B.C.M.O.E	B.C. Ministry of Environment
BCELM	B.C. Environmental Laboratory Manual
EPA	Environmental Protection Agency Test Methods - US
ISO	International Organization for Standardization
US EPA	US Environmental Protection Agency Test Methods

Comments:

- Reduction of analytical volume was necessary for Trace Metals analysis to bring results within the analytical range for sample #1207543-2. Detection limits are adjusted accordingly.
- Analysis was performed on sample 1207543-1 and 1207543-2, 1207543-3 and 1207543-4 that exceeded the recommended holding time for nitrate and nitrite analysis.
- NORM-W1 analysis was performed by a subcontract laboratory. See attached 6 page report 2017-6698.
- Sample 1207543-1; 5743530 Reduction of analytical volume was necessary for nitrate due to matrix effects in sample 1207543-1, 1207543-2 and 1207543-3. Detection limits are adjusted accordingly.

Please direct any inquiries regarding this report to our Client Services group.

Results relate only to samples as submitted.

The test report shall not be reproduced except in full, without the written approval of the laboratory.

SRC Group # 2017-6698

Jul 07, 2017

EXOVA
104-19575 55A Avenue
Surrey, BC V3S 8P8
Attn: Client Services

Date Samples Received: Jun-13-2017

Client P.O.: POC103750

All results have been reviewed and approved by a Qualified Person in accordance with the Saskatchewan Environmental Code, Corrective Action Plan Chapter, for the purposes of certifying a laboratory analysis

Results from Lab Sections 1 and 2 have been authorized by Keith Gipman, Supervisor
Results from Lab Section 3 have been authorized by Pat Moser, Supervisor
Results from Lab Sections 4 and 5 have been authorized by Vicky Snook, Supervisor
Results from Lab Section 6 have been authorized by Marion McConnell, Supervisor

-
- * Test methods and data are validated by the laboratory's Quality Assurance Program.
 - * Routine methods follow recognized procedures from sources such as
 - * Standard Methods for the Examination of Water and Wastewater APHA AWWA WEF
 - * Environment Canada
 - * US EPA
 - * CANMET
 - * The results reported relate only to the test samples as provided by the client.
 - * Samples will be kept for 30 days after the final report is sent. Please contact the lab if you have any special requirements.
 - * Additional information is available upon request.

This is a final report.

SRC Group # 2017-6698

Jul 07, 2017

EXOVA
104-19575 55A Avenue
Surrey, BC V3S 8P8
Attn : Client Services

Date Samples Received: Jun-13-2017 Client P.O.: POC103750

SRC Lab # 23208

Sample Type: WATER

06/07/2017 1207543-1 CAFN-MW-01 2017082

Analyte Name	Units	Results	Unconditional Release Limit
Lead-210	Bq/L	<0.1	1
Radium-226	Bq/L	<0.05	5
Radium-228	Bq/L	<0.7	5
Thorium-228	Bq/L	<0.1	1
Thorium-230	Bq/L	<0.1	5
Thorium-234	Bq/L	<4	10
Potassium-40	Bq/L	<7	none set

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Detection limits are influenced by several factors. "Less than" values reported above represent the lowest detection limits achievable for the sample.

Sum of Ratios = 0.77

This sample meets the unconditional derived release limits for diffuse NORM sources.

Sample preparation and Analysis Method

A 500 mL aliquot of each sample was measured into a standard Marinelli beaker, sealed with tape, and a high resolution gamma ray spectrometric measurement was performed using a hyperpure Ge detector housed in a 10cm lead castle.

Ra-226: An aliquot of each sample, usually 100 mL, was measured. Radionuclides were co-precipitated with lead sulfate. The precipitate was dissolved in alkaline EDTA. Radium was isolated by co-precipitation with barium sulfate. The precipitate was collected on a filter membrane and measured by alpha spectroscopy. The lower detection limit of a 100 mL sample is 0.05 Bq/L.

Th-230: An aliquot of each sample, usually 100 mL, was measured. Radionuclides were co-precipitated with barium sulfate. Following several wet-chemistry steps to remove impurities, the BaSO₄ precipitate was dissolved in alkaline EDTA and thorium was co-precipitated with ceric hydroxide. The precipitate was collected on a filter membrane and measured by alpha spectroscopy. The lower detection limit for a 100 mL sample is 0.1 Bq/L.

SRC Group # 2017-6698

Jul 07, 2017

Pb-210: Lead-210 is determined indirectly by precipitation and counting of its high energy beta emitting progeny, bismuth-210. An aliquot of each sample, usually 200 mL, was measured. Bismuth was isolated by solvent extraction and subsequently precipitated as bismuth oxychloride. The precipitate was collected on a filter paper/disk assembly and beta counted in a low background counting system using a gas-flow proportional detector. The lower detection limit for a 200 mL sample is 0.1 Bq/L.

SRC Group # 2017-6698

Jul 07, 2017

EXOVA
104-19575 55A Avenue
Surrey, BC V3S 8P8
Attn : Client Services

Date Samples Received: Jun-13-2017 Client P.O.: POC103750
SRC Lab # 23209 Sample Type: WATER

06/07/2017 1207543-2 CAFN-MW-03 2017083

Analyte Name	Units	Results	Unconditional Release Limit
Lead-210	Bq/L	<0.1	1
Radium-226	Bq/L	0.1	5
Radium-228	Bq/L	<1	5
Thorium-228	Bq/L	<0.1	1
Thorium-230	Bq/L	<0.1	5
Thorium-234	Bq/L	<4	10
Potassium-40	Bq/L	<6	none set

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Detection limits are influenced by several factors. "Less than" values reported above represent the lowest detection limits achievable for the sample.

Sum of Ratios = 0.84

This sample meets the unconditional derived release limits for diffuse NORM sources.

Sample preparation and Analysis Method

A 500 mL aliquot of each sample was measured into a standard Marinelli beaker, sealed with tape, and a high resolution gamma ray spectrometric measurement was performed using a hyperpure Ge detector housed in a 10cm lead castle.

Ra-226: An aliquot of each sample, usually 100 mL, was measured. Radionuclides were co-precipitated with lead sulfate. The precipitate was dissolved in alkaline EDTA. Radium was isolated by co-precipitation with barium sulfate. The precipitate was collected on a filter membrane and measured by alpha spectroscopy. The lower detection limit of a 100 mL sample is 0.05 Bq/L.

Th-230: An aliquot of each sample, usually 100 mL, was measured. Radionuclides were co-precipitated with barium sulfate. Following several wet-chemistry steps to remove impurities, the BaSO₄ precipitate was dissolved in alkaline EDTA and thorium was co-precipitated with ceric hydroxide. The precipitate was collected on a filter membrane and measured by alpha spectroscopy. The lower detection limit for a 100 mL sample is 0.1 Bq/L.

SRC Group # 2017-6698

Jul 07, 2017

Pb-210: Lead-210 is determined indirectly by precipitation and counting of its high energy beta emitting progeny, bismuth-210. An aliquot of each sample, usually 200 mL, was measured. Bismuth was isolated by solvent extraction and subsequently precipitated as bismuth oxychloride. The precipitate was collected on a filter paper/disk assembly and beta counted in a low background counting system using a gas-flow proportional detector. The lower detection limit for a 200 mL sample is 0.1 Bq/L.

SRC Group # 2017-6698

Jul 07, 2017

EXOVA
104-19575 55A Avenue
Surrey, BC V3S 8P8
Attn : Client Services

Date Samples Received: Jun-13-2017 Client P.O.: POC103750
SRC Lab # 23210 Sample Type: WATER

06/07/2017 1207543-3 CAFN-MW-02 2017084

Analyte Name	Units	Results	Unconditional Release Limit
Lead-210	Bq/L	<0.1	1
Radium-226	Bq/L	0.3	5
Radium-228	Bq/L	<0.5	5
Thorium-228	Bq/L	<0.1	1
Thorium-230	Bq/L	<0.1	5
Thorium-234	Bq/L	<4	10
Potassium-40	Bq/L	<3	none set

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Detection limits are influenced by several factors. "Less than" values reported above represent the lowest detection limits achievable for the sample.

Sum of Ratios = 0.78

This sample meets the unconditional derived release limits for diffuse NORM sources.

Sample preparation and Analysis Method

A 500 mL aliquot of each sample was measured into a standard Marinelli beaker, sealed with tape, and a high resolution gamma ray spectrometric measurement was performed using a hyperpure Ge detector housed in a 10cm lead castle.

Ra-226: An aliquot of each sample, usually 100 mL, was measured. Radionuclides were co-precipitated with lead sulfate. The precipitate was dissolved in alkaline EDTA. Radium was isolated by co-precipitation with barium sulfate. The precipitate was collected on a filter membrane and measured by alpha spectroscopy. The lower detection limit of a 100 mL sample is 0.05 Bq/L.

Th-230: An aliquot of each sample, usually 100 mL, was measured. Radionuclides were co-precipitated with barium sulfate. Following several wet-chemistry steps to remove impurities, the BaSO₄ precipitate was dissolved in alkaline EDTA and thorium was co-precipitated with ceric hydroxide. The precipitate was collected on a filter membrane and measured by alpha spectroscopy. The lower detection limit for a 100 mL sample is 0.1 Bq/L.

SRC Group # 2017-6698

Jul 07, 2017

Pb-210: Lead-210 is determined indirectly by precipitation and counting of its high energy beta emitting progeny, bismuth-210. An aliquot of each sample, usually 200 mL, was measured. Bismuth was isolated by solvent extraction and subsequently precipitated as bismuth oxychloride. The precipitate was collected on a filter paper/disk assembly and beta counted in a low background counting system using a gas-flow proportional detector. The lower detection limit for a 200 mL sample is 0.1 Bq/L.

Report Transmission Cover Page

Bill To: YTG DOE - Water Resources PO Box 2703 Whitehorse, YT, Canada Y1A 2C6	Project ID: YOWN Project Name: Campground Well Sampling Project Location: LSD: P.O.: C00037999 Proj. Acct. code:	Lot ID: 1223968 Control Number: Date Received: Aug 31, 2017 Date Reported: Sep 7, 2017 Report Number: 2218849
Attn: Accounts Payable Sampled By: JDM Company: YG-Environmental		

Contact	Company	Address
Holly Goulding	YTG DOE - Water Resources	202, 419 Range Road Whitehorse, YT Y1A 3V1 Phone: (867) 456-6583 Fax: (867) 667-3194 Email: holly.goulding@gov.yk.ca

Delivery	Format	Deliverables
Email - Merge Reports	PDF	COC / Test Report
Email - Single Report	EQWin	Test Report
Email - Single Report	PDF	Invoice

Contact	Company	Address
John Miller	YTG DOE - Water Resources	202, 419 Range Road Whitehorse, YT Y1A 3V1 Phone: (867) 667-3104 Fax: (867) 667-3194 Email: john.miller@gov.yk.ca

Delivery	Format	Deliverables
Email - Multiple Reports By Lot	EQWin	Test Report
Email - Multiple Reports By Lot	PDF	COC / Test Report
Email - Single Report	PDF	COA
Email - Single Report	PDF	COR
Email - Single Report	PDF	Invoice

Contact	Company	Address
Tyler Williams	YTG DOE - Water Resources	202, 419 Range Road Whitehorse, YT Y1A 3V1 Phone: (867) 667-3233 Fax: (867) 667-3194 Email: Tyler.Williams@gov.yk.ca

Delivery	Format	Deliverables
Email - Multiple Reports By Lot	EQWin	Test Report
Email - Multiple Reports By Lot	PDF	COC / Test Report

Notes To Clients:

- Reduction of analytical volume was necessary for Metals analysis to bring results within the analytical range for samples #1223968-2 through 7. Detection limits are adjusted accordingly.

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Analytical Report

Bill To: YTG DOE - Water Resources PO Box 2703 Whitehorse, YT, Canada Y1A 2C6 Attn: Accounts Payable	Project ID: YOWN Project Name: Campground Well Sampling Project Location: LSD: P.O.: C00037999 Proj. Acct. code:	Lot ID: 1223968 Control Number: Date Received: Aug 31, 2017 Date Reported: Sep 7, 2017 Report Number: 2218849
Sampled By: JDM Company: YG-Environmental		

Reference Number	1223968-1	1223968-2	1223968-3
Sample Date	Aug 29, 2017	Aug 29, 2017	Aug 28, 2017
Sample Time	09:30	14:32	19:13
Sample Location			
Sample Description	YOWN-1510 / 2017198 / 8 °C / M	YOWN-1613 / 2017199 / 8 °C / M	YOWN-1509 / 2017200 / 8 °C / M

Matrix	Water	Water	Water
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Analyte	Units	Results	Results	Results	Nominal Detection Limit
Routine Water					
Digestion	Dissolved	Field filtered and Pres Dissol	Field filtered and Pres Dissol		
Calcium	Dissolved mg/L	9.8	40	72	0.01
Magnesium	Dissolved mg/L	5.5	8.3	18	0.02
Potassium	Dissolved mg/L	1.9	1.7	1.6	0.04
Silicon	Dissolved mg/L	0.013	2.6	4.0	0.005
Sodium	Dissolved mg/L	7.7	2.2	5.8	0.1
Sulfur	Dissolved mg/L	1.2	0.72	6.9	0.02
Bicarbonate	mg/L	69	174		5
Carbonate	mg/L	<6	<6		6
Hydroxide	mg/L	<5	<5		5
P-Alkalinity	as CaCO3 mg/L	<5	<5		5
T-Alkalinity	as CaCO3 mg/L	57	142		5
Bromide	Dissolved mg/L	<0.02	<0.02		0.02
Chloride	Dissolved mg/L	0.37	1.11		0.05
Fluoride	Dissolved mg/L	0.15	0.12		0.01
Sulfate (SO4)	Dissolved mg/L	3.6	<0.1		0.1
Hardness	as CaCO3 (dissolved) mg/L	47	134	250	5
Trace Metals Dissolved					
Digestion	Dissolved	Field filtered and Pres Dissol	Field filtered and Pres Dissol	Field filtered and Pres Dissol	
Titanium	Dissolved mg/L	0.002	0.010	0.016	0.002
Aluminum	Dissolved mg/L	<0.001	<0.001	<0.001	0.001
Antimony	Dissolved mg/L	0.00008	0.00005	0.00004	0.00002
Arsenic	Dissolved mg/L	<0.0001	0.0001	0.0019	0.0001
Barium	Dissolved mg/L	0.0517	0.0999	0.2647	0.0001
Beryllium	Dissolved mg/L	<0.00005	<0.00005	<0.00005	0.00005
Bismuth	Dissolved mg/L	<0.0001	<0.0001	<0.0001	0.0001
Boron	Dissolved mg/L	0.003	0.006	0.003	0.002
Cadmium	Dissolved mg/L	<0.00001	<0.00001	<0.00001	0.00001
Chromium	Dissolved mg/L	<0.00005	<0.00005	<0.00005	0.00005
Cobalt	Dissolved mg/L	<0.00002	0.00045	0.00003	0.00002
Copper	Dissolved mg/L	<0.0005	<0.0005	<0.0005	0.0005
Iron	Dissolved mg/L	<0.002	5.80	2.58	0.002
Lead	Dissolved mg/L	0.00005	<0.00001	0.000097	0.00001
Lithium	Dissolved mg/L	0.0032	0.0017	0.0084	0.0005
Manganese	Dissolved mg/L	0.016	0.322	0.128	0.001
Molybdenum	Dissolved mg/L	0.00780	0.00110	0.00341	0.00002

Analytical Report

Bill To: YTG DOE - Water Resources PO Box 2703 Whitehorse, YT, Canada Y1A 2C6 Attn: Accounts Payable	Project ID: YOWN Project Name: Campground Well Sampling Project Location: LSD: P.O.: C00037999 Proj. Acct. code:	Lot ID: 1223968 Control Number: Date Received: Aug 31, 2017 Date Reported: Sep 7, 2017 Report Number: 2218849
Sampled By: JDM Company: YG-Environmental		

	Reference Number	1223968-1	1223968-2	1223968-3	
	Sample Date	Aug 29, 2017	Aug 29, 2017	Aug 28, 2017	
	Sample Time	09:30	14:32	19:13	
	Sample Location				
	Sample Description	YOWN-1510 / 2017198 / 8 °C / M	YOWN-1613 / 2017199 / 8 °C / M	YOWN-1509 / 2017200 / 8 °C / M	
	Matrix	Water	Water	Water	
Analyte	Units	Results	Results	Results	Nominal Detection Limit
Trace Metals Dissolved - Continued					
Nickel	Dissolved mg/L	0.0003	0.0008	<0.0002	0.0002
Selenium	Dissolved mg/L	<0.0002	<0.0002	<0.0002	0.0002
Silver	Dissolved mg/L	<0.00001	<0.00001	<0.00001	0.00001
Strontium	Dissolved mg/L	0.0990	0.1219	0.5911	0.0001
Tellurium	Dissolved mg/L	<0.00005	<0.00005	<0.00005	0.00005
Thallium	Dissolved mg/L	<0.00001	<0.00001	<0.00001	0.00001
Thorium	Dissolved mg/L	0.00012	0.00016	0.00011	0.00005
Tin	Dissolved mg/L	<0.0001	<0.0001	<0.0001	0.0001
Uranium	Dissolved mg/L	<0.00001	<0.00001	0.00008	0.00001
Vanadium	Dissolved mg/L	<0.00005	<0.00005	<0.00005	0.00005
Zinc	Dissolved mg/L	0.0005	0.0328	0.1495	0.0005
Zirconium	Dissolved mg/L	<0.0001	<0.0001	<0.0001	0.0001

Analytical Report

Bill To: YTG DOE - Water Resources PO Box 2703 Whitehorse, YT, Canada Y1A 2C6 Attn: Accounts Payable	Project ID: YOWN Project Name: Campground Well Sampling Project Location: LSD: P.O.: C00037999 Proj. Acct. code:	Lot ID: 1223968 Control Number: Date Received: Aug 31, 2017 Date Reported: Sep 7, 2017 Report Number: 2218849
Sampled By: JDM Company: YG-Environmental		

	Reference Number	1223968-1	1223968-2	1223968-5	
	Sample Date	Aug 29, 2017	Aug 29, 2017	Aug 29, 2017	
	Sample Time	09:30	14:32	11:35	
	Sample Location				
	Sample Description	YOWN-1510 / 2017198 / 8 °C / M	YOWN-1613 / 2017199 / 8 °C / M	YOWN-0805 / 2017202 / 8 °C / M	
	Matrix	Water	Water	Water	
Analyte	Units	Results	Results	Results	Nominal Detection Limit
Inorganic Nonmetallic Parameters					
Kjeldahl Nitrogen	Total	mg/L	0.45		0.07
Nitrogen	Total	mg/L	0.45	1.96	0.06
Organic Carbon	Total Nonpurgeable	mg/L	14	4.2	0.5
Organic Carbon	Dissolved Nonpurgeable	mg/L	12.6	1.5	0.5
Inorganic carbon	Total	mg/L	10	31.6	0.5
Inorganic carbon	Dissolved	mg/L	9.8	31.4	0.5
Ammonia - N		mg/L	0.27	1.36	0.01
Phosphorus	Total	mg/L	0.008	0.029	0.003
Metals Dissolved					
Mercury	Dissolved	mg/L	<0.00001	<0.00001	0.00001

Analytical Report

Bill To: YTG DOE - Water Resources PO Box 2703 Whitehorse, YT, Canada Y1A 2C6 Attn: Accounts Payable	Project ID: YOWN Project Name: Campground Well Sampling Project Location: LSD: P.O.: C00037999 Proj. Acct. code:	Lot ID: 1223968 Control Number: Date Received: Aug 31, 2017 Date Reported: Sep 7, 2017 Report Number: 2218849
Sampled By: JDM Company: YG-Environmental		

		Reference Number	1223968-3	1223968-4	1223968-6	
		Sample Date	Aug 28, 2017	Aug 29, 2017	Aug 29, 2017	
		Sample Time	19:13	15:45	13:08	
		Sample Location				
		Sample Description	YOWN-1509 / 2017200 / 8 °C / M	YOWN-1513 / 2017201 / 8 °C / M	YOWN-1512 / 2017203 / 8 °C / M	
		Matrix	Water	Water	Water	
Analyte		Units	Results	Results	Results	Nominal Detection Limit
Metals Total						
Calcium	Total	mg/L	77	79	97	0.01
Magnesium	Total	mg/L	19	15	20	0.02
Potassium	Total	mg/L	1.7	1.1	1.2	0.04
Silicon	Total	mg/L	4.5	5.9	10	0.005
Sulfur	Total	mg/L	7.4	2.4	1.8	0.02
Sodium	Total	mg/L	6.6	3.8	2.6	0.1
Titanium	Total	mg/L	0.017	0.018	0.021	0.002
Trace Metals Total						
Aluminum	Total	mg/L	0.008	0.018	<0.001	0.001
Antimony	Total	mg/L	0.00008	0.00020	0.00005	0.00002
Arsenic	Total	mg/L	0.0025	0.0008	0.0088	0.0001
Barium	Total	mg/L	0.29	0.20	0.32	0.0001
Beryllium	Total	mg/L	<0.00005	<0.00005	<0.00005	0.00005
Bismuth	Total	mg/L	<0.0001	<0.0001	<0.0001	0.0001
Boron	Total	mg/L	0.004	0.007	0.003	0.002
Cadmium	Total	mg/L	0.00001	<0.00001	<0.00001	0.00001
Chromium	Total	mg/L	<0.00005	0.0029	<0.00005	0.00005
Cobalt	Total	mg/L	0.00005	0.00025	<0.00002	0.00002
Copper	Total	mg/L	0.0004	0.0055	<0.0002	0.0002
Iron	Total	mg/L	3.2	4.9	1.9	0.002
Lead	Total	mg/L	0.0021	0.00093	0.000096	0.00001
Lithium	Total	mg/L	0.0091	0.0009	0.0031	0.0005
Manganese	Total	mg/L	0.14	0.033	0.32	0.001
Molybdenum	Total	mg/L	0.0038	0.00062	0.0011	0.00002
Nickel	Total	mg/L	0.0002	0.0028	<0.0002	0.0002
Selenium	Total	mg/L	<0.0002	<0.0002	<0.0002	0.0002
Silver	Total	mg/L	<0.00001	<0.00001	<0.00001	0.00001
Strontium	Total	mg/L	0.66	0.19	0.29	0.0001
Tellurium	Total	mg/L	<0.00005	<0.00005	<0.00005	0.00005
Thallium	Total	mg/L	<0.00001	<0.00001	<0.00001	0.00001
Thorium	Total	mg/L	0.00044	0.00027	0.00030	0.00005
Tin	Total	mg/L	<0.0001	0.0004	<0.0001	0.0001
Uranium	Total	mg/L	0.00010	0.00065	0.00012	0.00001
Vanadium	Total	mg/L	<0.00005	0.00036	<0.00005	0.00005
Zinc	Total	mg/L	0.46	0.23	0.076	0.0005
Zirconium	Total	mg/L	0.0003	0.0002	0.0004	0.0001

Analytical Report

Bill To: YTG DOE - Water Resources	Project ID: YOWN	Lot ID: 1223968
PO Box 2703	Project Name: Campground Well Sampling	Control Number:
Whitehorse, YT, Canada	Project Location:	Date Received: Aug 31, 2017
Y1A 2C6	LSD:	Date Reported: Sep 7, 2017
Attn: Accounts Payable	P.O.: C00037999	Report Number: 2218849
Sampled By: JDM	Proj. Acct. code:	
Company: YG-Environmental		

Reference Number	1223968-5
Sample Date	Aug 29, 2017
Sample Time	11:35
Sample Location	
Sample Description	YOWN-0805 / 2017202 / 8 °C / M

Matrix Water

Analyte	Units	Results	Results	Results	Nominal Detection Limit
Mono-Aromatic Hydrocarbons - Water					
Benzene	µg/L	<0.5			0.5
Ethylbenzene	µg/L	<0.5			0.5
Methyl t-Butyl Ether	µg/L	<0.5			0.5
Styrene	µg/L	<0.5			0.5
Toluene	µg/L	<0.5			0.5
Total Xylenes (m,p,o)	µg/L	<0.5			0.5
Volatile Petroleum Hydrocarbons - Water					
VPHw (VHw6-10 minus BTEX)	µg/L	<50			50
VHw6-10	µg/L	<50			50

Analytical Report

Bill To: YTG DOE - Water Resources PO Box 2703 Whitehorse, YT, Canada Y1A 2C6 Attn: Accounts Payable	Project ID: YOWN Project Name: Campground Well Sampling Project Location: LSD: P.O.: C00037999 Proj. Acct. code:	Lot ID: 1223968 Control Number: Date Received: Aug 31, 2017 Date Reported: Sep 7, 2017 Report Number: 2218849
Sampled By: JDM Company: YG-Environmental		

		Reference Number	1223968-5	1223968-6	1223968-7		
		Sample Date	Aug 29, 2017	Aug 29, 2017	Aug 28, 2017		
		Sample Time	11:35	13:08	17:39		
		Sample Location					
		Sample Description	YOWN-0805 / 2017202 / 8 °C / M	YOWN-1512 / 2017203 / 8 °C / M	2017204 / 8 °C / M		
		Matrix	Water	Water	Water		
Analyte	Units	Results	Results	Results	Nominal Detection Limit		
Routine Water							
Digestion	Dissolved	Field filtered and Pres Dissol					
Calcium	Dissolved	mg/L	64	90	40	0.01	
Magnesium	Dissolved	mg/L	14	19	11	0.02	
Potassium	Dissolved	mg/L	1.2	1.2	0.86	0.04	
Silicon	Dissolved	mg/L	4.4	9.2	2.1	0.005	
Sodium	Dissolved	mg/L	3.3	2.3	1.7	0.1	
Sulfur	Dissolved	mg/L	3.3	1.8	9.5	0.02	
Bicarbonate		mg/L	303			5	
Carbonate		mg/L	<6			6	
Hydroxide		mg/L	<5			5	
P-Alkalinity	as CaCO3	mg/L	<5			5	
T-Alkalinity	as CaCO3	mg/L	249			5	
Bromide	Dissolved	mg/L	<0.02			0.02	
Chloride	Dissolved	mg/L	2.41			0.05	
Fluoride	Dissolved	mg/L	0.08			0.01	
Sulfate (SO4)	Dissolved	mg/L	7.6			0.1	
Hardness	as CaCO3 (dissolved)	mg/L	220	300	145	5	
Trace Metals Dissolved							
Digestion	Dissolved		Field filtered and Pres Dissol	Field filtered and Pres Dissol	Field filtered and Pres Dissol		
Titanium	Dissolved	mg/L	0.014	0.019	0.009	0.002	
Aluminum	Dissolved	mg/L	<0.001	<0.001	<0.001	0.001	
Antimony	Dissolved	mg/L	0.00009	0.00003	0.00004	0.00002	
Arsenic	Dissolved	mg/L	0.0003	0.0065	<0.0001	0.0001	
Barium	Dissolved	mg/L	0.1121	0.2781	0.1082	0.0001	
Beryllium	Dissolved	mg/L	<0.00005	<0.00005	<0.00005	0.00005	
Bismuth	Dissolved	mg/L	<0.0001	<0.0001	<0.0001	0.0001	
Boron	Dissolved	mg/L	0.008	0.002	0.004	0.002	
Cadmium	Dissolved	mg/L	<0.00001	<0.00001	<0.00001	0.00001	
Chromium	Dissolved	mg/L	<0.00005	<0.00005	<0.00005	0.00005	
Cobalt	Dissolved	mg/L	0.00024	<0.00002	0.00003	0.00002	
Copper	Dissolved	mg/L	<0.0005	<0.0005	<0.0005	0.0005	
Iron	Dissolved	mg/L	1.61	0.629	0.051	0.002	
Lead	Dissolved	mg/L	<0.00001	<0.00001	0.00002	0.00001	
Lithium	Dissolved	mg/L	0.0027	0.0029	0.0023	0.0005	
Manganese	Dissolved	mg/L	0.092	0.315	0.106	0.001	
Molybdenum	Dissolved	mg/L	0.00133	0.00098	0.00081	0.00002	

Analytical Report

Bill To: YTG DOE - Water Resources PO Box 2703 Whitehorse, YT, Canada Y1A 2C6 Attn: Accounts Payable Sampled By: JDM Company: YG-Environmental	Project ID: YOWN Project Name: Campground Well Sampling Project Location: LSD: P.O.: C00037999 Proj. Acct. code:	Lot ID: 1223968 Control Number: Date Received: Aug 31, 2017 Date Reported: Sep 7, 2017 Report Number: 2218849
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	Reference Number	1223968-5	1223968-6	1223968-7	
	Sample Date	Aug 29, 2017	Aug 29, 2017	Aug 28, 2017	
	Sample Time	11:35	13:08	17:39	
	Sample Location				
	Sample Description	YOWN-0805 / 2017202 / 8 °C / M	YOWN-1512 / 2017203 / 8 °C / M	2017204 / 8 °C / M	
	Matrix	Water	Water	Water	
Analyte	Units	Results	Results	Results	Nominal Detection Limit
Trace Metals Dissolved - Continued					
Nickel	Dissolved mg/L	0.0018	<0.0002	0.0009	0.0002
Selenium	Dissolved mg/L	0.0005	<0.0002	0.0003	0.0002
Silver	Dissolved mg/L	<0.00001	<0.00001	<0.00001	0.00001
Strontium	Dissolved mg/L	0.2356	0.2572	0.1629	0.0001
Tellurium	Dissolved mg/L	<0.00005	<0.00005	<0.00005	0.00005
Thallium	Dissolved mg/L	<0.00001	<0.00001	<0.00001	0.00001
Thorium	Dissolved mg/L	0.00008	0.00010	0.00005	0.00005
Tin	Dissolved mg/L	<0.0001	<0.0001	<0.0001	0.0001
Uranium	Dissolved mg/L	0.00109	0.00010	0.00038	0.00001
Vanadium	Dissolved mg/L	<0.00005	<0.00005	<0.00005	0.00005
Zinc	Dissolved mg/L	0.0009	0.0403	0.0651	0.0005
Zirconium	Dissolved mg/L	<0.0001	<0.0001	<0.0001	0.0001

Analytical Report

Bill To: YTG DOE - Water Resources PO Box 2703 Whitehorse, YT, Canada Y1A 2C6 Attn: Accounts Payable	Project ID: YOWN Project Name: Campground Well Sampling Project Location: LSD: P.O.: C00037999 Proj. Acct. code:	Lot ID: 1223968 Control Number: Date Received: Aug 31, 2017 Date Reported: Sep 7, 2017 Report Number: 2218849
Sampled By: JDM Company: YG-Environmental		

Reference Number 1223968-7
Sample Date Aug 28, 2017
Sample Time 17:39
Sample Location
Sample Description 2017204 / 8 °C / M

Analyte		Matrix		Results	Nominal Detection Limit
		Units	Water		
Metals Total					
Calcium	Total	mg/L	43		0.01
Magnesium	Total	mg/L	12		0.02
Potassium	Total	mg/L	0.93		0.04
Silicon	Total	mg/L	2.4		0.005
Sulfur	Total	mg/L	10		0.02
Sodium	Total	mg/L	2.1		0.1
Titanium	Total	mg/L	0.0097		0.002
Trace Metals Total					
Aluminum	Total	mg/L	<0.001		0.001
Antimony	Total	mg/L	0.00006		0.00002
Arsenic	Total	mg/L	0.0001		0.0001
Barium	Total	mg/L	0.13		0.0001
Beryllium	Total	mg/L	<0.00005		0.00005
Bismuth	Total	mg/L	<0.0001		0.0001
Boron	Total	mg/L	0.004		0.002
Cadmium	Total	mg/L	0.00003		0.00001
Chromium	Total	mg/L	0.00024		0.00005
Cobalt	Total	mg/L	0.00008		0.00002
Copper	Total	mg/L	0.0012		0.0002
Iron	Total	mg/L	1.5		0.002
Lead	Total	mg/L	0.00077		0.00001
Lithium	Total	mg/L	0.0024		0.0005
Manganese	Total	mg/L	0.12		0.001
Molybdenum	Total	mg/L	0.00092		0.00002
Nickel	Total	mg/L	0.0016		0.0002
Selenium	Total	mg/L	0.0003		0.0002
Silver	Total	mg/L	<0.00001		0.00001
Strontium	Total	mg/L	0.18		0.0001
Tellurium	Total	mg/L	<0.00005		0.00005
Thallium	Total	mg/L	<0.00001		0.00001
Thorium	Total	mg/L	0.00012		0.00005
Tin	Total	mg/L	0.0001		0.0001
Uranium	Total	mg/L	0.00041		0.00001
Vanadium	Total	mg/L	<0.00005		0.00005
Zinc	Total	mg/L	0.12		0.0005
Zirconium	Total	mg/L	0.0001		0.0001

Analytical Report

Bill To: YTG DOE - Water Resources	Project ID: YOWN	Lot ID: 1223968
PO Box 2703	Project Name: Campground Well Sampling	Control Number:
Whitehorse, YT, Canada	Project Location:	Date Received: Aug 31, 2017
Y1A 2C6	LSD:	Date Reported: Sep 7, 2017
Attn: Accounts Payable	P.O.: C00037999	Report Number: 2218849
Sampled By: JDM	Proj. Acct. code:	
Company: YG-Environmental		

Approved by:



Carol Nam, Dipl. T.
Quality Officer

Data have been validated by Analytical Quality Control and Exova's Integrated Data Validation System (IDVS).

Generation and distribution of the report, and approval by the digitized signature above, are performed through a secure and controlled automatic process.

Quality Control

Bill To: YTG DOE - Water Resources PO Box 2703 Whitehorse, YT, Canada Y1A 2C6 Attn: Accounts Payable	Project ID: YOWN Project Name: Campground Well Sampling Project Location: LSD: P.O.: C00037999 Proj. Acct. code:	Lot ID: 1223968 Control Number: Date Received: Aug 31, 2017 Date Reported: Sep 7, 2017 Report Number: 2218849
Sampled By: JDM Company: YG-Environmental		

Inorganic Nonmetallic Parameters

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC	
Ammonium - N	µg/L	-22.118	-110.00	10.00	yes	
Phosphorus	mg/L	0.0007	-0.003	0.003	yes	
Date Acquired: September 01, 2017						
Nitrogen	mg/L	0	-0.04	0.08	yes	
Organic Carbon	mg/L	-0.02245	-0.5	0.5	yes	
Inorganic carbon	mg/L	0.1712	-0.5	0.5	yes	
Date Acquired: September 05, 2017						
Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC	
Ammonium - N	µg/L	97.09	85	115	yes	
Phosphorus	mg/L	99.70	90	110	yes	
Date Acquired: September 01, 2017						
Ammonium - N	µg/L	81.91	70	130	yes	
Phosphorus	mg/L	112.00	80	120	yes	
Date Acquired: September 01, 2017						
Client Sample Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Nitrogen	mg/L	4.55	4.62	10	0.06	yes
Organic Carbon	mg/L	<0.5	<0.5	10	1.0	yes
Inorganic carbon	mg/L	10	10	10	1.0	yes
Date Acquired: September 05, 2017						
Ammonia - N	mg/L	0.12	0.12	20	50.00	yes
Date Acquired: September 05, 2017						
Control Sample	Units	Measured	Lower Limit	Upper Limit	Passed QC	
Organic Carbon	mg/L	<0.5	-0.5	0.5	yes	
Date Acquired: September 01, 2017						
Nitrogen	mg/L	120	103.74	137.28	yes	
Organic Carbon	mg/L	123	109.1	139.7	yes	
Inorganic carbon	mg/L	45.2	40.5	55.5	yes	
Date Acquired: September 05, 2017						
Nitrogen	mg/L	16.2	13.27	16.93	yes	
Organic Carbon	mg/L	15.0	12.8	17.2	yes	
Inorganic carbon	mg/L	15.9	14.1	18.3	yes	
Date Acquired: September 05, 2017						
Nitrogen	mg/L	1.14	0.89	1.25	yes	
Organic Carbon	mg/L	2.9	2.4	4.0	yes	
Inorganic carbon	mg/L	3.0	2.7	4.1	yes	
Date Acquired: September 05, 2017						
Phosphorus	mg/L	0.459	0.389	0.503	yes	
Date Acquired: September 01, 2017						

Metals Dissolved

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
Mercury	ng/L	0	-9.99	9.99	yes

Quality Control

Bill To: YTG DOE - Water Resources	Project ID: YOWN	Lot ID: 1223968
PO Box 2703	Project Name: Campground Well	Control Number:
Whitehorse, YT, Canada	Sampling	Date Received: Aug 31, 2017
Y1A 2C6	Project Location:	Date Reported: Sep 7, 2017
Attn: Accounts Payable	LSD:	Report Number: 2218849
Sampled By: JDM	P.O.: C00037999	
Company: YG-Environmental	Proj. Acct. code:	

Metals Dissolved - Continued

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC	
Date Acquired:	September 05, 2017					
Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC	
Mercury	ng/L	109.60	90	110	yes	
Date Acquired:	September 05, 2017					
Certified Reference Material	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Mercury	µg/L	0.03	0.04	0.02	0.05	yes
Date Acquired:	September 05, 2017					
Client Sample Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Mercury	µg/L	<0.01	<0.01	20	0.05	yes
Date Acquired:	September 05, 2017					

Metals Total

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC	
Calcium	mg/L	-0.00205802	-0.010	0.010	yes	
Magnesium	mg/L	-0.00260972	-0.020	0.020	yes	
Potassium	mg/L	0.00389473	-0.040	0.040	yes	
Silicon	mg/L	0.00366344	-0.005	0.005	yes	
Sodium	mg/L	0.0178046	-0.099	0.099	yes	
Date Acquired:	September 01, 2017					
Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC	
Calcium	mg/L	101.89	90	110	yes	
Magnesium	mg/L	103.92	90	110	yes	
Potassium	mg/L	101.72	90	110	yes	
Silicon	mg/L	100.40	90	110	yes	
Sodium	mg/L	101.45	90	110	yes	
Titanium	mg/L	99.06	90	110	yes	
Date Acquired:	September 01, 2017					
Calcium	mg/L	104.76	90	110	yes	
Magnesium	mg/L	109.40	90	110	yes	
Potassium	mg/L	102.76	90	110	yes	
Silicon	mg/L	102.97	90	110	yes	
Sodium	mg/L	102.74	90	110	yes	
Titanium	mg/L	103.67	90	110	yes	
Date Acquired:	September 01, 2017					
Client Sample Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Calcium	mg/L	77	77	20	0.050	yes
Magnesium	mg/L	19	19	20	0.050	yes
Potassium	mg/L	1.7	1.7	20	0.100	yes
Silicon	mg/L	4.5	4.5	20	0.100	yes
Sodium	mg/L	6.6	6.5	20	0.100	yes
Date Acquired:	September 01, 2017					

Mono-Aromatic Hydrocarbons - Water

Quality Control

Bill To: YTG DOE - Water Resources	Project ID: YOWN	Lot ID: 1223968
PO Box 2703	Project Name: Campground Well	Control Number:
Whitehorse, YT, Canada	Sampling	Date Received: Aug 31, 2017
Y1A 2C6	Project Location:	Date Reported: Sep 7, 2017
Attn: Accounts Payable	LSD:	Report Number: 2218849
Sampled By: JDM	P.O.: C00037999	
Company: YG-Environmental	Proj. Acct. code:	

Mono-Aromatic Hydrocarbons - Water

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
Benzene	ng	0	-0.5	0.5	yes
Ethylbenzene	ng	0	-0.5	0.5	yes
Methyl t-Butyl Ether	ng	0	-0.5	0.5	yes
m,p-Xylene	ng	0	-0.5	0.5	yes
o-Xylene	ng	0	-0.5	0.5	yes
Styrene	ng	0	-0.5	0.5	yes
Toluene	ng	0	-0.5	0.5	yes
Total Xylenes (m,p,o)	ng	0	-0.5	0.5	yes
Dibromofluoromethane	%	97.86	74.990	115.010	yes
Toluene-d8	%	105.98	80.000	110.000	yes
4-Bromofluorobenzene	%	99.58	85.000	115.000	yes

Date Acquired: September 01, 2017

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
Benzene	ng	115.09	75	125	yes
Ethylbenzene	ng	110.64	75	125	yes
Methyl t-Butyl Ether	ng	80.71	75	125	yes
m,p-Xylene	ng	120.12	75	125	yes
o-Xylene	ng	109.82	75	125	yes
Styrene	ng	107.59	75	125	yes
Toluene	ng	119.15	75	125	yes
Total Xylenes (m,p,o)	ng	116.69	75	125	yes

Date Acquired: September 01, 2017

Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Benzene	µg/L	<0.5	<0.5	20	2.5	yes
Ethylbenzene	µg/L	<0.5	<0.5	20	2.5	yes
Methyl t-Butyl Ether	µg/L	<0.5	<0.5	20	2.5	yes
m,p-Xylene	µg/L	<0.5	<0.5	20	2.5	yes
o-Xylene	µg/L	<0.5	<0.5	20	2.5	yes
Styrene	µg/L	<0.5	<0.5	20	2.5	yes
Toluene	µg/L	<0.5	<0.5	20	2.5	yes
Total Xylenes (m,p,o)	µg/L	<0.5	<0.5	20	2.5	yes

Date Acquired: September 01, 2017

Matrix Spike	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
Benzene	µg/L	119	75	125	yes
Ethylbenzene	µg/L	93	75	125	yes
Methyl t-Butyl Ether	µg/L	82	75	125	yes
m,p-Xylene	µg/L	96	75	125	yes
o-Xylene	µg/L	110	75	125	yes
Styrene	µg/L	93	75	125	yes
Toluene	µg/L	108	75	125	yes
Total Xylenes (m,p,o)	µg/L	101	75	125	yes

Date Acquired: September 01, 2017

Routine Water

Quality Control

Bill To: YTG DOE - Water Resources PO Box 2703 Whitehorse, YT, Canada Y1A 2C6 Attn: Accounts Payable	Project ID: YOWN Project Name: Campground Well Sampling Project Location: LSD: P.O.: C00037999 Proj. Acct. code:	Lot ID: 1223968 Control Number: Date Received: Aug 31, 2017 Date Reported: Sep 7, 2017 Report Number: 2218849
Sampled By: JDM Company: YG-Environmental		

Routine Water

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC	
Calcium	mg/L	-0.00542283	-0.010	0.010	yes	
Magnesium	mg/L	-0.00371348	-0.020	0.020	yes	
Potassium	mg/L	0.0131529	-0.040	0.040	yes	
Silicon	mg/L	0.00306536	-0.005	0.005	yes	
Sodium	mg/L	0.0194042	-0.099	0.099	yes	
Date Acquired: September 01, 2017						
Nitrate - N	mg/L	0	-0.01	0.01	yes	
Nitrite - N	mg/L	0	-0.005	0.005	yes	
Date Acquired: September 05, 2017						
Bromide	mg/L	0	-0.099	0.099	yes	
Chloride	mg/L	0.0293728	-0.201	0.201	yes	
Fluoride	mg/L	0.0152232	-0.099	0.099	yes	
Sulfate (SO4)	mg/L	0.035609	-0.990	0.990	yes	
Date Acquired: September 01, 2017						
Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC	
Calcium	mg/L	98.02	90	110	yes	
Magnesium	mg/L	101.28	90	110	yes	
Potassium	mg/L	100.68	90	110	yes	
Silicon	mg/L	92.31	90	110	yes	
Sodium	mg/L	93.64	90	110	yes	
Date Acquired: September 01, 2017						
Bromide	mg/L	101.83	90	110	yes	
Chloride	mg/L	98.11	85	115	yes	
Fluoride	mg/L	108.79	85	115	yes	
Sulfate (SO4)	mg/L	89.58	85	115	yes	
Date Acquired: September 01, 2017						
Bromide	mg/L	102.03	90	110	yes	
Chloride	mg/L	97.93	90	110	yes	
Fluoride	mg/L	96.40	89	109	yes	
Sulfate (SO4)	mg/L	99.02	90	110	yes	
Date Acquired: September 01, 2017						
Calcium	mg/L	99.90	90	110	yes	
Magnesium	mg/L	104.70	90	110	yes	
Potassium	mg/L	103.17	90	110	yes	
Sodium	mg/L	97.88	90	110	yes	
Date Acquired: September 01, 2017						
Client Sample Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Nitrate - N	mg/L	0.02	0.02	10	0.01	yes
Nitrite - N	mg/L	<0.005	<0.005	10	0.010	yes
Date Acquired: September 05, 2017						
Calcium	mg/L	60	60	30	1.000	yes
Magnesium	mg/L	18	18	30	1.000	yes

Quality Control

Bill To: YTG DOE - Water Resources PO Box 2703 Whitehorse, YT, Canada Y1A 2C6 Attn: Accounts Payable	Project ID: YOWN Project Name: Campground Well Sampling Project Location: LSD: P.O.: C00037999 Proj. Acct. code:	Lot ID: 1223968 Control Number: Date Received: Aug 31, 2017 Date Reported: Sep 7, 2017 Report Number: 2218849
Sampled By: JDM Company: YG-Environmental		

Routine Water - Continued

Client Sample	Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Potassium		mg/L	3.6	3.6	30	1.000	yes
Silicon		mg/L	4.7	4.7	30	0.150	yes
Sodium		mg/L	14	14	30	1.000	yes
Sulfur		mg/L	18	17	30	3.000	yes

Date Acquired: September 01, 2017

Hardness		mg CaCO3/L	270	270	20	1.000	yes
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Date Acquired: September 01, 2017

Control Sample	Units	Measured	Lower Limit	Upper Limit	Passed QC
Nitrate - N	mg/L	10.2	9.68	10.68	yes
Nitrite - N	mg/L	10.2	9.460	10.600	yes
Nitrate and Nitrite - N	mg/L	20.4	19.27	20.97	yes

Date Acquired: September 05, 2017

Nitrate - N	mg/L	4.80	4.51	5.26	yes
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Nitrite - N	mg/L	5.02	4.548	5.352	yes
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Nitrate and Nitrite - N	mg/L	9.83	9.22	10.58	yes
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Date Acquired: September 05, 2017

Nitrate - N	mg/L	0.50	0.42	0.57	yes
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Nitrite - N	mg/L	0.522	0.438	0.552	yes
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Nitrate and Nitrite - N	mg/L	1.03	0.89	1.07	yes
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Date Acquired: September 05, 2017

Trace Metals Dissolved

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
Aluminum	µg/L	0	-0.990	0.990	yes
Antimony	µg/L	0.0022763	-0.020	0.020	yes
Arsenic	µg/L	0.00429312	-0.099	0.099	yes
Barium	µg/L	-0.0402786	-0.099	0.099	yes
Beryllium	µg/L	-7.912e-005	-0.050	0.050	yes
Bismuth	µg/L	-0.00198089	-0.099	0.099	yes
Boron	µg/L	-1.12834	-2.001	2.001	yes
Cadmium	µg/L	-0.00388357	-0.010	0.010	yes
Chromium	µg/L	0	-0.050	0.050	yes
Cobalt	µg/L	-0.000299852	-0.020	0.020	yes
Copper	µg/L	-0.00213618	-0.050	0.050	yes
Iron	µg/L	0.487405	-2.001	2.001	yes
Lead	µg/L	0	-0.010	0.010	yes
Lithium	µg/L	-0.00776323	-0.500	0.500	yes
Manganese	µg/L	-0.201246	-0.990	0.990	yes
Molybdenum	µg/L	0.00238097	-0.020	0.020	yes
Nickel	µg/L	-0.122969	-0.200	0.200	yes
Selenium	µg/L	0.00223545	-0.200	0.200	yes
Silver	µg/L	-0.000258742	-0.009	0.009	yes
Strontium	µg/L	-0.0417185	-0.099	0.099	yes

Quality Control

Bill To: YTG DOE - Water Resources	Project ID: YOWN	Lot ID: 1223968
PO Box 2703	Project Name: Campground Well	Control Number:
Whitehorse, YT, Canada	Sampling	Date Received: Aug 31, 2017
Y1A 2C6	Project Location:	Date Reported: Sep 7, 2017
Attn: Accounts Payable	LSD:	Report Number: 2218849
Sampled By: JDM	P.O.: C00037999	
Company: YG-Environmental	Proj. Acct. code:	

Trace Metals Dissolved - Continued

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
Tellurium	µg/L	-0.00469025	-0.050	0.050	yes
Thallium	µg/L	-0.00261748	-0.010	0.010	yes
Thorium	µg/L	0.0164483	-0.050	0.050	yes
Tin	µg/L	0.00170287	-0.099	0.099	yes
Titanium	µg/L	0.0488188	-0.099	0.099	yes
Uranium	µg/L	-0.00180158	-0.010	0.010	yes
Vanadium	µg/L	0.046059	-0.050	0.050	yes
Zinc	µg/L	0.242287	-0.500	0.500	yes
Zirconium	µg/L	-0.000739905	-0.099	0.099	yes

Date Acquired: September 01, 2017

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
Titanium	mg/L	93.02	90	110	yes

Date Acquired: September 01, 2017

Aluminum	µg/L	95.76	80	120	yes
Antimony	µg/L	93.89	90	110	yes
Arsenic	µg/L	94.97	90	110	yes
Barium	µg/L	94.72	90	110	yes
Beryllium	µg/L	95.89	90	110	yes
Boron	µg/L	97.77	70	130	yes
Cadmium	µg/L	93.74	90	110	yes
Chromium	µg/L	96.78	90	110	yes
Cobalt	µg/L	93.74	90	110	yes
Copper	µg/L	98.13	90	110	yes
Lead	µg/L	100.88	90	110	yes
Lithium	µg/L	91.97	90	110	yes
Molybdenum	µg/L	92.31	90	110	yes
Nickel	µg/L	97.06	90	110	yes
Selenium	µg/L	94.64	90	110	yes
Silver	µg/L	92.91	90	110	yes
Strontium	µg/L	94.54	90	110	yes
Thorium	µg/L	96.92	90	110	yes
Tin	µg/L	93.34	90	110	yes
Titanium	µg/L	91.38	90	110	yes
Uranium	µg/L	95.17	90	110	yes
Vanadium	µg/L	96.99	90	110	yes
Zinc	µg/L	100.87	90	110	yes

Date Acquired: September 01, 2017

Aluminum	µg/L	91.11	80	120	yes
Antimony	µg/L	90.92	90	110	yes
Arsenic	µg/L	93.10	90	110	yes
Barium	µg/L	95.26	90	110	yes
Beryllium	µg/L	95.07	90	110	yes
Boron	µg/L	101.28	80	120	yes

Quality Control

Bill To: YTG DOE - Water Resources	Project ID: YOWN	Lot ID: 1223968
PO Box 2703	Project Name: Campground Well	Control Number:
Whitehorse, YT, Canada	Sampling	Date Received: Aug 31, 2017
Y1A 2C6	Project Location:	Date Reported: Sep 7, 2017
Attn: Accounts Payable	LSD:	Report Number: 2218849
Sampled By: JDM	P.O.: C00037999	
Company: YG-Environmental	Proj. Acct. code:	

Trace Metals Dissolved - Continued

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
Cadmium	µg/L	98.37	90	110	yes
Chromium	µg/L	93.25	90	110	yes
Cobalt	µg/L	92.09	90	110	yes
Copper	µg/L	94.10	90	110	yes
Lead	µg/L	99.92	90	110	yes
Lithium	µg/L	93.97	90	110	yes
Molybdenum	µg/L	93.82	90	110	yes
Nickel	µg/L	96.30	90	110	yes
Selenium	µg/L	96.38	90	110	yes
Silver	µg/L	96.51	90	110	yes
Strontium	µg/L	94.03	90	110	yes
Thallium	µg/L	99.35	90	110	yes
Thorium	µg/L	104.64	86	122	yes
Tin	µg/L	93.09	90	110	yes
Titanium	µg/L	92.48	90	110	yes
Uranium	µg/L	97.00	90	110	yes
Vanadium	µg/L	93.42	90	110	yes
Zinc	µg/L	91.38	90	110	yes

Date Acquired: September 01, 2017

Client Sample Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Aluminum	µg/L	<1	1	20	20.000	yes
Antimony	µg/L	0.16	0.21	20	1.000	yes
Arsenic	µg/L	0.4	0.4	20	1.000	yes
Barium	µg/L	66.7	67.5	20	5.000	yes
Beryllium	µg/L	<0.05	<0.05	20	1.000	yes
Boron	µg/L	32	34	20	5.000	yes
Cadmium	µg/L	<0.01	<0.01	20	0.500	yes
Chromium	µg/L	<0.05	<0.05	20	5.000	yes
Cobalt	µg/L	0.04	0.04	20	0.500	yes
Copper	µg/L	6.6	6.6	20	5.000	yes
Iron	µg/L	<2	<2	20	50.000	yes
Lead	µg/L	<0.01	<0.01	20	0.500	yes
Lithium	µg/L	1.4	1.2	20	5.000	yes
Manganese	µg/L	<1	<1	20	0.500	yes
Molybdenum	µg/L	5.29	5.25	20	0.500	yes
Nickel	µg/L	0.9	0.4	20	5.000	yes
Selenium	µg/L	0.3	0.4	20	0.500	yes
Silver	µg/L	<0.01	<0.01	20	0.500	yes
Strontium	µg/L	599.9	601.3	20	0.500	yes
Tellurium	µg/L	<0.05	<0.05	20	0.500	yes
Thallium	µg/L	<0.01	<0.01	20	0.100	yes
Thorium	µg/L	0.25	0.25	20	0.100	yes
Tin	µg/L	<0.1	<0.1	20	0.500	yes
Titanium	µg/L	0.2	0.2	20	0.500	yes

Quality Control

Bill To: YTG DOE - Water Resources	Project ID: YOWN	Lot ID: 1223968
PO Box 2703	Project Name: Campground Well	Control Number:
Whitehorse, YT, Canada	Sampling	Date Received: Aug 31, 2017
Y1A 2C6	Project Location:	Date Reported: Sep 7, 2017
Attn: Accounts Payable	LSD:	Report Number: 2218849
Sampled By: JDM	P.O.: C00037999	
Company: YG-Environmental	Proj. Acct. code:	

Trace Metals Dissolved - Continued

Client Sample	Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Uranium		µg/L	1.77	1.73	20	0.100	yes
Vanadium		µg/L	0.32	0.30	20	0.500	yes
Zinc		µg/L	3.4	3.3	20	5.000	yes
Zirconium		µg/L	0.8	1.2	20	0.500	yes
Date Acquired: September 01, 2017							
Titanium		mg/L	0.014	0.014	30	0.012	yes
Date Acquired: September 01, 2017							

Trace Metals Total

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
Aluminum	µg/L	0.829204	-0.990	0.990	yes
Antimony	µg/L	0.00934363	-0.020	0.020	yes
Arsenic	µg/L	0.00366507	-0.099	0.099	yes
Barium	µg/L	0.0156025	-0.099	0.099	yes
Beryllium	µg/L	0.000578314	-0.050	0.050	yes
Bismuth	µg/L	-0.0102632	-0.099	0.099	yes
Boron	µg/L	0.585916	-2.001	2.001	yes
Cadmium	µg/L	0.00113134	-0.010	0.010	yes
Chromium	µg/L	-0.0393044	-0.050	0.050	yes
Cobalt	µg/L	-0.00381572	-0.020	0.020	yes
Copper	µg/L	0.0328885	-0.501	0.501	yes
Iron	µg/L	0.135075	-2.001	2.001	yes
Lead	µg/L	0.00863158	-0.010	0.010	yes
Lithium	µg/L	-0.0212596	-0.501	0.501	yes
Manganese	µg/L	0.0257725	-0.990	0.990	yes
Molybdenum	µg/L	-0.00751555	-0.020	0.020	yes
Nickel	µg/L	0.177143	-0.201	0.201	yes
Selenium	µg/L	0.0198337	-0.201	0.201	yes
Silver	µg/L	-0.00213124	-0.010	0.010	yes
Strontium	µg/L	0.02898	-0.099	0.099	yes
Tellurium	µg/L	-0.00549305	-0.050	0.050	yes
Thallium	µg/L	-0.000641092	-0.010	0.010	yes
Thorium	µg/L	-0.011832	-0.050	0.050	yes
Tin	µg/L	0.0737179	-0.099	0.099	yes
Titanium	µg/L	0.0764991	-0.099	0.099	yes
Uranium	µg/L	-0.00101481	-0.099	0.099	yes
Vanadium	µg/L	-0.0162611	-0.050	0.050	yes
Zinc	µg/L	0.0456715	-0.501	0.501	yes
Zirconium	µg/L	-0.0467538	-0.099	0.099	yes

Date Acquired: September 01, 2017

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
Aluminum	µg/L	92.61	80	120	yes
Antimony	µg/L	96.12	90	110	yes
Arsenic	µg/L	101.95	90	110	yes

Quality Control

Bill To: YTG DOE - Water Resources	Project ID: YOWN	Lot ID: 1223968
PO Box 2703	Project Name: Campground Well Sampling	Control Number:
Whitehorse, YT, Canada	Project Location:	Date Received: Aug 31, 2017
Y1A 2C6	LSD:	Date Reported: Sep 7, 2017
Attn: Accounts Payable	P.O.: C00037999	Report Number: 2218849
Sampled By: JDM	Proj. Acct. code:	
Company: YG-Environmental		

Trace Metals Total - Continued

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
Barium	µg/L	104.33	90	110	yes
Beryllium	µg/L	101.85	90	110	yes
Boron	µg/L	101.06	70	130	yes
Cadmium	µg/L	102.98	90	110	yes
Chromium	µg/L	102.68	90	110	yes
Cobalt	µg/L	99.77	90	110	yes
Copper	µg/L	100.09	90	110	yes
Lead	µg/L	107.26	90	110	yes
Lithium	µg/L	101.91	90	110	yes
Molybdenum	µg/L	102.52	90	110	yes
Nickel	µg/L	106.82	90	110	yes
Selenium	µg/L	106.75	90	110	yes
Silver	µg/L	103.20	90	110	yes
Strontium	µg/L	100.02	90	110	yes
Thallium	µg/L	109.26	90	110	yes
Thorium	µg/L	109.75	90	110	yes
Tin	µg/L	106.76	90	110	yes
Titanium	µg/L	101.77	90	110	yes
Uranium	µg/L	103.77	90	110	yes
Vanadium	µg/L	99.69	90	110	yes
Zinc	µg/L	103.92	90	110	yes
Date Acquired: September 01, 2017					
Aluminum	µg/L	96.59	80	120	yes
Antimony	µg/L	96.21	90	110	yes
Arsenic	µg/L	99.02	90	110	yes
Barium	µg/L	103.07	90	110	yes
Beryllium	µg/L	103.18	90	110	yes
Boron	µg/L	101.27	80	120	yes
Cadmium	µg/L	105.27	90	110	yes
Chromium	µg/L	101.04	90	110	yes
Cobalt	µg/L	97.55	90	110	yes
Copper	µg/L	96.37	90	110	yes
Lead	µg/L	104.38	90	110	yes
Lithium	µg/L	101.56	90	110	yes
Molybdenum	µg/L	101.60	90	110	yes
Nickel	µg/L	97.63	90	110	yes
Selenium	µg/L	101.85	90	110	yes
Silver	µg/L	104.89	90	110	yes
Strontium	µg/L	101.15	90	110	yes
Thallium	µg/L	106.23	90	110	yes
Thorium	µg/L	105.53	90	110	yes
Tin	µg/L	99.71	90	110	yes
Titanium	µg/L	99.23	90	110	yes
Uranium	µg/L	102.33	90	110	yes



Quality Control

Bill To: YTG DOE - Water Resources	Project ID: YOWN	Lot ID: 1223968
PO Box 2703	Project Name: Campground Well	Control Number:
Whitehorse, YT, Canada	Sampling	Date Received: Aug 31, 2017
Y1A 2C6	Project Location:	Date Reported: Sep 7, 2017
Attn: Accounts Payable	LSD:	Report Number: 2218849
Sampled By: JDM	P.O.: C00037999	
Company: YG-Environmental	Proj. Acct. code:	

Trace Metals Total - Continued

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
Vanadium	µg/L	97.73	90	110	yes
Zinc	µg/L	90.23	90	110	yes

Date Acquired: September 01, 2017

Client Sample Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Aluminum	µg/L	8	9	20	100.000	yes
Antimony	µg/L	0.08	0.15	20	2.000	yes
Arsenic	µg/L	2.5	2.5	20	2.000	yes
Barium	µg/L	290	290	20	10.000	yes
Beryllium	µg/L	<0.05	<0.05	20	0.400	yes
Boron	µg/L	4	4	20	40.000	yes
Cadmium	µg/L	0.01	0.02	20	0.100	yes
Chromium	µg/L	<0.05	<0.05	20	6.000	yes
Cobalt	µg/L	0.05	0.05	20	0.200	yes
Copper	µg/L	0.4	0.5	20	5.000	yes
Iron	µg/L	3200	3200	20	100.000	yes
Lead	µg/L	2.1	2.1	20	1.000	yes
Lithium	µg/L	9.1	9.1	20	10.000	yes
Manganese	µg/L	140	130	20	1.000	yes
Molybdenum	µg/L	3.8	3.8	20	0.200	yes
Nickel	µg/L	0.2	0.2	20	10.000	yes
Selenium	µg/L	<0.2	<0.2	20	5.000	yes
Silver	µg/L	<0.01	<0.01	20	0.100	yes
Strontium	µg/L	660	660	20	10.000	yes
Tellurium	µg/L	<0.05	<0.05	20	0.500	yes
Thallium	µg/L	<0.01	<0.01	20	0.100	yes
Thorium	µg/L	0.44	0.76	20	1.000	yes
Tin	µg/L	<0.1	0.1	20	1.000	yes
Titanium	µg/L	0.8	0.5	20	1.000	yes
Uranium	µg/L	0.10	0.10	20	1.000	yes
Vanadium	µg/L	<0.05	<0.05	20	0.400	yes
Zinc	µg/L	460	460	20	10.000	yes
Zirconium	µg/L	0.3	0.4	20	1.000	yes

Date Acquired: September 01, 2017

Volatile Petroleum Hydrocarbons - Water

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
VPHw (VHw6-10 minus)	ng	0	-50	50	yes
VHw6-10	ng	0	-50	50	yes

Date Acquired: September 01, 2017

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
VHw6-10	ng	111.73	75	125	yes

Date Acquired: September 01, 2017

Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
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Quality Control

Bill To: YTG DOE - Water Resources	Project ID: YOWN	Lot ID: 1223968
PO Box 2703	Project Name: Campground Well Sampling	Control Number:
Whitehorse, YT, Canada	Project Location:	Date Received: Aug 31, 2017
Y1A 2C6	LSD:	Date Reported: Sep 7, 2017
Attn: Accounts Payable	P.O.: C00037999	Report Number: 2218849
Sampled By: JDM	Proj. Acct. code:	
Company: YG-Environmental		

Volatile Petroleum Hydrocarbons - Water

- Continued

Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
VPHw (VHw6-10 minus)	µg/L	<50	<50	20	100	yes
VHw6-10	µg/L	<50	<50	20	100	yes
Date Acquired:	September 01, 2017					
Matrix Spike	Units	% Recovery	Lower Limit	Upper Limit		Passed QC
VHw6-10	µg/L	90	75	125		yes
Date Acquired:	September 01, 2017					

Methodology and Notes

Bill To: YTG DOE - Water Resources PO Box 2703 Whitehorse, YT, Canada Y1A 2C6	Project ID: YOWN Project Name: Campground Well Sampling Project Location: LSD: P.O.: C00037999 Proj. Acct. code:	Lot ID: 1223968 Control Number: Date Received: Aug 31, 2017 Date Reported: Sep 7, 2017 Report Number: 2218849
Attn: Accounts Payable Sampled By: JDM Company: YG-Environmental		

Method of Analysis

Method Name	Reference	Method	Date Analysis Started	Location
Alk, pH, EC, Turb in water (Surrey)	APHA	* Alkalinity - Titration Method, 2320 B	05-Sep-17	Exova Surrey
Ammonia-N in Water (Surrey)	APHA	* Flow Injection Analysis, 4500-NH3 H	05-Sep-17	Exova Surrey
Anions by IEC in water (Surrey)	APHA	* Ion Chromatography with Chemical Suppression of Eluent Cond., 4110 B	01-Sep-17	Exova Surrey
Anions by IEC in water (Surrey)	APHA	* Single-Column Ion Chromatography with Electronic Suppression, 4110 C	01-Sep-17	Exova Surrey
BTEX-VPH - Water (MS) (Surrey)	B.C.M.O.E	* Volatile Hydrocarbons in Waters by GC/FID (April, 2007), CSR	01-Sep-17	Exova Surrey
BTEX-VPH - Water (MS) (Surrey)	BCELM	* Volatile Hydrocarbons in Water by GC/FID, VH Water	01-Sep-17	Exova Surrey
Carbon Inorganic (Dissolved) in water(DIC)	APHA	High-Temperature Combustion Method, 5310 B	05-Sep-17	Exova Edmonton
Carbon Inorganic (Total) in water (TIC)	APHA	High-Temperature Combustion Method, 5310 B	05-Sep-17	Exova Edmonton
Carbon Organic (Dissolved) in water (DOC)	APHA	High-Temperature Combustion Method, 5310 B	05-Sep-17	Exova Edmonton
Carbon Organic (Total) in water (TOC)	APHA	High-Temperature Combustion Method, 5310 B	01-Sep-17	Exova Edmonton
Mercury Low Level (Dissolved) in water (Surrey)	EPA	* Mercury in Water by Cold Vapor Atomic Fluorescence Spectrometry, 245.7	05-Sep-17	Exova Surrey
Metals SemiTrace (Dissolved) in water (Surrey)	US EPA	* Metals & Trace Elements by ICP-AES, 6010C	01-Sep-17	Exova Surrey
Metals SemiTrace (Total) in Water (Surrey)	US EPA	* Metals & Trace Elements by ICP-AES, 6010C	01-Sep-17	Exova Surrey
Phosphorus - total by Smartchem (Surrey)	APHA	* Persulfate digestion method, 4500-P B5	01-Sep-17	Exova Surrey
Total and Kjeldahl Nitrogen (Total) in Water	ISO	* Water Quality - Determination of nitrogen, ISO/TR 11905-2	01-Sep-17	Exova Edmonton
Trace Metals (dissolved) in Water (Surrey)	US EPA	* Determination of Trace Elements in Waters and Wastes by ICP-MS, 200.8	01-Sep-17	Exova Surrey
Trace Metals (Total) in Water (Surrey)	US EPA	* Determination of Trace Elements in Waters and Wastes by ICP-MS, 200.8	01-Sep-17	Exova Surrey

* Reference Method Modified

References

APHA	Standard Methods for the Examination of Water and Wastewater
B.C.M.O.E	B.C. Ministry of Environment
BCELM	B.C. Environmental Laboratory Manual
EPA	Environmental Protection Agency Test Methods - US
ISO	International Organization for Standardization
US EPA	US Environmental Protection Agency Test Methods

Methodology and Notes

Bill To: YTG DOE - Water Resources	Project ID: YOWN	Lot ID: 1223968
PO Box 2703	Project Name: Campground Well Sampling	Control Number:
Whitehorse, YT, Canada	Project Location:	Date Received: Aug 31, 2017
Y1A 2C6	LSD:	Date Reported: Sep 7, 2017
Attn: Accounts Payable	P.O.: C00037999	Report Number: 2218849
Sampled By: JDM	Proj. Acct. code:	
Company: YG-Environmental		

Comments:

- Reduction of analytical volume was necessary for Metals analysis to bring results within the analytical range for samples #1223968-2 through 7. Detection limits are adjusted accordingly.

Please direct any inquiries regarding this report to our Client Services Group or to the Operations Manager at the coordinates indicated at the top left of this page.

Results relate only to samples as submitted.

The test report shall not be reproduced except in full, without the written approval of the laboratory.

Report Transmission Cover Page

Bill To: YTG DOE - Water Resources	Project ID: YOWN	Lot ID: 1239472
PO Box 2703	Project Name: YOWN	Control Number:
Whitehorse, YT, Canada	Project Location: Klondike CG	Date Received: Nov 15, 2017
Y1A 2C6	LSD:	Date Reported: Nov 21, 2017
Attn: Accounts Payable	P.O.: C00037999	Report Number: 2243457
Sampled By: Norbert Botca	Proj. Acct. code:	
Company: YG-Environment		

Contact	Company	Address
Holly Goulding	YTG DOE - Water Resources	202, 419 Range Road Whitehorse, YT Y1A 3V1 Phone: (867) 456-6583 Fax: (867) 667-3194 Email: holly.goulding@gov.yk.ca

Delivery	Format	Deliverables
Email - Merge Reports	PDF	COC / Test Report
Email - Single Report	EQWin	Test Report
Email - Single Report	PDF	Invoice

John Miller	YTG DOE - Water Resources	202, 419 Range Road Whitehorse, YT Y1A 3V1 Phone: (867) 667-3104 Fax: (867) 667-3194 Email: john.miller@gov.yk.ca
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Delivery	Format	Deliverables
Email - Multiple Reports By Lot	EQWin	Test Report
Email - Multiple Reports By Lot	PDF	COC / Test Report
Email - Single Report	PDF	COA
Email - Single Report	PDF	COR
Email - Single Report	PDF	Invoice

Norbert Botca	YTG DOE - Water Resources	203, 1191 Front Street Whitehorse, YT Y1A 0K5 Phone: (867) 667-3512 Fax: (867) 667-3194 Email: norbert.botca@gov.yk.ca
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Delivery	Format	Deliverables
Email - Multiple Reports By Lot	EQWin	Test Report
Email - Multiple Reports By Lot	PDF	COC / Test Report
Email - Single Report	PDF	COA
Email - Single Report	PDF	COR
Email - Single Report	PDF	Invoice

Notes To Clients:

- Nov 21, 2017 - Sample 1239472-1; 5921216: Reduction of analytical volume was necessary for TP analysis due to matrix effects in sample # 1239472-1. Detection limits are adjusted accordingly.

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Analytical Report

Bill To: YTG DOE - Water Resources	Project ID: YOWN	Lot ID: 1239472
PO Box 2703	Project Name: YOWN	Control Number:
Whitehorse, YT, Canada	Project Location: Klondike CG	Date Received: Nov 15, 2017
Y1A 2C6	LSD:	Date Reported: Nov 21, 2017
Attn: Accounts Payable	P.O.: C00037999	Report Number: 2243457
Sampled By: Norbert Botca	Proj. Acct. code:	
Company: YG-Environment		

Reference Number 1239472-1
Sample Date Nov 08, 2017
Sample Time 16:55
Sample Location
Sample Description YOWN-1608 /
 2017204 / 7 °C / B

Matrix Water

Analyte	Units	Results	Results	Results	Nominal Detection Limit
Inorganic Nonmetallic Parameters					
Nitrogen	Total	mg/L	3.8		0.06
Organic Carbon	Total Nonpurgeable	mg/L	36		0.5
Organic Carbon	Dissolved Nonpurgeable	mg/L	0.9		0.5
Inorganic carbon	Total	mg/L	32		0.5
Inorganic carbon	Dissolved	mg/L	29		0.5
Ammonia - N		mg/L	0.02		0.01
Phosphorus	Total	mg/L	1.31		0.003
Metals Dissolved					
Titanium	Dissolved	mg/L	0.004		0.002
Mercury	Dissolved	mg/L	<0.00001		0.00001
Physical and Aggregate Properties					
Solids	Total Dissolved	mg/L	200		5
Routine Water					
pH - Holding Time			Exceeded		
pH	at 25 °C		7.13		
Electrical Conductivity		µS/cm at 25 °C	283		1
Calcium	Dissolved	mg/L	44		0.01
Magnesium	Dissolved	mg/L	12		0.02
Potassium	Dissolved	mg/L	0.78		0.04
Silicon	Dissolved	mg/L	3.2		0.005
Sodium	Dissolved	mg/L	2.7		0.1
Sulfur	Dissolved	mg/L	23		0.02
Bicarbonate		mg/L	108		5
Carbonate		mg/L	<6		6
Hydroxide		mg/L	<5		5
P-Alkalinity	as CaCO3	mg/L	<5		5
T-Alkalinity	as CaCO3	mg/L	88		5
Chloride	Dissolved	mg/L	0.79		0.05
Fluoride	Dissolved	mg/L	0.07		0.01
Nitrate - N	Dissolved	mg/L	0.18		0.01
Nitrite - N	Dissolved	mg/L	<0.01		0.01
Sulfate (SO4)	Dissolved	mg/L	73.7		0.1
Hardness	as CaCO3 (dissolved)	mg/L	160		5
Trace Metals Dissolved					
Digestion	Dissolved		Field filtered and Pres Dissol		
Titanium	Dissolved	mg/L	0.004		0.002
Aluminum	Dissolved	mg/L	<0.001		0.001

Analytical Report

Bill To: YTG DOE - Water Resources	Project ID: YOWN	Lot ID: 1239472
PO Box 2703	Project Name: YOWN	Control Number:
Whitehorse, YT, Canada	Project Location: Klondike CG	Date Received: Nov 15, 2017
Y1A 2C6	LSD:	Date Reported: Nov 21, 2017
Attn: Accounts Payable	P.O.: C00037999	Report Number: 2243457
Sampled By: Norbert Botca	Proj. Acct. code:	
Company: YG-Environment		

Reference Number 1239472-1
Sample Date Nov 08, 2017
Sample Time 16:55
Sample Location
Sample Description YOWN-1608 /
 2017204 / 7 °C / B

Matrix Water

Analyte	Units	Results	Results	Results	Nominal Detection Limit
Trace Metals Dissolved - Continued					
Antimony	Dissolved	mg/L	0.00013		0.00002
Arsenic	Dissolved	mg/L	<0.0001		0.0001
Barium	Dissolved	mg/L	0.0665		0.0001
Beryllium	Dissolved	mg/L	<0.00005		0.00005
Bismuth	Dissolved	mg/L	<0.0001		0.0001
Boron	Dissolved	mg/L	0.005		0.002
Cadmium	Dissolved	mg/L	0.00023		0.00001
Chromium	Dissolved	mg/L	<0.00005		0.00005
Cobalt	Dissolved	mg/L	0.00004		0.00002
Copper	Dissolved	mg/L	0.00099		0.0005
Iron	Dissolved	mg/L	0.082		0.002
Lead	Dissolved	mg/L	0.00001		0.00001
Lithium	Dissolved	mg/L	0.0016		0.0005
Manganese	Dissolved	mg/L	0.010		0.001
Molybdenum	Dissolved	mg/L	0.00025		0.00002
Nickel	Dissolved	mg/L	0.0005		0.0002
Selenium	Dissolved	mg/L	0.0006		0.0002
Silver	Dissolved	mg/L	<0.00001		0.00001
Strontium	Dissolved	mg/L	0.1995		0.0001
Tellurium	Dissolved	mg/L	<0.00005		0.00005
Thallium	Dissolved	mg/L	<0.00001		0.00001
Thorium	Dissolved	mg/L	<0.00005		0.00005
Tin	Dissolved	mg/L	0.0018		0.0001
Uranium	Dissolved	mg/L	0.00034		0.00001
Vanadium	Dissolved	mg/L	<0.00005		0.00005
Zinc	Dissolved	mg/L	0.0142		0.0005
Zirconium	Dissolved	mg/L	<0.0001		0.0001

Approved by: 
 Mathieu Simoneau
 Operations Manager

Quality Control

Bill To: YTG DOE - Water Resources PO Box 2703 Whitehorse, YT, Canada Y1A 2C6 Attn: Accounts Payable	Project ID: YOWN Project Name: YOWN Project Location: Klondike CG LSD: P.O.: C00037999 Proj. Acct. code:	Lot ID: 1239472 Control Number: Date Received: Nov 15, 2017 Date Reported: Nov 21, 2017 Report Number: 2243457
Sampled By: Norbert Botca Company: YG-Environment		

Inorganic Nonmetallic Parameters

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
Ammonium - N	µg/L	-13.029	-110.00	10.00	yes
Phosphorus	mg/L	0	-0.003	0.003	yes
Date Acquired: November 17, 2017					
Organic Carbon	mg/L	0.1696	-0.5	0.5	yes
Inorganic carbon	mg/L	0.18	-0.5	0.5	yes
Date Acquired: November 16, 2017					

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
Ammonium - N	µg/L	97.21	85	115	yes
Phosphorus	mg/L	99.74	90	110	yes
Date Acquired: November 17, 2017					
Ammonium - N	µg/L	127.65	70	130	yes
Phosphorus	mg/L	102.00	80	120	yes
Date Acquired: November 17, 2017					

Client Sample Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Nitrogen	mg/L	3.8	3.8	10	0.06	yes
Organic Carbon	mg/L	36	36	10	1.0	yes
Inorganic carbon	mg/L	14.4	14.3	10	1.0	yes
Date Acquired: November 16, 2017						
Ammonia - N	mg/L	0.56	0.56	20	50.00	yes
Date Acquired: November 17, 2017						

Control Sample	Units	Measured	Lower Limit	Upper Limit	Passed QC
Organic Carbon	mg/L	<0.5	-0.5	0.5	yes
Date Acquired: November 16, 2017					
Organic Carbon	mg/L	120	109.1	139.7	yes
Inorganic carbon	mg/L	45.1	38.5	53.5	yes
Date Acquired: November 16, 2017					
Organic Carbon	mg/L	14.9	12.8	17.2	yes
Inorganic carbon	mg/L	16.1	14.1	18.3	yes
Date Acquired: November 16, 2017					
Organic Carbon	mg/L	2.6	2.4	4.0	yes
Inorganic carbon	mg/L	3.6	2.7	4.1	yes
Date Acquired: November 16, 2017					
Phosphorus	mg/L	0.419	0.389	0.503	yes
Date Acquired: November 17, 2017					

Metals Dissolved

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
Mercury	ng/L	-4	-9.99	9.99	yes
Date Acquired: November 17, 2017					
Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
Mercury	ng/L	92.40	90	110	yes
Date Acquired: November 17, 2017					

Quality Control

Bill To: YTG DOE - Water Resources	Project ID: YOWN	Lot ID: 1239472
PO Box 2703	Project Name: YOWN	Control Number:
Whitehorse, YT, Canada	Project Location: Klondike CG	Date Received: Nov 15, 2017
Y1A 2C6	LSD:	Date Reported: Nov 21, 2017
Attn: Accounts Payable	P.O.: C00037999	Report Number: 2243457
Sampled By: Norbert Botca	Proj. Acct. code:	
Company: YG-Environment		

Metals Dissolved - Continued

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC	
Titanium	mg/L	107.42	90	110	yes	
Date Acquired: November 15, 2017						
Certified Reference Material	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Mercury	µg/L	0.03	0.04	0.02	0.05	yes
Date Acquired: November 17, 2017						
Client Sample Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Titanium	mg/L	0.004	0.004	30	0.012	yes
Date Acquired: November 15, 2017						
Mercury	µg/L	<0.01	<0.01	20	0.05	yes
Date Acquired: November 17, 2017						

Physical and Aggregate Properties

Client Sample Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Solids	mg/L	200	180	30	50.000	yes
Date Acquired: November 17, 2017						
Control Sample	Units	Measured	Lower Limit	Upper Limit	Passed QC	
Solids	mg/L	510	412.000	610.600	yes	
Date Acquired: November 17, 2017						
Solids	mg/L	36	18.000	37.200	yes	
Date Acquired: November 17, 2017						
Solids	mg/L	<5	-5.001	5.001	yes	
Date Acquired: November 17, 2017						

Routine Water

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
Calcium	mg/L	0.00474061	-0.010	0.010	yes
Magnesium	mg/L	-0.00397798	-0.020	0.020	yes
Potassium	mg/L	-0.0113058	-0.040	0.040	yes
Sodium	mg/L	0.00433857	-0.099	0.099	yes
Date Acquired: November 15, 2017					
Chloride	mg/L	0.00921881	-0.201	0.201	yes
Fluoride	mg/L	0	-0.099	0.099	yes
Nitrate - N	mg/L	0.00255008	-0.010	0.010	yes
Nitrite - N	mg/L	0	-0.099	0.099	yes
Sulfate (SO4)	mg/L	0	-0.990	0.990	yes
Date Acquired: November 15, 2017					
Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
Calcium	mg/L	109.04	90	110	yes
Magnesium	mg/L	108.21	90	110	yes
Potassium	mg/L	108.48	90	110	yes
Sodium	mg/L	107.08	90	110	yes
Date Acquired: November 15, 2017					

Quality Control

Bill To: YTG DOE - Water Resources	Project ID: YOWN	Lot ID: 1239472
PO Box 2703	Project Name: YOWN	Control Number:
Whitehorse, YT, Canada	Project Location: Klondike CG	Date Received: Nov 15, 2017
Y1A 2C6	LSD:	Date Reported: Nov 21, 2017
Attn: Accounts Payable	P.O.: C00037999	Report Number: 2243457
Sampled By: Norbert Botca	Proj. Acct. code:	
Company: YG-Environment		

Routine Water - Continued

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
Chloride	mg/L	101.28	85	115	yes
Fluoride	mg/L	103.03	85	115	yes
Nitrate - N	mg/L	101.42	85	115	yes
Nitrite - N	mg/L	98.78	90	110	yes
Sulfate (SO4)	mg/L	104.39	85	115	yes

Date Acquired: November 15, 2017

Chloride	mg/L	101.06	90	110	yes
Fluoride	mg/L	97.62	89	109	yes
Nitrate - N	mg/L	100.89	88	108	yes
Nitrite - N	mg/L	101.26	90	118	yes
Sulfate (SO4)	mg/L	104.44	90	110	yes

Date Acquired: November 15, 2017

Calcium	mg/L	109.52	90	110	yes
Magnesium	mg/L	109.48	90	110	yes
Potassium	mg/L	108.96	90	110	yes
Sodium	mg/L	107.71	90	110	yes

Date Acquired: November 15, 2017

Certified Reference Material	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
T-Alkalinity	mg/L	10	10	8	12	yes

Date Acquired: November 17, 2017

Client Sample Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Calcium	mg/L	40	39	30	1.000	yes
Magnesium	mg/L	5.2	5.2	30	1.000	yes
Potassium	mg/L	1.6	1.6	30	1.000	yes
Sodium	mg/L	15	15	30	1.000	yes
Sulfur	mg/L	5.0	4.8	30	3.000	yes

Date Acquired: November 15, 2017

pH		7.15	7.04	10		yes
Electrical Conductivity	dS/m at 25 °C	0.022	0.022	10	0.005	yes
Bicarbonate	mg/L	<5	<5	10	10	yes
Hydroxide	mg/L	<5	<5	10	10	yes
P-Alkalinity	mg/L	<5	<5	10	5	yes
T-Alkalinity	mg/L	8	<5	10	5	yes
Chloride	mg/L	2.3	2.2	20	0.250	yes
Fluoride	mg/L	0.98	0.98	20	0.050	yes
Nitrate - N	mg/L	<0.1	<0.1	20	0.050	yes
Nitrite - N	mg/L	<0.1	<0.1	20	0.050	yes
Sulfate (SO4)	mg/L	4	4	20	0.500	yes

Date Acquired: November 15, 2017

Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Chloride	mg/L	1.31	1.31	6	0.010	yes
Nitrate - N	mg/L	0.30	0.30	12	0.050	yes
Sulfate (SO4)	mg/L	4.7	4.7	6	0.010	yes

Date Acquired: November 15, 2017

Quality Control

Bill To: YTG DOE - Water Resources	Project ID: YOWN	Lot ID: 1239472
PO Box 2703	Project Name: YOWN	Control Number:
Whitehorse, YT, Canada	Project Location: Klondike CG	Date Received: Nov 15, 2017
Y1A 2C6	LSD:	Date Reported: Nov 21, 2017
Attn: Accounts Payable	P.O.: C00037999	Report Number: 2243457
Sampled By: Norbert Botca	Proj. Acct. code:	
Company: YG-Environment		

Routine Water - Continued

Control Sample	Units	Measured	Lower Limit	Upper Limit	Passed QC
pH		10.02	9.17	10.81	yes
Electrical Conductivity	µS/cm at 25 °C	228	194	250	yes
P-Alkalinity	mg/L	50	7	55	yes
T-Alkalinity	mg/L	104	98	113	yes
Date Acquired: November 17, 2017					
pH		4.00	3.88	4.12	yes
Date Acquired: November 17, 2017					
pH		7.98	7.88	8.12	yes
Date Acquired: November 17, 2017					
Electrical Conductivity	µS/cm at 25 °C	1372	1323	1503	yes
Date Acquired: November 17, 2017					

Trace Metals Dissolved

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
Aluminum	µg/L	0.0142474	-0.990	0.990	yes
Antimony	µg/L	0.00806942	-0.020	0.020	yes
Arsenic	µg/L	0.00175753	-0.099	0.099	yes
Barium	µg/L	-0.00398975	-0.099	0.099	yes
Beryllium	µg/L	0.000566178	-0.050	0.050	yes
Boron	µg/L	1.32543	-2.001	2.001	yes
Cadmium	µg/L	0.00414892	-0.010	0.010	yes
Chromium	µg/L	0.00308984	-0.050	0.050	yes
Cobalt	µg/L	0.00303737	-0.020	0.020	yes
Copper	µg/L	-0.00146932	-0.050	0.050	yes
Iron	µg/L	-0.524504	-2.001	2.001	yes
Lead	µg/L	-0.00216729	-0.010	0.010	yes
Lithium	µg/L	0.0116949	-0.500	0.500	yes
Manganese	µg/L	-0.0436375	-0.990	0.990	yes
Molybdenum	µg/L	0	-0.020	0.020	yes
Nickel	µg/L	0.0381365	-0.200	0.200	yes
Selenium	µg/L	0.0210011	-0.200	0.200	yes
Silver	µg/L	0.000454369	-0.009	0.009	yes
Thallium	µg/L	0.00663748	-0.010	0.010	yes
Tin	µg/L	-0.0430386	-0.099	0.099	yes
Vanadium	µg/L	0.0114693	-0.050	0.050	yes
Zinc	µg/L	0	-0.500	0.500	yes

Date Acquired: November 15, 2017

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
Aluminum	µg/L	99.01	80	120	yes
Antimony	µg/L	91.19	90	110	yes
Arsenic	µg/L	94.11	90	110	yes
Barium	µg/L	100.20	90	110	yes
Beryllium	µg/L	96.44	90	110	yes
Boron	µg/L	95.46	70	130	yes

Quality Control

Bill To: YTG DOE - Water Resources	Project ID: YOWN	Lot ID: 1239472
PO Box 2703	Project Name: YOWN	Control Number:
Whitehorse, YT, Canada	Project Location: Klondike CG	Date Received: Nov 15, 2017
Y1A 2C6	LSD:	Date Reported: Nov 21, 2017
Attn: Accounts Payable	P.O.: C00037999	Report Number: 2243457
Sampled By: Norbert Botca	Proj. Acct. code:	
Company: YG-Environment		

Trace Metals Dissolved - Continued

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
Cadmium	µg/L	98.93	90	110	yes
Chromium	µg/L	95.84	90	110	yes
Cobalt	µg/L	91.87	90	110	yes
Copper	µg/L	93.86	90	110	yes
Lead	µg/L	97.51	90	110	yes
Lithium	µg/L	95.11	90	110	yes
Molybdenum	µg/L	93.36	90	110	yes
Nickel	µg/L	95.09	90	110	yes
Selenium	µg/L	93.89	90	110	yes
Silver	µg/L	98.05	90	110	yes
Tin	µg/L	100.49	90	110	yes
Vanadium	µg/L	96.98	90	110	yes
Zinc	µg/L	96.61	90	110	yes

Date Acquired: November 15, 2017

Aluminum	µg/L	96.78	80	120	yes
Antimony	µg/L	90.55	90	110	yes
Arsenic	µg/L	93.94	90	110	yes
Barium	µg/L	100.31	90	110	yes
Beryllium	µg/L	95.39	90	110	yes
Boron	µg/L	97.64	80	120	yes
Cadmium	µg/L	96.12	90	110	yes
Chromium	µg/L	97.17	90	110	yes
Cobalt	µg/L	96.47	90	110	yes
Copper	µg/L	91.68	90	110	yes
Lead	µg/L	92.71	90	110	yes
Lithium	µg/L	96.70	90	110	yes
Molybdenum	µg/L	90.75	90	110	yes
Nickel	µg/L	91.07	90	110	yes
Selenium	µg/L	93.17	90	110	yes
Silver	µg/L	99.22	90	110	yes
Thallium	µg/L	96.56	90	110	yes
Tin	µg/L	98.99	90	110	yes
Titanium	mg/L	107.62	90	110	yes
Vanadium	µg/L	95.48	90	110	yes
Zinc	µg/L	98.17	90	110	yes

Date Acquired: November 15, 2017

Client Sample Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Aluminum	µg/L	2	3	20	20.000	yes
Antimony	µg/L	158.75	164.43	20	1.000	yes
Arsenic	µg/L	55.4	53.8	20	1.000	yes
Barium	µg/L	6.1	6.2	20	5.000	yes
Beryllium	µg/L	<0.05	<0.05	20	1.000	yes
Boron	µg/L	75	75	20	5.000	yes
Cadmium	µg/L	0.17	0.17	20	0.500	yes

Quality Control

Bill To: YTG DOE - Water Resources	Project ID: YOWN	Lot ID: 1239472
PO Box 2703	Project Name: YOWN	Control Number:
Whitehorse, YT, Canada	Project Location: Klondike CG	Date Received: Nov 15, 2017
Y1A 2C6	LSD:	Date Reported: Nov 21, 2017
Attn: Accounts Payable	P.O.: C00037999	Report Number: 2243457
Sampled By: Norbert Botca	Proj. Acct. code:	
Company: YG-Environment		

Trace Metals Dissolved - Continued

Client Sample	Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Chromium		µg/L	<0.05	<0.05	20	5.000	yes
Cobalt		µg/L	0.05	0.04	20	0.500	yes
Copper		µg/L	<0.5	<0.5	20	5.000	yes
Iron		µg/L	3	<2	20	50.000	yes
Lead		µg/L	<0.01	<0.01	20	0.500	yes
Lithium		µg/L	3.3	3.2	20	5.000	yes
Manganese		µg/L	72	71	20	0.500	yes
Molybdenum		µg/L	655.97	650.80	20	0.500	yes
Nickel		µg/L	<0.2	<0.2	20	5.000	yes
Selenium		µg/L	0.4	0.4	20	0.500	yes
Silver		µg/L	<0.01	<0.01	20	0.500	yes
Thallium		µg/L	<0.01	<0.01	20	0.100	yes
Tin		µg/L	<0.1	<0.1	20	0.500	yes
Vanadium		µg/L	2.60	2.50	20	0.500	yes
Zinc		µg/L	1.8	1.7	20	5.000	yes

Date Acquired: November 15, 2017

Methodology and Notes

Bill To: YTG DOE - Water Resources	Project ID: YOWN	Lot ID: 1239472
PO Box 2703	Project Name: YOWN	Control Number:
Whitehorse, YT, Canada	Project Location: Klondike CG	Date Received: Nov 15, 2017
Y1A 2C6	LSD:	Date Reported: Nov 21, 2017
Attn: Accounts Payable	P.O.: C00037999	Report Number: 2243457
Sampled By: Norbert Botca	Proj. Acct. code:	
Company: YG-Environment		

Method of Analysis

Method Name	Reference	Method	Date Analysis Started	Location
Alk, pH, EC, Turb in water (Surrey)	APHA	* Alkalinity - Titration Method, 2320 B	Nov 17, 2017	Exova Surrey
Alk, pH, EC, Turb in water (Surrey)	APHA	* Conductivity, 2510 B	Nov 17, 2017	Exova Surrey
Alk, pH, EC, Turb in water (Surrey)	APHA	* pH - Electrometric Method, 4500-H+ B	Nov 17, 2017	Exova Surrey
Ammonia-N in Water (Surrey)	APHA	* Flow Injection Analysis, 4500-NH3 H	Nov 17, 2017	Exova Surrey
Anions by IEC in water (Surrey)	APHA	* Ion Chromatography with Chemical Suppression of Eluent Cond., 4110 B	Nov 17, 2017	Exova Surrey
Carbon Inorganic (Dissolved) in water(DIC)	APHA	High-Temperature Combustion Method, 5310 B	Nov 16, 2017	Exova Edmonton
Carbon Inorganic (Total) in water (TIC)	APHA	High-Temperature Combustion Method, 5310 B	Nov 16, 2017	Exova Edmonton
Carbon Organic (Dissolved) in water (DOC)	APHA	High-Temperature Combustion Method, 5310 B	Nov 17, 2017	Exova Edmonton
Carbon Organic (Total) in water (TOC)	APHA	High-Temperature Combustion Method, 5310 B	Nov 16, 2017	Exova Edmonton
Mercury Low Level (Dissolved) in water (Surrey)	EPA	* Mercury in Water by Cold Vapor Atomic Fluorescence Spectrometry, 245.7	Nov 17, 2017	Exova Surrey
Metals SemiTrace (Dissolved) in water (Surrey)	US EPA	* Metals & Trace Elements by ICP-AES, 6010C	Nov 16, 2017	Exova Surrey
Phosphorus - total by Smartchem (Surrey)	APHA	* Persulfate digestion method, 4500-P B5	Nov 17, 2017	Exova Surrey
Solids Dissolved (Total, Fixed and Volatile) - Surrey	APHA	* Total Dissolved Solids Dried at 180 C, 2540 C	Nov 17, 2017	Exova Surrey
Total and Kjeldahl Nitrogen (Total) in Water	ISO	* Water Quality - Determination of nitrogen, ISO/TR 11905-2	Nov 17, 2017	Exova Edmonton
Trace Metals (dissolved) in Water (Surrey)	US EPA	* Determination of Trace Elements in Waters and Wastes by ICP-MS, 200.8	Nov 16, 2017	Exova Surrey

* Reference Method Modified

References

APHA	Standard Methods for the Examination of Water and Wastewater
EPA	Environmental Protection Agency Test Methods - US
ISO	International Organization for Standardization
US EPA	US Environmental Protection Agency Test Methods

Comments:

- Nov 21, 2017 - Sample 1239472-1; 5921216: Reduction of analytical volume was necessary for TP analysis due to matrix effects in sample # 1239472-1. Detection limits are adjusted accordingly.

Methodology and Notes

Bill To:	YTG DOE - Water Resources	Project ID:	YOWN	Lot ID:	1239472
	PO Box 2703	Project Name:	YOWN	Control Number:	
	Whitehorse, YT, Canada	Project Location:	Klondike CG	Date Received:	Nov 15, 2017
	Y1A 2C6	LSD:		Date Reported:	Nov 21, 2017
Attn:	Accounts Payable	P.O.:	C00037999	Report Number:	2243457
Sampled By:	Norbert Botca	Proj. Acct. code:			
Company:	YG-Environment				

Please direct any inquiries regarding this report to our Client Services Group or to the Operations Manager at the coordinates indicated at the top left of this page.

Results relate only to samples as submitted.

The test report shall not be reproduced except in full, without the written approval of the laboratory.

Bad

Low

TKW

MUT HCL

MUT Y

DM

DHG

Report Transmission Cover Page

Bill To: YTG DOE - Water Resources	Project ID: YOWN	Lot ID: 1231069
PO Box 2703	Project Name: YOWN	Control Number:
Whitehorse, YT, Canada	Project Location: Faro	Date Received: Oct 5, 2017
Y1A 2C6	LSD:	Date Reported: Oct 12, 2017
Attn: Accounts Payable	P.O.: C00037999	Report Number: 2228556
Sampled By: Norbert Botca	Proj. Acct. code:	
Company: YG-Environment		

Contact	Company	Address
Holly Goulding	YTG DOE - Water Resources	202, 419 Range Road Whitehorse, YT Y1A 3V1 Phone: (867) 456-6583 Fax: (867) 667-3194 Email: holly.goulding@gov.yk.ca

Delivery	Format	Deliverables
Email - Merge Reports	PDF	COC / Test Report
Email - Single Report	EQWin	Test Report
Email - Single Report	PDF	Invoice

John Miller	YTG DOE - Water Resources	202, 419 Range Road Whitehorse, YT Y1A 3V1 Phone: (867) 667-3104 Fax: (867) 667-3194 Email: john.miller@gov.yk.ca
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Delivery	Format	Deliverables
Email - Multiple Reports By Lot	EQWin	Test Report
Email - Multiple Reports By Lot	PDF	COC / Test Report
Email - Single Report	PDF	COA
Email - Single Report	PDF	COR
Email - Single Report	PDF	Invoice

Norbert Botca	YTG DOE - Water Resources	203, 1191 Front Street Whitehorse, YT Y1A 0K5 Phone: (867) 667-3512 Fax: (867) 667-3194 Email: norbert.botca@gov.yk.ca
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Delivery	Format	Deliverables
Email - Multiple Reports By Lot	EQWin	Test Report
Email - Multiple Reports By Lot	PDF	COC / Test Report
Email - Single Report	PDF	COA
Email - Single Report	PDF	Invoice

Tyler Williams	YTG DOE - Water Resources	202, 419 Range Road Whitehorse, YT Y1A 3V1 Phone: (867) 667-3233 Fax: (867) 667-3194 Email: Tyler.Williams@gov.yk.ca
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Delivery	Format	Deliverables
Email - Multiple Reports By Lot	EQWin	Test Report
Email - Multiple Reports By Lot	PDF	COC / Test Report

Notes To Clients:

- Oct 11, 2017 - Sample 1231069-1; 5864669: Reduction of analytical volume was necessary for anions due to matrix effects in sample 1231069-1. Detection limits are adjusted accordingly.
- Oct 11, 2017 - Reduction of analytical volume was necessary for metals analysis to bring results within the analytical range for sample #1231069-1. Detection limits are adjusted accordingly.

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Analytical Report

Bill To: YTG DOE - Water Resources	Project ID: YOWN	Lot ID: 1231069
PO Box 2703	Project Name: YOWN	Control Number:
Whitehorse, YT, Canada	Project Location: Faro	Date Received: Oct 5, 2017
Y1A 2C6	LSD:	Date Reported: Oct 12, 2017
Attn: Accounts Payable	P.O.: C00037999	Report Number: 2228556
Sampled By: Norbert Botca	Proj. Acct. code:	
Company: YG-Environment		

	Reference Number	1231069-1	1231069-2	1231069-3		
	Sample Date	Oct 02, 2017	Oct 02, 2017	Oct 02, 2017		
	Sample Time	14:40	16:00	16:45		
	Sample Location					
	Sample Description	YOWN-1603 / 2017244 / 10.9 °C / B	YOWN-0802 / 2017245 / 10.9 °C / B	YOWN-1602 / 2017246 / 10.9 °C / B		
	Matrix	Water	Water	Water		
Analyte	Units	Results	Results	Results	Nominal Detection Limit	
Inorganic Nonmetallic Parameters						
Nitrogen	Total	mg/L	0.11	<0.06	0.17	0.06
Organic Carbon	Total Nonpurgeable	mg/L	1.9	0.7	6.2	0.5
Organic Carbon	Dissolved Nonpurgeable	mg/L	1.6	0.7	5.1	0.5
Inorganic carbon	Total	mg/L	18	15	25	0.5
Inorganic carbon	Dissolved	mg/L	18	15	25	0.5
Ammonia - N		mg/L	0.04	0.03	0.04	0.01
Phosphorus	Total	mg/L	0.206	<0.003	0.062	0.003
Metals Dissolved						
Mercury	Dissolved	mg/L	<0.00001	<0.00001	<0.00001	0.00001
Physical and Aggregate Properties						
Solids	Total Dissolved	mg/L	490	84	160	5
Routine Water						
Digestion	Dissolved		Field filtered and Pres Dissol Exceeded	Field filtered and Pres Dissol Exceeded	Field filtered and Pres Dissol Exceeded	
pH - Holding Time						
pH	at 25 °C		7.52	8.11	8.29	
Electrical Conductivity		µS/cm at 25 °C	715	170	218	1
Calcium	Dissolved	mg/L	24	22	36	0.01
Magnesium	Dissolved	mg/L	64	11	23	0.02
Potassium	Dissolved	mg/L	6.4	2.0	1.3	0.04
Silicon	Dissolved	mg/L	0.30	0.82	2.4	0.005
Sodium	Dissolved	mg/L	9.8	3.7	3.6	0.1
Sulfur	Dissolved	mg/L	100	12	19	0.02
Bicarbonate		mg/L	97	89	126	5
Carbonate		mg/L	<6	<6	<6	6
Hydroxide		mg/L	<5	<5	<5	5
P-Alkalinity	as CaCO3	mg/L	<5	<5	<5	5
T-Alkalinity	as CaCO3	mg/L	80	73	103	5
Chloride	Dissolved	mg/L	2.5	0.31	0.91	0.05
Fluoride	Dissolved	mg/L	0.3	0.05	0.04	0.01
Nitrate - N	Dissolved	mg/L	<0.1	0.02	<0.01	0.01
Nitrite - N	Dissolved	mg/L	<0.1	<0.01	<0.01	0.01
Sulfate (SO4)	Dissolved	mg/L	305	19.1	22.8	0.1
Hardness	as CaCO3 (dissolved)	mg/L	320	101	186	5
Trace Metals Dissolved						
Digestion	Dissolved		Field filtered and Pres Dissol	Field filtered and Pres Dissol	Field filtered and Pres Dissol	

Analytical Report

Bill To: YTG DOE - Water Resources	Project ID: YOWN	Lot ID: 1231069
PO Box 2703	Project Name: YOWN	Control Number:
Whitehorse, YT, Canada	Project Location: Faro	Date Received: Oct 5, 2017
Y1A 2C6	LSD:	Date Reported: Oct 12, 2017
Attn: Accounts Payable	P.O.: C00037999	Report Number: 2228556
Sampled By: Norbert Botca	Proj. Acct. code:	
Company: YG-Environment		

	Reference Number	1231069-1	1231069-2	1231069-3		
	Sample Date	Oct 02, 2017	Oct 02, 2017	Oct 02, 2017		
	Sample Time	14:40	16:00	16:45		
	Sample Location					
	Sample Description	YOWN-1603 / 2017244 / 10.9 °C / B	YOWN-0802 / 2017245 / 10.9 °C / B	YOWN-1602 / 2017246 / 10.9 °C / B		
	Matrix	Water	Water	Water		
Analyte	Units	Results	Results	Results	Nominal Detection Limit	
Trace Metals Dissolved - Continued						
Titanium	Dissolved	mg/L	0.005	0.005	0.008	0.002
Aluminum	Dissolved	mg/L	<0.001	<0.001	<0.001	0.001
Antimony	Dissolved	mg/L	0.00008	0.00005	0.000098	0.00002
Arsenic	Dissolved	mg/L	<0.0001	<0.0001	<0.0001	0.0001
Barium	Dissolved	mg/L	0.0073	0.0300	0.0233	0.0001
Beryllium	Dissolved	mg/L	<0.00005	<0.00005	<0.00005	0.00005
Bismuth	Dissolved	mg/L	<0.0001	<0.0001	<0.0001	0.0001
Boron	Dissolved	mg/L	0.005	<0.002	0.004	0.002
Cadmium	Dissolved	mg/L	0.00001	<0.00001	<0.00001	0.00001
Chromium	Dissolved	mg/L	<0.00005	<0.00005	<0.00005	0.00005
Cobalt	Dissolved	mg/L	0.00007	<0.00002	0.00002	0.00002
Copper	Dissolved	mg/L	<0.0005	<0.0005	0.0007	0.0005
Iron	Dissolved	mg/L	5.77	0.978	0.476	0.002
Lead	Dissolved	mg/L	<0.00001	0.00001	0.00003	0.00001
Lithium	Dissolved	mg/L	0.0321	0.0022	0.0038	0.0005
Manganese	Dissolved	mg/L	0.112	0.077	0.052	0.001
Molybdenum	Dissolved	mg/L	0.00039	0.00067	0.00080	0.00002
Nickel	Dissolved	mg/L	<0.0002	<0.0002	0.0002	0.0002
Selenium	Dissolved	mg/L	<0.0002	<0.0002	0.0004	0.0002
Silver	Dissolved	mg/L	0.00001	<0.00001	<0.00001	0.00001
Strontium	Dissolved	mg/L	0.1633	0.1089	0.1271	0.0001
Tellurium	Dissolved	mg/L	<0.00005	<0.00005	<0.00005	0.00005
Thallium	Dissolved	mg/L	0.00001	<0.00001	<0.00001	0.00001
Thorium	Dissolved	mg/L	0.00036	0.00006	0.00006	0.00005
Tin	Dissolved	mg/L	<0.0001	<0.0001	0.0004	0.0001
Uranium	Dissolved	mg/L	0.00011	0.00021	0.00078	0.00001
Vanadium	Dissolved	mg/L	<0.00005	<0.00005	<0.00005	0.00005
Zinc	Dissolved	mg/L	0.0008	0.0010	0.0006	0.0005
Zirconium	Dissolved	mg/L	0.0003	<0.0001	<0.0001	0.0001

Approved by: 
 Mathieu Simoneau
 Operations Manager

Data have been validated by Analytical Quality Control and Exova's Integrated Data Validation System (IDVS).

Generation and distribution of the report, and approval by the digitized signature above, are performed through a secure and controlled automatic process.

Quality Control

Bill To: YTG DOE - Water Resources	Project ID: YOWN	Lot ID: 1231069
PO Box 2703	Project Name: YOWN	Control Number:
Whitehorse, YT, Canada	Project Location: Faro	Date Received: Oct 5, 2017
Y1A 2C6	LSD:	Date Reported: Oct 12, 2017
Attn: Accounts Payable	P.O.: C00037999	Report Number: 2228556
Sampled By: Norbert Botca	Proj. Acct. code:	
Company: YG-Environment		

Inorganic Nonmetallic Parameters

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
Ammonium - N	µg/L	-8.903	-110.00	10.00	yes
Phosphorus	mg/L	-0.003	-0.003	0.003	yes
Date Acquired: October 06, 2017					
Nitrogen	mg/L	0	-0.04	0.08	yes
Organic Carbon	mg/L	0.4903	-0.5	0.5	yes
Inorganic carbon	mg/L	0.213	-0.5	0.5	yes
Date Acquired: October 11, 2017					

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
Ammonium - N	µg/L	112.91	85	115	yes
Phosphorus	mg/L	100.96	90	110	yes
Date Acquired: October 06, 2017					
Ammonium - N	µg/L	82.33	70	130	yes
Phosphorus	mg/L	101.00	80	120	yes
Date Acquired: October 06, 2017					

Client Sample Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Nitrogen	mg/L	0.37	0.31	10	0.06	yes
Organic Carbon	mg/L	1.6	1.7	10	1.0	yes
Inorganic carbon	mg/L	18	18	10	1.0	yes
Date Acquired: October 11, 2017						
Ammonia - N	mg/L	40.4	40.2	20	50.00	yes
Date Acquired: October 06, 2017						

Control Sample	Units	Measured	Lower Limit	Upper Limit	Passed QC
Organic Carbon	mg/L	<0.5	-0.5	0.5	yes
Date Acquired: October 10, 2017					
Nitrogen	mg/L	131	103.74	137.28	yes
Organic Carbon	mg/L	116	112.1	136.6	yes
Inorganic carbon	mg/L	44.7	40.5	55.5	yes
Date Acquired: October 11, 2017					
Nitrogen	mg/L	15.4	13.27	16.93	yes
Organic Carbon	mg/L	15.1	12.8	17.2	yes
Inorganic carbon	mg/L	15.5	14.1	18.3	yes
Date Acquired: October 11, 2017					
Nitrogen	mg/L	1.14	0.89	1.25	yes
Organic Carbon	mg/L	3.4	2.4	4.0	yes
Inorganic carbon	mg/L	3.2	2.7	4.1	yes
Date Acquired: October 11, 2017					
Phosphorus	mg/L	0.441	0.389	0.503	yes
Date Acquired: October 06, 2017					

Metals Dissolved

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
Mercury	ng/L	2.3	-9.99	9.99	yes
Date Acquired: October 06, 2017					

Quality Control

Bill To: YTG DOE - Water Resources	Project ID: YOWN	Lot ID: 1231069
PO Box 2703	Project Name: YOWN	Control Number:
Whitehorse, YT, Canada	Project Location: Faro	Date Received: Oct 5, 2017
Y1A 2C6	LSD:	Date Reported: Oct 12, 2017
Attn: Accounts Payable	P.O.: C00037999	Report Number: 2228556
Sampled By: Norbert Botca	Proj. Acct. code:	
Company: YG-Environment		

Metals Dissolved - Continued

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC	
Mercury	ng/L	108.80	90	110	yes	
Date Acquired: October 06, 2017						
Certified Reference Material	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Mercury	µg/L	0.04	0.04	0.02	0.05	yes
Date Acquired: October 06, 2017						
Client Sample Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Mercury	µg/L	<0.01	<0.01	20	0.05	yes
Date Acquired: October 06, 2017						

Physical and Aggregate Properties

Client Sample Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Solids	mg/L	480	480	30	50.000	yes
Date Acquired: October 06, 2017						
Control Sample	Units	Measured	Lower Limit	Upper Limit	Passed QC	
Solids	mg/L	510	412.000	610.600	yes	
Date Acquired: October 06, 2017						
Solids	mg/L	22	18.000	37.200	yes	
Date Acquired: October 06, 2017						
Solids	mg/L	<5	-5.001	5.001	yes	
Date Acquired: October 06, 2017						

Routine Water

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
Calcium	mg/L	0	-0.010	0.010	yes
Magnesium	mg/L	0.00755569	-0.020	0.020	yes
Potassium	mg/L	0	-0.040	0.040	yes
Silicon	mg/L	0.00241399	-0.005	0.005	yes
Sodium	mg/L	0.000585382	-0.099	0.099	yes
Date Acquired: October 10, 2017					
Chloride	mg/L	0.00621388	-0.201	0.201	yes
Fluoride	mg/L	0	-0.099	0.099	yes
Nitrate - N	mg/L	0	-0.010	0.010	yes
Nitrite - N	mg/L	0	-0.099	0.099	yes
Sulfate (SO4)	mg/L	0	-0.990	0.990	yes
Date Acquired: October 06, 2017					
Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
Calcium	mg/L	100.62	90	110	yes
Magnesium	mg/L	101.98	90	110	yes
Potassium	mg/L	100.34	90	110	yes
Silicon	mg/L	97.02	90	110	yes
Sodium	mg/L	96.42	90	110	yes
Date Acquired: October 10, 2017					
Chloride	mg/L	101.48	85	115	yes

Quality Control

Bill To: YTG DOE - Water Resources
 PO Box 2703
 Whitehorse, YT, Canada
 Y1A 2C6
 Attn: Accounts Payable
 Sampled By: Norbert Botca
 Company: YG-Environment

Project ID: YOWN
 Project Name: YOWN
 Project Location: Faro
 LSD:
 P.O.: C00037999
 Proj. Acct. code:

Lot ID: **1231069**
 Control Number:
 Date Received: Oct 5, 2017
 Date Reported: Oct 12, 2017
 Report Number: 2228556

Routine Water - Continued

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
Fluoride	mg/L	97.79	85	115	yes
Nitrate - N	mg/L	100.96	85	115	yes
Nitrite - N	mg/L	96.32	90	110	yes
Sulfate (SO4)	mg/L	98.52	85	115	yes

Date Acquired: October 06, 2017

Chloride	mg/L	97.63	90	110	yes
Fluoride	mg/L	93.91	89	109	yes
Nitrate - N	mg/L	96.76	88	108	yes
Nitrite - N	mg/L	99.10	90	118	yes
Sulfate (SO4)	mg/L	98.35	90	110	yes

Date Acquired: October 06, 2017

Calcium	mg/L	104.11	90	110	yes
Magnesium	mg/L	107.43	90	110	yes
Potassium	mg/L	96.77	90	110	yes
Sodium	mg/L	101.48	90	110	yes

Date Acquired: October 10, 2017

Certified Reference Material	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
T-Alkalinity	mg/L	10	10	8	12	yes

Date Acquired: October 07, 2017

Client Sample Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
pH		6.87	6.86	10		yes
Electrical Conductivity	dS/m at 25 °C	0.025	0.025	10	0.005	yes
Bicarbonate	mg/L	<5	<5	10	10	yes
Hydroxide	mg/L	<5	<5	10	10	yes
P-Alkalinity	mg/L	<5	<5	10	5	yes
T-Alkalinity	mg/L	7	7	10	5	yes
Chloride	mg/L	1.68	1.65	20	0.250	yes
Fluoride	mg/L	0.24	0.24	20	0.050	yes
Nitrate - N	mg/L	<0.01	<0.01	20	0.050	yes
Nitrite - N	mg/L	<0.01	<0.01	20	0.050	yes
Sulfate (SO4)	mg/L	7.7	7.5	20	0.500	yes

Date Acquired: October 06, 2017

Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Chloride	mg/L	1.22	1.25	6	0.010	yes
Nitrate - N	mg/L	0.28	0.29	12	0.050	yes
Sulfate (SO4)	mg/L	4.2	4.3	6	0.010	yes

Date Acquired: October 06, 2017

Control Sample	Units	Measured	Lower Limit	Upper Limit	Passed QC
pH		9.54	9.17	10.81	yes
Electrical Conductivity	µS/cm at 25 °C	212	194	250	yes
P-Alkalinity	mg/L	17	7	55	yes
T-Alkalinity	mg/L	111	98	113	yes

Date Acquired: October 07, 2017

Quality Control

Bill To: YTG DOE - Water Resources
 PO Box 2703
 Whitehorse, YT, Canada
 Y1A 2C6
 Attn: Accounts Payable
 Sampled By: Norbert Botca
 Company: YG-Environment

Project ID: YOWN
 Project Name: YOWN
 Project Location: Faro
 LSD:
 P.O.: C00037999
 Proj. Acct. code:

Lot ID: **1231069**
 Control Number:
 Date Received: Oct 5, 2017
 Date Reported: Oct 12, 2017
 Report Number: 2228556

Routine Water - Continued

Control Sample	Units	Measured	Lower Limit	Upper Limit	Passed QC
pH		4.03	3.88	4.12	yes
Date Acquired: October 07, 2017					
pH		8.00	7.88	8.12	yes
Date Acquired: October 07, 2017					
Electrical Conductivity	µS/cm at 25 °C	1380	1323	1503	yes
Date Acquired: October 07, 2017					

Trace Metals Dissolved

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
Aluminum	µg/L	0.0904427	-0.990	0.990	yes
Antimony	µg/L	0.000133512	-0.020	0.020	yes
Arsenic	µg/L	-0.026801	-0.099	0.099	yes
Barium	µg/L	-0.0148089	-0.099	0.099	yes
Beryllium	µg/L	-0.00495399	-0.050	0.050	yes
Bismuth	µg/L	-0.000564597	-0.099	0.099	yes
Boron	µg/L	0.112018	-2.001	2.001	yes
Cadmium	µg/L	-0.000315456	-0.010	0.010	yes
Chromium	µg/L	-0.0276651	-0.050	0.050	yes
Cobalt	µg/L	-0.00137621	-0.020	0.020	yes
Copper	µg/L	-0.017913	-0.050	0.050	yes
Iron	µg/L	0.757119	-2.001	2.001	yes
Lead	µg/L	0	-0.010	0.010	yes
Lithium	µg/L	0.0085649	-0.500	0.500	yes
Manganese	µg/L	-0.0696526	-0.990	0.990	yes
Molybdenum	µg/L	0.00430056	-0.020	0.020	yes
Nickel	µg/L	-0.0113326	-0.200	0.200	yes
Selenium	µg/L	0.0075459	-0.200	0.200	yes
Silver	µg/L	0.000587073	-0.009	0.009	yes
Strontium	µg/L	0.0289446	-0.099	0.099	yes
Tellurium	µg/L	-0.0033786	-0.050	0.050	yes
Thallium	µg/L	0.000613679	-0.010	0.010	yes
Thorium	µg/L	0.0014226	-0.050	0.050	yes
Tin	µg/L	0.00552401	-0.099	0.099	yes
Titanium	µg/L	0.0488961	-0.099	0.099	yes
Uranium	µg/L	-0.000113668	-0.010	0.010	yes
Vanadium	µg/L	0.020291	-0.050	0.050	yes
Zinc	µg/L	0.151001	-0.500	0.500	yes
Zirconium	µg/L	0.00111542	-0.099	0.099	yes

Date Acquired: October 10, 2017

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
Titanium	mg/L	96.11	90	110	yes
Date Acquired: October 10, 2017					
Aluminum	µg/L	97.70	80	120	yes
Antimony	µg/L	92.10	90	110	yes



Quality Control

Bill To: YTG DOE - Water Resources	Project ID: YOWN	Lot ID: 1231069
PO Box 2703	Project Name: YOWN	Control Number:
Whitehorse, YT, Canada	Project Location: Faro	Date Received: Oct 5, 2017
Y1A 2C6	LSD:	Date Reported: Oct 12, 2017
Attn: Accounts Payable	P.O.: C00037999	Report Number: 2228556
Sampled By: Norbert Botca	Proj. Acct. code:	
Company: YG-Environment		

Trace Metals Dissolved - Continued

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
Arsenic	µg/L	97.12	90	110	yes
Barium	µg/L	96.92	90	110	yes
Beryllium	µg/L	101.27	90	110	yes
Boron	µg/L	101.64	70	130	yes
Cadmium	µg/L	100.55	90	110	yes
Chromium	µg/L	96.40	90	110	yes
Cobalt	µg/L	96.33	90	110	yes
Copper	µg/L	96.45	90	110	yes
Lead	µg/L	98.55	90	110	yes
Lithium	µg/L	102.33	90	110	yes
Molybdenum	µg/L	92.19	90	110	yes
Nickel	µg/L	96.22	90	110	yes
Selenium	µg/L	101.70	90	110	yes
Silver	µg/L	99.97	90	110	yes
Strontium	µg/L	99.05	90	110	yes
Thorium	µg/L	91.27	90	110	yes
Tin	µg/L	91.13	90	110	yes
Titanium	µg/L	94.17	90	110	yes
Uranium	µg/L	98.70	90	110	yes
Vanadium	µg/L	97.44	90	110	yes
Zinc	µg/L	94.76	90	110	yes
Date Acquired: October 10, 2017					
Aluminum	µg/L	89.42	80	120	yes
Antimony	µg/L	91.13	90	110	yes
Arsenic	µg/L	92.72	90	110	yes
Barium	µg/L	90.29	90	110	yes
Beryllium	µg/L	91.73	90	110	yes
Boron	µg/L	94.63	80	120	yes
Cadmium	µg/L	95.87	90	110	yes
Chromium	µg/L	92.91	90	110	yes
Cobalt	µg/L	90.20	90	110	yes
Copper	µg/L	90.57	90	110	yes
Lead	µg/L	94.84	90	110	yes
Lithium	µg/L	94.47	90	110	yes
Molybdenum	µg/L	93.88	90	110	yes
Nickel	µg/L	90.57	90	110	yes
Selenium	µg/L	97.43	90	110	yes
Silver	µg/L	95.48	90	110	yes
Strontium	µg/L	96.04	90	110	yes
Thallium	µg/L	94.75	90	110	yes
Thorium	µg/L	98.95	86	122	yes
Tin	µg/L	93.42	90	110	yes
Titanium	mg/L	98.15	90	110	yes
Uranium	µg/L	100.95	90	110	yes
Vanadium	µg/L	93.93	90	110	yes

Quality Control

Bill To: YTG DOE - Water Resources
 PO Box 2703
 Whitehorse, YT, Canada
 Y1A 2C6
 Attn: Accounts Payable
 Sampled By: Norbert Botca
 Company: YG-Environment

Project ID: YOWN
 Project Name: YOWN
 Project Location: Faro
 LSD:
 P.O.: C00037999
 Proj. Acct. code:

Lot ID: **1231069**
 Control Number:
 Date Received: Oct 5, 2017
 Date Reported: Oct 12, 2017
 Report Number: 2228556

Trace Metals Dissolved - Continued

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
Zinc	µg/L	93.91	90	110	yes

Date Acquired: October 10, 2017

Client Sample Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Aluminum	µg/L	4	2	20	20.000	yes
Antimony	µg/L	0.22	0.28	20	1.000	yes
Arsenic	µg/L	0.9	0.9	20	1.000	yes
Barium	µg/L	20.9	21.5	20	5.000	yes
Beryllium	µg/L	<0.05	<0.05	20	1.000	yes
Boron	µg/L	65	67	20	5.000	yes
Cadmium	µg/L	0.02	0.01	20	0.500	yes
Chromium	µg/L	0.29	0.31	20	5.000	yes
Cobalt	µg/L	0.03	0.03	20	0.500	yes
Copper	µg/L	1.3	1.4	20	5.000	yes
Iron	µg/L	<2	<2	20	50.000	yes
Lead	µg/L	<0.01	<0.01	20	0.500	yes
Lithium	µg/L	2.1	2.0	20	5.000	yes
Manganese	µg/L	<1	<1	20	0.500	yes
Molybdenum	µg/L	0.81	0.86	20	0.500	yes
Nickel	µg/L	4.2	4.3	20	5.000	yes
Selenium	µg/L	10.2	10.2	20	0.500	yes
Silver	µg/L	0.02	0.05	20	0.500	yes
Strontium	µg/L	394.0	392.4	20	0.500	yes
Tellurium	µg/L	0.05	0.09	20	0.500	yes
Thallium	µg/L	<0.01	<0.01	20	0.100	yes
Thorium	µg/L	0.20	0.20	20	0.100	yes
Tin	µg/L	<0.1	<0.1	20	0.500	yes
Titanium	µg/L	0.6	0.5	20	0.500	yes
Uranium	µg/L	0.25	0.24	20	0.100	yes
Vanadium	µg/L	0.87	0.82	20	0.500	yes
Zinc	µg/L	0.9	0.99	20	5.000	yes
Zirconium	µg/L	0.5	0.7	20	0.500	yes

Date Acquired: October 10, 2017

Methodology and Notes

Bill To: YTG DOE - Water Resources	Project ID: YOWN	Lot ID: 1231069
PO Box 2703	Project Name: YOWN	Control Number:
Whitehorse, YT, Canada	Project Location: Faro	Date Received: Oct 5, 2017
Y1A 2C6	LSD:	Date Reported: Oct 12, 2017
Attn: Accounts Payable	P.O.: C00037999	Report Number: 2228556
Sampled By: Norbert Botca	Proj. Acct. code:	
Company: YG-Environment		

Method of Analysis

Method Name	Reference	Method	Date Analysis Started	Location
Alk, pH, EC, Turb in water (Surrey)	APHA	* Alkalinity - Titration Method, 2320 B	Oct 7, 2017	Exova Surrey
Alk, pH, EC, Turb in water (Surrey)	APHA	* Conductivity, 2510 B	Oct 7, 2017	Exova Surrey
Alk, pH, EC, Turb in water (Surrey)	APHA	* pH - Electrometric Method, 4500-H+ B	Oct 7, 2017	Exova Surrey
Ammonia-N in Water (Surrey)	APHA	* Flow Injection Analysis, 4500-NH3 H	Oct 6, 2017	Exova Surrey
Anions by IEC in water (Surrey)	APHA	* Ion Chromatography with Chemical Suppression of Eluent Cond., 4110 B	Oct 6, 2017	Exova Surrey
Carbon Inorganic (Dissolved) in water(DIC)	APHA	High-Temperature Combustion Method, 5310 B	Oct 11, 2017	Exova Edmonton
Carbon Inorganic (Total) in water (TIC)	APHA	High-Temperature Combustion Method, 5310 B	Oct 11, 2017	Exova Edmonton
Carbon Organic (Dissolved) in water (DOC)	APHA	High-Temperature Combustion Method, 5310 B	Oct 10, 2017	Exova Edmonton
Carbon Organic (Total) in water (TOC)	APHA	High-Temperature Combustion Method, 5310 B	Oct 10, 2017	Exova Edmonton
Mercury Low Level (Dissolved) in water (Surrey)	EPA	* Mercury in Water by Cold Vapor Atomic Fluorescence Spectrometry, 245.7	Oct 6, 2017	Exova Surrey
Metals SemiTrace (Dissolved) in water (Surrey)	US EPA	* Metals & Trace Elements by ICP-AES, 6010C	Oct 10, 2017	Exova Surrey
Phosphorus - total by Smartchem (Surrey)	APHA	* Persulfate digestion method, 4500-P B5	Oct 6, 2017	Exova Surrey
Solids Dissolved (Total, Fixed and Volatile) - Surrey	APHA	* Total Dissolved Solids Dried at 180 C, 2540 C	Oct 6, 2017	Exova Surrey
Total and Kjeldahl Nitrogen (Total) in Water	ISO	* Water Quality - Determination of nitrogen, ISO/TR 11905-2	Oct 10, 2017	Exova Edmonton
Trace Metals (dissolved) in Water (Surrey)	US EPA	* Determination of Trace Elements in Waters and Wastes by ICP-MS, 200.8	Oct 10, 2017	Exova Surrey

* Reference Method Modified

References

APHA	Standard Methods for the Examination of Water and Wastewater
EPA	Environmental Protection Agency Test Methods - US
ISO	International Organization for Standardization
US EPA	US Environmental Protection Agency Test Methods

Comments:

- Oct 11, 2017 - Sample 1231069-1; 5864669: Reduction of analytical volume was necessary for anions due to matrix effects in sample 1231069-1. Detection limits are adjusted accordingly.
- Oct 11, 2017 - Reduction of analytical volume was necessary for metals analysis to bring results within the analytical range for sample #1231069-1. Detection limits are adjusted accordingly.

Methodology and Notes

Bill To:	YTG DOE - Water Resources	Project ID:	YOWN	Lot ID:	1231069
	PO Box 2703	Project Name:	YOWN	Control Number:	
	Whitehorse, YT, Canada	Project Location:	Faro	Date Received:	Oct 5, 2017
	Y1A 2C6	LSD:		Date Reported:	Oct 12, 2017
Attn:	Accounts Payable	P.O.:	C00037999	Report Number:	2228556
Sampled By:	Norbert Botca	Proj. Acct. code:			
Company:	YG-Environment				

Please direct any inquiries regarding this report to our Client Services Group or to the Operations Manager at the coordinates indicated at the top left of this page.

Results relate only to samples as submitted.

The test report shall not be reproduced except in full, without the written approval of the laboratory.

Report Transmission Cover Page

Bill To: YTG DOE - Water Resources	Project ID: YOWN	Lot ID: 1232853
PO Box 2703	Project Name: YOWN	Control Number:
Whitehorse, YT, Canada	Project Location: Beaver Creek area, YT	Date Received: Oct 16, 2017
Y1A 2C6	LSD:	Date Reported: Oct 20, 2017
Attn: Accounts Payable	P.O.:	Report Number: 2231381
Sampled By: Norbert Botca	Proj. Acct. code:	
Company: YG-Environment		

Contact	Company	Address
Holly Goulding	YTG DOE - Water Resources	202, 419 Range Road Whitehorse, YT Y1A 3V1 Phone: (867) 456-6583 Fax: (867) 667-3194 Email: holly.goulding@gov.yk.ca

Delivery	Format	Deliverables
Email - Merge Reports	PDF	COC / Test Report
Email - Single Report	EQWin	Test Report
Email - Single Report	PDF	Invoice

John Miller	YTG DOE - Water Resources	202, 419 Range Road Whitehorse, YT Y1A 3V1 Phone: (867) 667-3104 Fax: (867) 667-3194 Email: john.miller@gov.yk.ca
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Delivery	Format	Deliverables
Email - Multiple Reports By Lot	EQWin	Test Report
Email - Multiple Reports By Lot	PDF	COC / Test Report
Email - Single Report	PDF	COA
Email - Single Report	PDF	COR
Email - Single Report	PDF	Invoice

Norbert Botca	YTG DOE - Water Resources	203, 1191 Front Street Whitehorse, YT Y1A 0K5 Phone: (867) 667-3512 Fax: (867) 667-3194 Email: norbert.botca@gov.yk.ca
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Delivery	Format	Deliverables
Email - Multiple Reports By Lot	EQWin	Test Report
Email - Multiple Reports By Lot	PDF	COC / Test Report
Email - Single Report	PDF	COA
Email - Single Report	PDF	COR
Email - Single Report	PDF	Invoice

Tyler Williams	YTG DOE - Water Resources	202, 419 Range Road Whitehorse, YT Y1A 3V1 Phone: (867) 667-3233 Fax: (867) 667-3194 Email: Tyler.Williams@gov.yk.ca
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Delivery	Format	Deliverables
Email - Multiple Reports By Lot	EQWin	Test Report
Email - Multiple Reports By Lot	PDF	COC / Test Report

Notes To Clients:

- Oct 18, 2017 - Sample 1232853-1; 5875524: Analysis was performed on sample 1232853-1, 1232853-2 and 1232853-3 that exceeded the recommended holding time for nitrite and nitrate analysis.

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Analytical Report

Bill To: YTG DOE - Water Resources	Project ID: YOWN	Lot ID: 1232853
PO Box 2703	Project Name: YOWN	Control Number:
Whitehorse, YT, Canada	Project Location: Beaver Creek area, YT	Date Received: Oct 16, 2017
Y1A 2C6	LSD:	Date Reported: Oct 20, 2017
Attn: Accounts Payable	P.O.:	Report Number: 2231381
Sampled By: Norbert Botca	Proj. Acct. code:	
Company: YG-Environment		

		Reference Number	1232853-1	1232853-2	1232853-3	
		Sample Date	Oct 11, 2017	Oct 11, 2017	Oct 11, 2017	
		Sample Time	16:40	18:00	13:50	
		Sample Location				
		Sample Description	YOWN-1607 / 2017254 / 7.9 °C / B	YOWN-1301 / 2017255 / 7.9 °C / B	YOWN-1614 / 2017256 / 7.9 °C / B	
		Matrix	Water	Water	Water	
Analyte	Units	Results	Results	Results	Nominal Detection Limit	
Inorganic Nonmetallic Parameters						
Nitrogen	Total	mg/L	0.34	0.08	0.09	0.06
Organic Carbon	Total Nonpurgeable	mg/L	5.9	2.1	3.0	0.5
Organic Carbon	Dissolved Nonpurgeable	mg/L	4.2	1.0	<0.5	0.5
Inorganic carbon	Total	mg/L	13.2	30.8	15.0	0.5
Inorganic carbon	Dissolved	mg/L	13.1	30.9	15.0	0.5
Ammonia - N		mg/L	0.02	0.04	0.03	0.01
Phosphorus	Total	mg/L	0.021	<0.003	0.539	0.003
Metals Dissolved						
Mercury	Dissolved	mg/L	<0.00001	<0.00001	<0.00001	0.00001
Physical and Aggregate Properties						
Solids	Total Dissolved	mg/L	66	170	150	5
Routine Water						
pH - Holding Time			Exceeded	Exceeded	Exceeded	
pH	at 25 °C		8.13	7.98	9.23	
Electrical Conductivity		µS/cm at 25 °C	130	291	268	1
Calcium	Dissolved	mg/L	17	49	9.5	0.01
Magnesium	Dissolved	mg/L	4.6	6.2	2.1	0.02
Potassium	Dissolved	mg/L	1.6	1.0	2.8	0.04
Silicon	Dissolved	mg/L	0.16	0.91	0.40	0.005
Sodium	Dissolved	mg/L	3.0	3.5	41	0.1
Sulfur	Dissolved	mg/L	0.38	6.4	8.3	0.02
Bicarbonate		mg/L	82	194	74	5
Carbonate		mg/L	<6	<6	12	6
Hydroxide		mg/L	<5	<5	<5	5
P-Alkalinity	as CaCO3	mg/L	<5	<5	10	5
T-Alkalinity	as CaCO3	mg/L	67	159	81	5
Chloride	Dissolved	mg/L	0.41	3.03	17.9	0.05
Fluoride	Dissolved	mg/L	0.84	0.01	0.08	0.01
Nitrate - N	Dissolved	mg/L	<0.01	0.03	<0.01	0.01
Nitrite - N	Dissolved	mg/L	<0.01	<0.01	<0.01	0.01
Sulfate (SO4)	Dissolved	mg/L	0.8	17.8	24.9	0.1
Hardness	as CaCO3 (dissolved)	mg/L	61	150	32	5
Trace Metals Dissolved						
Digestion	Dissolved		Field filtered and Pres Dissol	Field filtered and Pres Dissol	Field filtered and Pres Dissol	
Titanium	Dissolved	mg/L	0.004	0.011	<0.002	0.002
Aluminum	Dissolved	mg/L	0.001	<0.001	0.001	0.001
Antimony	Dissolved	mg/L	0.00003	0.00007	0.00004	0.00002

Analytical Report

Bill To: YTG DOE - Water Resources	Project ID: YOWN	Lot ID: 1232853
PO Box 2703	Project Name: YOWN	Control Number:
Whitehorse, YT, Canada	Project Location: Beaver Creek area, YT	Date Received: Oct 16, 2017
Y1A 2C6	LSD:	Date Reported: Oct 20, 2017
Attn: Accounts Payable	P.O.:	Report Number: 2231381
Sampled By: Norbert Botca	Proj. Acct. code:	
Company: YG-Environment		

	Reference Number	1232853-1	1232853-2	1232853-3		
	Sample Date	Oct 11, 2017	Oct 11, 2017	Oct 11, 2017		
	Sample Time	16:40	18:00	13:50		
	Sample Location					
	Sample Description	YOWN-1607 / 2017254 / 7.9 °C / B	YOWN-1301 / 2017255 / 7.9 °C / B	YOWN-1614 / 2017256 / 7.9 °C / B		
	Matrix	Water	Water	Water		
Analyte	Units	Results	Results	Results	Nominal Detection Limit	
Trace Metals Dissolved - Continued						
Arsenic	Dissolved	mg/L	<0.0001	0.0001	0.0027	0.0001
Barium	Dissolved	mg/L	0.0657	0.0263	0.0299	0.0001
Beryllium	Dissolved	mg/L	<0.00005	<0.00005	<0.00005	0.00005
Bismuth	Dissolved	mg/L	<0.0001	<0.0001	<0.0001	0.0001
Boron	Dissolved	mg/L	0.025	0.148	0.114	0.002
Cadmium	Dissolved	mg/L	<0.00001	<0.00001	<0.00001	0.00001
Chromium	Dissolved	mg/L	<0.00005	0.00010	<0.00005	0.00005
Cobalt	Dissolved	mg/L	<0.00002	0.00012	<0.00002	0.00002
Copper	Dissolved	mg/L	<0.0005	<0.0005	<0.0005	0.0005
Iron	Dissolved	mg/L	<0.002	<0.002	0.003	0.002
Lead	Dissolved	mg/L	<0.00001	<0.00001	0.00003	0.00001
Lithium	Dissolved	mg/L	0.0064	0.0016	0.0035	0.0005
Manganese	Dissolved	mg/L	0.005	0.163	0.004	0.001
Molybdenum	Dissolved	mg/L	0.00079	0.00029	0.00371	0.00002
Nickel	Dissolved	mg/L	<0.0002	0.0005	0.0002	0.0002
Selenium	Dissolved	mg/L	<0.0002	<0.0002	<0.0002	0.0002
Silver	Dissolved	mg/L	<0.00001	<0.00001	<0.00001	0.00001
Strontium	Dissolved	mg/L	0.0721	0.1523	0.2044	0.0001
Tellurium	Dissolved	mg/L	<0.00005	<0.00005	<0.00005	0.00005
Thallium	Dissolved	mg/L	<0.00001	<0.00001	<0.00001	0.00001
Thorium	Dissolved	mg/L	0.00005	<0.00005	<0.00005	0.00005
Tin	Dissolved	mg/L	<0.0001	<0.0001	<0.0001	0.0001
Uranium	Dissolved	mg/L	0.00002	0.00005	<0.00001	0.00001
Vanadium	Dissolved	mg/L	<0.00005	<0.00005	<0.00005	0.00005
Zinc	Dissolved	mg/L	<0.0005	0.0066	<0.0005	0.0005
Zirconium	Dissolved	mg/L	0.0003	<0.0001	<0.0001	0.0001

Approved by: 
 Mathieu Simoneau
 Operations Manager

Data have been validated by Analytical Quality Control and Exova's Integrated Data Validation System (IDVS).

Generation and distribution of the report, and approval by the digitized signature above, are performed through a secure and controlled automatic process.

Quality Control

Bill To: YTG DOE - Water Resources	Project ID: YOWN	Lot ID: 1232853
PO Box 2703	Project Name: YOWN	Control Number:
Whitehorse, YT, Canada	Project Location: Beaver Creek area, YT	Date Received: Oct 16, 2017
Y1A 2C6	LSD:	Date Reported: Oct 20, 2017
Attn: Accounts Payable	P.O.:	Report Number: 2231381
Sampled By: Norbert Botca	Proj. Acct. code:	
Company: YG-Environment		

Inorganic Nonmetallic Parameters

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC	
Phosphorus	mg/L	0.0005	-0.003	0.003	yes	
Date Acquired:	October 17, 2017					
Nitrogen	mg/L	0.04285	-0.04	0.08	yes	
Organic Carbon	mg/L	0.1027	-0.5	0.5	yes	
Inorganic carbon	mg/L	0.2468	-0.5	0.5	yes	
Date Acquired:	October 18, 2017					
Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC	
Phosphorus	mg/L	101.16	90	110	yes	
Date Acquired:	October 17, 2017					
Phosphorus	mg/L	91.00	80	120	yes	
Date Acquired:	October 17, 2017					
Client Sample Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Nitrogen	mg/L	110	105	10	0.06	yes
Organic Carbon	mg/L	35	35	10	1.0	yes
Inorganic carbon	mg/L	13.2	13.2	10	1.0	yes
Date Acquired:	October 18, 2017					
Control Sample	Units	Measured	Lower Limit	Upper Limit	Passed QC	
Organic Carbon	mg/L	<0.5	-0.5	0.5	yes	
Date Acquired:	October 18, 2017					
Nitrogen	mg/L	133	103.74	137.28	yes	
Organic Carbon	mg/L	120	109.1	139.7	yes	
Inorganic carbon	mg/L	45.3	39.0	57.0	yes	
Date Acquired:	October 18, 2017					
Nitrogen	mg/L	14.7	13.27	16.93	yes	
Organic Carbon	mg/L	14.1	12.8	17.2	yes	
Inorganic carbon	mg/L	15.3	14.1	18.3	yes	
Date Acquired:	October 18, 2017					
Nitrogen	mg/L	1.15	0.89	1.25	yes	
Organic Carbon	mg/L	3.0	2.4	4.0	yes	
Inorganic carbon	mg/L	3.2	2.7	4.1	yes	
Date Acquired:	October 18, 2017					
Phosphorus	mg/L	0.445	0.389	0.503	yes	
Date Acquired:	October 17, 2017					

Metals Dissolved

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC	
Mercury	ng/L	-1	-9.99	9.99	yes	
Date Acquired:	October 17, 2017					
Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC	
Mercury	ng/L	108.40	90	110	yes	
Date Acquired:	October 17, 2017					
Certified Reference Material	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC

Quality Control

Bill To: YTG DOE - Water Resources	Project ID: YOWN	Lot ID: 1232853
PO Box 2703	Project Name: YOWN	Control Number:
Whitehorse, YT, Canada	Project Location: Beaver Creek area, YT	Date Received: Oct 16, 2017
Y1A 2C6	LSD:	Date Reported: Oct 20, 2017
Attn: Accounts Payable	P.O.:	Report Number: 2231381
Sampled By: Norbert Botca	Proj. Acct. code:	
Company: YG-Environment		

Metals Dissolved - Continued

Certified Reference Material	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Mercury	µg/L	0.04	0.04	0.02	0.05	yes
Date Acquired: October 17, 2017						
Client Sample Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Mercury	µg/L	<0.01	<0.01	20	0.05	yes
Date Acquired: October 17, 2017						

Physical and Aggregate Properties

Client Sample Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Solids	mg/L	190	250	30	50.000	yes
Date Acquired: October 16, 2017						
Control Sample	Units	Measured	Lower Limit	Upper Limit		Passed QC
Solids	mg/L	520	412.000	610.600		yes
Date Acquired: October 16, 2017						
Solids	mg/L	28	18.000	37.200		yes
Date Acquired: October 16, 2017						
Solids	mg/L	<5	-5.001	5.001		yes
Date Acquired: October 16, 2017						

Routine Water

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
Calcium	mg/L	-0.0028194	-0.010	0.010	yes
Magnesium	mg/L	-0.00023088	-0.020	0.020	yes
Potassium	mg/L	0	-0.040	0.040	yes
Silicon	mg/L	0.00219228	-0.005	0.005	yes
Sodium	mg/L	-0.010957	-0.099	0.099	yes
Date Acquired: October 16, 2017					
Chloride	mg/L	0.00581405	-0.201	0.201	yes
Fluoride	mg/L	0	-0.099	0.099	yes
Nitrate - N	mg/L	0.00246213	-0.010	0.010	yes
Nitrite - N	mg/L	0	-0.099	0.099	yes
Sulfate (SO4)	mg/L	0	-0.990	0.990	yes
Date Acquired: October 17, 2017					
Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
Calcium	mg/L	95.81	90	110	yes
Magnesium	mg/L	95.94	90	110	yes
Potassium	mg/L	99.15	90	110	yes
Silicon	mg/L	93.50	90	110	yes
Sodium	mg/L	91.13	90	110	yes
Date Acquired: October 16, 2017					
Chloride	mg/L	92.20	85	115	yes
Fluoride	mg/L	93.71	85	115	yes
Nitrate - N	mg/L	94.69	85	115	yes
Nitrite - N	mg/L	93.65	90	110	yes

Quality Control

Bill To: YTG DOE - Water Resources
 PO Box 2703
 Whitehorse, YT, Canada
 Y1A 2C6
 Attn: Accounts Payable
 Sampled By: Norbert Botca
 Company: YG-Environment

Project ID: YOWN
 Project Name: YOWN
 Project Location: Beaver Creek area, YT
 LSD:
 P.O.:
 Proj. Acct. code:

Lot ID: **1232853**
 Control Number:
 Date Received: Oct 16, 2017
 Date Reported: Oct 20, 2017
 Report Number: 2231381

Routine Water - Continued

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC	
Sulfate (SO4)	mg/L	93.62	85	115	yes	
Date Acquired: October 17, 2017						
Chloride	mg/L	93.88	90	110	yes	
Fluoride	mg/L	90.25	89	109	yes	
Nitrate - N	mg/L	93.94	88	108	yes	
Nitrite - N	mg/L	98.65	90	118	yes	
Sulfate (SO4)	mg/L	94.87	90	110	yes	
Date Acquired: October 17, 2017						
Calcium	mg/L	102.98	90	110	yes	
Magnesium	mg/L	102.66	90	110	yes	
Potassium	mg/L	103.12	90	110	yes	
Sodium	mg/L	95.52	90	110	yes	
Date Acquired: October 16, 2017						
Certified Reference Material	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
T-Alkalinity	mg/L	10	10	8	12	yes
Date Acquired: October 18, 2017						
Client Sample Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Calcium	mg/L	610	610	30	1.000	yes
Magnesium	mg/L	130	130	30	1.000	yes
Potassium	mg/L	2.3	2.3	30	1.000	yes
Sodium	mg/L	54	53	30	1.000	yes
Date Acquired: October 16, 2017						
pH		7.12	7.09	10		yes
Electrical Conductivity	dS/m at 25 °C	1.464	1.462	10	0.005	yes
Bicarbonate	mg/L	577	573	10	10	yes
Hydroxide	mg/L	<5	<5	10	10	yes
P-Alkalinity	mg/L	<5	<5	10	5	yes
T-Alkalinity	mg/L	474	470	10	5	yes
Chloride	mg/L	10.1	10.1	20	0.250	yes
Nitrate - N	mg/L	<0.01	<0.01	20	0.050	yes
Nitrite - N	mg/L	<0.01	<0.01	20	0.050	yes
Sulfate (SO4)	mg/L	28.9	28.7	20	0.500	yes
Date Acquired: October 17, 2017						
Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Chloride	mg/L	1.21	1.19	6	0.010	yes
Nitrate - N	mg/L	0.28	0.28	12	0.050	yes
Sulfate (SO4)	mg/L	4.2	4.2	6	0.010	yes
Date Acquired: October 17, 2017						
Control Sample	Units	Measured	Lower Limit	Upper Limit	Passed QC	
pH		9.58	9.17	10.81	yes	
Electrical Conductivity	µS/cm at 25 °C	215	194	250	yes	
P-Alkalinity	mg/L	20	7	55	yes	
T-Alkalinity	mg/L	107	98	113	yes	
Date Acquired: October 18, 2017						

Quality Control

Bill To: YTG DOE - Water Resources	Project ID: YOWN	Lot ID: 1232853
PO Box 2703	Project Name: YOWN	Control Number:
Whitehorse, YT, Canada	Project Location: Beaver Creek area, YT	Date Received: Oct 16, 2017
Y1A 2C6	LSD:	Date Reported: Oct 20, 2017
Attn: Accounts Payable	P.O.:	Report Number: 2231381
Sampled By: Norbert Botca	Proj. Acct. code:	
Company: YG-Environment		

Routine Water - Continued

Control Sample	Units	Measured	Lower Limit	Upper Limit	Passed QC
pH		4.00	3.88	4.12	yes
Date Acquired: October 18, 2017					
pH		7.98	7.88	8.12	yes
Date Acquired: October 18, 2017					
Electrical Conductivity	µS/cm at 25 °C	1333	1323	1503	yes
Date Acquired: October 18, 2017					

Trace Metals Dissolved

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
Aluminum	µg/L	0.735133	-0.990	0.990	yes
Antimony	µg/L	0.0117377	-0.020	0.020	yes
Arsenic	µg/L	0.0102365	-0.099	0.099	yes
Barium	µg/L	0.0307205	-0.099	0.099	yes
Beryllium	µg/L	0.00114552	-0.050	0.050	yes
Bismuth	µg/L	0.00590358	-0.099	0.099	yes
Boron	µg/L	0.825769	-2.001	2.001	yes
Cadmium	µg/L	0.00316674	-0.010	0.010	yes
Chromium	µg/L	0.00748825	-0.050	0.050	yes
Cobalt	µg/L	0.0034834	-0.020	0.020	yes
Copper	µg/L	0.0391938	-0.050	0.050	yes
Iron	µg/L	0.101526	-2.001	2.001	yes
Lead	µg/L	0.00681827	-0.010	0.010	yes
Lithium	µg/L	0.0320158	-0.500	0.500	yes
Manganese	µg/L	0.0526316	-0.990	0.990	yes
Molybdenum	µg/L	0.00972457	-0.020	0.020	yes
Nickel	µg/L	0.0654066	-0.200	0.200	yes
Selenium	µg/L	0.0145008	-0.200	0.200	yes
Silver	µg/L	0.00772779	-0.009	0.009	yes
Strontium	µg/L	-0.00692057	-0.099	0.099	yes
Tellurium	µg/L	0.000637904	-0.050	0.050	yes
Thallium	µg/L	0.00901452	-0.010	0.010	yes
Thorium	µg/L	-0.000354077	-0.050	0.050	yes
Tin	µg/L	0.0367453	-0.099	0.099	yes
Titanium	µg/L	0.026203	-0.099	0.099	yes
Uranium	µg/L	0.00687617	-0.010	0.010	yes
Vanadium	µg/L	0.00610335	-0.050	0.050	yes
Zinc	µg/L	0.0293186	-0.500	0.500	yes
Zirconium	µg/L	0.0308286	-0.099	0.099	yes

Date Acquired: October 16, 2017

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
Titanium	mg/L	93.65	90	110	yes
Date Acquired: October 16, 2017					
Aluminum	µg/L	107.42	80	120	yes
Antimony	µg/L	90.02	90	110	yes

Quality Control

Bill To: YTG DOE - Water Resources	Project ID: YOWN	Lot ID: 1232853
PO Box 2703	Project Name: YOWN	Control Number:
Whitehorse, YT, Canada	Project Location: Beaver Creek area, YT	Date Received: Oct 16, 2017
Y1A 2C6	LSD:	Date Reported: Oct 20, 2017
Attn: Accounts Payable	P.O.:	Report Number: 2231381
Sampled By: Norbert Botca	Proj. Acct. code:	
Company: YG-Environment		

Trace Metals Dissolved - Continued

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
Arsenic	µg/L	96.60	90	110	yes
Barium	µg/L	97.30	90	110	yes
Beryllium	µg/L	107.81	90	110	yes
Boron	µg/L	105.43	70	130	yes
Cadmium	µg/L	99.15	90	110	yes
Chromium	µg/L	104.14	90	110	yes
Cobalt	µg/L	99.64	90	110	yes
Copper	µg/L	103.53	90	110	yes
Lead	µg/L	101.33	90	110	yes
Lithium	µg/L	105.20	90	110	yes
Molybdenum	µg/L	91.85	90	110	yes
Nickel	µg/L	98.95	90	110	yes
Selenium	µg/L	100.64	90	110	yes
Silver	µg/L	93.13	90	110	yes
Strontium	µg/L	94.28	90	110	yes
Thorium	µg/L	108.10	90	110	yes
Tin	µg/L	91.89	90	110	yes
Titanium	µg/L	92.51	90	110	yes
Uranium	µg/L	102.76	90	110	yes
Vanadium	µg/L	103.06	90	110	yes
Zinc	µg/L	97.68	90	110	yes
Date Acquired: October 16, 2017					
Aluminum	µg/L	91.80	80	120	yes
Antimony	µg/L	95.17	90	110	yes
Arsenic	µg/L	92.72	90	110	yes
Barium	µg/L	91.47	90	110	yes
Beryllium	µg/L	101.11	90	110	yes
Boron	µg/L	98.47	80	120	yes
Cadmium	µg/L	97.66	90	110	yes
Chromium	µg/L	97.30	90	110	yes
Cobalt	µg/L	91.69	90	110	yes
Copper	µg/L	90.23	90	110	yes
Lead	µg/L	92.59	90	110	yes
Lithium	µg/L	98.80	90	110	yes
Molybdenum	µg/L	96.40	90	110	yes
Nickel	µg/L	94.69	90	110	yes
Selenium	µg/L	95.28	90	110	yes
Silver	µg/L	106.15	90	110	yes
Strontium	µg/L	94.55	90	110	yes
Thallium	µg/L	94.74	90	110	yes
Thorium	µg/L	103.99	86	122	yes
Tin	µg/L	96.23	90	110	yes
Titanium	µg/L	91.48	90	110	yes
Uranium	µg/L	95.49	90	110	yes
Vanadium	µg/L	94.96	90	110	yes

Quality Control

Bill To: YTG DOE - Water Resources
 PO Box 2703
 Whitehorse, YT, Canada
 Y1A 2C6
 Attn: Accounts Payable
 Sampled By: Norbert Botca
 Company: YG-Environment

Project ID: YOWN
 Project Name: YOWN
 Project Location: Beaver Creek area, YT
 LSD:
 P.O.:
 Proj. Acct. code:

Lot ID: **1232853**
 Control Number:
 Date Received: Oct 16, 2017
 Date Reported: Oct 20, 2017
 Report Number: 2231381

Trace Metals Dissolved - Continued

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
Zinc	µg/L	101.65	90	110	yes

Date Acquired: October 16, 2017

Client Sample Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Aluminum	µg/L	<10	<10	20	20.000	yes
Antimony	µg/L	1.5	1.8	20	1.000	yes
Arsenic	µg/L	2	2	20	1.000	yes
Barium	µg/L	58	52	20	5.000	yes
Beryllium	µg/L	<0.5	<0.5	20	1.000	yes
Boron	µg/L	330	280	20	5.000	yes
Cadmium	µg/L	0.1	0.1	20	0.500	yes
Chromium	µg/L	<0.5	<0.5	20	5.000	yes
Cobalt	µg/L	1.9	1.7	20	0.500	yes
Copper	µg/L	<5	<5	20	5.000	yes
Iron	µg/L	<20	<20	20	50.000	yes
Lead	µg/L	<0.1	<0.1	20	0.500	yes
Lithium	µg/L	157	135	20	5.000	yes
Manganese	µg/L	680	600	20	0.500	yes
Molybdenum	µg/L	1.4	1.3	20	0.500	yes
Nickel	µg/L	8	8	20	5.000	yes
Selenium	µg/L	4	4	20	0.500	yes
Silver	µg/L	<0.1	<0.1	20	0.500	yes
Strontium	µg/L	1777	1538	20	0.500	yes
Tellurium	µg/L	<0.5	<0.5	20	0.500	yes
Thallium	µg/L	<0.1	<0.1	20	0.100	yes
Thorium	µg/L	<0.5	<0.5	20	0.100	yes
Tin	µg/L	<1	<1	20	0.500	yes
Titanium	µg/L	3	2	20	0.500	yes
Uranium	µg/L	32.4	27.9	20	0.100	yes
Vanadium	µg/L	<0.5	<0.5	20	0.500	yes
Zinc	µg/L	<5	6	20	5.000	yes
Zirconium	µg/L	<1	1	20	0.500	yes

Date Acquired: October 16, 2017

Methodology and Notes

Bill To: YTG DOE - Water Resources	Project ID: YOWN	Lot ID: 1232853
PO Box 2703	Project Name: YOWN	Control Number:
Whitehorse, YT, Canada	Project Location: Beaver Creek area, YT	Date Received: Oct 16, 2017
Y1A 2C6	LSD:	Date Reported: Oct 20, 2017
Attn: Accounts Payable	P.O.:	Report Number: 2231381
Sampled By: Norbert Botca	Proj. Acct. code:	
Company: YG-Environment		

Method of Analysis

Method Name	Reference	Method	Date Analysis Started	Location
Alk, pH, EC, Turb in water (Surrey)	APHA	* Alkalinity - Titration Method, 2320 B	Oct 18, 2017	Exova Surrey
Alk, pH, EC, Turb in water (Surrey)	APHA	* Conductivity, 2510 B	Oct 18, 2017	Exova Surrey
Alk, pH, EC, Turb in water (Surrey)	APHA	* pH - Electrometric Method, 4500-H+ B	Oct 18, 2017	Exova Surrey
Ammonia-N in Water (Surrey)	APHA	* Flow Injection Analysis, 4500-NH3 H	Oct 19, 2017	Exova Surrey
Anions by IEC in water (Surrey)	APHA	* Ion Chromatography with Chemical Suppression of Eluent Cond., 4110 B	Oct 17, 2017	Exova Surrey
Carbon Inorganic (Dissolved) in water(DIC)	APHA	High-Temperature Combustion Method, 5310 B	Oct 18, 2017	Exova Edmonton
Carbon Inorganic (Total) in water (TIC)	APHA	High-Temperature Combustion Method, 5310 B	Oct 18, 2017	Exova Edmonton
Carbon Organic (Dissolved) in water (DOC)	APHA	High-Temperature Combustion Method, 5310 B	Oct 18, 2017	Exova Edmonton
Carbon Organic (Total) in water (TOC)	APHA	High-Temperature Combustion Method, 5310 B	Oct 18, 2017	Exova Edmonton
Mercury Low Level (Dissolved) in water (Surrey)	EPA	* Mercury in Water by Cold Vapor Atomic Fluorescence Spectrometry, 245.7	Oct 17, 2017	Exova Surrey
Metals SemiTrace (Dissolved) in water (Surrey)	US EPA	* Metals & Trace Elements by ICP-AES, 6010C	Oct 16, 2017	Exova Surrey
Phosphorus - total by Smartchem (Surrey)	APHA	* Persulfate digestion method, 4500-P B5	Oct 17, 2017	Exova Surrey
Solids Dissolved (Total, Fixed and Volatile) - Surrey	APHA	* Total Dissolved Solids Dried at 180 C, 2540 C	Oct 16, 2017	Exova Surrey
Total and Kjeldahl Nitrogen (Total) in Water	ISO	* Water Quality - Determination of nitrogen, ISO/TR 11905-2	Oct 17, 2017	Exova Edmonton
Trace Metals (dissolved) in Water (Surrey)	US EPA	* Determination of Trace Elements in Waters and Wastes by ICP-MS, 200.8	Oct 16, 2017	Exova Surrey

* Reference Method Modified

References

APHA	Standard Methods for the Examination of Water and Wastewater
EPA	Environmental Protection Agency Test Methods - US
ISO	International Organization for Standardization
US EPA	US Environmental Protection Agency Test Methods

Comments:

- Oct 18, 2017 - Sample 1232853-1; 5875524: Analysis was performed on sample 1232853-1, 1232853-2 and 1232853-3 that exceeded the recommended holding time for nitrite and nitrate analysis.

Methodology and Notes

Bill To: YTG DOE - Water Resources	Project ID: YOWN	Lot ID: 1232853
PO Box 2703	Project Name: YOWN	Control Number:
Whitehorse, YT, Canada	Project Location: Beaver Creek area, YT	Date Received: Oct 16, 2017
Y1A 2C6	LSD:	Date Reported: Oct 20, 2017
Attn: Accounts Payable	P.O.:	Report Number: 2231381
Sampled By: Norbert Botca	Proj. Acct. code:	
Company: YG-Environment		

Please direct any inquiries regarding this report to our Client Services Group or to the Operations Manager at the coordinates indicated at the top left of this page.

Results relate only to samples as submitted.

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Report Transmission Cover Page

Bill To: YTG DOE - Water Resources	Project ID: YOWN	Lot ID: 1234110
PO Box 2703	Project Name: YOWN	Control Number:
Whitehorse, YT, Canada	Project Location: Haines Junction area, YT	Date Received: Oct 20, 2017
Y1A 2C6	LSD:	Date Reported: Oct 26, 2017
Attn: Accounts Payable	P.O.: C00037999	Report Number: 2233684
Sampled By: Norbert Botca	Proj. Acct. code:	
Company: YG-Environment		

Contact	Company	Address
Holly Goulding	YTG DOE - Water Resources	202, 419 Range Road Whitehorse, YT Y1A 3V1 Phone: (867) 456-6583 Fax: (867) 667-3194 Email: holly.goulding@gov.yk.ca

Delivery	Format	Deliverables
Email - Merge Reports	PDF	COC / Test Report
Email - Single Report	EQWin	Test Report
Email - Single Report	PDF	Invoice

John Miller	YTG DOE - Water Resources	202, 419 Range Road Whitehorse, YT Y1A 3V1 Phone: (867) 667-3104 Fax: (867) 667-3194 Email: john.miller@gov.yk.ca
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Delivery	Format	Deliverables
Email - Multiple Reports By Lot	EQWin	Test Report
Email - Multiple Reports By Lot	PDF	COC / Test Report
Email - Single Report	PDF	COA
Email - Single Report	PDF	COR
Email - Single Report	PDF	Invoice

Norbert Botca	YTG DOE - Water Resources	203, 1191 Front Street Whitehorse, YT Y1A 0K5 Phone: (867) 667-3512 Fax: (867) 667-3194 Email: norbert.botca@gov.yk.ca
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Delivery	Format	Deliverables
Email - Multiple Reports By Lot	EQWin	Test Report
Email - Multiple Reports By Lot	PDF	COC / Test Report
Email - Single Report	PDF	COA
Email - Single Report	PDF	COR
Email - Single Report	PDF	Invoice

Tyler Williams	YTG DOE - Water Resources	202, 419 Range Road Whitehorse, YT Y1A 3V1 Phone: (867) 667-3233 Fax: (867) 667-3194 Email: Tyler.Williams@gov.yk.ca
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Delivery	Format	Deliverables
Email - Multiple Reports By Lot	EQWin	Test Report
Email - Multiple Reports By Lot	PDF	COC / Test Report

Notes To Clients:

- Oct 23, 2017 - Reduction of analytical volume was necessary for metals analysis to bring results within the analytical range for sample #1234110-1. Detection limits are adjusted accordingly.
- Oct 25, 2017 - Sample 1234110-4; 5883399: Reduction of analytical volume was necessary for sulfate to bring results within the analytical range for sample 1234110-4. Detection limits are adjusted accordingly.
- Oct 25, 2017 - Sample 1234110-1; 5883396: Reduction of analytical volume was necessary for anions due to matrix effects in sample 1234110-1. Detection limits are adjusted accordingly.
- Oct 25, 2017 - Sample 1234110-4; 5883399: Reduction of analytical volume was necessary for sulfate to bring results within the analytical range for

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Report Transmission Cover Page

Bill To: YTG DOE - Water Resources	Project ID: YOWN	Lot ID: 1234110
PO Box 2703	Project Name: YOWN	Control Number:
Whitehorse, YT, Canada	Project Location: Haines Junction area, YT	Date Received: Oct 20, 2017
Y1A 2C6	LSD:	Date Reported: Oct 26, 2017
Attn: Accounts Payable	P.O.: C00037999	Report Number: 2233684
Sampled By: Norbert Botca	Proj. Acct. code:	
Company: YG-Environment		

Notes To Clients:

- sample 1234110-4. Detection limits are adjusted accordingly.
- Oct 25, 2017 - Total organic carbon was less than dissolved organic carbon for sample 1234110-4. The results were verified and are within expected measurement uncertainty.
- Oct 25, 2017 - Reduction of analytical volume was necessary for boron analysis to bring results within the analytical range for sample #1234110-1. Detection limits are adjusted accordingly.
- Oct 26, 2017 - Sample 1234110-1; 5883396: Reduction of analytical volume was necessary for fluoride to bring results within the analytical range for sample 1234110-1. Detection limits are adjusted accordingly.

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Analytical Report

Bill To: YTG DOE - Water Resources PO Box 2703 Whitehorse, YT, Canada Y1A 2C6	Project ID: YOWN Project Name: YOWN Project Location: Haines Junction area, YT LSD: P.O.: C00037999 Proj. Acct. code:	Lot ID: 1234110 Control Number: Date Received: Oct 20, 2017 Date Reported: Oct 26, 2017 Report Number: 2233684
Attn: Accounts Payable Sampled By: Norbert Botca Company: YG-Environment		

		Reference Number	1234110-1	1234110-2	1234110-3	
		Sample Date	Oct 17, 2017	Oct 17, 2017	Oct 17, 2017	
		Sample Time	13:18	11:40	10:35	
		Sample Location				
		Sample Description	YOWN-1506 / 2017259 / 4.1°C / B	YOWN-1514 / 2017257 / 4.1°C / B	YOWN-1515 / 2017258 / 4.1°C / B	
		Matrix	Water	Water	Water	
Analyte	Units	Results	Results	Results	Nominal Detection Limit	
Inorganic Nonmetallic Parameters						
Nitrogen	Total	mg/L	0.69	1.31	0.34	0.06
Organic Carbon	Total Nonpurgeable	mg/L	0.9	1.4	0.7	0.5
Organic Carbon	Dissolved Nonpurgeable	mg/L	<0.5	1.0	<0.5	0.5
Inorganic carbon	Total	mg/L	186	7.3	4	0.5
Inorganic carbon	Dissolved	mg/L	188	7.3	4	0.5
Ammonia - N		mg/L	0.30	0.85	<0.01	0.01
Phosphorus	Total	mg/L	0.021	0.008	0.004	0.003
Metals Dissolved						
Mercury	Dissolved	mg/L	<0.00001	<0.00001	<0.00001	0.00001
Physical and Aggregate Properties						
Solids	Total Dissolved	mg/L	1000	26	<5	5
Routine Water						
pH - Holding Time			Exceeded	Exceeded	Exceeded	
pH	at 25 °C		11.12	9.12	7.76	
Electrical Conductivity		µS/cm at 25 °C	432	1603	70	1
Calcium	Dissolved	mg/L	1.4	5.4	3.4	0.01
Magnesium	Dissolved	mg/L	0.70	0.37	0.21	0.02
Potassium	Dissolved	mg/L	1.0	1.5	0.73	0.04
Silicon	Dissolved	mg/L	3.2	0.085	0.16	0.005
Sodium	Dissolved	mg/L	400	5.4	1.6	0.1
Sulfur	Dissolved	mg/L	0.08	0.16	0.14	0.02
Bicarbonate		mg/L	<5	654	38	5
Carbonate		mg/L	18	194	<6	6
Hydroxide		mg/L	33	<5	<5	5
P-Alkalinity	as CaCO3	mg/L	111	162	<5	5
T-Alkalinity	as CaCO3	mg/L	126	861	31	5
Chloride	Dissolved	mg/L	26.9	3.91	0.17	0.05
Fluoride	Dissolved	mg/L	31	0.08	0.30	0.01
Nitrate - N	Dissolved	mg/L	0.2	<0.01	<0.01	0.01
Nitrite - N	Dissolved	mg/L	<0.1	<0.01	<0.01	0.01
Sulfate (SO4)	Dissolved	mg/L	1	<0.1	0.2	0.1
Hardness	as CaCO3 (dissolved)	mg/L	6.3	15	9.4	5
Trace Metals Dissolved						
Digestion	Dissolved		Field filtered and Pres Dissol	Field filtered and Pres Dissol	Field filtered and Pres Dissol	
Titanium	Dissolved	mg/L	<0.002	<0.002	<0.002	0.002
Aluminum	Dissolved	mg/L	0.002	<0.001	0.001	0.001
Antimony	Dissolved	mg/L	0.00013	0.00006	0.00006	0.00002

Analytical Report

Bill To: YTG DOE - Water Resources	Project ID: YOWN	Lot ID: 1234110
PO Box 2703	Project Name: YOWN	Control Number:
Whitehorse, YT, Canada	Project Location: Haines Junction area, YT	Date Received: Oct 20, 2017
Y1A 2C6	LSD:	Date Reported: Oct 26, 2017
Attn: Accounts Payable	P.O.: C00037999	Report Number: 2233684
Sampled By: Norbert Botca	Proj. Acct. code:	
Company: YG-Environment		

	Reference Number	1234110-1	1234110-2	1234110-3		
	Sample Date	Oct 17, 2017	Oct 17, 2017	Oct 17, 2017		
	Sample Time	13:18	11:40	10:35		
	Sample Location					
	Sample Description	YOWN-1506 / 2017259 / 4.1°C / B	YOWN-1514 / 2017257 / 4.1°C / B	YOWN-1515 / 2017258 / 4.1°C / B		
	Matrix	Water	Water	Water		
Analyte	Units	Results	Results	Results	Nominal Detection Limit	
Trace Metals Dissolved - Continued						
Arsenic	Dissolved	mg/L	<0.0001	<0.0001	<0.0001	0.0001
Barium	Dissolved	mg/L	0.0200	0.0046	0.0079	0.0001
Beryllium	Dissolved	mg/L	0.00007	<0.00005	<0.00005	0.00005
Bismuth	Dissolved	mg/L	<0.0001	<0.0001	<0.0001	0.0001
Boron	Dissolved	mg/L	18.86	0.050	0.021	0.002
Cadmium	Dissolved	mg/L	<0.00001	<0.00001	<0.00001	0.00001
Chromium	Dissolved	mg/L	<0.00005	<0.00005	<0.00005	0.00005
Cobalt	Dissolved	mg/L	<0.00002	<0.00002	0.00003	0.00002
Copper	Dissolved	mg/L	<0.0005	<0.0005	<0.0005	0.0005
Iron	Dissolved	mg/L	0.148	0.012	0.003	0.002
Lead	Dissolved	mg/L	<0.00001	<0.00001	<0.00001	0.00001
Lithium	Dissolved	mg/L	0.0156	<0.0005	0.0108	0.0005
Manganese	Dissolved	mg/L	0.003	0.015	0.011	0.001
Molybdenum	Dissolved	mg/L	0.00003	0.00691	0.00262	0.00002
Nickel	Dissolved	mg/L	<0.0002	0.0003	0.0017	0.0002
Selenium	Dissolved	mg/L	<0.0002	<0.0002	<0.0002	0.0002
Silver	Dissolved	mg/L	0.00001	<0.00001	<0.00001	0.00001
Strontium	Dissolved	mg/L	0.1365	0.0302	0.0161	0.0001
Tellurium	Dissolved	mg/L	<0.00005	<0.00005	<0.00005	0.00005
Thallium	Dissolved	mg/L	<0.00001	<0.00001	<0.00001	0.00001
Thorium	Dissolved	mg/L	0.00243	<0.00005	<0.00005	0.00005
Tin	Dissolved	mg/L	<0.0001	<0.0001	<0.0001	0.0001
Uranium	Dissolved	mg/L	0.00025	<0.00001	<0.00001	0.00001
Vanadium	Dissolved	mg/L	<0.00005	<0.00005	<0.00005	0.00005
Zinc	Dissolved	mg/L	<0.0005	<0.0005	<0.0005	0.0005
Zirconium	Dissolved	mg/L	0.0116	<0.0001	<0.0001	0.0001

Analytical Report

Bill To: YTG DOE - Water Resources	Project ID: YOWN	Lot ID: 1234110
PO Box 2703	Project Name: YOWN	Control Number:
Whitehorse, YT, Canada	Project Location: Haines Junction area, YT	Date Received: Oct 20, 2017
Y1A 2C6	LSD:	Date Reported: Oct 26, 2017
Attn: Accounts Payable	P.O.: C00037999	Report Number: 2233684
Sampled By: Norbert Botca	Proj. Acct. code:	
Company: YG-Environment		

Reference Number	1234110-4
Sample Date	Oct 18, 2017
Sample Time	10:12
Sample Location	
Sample Description	YOWN-1604 / 2017260 / 4.1°C / B

Matrix Water

Analyte	Units	Results	Results	Results	Nominal Detection Limit
Inorganic Nonmetallic Parameters					
Nitrogen	Total	mg/L	0.35		0.06
Organic Carbon	Total Nonpurgeable	mg/L	0.8		0.5
Organic Carbon	Dissolved Nonpurgeable	mg/L	0.9		0.5
Inorganic carbon	Total	mg/L	5.1		0.5
Inorganic carbon	Dissolved	mg/L	5.1		0.5
Ammonia - N		mg/L	0.03		0.01
Phosphorus	Total	mg/L	<0.003		0.003
Metals Dissolved					
Mercury	Dissolved	mg/L	<0.00001		0.00001
Physical and Aggregate Properties					
Solids	Total Dissolved	mg/L	270		5
Routine Water					
pH - Holding Time			Exceeded		
pH	at 25 °C		7.05		
Electrical Conductivity		µS/cm at 25 °C	29		1
Calcium	Dissolved	mg/L	14		0.01
Magnesium	Dissolved	mg/L	5.9		0.02
Potassium	Dissolved	mg/L	2.6		0.04
Silicon	Dissolved	mg/L	0.010		0.005
Sodium	Dissolved	mg/L	38		0.1
Sulfur	Dissolved	mg/L	37		0.02
Bicarbonate		mg/L	16		5
Carbonate		mg/L	<6		6
Hydroxide		mg/L	<5		5
P-Alkalinity	as CaCO3	mg/L	<5		5
T-Alkalinity	as CaCO3	mg/L	13		5
Chloride	Dissolved	mg/L	1.30		0.05
Fluoride	Dissolved	mg/L	0.27		0.01
Nitrate - N	Dissolved	mg/L	0.01		0.01
Nitrite - N	Dissolved	mg/L	<0.01		0.01
Sulfate (SO4)	Dissolved	mg/L	125		0.1
Hardness	as CaCO3 (dissolved)	mg/L	58		5
Trace Metals Dissolved					
Digestion	Dissolved		Field filtered and Pres Dissol		
Titanium	Dissolved	mg/L	<0.002		0.002
Aluminum	Dissolved	mg/L	<0.001		0.001
Antimony	Dissolved	mg/L	0.00009		0.00002

Analytical Report

Bill To: YTG DOE - Water Resources	Project ID: YOWN	Lot ID: 1234110
PO Box 2703	Project Name: YOWN	Control Number:
Whitehorse, YT, Canada	Project Location: Haines Junction area, YT	Date Received: Oct 20, 2017
Y1A 2C6	LSD:	Date Reported: Oct 26, 2017
Attn: Accounts Payable	P.O.: C00037999	Report Number: 2233684
Sampled By: Norbert Botca	Proj. Acct. code:	
Company: YG-Environment		

Reference Number 1234110-4
Sample Date Oct 18, 2017
Sample Time 10:12
Sample Location
Sample Description YOWN-1604 /
 2017260 / 4.1°C / B

Matrix Water

Analyte	Units	Results	Results	Results	Nominal Detection Limit
Trace Metals Dissolved - Continued					
Arsenic	Dissolved	mg/L	<0.0001		0.0001
Barium	Dissolved	mg/L	0.0026		0.0001
Beryllium	Dissolved	mg/L	<0.00005		0.00005
Bismuth	Dissolved	mg/L	<0.0001		0.0001
Boron	Dissolved	mg/L	0.026		0.002
Cadmium	Dissolved	mg/L	<0.00001		0.00001
Chromium	Dissolved	mg/L	<0.00005		0.00005
Cobalt	Dissolved	mg/L	0.00006		0.00002
Copper	Dissolved	mg/L	<0.0005		0.0005
Iron	Dissolved	mg/L	0.740		0.002
Lead	Dissolved	mg/L	<0.00001		0.00001
Lithium	Dissolved	mg/L	0.0092		0.0005
Manganese	Dissolved	mg/L	0.235		0.001
Molybdenum	Dissolved	mg/L	0.00266		0.00002
Nickel	Dissolved	mg/L	0.0009		0.0002
Selenium	Dissolved	mg/L	<0.0002		0.0002
Silver	Dissolved	mg/L	<0.00001		0.00001
Strontium	Dissolved	mg/L	0.1709		0.0001
Tellurium	Dissolved	mg/L	<0.00005		0.00005
Thallium	Dissolved	mg/L	<0.00001		0.00001
Thorium	Dissolved	mg/L	<0.00005		0.00005
Tin	Dissolved	mg/L	<0.0001		0.0001
Uranium	Dissolved	mg/L	<0.00001		0.00001
Vanadium	Dissolved	mg/L	<0.00005		0.00005
Zinc	Dissolved	mg/L	<0.0005		0.0005
Zirconium	Dissolved	mg/L	<0.0001		0.0001

Approved by: 
 Mathieu Simoneau
 Operations Manager

Data have been validated by Analytical Quality Control and Exova's Integrated Data Validation System (IDVS).

Generation and distribution of the report, and approval by the digitized signature above, are performed through a secure and controlled automatic process.

Quality Control

Bill To: YTG DOE - Water Resources	Project ID: YOWN	Lot ID: 1234110
PO Box 2703	Project Name: YOWN	Control Number:
Whitehorse, YT, Canada	Project Location: Haines Junction area, YT	Date Received: Oct 20, 2017
Y1A 2C6	LSD:	Date Reported: Oct 26, 2017
Attn: Accounts Payable	P.O.: C00037999	Report Number: 2233684
Sampled By: Norbert Botca	Proj. Acct. code:	
Company: YG-Environment		

Inorganic Nonmetallic Parameters

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
Ammonium - N	µg/L	-8.389	-110.00	10.00	yes
Phosphorus	mg/L	-0.001	-0.003	0.003	yes
Date Acquired: October 23, 2017					
Nitrogen	mg/L	0	-0.04	0.08	yes
Organic Carbon	mg/L	0.03132	-0.5	0.5	yes
Inorganic carbon	mg/L	0.1266	-0.5	0.5	yes
Date Acquired: October 25, 2017					

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
Ammonium - N	µg/L	110.27	85	115	yes
Phosphorus	mg/L	100.12	90	110	yes
Date Acquired: October 23, 2017					
Ammonium - N	µg/L	114.72	70	130	yes
Phosphorus	mg/L	106.00	80	120	yes
Date Acquired: October 23, 2017					

Client Sample Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Nitrogen	mg/L	0.66	0.68	10	0.06	yes
Organic Carbon	mg/L	7.2	7.3	10	1.0	yes
Inorganic carbon	mg/L	188	188	10	1.0	yes
Date Acquired: October 25, 2017						
Ammonia - N	mg/L	2.69	2.69	20	50.00	yes
Date Acquired: October 24, 2017						

Control Sample	Units	Measured	Lower Limit	Upper Limit	Passed QC
Organic Carbon	mg/L	<0.5	-0.5	0.5	yes
Date Acquired: October 24, 2017					
Nitrogen	mg/L	126	103.74	137.28	yes
Organic Carbon	mg/L	128	112.1	136.6	yes
Inorganic carbon	mg/L	47.2	39.0	57.0	yes
Date Acquired: October 25, 2017					
Nitrogen	mg/L	15.3	13.27	16.93	yes
Organic Carbon	mg/L	14.9	12.8	17.2	yes
Inorganic carbon	mg/L	16.4	13.5	18.3	yes
Date Acquired: October 25, 2017					
Nitrogen	mg/L	1.08	0.89	1.25	yes
Organic Carbon	mg/L	3.0	2.4	4.0	yes
Inorganic carbon	mg/L	3.4	2.7	3.9	yes
Date Acquired: October 25, 2017					
Phosphorus	mg/L	0.445	0.389	0.503	yes
Date Acquired: October 23, 2017					

Metals Dissolved

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
Mercury	ng/L	-0.3	-9.99	9.99	yes
Date Acquired: October 23, 2017					

Quality Control

Bill To: YTG DOE - Water Resources	Project ID: YOWN	Lot ID: 1234110
PO Box 2703	Project Name: YOWN	Control Number:
Whitehorse, YT, Canada	Project Location: Haines Junction area, YT	Date Received: Oct 20, 2017
Y1A 2C6	LSD:	Date Reported: Oct 26, 2017
Attn: Accounts Payable	P.O.: C00037999	Report Number: 2233684
Sampled By: Norbert Botca	Proj. Acct. code:	
Company: YG-Environment		

Metals Dissolved - Continued

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC	
Mercury	ng/L	107.40	90	110	yes	
Date Acquired: October 23, 2017						
Certified Reference Material	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Mercury	µg/L	0.03	0.04	0.02	0.05	yes
Date Acquired: October 23, 2017						
Client Sample Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Mercury	µg/L	<0.01	<0.01	20	0.05	yes
Date Acquired: October 23, 2017						

Physical and Aggregate Properties

Client Sample Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Solids	mg/L	10	<5	30	50.000	yes
Date Acquired: October 23, 2017						
Control Sample	Units	Measured	Lower Limit	Upper Limit	Passed QC	
Solids	mg/L	520	412.000	610.600	yes	
Date Acquired: October 23, 2017						
Solids	mg/L	32	18.000	37.200	yes	
Date Acquired: October 23, 2017						
Solids	mg/L	<5	-5.001	5.001	yes	
Date Acquired: October 23, 2017						

Routine Water

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
Calcium	mg/L	-0.00953614	-0.010	0.010	yes
Magnesium	mg/L	-0.011008	-0.020	0.020	yes
Potassium	mg/L	-0.00287871	-0.040	0.040	yes
Silicon	mg/L	0.00493899	-0.005	0.005	yes
Sodium	mg/L	0.0068099	-0.099	0.099	yes
Date Acquired: October 23, 2017					
Chloride	mg/L	0.025344	-0.201	0.201	yes
Fluoride	mg/L	0	-0.099	0.099	yes
Nitrate - N	mg/L	0.00759001	-0.010	0.010	yes
Nitrite - N	mg/L	0	-0.099	0.099	yes
Sulfate (SO4)	mg/L	0	-0.990	0.990	yes
Date Acquired: October 20, 2017					
Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
Calcium	mg/L	104.54	90	110	yes
Magnesium	mg/L	99.06	90	110	yes
Potassium	mg/L	95.90	90	110	yes
Silicon	mg/L	93.14	90	110	yes
Sodium	mg/L	94.02	90	110	yes
Date Acquired: October 23, 2017					
Chloride	mg/L	101.10	85	115	yes

Quality Control

Bill To: YTG DOE - Water Resources	Project ID: YOWN	Lot ID: 1234110
PO Box 2703	Project Name: YOWN	Control Number:
Whitehorse, YT, Canada	Project Location: Haines Junction area, YT	Date Received: Oct 20, 2017
Y1A 2C6	LSD:	Date Reported: Oct 26, 2017
Attn: Accounts Payable	P.O.: C00037999	Report Number: 2233684
Sampled By: Norbert Botca	Proj. Acct. code:	
Company: YG-Environment		

Routine Water - Continued

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
Fluoride	mg/L	103.74	85	115	yes
Nitrate - N	mg/L	99.93	85	115	yes
Nitrite - N	mg/L	95.62	90	110	yes
Sulfate (SO4)	mg/L	102.46	85	115	yes

Date Acquired: October 20, 2017

Chloride	mg/L	100.80	90	110	yes
Fluoride	mg/L	98.90	89	109	yes
Nitrate - N	mg/L	99.28	88	108	yes
Nitrite - N	mg/L	99.55	90	118	yes
Sulfate (SO4)	mg/L	102.28	90	110	yes

Date Acquired: October 20, 2017

Calcium	mg/L	93.76	90	110	yes
Magnesium	mg/L	104.20	90	110	yes
Potassium	mg/L	103.63	90	110	yes
Sodium	mg/L	99.48	90	110	yes

Date Acquired: October 23, 2017

Certified Reference Material	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
T-Alkalinity	mg/L	10	10	8	12	yes

Date Acquired: October 21, 2017

Client Sample Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Calcium	mg/L	420	400	30	1.000	yes
Magnesium	mg/L	150	140	30	1.000	yes
Potassium	mg/L	2.8	2.6	30	1.000	yes
Silicon	mg/L	3.9	3.7	30	0.150	yes
Sodium	mg/L	98	93	30	1.000	yes
Sulfur	mg/L	440	430	30	3.000	yes

Date Acquired: October 23, 2017

pH		8.03	7.81	10		yes
Chloride	mg/L	4.97	4.96	20	0.250	yes
Fluoride	mg/L	0.03	0.03	20	0.050	yes
Nitrate - N	mg/L	5.12	5.12	20	0.050	yes
Nitrite - N	mg/L	<0.01	<0.01	20	0.050	yes
Sulfate (SO4)	mg/L	13.6	13.6	20	0.500	yes

Date Acquired: October 20, 2017

Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Chloride	mg/L	1.30	1.36	6	0.010	yes
Nitrate - N	mg/L	0.29	0.30	12	0.050	yes
Sulfate (SO4)	mg/L	4.6	4.7	6	0.010	yes

Date Acquired: October 20, 2017

Control Sample	Units	Measured	Lower Limit	Upper Limit	Passed QC
pH		9.69	9.17	10.81	yes
Electrical Conductivity	µS/cm at 25 °C	210	194	250	yes
P-Alkalinity	mg/L	26	7	55	yes

Quality Control

Bill To: YTG DOE - Water Resources	Project ID: YOWN	Lot ID: 1234110
PO Box 2703	Project Name: YOWN	Control Number:
Whitehorse, YT, Canada	Project Location: Haines Junction area, YT	Date Received: Oct 20, 2017
Y1A 2C6	LSD:	Date Reported: Oct 26, 2017
Attn: Accounts Payable	P.O.: C00037999	Report Number: 2233684
Sampled By: Norbert Botca	Proj. Acct. code:	
Company: YG-Environment		

Routine Water - Continued

Control Sample	Units	Measured	Lower Limit	Upper Limit	Passed QC
T-Alkalinity	mg/L	106	98	113	yes
Date Acquired: October 21, 2017					
pH		4.04	3.88	4.12	yes
Date Acquired: October 21, 2017					
pH		7.97	7.88	8.12	yes
Date Acquired: October 21, 2017					
Electrical Conductivity	µS/cm at 25 °C	1360	1323	1503	yes
Date Acquired: October 21, 2017					

Trace Metals Dissolved

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
Aluminum	µg/L	0.821638	-0.990	0.990	yes
Antimony	µg/L	0.0198127	-0.020	0.020	yes
Arsenic	µg/L	-0.00653636	-0.099	0.099	yes
Barium	µg/L	0.00880642	-0.099	0.099	yes
Beryllium	µg/L	-0.0164462	-0.050	0.050	yes
Bismuth	µg/L	0.0137736	-0.099	0.099	yes
Boron	µg/L	0.311859	-2.001	2.001	yes
Cadmium	µg/L	0.00225781	-0.010	0.010	yes
Chromium	µg/L	0.0064843	-0.050	0.050	yes
Cobalt	µg/L	0.00399238	-0.020	0.020	yes
Copper	µg/L	0.0235268	-0.050	0.050	yes
Iron	µg/L	0.000638041	-2.001	2.001	yes
Lead	µg/L	0.00238973	-0.010	0.010	yes
Lithium	µg/L	0.0670326	-0.500	0.500	yes
Manganese	µg/L	0.057273	-0.990	0.990	yes
Molybdenum	µg/L	-0.000248757	-0.020	0.020	yes
Nickel	µg/L	0	-0.200	0.200	yes
Selenium	µg/L	0.021818	-0.200	0.200	yes
Silver	µg/L	-0.00271131	-0.009	0.009	yes
Strontium	µg/L	0.046068	-0.099	0.099	yes
Tellurium	µg/L	-0.0118794	-0.050	0.050	yes
Thallium	µg/L	0.000715481	-0.010	0.010	yes
Thorium	µg/L	-0.00595299	-0.050	0.050	yes
Tin	µg/L	0.00500916	-0.099	0.099	yes
Titanium	µg/L	-0.0451221	-0.099	0.099	yes
Uranium	µg/L	0.000645327	-0.010	0.010	yes
Vanadium	µg/L	-0.0168469	-0.050	0.050	yes
Zinc	µg/L	0.0187221	-0.500	0.500	yes
Zirconium	µg/L	0.0526091	-0.099	0.099	yes

Date Acquired: October 23, 2017

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
Titanium	mg/L	96.16	90	110	yes
Date Acquired: October 23, 2017					

Quality Control

Bill To: YTG DOE - Water Resources	Project ID: YOWN	Lot ID: 1234110
PO Box 2703	Project Name: YOWN	Control Number:
Whitehorse, YT, Canada	Project Location: Haines Junction area, YT	Date Received: Oct 20, 2017
Y1A 2C6	LSD:	Date Reported: Oct 26, 2017
Attn: Accounts Payable	P.O.: C00037999	Report Number: 2233684
Sampled By: Norbert Botca	Proj. Acct. code:	
Company: YG-Environment		

Trace Metals Dissolved - Continued

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
Aluminum	µg/L	110.88	80	120	yes
Antimony	µg/L	100.40	90	110	yes
Arsenic	µg/L	102.42	90	110	yes
Barium	µg/L	101.16	90	110	yes
Beryllium	µg/L	101.60	90	110	yes
Boron	µg/L	98.42	70	130	yes
Cadmium	µg/L	103.53	90	110	yes
Chromium	µg/L	106.38	90	110	yes
Cobalt	µg/L	105.38	90	110	yes
Copper	µg/L	102.40	90	110	yes
Lead	µg/L	108.42	90	110	yes
Lithium	µg/L	107.62	90	110	yes
Molybdenum	µg/L	98.22	90	110	yes
Nickel	µg/L	104.47	90	110	yes
Selenium	µg/L	101.04	90	110	yes
Silver	µg/L	99.57	90	110	yes
Strontium	µg/L	99.35	90	110	yes
Thorium	µg/L	98.86	90	110	yes
Tin	µg/L	100.26	90	110	yes
Titanium	µg/L	97.03	90	110	yes
Uranium	µg/L	105.78	90	110	yes
Vanadium	µg/L	105.94	90	110	yes
Zinc	µg/L	108.75	90	110	yes
Date Acquired: October 23, 2017					
Aluminum	µg/L	96.73	80	120	yes
Antimony	µg/L	103.77	90	110	yes
Arsenic	µg/L	97.87	90	110	yes
Barium	µg/L	96.28	90	110	yes
Beryllium	µg/L	103.93	90	110	yes
Boron	µg/L	99.51	80	120	yes
Cadmium	µg/L	101.38	90	110	yes
Chromium	µg/L	100.14	90	110	yes
Cobalt	µg/L	99.18	90	110	yes
Copper	µg/L	95.54	90	110	yes
Lead	µg/L	103.13	90	110	yes
Lithium	µg/L	101.16	90	110	yes
Molybdenum	µg/L	100.66	90	110	yes
Nickel	µg/L	99.78	90	110	yes
Selenium	µg/L	98.44	90	110	yes
Silver	µg/L	106.64	90	110	yes
Strontium	µg/L	98.08	90	110	yes
Thallium	µg/L	101.94	90	110	yes
Thorium	µg/L	101.54	86	122	yes
Tin	µg/L	102.32	90	110	yes
Titanium	µg/L	96.48	90	110	yes

Quality Control

Bill To: YTG DOE - Water Resources	Project ID: YOWN	Lot ID: 1234110
PO Box 2703	Project Name: YOWN	Control Number:
Whitehorse, YT, Canada	Project Location: Haines Junction area, YT	Date Received: Oct 20, 2017
Y1A 2C6	LSD:	Date Reported: Oct 26, 2017
Attn: Accounts Payable	P.O.: C00037999	Report Number: 2233684
Sampled By: Norbert Botca	Proj. Acct. code:	
Company: YG-Environment		

Trace Metals Dissolved - Continued

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
Uranium	µg/L	100.26	90	110	yes
Vanadium	µg/L	101.43	90	110	yes
Zinc	µg/L	90.36	90	110	yes

Date Acquired: October 23, 2017

Client Sample Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Barium	µg/L	2.0	2.0	20	5.000	yes
Nickel	µg/L	0.9	0.7	20	5.000	yes
Strontium	µg/L	0.4	0.4	20	0.500	yes
Zinc	µg/L	0.9	0.8	20	5.000	yes

Date Acquired: October 23, 2017

Titanium	mg/L	0.025	0.025	30	0.012	yes
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Date Acquired: October 23, 2017

Methodology and Notes

Bill To: YTG DOE - Water Resources	Project ID: YOWN	Lot ID: 1234110
PO Box 2703	Project Name: YOWN	Control Number:
Whitehorse, YT, Canada	Project Location: Haines Junction area, YT	Date Received: Oct 20, 2017
Y1A 2C6	LSD:	Date Reported: Oct 26, 2017
Attn: Accounts Payable	P.O.: C00037999	Report Number: 2233684
Sampled By: Norbert Botca	Proj. Acct. code:	
Company: YG-Environment		

Method of Analysis

Method Name	Reference	Method	Date Analysis Started	Location
Alk, pH, EC, Turb in water (Surrey)	APHA	* Alkalinity - Titration Method, 2320 B	Oct 21, 2017	Exova Surrey
Alk, pH, EC, Turb in water (Surrey)	APHA	* Conductivity, 2510 B	Oct 21, 2017	Exova Surrey
Alk, pH, EC, Turb in water (Surrey)	APHA	* pH - Electrometric Method, 4500-H+ B	Oct 21, 2017	Exova Surrey
Ammonia-N in Water (Surrey)	APHA	* Flow Injection Analysis, 4500-NH3 H	Oct 24, 2017	Exova Surrey
Anions by IEC in water (Surrey)	APHA	* Ion Chromatography with Chemical Suppression of Eluent Cond., 4110 B	Oct 20, 2017	Exova Surrey
Carbon Inorganic (Dissolved) in water(DIC)	APHA	High-Temperature Combustion Method, 5310 B	Oct 25, 2017	Exova Edmonton
Carbon Inorganic (Total) in water (TIC)	APHA	High-Temperature Combustion Method, 5310 B	Oct 25, 2017	Exova Edmonton
Carbon Organic (Dissolved) in water (DOC)	APHA	High-Temperature Combustion Method, 5310 B	Oct 24, 2017	Exova Edmonton
Carbon Organic (Total) in water (TOC)	APHA	High-Temperature Combustion Method, 5310 B	Oct 24, 2017	Exova Edmonton
Mercury Low Level (Dissolved) in water (Surrey)	EPA	* Mercury in Water by Cold Vapor Atomic Fluorescence Spectrometry, 245.7	Oct 23, 2017	Exova Surrey
Metals SemiTrace (Dissolved) in water (Surrey)	US EPA	* Metals & Trace Elements by ICP-AES, 6010C	Oct 23, 2017	Exova Surrey
Phosphorus - total by Smartchem (Surrey)	APHA	* Persulfate digestion method, 4500-P B5	Oct 23, 2017	Exova Surrey
Solids Dissolved (Total, Fixed and Volatile) - Surrey	APHA	* Total Dissolved Solids Dried at 180 C, 2540 C	Oct 23, 2017	Exova Surrey
Total and Kjeldahl Nitrogen (Total) in Water	ISO	* Water Quality - Determination of nitrogen, ISO/TR 11905-2	Oct 23, 2017	Exova Edmonton
Trace Metals (dissolved) in Water (Surrey)	US EPA	* Determination of Trace Elements in Waters and Wastes by ICP-MS, 200.8	Oct 23, 2017	Exova Surrey

* Reference Method Modified

References

APHA	Standard Methods for the Examination of Water and Wastewater
EPA	Environmental Protection Agency Test Methods - US
ISO	International Organization for Standardization
US EPA	US Environmental Protection Agency Test Methods

Comments:

- Oct 23, 2017 - Reduction of analytical volume was necessary for metals analysis to bring results within the analytical range for sample #1234110-1. Detection limits are adjusted accordingly.
- Oct 25, 2017 - Sample 1234110-4; 5883399: Reduction of analytical volume was necessary for sulfate to bring results within the analytical range for sample 1234110-4. Detection limits are adjusted accordingly.
- Oct 25, 2017 - Sample 1234110-1; 5883396: Reduction of analytical volume was necessary for anions due to matrix effects in sample 1234110-1. Detection limits are adjusted accordingly.
- Oct 25, 2017 - Sample 1234110-4; 5883399: Reduction of analytical volume was necessary for sulfate to bring results within the analytical range for sample 1234110-4. Detection limits are adjusted accordingly.
- Oct 25, 2017 - Total organic carbon was less than dissolved organic carbon for sample 1234110-4. The results were verified and are within expected measurement uncertainty.

Methodology and Notes

Bill To: YTG DOE - Water Resources	Project ID: YOWN	Lot ID: 1234110
PO Box 2703	Project Name: YOWN	Control Number:
Whitehorse, YT, Canada	Project Location: Haines Junction area, YT	Date Received: Oct 20, 2017
Y1A 2C6	LSD:	Date Reported: Oct 26, 2017
Attn: Accounts Payable	P.O.: C00037999	Report Number: 2233684
Sampled By: Norbert Botca	Proj. Acct. code:	
Company: YG-Environment		

-
- Oct 25, 2017 - Reduction of analytical volume was necessary for boron analysis to bring results within the analytical range for sample #1234110-1. Detection limits are adjusted accordingly.
 - Oct 26, 2017 - Sample 1234110-1; 5883396: Reduction of analytical volume was necessary for fluoride to bring results within the analytical range for sample 1234110-1. Detection limits are adjusted accordingly.

Please direct any inquiries regarding this report to our Client Services Group or to the Operations Manager at the coordinates indicated at the top left of this page.

Results relate only to samples as submitted.

The test report shall not be reproduced except in full, without the written approval of the laboratory.

Report Transmission Cover Page

Bill To: YTG DOE - Water Resources	Project ID: YOWN	Lot ID: 1234110
PO Box 2703	Project Name: YOWN	Control Number:
Whitehorse, YT, Canada	Project Location: Haines Junction area, YT	Date Received: Oct 20, 2017
Y1A 2C6	LSD:	Date Reported: Oct 26, 2017
Attn: Accounts Payable	P.O.: C00037999	Report Number: 2233684
Sampled By: Norbert Botca	Proj. Acct. code:	
Company: YG-Environment		

Contact	Company	Address
Holly Goulding	YTG DOE - Water Resources	202, 419 Range Road Whitehorse, YT Y1A 3V1 Phone: (867) 456-6583 Fax: (867) 667-3194 Email: holly.goulding@gov.yk.ca

Delivery	Format	Deliverables
Email - Merge Reports	PDF	COC / Test Report
Email - Single Report	EQWin	Test Report
Email - Single Report	PDF	Invoice

John Miller	YTG DOE - Water Resources	202, 419 Range Road Whitehorse, YT Y1A 3V1 Phone: (867) 667-3104 Fax: (867) 667-3194 Email: john.miller@gov.yk.ca
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Delivery	Format	Deliverables
Email - Multiple Reports By Lot	EQWin	Test Report
Email - Multiple Reports By Lot	PDF	COC / Test Report
Email - Single Report	PDF	COA
Email - Single Report	PDF	COR
Email - Single Report	PDF	Invoice

Norbert Botca	YTG DOE - Water Resources	203, 1191 Front Street Whitehorse, YT Y1A 0K5 Phone: (867) 667-3512 Fax: (867) 667-3194 Email: norbert.botca@gov.yk.ca
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Delivery	Format	Deliverables
Email - Multiple Reports By Lot	EQWin	Test Report
Email - Multiple Reports By Lot	PDF	COC / Test Report
Email - Single Report	PDF	COA
Email - Single Report	PDF	COR
Email - Single Report	PDF	Invoice

Tyler Williams	YTG DOE - Water Resources	202, 419 Range Road Whitehorse, YT Y1A 3V1 Phone: (867) 667-3233 Fax: (867) 667-3194 Email: Tyler.Williams@gov.yk.ca
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Delivery	Format	Deliverables
Email - Multiple Reports By Lot	EQWin	Test Report
Email - Multiple Reports By Lot	PDF	COC / Test Report

Notes To Clients:

- Oct 23, 2017 - Reduction of analytical volume was necessary for metals analysis to bring results within the analytical range for sample #1234110-1. Detection limits are adjusted accordingly.
- Oct 25, 2017 - Sample 1234110-4; 5883399: Reduction of analytical volume was necessary for sulfate to bring results within the analytical range for sample 1234110-4. Detection limits are adjusted accordingly.
- Oct 25, 2017 - Sample 1234110-1; 5883396: Reduction of analytical volume was necessary for anions due to matrix effects in sample 1234110-1. Detection limits are adjusted accordingly.
- Oct 25, 2017 - Sample 1234110-4; 5883399: Reduction of analytical volume was necessary for sulfate to bring results within the analytical range for

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Report Transmission Cover Page

Bill To: YTG DOE - Water Resources	Project ID: YOWN	Lot ID: 1234110
PO Box 2703	Project Name: YOWN	Control Number:
Whitehorse, YT, Canada	Project Location: Haines Junction area, YT	Date Received: Oct 20, 2017
Y1A 2C6	LSD:	Date Reported: Oct 26, 2017
Attn: Accounts Payable	P.O.: C00037999	Report Number: 2233684
Sampled By: Norbert Botca	Proj. Acct. code:	
Company: YG-Environment		

Notes To Clients:

- sample 1234110-4. Detection limits are adjusted accordingly.
- Oct 25, 2017 - Total organic carbon was less than dissolved organic carbon for sample 1234110-4. The results were verified and are within expected measurement uncertainty.
- Oct 25, 2017 - Reduction of analytical volume was necessary for boron analysis to bring results within the analytical range for sample #1234110-1. Detection limits are adjusted accordingly.
- Oct 26, 2017 - Sample 1234110-1; 5883396: Reduction of analytical volume was necessary for fluoride to bring results within the analytical range for sample 1234110-1. Detection limits are adjusted accordingly.

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Analytical Report

Bill To: YTG DOE - Water Resources PO Box 2703 Whitehorse, YT, Canada Y1A 2C6	Project ID: YOWN Project Name: YOWN Project Location: Haines Junction area, YT LSD: P.O.: C00037999 Proj. Acct. code:	Lot ID: 1234110 Control Number: Date Received: Oct 20, 2017 Date Reported: Oct 26, 2017 Report Number: 2233684
Attn: Accounts Payable Sampled By: Norbert Botca Company: YG-Environment		

		Reference Number	1234110-1	1234110-2	1234110-3	
		Sample Date	Oct 17, 2017	Oct 17, 2017	Oct 17, 2017	
		Sample Time	13:18	11:40	10:35	
		Sample Location				
		Sample Description	YOWN-1506 / 2017259 / 4.1°C / B	YOWN-1514 / 2017257 / 4.1°C / B	YOWN-1515 / 2017258 / 4.1°C / B	
		Matrix	Water	Water	Water	
Analyte	Units	Results	Results	Results	Nominal Detection Limit	
Inorganic Nonmetallic Parameters						
Nitrogen	Total	mg/L	0.69	1.31	0.34	0.06
Organic Carbon	Total Nonpurgeable	mg/L	0.9	1.4	0.7	0.5
Organic Carbon	Dissolved Nonpurgeable	mg/L	<0.5	1.0	<0.5	0.5
Inorganic carbon	Total	mg/L	186	7.3	4	0.5
Inorganic carbon	Dissolved	mg/L	188	7.3	4	0.5
Ammonia - N		mg/L	0.30	0.85	<0.01	0.01
Phosphorus	Total	mg/L	0.021	0.008	0.004	0.003
Metals Dissolved						
Mercury	Dissolved	mg/L	<0.00001	<0.00001	<0.00001	0.00001
Physical and Aggregate Properties						
Solids	Total Dissolved	mg/L	1000	26	<5	5
Routine Water						
pH - Holding Time			Exceeded	Exceeded	Exceeded	
pH	at 25 °C		11.12	9.12	7.76	
Electrical Conductivity		µS/cm at 25 °C	432	1603	70	1
Calcium	Dissolved	mg/L	1.4	5.4	3.4	0.01
Magnesium	Dissolved	mg/L	0.70	0.37	0.21	0.02
Potassium	Dissolved	mg/L	1.0	1.5	0.73	0.04
Silicon	Dissolved	mg/L	3.2	0.085	0.16	0.005
Sodium	Dissolved	mg/L	400	5.4	1.6	0.1
Sulfur	Dissolved	mg/L	0.08	0.16	0.14	0.02
Bicarbonate		mg/L	<5	654	38	5
Carbonate		mg/L	18	194	<6	6
Hydroxide		mg/L	33	<5	<5	5
P-Alkalinity	as CaCO3	mg/L	111	162	<5	5
T-Alkalinity	as CaCO3	mg/L	126	861	31	5
Chloride	Dissolved	mg/L	26.9	3.91	0.17	0.05
Fluoride	Dissolved	mg/L	31	0.08	0.30	0.01
Nitrate - N	Dissolved	mg/L	0.2	<0.01	<0.01	0.01
Nitrite - N	Dissolved	mg/L	<0.1	<0.01	<0.01	0.01
Sulfate (SO4)	Dissolved	mg/L	1	<0.1	0.2	0.1
Hardness	as CaCO3 (dissolved)	mg/L	6.3	15	9.4	5
Trace Metals Dissolved						
Digestion	Dissolved		Field filtered and Pres Dissol	Field filtered and Pres Dissol	Field filtered and Pres Dissol	
Titanium	Dissolved	mg/L	<0.002	<0.002	<0.002	0.002
Aluminum	Dissolved	mg/L	0.002	<0.001	0.001	0.001
Antimony	Dissolved	mg/L	0.00013	0.00006	0.00006	0.00002

Analytical Report

Bill To: YTG DOE - Water Resources PO Box 2703 Whitehorse, YT, Canada Y1A 2C6 Attn: Accounts Payable Sampled By: Norbert Botca Company: YG-Environment	Project ID: YOWN Project Name: YOWN Project Location: Haines Junction area, YT LSD: P.O.: C00037999 Proj. Acct. code:	Lot ID: 1234110 Control Number: Date Received: Oct 20, 2017 Date Reported: Oct 26, 2017 Report Number: 2233684
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	Reference Number	1234110-1	1234110-2	1234110-3		
	Sample Date	Oct 17, 2017	Oct 17, 2017	Oct 17, 2017		
	Sample Time	13:18	11:40	10:35		
	Sample Location					
	Sample Description	YOWN-1506 / 2017259 / 4.1°C / B	YOWN-1514 / 2017257 / 4.1°C / B	YOWN-1515 / 2017258 / 4.1°C / B		
	Matrix	Water	Water	Water		
Analyte	Units	Results	Results	Results	Nominal Detection Limit	
Trace Metals Dissolved - Continued						
Arsenic	Dissolved	mg/L	<0.0001	<0.0001	<0.0001	0.0001
Barium	Dissolved	mg/L	0.0200	0.0046	0.0079	0.0001
Beryllium	Dissolved	mg/L	0.00007	<0.00005	<0.00005	0.00005
Bismuth	Dissolved	mg/L	<0.0001	<0.0001	<0.0001	0.0001
Boron	Dissolved	mg/L	18.86	0.050	0.021	0.002
Cadmium	Dissolved	mg/L	<0.00001	<0.00001	<0.00001	0.00001
Chromium	Dissolved	mg/L	<0.00005	<0.00005	<0.00005	0.00005
Cobalt	Dissolved	mg/L	<0.00002	<0.00002	0.00003	0.00002
Copper	Dissolved	mg/L	<0.0005	<0.0005	<0.0005	0.0005
Iron	Dissolved	mg/L	0.148	0.012	0.003	0.002
Lead	Dissolved	mg/L	<0.00001	<0.00001	<0.00001	0.00001
Lithium	Dissolved	mg/L	0.0156	<0.0005	0.0108	0.0005
Manganese	Dissolved	mg/L	0.003	0.015	0.011	0.001
Molybdenum	Dissolved	mg/L	0.00003	0.00691	0.00262	0.00002
Nickel	Dissolved	mg/L	<0.0002	0.0003	0.0017	0.0002
Selenium	Dissolved	mg/L	<0.0002	<0.0002	<0.0002	0.0002
Silver	Dissolved	mg/L	0.00001	<0.00001	<0.00001	0.00001
Strontium	Dissolved	mg/L	0.1365	0.0302	0.0161	0.0001
Tellurium	Dissolved	mg/L	<0.00005	<0.00005	<0.00005	0.00005
Thallium	Dissolved	mg/L	<0.00001	<0.00001	<0.00001	0.00001
Thorium	Dissolved	mg/L	0.00243	<0.00005	<0.00005	0.00005
Tin	Dissolved	mg/L	<0.0001	<0.0001	<0.0001	0.0001
Uranium	Dissolved	mg/L	0.00025	<0.00001	<0.00001	0.00001
Vanadium	Dissolved	mg/L	<0.00005	<0.00005	<0.00005	0.00005
Zinc	Dissolved	mg/L	<0.0005	<0.0005	<0.0005	0.0005
Zirconium	Dissolved	mg/L	0.0116	<0.0001	<0.0001	0.0001

Analytical Report

Bill To: YTG DOE - Water Resources PO Box 2703 Whitehorse, YT, Canada Y1A 2C6	Project ID: YOWN Project Name: YOWN Project Location: Haines Junction area, YT LSD: P.O.: C00037999 Proj. Acct. code:	Lot ID: 1234110 Control Number: Date Received: Oct 20, 2017 Date Reported: Oct 26, 2017 Report Number: 2233684
Attn: Accounts Payable Sampled By: Norbert Botca Company: YG-Environment		

Reference Number 1234110-4
Sample Date Oct 18, 2017
Sample Time 10:12
Sample Location
Sample Description YOWN-1604 /
 2017260 / 4.1°C / B

Matrix Water

Analyte	Units	Results	Results	Results	Nominal Detection Limit
Inorganic Nonmetallic Parameters					
Nitrogen	Total	mg/L	0.35		0.06
Organic Carbon	Total Nonpurgeable	mg/L	0.8		0.5
Organic Carbon	Dissolved Nonpurgeable	mg/L	0.9		0.5
Inorganic carbon	Total	mg/L	5.1		0.5
Inorganic carbon	Dissolved	mg/L	5.1		0.5
Ammonia - N		mg/L	0.03		0.01
Phosphorus	Total	mg/L	<0.003		0.003
Metals Dissolved					
Mercury	Dissolved	mg/L	<0.00001		0.00001
Physical and Aggregate Properties					
Solids	Total Dissolved	mg/L	270		5
Routine Water					
pH - Holding Time			Exceeded		
pH	at 25 °C		7.05		
Electrical Conductivity		µS/cm at 25 °C	29		1
Calcium	Dissolved	mg/L	14		0.01
Magnesium	Dissolved	mg/L	5.9		0.02
Potassium	Dissolved	mg/L	2.6		0.04
Silicon	Dissolved	mg/L	0.010		0.005
Sodium	Dissolved	mg/L	38		0.1
Sulfur	Dissolved	mg/L	37		0.02
Bicarbonate		mg/L	16		5
Carbonate		mg/L	<6		6
Hydroxide		mg/L	<5		5
P-Alkalinity	as CaCO3	mg/L	<5		5
T-Alkalinity	as CaCO3	mg/L	13		5
Chloride	Dissolved	mg/L	1.30		0.05
Fluoride	Dissolved	mg/L	0.27		0.01
Nitrate - N	Dissolved	mg/L	0.01		0.01
Nitrite - N	Dissolved	mg/L	<0.01		0.01
Sulfate (SO4)	Dissolved	mg/L	125		0.1
Hardness	as CaCO3 (dissolved)	mg/L	58		5
Trace Metals Dissolved					
Digestion	Dissolved		Field filtered and Pres Dissol		
Titanium	Dissolved	mg/L	<0.002		0.002
Aluminum	Dissolved	mg/L	<0.001		0.001
Antimony	Dissolved	mg/L	0.00009		0.00002

Analytical Report

Bill To: YTG DOE - Water Resources PO Box 2703 Whitehorse, YT, Canada Y1A 2C6 Attn: Accounts Payable	Project ID: YOWN Project Name: YOWN Project Location: Haines Junction area, YT LSD: P.O.: C00037999 Proj. Acct. code:	Lot ID: 1234110 Control Number: Date Received: Oct 20, 2017 Date Reported: Oct 26, 2017 Report Number: 2233684
Sampled By: Norbert Botca Company: YG-Environment		

Reference Number 1234110-4
Sample Date Oct 18, 2017
Sample Time 10:12
Sample Location
Sample Description YOWN-1604 /
 2017260 / 4.1°C / B

Matrix Water

Analyte	Units	Results	Results	Results	Nominal Detection Limit
Trace Metals Dissolved - Continued					
Arsenic	Dissolved	mg/L	<0.0001		0.0001
Barium	Dissolved	mg/L	0.0026		0.0001
Beryllium	Dissolved	mg/L	<0.00005		0.00005
Bismuth	Dissolved	mg/L	<0.0001		0.0001
Boron	Dissolved	mg/L	0.026		0.002
Cadmium	Dissolved	mg/L	<0.00001		0.00001
Chromium	Dissolved	mg/L	<0.00005		0.00005
Cobalt	Dissolved	mg/L	0.00006		0.00002
Copper	Dissolved	mg/L	<0.0005		0.0005
Iron	Dissolved	mg/L	0.740		0.002
Lead	Dissolved	mg/L	<0.00001		0.00001
Lithium	Dissolved	mg/L	0.0092		0.0005
Manganese	Dissolved	mg/L	0.235		0.001
Molybdenum	Dissolved	mg/L	0.00266		0.00002
Nickel	Dissolved	mg/L	0.0009		0.0002
Selenium	Dissolved	mg/L	<0.0002		0.0002
Silver	Dissolved	mg/L	<0.00001		0.00001
Strontium	Dissolved	mg/L	0.1709		0.0001
Tellurium	Dissolved	mg/L	<0.00005		0.00005
Thallium	Dissolved	mg/L	<0.00001		0.00001
Thorium	Dissolved	mg/L	<0.00005		0.00005
Tin	Dissolved	mg/L	<0.0001		0.0001
Uranium	Dissolved	mg/L	<0.00001		0.00001
Vanadium	Dissolved	mg/L	<0.00005		0.00005
Zinc	Dissolved	mg/L	<0.0005		0.0005
Zirconium	Dissolved	mg/L	<0.0001		0.0001

Approved by: 
 Mathieu Simoneau
 Operations Manager

Data have been validated by Analytical Quality Control and Exova's Integrated Data Validation System (IDVS).

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Quality Control

Bill To: YTG DOE - Water Resources	Project ID: YOWN	Lot ID: 1234110
PO Box 2703	Project Name: YOWN	Control Number:
Whitehorse, YT, Canada	Project Location: Haines Junction area, YT	Date Received: Oct 20, 2017
Y1A 2C6	LSD:	Date Reported: Oct 26, 2017
Attn: Accounts Payable	P.O.: C00037999	Report Number: 2233684
Sampled By: Norbert Botca	Proj. Acct. code:	
Company: YG-Environment		

Inorganic Nonmetallic Parameters

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
Ammonium - N	µg/L	-8.389	-110.00	10.00	yes
Phosphorus	mg/L	-0.001	-0.003	0.003	yes
Date Acquired: October 23, 2017					
Nitrogen	mg/L	0	-0.04	0.08	yes
Organic Carbon	mg/L	0.03132	-0.5	0.5	yes
Inorganic carbon	mg/L	0.1266	-0.5	0.5	yes
Date Acquired: October 25, 2017					

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
Ammonium - N	µg/L	110.27	85	115	yes
Phosphorus	mg/L	100.12	90	110	yes
Date Acquired: October 23, 2017					
Ammonium - N	µg/L	114.72	70	130	yes
Phosphorus	mg/L	106.00	80	120	yes
Date Acquired: October 23, 2017					

Client Sample Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Nitrogen	mg/L	0.66	0.68	10	0.06	yes
Organic Carbon	mg/L	7.2	7.3	10	1.0	yes
Inorganic carbon	mg/L	188	188	10	1.0	yes
Date Acquired: October 25, 2017						
Ammonia - N	mg/L	2.69	2.69	20	50.00	yes
Date Acquired: October 24, 2017						

Control Sample	Units	Measured	Lower Limit	Upper Limit	Passed QC
Organic Carbon	mg/L	<0.5	-0.5	0.5	yes
Date Acquired: October 24, 2017					
Nitrogen	mg/L	126	103.74	137.28	yes
Organic Carbon	mg/L	128	112.1	136.6	yes
Inorganic carbon	mg/L	47.2	39.0	57.0	yes
Date Acquired: October 25, 2017					
Nitrogen	mg/L	15.3	13.27	16.93	yes
Organic Carbon	mg/L	14.9	12.8	17.2	yes
Inorganic carbon	mg/L	16.4	13.5	18.3	yes
Date Acquired: October 25, 2017					
Nitrogen	mg/L	1.08	0.89	1.25	yes
Organic Carbon	mg/L	3.0	2.4	4.0	yes
Inorganic carbon	mg/L	3.4	2.7	3.9	yes
Date Acquired: October 25, 2017					
Phosphorus	mg/L	0.445	0.389	0.503	yes
Date Acquired: October 23, 2017					

Metals Dissolved

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
Mercury	ng/L	-0.3	-9.99	9.99	yes
Date Acquired: October 23, 2017					

Quality Control

Bill To: YTG DOE - Water Resources	Project ID: YOWN	Lot ID: 1234110
PO Box 2703	Project Name: YOWN	Control Number:
Whitehorse, YT, Canada	Project Location: Haines Junction area, YT	Date Received: Oct 20, 2017
Y1A 2C6	LSD:	Date Reported: Oct 26, 2017
Attn: Accounts Payable	P.O.: C00037999	Report Number: 2233684
Sampled By: Norbert Botca	Proj. Acct. code:	
Company: YG-Environment		

Metals Dissolved - Continued

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC	
Mercury	ng/L	107.40	90	110	yes	
Date Acquired: October 23, 2017						
Certified Reference Material	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Mercury	µg/L	0.03	0.04	0.02	0.05	yes
Date Acquired: October 23, 2017						
Client Sample Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Mercury	µg/L	<0.01	<0.01	20	0.05	yes
Date Acquired: October 23, 2017						

Physical and Aggregate Properties

Client Sample Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Solids	mg/L	10	<5	30	50.000	yes
Date Acquired: October 23, 2017						
Control Sample	Units	Measured	Lower Limit	Upper Limit	Passed QC	
Solids	mg/L	520	412.000	610.600	yes	
Date Acquired: October 23, 2017						
Solids	mg/L	32	18.000	37.200	yes	
Date Acquired: October 23, 2017						
Solids	mg/L	<5	-5.001	5.001	yes	
Date Acquired: October 23, 2017						

Routine Water

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
Calcium	mg/L	-0.00953614	-0.010	0.010	yes
Magnesium	mg/L	-0.011008	-0.020	0.020	yes
Potassium	mg/L	-0.00287871	-0.040	0.040	yes
Silicon	mg/L	0.00493899	-0.005	0.005	yes
Sodium	mg/L	0.0068099	-0.099	0.099	yes
Date Acquired: October 23, 2017					
Chloride	mg/L	0.025344	-0.201	0.201	yes
Fluoride	mg/L	0	-0.099	0.099	yes
Nitrate - N	mg/L	0.00759001	-0.010	0.010	yes
Nitrite - N	mg/L	0	-0.099	0.099	yes
Sulfate (SO4)	mg/L	0	-0.990	0.990	yes
Date Acquired: October 20, 2017					
Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
Calcium	mg/L	104.54	90	110	yes
Magnesium	mg/L	99.06	90	110	yes
Potassium	mg/L	95.90	90	110	yes
Silicon	mg/L	93.14	90	110	yes
Sodium	mg/L	94.02	90	110	yes
Date Acquired: October 23, 2017					
Chloride	mg/L	101.10	85	115	yes

Quality Control

Bill To: YTG DOE - Water Resources	Project ID: YOWN	Lot ID: 1234110
PO Box 2703	Project Name: YOWN	Control Number:
Whitehorse, YT, Canada	Project Location: Haines Junction area, YT	Date Received: Oct 20, 2017
Y1A 2C6	LSD:	Date Reported: Oct 26, 2017
Attn: Accounts Payable	P.O.: C00037999	Report Number: 2233684
Sampled By: Norbert Botca	Proj. Acct. code:	
Company: YG-Environment		

Routine Water - Continued

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
Fluoride	mg/L	103.74	85	115	yes
Nitrate - N	mg/L	99.93	85	115	yes
Nitrite - N	mg/L	95.62	90	110	yes
Sulfate (SO4)	mg/L	102.46	85	115	yes

Date Acquired: October 20, 2017

Chloride	mg/L	100.80	90	110	yes
Fluoride	mg/L	98.90	89	109	yes
Nitrate - N	mg/L	99.28	88	108	yes
Nitrite - N	mg/L	99.55	90	118	yes
Sulfate (SO4)	mg/L	102.28	90	110	yes

Date Acquired: October 20, 2017

Calcium	mg/L	93.76	90	110	yes
Magnesium	mg/L	104.20	90	110	yes
Potassium	mg/L	103.63	90	110	yes
Sodium	mg/L	99.48	90	110	yes

Date Acquired: October 23, 2017

Certified Reference Material	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
T-Alkalinity	mg/L	10	10	8	12	yes

Date Acquired: October 21, 2017

Client Sample Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Calcium	mg/L	420	400	30	1.000	yes
Magnesium	mg/L	150	140	30	1.000	yes
Potassium	mg/L	2.8	2.6	30	1.000	yes
Silicon	mg/L	3.9	3.7	30	0.150	yes
Sodium	mg/L	98	93	30	1.000	yes
Sulfur	mg/L	440	430	30	3.000	yes

Date Acquired: October 23, 2017

pH		8.03	7.81	10		yes
Chloride	mg/L	4.97	4.96	20	0.250	yes
Fluoride	mg/L	0.03	0.03	20	0.050	yes
Nitrate - N	mg/L	5.12	5.12	20	0.050	yes
Nitrite - N	mg/L	<0.01	<0.01	20	0.050	yes
Sulfate (SO4)	mg/L	13.6	13.6	20	0.500	yes

Date Acquired: October 20, 2017

Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Chloride	mg/L	1.30	1.36	6	0.010	yes
Nitrate - N	mg/L	0.29	0.30	12	0.050	yes
Sulfate (SO4)	mg/L	4.6	4.7	6	0.010	yes

Date Acquired: October 20, 2017

Control Sample	Units	Measured	Lower Limit	Upper Limit	Passed QC
pH		9.69	9.17	10.81	yes
Electrical Conductivity	µS/cm at 25 °C	210	194	250	yes
P-Alkalinity	mg/L	26	7	55	yes

Quality Control

Bill To: YTG DOE - Water Resources	Project ID: YOWN	Lot ID: 1234110
PO Box 2703	Project Name: YOWN	Control Number:
Whitehorse, YT, Canada	Project Location: Haines Junction area, YT	Date Received: Oct 20, 2017
Y1A 2C6	LSD:	Date Reported: Oct 26, 2017
Attn: Accounts Payable	P.O.: C00037999	Report Number: 2233684
Sampled By: Norbert Botca	Proj. Acct. code:	
Company: YG-Environment		

Routine Water - Continued

Control Sample	Units	Measured	Lower Limit	Upper Limit	Passed QC
T-Alkalinity	mg/L	106	98	113	yes
Date Acquired: October 21, 2017					
pH		4.04	3.88	4.12	yes
Date Acquired: October 21, 2017					
pH		7.97	7.88	8.12	yes
Date Acquired: October 21, 2017					
Electrical Conductivity	µS/cm at 25 °C	1360	1323	1503	yes
Date Acquired: October 21, 2017					

Trace Metals Dissolved

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
Aluminum	µg/L	0.821638	-0.990	0.990	yes
Antimony	µg/L	0.0198127	-0.020	0.020	yes
Arsenic	µg/L	-0.00653636	-0.099	0.099	yes
Barium	µg/L	0.00880642	-0.099	0.099	yes
Beryllium	µg/L	-0.0164462	-0.050	0.050	yes
Bismuth	µg/L	0.0137736	-0.099	0.099	yes
Boron	µg/L	0.311859	-2.001	2.001	yes
Cadmium	µg/L	0.00225781	-0.010	0.010	yes
Chromium	µg/L	0.0064843	-0.050	0.050	yes
Cobalt	µg/L	0.00399238	-0.020	0.020	yes
Copper	µg/L	0.0235268	-0.050	0.050	yes
Iron	µg/L	0.000638041	-2.001	2.001	yes
Lead	µg/L	0.00238973	-0.010	0.010	yes
Lithium	µg/L	0.0670326	-0.500	0.500	yes
Manganese	µg/L	0.057273	-0.990	0.990	yes
Molybdenum	µg/L	-0.000248757	-0.020	0.020	yes
Nickel	µg/L	0	-0.200	0.200	yes
Selenium	µg/L	0.021818	-0.200	0.200	yes
Silver	µg/L	-0.00271131	-0.009	0.009	yes
Strontium	µg/L	0.046068	-0.099	0.099	yes
Tellurium	µg/L	-0.0118794	-0.050	0.050	yes
Thallium	µg/L	0.000715481	-0.010	0.010	yes
Thorium	µg/L	-0.00595299	-0.050	0.050	yes
Tin	µg/L	0.00500916	-0.099	0.099	yes
Titanium	µg/L	-0.0451221	-0.099	0.099	yes
Uranium	µg/L	0.000645327	-0.010	0.010	yes
Vanadium	µg/L	-0.0168469	-0.050	0.050	yes
Zinc	µg/L	0.0187221	-0.500	0.500	yes
Zirconium	µg/L	0.0526091	-0.099	0.099	yes

Date Acquired: October 23, 2017

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
Titanium	mg/L	96.16	90	110	yes
Date Acquired: October 23, 2017					

Quality Control

Bill To: YTG DOE - Water Resources	Project ID: YOWN	Lot ID: 1234110
PO Box 2703	Project Name: YOWN	Control Number:
Whitehorse, YT, Canada	Project Location: Haines Junction area, YT	Date Received: Oct 20, 2017
Y1A 2C6	LSD:	Date Reported: Oct 26, 2017
Attn: Accounts Payable	P.O.: C00037999	Report Number: 2233684
Sampled By: Norbert Botca	Proj. Acct. code:	
Company: YG-Environment		

Trace Metals Dissolved - Continued

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
Aluminum	µg/L	110.88	80	120	yes
Antimony	µg/L	100.40	90	110	yes
Arsenic	µg/L	102.42	90	110	yes
Barium	µg/L	101.16	90	110	yes
Beryllium	µg/L	101.60	90	110	yes
Boron	µg/L	98.42	70	130	yes
Cadmium	µg/L	103.53	90	110	yes
Chromium	µg/L	106.38	90	110	yes
Cobalt	µg/L	105.38	90	110	yes
Copper	µg/L	102.40	90	110	yes
Lead	µg/L	108.42	90	110	yes
Lithium	µg/L	107.62	90	110	yes
Molybdenum	µg/L	98.22	90	110	yes
Nickel	µg/L	104.47	90	110	yes
Selenium	µg/L	101.04	90	110	yes
Silver	µg/L	99.57	90	110	yes
Strontium	µg/L	99.35	90	110	yes
Thorium	µg/L	98.86	90	110	yes
Tin	µg/L	100.26	90	110	yes
Titanium	µg/L	97.03	90	110	yes
Uranium	µg/L	105.78	90	110	yes
Vanadium	µg/L	105.94	90	110	yes
Zinc	µg/L	108.75	90	110	yes
Date Acquired: October 23, 2017					
Aluminum	µg/L	96.73	80	120	yes
Antimony	µg/L	103.77	90	110	yes
Arsenic	µg/L	97.87	90	110	yes
Barium	µg/L	96.28	90	110	yes
Beryllium	µg/L	103.93	90	110	yes
Boron	µg/L	99.51	80	120	yes
Cadmium	µg/L	101.38	90	110	yes
Chromium	µg/L	100.14	90	110	yes
Cobalt	µg/L	99.18	90	110	yes
Copper	µg/L	95.54	90	110	yes
Lead	µg/L	103.13	90	110	yes
Lithium	µg/L	101.16	90	110	yes
Molybdenum	µg/L	100.66	90	110	yes
Nickel	µg/L	99.78	90	110	yes
Selenium	µg/L	98.44	90	110	yes
Silver	µg/L	106.64	90	110	yes
Strontium	µg/L	98.08	90	110	yes
Thallium	µg/L	101.94	90	110	yes
Thorium	µg/L	101.54	86	122	yes
Tin	µg/L	102.32	90	110	yes
Titanium	µg/L	96.48	90	110	yes

Quality Control

Bill To: YTG DOE - Water Resources	Project ID: YOWN	Lot ID: 1234110
PO Box 2703	Project Name: YOWN	Control Number:
Whitehorse, YT, Canada	Project Location: Haines Junction area, YT	Date Received: Oct 20, 2017
Y1A 2C6	LSD:	Date Reported: Oct 26, 2017
Attn: Accounts Payable	P.O.: C00037999	Report Number: 2233684
Sampled By: Norbert Botca	Proj. Acct. code:	
Company: YG-Environment		

Trace Metals Dissolved - Continued

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
Uranium	µg/L	100.26	90	110	yes
Vanadium	µg/L	101.43	90	110	yes
Zinc	µg/L	90.36	90	110	yes

Date Acquired: October 23, 2017

Client Sample Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Barium	µg/L	2.0	2.0	20	5.000	yes
Nickel	µg/L	0.9	0.7	20	5.000	yes
Strontium	µg/L	0.4	0.4	20	0.500	yes
Zinc	µg/L	0.9	0.8	20	5.000	yes

Date Acquired: October 23, 2017

Titanium	mg/L	0.025	0.025	30	0.012	yes
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Date Acquired: October 23, 2017

Methodology and Notes

Bill To: YTG DOE - Water Resources	Project ID: YOWN	Lot ID: 1234110
PO Box 2703	Project Name: YOWN	Control Number:
Whitehorse, YT, Canada	Project Location: Haines Junction area, YT	Date Received: Oct 20, 2017
Y1A 2C6	LSD:	Date Reported: Oct 26, 2017
Attn: Accounts Payable	P.O.: C00037999	Report Number: 2233684
Sampled By: Norbert Botca	Proj. Acct. code:	
Company: YG-Environment		

Method of Analysis

Method Name	Reference	Method	Date Analysis Started	Location
Alk, pH, EC, Turb in water (Surrey)	APHA	* Alkalinity - Titration Method, 2320 B	Oct 21, 2017	Exova Surrey
Alk, pH, EC, Turb in water (Surrey)	APHA	* Conductivity, 2510 B	Oct 21, 2017	Exova Surrey
Alk, pH, EC, Turb in water (Surrey)	APHA	* pH - Electrometric Method, 4500-H+ B	Oct 21, 2017	Exova Surrey
Ammonia-N in Water (Surrey)	APHA	* Flow Injection Analysis, 4500-NH3 H	Oct 24, 2017	Exova Surrey
Anions by IEC in water (Surrey)	APHA	* Ion Chromatography with Chemical Suppression of Eluent Cond., 4110 B	Oct 20, 2017	Exova Surrey
Carbon Inorganic (Dissolved) in water(DIC)	APHA	High-Temperature Combustion Method, 5310 B	Oct 25, 2017	Exova Edmonton
Carbon Inorganic (Total) in water (TIC)	APHA	High-Temperature Combustion Method, 5310 B	Oct 25, 2017	Exova Edmonton
Carbon Organic (Dissolved) in water (DOC)	APHA	High-Temperature Combustion Method, 5310 B	Oct 24, 2017	Exova Edmonton
Carbon Organic (Total) in water (TOC)	APHA	High-Temperature Combustion Method, 5310 B	Oct 24, 2017	Exova Edmonton
Mercury Low Level (Dissolved) in water (Surrey)	EPA	* Mercury in Water by Cold Vapor Atomic Fluorescence Spectrometry, 245.7	Oct 23, 2017	Exova Surrey
Metals SemiTrace (Dissolved) in water (Surrey)	US EPA	* Metals & Trace Elements by ICP-AES, 6010C	Oct 23, 2017	Exova Surrey
Phosphorus - total by Smartchem (Surrey)	APHA	* Persulfate digestion method, 4500-P B5	Oct 23, 2017	Exova Surrey
Solids Dissolved (Total, Fixed and Volatile) - Surrey	APHA	* Total Dissolved Solids Dried at 180 C, 2540 C	Oct 23, 2017	Exova Surrey
Total and Kjeldahl Nitrogen (Total) in Water	ISO	* Water Quality - Determination of nitrogen, ISO/TR 11905-2	Oct 23, 2017	Exova Edmonton
Trace Metals (dissolved) in Water (Surrey)	US EPA	* Determination of Trace Elements in Waters and Wastes by ICP-MS, 200.8	Oct 23, 2017	Exova Surrey

* Reference Method Modified

References

APHA	Standard Methods for the Examination of Water and Wastewater
EPA	Environmental Protection Agency Test Methods - US
ISO	International Organization for Standardization
US EPA	US Environmental Protection Agency Test Methods

Comments:

- Oct 23, 2017 - Reduction of analytical volume was necessary for metals analysis to bring results within the analytical range for sample #1234110-1. Detection limits are adjusted accordingly.
- Oct 25, 2017 - Sample 1234110-4; 5883399: Reduction of analytical volume was necessary for sulfate to bring results within the analytical range for sample 1234110-4. Detection limits are adjusted accordingly.
- Oct 25, 2017 - Sample 1234110-1; 5883396: Reduction of analytical volume was necessary for anions due to matrix effects in sample 1234110-1. Detection limits are adjusted accordingly.
- Oct 25, 2017 - Sample 1234110-4; 5883399: Reduction of analytical volume was necessary for sulfate to bring results within the analytical range for sample 1234110-4. Detection limits are adjusted accordingly.
- Oct 25, 2017 - Total organic carbon was less than dissolved organic carbon for sample 1234110-4. The results were verified and are within expected measurement uncertainty.

Methodology and Notes

Bill To: YTG DOE - Water Resources	Project ID: YOWN	Lot ID: 1234110
PO Box 2703	Project Name: YOWN	Control Number:
Whitehorse, YT, Canada	Project Location: Haines Junction area, YT	Date Received: Oct 20, 2017
Y1A 2C6	LSD:	Date Reported: Oct 26, 2017
Attn: Accounts Payable	P.O.: C00037999	Report Number: 2233684
Sampled By: Norbert Botca	Proj. Acct. code:	
Company: YG-Environment		

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- Oct 25, 2017 - Reduction of analytical volume was necessary for boron analysis to bring results within the analytical range for sample #1234110-1. Detection limits are adjusted accordingly.
 - Oct 26, 2017 - Sample 1234110-1; 5883396: Reduction of analytical volume was necessary for fluoride to bring results within the analytical range for sample 1234110-1. Detection limits are adjusted accordingly.

Please direct any inquiries regarding this report to our Client Services Group or to the Operations Manager at the coordinates indicated at the top left of this page.

Results relate only to samples as submitted.

The test report shall not be reproduced except in full, without the written approval of the laboratory.

Report Transmission Cover Page

Bill To: YTG DOE - Water Resources 202, 419 Range Road Whitehorse, YT, Canada Y1A 3V1	Project ID: YOWN Project Name: YOWN Project Location: McRae Creeks Well, whitehorse, YT	Lot ID: 1235288 Control Number: Date Received: Oct 25, 2017 Date Reported: Oct 31, 2017 Report Number: 2235880
Attn: John Miller Sampled By: Norbert Botca Company:	LSD: P.O.: C00037999 Proj. Acct. code:	

Contact	Company	Address
Holly Goulding	YTG DOE - Water Resources	202, 419 Range Road Whitehorse, YT Y1A 3V1 Phone: (867) 456-6583 Fax: (867) 667-3194 Email: holly.goulding@gov.yk.ca

Delivery	Format	Deliverables
Email - Merge Reports	PDF	COC / Test Report
Email - Single Report	EQWin	Test Report
Email - Single Report	PDF	Invoice

John Miller	YTG DOE - Water Resources	202, 419 Range Road Whitehorse, YT Y1A 3V1 Phone: (867) 667-3104 Fax: (867) 667-3194 Email: john.miller@gov.yk.ca
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Delivery	Format	Deliverables
Email - Multiple Reports By Lot	EQWin	Test Report
Email - Multiple Reports By Lot	PDF	COC / Test Report
Email - Single Report	PDF	COA
Email - Single Report	PDF	Invoice

Norbert Botca	YTG DOE - Water Resources	203, 1191 Front Street Whitehorse, YT Y1A 0K5 Phone: (867) 667-3512 Fax: (867) 667-3194 Email: norbert.botca@gov.yk.ca
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Delivery	Format	Deliverables
Email - Multiple Reports By Lot	EQWin	Test Report
Email - Multiple Reports By Lot	PDF	COC / Test Report
Email - Single Report	PDF	COA
Email - Single Report	PDF	Invoice

Tyler Williams	YTG DOE - Water Resources	202, 419 Range Road Whitehorse, YT Y1A 3V1 Phone: (867) 667-3233 Fax: (867) 667-3194 Email: Tyler.Williams@gov.yk.ca
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Delivery	Format	Deliverables
Email - Multiple Reports By Lot	EQWin	Test Report
Email - Multiple Reports By Lot	PDF	COC / Test Report

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Analytical Report

Bill To: YTG DOE - Water Resources 202, 419 Range Road Whitehorse, YT, Canada Y1A 3V1	Project ID: YOWN Project Name: YOWN Project Location: McRae Creeks Well, whitehorse, YT	Lot ID: 1235288 Control Number: Date Received: Oct 25, 2017 Date Reported: Oct 31, 2017 Report Number: 2235880
Attn: John Miller Sampled By: Norbert Botca Company:	LSD: P.O.: C00037999 Proj. Acct. code:	

Reference Number	1235288-1
Sample Date	Oct 24, 2017
Sample Time	13:45
Sample Location	
Sample Description	YOWN-1101 / 2017264 / B
Matrix	Water

Analyte	Units	Results	Results	Results	Nominal Detection Limit
Inorganic Nonmetallic Parameters					
Nitrogen	Total	mg/L	0.32		0.06
Organic Carbon	Total Nonpurgeable	mg/L	2.0		0.5
Organic Carbon	Dissolved Nonpurgeable	mg/L	1.5		0.5
Inorganic carbon	Total	mg/L	35.7		0.5
Inorganic carbon	Dissolved	mg/L	34.5		0.5
Ammonia - N		mg/L	<0.01		0.01
Phosphorus	Total	mg/L	0.027		0.003
Metals Dissolved					
Titanium	Dissolved	mg/L	0.004		0.002
Mercury	Dissolved	mg/L	<0.00001		0.00001
Physical and Aggregate Properties					
Solids	Total Dissolved	mg/L	160		5
Routine Water					
pH - Holding Time			Exceeded		
pH	at 25 °C		7.82		
Electrical Conductivity		µS/cm at 25 °C	242		1
Calcium	Dissolved	mg/L	34		0.01
Magnesium	Dissolved	mg/L	9.4		0.02
Potassium	Dissolved	mg/L	1.8		0.04
Silicon	Dissolved	mg/L	9.7		0.005
Sodium	Dissolved	mg/L	3.7		0.1
Sulfur	Dissolved	mg/L	1.1		0.02
Bicarbonate		mg/L	187		5
Carbonate		mg/L	<6		6
Hydroxide		mg/L	<5		5
P-Alkalinity	as CaCO3	mg/L	<5		5
T-Alkalinity	as CaCO3	mg/L	153		5
Chloride	Dissolved	mg/L	0.81		0.05
Fluoride	Dissolved	mg/L	0.05		0.01
Nitrate - N	Dissolved	mg/L	0.16		0.01
Nitrite - N	Dissolved	mg/L	<0.01		0.01
Sulfate (SO4)	Dissolved	mg/L	1.5		0.1
Hardness	as CaCO3 (dissolved)	mg/L	123		5
Trace Metals Dissolved					
Digestion	Dissolved		Field filtered and Pres Dissol		
Titanium	Dissolved	mg/L	0.004		0.002

Analytical Report

Bill To: YTG DOE - Water Resources 202, 419 Range Road Whitehorse, YT, Canada Y1A 3V1	Project ID: YOWN Project Name: YOWN Project Location: McRae Creeks Well, whitehorse, YT	Lot ID: 1235288 Control Number: Date Received: Oct 25, 2017 Date Reported: Oct 31, 2017 Report Number: 2235880
Attn: John Miller Sampled By: Norbert Botca Company:	LSD: P.O.: C00037999 Proj. Acct. code:	

Reference Number	1235288-1
Sample Date	Oct 24, 2017
Sample Time	13:45
Sample Location	
Sample Description	YOWN-1101 / 2017264 / B
Matrix	Water

Analyte	Units	Results	Results	Results	Nominal Detection Limit
Trace Metals Dissolved - Continued					
Aluminum	Dissolved	mg/L	<0.001		0.001
Antimony	Dissolved	mg/L	0.00016		0.00002
Arsenic	Dissolved	mg/L	0.0002		0.0001
Barium	Dissolved	mg/L	0.0048		0.0001
Beryllium	Dissolved	mg/L	<0.00005		0.00005
Bismuth	Dissolved	mg/L	<0.0001		0.0001
Boron	Dissolved	mg/L	0.004		0.002
Cadmium	Dissolved	mg/L	<0.00001		0.00001
Chromium	Dissolved	mg/L	0.00010		0.00005
Cobalt	Dissolved	mg/L	<0.00002		0.00002
Copper	Dissolved	mg/L	<0.0005		0.0005
Iron	Dissolved	mg/L	<0.002		0.002
Lead	Dissolved	mg/L	<0.00001		0.00001
Lithium	Dissolved	mg/L	<0.0005		0.0005
Manganese	Dissolved	mg/L	<0.001		0.001
Molybdenum	Dissolved	mg/L	0.00089		0.00002
Nickel	Dissolved	mg/L	0.0004		0.0002
Selenium	Dissolved	mg/L	<0.0002		0.0002
Silver	Dissolved	mg/L	<0.00001		0.00001
Strontium	Dissolved	mg/L	0.1610		0.0001
Tellurium	Dissolved	mg/L	<0.00005		0.00005
Thallium	Dissolved	mg/L	<0.00001		0.00001
Thorium	Dissolved	mg/L	0.00016		0.00005
Tin	Dissolved	mg/L	0.0001		0.0001
Uranium	Dissolved	mg/L	0.00152		0.00001
Vanadium	Dissolved	mg/L	0.00070		0.00005
Zinc	Dissolved	mg/L	0.00096		0.0005
Zirconium	Dissolved	mg/L	<0.0001		0.0001

Approved by: 
 Mathieu Simoneau
 Operations Manager

Data have been validated by Analytical Quality Control and Exova's Integrated Data Validation System (IDVS).

Generation and distribution of the report, and approval by the digitized signature above, are performed through a secure and controlled automatic process.

Quality Control

Bill To: YTG DOE - Water Resources 202, 419 Range Road Whitehorse, YT, Canada Y1A 3V1	Project ID: YOWN Project Name: YOWN Project Location: McRae Creeks Well, whitehorse, YT	Lot ID: 1235288 Control Number: Date Received: Oct 25, 2017 Date Reported: Oct 31, 2017 Report Number: 2235880
Attn: John Miller Sampled By: Norbert Botca Company:	LSD: P.O.: C00037999 Proj. Acct. code:	

Inorganic Nonmetallic Parameters

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC	
Ammonium - N	µg/L	-7.687	-110.00	10.00	yes	
Phosphorus	mg/L	-0.0023	-0.003	0.003	yes	
Date Acquired: October 30, 2017						
Nitrogen	mg/L	0	-0.04	0.08	yes	
Inorganic carbon	mg/L	0.2205	-0.5	0.5	yes	
Date Acquired: October 31, 2017						
Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC	
Ammonium - N	µg/L	107.64	85	115	yes	
Phosphorus	mg/L	101.10	90	110	yes	
Date Acquired: October 30, 2017						
Ammonium - N	µg/L	128.26	70	130	yes	
Phosphorus	mg/L	103.00	80	120	yes	
Date Acquired: October 30, 2017						
Client Sample Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Nitrogen	mg/L	0.32	0.27	10	0.06	yes
Inorganic carbon	mg/L	35.7	35.7	10	1.0	yes
Date Acquired: October 31, 2017						
Ammonia - N	mg/L	0.04	0.03	20	50.00	yes
Date Acquired: October 27, 2017						
Control Sample	Units	Measured	Lower Limit	Upper Limit	Passed QC	
Nitrogen	mg/L	115	103.74	137.28	yes	
Inorganic carbon	mg/L	47.3	38.5	53.5	yes	
Date Acquired: October 31, 2017						
Nitrogen	mg/L	14.1	13.27	16.93	yes	
Inorganic carbon	mg/L	16.6	14.1	18.3	yes	
Date Acquired: October 31, 2017						
Nitrogen	mg/L	1.05	0.89	1.25	yes	
Inorganic carbon	mg/L	3.5	2.7	4.1	yes	
Date Acquired: October 31, 2017						
Phosphorus	mg/L	0.465	0.389	0.503	yes	
Date Acquired: October 30, 2017						

Metals Dissolved

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
Mercury	ng/L	-7.1	-9.99	9.99	yes
Date Acquired: October 30, 2017					
Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
Mercury	ng/L	108.60	90	110	yes
Date Acquired: October 30, 2017					
Titanium	mg/L	97.95	90	110	yes
Date Acquired: October 28, 2017					

Quality Control

Bill To: YTG DOE - Water Resources 202, 419 Range Road Whitehorse, YT, Canada Y1A 3V1	Project ID: YOWN Project Name: YOWN Project Location: McRae Creeks Well, whitehorse, YT	Lot ID: 1235288 Control Number: Date Received: Oct 25, 2017 Date Reported: Oct 31, 2017 Report Number: 2235880
Attn: John Miller Sampled By: Norbert Botca Company:	LSD: P.O.: C00037999 Proj. Acct. code:	

Metals Dissolved - Continued

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC	
Titanium	mg/L	100.32	90	110	yes	
Date Acquired: October 28, 2017						
Certified Reference Material	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Mercury	µg/L	0.04	0.04	0.02	0.05	yes
Date Acquired: October 30, 2017						

Physical and Aggregate Properties

Client Sample Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Solids	mg/L	170	170	30	50.000	yes
Date Acquired: October 26, 2017						
Control Sample	Units	Measured	Lower Limit	Upper Limit	Passed QC	
Solids	mg/L	560	412.000	610.600	yes	
Date Acquired: October 26, 2017						
Solids	mg/L	<5	-5.001	5.001	yes	
Date Acquired: October 26, 2017						

Routine Water

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
Calcium	mg/L	-0.00795797	-0.010	0.010	yes
Magnesium	mg/L	0.000408688	-0.020	0.020	yes
Potassium	mg/L	-0.011597	-0.040	0.040	yes
Silicon	mg/L	-0.00204012	-0.005	0.005	yes
Sodium	mg/L	-0.0139737	-0.099	0.099	yes
Date Acquired: October 28, 2017					
Chloride	mg/L	0.0261144	-0.201	0.201	yes
Fluoride	mg/L	0	-0.099	0.099	yes
Nitrate - N	mg/L	0	-0.010	0.010	yes
Nitrite - N	mg/L	0	-0.099	0.099	yes
Sulfate (SO4)	mg/L	0	-0.990	0.990	yes
Date Acquired: October 26, 2017					
Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
Calcium	mg/L	100.70	90	110	yes
Magnesium	mg/L	103.75	90	110	yes
Potassium	mg/L	103.70	90	110	yes
Silicon	mg/L	102.34	90	110	yes
Sodium	mg/L	103.84	90	110	yes
Date Acquired: October 28, 2017					
Chloride	mg/L	101.03	85	115	yes
Fluoride	mg/L	100.78	85	115	yes
Nitrate - N	mg/L	99.49	85	115	yes
Nitrite - N	mg/L	94.93	90	110	yes
Sulfate (SO4)	mg/L	102.26	85	115	yes
Date Acquired: October 26, 2017					

Quality Control

Bill To: YTG DOE - Water Resources 202, 419 Range Road Whitehorse, YT, Canada Y1A 3V1	Project ID: YOWN Project Name: YOWN Project Location: McRae Creeks Well, whitehorse, YT	Lot ID: 1235288 Control Number: Date Received: Oct 25, 2017 Date Reported: Oct 31, 2017 Report Number: 2235880
Attn: John Miller Sampled By: Norbert Botca Company:	LSD: P.O.: C00037999 Proj. Acct. code:	

Routine Water - Continued

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
Chloride	mg/L	101.49	90	110	yes
Fluoride	mg/L	98.40	89	109	yes
Nitrate - N	mg/L	99.80	88	108	yes
Nitrite - N	mg/L	100.44	90	118	yes
Sulfate (SO4)	mg/L	102.94	90	110	yes

Date Acquired: October 26, 2017

Calcium	mg/L	101.68	90	110	yes
Magnesium	mg/L	106.06	90	110	yes
Potassium	mg/L	102.29	90	110	yes
Sodium	mg/L	103.46	90	110	yes

Date Acquired: October 28, 2017

Certified Reference Material	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
T-Alkalinity	mg/L	10	10	8	12	yes

Date Acquired: October 26, 2017

Client Sample Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
pH		7.82	7.76	10		yes
Electrical Conductivity	dS/m at 25 °C	0.242	0.239	10	0.005	yes
Bicarbonate	mg/L	187	190	10	10	yes
Hydroxide	mg/L	<5	<5	10	10	yes
P-Alkalinity	mg/L	<5	<5	10	5	yes
T-Alkalinity	mg/L	153	156	10	5	yes
Chloride	mg/L	12.2	12.0	20	0.250	yes
Fluoride	mg/L	0.10	0.10	20	0.050	yes
Nitrate - N	mg/L	0.01	<0.01	20	0.050	yes
Nitrite - N	mg/L	<0.01	<0.01	20	0.050	yes
Sulfate (SO4)	mg/L	9.4	9.4	20	0.500	yes

Date Acquired: October 26, 2017

Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Chloride	mg/L	1.31	1.37	6	0.010	yes
Nitrate - N	mg/L	0.30	0.31	12	0.050	yes
Sulfate (SO4)	mg/L	4.6	4.6	6	0.010	yes

Date Acquired: October 26, 2017

Control Sample	Units	Measured	Lower Limit	Upper Limit	Passed QC
pH		9.77	9.17	10.81	yes
Electrical Conductivity	µS/cm at 25 °C	204	194	250	yes
P-Alkalinity	mg/L	27	7	55	yes
T-Alkalinity	mg/L	106	98	113	yes

Date Acquired: October 26, 2017

pH		4.02	3.88	4.12	yes
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Date Acquired: October 26, 2017

pH		7.98	7.88	8.12	yes
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Date Acquired: October 26, 2017

Quality Control

Bill To: YTG DOE - Water Resources 202, 419 Range Road Whitehorse, YT, Canada Y1A 3V1	Project ID: YOWN Project Name: YOWN Project Location: McRae Creeks Well, whitehorse, YT	Lot ID: 1235288 Control Number: Date Received: Oct 25, 2017 Date Reported: Oct 31, 2017 Report Number: 2235880
Attn: John Miller Sampled By: Norbert Botca Company:	LSD: P.O.: C00037999 Proj. Acct. code:	

Routine Water - Continued

Control Sample	Units	Measured	Lower Limit	Upper Limit	Passed QC
Electrical Conductivity	µS/cm at 25 °C	1354	1323	1503	yes
Date Acquired: October 26, 2017					

Trace Metals Dissolved

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
Aluminum	µg/L	-0.333685	-0.990	0.990	yes
Antimony	µg/L	0	-0.020	0.020	yes
Arsenic	µg/L	-0.00408249	-0.099	0.099	yes
Barium	µg/L	-0.0468386	-0.099	0.099	yes
Beryllium	µg/L	0.0200366	-0.050	0.050	yes
Bismuth	µg/L	-0.0790753	-0.099	0.099	yes
Boron	µg/L	-0.282445	-2.001	2.001	yes
Cadmium	µg/L	-0.000600325	-0.010	0.010	yes
Chromium	µg/L	0	-0.050	0.050	yes
Cobalt	µg/L	-0.00294358	-0.020	0.020	yes
Copper	µg/L	-0.0279074	-0.050	0.050	yes
Iron	µg/L	-1.03605	-2.001	2.001	yes
Lead	µg/L	0	-0.010	0.010	yes
Lithium	µg/L	0.0256691	-0.500	0.500	yes
Manganese	µg/L	-0.00907391	-0.990	0.990	yes
Molybdenum	µg/L	0	-0.020	0.020	yes
Nickel	µg/L	-0.000669503	-0.200	0.200	yes
Selenium	µg/L	-0.0388904	-0.200	0.200	yes
Silver	µg/L	0	-0.009	0.009	yes
Strontium	µg/L	0.00179736	-0.099	0.099	yes
Tellurium	µg/L	0	-0.050	0.050	yes
Thallium	µg/L	-0.00976736	-0.010	0.010	yes
Thorium	µg/L	0	-0.050	0.050	yes
Tin	µg/L	0	-0.099	0.099	yes
Titanium	µg/L	0.000705694	-0.099	0.099	yes
Uranium	µg/L	-0.00666794	-0.010	0.010	yes
Vanadium	µg/L	0	-0.050	0.050	yes
Zinc	µg/L	0.0506524	-0.500	0.500	yes
Zirconium	µg/L	-0.033219	-0.099	0.099	yes

Date Acquired: October 28, 2017

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
Aluminum	µg/L	109.03	80	120	yes
Antimony	µg/L	91.96	90	110	yes
Arsenic	µg/L	99.35	90	110	yes
Barium	µg/L	103.87	90	110	yes
Beryllium	µg/L	100.51	90	110	yes
Boron	µg/L	105.73	70	130	yes
Cadmium	µg/L	102.93	90	110	yes
Chromium	µg/L	100.67	90	110	yes

Quality Control

Bill To: YTG DOE - Water Resources 202, 419 Range Road Whitehorse, YT, Canada Y1A 3V1	Project ID: YOWN Project Name: YOWN Project Location: McRae Creeks Well, whitehorse, YT	Lot ID: 1235288 Control Number: Date Received: Oct 25, 2017 Date Reported: Oct 31, 2017 Report Number: 2235880
Attn: John Miller Sampled By: Norbert Botca Company:	LSD: P.O.: C00037999 Proj. Acct. code:	

Trace Metals Dissolved - Continued

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
Cobalt	µg/L	102.33	90	110	yes
Copper	µg/L	100.87	90	110	yes
Lead	µg/L	98.98	90	110	yes
Lithium	µg/L	104.04	90	110	yes
Molybdenum	µg/L	96.90	90	110	yes
Nickel	µg/L	107.83	90	110	yes
Selenium	µg/L	100.09	90	110	yes
Silver	µg/L	91.26	90	110	yes
Strontium	µg/L	102.59	90	110	yes
Thorium	µg/L	108.26	90	110	yes
Tin	µg/L	98.39	90	110	yes
Titanium	µg/L	98.86	90	110	yes
Uranium	µg/L	99.72	90	110	yes
Vanadium	µg/L	101.64	90	110	yes
Zinc	µg/L	96.86	90	110	yes
Date Acquired: October 28, 2017					
Aluminum	µg/L	98.96	80	120	yes
Antimony	µg/L	92.33	90	110	yes
Arsenic	µg/L	97.00	90	110	yes
Barium	µg/L	97.65	90	110	yes
Beryllium	µg/L	98.46	90	110	yes
Boron	µg/L	101.67	80	120	yes
Cadmium	µg/L	99.03	90	110	yes
Chromium	µg/L	95.52	90	110	yes
Cobalt	µg/L	96.79	90	110	yes
Copper	µg/L	93.18	90	110	yes
Lead	µg/L	94.36	90	110	yes
Lithium	µg/L	98.39	90	110	yes
Molybdenum	µg/L	105.01	90	110	yes
Nickel	µg/L	97.26	90	110	yes
Selenium	µg/L	98.91	90	110	yes
Silver	µg/L	95.54	90	110	yes
Strontium	µg/L	99.97	90	110	yes
Thallium	µg/L	96.43	90	110	yes
Thorium	µg/L	98.95	86	122	yes
Tin	µg/L	103.22	90	110	yes
Titanium	µg/L	91.54	90	110	yes
Uranium	µg/L	95.47	90	110	yes
Vanadium	µg/L	95.63	90	110	yes
Zinc	µg/L	99.89	90	110	yes
Date Acquired: October 28, 2017					

Methodology and Notes

Bill To: YTG DOE - Water Resources 202, 419 Range Road Whitehorse, YT, Canada Y1A 3V1	Project ID: YOWN Project Name: YOWN Project Location: McRae Creeks Well, whitehorse, YT	Lot ID: 1235288 Control Number: Date Received: Oct 25, 2017 Date Reported: Oct 31, 2017 Report Number: 2235880
Attn: John Miller Sampled By: Norbert Botca Company:	LSD: P.O.: C00037999 Proj. Acct. code:	

Method of Analysis

Method Name	Reference	Method	Date Analysis Started	Location
Alk, pH, EC, Turb in water (Surrey)	APHA	* Alkalinity - Titration Method, 2320 B	Oct 26, 2017	Exova Surrey
Alk, pH, EC, Turb in water (Surrey)	APHA	* Conductivity, 2510 B	Oct 26, 2017	Exova Surrey
Alk, pH, EC, Turb in water (Surrey)	APHA	* pH - Electrometric Method, 4500-H+ B	Oct 26, 2017	Exova Surrey
Ammonia-N in Water (Surrey)	APHA	* Flow Injection Analysis, 4500-NH3 H	Oct 27, 2017	Exova Surrey
Anions by IEC in water (Surrey)	APHA	* Ion Chromatography with Chemical Suppression of Eluent Cond., 4110 B	Oct 26, 2017	Exova Surrey
Carbon Inorganic (Dissolved) in water(DIC)	APHA	High-Temperature Combustion Method, 5310 B	Oct 31, 2017	Exova Edmonton
Carbon Inorganic (Total) in water (TIC)	APHA	High-Temperature Combustion Method, 5310 B	Oct 31, 2017	Exova Edmonton
Carbon Organic (Dissolved) in water (DOC)	APHA	High-Temperature Combustion Method, 5310 B	Oct 30, 2017	Exova Edmonton
Carbon Organic (Total) in water (TOC)	APHA	High-Temperature Combustion Method, 5310 B	Oct 27, 2017	Exova Edmonton
Mercury Low Level (Dissolved) in water (Surrey)	EPA	* Mercury in Water by Cold Vapor Atomic Fluorescence Spectrometry, 245.7	Oct 30, 2017	Exova Surrey
Metals SemiTrace (Dissolved) in water (Surrey)	US EPA	* Metals & Trace Elements by ICP-AES, 6010C	Oct 28, 2017	Exova Surrey
Phosphorus - total by Smartchem (Surrey)	APHA	* Persulfate digestion method, 4500-P B5	Oct 30, 2017	Exova Surrey
Solids Dissolved (Total, Fixed and Volatile) - Surrey	APHA	* Total Dissolved Solids Dried at 180 C, 2540 C	Oct 26, 2017	Exova Surrey
Total and Kjeldahl Nitrogen (Total) in Water	ISO	* Water Quality - Determination of nitrogen, ISO/TR 11905-2	Oct 27, 2017	Exova Edmonton
Trace Metals (dissolved) in Water (Surrey)	US EPA	* Determination of Trace Elements in Waters and Wastes by ICP-MS, 200.8	Oct 28, 2017	Exova Surrey

* Reference Method Modified

References

APHA	Standard Methods for the Examination of Water and Wastewater
EPA	Environmental Protection Agency Test Methods - US
ISO	International Organization for Standardization
US EPA	US Environmental Protection Agency Test Methods

Methodology and Notes

Bill To:	YTG DOE - Water Resources	Project ID:	YOWN	Lot ID:	1235288
	202, 419 Range Road	Project Name:	YOWN	Control Number:	
	Whitehorse, YT, Canada	Project Location:	McRae Creeks Well, whitehorse, YT	Date Received:	Oct 25, 2017
	Y1A 3V1	LSD:		Date Reported:	Oct 31, 2017
Attn:	John Miller	P.O.:	C00037999	Report Number:	2235880
Sampled By:	Norbert Botca	Proj. Acct. code:			
Company:					

Please direct any inquiries regarding this report to our Client Services Group or to the Operations Manager at the coordinates indicated at the top left of this page.

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The test report shall not be reproduced except in full, without the written approval of the laboratory.

Report Transmission Cover Page

Bill To: YTG DOE - Water Resources PO Box 2703 Whitehorse, YT, Canada Y1A 2C6	Project ID: YOWN Project Name: YOWN Project Location: Whitehorse Area(Marsh and Labarge)	Lot ID: 1236284 Control Number: Date Received: Oct 30, 2017 Date Reported: Nov 3, 2017 Report Number: 2237858
Attn: Accounts Payable Sampled By: Norbert Botca Company: YG-Environment	LSD: P.O.: C00037999 Proj. Acct. code:	

Contact	Company	Address
Holly Goulding	YTG DOE - Water Resources	202, 419 Range Road Whitehorse, YT Y1A 3V1 Phone: (867) 456-6583 Fax: (867) 667-3194 Email: holly.goulding@gov.yk.ca

Delivery	Format	Deliverables
Email - Merge Reports	PDF	COC / Test Report
Email - Single Report	EQWin	Test Report
Email - Single Report	PDF	Invoice

John Miller	YTG DOE - Water Resources	202, 419 Range Road Whitehorse, YT Y1A 3V1 Phone: (867) 667-3104 Fax: (867) 667-3194 Email: john.miller@gov.yk.ca
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Delivery	Format	Deliverables
Email - Multiple Reports By Lot	EQWin	Test Report
Email - Multiple Reports By Lot	PDF	COC / Test Report
Email - Single Report	PDF	COA
Email - Single Report	PDF	COR
Email - Single Report	PDF	Invoice

Norbert Botca	YTG DOE - Water Resources	203, 1191 Front Street Whitehorse, YT Y1A 0K5 Phone: (867) 667-3512 Fax: (867) 667-3194 Email: norbert.botca@gov.yk.ca
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Delivery	Format	Deliverables
Email - Multiple Reports By Lot	EQWin	Test Report
Email - Multiple Reports By Lot	PDF	COC / Test Report
Email - Single Report	PDF	COA
Email - Single Report	PDF	COR
Email - Single Report	PDF	Invoice

Tyler Williams	YTG DOE - Water Resources	202, 419 Range Road Whitehorse, YT Y1A 3V1 Phone: (867) 667-3233 Fax: (867) 667-3194 Email: Tyler.Williams@gov.yk.ca
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Delivery	Format	Deliverables
Email - Multiple Reports By Lot	EQWin	Test Report
Email - Multiple Reports By Lot	PDF	COC / Test Report

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Analytical Report

Bill To: YTG DOE - Water Resources	Project ID: YOWN	Lot ID: 1236284
PO Box 2703	Project Name: YOWN	Control Number:
Whitehorse, YT, Canada	Project Location: Whitehorse Area(Marsh and Labarge)	Date Received: Oct 30, 2017
Y1A 2C6	LSD:	Date Reported: Nov 3, 2017
Attn: Accounts Payable	P.O.: C00037999	Report Number: 2237858
Sampled By: Norbert Botca	Proj. Acct. code:	
Company: YG-Environment		

Reference Number	1236284-1	1236284-2
Sample Date	Oct 26, 2017	Oct 26, 2017
Sample Time	13:30	11:05
Sample Location		
Sample Description	YOWN-1610 / 2017270 / 11.3 °C / B	YOWN-1501 / 2017271 / 11.3 °C / B
Matrix	Water	Water

Analyte	Units	Results	Results	Results	Nominal Detection Limit
Inorganic Nonmetallic Parameters					
Nitrogen	Total	mg/L	0.67	0.10	0.06
Organic Carbon	Total Nonpurgeable	mg/L	3.2	1.1	0.5
Organic Carbon	Dissolved Nonpurgeable	mg/L	2.3	<0.5	0.5
Inorganic carbon	Total	mg/L	56.9	8.1	0.5
Inorganic carbon	Dissolved	mg/L	56.4	1.7	0.5
Ammonia - N		mg/L	0.06	0.09	0.01
Phosphorus	Total	mg/L	0.010	0.076	0.003
Metals Dissolved					
Titanium	Dissolved	mg/L	0.008	<0.002	0.002
Mercury	Dissolved	mg/L	<0.00001	<0.00001	0.00001
Physical and Aggregate Properties					
Solids	Total Dissolved	mg/L	250	170	5
Routine Water					
Digestion	Dissolved		Field filtered and Pres Dissol	Field filtered and Pres Dissol	
pH - Holding Time			Exceeded	Exceeded	
pH	at 25 °C		7.93	8.50	
Electrical Conductivity		µS/cm at 25 °C	407	271	1
Calcium	Dissolved	mg/L	36	7.4	0.01
Magnesium	Dissolved	mg/L	22	1.1	0.02
Potassium	Dissolved	mg/L	0.96	0.58	0.04
Silicon	Dissolved	mg/L	0.72	3.1	0.005
Sodium	Dissolved	mg/L	2.8	50	0.1
Sulfur	Dissolved	mg/L	0.69	16	0.02
Bicarbonate		mg/L	310	130	5
Carbonate		mg/L	<6	<6	6
Hydroxide		mg/L	<5	<5	5
P-Alkalinity	as CaCO3	mg/L	<5	<5	5
T-Alkalinity	as CaCO3	mg/L	254	106	5
Chloride	Dissolved	mg/L	0.61	0.55	0.05
Fluoride	Dissolved	mg/L	0.09	0.81	0.01
Nitrate - N	Dissolved	mg/L	<0.01	0.01	0.01
Nitrite - N	Dissolved	mg/L	<0.01	<0.01	0.01
Sulfate (SO4)	Dissolved	mg/L	0.1	47.8	0.1
Hardness	as CaCO3 (dissolved)	mg/L	181	23	5

Analytical Report

Bill To: YTG DOE - Water Resources	Project ID: YOWN	Lot ID: 1236284
PO Box 2703	Project Name: YOWN	Control Number:
Whitehorse, YT, Canada	Project Location: Whitehorse Area(Marsh and Labarge)	Date Received: Oct 30, 2017
Y1A 2C6	LSD:	Date Reported: Nov 3, 2017
Attn: Accounts Payable	P.O.: C00037999	Report Number: 2237858
Sampled By: Norbert Botca	Proj. Acct. code:	
Company: YG-Environment		

		Reference Number	1236284-1	1236284-2	
		Sample Date	Oct 26, 2017	Oct 26, 2017	
		Sample Time	13:30	11:05	
		Sample Location			
		Sample Description	YOWN-1610 / 2017270 / 11.3 °C / B	YOWN-1501 / 2017271 / 11.3 °C / B	
		Matrix	Water	Water	
Analyte	Units	Results	Results	Results	Nominal Detection Limit
Trace Metals Dissolved					
Digestion	Dissolved	Field filtered and Pres Dissol	Field filtered and Pres Dissol		
Titanium	Dissolved	mg/L	0.008	<0.002	0.002
Aluminum	Dissolved	mg/L	<0.001	<0.001	0.001
Antimony	Dissolved	mg/L	0.00005	0.00008	0.00002
Arsenic	Dissolved	mg/L	0.0001	0.0332	0.0001
Barium	Dissolved	mg/L	0.0895	0.0238	0.0001
Beryllium	Dissolved	mg/L	<0.00005	<0.00005	0.00005
Bismuth	Dissolved	mg/L	<0.0001	<0.0001	0.0001
Boron	Dissolved	mg/L	0.009	0.038	0.002
Cadmium	Dissolved	mg/L	<0.00001	<0.00001	0.00001
Chromium	Dissolved	mg/L	<0.00005	<0.00005	0.00005
Cobalt	Dissolved	mg/L	0.00004	<0.00002	0.00002
Copper	Dissolved	mg/L	0.0034	<0.0005	0.0005
Iron	Dissolved	mg/L	6.75	0.055	0.002
Lead	Dissolved	mg/L	<0.00001	<0.00001	0.00001
Lithium	Dissolved	mg/L	0.0010	<0.0005	0.0005
Manganese	Dissolved	mg/L	0.234	0.004	0.001
Molybdenum	Dissolved	mg/L	0.00100	0.01531	0.00002
Nickel	Dissolved	mg/L	0.0028	0.0004	0.0002
Selenium	Dissolved	mg/L	<0.0002	<0.0002	0.0002
Silver	Dissolved	mg/L	0.00003	<0.00001	0.00001
Strontium	Dissolved	mg/L	0.1882	0.0874	0.0001
Tellurium	Dissolved	mg/L	0.00018	<0.00005	0.00005
Thallium	Dissolved	mg/L	<0.00001	<0.00001	0.00001
Thorium	Dissolved	mg/L	0.00048	0.00016	0.00005
Tin	Dissolved	mg/L	<0.0001	<0.0001	0.0001
Uranium	Dissolved	mg/L	<0.00001	0.00049	0.00001
Vanadium	Dissolved	mg/L	<0.00005	<0.00005	0.00005
Zinc	Dissolved	mg/L	0.0007	0.0011	0.0005
Zirconium	Dissolved	mg/L	0.0002	0.0012	0.0001

Approved by: 
 Mathieu Simoneau
 Operations Manager

Data have been validated by Analytical Quality Control and Exova's Integrated Data Validation System (IDVS).

Generation and distribution of the report, and approval by the digitized signature above, are performed through a secure and controlled automatic process.

Quality Control

Bill To: YTG DOE - Water Resources PO Box 2703 Whitehorse, YT, Canada Y1A 2C6 Attn: Accounts Payable	Project ID: YOWN Project Name: YOWN Project Location: Whitehorse Area(Marsh and Labarge) LSD: P.O.: C00037999 Proj. Acct. code:	Lot ID: 1236284 Control Number: Date Received: Oct 30, 2017 Date Reported: Nov 3, 2017 Report Number: 2237858
Sampled By: Norbert Botca Company: YG-Environment		

Inorganic Nonmetallic Parameters

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC	
Ammonium - N	µg/L	-13.308	-110.00	10.00	yes	
Phosphorus	mg/L	-0.0016	-0.003	0.003	yes	
Date Acquired: November 01, 2017						
Organic Carbon	mg/L	0.06521	-0.5	0.5	yes	
Inorganic carbon	mg/L	0.2098	-0.5	0.5	yes	
Date Acquired: November 03, 2017						
Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC	
Ammonium - N	µg/L	111.13	85	115	yes	
Phosphorus	mg/L	100.64	90	110	yes	
Date Acquired: November 01, 2017						
Ammonium - N	µg/L	111.54	70	130	yes	
Phosphorus	mg/L	87.00	80	120	yes	
Date Acquired: November 01, 2017						
Client Sample Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Organic Carbon	mg/L	3.2	3.3	10	1.0	yes
Inorganic carbon	mg/L	56.4	56.8	10	1.0	yes
Date Acquired: November 03, 2017						
Ammonia - N	mg/L	0.06	0.05	20	50.00	yes
Date Acquired: November 03, 2017						
Control Sample	Units	Measured	Lower Limit	Upper Limit	Passed QC	
Organic Carbon	mg/L	<0.5	-0.5	0.5	yes	
Date Acquired: November 02, 2017						
Organic Carbon	mg/L	121	109.1	139.7	yes	
Inorganic carbon	mg/L	48.6	39.0	57.0	yes	
Date Acquired: November 03, 2017						
Organic Carbon	mg/L	14.1	12.8	17.2	yes	
Inorganic carbon	mg/L	17.0	13.5	18.3	yes	
Date Acquired: November 03, 2017						
Organic Carbon	mg/L	2.8	2.4	4.0	yes	
Inorganic carbon	mg/L	3.6	2.7	3.9	yes	
Date Acquired: November 03, 2017						
Phosphorus	mg/L	0.454	0.389	0.503	yes	
Date Acquired: November 01, 2017						

Metals Dissolved

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
Mercury	ng/L	-1.3	-9.99	9.99	yes
Date Acquired: November 01, 2017					
Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
Mercury	ng/L	100.60	90	110	yes
Date Acquired: November 01, 2017					

Quality Control

Bill To: YTG DOE - Water Resources	Project ID: YOWN	Lot ID: 1236284
PO Box 2703	Project Name: YOWN	Control Number:
Whitehorse, YT, Canada	Project Location: Whitehorse Area(Marsh and Labarge)	Date Received: Oct 30, 2017
Y1A 2C6	LSD:	Date Reported: Nov 3, 2017
Attn: Accounts Payable	P.O.: C00037999	Report Number: 2237858
Sampled By: Norbert Botca	Proj. Acct. code:	
Company: YG-Environment		

Metals Dissolved - Continued

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC	
Titanium	mg/L	99.14	90	110	yes	
Date Acquired: October 31, 2017						
Certified Reference Material	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Mercury	µg/L	0.03	0.04	0.02	0.05	yes
Date Acquired: November 01, 2017						
Client Sample Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Titanium	mg/L	0.03	<0.02	30	0.012	yes
Date Acquired: October 31, 2017						
Mercury	µg/L	<0.01	<0.01	20	0.05	yes
Date Acquired: November 01, 2017						

Physical and Aggregate Properties

Client Sample Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Solids	mg/L	250	240	30	50.000	yes
Date Acquired: October 31, 2017						
Control Sample	Units	Measured	Lower Limit	Upper Limit	Passed QC	
Solids	mg/L	460	412.000	610.600	yes	
Date Acquired: October 31, 2017						
Solids	mg/L	26	18.000	37.200	yes	
Date Acquired: October 31, 2017						
Solids	mg/L	<5	-5.001	5.001	yes	
Date Acquired: October 31, 2017						

Routine Water

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
Calcium	mg/L	-0.00243609	-0.010	0.010	yes
Magnesium	mg/L	-0.00921136	-0.020	0.020	yes
Potassium	mg/L	-0.0286447	-0.040	0.040	yes
Silicon	mg/L	0.00178357	-0.005	0.005	yes
Sodium	mg/L	-0.00281304	-0.099	0.099	yes
Date Acquired: October 31, 2017					
Chloride	mg/L	0	-0.201	0.201	yes
Fluoride	mg/L	0	-0.099	0.099	yes
Nitrate - N	mg/L	0	-0.010	0.010	yes
Nitrite - N	mg/L	0	-0.099	0.099	yes
Sulfate (SO4)	mg/L	0	-0.990	0.990	yes
Date Acquired: October 31, 2017					
Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
Calcium	mg/L	101.05	90	110	yes
Magnesium	mg/L	104.17	90	110	yes
Potassium	mg/L	101.30	90	110	yes
Silicon	mg/L	99.14	90	110	yes

Quality Control

Bill To: YTG DOE - Water Resources	Project ID: YOWN	Lot ID: 1236284
PO Box 2703	Project Name: YOWN	Control Number:
Whitehorse, YT, Canada	Project Location: Whitehorse Area(Marsh and Labarge)	Date Received: Oct 30, 2017
Y1A 2C6	LSD:	Date Reported: Nov 3, 2017
Attn: Accounts Payable	P.O.: C00037999	Report Number: 2237858
Sampled By: Norbert Botca	Proj. Acct. code:	
Company: YG-Environment		

Routine Water - Continued

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC	
Sodium	mg/L	101.79	90	110	yes	
Date Acquired: October 31, 2017						
Chloride	mg/L	101.32	85	115	yes	
Fluoride	mg/L	101.94	85	115	yes	
Nitrate - N	mg/L	100.37	85	115	yes	
Nitrite - N	mg/L	96.48	90	110	yes	
Sulfate (SO4)	mg/L	102.32	85	115	yes	
Date Acquired: October 31, 2017						
Chloride	mg/L	100.92	90	110	yes	
Fluoride	mg/L	97.01	89	109	yes	
Nitrate - N	mg/L	99.35	88	108	yes	
Nitrite - N	mg/L	99.99	90	118	yes	
Sulfate (SO4)	mg/L	102.44	90	110	yes	
Date Acquired: October 31, 2017						
Calcium	mg/L	104.68	90	110	yes	
Magnesium	mg/L	109.69	90	110	yes	
Potassium	mg/L	107.35	90	110	yes	
Sodium	mg/L	106.79	90	110	yes	
Date Acquired: October 31, 2017						
Certified Reference Material	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
T-Alkalinity	mg/L	9	10	8	12	yes
Date Acquired: October 31, 2017						
Client Sample Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Calcium	mg/L	130	120	30	1.000	yes
Magnesium	mg/L	70	68	30	1.000	yes
Potassium	mg/L	3.9	3.4	30	1.000	yes
Silicon	mg/L	4.0	4.2	30	0.150	yes
Sodium	mg/L	24	24	30	1.000	yes
Sulfur	mg/L	6.1	6.0	30	3.000	yes
Date Acquired: October 31, 2017						
pH		7.47	7.48	10		yes
Electrical Conductivity	dS/m at 25 °C	0.543	0.544	10	0.005	yes
Bicarbonate	mg/L	310	309	10	10	yes
Hydroxide	mg/L	<5	<5	10	10	yes
P-Alkalinity	mg/L	<5	<5	10	5	yes
T-Alkalinity	mg/L	254	253	10	5	yes
Chloride	mg/L	2.84	2.84	20	0.250	yes
Fluoride	mg/L	0.01	0.01	20	0.050	yes
Nitrate - N	mg/L	0.12	0.13	20	0.050	yes
Nitrite - N	mg/L	<0.01	<0.01	20	0.050	yes
Sulfate (SO4)	mg/L	0.7	0.7	20	0.500	yes
Date Acquired: October 31, 2017						

Quality Control

Bill To: YTG DOE - Water Resources	Project ID: YOWN	Lot ID: 1236284
PO Box 2703	Project Name: YOWN	Control Number:
Whitehorse, YT, Canada	Project Location: Whitehorse Area(Marsh and Labarge)	Date Received: Oct 30, 2017
Y1A 2C6	LSD:	Date Reported: Nov 3, 2017
Attn: Accounts Payable	P.O.: C00037999	Report Number: 2237858
Sampled By: Norbert Botca	Proj. Acct. code:	
Company: YG-Environment		

Routine Water - Continued

Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Chloride	mg/L	1.30	1.33	6	0.010	yes
Nitrate - N	mg/L	0.30	0.31	12	0.050	yes
Sulfate (SO4)	mg/L	4.6	4.7	6	0.010	yes
Date Acquired: October 31, 2017						
Control Sample	Units	Measured	Lower Limit	Upper Limit		Passed QC
pH		10.36	9.17	10.81		yes
Electrical Conductivity	µS/cm at 25 °C	234	194	250		yes
P-Alkalinity	mg/L	27	7	55		yes
T-Alkalinity	mg/L	103	98	113		yes
Date Acquired: October 31, 2017						
pH		4.00	3.88	4.12		yes
Date Acquired: October 31, 2017						
pH		7.97	7.88	8.12		yes
Date Acquired: October 31, 2017						
Electrical Conductivity	µS/cm at 25 °C	1415	1323	1503		yes
Date Acquired: October 31, 2017						

Trace Metals Dissolved

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
Aluminum	µg/L	0	-0.990	0.990	yes
Antimony	µg/L	0	-0.020	0.020	yes
Arsenic	µg/L	-0.00119566	-0.099	0.099	yes
Barium	µg/L	-0.0424485	-0.099	0.099	yes
Beryllium	µg/L	0.0155321	-0.050	0.050	yes
Bismuth	µg/L	0.0144213	-0.099	0.099	yes
Boron	µg/L	1.31325	-2.001	2.001	yes
Cadmium	µg/L	0.00254575	-0.010	0.010	yes
Chromium	µg/L	-0.00200521	-0.050	0.050	yes
Cobalt	µg/L	-0.00200723	-0.020	0.020	yes
Copper	µg/L	0	-0.050	0.050	yes
Iron	µg/L	-0.0443874	-2.001	2.001	yes
Lead	µg/L	0	-0.010	0.010	yes
Lithium	µg/L	-0.0138493	-0.500	0.500	yes
Manganese	µg/L	-0.0770282	-0.990	0.990	yes
Molybdenum	µg/L	0	-0.020	0.020	yes
Nickel	µg/L	-0.010572	-0.200	0.200	yes
Selenium	µg/L	0	-0.200	0.200	yes
Silver	µg/L	0.00386933	-0.009	0.009	yes
Strontium	µg/L	-0.0117704	-0.099	0.099	yes
Tellurium	µg/L	0.0426897	-0.050	0.050	yes
Thallium	µg/L	0.00363098	-0.010	0.010	yes
Thorium	µg/L	0.029791	-0.050	0.050	yes
Tin	µg/L	0.0339383	-0.099	0.099	yes

Quality Control

Bill To: YTG DOE - Water Resources	Project ID: YOWN	Lot ID: 1236284
PO Box 2703	Project Name: YOWN	Control Number:
Whitehorse, YT, Canada	Project Location: Whitehorse Area(Marsh and Labarge)	Date Received: Oct 30, 2017
Y1A 2C6	LSD:	Date Reported: Nov 3, 2017
Attn: Accounts Payable	P.O.: C00037999	Report Number: 2237858
Sampled By: Norbert Botca	Proj. Acct. code:	
Company: YG-Environment		

Trace Metals Dissolved - Continued

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
Titanium	µg/L	0	-0.099	0.099	yes
Uranium	µg/L	0.0090832	-0.010	0.010	yes
Vanadium	µg/L	0	-0.050	0.050	yes
Zinc	µg/L	0	-0.500	0.500	yes
Zirconium	µg/L	0	-0.099	0.099	yes

Date Acquired: October 31, 2017

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
Aluminum	µg/L	112.03	80	120	yes
Antimony	µg/L	109.10	90	110	yes
Arsenic	µg/L	101.59	90	110	yes
Barium	µg/L	97.54	90	110	yes
Beryllium	µg/L	98.07	90	110	yes
Boron	µg/L	99.58	70	130	yes
Cadmium	µg/L	101.96	90	110	yes
Chromium	µg/L	104.50	90	110	yes
Cobalt	µg/L	100.79	90	110	yes
Copper	µg/L	104.31	90	110	yes
Lead	µg/L	99.86	90	110	yes
Lithium	µg/L	98.50	90	110	yes
Molybdenum	µg/L	90.10	90	110	yes
Nickel	µg/L	107.25	90	110	yes
Selenium	µg/L	104.96	90	110	yes
Silver	µg/L	100.93	90	110	yes
Strontium	µg/L	104.97	90	110	yes
Thorium	µg/L	95.47	90	110	yes
Tin	µg/L	107.72	90	110	yes
Titanium	µg/L	99.20	90	110	yes
Uranium	µg/L	98.90	90	110	yes
Vanadium	µg/L	100.72	90	110	yes
Zinc	µg/L	101.74	90	110	yes

Date Acquired: October 31, 2017

Aluminum	µg/L	94.30	80	120	yes
Antimony	µg/L	92.40	90	110	yes
Arsenic	µg/L	96.86	90	110	yes
Barium	µg/L	96.59	90	110	yes
Beryllium	µg/L	98.17	90	110	yes
Boron	µg/L	105.18	80	120	yes
Cadmium	µg/L	101.05	90	110	yes
Chromium	µg/L	98.41	90	110	yes
Cobalt	µg/L	95.21	90	110	yes
Copper	µg/L	93.86	90	110	yes
Lead	µg/L	93.01	90	110	yes
Lithium	µg/L	92.05	90	110	yes
Molybdenum	µg/L	93.23	90	110	yes

Quality Control

Bill To: YTG DOE - Water Resources	Project ID: YOWN	Lot ID: 1236284
PO Box 2703	Project Name: YOWN	Control Number:
Whitehorse, YT, Canada	Project Location: Whitehorse Area(Marsh and Labarge)	Date Received: Oct 30, 2017
Y1A 2C6	LSD:	Date Reported: Nov 3, 2017
Attn: Accounts Payable	P.O.: C00037999	Report Number: 2237858
Sampled By: Norbert Botca	Proj. Acct. code:	
Company: YG-Environment		

Trace Metals Dissolved - Continued

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
Nickel	µg/L	100.66	90	110	yes
Selenium	µg/L	98.68	90	110	yes
Silver	µg/L	92.42	90	110	yes
Strontium	µg/L	97.55	90	110	yes
Thallium	µg/L	95.02	90	110	yes
Thorium	µg/L	96.26	86	122	yes
Tin	µg/L	101.86	90	110	yes
Titanium	µg/L	92.85	90	110	yes
Uranium	µg/L	95.65	90	110	yes
Vanadium	µg/L	95.64	90	110	yes
Zinc	µg/L	99.65	90	110	yes

Date Acquired: October 31, 2017

Client Sample Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Aluminum	µg/L	<10	<10	20	20.000	yes
Antimony	µg/L	1.5	1.6	20	1.000	yes
Arsenic	µg/L	2	2	20	1.000	yes
Barium	µg/L	408	409	20	5.000	yes
Beryllium	µg/L	<0.5	<0.5	20	1.000	yes
Boron	µg/L	110	130	20	5.000	yes
Cadmium	µg/L	0.2	0.2	20	0.500	yes
Chromium	µg/L	<0.5	<0.5	20	5.000	yes
Cobalt	µg/L	67.1	66.8	20	0.500	yes
Copper	µg/L	<5	<5	20	5.000	yes
Iron	µg/L	3510	3670	20	50.000	yes
Lead	µg/L	0.6	0.6	20	0.500	yes
Lithium	µg/L	7	8	20	5.000	yes
Manganese	µg/L	4620	4760	20	0.500	yes
Molybdenum	µg/L	0.4	0.7	20	0.500	yes
Nickel	µg/L	116	121	20	5.000	yes
Selenium	µg/L	<2	<2	20	0.500	yes
Silver	µg/L	<0.1	<0.1	20	0.500	yes
Strontium	µg/L	1220	1229	20	0.500	yes
Tellurium	µg/L	<0.5	<0.5	20	0.500	yes
Thallium	µg/L	<0.1	<0.1	20	0.100	yes
Thorium	µg/L	<0.5	<0.5	20	0.100	yes
Tin	µg/L	4	3	20	0.500	yes
Titanium	µg/L	<1	<1	20	0.500	yes
Uranium	µg/L	0.9	0.9	20	0.100	yes
Vanadium	µg/L	<0.5	<0.5	20	0.500	yes
Zinc	µg/L	53	55	20	5.000	yes
Zirconium	µg/L	<1	<1	20	0.500	yes

Date Acquired: October 31, 2017

Titanium	mg/L	<0.002	<0.002	30	0.012	yes
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Date Acquired: October 31, 2017

Quality Control

Bill To: YTG DOE - Water Resources	Project ID: YOWN	Lot ID: 1236284
PO Box 2703	Project Name: YOWN	Control Number:
Whitehorse, YT, Canada	Project Location: Whitehorse Area(Marsh and Labarge)	Date Received: Oct 30, 2017
Y1A 2C6	LSD:	Date Reported: Nov 3, 2017
Attn: Accounts Payable	P.O.: C00037999	Report Number: 2237858
Sampled By: Norbert Botca	Proj. Acct. code:	
Company: YG-Environment		

Trace Metals Dissolved - Continued

Client Sample	Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
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Methodology and Notes

Bill To: YTG DOE - Water Resources PO Box 2703 Whitehorse, YT, Canada Y1A 2C6	Project ID: YOWN Project Name: YOWN Project Location: Whitehorse Area(Marsh and Labarge)	Lot ID: 1236284 Control Number: Date Received: Oct 30, 2017 Date Reported: Nov 3, 2017 Report Number: 2237858
Attn: Accounts Payable Sampled By: Norbert Botca Company: YG-Environment	LSD: P.O.: C00037999 Proj. Acct. code:	

Method of Analysis

Method Name	Reference	Method	Date Analysis Started	Location
Alk, pH, EC, Turb in water (Surrey)	APHA	* Alkalinity - Titration Method, 2320 B	Oct 31, 2017	Exova Surrey
Alk, pH, EC, Turb in water (Surrey)	APHA	* Conductivity, 2510 B	Oct 31, 2017	Exova Surrey
Alk, pH, EC, Turb in water (Surrey)	APHA	* pH - Electrometric Method, 4500-H+ B	Oct 31, 2017	Exova Surrey
Ammonia-N in Water (Surrey)	APHA	* Flow Injection Analysis, 4500-NH3 H	Nov 3, 2017	Exova Surrey
Anions by IEC in water (Surrey)	APHA	* Ion Chromatography with Chemical Suppression of Eluent Cond., 4110 B	Oct 31, 2017	Exova Surrey
Carbon Inorganic (Dissolved) in water(DIC)	APHA	High-Temperature Combustion Method, 5310 B	Nov 3, 2017	Exova Edmonton
Carbon Inorganic (Total) in water (TIC)	APHA	High-Temperature Combustion Method, 5310 B	Nov 3, 2017	Exova Edmonton
Carbon Organic (Dissolved) in water (DOC)	APHA	High-Temperature Combustion Method, 5310 B	Nov 2, 2017	Exova Edmonton
Carbon Organic (Total) in water (TOC)	APHA	High-Temperature Combustion Method, 5310 B	Nov 2, 2017	Exova Edmonton
Mercury Low Level (Dissolved) in water (Surrey)	EPA	* Mercury in Water by Cold Vapor Atomic Fluorescence Spectrometry, 245.7	Oct 31, 2017	Exova Surrey
Metals SemiTrace (Dissolved) in water (Surrey)	US EPA	* Metals & Trace Elements by ICP-AES, 6010C	Oct 31, 2017	Exova Surrey
Phosphorus - total by Smartchem (Surrey)	APHA	* Persulfate digestion method, 4500-P B5	Nov 1, 2017	Exova Surrey
Solids Dissolved (Total, Fixed and Volatile) - Surrey	APHA	* Total Dissolved Solids Dried at 180 C, 2540 C	Oct 31, 2017	Exova Surrey
Total and Kjeldahl Nitrogen (Total) in Water	ISO	* Water Quality - Determination of nitrogen, ISO/TR 11905-2	Nov 3, 2017	Exova Edmonton
Trace Metals (dissolved) in Water (Surrey)	US EPA	* Determination of Trace Elements in Waters and Wastes by ICP-MS, 200.8	Oct 31, 2017	Exova Surrey

* Reference Method Modified

References

APHA	Standard Methods for the Examination of Water and Wastewater
EPA	Environmental Protection Agency Test Methods - US
ISO	International Organization for Standardization
US EPA	US Environmental Protection Agency Test Methods

Methodology and Notes

Bill To:	YTG DOE - Water Resources	Project ID:	YOWN	Lot ID:	1236284
	PO Box 2703	Project Name:	YOWN	Control Number:	
	Whitehorse, YT, Canada	Project Location:	Whitehorse Area(Marsh and Labarge)	Date Received:	Oct 30, 2017
	Y1A 2C6	LSD:		Date Reported:	Nov 3, 2017
Attn:	Accounts Payable	P.O.:	C00037999	Report Number:	2237858
Sampled By:	Norbert Botca	Proj. Acct. code:			
Company:	YG-Environment				

Please direct any inquiries regarding this report to our Client Services Group or to the Operations Manager at the coordinates indicated at the top left of this page.

Results relate only to samples as submitted.

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Report Transmission Cover Page

Bill To: YTG DOE - Water Resources PO Box 2703 Whitehorse, YT, Canada Y1A 2C6	Project ID: YOWN Project Name: YOWN Project Location: Grizzly Valley & Deep Creek	Lot ID: 1237716 Control Number: Date Received: Nov 6, 2017 Date Reported: Nov 10, 2017 Report Number: 2240510
Attn: Accounts Payable Sampled By: Norbert Botca Company: YG-Environment	LSD: P.O.: C00037999 Proj. Acct. code:	

Contact	Company	Address
Holly Goulding	YTG DOE - Water Resources	202, 419 Range Road Whitehorse, YT Y1A 3V1 Phone: (867) 456-6583 Fax: (867) 667-3194 Email: holly.goulding@gov.yk.ca

Delivery	Format	Deliverables
Email - Merge Reports	PDF	COC / Test Report
Email - Single Report	EQWin	Test Report
Email - Single Report	PDF	Invoice

Contact	Company	Address
John Minder	YTG DOE - Water Resources	202, 419 Range Road Whitehorse, YT Y1A 3V1 Phone: (867) 667-3102 Fax: (867) 667-3194 Email: john.minder@gov.yk.ca

Delivery	Format	Deliverables
Email - Multiple Reports By Lot	EQWin	Test Report
Email - Multiple Reports By Lot	PDF	COC / Test Report
Email - Single Report	PDF	COA
Email - Single Report	PDF	COR
Email - Single Report	PDF	Invoice

Contact	Company	Address
Norbert Botca	YTG DOE - Water Resources	203, 1191 Front Street Whitehorse, YT Y1A 0K5 Phone: (867) 667-3512 Fax: (867) 667-3194 Email: norbert.botca@gov.yk.ca

Delivery	Format	Deliverables
Email - Multiple Reports By Lot	EQWin	Test Report
Email - Multiple Reports By Lot	PDF	COC / Test Report
Email - Single Report	PDF	COA
Email - Single Report	PDF	COR
Email - Single Report	PDF	Invoice

Notes To Clients:

- Nov 08, 2017 - Sample 1237716-1; 5909319: Reduction of analytical volume was necessary for anions due to matrix effects in sample 1237716-1 and 1237716-2. Detection limits are adjusted accordingly.
- Nov 09, 2017 - Reduction of analytical volume was necessary for metals analysis to bring results within the analytical range for sample. Detection limits are adjusted accordingly.

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Analytical Report

Bill To: YTG DOE - Water Resources PO Box 2703 Whitehorse, YT, Canada Y1A 2C6 Attn: Accounts Payable	Project ID: YOWN Project Name: YOWN Project Location: Grizzly Valley & Deep Creek LSD: P.O.: C00037999 Proj. Acct. code:	Lot ID: 1237716 Control Number: Date Received: Nov 6, 2017 Date Reported: Nov 10, 2017 Report Number: 2240510
Sampled By: Norbert Botca Company: YG-Environment		

Reference Number	1237716-1	1237716-2
Sample Date	Nov 02, 2017	Nov 02, 2017
Sample Time	12:50	11:30
Sample Location		
Sample Description	YOWN-1504 / 2017272 / 2 °C / B	YOWN-1505 / 2017273 / 2 °C / B


Analyte	Matrix	Units	Results	Results	Nominal Detection Limit
Inorganic Nonmetallic Parameters					
Nitrogen	Total	mg/L	0.53	0.33	0.06
Organic Carbon	Total Nonpurgeable	mg/L	5.6	1.0	0.5
Organic Carbon	Dissolved Nonpurgeable	mg/L	5.0	<0.5	0.5
Inorganic carbon	Total	mg/L	102	52.8	0.5
Inorganic carbon	Dissolved	mg/L	95.6	51.8	0.5
Ammonia - N		mg/L	0.11	0.01	0.01
Phosphorus	Total	mg/L	0.012	0.004	0.003
Metals Dissolved					
Titanium	Dissolved	mg/L	0.028	0.009	0.002
Mercury	Dissolved	mg/L	<0.00001	<0.00001	0.00001
Physical and Aggregate Properties					
Solids	Total Dissolved	mg/L	1600	470	5
Routine Water					
Digestion	Dissolved		Field filtered and Pres Dissol Exceeded	Field filtered and Pres Dissol Exceeded	
pH - Holding Time					
pH	at 25 °C		7.82	8.18	
Electrical Conductivity		µS/cm at 25 °C	1866	742	1
Calcium	Dissolved	mg/L	190	44	0.01
Magnesium	Dissolved	mg/L	170	37	0.02
Potassium	Dissolved	mg/L	0.82	0.95	0.04
Silicon	Dissolved	mg/L	6.1	4.1	0.005
Sodium	Dissolved	mg/L	32	64	0.1
Sulfur	Dissolved	mg/L	280	59	0.02
Bicarbonate		mg/L	478	257	5
Carbonate		mg/L	<6	<6	6
Hydroxide		mg/L	<5	<5	5
P-Alkalinity	as CaCO3	mg/L	<5	<5	5
T-Alkalinity	as CaCO3	mg/L	392	211	5
Chloride	Dissolved	mg/L	6.6	12.4	0.05
Fluoride	Dissolved	mg/L	0.1	0.2	0.01
Nitrate - N	Dissolved	mg/L	<0.1	<0.1	0.01
Nitrite - N	Dissolved	mg/L	<0.1	<0.1	0.01
Sulfate (SO4)	Dissolved	mg/L	853	189	0.1
Hardness	as CaCO3 (dissolved)	mg/L	1180	260	5
Trace Metals Dissolved					
Digestion	Dissolved		Field filtered and	Field filtered and	

Analytical Report

Bill To: YTG DOE - Water Resources	Project ID: YOWN	Lot ID: 1237716
PO Box 2703	Project Name: YOWN	Control Number:
Whitehorse, YT, Canada	Project Location: Grizzly Valley & Deep Creek	Date Received: Nov 6, 2017
Y1A 2C6	LSD:	Date Reported: Nov 10, 2017
Attn: Accounts Payable	P.O.: C00037999	Report Number: 2240510
Sampled By: Norbert Botca	Proj. Acct. code:	
Company: YG-Environment		

Reference Number	1237716-1	1237716-2
Sample Date	Nov 02, 2017	Nov 02, 2017
Sample Time	12:50	11:30
Sample Location		
Sample Description	YOWN-1504 / 2017272 / 2 °C / B	YOWN-1505 / 2017273 / 2 °C / B
Matrix	Water	Water

Analyte	Units	Results	Results	Results	Nominal Detection Limit
Trace Metals Dissolved - Continued					
		Pres Dissol	Pres Dissol		
Titanium	Dissolved	mg/L	0.028	0.009	0.002
Aluminum	Dissolved	mg/L	0.002	<0.001	0.001
Antimony	Dissolved	mg/L	0.00027	0.00287	0.00002
Arsenic	Dissolved	mg/L	0.0011	0.0022	0.0001
Barium	Dissolved	mg/L	0.0142	0.0120	0.0001
Beryllium	Dissolved	mg/L	<0.00005	<0.00005	0.00005
Bismuth	Dissolved	mg/L	<0.0001	<0.0001	0.0001
Boron	Dissolved	mg/L	0.027	0.024	0.002
Cadmium	Dissolved	mg/L	<0.00001	<0.00001	0.00001
Chromium	Dissolved	mg/L	<0.00005	<0.00005	0.00005
Cobalt	Dissolved	mg/L	0.00041	0.00025	0.00002
Copper	Dissolved	mg/L	<0.0005	<0.0005	0.0005
Iron	Dissolved	mg/L	0.913	0.315	0.002
Lead	Dissolved	mg/L	0.00004	<0.00001	0.00001
Lithium	Dissolved	mg/L	0.0096	0.0181	0.0005
Manganese	Dissolved	mg/L	0.293	0.101	0.001
Molybdenum	Dissolved	mg/L	0.00366	0.00120	0.00002
Nickel	Dissolved	mg/L	0.0008	0.0008	0.0002
Selenium	Dissolved	mg/L	<0.0002	<0.0002	0.0002
Silver	Dissolved	mg/L	<0.00001	<0.00001	0.00001
Strontium	Dissolved	mg/L	2.632	2.968	0.0001
Tellurium	Dissolved	mg/L	<0.00005	<0.00005	0.00005
Thallium	Dissolved	mg/L	<0.00001	<0.00001	0.00001
Thorium	Dissolved	mg/L	0.00089	0.00014	0.00005
Tin	Dissolved	mg/L	0.0005	<0.0001	0.0001
Uranium	Dissolved	mg/L	0.00412	0.00050	0.00001
Vanadium	Dissolved	mg/L	<0.00005	<0.00005	0.00005
Zinc	Dissolved	mg/L	0.0129	0.0043	0.0005
Zirconium	Dissolved	mg/L	0.0005	0.0001	0.0001

Approved by: 
 Randy Neumann, BSc
 Vice President

Quality Control

Bill To: YTG DOE - Water Resources PO Box 2703 Whitehorse, YT, Canada Y1A 2C6 Attn: Accounts Payable	Project ID: YOWN Project Name: YOWN Project Location: Grizzly Valley & Deep Creek LSD: P.O.: C00037999 Proj. Acct. code:	Lot ID: 1237716 Control Number: Date Received: Nov 6, 2017 Date Reported: Nov 10, 2017 Report Number: 2240510
Sampled By: Norbert Botca Company: YG-Environment		

Inorganic Nonmetallic Parameters

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
Ammonium - N	µg/L	-11.74	-110.00	10.00	yes
Phosphorus	mg/L	0	-0.003	0.003	yes
Date Acquired: November 08, 2017					
Nitrogen	mg/L	0	-0.04	0.08	yes
Organic Carbon	mg/L	0.05823	-0.5	0.5	yes
Inorganic carbon	mg/L	0.172	-0.5	0.5	yes
Date Acquired: November 09, 2017					

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
Ammonium - N	µg/L	104.65	85	115	yes
Phosphorus	mg/L	98.36	90	110	yes
Date Acquired: November 08, 2017					
Ammonium - N	µg/L	101.40	70	130	yes
Phosphorus	mg/L	101.00	80	120	yes
Date Acquired: November 08, 2017					

Client Sample Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Nitrogen	mg/L	0.53	0.57	10	0.06	yes
Organic Carbon	mg/L	5.6	6.1	10	1.0	yes
Inorganic carbon	mg/L	2.0	2.2	10	1.0	yes
Date Acquired: November 09, 2017						
Ammonia - N	mg/L	<0.01	<0.01	20	50.00	yes
Date Acquired: November 08, 2017						

Control Sample	Units	Measured	Lower Limit	Upper Limit	Passed QC
Organic Carbon	mg/L	<0.5	-0.5	0.5	yes
Date Acquired: November 08, 2017					
Nitrogen	mg/L	115	103.74	137.28	yes
Organic Carbon	mg/L	128	109.1	139.7	yes
Inorganic carbon	mg/L	48.0	39.0	57.0	yes
Date Acquired: November 09, 2017					
Nitrogen	mg/L	14.0	13.27	16.93	yes
Organic Carbon	mg/L	15.2	12.8	17.2	yes
Inorganic carbon	mg/L	17.0	13.5	18.3	yes
Date Acquired: November 09, 2017					
Nitrogen	mg/L	1.19	0.89	1.25	yes
Organic Carbon	mg/L	3.7	2.4	4.0	yes
Inorganic carbon	mg/L	3.6	2.7	3.9	yes
Date Acquired: November 09, 2017					
Phosphorus	mg/L	0.449	0.389	0.503	yes
Date Acquired: November 08, 2017					

Metals Dissolved

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
Mercury	ng/L	1.1	-9.99	9.99	yes

Quality Control

Bill To: YTG DOE - Water Resources PO Box 2703 Whitehorse, YT, Canada Y1A 2C6 Attn: Accounts Payable	Project ID: YOWN Project Name: YOWN Project Location: Grizzly Valley & Deep Creek LSD: P.O.: C00037999 Proj. Acct. code:	Lot ID: 1237716 Control Number: Date Received: Nov 6, 2017 Date Reported: Nov 10, 2017 Report Number: 2240510
Sampled By: Norbert Botca Company: YG-Environment		

Metals Dissolved - Continued

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC	
Date Acquired:	November 06, 2017					
Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC	
Mercury	ng/L	97.80	90	110	yes	
Date Acquired:	November 06, 2017					
Titanium	mg/L	100.22	90	110	yes	
Date Acquired:	November 08, 2017					
Titanium	mg/L	102.48	90	110	yes	
Date Acquired:	November 08, 2017					
Certified Reference Material	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Mercury	µg/L	0.03	0.04	0.02	0.05	yes
Date Acquired:	November 06, 2017					
Client Sample Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Mercury	µg/L	<0.01	<0.01	20	0.05	yes
Date Acquired:	November 06, 2017					

Physical and Aggregate Properties

Control Sample	Units	Measured	Lower Limit	Upper Limit	Passed QC
Solids	mg/L	520	412.000	610.600	yes
Date Acquired:	November 07, 2017				
Solids	mg/L	<5	-5.001	5.001	yes
Date Acquired:	November 07, 2017				

Routine Water

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
Calcium	mg/L	0	-0.010	0.010	yes
Magnesium	mg/L	0	-0.020	0.020	yes
Potassium	mg/L	-0.0279255	-0.040	0.040	yes
Silicon	mg/L	-0.00108072	-0.005	0.005	yes
Sodium	mg/L	-0.0741568	-0.099	0.099	yes
Date Acquired:	November 08, 2017				
Chloride	mg/L	0.0122752	-0.201	0.201	yes
Fluoride	mg/L	0	-0.099	0.099	yes
Nitrate - N	mg/L	0	-0.010	0.010	yes
Nitrite - N	mg/L	0	-0.099	0.099	yes
Sulfate (SO4)	mg/L	0	-0.990	0.990	yes
Date Acquired:	November 07, 2017				
Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
Calcium	mg/L	102.89	90	110	yes
Magnesium	mg/L	102.39	90	110	yes
Potassium	mg/L	101.75	90	110	yes
Silicon	mg/L	96.78	90	110	yes
Sodium	mg/L	101.89	90	110	yes

Quality Control

Bill To: YTG DOE - Water Resources	Project ID: YOWN	Lot ID: 1237716
PO Box 2703	Project Name: YOWN	Control Number:
Whitehorse, YT, Canada	Project Location: Grizzly Valley & Deep Creek	Date Received: Nov 6, 2017
Y1A 2C6	LSD:	Date Reported: Nov 10, 2017
Attn: Accounts Payable	P.O.: C00037999	Report Number: 2240510
Sampled By: Norbert Botca	Proj. Acct. code:	
Company: YG-Environment		

Routine Water - Continued

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC	
Date Acquired: November 08, 2017						
Chloride	mg/L	101.34	85	115	yes	
Fluoride	mg/L	106.55	85	115	yes	
Nitrate - N	mg/L	100.48	85	115	yes	
Nitrite - N	mg/L	96.45	90	110	yes	
Sulfate (SO4)	mg/L	102.99	85	115	yes	
Date Acquired: November 07, 2017						
Chloride	mg/L	102.08	90	110	yes	
Fluoride	mg/L	97.03	89	109	yes	
Nitrate - N	mg/L	101.31	88	108	yes	
Nitrite - N	mg/L	101.99	90	118	yes	
Sulfate (SO4)	mg/L	104.53	90	110	yes	
Date Acquired: November 07, 2017						
Calcium	mg/L	103.07	90	110	yes	
Magnesium	mg/L	105.02	90	110	yes	
Potassium	mg/L	104.53	90	110	yes	
Sodium	mg/L	101.42	90	110	yes	
Date Acquired: November 08, 2017						
Certified Reference Material	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
T-Alkalinity	mg/L	9	10	8	12	yes
Date Acquired: November 07, 2017						
Client Sample Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Calcium	mg/L	11	11	30	1.000	yes
Magnesium	mg/L	7.3	7.5	30	1.000	yes
Date Acquired: November 08, 2017						
pH		7.32	7.34	10		yes
Electrical Conductivity	dS/m at 25 °C	0.654	0.657	10	0.005	yes
Chloride	mg/L	3.45	3.46	20	0.250	yes
Fluoride	mg/L	0.05	0.05	20	0.050	yes
Nitrate - N	mg/L	<0.01	<0.01	20	0.050	yes
Nitrite - N	mg/L	<0.01	<0.01	20	0.050	yes
Sulfate (SO4)	mg/L	3.9	3.9	20	0.500	yes
Date Acquired: November 07, 2017						
Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Chloride	mg/L	1.39	1.35	6	0.010	yes
Nitrate - N	mg/L	0.30	0.30	12	0.050	yes
Sulfate (SO4)	mg/L	4.7	4.7	6	0.010	yes
Date Acquired: November 07, 2017						
Control Sample	Units	Measured	Lower Limit	Upper Limit	Passed QC	
pH		9.85	9.17	10.81	yes	
Electrical Conductivity	µS/cm at 25 °C	237	194	250	yes	
P-Alkalinity	mg/L	41	7	55	yes	

Quality Control

Bill To: YTG DOE - Water Resources PO Box 2703 Whitehorse, YT, Canada Y1A 2C6 Attn: Accounts Payable	Project ID: YOWN Project Name: YOWN Project Location: Grizzly Valley & Deep Creek LSD: P.O.: C00037999 Proj. Acct. code:	Lot ID: 1237716 Control Number: Date Received: Nov 6, 2017 Date Reported: Nov 10, 2017 Report Number: 2240510
Sampled By: Norbert Botca Company: YG-Environment		

Routine Water - Continued

Control Sample	Units	Measured	Lower Limit	Upper Limit	Passed QC
T-Alkalinity	mg/L	102	98	113	yes
Date Acquired: November 07, 2017					
pH		4.03	3.88	4.12	yes
Date Acquired: November 07, 2017					
pH		8.01	7.88	8.12	yes
Date Acquired: November 07, 2017					
Electrical Conductivity	µS/cm at 25 °C	1384	1323	1503	yes
Date Acquired: November 07, 2017					

Trace Metals Dissolved

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
Aluminum	µg/L	-0.964507	-0.990	0.990	yes
Antimony	µg/L	0.0102766	-0.020	0.020	yes
Arsenic	µg/L	0.0303342	-0.099	0.099	yes
Barium	µg/L	0.00211356	-0.099	0.099	yes
Beryllium	µg/L	0.0253291	-0.050	0.050	yes
Bismuth	µg/L	0.0101914	-0.099	0.099	yes
Boron	µg/L	-1.19551	-2.001	2.001	yes
Cadmium	µg/L	-0.000691178	-0.010	0.010	yes
Chromium	µg/L	0.00592518	-0.050	0.050	yes
Cobalt	µg/L	0.0162042	-0.020	0.020	yes
Copper	µg/L	0.030624	-0.050	0.050	yes
Iron	µg/L	-0.919698	-2.001	2.001	yes
Lead	µg/L	0	-0.010	0.010	yes
Lithium	µg/L	0.0634889	-0.500	0.500	yes
Manganese	µg/L	-0.000928955	-0.990	0.990	yes
Molybdenum	µg/L	0.0100243	-0.020	0.020	yes
Nickel	µg/L	-0.0225284	-0.200	0.200	yes
Selenium	µg/L	0.0220985	-0.200	0.200	yes
Silver	µg/L	0.00686317	-0.009	0.009	yes
Strontium	µg/L	0.022572	-0.099	0.099	yes
Tellurium	µg/L	-0.00748572	-0.050	0.050	yes
Thallium	µg/L	-0.000462928	-0.010	0.010	yes
Thorium	µg/L	-0.0032633	-0.050	0.050	yes
Tin	µg/L	-0.0168312	-0.099	0.099	yes
Titanium	µg/L	0.0600738	-0.099	0.099	yes
Uranium	µg/L	7.82491e-007	-0.010	0.010	yes
Vanadium	µg/L	-0.0200434	-0.050	0.050	yes
Zinc	µg/L	-0.152292	-0.500	0.500	yes
Zirconium	µg/L	0.0336527	-0.099	0.099	yes

Date Acquired: November 08, 2017

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
Aluminum	µg/L	102.38	80	120	yes

Quality Control

Bill To: YTG DOE - Water Resources	Project ID: YOWN	Lot ID: 1237716
PO Box 2703	Project Name: YOWN	Control Number:
Whitehorse, YT, Canada	Project Location: Grizzly Valley & Deep Creek	Date Received: Nov 6, 2017
Y1A 2C6	LSD:	Date Reported: Nov 10, 2017
Attn: Accounts Payable	P.O.: C00037999	Report Number: 2240510
Sampled By: Norbert Botca	Proj. Acct. code:	
Company: YG-Environment		

Trace Metals Dissolved - Continued

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
Antimony	µg/L	105.21	90	110	yes
Arsenic	µg/L	98.50	90	110	yes
Barium	µg/L	96.37	90	110	yes
Beryllium	µg/L	94.84	90	110	yes
Boron	µg/L	103.67	70	130	yes
Cadmium	µg/L	97.94	90	110	yes
Chromium	µg/L	103.13	90	110	yes
Cobalt	µg/L	99.10	90	110	yes
Copper	µg/L	98.43	90	110	yes
Lead	µg/L	102.44	90	110	yes
Lithium	µg/L	107.18	90	110	yes
Molybdenum	µg/L	94.18	90	110	yes
Nickel	µg/L	101.29	90	110	yes
Selenium	µg/L	98.39	90	110	yes
Silver	µg/L	90.05	90	110	yes
Strontium	µg/L	95.45	90	110	yes
Thorium	µg/L	102.85	90	110	yes
Tin	µg/L	93.28	90	110	yes
Titanium	µg/L	93.90	90	110	yes
Uranium	µg/L	100.08	90	110	yes
Vanadium	µg/L	99.77	90	110	yes
Zinc	µg/L	105.18	90	110	yes
Date Acquired: November 08, 2017					
Aluminum	µg/L	90.11	80	120	yes
Antimony	µg/L	106.21	90	110	yes
Arsenic	µg/L	93.82	90	110	yes
Barium	µg/L	94.04	90	110	yes
Beryllium	µg/L	90.43	90	110	yes
Boron	µg/L	93.56	80	120	yes
Cadmium	µg/L	95.46	90	110	yes
Chromium	µg/L	94.09	90	110	yes
Cobalt	µg/L	91.89	90	110	yes
Copper	µg/L	90.73	90	110	yes
Lead	µg/L	96.03	90	110	yes
Lithium	µg/L	96.70	90	110	yes
Molybdenum	µg/L	96.00	90	110	yes
Nickel	µg/L	92.78	90	110	yes
Selenium	µg/L	95.61	90	110	yes
Silver	µg/L	108.13	90	110	yes
Strontium	µg/L	92.04	90	110	yes
Thallium	µg/L	98.34	90	110	yes
Thorium	µg/L	97.02	86	122	yes
Tin	µg/L	91.73	90	110	yes
Titanium	µg/L	90.90	90	110	yes

Quality Control

Bill To: YTG DOE - Water Resources	Project ID: YOWN	Lot ID: 1237716
PO Box 2703	Project Name: YOWN	Control Number:
Whitehorse, YT, Canada	Project Location: Grizzly Valley & Deep Creek	Date Received: Nov 6, 2017
Y1A 2C6	LSD:	Date Reported: Nov 10, 2017
Attn: Accounts Payable	P.O.: C00037999	Report Number: 2240510
Sampled By: Norbert Botca	Proj. Acct. code:	
Company: YG-Environment		

Trace Metals Dissolved - Continued

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
Uranium	µg/L	96.77	90	110	yes
Vanadium	µg/L	92.22	90	110	yes
Zinc	µg/L	91.92	90	110	yes

Date Acquired: November 08, 2017

Client Sample Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Aluminum	µg/L	2	2	20	20.000	yes
Antimony	µg/L	0.27	0.30	20	1.000	yes
Arsenic	µg/L	1.1	1.1	20	1.000	yes
Barium	µg/L	14.2	14.3	20	5.000	yes
Beryllium	µg/L	<0.05	<0.05	20	1.000	yes
Boron	µg/L	27	25	20	5.000	yes
Cadmium	µg/L	<0.01	<0.01	20	0.500	yes
Chromium	µg/L	<0.05	<0.05	20	5.000	yes
Cobalt	µg/L	0.41	0.40	20	0.500	yes
Copper	µg/L	<0.5	<0.5	20	5.000	yes
Iron	µg/L	913	913	20	50.000	yes
Lead	µg/L	0.04	0.17	20	0.500	yes
Lithium	µg/L	9.6	9.7	20	5.000	yes
Manganese	µg/L	293	293	20	0.500	yes
Molybdenum	µg/L	3.66	3.63	20	0.500	yes
Nickel	µg/L	0.8	0.8	20	5.000	yes
Selenium	µg/L	<0.2	<0.2	20	0.500	yes
Silver	µg/L	<0.01	0.01	20	0.500	yes
Strontium	µg/L	2632	2648	20	0.500	yes
Tellurium	µg/L	<0.05	<0.05	20	0.500	yes
Thallium	µg/L	<0.01	<0.01	20	0.100	yes
Thorium	µg/L	0.89	0.8	20	0.100	yes
Tin	µg/L	0.5	0.7	20	0.500	yes
Titanium	µg/L	0.7	0.7	20	0.500	yes
Uranium	µg/L	4.12	4.19	20	0.100	yes
Vanadium	µg/L	<0.05	<0.05	20	0.500	yes
Zinc	µg/L	12.9	13.1	20	5.000	yes
Zirconium	µg/L	0.5	0.6	20	0.500	yes

Date Acquired: November 08, 2017

Methodology and Notes

Bill To: YTG DOE - Water Resources PO Box 2703 Whitehorse, YT, Canada Y1A 2C6	Project ID: YOWN Project Name: YOWN Project Location: Grizzly Valley & Deep Creek	Lot ID: 1237716 Control Number: Date Received: Nov 6, 2017 Date Reported: Nov 10, 2017 Report Number: 2240510
Attn: Accounts Payable Sampled By: Norbert Botca Company: YG-Environment	LSD: P.O.: C00037999 Proj. Acct. code:	

Method of Analysis

Method Name	Reference	Method	Date Analysis Started	Location
Alk, pH, EC, Turb in water (Surrey)	APHA	* Alkalinity - Titration Method, 2320 B	Nov 7, 2017	Exova Surrey
Alk, pH, EC, Turb in water (Surrey)	APHA	* Conductivity, 2510 B	Nov 7, 2017	Exova Surrey
Alk, pH, EC, Turb in water (Surrey)	APHA	* pH - Electrometric Method, 4500-H+ B	Nov 7, 2017	Exova Surrey
Ammonia-N in Water (Surrey)	APHA	* Flow Injection Analysis, 4500-NH3 H	Nov 8, 2017	Exova Surrey
Anions by IEC in water (Surrey)	APHA	* Ion Chromatography with Chemical Suppression of Eluent Cond., 4110 B	Nov 7, 2017	Exova Surrey
Carbon Inorganic (Dissolved) in water(DIC)	APHA	High-Temperature Combustion Method, 5310 B	Nov 9, 2017	Exova Edmonton
Carbon Inorganic (Total) in water (TIC)	APHA	High-Temperature Combustion Method, 5310 B	Nov 9, 2017	Exova Edmonton
Carbon Organic (Dissolved) in water (DOC)	APHA	High-Temperature Combustion Method, 5310 B	Nov 8, 2017	Exova Edmonton
Carbon Organic (Total) in water (TOC)	APHA	High-Temperature Combustion Method, 5310 B	Nov 8, 2017	Exova Edmonton
Mercury Low Level (Dissolved) in water (Surrey)	EPA	* Mercury in Water by Cold Vapor Atomic Fluorescence Spectrometry, 245.7	Nov 7, 2017	Exova Surrey
Metals SemiTrace (Dissolved) in water (Surrey)	US EPA	* Metals & Trace Elements by ICP-AES, 6010C	Nov 7, 2017	Exova Surrey
Phosphorus - total by Smartchem (Surrey)	APHA	* Persulfate digestion method, 4500-P B5	Nov 8, 2017	Exova Surrey
Solids Dissolved (Total, Fixed and Volatile) - Surrey	APHA	* Total Dissolved Solids Dried at 180 C, 2540 C	Nov 7, 2017	Exova Surrey
Total and Kjeldahl Nitrogen (Total) in Water	ISO	* Water Quality - Determination of nitrogen, ISO/TR 11905-2	Nov 8, 2017	Exova Edmonton
Trace Metals (dissolved) in Water (Surrey)	US EPA	* Determination of Trace Elements in Waters and Wastes by ICP-MS, 200.8	Nov 7, 2017	Exova Surrey

* Reference Method Modified

References

APHA	Standard Methods for the Examination of Water and Wastewater
EPA	Environmental Protection Agency Test Methods - US
ISO	International Organization for Standardization
US EPA	US Environmental Protection Agency Test Methods

Comments:

- Nov 08, 2017 - Sample 1237716-1; 5909319: Reduction of analytical volume was necessary for anions due to matrix effects in sample 1237716-1 and 1237716-2. Detection limits are adjusted accordingly.
- Nov 09, 2017 - Reduction of analytical volume was necessary for metals analysis to bring results within the analytical range for sample. Detection limits are adjusted accordingly.

Methodology and Notes

Bill To: YTG DOE - Water Resources	Project ID: YOWN	Lot ID: 1237716
PO Box 2703	Project Name: YOWN	Control Number:
Whitehorse, YT, Canada	Project Location: Grizzly Valley & Deep Creek	Date Received: Nov 6, 2017
Y1A 2C6	LSD:	Date Reported: Nov 10, 2017
Attn: Accounts Payable	P.O.: C00037999	Report Number: 2240510
Sampled By: Norbert Botca	Proj. Acct. code:	
Company: YG-Environment		


Please direct any inquiries regarding this report to our Client Services Group or to the Operations Manager at the coordinates indicated at the top left of this page.

Results relate only to samples as submitted.

The test report shall not be reproduced except in full, without the written approval of the laboratory.

Environmental Sample Information Sheet

NOTE Proper completion of this form is required in order to proceed with analysis

Billing Address		Report To: <input checked="" type="checkbox"/>	Copy of Report To:	Copy of invoice: <input type="checkbox"/>
Company: Environment Yukon - Water Resources		QA/QC Report <input type="checkbox"/>	Company: Same	Mail invoice to this address for approval <input type="checkbox"/>
Address: Room 203/ 1191 Front Street Whitehorse, YT. Y1A 0K5			Address:	
Attention: Norbert Botca; John Miller		Report Result:	Lot: 1237716 ^{COC}	
Phone: (867) 667-3512		Fax <input type="checkbox"/>		
Fax: (867) 667-3194		Mail <input type="checkbox"/>		
Cell:		Courier <input type="checkbox"/>		
Email: norbert.botca@gov.yk.ca; john.miller@gov.yk.ca		Email <input checked="" type="checkbox"/>		
		e-Services <input checked="" type="checkbox"/>		
			Attention:	Report Result:
			Phone:	Fax <input type="checkbox"/>
			Fax:	Mail <input type="checkbox"/>
			Cell:	Courier <input type="checkbox"/>
			Email:	Email <input checked="" type="checkbox"/>
				e-Services <input type="checkbox"/>

Information to be included on Report and Invoice	RUSH Please contact the laboratory to confirm rush dates and times before submitting samples. (Upon filling in this section client accepts that a surcharge will be applied to this analysis).	Sample Custody (Please Print)
	Project ID: YOWN Project Name: YOWN Project Location: Grizzly Valley & Deep Creek Legal Location: PO#: Proj. Acct. Code: Agreement ID:	Upon filling out this section, client accepts that surcharges will be attached to this analysis Required on: all analyses <input type="checkbox"/> or <input type="checkbox"/> Date required: _____ Signature: _____ Norwest Authorization: _____

Special Instructions/Comments Please indicate which regulations you are required to meet: _____										FOR LAB USE ONLY																																																																																																																																																																																																																																																																																																											
										Condition of containers/coolers upon arrival at lab <table border="1" style="width:100%; border-collapse: collapse; text-align: center;"> <tr> <th style="writing-mode: vertical-rl; transform: rotate(180deg);">Number of Containers</th> <th>TW23EW</th> <th>ALK</th> <th>ICCL</th> <th>ICF</th> <th>ICSO</th> <th>PH</th> <th>EC</th> <th>TDS</th> <th>HARD</th> <th>NH3-N</th> <th>ICN2</th> <th>ICN3</th> <th>DOC</th> <th>TP</th> <th>TN1</th> <th>D-MERC</th> <th>TOC</th> <th>TIC/DIC</th> <th></th> </tr> <tr> <td>7</td> <td>x</td><td>x</td><td>x</td><td>x</td><td>x</td><td>x</td><td>x</td><td>x</td><td>x</td><td>x</td><td>x</td><td>x</td><td>x</td><td>x</td><td>x</td><td>x</td><td>x</td><td>x</td><td></td> </tr> <tr> <td>7</td> <td>x</td><td>x</td><td>x</td><td>x</td><td>x</td><td>x</td><td>x</td><td>x</td><td>x</td><td>x</td><td>x</td><td>x</td><td>x</td><td>x</td><td>x</td><td>x</td><td>x</td><td>x</td><td></td> </tr> <tr><td> </td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td> </td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td> </td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td> </td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td> </td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td> </td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td> </td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td> </td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td> </td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td> </td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td> </td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td> </td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> </table>										Number of Containers	TW23EW	ALK	ICCL	ICF	ICSO	PH	EC	TDS	HARD	NH3-N	ICN2	ICN3	DOC	TP	TN1	D-MERC	TOC	TIC/DIC		7	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		7	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x																																																																																																																																																																																																																																							
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